

The MINOR PLANET CIRCULARS/MINOR PLANETS AND COMETS are published, on behalf of
Commission 20 of the International Astronomical Union, usually in batches
on or near the date of each full moon, by:

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

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ERRATUM

MPC Line
36128 -34

For violinist read violist

NEW OBSERVATORY CODES

The following listing is a continuation to that on MPC 35765. 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	$\rho \cos \phi'$	$\rho \sin \phi'$	
167	8.5727	0.67662	+0.73398	Buelach Observatory
169	8.4016	0.70737	+0.70453	Airali Observatory
170	1.9206	0.75217	+0.65711	Observatorio de Begues
171	14.4708	0.81087	+0.58328	Flarestar Observatory, San Gwann
461	19.8943	0.67153	+0.73869	JATE Asteroid Survey, Piskésető
851	296.4189	0.71284	+0.69900	Burke-Gaffney Observatory, Halifax
945	354.3986	0.72671	+0.68474	Observatorio Monte Deva
930	210.4119	0.95374	-0.29967	Tahiti
853	249.1517	0.84365	+0.53544	Biosphere 2 Observatory

CORRECTED OBSERVATIONS

The following observations correct those previously published.

Object	Date	UT	α_{2000}	δ_{2000}	Reference	N Obs.
1957 LE	1957 06 05.97500	17 34 32.77	-22 43 22.0	<i>MPC</i> 5298		1 081
1957 LE	1957 06 06.03000	17 34 29.62	-22 43 16.1	<i>MPC</i> 5298		1 081

Note 1: observations interchanged.

IDENTIFICATION CHANGES

Continuation to MPC 35766.

Object	Date	UT	α_{2000}	δ_{2000}	Originally	Mag.	Obs.
1982 RP ₃	* 1982 09	13.83403	22 28 29.15	-10 41 59.3	1982 QE ₂	17.0	095
1986 VR ₉	* 1986 11	07.94826	02 39 01.45	+16 01 26.4	1986 VD ₇		046
1986 VR ₉	1986 11	07.96238	02 39 00.64	+16 01 24.4	1986 VD ₇		046
1989 GV ₈	* 1989 04	07.10521	12 29 45.96	-04 58 32.1	1989 GE ₄		809

1989 GV ₈	1989 04 07.11528	12 29 45.53	-04 58 29.0	1989 GE ₄	809
1989 GV ₈	1989 04 07.12639	12 29 45.22	-04 58 26.6	1989 GE ₄	809
1990 QV ₁₉	* 1990 08 18.22361	22 56 03.10	-07 56 33.9	1990 QG ₈	19.4 809
1990 QV ₁₉	1990 08 18.23681	22 56 02.66	-07 56 41.5	1990 QG ₈	809
1990 QV ₁₉	1990 08 18.25000	22 56 02.18	-07 56 49.4	1990 QG ₈	809
1992 GS ₈	* 1992 04 06.06285	10 10 19.80	+11 32 56.6	1992 EF ₈	18.8 809
1992 TC ₂	* 1992 10 01.71215	02 08 08.59	+14 51 46.9	1992 SP ₁₂	17 372
1992 TC ₂	1992 10 01.72639	02 08 08.13	+14 51 43.0	1992 SP ₁₂	372
1993 NQ ₂	* 1993 07 13.21111	20 12 30.58	-20 51 36.6	1993 OA ₆	18.6 809
1993 NQ ₂	1993 07 13.22431	20 12 29.94	-20 51 40.9	1993 OA ₆	809
1993 NQ ₂	1993 07 13.23750	20 12 29.15	-20 51 46.4	1993 OA ₆	809

OBSERVATIONS OF COMETS

Observations are published here for the following observatory codes:

012	Uccle. 0.85-m $f/2.5$ Schmidt + CCD. Observers E. W. Elst and S. Ipatov.
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 G. Borisov, A. Marinov, V. Redeva, R. Ralev and I. Darganov. Measured by G. Borisov.
106	Črni vrh. 0.36-m $f/6.7$ Schmidt-Cassegrain + CCD. Observer H. Mikuž.
108	Montelupo. 0.30-m $f/5.7$ Schmidt-Cassegrain + CCD. Observers M. Tombelli and G. Forti.
113	Drebach. 0.14-m $f/3.5$ camera. Observers J. Kandler and G. Lehmann.
118	Modra. 0.6-m $f/5.5$ reflector + CCD. Observers A. Galád, P. Kolény, L. Kornoš and J. Tóth.
133	Les Tardieux. 0.20-m $f/3.5$ reflector + CCD. Observer M. Boeuf.
143	Gnosca. 0.20-m $f/6.3$ reflector + CCD. Observer S. Sposetti.
145	's-Gravenwezel. 0.25-m $f/3.3$ Schmidt-Cassegrain + CCD. Observer T. Alderweireldt.
159	Monte Agliale. 0.51-m reflector + CCD. Observers S. Donati and E. Mazzoni.
167	Büla Observatory. 0.50-m reflector + CCD. Observer S. Meister.
169	Rosignano. 0.25-m Schmidt-Cassegrain + CCD. Observer S. Puccini.
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.	713	Thornton. 0.20-m $f/10$ Schmidt-Cassegrain + CCD. Observer R. A. Koff.				
355	Hadano. 0.28-m $f/5.0$ reflector + CCD. Observer A. Asami.	714	Bagdad. 0.30-m $f/10$ Schmidt-Cassegrain. Observer J. Bruton.				
360	Kuma Kogen. 0.60-m $f/5.8$ Ritchey-Chrétien + CCD. Observer A. Nakamura.	718	Hansen Planetarium, University of Utah. 0.35-m $f/4.1$ Schmidt-Cassegrain + CCD. Observers P. Wiggins and H. Phaneuf.				
367	Yatsuka. 0.26-m $f/4.8$ reflector. Observer H. Abe.	719	Etscorn. 0.36-m Schmidt-Cassegrain + CCD. Observer D. A. Klinglesmith III.				
372	Geisei. 0.60-m $f/3.5$ reflector. Observer T. Seki.	720	Universidad de Monterrey. 0.18-m $f/15.0$ Maksutov + CCD. Observer P. V. Sada.				
385	Nihondaira Observatory. 0.31-m $f/4.7$ reflector + CCD. Observer T. Urata.	750	Hobbs Observatory, Fall Creek. 0.6-m $f/5$ telescope + CCD. Observer R. Elliott.				
392	JCPM Sapporo Station. 0.30-m $f/2.7$ Schmidt camera. Observer K. Watanabe.	784	Alfred University Observatory. 0.81-m $f/4$ reflector + CCD. Observer R. Gutermuth.				
402	Dynic Astronomical Observatory. 0.60-m $f/3.7$ reflector + CCD. Observer A. Sugie.	807	Cerro Tololo. 0.9-m reflector + CCD. Observers A. Becker, C. Stubbs and J. Perez.				
411	Oizumi. 0.41-m $f/4.3$ reflector + CCD. Observer T. Kobayashi.	809	European Southern Observatory. 2.2-m MPG reflector + CCD. Observers C. Wolf and T. Kranz.				
413	Siding Spring. 1.0-m $f/8$ reflector + CCD and 1.2-m U.K. Schmidt. Observers R. H. McNaught and M. Hartley.	834	Buenos Aires-AAAA. 0.25-m $f/6.3$ reflector + CCD. Observers R. Caprio, H. Ruggio and R. Mackintosh. Measured by R. Mackintosh and M. S. Fernandez.				
423	North Ryde. 0.20-m $f/4$ hyperbolic astrograph + CCD Observer S. G. McAndrew.	848	Cottage Grove. 0.36-m $f/11$ Schmidt-Cassegrain + CCD. Observer M. Schwartz. Measured by P. R. Holvorcem.				
428	Reedy Creek. 0.25-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer J. Broughton.	850	Cordell-Lorenz Observatory. 0.3-m $f/5.7$ Schmidt-Cassegrain + CCD. Observers D. T. Durig and T. D. Polk.				
432	Boambee. 0.20-m Schmidt-Cassegrain + CCD. Observer V. A. Gardiner.	853	Biosphere 2 Observatory. 0.5-m $f/8.1$ reflector. Observer G. J. Garradd.				
461	JATE Asteroid Survey, Piskésető. 0.60-m Schmidt + CCD. Observers K. Sárneczky, L. Kiss and G. Szabó. Measured by K. Sárneczky and L. Kiss.	859	Serra da Piedade. 0.30-m $f/3.3$ reflector + CCD. Observers C. Jacques.				
467	Auckland. 0.50-m Cassegrain $f/6.4$ reflector + CCD. Observers I. P. Griffin, R. Greatrex, M. Arthur and M. Bos.	867	Saji Observatory. 1.03-m $f/4.8$ reflector + CCD. Observers M. Yamanishi, A. Miyamoto, M. Aimoto and T. Oribe.				
468	Campo Catino. 0.80-m $f/4.0$ reflector + CCD. Observers F. Mallia, G. Masi and M. Di Sora.	886	Susono. 0.25-m $f/6.3$ reflector + CCD. Observer M. Akiyama.				
470	Ceccano. 0.15-m $f/5$ reflector + CCD. Observers G. Masi and A. Cassetti.	888	Gekko. 0.50-m $f/4.0$ reflector + CCD. Observer T. Kagawa.				
504	Le Creusot. 0.40-m $f/5$ reflector + CCD. Observer J. C. Merlin.	897	Chiyoda. 0.25-m $f/6.0$ reflector + CCD. Observer T. Kojima.				
557	Ondřejov. 0.65-m $f/3.6$ reflector + CCD. Observers P. Pravec, L. Šarounová and P. Kušnirák.	900	Moriyama. 0.25-m $f/6.3$ reflector + CCD. Observer Y. Ikari.				
561	Piskésető. 0.60-m Schmidt + CCD. Observers J. Kelemen and T. Nemeth.	903	Fukuchiyama. 0.25-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer M. Yoshimi.				
587	Sormano. 0.5-m reflector + CCD. Observers F. Manca and M. Cavagna.	945	Monte Deva. 0.36-m reflector + CCD. Observers J. Vidal, E. Riego and R. Cuesta. Measured by R. Cuesta.				
610	Pianoro. 0.25-m $f/4$ Schmidt-Cassegrain. Observer V. Goretti.	946	Ametlla de Mar. 0.30-m $f/5.0$ reflector + CCD. Observer J. Nomen.				
611	Starkenbug. 0.45-m $f/4.4$ reflector + CCD. Observers M. Busch, S. Kluegl and E. Schwab.	954	Teide. 0.8-m $f/11.3$ reflector + CCD. Observer J. Licandro. Measured by R. Casas and J. Licandro.				
620	Mallorca. 0.35-m $f/3.2$ Schmidt-Cassegrain + CCD. Observers S. Sanchez and M. Blasco. Measured by J. Rodriguez.	958	Dax. 0.20-m $f/10$ Schmidt-Cassegrain + CCD. Observer P. Dupouy. Measured by J.-F. Lahitte.				
629	Szeged. 0.28-m Schmidt-Cassegrain + CCD. Observers K. Sárneczky and B. Csák. Measured by L. Kiss and K. Sárneczky.						
642	Oak Bay, Victoria. 0.20-m $f/3.7$ Schmidt-Cassegrain + CCD. Observer C. E. Spratt.						
658	Dominion Astrophysical Observatory. 1.82-m Plaskett telescope + CCD. Observer D. D. Balam.						
670	Camarillo. 0.25-m Schmidt-Cassegrain + CCD. Observer J. E. Rogers.						
695	Kitt Peak. 2.3-m reflector + CCD. Observer C. W. Hergenrother.						
699	LONEOS. 0.59-m Schmidt + CCD. Observer W. Ferris. Measured by B. W. Koehn.						
703	Catalina Sky Survey. 0.41-m $f/3$ Schmidt + CCD. Observer C. W. Hergenrother.						
704	LINEAR. 1.0-m $f/2.15$ reflector + CCD. Observers M. Blythe, F. Shelly, M. Bezpalko, M. Elowitz and R. Huber. Measured by J. Stuart, H. Vigg and R. Sayer.						
711	McDonald. 0.76-m reflector + CCD. Observer J. G. Ries.						
		Object	Date UT α_{2000} δ_{2000} Mag. N Obs.				
		C/1995 O1 (Hale-Bopp)					
		C/1995 O1	1999 10 15.45315	07 09 32.28	-73 01 57.2	13.4 N	467
		C/1995 O1	1999 10 15.45537	07 09 32.48	-73 01 57.6	13.2 N	467
		C/1995 O1	1999 10 15.45983	07 09 32.35	-73 01 58.8	13.0 N	467
		C/1995 O1	1999 10 22.34993	07 07 27.71	-73 49 05.9	13.1 N	467
		C/1995 O1	1999 10 22.35515	07 07 27.57	-73 49 07.9	12.9 N	467
		C/1995 O1	1999 10 22.38635	07 07 26.90	-73 49 20.9	13.2 N	467
		C/1997 BA ₆ (Spacewatch)					
		C/1997 BA ₆	1999 02 07.63832	09 16 47.25	-47 39 07.4	15.2 T	897
		C/1997 BA ₆	1999 02 07.64416	09 16 46.56	-47 39 11.2		897

C/1997 BA ₆	1999 10 07.76770	11 26 43.84	−67 24 50.9	15	T	413
C/1997 BA ₆	1999 10 07.77031	11 26 44.36	−67 24 53.6			413
C/1997 BA ₆	1999 10 07.77298	11 26 44.93	−67 24 56.6			413

C/1997 J2 (Meunier-Dupouy)

C/1997 J2	1999 10 06.47156	22 29 08.02	−48 20 35.9	18.3	T	432
C/1997 J2	1999 10 09.38439	22 27 28.04	−48 25 24.6	18.5	T	432

C/1998 K2 (LINEAR)

C/1998 K2	1999 09 30.37980	04 20 29.86	−28 25 03.8	17.8	T	704
C/1998 K2	1999 09 30.39302	04 20 29.26	−28 25 07.1	18.5	T	704
C/1998 K2	1999 09 30.40616	04 20 28.93	−28 25 09.3	18.2	T	704
C/1998 K2	1999 09 30.43219	04 20 27.99	−28 25 14.9	18.5	T	704

C/1998 K5 (LINEAR)

C/1998 K5	1998 10 10.98797	03 23 21.35	+17 50 05.9	13.5	T	629
C/1998 K5	1998 10 10.98986	03 23 21.20	+17 50 03.9			629
C/1998 K5	1998 10 10.99508	03 23 20.74	+17 49 58.9			629
C/1998 K5	1998 10 10.99765	03 23 20.56	+17 49 56.6			629

C/1998 M2 (LINEAR)

C/1998 M2	1999 09 27.63889	00 59 08.71	+70 08 34.7	18.0	T	402
C/1998 M2	1999 09 27.64351	00 59 08.29	+70 08 33.9			402
C/1998 M2	1999 09 27.64582	00 59 08.10	+70 08 33.5			402
C/1998 M2	1999 10 20.25770	00 33 58.81	+68 23 19.1	20.2	T	704
C/1998 M2	1999 10 20.27319	00 33 58.36	+68 23 12.2	19.9	T	704
C/1998 M2	1999 10 20.28869	00 33 57.50	+68 23 04.7	20.4	T	704
C/1998 M2	1999 10 20.30459	00 33 56.57	+68 22 57.2	20.1	T	704

C/1998 M5 (LINEAR)

C/1998 M5	1999 01 29.83756	19 15 13.10	+52 53 12.2			897
C/1998 M5	1999 01 29.84287	19 15 13.35	+52 53 22.9			897
C/1998 M5	1999 02 14.86573	19 27 54.66	+63 28 15.6			897
C/1998 M5	1999 02 14.86868	19 27 54.71	+63 28 24.3			897
C/1998 M5	1999 02 21.75863	19 33 54.23	+69 04 15.9			897
C/1998 M5	1999 02 21.77148	19 33 54.98	+69 04 55.6			897
C/1998 M5	1999 03 16.44691	07 15 47.69	+88 56 17.7	12.6	T	897
C/1998 M5	1999 03 16.45043	07 15 55.24	+88 56 04.1			897
C/1998 M5	1999 03 16.47888	07 16 50.73	+88 54 19.2	12.4	T	897
C/1998 M5	1999 03 22.59610	07 51 53.55	+82 34 13.7			897
C/1998 M5	1999 03 22.60050	07 51 53.98	+82 33 57.5			897
C/1998 M5	1999 04 07.58619	08 09 57.50	+66 48 28.9	11.5	T	897
C/1998 M5	1999 04 07.59050	08 09 57.76	+66 48 14.6			897
C/1998 M5	1999 04 07.60306	08 09 58.47	+66 47 32.9			897
C/1998 M5	1999 06 01.49017	09 02 25.71	+31 42 48.1	13.4	T	897
C/1998 M5	1999 06 01.49897	09 02 26.25	+31 42 34.3			897
C/1998 M5	1999 06 14.46727	09 14 33.66	+26 41 32.9	13.6	T	897
C/1998 M5	1999 06 14.47550	09 14 34.05	+26 41 20.7			897
C/1998 M5	1999 10 17.81855	10 49 13.19	−04 26 46.6			349
C/1998 M5	1999 10 17.82256	10 49 13.28	−04 26 48.9	15.4	T	349
C/1998 M5	1999 10 17.82410	10 49 13.36	−04 26 50.6			349
C/1998 M5	1999 10 20.81393	10 50 26.56	−05 03 40.0			349
C/1998 M5	1999 10 20.81713	10 50 26.63	−05 03 43.0			349
C/1998 M5	1999 10 20.82184	10 50 26.76	−05 03 46.4			349

C/1998 P1 (Williams)

C/1998 P1	1999 01 29.81799	11 07 08.57	+21 54 40.4			897
C/1998 P1	1999 01 29.81921	11 07 08.27	+21 54 45.1			897
C/1998 P1	1999 02 21.73918	08 58 19.78	+39 01 16.8			897
C/1998 P1	1999 02 21.74470	08 58 18.17	+39 01 23.8			897
C/1998 P1	1999 02 21.74966	08 58 16.69	+39 01 29.7			897
C/1998 P1	1999 03 22.55651	07 30 54.61	+42 01 51.9			897
C/1998 P1	1999 03 22.56825	07 30 53.51	+42 01 51.4	13.9	T	897
C/1998 P1	1999 04 07.56458	07 16 18.17	+41 37 10.3	14.9	T	897
C/1998 P1	1999 04 07.57132	07 16 18.04	+41 37 08.5			897

P/1998 S1 (LINEAR-Mueller)

P/1998 S1	1999 10 11.13468	08 31 37.93	+28 55 42.6	18.6	T	118
P/1998 S1	1999 10 11.14291	08 31 38.51	+28 55 41.6	18.7	T	118
P/1998 S1	1999 10 11.15115	08 31 38.80	+28 55 41.0	18.5	T	118
P/1998 S1	1999 10 17.79030	08 37 34.66	+28 48 24.0			867
P/1998 S1	1999 10 17.79586	08 37 34.94	+28 48 23.7			867
P/1998 S1	1999 10 17.80141	08 37 35.16	+28 48 23.2			867
P/1998 S1	1999 10 18.77641	08 38 23.98	+28 47 30.6	18.7	T	867
P/1998 S1	1999 10 18.78336	08 38 24.33	+28 47 30.5			867
P/1998 S1	1999 10 18.79134	08 38 24.70	+28 47 30.0			867
P/1998 S1	1999 10 20.81597	08 40 02.91	+28 45 52.7	18.8	T	360
P/1998 S1	1999 10 20.82049	08 40 03.09	+28 45 53.0			360
P/1998 S1	1999 10 20.82708	08 40 03.42	+28 45 52.4			360

C/1998 T1 (LINEAR)

C/1998 T1	1999 07 28.95746	14 11 47.08	−27 27 09.6			834
C/1998 T1	1999 07 30.94252	14 07 27.10	−26 28 33.1			834
C/1998 T1	1999 07 30.97941	14 07 22.51	−26 27 31.5			834
C/1998 T1	1999 08 01.03656	14 05 21.52	−25 59 05.3			834
C/1998 T1	1999 08 01.93155	14 03 47.40	−25 36 24.9			834
C/1998 T1	1999 08 01.96990	14 03 43.44	−25 35 27.5			834

P/1998 U3 (Jäger)

P/1998 U3	1999 02 06.63773	06 18 26.08	+29 35 48.3			897
P/1998 U3	1999 02 06.65744	06 18 26.08	+29 35 31.0			897
P/1998 U3	1999 02 23.62528	06 24 08.69	+25 42 50.8			897
P/1998 U3	1999 02 23.63580	06 24 09.19	+25 42 43.4			897
P/1998 U3	1999 03 16.48393	06 43 10.72	+21 35 11.3			897
P/1998 U3	1999 03 16.50447	06 43 12.07	+21 34 57.4	12.3	T	897
P/1998 U3	1999 03 22.58459	06 50 39.82	+20 29 30.1			897
P/1998 U3	1999 03 22.58983	06 50 40.30	+20 29 26.6			897
P/1998 U3	1999 04 07.47233	07 13 05.72	+17 46 58.4			897
P/1998 U3	1999 04 07.48050	07 13 06.48	+17 46 53.9	12.8	T	897

C/1998 U5 (LINEAR)

C/1998 U5	1999 04 14.73662	20 41 36.76	+15 54 23.3	15.7	T	897
C/1998 U5	1999 04 14.74348	20 41 36.15	+15 54 26.2			897

C/1998 W3 (LINEAR)

C/1998 W3	1999 10 20.82289	06 55 16.30	+62 33 03.1	17.7	T	402
C/1998 W3	1999 10 20.82416	06 55 15.98	+62 33 04.5			402
C/1998 W3	1999 10 20.82668	06 55 15.77	+62 33 05.8			402

P/1998 X1 (ODAS)							C/1999 H1						
P/1998 X1	1999 02 05.64793	09 37 44.26	+15 38 26.9	18.4	T	897	C/1999 H1	1999 09 19.79941	03 40 35.74	+59 18 44.4		349	
P/1998 X1	1999 02 05.66225	09 37 43.39	+15 38 29.0			897	C/1999 H1	1999 09 19.80020	03 40 35.17	+59 18 44.7		349	
P/1998 X1	1999 02 23.58633	09 22 46.04	+16 38 46.7			897	C/1999 H1	1999 09 19.80091	03 40 34.59	+59 18 45.3		349	
P/1998 X1	1999 02 23.60439	09 22 45.36	+16 38 46.8	17.9	T	897	C/1999 H1	1999 09 20.81461	03 26 30.12	+59 20 26.9		349	
P/1998 X1	1999 02 23.61433	09 22 44.72	+16 38 47.6			897	C/1999 H1	1999 09 20.81645	03 26 28.51	+59 20 26.6		349	
C/1998 Y1 (LINEAR)							C/1999 H1	1999 09 20.81936	03 26 26.09	+59 20 27.0		349	
C/1998 Y1	1999 02 05.58662	06 52 35.19	+40 26 15.6	17.8	T	897	C/1999 H1	1999 09 22.38921	03 03 56.07	+59 10 22.9	10.3	T 848	
C/1998 Y1	1999 02 05.59569	06 52 35.37	+40 26 21.7			897	C/1999 H1	1999 09 22.39087	03 03 54.71	+59 10 22.8	10.3	T 848	
C/1998 Y1	1999 02 05.61093	06 52 35.69	+40 26 34.3			897	C/1999 H1	1999 09 22.39250	03 03 53.25	+59 10 20.7	10.3	T 848	
C/1998 Y1	1999 02 05.61847	06 52 35.80	+40 26 42.4			897	C/1999 H1	1999 09 23.49390	02 47 47.46	+58 53 17.9		349	
C/1998 Y1	1999 02 05.63307	06 52 36.21	+40 26 51.6			897	C/1999 H1	1999 09 23.49608	02 47 45.51	+58 53 15.8		349	
P/1998 Y2 (Li)							C/1999 H1	1999 09 23.86441	02 42 20.82	+58 45 41.2	14	N 461	
P/1998 Y2	1999 02 06.49882	03 04 10.79	+05 59 31.6	16.1	T	897	C/1999 H1	1999 09 23.86618	02 42 19.24	+58 45 38.9		461	
P/1998 Y2	1999 02 06.51240	03 04 11.67	+05 59 44.5			897	C/1999 H1	1999 09 23.86917	02 42 16.63	+58 45 35.2		461	
P/1999 D1 (Hermann)							C/1999 H1	1999 09 23.87028	02 42 15.60	+58 45 33.6		461	
P/1999 D1	1999 03 16.63762	11 50 44.66	-07 46 53.9			897	C/1999 H1	1999 09 25.57630	02 17 19.10	+57 57 37.5		349	
P/1999 D1	1999 03 16.64486	11 50 44.15	-07 47 01.6			897	C/1999 H1	1999 09 25.58169	02 17 14.37	+57 57 26.1	10.8	T 349	
P/1999 D1	1999 03 22.62621	11 43 32.58	-10 14 22.7			897	C/1999 H1	1999 09 25.58657	02 17 10.09	+57 57 16.5		349	
P/1999 D1	1999 03 22.65075	11 43 30.73	-10 14 57.0			897	C/1999 H1	1999 09 25.97591	02 11 32.12	+57 43 16.5		945	
P/1999 D1	1999 03 22.65988	11 43 30.18	-10 15 09.3	17.8	T	897	C/1999 H1	1999 09 25.99355	02 11 17.59	+57 42 39.0		945	
C/1999 E1 (Li)							C/1999 H1	1999 09 26.63963	02 02 03.51	+57 17 06.3		349	
C/1999 E1	1999 03 22.47690	06 28 12.30	+06 29 06.9			897	C/1999 H1	1999 09 26.64733	02 01 56.91	+57 16 47.2	11.2	T 349	
C/1999 E1	1999 03 22.48596	06 28 12.56	+06 29 12.2	15.9	T	897	C/1999 H1	1999 09 26.64855	02 01 55.90	+57 16 44.6		349	
C/1999 E1	1999 03 22.50523	06 28 13.04	+06 29 26.1			897	C/1999 H1	1999 09 26.87135	01 58 47.52	+57 07 07.0		145	
C/1999 E1	1999 04 07.48589	06 37 09.18	+09 14 45.1	15.6	T	897	C/1999 H1	1999 09 26.91438	01 58 10.85	+57 05 13.7		145	
C/1999 E1	1999 04 07.49339	06 37 09.52	+09 14 48.7			897	C/1999 H1	1999 09 26.91747	01 58 08.13	+57 05 06.0		145	
C/1999 E1	1999 10 22.80529	10 07 31.27	+19 22 56.2	16.8	T	385	C/1999 H1	1999 09 26.92392	01 58 02.73	+57 04 48.8		145	
C/1999 E1	1999 10 22.80913	10 07 31.49	+19 22 56.9			385	C/1999 H1	1999 09 26.92729	01 57 59.85	+57 04 40.0		145	
C/1999 E1	1999 10 22.81219	10 07 31.60	+19 22 58.1			385	C/1999 H1	1999 09 26.93296	01 57 55.20	+57 04 24.9		145	
C/1999 E1	1999 10 22.81792	10 07 31.87	+19 22 58.1			385	C/1999 H1	1999 09 26.94814	01 57 42.30	+57 03 45.4		145	
C/1999 F2 (Dalcanton)							C/1999 H1	1999 09 27.46635	01 50 27.47	+56 40 03.1		848	
C/1999 F2	1999 06 14.56368	15 03 14.47	+12 22 57.1			897	C/1999 H1	1999 09 27.46721	01 50 26.77	+56 40 00.7		848	
C/1999 F2	1999 06 14.58025	15 03 14.27	+12 22 59.9	15.8	T	897	C/1999 H1	1999 09 27.46806	01 50 26.12	+56 39 58.8		848	
C/1999 F2	1999 06 14.58737	15 03 14.16	+12 23 01.5			897	C/1999 H1	1999 09 27.68126	01 47 29.83	+56 29 41.6		402	
C/1999 F2	1999 10 09.40571	15 39 47.04	+10 52 07.8	16.8	T	402	C/1999 H1	1999 09 27.68252	01 47 28.79	+56 29 37.9		402	
C/1999 F2	1999 10 09.40801	15 39 47.15	+10 52 08.8			402	C/1999 H1	1999 09 27.68378	01 47 27.75	+56 29 34.3		402	
C/1999 F2	1999 10 09.41031	15 39 47.26	+10 52 09.5			402	C/1999 H1	1999 09 28.37020	01 38 08.34	+55 54 16.8		848	
C/1999 G1 (LINEAR)							C/1999 H1	1999 09 28.37107	01 38 07.73	+55 54 14.8		848	
C/1999 G1	1999 04 14.57366	13 29 33.75	-03 02 14.9	17.5	T	897	C/1999 H1	1999 09 28.37266	01 38 06.40	+55 54 09.5		848	
C/1999 G1	1999 04 14.61154	13 29 31.12	-03 02 23.0			897	C/1999 H1	1999 09 28.47225	01 36 47.23	+55 48 43.7	12.4	T 351	
C/1999 H1 (Lee)							C/1999 H1	1999 09 28.47620	01 36 43.94	+55 48 30.4		351	
C/1999 H1	1999 06 01.45322	08 33 38.36	+04 22 17.4			897	C/1999 H1	1999 09 28.47965	01 36 41.10	+55 48 19.7		351	
C/1999 H1	1999 06 01.46197	08 33 37.82	+04 22 49.9			897	C/1999 H1	1999 09 28.70904	01 33 36.93	+55 35 46.7		349	
C/1999 H1	1999 06 14.44556	08 22 01.17	+15 03 31.2			897	C/1999 H1	1999 09 28.71115	01 33 35.21	+55 35 39.0		349	
C/1999 H1	1999 06 14.44939	08 22 01.01	+15 03 40.5			897	C/1999 H1	1999 09 29.01745	01 29 34.01	+55 18 16.7		945	
C/1999 H1	1999 07 30.75855	07 30 57.45	+36 28 03.7			897	C/1999 H1	1999 09 29.02804	01 29 25.31	+55 17 37.9		945	
C/1999 H1	1999 09 14.96336	04 40 00.83	+58 01 31.0			945	C/1999 H1	1999 09 29.03052	01 29 23.42	+55 17 29.2		945	
C/1999 H1	1999 09 15.07480	04 38 48.32	+58 04 21.6	13.2	N	629	C/1999 H1	1999 09 29.08123	01 28 44.84	+55 14 29.7	15.5	T 750	
							C/1999 H1	1999 09 29.09147	01 28 36.64	+55 13 54.7	15.3	T 750	
							C/1999 H1	1999 09 29.10251	01 28 28.20	+55 13 17.3	15.6	T 750	
							C/1999 H1	1999 09 29.65814	01 21 18.46	+54 40 07.1		900	
							C/1999 H1	1999 09 29.66631	01 21 12.24	+54 39 37.1		900	
							C/1999 H1	1999 09 29.93935	01 17 46.16	+54 22 34.5	13.2	N 610	

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C/1999 H1	1999 09 29.94213	01 17 44.07	+54 22 24.0		610
C/1999 H1	1999 09 29.94491	01 17 41.97	+54 22 13.4		610
C/1999 H1	1999 09 29.94769	01 17 39.87	+54 22 02.9		610
C/1999 H1	1999 09 29.95046	01 17 37.77	+54 21 52.3		610
C/1999 H1	1999 09 30.89455	01 06 05.21	+53 19 51.2	12.2 T	057
C/1999 H1	1999 09 30.89857	01 06 02.52	+53 19 34.4	12.5 T	057
C/1999 H1	1999 09 30.90385	01 05 59.03	+53 19 12.8		057
C/1999 H1	1999 09 30.91220	01 05 52.71	+53 18 39.6	12.4 T	057
C/1999 H1	1999 09 30.91737	01 05 49.03	+53 18 15.0	12.4 T	057
C/1999 H1	1999 09 30.91973	01 05 47.52	+53 18 08.1		057
C/1999 H1	1999 09 30.92256	01 05 45.16	+53 17 56.7	12.5 T	057
C/1999 H1	1999 09 30.92373	01 05 44.37	+53 17 51.1	12.2 T	057
C/1999 H1	1999 09 30.92491	01 05 43.60	+53 17 48.1	12.3 T	057
C/1999 H1	1999 10 01.01722	01 04 37.54	+53 11 28.5		945
C/1999 H1	1999 10 01.01959	01 04 35.86	+53 11 20.6		945
C/1999 H1	1999 10 01.02005	01 04 35.61	+53 11 17.4		945
C/1999 H1	1999 10 01.02083	01 04 35.01	+53 11 14.4		945
C/1999 H1	1999 10 01.02373	01 04 33.13	+53 11 02.9		945
C/1999 H1	1999 10 01.02477	01 04 32.27	+53 10 58.6		945
C/1999 H1	1999 10 01.02661	01 04 30.97	+53 10 50.7		945
C/1999 H1	1999 10 01.23379	01 02 04.76	+52 56 29.4	14.7 T	750
C/1999 H1	1999 10 01.23769	01 02 02.02	+52 56 13.6	14.6 T	750
C/1999 H1	1999 10 01.24303	01 01 58.22	+52 55 50.8	14.8 T	750
C/1999 H1	1999 10 01.58142	00 58 03.22	+52 31 58.3		867
C/1999 H1	1999 10 01.58524	00 58 00.57	+52 31 42.0		867
C/1999 H1	1999 10 01.58628	00 57 59.85	+52 31 37.5		867
C/1999 H1	1999 10 02.00784	00 53 12.79	+52 01 05.5		118
C/1999 H1	1999 10 02.01339	00 53 09.02	+52 00 40.7		118
C/1999 H1	1999 10 02.08601	00 52 20.16	+51 55 18.7	12.5 T	468
C/1999 H1	1999 10 02.08779	00 52 18.93	+51 55 10.3	12.1 T	468
C/1999 H1	1999 10 02.08963	00 52 17.75	+51 55 01.9	12.6 T	468
C/1999 H1	1999 10 02.09141	00 52 16.58	+51 54 55.2	12.4 T	468
C/1999 H1	1999 10 02.09319	00 52 15.25	+51 54 47.0	12.8 T	468
C/1999 H1	1999 10 02.58711	00 46 50.91	+51 17 57.3		349
C/1999 H1	1999 10 02.58812	00 46 50.20	+51 17 52.8		349
C/1999 H1	1999 10 02.59262	00 46 47.30	+51 17 32.5		349
C/1999 H1	1999 10 02.85321	00 44 00.15	+50 57 35.5	12.1 T	057
C/1999 H1	1999 10 02.85699	00 43 57.55	+50 57 22.0	12.5 T	057
C/1999 H1	1999 10 02.86037	00 43 55.52	+50 57 06.0		057
C/1999 H1	1999 10 02.86279	00 43 53.99	+50 56 55.3	12.3 T	057
C/1999 H1	1999 10 02.86388	00 43 53.38	+50 56 49.5	12.4 T	057
C/1999 H1	1999 10 02.86740	00 43 51.26	+50 56 33.6	12.2 T	057
C/1999 H1	1999 10 02.86994	00 43 49.26	+50 56 19.8		057
C/1999 H1	1999 10 02.87101	00 43 48.64	+50 56 17.0	12.1 T	057
C/1999 H1	1999 10 02.87207	00 43 47.96	+50 56 12.1	12.3 T	057
C/1999 H1	1999 10 02.87463	00 43 46.47	+50 56 01.3		057
C/1999 H1	1999 10 02.87566	00 43 45.64	+50 55 56.9	12.5 T	057
C/1999 H1	1999 10 02.87678	00 43 45.01	+50 55 49.7	12.5 T	057
C/1999 H1	1999 10 03.12802	00 41 06.59	+50 36 23.4		642
C/1999 H1	1999 10 03.15649	00 40 48.81	+50 34 11.5		642
C/1999 H1	1999 10 03.65127	00 35 43.25	+49 55 23.5		402
C/1999 H1	1999 10 03.65253	00 35 42.49	+49 55 17.8		402
C/1999 H1	1999 10 03.65380	00 35 41.72	+49 55 11.6		402

C/1999 H1	1999 10 03.83927	00 33 50.79	+49 40 21.9	12.6 T	470
C/1999 H1	1999 10 03.84093	00 33 49.79	+49 40 13.9	12.6 T	470
C/1999 H1	1999 10 03.84234	00 33 49.01	+49 40 06.2	12.6 T	470
C/1999 H1	1999 10 03.84367	00 33 48.21	+49 39 59.5	12.6 T	470
C/1999 H1	1999 10 03.84508	00 33 47.33	+49 39 53.2	12.6 T	470
C/1999 H1	1999 10 03.84640	00 33 46.51	+49 39 46.9	12.7 T	470
C/1999 H1	1999 10 03.84802	00 33 45.53	+49 39 38.9	12.6 T	470
C/1999 H1	1999 10 03.95458	00 32 41.52	+49 31 08.2		945
C/1999 H1	1999 10 03.96877	00 32 33.20	+49 29 59.6		945
C/1999 H1	1999 10 04.57925	00 26 38.34	+48 40 27.2	10.9 T	355
C/1999 H1	1999 10 04.58166	00 26 36.95	+48 40 15.7		355
C/1999 H1	1999 10 04.58275	00 26 36.34	+48 40 10.0		355
C/1999 H1	1999 10 04.83604	00 24 13.95	+48 19 14.9		504
C/1999 H1	1999 10 04.83712	00 24 13.30	+48 19 10.0		504
C/1999 H1	1999 10 04.83748	00 24 13.01	+48 19 09.0		504
C/1999 H1	1999 10 04.83859	00 24 12.39	+48 19 02.0		504
C/1999 H1	1999 10 04.83955	00 24 11.89	+48 18 58.5		504
C/1999 H1	1999 10 04.84024	00 24 11.57	+48 18 55.2		504
C/1999 H1	1999 10 04.84715	00 24 07.62	+48 18 20.6		504
C/1999 H1	1999 10 04.84831	00 24 06.98	+48 18 14.9		504
C/1999 H1	1999 10 05.15693	00 21 16.39	+47 52 36.9		642
C/1999 H1	1999 10 05.16690	00 21 10.83	+47 51 47.0		642
C/1999 H1	1999 10 05.17021	00 21 09.03	+47 51 31.1		642
C/1999 H1	1999 10 05.64778	00 16 51.55	+47 11 30.9		903
C/1999 H1	1999 10 05.65134	00 16 49.61	+47 11 12.8		903
C/1999 H1	1999 10 05.65848	00 16 45.83	+47 10 37.0		903
C/1999 H1	1999 10 07.18125	00 04 03.91	+45 00 28.4		720
C/1999 H1	1999 10 07.18403	00 04 02.62	+45 00 14.1		720
C/1999 H1	1999 10 07.18681	00 04 01.24	+44 59 59.7		720
C/1999 H1	1999 10 07.18958	00 03 59.96	+44 59 45.6		720
C/1999 H1	1999 10 07.19167	00 03 58.97	+44 59 35.0		720
C/1999 H1	1999 10 07.88777	23 58 37.69	+43 59 11.8		169
C/1999 H1	1999 10 07.88865	23 58 37.21	+43 59 07.8		169
C/1999 H1	1999 10 07.89275	23 58 35.36	+43 58 45.3		169
C/1999 H1	1999 10 07.89332	23 58 35.18	+43 58 42.4		169
C/1999 H1	1999 10 07.89693	23 58 33.47	+43 58 23.1		169
C/1999 H1	1999 10 07.89752	23 58 33.21	+43 58 19.3		169
C/1999 H1	1999 10 07.90109	23 58 31.62	+43 58 01.7		169
C/1999 H1	1999 10 07.90525	23 58 29.73	+43 57 40.1		169
C/1999 H1	1999 10 07.90601	23 58 29.26	+43 57 37.2		169
C/1999 H1	1999 10 07.90987	23 58 27.71	+43 57 15.5		169
C/1999 H1	1999 10 07.91051	23 58 27.38	+43 57 11.1		169
C/1999 H1	1999 10 08.65401	23 53 01.82	+42 52 31.4		349
C/1999 H1	1999 10 08.65512	23 53 01.30	+42 52 25.9		349
C/1999 H1	1999 10 08.65547	23 53 01.24	+42 52 25.2	10.6 T	900
C/1999 H1	1999 10 08.65705	23 53 00.52	+42 52 15.6		349
C/1999 H1	1999 10 08.66229	23 52 58.31	+42 51 48.4		900
C/1999 H1	1999 10 08.89383	23 51 21.32	+42 31 37.2	13.5 N	610
C/1999 H1	1999 10 08.89662	23 51 20.15	+42 31 22.5		610
C/1999 H1	1999 10 08.89940	23 51 18.97	+42 31 07.9		610
C/1999 H1	1999 10 08.90218	23 51 17.80	+42 30 53.4		610
C/1999 H1	1999 10 08.90495	23 51 16.63	+42 30 38.8		610
C/1999 H1	1999 10 08.99235	23 50 40.04	+42 23 03.5		945

C/1999 H1	1999 10 08.99470	23 50 38.91	+42 22 48.7		945	C/1999 H1	1999 10 12.86546	23 27 27.02	+36 50 00.6	11.5 T	071
C/1999 H1	1999 10 08.99730	23 50 38.08	+42 22 36.2		945	C/1999 H1	1999 10 12.86823	23 27 26.49	+36 49 45.8	11.5 T	071
C/1999 H1	1999 10 09.13991	23 49 39.88	+42 10 09.2		642	C/1999 H1	1999 10 13.17097	23 25 53.03	+36 24 28.7		642
C/1999 H1	1999 10 09.14638	23 49 37.22	+42 09 34.6		642	C/1999 H1	1999 10 13.18287	23 25 49.69	+36 23 35.4		642
C/1999 H1	1999 10 09.14843	23 49 36.40	+42 09 25.1		642	C/1999 H1	1999 10 14.14902	23 21 08.03	+35 03 38.1		642
C/1999 H1	1999 10 09.22657	23 49 03.84	+42 02 38.6	14.2 T	750	C/1999 H1	1999 10 14.15209	23 21 07.10	+35 03 23.3		642
C/1999 H1	1999 10 09.23091	23 49 02.01	+42 02 15.8	14.8 T	750	C/1999 H1	1999 10 14.15564	23 21 06.10	+35 03 05.7		642
C/1999 H1	1999 10 09.52606	23 47 03.50	+41 36 34.9	11.9 T	351	C/1999 H1	1999 10 14.16007	23 21 04.78	+35 02 47.4	13.6 N	713
C/1999 H1	1999 10 09.53225	23 47 01.06	+41 36 02.8		351	C/1999 H1	1999 10 14.18090	23 20 58.84	+35 01 05.2	13.7 N	713
C/1999 H1	1999 10 09.53648	23 46 59.26	+41 35 40.7		351	C/1999 H1	1999 10 14.91748	23 17 37.51	+34 01 19.7		945
C/1999 H1	1999 10 09.54308	23 46 56.63	+41 35 06.8		900	C/1999 H1	1999 10 14.92508	23 17 35.61	+34 00 44.0		945
C/1999 H1	1999 10 09.54872	23 46 54.35	+41 34 37.0		900	C/1999 H1	1999 10 14.92858	23 17 34.49	+34 00 24.7		945
C/1999 H1	1999 10 09.60816	23 46 30.53	+41 29 27.4		360	C/1999 H1	1999 10 14.94475	23 17 30.30	+33 59 07.4		945
C/1999 H1	1999 10 09.60955	23 46 29.96	+41 29 20.2		360	C/1999 H1	1999 10 15.13323	23 16 41.17	+33 44 01.7		642
C/1999 H1	1999 10 09.61094	23 46 29.41	+41 29 12.8		360	C/1999 H1	1999 10 15.13802	23 16 39.93	+33 43 39.6		642
C/1999 H1	1999 10 09.87008	23 44 48.36	+41 06 39.0		169	C/1999 H1	1999 10 15.14005	23 16 39.45	+33 43 29.5		642
C/1999 H1	1999 10 09.87075	23 44 48.06	+41 06 37.6		169	C/1999 H1	1999 10 15.14272	23 16 38.54	+33 43 18.8	13.5 N	713
C/1999 H1	1999 10 09.87462	23 44 46.68	+41 06 15.0		169	C/1999 H1	1999 10 15.15660	23 16 34.92	+33 42 12.2	13.6 N	713
C/1999 H1	1999 10 09.87626	23 44 45.55	+41 06 03.9		169	C/1999 H1	1999 10 15.17397	23 16 30.34	+33 40 49.2	13.1 N	713
C/1999 H1	1999 10 09.88056	23 44 44.21	+41 05 39.2		169	C/1999 H1	1999 10 16.14022	23 12 27.72	+32 24 32.4		642
C/1999 H1	1999 10 09.88120	23 44 43.97	+41 05 40.3		169	C/1999 H1	1999 10 16.14700	23 12 26.31	+32 24 03.7		642
C/1999 H1	1999 10 10.12450	23 43 10.40	+40 44 32.5	14.7 T	750	C/1999 H1	1999 10 16.15132	23 12 25.11	+32 23 39.9		642
C/1999 H1	1999 10 10.12972	23 43 08.43	+40 44 05.3	14.7 T	750	C/1999 H1	1999 10 16.83138	23 09 44.49	+31 31 12.1		145
C/1999 H1	1999 10 10.13149	23 43 07.71	+40 43 56.2	14.7 T	750	C/1999 H1	1999 10 16.83378	23 09 43.92	+31 31 01.4		145
C/1999 H1	1999 10 10.13520	23 43 06.30	+40 43 37.1	14.5 T	750	C/1999 H1	1999 10 16.83770	23 09 42.99	+31 30 43.3		145
C/1999 H1	1999 10 10.16939	23 42 53.49	+40 40 37.8		642	C/1999 H1	1999 10 16.86679	23 09 36.25	+31 28 30.1		145
C/1999 H1	1999 10 10.17068	23 42 53.04	+40 40 29.8		642	C/1999 H1	1999 10 17.20211	23 08 20.33	+31 03 02.6		642
C/1999 H1	1999 10 10.17543	23 42 51.27	+40 40 05.2		642	C/1999 H1	1999 10 17.20358	23 08 20.07	+31 02 54.7		642
C/1999 H1	1999 10 10.42340	23 41 18.14	+40 18 38.4		349	C/1999 H1	1999 10 17.20498	23 08 19.74	+31 02 49.1		642
C/1999 H1	1999 10 10.42711	23 41 16.72	+40 18 19.4		349	C/1999 H1	1999 10 17.20736	23 08 18.88	+31 02 39.2		642
C/1999 H1	1999 10 10.42897	23 41 16.03	+40 18 09.6		349	C/1999 H1	1999 10 17.52198	23 07 09.44	+30 39 00.0		367
C/1999 H1	1999 10 10.52157	23 40 41.33	+40 10 09.7	11.1 T	355	C/1999 H1	1999 10 17.52407	23 07 08.96	+30 38 50.8		367
C/1999 H1	1999 10 10.52353	23 40 40.60	+40 09 59.5		355	C/1999 H1	1999 10 17.52616	23 07 08.49	+30 38 41.2		367
C/1999 H1	1999 10 10.52692	23 40 39.35	+40 09 41.6		355	C/1999 H1	1999 10 17.59058	23 06 54.27	+30 33 52.3		900
C/1999 H1	1999 10 10.89581	23 38 24.97	+39 37 50.0		945	C/1999 H1	1999 10 17.59799	23 06 52.62	+30 33 18.5		900
C/1999 H1	1999 10 10.89625	23 38 24.84	+39 37 47.0		945	C/1999 H1	1999 10 17.69154	23 06 32.14	+30 26 17.2		349
C/1999 H1	1999 10 10.89742	23 38 24.26	+39 37 39.9		945	C/1999 H1	1999 10 17.69231	23 06 31.94	+30 26 14.2		349
C/1999 H1	1999 10 10.90126	23 38 22.95	+39 37 19.9		945	C/1999 H1	1999 10 17.69487	23 06 31.40	+30 26 03.0		349
C/1999 H1	1999 10 11.49510	23 34 54.35	+38 46 19.7		349	C/1999 H1	1999 10 17.88701	23 05 50.92	+30 11 48.8		945
C/1999 H1	1999 10 11.49647	23 34 53.84	+38 46 12.3		349	C/1999 H1	1999 10 17.88780	23 05 50.51	+30 11 40.7		945
C/1999 H1	1999 10 11.49801	23 34 53.33	+38 46 04.8		349	C/1999 H1	1999 10 17.89037	23 05 50.13	+30 11 31.7		945
C/1999 H1	1999 10 11.84370	23 32 56.01	+38 16 30.4	13.2 T	071	C/1999 H1	1999 10 17.89486	23 05 49.00	+30 11 11.9		945
C/1999 H1	1999 10 11.84587	23 32 55.43	+38 16 18.1	12.4 T	071	C/1999 H1	1999 10 17.89892	23 05 48.25	+30 10 54.2		945
C/1999 H1	1999 10 11.84815	23 32 54.43	+38 16 08.2	13.4 T	071	C/1999 H1	1999 10 18.18803	23 04 47.50	+29 49 36.1		642
C/1999 H1	1999 10 11.85453	23 32 52.22	+38 15 35.7	13.3 T	071	C/1999 H1	1999 10 18.19100	23 04 46.96	+29 49 22.8		642
C/1999 H1	1999 10 11.85572	23 32 51.85	+38 15 29.7	13.1 T	071	C/1999 H1	1999 10 18.19661	23 04 45.78	+29 48 57.7		642
C/1999 H1	1999 10 11.86119	23 32 50.21	+38 15 00.9	12.5 T	071	C/1999 H1	1999 10 18.19885	23 04 45.37	+29 48 47.7		642
C/1999 H1	1999 10 12.23594	23 30 46.50	+37 43 12.0	15.8 N	853	C/1999 H1	1999 10 18.77557	23 02 48.24	+29 06 52.1	13.4 T	113
C/1999 H1	1999 10 12.23640	23 30 46.34	+37 43 09.6	15.5 N	853	C/1999 H1	1999 10 18.82441	23 02 38.41	+29 03 21.2	13.4 T	113
C/1999 H1	1999 10 12.23716	23 30 46.09	+37 43 05.6	15.8 N	853	C/1999 H1	1999 10 19.11211	23 01 42.09	+28 42 45.3		642
C/1999 H1	1999 10 12.85829	23 27 28.37	+36 50 50.7	11.7 T	071	C/1999 H1	1999 10 19.16133	23 01 32.55	+28 39 15.7		642
C/1999 H1	1999 10 12.86222	23 27 28.35	+36 50 15.8	11.8 T	071	C/1999 H1	1999 10 19.16771	23 01 31.21	+28 38 48.9		642
C/1999 H1	1999 10 12.86277	23 27 28.01	+36 50 13.3	12.0 T	071	C/1999 H1	1999 10 19.17149	23 01 30.58	+28 38 33.1		642

C/1999 H1	1999 10 19.78228	22 59 35.11	+27 55 33.9	12.5 T	118
C/1999 H1	1999 10 19.78949	22 59 33.75	+27 55 03.7		046
C/1999 H1	1999 10 19.79043	22 59 33.54	+27 54 59.9		118
C/1999 H1	1999 10 19.79115	22 59 33.44	+27 54 56.7		046
C/1999 H1	1999 10 19.79128	22 59 33.49	+27 54 55.4	13.3 T	113
C/1999 H1	1999 10 19.79198	22 59 33.41	+27 54 52.7	13.3 T	113
C/1999 H1	1999 10 19.79236	22 59 33.21	+27 54 51.7		046
C/1999 H1	1999 10 19.79267	22 59 33.17	+27 54 49.8	13.4 T	113
C/1999 H1	1999 10 19.79337	22 59 33.14	+27 54 46.4	13.3 T	113
C/1999 H1	1999 10 19.79406	22 59 33.01	+27 54 43.7	13.3 T	113
C/1999 H1	1999 10 19.79450	22 59 32.81	+27 54 42.8		046
C/1999 H1	1999 10 20.11456	22 58 34.83	+27 32 31.8		642
C/1999 H1	1999 10 20.11674	22 58 34.20	+27 32 22.3		642
C/1999 H1	1999 10 20.12373	22 58 32.96	+27 31 52.7		642
C/1999 H1	1999 10 20.45440	22 57 34.02	+27 09 18.0	12.0 T	402
C/1999 H1	1999 10 20.45565	22 57 33.81	+27 09 12.9		402
C/1999 H1	1999 10 20.45691	22 57 33.58	+27 09 07.8		402
C/1999 H1	1999 10 20.50762	22 57 24.57	+27 05 40.5		355
C/1999 H1	1999 10 20.50843	22 57 24.41	+27 05 37.3		355
C/1999 H1	1999 10 20.67531	22 56 54.98	+26 54 17.1		349
C/1999 H1	1999 10 20.67856	22 56 54.43	+26 54 03.7		349
C/1999 H1	1999 10 20.67985	22 56 54.17	+26 53 58.2		349
C/1999 H1	1999 10 21.44418	22 54 46.40	+26 03 04.2	11.4 T	900
C/1999 H1	1999 10 21.45557	22 54 44.55	+26 02 18.8		900
C/1999 H1	1999 10 22.13575	22 52 56.28	+25 18 11.2	16.0 N	853
C/1999 H1	1999 10 22.13653	22 52 56.15	+25 18 08.4	16.0 N	853
C/1999 H1	1999 10 22.13706	22 52 56.07	+25 18 06.3	16.0 N	853
C/1999 H1	1999 10 23.14583	22 50 25.28	+24 14 38.2		720
C/1999 H1	1999 10 23.15155	22 50 24.56	+24 14 13.5		642
C/1999 H1	1999 10 23.15625	22 50 23.74	+24 13 58.3		720
C/1999 H1	1999 10 23.15707	22 50 23.81	+24 13 51.8		642
C/1999 H1	1999 10 23.15972	22 50 23.21	+24 13 45.8		720
C/1999 H1	1999 10 23.16319	22 50 22.77	+24 13 32.1		720
C/1999 H1	1999 10 23.16667	22 50 22.25	+24 13 20.2		720
C/1999 H1	1999 10 23.46370	22 49 40.03	+23 55 06.6		897
C/1999 H1	1999 10 23.47223	22 49 38.84	+23 54 35.5		897

C/1999 H3 (LINEAR)

C/1999 H3	1999 09 24.74763	14 18 13.51	+36 17 40.4	16.4 T	461
C/1999 H3	1999 09 29.41491	14 18 39.62	+35 28 35.0	15.4 T	402
C/1999 H3	1999 09 29.41617	14 18 39.65	+35 28 34.1		402
C/1999 H3	1999 09 29.41743	14 18 39.66	+35 28 33.3		402
C/1999 H3	1999 10 21.40519	14 22 47.99	+32 22 57.0	14.5 T	402
C/1999 H3	1999 10 21.40645	14 22 47.92	+32 22 55.4		402
C/1999 H3	1999 10 21.40897	14 22 47.99	+32 22 53.6		402

C/1999 J2 (Skiff)

C/1999 J2	1999 09 10.94105	15 34 14.12	+47 01 38.9	17.3 T	167
C/1999 J2	1999 09 24.76084	15 38 07.17	+44 35 25.8	16.9 T	461
C/1999 J2	1999 09 24.76539	15 38 07.25	+44 35 23.3		461
C/1999 J2	1999 09 28.44169	15 39 25.04	+43 58 22.8	16.0 T	402
C/1999 J2	1999 09 28.44295	15 39 25.06	+43 58 22.4		402
C/1999 J2	1999 09 28.44421	15 39 25.09	+43 58 21.6		402
C/1999 J2	1999 09 30.15601	15 40 03.31	+43 41 25.7	1 718	

C/1999 J2	1999 09 30.16294	15 40 03.48	+43 41 22.0		1 718
C/1999 J2	1999 09 30.16990	15 40 03.59	+43 41 17.3		1 718
C/1999 J2	1999 09 30.18101	15 40 03.87	+43 41 10.7		1 718
C/1999 J2	1999 10 02.14144	15 40 49.11	+43 22 02.6		1 718
C/1999 J2	1999 10 02.14838	15 40 49.29	+43 21 57.3		1 718
C/1999 J2	1999 10 02.15972	15 40 49.60	+43 21 50.9		1 718
C/1999 J2	1999 10 02.16667	15 40 49.67	+43 21 47.9		1 718
C/1999 J2	1999 10 03.42240	15 41 19.55	+43 09 41.1	16.2 T	2 360
C/1999 J2	1999 10 03.42656	15 41 19.59	+43 09 38.2		2 360
C/1999 J2	1999 10 04.75192	15 41 51.81	+42 56 59.3	15.7 T	470
C/1999 J2	1999 10 04.75749	15 41 51.95	+42 56 56.4	15.9 T	470
C/1999 J2	1999 10 04.76501	15 41 52.14	+42 56 52.7	15.7 T	470
C/1999 J2	1999 10 20.39495	15 48 54.87	+40 37 48.0	15.8 T	402
C/1999 J2	1999 10 20.39623	15 48 54.92	+40 37 47.1		402
C/1999 J2	1999 10 23.38760	15 50 23.46	+40 13 29.5	15.6 T	897
C/1999 J2	1999 10 23.39830	15 50 23.71	+40 13 25.0		897

C/1999 J3 (LINEAR)

C/1999 J3	1999 09 19.76770	08 22 50.18	+38 20 24.6	10.2 T	349
C/1999 J3	1999 09 19.77052	08 22 50.01	+38 20 15.2		349
C/1999 J3	1999 09 19.81513	08 22 46.68	+38 17 43.2		349
C/1999 J3	1999 09 20.76642	08 21 37.38	+37 21 56.5	10.8 T	349
C/1999 J3	1999 09 20.76845	08 21 37.21	+37 21 49.2		349
C/1999 J3	1999 09 20.81107	08 21 34.03	+37 19 17.1		349
C/1999 J3	1999 09 26.72486	08 13 54.90	+30 23 16.7		349
C/1999 J3	1999 09 26.72578	08 13 54.80	+30 23 12.0	10.7 T	349
C/1999 J3	1999 09 26.72701	08 13 54.70	+30 23 06.4		349
C/1999 J3	1999 09 27.80157	08 12 24.96	+28 52 14.0	9.9 T	349
C/1999 J3	1999 09 27.80604	08 12 24.57	+28 51 51.4		349
C/1999 J3	1999 09 27.80887	08 12 24.29	+28 51 36.1		349
C/1999 J3	1999 09 28.79605	08 10 59.99	+27 23 04.7	9.5 T	349
C/1999 J3	1999 09 28.79780	08 10 59.76	+27 22 55.6		349
C/1999 J3	1999 09 28.79940	08 10 59.66	+27 22 46.9		349
C/1999 J3	1999 10 05.76269	07 59 51.15	+14 13 00.0		903
C/1999 J3	1999 10 05.76567	07 59 50.85	+14 12 35.6		903
C/1999 J3	1999 10 05.77043	07 59 50.34	+14 11 56.8		903
C/1999 J3	1999 10 05.80382	07 59 46.74	+14 07 21.3		372
C/1999 J3	1999 10 08.79249	07 54 04.55	+06 40 15.7		349
C/1999 J3	1999 10 08.79302	07 54 04.47	+06 40 10.1		349
C/1999 J3	1999 10 08.79459	07 54 04.29	+06 39 55.2		349
C/1999 J3	1999 10 08.82313	07 54 00.76	+06 35 19.4	8.5 T	372
C/1999 J3	1999 10 10.73444	07 49 57.70	+01 11 33.9	10.1 T	355
C/1999 J3	1999 10 10.73639	07 49 57.42	+01 11 13.0		355
C/1999 J3	1999 10 10.74428	07 49 56.35	+01 09 49.4		355
C/1999 J3	1999 10 10.75882	07 49 54.38	+01 07 14.7		349
C/1999 J3	1999 10 10.75947	07 49 54.30	+01 07 07.6		349
C/1999 J3	1999 10 10.76045	07 49 54.13	+01 06 57.8		349
C/1999 J3	1999 10 16.10689	07 36 15.61	-16 10 38.0	13.8 N	629
C/1999 J3	1999 10 16.11260	07 36 14.86	-16 11 50.4	14.1 N	629
C/1999 J3	1999 10 16.11403	07 36 14.53	-16 12 06.2	13.9 N	629
C/1999 J3	1999 10 17.76554	07 31 09.38	-21 55 06.7		349
C/1999 J3	1999 10 17.83469	07 30 55.50	-22 09 31.6		349
C/1999 J3	1999 10 17.84014	07 30 54.40	-22 10 39.9		349

C/1999 J3	1999 10 18.12634	07 29 58.29	-23 10 22.1	13.9 N	629
C/1999 J3	1999 10 18.12818	07 29 57.97	-23 10 44.3	13.7 N	629
C/1999 J3	1999 10 18.12962	07 29 57.67	-23 11 00.8	13.7 N	629
C/1999 J3	1999 10 18.13895	07 29 55.69	-23 12 58.4	13.8 N	629
C/1999 J3	1999 10 18.14396	07 29 54.85	-23 14 01.5	13.8 N	629
C/1999 J3	1999 10 18.15252	07 29 53.04	-23 15 47.8	14.1 N	629
C/1999 J3	1999 10 18.73252	07 27 55.92	-25 16 22.3	12.0 T	392
C/1999 J3	1999 10 18.73368	07 27 55.56	-25 16 38.0		392
C/1999 J3	1999 10 18.73987	07 27 54.28	-25 17 54.0		392
C/1999 J3	1999 10 20.76814	07 20 29.18	-32 13 28.2		349
C/1999 J3	1999 10 20.77087	07 20 28.52	-32 14 01.8		349
C/1999 J3	1999 10 20.78194	07 20 25.82	-32 16 15.0		349
C/1999 J3	1999 10 20.82188	07 20 16.28	-32 24 18.0	8.0 T	372
C/1999 J3	1999 10 20.83201	07 20 13.81	-32 26 19.7		402
C/1999 J3	1999 10 20.83327	07 20 13.49	-32 26 34.1		402
C/1999 J3	1999 10 20.83454	07 20 13.20	-32 26 50.6		402
C/1999 J3	1999 10 20.83559	07 20 13.01	-32 27 02.8		2 360
C/1999 J3	1999 10 20.83681	07 20 12.70	-32 27 17.5		2 360
C/1999 J3	1999 10 20.83785	07 20 12.48	-32 27 29.6		2 360
C/1999 J3	1999 10 22.80330	07 11 59.48	-38 51 39.2		349
C/1999 J3	1999 10 22.80535	07 11 58.83	-38 52 02.0		349
C/1999 J3	1999 10 22.81140	07 11 57.23	-38 53 11.2		349
C/1999 J3	1999 10 24.80016	07 02 27.01	-44 54 40.7		897
C/1999 J3	1999 10 24.80155	07 02 26.55	-44 54 54.5		897
C/1999 J3	1999 10 24.80389	07 02 25.80	-44 55 19.9		897

P/1999 J5 (LINEAR)

P/1999 J5	1999 06 06.33684	16 26 45.84	-08 33 52.0	18.1 T	699
P/1999 J5	1999 06 06.34960	16 26 45.38	-08 33 52.8		699
P/1999 J5	1999 06 06.36233	16 26 44.86	-08 33 54.7		699

C/1999 K3 (LINEAR)

C/1999 K3	1999 06 14.66940	17 54 21.60	+25 52 51.7		897

C/1999 K6 (LINEAR)

C/1999 K6	1999 07 24.70461	18 24 45.32	+36 09 46.2	16.1 T	897
C/1999 K6	1999 07 24.71282	18 24 44.93	+36 09 50.7		897
C/1999 K6	1999 07 24.71929	18 24 44.64	+36 09 53.6		897
C/1999 K6	1999 09 11.80127	18 30 52.42	+36 27 27.5	17.1 T	561
C/1999 K6	1999 09 11.82072	18 30 53.44	+36 27 21.2	17.2 T	561
C/1999 K6	1999 09 11.82948	18 30 54.09	+36 27 17.5	17.2 T	561
C/1999 K6	1999 09 11.84377	18 30 54.61	+36 27 14.3	17.1 T	561
C/1999 K6	1999 09 11.84668	18 30 54.74	+36 27 13.7	17.1 T	561
C/1999 K6	1999 09 11.84960	18 30 54.89	+36 27 12.5	17.1 T	561
C/1999 K6	1999 09 11.85250	18 30 55.03	+36 27 11.9	17.1 T	561
C/1999 K6	1999 09 11.85540	18 30 55.21	+36 27 11.2	17.2 T	561
C/1999 K6	1999 09 11.85833	18 30 55.37	+36 27 10.1	17.2 T	561
C/1999 K6	1999 09 11.86123	18 30 55.53	+36 27 09.1	17.2 T	561
C/1999 K6	1999 09 11.86413	18 30 55.68	+36 27 08.2	17.2 T	561
C/1999 K6	1999 09 11.86704	18 30 55.84	+36 27 07.1	17.1 T	561
C/1999 K6	1999 09 11.86994	18 30 55.98	+36 27 06.3	17.2 T	561
C/1999 K6	1999 09 11.92558	18 30 59.03	+36 26 48.6	17.2 T	561
C/1999 K6	1999 09 11.93194	18 30 59.31	+36 26 46.7	17.2 T	561
C/1999 K6	1999 09 11.93498	18 30 59.46	+36 26 45.7	17.2 T	561

C/1999 K6	1999 09 11.94102	18 30 59.80	+36 26 43.8	17.2 T	561
C/1999 K6	1999 09 11.94405	18 30 59.95	+36 26 43.0	17.2 T	561
C/1999 K6	1999 09 11.94707	18 31 00.11	+36 26 42.0	17.2 T	561
C/1999 K6	1999 09 11.95009	18 31 00.27	+36 26 40.8	17.2 T	561
C/1999 K6	1999 09 11.95311	18 31 00.46	+36 26 40.0	17.2 T	561
C/1999 K6	1999 09 11.95613	18 31 00.60	+36 26 39.2	17.2 T	561
C/1999 K6	1999 09 11.95916	18 31 00.79	+36 26 38.1	17.1 T	561
C/1999 K6	1999 09 12.01409	18 31 03.75	+36 26 20.0	17.1 T	561
C/1999 K6	1999 09 12.01927	18 31 04.05	+36 26 18.8	17.1 T	561
C/1999 K6	1999 09 12.02230	18 31 04.18	+36 26 17.8	17.2 T	561
C/1999 K6	1999 09 12.02521	18 31 04.40	+36 26 16.5	17.1 T	561
C/1999 K6	1999 09 12.02835	18 31 04.54	+36 26 16.0	17.1 T	561
C/1999 K6	1999 09 12.03138	18 31 04.54	+36 26 16.0	17.1 T	561
C/1999 K6	1999 09 12.03440	18 31 04.70	+36 26 14.4	17.2 T	561
C/1999 K6	1999 09 12.77610	18 31 46.02	+36 22 25.7	17.3 T	561
C/1999 K6	1999 09 12.78773	18 31 46.66	+36 22 22.2	17.3 T	561
C/1999 K6	1999 09 12.79086	18 31 46.83	+36 22 21.1	17.3 T	561
C/1999 K6	1999 09 12.79387	18 31 46.98	+36 22 20.2	17.2 T	561
C/1999 K6	1999 09 12.79688	18 31 47.17	+36 22 19.1	17.3 T	561
C/1999 K6	1999 09 12.79988	18 31 47.32	+36 22 18.2	17.3 T	561
C/1999 K6	1999 09 12.80289	18 31 47.48	+36 22 17.2	17.3 T	561
C/1999 K6	1999 09 12.80590	18 31 47.64	+36 22 16.2	17.3 T	561
C/1999 K6	1999 09 12.80891	18 31 47.81	+36 22 15.3	17.3 T	561
C/1999 K6	1999 09 12.81192	18 31 47.97	+36 22 14.3	17.3 T	561
C/1999 K6	1999 09 12.81493	18 31 48.14	+36 22 13.5	17.3 T	561
C/1999 K6	1999 09 12.86539	18 31 50.89	+36 21 57.2	17.3 T	561
C/1999 K6	1999 09 12.86997	18 31 51.14	+36 21 55.8	17.3 T	561
C/1999 K6	1999 09 12.87274	18 31 51.32	+36 21 55.1	17.3 T	561
C/1999 K6	1999 09 12.87581	18 31 51.45	+36 21 54.1	17.3 T	561
C/1999 K6	1999 09 12.87882	18 31 51.64	+36 21 53.0	17.2 T	561
C/1999 K6	1999 09 12.88183	18 31 51.80	+36 21 52.3	17.3 T	561
C/1999 K6	1999 09 12.88484	18 31 51.94	+36 21 51.2	17.3 T	561
C/1999 K6	1999 09 12.88785	18 31 52.11	+36 21 50.4	17.3 T	561
C/1999 K6	1999 09 12.89091	18 31 52.29	+36 21 49.1	17.3 T	561
C/1999 K6	1999 09 12.89392	18 31 52.46	+36 21 48.2	17.3 T	561
C/1999 K6	1999 09 12.89699	18 31 52.63	+36 21 47.2	17.3 T	561
C/1999 K6	1999 09 12.94335	18 31 55.17	+36 21 32.3	17.3 T	561
C/1999 K6	1999 09 12.94878	18 31 55.50	+36 21 30.4	17.3 T	561
C/1999 K6	1999 09 12.95347	18 31 55.74	+36 21 29.2	17.3 T	561
C/1999 K6	1999 09 12.95648	18 31 55.90	+36 21 28.2	17.3 T	561
C/1999 K6	1999 09 12.95949	18 31 56.10	+36 21 27.0	17.3 T	561
C/1999 K6	1999 09 12.96250	18 31 56.27	+36 21 26.2	17.3 T	561
C/1999 K6	1999 09 12.96551	18 31 56.43	+36 21 24.9	17.3 T	561
C/1999 K6	1999 09 12.96852	18 31 56.61	+36 21 24.0	17.3 T	561
C/1999 K6	1999 09 12.97153	18 31 56.78	+36 21 23.1	17.3 T	561
C/1999 K6	1999 09 12.97454	18 31 56.93	+36 21 22.2	17.3 T	561
C/1999 K6	1999 09 12.97755	18 31 57.11	+36 21 21.1	17.3 T	561
C/1999 K6	1999 09 12.98056	18 31 57.27	+36 21 20.4	17.3 T	561
C/1999 K6	1999 09 14.83229	18 33 44.59	+36 11 30.4	17.1 T	561
C/1999 K6	1999 09 14.83554	18 33 44.77	+36 11 29.1	17.1 T	561
C/1999 K6	1999 09 14.87153	18 33 46.88	+36 11 16.9	17.1 T	561
C/1999 K6	1999 09 14.87583	18 33 47.13	+36 11 15.8	17.1 T	561
C/1999 K6	1999 09 14.87909	18 33 47.30	+36 11 14.8	17.2 T	561

C/1999 K6	1999 09 14.88234	18 33 47.48	+36 11 13.4	17.2 T	561
C/1999 K6	1999 09 14.88560	18 33 47.69	+36 11 12.3	17.2 T	561
C/1999 K6	1999 09 14.88885	18 33 47.89	+36 11 11.4	17.2 T	561
C/1999 K6	1999 09 14.89211	18 33 48.09	+36 11 10.1	17.2 T	561
C/1999 K6	1999 09 14.89536	18 33 48.26	+36 11 09.2	17.1 T	561
C/1999 K6	1999 09 14.89862	18 33 48.47	+36 11 08.0	17.1 T	561
C/1999 K6	1999 09 14.90187	18 33 48.65	+36 11 06.9	17.1 T	561
C/1999 K6	1999 09 15.79572	18 34 42.69	+36 06 14.9	17.1 T	561
C/1999 K6	1999 09 15.79898	18 34 42.90	+36 06 14.4	17.2 T	561
C/1999 K6	1999 09 15.80223	18 34 43.08	+36 06 12.9	17.2 T	561
C/1999 K6	1999 09 15.80549	18 34 43.31	+36 06 11.7	17.2 T	561
C/1999 K6	1999 09 15.80875	18 34 43.51	+36 06 10.7	17.2 T	561
C/1999 K6	1999 09 15.81200	18 34 43.69	+36 06 09.7	17.2 T	561
C/1999 K6	1999 09 15.81851	18 34 44.08	+36 06 07.6	17.2 T	561
C/1999 K6	1999 09 15.82177	18 34 44.29	+36 06 06.6	17.2 T	561
C/1999 K6	1999 09 15.82502	18 34 44.49	+36 06 05.5	17.1 T	561
C/1999 K6	1999 09 15.82828	18 34 44.67	+36 06 04.4	17.1 T	561
C/1999 K6	1999 09 15.83154	18 34 44.86	+36 06 03.3	17.2 T	561
C/1999 K6	1999 09 15.83479	18 34 45.05	+36 06 02.2	17.2 T	561
C/1999 K6	1999 09 15.83804	18 34 45.25	+36 06 00.9	17.2 T	561
C/1999 K6	1999 09 15.84130	18 34 45.45	+36 06 00.1	17.2 T	561
C/1999 K6	1999 09 15.93449	18 34 51.11	+36 05 28.8	17.1 T	561
C/1999 K6	1999 09 15.94203	18 34 51.52	+36 05 25.9	17.1 T	561
C/1999 K6	1999 09 15.94529	18 34 51.72	+36 05 24.7	17.1 T	561
C/1999 K6	1999 09 15.95833	18 34 52.55	+36 05 20.1	17.2 T	561
C/1999 K6	1999 09 15.96156	18 34 52.74	+36 05 19.0	17.2 T	561
C/1999 K6	1999 09 15.96483	18 34 52.90	+36 05 18.0	17.2 T	561
C/1999 K6	1999 09 15.96808	18 34 53.11	+36 05 16.9	17.2 T	561
C/1999 K6	1999 09 15.97133	18 34 53.30	+36 05 16.0	17.3 T	561
C/1999 K6	1999 09 15.97588	18 34 53.61	+36 05 14.2	17.2 T	561
C/1999 K6	1999 09 15.97913	18 34 53.82	+36 05 13.2	17.1 T	561
C/1999 K6	1999 09 15.98238	18 34 53.99	+36 05 12.1	17.2 T	561
C/1999 K6	1999 09 15.98564	18 34 54.18	+36 05 11.1	17.2 T	561
C/1999 K6	1999 09 15.98890	18 34 54.41	+36 05 10.0	17.2 T	561
C/1999 K6	1999 09 15.99215	18 34 54.60	+36 05 08.8	17.3 T	561
C/1999 K6	1999 09 15.99541	18 34 54.81	+36 05 07.6	17.2 T	561
C/1999 K6	1999 09 15.99866	18 34 55.00	+36 05 06.5	17.2 T	561
C/1999 K6	1999 09 16.00192	18 34 55.19	+36 05 05.3	17.1 T	561
C/1999 K6	1999 09 16.00517	18 34 55.38	+36 05 04.3	17.1 T	561
C/1999 K6	1999 09 23.82037	18 43 45.23	+35 19 53.9	17.5 T	461
C/1999 K6	1999 09 23.82472	18 43 46.00	+35 19 48.9		461
C/1999 K6	1999 09 23.83097	18 43 46.37	+35 19 46.4		461
C/1999 K6	1999 09 27.12014	18 47 57.06	+34 59 49.4	18.3 T	704
C/1999 K6	1999 09 27.13337	18 47 57.99	+34 59 45.1	19.0 T	704
C/1999 K6	1999 09 27.14662	18 47 59.19	+34 59 38.8	18.7 T	704
C/1999 K6	1999 09 27.17401	18 48 01.30	+34 59 30.5	18.7 T	704
C/1999 K6	1999 09 29.58682	18 51 15.24	+34 44 31.4		867
C/1999 K6	1999 09 29.58890	18 51 15.39	+34 44 30.4		867
C/1999 K6	1999 10 01.11648	18 53 22.62	+34 34 58.8	18.2 T	704
C/1999 K6	1999 10 01.12978	18 53 23.84	+34 34 52.9	18.4 T	704
C/1999 K6	1999 10 01.14312	18 53 24.81	+34 34 48.6	18.4 T	704
C/1999 K6	1999 10 01.16980	18 53 27.16	+34 34 38.3	18.4 T	704
C/1999 K6	1999 10 20.41804	19 24 11.75	+32 33 57.3	17.5 T	402

C/1999 K6	1999 10 20.42034	19 24 11.98	+32 33 55.7		402
C/1999 K6	1999 10 20.42264	19 24 12.27	+32 33 54.7		402
C/1999 K8 (LINEAR)					
C/1999 K8	1999 06 30.62285	21 41 34.91	+37 33 02.6	16.0 T	897
C/1999 K8	1999 07 24.72845	21 36 38.57	+38 12 41.9	15.5 T	897
C/1999 K8	1999 07 24.74154	21 36 38.35	+38 12 41.5		897
C/1999 K8	1999 09 11.88472	21 18 16.33	+33 39 31.1	16.3 T	561
C/1999 K8	1999 09 11.89167	21 18 16.15	+33 39 26.7	16.4 T	561
C/1999 K8	1999 09 11.89479	21 18 16.14	+33 39 25.1	16.4 T	561
C/1999 K8	1999 09 11.89792	21 18 16.10	+33 39 23.1	16.4 T	561
C/1999 K8	1999 09 11.90104	21 18 16.03	+33 39 21.0	16.4 T	561
C/1999 K8	1999 09 11.90417	21 18 15.99	+33 39 19.5	16.4 T	561
C/1999 K8	1999 09 11.90729	21 18 15.95	+33 39 17.3	16.4 T	561
C/1999 K8	1999 09 11.91042	21 18 15.93	+33 39 15.7	16.4 T	561
C/1999 K8	1999 09 11.91354	21 18 15.86	+33 39 13.6	16.4 T	561
C/1999 K8	1999 09 11.91632	21 18 15.81	+33 39 12.1	16.4 T	561
C/1999 K8	1999 09 11.91944	21 18 15.78	+33 39 09.8	16.4 T	561
C/1999 K8	1999 09 11.97564	21 18 14.86	+33 38 34.1	16.1 T	561
C/1999 K8	1999 09 11.98179	21 18 14.83	+33 38 30.8	16.0 T	561
C/1999 K8	1999 09 11.98457	21 18 14.80	+33 38 29.9	16.1 T	561
C/1999 K8	1999 09 11.98750	21 18 14.70	+33 38 27.3	16.1 T	561
C/1999 K8	1999 09 11.99063	21 18 14.62	+33 38 25.2	16.2 T	561
C/1999 K8	1999 09 11.99375	21 18 14.54	+33 38 23.2	16.2 T	561
C/1999 K8	1999 09 11.99670	21 18 14.48	+33 38 21.9	16.2 T	561
C/1999 K8	1999 09 11.99977	21 18 14.48	+33 38 19.8	16.1 T	561
C/1999 K8	1999 09 12.00573	21 18 14.29	+33 38 16.5	15.7 T	561
C/1999 K8	1999 09 12.00880	21 18 14.31	+33 38 13.7	16.1 T	561
C/1999 K8	1999 09 12.04375	21 18 13.75	+33 37 50.0	16.4 T	561
C/1999 K8	1999 09 12.05208	21 18 13.69	+33 37 46.6	16.4 T	561
C/1999 K8	1999 09 12.05513	21 18 13.61	+33 37 44.5	16.3 T	561
C/1999 K8	1999 09 12.05816	21 18 13.53	+33 37 43.5	16.4 T	561
C/1999 K8	1999 09 12.06118	21 18 13.48	+33 37 41.7	16.4 T	561
C/1999 K8	1999 09 12.07025	21 18 13.38	+33 37 35.8	16.2 T	561
C/1999 K8	1999 09 12.07326	21 18 13.29	+33 37 33.3	16.3 T	561
C/1999 K8	1999 09 12.07627	21 18 13.27	+33 37 31.4	16.3 T	561
C/1999 K8	1999 09 12.07933	21 18 13.21	+33 37 29.9	16.4 T	561
C/1999 K8	1999 09 12.82025	21 18 02.27	+33 29 46.6	16.0 T	561
C/1999 K8	1999 09 12.83067	21 18 02.12	+33 29 40.8	16.0 T	561
C/1999 K8	1999 09 12.83356	21 18 02.08	+33 29 39.3	16.0 T	561
C/1999 K8	1999 09 12.83669	21 18 02.01	+33 29 37.3	16.0 T	561
C/1999 K8	1999 09 12.83975	21 18 01.97	+33 29 35.4	16.0 T	561
C/1999 K8	1999 09 12.84271	21 18 01.92	+33 29 33.4	16.0 T	561
C/1999 K8	1999 09 12.84572	21 18 01.89	+33 29 31.5	16.0 T	561
C/1999 K8	1999 09 12.84870	21 18 01.84	+33 29 29.7	16.0 T	561
C/1999 K8	1999 09 12.85172	21 18 01.77	+33 29 27.7	16.0 T	561
C/1999 K8	1999 09 12.85474	21 18 01.75	+33 29 25.8	16.0 T	561
C/1999 K8	1999 09 12.85775	21 18 01.70	+33 29 23.9	16.0 T	561
C/1999 K8	1999 09 12.91152	21 18 00.89	+33 28 50.2	16.0 T	561
C/1999 K8	1999 09 12.91447	21 18 00.82	+33 28 47.9	16.0 T	561
C/1999 K8	1999 09 12.91748	21 18 00.77	+33 28 46.1	16.0 T	561
C/1999 K8	1999 09 12.92049	21 18 00.67	+33 28 44.5	15.9 T	561
C/1999 K8	1999 09 12.92651	21 18 00.51	+33 28 40.5	16.1 T	561

C/1999 K8	1999 09 12.92951	21 18 00.48	+33 28 37.9	16.1 T	561	C/1999 K8	1999 09 15.89913	21 17 20.11	+32 56 51.8	15.9 T	561
C/1999 K8	1999 09 12.93264	21 18 00.49	+33 28 36.3	16.0 T	561	C/1999 K8	1999 09 15.90238	21 17 20.08	+32 56 49.4	16.0 T	561
C/1999 K8	1999 09 12.93559	21 18 00.52	+33 28 34.7	15.9 T	561	C/1999 K8	1999 09 15.90565	21 17 20.04	+32 56 47.2	16.0 T	561
C/1999 K8	1999 09 12.93854	21 18 00.44	+33 28 32.9	16.0 T	561	C/1999 K8	1999 09 15.90890	21 17 20.02	+32 56 45.0	16.1 T	561
C/1999 K8	1999 09 12.98565	21 17 59.73	+33 28 03.2	16.0 T	561	C/1999 K8	1999 09 15.91215	21 17 19.97	+32 56 42.8	16.1 T	561
C/1999 K8	1999 09 12.99294	21 17 59.65	+33 27 59.2	16.0 T	561	C/1999 K8	1999 09 15.91541	21 17 19.93	+32 56 40.6	16.0 T	561
C/1999 K8	1999 09 12.99549	21 17 59.59	+33 27 56.8	16.0 T	561	C/1999 K8	1999 09 15.91867	21 17 19.86	+32 56 38.2	16.1 T	561
C/1999 K8	1999 09 12.99850	21 17 59.54	+33 27 55.3	16.0 T	561	C/1999 K8	1999 09 15.92192	21 17 19.83	+32 56 36.5	16.1 T	561
C/1999 K8	1999 09 13.00150	21 17 59.52	+33 27 53.0	16.0 T	561	C/1999 K8	1999 09 15.92517	21 17 19.78	+32 56 34.1	16.0 T	561
C/1999 K8	1999 09 13.00451	21 17 59.47	+33 27 51.2	16.0 T	561	C/1999 K8	1999 09 15.92843	21 17 19.77	+32 56 31.8	16.0 T	561
C/1999 K8	1999 09 13.00752	21 17 59.42	+33 27 48.9	16.0 T	561	C/1999 K8	1999 09 16.01262	21 17 18.67	+32 55 36.5	16.1 T	561
C/1999 K8	1999 09 13.01053	21 17 59.39	+33 27 47.1	16.0 T	561	C/1999 K8	1999 09 16.01672	21 17 18.61	+32 55 33.9	16.1 T	561
C/1999 K8	1999 09 13.01308	21 17 59.31	+33 27 45.4	16.1 T	561	C/1999 K8	1999 09 16.01999	21 17 18.57	+32 55 31.7	16.1 T	561
C/1999 K8	1999 09 13.01667	21 17 59.26	+33 27 43.5	16.0 T	561	C/1999 K8	1999 09 16.02324	21 17 18.52	+32 55 29.5	16.0 T	561
C/1999 K8	1999 09 13.01968	21 17 59.24	+33 27 41.5	16.0 T	561	C/1999 K8	1999 09 16.02649	21 17 18.50	+32 55 27.8	16.1 T	561
C/1999 K8	1999 09 14.00699	21 17 45.13	+33 17 14.8	16.0 T	561	C/1999 K8	1999 09 16.02975	21 17 18.43	+32 55 25.1	16.0 T	561
C/1999 K8	1999 09 14.01002	21 17 45.10	+33 17 13.0	16.0 T	561	C/1999 K8	1999 09 16.03301	21 17 18.39	+32 55 22.8	16.0 T	561
C/1999 K8	1999 09 14.01304	21 17 45.07	+33 17 11.3	16.0 T	561	C/1999 K8	1999 09 16.03626	21 17 18.35	+32 55 20.7	16.0 T	561
C/1999 K8	1999 09 14.01606	21 17 45.04	+33 17 09.4	16.0 T	561	C/1999 K8	1999 09 16.03951	21 17 18.31	+32 55 19.0	16.0 T	561
C/1999 K8	1999 09 14.01910	21 17 44.99	+33 17 07.0	16.0 T	561	C/1999 K8	1999 09 16.04278	21 17 18.30	+32 55 16.7	16.0 T	561
C/1999 K8	1999 09 14.02212	21 17 44.96	+33 17 05.2	16.0 T	561	C/1999 K8	1999 09 16.04603	21 17 18.22	+32 55 14.4	16.1 T	561
C/1999 K8	1999 09 14.02514	21 17 44.89	+33 17 03.2	16.0 T	561	C/1999 K8	1999 09 16.05127	21 17 18.19	+32 55 10.8	16.0 T	561
C/1999 K8	1999 09 14.76882	21 17 34.90	+33 09 05.6	15.9 T	561	C/1999 K8	1999 09 16.05453	21 17 18.14	+32 55 09.1	16.0 T	561
C/1999 K8	1999 09 14.77522	21 17 34.79	+33 09 01.8	15.9 T	561	C/1999 K8	1999 09 16.05779	21 17 18.05	+32 55 06.5	16.1 T	561
C/1999 K8	1999 09 14.77847	21 17 34.69	+33 08 59.6	16.1 T	561	C/1999 K8	1999 09 16.06104	21 17 18.05	+32 55 04.9	16.1 T	561
C/1999 K8	1999 09 14.78174	21 17 34.70	+33 08 57.9	16.0 T	561	C/1999 K8	1999 09 16.06429	21 17 18.02	+32 55 02.2	16.1 T	561
C/1999 K8	1999 09 14.78499	21 17 34.69	+33 08 55.4	16.0 T	561	C/1999 K8	1999 09 16.06755	21 17 17.95	+32 55 00.1	16.1 T	561
C/1999 K8	1999 09 14.78824	21 17 34.62	+33 08 53.5	16.0 T	561	C/1999 K8	1999 09 19.56134	21 16 39.16	+32 16 01.7	14.7 T	900
C/1999 K8	1999 09 14.79149	21 17 34.61	+33 08 51.4	16.0 T	561	C/1999 K8	1999 09 19.57053	21 16 39.08	+32 15 55.9		900
C/1999 K8	1999 09 14.79476	21 17 34.55	+33 08 49.3	16.0 T	561	C/1999 K8	1999 09 24.79050	21 15 59.15	+31 15 02.4	17.0 N	461
C/1999 K8	1999 09 14.79801	21 17 34.51	+33 08 47.3	16.0 T	561	C/1999 K8	1999 09 27.50797	21 15 47.26	+30 42 19.5	14.4 T	900
C/1999 K8	1999 09 14.80126	21 17 34.45	+33 08 45.3	16.0 T	561	C/1999 K8	1999 09 27.52011	21 15 47.20	+30 42 10.2		900
C/1999 K8	1999 09 14.80453	21 17 34.38	+33 08 42.6	16.0 T	561	C/1999 K8	1999 09 27.52585	21 15 47.03	+30 41 46.1	14.6 T	402
C/1999 K8	1999 09 14.80778	21 17 34.34	+33 08 40.6	16.0 T	561	C/1999 K8	1999 09 27.55411	21 15 47.04	+30 41 45.3		402
C/1999 K8	1999 09 14.81103	21 17 34.35	+33 08 38.7	15.9 T	561	C/1999 K8	1999 09 27.55537	21 15 47.04	+30 41 44.1		402
C/1999 K8	1999 09 14.91441	21 17 32.89	+33 07 32.3	15.9 T	561	C/1999 K8	1999 09 29.60105	21 15 42.30	+30 16 42.4		867
C/1999 K8	1999 09 14.91766	21 17 32.84	+33 07 29.6	15.9 T	561	C/1999 K8	1999 09 29.60730	21 15 42.28	+30 16 37.7		867
C/1999 K8	1999 09 14.92093	21 17 32.71	+33 07 28.0	16.0 T	561	C/1999 K8	1999 09 29.60973	21 15 42.28	+30 16 35.8		867
C/1999 K8	1999 09 14.92418	21 17 32.74	+33 07 25.8	15.9 T	561	C/1999 K8	1999 10 03.51181	21 15 43.66	+29 28 04.2	14.6 T	2 360
C/1999 K8	1999 09 14.92743	21 17 32.70	+33 07 23.7	15.9 T	561	C/1999 K8	1999 10 03.51424	21 15 43.66	+29 28 02.3		2 360
C/1999 K8	1999 09 14.93068	21 17 32.60	+33 07 21.2	16.0 T	561	C/1999 K8	1999 10 06.82902	21 15 55.55	+28 46 10.9	14.6 T	504
C/1999 K8	1999 09 14.93394	21 17 32.59	+33 07 19.4	16.0 T	561	C/1999 K8	1999 10 06.83419	21 15 55.57	+28 46 07.3	14.6 T	504
C/1999 K8	1999 09 14.93720	21 17 32.53	+33 07 17.1	16.0 T	561	C/1999 K8	1999 10 07.77271	21 16 00.78	+28 34 12.6		143
C/1999 K8	1999 09 14.94045	21 17 32.50	+33 07 14.8	16.0 T	561	C/1999 K8	1999 10 07.78094	21 16 00.84	+28 34 06.1		143
C/1999 K8	1999 09 14.94370	21 17 32.43	+33 07 13.1	16.0 T	561	C/1999 K8	1999 10 07.78918	21 16 00.89	+28 33 59.5		143
C/1999 K8	1999 09 15.08862	21 17 30.49	+33 05 38.5	16.0 T	561	C/1999 K8	1999 10 09.11150	21 16 09.45	+28 17 07.9	18.2 T	750
C/1999 K8	1999 09 15.09188	21 17 30.47	+33 05 36.2	16.1 T	561	C/1999 K8	1999 10 09.13119	21 16 09.60	+28 16 54.6	17.0 T	750
C/1999 K8	1999 09 15.09839	21 17 30.32	+33 05 32.1	16.0 T	561	C/1999 K8	1999 10 09.15102	21 16 09.71	+28 16 39.4	16.8 T	750
C/1999 K8	1999 09 15.10164	21 17 30.32	+33 05 30.4	16.0 T	561	C/1999 K8	1999 10 09.49660	21 16 12.28	+28 12 16.6		900
C/1999 K8	1999 09 15.10491	21 17 30.22	+33 05 28.3	16.0 T	561	C/1999 K8	1999 10 09.50210	21 16 12.34	+28 12 11.7		900
C/1999 K8	1999 09 15.10816	21 17 30.21	+33 05 25.9	16.0 T	561	C/1999 K8	1999 10 10.07490	21 16 16.89	+28 04 53.3	16.9 T	750
C/1999 K8	1999 09 15.11141	21 17 30.16	+33 05 23.8	16.0 T	561	C/1999 K8	1999 10 10.08271	21 16 16.93	+28 04 46.4	17.0 T	750
C/1999 K8	1999 09 15.11466	21 17 30.18	+33 05 20.9	15.8 T	561	C/1999 K8	1999 10 10.49409	21 16 20.19	+27 59 30.8		349

C/1999 K8	1999 10 10.49536	21 16 20.28	+27 59 30.8		355
C/1999 K8	1999 10 10.49984	21 16 20.34	+27 59 27.3		355
C/1999 K8	1999 10 10.51221	21 16 20.44	+27 59 18.0	14.8 T	355
C/1999 K8	1999 10 11.46469	21 16 28.92	+27 47 07.4		349
C/1999 K8	1999 10 11.47641	21 16 28.98	+27 46 58.7	14.9 T	349
C/1999 K8	1999 10 11.83276	21 16 32.41	+27 42 24.7	15.5 T	071
C/1999 K8	1999 10 11.83616	21 16 32.49	+27 42 22.8	15.6 T	071
C/1999 K8	1999 10 11.83810	21 16 32.45	+27 42 20.6	15.7 T	071
C/1999 K8	1999 10 12.71171	21 16 41.34	+27 31 10.7	16.2 T	071
C/1999 K8	1999 10 12.71437	21 16 41.47	+27 31 09.0	16.0 T	071
C/1999 K8	1999 10 12.71826	21 16 41.50	+27 31 05.5	15.8 T	071
C/1999 K8	1999 10 12.72413	21 16 41.56	+27 31 00.6	15.5 T	071
C/1999 K8	1999 10 12.72757	21 16 41.61	+27 30 57.8	15.6 T	071
C/1999 K8	1999 10 12.73146	21 16 41.62	+27 30 55.0	15.5 T	071
C/1999 K8	1999 10 13.08886	21 16 45.49	+27 26 21.9	17.6 T	704
C/1999 K8	1999 10 13.10505	21 16 45.65	+27 26 06.5	18.2 T	704
C/1999 K8	1999 10 13.12092	21 16 45.74	+27 25 53.3	18.2 T	704
C/1999 K8	1999 10 13.13661	21 16 45.94	+27 25 44.0	17.6 T	704
C/1999 K8	1999 10 13.15234	21 16 46.18	+27 25 27.7	17.7 T	704
C/1999 K8	1999 10 17.51146	21 17 42.38	+26 29 50.2	14.7 T	360
C/1999 K8	1999 10 17.51389	21 17 42.40	+26 29 48.4		360
C/1999 K8	1999 10 17.52707	21 17 42.63	+26 29 38.0		900
C/1999 K8	1999 10 17.53952	21 17 42.76	+26 29 28.7	14.6 T	900
C/1999 K8	1999 10 17.75164	21 17 45.96	+26 26 47.4	16.3 T	629
C/1999 K8	1999 10 17.76818	21 17 46.29	+26 26 31.7	16.1 T	629
C/1999 K8	1999 10 21.44352	21 18 48.21	+25 39 53.3	14.7 T	402
C/1999 K8	1999 10 21.44477	21 18 48.21	+25 39 52.0		402
C/1999 K8	1999 10 21.44603	21 18 48.23	+25 39 51.2		402
C/1999 K8	1999 10 21.47374	21 18 48.70	+25 39 30.6		900
C/1999 K8	1999 10 21.48652	21 18 48.93	+25 39 20.4	14.6 T	900
C/1999 N2 (Lynn)					
C/1999 N2	1999 09 29.40727	13 25 25.29	+36 07 50.7	13.4 T	402
C/1999 N2	1999 09 29.40853	13 25 25.31	+36 07 52.0		402
C/1999 N2	1999 09 29.40980	13 25 25.45	+36 07 54.4		402
C/1999 N2	1999 10 09.39688	13 36 04.21	+38 23 21.6	13.5 T	402
C/1999 N2	1999 10 09.39963	13 36 04.37	+38 23 23.9		402
C/1999 N4 (LINEAR)					
C/1999 N4	1999 09 29.44277	18 05 30.95	-02 27 37.3	18.6 T	402
C/1999 N4	1999 09 29.44506	18 05 30.85	-02 27 38.3		402
C/1999 N4	1999 09 29.44736	18 05 30.85	-02 27 38.1		402
C/1999 N4	1999 10 03.43299	18 04 16.91	-02 39 41.5	17.9 T	2 360
C/1999 N4	1999 10 03.43681	18 04 16.88	-02 39 42.6		2 360
C/1999 N4	1999 10 03.44028	18 04 16.84	-02 39 42.7		2 360
P/1999 RO₂₈ (LONEOS)					
P/1999 RO ₂₈	1999 09 13.33943	00 00 08.05	-16 54 46.5	17.7 T	848
P/1999 RO ₂₈	1999 09 13.34223	00 00 08.45	-16 54 51.3	17.9 T	848
P/1999 RO ₂₈	1999 09 13.34441	00 00 08.95	-16 54 54.0	17.6 T	848
P/1999 RO ₂₈	1999 09 15.43403	00 06 50.80	-17 42 24.4	18.2 T	848
P/1999 RO ₂₈	1999 09 15.43681	00 06 51.31	-17 42 28.2	18.6 T	848
P/1999 RO ₂₈	1999 09 15.43959	00 06 51.84	-17 42 31.5	18.6 T	848
P/1999 RO ₂₈	1999 09 17.34434	00 13 05.75	-18 24 06.5		848

P/1999 RO ₂₈	1999 09 17.34641	00 13 06.15	-18 24 08.5		848
P/1999 RO ₂₈	1999 09 17.34841	00 13 06.52	-18 24 11.8		848
P/1999 RO ₂₈	1999 09 18.33038	00 16 20.82	-18 44 49.5	17.8 T	3 848
P/1999 RO ₂₈	1999 09 18.33324	00 16 21.39	-18 44 54.7	18.0 T	3 848
P/1999 RO ₂₈	1999 09 18.33591	00 16 21.79	-18 44 57.7	17.9 T	3 848
P/1999 RO ₂₈	1999 09 19.39931	00 19 52.31	-19 06 36.4	17.5 T	3 848
P/1999 RO ₂₈	1999 09 20.39500	00 23 10.65	-19 26 10.6	17.3 T	3 848
P/1999 RO ₂₈	1999 09 20.39956	00 23 11.41	-19 26 16.2	17.8 T	3 848
P/1999 RO ₂₈	1999 09 20.40331	00 23 12.20	-19 26 19.0	17.7 T	3 848
P/1999 RO ₂₈	1999 10 03.62483	01 06 13.88	-22 21 34.5	18.7 T	2 360
P/1999 RO ₂₈	1999 10 03.62899	01 06 14.74	-22 21 37.5		2 360
P/1999 RO ₂₈	1999 10 03.63420	01 06 15.49	-22 21 38.5		2 360
P/1999 RO ₂₈	1999 10 08.58514	01 20 50.39	-22 40 17.2	18.7 T	402
P/1999 RO ₂₈	1999 10 08.58973	01 20 51.15	-22 40 17.7		402
P/1999 RO ₂₈	1999 10 08.59204	01 20 51.43	-22 40 17.8		402
P/1999 RO ₂₈	1999 10 09.68229	01 23 52.60	-22 40 49.6	18.6 T	360
P/1999 RO ₂₈	1999 10 09.68611	01 23 53.19	-22 40 48.9		360
P/1999 RO ₂₈	1999 10 09.69010	01 23 53.77	-22 40 49.2		360
P/1999 RO ₂₈	1999 10 20.66951	01 50 40.46	-21 40 03.4	18.7 T	402
P/1999 RO ₂₈	1999 10 20.67076	01 50 40.67	-21 40 02.5		402
P/1999 RO ₂₈	1999 10 20.67203	01 50 40.75	-21 40 01.4		402

C/1999 S2 (McNaught-Watson)

C/1999 S2	1999 09 28.59281	03 08 21.87	-64 11 21.2	19.9 N	413
C/1999 S2	1999 09 28.59453	03 08 21.82	-64 11 21.4	19.7 N	413
C/1999 S2	1999 09 28.78736	03 08 14.28	-64 11 46.5	18.9 N	413
C/1999 S2	1999 09 28.79369	03 08 13.96	-64 11 47.3	19.4 N	413
C/1999 S2	1999 09 30.28437	03 07 16.33	-64 14 49.2		2 834
C/1999 S2	1999 09 30.55030	03 07 05.95	-64 15 20.6	16.7 T	428
C/1999 S2	1999 09 30.55993	03 07 05.62	-64 15 22.7	18.0 N	428
C/1999 S2	1999 10 02.26471	03 05 56.66	-64 18 32.5		2 834
C/1999 S2	1999 10 02.28767	03 05 56.04	-64 18 35.3		2 834
C/1999 S2	1999 10 04.20207	03 04 35.42	-64 21 44.6		2 834
C/1999 S2	1999 10 04.22422	03 04 34.85	-64 21 45.5		2 834
C/1999 S2	1999 10 04.75113	03 04 12.11	-64 22 32.0	16.9 T	428
C/1999 S2	1999 10 04.75755	03 04 11.93	-64 22 33.1	17.0 T	428
C/1999 S2	1999 10 05.72162	03 03 30.00	-64 23 55.3	17.8 N	413
C/1999 S2	1999 10 05.72355	03 03 29.91	-64 23 55.2	17.8 N	413
C/1999 S2	1999 10 05.72619	03 03 29.81	-64 23 55.6	17.6 N	413
C/1999 S2	1999 10 11.64073	02 58 59.71	-64 29 46.5	17.9 N	428
C/1999 S2	1999 10 11.66211	02 58 58.79	-64 29 48.9	17.9 N	428
C/1999 S2	1999 10 15.36486	02 55 59.78	-64 31 10.4	17.1 N	467
C/1999 S2	1999 10 15.38043	02 55 58.84	-64 31 10.4	16.7 N	467
C/1999 S2	1999 10 15.38578	02 55 58.49	-64 31 09.4	15.8 N	467
C/1999 S2	1999 10 15.76632	02 55 39.64	-64 31 12.0		413
C/1999 S2	1999 10 15.77010	02 55 39.48	-64 31 11.6		413
C/1999 S2	1999 10 16.66931	02 54 54.90	-64 31 12.3		413
C/1999 S2	1999 10 16.67188	02 54 54.77	-64 31 12.1		413
C/1999 S2	1999 10 16.67389	02 54 54.67	-64 31 12.0		413
C/1999 S2	1999 10 17.69797	02 54 03.48	-64 31 04.0		413
C/1999 S2	1999 10 17.69950	02 54 03.39	-64 31 04.2		413
C/1999 S2	1999 10 19.65867	02 52 24.46	-64 30 25.1	16.3 T	428
C/1999 S2	1999 10 19.66467	02 52 24.25	-64 30 25.3	16.2 T	428

C/1999 S3 (LINEAR)													
C/1999 S3	1999 09 26.03669	01 14 50.73	+47 52 23.2	13.8 T	461		C/1999 S3	1999 09 29.92836	00 56 32.71	+50 39 35.5		610	
C/1999 S3	1999 09 26.03794	01 14 50.42	+47 52 26.2		461		C/1999 S3	1999 09 29.93113	00 56 31.87	+50 39 42.2		610	
C/1999 S3	1999 09 26.03905	01 14 50.10	+47 52 29.6		461		C/1999 S3	1999 09 29.93391	00 56 31.03	+50 39 48.8		610	
C/1999 S3	1999 09 26.04015	01 14 49.80	+47 52 32.3		461		C/1999 S3	1999 09 29.93669	00 56 30.19	+50 39 55.5		610	
C/1999 S3	1999 09 26.04133	01 14 49.51	+47 52 35.5		461		C/1999 S3	1999 09 30.44028	00 53 56.23	+51 00 21.0	13.6 T	372	
C/1999 S3	1999 09 26.04525	01 14 48.45	+47 52 45.9		461		C/1999 S3	1999 09 30.59920	00 53 06.45	+51 06 46.4	14.0 T	886	
C/1999 S3	1999 09 27.30680	01 09 10.96	+48 48 33.8	13.1 T	848		C/1999 S3	1999 09 30.60685	00 53 03.99	+51 07 03.8		886	
C/1999 S3	1999 09 27.30975	01 09 10.14	+48 48 41.8	13.2 T	848		C/1999 S3	1999 10 01.10279	00 50 28.97	+51 26 45.8	14.1 T	850	
C/1999 S3	1999 09 27.31134	01 09 09.70	+48 48 46.0	13.1 T	848		C/1999 S3	1999 10 02.00057	00 45 39.75	+52 01 38.6		118	
C/1999 S3	1999 09 27.31294	01 09 09.23	+48 48 50.3	13.0 T	848		C/1999 S3	1999 10 02.00275	00 45 39.04	+52 01 43.4	13.0 T	118	
C/1999 S3	1999 09 27.43706	01 08 34.63	+48 54 14.5	12.6 T	848		C/1999 S3	1999 10 02.27222	00 44 10.81	+52 11 59.1	14.2 T	850	
C/1999 S3	1999 09 27.43867	01 08 34.17	+48 54 18.7	12.4 T	848		C/1999 S3	1999 10 02.31529	00 43 56.48	+52 13 35.8	14.1 T	850	
C/1999 S3	1999 09 27.44025	01 08 33.72	+48 54 23.3	12.3 T	848		C/1999 S3	1999 10 02.58127	00 42 29.02	+52 23 36.0	13.5 T	355	
C/1999 S3	1999 09 27.44185	01 08 33.27	+48 54 27.1	12.5 T	848		C/1999 S3	1999 10 02.58235	00 42 28.66	+52 23 38.8		355	
C/1999 S3	1999 09 27.45823	01 08 29.59	+48 55 08.0	13.3 T	897		C/1999 S3	1999 10 02.58525	00 42 27.65	+52 23 45.2		355	
C/1999 S3	1999 09 27.47466	01 08 25.03	+48 55 51.6		897		C/1999 S3	1999 10 02.59904	00 42 22.96	+52 24 16.2	13.6 T	349	
C/1999 S3	1999 09 27.48160	01 08 23.04	+48 56 10.6	13.9 T	372		C/1999 S3	1999 10 02.62956	00 42 12.67	+52 25 24.3		349	
C/1999 S3	1999 09 27.48872	01 08 21.13	+48 56 29.3	13.9 T	372		C/1999 S3	1999 10 02.63464	00 42 11.00	+52 25 35.5		349	
C/1999 S3	1999 09 27.61623	01 07 45.30	+49 02 04.1	12.9 T	900		C/1999 S3	1999 10 02.80274	00 41 15.50	+52 31 48.1	13.6 T	057	
C/1999 S3	1999 09 27.62549	01 07 42.69	+49 02 28.5		900		C/1999 S3	1999 10 02.81159	00 41 12.54	+52 32 10.2	14.1 T	057	
C/1999 S3	1999 09 27.67234	01 07 29.50	+49 04 29.6	13.7 T	402		C/1999 S3	1999 10 02.81387	00 41 11.90	+52 32 14.8		057	
C/1999 S3	1999 09 27.67393	01 07 29.04	+49 04 33.9		402		C/1999 S3	1999 10 02.82837	00 41 06.83	+52 32 44.5	13.6 T	057	
C/1999 S3	1999 09 27.67554	01 07 28.58	+49 04 38.0		402		C/1999 S3	1999 10 02.85759	00 40 56.96	+52 33 51.5	14.4 T	629	
C/1999 S3	1999 09 28.32248	01 04 26.12	+49 32 26.3	12.8 T	848		C/1999 S3	1999 10 02.86418	00 40 54.73	+52 34 06.4	14.3 T	629	
C/1999 S3	1999 09 28.32406	01 04 25.67	+49 32 30.2	13.1 T	848		C/1999 S3	1999 10 02.86865	00 40 53.17	+52 34 16.1	14.3 T	629	
C/1999 S3	1999 09 28.32566	01 04 25.26	+49 32 34.6	12.7 T	848		C/1999 S3	1999 10 02.87821	00 40 49.92	+52 34 37.3	14.5 T	629	
C/1999 S3	1999 09 28.48177	01 03 40.70	+49 39 13.3	13.8 T	372		C/1999 S3	1999 10 02.88382	00 40 48.05	+52 34 49.8	14.3 T	629	
C/1999 S3	1999 09 28.48657	01 03 39.47	+49 39 24.8	13.7 T	351		C/1999 S3	1999 10 02.97272	00 40 17.90	+52 38 06.4	13.3 T	470	
C/1999 S3	1999 09 28.49102	01 03 38.15	+49 39 36.5		351		C/1999 S3	1999 10 02.97493	00 40 17.17	+52 38 11.5	13.3 T	470	
C/1999 S3	1999 09 28.49537	01 03 36.89	+49 39 47.3		351		C/1999 S3	1999 10 02.97624	00 40 16.72	+52 38 14.1	13.4 T	470	
C/1999 S3	1999 09 28.62992	01 02 57.62	+49 45 31.5	13.4 T	903		C/1999 S3	1999 10 02.97755	00 40 16.28	+52 38 17.0	13.4 T	470	
C/1999 S3	1999 09 28.63348	01 02 56.52	+49 45 40.3		903		C/1999 S3	1999 10 02.97884	00 40 15.85	+52 38 20.2	13.4 T	470	
C/1999 S3	1999 09 28.63561	01 02 55.92	+49 45 46.4		903		C/1999 S3	1999 10 02.98192	00 40 14.81	+52 38 26.5	13.4 T	470	
C/1999 S3	1999 09 28.68350	01 02 41.82	+49 47 47.8	13.5 T	886		C/1999 S3	1999 10 02.98421	00 40 14.05	+52 38 31.7	13.4 T	470	
C/1999 S3	1999 09 28.69025	01 02 39.86	+49 48 04.8		886		C/1999 S3	1999 10 03.13700	00 39 23.24	+52 44 05.3		642	
C/1999 S3	1999 09 28.72923	01 02 28.39	+49 49 42.6	13.7 T	349		C/1999 S3	1999 10 03.14340	00 39 21.01	+52 44 19.5		642	
C/1999 S3	1999 09 28.73872	01 02 25.57	+49 50 07.3		349		C/1999 S3	1999 10 03.15012	00 39 18.94	+52 44 34.0		642	
C/1999 S3	1999 09 28.74082	01 02 25.01	+49 50 12.3		349		C/1999 S3	1999 10 03.26181	00 38 40.30	+52 48 41.6	14.2 T	850	
C/1999 S3	1999 09 28.88321	01 01 44.25	+49 56 11.7		143		C/1999 S3	1999 10 03.29584	00 38 28.61	+52 49 55.4	14.2 T	850	
C/1999 S3	1999 09 28.89226	01 01 41.60	+49 56 34.7		143		C/1999 S3	1999 10 03.54844	00 37 03.16	+52 59 03.1	13.1 T	2 360	
C/1999 S3	1999 09 28.90132	01 01 38.94	+49 56 57.6		143		C/1999 S3	1999 10 03.55104	00 37 02.24	+52 59 08.8		2 360	
C/1999 S3	1999 09 29.65903	00 57 53.87	+50 28 35.6	13.8 T	372		C/1999 S3	1999 10 03.55313	00 37 01.54	+52 59 13.2		2 360	
C/1999 S3	1999 09 29.67843	00 57 47.91	+50 29 21.8		900		C/1999 S3	1999 10 03.55894	00 36 59.48	+52 59 26.2	13.5 T	886	
C/1999 S3	1999 09 29.68668	00 57 45.37	+50 29 42.5		900		C/1999 S3	1999 10 03.56441	00 36 57.57	+52 59 37.2		367	
C/1999 S3	1999 09 29.69740	00 57 42.15	+50 30 10.2	13.8 T	372		C/1999 S3	1999 10 03.56615	00 36 56.99	+52 59 40.9		367	
C/1999 S3	1999 09 29.78005	00 57 17.91	+50 33 28.3	14.3 T	106		C/1999 S3	1999 10 03.56788	00 36 56.36	+52 59 44.3		367	
C/1999 S3	1999 09 29.79655	00 57 12.85	+50 34 09.5		106		C/1999 S3	1999 10 03.57079	00 36 55.36	+52 59 51.2		886	
C/1999 S3	1999 09 29.81074	00 57 08.50	+50 34 45.7		106		C/1999 S3	1999 10 03.61198	00 36 41.03	+53 01 20.8	13.5 T	372	
C/1999 S3	1999 09 29.81338	00 57 07.86	+50 34 50.3		106		C/1999 S3	1999 10 03.64520	00 36 29.53	+53 02 31.4	13.7 T	402	
C/1999 S3	1999 09 29.82705	00 57 03.60	+50 35 25.4		106		C/1999 S3	1999 10 03.64646	00 36 29.09	+53 02 34.0		402	
C/1999 S3	1999 09 29.84333	00 56 58.83	+50 36 05.0		106		C/1999 S3	1999 10 03.64772	00 36 28.65	+53 02 36.8		402	
C/1999 S3	1999 09 29.92558	00 56 33.55	+50 39 28.9	13.7 N	610		C/1999 S3	1999 10 03.71042	00 36 06.85	+53 04 52.1	13.8 T	372	
							C/1999 S3	1999 10 04.59500	00 30 59.49	+53 35 45.8	13.6 T	355	

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C/1999 S3	1999 10 04.59716	00 30 58.71	+53 35 50.4		355
C/1999 S3	1999 10 04.59809	00 30 58.40	+53 35 52.1		355
C/1999 S3	1999 10 04.64861	00 30 40.32	+53 37 36.9	13.9 T	372
C/1999 S3	1999 10 04.68723	00 30 26.57	+53 38 54.6	13.1 T	897
C/1999 S3	1999 10 04.69287	00 30 24.55	+53 39 05.9		897
C/1999 S3	1999 10 05.20041	00 27 24.79	+53 56 08.1		642
C/1999 S3	1999 10 05.20688	00 27 22.56	+53 56 20.4		642
C/1999 S3	1999 10 05.20986	00 27 21.52	+53 56 27.2		642
C/1999 S3	1999 10 05.66329	00 24 37.55	+54 11 21.3	13.3 T	903
C/1999 S3	1999 10 05.66715	00 24 36.14	+54 11 28.8		903
C/1999 S3	1999 10 05.67213	00 24 34.30	+54 11 38.7		903
C/1999 S3	1999 10 05.75851	00 24 02.73	+54 14 25.6		372
C/1999 S3	1999 10 06.1227	00 21 51.14	+54 26 03.0	13.6 T	850
C/1999 S3	1999 10 06.79031	00 17 44.73	+54 46 45.4		108
C/1999 S3	1999 10 06.79297	00 17 43.83	+54 46 50.2		108
C/1999 S3	1999 10 06.79531	00 17 42.90	+54 46 54.4	13.3 T	108
C/1999 S3	1999 10 06.91336	00 16 58.54	+54 50 30.4	13.5 N	610
C/1999 S3	1999 10 06.91615	00 16 57.49	+54 50 35.4		610
C/1999 S3	1999 10 06.91892	00 16 56.45	+54 50 40.5		610
C/1999 S3	1999 10 06.92170	00 16 55.41	+54 50 45.5		610
C/1999 S3	1999 10 06.92448	00 16 54.36	+54 50 50.6		610
C/1999 S3	1999 10 07.10351	00 15 47.90	+54 56 13.4	13.5 T	850
C/1999 S3	1999 10 07.11736	00 15 42.65	+54 56 38.5	13.5 T	850
C/1999 S3	1999 10 08.50815	00 06 54.65	+55 36 20.9		411
C/1999 S3	1999 10 08.51851	00 06 50.61	+55 36 38.1		411
C/1999 S3	1999 10 08.53266	00 06 45.12	+55 37 01.3		411
C/1999 S3	1999 10 08.66258	00 05 54.51	+55 40 30.3	13.3 T	349
C/1999 S3	1999 10 08.66634	00 05 53.03	+55 40 36.5		349
C/1999 S3	1999 10 08.66749	00 05 52.58	+55 40 37.9		349
C/1999 S3	1999 10 09.00486	00 03 42.40	+55 49 37.2		945
C/1999 S3	1999 10 09.00726	00 03 41.55	+55 49 41.3		945
C/1999 S3	1999 10 09.01145	00 03 39.66	+55 49 48.3		945
C/1999 S3	1999 10 09.01632	00 03 37.92	+55 49 55.5		945
C/1999 S3	1999 10 09.16102	00 02 42.42	+55 53 40.5		642
C/1999 S3	1999 10 09.16319	00 02 41.56	+55 53 43.7		642
C/1999 S3	1999 10 09.16645	00 02 40.32	+55 53 48.5		642
C/1999 S3	1999 10 09.56574	00 00 04.17	+56 04 04.8	13.0 T	900
C/1999 S3	1999 10 09.56617	00 00 04.08	+56 04 05.0	13.2 T	351
C/1999 S3	1999 10 09.56971	00 00 02.67	+56 04 09.4		351
C/1999 S3	1999 10 09.57492	00 00 00.48	+56 04 18.7		900
C/1999 S3	1999 10 09.57591	00 00 00.16	+56 04 19.4		351
C/1999 S3	1999 10 10.14725	23 56 16.02	+56 18 21.7	14.5 T	750
C/1999 S3	1999 10 10.15507	23 56 12.91	+56 18 32.9	14.5 T	750
C/1999 S3	1999 10 10.16254	23 56 09.95	+56 18 43.7	14.4 T	750
C/1999 S3	1999 10 10.43684	23 54 22.02	+56 25 14.2		349
C/1999 S3	1999 10 10.43902	23 54 21.13	+56 25 17.1	13.2 T	349
C/1999 S3	1999 10 10.44049	23 54 20.52	+56 25 19.3		349
C/1999 S3	1999 10 10.47200	23 54 07.88	+56 26 04.8		411
C/1999 S3	1999 10 10.47478	23 54 06.76	+56 26 08.9		411
C/1999 S3	1999 10 10.48482	23 54 02.75	+56 26 22.9		411
C/1999 S3	1999 10 10.52812	23 53 45.48	+56 27 23.6	13.0 T	886
C/1999 S3	1999 10 10.53995	23 53 40.71	+56 27 40.2		886
C/1999 S3	1999 10 10.54425	23 53 39.01	+56 27 46.1	13.1 T	355

C/1999 S3	1999 10 10.54529	23 53 38.58	+56 27 47.6		355
C/1999 S3	1999 10 10.54736	23 53 37.76	+56 27 50.6		355
C/1999 S3	1999 10 10.80027	23 51 57.82	+56 33 37.3	14.7 T	133
C/1999 S3	1999 10 10.80209	23 51 57.10	+56 33 39.6	14.7 T	133
C/1999 S3	1999 10 10.80480	23 51 56.01	+56 33 43.4	14.6 T	133
C/1999 S3	1999 10 10.80662	23 51 55.25	+56 33 46.0	14.4 T	133
C/1999 S3	1999 10 10.91248	23 51 12.88	+56 36 11.4		945
C/1999 S3	1999 10 10.91306	23 51 12.64	+56 36 12.4		945
C/1999 S3	1999 10 10.91440	23 51 12.07	+56 36 14.3		945
C/1999 S3	1999 10 10.91917	23 51 10.14	+56 36 20.9		945
C/1999 S3	1999 10 11.48559	23 47 24.36	+56 48 46.8	13.4 T	349
C/1999 S3	1999 10 11.48817	23 47 23.37	+56 48 50.3		349
C/1999 S3	1999 10 11.49351	23 47 21.18	+56 48 57.7		349
C/1999 S3	1999 10 15.80120	23 18 19.08	+58 02 30.0	14.7 T	133
C/1999 S3	1999 10 15.80301	23 18 18.34	+58 02 31.2	14.8 T	133
C/1999 S3	1999 10 15.80676	23 18 16.80	+58 02 34.3	14.7 T	133
C/1999 S3	1999 10 16.15700	23 15 55.04	+58 06 56.7		642
C/1999 S3	1999 10 16.16405	23 15 52.09	+58 07 02.2		642
C/1999 S3	1999 10 16.16804	23 15 50.51	+58 07 04.7		642
C/1999 S3	1999 10 16.16901	23 15 50.24	+58 07 05.9	15.0 T	704
C/1999 S3	1999 10 16.18670	23 15 43.37	+58 07 15.6	16.0 T	704
C/1999 S3	1999 10 16.21847	23 15 30.38	+58 07 36.4	14.6 T	704
C/1999 S3	1999 10 16.23634	23 15 22.98	+58 07 51.4	14.8 T	704
C/1999 S3	1999 10 16.76953	23 11 47.51	+58 14 01.6	13.4 T	629
C/1999 S3	1999 10 16.77228	23 11 46.39	+58 14 03.1	13.3 T	629
C/1999 S3	1999 10 16.77512	23 11 45.23	+58 14 05.2	13.3 T	629
C/1999 S3	1999 10 16.77784	23 11 44.10	+58 14 07.1	13.4 T	629
C/1999 S3	1999 10 16.77986	23 11 43.31	+58 14 08.4	13.3 T	629
C/1999 S3	1999 10 16.78179	23 11 42.53	+58 14 09.9	13.2 T	629
C/1999 S3	1999 10 16.78498	23 11 41.24	+58 14 11.5	13.2 T	629
C/1999 S3	1999 10 16.79230	23 11 38.27	+58 14 16.5	13.3 T	629
C/1999 S3	1999 10 17.16007	23 09 10.26	+58 18 09.6		642
C/1999 S3	1999 10 17.16156	23 09 09.65	+58 18 10.3		642
C/1999 S3	1999 10 17.16358	23 09 08.65	+58 18 11.6		642
C/1999 S3	1999 10 17.16527	23 09 08.03	+58 18 13.8		642
C/1999 S3	1999 10 17.16958	23 09 06.37	+58 18 16.0		642
C/1999 S3	1999 10 17.17118	23 09 05.64	+58 18 17.2		642
C/1999 S3	1999 10 17.17323	23 09 04.91	+58 18 18.7		642
C/1999 S3	1999 10 17.53125	23 06 40.91	+58 21 53.2	12.8 T	360
C/1999 S3	1999 10 17.53351	23 06 40.00	+58 21 54.6		360
C/1999 S3	1999 10 17.54705	23 06 34.54	+58 22 01.3		367
C/1999 S3	1999 10 17.54983	23 06 33.37	+58 22 03.1		367
C/1999 S3	1999 10 17.55260	23 06 32.23	+58 22 05.2		367
C/1999 S3	1999 10 17.61044	23 06 08.76	+58 22 36.7		900
C/1999 S3	1999 10 17.61964	23 06 05.05	+58 22 42.2	12.5 T	900
C/1999 S3	1999 10 17.66450	23 05 47.00	+58 23 05.4	12.9 T	903
C/1999 S3	1999 10 17.66683	23 05 45.99	+58 23 06.9		903
C/1999 S3	1999 10 17.66911	23 05 45.14	+58 23 07.7		903
C/1999 S3	1999 10 17.67712	23 05 41.88	+58 23 11.6		349
C/1999 S3	1999 10 17.68368	23 05 39.22	+58 23 15.5		349
C/1999 S3	1999 10 17.68674	23 05 37.99	+58 23 16.8	12.9 T	349
C/1999 S3	1999 10 17.90944	23 04 09.38	+58 25 21.4		945
C/1999 S3	1999 10 17.91161	23 04 08.49	+58 25 22.6		945

C/1999 S3	1999 10 17.91449	23 04 07.52	+58 25 23.9		945	C/1999 S4	1999 09 27.43951	05 03 46.09	+34 16 57.7	17.6 N	704
C/1999 S3	1999 10 18.12859	23 02 42.51	+58 27 13.7		642	C/1999 S4	1999 09 27.45361	05 03 45.63	+34 17 01.4	17.4 N	704
C/1999 S3	1999 10 18.13223	23 02 41.10	+58 27 15.2		642	C/1999 S4	1999 09 28.39537	05 03 16.45	+34 21 21.8	17.5 N	704
C/1999 S3	1999 10 18.13545	23 02 39.61	+58 27 15.4		642	C/1999 S4	1999 09 28.40982	05 03 16.01	+34 21 25.3	17.6 N	704
C/1999 S3	1999 10 18.14053	23 02 37.81	+58 27 17.3		642	C/1999 S4	1999 09 28.42439	05 03 15.59	+34 21 29.9	17.5 N	704
C/1999 S3	1999 10 18.14464	23 02 36.05	+58 27 21.1		642	C/1999 S4	1999 09 28.43904	05 03 15.04	+34 21 33.5	17.9 N	704
C/1999 S3	1999 10 19.20602	22 55 35.42	+58 35 19.1		642	C/1999 S4	1999 09 28.45370	05 03 14.56	+34 21 38.5	17.5 N	704
C/1999 S3	1999 10 19.20902	22 55 33.94	+58 35 20.9		642	C/1999 S4	1999 10 01.38638	05 01 33.33	+34 35 10.2		704
C/1999 S3	1999 10 19.21216	22 55 32.77	+58 35 21.6		642	C/1999 S4	1999 10 01.39174	05 01 33.02	+34 35 11.1		704
C/1999 S3	1999 10 19.21528	22 55 31.55	+58 35 22.8		642	C/1999 S4	1999 10 01.39709	05 01 32.84	+34 35 13.0		704
C/1999 S3	1999 10 19.53802	22 53 24.57	+58 37 26.1		367	C/1999 S4	1999 10 01.40417	05 01 32.72	+34 35 18.3	17.5 T	5 850
C/1999 S3	1999 10 19.53941	22 53 24.04	+58 37 26.6		367	C/1999 S4	1999 10 01.42732	05 01 31.95	+34 35 24.4	17.5 T	704
C/1999 S3	1999 10 19.54080	22 53 23.47	+58 37 27.3		367	C/1999 S4	1999 10 01.43142	05 01 31.64	+34 35 25.1	16.3 T	5 850
C/1999 S3	1999 10 19.79774	22 51 43.25	+58 38 54.6		046	C/1999 S4	1999 10 01.44041	05 01 31.34	+34 35 28.1	17.8 T	704
C/1999 S3	1999 10 19.79933	22 51 42.64	+58 38 55.1		046	C/1999 S4	1999 10 01.45360	05 01 30.91	+34 35 32.1	18.5 T	704
C/1999 S3	1999 10 19.80075	22 51 42.07	+58 38 55.7		046	C/1999 S4	1999 10 01.46666	05 01 30.36	+34 35 35.8	18.0 T	704
C/1999 S3	1999 10 19.80172	22 51 41.70	+58 38 55.9		046	C/1999 S4	1999 10 01.47970	05 01 29.79	+34 35 40.0	18.1 T	704
C/1999 S3	1999 10 20.16672	22 49 19.67	+58 40 49.6		642	C/1999 S4	1999 10 01.84729	05 01 16.15	+34 37 21.4	16.9 T	327
C/1999 S3	1999 10 20.16841	22 49 18.95	+58 40 50.1		642	C/1999 S4	1999 10 01.89332	05 01 14.52	+34 37 33.6	16.2 T	046
C/1999 S3	1999 10 20.17030	22 49 18.18	+58 40 51.6		642	C/1999 S4	1999 10 01.89419	05 01 14.48	+34 37 31.7		587
C/1999 S3	1999 10 20.17881	22 49 14.85	+58 40 53.1		642	C/1999 S4	1999 10 01.89456	05 01 14.46	+34 37 34.5		046
C/1999 S3	1999 10 20.17931	22 49 15.46	+58 40 49.0	15.4 T	704	C/1999 S4	1999 10 01.89566	05 01 14.39	+34 37 34.7		046
C/1999 S3	1999 10 20.19525	22 49 09.10	+58 40 55.5	15.8 T	704	C/1999 S4	1999 10 01.89677	05 01 14.39	+34 37 35.0		046
C/1999 S3	1999 10 20.21120	22 49 02.73	+58 40 58.0	15.3 T	704	C/1999 S4	1999 10 01.89821	05 01 14.32	+34 37 34.7		046
C/1999 S3	1999 10 20.22709	22 48 56.47	+58 41 04.8	15.5 T	704	C/1999 S4	1999 10 01.89939	05 01 14.27	+34 37 35.6		046
C/1999 S3	1999 10 20.24299	22 48 50.04	+58 41 12.6	15.4 T	704	C/1999 S4	1999 10 01.91170	05 01 13.79	+34 37 39.2		118
C/1999 S3	1999 10 20.51497	22 47 04.53	+58 42 28.7		355	C/1999 S4	1999 10 01.91285	05 01 13.73	+34 37 39.5	16.0 T	118
C/1999 S3	1999 10 20.51681	22 47 03.81	+58 42 29.3		355	C/1999 S4	1999 10 01.91848	05 01 13.54	+34 37 40.8		587
C/1999 S3	1999 10 20.51912	22 47 02.94	+58 42 29.6		355	C/1999 S4	1999 10 01.91907	05 01 13.48	+34 37 41.1		118
C/1999 S3	1999 10 20.52446	22 47 00.83	+58 42 31.5	12.8 T	402	C/1999 S4	1999 10 02.36528	05 00 56.31	+34 39 46.5	17.1 T	850
C/1999 S3	1999 10 20.52571	22 47 00.33	+58 42 31.8		402	C/1999 S4	1999 10 02.39063	05 00 55.28	+34 39 53.5	16.8 T	850
C/1999 S3	1999 10 20.52697	22 46 59.84	+58 42 32.1		402	C/1999 S4	1999 10 02.41287	05 00 54.42	+34 40 00.3	16.9 T	850
C/1999 S3	1999 10 20.68289	22 45 59.20	+58 43 07.8		349	C/1999 S4	1999 10 02.60515	05 00 47.09	+34 40 53.2		355
C/1999 S3	1999 10 20.68436	22 45 58.65	+58 43 08.0	12.5 T	349	C/1999 S4	1999 10 02.61225	05 00 46.78	+34 40 54.8	16.6 T	355
C/1999 S3	1999 10 20.68575	22 45 58.11	+58 43 08.6		349	C/1999 S4	1999 10 03.02956	05 00 30.28	+34 42 51.9	16.1 T	470
C/1999 S3	1999 10 21.47253	22 40 58.12	+58 45 55.5	12.6 T	402	C/1999 S4	1999 10 03.03472	05 00 29.99	+34 42 54.0	15.8 T	470
C/1999 S3	1999 10 21.47379	22 40 57.64	+58 45 55.8		402	C/1999 S4	1999 10 03.06396	05 00 28.83	+34 43 02.2	16.2 T	046
C/1999 S3	1999 10 21.47505	22 40 57.15	+58 45 56.0		402	C/1999 S4	1999 10 03.06534	05 00 28.76	+34 43 02.5		046
C/1999 S3	1999 10 23.13757	22 30 37.32	+58 48 31.7		642	C/1999 S4	1999 10 03.06648	05 00 28.73	+34 43 02.8		046
C/1999 S3	1999 10 23.14178	22 30 35.77	+58 48 32.1		642	C/1999 S4	1999 10 03.06760	05 00 28.71	+34 43 03.2		046
C/1999 S3	1999 10 23.14468	22 30 34.70	+58 48 32.8		642	C/1999 S4	1999 10 03.08079	05 00 28.12	+34 43 06.9	16.1 T	629
C/1999 S3	1999 10 23.44653	22 28 44.24	+58 48 35.8	12.5 T	897	C/1999 S4	1999 10 03.08262	05 00 28.05	+34 43 07.9	16.4 T	629
C/1999 S3	1999 10 23.45231	22 28 42.09	+58 48 36.0		897	C/1999 S4	1999 10 03.08840	05 00 27.86	+34 43 11.6	17.0 T	629
C/1999 S3	1999 10 23.45810	22 28 39.94	+58 48 35.9	12.6 T	897	C/1999 S4	1999 10 03.32083	05 00 18.44	+34 44 13.7	17.0 T	850
C/1999 S3	1999 10 24.52409	22 22 17.28	+58 47 44.8		355	C/1999 S4	1999 10 03.63611	05 00 05.57	+34 45 43.2	16.8 T	372
C/1999 S3	1999 10 24.52730	22 22 16.13	+58 47 44.2		355	C/1999 S4	1999 10 03.69567	05 00 03.21	+34 45 59.2	16.8 T	402
C/1999 S3	1999 10 24.53612	22 22 12.95	+58 47 44.0	13.5 T	886	C/1999 S4	1999 10 03.69692	05 00 03.13	+34 45 59.7		402
C/1999 S3	1999 10 24.54534	22 22 09.66	+58 47 43.0		886	C/1999 S4	1999 10 03.69819	05 00 03.06	+34 46 00.0		402
C/1999 S4 (LINEAR)						C/1999 S4	1999 10 03.70000	05 00 03.03	+34 46 01.0	16.3 T	2 360
C/1999 S4	1999 09 27.39766	05 03 47.42	+34 16 45.3	17.3 N	4 704	C/1999 S4	1999 10 03.70417	05 00 02.85	+34 46 01.9		2 360
C/1999 S4	1999 09 27.41147	05 03 46.99	+34 16 49.5	17.5 N	704	C/1999 S4	1999 10 03.70833	05 00 02.70	+34 46 02.9		2 360
C/1999 S4	1999 09 27.42537	05 03 46.59	+34 16 54.1	17.3 N	704	C/1999 S4	1999 10 03.72170	05 00 01.95	+34 46 07.8	16.8 T	372
						C/1999 S4	1999 10 04.59267	04 59 25.44	+34 50 09.7	16.4 T	897

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C/1999 S4	1999 10 04.67110	04 59 22.10	+34 50 32.0		897	C/1999 S4	1999 10 10.60925	04 54 32.83	+35 18 11.4	16.5 T	886
C/1999 S4	1999 10 04.79340	04 59 16.70	+34 51 08.1	16.6 T	372	C/1999 S4	1999 10 10.62106	04 54 32.07	+35 18 14.8		886
C/1999 S4	1999 10 05.68368	04 58 37.67	+34 55 16.5		372	C/1999 S4	1999 10 10.63009	04 54 31.54	+35 18 17.1		886
C/1999 S4	1999 10 05.73282	04 58 35.32	+34 55 29.9		903	C/1999 S4	1999 10 10.67340	04 54 29.28	+35 18 29.8	16.2 T	355
C/1999 S4	1999 10 05.74486	04 58 34.78	+34 55 33.4		903	C/1999 S4	1999 10 10.67903	04 54 28.97	+35 18 31.4		355
C/1999 S4	1999 10 05.74791	04 58 34.65	+34 55 34.4	16.4 T	903	C/1999 S4	1999 10 10.68738	04 54 28.49	+35 18 34.0		355
C/1999 S4	1999 10 06.84766	04 57 44.00	+35 00 41.5		108	C/1999 S4	1999 10 10.69719	04 54 27.92	+35 18 36.9		349
C/1999 S4	1999 10 06.88804	04 57 42.30	+35 00 52.9	16.6 T	167	C/1999 S4	1999 10 10.70618	04 54 27.41	+35 18 40.0	16.6 T	349
C/1999 S4	1999 10 06.91230	04 57 41.11	+35 00 59.4	16.5 T	108	C/1999 S4	1999 10 10.71030	04 54 27.20	+35 18 40.8		349
C/1999 S4	1999 10 06.91419	04 57 41.23	+35 01 00.6		167	C/1999 S4	1999 10 11.60885	04 53 37.23	+35 22 50.5	17.0 T	886
C/1999 S4	1999 10 06.99574	04 57 37.21	+35 01 22.5	17.7 T	167	C/1999 S4	1999 10 11.62067	04 53 36.46	+35 22 52.4		886
C/1999 S4	1999 10 08.01357	04 56 47.70	+35 06 08.6	15.9 T	470	C/1999 S4	1999 10 11.63282	04 53 35.81	+35 22 55.8	16.3 T	355
C/1999 S4	1999 10 08.02252	04 56 47.30	+35 06 11.5		470	C/1999 S4	1999 10 11.63579	04 53 35.63	+35 22 56.6		355
C/1999 S4	1999 10 08.13480	04 56 41.78	+35 06 43.2	16.2 T	046	C/1999 S4	1999 10 11.63863	04 53 35.51	+35 22 57.3		355
C/1999 S4	1999 10 08.13810	04 56 41.58	+35 06 43.9		046	C/1999 S4	1999 10 11.64523	04 53 34.99	+35 22 58.4		886
C/1999 S4	1999 10 08.14057	04 56 41.46	+35 06 44.4		046	C/1999 S4	1999 10 14.34549	04 50 54.07	+35 35 19.0	17.6 T	704
C/1999 S4	1999 10 08.14273	04 56 41.32	+35 06 45.3		046	C/1999 S4	1999 10 14.37007	04 50 52.49	+35 35 24.1	17.6 T	704
C/1999 S4	1999 10 08.40732	04 56 28.02	+35 07 58.4	17.5 T	704	C/1999 S4	1999 10 14.39513	04 50 50.90	+35 35 31.9	17.5 T	704
C/1999 S4	1999 10 08.42279	04 56 27.24	+35 08 02.7	17.3 T	704	C/1999 S4	1999 10 14.41645	04 50 49.47	+35 35 37.4	17.7 T	704
C/1999 S4	1999 10 08.43827	04 56 26.43	+35 08 07.3	17.4 T	704	C/1999 S4	1999 10 14.55102	04 50 41.23	+35 36 15.5	15.7 T	392
C/1999 S4	1999 10 08.45375	04 56 25.66	+35 08 11.4	17.3 T	704	C/1999 S4	1999 10 16.88853	04 48 08.49	+35 46 43.0		046
C/1999 S4	1999 10 08.46926	04 56 24.77	+35 08 16.0	17.5 T	704	C/1999 S4	1999 10 16.88970	04 48 08.37	+35 46 43.6		046
C/1999 S4	1999 10 08.57997	04 56 19.47	+35 08 46.9		411	C/1999 S4	1999 10 16.89486	04 48 08.05	+35 46 44.9		046
C/1999 S4	1999 10 08.58344	04 56 19.30	+35 08 48.3		411	C/1999 S4	1999 10 17.04035	04 47 58.01	+35 47 23.9		118
C/1999 S4	1999 10 08.60714	04 56 18.11	+35 08 54.5		411	C/1999 S4	1999 10 17.04657	04 47 57.56	+35 47 25.2	16.4 T	118
C/1999 S4	1999 10 08.61683	04 56 17.67	+35 08 56.3	16.5 T	886	C/1999 S4	1999 10 17.55764	04 47 22.43	+35 49 39.6	16.1 T	367
C/1999 S4	1999 10 08.62104	04 56 17.37	+35 08 58.4	16.4 T	897	C/1999 S4	1999 10 17.56076	04 47 22.22	+35 49 40.5		367
C/1999 S4	1999 10 08.62603	04 56 17.15	+35 08 59.8		897	C/1999 S4	1999 10 17.56389	04 47 22.02	+35 49 41.6		367
C/1999 S4	1999 10 08.63104	04 56 16.84	+35 09 01.6		886	C/1999 S4	1999 10 17.70281	04 47 12.17	+35 50 18.2		903
C/1999 S4	1999 10 08.63131	04 56 16.86	+35 09 01.6		897	C/1999 S4	1999 10 17.70592	04 47 12.12	+35 50 19.7		349
C/1999 S4	1999 10 08.65295	04 56 15.53	+35 09 04.5		886	C/1999 S4	1999 10 17.71148	04 47 11.68	+35 50 20.5		903
C/1999 S4	1999 10 08.71354	04 56 12.66	+35 09 24.4		349	C/1999 S4	1999 10 17.72390	04 47 10.80	+35 50 24.8	16.1 T	903
C/1999 S4	1999 10 08.71767	04 56 12.45	+35 09 26.3	16.7 T	372	C/1999 S4	1999 10 17.72440	04 47 10.75	+35 50 24.7	16.0 T	900
C/1999 S4	1999 10 08.73274	04 56 11.70	+35 09 30.0	16.4 T	349	C/1999 S4	1999 10 17.73451	04 47 10.01	+35 50 27.6		900
C/1999 S4	1999 10 08.74115	04 56 11.18	+35 09 32.3		349	C/1999 S4	1999 10 17.73594	04 47 09.87	+35 50 28.8	16.4 T	372
C/1999 S4	1999 10 09.06003	04 55 54.87	+35 11 02.0	16.0 N	620	C/1999 S4	1999 10 17.78115	04 47 06.80	+35 50 38.8		349
C/1999 S4	1999 10 09.07170	04 55 54.26	+35 11 04.9		620	C/1999 S4	1999 10 17.80296	04 47 05.17	+35 50 44.8	16.5 T	349
C/1999 S4	1999 10 09.08875	04 55 53.39	+35 11 10.2		620	C/1999 S4	1999 10 17.97420	04 46 53.18	+35 51 29.6	16.3 T	629
C/1999 S4	1999 10 09.09302	04 55 53.17	+35 11 10.4		468	C/1999 S4	1999 10 17.98111	04 46 52.85	+35 51 32.1	16.6 T	629
C/1999 S4	1999 10 09.10716	04 55 52.39	+35 11 13.8		468	C/1999 S4	1999 10 17.98823	04 46 52.29	+35 51 33.8	16.2 T	629
C/1999 S4	1999 10 09.64193	04 55 24.69	+35 13 44.9	16.5 T	886	C/1999 S4	1999 10 17.99609	04 46 51.84	+35 51 34.6	16.4 T	629
C/1999 S4	1999 10 09.65601	04 55 23.84	+35 13 46.4		886	C/1999 S4	1999 10 18.57335	04 46 10.84	+35 54 05.7		411
C/1999 S4	1999 10 09.67188	04 55 23.18	+35 13 52.3	16.3 T	360	C/1999 S4	1999 10 18.57818	04 46 10.50	+35 54 07.1		411
C/1999 S4	1999 10 09.67569	04 55 22.95	+35 13 53.4		360	C/1999 S4	1999 10 18.65469	04 46 05.00	+35 54 29.0	16.2 T	372
C/1999 S4	1999 10 09.73750	04 55 19.48	+35 14 11.3		372	C/1999 S4	1999 10 18.66858	04 46 03.94	+35 54 31.2		372
C/1999 S4	1999 10 09.74653	04 55 18.97	+35 14 13.8		372	C/1999 S4	1999 10 18.70226	04 46 01.46	+35 54 40.1	16.2 T	392
C/1999 S4	1999 10 09.76377	04 55 18.13	+35 14 18.1	16.4 T	900	C/1999 S4	1999 10 18.70758	04 46 01.07	+35 54 41.6		392
C/1999 S4	1999 10 09.77640	04 55 17.46	+35 14 21.6		900	C/1999 S4	1999 10 18.71233	04 46 00.68	+35 54 42.6		392
C/1999 S4	1999 10 10.54992	04 54 36.04	+35 17 55.3		411	C/1999 S4	1999 10 18.88171	04 45 48.51	+35 55 25.6	15.7 T	113
C/1999 S4	1999 10 10.55476	04 54 35.78	+35 17 56.7		411	C/1999 S4	1999 10 18.91198	04 45 46.32	+35 55 33.8	15.8 T	113
C/1999 S4	1999 10 10.55591	04 54 35.60	+35 17 57.1	16.3 T	897	C/1999 S4	1999 10 19.54896	04 44 59.84	+35 58 18.2	16.4 T	367
C/1999 S4	1999 10 10.56369	04 54 35.26	+35 17 59.2		897	C/1999 S4	1999 10 19.55243	04 44 59.55	+35 58 19.3		367
C/1999 S4	1999 10 10.57078	04 54 34.87	+35 18 01.9		897	C/1999 S4	1999 10 19.55590	04 44 59.31	+35 58 20.2		367

C/1999 S4	1999 10 19.87915	04 44 35.23	+35 59 42.2	15.8 T	113
C/1999 S4	1999 10 19.89490	04 44 34.07	+35 59 46.1	15.7 T	113
C/1999 S4	1999 10 20.12086	04 44 17.07	+36 00 45.2	15.8 T	118
C/1999 S4	1999 10 20.12303	04 44 16.84	+36 00 45.0		118
C/1999 S4	1999 10 20.12638	04 44 16.59	+36 00 45.9		118
C/1999 S4	1999 10 20.58115	04 43 42.42	+36 02 41.3		355
C/1999 S4	1999 10 20.58525	04 43 42.14	+36 02 42.3		355
C/1999 S4	1999 10 20.59385	04 43 41.49	+36 02 44.9		355
C/1999 S4	1999 10 20.61382	04 43 39.94	+36 02 49.9	16.5 T	886
C/1999 S4	1999 10 20.62565	04 43 38.94	+36 02 53.3		886
C/1999 S4	1999 10 20.67439	04 43 35.20	+36 03 05.8	16.2 T	900
C/1999 S4	1999 10 20.68125	04 43 34.61	+36 03 07.4	16.1 T	372
C/1999 S4	1999 10 20.68703	04 43 34.24	+36 03 08.9		900
C/1999 S4	1999 10 20.74277	04 43 29.92	+36 03 23.0	16.6 T	402
C/1999 S4	1999 10 20.74403	04 43 29.82	+36 03 23.5		402
C/1999 S4	1999 10 20.74529	04 43 29.71	+36 03 23.6		402
C/1999 S4	1999 10 23.81645	04 39 23.84	+36 15 55.3	15.8 T	897
C/1999 S4	1999 10 23.82068	04 39 23.55	+36 15 56.8		897
C/1999 S4	1999 10 23.83150	04 39 22.58	+36 15 59.5		897
C/1999 S4	1999 10 25.25519	04 37 21.45	+36 21 31.6	15.8 T	750
C/1999 S4	1999 10 25.26049	04 37 21.01	+36 21 32.7	16.4 T	750
C/1999 S4	1999 10 25.26840	04 37 20.30	+36 21 35.2	16.3 T	750

C/1999 T1 (McNaught-Hartley)

C/1999 T1	1999 10 07.63654	02 04 29.37	-39 08 08.0	15 T	413
C/1999 T1	1999 10 07.68168	02 04 27.46	-39 08 31.1		413
C/1999 T1	1999 10 09.27174	02 03 16.84	-39 23 01.9		719
C/1999 T1	1999 10 09.28916	02 03 16.02	-39 23 14.3		719
C/1999 T1	1999 10 09.56846	02 03 03.26	-39 25 40.4	16.9 T	423
C/1999 T1	1999 10 09.59716	02 03 02.06	-39 25 54.5	16.2 T	423
C/1999 T1	1999 10 09.62379	02 03 00.86	-39 26 12.0	16.2 T	423
C/1999 T1	1999 10 09.63444	02 03 00.36	-39 26 16.1	16.4 T	428
C/1999 T1	1999 10 09.67416	02 02 58.54	-39 26 37.2	18.3 N	428
C/1999 T1	1999 10 09.74686	02 02 55.17	-39 27 15.7	17.9 N	428
C/1999 T1	1999 10 09.75152	02 02 54.99	-39 27 18.9	18.5 N	428
C/1999 T1	1999 10 10.11201	02 02 38.79	-39 30 30.3	17.6 T	859
C/1999 T1	1999 10 10.11530	02 02 38.63	-39 30 31.9	17.7 T	859
C/1999 T1	1999 10 10.11911	02 02 38.44	-39 30 33.8	17.7 V	859
C/1999 T1	1999 10 10.12194	02 02 38.30	-39 30 35.6	17.5 V	859
C/1999 T1	1999 10 10.58554	02 02 17.00	-39 34 42.5	17.9 N	428
C/1999 T1	1999 10 10.59009	02 02 16.85	-39 34 44.8	17.6 N	428
C/1999 T1	1999 10 10.59531	02 02 16.58	-39 34 47.4	17.7 N	428
C/1999 T1	1999 10 11.19162	02 01 49.1	-39 39 57	16.4 T	807
C/1999 T1	1999 10 11.43772	02 01 37.76	-39 42 08.2	15.7 T	467
C/1999 T1	1999 10 11.44068	02 01 37.81	-39 42 10.0	15.6 T	467
C/1999 T1	1999 10 11.45107	02 01 37.16	-39 42 14.6		467
C/1999 T1	1999 10 11.47286	02 01 36.11	-39 42 27.6	16.0 T	423
C/1999 T1	1999 10 11.47404	02 01 36.13	-39 42 26.9	15.6 T	467
C/1999 T1	1999 10 11.47551	02 01 36.08	-39 42 27.3	15.7 T	467
C/1999 T1	1999 10 11.47700	02 01 36.05	-39 42 28.4	15.6 T	467
C/1999 T1	1999 10 11.54506	02 01 32.78	-39 43 04.5	16.2 T	423
C/1999 T1	1999 10 11.56470	02 01 31.89	-39 43 14.7	16.2 T	423
C/1999 T1	1999 10 11.58691	02 01 30.75	-39 43 25.7	16.3 T	423

C/1999 T1	1999 10 11.60500	02 01 29.96	-39 43 36.3	17.7 N	428
C/1999 T1	1999 10 11.60956	02 01 29.74	-39 43 38.5	17.6 N	428
C/1999 T1	1999 10 11.61424	02 01 29.55	-39 43 40.6	17.5 N	428
C/1999 T1	1999 10 11.61468	02 01 29.63	-39 43 39.1	16.3 T	423
C/1999 T1	1999 10 15.33612	01 58 32.75	-40 14 45.9	15.4 N	467
C/1999 T1	1999 10 15.34564	01 58 32.28	-40 14 50.5		467
C/1999 T1	1999 10 15.35399	01 58 31.84	-40 14 54.1	15.2 N	467
C/1999 T1	1999 10 15.45025	01 58 27.22	-40 15 41.2		413
C/1999 T1	1999 10 15.45176	01 58 27.13	-40 15 42.1		413
C/1999 T1	1999 10 15.55225	01 58 22.17	-40 16 31.1	16.3 T	423
C/1999 T1	1999 10 15.56336	01 58 21.59	-40 16 36.6	16.3 T	423
C/1999 T1	1999 10 15.57446	01 58 21.10	-40 16 42.6	16.4 T	423
C/1999 T1	1999 10 15.60778	01 58 19.42	-40 16 59.1	16.9 T	423
C/1999 T1	1999 10 16.65644	01 57 28.12	-40 25 16.4		413
C/1999 T1	1999 10 16.66540	01 57 27.67	-40 25 20.7		413
C/1999 T1	1999 10 16.66744	01 57 27.57	-40 25 21.8		413
C/1999 T1	1999 10 17.44363	01 56 49.35	-40 31 23.2	16.5 T	423
C/1999 T1	1999 10 17.45475	01 56 48.81	-40 31 28.5	16.0 T	423
C/1999 T1	1999 10 17.47260	01 56 47.91	-40 31 36.0	15.4 N	467
C/1999 T1	1999 10 17.48003	01 56 47.56	-40 31 39.8	15.4 N	467
C/1999 T1	1999 10 17.48807	01 56 47.15	-40 31 44.7	16.5 T	423
C/1999 T1	1999 10 17.48821	01 56 47.16	-40 31 43.5	15.3 N	467
C/1999 T1	1999 10 17.57222	01 56 43.02	-40 32 22.2	16.0 T	367
C/1999 T1	1999 10 17.57847	01 56 42.67	-40 32 25.6		367
C/1999 T1	1999 10 17.58472	01 56 42.39	-40 32 28.5		367
C/1999 T1	1999 10 17.63160	01 56 40.07	-40 32 51.5	15.6 T	2 360
C/1999 T1	1999 10 17.63455	01 56 39.86	-40 32 52.4		2 360
C/1999 T1	1999 10 17.63681	01 56 39.73	-40 32 53.4		2 360
C/1999 T1	1999 10 17.63993	01 56 39.47	-40 32 55.6	15.6 T	372
C/1999 T1	1999 10 17.65938	01 56 38.57	-40 33 03.7	15.6 T	372
C/1999 T1	1999 10 17.69427	01 56 36.81	-40 33 18.6		413
C/1999 T1	1999 10 17.69638	01 56 36.70	-40 33 19.6		413
C/1999 T1	1999 10 19.62014	01 55 00.42	-40 47 44.7	16.4 T	428
C/1999 T1	1999 10 19.62509	01 55 00.22	-40 47 47.4	16.5 T	428
C/1999 T1	1999 10 20.58648	01 54 11.54	-40 54 43.5	16.1 T	423
C/1999 T1	1999 10 20.61925	01 54 10.03	-40 55 00.1	16.6 T	897
C/1999 T1	1999 10 20.61980	01 54 09.80	-40 54 58.3	16.4 T	423
C/1999 T1	1999 10 20.63227	01 54 09.13	-40 55 04.7		897
C/1999 T1	1999 10 20.64801	01 54 08.47	-40 55 10.1	16.0 T	402
C/1999 T1	1999 10 20.65053	01 54 08.32	-40 55 11.4		402
C/1999 T1	1999 10 20.65179	01 54 08.33	-40 55 11.3		402
C/1999 T1	1999 10 20.70958	01 54 05.61	-40 55 34.6	15.8 T	372
C/1999 T1	1999 10 21.55223	01 53 22.47	-41 01 30.9	16.1 T	423
C/1999 T1	1999 10 21.57444	01 53 21.28	-41 01 41.0	16.2 T	423
C/1999 T1	1999 10 21.59111	01 53 20.44	-41 01 47.5	16.1 T	423
C/1999 T1	1999 10 21.62442	01 53 18.68	-41 02 01.3	16.1 T	423

C/1999 T2 (LINEAR)

C/1999 T2	1999 07 22.35704	00 32 16.49	+26 13 49.2	18.6 T	6 704
C/1999 T2	1999 07 22.36960	00 32 16.18	+26 13 54.6	19.0 T	6 704
C/1999 T2	1999 07 22.38211	00 32 15.71	+26 13 58.9	19.0 T	6 704
C/1999 T2	1999 07 22.39467	00 32 15.40	+26 14 03.6	19.0 T	6 704
C/1999 T2	1999 07 22.40732	00 32 15.04	+26 14 09.4	18.9 T	6 704

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C/1999 T2	1999 09 25.23806	23 25 00.14	+30 14 21.9	17.2 T	6 699
C/1999 T2	1999 09 25.26352	23 24 58.05	+30 14 19.5		6 699
C/1999 T2	1999 09 25.28899	23 24 55.85	+30 14 16.8		6 699
C/1999 T2	1999 10 05.25037	23 10 49.60	+29 53 37.6	18.0 T	6 704
C/1999 T2	1999 10 05.26419	23 10 48.42	+29 53 35.5	17.7 T	6 704
C/1999 T2	1999 10 05.27825	23 10 47.26	+29 53 32.7	17.7 T	6 704
C/1999 T2	1999 10 05.29227	23 10 46.05	+29 53 30.1	18.2 T	6 704
C/1999 T2	1999 10 05.30624	23 10 44.90	+29 53 27.6	17.9 T	6 704
C/1999 T2	1999 10 14.15980	22 58 44.30	+29 22 01.4	17.7 T	7 704
C/1999 T2	1999 10 14.17548	22 58 43.11	+29 21 56.7	17.7 T	7 704
C/1999 T2	1999 10 14.19108	22 58 41.85	+29 21 52.8	17.7 T	7 704
C/1999 T2	1999 10 14.22223	22 58 39.35	+29 21 45.2	18.2 T	7 704
C/1999 T2	1999 10 14.87973	22 57 47.85	+29 19 00.9		046
C/1999 T2	1999 10 14.88149	22 57 47.68	+29 19 00.4		046
C/1999 T2	1999 10 14.88353	22 57 47.53	+29 18 59.7	16.5 T	046
C/1999 T2	1999 10 14.88503	22 57 47.41	+29 18 59.7		046
C/1999 T2	1999 10 14.91549	22 57 45.04	+29 18 50.9		611
C/1999 T2	1999 10 15.05142	22 57 34.53	+29 18 17.5	15.4 T	784
C/1999 T2	1999 10 15.06459	22 57 33.46	+29 18 14.5	16.7 T	784
C/1999 T2	1999 10 15.08733	22 57 31.63	+29 18 08.2	16.8 T	784
C/1999 T2	1999 10 15.09238	22 57 31.27	+29 18 07.2	17.0 T	850
C/1999 T2	1999 10 15.10362	22 57 30.37	+29 18 03.6	16.1 T	784
C/1999 T2	1999 10 15.12156	22 57 28.96	+29 18 00.2	16.7 T	750
C/1999 T2	1999 10 15.12560	22 57 28.77	+29 17 58.2	16.7 T	750
C/1999 T2	1999 10 15.12608	22 57 28.72	+29 17 58.5	16.9 T	850
C/1999 T2	1999 10 15.13992	22 57 27.45	+29 17 54.8	16.1 T	784
C/1999 T2	1999 10 15.14189	22 57 27.44	+29 17 54.1	16.7 T	750
C/1999 T2	1999 10 15.15493	22 57 26.44	+29 17 50.1	16.8 T	750
C/1999 T2	1999 10 15.20891	22 57 22.18	+29 17 37.4		711
C/1999 T2	1999 10 15.21378	22 57 21.77	+29 17 36.0		711
C/1999 T2	1999 10 15.21424	22 57 21.67	+29 17 35.6	16.9 T	850
C/1999 T2	1999 10 15.21865	22 57 21.43	+29 17 34.5		711
C/1999 T2	1999 10 15.26476	22 57 17.81	+29 17 22.2	17.0 T	850
C/1999 T2	1999 10 15.59212	22 56 52.33	+29 16 00.8		413
C/1999 T2	1999 10 15.59388	22 56 52.19	+29 16 00.4		413
C/1999 T2	1999 10 15.73335	22 56 41.58	+29 15 21.8		118
C/1999 T2	1999 10 15.73488	22 56 41.48	+29 15 21.4	16.6 T	118
C/1999 T2	1999 10 15.73534	22 56 41.43	+29 15 21.5		557
C/1999 T2	1999 10 15.73708	22 56 41.30	+29 15 21.0		557
C/1999 T2	1999 10 15.73779	22 56 41.25	+29 15 20.6		118
C/1999 T2	1999 10 15.73883	22 56 41.15	+29 15 20.5		557
C/1999 T2	1999 10 15.78305	22 56 37.78	+29 15 09.2	16.9 T	946
C/1999 T2	1999 10 15.78406	22 56 37.64	+29 15 09.0		046
C/1999 T2	1999 10 15.78531	22 56 37.56	+29 15 08.7	16.6 T	946
C/1999 T2	1999 10 15.79040	22 56 37.24	+29 15 08.0		946
C/1999 T2	1999 10 15.79104	22 56 37.10	+29 15 07.4		046
C/1999 T2	1999 10 15.80174	22 56 36.29	+29 15 04.1	16.5 T	958
C/1999 T2	1999 10 15.82763	22 56 34.34	+29 14 58.1	16.5 T	958
C/1999 T2	1999 10 15.87762	22 56 30.46	+29 14 45.3	16.4 T	958
C/1999 T2	1999 10 16.06666	22 56 15.75	+29 13 58.1		809
C/1999 T2	1999 10 16.08356	22 56 14.43	+29 13 53.8		809
C/1999 T2	1999 10 16.12196	22 56 11.56	+29 13 40.8		658
C/1999 T2	1999 10 16.12774	22 56 11.12	+29 13 39.5		658

C/1999 T2	1999 10 16.13263	22 56 10.74	+29 13 38.0		658
C/1999 T2	1999 10 16.17391	22 56 07.54	+29 13 27.5	16.9 T	714
C/1999 T2	1999 10 16.18747	22 56 06.51	+29 13 24.3	16.8 T	714
C/1999 T2	1999 10 16.21485	22 56 04.36	+29 13 17.0		711
C/1999 T2	1999 10 16.21967	22 56 03.95	+29 13 15.4		711
C/1999 T2	1999 10 16.22478	22 56 03.52	+29 13 14.9		711
C/1999 T2	1999 10 17.48819	22 54 27.02	+29 07 38.6	16.7 T	360
C/1999 T2	1999 10 17.49306	22 54 26.63	+29 07 37.3		360
C/1999 T2	1999 10 17.49583	22 54 26.41	+29 07 36.4		360
C/1999 T2	1999 10 17.53333	22 54 23.61	+29 07 26.6	16.4 T	367
C/1999 T2	1999 10 17.53681	22 54 23.30	+29 07 26.0		367
C/1999 T2	1999 10 17.54028	22 54 23.05	+29 07 25.0		367
C/1999 T2	1999 10 17.56375	22 54 21.27	+29 07 18.0		900
C/1999 T2	1999 10 17.57639	22 54 20.28	+29 07 14.7	15.7 T	900
C/1999 T2	1999 10 17.58559	22 54 19.66	+29 07 12.9		372
C/1999 T2	1999 10 17.60087	22 54 18.47	+29 07 08.6		372
C/1999 T2	1999 10 17.61752	22 54 17.14	+29 07 03.2		903
C/1999 T2	1999 10 17.63319	22 54 15.96	+29 06 59.2		903
C/1999 T2	1999 10 17.64329	22 54 15.17	+29 06 55.5	16.3 T	903
C/1999 T2	1999 10 18.28494	22 53 26.85	+29 04 00.8	16.7 T	714
C/1999 T2	1999 10 18.29462	22 53 26.00	+29 03 57.9	17.0 T	714
C/1999 T2	1999 10 18.63542	22 53 00.40	+29 02 24.6	16.5 T	372
C/1999 T2	1999 10 18.64444	22 52 59.73	+29 02 22.4	16.5 T	372
C/1999 T2	1999 10 18.65451	22 52 58.84	+29 02 18.5		349
C/1999 T2	1999 10 18.66258	22 52 58.32	+29 02 16.9	16.1 T	349
C/1999 T2	1999 10 19.52431	22 51 54.17	+28 58 16.4	16.2 T	367
C/1999 T2	1999 10 19.52778	22 51 53.94	+28 58 15.4		367
C/1999 T2	1999 10 19.53124	22 51 53.70	+28 58 14.2		367
C/1999 T2	1999 10 19.76902	22 51 36.17	+28 57 07.1	16.1 T	118
C/1999 T2	1999 10 19.77455	22 51 35.72	+28 57 05.9		118
C/1999 T2	1999 10 20.44860	22 50 46.12	+28 53 53.6	16.1 T	402
C/1999 T2	1999 10 20.44986	22 50 46.04	+28 53 53.6		402
C/1999 T2	1999 10 20.45112	22 50 45.94	+28 53 53.2		402
C/1999 T2	1999 10 20.46672	22 50 44.85	+28 53 48.1		355
C/1999 T2	1999 10 20.46948	22 50 44.65	+28 53 48.0		355
C/1999 T2	1999 10 20.47519	22 50 44.24	+28 53 46.6		355
C/1999 T2	1999 10 20.51570	22 50 41.17	+28 53 35.5	16.1 T	900
C/1999 T2	1999 10 20.52841	22 50 40.24	+28 53 31.2		900
C/1999 T2	1999 10 20.55598	22 50 38.20	+28 53 22.4	15.9 T	897
C/1999 T2	1999 10 20.56271	22 50 37.69	+28 53 21.1		897
C/1999 T2	1999 10 20.58058	22 50 36.36	+28 53 15.1		897
C/1999 T2	1999 10 20.63803	22 50 32.16	+28 52 58.7		349
C/1999 T2	1999 10 20.65075	22 50 31.20	+28 52 54.2	16.4 T	349
C/1999 T2	1999 10 21.55641	22 49 25.42	+28 48 33.1	15.9 T	402
C/1999 T2	1999 10 21.55767	22 49 25.34	+28 48 32.6		402
C/1999 T2	1999 10 21.55894	22 49 25.25	+28 48 32.6		402
C/1999 T2	1999 10 21.56009	22 49 25.26	+28 48 33.3	15.9 T	903
C/1999 T2	1999 10 21.56427	22 49 24.84	+28 48 31.0		903
C/1999 T2	1999 10 21.57963	22 49 23.75	+28 48 25.6		903

C/1999 T3 (LINEAR)

C/1999 T3	1999 10 03.33731	03 09 03.31	+22 06 48.3	18.3 N	704
C/1999 T3	1999 10 03.34768	03 09 02.93	+22 06 43.0	18.4 N	704

C/1999 T3	1999 10 03.35805	03 09 02.58	+22 06 39.4	19.0 N	704
C/1999 T3	1999 10 03.36847	03 09 02.13	+22 06 33.1	18.9 N	704
C/1999 T3	1999 10 03.37888	03 09 01.75	+22 06 27.9	18.1 N	704
C/1999 T3	1999 10 05.31838	03 07 50.49	+21 50 21.8	18.5 N	704
C/1999 T3	1999 10 05.34553	03 07 49.52	+21 50 08.4	18.5 N	704
C/1999 T3	1999 10 05.35912	03 07 48.98	+21 50 01.6	18.6 N	704
C/1999 T3	1999 10 05.37318	03 07 48.39	+21 49 54.9	18.3 N	704
C/1999 T3	1999 10 07.41421	03 06 30.74	+21 32 33.6	18.2 N	704
C/1999 T3	1999 10 07.42461	03 06 30.39	+21 32 27.3	18.1 N	704
C/1999 T3	1999 10 07.43499	03 06 29.95	+21 32 22.3	18.1 N	704
C/1999 T3	1999 10 07.44536	03 06 29.57	+21 32 16.0	19.1 N	704
C/1999 T3	1999 10 07.45573	03 06 29.14	+21 32 11.0	19.0 N	704
C/1999 T3	1999 10 12.27389	03 03 15.91	+20 49 35.9	18.3 N	704
C/1999 T3	1999 10 12.28758	03 03 15.37	+20 49 28.5	18.2 N	704
C/1999 T3	1999 10 12.30122	03 03 14.78	+20 49 20.8	18.4 N	704
C/1999 T3	1999 10 12.31483	03 03 14.18	+20 49 13.5	18.4 N	704
C/1999 T3	1999 10 12.32901	03 03 13.72	+20 49 05.0	18.7 N	704
C/1999 T3	1999 10 15.40588	03 01 03.52	+20 20 45.8	18.2 N	704
C/1999 T3	1999 10 15.42135	03 01 02.85	+20 20 37.3	18.2 N	704
C/1999 T3	1999 10 15.43668	03 01 02.20	+20 20 28.3	18.0 N	704
C/1999 T3	1999 10 15.45202	03 01 01.52	+20 20 20.2	18.6 N	704
C/1999 T3	1999 10 15.46738	03 01 00.85	+20 20 10.8	18.5 N	704
C/1999 T3	1999 10 18.04160	02 59 08.90	+19 55 52.4	18.5 T	012
C/1999 T3	1999 10 18.06824	02 59 07.46	+19 55 33.9		012
C/1999 T3	1999 10 21.25555	02 56 44.76	+19 24 38.2	18.0 N	704
C/1999 T3	1999 10 21.27100	02 56 44.01	+19 24 29.8	18.0 N	704
C/1999 T3	1999 10 21.28652	02 56 43.32	+19 24 20.9	17.9 N	704
C/1999 T3	1999 10 21.30192	02 56 42.62	+19 24 11.6	17.9 N	704
C/1999 T3	1999 10 21.31735	02 56 41.88	+19 24 02.9	18.3 N	704
C/1999 T3	1999 10 24.38021	02 54 21.21	+18 53 35.4	17.8 T	850
C/1999 T3	1999 10 24.39361	02 54 20.54	+18 53 27.4		850
C/1999 T3	1999 10 24.88090	02 53 58.13	+18 48 32.9	17.0 T	046
C/1999 T3	1999 10 24.88203	02 53 58.07	+18 48 33.2		046
C/1999 T3	1999 10 24.88313	02 53 57.96	+18 48 30.6		046
C/1999 T3	1999 10 24.88693	02 53 57.82	+18 48 30.9		046
C/1999 T3	1999 10 24.89034	02 53 57.71	+18 48 26.6		046
C/1999 T3	1999 10 24.89153	02 53 57.49	+18 48 27.0		046
C/1999 T3	1999 10 25.29965	02 53 38.62	+18 44 18.5	8	850
C/1999 T3	1999 10 25.32199	02 53 37.61	+18 44 05.3	9	850

C/1999 U1 (Ferris)

C/1999 U1	1999 10 18.38023	04 38 39.47	+08 25 00.4	17.3 T	699
C/1999 U1	1999 10 18.40064	04 38 38.50	+08 25 04.1		699
C/1999 U1	1999 10 18.42104	04 38 37.37	+08 25 06.7		699
C/1999 U1	1999 10 18.93387	04 38 11.62	+08 26 35.8		557
C/1999 U1	1999 10 18.94006	04 38 11.30	+08 26 36.4		557
C/1999 U1	1999 10 18.96318	04 38 10.13	+08 26 40.8	17.2 T	046
C/1999 U1	1999 10 18.96468	04 38 10.09	+08 26 41.2		046
C/1999 U1	1999 10 18.96627	04 38 09.98	+08 26 42.1		046
C/1999 U1	1999 10 18.96826	04 38 09.84	+08 26 42.6		046
C/1999 U1	1999 10 18.96992	04 38 09.81	+08 26 42.4		046
C/1999 U1	1999 10 19.25435	04 37 55.44	+08 27 31.9	18.8 N	853
C/1999 U1	1999 10 19.26128	04 37 55.08	+08 27 32.7	18.7 N	853

C/1999 U1	1999 10 19.26420	04 37 54.91	+08 27 33.1	19.0 N	853
C/1999 U1	1999 10 19.32687	04 37 51.71	+08 27 43.3	18.2 T	704
C/1999 U1	1999 10 19.34086	04 37 50.97	+08 27 46.1	18.7 T	704
C/1999 U1	1999 10 19.35472	04 37 50.21	+08 27 48.1	18.2 T	704
C/1999 U1	1999 10 19.36862	04 37 49.53	+08 27 50.7	18.2 T	704
C/1999 U1	1999 10 19.38251	04 37 48.79	+08 27 53.2	18.2 T	704
C/1999 U1	1999 10 19.49589	04 37 42.99	+08 28 12.8		670
C/1999 U1	1999 10 19.51232	04 37 42.12	+08 28 16.3		670
C/1999 U1	1999 10 19.53010	04 37 41.20	+08 28 18.9		670
C/1999 U1	1999 10 19.56944	04 37 39.41	+08 28 25.8	17.1 T	367
C/1999 U1	1999 10 19.57361	04 37 39.19	+08 28 26.2		367
C/1999 U1	1999 10 19.57778	04 37 38.98	+08 28 27.0		367
C/1999 U1	1999 10 20.09112	04 37 12.51	+08 29 55.9		118
C/1999 U1	1999 10 20.09411	04 37 12.38	+08 29 56.6	16.9 T	118
C/1999 U1	1999 10 20.09735	04 37 12.22	+08 29 57.1		118
C/1999 U1	1999 10 20.38719	04 36 57.31	+08 30 47.6	17.3 T	699
C/1999 U1	1999 10 20.41240	04 36 56.01	+08 30 51.5		699
C/1999 U1	1999 10 20.43345	04 36 54.88	+08 30 54.4		699
C/1999 U1	1999 10 20.58617	04 36 47.09	+08 31 21.3		897
C/1999 U1	1999 10 20.59365	04 36 46.73	+08 31 23.8		897
C/1999 U1	1999 10 20.60439	04 36 46.13	+08 31 26.5	17.3 T	897
C/1999 U1	1999 10 20.62182	04 36 45.24	+08 31 28.6		355
C/1999 U1	1999 10 20.62893	04 36 44.91	+08 31 29.6		355
C/1999 U1	1999 10 20.64207	04 36 44.21	+08 31 32.5		355
C/1999 U1	1999 10 20.69045	04 36 41.59	+08 31 40.2	16.6 T	360
C/1999 U1	1999 10 20.69392	04 36 41.41	+08 31 41.1		360
C/1999 U1	1999 10 20.69740	04 36 41.24	+08 31 41.5		360
C/1999 U1	1999 10 20.72134	04 36 40.01	+08 31 45.4		900
C/1999 U1	1999 10 20.72882	04 36 39.64	+08 31 47.2	17.5 T	372
C/1999 U1	1999 10 20.72923	04 36 39.59	+08 31 47.3	17.0 T	402
C/1999 U1	1999 10 20.73049	04 36 39.50	+08 31 46.8		402
C/1999 U1	1999 10 20.73175	04 36 39.42	+08 31 46.8		402
C/1999 U1	1999 10 20.73311	04 36 39.33	+08 31 47.6	16.9 T	900
C/1999 U1	1999 10 20.73993	04 36 39.07	+08 31 49.0	17.5 T	372
C/1999 U1	1999 10 21.38570	04 36 05.27	+08 33 41.4	18.0 T	850
C/1999 U1	1999 10 21.42639	04 36 03.06	+08 33 48.5	18.3 T	850
C/1999 U1	1999 10 21.44410	04 36 02.16	+08 33 50.7	17.9 T	850
C/1999 U1	1999 10 21.57892	04 35 55.19	+08 34 14.7		411
C/1999 U1	1999 10 21.58295	04 35 55.01	+08 34 16.5	17.0 T	402
C/1999 U1	1999 10 21.58374	04 35 54.88	+08 34 16.2		411
C/1999 U1	1999 10 21.58674	04 35 54.80	+08 34 16.3		402
C/1999 U1	1999 10 21.58926	04 35 54.69	+08 34 17.0		402
C/1999 U1	1999 10 21.59418	04 35 54.37	+08 34 17.7		411
C/1999 U1	1999 10 21.60715	04 35 53.74	+08 34 21.1		903
C/1999 U1	1999 10 21.61529	04 35 53.25	+08 34 20.5		903
C/1999 U1	1999 10 21.62249	04 35 52.95	+08 34 23.2	16.6 T	903
C/1999 U1	1999 10 22.30382	04 35 16.89	+08 36 22.8	17.5 T	850
C/1999 U1	1999 10 22.34514	04 35 14.61	+08 36 29.0	17.5 T	850
C/1999 U1	1999 10 22.38889	04 35 12.22	+08 36 37.6	17.4 T	850
C/1999 U1	1999 10 22.68248	04 34 56.62	+08 37 28.9		888
C/1999 U1	1999 10 22.69010	04 34 56.21	+08 37 29.8		888
C/1999 U1	1999 10 22.70185	04 34 55.57	+08 37 32.4		888

1999 OCT. 26

M.P.C. 36173

	2P/Encke				
2P	1999 10 09.57170	23 01 32.15	−00 23 13.2	19.7 T	360
2P	1999 10 09.57587	23 01 31.91	−00 23 14.9		360
2P	1999 10 09.58056	23 01 31.63	−00 23 16.7		360

	10P/Tempel 2				
10P	1999 04 14.68786	17 20 08.20	−06 20 00.1		897
10P	1999 04 14.69907	17 20 08.75	−06 19 57.4	18.7 T	897
10P	1999 07 26.98588	17 02 04.83	−16 19 57.6		834
10P	1999 07 27.08197	17 02 06.98	−16 21 53.0		834
10P	1999 07 30.98462	17 04 18.96	−17 40 07.5		834
10P	1999 08 01.95956	17 05 44.01	−18 19 44.1		834
10P	1999 08 01.98156	17 05 44.90	−18 20 10.3		834
10P	1999 08 04.00154	17 07 24.78	−19 00 33.4		834
10P	1999 08 04.02825	17 07 25.97	−19 01 05.0		834
10P	1999 08 12.95109	17 17 25.04	−21 55 17.1		834
10P	1999 08 12.97827	17 17 27.13	−21 55 47.4		834
10P	1999 08 16.02069	17 21 49.62	−22 52 45.6		834
10P	1999 08 16.06397	17 21 53.34	−22 53 33.3		834
10P	1999 08 22.96228	17 33 35.32	−24 55 52.1		2 834
10P	1999 08 22.99843	17 33 39.20	−24 56 28.9		2 834
10P	1999 08 27.96148	17 43 30.13	−26 17 12.8		2 834
10P	1999 09 13.54931	18 23 54.22	−29 49 44.3	13.2 T	372
10P	1999 09 27.38924	19 04 23.42	−31 24 55.8		897
10P	1999 09 27.39619	19 04 24.70	−31 24 57.8		897
10P	1999 09 27.40650	19 04 26.40	−31 24 58.6	12.5 T	897
10P	1999 09 27.43559	19 04 31.71	−31 25 05.9	13.0 T	372
10P	1999 10 09.45837	19 42 22.03	−31 40 54.7	12.6 T	900
10P	1999 10 09.47131	19 42 24.40	−31 40 53.1		900
10P	1999 10 11.40204	19 48 35.41	−31 37 43.9		349
10P	1999 10 11.41924	19 48 38.73	−31 37 41.5		349
10P	1999 10 11.42141	19 48 39.15	−31 37 41.3	13.4 T	349
10P	1999 10 20.46008	20 17 36.13	−31 02 58.0		900
10P	1999 10 20.47149	20 17 38.30	−31 02 53.1	13.4 T	900
10P	1999 10 21.42945	20 20 41.65	−30 57 24.8	13.0 T	402
10P	1999 10 21.43069	20 20 41.88	−30 57 24.9		402
10P	1999 10 21.43196	20 20 42.13	−30 57 24.7		402

	21P/Giacobini-Zinner				
21P	1999 02 06.46124	02 37 19.73	−17 49 40.0	12.8 T	897
21P	1999 02 06.47197	02 37 21.85	−17 49 30.8		897
21P	1999 02 16.47329	03 08 55.97	−15 24 58.2		897
21P	1999 02 16.47892	03 08 56.86	−15 24 53.4		897
21P	1999 03 16.43164	04 25 01.62	−09 09 45.4	14.7 T	897
21P	1999 03 16.43738	04 25 02.70	−09 09 40.5		897
21P	1999 03 22.43296	04 39 41.16	−08 01 06.5	14.0 T	897
21P	1999 03 22.44978	04 39 43.58	−08 00 55.6		897
21P	1999 04 07.44831	05 16 41.90	−05 24 41.0		897

	29P/Schwassmann-Wachmann 1				
29P	1999 02 11.84752	15 18 59.43	−28 05 06.1	17.9 T	897
29P	1999 02 11.85633	15 18 59.52	−28 05 09.1		897
29P	1999 02 11.86225	15 18 59.53	−28 05 07.7		897
29P	1999 03 22.66667	15 21 09.53	−29 13 38.1		897

29P	1999 03 22.67547	15 21 09.52	−29 13 38.8	16.4 T	897
29P	1999 04 07.65145	15 17 00.88	−29 20 16.0		897
29P	1999 04 07.66368	15 17 00.60	−29 20 13.2	14.7 T	897
29P	1999 04 14.63306	15 14 25.91	−29 18 22.5		897
29P	1999 04 14.64074	15 14 25.54	−29 18 19.7	14.4 T	897
29P	1999 04 14.64832	15 14 25.35	−29 18 20.6		897

	37P/Forbes				
37P	1999 07 24.74891	00 42 54.69	+05 14 06.0	13.9 T	897
37P	1999 07 24.75694	00 42 54.97	+05 14 11.0		897
37P	1999 09 06.95889	00 32 01.69	+09 27 26.4	15.8 T	071
37P	1999 09 06.96056	00 32 01.56	+09 27 26.8	15.7 T	071
37P	1999 09 06.96603	00 32 01.20	+09 27 26.3	15.8 T	071
37P	1999 09 06.96663	00 32 01.18	+09 27 26.4	15.8 T	071
37P	1999 09 29.34480	00 08 07.82	+08 42 27.9	14.3 T	703
37P	1999 09 29.35726	00 08 07.08	+08 42 24.5	14.4 T	703
37P	1999 09 29.36961	00 08 06.30	+08 42 21.3	14.4 T	703
37P	1999 09 29.38197	00 08 05.67	+08 42 21.5	14.4 T	703
37P	1999 09 29.63855	00 07 50.40	+08 41 29.1		867
37P	1999 09 29.64237	00 07 50.15	+08 41 28.6		867
37P	1999 09 29.64828	00 07 49.78	+08 41 27.2		867
37P	1999 10 03.58785	00 04 00.78	+08 27 31.4	14.9 T	2 360
37P	1999 10 03.59340	00 04 00.47	+08 27 30.0		2 360
37P	1999 10 03.59896	00 04 00.11	+08 27 29.2		2 360
37P	1999 10 04.23663	00 03 24.96	+08 25 10.4	17.6 T	704
37P	1999 10 04.25001	00 03 24.06	+08 25 07.6	18.0 T	704
37P	1999 10 04.26336	00 03 23.29	+08 25 05.6	17.6 T	704
37P	1999 10 04.27674	00 03 22.52	+08 25 02.0	17.7 T	704
37P	1999 10 04.29028	00 03 21.77	+08 24 58.8	17.7 T	704
37P	1999 10 04.59375	00 03 05.19	+08 23 53.2	15.0 T	360
37P	1999 10 04.59792	00 03 04.96	+08 23 52.2		360
37P	1999 10 04.60313	00 03 04.67	+08 23 51.2		360
37P	1999 10 07.30629	00 00 42.18	+08 14 02.1	18.0 T	704
37P	1999 10 07.31694	00 00 41.56	+08 14 00.2	18.3 T	704
37P	1999 10 07.32739	00 00 41.01	+08 13 58.7	18.5 T	704
37P	1999 10 07.33813	00 00 40.34	+08 13 56.2	18.6 T	704
37P	1999 10 07.34864	00 00 39.87	+08 13 53.3	18.3 T	704
37P	1999 10 09.18028	23 59 09.83	+08 07 15.1	19.1 T	750
37P	1999 10 09.19509	23 59 09.04	+08 07 11.4	17.7 T	750
37P	1999 10 09.21032	23 59 08.28	+08 07 08.4	17.3 T	750
37P	1999 10 09.59475	23 58 49.96	+08 05 47.8		900
37P	1999 10 09.60738	23 58 49.30	+08 05 45.5	16.2 T	900
37P	1999 10 10.18070	23 58 22.52	+08 03 41.4	17.8 T	750
37P	1999 10 10.18979	23 58 22.29	+08 03 39.2	16.4 T	750
37P	1999 10 10.19568	23 58 22.06	+08 03 37.8	18.5 T	750
37P	1999 10 19.12937	23 52 37.38	+07 34 05.4	19.1 T	704
37P	1999 10 19.15667	23 52 36.36	+07 33 59.0	19.5 T	704
37P	1999 10 19.17030	23 52 35.84	+07 33 56.1	19.5 T	704
37P	1999 10 19.18397	23 52 35.37	+07 33 54.3	19.1 T	704
37P	1999 10 19.81444	23 52 16.50	+07 32 01.8		046
37P	1999 10 19.81568	23 52 16.44	+07 32 00.7		046
37P	1999 10 19.81714	23 52 16.42	+07 32 01.5		046
37P	1999 10 19.81860	23 52 16.38	+07 32 00.7		046

37P	1999 10 20.54673	23 51 55.36	+07 29 57.1	14.9 T	900
37P	1999 10 20.55993	23 51 55.01	+07 29 55.0		900
50P/Arend					
50P	1999 10 03.72865	07 06 37.82	+43 46 20.5	16.9 T	2 360
50P	1999 10 03.73264	07 06 38.38	+43 46 21.9		2 360
50P	1999 10 07.42777	07 14 45.91	+44 08 16.1	16.4 T	703
50P	1999 10 07.44013	07 14 47.06	+44 08 19.8	15.8 T	703
50P	1999 10 07.45249	07 14 48.69	+44 08 25.3	15.8 T	703
50P	1999 10 20.76424	07 41 08.95	+45 24 22.3	17.0 T	360
50P	1999 10 20.76806	07 41 09.37	+45 24 23.4		360
52P/Harrington-Abell					
52P	1999 02 09.57377	07 04 29.11	+34 18 11.1		897
52P	1999 02 09.58482	07 04 29.24	+34 18 01.9		897
52P	1999 03 16.51338	07 35 27.92	+26 17 18.6	12.7 T	897
52P	1999 03 16.53775	07 35 29.85	+26 16 58.5		897
52P	1999 03 22.60902	07 44 14.49	+24 57 41.5	13.3 T	897
52P	1999 03 22.62047	07 44 15.53	+24 57 32.3		897
52P	1999 04 07.54663	08 09 50.03	+21 34 53.1	13.9 T	897
52P	1999 04 07.55811	08 09 51.15	+21 34 44.8		897
59P/Kearns-Kwee					
59P	1999 10 12.25370	07 51 55.41	+27 52 17.8	16.7 T	954
59P	1999 10 12.25773	07 51 55.69	+27 52 17.1	16.7 T	954
59P	1999 10 12.26174	07 51 56.06	+27 52 16.1	16.7 T	954
59P	1999 10 13.42430	07 53 41.90	+27 47 16.8	18.7 T	704
59P	1999 10 13.45799	07 53 44.86	+27 47 10.0	18.5 T	704
59P	1999 10 13.47526	07 53 46.37	+27 47 04.6	18.4 T	704
59P	1999 10 13.49139	07 53 47.87	+27 47 00.6	18.5 T	704
59P	1999 10 20.79410	08 04 16.29	+27 15 22.5	16.7 T	360
59P	1999 10 20.79792	08 04 16.66	+27 15 21.4		360
60P/Tsuchinshan 2					
60P	1999 02 05.55380	06 17 14.23	+21 41 05.6	17.3 T	897
74P/Smirnova-Chernykh					
74P	1999 10 08.06934	07 25 04.76	+24 01 37.8	17.0 T	159
74P	1999 10 08.07218	07 25 04.88	+24 01 37.5	17.1 T	159
74P	1999 10 08.07598	07 25 04.98	+24 01 37.3	17.0 T	159
74P	1999 10 08.07958	07 25 05.26	+24 01 37.7	17.6 T	159
74P	1999 10 08.46464	07 25 20.57	+24 01 39.8	17.2 T	703
74P	1999 10 08.47699	07 25 21.01	+24 01 40.3	16.8 T	703
74P	1999 10 08.48934	07 25 21.51	+24 01 39.7	16.7 T	703
74P	1999 10 08.50172	07 25 22.03	+24 01 39.8	16.9 T	703
74P	1999 10 12.42544	07 27 53.04	+24 02 02.2	18.7 T	704
74P	1999 10 12.43904	07 27 53.54	+24 02 01.9	19.2 T	704
74P	1999 10 12.45264	07 27 54.08	+24 02 02.5	18.7 T	704
74P	1999 10 12.46636	07 27 54.53	+24 02 03.7	18.4 T	704
74P	1999 10 20.80469	07 32 30.81	+24 04 36.8	17.3 T	360
74P	1999 10 20.80868	07 32 30.92	+24 04 36.7		360
74P	1999 10 22.42551	07 33 17.16	+24 05 24.8	18.9 T	704
74P	1999 10 22.43841	07 33 17.49	+24 05 24.6	18.6 T	704
74P	1999 10 22.45118	07 33 17.93	+24 05 25.1	19.3 T	704
74P	1999 10 22.46401	07 33 18.18	+24 05 25.7	19.7 T	704
74P	1999 10 22.47690	07 33 18.62	+24 05 27.6	18.3 T	704

84P/Giclas					
84P	1999 10 03.71476	05 09 40.24	+13 01 43.7	16.6 T	2 360
84P	1999 10 03.71892	05 09 40.41	+13 01 43.5		2 360
84P	1999 10 05.77497	05 11 43.41	+13 01 23.4	17.0 T	903
84P	1999 10 05.77878	05 11 43.53	+13 01 22.5		903
84P	1999 10 05.78656	05 11 43.96	+13 01 22.6		903
84P	1999 10 10.36289	05 15 47.22	+13 00 22.5	18.1 T	704
84P	1999 10 10.37849	05 15 47.98	+13 00 22.5	18.7 T	704
84P	1999 10 10.39449	05 15 48.68	+13 00 21.9	18.1 T	704
84P	1999 10 10.40992	05 15 49.37	+13 00 21.7	17.5 T	704
84P	1999 10 18.05811	05 20 54.14	+12 58 39.6	16.7 T	3 629
84P	1999 10 20.33079	05 21 59.80	+12 58 23.2	18.5 T	704
84P	1999 10 20.34605	05 22 00.19	+12 58 23.5	18.5 T	704
84P	1999 10 20.37673	05 22 00.96	+12 58 22.6	19.0 T	704
84P	1999 10 20.39203	05 22 01.35	+12 58 24.1	18.0 T	704
84P	1999 10 20.74184	05 22 10.24	+12 58 21.8	16.4 T	360
84P	1999 10 20.74583	05 22 10.32	+12 58 21.5		360
84P	1999 10 20.77920	05 22 11.03	+12 58 21.6	16.7 T	402
84P	1999 10 20.78046	05 22 11.04	+12 58 21.5		402
84P	1999 10 20.78172	05 22 11.09	+12 58 21.6		402
84P	1999 10 23.83611	05 23 16.90	+12 58 18.6		897
84P	1999 10 23.83869	05 23 16.94	+12 58 18.8	16.4 T	897
84P	1999 10 24.80978	05 23 33.56	+12 58 23.3		897
84P	1999 10 24.81419	05 23 33.61	+12 58 23.5	16.4 T	897
88P/Howell					
88P	1999 09 13.49177	05 03 59.07	+22 56 22.0		695
88P	1999 09 13.49385	05 03 59.13	+22 56 21.9		695
88P	1999 09 13.49569	05 03 59.17	+22 56 22.1	19.2 T	695
88P	1999 10 09.80141	05 06 02.85	+23 19 26.6	19.3 T	867
88P	1999 10 09.80766	05 06 02.68	+23 19 26.3		867
88P	1999 10 09.81391	05 06 02.67	+23 19 27.2		867
88P	1999 10 18.73058	05 03 03.36	+23 23 02.6	19.3 T	867
88P	1999 10 18.76183	05 03 02.43	+23 23 02.2		867
88P	1999 10 18.76912	05 03 02.24	+23 23 02.0		867
93P/Lovas 1					
93P	1999 02 16.58238	06 18 52.56	+36 29 51.5	15.8 T	897
93P	1999 02 16.59855	06 18 53.26	+36 29 40.3		897
93P	1999 03 16.57570	06 49 19.20	+31 45 26.0	16.3 T	897
93P	1999 03 16.58167	06 49 19.75	+31 45 22.2		897
106P/Schuster					
106P	1999 10 06.35848	00 40 45.20	-31 06 13.3	15.8 T	704
106P	1999 10 06.37183	00 40 44.25	-31 06 03.8	16.5 T	704
106P	1999 10 06.38503	00 40 43.21	-31 05 56.2	16.9 T	704
106P	1999 10 06.39834	00 40 42.24	-31 05 48.3	17.0 T	704
106P	1999 10 09.62612	00 36 59.82	-30 28 20.5		900
106P	1999 10 09.63916	00 36 58.90	-30 28 10.6	15.0 T	900
106P	1999 10 17.57222	00 28 15.68	-28 23 56.5	13.9 T	360
106P	1999 10 17.57448	00 28 15.53	-28 23 54.0		360
106P	1999 10 20.54352	00 25 18.78	-27 25 54.2		897
106P	1999 10 20.55057	00 25 18.34	-27 25 45.5	14.8 T	897
106P	1999 10 20.59407	00 25 15.57	-27 24 52.4		349

106P	1999 10 20.59758	00 25 15.37	-27 24 47.8	14.1 T	349
106P	1999 10 20.59968	00 25 15.24	-27 24 45.6		349

114P/Wiseman-Skiff

114P	1999 09 28.12908	02 28 53.42	+45 39 52.5	18.1 T	704
114P	1999 09 28.14288	02 28 53.95	+45 40 00.9	18.3 T	704
114P	1999 09 28.15648	02 28 54.24	+45 40 09.5	18.0 T	704
114P	1999 09 28.17018	02 28 54.53	+45 40 18.8	18.4 T	704
114P	1999 10 02.25954	02 30 34.04	+46 16 13.9		1 718
114P	1999 10 02.34793	02 30 35.15	+46 16 54.4		1 718
114P	1999 10 02.35713	02 30 35.27	+46 16 59.6		1 718
114P	1999 10 03.68785	02 31 01.09	+46 27 33.2	17.4 T	1 360
114P	1999 10 03.69271	02 31 01.11	+46 27 35.7		1 360
114P	1999 10 04.84686	02 31 21.14	+46 36 10.1	17.1 T	470
114P	1999 10 04.85398	02 31 21.22	+46 36 14.0	17.1 T	470
114P	1999 10 09.64931	02 32 14.80	+47 06 57.8	17.1 T	360
114P	1999 10 09.65330	02 32 14.80	+47 06 59.1		360
114P	1999 10 10.83206	02 32 21.83	+47 13 01.1		A 587
114P	1999 10 10.84097	02 32 21.83	+47 13 04.9		A 587
114P	1999 10 12.10057	02 32 25.57	+47 19 04.9	16.6 T	954
114P	1999 10 12.10458	02 32 25.55	+47 19 06.1	16.6 T	954
114P	1999 10 12.10860	02 32 25.54	+47 19 07.0	16.6 T	954
114P	1999 10 12.11263	02 32 25.53	+47 19 08.0	16.6 T	954
114P	1999 10 12.11664	02 32 25.53	+47 19 06.0	16.6 T	954
114P	1999 10 16.93213	02 32 15.67	+47 34 48.0	16.4 T	118
114P	1999 10 19.87223	02 31 50.66	+47 38 39.3	16.4 T	113
114P	1999 10 19.88918	02 31 50.45	+47 38 40.3	16.4 T	113
114P	1999 10 19.90580	02 31 50.21	+47 38 40.8	16.3 T	113

140P/Bowell-Skiff

140P	1999 02 06.60240	06 38 20.78	+27 52 07.2	15.7 T	897
140P	1999 02 06.62007	06 38 20.51	+27 52 05.2		897
140P	1999 03 22.51381	07 02 27.38	+25 13 52.3	15.4 T	897
140P	1999 03 22.55057	07 02 30.17	+25 13 42.3		897

141P/Machholz 2

141P-A	1999 10 06.40778	17 19 02.45	-11 33 18.3	19.9 N	3 413
141P-A	1999 10 06.41020	17 19 02.60	-11 33 19.2		3 413
141P-A	1999 10 07.40730	17 20 43.78	-11 34 49.9	20.3 N	413
141P-A	1999 10 07.40973	17 20 44.01	-11 34 49.7	20.2 N	413
141P-A	1999 10 07.41223	17 20 44.27	-11 34 49.7	20.2 N	413
141P-A	1999 10 07.41466	17 20 44.52	-11 34 50.1	20.4 N	413
141P-D	1999 10 17.42705	17 39 20.65	-11 53 16.1		A 413
141P-A	1999 10 17.42916	17 39 38.35	-11 47 29.1		A 413
141P-A	1999 10 17.43132	17 39 38.52	-11 47 30.2	18.9 N	413
141P-D	1999 10 17.43132	17 39 21.16	-11 53 16.7	19.4 N	413
141P-A	1999 10 17.44515	17 39 40.26	-11 47 30.2	19.4 N	413
141P-D	1999 10 17.44515	17 39 22.84	-11 53 16.5		A 413
141P-D	1999 10 21.41962	17 47 52.96	-11 56 47.6	16.2 T	402
141P-D	1999 10 21.42088	17 47 53.14	-11 56 46.5		402
141P-D	1999 10 21.42214	17 47 53.49	-11 56 46.7		402
141P-D	1999 10 23.39215	17 52 19.17	-11 57 59.8	17.3 T	402
141P-D	1999 10 23.39342	17 52 19.43	-11 57 59.2		402
141P-D	1999 10 23.39468	17 52 19.62	-11 58 00.0		402

141P-D	1999 10 23.39594	17 52 19.73	-11 57 59.2		402
141P-D	1999 10 23.39720	17 52 19.82	-11 57 59.2		402

142P/Ge-Wang

142P	1999 10 03.73044	02 18 04.56	+04 18 55.5	19.2 T	402
142P	1999 10 03.73274	02 18 04.38	+04 18 54.2		402
142P	1999 10 03.73965	02 18 04.33	+04 18 52.1		402
142P	1999 10 03.74196	02 18 04.17	+04 18 49.6		402
142P	1999 10 04.35317	02 17 50.89	+04 13 44.8	18.4 T	703
142P	1999 10 04.36543	02 17 50.62	+04 13 39.1	19.0 T	703
142P	1999 10 04.38962	02 17 50.09	+04 13 24.9	18.1 T	703
142P	1999 10 04.67882	02 17 43.68	+04 11 00.9	19.1 T	360
142P	1999 10 04.68333	02 17 43.62	+04 10 58.0		360
142P	1999 10 04.68872	02 17 43.44	+04 10 55.9		360
142P	1999 10 09.26729	02 15 50.28	+03 32 32.3	19.5 T	704
142P	1999 10 09.28285	02 15 49.76	+03 32 24.6	19.1 T	704
142P	1999 10 09.29831	02 15 49.28	+03 32 17.4	19.5 T	704
142P	1999 10 09.31374	02 15 48.92	+03 32 09.3	19.4 T	704
142P	1999 10 13.04878	02 14 03.62	+03 01 04.2		3 118
142P	1999 10 13.05200	02 14 03.48	+03 01 01.3		3 118
142P	1999 10 13.05538	02 14 03.35	+03 01 01.1		3 118
142P	1999 10 13.94571	02 13 37.19	+02 53 41.5		118
142P	1999 10 13.95174	02 13 36.94	+02 53 37.9		118
142P	1999 10 13.95438	02 13 36.88	+02 53 38.7		118

Note 1: no guiding. 2: bad seeing. 3: faint image. 4: time on *IAUC* 7267 corrected.
 5: poor sky. 6: predisccovery observation. 7: time on *IAUC* 7280 corrected.
 8: very faint image. 9: position uncertain. A: involved with star.

OBSERVATIONS OF MINOR PLANETS

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

010 Caussols

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

Observers C. Pollas, D. Albanese

Measurer E. W. Elst

0.9-m Schmidt telescope

1991 RG₁₄, 3, 1, 0; 1995 ST₃₂, 3, 1, 0; 1998 HH₅₅, 3, 1, 0; 1998 XB₁₄, 3, 1, 0; 1999 RY₂, 3, 1, 0; 1999 RM₁₄₈, 3, 1, 0; 1999 RG₁₅₄, 3, 1, 0; [21, 7, 0*, 1993/09/18–1995/09/26]

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, H. Boffin

Measurers E. W. Elst, T. Pauwels

0.85-m $f/2.5$ Schmidt + CCD

GSC-1.2

{1} 1994 PO₃₀, 2, 1, 0; 1999 RL₂₇, 2, 1, 0; 1999 TM₄, 2, 1, 0; (7647), 4, 2, 4; [10, 4, 0*, 1999/09/07–1999/10/18]

{2} 1994 PA₁₄, 5, 1, 0; 1998 EA₉, 7, 2, 2; 1998 FW₃₀, 3, 1, 0; 1998 FS₆₅, 5, 1, 0; 1998 KT₈, 10, 2, 5; 1998 KA₅₄, 4, 1, 0; 1999 OX₁, 2, 1, 0; 1999 PV₄, 5, 1, 0; 1999 QH₂, 5, 1, 0; 1999 RC₂₀, 4, 1, 0; 1999 RH₂₁, 5, 1, 0; 1999 RX₃₁, 3, 1, 0; 1999 RU₃₃, 5, 1, 0; 1999 RO₄₅, 3, 1, 0; 1999 RR₄₅, 5, 1, 0; 1999 RC₈₅, 4, 1, 0; 1999 RD₈₅, 5, 1, 0; 1999 RE₉₀, 5, 1, 0; 1999 RO₁₀₆, 3, 1, 0; 1999 RC₁₄₂, 5, 1, 0; 1999 RT₁₄₃, 10, 2, 5; 1999 RU₁₄₃, 5, 1, 0; 1999 RA₁₈₃, 5, 1, 0; 1999 RH₂₁₄, 11, 2, 2; 1999 TD₁₉ *, 9, 2, 2; 1999 TE₁₉ *, 7, 2, 2; 1999 TF₁₉ *, 9, 2, 2; 1999 TN₁₉ *, 10, 2, 5; 1999 TQ₁₉ *, 10, 2, 2; 3329 T-1, 5, 1, 0; 1114 T-2, 5, 1, 0; (2367), 5, 1, 0; (9336), 5, 1, 0; [189, 33, 5*, 1998/03/24–1999/10/19]

033 Tautenburg

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

1.3-m Schmidt telescope

PPM

1992 BO₁, 2, 1, 0; 1993 FU₆₄, 2, 1, 0; 1998 AV₉, 2, 1, 0; 1998 EB₁₀, 2, 1, 0; 1998 FD₆₆, 3, 2, 2; 1998 FG₁₀₄, 2, 1, 0; 1999 RA₁₃₂, 2, 1, 0; 1999 RN₁₉₄, 1, 1, 0; [16, 8, 0*, 1992/03/01–1995/10/25]

046 Kleť

J. Tichá, Hvězdárna Kleť, Zátkovo nábreží 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

1982 UW₁, 3, 1, 0; 1984 JE, 6, 2, 1; 1986 VW, 7, 2, 5; 1991 LV₂, 3, 1, 0; 1995 SL₃, 3, 1, 0; 1996 UN, 5, 1, 0; 1996 XM₂, 3, 1, 0; 1997 CT₅, 3, 1, 0; 1997 EK₆, 3, 1, 0; 1998 FS₅, 5, 1, 0; 1998 GO₁, 3, 1, 0; 1998 HN₄₉, 8, 2, 11; 1998 KC₅, 6, 2, 5; 1998 KS₅₄, 11, 2, 5; 1998 UP₁, 4, 1, 0; 1999 LF₆, 8, 2, 6; 1999 PJ, 6, 2, 5; 1999 PY, 3, 1, 0; 1999 QR, 5, 1, 0; 1999 RL₃, 4, 1, 0; 1999 RH₂₇, 4, 1, 0; 1999 RX₂₇, 14, 4, 22; 1999 RX₃₁, 3, 1, 0; 1999 RD₃₆, 16, 4, 15; 1999 RG₄₀, 7, 2, 10; 1999 RS₄₁, 13, 4, 11; 1999 RN₉₁, 10, 2, 1; 1999 RG₉₄, 10, 2, 1; 1999 RH₉₄, 11, 2, 5; 1999 RN₁₈₇, 10, 2, 1; 1999 RR₂₁₄ *, 22, 5, 28; 1999 SQ₂, 21, 6, 22; 1999 SR₂, 15, 5, 21; 1999 SS₂, 17, 5, 22; 1999 SK₅, 4, 1, 0; 1999 SL₅, 4, 1, 0; 1999 SM₅, 4, 1, 0; 1999 SN₅, 5, 1, 0; 1999 SO₅, 3, 1, 0; 1999 SD₁₀, 9, 2, 1; 1999 SE₁₀, 8, 2, 1; 1999 SF₁₀, 9, 2, 1; 1999 SG₁₀, 10, 2, 1; 1999 SH₁₀, 7, 2, 1; 1999 SJ₁₀, 5, 1, 0; 1999 SK₁₀, 4, 1, 0; 1999 TF *, 24, 7, 17; 1999 TX₂, 6, 1, 0; 1999 TY₂, 21, 2, 2; 1999 TX₄ *, 19, 5, 16; 1999 TZ₄, 5, 1, 0; 1999 TA₅, 4, 1, 0; 1999 TB₅, 5, 1, 0; 1999 TC₅, 3, 1, 0; 1999 TD₅, 4, 1, 0; 1999 TE₅, 4, 1, 0; 1999 TF₅, 8, 2, 2; 1999 TG₆, 9, 2, 2; 1999 TX₉, 4, 1, 0; 1999 TA₁₀, 13, 3, 7; 1999 TB₁₀, 5, 1, 0; 1999 TC₁₀, 4, 1, 0; 1999 TD₁₀, 5, 1, 0; 1999 TU₁₀, 5, 1, 0; 1999 TO₁₁ *, 26, 5, 12; 1999 TP₁₁ *, 17, 4, 11; 1999 TQ₁₁ *, 16, 4, 11; 1999 TH₁₂ *, 25, 6, 7; 1999 TJ₁₂, 9, 2, 1; 1999 TK₁₂, 10, 2, 1; 1999 TL₁₂, 5, 2, 1; 1999 TM₁₂, 5, 1, 0; 1999 TN₁₂, 5, 1, 0; 1999 TT₁₂ *, 20, 5, 7; 1999 TN₁₃, 18, 4, 6; 1999 TO₁₃, 8, 2, 1; 1999 TT₁₅, 7, 1, 0; 1999 TV₁₆, 8, 2, 1; 1999 TW₁₆, 6, 1, 0; 1999 TY₁₆, 5, 1, 0; 1999 UQ, 13, 2, 2; 1999 UR, 8, 2, 1; 1999 UM₁ *, 10, 2, 1; 1999 UN₁ *, 8, 2, 1; 1999 UO₁ *, 7, 2, 1; 4220 T-3, 9, 2, 1; (2117), 3, 1, 0; (3579), 5, 1, 0; (4419), 3, 1, 0; (6174), 4, 1, 0; (11477), 3, 1, 0; (11493), 3, 1, 0; [758, 92, 11*, 1999/09/15–1999/10/22]

071 Bulgarian National Observatory

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

Observers G. Borisov, A. Marinov, V. Radeva, R. Ralev, I. Darganov

Measurer G. Borisov

0.50-m $f/1.4$ Schmidt + CCD

GSC

1999 LF₆, 2, 1, 0; 1999 ML, 3, 1, 0; 1999 NZ₄, 2, 1, 0; 1999 OP₃, 3, 1, 0; 1999 QJ, 3, 1, 0; 1999 RU₂, 3, 1, 0; 1999 RV₂, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 RP₃₆, 2, 1, 0; 1999 TG₁₀, 3, 1, 0; [30, 11, 0*, 1999/09/06–1999/10/13]

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 HQ₂₇, 1, 1, 0; 1999 PK₆, 2, 1, 0; 1999 RO₆₃, 2, 1, 0; 1999 RW₁₄₉, 6, 3, 30; [11, 4, 0*, 1991/10/05–1992/09/29]

098 Asiago Observatory, Cima Ekar

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

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

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

0.67-m $f/3.2$ Schmidt

1998 FP₁₀₉, 2, 1, 0; 1999 RF₃₄, 2, 1, 0; [4, 2, 0*, 1994/01/18–1994/12/03]

104 San Marcello Pistoiese

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

Observers L. Tesi, A. Boattini, M. Tombelli

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

0.40-m $f/5$ reflector + CCD

GSC

1995 OD, 6, 2, 15; 1997 BD₉, 3, 1, 0; 1997 FU, 2, 1, 0; 1998 CE₂, 4, 1, 0; 1998 JA₂, 5, 2, 1; 1998 MT₂₄, 6, 2, 1; 1998 PA₁, 3, 1, 0; 1999 LF₆, 4, 1, 0; 1999 QF, 7, 2, 1; 1999 RN₁₄₀, 7, 2, 1; 1999 SP₄, 6, 2, 2; 1999 SK₅, 4, 1, 0; 1999 SL₅, 3, 1, 0; 1999 SM₅, 3, 1, 0; 1999 SN₅, 4, 1, 0; 1999 ST₉ *, 8, 3, 7; 1999 SU₉ *, 9, 3, 7; 1999 SV₉ *, 9, 3, 17; 1999 SD₁₀, 3, 1, 0; 1999 SE₁₀, 3, 1, 0; 1999 SF₁₀, 5, 1, 0; 1999 SG₁₀, 3, 1, 0; 1999 TD, 3, 1, 0; 1999 TM, 5, 2, 2; 1999 TO₁, 2, 1, 0; 1999 TU₁, 5, 2, 1; 1999 TX₂, 3, 1, 0; 1999 TY₂, 6, 1, 0; 1999 TE₄ *, 5, 2, 6; 1999 TW₅ *, 15, 5, 15; 1999 TX₅ *, 6, 2, 5; 1999 TY₅ *, 7, 3, 6; 1999 TZ₅ *, 8, 3, 6; 1999 TR₈ *, 6, 2, 1; 1999 TO₉, 4, 2, 1; 1999 TP₉, 6, 2, 3; 1999 TW₉ *, 7, 3, 9; 1999 TD₁₀, 2, 1, 0; 1999 TN₁₀ *, 6, 3, 4; 1999 TO₁₀ *, 7, 3, 3; 1999 TB₁₁ *, 4, 2, 1; 1999 TX₁₁ *, 12, 4, 8; 2091 P-L, 4, 1, 0; 3105 T-1, 4, 2, 1; [234, 44, 14*, 1999/09/28–1999/10/16]

106 Črni vrh

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

Observers H. Mikuž, S. Matičič, B. Dintinjana

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

USNO-SA2.0, USNO-A2.0, GSC-1.1, ACT

1969 TT₁, 3, 1, 0; 1971 UN₁, 3, 1, 0; 1975 TU₃, 3, 1, 0; 1978 RD₂, 3, 1, 0; 1979 QM₁, 3, 1, 0; 1980 TK₆, 3, 1, 0; 1981 DU, 2, 1, 0; 1981 EM₇, 3, 1, 0; 1981 EN₁₃, 3, 1, 0; 1981 EK₂₇, 2, 1, 0; 1982 UW₁, 6, 2, 2; 1982 UR₁₀, 3, 1, 0; 1983 RL₃, 3, 1, 0; 1984 UN₂, 3, 1, 0; 1985 RA₄, 3, 1, 0; 1985 TS, 2, 1, 0; 1985 VE, 3, 1, 0; 1986 QX₁, 3, 1, 0; 1986 QZ₂, 2, 1, 0; 1986 VW, 3, 1, 0; 1987 BR₁, 3, 1, 0; 1987 DM₆, 2, 1, 0; 1987 QW₂, 2, 1, 0; 1987 XC, 2, 1, 0; 1988 RV₁, 6, 2, 1; 1988 RM₃, 5, 1, 0; 1988 RS₃, 2, 1, 0; 1988 RJ₆, 3, 1, 0; 1988 RO₆, 3, 1, 0; 1988 RO₁₁, 3, 1, 0; 1988 TS₁, 3, 1, 0; 1989 GJ₄, 3, 1, 0; 1989 SR, 2, 1, 0; 1989 SB₁, 2, 1, 0; 1989 SL₁₂, 5, 2, 1; 1989 TR₂, 3, 1, 0; 1990 EM₁, 3, 1, 0; 1990 HJ, 2, 1, 0; 1990 SX₈, 3, 1, 0; 1990 TD₁₂, 3, 1, 0; 1990 UO₄, 2, 1, 0; 1990 VF₈, 3, 1, 0; 1990 WZ, 3, 1, 0; 1991 EC, 2, 1, 0; 1991 GA₂, 3, 1, 0; 1991 GR₂, 3, 1, 0; 1991 GU₄, 3, 1, 0; 1991 GP₇, 5, 2, 1; 1991 LV₂, 3, 1, 0; 1991 TV₁, 3, 1, 0; 1991 UA, 3, 1, 0; 1991 VE₂, 3, 1, 0; 1992 EO, 3, 1, 0; 1992 JU₂, 3, 1, 0; 1992 PE₃, 3, 1, 0; 1992 QW, 3, 1, 0; 1992 RH₇, 3, 1, 0; 1992 SY₁₇, 3, 1, 0; 1992 SQ₂₃, 3, 1, 0; 1992 UY, 5, 2, 2; 1992 UU₅, 2, 1, 0; 1992 UK₈, 3, 1, 0; 1993 DD₂, 3, 1, 0; 1993 ES, 3, 1, 0; 1993 FB₁, 2, 1, 0; 1993 FF₁₆, 3, 1, 0; 1993 FS₂₂, 3, 1, 0; 1993 RA₈, 3, 1, 0; 1994 CG₁₂, 3, 1, 0; 1994 EQ₁, 3, 1, 0; 1994 GE, 2, 1, 0; 1994 PQ₁₁, 3, 1, 0; 1994 PW₂₀, 3, 1, 0; 1994 PH₃₀, 3, 1, 0; 1994 VM₁, 3, 1, 0; 1994 YG, 3, 1, 0; 1995 KM₁, 3, 1, 0; 1995 SC₂, 3, 1, 0; 1995 SK₂, 8, 3, 3; 1995 ST₅₃, 5, 2, 1; 1995 UH₅, 3, 1, 0; 1995 UP₇, 2, 1, 0; 1995 UQ₄₄, 6, 1, 0; 1995 WF₃, 2, 1, 0; 1995 WF₅, 3, 1, 0; 1996 BE₁, 3, 1, 0; 1996 CK₂, 3, 1, 0; 1996 FM₅, 3, 1, 0; 1996 UB₁, 3, 1, 0; 1996 WA, 3, 1, 0;

1999 OCT. 26

M.P.C. 36177

1997 AM₅, 3, 1, 0; 1997 AR₁₆, 3, 1, 0; 1997 AZ₁₇, 6, 1, 0; 1997 AR₂₂, 3, 1, 0; 1997 BP₁, 3, 1, 0; 1997 CK₂₉, 3, 1, 0; 1997 EX₇, 3, 1, 0; 1997 ER₂₆, 3, 1, 0; 1997 EL₅₅, 2, 1, 0; 1997 FU₂, 2, 1, 0; 1997 FQ₄, 3, 1, 0; 1997 GX₃, 6, 2, 5; 1997 GO₆, 3, 1, 0; 1997 GH₂₇, 3, 1, 0; 1997 GT₃₂, 6, 2, 1; 1997 HO₁, 3, 1, 0; 1998 FQ₂, 3, 1, 0; 1998 FF₉, 3, 1, 0; 1998 FV₁₀, 2, 1, 0; 1998 FQ₁₄, 3, 1, 0; 1998 FZ₂₉, 3, 1, 0; 1998 FR₃₀, 2, 1, 0; 1998 FL₄₉, 2, 1, 0; 1998 FQ₄₉, 3, 1, 0; 1998 FQ₆₄, 3, 1, 0; 1998 FH₆₅, 3, 1, 0; 1998 FL₆₆, 3, 1, 0; 1998 FO₆₈, 3, 1, 0; 1998 FS₆₈, 3, 1, 0; 1998 FN₇₀, 3, 1, 0; 1998 FJ₇₂, 2, 1, 0; 1998 FL₇₅, 2, 1, 0; 1998 FV₇₇, 3, 1, 0; 1998 FY₉₉, 3, 1, 0; 1998 FQ₁₂₁, 3, 1, 0; 1998 FL₁₂₅, 3, 1, 0; 1998 FQ₁₃₃, 3, 1, 0; 1998 HQ₁₉, 3, 1, 0; 1998 HS₂₃, 3, 1, 0; 1998 HO₃₃, 3, 1, 0; 1998 HO₃₅, 3, 1, 0; 1998 HY₃₅, 3, 1, 0; 1998 HE₃₈, 6, 2, 4; 1998 HT₄₂, 3, 1, 0; 1998 HB₄₅, 3, 1, 0; 1998 HK₄₅, 3, 1, 0; 1998 HO₄₅, 3, 1, 0; 1998 HJ₅₁, 2, 1, 0; 1998 HG₅₃, 3, 1, 0; 1998 HH₉₃, 3, 1, 0; 1998 HV₉₇, 2, 1, 0; 1998 HD₁₂₉, 3, 1, 0; 1998 HV₁₄₈, 2, 2, 5; 1998 KA₁₀, 5, 2, 7; 1998 KW₃₃, 3, 1, 0; 1998 KE₄₀, 3, 1, 0; 1998 KG₄₁, 1, 1, 0; 1998 KM₄₁, 2, 1, 0; 1998 KM₄₆, 3, 1, 0; 1998 KJ₄₈, 3, 1, 0; 1998 LB₃, 3, 1, 0; 1998 MC₄₅, 3, 1, 0; 1999 JM₈₁, 3, 1, 0; 1999 KR₄, 2, 1, 0; 1999 KS₇, 3, 1, 0; 1999 KM₁₅, 3, 1, 0; 1999 ML₂, 1, 0; 1999 NT₁, 3, 1, 0; 1999 NP₂, 3, 1, 0; 1999 NR₁₁, 3, 1, 0; 1999 PN₃, 3, 1, 0; 1999 PO₄, 3, 1, 0; 1999 PS₅, 3, 1, 0; 1999 QQ₂, 2, 1, 0; 1999 RB₁, 3, 1, 0; 1999 RT₁, 3, 1, 0; 1999 RZ₁, 3, 1, 0; 1999 RD₂, 3, 1, 0; 1999 RF₃, 3, 1, 0; 1999 RK₇, 3, 1, 0; 1999 RM₁₁, 3, 1, 0; 1999 RV₁₁, 3, 1, 0; 1999 RH₁₂, 2, 1, 0; 1999 RF₁₄, 3, 1, 0; 1999 RW₁₅, 6, 2, 1; 1999 RN₁₈, 2, 1, 0; 1999 RT₁₉, 3, 1, 0; 1999 RN₂₀, 3, 1, 0; 1999 RL₂₂, 3, 1, 0; 1999 RQ₂₂, 7, 2, 1; 1999 RB₂₄, 3, 1, 0; 1999 RL₂₇, 3, 1, 0; 1999 RR₂₇, 3, 1, 0; 1999 RN₃₀, 3, 1, 0; 1999 RL₃₁, 3, 1, 0; 1999 RO₃₂, 3, 1, 0; 1999 RX₃₂, 2, 1, 0; 1999 RL₃₄, 3, 1, 0; 1999 RW₃₄, 3, 1, 0; 1999 RA₃₅, 3, 1, 0; 1999 RM₃₅, 3, 1, 0; 1999 RS₃₅, 6, 2, 5; 1999 RF₃₆, 3, 1, 0; 1999 RH₃₆, 3, 1, 0; 1999 RD₃₇, 3, 1, 0; 1999 RJ₃₇, 2, 1, 0; 1999 RL₄₂, 3, 1, 0; 1999 RX₄₂, 3, 1, 0; 1999 RQ₄₃, 3, 1, 0; 1999 RU₄₃, 3, 1, 0; 1999 RC₄₄, 6, 1, 0; 1999 RM₄₄, 2, 1, 0; 1999 RU₄₄, 3, 1, 0; 1999 RC₄₅, 3, 1, 0; 1999 RQ₅₇, 2, 1, 0; 1999 RO₆₃, 2, 1, 0; 1999 RV₇₅, 3, 1, 0; 1999 RN₈₄, 3, 1, 0; 1999 RZ₈₈, 3, 1, 0; 1999 RC₉₄, 3, 1, 0; 1999 RK₉₄, 9, 2, 1; 1999 RY₁₀₂, 3, 1, 0; 1999 RX₁₁₈, 3, 1, 0; 1999 RV₁₂₀, 2, 1, 0; 1999 RT₁₂₈, 2, 1, 0; 1999 RS₁₂₉, 2, 1, 0; 1999 RT₁₃₃, 3, 1, 0; 1999 RD₁₃₄, 3, 1, 0; 1999 RT₁₃₇, 2, 1, 0; 1999 RP₁₄₅, 3, 1, 0; 1999 RD₁₄₉, 2, 1, 0; 1999 RW₁₄₉, 3, 1, 0; 1999 RX₁₄₉, 2, 1, 0; 1999 RR₁₅₈, 2, 1, 0; 1999 RO₁₆₁, 3, 1, 0; 1999 RD₁₆₉, 2, 1, 0; 1999 RM₁₇₂, 3, 1, 0; 1999 RO₁₉₀, 3, 1, 0; 1999 RO₁₉₃, 3, 1, 0; 1999 RG₁₉₄, 6, 2, 1; 1999 SK₃, 1, 0; 1999 SH₁, 2, 1, 0; 1999 SA₄, 3, 1, 0; 1999 SP₄, 6, 2, 3; 1999 TW₆, 2, 1; 1999 TU₃, 10, 3, 3; 1999 TZ₇ *, 7, 3, 5; 1999 TA₈ *, 12, 4, 11; 1999 TB₈ *, 13, 4, 11; 1999 TS₈, 9, 3, 3; 1999 TV₉ *, 10, 4, 10; 1999 TL₁₁, 2, 1, 0; 1999 TY₁₁ *, 5, 2, 2; 1999 TZ₁₁ *, 11, 3, 9; 1999 TA₁₂ *, 9, 3, 6; 1999 TA₁₃, 2, 1, 0; 1999 TP₁₃ *, 14, 4, 7; 1999 TQ₁₃ *, 9, 3, 7; 1999 TR₁₃ *, 8, 3, 7; 1999 TS₁₃ *, 8, 3, 7; 1999 TT₁₃ *, 10, 3, 7; 1999 TU₁₃ *, 9, 3, 7; 1999 TV₁₃ *, 6, 2, 1; 1999 TW₁₃ *, 6, 2, 1; 1999 TD₁₆ *, 9, 3, 6; 1999 TE₁₆ *, 9, 3, 6; 1999 TV₁₈ *, 5, 2, 6; 1999 TW₁₈ *, 6, 2, 6; 1999 TX₁₈ *, 6, 2, 6; 1999 TY₁₈ *, 6, 2, 6; 4024 P-L, 3, 1, 0; 4037 P-L, 2, 1, 0; 4060 P-L, 2, 1, 0; 1182 T-1, 5, 1, 0; 1287 T-1, 3, 1, 0; 3033 T-1, 3, 1, 0; 3195 T-1, 3, 1, 0; 1042 T-2, 5, 2, 3; 1310 T-2, 1, 1, 0; 3289 T-2, 3, 1, 0; 3372 T-2, 3, 1, 0; 4306 T-2, 3, 1, 0; 2416 T-3, 3, 1, 0; 3093 T-3, 3, 1, 0; 3164 T-3, 2, 1, 0; 3197 T-3, 4, 2, 3; 4039 T-3, 3, 1, 0; (83), 3, 1, 0; (169), 3, 1, 0; (317), 3, 1, 0; (348), 3, 1, 0; (461), 3, 1, 0; (468), 3, 1, 0; (561), 2, 1, 0; (604), 6, 2, 2; (636), 3, 1, 0; (711), 3, 1, 0; (723), 3, 1, 0; (811), 3, 1, 0; (822), 3, 1, 0; (921), 3, 1, 0; (923), 3, 1, 0; (929), 3, 1, 0; (941), 3, 1, 0; (954), 3, 1, 0; (1010), 3, 1, 0; (1178), 3, 1, 0; (1325), 3, 1, 0; (1423), 3, 1, 0; (1442), 3, 1, 0; (1589), 3, 1, 0; (1603), 3, 1, 0; (1646), 3, 1, 0; (1706), 3, 1, 0; (1770), 3, 1, 0; (1831), 3, 1, 0; (1879), 3, 1, 0; (1990), 3, 1, 0; (2057), 2, 1, 0; (2163), 3, 1, 0; (2222), 3, 1, 0; (2238), 3, 1, 0; (2255), 3, 1, 0; (2271), 5, 2, 3; (2324), 3, 1, 0; (2387), 3, 1, 0; (2402), 3, 1, 0; (2410), 3, 1, 0; (2711), 2, 1, 0; (2789), 2, 1, 0; (2843), 3, 1, 0; (2853), 3, 1, 0; (2928), 3, 1, 0; (3054), 3, 1, 0; (3156), 3, 1, 0; (3241), 3, 1, 0; (3261), 3, 1, 0; (3378), 3, 1, 0; (3487), 3, 1, 0; (3509), 2, 1, 0; (3555), 2, 1, 0; (3570), 2, 1, 0; (3645), 2, 1, 0; (3899), 3, 1, 0; (3916), 6, 2, 2; (3937), 3, 1, 0; (3939), 3, 1, 0; (3979), 2, 1, 0; (3980), 3, 1, 0; (3981), 3, 1, 0; (4050), 2, 1, 0; (4372), 2, 1, 0; (4454), 2, 1, 0; (4502), 3, 1, 0; (4569), 3, 1, 0; (4613), 3, 1, 0; (4782), 2, 1, 0; (5153), 2, 1, 0; (6218), 2, 1, 0; (6220), 3, 1, 0; (6279), 3, 1, 0; (6587), 3, 1, 0; (6616), 3, 1, 0; (6662), 3, 1, 0; (6712), 3, 1, 0; (6798), 2, 1, 0; (7086), 3, 1, 0; (7283), 2, 1, 0; (7408), 3, 1, 0; (7547), 2, 1, 0; (7636), 2, 1, 0; (8416), 3, 1, 0; (8543), 2, 1, 0; (8603), 3, 1, 0; (8738), 2, 1, 0; (8757), 3, 1, 0; (8761), 3, 1, 0; (8843), 3, 1, 0; (8860), 3, 1, 0; (8897), 3, 1, 0; (8904), 3, 1, 0; (8905), 3, 1, 0; (8928), 2, 1, 0; (8948), 3, 1, 0; (10999), 3, 1, 0; (11442), 3, 1, 0; (11483), 2, 1, 0; (11566), 3, 1, 0; (11618), 3, 1, 0; (11654), 3, 1, 0; [1275, 380, 21*, 1999/09/11–1999/10/18]

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

1998 CE₂, 3, 1, 0; 1999 RV₂, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 ST₉, 2, 1, 0; 1999 SU₉, 2, 1, 0; 1999 SV₉, 3, 1, 0; 1999 TD₂, 2, 1, 0; 1999 TO₁, 2, 1, 0; 1999 TY₂, 3, 1, 0;

1999 TE₄, 3, 1, 0; 1999 TZ₅, 3, 1, 0; 1999 TP₉, 3, 1, 0; 1999 TW₉, 3, 1, 0; 1999 TA₁₀, 4, 1, 0; [42, 15, 0*, 1999/09/10–1999/10/08]

113 Volkssternwarte Drebach, Schönbrunn

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Observer J. Kandler

0.18-m $f/9.0$ refractor + CCD

USNO-A2.0

1988 BY₂, 2, 1, 0; 1988 RV₁, 2, 1, 0; 1988 RM₃, 2, 1, 0; 1988 RS₃, 2, 1, 0; 1990 TZ₁, 2, 1, 0; 1990 TD₁₂, 2, 1, 0; 1992 RX₂, 2, 1, 0; 1992 SX₁, 2, 1, 0; 1992 SQ₂₃, 2, 1, 0; 1995 SK₂, 3, 1, 0; 1999 RK₂₇, 4, 2, 1; 1999 RW₃₂, 5, 2, 1; 1999 RC₃₆, 4, 2, 1; 1999 TS₈, 5, 2, 1; (847), 3, 1, 0; (11573), 5, 2, 1; [47, 16, 0*, 1999/10/18–1999/10/19]

116 Giesing

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[100341.75@compuserve.com]

Observers J.-L. Dighaye, P. Sala

Measurers P. Sala, H. Beuchat

0.20-m reflector + CCD

1999 TZ₁₆ *, 6, 3, 9; [6, 1, 1*, 1999/10/07–1999/10/16]

118 Modra

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

[ago@fmph.uniba.sk]

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

0.57-m $f/5.2$ reflector + CCD

USNO-A2.0

1995 UY₄₄, 4, 2, 1; 1996 KA₄, 4, 2, 6; 1996 VX₂₉, 2, 1, 0; 1996 YG₁, 7, 3, 4; 1997 FG₁, 3, 1, 0; 1998 HF₃, 3, 1, 0; 1998 KK₁₇, 2, 1, 0; 1998 UP₁, 5, 2, 4; 1999 CU₃, 7, 3, 16; 1999 GK₄, 3, 1, 0; 1999 LF₆, 3, 1, 0; 1999 OW₂, 2, 1, 0; 1999 RU₂, 7, 3, 12; 1999 RV₂, 8, 3, 10; 1999 RH₂₇, 5, 2, 4; 1999 RB₃₂, 2, 1, 0; 1999 RC₃₂, 7, 3, 12; 1999 RD₃₂, 9, 4, 11; 1999 RF₃₃, 2, 1, 0; 1999 RP₃₆, 7, 3, 18; 1999 RK₄₄, 12, 5, 16; 1999 RP₁₅₀, 6, 2, 1; 1999 SL₅, 11, 4, 19; 1999 SM₅, 10, 4, 18; 1999 SN₅, 2, 1, 0; 1999 SO₅, 3, 1, 0; 1999 SG₁₀, 2, 1, 0; 1999 SK₁₀, 2, 1, 0; 1999 TX₂, 3, 1, 0; 1999 TB₅, 12, 4, 9; 1999 TC₅, 10, 4, 10; 1999 TD₅, 9, 3, 11; 1999 TE₅, 8, 3, 7; 1999 TF₅, 3, 1, 0; 1999 TE₆ *, 20, 8, 13; 1999 TF₆ *, 19, 8, 13; 1999 TA₁₀, 10, 4, 5; 1999 TB₁₀, 3, 1, 0; 1999 TC₁₀, 9, 3, 4; 1999 TJ₁₂, 5, 2, 1; 1999 TK₁₂, 5, 2, 1; 1999 TM₁₂, 2, 1, 0; 1999 TN₁₂, 6, 2, 1; 1999 TN₁₃, 6, 2, 3; 1999 TO₁₃, 9, 3, 6; 1999 TE₁₅ *, 13, 5, 7; 1999 TV₁₆, 3, 1, 0; 1999 TW₁₆, 5, 2, 4; 1999 TX₁₆, 3, 1, 0; 1999 TY₁₆, 5, 2, 1; 1999 TL₁₇ *, 12, 4, 4; 1999 TM₁₇ *, 12, 4, 6; 1999 TN₁₇ *, 12, 4, 6; 1999 UR₆, 6, 2, 1; (829), 2, 1, 0; (1863), 2, 1, 0; (3200), 2, 1, 0; (3437), 5, 2, 2; (3691), 2, 1, 0; (5653), 2, 1, 0; (8176), 2, 1, 0; (10115), 2, 1, 0; [369, 62, 6*, 1999/09/30–1999/10/20]

120 Višnjan

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

Observers K. Korlević, P. Korlević, M. Jurić, P. Radovan, A. Ritosa, O. Persurić

Measurers K. Korlević, M. Jurić

0.41-m $f/4.3$ reflector + CCD

USNO-SA1.0

1971 UT₁, 8, 4, 3; 1975 SZ₁, 4, 2, 7; 1977 TQ₆, 4, 2, 2; 1979 QM₁, 4, 2, 1; 1981 EF₁₆, 4, 2, 15; 1981 EA₁₉, 2, 1, 0; 1981 EU₃₈, 4, 2, 1; 1982 UW₁, 10, 4, 3; 1986 VW₄, 4, 2, 1; 1988 TS₁, 3, 1, 0; 1990 TT₁₀, 3, 1, 0; 1990 UO₄, 7, 3, 2; 1990 VF₈, 2, 1, 0; 1991 GF₉, 4, 2, 10; 1991 JD₂, 2, 1, 0; 1991 PT₁₄, 10, 4, 5; 1991 RA₄, 4, 2, 9; 1992 EO₃, 3, 1, 0; 1992 EV₃₂, 4, 2, 1; 1992 RS₃, 2, 1, 0; 1992 SB₁₃, 6, 3, 16; 1992 US₁, 2, 1, 0; 1992 WR₂, 2, 1, 0; 1992 WJ₃, 4, 1, 0; 1992 WC₉, 2, 1, 0; 1993 OR₉, 2, 1, 0; 1993 TN₂₄, 4, 2, 1; 1994 CO₁, 2, 1, 0; 1994 EQ₁, 4, 2, 1; 1994 PN₅, 5, 2, 5; 1994 PB₁₄, 2, 1, 0; 1994 UZ₁, 2, 1, 0; 1994 WF₁, 3, 1, 0; 1994 YG₆, 3, 20; 1995 TB₈, 6, 3, 16; 1995 UX₂, 2, 1, 0; 1995 UH₅, 2, 1, 0; 1995 WQ₄, 2, 1, 0; 1995 WM₃, 4, 2, 16; 1995 WL₄₂, 2, 1, 0; 1995 YP₈, 8, 3, 2; 1996 XW₁₈, 4, 2, 1; 1997 AC₁, 4, 2, 1; 1997 AP₄, 5, 2, 3; 1997 BP₁, 6, 3, 18; 1997 CE₈, 3, 1, 0; 1997 ER₃₁, 2, 1, 0; 1997 GT₃₂, 4, 2, 1; 1997 GF₃₃, 3, 1, 0; 1998 AV₉, 3, 1, 0; 1998 EE₁₀, 2, 1, 0; 1998 FD₆₁, 2, 1, 0; 1998 FH₆₅, 2, 1, 0; 1998 FM₇₀, 2, 1, 0; 1998 HQ₁₉, 4, 2, 1; 1998 HM₂₆, 2, 1, 0; 1998 HY₃₅, 2, 1, 0; 1998 HB₄₅, 4, 2, 7; 1998 HG₅₃, 3, 1, 0; 1998 HH₅₅, 2, 1, 0; 1998 HL₈₄, 6, 3, 15; 1998 HS₉₆, 2, 1, 0; 1998 HQ₁₀₀, 5, 2, 1; 1998 HW₁₀₁, 8, 4, 18; 1998 JQ₂,

2, 1, 0; 1998 JF₃, 3, 1, 0; 1998 KM₄₆, 2, 1, 0; 1998 KW₄₇, 6, 3, 15; 1998 MW₃₄, 3, 1, 0; 1999 PB₅, 2, 1, 0; 1999 RS₁, 4, 2, 2; 1999 RU₁, 4, 1, 0; 1999 RV₁, 2, 1, 0; 1999 RW₁, 5, 2, 1; 1999 RX₁, 7, 3, 2; 1999 RY₁, 2, 1, 0; 1999 RZ₁, 4, 2, 12; 1999 RY₂, 2, 1, 0; 1999 RZ₂, 6, 3, 2; 1999 RA₃, 2, 1, 0; 1999 RB₃, 2, 1, 0; 1999 RC₃, 2, 1, 0; 1999 RD₃, 2, 1, 0; 1999 RE₃, 7, 2, 1; 1999 RF₃, 4, 2, 1; 1999 RO₂₇, 2, 1, 0; 1999 RP₂₇, 2, 1, 0; 1999 RR₂₇, 2, 1, 0; 1999 RT₂₇, 2, 1, 0; 1999 RU₂₇, 2, 1, 0; 1999 RW₂₇, 3, 2, 1; 1999 RJ₃₁, 2, 1, 0; 1999 RK₃₁, 6, 3, 2; 1999 RL₃₁, 7, 3, 3; 1999 RM₃₁, 2, 1, 0; 1999 RV₃₁, 2, 1, 0; 1999 RF₃₂, 3, 1, 0; 1999 RH₃₂, 2, 1, 0; 1999 RK₃₂, 2, 1, 0; 1999 RO₃₃, 2, 1, 0; 1999 RD₃₄, 2, 1, 0; 1999 RE₃₄, 2, 1, 0; 1999 RN₃₄, 3, 1, 0; 1999 RQ₃₄, 2, 1, 0; 1999 RY₃₄, 3, 1, 0; 1999 RC₃₅, 2, 1, 0; 1999 RD₃₅, 7, 3, 8; 1999 RM₃₅, 10, 4, 18; 1999 RN₃₅, 2, 1, 0; 1999 RP₃₅, 7, 3, 4; 1999 RF₃₆, 2, 1, 0; 1999 RH₃₆, 2, 1, 0; 1999 RJ₃₆, 10, 4, 11; 1999 RR₃₆, 3, 1, 0; 1999 RS₃₆, 2, 1, 0; 1999 RD₃₇, 2, 1, 0; 1999 RV₃₇, 5, 2, 1; 1999 RX₃₇, 3, 1, 0; 1999 RY₃₇, 3, 1, 0; 1999 RZ₃₇, 2, 1, 0; 1999 RA₃₈, 3, 1, 0; 1999 RF₃₈, 2, 1, 0; 1999 RG₃₈, 5, 2, 3; 1999 RH₃₈, 3, 1, 0; 1999 RM₃₈, 5, 2, 3; 1999 RN₃₈, 3, 1, 0; 1999 RV₄₁, 5, 2, 2; 1999 RX₄₁, 5, 2, 1; 1999 RA₄₂, 4, 2, 3; 1999 RK₄₂, 4, 2, 6; 1999 RM₄₂, 2, 1, 0; 1999 RN₄₂, 2, 1, 0; 1999 RO₄₂, 2, 1, 0; 1999 RP₄₂, 2, 1, 0; 1999 RQ₄₂, 2, 1, 0; 1999 RR₄₂, 2, 1, 0; 1999 RH₄₃, 2, 1, 0; 1999 RT₄₃, 2, 1, 0; 1999 RU₄₃, 2, 1, 0; 1999 RV₄₃, 2, 1, 0; 1999 RW₄₃, 8, 3, 3; 1999 RX₄₃, 5, 2, 3; 1999 RZ₄₃, 3, 1, 0; 1999 RA₄₄, 2, 1, 0; 1999 RB₄₄, 2, 1, 0; 1999 RR₄₄, 3, 1, 0; 1999 RS₄₄, 2, 1, 0; 1999 RF₈₇, 2, 1, 0; 1999 RY₈₇, 4, 2, 1; 1999 RW₈₈, 4, 2, 1; 1999 RG₉₅, 6, 3, 12; 1999 RZ₁₂₃, 2, 1, 0; 1999 RV₁₆₅, 2, 1, 0; 1999 RA₁₈₃, 2, 1, 0; 1999 SE, 4, 2, 16; 1999 SJ, 4, 2, 1; 1999 SK, 2, 1, 0; 1999 SL, 10, 4, 7; 1999 SO₁, 4, 2, 16; 1999 SF₂, 7, 3, 3; 1999 SG₂, 2, 1, 0; 1999 SH₂, 2, 1, 0; 1999 SX₃ *, 7, 3, 2; 1999 SY₃ *, 9, 4, 18; 1999 SZ₃ *, 9, 4, 4; 1999 SA₄ *, 4, 2, 1; 1999 SB₄ *, 11, 5, 16; 1999 SC₄ *, 11, 5, 16; 1999 SD₄ *, 6, 3, 3; 1999 SE₄ *, 9, 3, 3; 1999 SF₄ *, 6, 3, 3; 1999 SG₄ *, 6, 3, 3; 1999 SH₄ *, 10, 5, 15; 1999 SJ₄ *, 9, 4, 15; 1999 SK₄ *, 9, 4, 17; 1999 SL₄ *, 15, 6, 20; 1999 SM₄ *, 9, 4, 15; 1999 SN₄ *, 8, 4, 8; 1999 SO₄ *, 6, 3, 17; 1999 SP₄ *, 9, 4, 18; 1999 SQ₄ *, 7, 3, 17; 1999 SR₄ *, 9, 4, 18; 1999 SS₄ *, 10, 5, 20; 1999 SU₆, 4, 2, 1; 1999 SQ₉ *, 5, 2, 3; 1999 SR₉ *, 6, 3, 8; 1999 SS₉ *, 6, 3, 7; 1999 SV₉, 4, 2, 2; 1999 TQ, 9, 4, 7; 1999 TR *, 5, 2, 1; 1999 TS *, 8, 4, 15; 1999 TT *, 9, 4, 15; 1999 TU *, 6, 3, 5; 1999 TV *, 8, 4, 13; 1999 TW *, 10, 5, 18; 1999 TX *, 8, 3, 5; 1999 TY *, 9, 5, 16; 1999 TZ *, 6, 3, 7; 1999 TA₁ *, 11, 5, 7; 1999 TB₁ *, 6, 3, 8; 1999 TC₁ *, 6, 3, 18; 1999 TD₁ *, 6, 3, 5; 1999 TE₁ *, 11, 5, 7; 1999 TF₁ *, 15, 6, 13; 1999 TG₁ *, 14, 6, 13; 1999 TH₁ *, 10, 4, 8; 1999 TJ₁ *, 8, 4, 13; 1999 TK₁ *, 9, 4, 18; 1999 TL₁ *, 11, 5, 18; 1999 TM₁ *, 6, 3, 18; 1999 TN₁ *, 8, 4, 16; 1999 TO₁ *, 6, 3, 8; 1999 TP₁ *, 6, 3, 5; 1999 TQ₁ *, 7, 3, 5; 1999 TR₁ *, 8, 4, 18; 1999 TS₁ *, 8, 4, 18; 1999 TT₁ *, 6, 3, 13; 1999 TU₁ *, 8, 4, 16; 1999 TV₁ *, 10, 5, 9; 1999 TW₁ *, 12, 6, 9; 1999 TX₁ *, 3, 2, 1; 1999 TY₁ *, 8, 4, 6; 1999 TE₂, 4, 2, 3; 1999 TF₄, 4, 2, 1; 1999 TT₄, 4, 2, 2; 1999 TW₄, 8, 4, 3; 1999 TL₅ *, 11, 5, 15; 1999 TM₅ *, 15, 6, 18; 1999 TN₅ *, 13, 6, 18; 1999 TO₅ *, 6, 3, 6; 1999 TP₅ *, 8, 4, 7; 1999 TQ₅ *, 6, 3, 6; 1999 TR₅ *, 4, 3, 5; 1999 TY₅, 6, 3, 3; 1999 TZ₅, 4, 2, 3; 1999 TJ₆ *, 8, 4, 18; 1999 TK₆ *, 11, 5, 13; 1999 TL₆ *, 9, 4, 8; 1999 TM₆ *, 6, 3, 2; 1999 TN₆ *, 6, 3, 2; 1999 TO₆ *, 8, 4, 10; 1999 TP₆ *, 8, 4, 10; 1999 TQ₆ *, 9, 3, 2; 1999 TR₆ *, 7, 3, 2; 1999 TS₆ *, 7, 3, 2; 1999 TT₆ *, 7, 3, 2; 1999 TU₆ *, 7, 3, 2; 1999 TV₆ *, 6, 3, 2; 1999 TW₆ *, 8, 4, 3; 1999 TX₆ *, 8, 4, 11; 1999 TZ₆ *, 4, 2, 1; 1999 TA₇ *, 4, 2, 1; 1999 TB₇ *, 6, 3, 10; 1999 TC₇ *, 6, 3, 2; 1999 TD₇ *, 6, 3, 2; 1999 TE₇ *, 6, 3, 2; 1999 TF₇ *, 8, 4, 10; 1999 TG₇ *, 6, 3, 2; 1999 TH₇ *, 6, 3, 2; 1999 TJ₇ *, 4, 2, 1; 1999 TL₇ *, 8, 4, 3; 1999 TM₇ *, 8, 4, 3; 1999 TN₇ *, 8, 4, 10; 1999 TO₇ *, 5, 3, 2; 1999 TB₈, 5, 2, 1; 1999 TD₈, 3, 1, 0; 1999 TJ₈ *, 11, 5, 13; 1999 TK₈ *, 9, 4, 13; 1999 TL₈ *, 9, 4, 4; 1999 TM₈ *, 8, 4, 10; 1999 TN₈ *, 10, 5, 9; 1999 TO₈ *, 6, 3, 2; 1999 TP₈ *, 8, 4, 10; 1999 TQ₈ *, 6, 3, 2; 1999 TR₈, 4, 2, 3; 1999 TV₈ *, 4, 2, 1; 1999 TA₉ *, 13, 5, 12; 1999 TB₉ *, 4, 2, 1; 1999 TC₉ *, 8, 3, 7; 1999 TD₉ *, 6, 3, 9; 1999 TE₉ *, 6, 3, 7; 1999 TF₉ *, 4, 2, 1; 1999 TG₉ *, 6, 3, 7; 1999 TH₉ *, 4, 2, 1; 1999 TJ₉ *, 4, 2, 1; 1999 TK₉ *, 6, 3, 8; 1999 TL₉ *, 6, 3, 8; 1999 TM₉ *, 4, 2, 1; 1999 TN₉ *, 4, 2, 1; 1999 TO₉ *, 4, 2, 1; 1999 TP₉ *, 8, 2, 1; 1999 TQ₉ *, 4, 2, 1; 1999 TR₉ *, 4, 2, 1; 1999 TS₉ *, 4, 2, 1; 1999 TT₉ *, 6, 3, 2; 1999 TU₉, 9, 4, 9; 1999 TQ₁₀ *, 7, 3, 8; 1999 TR₁₀ *, 6, 3, 2; 1999 TS₁₀ *, 4, 2, 1; 1999 TT₁₀ *, 6, 3, 9; 1999 TT₁₁ *, 4, 2, 2; 1999 TU₁₁ *, 9, 4, 5; 1999 TV₁₁ *, 9, 4, 5; 1999 TW₁₁ *, 9, 4, 5; 1999 TH₁₃ *, 2, 1, 0; 1999 TT₁₃, 5, 2, 1; 1999 TE₁₄ *, 6, 3, 9; 1999 TF₁₄ *, 6, 3, 9; 1999 TG₁₄ *, 6, 3, 9; 1999 TH₁₄ *, 6, 3, 9; 1999 TJ₁₄ *, 4, 2, 2; 1999 TK₁₄ *, 8, 3, 5; 1999 TL₁₄ *, 6, 3, 4; 1999 TM₁₄ *, 5, 2, 2; 1999 TN₁₄ *, 6, 2, 2; 1999 TO₁₄ *, 12, 5, 6; 1999 TT₁₄ *, 2, 1, 0; 1999 TP₁₅ *, 2, 1, 0; 1999 TQ₁₅, 4, 2, 1; 1999 TR₁₅, 4, 2, 1; 1999 TW₁₅ *, 9, 4, 7; 1999 TA₁₇ *, 5, 2, 5; 1999 TB₁₇ *, 11, 5, 5; 1999 TC₁₇ *, 4, 2, 1; 1999 TD₁₇ *, 4, 2, 1; 1999 TE₁₇ *, 4, 2, 1; 1999 TF₁₇ *, 8, 4, 5; 1999 TG₁₇ *, 7, 3, 5; 1999 TH₁₇ *, 4, 2, 1; 1999 TA₁₈, 2, 1, 0; 1999 TB₁₈, 2, 1, 0; 1999 TZ₁₈ *, 9, 4, 4; 1999 TA₁₉ *, 6, 3, 2; 1999 TB₁₉ *, 7, 3, 2; 1999 TC₁₉ *, 7, 3, 2; 1999 UD *, 6, 3, 3; 1999 UE *, 6, 3, 3; 1999 UF *, 6, 3, 3; 1999 UG *, 6, 3, 3; 1999 UH *, 6, 3, 3; 1999 UJ *, 8, 4, 10; 1999 UK *, 6, 3, 3; 1999 UL *, 8, 3, 3; 1999 UM *, 6, 3, 3; 1999 UN *, 6, 3, 3; 1999 UO *, 6, 3, 3; 1999 UP *, 8, 3, 3; 1999 US *, 7, 3, 4; 1999 UT *, 6, 3, 4; 1999 UV *, 5, 2, 1; 1999 UW *, 6, 3, 3; 1999 UX *, 4, 2, 1; 1999 UY *, 6, 3, 3; 1999 UZ *, 4, 2, 1; 1999 UA₁ *, 4, 2, 1; 1999 UB₁ *, 4, 2, 1; 1999 UC₁ *, 4, 2, 1; 1999 UD₁ *, 6, 3, 3; 1999 UE₁ *, 10, 3, 3; 1999 UF₁ *, 6, 3, 3; 1999 UG₁ *, 6, 3, 2; 1999 UC₂ *, 5, 2, 3; 1999 UD₂ *, 5, 2, 4; 1999 UE₂ *, 6, 2, 4; 1999 UF₂ *, 4, 2, 3; 1999 UG₂ *, 5, 2, 3; 1999 UH₂ *, 4, 2, 2; 1999 UJ₂ *, 4, 2, 2; 1999 UK₂ *, 4, 2, 2; 1999 UN₃ *, 4, 2, 4; 1999 UO₃ *, 4, 2, 3; 2129 P-L, 2, 1, 0; 2558 P-L, 2, 1, 0; 2613 P-L, 2, 1, 0; 2416 T-3, 2, 1, 0; 3197 T-3, 4, 2, 15; (280), 2, 1, 0; (331), 2, 1, 0; (597), 2, 1, 0; (770), 2, 1, 0; (941), 2, 1, 0; (1130), 2, 1, 0; (1257), 2, 1, 0; (1489), 13, 5, 9; (1575), 2, 1, 0; (1624), 2, 1, 0; (1698), 2, 1, 0; (1743), 2, 1, 0; (1770), 4, 2, 1; (1784),

10, 5, 7; (1792), 2, 1, 0; (1909), 2, 1, 0; (1910), 2, 1, 0; (2057), 7, 3, 3; (2117), 2, 1, 0; (2163), 2, 1, 0; (2238), 11, 5, 20; (2255), 2, 1, 0; (2322), 4, 2, 1; (2324), 2, 1, 0; (2355), 3, 1, 0; (2433), 2, 1, 0; (2464), 4, 2, 1; (2586), 3, 1, 0; (2598), 2, 1, 0; (2787), 6, 3, 2; (2972), 6, 3, 2; (3054), 2, 1, 0; (3247), 4, 2, 13; (3264), 4, 2, 8; (3437), 2, 1, 0; (3480), 2, 1, 0; (3487), 4, 2, 7; (3507), 2, 1, 0; (3555), 2, 1, 0; (3718), 4, 2, 1; (3848), 9, 3, 3; (3939), 2, 1, 0; (3981), 6, 3, 9; (4101), 5, 2, 1; (4330), 13, 6, 9; (4375), 3, 1, 0; (4629), 2, 1, 0; (4704), 2, 1, 0; (4781), 6, 3, 2; (4798), 2, 1, 0; (4852), 2, 1, 0; (5031), 2, 1, 0; (5060), 2, 1, 0; (5104), 2, 1, 0; (5125), 2, 1, 0; (5309), 2, 1, 0; (5444), 2, 1, 0; (5584), 5, 2, 4; (5608), 3, 1, 0; (5668), 3, 1, 0; (5714), 9, 4, 7; (6297), 2, 1, 0; (6549), 8, 3, 3; (6559), 4, 2, 1; (6616), 2, 1, 0; (6638), 2, 1, 0; (6712), 2, 1, 0; (6715), 2, 1, 0; (6719), 6, 3, 2; (6767), 2, 1, 0; (6820), 2, 1, 0; (6833), 2, 1, 0; (6912), 4, 2, 1; (7003), 7, 3, 5; (7051), 2, 1, 0; (7077), 8, 3, 3; (7191), 2, 1, 0; (7210), 2, 1, 0; (7312), 7, 3, 5; (7420), 6, 3, 2; (7548), 4, 2, 3; (7606), 9, 4, 13; (7608), 3, 1, 0; (7609), 9, 4, 20; (7630), 7, 3, 2; (7634), 2, 1, 0; (7636), 4, 2, 1; (7639), 2, 1, 0; (7664), 3, 1, 0; (7708), 8, 4, 20; (7746), 6, 3, 18; (7754), 4, 2, 1; (8689), 4, 2, 9; (8715), 2, 1, 0; (8752), 2, 1, 0; (8783), 2, 1, 0; (8856), 4, 2, 10; (8862), 2, 1, 0; (8904), 2, 1, 0; (8928), 2, 1, 0; (8935), 2, 1, 0; (9041), 4, 2, 17; (9056), 4, 2, 18; (9097), 3, 1, 0; (9098), 6, 3, 2; (9100), 2, 1, 0; (9339), 2, 1, 0; (9384), 4, 2, 4; (11260), 3, 1, 0; (11444), 3, 1, 0; (11483), 4, 2, 16; (11491), 2, 1, 0; (11763), 2, 1, 0; [2407, 490, 192*, 1998/06/17–1999/10/20]

121 Kharkov University, Chuguevskaya Station

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

0.70-m $f/4$ reflector + CCD

GSC

(954), 22, 5, 43; (1279), 9, 2, 1; [31, 2, 0*, 1999/09/01–1999/10/14]

126 Monte Viseggi

P. Pietrapiana, via Stefano Clemente 22, I-10143 Torino, Italy

[mc7316@mclink.it]

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

Measurer L. Zannoni

0.40-m $f/6$ reflector + CCD

USNO

1999 RH₁, 3, 1, 0; [3, 1, 0*, 1999/10/01]

127 Bornheim

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

0.19-m $f/4$ FFC + CCD

GSC

1971 UT₁, 4, 2, 2; 1982 UW₁, 4, 2, 2; 1986 VW, 8, 3, 4; 1990 BO, 9, 4, 4; 1991 TR₁, 7, 3, 4; 1991 VT₃, 7, 3, 3; 1992 PE₃, 4, 2, 2; 1997 AV, 6, 3, 4; 1999 OW₂, 6, 3, 6; 1999 TU₁₇ *, 22, 5, 4; 4306 T-2, 6, 3, 4; (4569), 3, 1, 0; (6659), 3, 1, 0; [89, 13, 1*, 1999/10/12–1999/10/19]

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

(1365), 3, 1, 0; (3645), 3, 1, 0; [6, 2, 0*, 1999/10/10]

132 Bedoin

P. Antonini, 47 rue Guillaume Puy, F-84000 Avignon, France

[Pierre.Antonini@wanadoo.fr]

0.16-m $f/3.3$ reflector + CCD

USNO, GSC

1997 DQ, 7, 2, 4; 1998 HD₈, 10, 3, 24; 1999 QS₂, 3, 1, 0; 1999 RD₂, 4, 1, 0; 1999 RH₁₈, 3, 1, 0; 1999 RZ₃₆, 3, 1, 0; 1999 TF₁₆ *, 8, 2, 4; (7694), 3, 1, 0; [41, 8, 1*, 1999/09/16–1999/10/14]

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

1988 RS₃, 3, 1, 0; [3, 1, 0*, 1999/10/13]

138 Village-Neuf

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

[Sky.walker@wanadoo.fr]

0.20-m $f/6.7$ Schmidt-Cassegrain + CCD, 0.20-m $f/3.81$ Schmidt-Cassegrain +
CCD

GSC

1999 LF₆, 4, 1, 0; (6649), 3, 1, 0; [7, 2, 0*, 1999/09/13–1999/10/17]

143 Gnosca

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

0.20-m $f/7.1$ reflector + CCD

GSC

1996 BX, 3, 1, 0; 1997 DQ, 6, 2, 1; 1999 QO₂, 3, 1, 0; 1999 RV₂, 3, 1, 0; 1999 RH₂₇, 4, 1, 0;
1999 RZ₂₈, 6, 2, 1; 1999 RV₃₁, 7, 2, 1; 1999 RH₃₂, 7, 2, 1; 1999 RA₃₃, 3, 1, 0; 1999 RC₃₃, 3, 1, 0;
1999 RK₅₃, 6, 2, 1; 1999 RK₁₂₀, 3, 1, 0; 1999 RE₁₈₆, 2, 1, 0; 1999 SM₅, 3, 1, 0; 1999 SO₅, 5, 1, 0;
1999 TC₁₀, 4, 1, 0; 1999 TW₁₀ *, 9, 3, 4; 1999 TX₁₀ *, 10, 3, 4; 1999 TY₁₀ *, 9, 3, 4; 1999 TA₁₁ *,
13, 4, 4; 1999 TB₁₂ *, 14, 4, 4; 1999 TC₁₂ *, 10, 4, 4; 1999 TD₁₂ *, 12, 3, 2; 1999 TE₁₂ *, 6,
2, 1; 1999 TF₁₂ *, 8, 3, 2; 1999 TG₁₂ *, 14, 4, 4; 1999 TX₁₃ *, 6, 2, 1; 1999 TY₁₃ *, 9, 2, 1;
1999 TZ₁₃ *, 6, 2, 1; 1999 TA₁₄ *, 5, 2, 1; 1999 TU₁₅ *, 7, 2, 2; 1999 TV₁₅ *, 7, 2, 2; (5597), 3,
1, 0; (8752), 6, 2, 1; [222, 34, 16*, 1999/09/09–1999/10/14]

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

1996 XF₁₉, 3, 1, 0; 1998 EE₁₀, 4, 1, 0; 1998 FR₄₇, 4, 1, 0; 1999 TV₉, 4, 1, 0; 4626 P-L, 4, 1, 0;
(1865), 4, 1, 0; (3622), 3, 1, 0; [26, 7, 0*, 1999/10/16]

147 Osservatorio Astronomico di Suno

G. Bianchi, Osservatorio G. Galilei, loc. Mottozufolone, I-28019 Suno, Italy

[apan@pn.itnet.it]

Observers G. Bianchi, V. Sacco

Measurer M. Carpino

0.40-m $f/4.1$ reflector + CCD

USNO-A2.0

(3579), 6, 1, 0; (4813), 11, 2, 7; (7628), 10, 1, 0; (7803), 5, 1, 0; [32, 4, 0*, 1999/09/28–
1999/10/05]

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 BY₂, 4, 1, 0; 1988 RM₃, 12, 3, 5; 1988 RS₃, 7, 2, 6; 1990 TZ₁, 10, 3, 7; 1992 SQ₂₃, 10, 3,
13; 1999 CU₃, 6, 1, 0; 1999 LF₆, 27, 6, 22; 1999 ML, 16, 3, 4; 1999 ND₄₃, 14, 3, 10; 1999 RV₂,
6, 1, 0; 1999 RH₂₇, 26, 5, 11; 1999 SM₅, 24, 4, 9; (699), 9, 3, 13; (789), 4, 1, 0; (1817), 4, 1, 0;
(3055), 3, 1, 0; (3314), 3, 1, 0; (3581), 3, 1, 0; (3838), 3, 1, 0; (11547), 19, 4, 7; [210, 20, 0*,
1999/10/01–1999/10/23]

157 Frasso Sabino

A. Pelloni, via Oratorio Damasiano 15, I-00148 Rome, Italy [mc3657@mcclink.it]

Observers A. Pelloni, F. Anzellini, R. Gorelli, F. Porcellana, M. Solarino

Measurer A. Pelloni

0.10-m $f/10$ refractor + CCD

USNO-A2.0

1999 SM₅, 3, 1, 0; [3, 1, 0*, 1999/10/01]

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, M. Ziboli

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

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

USNO-A1.0, USNO-A2.0

1998 KJ₄₈, 6, 1, 0; 1999 PL, 4, 1, 0; 1999 RY₃₂, 9, 2, 7; 1999 RF₃₇, 8, 2, 2; 1999 RD₁₇₆, 22, 5, 12;
1999 SX₄ *, 36, 5, 12; 1999 SX₉ *, 20, 4, 18; 1999 TH₆ *, 23, 4, 9; 1999 TY₆ *, 20, 3, 4; 1999 TK₇ *,
17, 3, 4; 1999 TP₁₀ *, 10, 2, 5; 1999 TC₁₁ *, 24, 4, 4; 1999 TD₁₁ *, 11, 2, 2; 1999 TY₁₂ *, 26,
4, 3; 1999 TB₁₅ *, 6, 2, 2; 1999 TC₁₅ *, 21, 3, 2; 1999 TG₁₆ *, 14, 2, 3; 1999 TP₁₇ *, 10, 2, 5;
1999 TU₁₈ *, 12, 2, 3; (2951), 5, 1, 0; [304, 20, 14*, 1999/09/23–1999/10/17]

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

(632), 4, 2, 2; (773), 4, 2, 1; [8, 2, 0*, 1999/09/30–1999/10/11]

163 Roeser Observatory, Luxembourg

M. Dawson, 66 rue JF Boch, L-1244 Luxembourg, Luxembourg [dawson@pt.lu]

0.457-m $f/4.5$ Newtonian + CCD

USNO-SA2.0

(1767), 4, 2, 1; (2040), 4, 2, 1; (6240), 2, 1, 0; (6938), 4, 2, 1; (8604), 2, 1, 0; [16, 5, 0*,
1999/10/17–1999/10/19]

164 St. Michel sur Meurthe

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

[laurent.bernasconi.51@wanadoo.fr]

0.212-m $f/3.9$ reflector + CCD

USNO

1998 LB₃, 6, 2, 1; 1999 RA₃₃, 3, 1, 0; 1999 RM₃₈, 3, 1, 0; 1999 SR₉, 3, 1, 0; 1999 TY₁₁, 3, 1, 0;
(331), 6, 2, 1; (7192), 3, 1, 0; [27, 7, 0*, 1999/10/15–1999/10/17]

167 Bülach Observatory

S. Meister, Vogelsangstr. 9, CH-8180 Bülach, Switzerland

[stefan.meister@astroinfo.org]

0.50-m reflector + CCD

GSC-1.2

(3200), 3, 1, 0; [3, 1, 0*, 1999/09/10]

170 Observatorio de Begues

J. Manteca, c/Santpere, no. Casa 22, 08859 Begues, Barcelona, Spain

[jmantecav@nexo.es]

Observer J. Manteca

Measurer S. Alonso

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

GSC-1.1

(216), 9, 3, 6; [9, 1, 0*, 1999/09/30–1999/10/07]

171 Flarestar Observatory, San Gwann

S. M. Brincat, Fl. 5 Ent. B, Silver Jubilee Apt., Ta' Zwej, San Gwann SGN 09,
Malta [sbrincat@orbit.net.mt]

0.25-m $f/2.6$ Schmidt-Cassegrain + CCD

GSC-ACT

(1331), 6, 2, 1; (1789), 5, 2, 1; [11, 2, 0*, 1999/10/03–1999/10/04]

327 Peking Observatory, Xinglong Station

J. Zhu, Peking Astronomical Observatory, Chinese Academy of Sciences,
Zhongguancun, Peking 100101, Peoples Republic of China
[zj@bac.pku.edu.cn]

Observers J. Zhu, X. Zhou, X. M. Teng, X. Y. Li

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

0.60-m Schmidt + CCD

1982 JD₂, 18, 4, 8; 1991 FT₂, 6, 2, 2; 1994 PS₂₆, 3, 1, 0; 1995 WK₇, 7, 2, 49; 1995 YP, 6, 2, 3;
1996 TF, 4, 1, 0; 1996 VO₃, 3, 1, 0; 1996 VG₃₉, 3, 1, 0; 1997 BV₅, 3, 1, 0; 1997 CO₁₂, 3, 1, 0;
1997 FX₁, 3, 1, 0; 1997 GQ₇, 6, 2, 2; 1997 UP₄, 3, 1, 0; 1998 BH₂₆, 6, 2, 1; 1998 DD₂₄, 4, 1, 0;
1998 FQ₅, 9, 3, 5; 1998 FU₁₂, 3, 1, 0; 1998 HX₁₈, 4, 1, 0; 1998 KW₉, 9, 3, 4; 1998 KZ₂₆, 3, 1, 0;
1998 KW₄₇, 6, 2, 3; 1998 KW₅₄, 6, 2, 4; 1998 RW₁₆, 6, 2, 29; 1998 UV₃₁, 3, 1, 0; 1999 JT₁₂₆, 3, 1,
0; 1999 NM₆₂, 3, 1, 0; 1999 RC, 3, 1, 0; 1999 RD₁₁, 3, 1, 0; 1999 RG₁₁, 3, 1, 0; 1999 RG₁₈, 3, 1, 0;
1999 RE₂₈, 6, 2, 1; 1999 RR₃₃, 3, 1, 0; 1999 RK₃₄, 6, 2, 2; 1999 RF₃₆, 3, 1, 0; 1999 RY₄₁, 7, 2, 4;
1999 RP₉₂, 9, 3, 8; 1999 RW₁₁₉, 3, 1, 0; 1999 RA₁₂₂, 7, 2, 17; 1999 RS₁₂₉, 3, 1, 0; 1999 RW₁₄₆, 3,
1, 0; 1999 RK₁₅₈, 3, 1, 0; 1999 RF₁₈₄, 3, 1, 0; 1999 RG₂₀₀, 6, 2, 4; 1999 RA₂₀₄, 6, 2, 4; 1999 SK,
3, 1, 0; 1999 SR₄, 3, 1, 0; 1999 SP₉, 3, 1, 0; 1999 SG₁₀, 3, 1, 0; 1999 SH₁₀, 3, 1, 0; 1999 SK₁₀, 3,
1, 0; 1999 SR₁₀ *, 6, 2, 5; 1999 SS₁₀ *, 6, 2, 5; 1999 TV, 6, 2, 1; 1999 TW, 6, 2, 1; 1999 TB₁, 9,
3, 2; 1999 TC₁, 6, 2, 4; 1999 TH₁, 9, 3, 4; 1999 TJ₁, 9, 3, 2; 1999 TM₁, 9, 3, 4; 1999 TV₅, 7, 2, 4;
1999 TR₆, 6, 2, 3; 1999 TT₆, 6, 2, 1; 1999 TV₁₇ *, 6, 2, 5; 1999 TW₁₇ *, 13, 4, 11; 1999 TX₁₇ *,
9, 3, 10; 1999 TY₁₇ *, 6, 2, 6; 1999 TZ₁₇ *, 9, 3, 8; 1999 TA₁₈ *, 9, 3, 5; 1999 TB₁₈ *, 15,
3, 5; 1999 TC₁₈ *, 9, 3, 8; 1999 TD₁₈ *, 6, 2, 4; 1999 TE₁₈ *, 9, 3, 8; 1999 TF₁₈ *, 18, 6, 10;
1999 TG₁₈ *, 9, 3, 5; 1999 TH₁₈ *, 5, 2, 5; 1999 TJ₁₈ *, 6, 2, 5; 1999 TK₁₈ *, 6, 2, 1; 1999 TL₁₈ *,
9, 3, 2; 1999 TM₁₈ *, 6, 2, 1; 1999 TN₁₈ *, 6, 2, 1; 1999 TO₁₈ *, 12, 3, 4; 1999 TP₁₈ *, 12, 3, 4;
1999 TQ₁₈ *, 9, 3, 4; 1999 TR₁₈ *, 9, 3, 4; 1999 TS₁₈ *, 6, 2, 1; 1999 TV₁₉ *, 6, 2, 8; 1999 TW₁₉ *,
6, 2, 4; 1999 TX₁₉ *, 6, 2, 4; 1999 TY₁₉ *, 6, 2, 4; 1999 TZ₁₉ *, 7, 2, 3; 1999 TA₂₀ *, 9, 2, 3;
1999 TB₂₀ *, 6, 2, 3; 1999 TC₂₀ *, 6, 2, 3; 1999 TD₂₀ *, 6, 2, 3; 1999 TE₂₀ *, 6, 2, 3; 1999 UM,
6, 2, 1; 1999 UN, 6, 2, 8; 1999 UO, 12, 3, 8; 1999 UP₃ *, 6, 2, 4; 1999 UQ₃ *, 6, 2, 2; 3093 P-L, 4,
1, 0; 9509 P-L, 6, 2, 1; 4220 T-1, 6, 2, 3; 1348 T-2, 3, 1, 0; (81), 9, 3, 7; (2786), 12, 3, 8; (4003),
9, 3, 4; (4372), 6, 2, 2; (4704), 6, 2, 1; (5887), 6, 2, 2; (6221), 6, 2, 6; (6287), 6, 2, 3; (6378), 6, 2,
6; (6638), 9, 3, 3; (7003), 12, 3, 4; (7656), 6, 2, 2; (8604), 6, 2, 4; (9056), 6, 2, 1; (11534), 6, 2, 1;
[750, 119, 37*, 1995/10/15–1999/10/22]

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 SM₅, 6, 2, 2; [9, 2, 0*, 1999/09/30–1999/10/11]

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 TZ₁₂ *, 10, 4, 10; 1999 TF₂₀ *, 9, 3, 10; 1999 TH₂₀ *, 9, 3, 7; [28, 3, 3*, 1999/10/08–
1999/10/18]

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 VA, 3, 1, 0; 1995 SO₂, 3, 1, 0; 1995 SP₂, 2, 1, 0; 1997 AW₁₇, 5, 2, 11; 1997 DL, 3, 1, 0;
1997 UF₉, 3, 1, 0; 1998 UP₁, 3, 1, 0; 1998 XS₁₆, 3, 1, 0; 1999 CU₃, 3, 1, 0; 1999 GK₄, 3, 1, 0;

1999 LF₆, 4, 1, 0; 1999 ML, 3, 1, 0; 1999 OH₃, 10, 3, 5; 1999 OP₃, 3, 1, 0; 1999 PJ₁, 3, 1, 0;
1999 QJ, 3, 1, 0; 1999 RU₂, 3, 1, 0; 1999 RV₂, 7, 2, 15; 1999 RH₂₇, 3, 1, 0; 1999 RQ₂₈, 3, 1, 0;
1999 RB₃₂, 3, 1, 0; 1999 RC₃₂, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 RG₃₃, 3, 1, 0; 1999 RO₃₆, 3, 1,
0; 1999 RP₃₆, 3, 1, 0; 1999 SE, 6, 2, 1; 1999 SL₅, 6, 2, 14; 1999 SM₅, 6, 2, 14; 1999 SG₁₀, 3, 1,
0; 1999 SK₁₀, 3, 1, 0; 1999 TC₄ *, 6, 2, 1; 1999 TD₄ *, 11, 4, 14; 1999 TZ₄, 3, 1, 0; 1999 TA₅, 3,
1, 0; 1999 TB₅, 3, 1, 0; 1999 TE₅, 3, 1, 0; 1999 TA₁₀, 3, 1, 0; 1999 TC₁₀, 4, 1, 0; 1999 TO₁₃, 3,
1, 0; 1999 TW₁₆, 3, 1, 0; (2499), 3, 1, 0; (4347), 2, 1, 0; (5404), 3, 1, 0; (9010), 2, 1, 0; (9062), 3,
1, 0; [170, 46, 2*, 1999/10/03–1999/10/20]

365 Kashiwara

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

[nag01736@niftyserve.or.jp]

0.28-m $f/6.3$ refractor + CCD

GSC

1999 RE₃₇, 4, 2, 9; 1999 TK₁₉ *, 4, 2, 8; 1999 TL₁₉ *, 4, 2, 8; 1999 TM₁₉ *, 4, 2, 8; [16, 4, 3*,
1999/09/30–1999/10/17]

372 Geisei

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

0.60-m $f/3.5$ reflector

GSC

1990 SS₃, 2, 1, 0; [2, 1, 0*, 1996/02/15]

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-I.1, USNO-A2.0

1981 EV₂₁, 1, 1, 0; 1987 BF, 4, 2, 7; 1991 UE₂, 3, 1, 0; 1991 YC, 2, 1, 0; 1992 UT₃, 4, 2, 10;
1992 WO₃, 5, 2, 10; 1993 BP₃, 2, 1, 0; 1994 BY, 3, 1, 0; 1994 PO, 3, 1, 0; 1994 VS₁, 2, 1, 0;
1995 QS, 9, 4, 7; 1995 UF₆, 5, 2, 9; 1997 AQ₆, 3, 1, 0; 1998 EF₆, 1, 1, 0; 1999 SE₄, 3, 1, 0;
1999 SL₈, 4, 2, 1; 1999 TX₁, 4, 2, 10; 1999 TW₂ *, 3, 1, 0; 1999 TJ₁₁, 2, 1, 0; 1999 TA₁₃, 2,
1, 0; 1999 TE₁₃ *, 6, 3, 7; 1999 TF₁₃ *, 14, 5, 8; 1999 TG₁₃ *, 16, 7, 10; 1999 UQ₁ *, 10, 4,
5; 1999 UR₁ *, 10, 3, 5; 1999 UZ₂, 2, 1, 0; 1999 UL₃ *, 7, 3, 3; (8896), 3, 1, 0; (8903), 3, 1, 0;
(9166), 9, 3, 2; [145, 30, 7*, 1999/09/19–1999/10/23]

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

1991 VD₁, 2, 1, 0; 1992 SB₁₃, 6, 3, 13; 1999 RS₄₄, 4, 2, 1; 1999 TF₄ *, 7, 4, 14; 1999 UC₁, 4, 2,
4; [23, 5, 1*, 1999/10/04–1999/10/18]

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

1997 WR₂, 2, 1, 0; [2, 1, 0*, 1995/02/03]

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 WU₂₂, 3, 1, 0; 1998 RO₁, 3, 1, 0; 1998 XS₁₆, 3, 1, 0; 1999 GK₄, 3, 1, 0; 1999 OP₃, 3, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 QJ, 3, 1, 0; 1999 RC₂, 4, 2, 1; 1999 RU₂, 3, 1, 0; 1999 RV₂, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; 1999 RN₂₈, 3, 1, 0; 1999 RQ₂₈, 6, 2, 22; 1999 RR₂₈, 3, 1, 0; 1999 RC₃₂, 7, 2, 24; 1999 RD₃₂, 6, 2, 23; 1999 RO₃₆, 3, 1, 0; 1999 RP₃₆, 6, 2, 22; 1999 RJ₄₅, 3, 1, 0; 1999 SL₅, 11, 3, 21; 1999 SM₅, 13, 4, 19; 1999 SN₅, 4, 1, 0; 1999 SE₁₀, 6, 2, 17; 1999 SG₁₀, 4, 1, 0; 1999 SH₁₀, 4, 1, 0; 1999 TZ₄, 6, 2, 11; 1999 TA₅, 3, 1, 0; 1999 TB₅, 7, 2, 6; 1999 TC₅, 6, 2, 11; 1999 TD₅, 7, 2, 17; 1999 TE₅, 3, 1, 0; 1999 TF₅, 3, 1, 0; 1999 TA₁₀, 11, 3, 12; 1999 TC₁₀, 2, 1, 0; 1999 TD₁₀, 6, 2, 1; 1999 TN₁₂, 3, 1, 0; 1999 TO₁₃, 3, 1, 0; 1999 TW₁₆, 3, 1, 0; 1999 TX₁₆, 3, 1, 0; 1999 TY₁₆, 3, 1, 0; 1999 UQ, 3, 1, 0; 1999 UR, 3, 1, 0; (6139), 3, 1, 0; (11500), 3, 1, 0; [194, 44, 0*, 1999/09/27–1999/10/21]

411 Oizumi

T. Kobayashi, 1717-2 Shimo-Koizumi, Oizumi-machi, Ora-gun, Gunma-ken, 370-0515 Japan [kobataka@sannet.ne.jp]
0.25-m $f/4.4$ reflector + CCD, 0.41-m $f/4.3$ reflector + CCD
GSC

1995 BQ, 2, 1, 0; 1996 YY, 7, 3, 8; 1999 JM, 2, 1, 0; 1999 JK₃, 2, 1, 0; 1999 JL₃, 2, 1, 0; 1999 TB₁₃ *, 7, 3, 8; 1999 TC₁₃ *, 10, 4, 11; 1999 TD₁₃ *, 8, 3, 8; [40, 8, 3*, 1999/05/17–1999/10/21]

413 Siding Spring

R. H. McNaught, Research School of Astronomy and Astrophysics,
Siding Spring Observatory, Coonabarabran, NSW 2357, Australia
[rmn@aaocbn.aao.gov.au] (1)
A. Gnädig, c/o Archenhold-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany
[doppler@mind.de] (5)
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, M. Hartley, M. A. Read, K. S. Russell
Measurers R. H. McNaught, O. Hernius, A. Boattini, G. Forti, M. Tombelli,
L. Tesi, A. Gnädig

1.2-m U.K. Schmidt, 1.0-m $f/8$ reflector + CCD
USNO-A2.0, GSC-ACT, PPM

{1} 1993 HA, 1, 1, 0; 1994 TF₂, 8, 3, 19; 1994 WZ₂, 2, 1, 0; 1995 UB₄, 3, 1, 0; 1995 UO₅, 2, 1, 0; 1998 AK₈, 2, 1, 0; 1998 KE₃, 2, 1, 0; 1998 KK₁₇, 2, 1, 0; 1998 OH, 2, 1, 0; 1998 PF, 2, 1, 0; 1998 QR₅₂, 2, 1, 0; 1998 SD₁₅, 2, 1, 0; 1998 WM, 4, 2, 18; 1998 WZ₆, 2, 1, 0; 1998 YW₃, 7, 3, 2; 1999 DK₃, 2, 1, 0; 1999 ED₅, 4, 2, 18; 1999 FN₅₃, 6, 3, 9; 1999 GJ₂, 3, 1, 0; 1999 GY₃, 1, 1, 0; 1999 GT₆, 3, 2, 1; 1999 HE₁, 2, 1, 0; 1999 HY₁, 3, 2, 1; 1999 HW₂, 3, 2, 1; 1999 HX₂, 4, 2, 1; 1999 JB, 2, 1, 0; 1999 JV₃, 2, 1, 0; 1999 JD₆, 6, 3, 2; 1999 JO₆, 2, 1, 0; 1999 JU₆, 2, 1, 0; 1999 JO₈, 2, 1, 0; 1999 KK₁, 2, 1, 0; 1999 KX₄, 5, 2, 8; 1999 LT₁, 3, 1, 0; 1999 LY₅, 2, 1, 0; 1999 LN₂₈, 5, 2, 7; 1999 LQ₂₈, 4, 2, 1; 1999 LD₃₀, 8, 4, 11; 1999 ML, 4, 2, 7; 1999 NJ, 2, 1, 0; 1999 OQ₃, 4, 2, 8; 1999 OR₃, 3, 1, 0; 1999 OW₃, 2, 1, 0; 1999 PK, 4, 2, 1; 1999 PL₁, 2, 1, 0; 1999 PM₁, 2, 1, 0; 1999 PO₁, 2, 1, 0; 1999 PS₃, 6, 2, 1; 1999 QJ, 2, 1, 0; 1999 QD₂, 4, 2, 1; 1999 RV₂, 2, 1, 0; 1999 RN₁₁, 2, 1, 0; 1999 RJ₂₇, 2, 1, 0; 1999 RL₂₈, 2, 1, 0; 1999 RM₂₈, 9, 4, 18; 1999 RN₂₈, 2, 1, 0; 1999 RP₂₈, 4, 2, 1; 1999 RR₂₈, 4, 2, 1; 1999 RA₃₂, 9, 3, 2; 1999 RD₃₂, 2, 1, 0; 1999 RH₃₃, 6, 3, 11; 1999 RO₃₆, 4, 2, 1; 1999 RP₃₆, 2, 1, 0; 1999 RD₄₂, 2, 1, 0; 1999 RA₄₃, 2, 1, 0; 1999 RC₄₃, 4, 2, 8; 1999 RD₄₃, 4, 2, 8; 1999 RJ₄₅, 4, 2, 8; 1999 RK₄₅, 8, 2, 9; 1999 RL₄₅, 8, 4, 11; 1999 RM₄₅, 14, 6, 12; 1999 RR₂₁₄, 2, 1, 0; 1999 SK₂, 8, 4, 12; 1999 SK₅, 7, 4, 11; 1999 SM₅, 2, 1, 0; 1999 SO₅, 8, 4, 10; 1999 SZ₅, 7, 3, 2; 1999 SO₉, 2, 1, 0; 1999 SD₁₀, 9, 5, 11; 1999 SE₁₀, 5, 3, 2; 1999 SF₁₀, 7, 2, 1; 1999 SG₁₀, 17, 5, 11; 1999 SH₁₀, 8, 4, 10; 1999 SJ₁₀, 6, 3, 11; 1999 SK₁₀, 3, 1, 0; 1999 TX₂, 8, 4, 10; 1999 TY₂, 21, 3, 2; 1999 TZ₄, 2, 1, 0; 1999 TA₅, 2, 1, 0; 1999 TB₅, 2, 1, 0; 1999 TC₅, 2, 1, 0; 1999 TD₅, 6, 3, 10; 1999 TE₅, 2, 1, 0; 1999 TF₅, 2, 1, 0; 1999 TG₆, 3, 1, 0; 1999 TA₁₀, 2, 1, 0; 1999 TD₁₀, 2, 1, 0; 1999 TM₁₁ *, 8, 4, 11; 1999 TN₁₁ *, 6, 3, 10; 1999 TM₁₂, 8, 2, 1; 1999 TM₁₃, 1, 1, 0; 1999 TN₁₃, 3, 1, 0; 1999 TT₁₆, 4, 2, 1; 1999 TU₁₆, 7, 3, 2; 1999 TV₁₆, 11, 3, 2; 1999 TW₁₆, 5, 2, 1; 1999 TX₁₆, 4, 2, 1; 1999 TY₁₆, 2, 1, 0; 1999 TR₁₉ *, 7, 3, 2; 1999 TS₁₉ *, 7, 3, 2; 1999 TT₁₉ *, 7, 3, 2; 1999 TU₁₉ *, 5, 2, 2; 1999 UQ, 3, 1, 0; 1999 UR, 6, 1, 0; 1999 UP₂ *, 4, 2, 1; (3362), 2, 1, 0; (7482), 2, 1, 0; (8176), 2, 1, 0; (10563), 2, 1, 0; (11066), 2, 1, 0; [505, 120, 7*, 1999/09/01–1999/10/17]

{5} 1998 SO₁₀, 2, 1, 0; 1999 AC₃, 2, 1, 0; 1999 JT₃, 4, 2, 5795; 1999 RP₁₄₅, 4, 2, 542; (3314), 3, 2, 2062; (5264), 5, 3, 487; (8412), 3, 2, 4015; (8476), 2, 1, 0; (8486), 2, 1, 0; (8734), 2, 1, 0; (8760), 4, 2, 2742; (8771), 2, 1, 0; (9126), 2, 1, 0; (9503), 2, 1, 0; (11739), 2, 1, 0; [41, 15, 0*, 1976/11/24–1996/10/04]

{6} 1999 LF₆, 2, 1, 0; [2, 1, 0*, 1979/12/20]

{8} 1993 FK₅₇, 1, 1, 0; 1993 FC₆₂, 1, 1, 0; 1993 FS₇₅, 1, 1, 0; 1999 RQ₈₁, 1, 1, 0; 1999 RU₁₃₃, 1, 1, 0; 1999 RC₁₅₉, 1, 1, 0; [6, 6, 0*, 1993/04/16–1993/04/18]

417 Yanagida Astronomical Observatory

A. Tsuchikawa, Robu 1-1, Kanmachi, Fugeshi-gun, Ishikawa-ken, 928-03 Japan
Observer A. Tsuchikawa
0.60-m $f/8.0$ reflector + CCD
USNO-A2.0
1999 TG₂₀ *, 10, 5, 13; [10, 1, 1*, 1999/10/09–1999/10/22]

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

1986 CB, 14, 4, 14; 1991 GE₂, 15, 5, 40; 1991 TB₆, 15, 6, 19; 1991 VT, 8, 3, 16; 1992 UD₂, 13, 6, 26; 1994 XY₄, 4, 2, 1; 1995 SO₅, 5, 2, 5; 1995 YV₃, 5, 2, 4; (5131), 2, 1, 0; [81, 9, 0*, 1999/08/30–1999/10/21]

426 Woomera

F. B. Zoltowski, 10 Gundawarra St., P.O. Box 84, Woomera, SA 5720, Australia
[fbzolt@CompuServe.com]
0.30-m $f/10$ Schmidt-Cassegrain + CCD
USNO-SA2.0

1989 TS₂, 3, 1, 0; 1999 HE₁, 3, 1, 0; 1999 JH₃₅, 3, 1, 0; 1999 KX₄, 2, 1, 0; 1999 NW, 3, 1, 0; 1999 NY, 2, 1, 0; 1999 OA, 2, 1, 0; 1999 OB₄ *, 5, 2, 6; 1999 RU₃₆, 3, 1, 0; 1999 RV₃₆, 3, 1, 0; 1999 RF₄₄, 6, 2, 1; 1999 RT₁₈₇, 6, 2, 1; 1999 SL₁, 3, 1, 0; 1999 SK₅, 6, 2, 1; 1999 SN₅, 6, 2, 1; 1999 SO₅, 9, 3, 2; 1999 SY₉ *, 9, 3, 3; 1999 SB₁₀ *, 8, 3, 3; 1999 SD₁₀, 11, 4, 3; 1999 SE₁₀, 6, 2, 1; 1999 SF₁₀, 9, 3, 2; 1999 SG₁₀, 9, 3, 2; 1999 SH₁₀, 3, 1, 0; 1999 SJ₁₀, 8, 3, 2; 1999 SK₁₀, 1, 1, 0; 1999 TM₂ *, 9, 3, 2; 1999 TX₂, 6, 2, 1; 1999 TO₃ *, 6, 2, 1; 1999 TZ₄, 3, 1, 0; 1999 TB₅, 6, 2, 1; (5786), 6, 2, 1; (8771), 6, 2, 2; (9816), 6, 2, 1; (11398), 6, 2, 1; [183, 34, 5*, 1999/05/15–1999/10/04]

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 HW₁₀₁, 2, 1, 0; 1998 OW₁₁, 4, 2, 1; 1998 OH₁₂, 1, 1, 0; 1998 PO₁, 4, 2, 13; 1999 HX, 2, 1, 0; 1999 JM₈, 2, 1, 0; 1999 JO₈, 2, 1, 0; 1999 KU₄, 2, 1, 0; 1999 MO, 1, 1, 0; 1999 NN₄, 1, 1, 0; 1999 PE, 1, 1, 0; 1999 PF, 2, 1, 0; 1999 PU₁, 1, 1, 0; 1999 PD₄, 2, 1, 0; 1999 PE₄, 1, 1, 0; 1999 PH₄, 1, 1, 0; 1999 PO₄, 2, 1, 0; 1999 PP₄, 2, 1, 0; 1999 RQ₂₈, 6, 2, 7; 1999 RV₃₈, 2, 1, 0; 1999 RW₃₈, 1, 1, 0; 1999 RX₃₈, 2, 1, 0; 1999 RA₃₉, 1, 1, 0; 1999 RG₄₄, 1, 1, 0; 1999 RH₄₄, 2, 1, 0; 1999 RN₄₅, 1, 1, 0; 1999 SL, 4, 2, 13; 1999 SD₁₀, 2, 1, 0; 1999 SF₁₀, 2, 1, 0; 1999 SG₁₀, 4, 1, 0; 1999 SH₁₀, 2, 1, 0; 1999 SJ₁₀, 2, 1, 0; 1999 TY₂, 2, 1, 0; 1999 TM₁₁, 3, 2, 1; 1999 TN₁₁, 5, 2, 1; [75, 35, 0*, 1999/10/04–1999/10/19]

432 Boambee

V. A. Gardiner, 44 Shaws Close, Boambee, NSW 2452, Australia
[vgardi@chc.net.au]
0.20-m $f/5.2$ reflector + CCD
GSC-ACT
1995 YV₃, 2, 2, 3; (772), 2, 2, 3; (2050), 2, 2, 3; (3266), 2, 2, 3; [8, 4, 0*, 1999/10/06–1999/10/09]

461 JATE Asteroid Survey, Piskésető

L. Kiss, Pf. 596, H-6701 Szeged, Hungary [l.kiss@physx.u-szeged.hu]

Observers K. Sárneczky, L. Kiss, G. Szabó

Measurers K. Sárneczky, L. Kiss

0.60-m Schmidt + CCD

USNO-A2.0

1996 TY₉, 3, 1, 0; 1998 LB₃, 9, 3, 6; 1998 PN₁, 2, 1, 0; 1999 ND₄₃, 8, 1, 0; 1999 RX₁₉₇, 10, 2, 3; 1999 SL₅, 3, 1, 0; 1999 SU₆ *, 12, 4, 28; 1999 SW₉ *, 9, 3, 6; 1999 SC₁₀ *, 15, 3, 27; 1999 SL₁₀ *, 6, 2, 5; 1999 TO, 3, 1, 0; (3200), 3, 1, 0; (11436), 6, 1, 0; [89, 13, 4*, 1999/09/23–1999/10/22]

465 Takapuna

J. L. Schiff, Dept. of Mathematics, University of Auckland, Auckland, New Zealand
Observers J. L. Schiff, C. J. Schiff

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

GSC 1.1

1998 FS₇₀, 4, 2, 4; 1999 SO₉ *, 13, 5, 19; 3560 P-L, 4, 2, 4; [21, 3, 1*, 1999/09/27–1999/10/16]

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

1999 RB, 3, 1, 0; [3, 1, 0*, 1999/10/17]

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, A. Cassetti, L. Fortuna

0.25-m *f*/3 reflector + CCD

GSC

1990 RA₃, 2, 1, 0; 1992 GM₂, 1, 1, 0; 1997 HE₁₄, 2, 1, 0; 1998 KQ₃₁, 3, 2, 9; 1999 RQ₃₂, 4, 2, 7; 1999 RC₃₄, 4, 2, 13; 1999 RR₃₄, 6, 3, 15; 1999 RZ₁₀₄, 4, 2, 6; 1999 RK₁₅₇, 2, 1, 0; 1999 SM₅, 2, 1, 0; 1999 SN₉ *, 8, 4, 15; 1999 TO *, 4, 2, 7; 1999 TP *, 6, 3, 13; 1999 TQ *, 5, 3, 13; 1999 TA₁₀, 2, 1, 0; (11661), 2, 1, 0; [57, 16, 4*, 1999/09/29–1999/10/14]

469 Courroux

H. Lehmann, Sports 6, CH-2822 Courroux, Switzerland [huble@vtx.ch]

0.20-m *f*/6.3 Schmidt-Cassegrain + CCD

GSC

1999 JO₈, 2, 1, 0; [2, 1, 0*, 1999/06/09]

470 Ceccano

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

[gianmasi@fr.flashnet.it]

Observers G. Masi, A. Cassetti

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

USNO-A2.0, USNO-A1.0

1999 ML, 2, 1, 0; 1999 QJ, 3, 1, 0; 1999 QV₁, 2, 1, 0; 1999 RA, 3, 1, 0; 1999 RN, 3, 1, 0; 1999 RS₂, 2, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 RL₃₅, 2, 1, 0; 1999 RK₁₅₇, 3, 1, 0; 1999 SK, 3, 1, 0; 1999 SM₅, 3, 1, 0; 1999 SN₉, 4, 2, 1; 1999 TO, 4, 2, 2; 1999 TP, 4, 2, 1; 1999 TQ, 2, 1, 0; 1999 TY₂, 6, 1, 0; 1999 TN₄ *, 7, 3, 4; 1999 TP₇, 2, 1, 0; 1999 TA₁₀, 2, 1, 0; 1999 TZ₁₀ *, 3, 1, 0; (5653), 2, 1, 0; (7547), 3, 1, 0; [68, 22, 2*, 1999/09/30–1999/10/08]

504 Le Creusot

J.-C. Merlin, 18 rue P. Mendès-France, F-71200 Le Creusot, France

[merlin@obsmp.fr]

0.40-m *f*/5.1 reflector + CCD

GSC

1999 RY₄₄, 5, 2, 1; [5, 1, 0*, 1999/10/06–1999/10/07]

511 Haute Provence

E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium [ericelst@ksb-orb.oma.be]

Observers E. W. Elst, G. Traversa

Measurer E. W. Elst

0.6-m Schmidt

1998 QH₅₁, 2, 1, 0; [2, 1, 0*, 1991/02/11]

544 Wilhelm Foerster Observatory, Berlin

W. Hasse, Wilhelm-Foerster-Sternwarte, Munsterdamm 90, D-12169 Berlin, Germany [cwkl@uni.de]

Observers W. Hasse, S. Klose, C. Linke, K. Toedte

Measurers M. Dentel, C. Haase, W. Hasse, F. Kugler, K. Toedte, F. Vetter

0.15-m *f*/15 double refractor, 0.75-m *f*/7.7 Ritchey-Chrétien reflector + CCD

Hipparcos, USNO A1.0

1994 TY₂, 4, 1, 0; [4, 1, 0*, 1998/12/17]

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

1995 SC₂, 2, 1, 0; 1997 ET₇, 4, 2, 2; 1998 CB₄, 2, 1, 0; 1999 RA₂₈, 2, 1, 0; 1999 RR₃₂, 7, 2, 4; 1999 RK₁₈₃, 2, 1, 0; (5315), 4, 1, 0; (5697), 4, 1, 0; [27, 8, 0*, 1999/08/31–1999/10/10]

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

1983 YK, 2, 1, 0; 1987 DD₆, 6, 1, 0; 1989 TN₁₆, 10, 4, 19; 1990 SS, 2, 1, 0; 1995 EA₈, 4, 1, 0; 1995 RK, 2, 1, 0; 1995 SP, 1, 1, 0; 1995 SM₁, 8, 3, 974; 1995 SK₃, 3, 1, 0; 1996 BB₁, 3, 1, 0; 1996 FR₁, 7, 2, 1; 1996 OO, 4, 2, 2; 1997 AE₁₈, 6, 2, 2; 1997 JD, 3, 1, 0; 1997 JO, 5, 2, 1; 1997 SH, 6, 2, 1; 1997 TT₉, 4, 2, 1; 1997 WU₂₂, 2, 1, 0; 1998 FA₃, 5, 2, 2; 1998 FW₉, 3, 1, 0; 1998 FZ₇₀, 2, 1, 0; 1998 HT₇₆, 2, 1, 0; 1998 OZ₄, 3, 1, 0; 1998 QR₁, 3, 1, 0; 1998 UP₁, 5, 1, 0; 1998 XS₁₆, 6, 1, 0; 1999 KR₄, 3, 1, 0; 1999 PP₁, 3, 2, 3; 1999 PH₃, 2, 1, 0; 1999 PP₃, 3, 1, 0; 1999 QZ₁, 2, 1, 0; 1999 QL₂, 2, 1, 0; 1999 QM₂, 2, 1, 0; 1999 RO, 2, 1, 0; 1999 RP, 2, 1, 0; 1999 RQ, 2, 1, 0; 1999 RR, 2, 1, 0; 1999 RG₁, 2, 1, 0; 1999 RJ₃, 2, 1, 0; 1999 RK₃, 8, 3, 18; 1999 RS₂₈, 7, 2, 10; 1999 RO₃₁, 2, 1, 0; 1999 RP₃₁, 2, 1, 0; 1999 RQ₃₁, 2, 1, 0; 1999 RU₃₁, 5, 2, 4; 1999 RD₃₂, 5, 1, 0; 1999 RS₃₄, 3, 1, 0; 1999 RT₃₄, 6, 3, 18; 1999 RU₃₄, 4, 2, 3; 1999 RV₃₄, 8, 3, 14; 1999 RW₃₅, 8, 3, 20; 1999 RH₄₀, 4, 2, 14; 1999 RJ₄₀, 4, 2, 10; 1999 RF₄₂, 10, 4, 18; 1999 RG₄₂, 4, 2, 18; 1999 RH₄₂, 3, 1, 0; 1999 RL₄₃, 2, 1, 0; 1999 RM₄₃, 2, 1, 0; 1999 RM₇₈, 4, 2, 3; 1999 RJ₁₀₅, 4, 2, 1; 1999 RO₁₄₈, 4, 1, 0; 1999 RO₁₅₂, 4, 2, 4; 1999 RN₁₇₆, 3, 1, 0; 1999 RE₁₈₁, 4, 2, 3; 1999 RP₂₁₃, 7, 2, 15; 1999 SP₁, 4, 2, 4; 1999 SQ₁, 2, 1, 0; 1999 SR₁, 3, 1, 0; 1999 SU₂, 2, 1, 0; 1999 SV₂, 8, 4, 17; 1999 SW₂, 22, 7, 18; 1999 SK₅, 2, 1, 0; 1999 SL₅, 2, 1, 0; 1999 SM₅, 13, 3, 11; 1999 SN₅, 3, 1, 0; 1999 SO₅, 4, 1, 0; 1999 SZ₉ *, 9, 4, 18; 1999 SE₁₀, 2, 1, 0; 1999 SK₁₀, 4, 1, 0; 1999 TJ₂ *, 20, 8, 18; 1999 TR₃ *, 9, 4, 12; 1999 TS₃ *, 11, 5, 12; 1999 TT₃ *, 12, 5, 15; 1999 TU₃ *, 15, 7, 17; 1999 TV₃ *, 9, 4, 17; 1999 TW₃ *, 7, 3, 12; 1999 TX₃ *, 16, 7, 24; 1999 TY₃ *, 11, 5, 19; 1999 TZ₃ *, 9, 4, 18; 1999 TA₄ *, 9, 4, 17; 1999 TB₄ *, 14, 5, 18; 1999 TZ₄, 6, 2, 2; 1999 TA₅, 4, 1, 0; 1999 TB₅, 10, 3, 3; 1999 TC₅, 6, 2, 1; 1999 TD₅, 6, 2, 2; 1999 TE₅, 3, 1, 0; 1999 TF₅, 8, 2, 1; 1999 TG₅ *, 13, 4, 15; 1999 TJ₅ *, 10, 4, 14; 1999 TG₆, 4, 1, 0; 1999 TC₈ *, 8, 4, 12; 1999 TV₉, 12, 4, 5; 1999 TA₁₀, 17, 4, 13; 1999 TD₁₀, 5, 2, 3; 1999 TJ₁₀, 3, 1, 0; 1999 TG₁₁, 6, 2, 1; 1999 TZ₁₁, 8, 3, 2; 1999 TK₁₂, 8, 3, 2; 1999 TN₁₃, 6, 2, 1; 1999 TO₁₃, 14, 4, 8; 1999 TP₁₄ *, 8, 4, 14; 1999 TQ₁₄ *, 15, 6, 14; 1999 TR₁₄ *, 10, 4, 14; 1999 TS₁₄ *, 14, 4, 11; 1999 TF₁₅ *, 4, 2, 9; 1999 TG₁₅ *, 11, 4, 7; 1999 TH₁₅ *, 10, 4, 7; 1999 TJ₁₅ *, 8, 4, 7; 1999 TK₁₅ *, 7, 3, 6; 1999 TL₁₅ *, 7, 3, 7; 1999 TM₁₅ *, 8, 4, 7; 1999 TN₁₅ *, 5, 2, 1; 1999 TO₁₅ *, 5, 2, 1; 1999 TS₁₅ *, 9, 4, 12; 1999 TT₁₅ *, 6, 3, 5; 1999 TX₁₅ *, 6, 3, 6; 1999 TY₁₅ *, 13, 4, 7; 1999 TL₁₆ *, 8, 3,

6; 1999 TM₁₆ *, 7, 3, 4; 1999 TN₁₆ *, 8, 3, 5; 1999 TO₁₆ *, 9, 4, 6; 1999 TP₁₆ *, 16, 5, 6; 1999 TQ₁₆ *, 6, 3, 5; 1999 TR₁₆ *, 6, 3, 5; 1999 TS₁₆ *, 6, 3, 5; 1999 TV₁₆, 4, 1, 0; 1999 TX₁₆, 3, 1, 0; 1999 TY₁₆, 4, 1, 0; 1999 TQ₁₇ *, 7, 3, 6; 1999 TR₁₇ *, 10, 4, 3; 1999 TS₁₇ *, 16, 4, 4; 1999 TT₁₇ *, 12, 4, 4; 1999 UA *, 10, 4, 5; 1999 UB *, 8, 4, 4; 1999 UC *, 7, 3, 4; 1999 UQ, 10, 3, 3; 1999 UR, 3, 1, 0; 1999 UH₁ *, 9, 3, 2; 1999 UP₁, 6, 2, 1; 1999 US₁ *, 5, 2, 2; 1999 UT₁ *, 4, 2, 2; 1999 UU₁ *, 5, 2, 2; 1999 UV₁ *, 4, 2, 2; 1999 UW₁ *, 5, 2, 1; 1999 UX₁ *, 7, 2, 1; 1999 UQ₂ *, 4, 2, 1; 1999 UR₂ *, 6, 2, 1; 1999 US₂ *, 5, 2, 1; 1999 UT₂ *, 4, 2, 1; 1999 UX₂ *, 8, 2, 1; 1999 UY₂ *, 6, 2, 1; 3770 T-1, 8, 3, 4; (604), 2, 1, 0; (1743), 6, 2, 1; (3838), 6, 1, 0; (4562), 3, 1, 0; (5041), 3, 1, 0; (5055), 4, 1, 0; (6414), 11, 4, 16; (9067), 5, 2, 1; (9562), 3, 1, 0; (11579), 19, 5, 7; [1088, 173, 61*, 1997/02/03–1999/10/20]

560 Madonna di Dossobuono

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[astrofil@astboi.bo.cnr.it]

Observers L. Lai, I. Rocchetti, G. Vesentini
0.40-m $f/3.5$ reflector + CCD
GSC

1988 RM₇, 7, 2, 1; 1992 SO, 2, 1, 0; 1997 AB₆, 3, 1, 0; 1997 GJ₈, 7, 2, 1; 1998 FB₁₀, 3, 1, 0; 1998 FQ₁₄, 5, 2, 1; 1999 RA₃₆, 11, 3, 15; 1999 RC₃₇, 3, 1, 0; 1999 TY₉ *, 7, 2, 1; (11058), 6, 2, 3; (11476), 7, 2, 7; [61, 11, 1*, 1999/09/05–1999/10/08]

563 Seewalchen

M. Bressler, Sachsenstrasse 40, A-4863 Seewalchen a. A., Austria
[m.bressler@cso.net]

0.25-m $f/6$ reflector + CCD
USNO-A

1991 VA₃, 7, 2, 1; 1991 VU₅, 6, 2, 1; 1992 OJ₁, 6, 2, 2; 1998 EK₉, 6, 2, 7; (10924), 7, 2, 7; (11544), 6, 2, 1; [38, 6, 0*, 1999/05/09–1999/09/12]

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

1980 FV₂, 3, 1, 0; 1988 QF, 3, 1, 0; 1993 AQ, 3, 1, 0; 1993 QH₈, 3, 1, 0; 1993 SG₅, 3, 1, 0; 1994 PL₂₂, 3, 1, 0; 1995 LK, 3, 1, 0; 1995 OG₁₀, 9, 3, 434; 1995 UQ₁₁, 3, 1, 0; 1996 TG₆, 3, 1, 0; 1996 TL₁₁, 3, 1, 0; 1997 BN₂, 3, 1, 0; 1997 CH₂₄, 3, 1, 0; 1997 EP, 3, 1, 0; 1997 EX₁₃, 3, 1, 0; 1997 ET₃₄, 3, 1, 0; 1998 AW₅, 3, 1, 0; 1998 BC₁₀, 6, 2, 64; 1998 BX₂₂, 3, 1, 0; 1998 DQ₁₁, 6, 2, 55; 1998 DD₂₄, 3, 1, 0; 1998 EJ₁₉, 3, 1, 0; 1998 ER₁₉, 3, 1, 0; 1998 FZ₁₆, 3, 1, 0; 1998 FF₂₀, 3, 1, 0; 1998 FN₂₀, 3, 1, 0; 1998 FC₂₁, 3, 1, 0; 1998 FC₂₃, 3, 1, 0; 1998 FF₂₇, 3, 1, 0; 1998 FZ₂₈, 3, 1, 0; 1998 FF₃₃, 3, 1, 0; 1998 FJ₃₃, 3, 1, 0; 1998 FF₃₄, 3, 1, 0; 1998 FJ₃₄, 3, 1, 0; 1998 FU₃₅, 3, 1, 0; 1998 FR₃₆, 6, 2, 28; 1998 FB₄₅, 6, 2, 28; 1998 FK₅₂, 3, 1, 0; 1998 FS₅₂, 3, 1, 0; 1998 FF₈₈, 3, 1, 0; 1998 FR₉₆, 3, 1, 0; 1998 FO₉₇, 3, 1, 0; 1998 FQ₉₇, 3, 1, 0; 1998 FN₉₈, 3, 1, 0; 1998 FJ₉₉, 6, 2, 28; 1998 FQ₁₀₂, 3, 1, 0; 1998 FQ₁₂₆, 3, 1, 0; 1998 FJ₁₃₀, 3, 1, 0; 1998 FT₁₃₀, 3, 1, 0; 1998 FM₁₃₁, 3, 1, 0; 1998 HM₁₃, 3, 1, 0; 1998 HB₁₉, 3, 1, 0; 1998 HH₅₅, 3, 1, 0; 1998 HQ₇₈, 3, 1, 0; 1998 HS₈₅, 3, 1, 0; 1998 HU₁₀₂, 3, 1, 0; 1998 HX₁₃₁, 3, 1, 0; 1998 HJ₁₃₆, 3, 1, 0; 1998 KP₁₃, 3, 1, 0; 1998 KJ₁₄, 3, 1, 0; 1998 KA₆₀, 3, 1, 0; 1999 NJ₉, 3, 1, 0; 1999 NM₆₂, 3, 1, 0; 1999 RE₁, 3, 1, 0; 1999 RZ₁, 6, 2, 23; 1999 RM₁₁, 3, 1, 0; 1999 RL₁₅, 3, 1, 0; 1999 RQ₁₅, 3, 1, 0; 1999 RF₁₇, 3, 1, 0; 1999 RT₁₇, 3, 1, 0; 1999 RY₂₇, 3, 1, 0; 1999 RV₂₈, 9, 3, 59; 1999 RH₃₅, 3, 1, 0; 1999 RL₃₅, 3, 1, 0; 1999 RV₄₂, 3, 1, 0; 1999 RC₅₂, 3, 1, 0; 1999 RO₇₂, 3, 1, 0; 1999 RM₁₀₂, 3, 1, 0; 1999 RR₁₁₄, 3, 1, 0; 1999 RT₁₁₆, 3, 1, 0; 1999 RY₁₁₉, 3, 1, 0; 1999 RA₁₂₂, 3, 1, 0; 1999 RV₁₂₅, 3, 1, 0; 1999 RA₁₃₃, 3, 1, 0; 1999 RG₁₃₈, 3, 1, 0; 1999 RF₁₄₆, 3, 1, 0; 1999 RG₁₆₀, 3, 1, 0; 1999 RO₁₇₈, 3, 1, 0; 1999 RM₂₁₄, 3, 1, 0; 1999 SK, 3, 1, 0; 6680 P-L, 3, 1, 0; 5175 T-2, 6, 2, 23; 3084 T-3, 3, 1, 0; [312, 93, 0*, 1996/03/18–1998/07/19]

568 Mauna Kea

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

G. M. Bernstein, Univ. of Michigan Dept. of Astronomy, Ann Arbor, MI 48103, U.S.A. [garyb@astro.lsa.umich.edu] (4)

S. Sheppard, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A. [sheppard@ifa.hawaii.edu] (5)

M. Holman, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. [mholman@cfa.harvard.edu] (6)

K. J. Meech, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A. [meech@nihoa.ifa.hawaii.edu] (7)

Observers C. Veillet (3), R. L. Allen (4), G. Bernstein (4) P. Guhathakurta (4), B. Gladman (6), J. J. Kavelaars (6), J.-M. Petit (6), M. Holman (6), H. Scholl (6), S. Sheppard (5), K. J. Meech (7), J. Bauer (7)

Measurers C. Veillet (3), G. Bernstein (4), M. Holman (6), S. Sheppard (5), J. Bauer (7)

3.6-m Canada-France-Hawaii Telescope + CCD, 2.24-m reflector + CCD, 10-m Keck Telescope

USNO-A2.0

{3} 1998 US₄₃, 3, 2, 3; 1998 WA₂₅, 3, 2, 3; 1998 WU₃₁, 3, 2, 3; [9, 3, 0*, 1999/10/06–1999/10/09]

{4} 1999 KL₁₇, 7, 2, 1; 1999 KR₁₈, 4, 1, 0; [11, 2, 0*, 1999/08/07–1999/08/08]

{5} 1992 QB₁, 2, 1, 0; 1998 US₄₃, 2, 1, 0; 1998 WX₂₄, 4, 2, 1; 1998 WU₃₁, 2, 1, 0; 1999 TR₁₁ *, 4, 2, 1; [14, 5, 1*, 1999/10/09–1999/10/11]

{6} 1999 OC₄ *, 6, 2, 2; 1999 OD₄ *, 3, 1, 0; 1999 OE₄ *, 3, 1, 0; 1999 OF₄ *, 3, 1, 0; [15, 4, 4*, 1999/07/18–1999/07/21]

{7} 1999 OX₃, 2, 1, 0; [2, 1, 0*, 1999/09/23]

587 Sormano

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Observers A. Testa, F. Manca, M. Cavagna, V. Giuliani, P. Chiavenna, P. Sicoli
0.5-m reflector + CCD

GSC

1994 TD, 3, 1, 0; 1996 VB₁, 2, 1, 0; 1997 AW₁₃, 5, 2, 19; 1997 CL₁₃, 4, 2, 3; 1998 XS₁₆, 2, 1, 0; 1999 OP₃, 2, 1, 0; 1999 PJ₁, 2, 1, 0; 1999 RU₂, 3, 1, 0; 1999 RR₂₈, 2, 1, 0; 1999 RC₃₂, 3, 1, 0; 1999 RD₃₂, 3, 1, 0; 1999 SL₅, 2, 1, 0; 1999 SM₅, 2, 1, 0; 1999 SN₅, 3, 1, 0; 1999 SO₅, 5, 2, 4; 1999 SF₁₀, 2, 1, 0; 1999 SG₁₀, 2, 1, 0; 1999 TY₂, 3, 1, 0; 1999 TZ₄, 3, 1, 0; 1999 TA₅, 3, 1, 0; 1999 TB₅, 2, 1, 0; 1999 TF₅, 4, 2, 2; 1999 TA₁₀, 3, 1, 0; [65, 23, 0*, 1999/09/12–1999/10/07]

589 Santa Lucia Stroncone

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Observers A. Vagnozzi, G. Bernabei, V. Risoldi, V. Scirri, G. Iatteri
0.50-m $f/2.8$ Ritchey-Chrétien + CCD

GSC

1995 KM₁, 9, 3, 2; 1996 EG, 2, 1, 0; 1999 RC, 10, 3, 7; 1999 RL₂₀₆, 7, 2, 2; 1999 SP₉ *, 17, 4, 11; 1999 TQ₃ *, 10, 3, 9; 1999 TD₆ *, 9, 3, 2; [64, 7, 3*, 1999/09/29–1999/10/12]

595 Farra d'Isonzo

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[ccaf@tmedia.it]

Observers A. Toso, G. Lombardi, E. Pettarin, M. Spolaor, M. Devetti, A. Olivieri,
C. Tonini, L. Drigo, G. Ierman, C. Knapic, W. Boschin, L. Bianchini
Measurers E. Pettarin, C. Tonini, L. Drigo, G. Lombardi, C. Knapic, A. Toso,
L. Bianchini

0.4-m $f/4.5$ reflector + CCD
GSC, USNO-SA1.0

1993 FX₃₇, 2, 1, 0; 1999 PJ₁, 3, 1, 0; 1999 RS₁, 6, 3, 6; 1999 RU₂, 3, 1, 0; 1999 RC₂₁, 3, 1, 0; 1999 RS₃₁, 2, 1, 0; 1999 RD₃₂, 8, 2, 3; 1999 RS₃₇, 1, 1, 0; 1999 RN₄₅, 5, 1, 0; 1999 RM₈₇, 12, 4, 13; 1999 RO₂₁₄, 4, 2, 5; 1999 SH₄, 2, 1, 0; 1999 SL₅, 11, 3, 7; 1999 SM₅, 4, 1, 0; 1999 SN₅, 5, 2, 15; 1999 TB₅, 3, 1, 0; 1999 TC₅, 3, 1, 0; 1999 TD₅, 3, 1, 0; 1999 TE₅, 2, 1, 0; 1999 TF₅, 3, 1, 0; 1999 TV₆, 3, 1, 0; 1999 TW₈ *, 6, 3, 6; 1999 TX₈ *, 6, 3, 7; 1999 TY₈ *, 8, 4, 7; 1999 TZ₈ *, 4, 2, 1; 1999 TA₁₀, 2, 1, 0; 1999 TH₁₃, 3, 1, 0; 1999 TO₁₃, 5, 1, 0; 1999 TT₁₄, 2, 1, 0; 1999 TP₁₅, 4, 2, 1; 1999 TQ₁₅ *, 4, 2, 1; 1999 TR₁₅ *, 4, 2, 1; 1999 TZ₁₅ *, 6, 2, 1; 1999 TC₁₆ *, 6, 3, 6; 1999 TO₁₉ *, 4, 2, 5; 1999 TP₁₉ *, 4, 2, 5; 1999 TJ₂₀ *, 4, 2, 5; (7639), 2, 1, 0; [162, 38, 11*, 1999/09/16–1999/10/20]

596 Colleverde di Guidonia

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0.40-m $f/3.2$ reflector + CCD

GSC

1986 QZ₂, 2, 1, 0; 1989 SC, 2, 1, 0; 1995 QN₂, 6, 2, 2; 1995 UC₅, 7, 2, 2; 1995 YB, 2, 1, 0; 1996 XC₉, 6, 2, 1; 1999 SM₅, 9, 3, 2; 1999 TA₁₀, 3, 1, 0; 1999 TO₁₃, 4, 1, 0; (3735), 3, 1, 0; [44, 10, 0*, 1999/09/30–1999/10/19]

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

4120 T-2, 2, 1, 0; [2, 1, 0*, 1996/05/23]

608 Haleakala-AMOS

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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 FR₃₀, 2, 1, 0; 1998 KJ₄, 3, 1, 0; 2650 P-L, 2, 1, 0; [7, 3, 0*, 1995/11/21–1997/01/11]

609 Osservatorio Polino

G. Iatterti, Via Val Serra 45h, Terni, Italy

Observers G. Iatterti, V. Scirri, G. Bernabei

0.40-m $f/2.9$ reflector + CCD

GSC

1995 KM₁, 2, 1, 0; 1999 TD₆, 2, 1, 0; 1999 TE₁₁ *, 6, 2, 2; [10, 3, 1*, 1999/10/07–1999/10/09]

610 Pianoro

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

GSC

1981 EK₂₇, 15, 3, 2; 1982 VD₅, 10, 2, 1; 1988 RD, 5, 1, 0; 1991 NB₁, 5, 1, 0; 1991 UE₂, 24, 5, 4; 1993 FL₄, 24, 5, 4; 1994 BY, 21, 4, 3; 1995 UQ₄₄, 5, 1, 0; 1996 XF₁₉, 10, 2, 6; 1998 FC₁₁₈, 10, 2, 1; 1998 HH₉₃, 5, 1, 0; 1999 ML, 5, 1, 0; 1999 ND₄₃, 6, 1, 0; 1999 SM₅, 5, 1, 0; (205), 10, 2, 7; (699), 32, 2, 11; (829), 5, 1, 0; (890), 5, 1, 0; (950), 4, 1, 0; (1383), 5, 1, 0; (1469), 15, 3, 10; (1811), 5, 1, 0; (2238), 10, 2, 1; (2400), 5, 1, 0; (2586), 5, 1, 0; (2685), 5, 1, 0; (2928), 5, 1, 0; (3143), 14, 3, 3; (3146), 5, 1, 0; (3164), 5, 1, 0; (3440), 5, 1, 0; (3533), 5, 1, 0; (3622), 10, 2, 6; (3657), 10, 2, 7; (3912), 5, 1, 0; (4105), 13, 3, 10; (4263), 11, 2, 4; (4454), 5, 1, 0; (4733), 5, 1, 0; (5150), 14, 3, 3; (5315), 4, 1, 0; (5680), 5, 1, 0; (5697), 5, 1, 0; (5887), 5, 1, 0; (6220), 5, 1, 0;

(6521), 5, 1, 0; (6571), 10, 2, 1; (6587), 15, 3, 2; (7447), 5, 1, 0; (7609), 10, 2, 1; (7708), 5, 1, 0; (7746), 10, 2, 1; (8466), 5, 1, 0; (8616), 5, 1, 0; (8736), 5, 1, 0; (8748), 11, 2, 4; (8864), 5, 1, 0; (9078), 15, 3, 2; (9257), 5, 1, 0; (11437), 5, 1, 0; (11534), 5, 1, 0; (11575), 5, 1, 0; (11576), 15, 3, 2; (11635), 10, 2, 1; [543, 64, 0*, 1999/09/29–1999/10/17]

611 Starkenburg Sternwarte, Heppenheim

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

Observers M. Busch, R. Stoss, S. Kluegl, A. Seib, E. Schwab, L. Kurtze,

J. Rothermel, L. Šarounová

Measurers M. Busch, R. Stoss, E. Schwab

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

GSC-ACT, USNO-SA1.0

1977 QF₁, 2, 1, 0; 1981 TK, 2, 1, 0; 1983 RL, 4, 2, 1; 1985 UJ₃, 2, 1, 0; 1986 TR, 2, 1, 0; 1988 RO₆, 2, 1, 0; 1988 VL₂, 2, 1, 0; 1988 VG₄, 2, 1, 0; 1989 TW, 2, 1, 0; 1990 BO, 2, 1, 0; 1990 TZ₁, 2, 1, 0; 1991 GA₂, 1, 1, 0; 1991 NB₁, 2, 1, 0; 1991 NU₃, 4, 1, 0; 1991 PE₃, 2, 1, 0; 1991 RA₄, 6, 3, 2; 1991 RN₂₇, 2, 1, 0; 1991 SR₁, 1, 1, 0; 1991 VE₂, 2, 1, 0; 1991 VA₃, 4, 2, 1; 1991 VT₃, 2, 1, 0; 1992 ME, 2, 1, 0; 1992 SY₁₂, 2, 1, 0; 1992 SG₁₃, 2, 1, 0; 1992 SY₁₇, 2, 1, 0; 1992 UT₃, 2, 1, 0; 1992 WV₃, 2, 1, 0; 1993 FH₃₆, 2, 1, 0; 1993 SD₂, 1, 1, 0; 1993 SN₃, 2, 1, 0; 1995 QD₃, 2, 1, 0; 1996 EQ₂, 2, 1, 0; 1996 XX₃₁, 2, 1, 0; 1997 AZ₂, 3, 2, 1; 1997 EH₄₆, 4, 2, 1; 1998 FQ₆₉, 2, 2, 2; 1998 FN₇₇, 2, 1, 0; 1998 FZ₉₇, 2, 1, 0; 1998 FC₁₁₈, 2, 1, 0; 1998 KZ₄₆, 2, 1, 0; 1998 UP₁, 3, 1, 0; 1999 CU₃, 2, 1, 0; 1999 HX₂, 2, 1, 0; 1999 JL₈₁, 2, 1, 0; 1999 KF₄, 2, 2, 75; 1999 KK₆, 4, 2, 75; 1999 KL₆, 2, 1, 0; 1999 KS₇, 2, 1, 0; 1999 NK₅₆, 2, 1, 0; 1999 OB₃, 2, 1, 0; 1999 QB₂, 2, 1, 0; 1999 RC, 2, 1, 0; 1999 RK₃, 4, 2, 1; 1999 RM₁₁, 2, 1, 0; 1999 RL₂₇, 2, 1, 0; 1999 RW₂₇, 2, 1, 0; 1999 RC₂₈, 2, 1, 0; 1999 RY₃₄, 2, 1, 0; 1999 RK₃₅, 5, 2, 1; 1999 RN₃₆, 2, 1, 0; 1999 RW₃₇, 7, 3, 2; 1999 RJ₄₂, 2, 1, 0; 1999 RX₄₂, 2, 1, 0; 1999 RC₄₄, 2, 1, 0; 1999 RK₁₀₄, 2, 1, 0; 1999 RR₁₁₃, 3, 2, 1; 1999 RL₁₂₄, 4, 2, 2; 1999 RM₁₇₂, 2, 1, 0; 1999 RB₁₇₃, 2, 1, 0; 1999 RH₁₇₇, 2, 1, 0; 1999 RQ₁₉₄, 2, 1, 0; 1999 RC₁₉₈, 2, 1, 0; 1999 SU₁, 2, 1, 0; 1999 SB₂, 2, 1, 0; 1999 SJ₂, 2, 1, 0; 1999 TY₁, 2, 1, 0; 1999 TJ₁₂, 4, 1, 0; 1999 TM₁₂, 2, 1, 0; 1999 TN₁₃, 8, 2, 5; 1999 TO₁₃, 3, 1, 0; 1999 TA₁₆ *, 8, 3, 2; 1999 TB₁₆ *, 9, 4, 3; 1999 TK₁₆ *, 6, 3, 2; 1999 TV₁₆, 4, 1, 0; 1999 TW₁₆, 3, 1, 0; 1999 TX₁₆, 2, 1, 0; 1999 TY₁₆, 3, 1, 0; 1999 UQ, 5, 2, 1; 1999 UR, 4, 1, 0; 1999 UP₁ *, 5, 2, 1; 1182 T-1, 3, 2, 1; (1909), 3, 1, 0; (6945), 5, 1, 0; (11055), 2, 1, 0; (11059), 2, 1, 0; (11398), 2, 1, 0; (11569), 3, 2, 2; [264, 97, 4*, 1999/07/18–1999/10/18]

615 St. Véran

J. Schwaenen, Allée D 5, B-6001 Marcinelle, Belgium

[jean.schwaenen@worldonline.be]

Observers J. Boussuge, C. Jacquemard, A. Jacquemard, J.-L. Labaye

Measurer J. Boussuge

0.62-m $f/3$ reflector + CCD

GSC, USNO-SA2.0

1998 HD₈, 5, 2, 1; 1999 QS₂, 7, 2, 1; 1999 RY₄₄, 4, 2, 1; (9117), 6, 2, 2; [22, 4, 0*, 1999/10/04–1999/10/07]

619 Sabadell

F. Casarramona, P.O. Box 50, E-8200 Sabadell (BCN), Spain

[astrosab@redestb.es]

Observers F. Casarramona, E. Vigil

Measurer F. Casarramona

0.51-m $f/3.9$ reflector + CCD

GSC

1990 VF₈, 3, 1, 0; 1991 AH₂, 3, 1, 0; 1992 UY, 3, 1, 0; 1993 SD₂, 3, 1, 0; 1996 YF, 4, 1, 0; (950), 1, 1, 0; [17, 6, 0*, 1999/10/07–1999/10/10]

620 Observatorio Astronómico de Mallorca

À. López, Observatori Astronòmic de Mallorca, Camí de l'observatori s/n, E-07144 Costitx, Balears, Spain [astroam@dinky.bitel.es]

Observers À. López, R. Pacheco

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

GSC

1999 SL₅, 4, 1, 0; 1999 SM₅, 3, 1, 0; 1999 TA₁₀, 3, 1, 0; [10, 3, 0*, 1999/10/01–1999/10/08]

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

1999 RQ₂₇, 11, 3, 3; 1999 RN₃₀, 11, 2, 2; 1999 RZ₅₂, 11, 3, 3; 1999 RH₁₁₈, 15, 4, 4; 1999 RH₂₁₃, 9, 3, 3; 1999 TL₂₁ *, 9, 3, 4; 1999 TM₂₁ *, 9, 3, 5; 1999 TN₂₁ *, 18, 5, 6; 1999 UD₃ *, 21, 5, 4; 1999 UE₃ *, 12, 4, 3; 1999 UF₃ *, 7, 2, 1; 1999 UG₃ *, 9, 2, 1; 1999 UH₃ *, 8, 2, 1; (1382), 6, 2, 1; (1498), 5, 2, 3; (3607), 12, 3, 4; (4993), 15, 2, 1; (9059), 6, 1, 0; [194, 18, 8*, 1999/10/12-1999/10/20]

628 Mülheim-Ruhr

A. Martin, Turtle Star Observatory, Friedhostr. 15, D-45478 Mülheim-Ruhr, Germany [axe1m@bph.ruhr-uni-bochum.de]

Observers A. Boeker, A. Martin

0.2-m Schmidt-Cassegrain + CCD

USNO-A2.0

1993 SD₂, 4, 1, 0; 1995 MB, 3, 1, 0; 1995 SK₂, 2, 1, 0; 1999 RL₁₂₄, 4, 1, 0; 1999 RC₁₉₈, 4, 1, 0; 1999 TS₈, 5, 1, 0; (832), 4, 1, 0; (4263), 5, 1, 0; (8748), 4, 1, 0; (11573), 5, 1, 0; [40, 10, 0*, 1999/10/15-1999/10/18]

629 JATE Observatory, Szeged

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

Observers K. Sárneczky, L. Kiss, B. Csák, G. Szabó

0.28-m Schmidt-Cassegrain + CCD

GSC

1942 TB, 3, 1, 0; 1969 TT₁, 4, 1, 0; 1971 UN₁, 4, 1, 0; 1971 UT₁, 10, 3, 15; 1973 AW₃, 7, 2, 14; 1975 TU₃, 4, 1, 0; 1999 LF₆, 9, 1, 0; 1999 SB₃, 14, 2, 1; (921), 4, 1, 0; (1698), 3, 1, 0; (5714), 4, 1, 0; (5883), 2, 1, 0; (8738), 3, 1, 0; [71, 13, 0*, 1999/10/02-1999/10/17]

631 Hamburg-Georgswerder

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

[michael.buck@jovice.net]

0.15-m $f/8$ refractor + CCD

GSC

(193), 4, 2, 1; (687), 4, 2, 1; (2917), 4, 2, 1; (3632), 4, 2, 1; (4203), 4, 2, 1; (4813), 4, 2, 1; (7536), 4, 2, 1; (7628), 4, 2, 1; [32, 8, 0*, 1999/10/15-1999/10/16]

635 Perpignan

J.-M. Llapasset, 66 Cours De Lassus, F-66000 Perpignan, France [Jean-Marie.Llapasset@wanadoo.fr]

0.28-m $f/6.3$ reflector + CCD

USNO-SA1.0

1999 RA₃₃, 6, 2, 2; 1999 RY₄₄, 5, 2, 1; (699), 6, 1, 0; [17, 3, 0*, 1999/09/28-1999/10/05]

636 Essen

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

0.318-m $f/5.7$ reflector + CCD

USNO-A2.0

1988 VG₄, 6, 2, 1; 1989 TW, 5, 2, 1; 1990 BO, 3, 1, 0; 1990 RT₂, 5, 2, 1; 1991 NU₃, 3, 1, 0; 1991 VT₃, 3, 1, 0; 1992 SY₁₇, 4, 2, 1; 1992 SQ₂₃, 6, 2, 1; 1993 FH₃₆, 7, 2, 1; 1995 MB, 7, 3, 5; 1998 KZ₄₆, 8, 3, 4; 1999 RD₂, 3, 1, 0; (1399), 4, 1, 0; (11277), 6, 2, 1; [70, 14, 0*, 1999/10/12-1999/10/19]

641 Overberg

A. van Staden, 7 Sonop Street, Bredasdorp 7280, South Africa [andrev@otb.co.za]

0.20-m $f/7.9$ reflector + CCD

GSC

1999 SN₁₀ *, 5, 2, 5; [5, 1, 1*, 1999/09/29-1999/10/04]

642 Oak Bay, Victoria

C. E. Spratt, 1431 St. Patrick Street, Victoria, BC V8S 4Y5, Canada

[cspratt@islandnet.com]

0.20-m $f/3.7$ Schmidt-Cassegrain + CCD

GSC

1999 SM₅, 12, 3, 2; (575), 4, 2, 2; (687), 6, 2, 1; (2229), 7, 3, 3; (3731), 7, 3, 4; (11497), 2, 1, 0; [38, 6, 0*, 1999/09/28-1999/10/23]

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

1999 RO₃₃, 2, 1, 0; [2, 1, 0*, 1999/09/18]

649 Powell Observatory, Louisburg

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

[lrobinson@ix.netcom.com]

Observers R. Fredrick, D. Hudgins

Measurers L. Robinson, R. Fredrick, J. Miriani

0.30-m Schmidt-Cassegrain + CCD, 0.25-m Schmidt-Cassegrain + CCD

GSC-I.1

1981 EN₁₃, 2, 1, 0; 1987 SE₃, 3, 1, 0; 1993 GR, 2, 1, 0; 1998 SD₂, 3, 1, 0; 1999 QV₁, 3, 1, 0; 1999 TP₇ *, 12, 4, 14; 1999 TZ₁₀, 3, 1, 0; 1999 TS₁₁, 3, 1, 0; (4754), 3, 1, 0; (11436), 2, 1, 0; (11437), 1, 1, 0; (11449), 3, 1, 0; (11505), 3, 1, 0; [43, 13, 1*, 1999/10/07-1999/10/21]

650 Temecula

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

[jimvail@pe.net]

0.25-m $f/7.7$ Schmidt-Cassegrain + CCD

GSC-I.1

1999 JN₁₇, 4, 2, 8; (2373), 4, 2, 8; (6717), 4, 2, 8; [12, 3, 0*, 1999/09/21-1999/09/29]

653 Torus Observatory, Buckley

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

[richjwilliams@msn.com]

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

GSC

1999 UB₃ *, 4, 2, 1; [4, 1, 1*, 1999/10/21-1999/10/22]

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

1998 OH, 3, 1, 0; 1999 CF₉, 6, 2, 2; 1999 ED₅, 3, 1, 0; 1999 NZ₄, 6, 2, 2; 1999 QJ, 9, 3, 7; 1999 RU₂, 3, 1, 0; 1999 RV₂, 3, 1, 0; 1999 RH₂₇, 3, 1, 0; 1999 RN₂₈, 3, 1, 0; 1999 RD₃₂, 6, 2, 2; 1999 RM₄₅, 6, 2, 2; 1999 SK₂, 3, 1, 0; 1999 SL₅, 9, 3, 7; 1999 SM₅, 3, 1, 0; 1999 SN₅, 3, 1, 0; 1999 SO₅, 6, 2, 2; 1999 SG₁₀, 3, 1, 0; 1999 SK₁₀, 8, 3, 6; 1999 SQ₁₀, 3, 1, 0; 1999 TZ₄, 3, 1, 0; 1999 TA₅, 6, 2, 2; 1999 TB₅, 6, 2, 2; 1999 TC₅, 6, 2, 2; 1999 TE₅, 3, 1, 0; 1999 TB₁₀, 3, 1, 0; 1999 TC₁₀, 6, 2, 4; 1999 TM₁₃, 3, 1, 0; 1999 TO₁₃, 3, 1, 0; 1999 TT₁₆, 6, 2, 2; 1999 TU₁₆, 6, 2, 2; 1999 TV₁₆, 6, 2, 2; 1999 TW₁₆, 6, 2, 6; 1999 TX₁₆, 3, 1, 0; 1999 TY₁₆, 6, 2, 2; 1999 UQ, 9, 3, 5; 1999 UR, 3, 1, 0; 1999 UM₃, 6, 2, 1; [182, 38, 0*, 1999/09/21-1999/10/23]

670 Camarillo

J. E. Rogers, 441 Rowland Avenue, Camarillo, CA 93010, U.S.A.
[johnrogers@csi.com]

0.30-m $f/6.7$ Helin Telescope + CCD
GSC-1.1

1998 UP₁, 7, 2, 1; 1999 CU₃, 7, 3, 5; 1999 GK₄, 5, 2, 10; 1999 JM₈, 2, 1, 0; 1999 LF₆, 5, 2, 1; 1999 ML, 5, 2, 12; 1999 RV₂, 2, 1, 0; 1999 RH₂₇, 2, 1, 0; 1999 SL₅, 4, 2, 12; 1999 SM₅, 4, 1, 0; 1999 SG₁₀, 3, 1, 0; 1999 TY₂, 12, 2, 1; 1999 TA₁₀, 6, 2, 10; 1999 TJ₁₂, 2, 1, 0; 1999 TN₁₃, 2, 1, 0; 1999 TO₁₃, 5, 2, 1; 1999 UR, 8, 2, 1; (10115), 3, 1, 0; [84, 18, 0*, 1999/10/02–1999/10/19]

671 Stony Ridge

J. E. Rogers, 441 Rowland Avenue, Camarillo, CA 93010, U.S.A.
[72401.3174@compuserve.com]

0.75-m $f/6$ Newtonian reflector + focal reducer + CCD
1999 TB₅, 4, 1, 0; [4, 1, 0*, 1999/10/03]

675 Palomar

E. F. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A.
[efh@alps.jpl.nasa.gov] (2)

C. S. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A.
[gshoemaker@iflag2.wr.usgs.gov] (3)

C. J. van Houten, Sterrewacht Leiden, Postbus 9513, NL-2300 RA Leiden, The Netherlands [vanhouten@rulhl1.leidenuniv.nl] (4)

A. Gnädig, c/o Archenhold-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany
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E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. [elgb@lowell.edu] (6)

9 = 6 + 3

Observers T. Gehrels (4, L), D. J. Griffith (3, L), E. F. Helin (2, S), H. E. Holt (3, S), K. Lawrence (2, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S)
Measurers A. Gnädig (5), K. Lawrence (2), B. A. Skiff (6), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4)

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

{2} 1994 PX₃₉, 2, 1, 0; 1997 UK₉, 8, 3, 35; 1998 DM₁₃, 4, 2, 4; [14, 3, 0*, 1990/10/14–1994/09/03]

{4} 2588 P-L *, 11, 9, 32; 2601 P-L *, 7, 7, 32; 3013 P-L *, 8, 6, 5; 3026 P-L *, 15, 6, 5; 3093 P-L *, 5, 5, 5; 3504 P-L *, 10, 7, 30; 3563 P-L *, 4, 3, 8; 4104 P-L *, 7, 7, 32; 6056 P-L *, 8, 8, 32; 6617 P-L *, 8, 8, 32; 6622 P-L *, 8, 8, 32; 6685 P-L *, 8, 4, 4; 6847 P-L *, 8, 4, 4; 9075 P-L *, 3, 3, 4; 1116 T-1 *, 6, 5, 9; 2087 T-1 *, 7, 5, 22; 2099 T-1 *, 4, 3, 2; 2294 T-1 *, 7, 5, 9; 3162 T-1 *, 6, 3, 2; 4038 T-1 *, 7, 4, 9; 1066 T-2 *, 14, 8, 16; 1213 T-2 *, 15, 8, 16; 1528 T-2 *, 15, 8, 16; 2215 T-2 *, 23, 8, 16; 2284 T-2 *, 7, 4, 6; 3133 T-2 *, 15, 8, 16; 3318 T-2 *, 7, 4, 6; 4091 T-2 *, 15, 8, 16; 5175 T-2 *, 12, 6, 11; 1228 T-3 *, 6, 3, 6; 2428 T-3 *, 16, 4, 6; 3071 T-3 *, 8, 4, 6; 3078 T-3 *, 16, 7, 15; 3084 T-3 *, 8, 4, 6; 4070 T-3 *, 12, 7, 15; 4141 T-3 *, 15, 7, 15; 4375 T-3 *, 6, 3, 5; 4432 T-3 *, 19, 7, 15; 5188 T-3 *, 8, 4, 6; [384, 39, 39*, 1960/09/24–1977/10/22]

{5} 1997 PK₂, 4, 2, 13138; 1997 UK₇, 2, 1, 0; 1998 DK₁, 2, 1, 0; 1998 KK, 2, 1, 0; 1998 MT₂₄, 2, 1, 0; 1999 RP₁₄₅, 6, 3, 462; 1999 RR₁₄₇, 2, 1, 0; 1999 RP₁₅₉, 2, 2, 1275; (2830), 2, 1, 0; (3314), 2, 1, 0; (4464), 4, 2, 2331; (4793), 3, 2, 13183; (8412), 4, 2, 15060; (8486), 2, 1, 0; (8563), 2, 1, 0; (8773), 2, 1, 0; (9242), 2, 1, 0; (9503), 2, 1, 0; (11739), 1, 1, 0; [48, 19, 0*, 1949/12/22–1997/02/07]

{6} 1999 RF₂₇, 2, 1, 0; [2, 1, 0*, 1951/02/04]

{9} 1993 FF₁₆, 1, 1, 0; 1995 BP, 2, 1, 0; 1996 AV, 2, 1, 0; 1998 DT₇, 2, 1, 0; 1998 QH₅₁, 2, 1, 0; 1999 JK₈₁, 1, 1, 0; 1999 RT₃₂, 1, 1, 0; 1999 RQ₁₂₉, 2, 1, 0; 4120 T-2, 1, 1, 0; [14, 9, 0*, 1986/03/04–1994/11/07]

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

1997 FU₂, 10, 4, 3; 1999 OB₃, 5, 2, 1; 1999 RD₂, 5, 2, 15; 1999 RE₂, 4, 2, 15; 1999 RD₂₈, 2, 1, 0; 1999 RE₂₈, 5, 2, 15; 1999 RL₃₆, 2, 1, 0; 1999 RJ₄₂, 3, 1, 0; 1999 RQ₄₃, 2, 1, 0; 1999 RG₄₅, 2, 1, 0; 1999 RH₄₅, 3, 1, 0; 1999 RH₉₂, 4, 2, 1; 1999 RR₁₁₄, 5, 2, 1; 1999 RM₁₄₆, 4, 2, 1; 1999 RW₁₄₉, 5, 2, 1; 1999 RA₁₅₀, 5, 2, 1; 1999 RE₁₅₄, 4, 2, 1; 1999 RZ₁₅₅, 11, 4, 3; 1999 RL₁₅₆, 5, 2, 1; 1999 RP₁₆₃, 5, 2, 1; 1999 RZ₁₇₅, 4, 2, 1; 1999 RH₁₇₇, 5, 2, 1; 1999 RO₂₁₁, 5, 2, 1; 1999 RQ₂₁₁, 6, 2, 1; 1999 SB₂, 5, 2, 1; 1999 SV₆ *, 12, 4, 14; 1999 TZ₁ *, 13, 5, 19; 1999 TA₂ *, 11, 4, 12; 1999 TB₂ *, 9, 4, 12; 1999 TC₂ *, 10, 4, 12; 1999 TD₂ *, 20, 7, 14; 1999 TE₂ *, 8, 3, 13; 1999 TF₂ *, 10, 5, 14; 1999 TG₂ *, 10, 4, 12; 1999 TH₂ *, 14, 6, 17; 1999 TN₂ *, 8, 4, 12; 1999 TO₂ *, 10, 3, 12; 1999 TP₂ *, 9, 4, 12; 1999 TQ₂ *, 11, 4, 12; 1999 TR₂ *, 8, 3, 12; 1999 TS₂ *, 8, 3, 12; 1999 TA₃ *, 7, 3, 11; 1999 TD₈ *, 10, 4, 9; 1999 TE₈ *, 9, 3, 10; 1999 TF₈ *, 9, 4, 9; 1999 TG₈ *, 8, 3, 7; 1999 TH₈ *, 7, 3, 7; 1999 TU₈, 3, 1, 0; 1999 TF₁₁ *, 11, 4, 10; 1999 TG₁₁ *, 8, 4, 10; 1999 TH₁₁ *, 11, 4, 10; 1999 TP₁₂, 6, 2, 1; 1999 TQ₁₂, 5, 2, 1; 1999 TU₁₂ *, 10, 4, 9; 1999 TV₁₂ *, 9, 4, 9; 1999 TW₁₂ *, 12, 5, 11; 1999 TX₁₂ *, 9, 4, 9; 1999 TL₁₃, 3, 1, 0; 1999 TW₁₄ *, 8, 4, 8; 1999 TX₁₄ *, 9, 4, 7; 1999 TY₁₄ *, 9, 4, 7; 1999 TZ₁₄ *, 11, 4, 7; 1999 TA₁₅ *, 9, 4, 7; 1999 TH₁₆ *, 9, 4, 8; 1999 TJ₁₆ *, 8, 3, 7; 1999 UY₁ *, 7, 3, 5; 1999 UZ₁ *, 6, 3, 5; 1999 UU₂ *, 7, 3, 2; 1999 UV₂ *, 7, 3, 2; 1999 UW₂ *, 5, 2, 1; [519, 70, 41*, 1999/09/30–1999/10/21]

681 Calgary

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0.36-m $f/7$ Schmidt-Cassegrain + CCD
USNO-A2.0

1979 QM₁, 5, 2, 6; 1982 UR₁₀, 4, 2, 6; 1993 ES, 4, 2, 6; 1994 PK₅, 4, 2, 1; 1995 OA, 4, 2, 1; 1995 XH, 2, 1, 0; 1998 FJ₇₂, 2, 1, 0; 1998 FN₇₇, 4, 2, 6; 1999 RD₄₄, 2, 1, 0; 1999 RE₄₄, 3, 1, 0; 1999 ST₁, 2, 1, 0; 1999 SU₁, 5, 2, 1; 1999 TQ₉, 5, 2, 6; 1999 TJ₁₉ *, 11, 4, 13; 1999 UJ₃ *, 7, 2, 2; (7754), 5, 2, 6; [69, 16, 2*, 1999/09/28–1999/10/23]

683 Goodricke-Pigott Observatory, Tucson

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0.35-m $f/11$ Schmidt-Cassegrain + CCD
GSC

1986 WZ, 3, 1, 0; 1987 QW₂, 6, 2, 1; 1992 GM₂, 6, 2, 1; 1994 AM₃, 6, 2, 1; 1995 FA₁, 6, 2, 1; 1997 EK₈, 9, 3, 3; 1997 HE₁₄, 11, 3, 3; 1998 FS₆₈, 3, 1, 0; 1998 FG₁₀₄, 8, 3, 3; 1998 FB₁₁₁, 9, 3, 3; 1998 KH₃₀, 6, 2, 1; 1998 KQ₃₁, 6, 2, 1; 1999 QZ₁, 6, 2, 1; 1999 RJ₁₀₅, 11, 3, 3; 1999 RL₁₀₇, 6, 2, 1; 1999 RC₂₀₆, 3, 1, 0; 1999 RO₂₀₇, 9, 3, 3; 1999 RQ₂₀₇, 8, 3, 3; 1999 RB₂₀₉, 8, 3, 3; 1999 RK₂₁₂, 6, 2, 1; 1999 SH, 3, 1, 0; 1999 TP, 6, 2, 1; 1999 TD₃, 5, 2, 3; 1999 TY₃, 6, 2, 1; 1999 TK₅, 3, 1, 0; 1999 TT₅, 6, 2, 1; 1999 TQ₇, 3, 1, 0; 1999 TK₂₀ *, 11, 3, 3; 1999 TL₂₀ *, 11, 3, 3; 1999 TM₂₀ *, 9, 3, 3; 1999 TN₂₀ *, 9, 3, 3; 1999 TO₂₀ *, 6, 2, 3; 1999 TP₂₀ *, 6, 2, 3; 1999 TQ₂₀ *, 6, 2, 3; 1999 TR₂₀ *, 5, 2, 3; 1999 TS₂₀ *, 6, 2, 1; 1999 TT₂₀ *, 6, 2, 1; 1999 TU₂₀ *, 6, 2, 1; 1999 TV₂₀ *, 6, 2, 1; 1999 TW₂₀ *, 9, 2, 1; 1999 TX₂₀ *, 5, 2, 1; 1999 TY₂₀ *, 5, 2, 1; 1999 TZ₂₀ *, 5, 2, 1; 1999 TA₂₁ *, 6, 2, 1; 1999 TB₂₁ *, 6, 2, 1; 1999 TC₂₁ *, 4, 2, 1; 2054 P-L, 3, 1, 0; 4626 P-L, 6, 2, 1; (1311), 6, 2, 1; (3406), 6, 2, 1; (3503), 3, 1, 0; (3661), 6, 2, 1; (5404), 12, 3, 3; (5652), 3, 1, 0; (6028), 6, 2, 1; (6545), 2, 1, 0; (6715), 6, 2, 1; (6771), 3, 1, 0; (7465), 6, 2, 1; (11586), 6, 2, 1; (11709), 6, 2, 3; [375, 61, 19*, 1999/10/05–1999/10/08]

684 Prescott

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0.46-m $f/4.5$ reflector + CCD
GSC

1996 TD₇, 4, 2, 1; 1996 VT, 4, 2, 1; 1996 XC, 4, 2, 1; 1996 XH₂₆, 6, 2, 1; 1997 AX₅, 4, 2, 1; 1997 BP₅, 4, 2, 1; 1997 BV₅, 4, 2, 1; 1997 CF₂₂, 4, 2, 1; 1997 ED₈, 4, 2, 1; 1997 EK₈, 5, 2, 1; 1997 FH₁, 4, 2, 1; 1997 HO₁, 2, 1, 0; 1997 HE₁₄, 3, 1, 0; 1998 HA, 4, 2, 1; 1998 HQ₂₃, 4, 2, 1; 1998 HR₂₃, 4, 2, 1; 1998 HS₂₃, 4, 2, 1; 1998 HL₈₀, 2, 1, 0; 1998 KB, 4, 2, 1; 1998 KM₉, 4, 2, 1; 1998 OW₅, 4, 2, 1; 1998 QF, 4, 2, 1; 1999 ML, 2, 1, 0; 1999 PC, 4, 2, 1; 1999 PM₃, 4, 2, 2; 1999 RG, 4, 2, 1; 1999 RL, 2, 1, 0; 1999 RP₁, 4, 2, 1; 1999 RR₁, 4, 2, 1; 1999 RD₃₅, 5, 1, 0; 1999 RE₃₅, 2, 1, 0; 1999 RZ₃₅, 4, 2, 1; 1999 RW₃₆, 4, 2, 1; 1999 RW₈₆, 3, 1, 0; 1999 RF₈₇, 2, 1, 0; 1999 RE₉₃, 5, 2, 1; 1999 RQ₉₃, 5, 2, 1; 1999 RM₉₆, 2, 1, 0; 1999 RZ₁₄₅, 2, 1, 0; 1999 RR₂₁₄, 6, 2, 3; 1999 SE₁, 4, 2, 1; 1999 SU₃ *, 10, 4, 19; 1999 TG *, 10, 4, 5; 1999 TH *, 6, 2, 1; 1999 TJ *, 5, 2,

1; 1999 TK *, 9, 4, 5; 1999 TL *, 9, 4, 5; 1999 TB₃ *, 4, 2, 1; 1999 TC₃ *, 4, 2, 1; 1999 TD₃ *, 9, 4, 5; 1999 TE₃ *, 9, 4, 5; 1999 TF₃ *, 4, 2, 1; 1999 TG₃ *, 4, 2, 1; 1999 TH₃ *, 4, 2, 1; 1999 TJ₃ *, 4, 2, 1; 1999 TK₃ *, 4, 2, 1; 1999 TL₃ *, 8, 4, 5; 1999 TM₃ *, 8, 4, 5; 1999 TN₃ *, 15, 7, 10; 1999 TY₄ *, 4, 2, 1; 1999 TN₉ *, 6, 2, 1; 1999 TZ₉ *, 6, 3, 2; 1999 TB₁₀ *, 2, 1, 0; 1999 TE₁₀ *, 4, 2, 1; 1999 TF₁₀ *, 6, 3, 4; 1999 TG₁₀ *, 8, 4, 5; 1999 TH₁₀ *, 15, 7, 6; 1999 TK₁₀ *, 4, 2, 1; 1999 TL₁₀ *, 5, 2, 1; 1999 TM₁₀ *, 3, 2, 1; 1999 TJ₁₂ *, 3, 1, 0; 1999 TK₁₂ *, 2, 1, 0; 1999 TL₁₂ *, 2, 1, 0; 1999 TO₁₂ *, 7, 3, 2; 1999 TP₁₂ *, 7, 3, 2; 1999 TQ₁₂ *, 7, 3, 2; 1999 TR₁₂ *, 5, 2, 1; 1999 TS₁₂ *, 5, 2, 1; 1999 TB₁₄ *, 6, 3, 2; 1999 TC₁₄ *, 6, 3, 2; 1999 TD₁₄ *, 6, 3, 2; 1999 TW₁₆ *, 2, 1, 0; 1999 TO₁₇ *, 2, 1, 0; 1999 TT₁₈ *, 2, 1, 0; 1999 TH₁₉ *, 2, 1, 0; 4060 P-L, 4, 2, 3; (2542), 2, 1, 0; [413, 87, 38*, 1999/09/18–1999/10/15]

688 Lowell Observatory, Anderson Mesa Station

M. W. Buie, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001,
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G. A. Snyder Gettysburg College 300 N. Washington St PA 17325 USA
[gsnyder@gettysburg.edu] (2)

Observers M. W. Buie, L. Marschall, J. Lynch, A. Duffy, P. Nothstein,
M. Rothrock, E. Praton, E. Roberts, K. Janes

Measurers M. E. Buie G. Snyder

1.07-m reflector + CCD, 0.8-m reflector + CCD, 1.8-m reflector + CCD
USNO-A2.0

{1} 1999 RO₆₃, 3, 1, 0; [3, 1, 0*, 1998/04/18]

{2} 1999 TU₁₄ *, 19, 6, 5; 1999 TV₁₄ *, 14, 5, 5; (5404), 2, 1, 0; [35, 3, 2*, 1999/10/10–1999/10/15]

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 J. V. Scotti, N. Danzl, J. A. Larsen, R. S. McMillan, B. May, D. Maggs,
J. L. Montani, A. E. Gleason, T. Gehrels

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

1971 UN₁, 6, 2, 5; 1973 UQ₅, 3, 1, 0; 1977 DL₄, 3, 1, 0; 1978 RD₂, 3, 1, 0; 1978 RA₁₀, 3, 1, 0; 1978 VE₇, 9, 3, 12; 1979 MM₄, 3, 1, 0; 1979 QM₁, 6, 2, 6; 1981 DG₂, 3, 1, 0; 1981 EM₇, 3, 1, 0; 1981 EH₁₇, 6, 2, 7; 1981 EM₁₇, 3, 1, 0; 1981 EB₁₈, 6, 2, 6; 1981 EH₁₉, 3, 1, 0; 1981 EK₂₆, 3, 1, 0; 1981 EC₃₅, 6, 2, 11; 1981 EF₃₈, 6, 2, 4; 1981 EF₄₅, 9, 3, 5; 1981 EF₄₇, 6, 2, 27; 1981 RR₁, 3, 1, 0; 1982 SO₅, 3, 1, 0; 1985 PC, 9, 3, 9; 1988 RM₃, 9, 3, 18; 1988 RO₆, 9, 3, 33; 1988 RO₁₁, 6, 2, 7; 1988 TS₁, 6, 2, 7; 1989 GJ₄, 3, 1, 0; 1989 TS₂, 3, 1, 0; 1990 EM₁, 3, 1, 0; 1990 QB₈, 3, 1, 0; 1990 RC₂, 9, 3, 15; 1990 RN₈, 6, 2, 1408; 1990 SU₁₅, 3, 1, 0; 1990 TT, 3, 1, 0; 1990 TT₁₀, 18, 6, 15; 1990 UO₄, 3, 1, 0; 1991 ED₂, 3, 1, 0; 1991 GH₁₁, 6, 2, 3; 1991 JD, 6, 2, 7; 1991 PL₅, 3, 1, 0; 1991 UE₂, 6, 2, 4; 1991 VL₆, 3, 1, 0; 1991 VH₁₀, 3, 1, 0; 1991 VP₁₂, 12, 4, 17; 1992 ED₈, 3, 1, 0; 1992 EX₁₀, 9, 3, 11; 1992 ET₁₄, 3, 1, 0; 1992 JU₂, 3, 1, 0; 1992 RN, 6, 2, 1; 1992 UY₂, 6, 2, 2; 1992 WR, 9, 3, 10; 1992 WK₉, 2, 1, 0; 1993 CK₁, 9, 3, 13; 1993 DD₂, 6, 2, 3; 1993 FL₄, 3, 1, 0; 1993 FX₉, 9, 3, 13; 1993 FS₂₂, 3, 1, 0; 1993 FS₂₄, 6, 2, 7; 1993 NV, 6, 2, 9; 1993 OX₆, 3, 1, 0; 1993 OY₉, 3, 1, 0; 1993 RA₈, 6, 2, 7; 1993 SG₅, 9, 3, 866; 1993 ST₅, 9, 3, 13; 1994 AM₃, 3, 1, 0; 1994 AX₆, 3, 1, 0; 1994 BY, 6, 2, 4; 1994 CP₈, 3, 1, 0; 1994 CO₁₆, 3, 1, 0; 1994 FB, 6, 2, 2; 1994 GB₉, 6, 2, 3; 1994 JL₆, 3, 1, 0; 1994 PU₅, 3, 1, 0; 1994 PC₇, 3, 1, 0; 1994 PQ₁₁, 3, 1, 0; 1994 PA₁₄, 6, 2, 13; 1994 PR₁₄, 6, 2, 4; 1994 PK₁₈, 3, 1, 0; 1994 PO₁₈, 3, 1, 0; 1994 PW₂₀, 6, 2, 5; 1994 PN₂₂, 6, 2, 2676; 1994 PT₂₈, 3, 1, 0; 1994 PH₃₀, 3, 1, 0; 1994 PB₃₈, 3, 1, 0; 1994 PO₃₈, 3, 1, 0; 1994 SZ₉, 6, 2, 7; 1994 SM₁₀, 3, 1, 0; 1994 VN, 3, 1, 0; 1994 VS₁, 3, 1, 0; 1995 FM₁₁, 3, 1, 0; 1995 OD, 6, 2, 7; 1995 OS₁, 6, 2, 1; 1995 SD, 3, 1, 0; 1995 SJ₁, 3, 1, 0; 1995 SK₂, 9, 3, 11; 1995 SL₃, 6, 2, 11; 1995 SS₅, 15, 5, 11; 1995 SU₅, 3, 1, 0; 1995 SE₁₀, 3, 1, 0; 1995 SU₁₅, 9, 3, 13; 1995 SC₁₇, 3, 1, 0; 1995 SM₅₅, 3, 1, 0; 1995 UW₂, 3, 1, 0; 1995 UK₂₈, 3, 1, 0; 1995 UV₄₄, 3, 1, 0; 1995 VE₁, 5, 2, 33; 1995 VK₁, 6, 2, 8; 1995 VX₂, 3, 1, 0; 1995 VD₉, 5, 2, 6; 1995 WC₅, 3, 1, 0; 1995 WD₁₀, 3, 1, 0; 1995 WF₁₃, 3, 1, 0; 1995 WP₁₇, 3, 1, 0; 1996 BE₁, 2, 1, 0; 1996 BP₁₃, 3, 1, 0; 1996 DV₁, 9, 3, 7; 1996 HZ₂₁, 3, 1, 0; 1996 TG₆, 3, 1, 0; 1996 TJ₁₁, 6, 2, 12; 1996 TL₁₁, 3, 1, 0; 1996 VQ₉, 3, 1, 0; 1996 VF₁₆, 3, 1, 0; 1996 VU₁₇, 9, 3, 6; 1996 VZ₂₇, 3, 1, 0; 1996 WA, 6, 2, 6; 1996 XK, 3, 1, 0; 1996 XK₁, 6, 2, 1; 1996 XK₇, 3, 1, 0; 1996 XC₉, 3, 1, 0; 1996 XU₁₉, 3, 1, 0; 1996 XM₂₄, 3, 1, 0; 1996 XU₂₆, 3, 1, 0; 1996 YD, 9, 3, 12; 1996 YO₁, 3, 1, 0; 1997 AM₅, 6, 2, 8; 1997 AT₁₃, 3, 1, 0; 1997 AR₁₆, 6, 2, 8; 1997 BA₃, 9, 3, 16; 1997 BV₅, 3, 1, 0; 1997 CN₁, 2, 1, 0; 1997 CP₁, 6, 2, 28; 1997 CX₂, 9, 3, 14; 1997 CK₁₂, 3, 1, 0; 1997 CO₁₂, 3, 1, 0; 1997 CT₁₉, 3, 1, 0; 1997 CN₂₄, 3, 1, 0; 1997 EL, 3, 1, 0; 1997 EU₂, 9, 3, 10; 1997 ED₅, 3, 1, 0;

1997 EG₁₆, 3, 1, 0; 1997 EZ₂₅, 6, 2, 22; 1997 EA₂₇, 3, 1, 0; 1997 EL₂₈, 9, 3, 9; 1997 ED₃₂, 3, 1, 0; 1997 EN₃₂, 3, 1, 0; 1997 EA₃₆, 6, 2, 9; 1997 EM₃₆, 6, 2, 10; 1997 EC₃₉, 3, 1, 0; 1997 EJ₅₅, 6, 2, 6; 1997 EM₅₉, 3, 1, 0; 1997 FC₃, 6, 2, 947; 1997 FK₃, 6, 2, 438; 1997 FB₄, 3, 1, 0; 1997 FJ₄, 3, 1, 0; 1997 GR₄, 3, 1, 0; 1997 GX₁₈, 3, 1, 0; 1997 GE₂₀, 3, 1, 0; 1997 GH₂₇, 6, 2, 11; 1997 GP₃₅, 6, 2, 13; 1997 GP₃₆, 6, 2, 5; 1997 HV₈, 6, 2, 3; 1997 HK₁₆, 3, 1, 0; 1997 JM₁₁, 3, 1, 0; 1998 BN₈, 3, 1, 0; 1998 CR₁, 3, 1, 0; 1998 CC₃, 6, 2, 12; 1998 CO₃, 3, 1, 0; 1998 DV₁₁, 3, 1, 0; 1998 DG₂₄, 3, 1, 0; 1998 DC₃₄, 3, 1, 0; 1998 ER₃, 3, 1, 0; 1998 EB₃, 3, 1, 0; 1998 EB₁₀, 3, 1, 0; 1998 EJ₂₀, 3, 1, 0; 1998 FE₈, 6, 2, 29; 1998 FV₁₀, 9, 3, 8; 1998 FW₁₄, 3, 1, 0; 1998 FV₁₅, 3, 1, 0; 1998 FF₂₀, 6, 2, 29; 1998 FD₂₁, 6, 2, 15; 1998 FR₃₀, 6, 2, 7; 1998 FK₄₇, 3, 1, 0; 1998 FX₄₇, 12, 4, 12; 1998 FA₅₄, 6, 2, 7; 1998 FF₅₇, 6, 2, 11; 1998 FG₅₈, 6, 2, 6; 1998 FQ₅₈, 6, 2, 6; 1998 FH₆₀, 6, 2, 11; 1998 FO₆₀, 3, 1, 0; 1998 FO₆₁, 3, 1, 0; 1998 FS₆₂, 9, 3, 6; 1998 FF₆₃, 6, 2, 7; 1998 FS₆₅, 3, 1, 0; 1998 FD₆₆, 3, 1, 0; 1998 FL₆₆, 9, 3, 11; 1998 FM₆₈, 3, 1, 0; 1998 FS₆₈, 3, 1, 0; 1998 FS₇₀, 3, 1, 0; 1998 FL₇₄, 9, 3, 8; 1998 FR₁₀₈, 6, 2, 54; 1998 FZ₁₀₉, 6, 2, 379; 1998 FN₁₂₂, 6, 2, 8; 1998 FH₁₂₃, 3, 1, 0; 1998 FQ₁₃₅, 3, 1, 0; 1998 HU₉, 3, 1, 0; 1998 HT₁₃, 3, 1, 0; 1998 HP₁₉, 3, 1, 0; 1998 HQ₁₉, 3, 1, 0; 1998 HV₁₉, 3, 1, 0; 1998 HE₂₁, 12, 3, 5; 1998 HQ₂₇, 3, 1, 0; 1998 HF₃₀, 3, 1, 0; 1998 HS₃₂, 15, 5, 2483; 1998 HJ₃₃, 3, 1, 0; 1998 HK₃₄, 3, 1, 0; 1998 HB₃₈, 3, 1, 0; 1998 HB₄₅, 3, 1, 0; 1998 HE₄₇, 3, 1, 0; 1998 HK₅₀, 3, 1, 0; 1998 HH₅₅, 6, 2, 10; 1998 HN₇₆, 3, 1, 0; 1998 HK₇₇, 3, 1, 0; 1998 HQ₇₈, 4, 2, 1; 1998 HH₈₀, 3, 1, 0; 1998 HL₈₀, 6, 2, 5; 1998 HH₉₉, 3, 1, 0; 1998 HE₁₀₂, 9, 3, 1427; 1998 HL₁₀₉, 3, 1, 0; 1998 HY₁₁₄, 3, 1, 0; 1998 HN₁₁₉, 3, 1, 0; 1998 HD₁₂₉, 3, 1, 0; 1998 HZ₁₄₇, 6, 2, 6; 1998 HB₁₄₈, 6, 2, 2658; 1998 HR₁₄₉, 3, 1, 0; 1998 JQ₁, 2, 1, 0; 1998 KJ₁, 3, 1, 0; 1998 KS₄, 3, 1, 0; 1998 KW₄, 3, 1, 0; 1998 KV₇, 3, 1, 0; 1998 KZ₃₀, 6, 2, 6; 1998 KT₃₂, 6, 2, 16; 1998 KV₃₃, 3, 1, 0; 1998 KT₃₆, 3, 1, 0; 1998 KP₃₇, 3, 1, 0; 1998 KG₃₈, 3, 1, 0; 1998 KT₄₄, 3, 1, 0; 1998 KH₄₅, 3, 1, 0; 1998 KE₄₈, 3, 1, 0; 1998 KB₅₁, 6, 2, 3; 1998 KK₅₅, 6, 2, 12; 1998 KC₅₆, 3, 1, 0; 1998 KA₆₀, 2, 1, 0; 1998 MG₁, 3, 1, 0; 1998 MC₄₅, 3, 1, 0; 1998 SM₁₆₅, 9, 4, 6; 1999 JY₁₀₆, 6, 2, 31; 1999 JT₁₂₆, 3, 1, 0; 1999 KR₄, 3, 1, 0; 1999 NF₄, 3, 1, 0; 1999 NT₄, 3, 1, 0; 1999 NR₇, 6, 2, 1; 1999 NA₈, 3, 1, 0; 1999 NV₈, 3, 1, 0; 1999 NM₉, 9, 3, 31; 1999 NW₉, 3, 1, 0; 1999 NA₁₀, 3, 1, 0; 1999 NF₁₀, 6, 2, 7; 1999 NO₁₀, 3, 1, 0; 1999 NH₁₂, 3, 1, 0; 1999 NC₃₄, 3, 1, 0; 1999 NK₄₁, 6, 2, 26; 1999 NJ₄₂, 3, 1, 0; 1999 NM₆₂, 6, 2, 32; 1999 NG₆₄, 3, 1, 0; 1999 OB, 6, 2, 11; 1999 OT, 3, 1, 0; 1999 PB, 3, 1, 0; 1999 PY, 6, 2, 1; 1999 PR₃, 6, 2, 94; 1999 PR₄, 3, 1, 0; 1999 PS₄, 3, 1, 0; 1999 PY₄, 3, 1, 0; 1999 PK₆, 3, 1, 0; 1999 PQ₃, 3, 1, 0; 1999 QP, 6, 2, 7; 1999 QH₂, 3, 1, 0; 1999 RC, 3, 1, 0; 1999 RN, 3, 1, 0; 1999 RT, 3, 1, 0; 1999 RE₁, 3, 1, 0; 1999 RM₁, 3, 1, 0; 1999 RN₁, 6, 2, 11; 1999 RS₁, 6, 2, 5; 1999 RA₂, 3, 1, 0; 1999 RD₃, 12, 4, 5; 1999 RG₃, 3, 1, 0; 1999 RJ₃, 3, 1, 0; 1999 RS₄, 3, 1, 0; 1999 RB₉, 3, 1, 0; 1999 RD₁₀, 3, 1, 0; 1999 RY₁₀, 3, 1, 0; 1999 RO₁₁, 3, 1, 0; 1999 RC₁₅, 3, 1, 0; 1999 RJ₁₅, 3, 1, 0; 1999 RL₁₅, 3, 1, 0; 1999 RW₁₅, 6, 2, 14; 1999 RA₁₆, 3, 1, 0; 1999 RF₁₇, 6, 2, 485; 1999 RY₁₇, 3, 1, 0; 1999 RF₁₈, 3, 1, 0; 1999 RR₁₈, 3, 1, 0; 1999 RU₁₈, 6, 2, 7; 1999 RT₁₉, 9, 3, 37; 1999 RK₂₁, 6, 2, 1610; 1999 RL₂₁, 3, 1, 0; 1999 RR₂₁, 3, 1, 0; 1999 RD₂₂, 3, 1, 0; 1999 RL₂₂, 3, 1, 0; 1999 RB₂₃, 3, 1, 0; 1999 RF₂₃, 3, 1, 0; 1999 RP₂₆, 3, 1, 0; 1999 RJ₂₇, 8, 3, 14; 1999 RQ₂₇, 9, 3, 17; 1999 RU₂₇, 3, 1, 0; 1999 RA₂₈, 3, 1, 0; 1999 RS₃₁, 3, 1, 0; 1999 RJ₃₂, 3, 1, 0; 1999 RO₃₂, 3, 1, 0; 1999 RP₃₂, 3, 1, 0; 1999 RV₃₂, 3, 1, 0; 1999 RB₃₃, 6, 2, 2003; 1999 RH₃₃, 2, 1, 0; 1999 RM₃₃, 12, 4, 44; 1999 RO₃₃, 3, 1, 0; 1999 RU₃₃, 6, 2, 7; 1999 RV₃₃, 12, 4, 13; 1999 RW₃₃, 3, 1, 0; 1999 RC₃₄, 6, 1, 0; 1999 RD₃₄, 3, 1, 0; 1999 RL₃₄, 3, 1, 0; 1999 RW₃₄, 3, 1, 0; 1999 RC₃₅, 3, 1, 0; 1999 RD₃₅, 3, 1, 0; 1999 RL₃₅, 9, 3, 959; 1999 RY₃₅, 6, 2, 13; 1999 RF₃₆, 3, 1, 0; 1999 RJ₃₆, 6, 2, 7; 1999 RC₃₇, 3, 1, 0; 1999 RD₃₇, 6, 2, 3; 1999 RW₃₇, 3, 1, 0; 1999 RA₃₈, 3, 1, 0; 1999 RD₃₈, 3, 1, 0; 1999 RL₃₈, 9, 3, 1480; 1999 RN₃₈, 3, 1, 0; 1999 RP₃₈, 3, 1, 0; 1999 RT₃₈, 3, 1, 0; 1999 RY₃₈, 3, 1, 0; 1999 RS₃₉, 3, 1, 0; 1999 RY₃₉, 6, 2, 3; 1999 RZ₃₉, 3, 1, 0; 1999 RU₄₁, 3, 1, 0; 1999 RW₄₁, 3, 1, 0; 1999 RC₄₂, 3, 1, 0; 1999 RJ₄₃, 3, 1, 0; 1999 RO₄₃, 6, 2, 13; 1999 RS₄₃, 3, 1, 0; 1999 RT₄₃, 3, 1, 0; 1999 RK₄₄, 3, 1, 0; 1999 RR₄₄, 3, 1, 0; 1999 RV₄₅, 3, 1, 0; 1999 RZ₄₅, 3, 1, 0; 1999 RK₄₈, 3, 1, 0; 1999 RN₄₈, 3, 1, 0; 1999 RR₄₈, 3, 1, 0; 1999 RU₄₉, 9, 3, 40; 1999 RA₅₁, 6, 2, 12; 1999 RK₅₅, 6, 2, 1797; 1999 RM₅₅, 3, 1, 0; 1999 RT₅₅, 3, 1, 0; 1999 RX₅₉, 3, 1, 0; 1999 RL₇₄, 3, 1, 0; 1999 RJ₇₅, 3, 1, 0; 1999 RR₇₅, 3, 1, 0; 1999 RV₇₅, 3, 1, 0; 1999 RZ₇₅, 6, 2, 10; 1999 RH₇₈, 3, 1, 0; 1999 RQ₇₉, 3, 1, 0; 1999 RN₈₁, 6, 2, 8; 1999 RO₈₁, 6, 2, 7; 1999 RQ₈₁, 9, 3, 917; 1999 RR₈₁, 6, 2, 7; 1999 RU₈₁, 3, 1, 0; 1999 RV₈₁, 6, 2, 4; 1999 RX₈₁, 6, 2, 4; 1999 RZ₈₁, 3, 1, 0; 1999 RK₈₂, 3, 1, 0; 1999 RB₈₄, 9, 3, 14; 1999 RE₈₄, 3, 1, 0; 1999 RB₈₅, 3, 1, 0; 1999 RU₈₆, 2, 1, 0; 1999 RD₈₇, 3, 1, 0; 1999 RE₈₇, 3, 1, 0; 1999 RY₈₇, 3, 1, 0; 1999 RW₈₈, 3, 1, 0; 1999 RJ₈₉, 3, 1, 0; 1999 RC₉₄, 3, 1, 0; 1999 RZ₉₄, 3, 1, 0; 1999 RD₉₅, 3, 1, 0; 1999 RH₉₅, 3, 1, 0; 1999 RY₉₇, 3, 1, 0; 1999 RJ₁₀₂, 3, 1, 0; 1999 RF₁₀₄, 3, 1, 0; 1999 RQ₁₀₄, 3, 1, 0; 1999 RX₁₁₀, 3, 1, 0; 1999 RQ₁₁₃, 3, 1, 0; 1999 RL₁₁₄, 2, 1, 0; 1999 RC₁₁₅, 3, 1, 0; 1999 RG₁₁₅, 3, 1, 0; 1999 RM₁₁₅, 3, 1, 0; 1999 RX₁₁₅, 3, 1, 0; 1999 RY₁₁₅, 3, 1, 0; 1999 RA₁₁₆, 6, 2, 4; 1999 RW₁₁₆, 6, 2, 5; 1999 RF₁₁₈, 6, 2, 10; 1999 RW₁₁₉, 3, 1, 0; 1999 RY₁₁₉, 12, 4, 1585; 1999 RA₁₂₂, 3, 1, 0; 1999 RU₁₂₃, 3, 1, 0; 1999 RD₁₂₄, 3, 1, 0; 1999 RN₁₂₅, 3, 1, 0; 1999 RV₁₂₆, 6, 2, 4; 1999 RA₁₂₈, 3, 1, 0; 1999 RB₁₂₈, 6, 2, 1770; 1999 RC₁₂₉, 3, 1, 0; 1999 RN₁₂₉, 3, 1, 0; 1999 RQ₁₂₉, 3, 1, 0; 1999 RC₁₃₀, 3, 1, 0; 1999 RG₁₃₂, 3, 1, 0; 1999 RU₁₃₃, 3, 1, 0; 1999 RA₁₃₅, 3, 1, 0; 1999 RY₁₃₅, 3, 1, 0; 1999 R

0; 1999 RG₁₅₂, 5, 2, 2038; 1999 RB₁₅₃, 3, 1, 0; 1999 RE₁₅₄, 3, 1, 0; 1999 RW₁₅₅, 9, 3, 1804; 1999 RK₁₅₈, 3, 1, 0; 1999 RN₁₅₈, 3, 1, 0; 1999 RR₁₅₈, 3, 1, 0; 1999 RC₁₅₉, 3, 1, 0; 1999 RG₁₆₀, 3, 1, 0; 1999 RN₁₆₀, 3, 1, 0; 1999 RT₁₆₀, 3, 1, 0; 1999 RC₁₆₁, 3, 1, 0; 1999 RD₁₆₁, 3, 1, 0; 1999 RG₁₆₃, 3, 1, 0; 1999 RV₁₆₅, 3, 1, 0; 1999 RX₁₆₇, 3, 1, 0; 1999 RF₁₆₈, 3, 1, 0; 1999 RQ₁₆₈, 3, 1, 0; 1999 RQ₁₆₉, 3, 1, 0; 1999 RZ₁₆₉, 3, 1, 0; 1999 RF₁₇₀, 3, 1, 0; 1999 RH₁₇₀, 3, 1, 0; 1999 RJ₁₇₀, 9, 3, 2508; 1999 RL₁₇₀, 3, 1, 0; 1999 RG₁₇₅, 9, 3, 14; 1999 RK₁₇₅, 9, 3, 14; 1999 RQ₁₇₅, 6, 2, 2918; 1999 RV₁₇₅, 12, 4, 2903; 1999 RZ₁₇₅, 6, 2, 12; 1999 RF₁₇₆, 3, 1, 0; 1999 RG₁₇₆, 6, 2, 4; 1999 RN₁₇₆, 6, 2, 6; 1999 RO₁₇₆, 3, 1, 0; 1999 RR₁₇₆, 3, 1, 0; 1999 RS₁₇₆, 6, 2, 7; 1999 RX₁₇₆, 9, 3, 13; 1999 RY₁₇₆, 6, 2, 7; 1999 RC₁₇₇, 6, 2, 7; 1999 RE₁₇₇, 3, 1, 0; 1999 RF₁₇₇, 3, 1, 0; 1999 RG₁₇₇, 6, 2, 7; 1999 RJ₁₇₇, 6, 2, 8; 1999 RO₁₇₈, 6, 2, 982; 1999 RZ₁₇₈, 3, 1, 0; 1999 RN₁₈₁, 3, 1, 0; 1999 RT₁₈₁, 9, 3, 414; 1999 RB₁₈₂, 3, 1, 0; 1999 RF₁₈₂, 3, 1, 0; 1999 RG₁₈₂, 3, 1, 0; 1999 RO₁₈₂, 6, 2, 7; 1999 RV₁₈₂, 3, 1, 0; 1999 RW₁₈₂, 3, 1, 0; 1999 RX₁₈₂, 3, 1, 0; 1999 RA₁₈₃, 3, 1, 0; 1999 RM₁₈₃, 3, 1, 0; 1999 RT₁₈₆, 9, 2, 8; 1999 RB₁₈₇, 3, 1, 0; 1999 RY₁₈₈, 6, 2, 8; 1999 RC₁₈₉, 6, 2, 7; 1999 RE₁₈₉, 3, 1, 0; 1999 RQ₁₈₉, 3, 1, 0; 1999 RU₁₉₁, 9, 3, 14; 1999 RN₁₉₃, 3, 1, 0; 1999 RO₁₉₃, 3, 1, 0; 1999 RC₁₉₄, 6, 2, 24; 1999 RO₁₉₄, 3, 1, 0; 1999 RT₁₉₅, 3, 1, 0; 1999 RB₁₉₈, 3, 1, 0; 1999 RR₁₉₈, 9, 3, 6; 1999 RS₂₀₈, 3, 1, 0; 1999 RH₂₁₃, 3, 1, 0; 1999 RV₂₁₃, 3, 1, 0; 1999 RD₂₁₄, 6, 2, 6; 1999 SK₆, 2, 1424; 1999 SY₃, 3, 1, 0; 1999 SB₁, 3, 1, 0; 1999 SH₂, 3, 1, 0; 1999 SN₂, 3, 1, 0; 1999 SW₂, 3, 1, 0; 1999 SK₄, 3, 1, 0; 1999 SU₆, 9, 3, 8; 1999 SK₁₀ *, 16, 6, 15; 1999 SQ₁₀ *, 2, 1, 0; 1999 TO₁, 3, 1, 0; 1999 TT₁, 3, 1, 0; 1999 TT₂ *, 6, 2, 1; 1999 TV₂ *, 6, 2, 1; 1999 TY₂, 6, 1, 0; 1999 TG₃, 3, 1, 0; 1999 TW₃, 3, 1, 0; 1999 TJ₄, 3, 1, 0; 1999 TK₄, 3, 1, 0; 1999 TL₄, 9, 3, 7; 1999 TR₄, 2, 1, 0; 1999 TS₄, 3, 1, 0; 1999 TW₄, 6, 2, 1; 1999 TK₅, 3, 1, 0; 1999 TS₅, 3, 1, 0; 1999 TT₅, 3, 1, 0; 1999 TA₆, 3, 1, 0; 1999 TG₇, 9, 3, 7; 1999 TJ₇, 3, 1, 0; 1999 TQ₈, 6, 2, 8; 1999 TS₈, 6, 2, 6; 1999 TT₈, 9, 3, 10; 1999 TX₈, 9, 3, 35; 1999 TZ₈, 6, 2, 5; 1999 TC₉, 3, 1, 0; 1999 TE₉, 3, 1, 0; 1999 TF₉, 6, 2, 6; 1999 TG₉, 9, 3, 6; 1999 TJ₉, 3, 1, 0; 1999 TN₉, 3, 1, 0; 1999 TQ₉, 3, 1, 0; 1999 TD₁₀ *, 15, 5, 7; 1999 TJ₁₀ *, 3, 1, 0; 1999 TO₁₀, 3, 1, 0; 1999 TR₁₀, 3, 1, 0; 1999 TR₁₃, 6, 2, 7; 1999 TN₁₄, 3, 1, 0; 1999 TP₁₅, 6, 2, 2; 1999 TQ₁₅, 6, 2, 2; 1999 TR₁₅, 6, 2, 2; 1999 TS₁₅, 3, 1, 0; 1999 TW₁₅, 3, 1, 0; 1999 TS₁₆, 3, 1, 0; 1999 TT₁₆ *, 12, 4, 6; 1999 TU₁₆ *, 12, 4, 4; 1999 TF₁₇, 3, 1, 0; 1999 TO₁₈, 3, 1, 0; 1999 TJ₂₀, 3, 1, 0; 1999 TE₂₁ *, 6, 2, 2; 1999 TO₂₁ *, 6, 2, 4; 1999 TP₂₁ *, 6, 2, 4; 1999 TQ₂₁ *, 6, 2, 4; 1999 TR₂₁ *, 6, 2, 4; 1999 TS₂₁ *, 6, 2, 4; 1999 TT₂₁ *, 6, 2, 4; 1999 TU₂₁ *, 6, 2, 4; 1999 TV₂₁ *, 6, 2, 3; 1999 TW₂₁ *, 6, 2, 3; 1999 TX₂₁ *, 6, 2, 3; 1999 TY₂₁ *, 6, 2, 3; 1999 TZ₂₁ *, 6, 2, 3; 1999 TA₂₂ *, 6, 2, 3; 1999 TB₂₂ *, 6, 2, 3; 1999 TC₂₂ *, 6, 2, 3; 1999 TD₂₂ *, 6, 2, 3; 1999 TE₂₂ *, 6, 2, 3; 1999 TF₂₂ *, 6, 2, 3; 1999 TG₂₂ *, 6, 2, 3; 1999 TH₂₂ *, 6, 2, 3; 1999 TJ₂₂ *, 6, 2, 3; 1999 TK₂₂ *, 6, 2, 3; 1999 TL₂₂ *, 6, 2, 3; 1999 TM₂₂ *, 6, 2, 3; 1999 TN₂₂ *, 6, 2, 3; 1999 TO₂₂ *, 6, 2, 3; 1999 TP₂₂ *, 6, 2, 3; 1999 TQ₂₂ *, 6, 2, 3; 1999 TR₂₂ *, 6, 2, 3; 1999 TS₂₂ *, 6, 2, 3; 1999 TT₂₂ *, 6, 2, 3; 1999 TU₂₂ *, 6, 2, 3; 1999 TV₂₂ *, 6, 2, 3; 1999 TW₂₂ *, 6, 2, 3; 1999 TX₂₂ *, 6, 2, 3; 1999 TY₂₂ *, 6, 2, 3; 1999 TZ₂₂ *, 6, 2, 3; 1999 TA₂₃ *, 6, 2, 3; 1999 TB₂₃ *, 6, 2, 3; 1999 TC₂₃ *, 6, 2, 3; 1999 TD₂₃ *, 6, 2, 3; 1999 TE₂₃ *, 6, 2, 3; 1999 TF₂₃ *, 6, 2, 3; 1999 TG₂₃ *, 6, 2, 3; 1999 TH₂₃ *, 6, 2, 3; 1999 TJ₂₃ *, 6, 2, 3; 1999 TK₂₃ *, 6, 2, 3; 1999 TL₂₃ *, 6, 2, 3; 1999 TM₂₃ *, 6, 2, 3; 1999 TN₂₃ *, 6, 2, 3; 1999 TO₂₃ *, 6, 2, 3; 1999 TP₂₃ *, 6, 2, 3; 1999 TQ₂₃ *, 6, 2, 3; 1999 TR₂₃ *, 6, 2, 3; 1999 TS₂₃ *, 6, 2, 3; 1999 TT₂₃ *, 6, 2, 3; 1999 TU₂₃ *, 6, 2, 3; 1999 TV₂₃ *, 6, 2, 3; 1999 TW₂₃ *, 6, 2, 3; 1999 TX₂₃ *, 6, 2, 3; 1999 TY₂₃ *, 6, 2, 3; 1999 TZ₂₃ *, 6, 2, 3; 1999 TA₂₄ *, 6, 2, 2; 1999 TB₂₄ *, 6, 2, 2; 1999 TC₂₄ *, 6, 2, 2; 1999 TD₂₄ *, 6, 2, 2; 1999 TE₂₄ *, 6, 2, 2; 1999 TF₂₄ *, 6, 2, 2; 1999 TG₂₄ *, 6, 2, 2; 1999 TH₂₄ *, 6, 2, 2; 1999 TJ₂₄ *, 6, 2, 2; 1999 TK₂₄ *, 6, 2, 2; 1999 TL₂₄ *, 6, 2, 2; 1999 TM₂₄ *, 6, 2, 2; 1999 TN₂₄ *, 6, 2, 2; 1999 TO₂₄ *, 6, 2, 2; 1999 TP₂₄ *, 6, 2, 2; 1999 TQ₂₄ *, 6, 2, 2; 1999 TR₂₄ *, 6, 2, 2; 1999 TS₂₄ *, 6, 2, 2; 1999 TT₂₄ *, 6, 2, 2; 1999 TU₂₄ *, 5, 2, 2; 2071 P-L, 9, 3, 12; 2085 P-L, 3, 1, 0; 2113 P-L, 6, 2, 2; 4055 P-L, 6, 2, 5; 4112 P-L, 3, 1, 0; 6335 P-L, 3, 1, 0; 9099 P-L, 6, 2, 7; 1051 T-1, 6, 2, 8; 1182 T-1, 3, 1, 0; 1220 T-1, 9, 3, 7; 1285 T-1, 6, 2, 8; 2024 T-1, 9, 3, 12; 2120 T-1, 3, 1, 0; 3243 T-1, 3, 1, 0; 3329 T-1, 3, 1, 0; 1038 T-2, 9, 3, 3; 1043 T-2, 3, 1, 0; 1102 T-2, 3, 1, 0; 1114 T-2, 9, 3, 14; 1158 T-2, 6, 2, 7; 1260 T-2, 3, 1, 0; 1348 T-2, 3, 1, 0; 1405 T-2, 6, 2, 1933; 1474 T-2, 3, 1, 0; 2162 T-2, 6, 2, 4; 3152 T-2, 3, 1, 0; 4209 T-2, 3, 1, 0; 2053 T-3, 3, 1, 0; 2382 T-3, 12, 4, 1449; 2428 T-3, 3, 1, 0; 3283 T-3, 3, 1, 0; 4054 T-3, 3, 1, 0; 4141 T-3, 3, 1, 0; 5019 T-3, 3, 1, 0; (223), 3, 1, 0; (227), 3, 1, 0; (280), 12, 4, 13; (632), 3, 1, 0; (661), 3, 1, 0; (733), 3, 1, 0; (822), 6, 2, 7; (950), 3, 1, 0; (958), 6, 2, 8; (1281), 3, 1, 0; (1311), 6, 2, 7; (1382), 6, 2, 7; (1383), 6, 2, 2; (1489), 6, 2, 4; (1559), 9, 3, 8; (1698), 9, 3, 10; (1731), 3, 1, 0; (1791), 6, 2, 7; (1835), 9, 3, 13; (1858), 3, 1, 0; (1879), 3, 1, 0; (1905), 12, 4, 15; (1990), 6, 2, 5; (2031), 3, 1, 0; (2153), 6, 2, 6; (2155), 6, 2, 6; (2355), 3, 1, 0; (2367), 9, 3, 16; (2464), 6, 2, 5; (2480), 9, 3, 13; (2557), 3, 1, 0; (2607), 3, 1, 0; (2628), 6, 1, 0; (2658), 3, 1, 0; (2770), 3, 1, 0; (2781), 3, 1, 0; (2961), 6, 2, 7; (2987), 3, 1, 0; (3008), 3, 1, 0; (3070), 6, 2, 6; (3170), 3, 1, 0; (3181), 6, 2, 7; (3282), 6, 2, 6; (3306), 6, 2, 7; (3337), 3, 1, 0; (3363), 9, 3, 13; (3385), 3, 1, 0; (3461), 6, 2, 3; (3507), 6, 2, 4; (3533), 9, 3, 9; (3633), 6, 2, 7; 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(5988), 3, 1, 0; (6048), 12, 3, 4; (6056), 12, 4, 12; (6138), 3, 1, 0; (6206), 6, 2, 7; (6241), 9, 3, 7; (6287), 6, 2, 8; (6297), 3, 1, 0; (6333), 3, 1, 0; (6559), 3, 1, 0; (6561), 3, 1, 0; (6573), 6, 2, 6; (6580), 3, 1, 0; (6586), 3, 1, 0; (6593), 3, 1, 0; (6716), 3, 1, 0; (6773), 3, 1, 0; (6805), 3, 1, 0; (6833), 3, 1, 0; (6908), 3, 1, 0; (6912), 3, 1, 0; (6986), 9, 3, 9; (7064), 6, 2, 2; (7296), 3, 1, 0; (7492), 3, 1, 0; (7613), 6, 2, 9; (7630), 3, 1, 0; (7634), 6, 2, 4; (7665), 6, 2, 10; (7681), 3, 1, 0; (7684), 3, 1, 0; (7717), 3, 1, 0; (7754), 3, 1, 0; (7772), 6, 2, 7; (7815), 3, 1, 0; (8416), 6, 2, 3; (8454), 3, 1, 0; (8462), 3, 1, 0; (8479), 3, 1, 0; (8574), 3, 1, 0; (8579), 9, 3, 12; (8592), 9, 3, 16; (8603), 6, 2, 4; (8616), 9, 3, 12; (8703), 3, 1, 0; (8738), 3, 1, 0; (8761), 3, 1, 0; (8764), 3, 1, 0; (8796), 6, 2, 8; (8805), 6, 2, 2; (8843), 3, 1, 0; (8905), 3, 1, 0; (8909), 3, 1, 0; (8927), 12, 3, 16; (8949), 3, 1, 0; (8973), 6, 2, 3; (8974), 3, 1, 0; (8987), 9, 3, 13; (9078), 6, 2, 7; (9097), 6, 2, 4; (9101), 3, 1, 0; (9123), 9, 3, 7; (9163), 3, 1, 0; (9228), 6, 2, 6; (9336), 12, 4, 16; (9339), 9, 3, 13; (9505), 3, 1, 0; (9591), 6, 2, 7; (10997), 9, 3, 13; (11167), 3, 1, 0; (11270), 3, 1, 0; (11300), 3, 1, 0; (11312), 3, 1, 0; (11325), 9, 3, 13; (11438), 6, 2, 7; (11444), 3, 1, 0; (11451), 6, 2, 6; (11474), 6, 2, 2; (11476), 3, 1, 0; (11479), 6, 2, 15; (11491), 3, 1, 0; (11505), 3, 1, 0; (11513), 3, 1, 0; (11517), 3, 1, 0; (11530), 9, 3, 5; (11547), 6, 2, 5; (11560), 12, 4, 6; (11573), 12, 4, 11; (11576), 6, 2, 7; (11581), 3, 1, 0; (11582), 3, 1, 0; (11586), 3, 1, 0; (11659), 6, 2, 7; (11670), 3, 1, 0; (11673), 3, 1, 0; (11685), 3, 1, 0; (11687), 9, 3, 12; (11693), 3, 1, 0; (11725), 3, 1, 0; (11728), 3, 1, 0; (11735), 3, 1, 0; (11747), 3, 1, 0; (11763), 3, 1, 0; (11773), 6, 2, 12; (11774), 3, 1, 0; [4358, 919, 92*, 1991/09/07–1999/10/19]

693 University of Arizona, Catalina Station

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

1.54-m reflector + CCD

GSC-1.1

1998 BP₂₆, 4, 1, 0; [4, 1, 0*, 1999/09/25]

697 Kitt Peak, McGraw-Hill Observatory

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Observers G. J. Garradd, J. Kemp, J. Baldeau, D. J. Norlander, B. Swift, V. Yuille
Measurer G. J. Garradd

1.3-m *f*/7.6 reflector + CCD

GSC-ACT A2.0

1998 BP₂₆, 4, 2, 1; 1999 NC₄₃, 2, 1, 0; 1999 TX₂, 2, 1, 0; 1999 TZ₄, 2, 1, 0; 1999 TA₅, 3, 1, 0; 1999 TB₁₀, 2, 1, 0; 1999 TK₁₂, 3, 1, 0; 1999 TO₁₃, 3, 1, 0; 1999 TT₁₆, 2, 1, 0; [23, 9, 0*, 1999/10/23–1999/10/24]

699 Lowell Observatory–LONEOS

E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff AZ 86001,
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Observers O. Matic, W. D. Ferris, B. A. Skiff, M. E. Van Ness, B. W. Koehn,
L. Levy

Measurer B. W. Koehn

0.59-m LONEOS Schmidt + CCD

USNO-A2.0

1973 UK₅, 3, 1, 0; 1977 ER₅, 3, 1, 0; 1978 QF₁, 3, 1, 0; 1978 UF₇, 3, 1, 0; 1978 VE₇, 6, 2, 25; 1978 VW₈, 3, 1, 0; 1979 PA₃, 3, 1, 0; 1979 QR₂, 3, 1, 0; 1981 EU₆, 3, 1, 0; 1981 EH₁₇, 3, 1, 0; 1981 EG₁₈, 3, 1, 0; 1982 SO₅, 3, 1, 0; 1983 RL₃, 3, 1, 0; 1983 YK₃, 3, 1, 0; 1984 EU₁, 3, 1, 0; 1986 GD₃, 3, 1, 0; 1987 UZ₁, 3, 1, 0; 1988 BM₂, 3, 1, 0; 1988 PQ₃, 3, 1, 0; 1988 QZ₃, 3, 1, 0; 1988 RM₃, 3, 1, 0; 1988 RP₄, 3, 1, 0; 1988 RZ₅, 3, 1, 0; 1988 RJ₆, 3, 1, 0; 1988 RO₆, 3, 1, 0; 1988 RM₈, 3, 1, 0; 1988 RC₁₁, 3, 1, 0; 1989 BZ₃, 3, 1, 0; 1989 SY₂, 3, 1, 0; 1989 SP₁₁, 3, 1, 0; 1990 FJ₂, 3, 1, 0; 1990 OZ₃, 3, 1, 0; 1990 QD₇, 3, 1, 0; 1990 SH₈, 3, 1, 0; 1990 TT₁₀, 3, 1, 0; 1990 WU₁, 3, 1, 0; 1991 EX₂, 3, 1, 0; 1991 RP₁, 3, 1, 0; 1991 RK₁₆, 3, 1, 0; 1991 RB₁₉, 3, 1, 0; 1991 RN₂₇, 3, 1, 0; 1991 TE₁, 3, 1, 0; 1991 VN₃, 3, 1, 0; 1991 VT₅, 6, 2, 13; 1991 VX₅, 3, 1, 0; 1992 DM₇, 3, 1, 0; 1992 DU₇, 6, 2, 19; 1992 DV₈, 3, 1, 0; 1992 EG₂₂, 3, 1, 0; 1992 KJ₃, 3, 1, 0; 1992 OF₂, 3, 1, 0; 1992 OP₅, 3, 1, 0; 1992 PO₂, 3, 1, 0; 1992 RN₆, 2, 1, 0; 1992 RU₃, 3, 1, 0; 1992 RF₂, 3, 1, 0; 1992 RK₂, 3, 1, 0; 1992 SJ₁, 3, 1, 0; 1992 SA₄, 3, 1, 0; 1992 SY₁₂, 3, 1, 0; 1992 ST₁₇, 3, 1, 0; 1992 UW₁, 3, 1, 0; 1992 UN₃, 3, 1, 0; 1992 UU₆, 3, 1, 0; 1992 YA₁, 3, 1, 0; 1993 FM₅, 3, 1, 0; 1993 FN₇, 3, 1, 0; 1993 FO₂₁, 3, 1, 0; 1993 FA₃₇, 3, 1, 0; 1993 FQ₄₃, 3, 1, 0; 1993 HY₅, 3, 1, 0; 1993 KT₁, 3, 1, 0; 1993 RA₈, 3, 1, 0; 1993 SN₁, 3, 1, 0; 1993 UD₇, 3, 1, 0; 1994 BH₁, 3, 1, 0; 1994 DW₃, 3, 1, 0; 1994 NV₁, 3, 1, 0; 1994 PK₃, 3, 1, 0; 1994 PN₂₂, 3,

1, 0; 1994 PH₂₆, 3, 1, 0; 1994 PO₃₀, 3, 1, 0; 1994 QQ, 3, 1, 0; 1994 SH₉, 3, 1, 0; 1994 WB₃, 3, 1, 0; 1994 WX₄, 3, 1, 0; 1995 KF, 3, 1, 0; 1995 SO₂, 3, 1, 0; 1995 SM₁₅, 3, 1, 0; 1995 UG, 3, 1, 0; 1995 VK₁, 3, 1, 0; 1996 BM₃, 3, 1, 0; 1996 NG₅, 3, 1, 0; 1996 PA₄, 3, 1, 0; 1996 RG₁, 3, 1, 0; 1996 TT₁₄, 3, 1, 0; 1996 UP, 3, 1, 0; 1996 UW, 3, 1, 0; 1996 UZ, 3, 1, 0; 1996 VT, 3, 1, 0; 1996 VZ₈, 3, 1, 0; 1996 VX₁₅, 3, 1, 0; 1996 VP₃₀, 3, 1, 0; 1996 WJ₃, 3, 1, 0; 1996 XC, 3, 1, 0; 1996 XU, 3, 1, 0; 1996 XN₅, 3, 1, 0; 1996 XB₉, 2, 1, 0; 1996 XY₂₈, 3, 1, 0; 1997 AT₆, 3, 1, 0; 1997 AW₆, 3, 1, 0; 1997 AN₁₇, 3, 1, 0; 1997 AZ₂₁, 3, 1, 0; 1997 BA₃, 3, 1, 0; 1997 BU₈, 3, 1, 0; 1997 BD₉, 3, 1, 0; 1997 CS, 3, 1, 0; 1997 CX₂, 3, 1, 0; 1997 CF₂₂, 3, 1, 0; 1997 EL, 3, 1, 0; 1997 EK₅₄, 3, 1, 0; 1997 EL₅₅, 3, 1, 0; 1997 GX₇, 3, 1, 0; 1997 GW₂₉, 3, 1, 0; 1997 VF₆, 3, 1, 0; 1997 WB₆, 3, 1, 0; 1997 XH, 3, 1, 0; 1997 XV₁, 3, 1, 0; 1997 XS₃, 3, 1, 0; 1997 XL₉, 3, 1, 0; 1997 YT₁₀, 3, 1, 0; 1997 YS₁₁, 3, 1, 0; 1998 AK₃, 3, 1, 0; 1998 AB₅, 3, 1, 0; 1998 AM₁₀, 3, 1, 0; 1998 BN₁₆, 3, 1, 0; 1998 BZ₂₄, 3, 1, 0; 1998 BH₂₆, 3, 1, 0; 1998 BK₃₃, 3, 1, 0; 1998 BN₃₃, 3, 1, 0; 1998 BN₄₈, 3, 1, 0; 1998 CR₁, 3, 1, 0; 1998 DX, 3, 1, 0; 1998 DR₅, 3, 1, 0; 1998 DU₇, 3, 1, 0; 1998 DT₉, 3, 1, 0; 1998 DG₁₂, 3, 1, 0; 1998 DK₁₄, 3, 1, 0; 1998 DT₃₄, 2, 1, 0; 1998 DC₃₅, 3, 1, 0; 1998 EZ₂, 3, 1, 0; 1998 EL₅, 3, 1, 0; 1998 EW₁₁, 3, 1, 0; 1998 ER₁₃, 3, 1, 0; 1998 FE₂, 3, 1, 0; 1998 EV₁₀, 3, 1, 0; 1998 FM₁₂, 3, 1, 0; 1998 FR₁₃, 3, 1, 0; 1998 FT₁₃, 3, 1, 0; 1998 FB₁₄, 3, 1, 0; 1998 FV₁₅, 3, 1, 0; 1998 FW₂₀, 3, 1, 0; 1998 FJ₂₂, 2, 1, 0; 1998 FU₂₂, 3, 1, 0; 1998 FL₃₀, 3, 1, 0; 1998 FR₃₀, 6, 2, 38; 1998 FO₃₂, 3, 1, 0; 1998 FH₄₂, 3, 1, 0; 1998 FK₄₄, 3, 1, 0; 1998 FK₄₇, 3, 1, 0; 1998 FZ₄₇, 3, 1, 0; 1998 FQ₄₉, 3, 1, 0; 1998 FS₄₉, 3, 1, 0; 1998 FM₅₄, 3, 1, 0; 1998 FG₅₆, 3, 1, 0; 1998 FH₆₀, 3, 1, 0; 1998 FQ₇₂, 3, 1, 0; 1998 FH₇₅, 6, 2, 12; 1998 FP₇₆, 3, 1, 0; 1998 FV₇₇, 3, 1, 0; 1998 FQ₇₉, 3, 1, 0; 1998 FY₉₉, 3, 1, 0; 1998 FU₁₀₈, 3, 1, 0; 1998 FB₁₁₇, 3, 1, 0; 1998 FM₁₁₇, 3, 1, 0; 1998 FP₁₂₂, 3, 1, 0; 1998 FE₁₂₅, 3, 1, 0; 1998 FC₁₂₇, 3, 1, 0; 1998 HN₈, 3, 1, 0; 1998 HM₁₃, 3, 1, 0; 1998 HT₁₃, 3, 1, 0; 1998 HW₁₃, 3, 1, 0; 1998 HJ₁₄, 3, 1, 0; 1998 HL₁₄, 3, 1, 0; 1998 HE₂₀, 2, 1, 0; 1998 HS₂₃, 1, 1, 0; 1998 HT₂₃, 3, 1, 0; 1998 HS₃₂, 3, 1, 0; 1998 HP₃₄, 3, 1, 0; 1998 HZ₃₇, 3, 1, 0; 1998 HM₃₈, 3, 1, 0; 1998 HW₄₄, 3, 1, 0; 1998 HK₆₁, 3, 1, 0; 1998 HT₇₃, 3, 1, 0; 1998 HT₇₆, 3, 1, 0; 1998 HK₇₇, 3, 1, 0; 1998 HQ₇₈, 3, 1, 0; 1998 HL₈₁, 3, 1, 0; 1998 HT₈₃, 3, 1, 0; 1998 HS₈₅, 9, 3, 25; 1998 HL₈₆, 3, 1, 0; 1998 HH₉₃, 3, 1, 0; 1998 HG₉₇, 6, 2, 26; 1998 HX₉₉, 3, 1, 0; 1998 HU₁₀₂, 3, 1, 0; 1998 HP₁₀₇, 3, 1, 0; 1998 HO₁₁₁, 3, 1, 0; 1998 HF₁₁₃, 3, 1, 0; 1998 HM₁₁₃, 3, 1, 0; 1998 HU₁₁₃, 3, 1, 0; 1998 HB₁₁₅, 3, 1, 0; 1998 HK₁₁₆, 3, 1, 0; 1998 HW₁₁₉, 3, 1, 0; 1998 HX₁₂₂, 3, 1, 0; 1998 HB₁₂₃, 3, 1, 0; 1998 HE₁₂₃, 3, 1, 0; 1998 HI₁₂₃, 3, 1, 0; 1998 HO₁₂₄, 3, 1, 0; 1998 HG₁₂₄, 3, 1, 0; 1998 HX₁₃₁, 3, 1, 0; 1998 HZ₁₃₁, 3, 1, 0; 1998 HJ₁₃₆, 3, 1, 0; 1998 HV₁₃₇, 3, 1, 0; 1998 HJ₁₄₁, 6, 2, 49; 1998 HC₁₄₄, 3, 1, 0; 1998 HN₁₄₈, 3, 1, 0; 1998 HV₁₄₈, 3, 1, 0; 1998 KL, 3, 1, 0; 1998 KL₁, 3, 1, 0; 1998 KQ₃, 3, 1, 0; 1998 KW₃, 3, 1, 0; 1998 KE₄, 3, 1, 0; 1998 KC₅, 3, 1, 0; 1998 KV₇, 2, 1, 0; 1998 KT₈, 3, 1, 0; 1998 KJ₁₄, 3, 1, 0; 1998 KP₁₈, 3, 1, 0; 1998 KS₁₉, 3, 1, 0; 1998 KM₂₀, 6, 2, 33; 1998 KV₂₅, 6, 2, 18; 1998 KF₂₇, 3, 1, 0; 1998 KM₂₇, 3, 1, 0; 1998 KL₂₈, 3, 1, 0; 1998 KG₃₈, 6, 2, 12; 1998 KS₃₉, 3, 1, 0; 1998 KN₄₅, 3, 1, 0; 1998 KN₄₉, 3, 1, 0; 1998 KQ₅₁, 3, 1, 0; 1998 KC₅₄, 3, 1, 0; 1998 KZ₅₄, 3, 1, 0; 1998 KK₅₅, 9, 3, 38; 1998 KN₅₅, 3, 1, 0; 1998 KN₅₉, 3, 1, 0; 1998 KA₆₀, 9, 3, 35; 1998 KK₆₃, 3, 1, 0; 1998 KU₆₅, 6, 2, 21; 1998 KW₆₅, 3, 1, 0; 1998 RW₁₆, 3, 1, 0; 1999 DH₃, 2, 1, 0; 1999 GW, 3, 1, 0; 1999 GS₄, 3, 1, 0; 1999 GW₄₀, 3, 1, 0; 1999 HU, 3, 1, 0; 1999 HV, 3, 1, 0; 1999 HX, 3, 1, 0; 1999 HG₁, 3, 1, 0; 1999 JH₃, 3, 1, 0; 1999 JU₄, 3, 1, 0; 1999 JF₆, 3, 1, 0; 1999 JG₆, 3, 1, 0; 1999 JX₆, 3, 1, 0; 1999 JA₇, 3, 1, 0; 1999 JQ₁₅, 3, 1, 0; 1999 JP₁₇, 3, 1, 0; 1999 JP₁₉, 3, 1, 0; 1999 JD₂₃, 3, 1, 0; 1999 JG₂₉, 3, 1, 0; 1999 JM₃₀, 2, 1, 0; 1999 JN₃₂, 3, 1, 0; 1999 JY₃₃, 3, 1, 0; 1999 JA₃₄, 3, 1, 0; 1999 JO₃₈, 3, 1, 0; 1999 JD₃₉, 3, 1, 0; 1999 JQ₃₉, 3, 1, 0; 1999 JT₄₀, 3, 1, 0; 1999 JA₄₁, 3, 1, 0; 1999 JP₄₁, 3, 1, 0; 1999 JV₄₅, 3, 1, 0; 1999 JV₅₀, 3, 1, 0; 1999 JO₅₅, 3, 1, 0; 1999 JN₅₉, 3, 1, 0; 1999 JP₅₉, 5, 2, 1; 1999 JT₆₀, 3, 1, 0; 1999 JX₆₀, 3, 1, 0; 1999 JP₆₁, 3, 1, 0; 1999 JU₆₁, 3, 1, 0; 1999 JZ₆₁, 3, 1, 0; 1999 JQ₆₂, 2, 1, 0; 1999 JO₆₃, 3, 1, 0; 1999 JT₆₃, 3, 1, 0; 1999 JX₆₈, 3, 1, 0; 1999 JF₇₀, 3, 1, 0; 1999 JB₇₁, 3, 1, 0; 1999 JF₇₂, 3, 1, 0; 1999 JO₇₂, 3, 1, 0; 1999 JP₇₂, 3, 1, 0; 1999 JO₇₃, 3, 1, 0; 1999 JZ₇₃, 3, 1, 0; 1999 JF₇₄, 3, 1, 0; 1999 JA₇₅, 2, 1, 0; 1999 JO₇₆, 3, 1, 0; 1999 JN₇₇, 3, 1, 0; 1999 JO₇₇, 3, 1, 0; 1999 JV₈₀, 3, 1, 0; 1999 JC₈₃, 3, 1, 0; 1999 JP₈₅, 6, 2, 55; 1999 JM₉₇, 3, 1, 0; 1999 JD₁₂₁, 3, 1, 0; 1999 JU₁₂₂, 3, 1, 0; 1999 KG₄, 3, 1, 0; 1999 KK₄, 3, 1, 0; 1999 KJ₁₅, 3, 1, 0; 1999 LS₁₅, 3, 1, 0; 1999 NP₂, 3, 1, 0; 1999 NT₄, 3, 1, 0; 1999 NG₅, 3, 1, 0; 1999 NC₆, 6, 2, 25; 1999 NJ₇, 3, 1, 0; 1999 NR₇, 3, 1, 0; 1999 NA₈, 3, 1, 0; 1999 NF₈, 3, 1, 0; 1999 NR₈, 3, 1, 0; 1999 NL₃₁, 3, 1, 0; 1999 NC₃₄, 3, 1, 0; 1999 NH₃₇, 3, 1, 0; 1999 NZ₃₇, 3, 1, 0; 1999 NB₃₈, 6, 2, 1; 1999 NG₃₈, 3, 1, 0; 1999 NC₃₉, 3, 1, 0; 1999 NN₃₉, 3, 1, 0; 1999 NB₃₉, 3, 1, 0; 1999 NJ₄₁, 6, 2, 1; 1999 NK₄₁, 3, 1, 0; 1999 NX₄₂, 3, 1, 0; 1999 NS₄₉, 3, 1, 0; 1999 NU₄₉, 3, 1, 0; 1999 NY₄₉, 3, 1, 0; 1999 NU₅₂, 3, 1, 0; 1999 NQ₅₉, 3, 1, 0; 1999 NM₆₂, 3, 1, 0; 1999 OB, 3, 1, 0; 1999 OO, 3, 1, 0; 1999 OS, 3, 1, 0; 1999 OW, 3, 1, 0; 1999 OW₂, 3, 1, 0; 1999 OB₃, 3, 1, 0; 1999 PX, 3, 1, 0; 1999 PZ, 6, 2, 26; 1999 PV₁, 3, 1, 0; 1999 PA₄, 3, 1, 0; 1999 PU₄, 3, 1, 0; 1999 PY₄, 3, 1, 0; 1999 PK₆, 3, 1, 0; 1999 QQ₂, 3, 1, 0; 1999 RA, 3, 1, 0; 1999 RF, 3, 1, 0; 1999 RT, 3, 1, 0; 1999 RU, 6, 2, 36; 1999 RS₁, 6, 2, 10; 1999 RT₁, 3, 1, 0; 1999 RW₁, 3, 1, 0; 1999 RU₂, 3, 1, 0; 1999 RE₃, 3, 1, 0; 1999 RF₃, 3, 1, 0; 1999 RG₃, 3, 1, 0; 1999 RH₃, 3, 1, 0; 1999 RJ₄, 3, 1, 0; 1999 RS₄, 3, 1, 0; 1999 RL₆, 3, 1, 0; 1999 RK₇, 3, 1, 0; 1999 RG₁₀, 3, 1, 0; 1999 RS₁₀, 6, 2, 37; 1999 RY₁₀, 12, 4, 70; 1999 RG₁₁, 6, 2, 46; 1999 RM₁₁, 3, 1, 0; 1999 RP₁₁, 3, 1, 0; 1999 RT₁₁, 3, 1, 0; 1999 RH₁₂, 6, 2, 53; 1999 RL₁₂, 3, 1, 0; 1999 RP₁₂, 3, 1, 0; 1999 RT₁₂, 3, 1, 0; 1999 RZ₁₂, 6, 2, 39; 1999 RU₁₃, 3, 1, 0; 1999 RF₁₄, 9, 3, 46; 1999 RO₁₄, 6, 2, 39; 1999 RQ₁₄, 6, 2, 39; 1999 RK₁₅, 3, 1, 0; 1999 RM₁₅, 3, 1, 0; 1999 RA₁₆, 3, 1, 0; 1999 RE₁₆, 3, 1, 0; 1999 RK₁₆, 3, 1, 0; 1999 RT₁₆, 3, 1, 0; 1999 RU₁₆, 3, 1, 0;

1999 RV₁₆, 3, 1, 0; 1999 RF₁₇, 3, 1, 0; 1999 RV₁₇, 3, 1, 0; 1999 RX₁₇, 3, 1, 0; 1999 RY₁₇, 3, 1, 0; 1999 RE₁₈, 3, 1, 0; 1999 RJ₁₈, 3, 1, 0; 1999 RN₁₈, 3, 1, 0; 1999 RR₁₈, 3, 1, 0; 1999 RT₁₈, 3, 1, 0; 1999 RU₁₈, 3, 1, 0; 1999 RH₁₉, 3, 1, 0; 1999 RT₁₉, 3, 1, 0; 1999 RC₂₀, 3, 1, 0; 1999 RD₂₀, 9, 3, 11; 1999 RJ₂₁, 3, 1, 0; 1999 RV₂₁, 3, 1, 0; 1999 RC₂₂, 3, 1, 0; 1999 RD₂₂, 3, 1, 0; 1999 RL₂₂, 3, 1, 0; 1999 RF₂₃, 3, 1, 0; 1999 RH₂₃, 3, 1, 0; 1999 RV₂₄, 3, 1, 0; 1999 RX₂₅, 3, 1, 0; 1999 RH₂₆, 3, 1, 0; 1999 RK₂₇, 3, 1, 0; 1999 RP₂₇, 3, 1, 0; 1999 RR₂₇, 3, 1, 0; 1999 RV₂₇, 3, 1, 0; 1999 RA₂₈, 3, 1, 0; 1999 RE₂₈, 3, 1, 0; 1999 RV₂₈, 3, 1, 0; 1999 RT₂₉, 3, 1, 0; 1999 RU₂₉, 3, 1, 0; 1999 RD₃₀, 3, 1, 0; 1999 RD₃₁, 3, 1, 0; 1999 RJ₃₁, 6, 2, 49; 1999 RD₃₂, 3, 1, 0; 1999 RN₃₂, 6, 2, 13; 1999 RO₃₂, 3, 1, 0; 1999 RC₃₃, 3, 1, 0; 1999 RM₃₃, 3, 1, 0; 1999 RC₃₄, 3, 1, 0; 1999 RD₃₄, 6, 2, 13; 1999 RR₃₄, 3, 1, 0; 1999 RN₃₅, 3, 1, 0; 1999 RO₃₅, 3, 1, 0; 1999 RT₃₅, 3, 1, 0; 1999 RM₃₆, 3, 1, 0; 1999 RP₃₆, 3, 1, 0; 1999 RB₃₇, 6, 2, 49; 1999 RC₃₇, 6, 2, 49; 1999 RJ₃₇, 3, 1, 0; 1999 RT₃₇, 3, 1, 0; 1999 RW₃₇, 3, 1, 0; 1999 RF₃₈, 3, 1, 0; 1999 RN₃₈, 3, 1, 0; 1999 RO₃₈, 6, 2, 23; 1999 RT₃₈, 3, 1, 0; 1999 RV₃₈, 3, 1, 0; 1999 RZ₃₈, 6, 2, 26; 1999 RK₄₀, 3, 1, 0; 1999 RF₄₁, 3, 1, 0; 1999 RW₄₁, 3, 1, 0; 1999 RA₄₂, 3, 1, 0; 1999 RH₄₃, 3, 1, 0; 1999 RO₄₃, 3, 1, 0; 1999 RP₄₃, 3, 1, 0; 1999 RQ₄₃, 3, 1, 0; 1999 RT₄₄, 3, 1, 0; 1999 RG₄₅, 3, 1, 0; 1999 RF₄₆, 3, 1, 0; 1999 RQ₄₆, 6, 2, 24; 1999 RW₄₆, 12, 4, 109; 1999 RH₄₇, 3, 1, 0; 1999 RN₄₇, 3, 1, 0; 1999 RS₄₇, 3, 1, 0; 1999 RJ₄₈, 3, 1, 0; 1999 RK₄₈, 3, 1, 0; 1999 RN₄₈, 6, 2, 37; 1999 RH₄₈, 3, 1, 0; 1999 RJ₅₀, 3, 1, 0; 1999 RN₅₀, 6, 2, 21; 1999 RA₅₁, 3, 1, 0; 1999 RH₅₂, 3, 1, 0; 1999 RX₅₂, 6, 2, 23; 1999 RQ₅₃, 6, 2, 25; 1999 RW₅₄, 3, 1, 0; 1999 RK₅₅, 3, 1, 0; 1999 RT₅₅, 6, 2, 17; 1999 RW₅₅, 3, 1, 0; 1999 RY₅₅, 3, 1, 0; 1999 RO₅₇, 3, 1, 0; 1999 RQ₅₇, 3, 1, 0; 1999 RM₅₈, 3, 1, 0; 1999 RG₆₂, 6, 2, 23; 1999 RO₆₃, 3, 1, 0; 1999 RE₆₄, 3, 1, 0; 1999 RN₆₄, 3, 1, 0; 1999 RG₇₁, 3, 1, 0; 1999 RO₇₂, 3, 1, 0; 1999 RP₇₂, 3, 1, 0; 1999 RL₇₃, 3, 1, 0; 1999 RD₇₄, 3, 1, 0; 1999 RV₇₄, 3, 1, 0; 1999 RQ₇₅, 3, 1, 0; 1999 RM₇₆, 3, 1, 0; 1999 RO₈₁, 3, 1, 0; 1999 RV₈₁, 3, 1, 0; 1999 RA₈₃, 6, 2, 39; 1999 RB₈₄, 3, 1, 0; 1999 RM₈₅, 3, 1, 0; 1999 RA₈₆, 3, 1, 0; 1999 RD₈₆, 6, 2, 24; 1999 RJ₈₆, 3, 1, 0; 1999 RU₈₆, 3, 1, 0; 1999 RN₈₇, 3, 1, 0; 1999 RT₈₇, 3, 1, 0; 1999 RZ₈₈, 3, 1, 0; 1999 RE₉₀, 3, 1, 0; 1999 RQ₉₀, 3, 1, 0; 1999 RE₉₁, 6, 2, 14; 1999 RJ₉₁, 3, 1, 0; 1999 RB₉₃, 3, 1, 0; 1999 RH₉₃, 3, 1, 0; 1999 RN₉₃, 3, 1, 0; 1999 RT₉₃, 3, 1, 0; 1999 RC₉₄, 6, 2, 14; 1999 RK₉₄, 6, 2, 13; 1999 RD₉₅, 3, 1, 0; 1999 RX₉₅, 3, 1, 0; 1999 RB₉₆, 3, 1, 0; 1999 RW₉₇, 3, 1, 0; 1999 RR₉₈, 3, 1, 0; 1999 RD₁₀₀, 3, 1, 0; 1999 RJ₁₀₂, 6, 2, 32; 1999 RY₁₀₂, 3, 1, 0; 1999 RQ₁₀₃, 3, 1, 0; 1999 RT₁₀₃, 3, 1, 0; 1999 RZ₁₀₄, 3, 1, 0; 1999 RQ₁₁₃, 6, 2, 15; 1999 RR₁₁₄, 6, 2, 3; 1999 RC₁₁₅, 3, 1, 0; 1999 RG₁₁₅, 3, 1, 0; 1999 RW₁₁₅, 9, 3, 74; 1999 RY₁₁₅, 6, 2, 25; 1999 RA₁₁₆, 3, 1, 0; 1999 RM₁₁₆, 3, 1, 0; 1999 RT₁₁₆, 3, 1, 0; 1999 RO₁₁₇, 3, 1, 0; 1999 RQ₁₁₉, 3, 1, 0; 1999 RF₁₁₈, 9, 2, 25; 1999 RT₁₁₈, 3, 1, 0; 1999 RX₁₁₈, 3, 1, 0; 1999 RQ₁₁₉, 3, 1, 0; 1999 RT₁₁₉, 3, 1, 0; 1999 RW₁₁₉, 3, 1, 0; 1999 RK₁₂₀, 3, 1, 0; 1999 RP₁₂₀, 3, 1, 0; 1999 RB₁₂₁, 3, 1, 0; 1999 RC₁₂₁, 3, 1, 0; 1999 RK₁₂₁, 3, 1, 0; 1999 RT₁₂₂, 3, 1, 0; 1999 RV₁₂₂, 3, 1, 0; 1999 RD₁₂₄, 3, 1, 0; 1999 RN₁₂₅, 6, 2, 14; 1999 RV₁₂₅, 3, 1, 0; 1999 RX₁₂₅, 9, 3, 29; 1999 RY₁₂₅, 6, 2, 14; 1999 RF₁₂₆, 6, 2, 38; 1999 RG₁₂₆, 3, 1, 0; 1999 RN₁₂₆, 3, 1, 0; 1999 RJ₁₂₇, 3, 1, 0; 1999 RB₁₂₈, 6, 2, 29; 1999 RM₁₂₈, 3, 1, 0; 1999 RX₁₂₈, 3, 1, 0; 1999 RA₁₂₉, 3, 1, 0; 1999 RB₁₂₉, 3, 1, 0; 1999 RC₁₂₉, 3, 1, 0; 1999 RM₁₂₉, 9, 3, 52; 1999 RN₁₂₉, 6, 2, 30; 1999 RS₁₂₉, 3, 1, 0; 1999 RU₁₂₉, 3, 1, 0; 1999 RC₁₃₀, 3, 1, 0; 1999 RD₁₃₀, 3, 1, 0; 1999 RE₁₃₀, 6, 2, 27; 1999 RJ₁₃₀, 3, 1, 0; 1999 RP₁₃₀, 3, 1, 0; 1999 RS₁₃₀, 3, 1, 0; 1999 RW₁₃₁, 3, 1, 0; 1999 RA₁₃₂, 3, 1, 0; 1999 RE₁₃₂, 6, 2, 14; 1999 RP₁₃₂, 3, 1, 0; 1999 RA₁₃₃, 3, 1, 0; 1999 RK₁₃₄, 3, 1, 0; 1999 RT₁₃₄, 3, 1, 0; 1999 RA₁₃₅, 3, 1, 0; 1999 RD₁₃₅, 3, 1, 0; 1999 RF₁₃₅, 3, 1, 0; 1999 RM₁₃₅, 6, 2, 44; 1999 RS₁₃₅, 3, 1, 0; 1

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701 Sierra Vista

D. Healy, Junk Bond Observatory, 6929 Madera Dr, Sierra Vista, AZ 85635, U.S.A.

[76443.1440@compuserve.com]

Observer D. Healy, J. Medkeff

Measurer J. Medkeff

0.40-m $f/5$ Schmidt-Cassegrain + CCD

GSC-ACT

1990 WP₁, 9, 2, 1; 1992 US₁, 1, 1, 0; 1993 FX₃₇, 6, 2, 1; 1993 NS₁, 6, 2, 1; 1999 UJ₁ *, 9, 2, 1; 1999 UK₁ *, 8, 2, 1; 1999 UL₂ *, 6, 2, 1; 1999 UM₂ *, 6, 2, 1; 1999 UN₂ *, 5, 2, 1; 1999 UO₂ *, 6, 2, 1; (114), 6, 2, 1; (150), 3, 1, 0; (165), 3, 1, 0; (174), 3, 1, 0; (175), 3, 1, 0; (186), 6, 2, 1; (194), 3, 1, 0; (199), 6, 2, 1; (885), 3, 1, 0; (1234), 3, 1, 0; (1273), 3, 1, 0; (1304), 6, 2, 1; (1311), 6, 2, 1; (1312), 3, 1, 0; (1337), 5, 2, 1; (1355), 3, 1, 0; (1371), 6, 2, 1; (1377), 3, 1, 0; (1390), 6, 2, 1; (1391), 6, 2, 1; (4494), 6, 2, 1; (4497), 6, 2, 1; (4546), 6, 2, 1; (4567), 6, 2, 1; [172, 34, 6*, 1998/05/28-1999/10/19]

703 Catalina Sky Survey

C. W. Hergenrother, Space Sciences Building, University of Arizona, Tucson, AZ

85721, U.S.A. [chergen@pir1.lpl.arizona.edu]

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

0.41-m $f/3$ Schmidt + CCD

USNO-A2.0

1942 TB, 4, 1, 0; 1955 RE₁, 4, 1, 0; 1971 FB, 4, 1, 0; 1971 UR, 4, 1, 0; 1971 UN₁, 4, 1, 0; 1971 UT₁, 4, 1, 0; 1973 AW₃, 4, 1, 0; 1973 QO₁, 4, 1, 0; 1973 UR₅, 4, 1, 0; 1975 SX, 8, 2, 7; 1975 SZ₁, 4, 1, 0; 1975 TU₃, 4, 1, 0; 1976 QK₁, 4, 1, 0; 1977 ER₅, 4, 1, 0; 1977 QW, 8, 2, 9; 1977 QN₂, 8, 2, 9; 1977 TQ₆, 4, 1, 0; 1978 RU, 4, 1, 0; 1978 RQ₁, 4, 1, 0; 1978 RT₆, 4, 1, 0; 1978 SH₇, 4, 1, 0; 1978 TH₇, 4, 1, 0; 1978 VD₅, 8, 2, 6; 1978 VW₈, 4, 1, 0; 1978 VP₉, 4, 1, 0; 1979 MM₄, 4, 1, 0; 1979 MT₈, 4, 1, 0; 1979 QM₃, 4, 1, 0; 1980 FV₂, 4, 1, 0; 1980 FZ₂, 4, 1, 0; 1981 DD₁, 4, 1, 0; 1981 DN₁, 4, 1, 0; 1981 DG₂, 8, 2, 7; 1981 DL₂, 8, 2, 10; 1981 DS₂, 4, 1, 0; 1981 DY₂, 4, 1, 0; 1981 EO₃, 4, 1, 0; 1981 ET₅, 4, 1, 0; 1981 EW₅, 4, 1, 0; 1981 EM₆, 4, 1, 0; 1981 EM₇, 8, 2, 7; 1981 EN₁₀, 4, 1, 0; 1981 EP₁₂, 4, 1, 0; 1981 EL₁₃, 4, 1, 0; 1981 EY₁₃, 8, 2, 5; 1981 EF₁₄, 4, 1, 0; 1981 EF₁₆, 4, 1, 0; 1981 EM₁₇, 4, 1, 0; 1981 EA₁₉, 4, 1, 0; 1981 EH₁₉, 8, 2, 7; 1981 EO₁₉, 4, 1, 0; 1981 ET₂₃, 8, 2, 7; 1981 EK₂₇, 4, 1, 0; 1981 EJ₂₉, 4, 1, 0; 1981 EG₃₁, 4, 1, 0; 1981 EX₃₂, 4, 1, 0; 1981 EK₃₅, 4, 1, 0; 1981 EO₃₅, 12, 3, 33; 1981 ET₃₇, 4, 1, 0; 1981 EO₃₈, 4, 1, 0; 1981 EU₃₈, 4, 1, 0; 1981 EE₄₆, 4, 1, 0; 1981 KJ, 4, 1, 0; 1981 QR₂, 4, 1, 0; 1981 UL₂₉, 8, 2, 9; 1982 JD₂, 4, 1, 0; 1982 UA₆, 4, 1, 0; 1982 VU₂, 4, 1, 0; 1982 VD₅, 4, 1, 0; 1984 DZ, 4, 1, 0; 1984 SC₆, 4, 1, 0; 1984 UN₂, 4, 1, 0; 1985 RP, 8, 2, 4; 1985 RQ₃, 4, 1, 0; 1985 VE, 4, 1, 0; 1986 PY, 4, 1, 0; 1986 PJ₁, 4, 1, 0; 1986 QX₁, 4, 1, 0; 1986 TR, 8, 1,

0; 1987 DD₆, 4, 1, 0; 1987 RZ, 4, 1, 0; 1987 YS₁, 4, 1, 0; 1988 BM₄, 4, 1, 0; 1988 BJ₅, 4, 1, 0; 1988 FD₃, 4, 1, 0; 1988 FE₃, 4, 1, 0; 1988 PQ, 4, 1, 0; 1988 PG₂, 4, 1, 0; 1988 PW₂, 12, 2, 4; 1988 QZ, 4, 1, 0; 1988 RY₂, 4, 1, 0; 1988 RS₃, 4, 1, 0; 1988 RJ₆, 4, 1, 0; 1988 RL₆, 4, 1, 0; 1988 RW₁₀, 8, 2, 8; 1988 RX₁₂, 4, 1, 0; 1988 SN₁, 4, 1, 0; 1988 TS₁, 4, 1, 0; 1988 UP, 4, 1, 0; 1988 VA₁, 4, 1, 0; 1988 VT₁, 4, 1, 0; 1988 VC₂, 4, 1, 0; 1988 VL₂, 8, 2, 9; 1988 VY₂, 8, 2, 4; 1988 XJ₁, 4, 1, 0; 1988 XB₂, 8, 2, 7; 1989 GJ₄, 8, 2, 7; 1989 NH₁, 4, 1, 0; 1989 SR, 4, 1, 0; 1989 SB₁, 8, 2, 8; 1989 SZ₁, 4, 1, 0; 1989 TY₄, 4, 1, 0; 1989 TP₇, 4, 1, 0; 1989 TN₁₆, 4, 1, 0; 1989 VA, 4, 1, 0; 1989 WB₃, 4, 1, 0; 1989 YC₆, 4, 1, 0; 1990 EC₁, 4, 1, 0; 1990 EM₁, 4, 1, 0; 1990 EL₈, 4, 1, 0; 1990 GD, 4, 1, 0; 1990 HJ, 4, 1, 0; 1990 KR, 4, 1, 0; 1990 OZ, 4, 1, 0; 1990 OY₁, 4, 1, 0; 1990 OG₄, 4, 1, 0; 1990 QR, 4, 1, 0; 1990 QY₅, 4, 1, 0; 1990 RD₅, 8, 2, 6; 1990 SO₈, 4, 1, 0; 1990 TZ₁, 4, 1, 0; 1990 TJ₁₅, 8, 2, 6; 1990 UD₃, 4, 1, 0; 1990 UB₄, 4, 1, 0; 1990 UO₄, 4, 1, 0; 1990 UG₅, 8, 2, 8; 1990 VS₅, 4, 1, 0; 1990 WZ, 4, 1, 0; 1990 WP₄, 4, 1, 0; 1991 BZ, 4, 1, 0; 1991 DG₁, 4, 1, 0; 1991 EM, 4, 1, 0; 1991 EF₂, 4, 1, 0; 1991 FP, 4, 1, 0; 1991 FJ₂, 8, 2, 7; 1991 FT₂, 8, 1, 0; 1991 FZ₂, 4, 1, 0; 1991 GA₂, 4, 1, 0; 1991 GH₅, 4, 1, 0; 1991 GC₇, 4, 1, 0; 1991 GR₇, 4, 1, 0; 1991 GJ₈, 4, 1, 0; 1991 GM₉, 4, 1, 0; 1991 JC, 4, 1, 0; 1991 JD, 4, 1, 0; 1991 NB₁, 4, 1, 0; 1991 PL₂, 4, 1, 0; 1991 PV₁₁, 4, 1, 0; 1991 PW₁₁, 4, 1, 0; 1991 PT₁₄, 4, 1, 0; 1991 PH₁₈, 4, 1, 0; 1991 RP₁, 4, 1, 0; 1991 RN₂₇, 4, 1, 0; 1991 TH₃, 4, 1, 0; 1991 UA, 4, 1, 0; 1991 UE₂, 4, 1, 0; 1991 UD₃, 4, 1, 0; 1991 VD₁, 4, 1, 0; 1991 VA₃, 4, 1, 0; 1991 VE₃, 8, 2, 4; 1991 VB₅, 4, 1, 0; 1991 VU₅, 4, 1, 0; 1991 VL₆, 4, 1, 0; 1991 VP₁₂, 4, 1, 0; 1992 DM₇, 4, 1, 0; 1992 EO, 8, 2, 7; 1992 ES₆, 8, 2, 4; 1992 EM₈, 8, 2, 4; 1992 ER₈, 4, 1, 0; 1992 GM₂, 4, 1, 0; 1992 HG, 8, 2, 9; 1992 JU₂, 4, 1, 0; 1992 OJ₁, 4, 1, 0; 1992 OB₃, 4, 1, 0; 1992 PF, 4, 1, 0; 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1994 YF, 4, 1, 0; 1995 BJ, 4, 1, 0; 1995 FA₁, 4, 1, 0; 1995 KM₁, 4, 1, 0; 1995 KJ₃, 8, 2, 7; 1995 QG, 4, 1, 0; 1995 QN₂, 4, 1, 0; 1995 QY₃, 4, 1, 0; 1995 QC₁₀, 4, 1, 0; 1995 SJ₁, 4, 1, 0; 1995 SK₂, 4, 1, 0; 1995 SO₂, 4, 1, 0; 1995 SX₂, 4, 1, 0; 1995 SK₃, 4, 1, 0; 1995 SS₅, 4, 1, 0; 1995 SP₈, 8, 2, 7; 1995 SH₂₆, 4, 1, 0; 1995 SL₃₅, 4, 1, 0; 1995 TZ₁, 4, 1, 0; 1995 TB₈, 4, 1, 0; 1995 UX₂, 4, 1, 0; 1995 UM₃, 4, 1, 0; 1995 UU₃, 4, 1, 0; 1995 UP₄, 4, 1, 0; 1995 UT₄, 4, 1, 0; 1995 UC₅, 4, 1, 0; 1995 UP₇, 4, 1, 0; 1995 UR₈, 4, 1, 0; 1995 UQ₁₆, 4, 1, 0; 1995 UF₂₄, 8, 2, 8; 1995 UK₂₈, 4, 1, 0; 1995 VG, 8, 2, 8; 1995 VJ, 4, 1, 0; 1995 VM, 4, 1, 0; 1995 VP, 8, 2, 9; 1995 WB, 4, 1, 0; 1995 WF₃, 4, 1, 0; 1995 WM₃, 4, 1, 0; 1995 WV₃, 4, 1, 0; 1995 WM₄, 4, 1, 0; 1995 WM₆, 8, 2, 8; 1995 WD₇, 8, 2, 7; 1995 WK₇, 4, 1, 0; 1995 WP₁₇, 8, 2, 7; 1995 WM₃₃, 4, 1, 0; 1995 XH, 4, 1, 0; 1995 XU₁, 8, 2, 7; 1995 XC₅, 8, 2, 7; 1995 YB, 4, 1, 0; 1995 YL, 4, 1, 0; 1995 YP, 4, 1, 0; 1995 YJ₁, 4, 1, 0; 1996 AG, 4, 1, 0; 1996 BX, 4, 1, 0; 1996 BJ₂, 4, 1, 0; 1996 BP₃, 8, 2, 26; 1996 CK₂, 8, 2, 7; 1996 DV, 4, 1, 0; 1996 EG, 4, 1, 0; 1996 EQ₂, 4, 1, 0; 1996 ED₉, 4, 1, 0; 1996 KA, 4, 1, 0; 1996 KA₃, 4, 1, 0; 1996 RG₁, 4, 1, 0; 1996 TF, 8, 2, 27; 1996 TG₆, 8, 2, 8; 1996 TT₁₄, 4, 1, 0; 1996 VU₈, 4, 1, 0; 1996 VU₁₇, 4, 1, 0; 1996 VX₂₉, 4, 1, 0; 1996 VL₃₀, 8, 2, 6; 1996 WA, 4, 1, 0; 1996 WA₁, 4, 1, 0; 1996 WE₃, 4, 1, 0; 1996 XU, 4, 1, 0; 1996 XC₁, 4, 1, 0; 1996 XO₁, 8, 2, 6; 1996 XM₂, 4, 1, 0; 1996 XD₃, 4, 1, 0; 1996 XG₅, 4, 1, 0; 1996 XQ₅, 4, 1, 0; 1996 XC₉, 8, 2, 30; 1996 XF₁₉, 4, 1, 0; 1996 XG₁₉, 4, 1, 0; 1996 XX₁₉, 4, 1, 0; 1996 XH₂₆, 8, 2, 7; 1996 XL₃₁, 4, 1, 0; 1996 YD, 4, 1, 0; 1996 YF, 4, 1, 0; 1996 YR, 4, 1, 0; 1996 YL₂, 4, 1, 0; 1997 AD, 4, 1, 0; 1997 AG, 4, 1, 0; 1997 AQ, 4, 1, 0; 1997 AS, 4, 1, 0; 1997 AC₁, 4, 1, 0; 1997 AE₁, 4, 1, 0; 1997 AK₁, 4, 1, 0; 1997 AZ₂, 8, 2, 6; 1997 AC₃, 4, 1, 0; 1997 AF₃, 4, 1, 0; 1997 AW₃, 4, 1, 0; 1997 AZ₅, 8, 2, 5; 1997 AB₆, 4, 1, 0; 1997 AW₆, 4, 1, 0; 1997 AB₇, 4, 1, 0; 1997 AH₈, 4, 1, 0; 1997 AD₁₀, 4, 1, 0; 1997 AC₁₃, 4, 1, 0; 1997 AG₁₃, 8, 2, 4; 1997 AJ₁₃, 4, 1, 0; 1997 AR₁₆, 8, 1, 0; 1997 AU₁₇, 4, 1, 0; 1997 BZ, 4, 1, 0; 1997 BN₁, 4, 1, 0; 1997 BP₁, 4, 1, 0; 1997 BX₂, 4, 1, 0; 1997 BF₃, 4, 1, 0; 1997 BO₃, 4, 1, 0; 1997 BP₅, 8, 2, 7; 1997 BN₉, 8, 2, 6; 1997 CH₁, 4, 1, 0; 1997 CZ₆, 4, 1, 0; 1997 CE₂₀, 4, 1, 0; 1997 CK₂₉, 4, 1, 0; 1997 EJ, 4, 1, 0; 1997 EO₇, 4, 1, 0; 1997 EX₇, 4, 1, 0; 1997 EK₈, 4, 1, 0; 1997 EL₂₈, 4, 1, 0;

1997 ER₃₁, 4, 1, 0; 1997 EN₃₂, 8, 2, 7; 1997 EA₃₆, 4, 1, 0; 1997 EW₄₅, 4, 1, 0; 1997 EK₅₄, 4, 1, 0; 1997 EL₅₅, 4, 1, 0; 1997 FC, 4, 1, 0; 1997 FB₄, 8, 2, 7; 1997 FQ₄, 4, 1, 0; 1997 GX₃, 4, 1, 0; 1997 GO₆, 8, 2, 7; 1997 GJ₈, 4, 1, 0; 1997 GQ₂₂, 4, 1, 0; 1997 GB₂₃, 4, 1, 0; 1997 GO₂₇, 4, 1, 0; 1997 GT₃₂, 8, 2, 7; 1997 GK₃₃, 8, 2, 32; 1997 GP₃₆, 4, 1, 0; 1997 HX₆, 4, 1, 0; 1997 HE₁₄, 4, 1, 0; 1997 JE₁₀, 4, 1, 0; 1997 LU₁, 4, 1, 0; 1997 PL₅, 4, 1, 0; 1997 YS₁₁, 4, 1, 0; 1998 AV₉, 4, 1, 0; 1998 BH₂₆, 4, 1, 0; 1998 CK₁, 4, 1, 0; 1998 DT₉, 4, 1, 0; 1998 DZ₁₃, 4, 1, 0; 1998 DN₁₇, 4, 1, 0; 1998 DD₁₈, 4, 1, 0; 1998 DB₂₄, 4, 1, 0; 1998 DC₃₀, 8, 2, 7; 1998 DT₃₄, 4, 1, 0; 1998 DB₃₆, 4, 1, 0; 1998 EB₈, 4, 1, 0; 1998 EC₉, 4, 1, 0; 1998 EB₁₀, 8, 2, 6; 1998 EE₁₀, 4, 1, 0; 1998 ET₁₁, 4, 1, 0; 1998 EY₁₁, 7, 2, 7; 1998 FO₂, 8, 2, 8; 1998 FB₅, 4, 1, 0; 1998 FB₆, 4, 1, 0; 1998 FV₈, 4, 1, 0; 1998 FF₉, 8, 2, 4; 1998 FB₁₀, 4, 1, 0; 1998 FQ₁₄, 4, 1, 0; 1998 FW₁₄, 4, 1, 0; 1998 FY₁₄, 4, 1, 0; 1998 FD₁₅, 4, 1, 0; 1998 FS₁₅, 4, 1, 0; 1998 FZ₁₅, 4, 1, 0; 1998 FF₁₆, 4, 1, 0; 1998 FZ₂₉, 4, 1, 0; 1998 FW₃₀, 8, 2, 2; 1998 FK₃₂, 4, 1, 0; 1998 FA₃₃, 4, 1, 0; 1998 FF₃₄, 4, 1, 0; 1998 FX₃₉, 4, 1, 0; 1998 FH₄₁, 4, 1, 0; 1998 FR₄₇, 4, 1, 0; 1998 FL₄₉, 4, 1, 0; 1998 FT₅₇, 4, 1, 0; 1998 FC₅₉, 4, 1, 0; 1998 FD₆₁, 4, 1, 0; 1998 FT₆₁, 4, 1, 0; 1998 FL₆₂, 4, 1, 0; 1998 FK₆₃, 8, 2, 7; 1998 FQ₆₄, 8, 2, 6; 1998 FC₆₅, 8, 2, 6; 1998 FH₆₅, 4, 1, 0; 1998 FP₆₅, 4, 1, 0; 1998 FC₆₆, 4, 1, 0; 1998 FD₆₆, 4, 1, 0; 1998 FL₆₆, 4, 1, 0; 1998 FW₆₆, 4, 1, 0; 1998 FF₆₇, 4, 1, 0; 1998 FS₆₈, 4, 1, 0; 1998 FZ₆₈, 8, 2, 6; 1998 FX₆₉, 8, 2, 4; 1998 FM₇₀, 4, 1, 0; 1998 FZ₇₀, 4, 1, 0; 1998 FY₇₁, 4, 1, 0; 1998 FJ₇₂, 4, 1, 0; 1998 FQ₇₂, 4, 1, 0; 1998 FZ₇₃, 4, 1, 0; 1998 FM₇₆, 4, 1, 0; 1998 FZ₉₇, 4, 1, 0; 1998 FY₉₉, 4, 1, 0; 1998 FZ₉₉, 4, 1, 0; 1998 FU₁₀₂, 4, 1, 0; 1998 FW₁₀₂, 8, 2, 6; 1998 FJ₁₀₃, 4, 1, 0; 1998 FQ₁₀₃, 4, 1, 0; 1998 FR₁₀₃, 4, 1, 0; 1998 FZ₁₀₃, 4, 1, 0; 1998 FG₁₀₄, 4, 1, 0; 1998 FJ₁₀₅, 4, 1, 0; 1998 FK₁₀₆, 8, 2, 9; 1998 FG₁₀₇, 8, 2, 5; 1998 FJ₁₀₉, 4, 1, 0; 1998 FR₁₁₃, 8, 2, 9; 1998 FU₁₁₃, 4, 1, 0; 1998 FZ₁₁₃, 4, 1, 0; 1998 FB₁₁₄, 8, 2, 7; 1998 FJ₁₁₄, 8, 2, 26; 1998 FX₁₁₄, 4, 1, 0; 1998 FE₁₁₅, 4, 1, 0; 1998 FH₁₁₅, 4, 1, 0; 1998 FK₁₁₅, 4, 1, 0; 1998 FL₁₁₆, 3, 1, 0; 1998 FB₁₁₇, 4, 1, 0; 1998 FC₁₁₇, 4, 1, 0; 1998 FG₁₁₇, 4, 1, 0; 1998 FC₁₁₈, 4, 1, 0; 1998 FQ₁₂₁, 4, 1, 0; 1998 FS₁₂₁, 4, 1, 0; 1998 FX₁₂₅, 8, 2, 5; 1998 FC₁₂₇, 4, 1, 0; 1998 FQ₁₃₃, 4, 1, 0; 1998 FC₁₄₄, 4, 1, 0; 1998 CG₁, 4, 1, 0; 1998 GE₉, 4, 1, 0; 1998 HF₃, 4, 1, 0; 1998 HQ₁₂, 4, 1, 0; 1998 HP₁₉, 8, 2, 26; 1998 HQ₁₉, 8, 2, 7; 1998 HR₁₉, 4, 1, 0; 1998 HU₁₉, 8, 2, 6; 1998 HE₂₁, 4, 1, 0; 1998 HS₂₃, 4, 1, 0; 1998 HM₂₆, 4, 1, 0; 1998 HR₂₇, 4, 1, 0; 1998 HY₃₁, 4, 1, 0; 1998 HZ₃₁, 8, 2, 6; 1998 HK₃₃, 4, 1, 0; 1998 HO₃₅, 8, 2, 2; 1998 HY₃₅, 8, 2, 18; 1998 HK₃₆, 4, 1, 0; 1998 HX₃₆, 4, 1, 0; 1998 HW₄₄, 4, 1, 0; 1998 HB₄₅, 8, 2, 7; 1998 HW₄₅, 8, 2, 8; 1998 HM₅₂, 4, 1, 0; 1998 HM₅₂, 4, 1, 0; 1998 HJ₅₄, 4, 1, 0; 1998 HH₅₅, 12, 3, 27; 1998 HQ₆₈, 4, 1, 0; 1998 HV₇₈, 4, 1, 0; 1998 HX₇₈, 4, 1, 0; 1998 HH₈₀, 4, 1, 0; 1998 HP₈₃, 4, 1, 0; 1998 HL₈₄, 4, 1, 0; 1998 HR₈₄, 4, 1, 0; 1998 HH₈₇, 4, 1, 0; 1998 HD₈₈, 4, 1, 0; 1998 HX₈₉, 4, 1, 0; 1998 HA₉₃, 4, 1, 0; 1998 HH₉₃, 4, 1, 0; 1998 HY₉₃, 4, 1, 0; 1998 HR₉₄, 8, 2, 10; 1998 HC₉₆, 4, 1, 0; 1998 HS₉₆, 4, 1, 0; 1998 HF₉₉, 4, 1, 0; 1998 HH₉₉, 4, 1, 0; 1998 HL₉₉, 4, 1, 0; 1998 HH₁₀₀, 4, 1, 0; 1998 HW₁₀₁, 4, 1, 0; 1998 HH₁₁₄, 4, 1, 0; 1998 HN₁₁₉, 4, 1, 0; 1998 HF₁₂₁, 4, 1, 0; 1998 HG₁₂₁, 8, 2, 4; 1998 HH₁₂₃, 4, 1, 0; 1998 HK₁₂₄, 4, 1, 0; 1998 HG₁₂₅, 8, 2, 4; 1998 HV₁₃₇, 8, 2, 8; 1998 HT₁₄₇, 4, 1, 0; 1998 HV₁₄₈, 4, 1, 0; 1998 JK₄, 1, 0; 1998 JW, 8, 2, 7; 1998 JH₁, 4, 1, 0; 1998 JQ₁, 8, 2, 33; 1998 JY₁, 4, 1, 0; 1998 JA₂, 4, 1, 0; 1998 JE₃, 4, 1, 0; 1998 JB₄, 4, 1, 0; 1998 KC₅, 4, 1, 0; 1998 KD₅, 4, 1, 0; 1998 KK₈, 8, 2, 5; 1998 KM₈, 4, 1, 0; 1998 KP₈, 4, 1, 0; 1998 KC₉, 7, 2, 7; 1998 KW₉, 4, 1, 0; 1998 KN₁₀, 4, 1, 0; 1998 KE₃₀, 4, 1, 0; 1998 KH₃₀, 8, 2, 9; 1998 KQ₃₁, 4, 1, 0; 1998 KT₃₂, 4, 1, 0; 1998 KY₃₄, 4, 1, 0; 1998 KF₃₅, 4, 1, 0; 1998 KL₃₅, 4, 1, 0; 1998 KM₃₅, 4, 1, 0; 1998 KT₃₆, 4, 1, 0; 1998 KL₃₇, 4, 1, 0; 1998 KQ₃₈, 4, 1, 0; 1998 KS₃₉, 4, 1, 0; 1998 KF₄₀, 4, 1, 0; 1998 KG₄₁, 4, 1, 0; 1998 KD₄₄, 8, 2, 26; 1998 KT₄₄, 4, 1, 0; 1998 KN₄₅, 4, 1, 0; 1998 KM₄₆, 4, 1, 0; 1998 KW₄₆, 4, 1, 0; 1998 KZ₄₆, 4, 1, 0;

[illegible]

0, 1, 0; 1999 RY₁₀₇, 8, 2, 6; 1999 RC₁₀₈, 8, 2, 6; 1999 RD₁₀₈, 8, 2, 30; 1999 RG₁₀₈, 8, 2, 24; 1999 RM₁₀₈, 8, 2, 24; 1999 RO₁₀₈, 11, 3, 24; 1999 RP₁₀₈, 4, 1, 0; 1999 RT₁₀₈, 8, 2, 22; 1999 RX₁₀₈, 4, 1, 0; 1999 RR₁₀₉, 8, 10, 1; 1999 RS₁₀₉, 4, 1, 0; 1999 RU₁₀₉, 8, 2, 9; 1999 RY₁₀₉, 4, 1, 0; 1999 RC₁₁₀, 4, 1, 0; 1999 RD₁₁₀, 4, 1, 0; 1999 RW₁₁₀, 4, 1, 0; 1999 RX₁₁₀, 4, 1, 0; 1999 RZ₁₁₀, 4, 1, 0; 1999 RQ₁₁₃, 4, 1, 0; 1999 RJ₁₁₃, 4, 1, 0; 1999 RB₁₁₄, 4, 1, 0; 1999 RC₁₁₄, 4, 1, 0; 1999 RZ₁₁₄, 4, 1, 0; 1999 RA₁₁₆, 4, 1, 0; 1999 RG₁₁₆, 4, 1, 0; 1999 RM₁₁₆, 4, 1, 0; 1999 RT₁₁₆, 4, 1, 0; 1999 RQ₁₁₉, 4, 1, 0; 1999 RW₁₁₉, 4, 1, 0; 1999 RY₁₁₉, 4, 1, 0; 1999 RK₁₂₀, 4, 1, 0; 1999 RX₁₂₁, 4, 1, 0; 1999 RV₁₂₂, 4, 1, 0; 1999 RA₁₂₃, 12, 3, 32; 1999 RE₁₂₃, 4, 1, 0; 1999 RG₁₂₃, 8, 2, 6; 1999 RH₁₂₃, 4, 1, 0; 1999 RK₁₂₃, 4, 1, 0; 1999 RO₁₂₃, 8, 2, 24; 1999 RQ₁₂₃, 4, 1, 0; 1999 RT₁₂₃, 4, 1, 0; 1999 RA₁₂₄, 4, 1, 0; 1999 RB₁₂₄, 8, 2, 8; 1999 RE₁₂₄, 4, 1, 0; 1999 RL₁₂₄, 4, 1, 0; 1999 RQ₁₂₄, 4, 1, 0; 1999 RL₁₂₅, 4, 1, 0; 1999 RN₁₂₅, 4, 1, 0; 1999 RY₁₂₅, 4, 1, 0; 1999 RF₁₂₆, 12, 3, 41; 1999 RJ₁₂₈, 4, 1, 0; 1999 RX₁₂₈, 4, 1, 0; 1999 RB₁₂₉, 8, 1, 0; 1999 RM₁₂₉, 4, 1, 0; 1999 RN₁₂₉, 4, 1, 0; 1999 RS₁₂₉, 4, 1, 0; 1999 RD₁₃₀, 4, 1, 0; 1999 RP₁₃₀, 8, 1, 0; 1999 RT₁₃₀, 4, 1, 0; 1999 RF₁₃₁, 4, 1, 0; 1999 RM₁₃₁, 12, 3, 7; 1999 RT₁₃₁, 4, 1, 0; 1999 RW₁₃₁, 4, 1, 0; 1999 RA₁₃₂, 8, 2, 18; 1999 RB₁₃₂, 4, 1, 0; 1999 RE₁₃₂, 8, 2, 18; 1999 RG₁₃₂, 4, 1, 0; 1999 RP₁₃₂, 8, 2, 18; 1999 RA₁₃₃, 4, 1, 0; 1999 RB₁₃₃, 4, 1, 0; 1999 RD₁₃₃, 4, 1, 0; 1999 RE₁₃₃, 4, 1, 0; 1999 RG₁₃₃, 4, 1, 0; 1999 RH₁₃₃, 8, 2, 26; 1999 RK₁₃₃, 8, 2, 5; 1999 RM₁₃₃, 4, 1, 0; 1999 RO₁₃₃, 8, 2, 5; 1999 RQ₁₃₃, 8, 2, 5; 1999 RT₁₃₃, 8, 2, 5; 1999 RW₁₃₃, 4, 1, 0; 1999 RY₁₃₃, 4, 1, 0; 1999 RB₁₃₄, 4, 1, 0; 1999 RD₁₃₄, 4, 1, 0; 1999 RK₁₃₄, 4, 1, 0; 1999 RM₁₃₄, 4, 1, 0; 1999 RU₁₃₄, 4, 1, 0; 1999 RA₁₃₅, 8, 1, 0; 1999 RD₁₃₅, 4, 1, 0; 1999 RE₁₃₅, 4, 1, 0; 1999 RF₁₃₅, 8, 2, 43; 1999 RM₁₃₅, 4, 1, 0; 1999 RO₁₃₅, 4, 1, 0; 1999 RQ₁₃₆, 4, 1, 0; 1999 RU₁₃₆, 8, 2, 43; 1999 RA₁₃₇, 4, 1, 0; 1999 RE₁₃₇, 4, 1, 0; 1999 RH₁₃₇, 4, 1, 0; 1999 RU₁₃₇, 4, 1, 0; 1999 RV₁₃₇, 4, 1, 0; 1999 RB₁₃₈, 4, 1, 0; 1999 RC₁₃₈, 4, 1, 0; 1999 RD₁₃₈, 4, 1, 0; 1999 RE₁₃₈, 4, 1, 0; 1999 RG₁₃₈, 4, 1, 0; 1999 RH₁₃₈, 4, 1, 0; 1999 RI₁₃₈, 4, 1, 0; 1999 RJ₁₃₈, 4, 1, 0; 1999 RK₁₃₈, 4, 1, 0; 1999 RL₁₃₈, 4, 1, 0; 1999 RM₁₃₈, 4, 1, 0; 1999 RN₁₃₈, 4, 1, 0; 1999 RO₁₃₈, 4, 1, 0; 1999 RP₁₃₈, 4, 1, 0; 1999 RQ₁₃₈, 4, 1, 0; 1999 RS₁₃₈, 4, 1, 0; 1999 RT₁₃₈, 4, 1, 0; 1999 RU₁₃₈, 4, 1, 0; 1999 RV₁₃₈, 4, 1, 0; 1999 RW₁₃₈, 4, 1, 0; 1999 RY₁₃₈, 4, 1, 0; 1999 RZ₁₃₈, 4, 1, 0; 1999 RA₁₃₉, 4, 1, 0; 1999 RB₁₃₉, 4, 1, 0; 1999 RC₁₃₉, 4, 1, 0; 1999 RD₁₃₉, 4, 1, 0; 1999 RE₁₃₉, 4, 1, 0; 1999 RF₁₃₉, 4, 1, 0; 1999 RG₁₃₉, 4, 1, 0; 1999 RH₁₃₉, 4, 1, 0; 1999 RI₁₃₉, 4, 1, 0; 1999 RJ₁₃₉, 4, 1, 0; 1999 RK₁₃₉, 4, 1, 0; 1999 RL₁₃₉, 4, 1, 0; 1999 RM₁₃₉, 4, 1, 0; 1999 RN₁₃₉, 4, 1, 0; 1999 RO₁₃₉, 4, 1, 0; 1999 RP₁₃₉, 4, 1, 0; 1999 RQ₁₃₉, 4, 1, 0; 1999 RS₁₃₉, 4, 1, 0; 1999 RT₁₃₉, 4, 1, 0; 1999 RU₁₃₉, 4, 1, 0; 1999 RV₁₃₉, 4, 1, 0; 1999 RW₁₃₉, 4, 1, 0; 1999 RY₁₃₉, 4, 1, 0; 1999 RZ₁₃₉, 4, 1, 0; 1999 RA₁₄₀, 4, 1, 0; 1999 RB₁₄₀, 4, 1, 0; 1999 RC₁₄₀, 4, 1, 0; 1999 RD₁₄₀, 4, 1, 0; 1999 RE₁₄₀, 4, 1, 0; 1999 RF₁₄₀, 4, 1, 0; 1999 RG₁₄₀, 4, 1, 0; 1999 RH₁₄₀, 4, 1, 0; 1999 RI₁₄₀, 4, 1, 0; 1999 RJ₁₄₀, 4, 1, 0; 1999 RK₁₄₀, 4, 1, 0; 1999 RL₁₄₀, 4, 1, 0; 1999 RM₁₄₀, 4, 1, 0; 1999 RN₁₄₀, 4, 1, 0; 1999 RO₁₄₀, 4, 1, 0; 1999 RP₁₄₀, 4, 1, 0; 1999 RQ₁₄₀, 4, 1, 0; 1999 RS₁₄₀, 4, 1, 0; 1999 RT₁₄₀, 4, 1, 0; 1999 RU₁₄₀, 4, 1, 0; 1999 RV₁₄₀, 4, 1, 0; 1999 RW₁₄₀, 4, 1, 0; 1999 RY₁₄₀, 4, 1, 0; 1999 RZ_{140</}

8, 2, 10; 1999 RK₂₀₅, 4, 1, 0; 1999 RM₂₀₅, 4, 1, 0; 1999 RP₂₀₅, 8, 2, 10; 1999 RR₂₀₅, 4, 1, 0; 1999 RV₂₀₅, 8, 2, 10; 1999 RA₂₀₆, 8, 2, 10; 1999 RB₂₀₆, 8, 2, 10; 1999 RC₂₀₆, 8, 2, 10; 1999 RL₂₀₆, 4, 1, 0; 1999 RN₂₀₆, 4, 1, 0; 1999 RT₂₀₆, 4, 1, 0; 1999 RP₂₀₇, 4, 1, 0; 1999 RG₂₀₇, 4, 1, 0; 1999 RP₂₀₇, 4, 1, 0; 1999 RW₂₀₇, 8, 2, 9; 1999 RY₂₀₇, 8, 2, 9; 1999 RG₂₀₈, 4, 1, 0; 1999 RL₂₀₈, 8, 2, 6; 1999 RN₂₀₈, 4, 1, 0; 1999 RR₂₀₈, 4, 1, 0; 1999 RS₂₀₈, 12, 3, 33; 1999 RT₂₀₈, 4, 1, 0; 1999 RW₂₀₈, 12, 3, 33; 1999 RA₂₀₉, 4, 1, 0; 1999 RC₂₀₉, 12, 3, 33; 1999 RE₂₀₉, 8, 2, 9; 1999 RQ₂₀₉, 4, 1, 0; 1999 RP₂₁₀, 4, 1, 0; 1999 RX₂₁₀, 4, 1, 0; 1999 RB₂₁₁, 8, 2, 26; 1999 RO₂₁₁, 8, 2, 26; 1999 RZ₂₁₁, 4, 1, 0; 1999 RH₂₁₂, 8, 2, 10; 1999 RK₂₁₂, 8, 2, 10; 1999 RP₂₁₂, 4, 1, 0; 1999 RC₂₁₃, 4, 1, 0; 1999 RE₂₁₃, 4, 1, 0; 1999 RP₂₁₃, 16, 3, 21; 1999 RM₂₁₄, 4, 1, 0; 1999 RN₂₁₄, 4, 1, 0; 1999 RO₂₁₄, 4, 1, 0; 1999 SB, 4, 1, 0; 1999 SG, 4, 1, 0; 1999 SH, 4, 1, 0; 1999 SK, 4, 1, 0; 1999 SL, 8, 2, 7; 1999 SS, 8, 2, 7; 1999 SV, 4, 1, 0; 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704 Lincoln Laboratory Experimental Test System, New Mexico

G. Stokes, MIT Lincoln Laboratory, 244 Wood Street, Lexington, MA 02420,

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

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

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

1.0-m $f/2.15$ reflector + CCD

USNO-SA1.0

1942 TB, 5, 1, 0; 1955 RE₁, 14, 3, 12; 1964 VL₁, 10, 2, 10; 1966 PL, 10, 2, 6; 1969 TT₁, 10, 2, 11; 1970 JB, 10, 2, 8; 1971 FB, 5, 1, 0; 1971 UR, 19, 4, 16; 1971 UN₁, 24, 5, 15; 1971 UT₁, 23, 5, 15; 1973 AW₃, 10, 2, 2; 1973 SL, 5, 1, 0; 1973 UQ₅, 5, 1, 0; 1973 UR₅, 4, 1, 0; 1975 SX, 28, 6, 11; 1975 SU₁, 8, 2, 10; 1975 SZ₁, 23, 5, 15; 1975 SB₂, 9, 2, 10; 1975 TE, 5, 1, 0; 1975 TU₃, 19, 4, 13; 1976 QK₁, 24, 5, 11; 1976 SL₅, 9, 2, 2; 1977 DA₄, 18, 4, 13; 1977 DL₄, 9, 2, 10; 1977 ER₅, 24, 5, 10; 1977 JA, 3, 1, 0; 1977 PB, 10, 2, 16; 1977 QW, 29, 5, 15; 1977 QF₁, 15, 2, 9; 1977 QN₁, 8, 2, 19; 1977 QN₂, 29, 6, 15; 1977 RK, 9, 2, 16; 1977 RL₇, 10, 2, 9; 1977 TU₃, 5, 1, 0; 1977 TQ₆, 18, 4, 13; 1978 CK, 4, 1, 0; 1978 NF, 4, 1, 0; 1978 QF₁, 13, 3, 16; 1978 RW, 28, 6, 19; 1978 RQ₁, 19, 4, 12; 1978 RD₂, 20, 5, 18; 1978 RT₆, 15, 3, 10; 1978 RL₇, 3, 1, 0; 1978 RQ₉, 10, 2, 15; 1978 RA₁₀, 21, 5, 13; 1978 SE₅, 10, 2, 10; 1978 SF₅, 3, 1, 0; 1978 SH₇, 15, 3, 16; 1978 ST₇, 14, 3, 18; 1978 SX₇, 16, 4, 8; 1978 SB₈, 5, 1, 0; 1978 TH₇, 9, 2, 6; 1978 TT₈, 14, 3, 11; 1978 UA₅, 13, 3, 5; 1978 VB₃, 10, 1, 0; 1978 VP₃, 4, 1, 0; 1978 VX₄, 10, 2, 5; 1978 VD₅, 20, 4, 10; 1978 VE₇, 14, 3, 15; 1978 VW₈, 5, 1, 0; 1978 VP₉, 15, 3, 17; 1978 WM₁₁, 4, 1, 0; 1978 XW, 19, 4, 13; 1979 DF, 14, 3, 8; 1979 EL, 10, 2, 10; 1979 KO₁, 13, 3, 8; 1979 MM₃, 5, 1, 0; 1979 MM₄, 12, 3, 10; 1979 MU₄, 4, 1, 0; 1979 MD₈, 9, 2, 10; 1979 MM₈, 5, 1, 0; 1979 MP₈, 3, 1, 0; 1979 MT₈, 5, 1, 0; 1979 QM₁, 30, 6, 17; 1979 QR₂, 8, 2, 5; 1979 SC₂, 5, 1, 0; 1980 DS₄, 15, 3, 10; 1980 FR₂, 10, 2, 11; 1980 FV₂, 14, 3, 18; 1980 FY₂, 5, 1, 0; 1980 FZ₂, 13, 3, 471; 1980 FH₃, 8, 2, 10; 1980 FO₅, 9, 2, 9; 1980 PJ₁, 5, 1, 0; 1980 TA₄, 9, 2, 8; 1980 TK₆, 29, 6, 18; 1980 UW₁, 3, 1, 0; 1981 D₂, 4, 1, 0; 1981 DU, 9, 2, 6; 1981 DD₁, 10, 2, 7; 1981 DN₁, 13, 3, 41; 1981 DU₁, 5, 1, 0; 1981 DG₂, 44, 7, 18; 1981 DL₂, 16, 3, 16; 1981 DN₂, 20, 3, 17; 1981 DS₂, 15, 3, 16; 1981 DX₂, 10, 2, 10; 1981 DY₂, 13, 3, 16; 1981 DN₃, 19, 4, 17; 1981 EO₂, 37, 7, 19; 1981 EP₂, 18, 4, 18; 1981 EY₂, 5, 1, 0; 1981 EA₃, 5, 1, 0; 1981 EG₃, 5, 1, 0; 1981 EO₃, 19, 3, 72; 1981 EO₄, 5, 1, 0; 1981 EU₄, 9, 2, 1; 1981 EL₅, 9, 2, 6; 1981 ET₅, 9, 2, 5; 1981 EW₅, 10, 2, 5; 1981 EM₆, 9, 2, 5; 1981 EN₆, 5, 1, 0; 1981 EM₇, 52, 9, 17; 1981 EN₇, 8, 2, 9; 1981 EU₉, 27, 6, 18; 1981 EH₁₀, 14, 2, 2; 1981 EN₁₀, 22, 5, 16; 1981 EE₁₁, 7, 2, 2; 1981 ED₁₂, 9, 2, 10; 1981 EG₁₂, 18, 4, 13; 1981 EP₁₂, 9, 2, 7; 1981 ES₁₂, 5, 1, 0; 1981 EE₁₂, 3, 1, 0; 1981 EE₁₃, 14, 3, 18; 1981 EJ₁₃, 5, 1, 0; 1981 EL₁₃, 32, 6, 15; 1981 EM₁₃, 4, 1, 0; 1981 EN₁₃, 5, 1, 0; 1981 EO₁₃, 12, 3, 11; 1981 EV₁₃, 3, 1, 0; 1981 EY₁₃, 9, 2, 6; 1981 EF₁₄, 24, 5, 13; 1981 ED₁₆, 4, 1, 0; 1981 EF₁₆, 15, 3, 5; 1981 EO₁₆, 4, 1, 0; 1981 EH₁₇, 15, 3, 9; 1981 EL₁₇, 5, 1, 0; 1981 EM₁₇, 18, 4, 12; 1981 EA₁₈, 5, 1, 0; 1981 EB₁₈, 3, 1, 0; 1981 EG₁₈, 13, 3, 15; 1981 EL₁₈, 5, 1, 0; 1981 EV₁₈, 19, 4, 15; 1981 EA₁₉, 24, 5, 14; 1981 EH₁₉, 43, 8, 17; 1981 EO₁₉, 24, 4, 11; 1981 EK₂₀, 10, 2, 15; 1981 EL₂₀, 20, 4, 15; 1981 EV₂₁, 12, 3, 10; 1981 EQ₂₃, 4, 1, 0; 1981 ET₂₃, 23, 5, 11; 1981 EK<

29, 6, 18; 1981 EM₃₅, 3, 1, 0; 1981 EO₃₅, 24, 5, 567; 1981 ER₃₅, 9, 2, 17; 1981 EF₃₇, 5, 1, 0; 1981 EL₃₇, 4, 1, 0; 1981 ET₃₇, 6, 2, 16; 1981 EO₃₈, 10, 2, 10; 1981 EP₃₈, 9, 2, 2; 1981 EU₃₈, 19, 4, 16; 1981 EE₃₉, 8, 2, 3; 1981 EY₃₉, 9, 2, 4; 1981 EA₄₂, 12, 2, 10; 1981 EC₄₃, 3, 1, 0; 1981 EG₄₄, 4, 1, 0; 1981 EE₄₆, 10, 2, 2; 1981 ER₄₇, 5, 1, 0; 1981 KJ, 28, 6, 17; 1981 QR₂, 29, 6, 15; 1981 QN₃, 15, 3, 11; 1981 RF₂, 15, 3, 8; 1981 TK, 18, 4, 13; 1981 US₂₂, 4, 1, 0; 1981 UB₂₃, 5, 1, 0; 1981 UL₂₉, 15, 3, 17; 1981 VF, 19, 3, 8; 1981 VL, 5, 1, 0; 1981 WF₉, 14, 3, 11; 1982 FN, 5, 1, 0; 1982 JD₂, 10, 2, 2; 1982 RK, 10, 2, 11; 1982 SO₅, 14, 3, 16; 1982 ST₇, 8, 2, 9; 1982 SC₈, 19, 3, 3; 1982 UW₁, 29, 6, 15; 1982 UA₆, 24, 5, 15; 1982 UD₆, 14, 2, 8; 1982 UR₁₀, 21, 5, 18; 1982 VS₂, 9, 2, 6; 1982 VU₂, 14, 3, 10; 1982 VY₃, 10, 2, 6; 1982 VD₅, 34, 7, 15; 1982 WA, 14, 3, 10; 1983 AA, 4, 1, 0; 1983 RL, 14, 3, 16; 1983 RL₃, 4, 1, 0; 1983 TX, 18, 4, 12; 1983 XE, 13, 3, 19; 1983 YK, 18, 4, 13; 1984 CE, 5, 1, 0; 1984 DZ, 20, 4, 11; 1984 EU₁, 8, 2, 5; 1984 JE, 20, 3, 13; 1984 SC₆, 20, 4, 11; 1984 SE₆, 5, 1, 0; 1984 UN₂, 30, 6, 15; 1985 DA, 5, 1, 0; 1985 PC, 15, 3, 11; 1985 PQ, 4, 1, 0; 1985 RP, 5, 1, 0; 1985 RW, 10, 2, 9; 1985 RQ₃, 5, 1, 0; 1985 RA₄, 19, 4, 18; 1985 TN, 19, 3, 12; 1985 TS, 25, 6, 19; 1985 TO₃, 9, 2, 2; 1985 TZ₃, 14, 3, 8; 1985 UJ₃, 18, 4, 13; 1985 UK₃, 4, 1, 0; 1985 VE, 20, 4, 11; 1986 GD, 9, 2, 16; 1986 PY, 5, 1, 0; 1986 PJ₁, 9, 2, 10; 1986 QN, 10, 2, 11; 1986 QQ₁, 8, 2, 10; 1986 QX₁, 24, 5, 11; 1986 QR₂, 9, 2, 6; 1986 QY₂, 10, 2, 1; 1986 QZ₂, 19, 4, 8; 1986 QF₃, 10, 2, 11; 1986 RB₂, 5, 1, 0; 1986 RB₁₂, 10, 2, 10; 1986 TR, 14, 3, 17; 1986 TV₆, 4, 1, 0; 1986 VW, 40, 7, 16; 1987 BR₁, 19, 4, 18; 1987 BA₂, 5, 1, 0; 1987 CH, 5, 1, 0; 1987 DD₆, 19, 4, 11; 1987 DM₆, 24, 5, 11; 1987 HE, 10, 2, 6; 1987 QW, 5, 1, 0; 1987 QW₂, 29, 6, 15; 1987 RR, 5, 1, 0; 1987 RZ, 28, 6, 17; 1987 SE₃, 10, 2, 16; 1987 SL₃, 9, 2, 9; 1987 SP₁₂, 4, 1, 0; 1987 XC, 5, 1, 0; 1987 YS₁, 5, 1, 0; 1987 YU₁, 21, 3, 3; 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1991 GU₃, 19, 4, 16; 1991 GV₃, 10, 2, 2; 1991 GT₄, 5, 1, 0; 1991 GU₄, 23, 5, 19; 1991 GY₄, 9, 2, 9; 1991 GH₅, 8, 2, 16; 1991 GC₆, 29, 6, 19; 1991 GP₆, 5, 1, 0; 1991 GC₇, 15, 3, 13; 1991 GL₇, 4, 1, 0; 1991 GP₇, 24, 5, 17; 1991 GR₇, 19, 4, 15; 1991 GY₇, 8, 2, 10; 1991 GD₈, 9, 2, 11; 1991 GJ₈, 5, 1, 0; 1991 GF₉, 19, 4, 12; 1991 GM₉, 4, 1, 0; 1991 GJ₁₀, 19, 4, 13; 1991 HN, 5, 1, 0; 1991 JC, 23, 5, 11; 1991 JD, 25, 5, 15; 1991 LR, 9, 2, 6; 1991 LZ, 10, 2, 6; 1991 LF₁, 5, 1, 0; 1991 LJ₂, 3, 1, 0; 1991 LK₂, 14, 3, 11; 1991 LV₂, 13, 3, 6; 1991 NB₁, 14, 3, 15; 1991 NV₁, 5, 1, 0; 1991 NS₂, 9, 2, 16; 1991 NU₃, 10, 2, 9; 1991 NG₅, 9, 2, 1; 1991 PB, 8, 2, 11; 1991 PG₁, 4, 1, 0; 1991 PY₁, 9, 2, 6; 1991 PE₂, 5, 1, 0; 1991 PL₂, 23, 5, 15; 1991 PQ₂, 9, 2, 10; 1991 PE₃, 9, 2, 5; 1991 PL₅, 17, 4, 18; 1991 PC₆, 7, 2, 10; 1991 PG₇, 3, 1, 0; 1991 PD₁₀, 10, 2, 9; 1991 PT₁₀, 15, 3, 3; 1991 PV₁₁, 10, 2, 6; 1991 PW₁₁, 18, 4, 12; 1991 PF₁₂, 4, 1, 0; 1991 PZ₁₂, 15, 3, 8; 1991 PL₁₃, 25, 5, 18; 1991 PT₁₄, 14, 3, 10; 1991 PZ₁₄, 24, 5, 16; 1991 PA₁₅, 3, 1, 0; 1991 PP₁₆, 8, 2, 11; 1991 PQ₁₆, 10, 2, 10; 1991 PL₁₇, 7, 2, 9; 1991 PV₁₇, 10, 2, 10; 1991 PH₁₈, 5, 1, 0; 1991 RP₁, 15, 3, 7; 1991 RO₂, 3, 1, 0; 1991 RV₂, 20, 4, 16; 1991 RA₄, 28, 6, 17; 1991 RN₄, 4, 1, 0; 1991 RC₆, 10, 2, 1; 1991 RD₇, 8, 2, 1; 1991 RL₇, 9, 2, 10; 1991 RX₁₀, 5, 1, 0; 1991 RF₁₁, 5, 1, 0; 1991 RL₁₂, 4, 1, 0; 1991 RW₁₂, 9, 2, 6; 1991 RG₁₄, 2, 1, 0; 1991 RK₁₆, 4, 1, 0; 1991 RR₁₆, 4, 1, 0; 1991 RV₁₇, 5, 1, 0; 1991 RX₁₇, 5, 1, 0; 1991 RB₁₉, 31, 7, 16; 1991 RB₂₄, 9, 2, 11; 1991 RT₂₆, 5, 1, 0; 1991 RN₂₇, 15, 3, 7; 1991 RM₂₉, 3, 1, 0; 1991 SB, 9, 2, 10; 1991 SD₁, 4, 1, 0; 1991 TK, 10, 2, 10; 1991 TX, 7, 1, 0; 1991 TE₁, 10, 2, 16; 1991 TR₁, 20, 4, 17; 1991 TV₁, 5, 1, 0; 1991 TC₂, 10, 2, 16; 1991 TQ₂, 5, 1, 0; 1991 TH₃, 5, 1, 0; 1991 TF₁₄, 19, 4, 16; 1991 TM₁₄, 14, 3, 10; 1991 UA, 24, 5, 18; 1991 UE₂, 25, 5, 11; 1991 UQ₂, 5, 1, 0; 1991 UD₃, 27, 6, 15; 1991 US₃, 9, 2, 6; 1991 UY₃, 4, 1, 0; 1991 VY, 10, 2, 10; 1991 VD₁, 20, 4, 13; 1991 VJ₁, 5, 1, 0; 1991 VV₁, 9, 2, 10; 1991 VE₂, 19, 4, 19; 1991 VA₃, 15, 3, 15; 1991 VE₃, 5, 1, 0; 1991 VN₃, 10, 2, 9; 1991 VT₃, 10, 2, 9; 1991 VB₅, 13, 3, 12; 1991 VT₅, 20, 4, 24; 1991 VU₅, 10, 2, 6; 1991 VH₆, 5, 1, 0; 1991 VL₆, 33, 7, 17; 1991 VP₁₂, 4, 1, 0; 1991 XD, 5, 1, 0; 1991 YC, 3, 1, 0; 1991 YT, 5, 1, 0; 1991 YU, 4, 1, 0; 1992 AL, 5, 1, 0; 1992 AE₁, 5, 1, 0; 1992 AJ₁, 7, 2, 11; 1992 AV₁, 5, 1, 0; 1992 BD, 4, 1, 0; 1992 BT₂, 10, 2, 6; 1992 CH, 4, 1, 0; 1992 CS₂, 3, 1, 0; 1992 CD₃, 3, 1, 0; 1992 DT₂, 7, 1, 0; 1992 DD₃, 10, 2, 10; 1992 DH₃, 5, 1, 0; 1992 DM₇, 5, 1, 0; 1992 DU₇, 13, 3, 6; 1992 EO, 25, 5, 30; 1992 EX, 5, 1, 0; 1992 EO₆, 9, 2, 10; 1992 ES₆, 10, 2, 7; 1992 EZ₇, 5, 1, 0; 1992 ED₈, 13, 3, 10; 1992 EM₈, 10, 2, 7; 1992 ER₈, 30, 6, 15; 1992 EX₈, 5, 1, 0; 1992 EW₉, 5, 1, 0; 1992 EX₉, 10, 2, 11; 1992 EX₁₀, 18, 4, 13; 1992 EP₁₁, 4, 1, 0; 1992 EE₁₄, 16, 4, 16; 1992 ES₂₈, 4, 1, 0; 1992 EE₃₂, 4, 1, 0; 1992 FA₂, 4, 1, 0; 1992 GA, 4, 1, 0; 1992 GM₂, 30, 6, 15; 1992 GC₅, 9, 2, 8; 1992 HG, 25, 5, 15; 1992 HH₁, 9, 2, 10; 1992 HD₅, 19, 3, 4; 1992 HD₇, 5, 1, 0; 1992 JG, 10, 2, 16; 1992 JU₂, 20, 4, 11; 1992 KC, 9, 2, 9; 1992 KJ, 24, 5, 14; 1992 LF, 5, 1, 0; 1992 OF₁, 7, 2, 11; 1992 OJ₁, 5, 1, 0; 1992 OF₂, 8, 2, 574; 1992 OB₃, 10, 2, 15; 1992 OP₅, 15, 3, 15; 1992 OM₆, 15, 3, 12; 1992 PC, 13, 3, 11; 1992 PF, 22, 5, 18; 1992 PB₁, 10, 2, 10; 1992 PH₁, 8, 2, 1; 1992 PQ₁, 5, 1, 0; 1992 PZ₁, 15, 3, 17; 1992 PA₂, 10, 2, 7; 1992 PH₂, 5, 1, 0; 1992 PK₂, 3, 1, 0; 1992 PL₂, 5, 1, 0; 1992 PM₂, 10, 2, 5; 1992 PO₂, 19, 4, 13; 1992 PC₃, 9, 2, 11; 1992 PE₃, 24, 5, 19; 1992 QW, 13, 3, 15; 1992 RN, 14, 3, 15; 1992 RU, 15, 3, 16; 1992 RX, 20, 4, 10; 1992 RF₂, 5, 1, 0; 1992 RK₂, 14, 3, 509; 1992 RW₂, 19, 4, 16; 1992 RD₃, 15, 3, 18; 1992 RL₃, 5, 1, 0; 1992 RS₃, 29, 6, 15; 1992 RZ₃, 19, 4, 13; 1992 RS₅, 3, 1, 0; 1992 RT₅, 9, 2, 1; 1992 RH₇, 28, 6, 18; 1992 SF, 19, 4, 8; 1992 SO, 15, 3, 16; 1992 SQ, 5, 1, 0; 1992 SJ₁, 5, 1, 0; 1992 SQ₁, 5, 1, 0; 1992 SX₁, 15, 3, 13; 1992 ST₂, 9, 2, 5; 1992 SA₄, 5, 1, 0; 1992 SY₁₂, 20, 4, 13; 1992 SB₁₃, 19, 4, 13; 1992 SG₁₃, 18, 4, 13; 1992 SK₁₃, 10, 2, 1; 1992 SS₁₆, 4, 1, 0; 1992 SA₁₇, 35, 7, 19; 1992 SH₁₇, 34, 4, 28; 1992 ST₁₇, 10, 2, 15; 1992 SY₁₇, 13, 2, 9; 1992 SQ₂₃, 29, 6, 18; 1992 UX, 10, 2, 16; 1992 UY, 15, 3, 12; 1992 US₁, 20, 4, 14; 1992 UW₁, 9, 2, 16; 1992 UT₂, 22, 4, 13; 1992 UW₂, 14, 3, 11; 1992 UX₂, 9, 2, 11; 1992 UY₂, 14, 3, 11; 1992 UT₃, 10, 2, 6; 1992 UJ₅, 9, 2, 10; 1992 UU₅, 20, 4, 12; 1992 UA₆, 19, 4, 11; 199

7, 2, 11; 1993 QQ₄, 24, 5, 13; 1993 QV₄, 4, 1, 0; 1993 QH₈, 14, 3, 13; 1993 RA₈, 30, 6, 483; 1993 RY₁₁, 4, 1, 0; 1993 RM₁₄, 10, 2, 9; 1993 ST₁, 10, 2, 10; 1993 SD₂, 10, 2, 9; 1993 SO₂, 8, 2, 10; 1993 SN₃, 10, 2, 6; 1993 SQ₃, 9, 2, 7; 1993 SG₅, 20, 4, 13; 1993 ST₅, 14, 3, 15; 1993 TB, 5, 1, 0; 1993 TJ, 14, 3, 11; 1993 TS₁, 9, 2, 9; 1993 TL₁₈, 25, 5, 15; 1993 TV₁₉, 4, 1, 0; 1993 TA₂₄, 14, 3, 8; 1993 TN₂₄, 18, 4, 15; 1993 TX₂₆, 5, 1, 0; 1993 TJ₃₁, 5, 1, 0; 1993 TD₃₇, 3, 1, 0; 1993 TW₃₈, 9, 2, 10; 1993 UE₁, 9, 2, 2; 1993 UQ₂, 10, 2, 10; 1993 UX₄, 4, 1, 0; 1993 UZ₇, 7, 2, 10; 1993 VA₃, 4, 1, 0; 1993 XQ₁, 30, 6, 17; 1993 YD, 10, 2, 10; 1994 AC, 25, 5, 15; 1994 AT, 12, 3, 8; 1994 AV₁, 4, 1, 0; 1994 AN₂, 9, 2, 15; 1994 AJ₃, 5, 1, 0; 1994 AM₃, 28, 6, 18; 1994 AX₆, 9, 2, 10; 1994 BW, 12, 3, 16; 1994 BX, 3, 1, 0; 1994 BY, 25, 5, 11; 1994 BH₁, 17, 4, 16; 1994 BG₄, 4, 1, 0; 1994 CA₁, 9, 2, 1; 1994 CO₁, 9, 2, 5; 1994 CY₁, 10, 2, 7; 1994 CD₈, 17, 4, 16; 1994 CN₈, 5, 1, 0; 1994 CV₉, 5, 1, 0; 1994 CK₁₀, 13, 3, 16; 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0; 1995 WF₅, 15, 3, 13; 1995 WG₅, 8, 2, 11; 1995 WJ₅, 3, 1, 0; 1995 WN₅, 20, 4, 11; 1995 WE₆, 9, 2, 8; 1995 WM₆, 23, 5, 11; 1995 WD₇, 10, 2, 7; 1995 WH₇, 4, 1, 0; 1995 WK₇, 18, 4, 498; 1995 WQ₇, 7, 2, 10; 1995 WV₇, 9, 2, 11; 1995 WL₁₃, 5, 1, 0; 1995 WF₁₇, 20, 4, 5; 1995 WD₃₂, 9, 2, 6; 1995 WN₃₃, 28, 6, 15; 1995 WL₄₂, 9, 2, 5; 1995 XC, 10, 2, 7; 1995 XE, 5, 1, 0; 1995 XH, 23, 5, 15; 1995 XJ, 5, 1, 0; 1995 XW, 5, 1, 0; 1995 XX, 5, 1, 0; 1995 XD₁, 3, 1, 0; 1995 XK₁, 10, 2, 9; 1995 XU₁, 24, 5, 11; 1995 XB₂, 10, 2, 7; 1995 XQ₄, 4, 1, 0; 1995 XC₅, 19, 4, 13; 1995 YB, 10, 2, 7; 1995 YF, 3, 1, 0; 1995 YH, 5, 1, 0; 1995 YL, 15, 3, 16; 1995 YN, 4, 1, 0; 1995 YP, 24, 5, 12; 1995 YB₁, 5, 1, 0; 1995 YC₁, 9, 2, 6; 1995 YF₁, 9, 2, 1; 1995 YJ₁, 20, 4, 11; 1995 YP₁, 18, 4, 17; 1995 YJ₃, 10, 2, 11; 1995 YM₉, 2, 1, 0; 1995 YU₉, 10, 2, 7; 1995 YY₁₀, 9, 2, 10; 1995 YV₂₂, 5, 1, 0; 1996 AP, 10, 2, 10; 1996 AW, 5, 1, 0; 1996 AE₁, 5, 1, 0; 1996 AF₁, 10, 2, 10; 1996 AR₁, 13, 2, 9; 1996 AG₂, 4, 1, 0; 1996 AY₃, 5, 1, 0; 1996 AF₄, 10, 2, 9; 1996 AG₇, 8, 2, 7; 1996 BB, 5, 1, 0; 1996 BM, 8, 2, 2; 1996 BV, 4, 1, 0; 1996 BX, 14, 3, 10; 1996 BB₁, 4, 1, 0; 1996 BE₁, 13, 3, 6; 1996 BO₁, 4, 1, 0; 1996 BV₁, 10, 2, 1; 1996 BY₁, 4, 1, 0; 1996 BH₂, 4, 1, 0; 1996 BJ₂, 10, 2, 15; 1996 BP₃, 20, 4, 32; 1996 BU₃, 4, 1, 0; 1996 BN₆, 14, 3, 10; 1996 BM₁₇, 3, 1, 0; 1996 CZ, 9, 2, 11; 1996 CK₁, 5, 1, 0; 1996 CK₂, 23, 5, 18; 1996 CO₂, 10, 2, 10; 1996 CA₃, 14, 3, 11; 1996 CF₃, 5, 1, 0; 1996 CU₈, 5, 1, 0; 1996 CM₉, 5, 1, 0; 1996 DT, 4, 1, 0; 1996 DV, 5, 1, 0; 1996 DE₁, 4, 1, 0; 1996 DO₁, 5, 1, 0; 1996 DQ₁, 19, 4, 13; 1996 EB, 4, 1, 0; 1996 EG, 39, 8, 42; 1996 EB₁, 9, 2, 10; 1996 EQ₂, 10, 2, 5; 1996 ED₄, 4, 1, 0; 1996 ED₉, 9, 2, 6; 1996 EJ₄, 5, 1, 0; 1996 FM₅, 19, 4, 18; 1996 FE₁₆, 8, 2, 11; 1996 GE₁₉, 10, 2, 7; 1996 GT₁₉, 8, 2, 10; 1996 HE₁, 14, 3, 10; 1996 HE₂, 5, 1, 0; 1996 HV₁₉, 5, 1, 0; 1996 JO, 5, 1, 0; 1996 KA, 14, 3, 10; 1996 KA₃, 5, 1, 0; 1996 RG₁, 20, 4, 13; 1996 SC₁, 5, 1, 0; 1996 SH₆, 14, 3, 16; 1996 SJ₇, 5, 1, 0; 1996 TF, 24, 5, 574; 1996 TS₅, 10, 2, 6; 1996 TG₆, 29, 6, 15; 1996 TJ₆, 5, 1, 0; 1996 TD₇, 8, 2, 7; 1996 TX₇, 4, 1, 0; 1996 TC₈, 11, 3, 10; 1996 TM₉, 8, 2, 3; 1996 TY₉, 5, 1, 0; 1996 TJ₁₀, 4, 1, 0; 1996 TO₁₀, 4, 1, 0; 1996 TS₁₀, 4, 1, 0; 1996 TJ₁₁, 14, 3, 574; 1996 TT₁₄, 5, 1, 0; 1996 TD₁₅, 5, 1, 0; 1996 TR₂₉, 5, 1, 0; 1996 UE, 4, 1, 0; 1996 UN, 4, 1, 0; 1996 UZ, 19, 4, 13; 1996 UB₁, 8, 2, 8; 1996 UK₄, 17, 2, 1; 1996 VT, 9, 2, 27; 1996 VW, 14, 3, 3; 1996 VJ₂, 22, 5, 17; 1996 VT₅, 10, 2, 1; 1996 VG₆, 4, 1, 0; 1996 VN₆, 5, 1, 0; 1996 VH₈, 5, 1, 0; 1996 VJ₈, 17, 4, 16; 1996 VZ₈, 15, 3, 15; 1996 VG₁₁, 4, 1, 0; 1996 VX₁₅, 18, 4, 13; 1996 VU₁₇, 18, 4, 11; 1996 VX₂₉, 5, 1, 0; 1996 VL₃₀, 10, 2, 5; 1996 WA, 25, 4, 11; 1996 WF, 11, 2, 24; 1996 WX, 8, 2, 16; 1996 WA₁, 29, 6, 15; 1996 WC₂, 3, 1, 0; 1996 WE₃, 20, 4, 17; 1996 XC, 15, 2, 16; 1996 XU, 10, 2, 6; 1996 XC₁, 23, 5, 11; 1996 XL₁, 10, 2, 16; 1996 XO₁, 9, 2, 5; 1996 XM₂, 15, 3, 10; 1996 XD₃, 9, 2, 5; 1996 XG₅, 4, 1, 0; 1996 XH₅, 4, 1, 0; 1996 XM₅, 14, 3, 3; 1996 XP₅, 4, 1, 0; 1996 XQ₅, 20, 5, 18; 1996 XB₆, 5, 1, 0; 1996 XC₉, 9, 2, 479; 1996 XA₁₂, 4, 1, 0; 1996 XJ₁₅, 10, 2, 6; 1996 XY₁₇, 10, 2, 15; 1996 XV₁₈, 5, 1, 0; 1996 XY₁₈, 3, 1, 0; 1996 XD₁₉, 28, 6, 12; 1996 XF₁₉, 14, 3, 7; 1996 XG₁₉, 14, 3, 9; 1996 XH₁₉, 5, 1, 0; 1996 XT₁₉, 9, 2, 10; 1996 XU₁₉, 7, 2, 9; 1996 XW₁₉, 10, 2, 15; 1996 XX₁₉, 14, 3, 12; 1996 XH₂₆, 18, 4, 5; 1996 XU₂₆, 10, 2, 10; 1996 XZ₃₀, 5, 1, 0; 1996 XE₃₁, 11, 2, 1; 1996 XL₃₁, 14, 3, 10; 1996 XX₃₁, 15, 3, 8; 1996 XZ₃₁, 3, 1, 0; 1996 YD, 33, 7, 18; 1996 YF, 5, 1, 0; 1996 YJ, 9, 2, 7; 1996 YO, 4, 1, 0; 1996 YR, 9, 2, 7; 1996 YX, 23, 4, 90; 1996 YY, 10, 2, 9; 1996 YC₁, 7, 2, 11; 1996 YG₁, 5, 1, 0; 1996 YO₁, 17, 4, 15; 1996 YT₁, 9, 2, 16; 1996 YL₂, 5, 1, 0; 1996 YN₂, 10, 2, 2; 1997 AD, 20, 3, 7; 1997 AE, 19, 4, 10; 1997 AG, 15, 3, 7; 1997 AQ, 5, 1, 0; 1997 AR, 8, 2, 10; 1997 AS, 10, 2, 10; 1997 AV, 10, 2, 9; 1997 AB₁, 5, 1, 0; 1997 AC₁, 24, 5, 15; 1997 AJ₁, 24, 5, 18; 1997 AK₁, 14, 3, 12; 1997 AR₁, 8, 2, 11; 1997 AV₁, 9, 2, 5; 1997 AA₂, 17, 4, 16; 1997 AZ₂, 10, 2, 7; 1997 AC₃, 12, 3, 16; 1997 AF₃, 23, 5, 15; 1997 AW₃, 10, 2, 10; 1997 AZ₃, 4, 1, 0; 1997 AA₄, 4, 1, 0; 1997 AB₄, 12, 3, 6; 1997 AD₄, 10, 2, 9; 1997 AH₄, 9, 2, 10; 1997 AJ₄, 8, 2, 2; 1997 AM₄, 10, 2, 8; 1997 AP₄, 28, 6, 15; 1997 AQ₄, 3, 1, 0; 1997 AV₄, 8, 2, 7; 1997 AB₅, 3, 1, 0; 1997 AE₅, 5, 1, 0; 1997 AF₅, 5, 1, 0; 1997 AM₅, 27, 6, 18; 1997 AQ₅, 5, 1, 0; 1997 AX₅, 5, 1, 0; 199

1997 EK₈, 27, 6, 15; 1997 EL₁₁, 10, 2, 8; 1997 EO₁₇, 4, 1, 0; 1997 EU₁₇, 4, 1, 0; 1997 EY₂₀, 5, 1, 0; 1997 EE₂₃, 9, 2, 11; 1997 EM₂₅, 3, 1, 0; 1997 EQ₂₅, 10, 2, 2; 1997 EX₂₅, 4, 1, 0; 1997 ER₂₆, 20, 5, 31; 1997 EG₂₇, 7, 2, 11; 1997 EL₂₈, 20, 4, 13; 1997 EQ₃₀, 5, 1, 0; 1997 ER₃₁, 29, 6, 15; 1997 EN₃₂, 24, 5, 11; 1997 EK₃₅, 5, 1, 0; 1997 EA₃₆, 5, 1, 0; 1997 EQ₄₁, 17, 4, 16; 1997 EW₄₅, 5, 1, 0; 1997 EH₄₆, 9, 2, 6; 1997 ER₄₆, 2, 1, 0; 1997 EW₄₇, 8, 2, 10; 1997 EK₅₄, 18, 4, 31; 1997 EL₅₅, 30, 5, 13; 1997 FC, 5, 1, 0; 1997 FN, 10, 2, 6; 1997 FU, 5, 1, 0; 1997 FG₁, 5, 1, 0; 1997 FH₁, 10, 2, 9; 1997 FT₁, 4, 1, 0; 1997 FW₁, 18, 4, 11; 1997 FB₂, 4, 1, 0; 1997 FO₃, 8, 2, 11; 1997 FB₄, 22, 5, 13; 1997 FJ₄, 4, 1, 0; 1997 FQ₄, 24, 5, 16; 1997 GO₁, 9, 2, 10; 1997 GX₃, 29, 6, 15; 1997 GB₆, 4, 1, 0; 1997 GO₆, 18, 3, 4; 1997 GP₆, 4, 1, 0; 1997 GW₆, 4, 1, 0; 1997 GQ₇, 24, 5, 19; 1997 GX₇, 5, 1, 0; 1997 GD₈, 4, 1, 0; 1997 GJ₈, 9, 2, 15; 1997 GD₁₅, 5, 1, 0; 1997 GD₁₇, 10, 2, 8; 1997 GF₁₇, 3, 1, 0; 1997 GX₁₈, 13, 3, 10; 1997 GN₁₉, 5, 1, 0; 1997 GQ₂₂, 23, 5, 18; 1997 GB₂₃, 19, 4, 11; 1997 GY₂₆, 5, 1, 0; 1997 GH₂₇, 27, 6, 18; 1997 GO₂₇, 5, 1, 0; 1997 GW₂₉, 10, 2, 16; 1997 GW₃₀, 14, 3, 10; 1997 GT₃₂, 30, 6, 17; 1997 GK₃₃, 29, 6, 477; 1997 GM₃₃, 3, 1, 0; 1997 GP₃₃, 23, 5, 15; 1997 GB₃₅, 19, 4, 16; 1997 GP₃₅, 10, 2, 4; 1997 GP₃₆, 26, 6, 18; 1997 GR₃₆, 4, 1, 0; 1997 GQ₄₁, 5, 1, 0; 1997 GD₄₂, 5, 1, 0; 1997 HQ, 4, 1, 0; 1997 HO₁, 24, 5, 15; 1997 HX₆, 4, 1, 0; 1997 HE₁₄, 28, 6, 15; 1997 JD, 4, 1, 0; 1997 JE₁₀, 5, 1, 0; 1997 JA₁₁, 5, 1, 0; 1997 JV₁₁, 2, 1, 0; 1997 JB₁₃, 5, 1, 0; 1997 JD₁₄, 5, 1, 0; 1997 JE₁₅, 4, 1, 0; 1997 JT₁₅, 5, 1, 0; 1997 JP₁₆, 12, 3, 11; 1997 KC, 7, 2, 11; 1997 LU₁, 13, 3, 10; 1997 MG₁, 10, 2, 10; 1997 MC₃, 4, 1, 0; 1997 NQ₂, 5, 1, 0; 1997 NG₃, 5, 1, 0; 1997 PM₁, 8, 2, 11; 1997 US₉, 4, 1, 0; 1997 VB₁, 3, 1, 0; 1997 VU₂₂, 3, 1, 0; 1997 XH, 16, 4, 13; 1997 YA₈, 4, 1, 0; 1997 YR₁₁, 4, 1, 0; 1997 YS₁₁, 5, 1, 0; 1997 YP₁₃, 5, 1, 0; 1997 YC₁₄, 8, 2, 15; 1998 AR₄, 14, 3, 3; 1998 AV₉, 28, 6, 15; 1998 BP₈, 17, 4, 16; 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1998 FK₄₄, 16, 4, 17; 1998 FL₄₄, 15, 3, 15; 1998 FB₄₅, 5, 1, 0; 1998 FK₄₇, 20, 4, 13; 1998 FR₄₇, 10, 2, 15; 1998 FX₄₇, 19, 4, 13; 1998 FZ₄₇, 9, 2, 5; 1998 FO₄₈, 4, 1, 0; 1998 FB₄₉, 30, 6, 18; 1998 FJ₄₉, 4, 1, 0; 1998 FL₄₉, 30, 6, 18; 1998 FO₄₉, 8, 2, 16; 1998 FQ₄₉, 9, 2, 3; 1998 FN₅₃, 15, 3, 16; 1998 FZ₅₃, 3, 1, 0; 1998 FA₅₄, 5, 1, 0; 1998 FM₅₄, 25, 5, 13; 1998 FG₅₆, 18, 4, 13; 1998 FH₅₆, 5, 1, 0; 1998 FF₅₇, 14, 3, 5; 1998 FG₅₇, 4, 1, 0; 1998 FH₅₇, 9, 2, 22; 1998 FT₅₇, 19, 4, 11; 1998 FG₅₈, 19, 4, 13; 1998 FM₅₈, 19, 4, 13; 1998 FQ₅₈, 10, 2, 10; 1998 FX₅₈, 9, 2, 10; 1998 FC₅₉, 14, 3, 5; 1998 FT₅₉, 26, 5, 16; 1998 FF₆₀, 4, 1, 0; 1998 FH₆₀, 12, 3, 15; 1998 FO₆₀, 4, 1, 0; 1998 FD₆₁, 30, 6, 15; 1998 FH₆₁, 3, 1, 0; 1998 FO₆₁, 10, 2, 6; 1998 FR₆₁, 5, 1, 0; 1998 FT₆₁, 31, 7, 15; 1998 FD₆₂, 29, 6, 13; 1998 FL₆₂, 14, 3, 7; 1998 FS₆₂, 15, 3, 9; 1998 FF₆₃, 5, 1, 0; 1998 FK₆₃, 14, 3, 13; 1998 FS₆₃, 10, 2, 16; 1998 FV₆₃, 5, 1, 0; 1998 FW₆₃, 10, 2, 15; 1998 FQ₆₄, 24, 5, 11; 1998 FA₆₅, 4, 1, 0; 1998 FC₆₅, 22, 5, 11; 1998 FG₆₅, 12, 3, 8; 1998 FH₆₅, 29, 6, 16; 1998 FP₆₅, 5, 1, 0; 1998 FR₆₅, 10, 2, 2; 1998 FS₆₅, 19, 4, 544; 1998 FT₆₅, 18, 4, 19; 1998 FC₆₆, 17, 4, 13; 1998 FD₆₆, 24, 5, 541; 1998 FF₆₆, 5, 1, 0; 1998 FJ₆₆, 8, 2, 1; 1998 FL₆₆, 27, 6, 18; 1998 FW₆₆, 9, 2, 16; 1998 FY₆₆, 8, 2, 2; 1998 FF₆₇, 7, 2, 8; 1998 FJ₆₇, 13, 3, 16; 1998 FW₆₇, 5, 1, 0; 1998 FM₆₈, 15, 3, 8; 1998 FO₆₈, 36, 7, 18; 1998 FS₆₈, 28, 6, 17; 1998 FZ₆₈, 20, 4, 13; 1998 FG₆₉, 10, 2, 16; 1998 FM₆₉, 10, 2, 28; 1998 FO₆₉, 4, 1, 0; 1998 FQ₆₉, 15, 3, 16; 1998 FX₆₉,

20, 4, 13; 1998 FM₇₀, 24, 5, 15; 1998 FN₇₀, 19, 3, 13; 1998 FS₇₀, 10, 2, 24; 1998 FT₇₀, 8, 2, 13; 1998 FV₇₀, 16, 3, 7; 1998 FZ₇₀, 5, 1, 0; 1998 FH₇₁, 4, 1, 0; 1998 FY₇₁, 5, 1, 0; 1998 FJ₇₂, 24, 5, 11; 1998 FF₇₂, 5, 1, 0; 1998 FQ₇₂, 9, 2, 16; 1998 FF₇₃, 5, 1, 0; 1998 FZ₇₃, 35, 7, 15; 1998 FC₇₄, 10, 2, 23; 1998 FL₇₄, 18, 4, 13; 1998 FC₇₅, 12, 3, 16; 1998 FF₇₅, 5, 1, 0; 1998 FG₇₅, 38, 6, 11; 1998 FH₇₅, 18, 4, 6; 1998 FL₇₅, 18, 4, 17; 1998 FP₇₅, 5, 1, 0; 1998 FS₇₅, 5, 1, 0; 1998 FL₇₆, 10, 2, 6; 1998 FG₇₇, 10, 2, 6; 1998 FN₇₇, 9, 2, 10; 1998 FP₇₇, 4, 1, 0; 1998 FS₇₇, 17, 4, 13; 1998 FV₇₇, 21, 5, 13; 1998 FA₇₈, 7, 2, 16; 1998 FB₇₉, 5, 1, 0; 1998 FJ₇₉, 30, 5, 16; 1998 FK₇₉, 5, 1, 0; 1998 FG₈₀, 4, 1, 0; 1998 FE₈₃, 3, 1, 0; 1998 FF₈₈, 3, 1, 0; 1998 FO₉₀, 7, 2, 24; 1998 FR₉₀, 7, 2, 24; 1998 FU₉₀, 10, 2, 19; 1998 FP₉₃, 4, 1, 0; 1998 FU₉₅, 5, 1, 0; 1998 FR₉₆, 4, 1, 0; 1998 FO₉₇, 3, 1, 0; 1998 FQ₉₇, 12, 3, 23; 1998 FZ₉₇, 10, 2, 5; 1998 FY₉₉, 18, 4, 9; 1998 FZ₉₉, 17, 4, 31; 1998 FF₁₀₁, 5, 1, 0; 1998 FQ₁₀₁, 5, 1, 0; 1998 FU₁₀₁, 8, 2, 15; 1998 FA₁₀₂, 19, 4, 7; 1998 FT₁₀₂, 5, 1, 0; 1998 FU₁₀₂, 10, 2, 5; 1998 FW₁₀₂, 14, 3, 7; 1998 FJ₁₀₃, 24, 5, 15; 1998 FM₁₀₃, 12, 3, 6; 1998 FR₁₀₃, 18, 4, 8; 1998 FZ₁₀₃, 4, 1, 0; 1998 FD₁₀₄, 10, 2, 15; 1998 FG₁₀₄, 15, 3, 17; 1998 FJ₁₀₅, 5, 1, 0; 1998 FK₁₀₅, 5, 1, 0; 1998 FK₁₀₆, 45, 6, 15; 1998 FG₁₀₇, 4, 1, 0; 1998 FR₁₀₈, 5, 1, 0; 1998 FU₁₀₈, 15, 3, 15; 1998 FX₁₀₈, 14, 3, 15; 1998 FJ₁₀₉, 7, 2, 15; 1998 FP₁₀₉, 5, 1, 0; 1998 FZ₁₀₉, 5, 1, 0; 1998 FB₁₁₁, 9, 2, 3; 1998 FC₁₁₁, 9, 2, 16; 1998 FG₁₁₂, 5, 1, 0; 1998 FR₁₁₃, 14, 3, 16; 1998 FZ₁₁₃, 10, 2, 15; 1998 FA₁₁₄, 10, 2, 6; 1998 FB₁₁₄, 5, 1, 0; 1998 FD₁₁₄, 8, 2, 1; 1998 FE₁₁₄, 4, 1, 0; 1998 FJ₁₁₄, 15, 3, 17; 1998 FJ₁₁₄, 8, 2, 15; 1998 FE₁₁₅, 15, 3, 23; 1998 FH₁₁₅, 5, 1, 0; 1998 FK₁₁₅, 10, 2, 15; 1998 FS₁₁₅, 4, 1, 0; 1998 FS₁₁₆, 10, 2, 7; 1998 FD₁₁₆, 15, 3, 83; 1998 FG₁₁₆, 5, 1, 0; 1998 FL₁₁₆, 12, 3, 8; 1998 FN₁₁₆, 5, 1, 0; 1998 FB₁₁₇, 10, 2, 2; 1998 FC₁₁₇, 20, 4, 17; 1998 FD₁₁₇, 5, 1, 0; 1998 FG₁₁₇, 10, 2, 7; 1998 FH₁₁₇, 3, 1, 0; 1998 FL₁₁₇, 4, 1, 0; 1998 FM₁₁₇, 9, 2, 26; 1998 FT₁₁₇, 5, 1, 0; 1998 FY₁₁₇, 21, 5, 19; 1998 FC₁₁₈, 5, 1, 0; 1998 FE₁₁₈, 5, 1, 0; 1998 FH₁₁₈, 7, 2, 16; 1998 FN₁₁₈, 5, 1, 0; 1998 FS₁₁₈, 10, 2, 9; 1998 FG₁₁₉, 13, 3, 52; 1998 FM₁₂₁, 12, 3, 13; 1998 FQ₁₂₁, 29, 6, 17; 1998 FS₁₂₁, 28, 5, 11; 1998 FM₁₂₂, 9, 2, 5; 1998 FN₁₂₂, 8, 2, 9; 1998 FP₁₂₂, 9, 2, 16; 1998 FY₁₂₂, 10, 2, 2; 1998 FE₁₂₅, 20, 5, 13; 1998 FL₁₂₅, 10, 2, 6; 1998 FJ₁₂₅, 5, 1, 0; 1998 FX₁₂₅, 9, 2, 6; 1998 FM₁₂₆, 8, 2, 2; 1998 FC₁₂₇, 15, 2, 16; 1998 FJ₁₃₀, 10, 2, 30; 1998 FT₁₃₀, 4, 1, 0; 1998 FQ₁₃₃, 15, 3, 38; 1998 FQ₁₃₅, 8, 2, 41; 1998 FY₁₃₈, 10, 2, 30; 1998 FO₁₄₁, 5, 1, 0; 1998 FY₁₄₃, 5, 1, 0; 1998 FC₁₄₄, 19, 4, 16; 1998 GF, 16, 4, 13; 1998 GK, 9, 2, 6; 1998 GZ, 3, 1, 0; 1998 GJ₁, 5, 1, 0; 1998 GK₁, 4, 1, 0; 1998 GO₁, 15, 3, 24; 1998 GW₁₀, 16, 4, 33; 1998 HT, 17, 3, 6; 1998 HR₂, 5, 1, 0; 1998 HF₃, 8, 2, 5; 1998 HG₆, 10, 2, 23; 1998 HV₆, 15, 3, 36; 1998 HW₇, 5, 1, 0; 1998 HD₈, 5, 1, 0; 1998 HE₈, 30, 6, 12; 1998 HN₈, 13, 3, 8; 1998 HY₈, 9, 2, 6; 1998 HM₁₁, 10, 2, 16; 1998 HM₁₃, 10, 2, 19; 1998 HT₁₃, 3, 1, 0; 1998 HW₁₃, 25, 5, 13; 1998 HH₁₄, 7, 2, 6; 1998 HT₁₄, 16, 4, 13; 1998 HL₁₇, 5, 1, 0; 1998 HC₁₈, 9, 2, 2; 1998 HQ₁₈, 9, 2, 7; 1998 HR₁₈, 4, 1, 0; 1998 HB₁₉, 14, 3, 7; 1998 HH₁₉, 9, 2, 7; 1998 HP₁₉, 17, 4, 16; 1998 HQ₁₉, 33, 6, 17; 1998 HR₁₉, 15, 3, 10; 1998 HS₁₉, 4, 1, 0; 1998 HU₁₉, 10, 2, 5; 1998 HV₁₉, 5, 1, 0; 1998 HC₂₀, 10, 2, 6; 1998 HE₂₀, 5, 1, 0; 1998 HE₂₁, 21, 5, 11; 1998 HS₂₁, 9, 2, 18; 1998 HW₂₁, 4, 1, 0; 1998 HC₂₂, 10, 2, 2; 1998 HG₂₃, 13, 3, 13; 1998 HS₂₃, 25, 5, 11; 1998 HT₂₃, 8, 2, 7; 1998 HK₂₄, 18, 3, 7; 1998 HM₂₆, 19, 4, 12; 1998 HR₂₇, 30, 6, 15; 1998 HB₃₀, 10, 2, 16; 1998 HY₃₁, 23, 5, 18; 1998 HZ₃₁, 10, 2, 7; 1998 HJ₃₂, 5, 1, 0; 1998 HS₃₂, 34, 6, 565; 1998 HU₃₂, 5, 1, 0; 1998 HJ₃₃, 5, 1, 0; 1998 HK₃₃, 30, 6, 16; 1998 HO₃₃, 30, 6, 17; 1998 HU₃₃, 4, 1, 0; 1998 HP₃₄, 8, 2, 7; 1998 HO₃₅, 14, 3, 13; 1998 HY₃₅, 5, 1, 0; 1998 HK₃₆, 19, 4, 17; 1998 HX₃₆, 20, 4, 13; 1998 HZ₃₇, 18, 4, 52; 1998 HB₃₈, 18, 4, 16; 1998 HC₃₈, 10, 2, 4; 1998 HE₃₈, 4, 1, 0; 1998 HM₃₈, 14, 3, 52; 1998 HN_{38</}

3, 1, 0; 1998 HW₁₁₈, 5, 1, 0; 1998 HN₁₁₉, 20, 4, 11; 1998 HW₁₁₉, 3, 1, 0; 1998 HL₁₂₀, 5, 1, 0; 1998 HO₁₂₀, 5, 1, 0; 1998 HF₁₂₁, 10, 2, 6; 1998 HG₁₂₁, 5, 1, 0; 1998 HM₁₂₁, 8, 2, 16; 1998 HV₁₂₁, 4, 1, 0; 1998 HV₁₂₂, 5, 1, 0; 1998 HB₁₂₃, 5, 1, 0; 1998 HD₁₂₃, 8, 2, 1; 1998 HH₁₂₃, 24, 5, 16; 1998 HK₁₂₄, 5, 1, 0; 1998 HO₁₂₄, 5, 1, 0; 1998 HQ₁₂₄, 10, 2, 16; 1998 HX₁₂₄, 8, 2, 6; 1998 HG₁₂₅, 5, 1, 0; 1998 HZ₁₂₆, 9, 2, 12; 1998 HY₁₂₇, 7, 2, 15; 1998 HB₁₂₉, 9, 2, 1; 1998 HC₁₂₉, 4, 1, 0; 1998 HD₁₂₉, 19, 4, 15; 1998 HF₁₃₀, 4, 1, 0; 1998 HJ₁₃₀, 4, 1, 0; 1998 HE₁₃₁, 9, 2, 9; 1998 HZ₁₃₁, 5, 1, 0; 1998 HY₁₃₂, 10, 2, 3; 1998 HR₁₃₆, 5, 1, 0; 1998 HV₁₃₇, 33, 6, 11; 1998 HA₁₃₈, 9, 2, 52; 1998 HJ₁₄₁, 19, 4, 65; 1998 HV₁₄₃, 10, 2, 16; 1998 HC₁₄₄, 10, 2, 65; 1998 HT₁₄₇, 9, 2, 2; 1998 HZ₁₄₇, 13, 3, 11; 1998 HB₁₄₈, 8, 2, 3; 1998 HD₁₄₈, 5, 1, 0; 1998 HF₁₄₈, 4, 1, 0; 1998 HN₁₄₈, 7, 2, 2; 1998 HV₁₄₈, 14, 3, 13; 1998 HL₁₄₉, 13, 3, 8; 1998 HR₁₄₉, 5, 1, 0; 1998 HT₁₅₀, 14, 3, 6; 1998 JK₁₉, 4, 16; 1998 JQ₁₉, 4, 19; 1998 JT₁₀, 2, 8; 1998 JW₁₀, 2, 5; 1998 JH₁₁, 19, 3, 17; 1998 JQ₁₁, 35, 5, 15; 1998 JY₁₁, 15, 3, 7; 1998 JA₂, 27, 6, 15; 1998 JE₂, 8, 2, 7; 1998 JO₂, 5, 1, 0; 1998 JQ₂, 5, 1, 0; 1998 JX₂, 20, 4, 16; 1998 JB₃, 8, 2, 29; 1998 JE₃, 9, 2, 13; 1998 JF₃, 17, 4, 13; 1998 JH₃, 5, 1, 0; 1998 JK₃, 4, 1, 0; 1998 JB₄, 10, 2, 15; 1998 JE₄, 11, 3, 17; 1998 JH₄, 7, 2, 9; 1998 JK₄, 5, 1, 0; 1998 KB₅, 5, 1, 0; 1998 KL₅, 23, 5, 13; 1998 KT₅, 5, 1, 0; 1998 KJ₁, 17, 4, 9; 1998 KL₁, 16, 4, 16; 1998 KG₂, 7, 2, 1; 1998 KQ₂, 5, 1, 0; 1998 KQ₃, 5, 1, 0; 1998 KW₃, 5, 1, 0; 1998 KC₄, 10, 2, 1; 1998 KE₄, 4, 1, 0; 1998 KJ₄, 5, 1, 0; 1998 KW₄, 11, 3, 12; 1998 KC₅, 10, 2, 1; 1998 KD₅, 20, 4, 16; 1998 KO₆, 9, 2, 1; 1998 KP₆, 24, 5, 12; 1998 KV₇, 5, 1, 0; 1998 KW₇, 5, 1, 0; 1998 KK₈, 10, 2, 6; 1998 KM₈, 28, 6, 15; 1998 KP₈, 5, 1, 0; 1998 KT₈, 9, 2, 18; 1998 KZ₈, 5, 1, 0; 1998 KC₉, 20, 4, 13; 1998 KM₉, 9, 2, 24; 1998 KW₉, 10, 2, 15; 1998 KA₁₀, 15, 3, 6; 1998 KF₁₀, 16, 4, 17; 1998 KN₁₀, 9, 2, 6; 1998 KC₁₃, 9, 2, 10; 1998 KP₁₃, 5, 1, 0; 1998 KJ₁₄, 9, 2, 9; 1998 KP₁₈, 5, 1, 0; 1998 KS₁₉, 4, 1, 0; 1998 KM₂₀, 9, 2, 9; 1998 KP₂₁, 5, 1, 0; 1998 KV₂₁, 4, 1, 0; 1998 KK₂₃, 9, 2, 9; 1998 KA₂₄, 4, 1, 0; 1998 KM₂₅, 4, 1, 0; 1998 KV₂₅, 9, 2, 9; 1998 KF₂₇, 18, 4, 57; 1998 KT₂₈, 4, 1, 0; 1998 KR₂₉, 9, 2, 1; 1998 KE₃₀, 8, 2, 16; 1998 KH₃₀, 19, 4, 89; 1998 KZ₃₀, 12, 3, 16; 1998 KL₃₁, 5, 1, 0; 1998 KQ₃₁, 28, 6, 15; 1998 KC₃₂, 8, 2, 1; 1998 KT₃₂, 19, 4, 18; 1998 KV₃₂, 10, 2, 2; 1998 KR₃₃, 5, 1, 0; 1998 KB₃₄, 19, 4, 8; 1998 KW₃₄, 4, 1, 0; 1998 KY₃₄, 8, 2, 13; 1998 KF₃₅, 15, 3, 11; 1998 KL₃₅, 10, 2, 6; 1998 KM₃₅, 8, 2, 6; 1998 KA₃₅, 25, 5, 14; 1998 KT₃₆, 28, 6, 18; 1998 KL₃₇, 24, 5, 15; 1998 KM₃₇, 13, 3, 10; 1998 KP₃₇, 8, 2, 24; 1998 KV₃₇, 7, 2, 10; 1998 KX₃₇, 15, 3, 16; 1998 KG₃₈, 20, 4, 13; 1998 KQ₃₈, 13, 3, 31; 1998 KZ₃₈, 14, 3, 8; 1998 KS₃₉, 13, 3, 6; 1998 KE₄₀, 15, 3, 6; 1998 KF₄₀, 10, 2, 5; 1998 KK₄₀, 4, 1, 0; 1998 KG₄₁, 16, 4, 12; 1998 KP₄₁, 9, 2, 10; 1998 KR₄₂, 4, 1, 0; 1998 KD₄₄, 19, 4, 17; 1998 KT₄₄, 23, 5, 17; 1998 KK₄₆, 5, 1, 0; 1998 KM₄₆, 20, 4, 12; 1998 KO₄₆, 10, 2, 6; 1998 KS₄₆, 8, 2, 11; 1998 KU₄₆, 19, 4, 16; 1998 KW₄₆, 10, 2, 15; 1998 KZ₄₆, 4, 1, 0; 1998 KH₄₇, 10, 2, 5; 1998 KR₄₇, 5, 1, 0; 1998 KS₄₇, 3, 1, 0; 1998 KV₄₇, 28, 5, 11; 1998 KW₄₇, 24, 5, 11; 1998 KX₄₇, 10, 2, 7; 1998 KZ₄₇, 5, 1, 0; 1998 KE₄₈, 10, 2, 11; 1998 KJ₄₈, 19, 4, 13; 1998 KL₄₈, 4, 1, 0; 1998 KW₅₀, 9, 2, 6; 1998 KB₅₁, 19, 4, 11; 1998 KD₅₁, 10, 2, 6; 1998 KE₅₁, 5, 1, 0; 1998 KF₅₁, 10, 2, 5; 1998 KG₅₁, 10, 2, 10; 1998 KQ₅₁, 10, 2, 2; 1998 KS₅₁, 5, 1, 0; 1998 KT₅₁, 7, 2, 1; 1998 KU₅₁, 5, 1, 0; 1998 KF₅₃, 15, 3, 32; 1998 KA₅₄, 13, 2, 15; 1998 KK₅₄, 4, 1, 0; 1998 KL₅₄, 5, 1, 0; 1998 KM₅₄, 4, 1, 0; 1998 KO₅₄, 5, 1, 0; 1998 KP₅₄, 15, 3, 24; 1998 KR₅₄, 10, 2, 6; 1998 KS₅₄, 3, 1, 0; 1998 KW₅₄, 10, 2, 2; 1998 KZ₅₄, 20, 3, 13; 1998 KA₅₅, 5, 1, 0; 1998 KB₅₅, 10, 2, 7; 1998 KK₅₅, 19, 4, 13; 1998 KL₅₅, 24, 5, 13; 1998 KN₅₅, 13, 3, 7; 1998 KR₅₅, 4, 1, 0; 1998 KU₅₅, 10, 2, 6; 1998 KC₅₆, 10, 2, 6; 1998 KK₅₈, 8, 2, 28; 1998 KZ₅₉, 3, 1, 0; 1998 KL₆₅, 14, 3, 17; 1998 KU₆₅, 5, 1, 0; 1998 LA₁₀, 10, 2, 10; 1998 LM₅, 1, 0; 1998 LU₃₀, 6, 15; 1998 LK₂, 8, 2, 10; 1998 LL₂, 5, 1, 0; 1998 LM₂, 4, 1, 0; 1998 LB₃, 23, 5, 11; 1998 MG₁, 9, 2, 10; 1998 MY₁, 5, 1, 0; 1998 MF₃, 3, 1, 0; 1998 MH₃, 4, 1, 0; 1998 MK₄, 10, 2, 16; 1998 ML₄, 5, 1, 0; 1998 MB₆, 4, 1, 0; 1998 MZ₇, 15, 2, 11; 1998 MA₈, 4, 1, 0; 1998 MH₈, 4, 1, 0; 1998 MZ₈, 12, 3, 10; 1998 ME₁₂, 4, 1, 0; 1998 MG₁₂, 4, 1, 0; 1998 MN₁₆, 9, 2, 10; 1998 MM₁₉, 4, 1, 0; 1998 MY₂₁, 4, 1, 0; 1998 MX₂₂, 4, 1, 0; 1998 MZ₂₃, 5, 1, 0; 1998 MO₂₆, 4, 1, 0; 1998 ME₂₇, 5, 1, 0; 1998 MS₂₉, 9, 2, 6; 1998 MY₂₉, 15, 3, 8; 1998 MH₃₀, 4, 1, 0; 1998 MZ₃₀, 10, 2, 10; 1998 MF₃₂, 10, 2, 7; 1998 MT₃₂, 3, 1, 0; 1998 MD₃₃, 5, 1, 0; 1998 MT₃₄, 4, 1, 0; 1998 MF₃₇, 5, 1, 0; 1998 MK₃₇, 4, 1, 0; 1998 MR₃₇, 4, 1, 0; 1998 MT₃₇, 5, 1, 0; 1998 MV₃₇, 8, 2, 11; 1998 MC₃₈, 13, 3, 17; 1998 MC₄₅, 26, 6, 17; 1998 OP₃, 3, 1, 0; 1998 OQ₁₀, 10, 2, 10; 1998 ON₁, 3, 1, 0; 1998 OP₂, 20, 4, 19; 1998 OZ₄, 5, 1, 0; 1998 OH₆, 19, 4, 11; 1998 OU₇, 8, 2, 10; 1998 OZ₈, 4, 1, 0; 1998 OZ₉, 10, 2, 10; 1998 OG₁₂, 5, 1, 0; 1998 OH₁₂, 5, 1, 0; 1998 OM₁₂, 7, 2, 7; 1998 ON₁₃, 5, 1, 0; 1998 OZ₁₄, 4, 1, 0; 1998 PL₄, 4, 1, 0; 1998 PQ₄, 4, 1, 0; 1998 PA₁, 5, 1, 0; 1998 PD₁, 5, 1, 0; 1998 PN₁, 15, 3, 16; 1998 PO₁, 15, 3, 8; 1998 QW₉, 9, 2, 10; 1998 QZ₃, 1, 0; 1998 QA₂, 3, 1, 0; 1998 QW₂, 4, 1, 0; 1998 QM₅, 14, 3, 11; 1998 QN₇, 18, 4, 14; 1998 QJ₈, 5, 1, 0; 1998 QQ₈, 5, 1, 0; 1998 QM₉, 3, 1, 0; 1998 QX₉, 7, 2, 11; 1998 QR₁₀, 10, 1, 0; 1998 QF₁₁, 9, 2, 10; 1998 QH₁₁, 4, 1, 0; 1998 QS₁₁, 4, 1, 0; 1998 QZ₁₁, 4, 1, 0; 1998 QJ₁₃, 10, 2, 10; 1998 QZ₁₅, 5, 1, 0; 1998 QJ₁₆, 10, 2, 9; 1998 QP₁₆, 9, 2, 9; 1998 QC₁₇, 9, 2, 11; 1998 QF₁₇, 10, 2, 11; 1998 QL₁₈, 5, 1, 0; 1998 QN₁₈, 5, 1, 0; 1998 QT₁₈, 6, 2, 9; 1998 QK₁₉, 8, 2, 11; 1998 QT₁₉, 4, 1, 0; 1998 QV₁₉, 4, 1, 0; 1998 QM₂₀, 10, 2, 10; 1998 QJ₂₁, 3, 1, 0; 1998 QL₂₂, 5, 1, 0; 1998 QV₂₂, 10, 2, 10; 1998 QW₂₂, 4, 1, 0; 1998 QD₂₃, 5, 1, 0; 1998 QL₂₃, 5, 1, 0; 1998 QJ₂₅, 8, 2, 11; 1998 QA₂₆, 4, 1, 0; 1998 QK₂₆, 4, 1, 0; 1998 QO₂₆, 14, 3, 11; 1998 QR₃₀, 5, 1, 0; 1998 QY₃₀, 4, 1, 0; 1998 QF₃₁, 3, 1, 0; 1998 QS₃₁, 5, 1, 0; 1998 QY₃₂, 9, 2, 10; 1998 QL₃₄, 8, 2, 3; 1998 QM₃₄, 5, 1, 0; 1998 QW₃₄, 5, 1, 0; 1998 QG₃₅, 10, 2, 6; 1998 QP₃₅, 10, 2, 10; 1998 QW₃₇, 4, 1, 0; 1998 QK₃₈, 4, 1, 0; 1998 QE₃₉, 3, 1, 0; 1998 QG₃₉, 5, 1, 0; 1998 QB₄₀, 3, 1, 0; 1998 QV₄₀, 9, 2, 10; 1998 QN₄₂, 4, 1, 0; 1998 QR₄₂, 5, 1, 0; 1998 QW₄₂, 19, 4, 16; 1998 QB₄₃, 9, 2, 10; 1998 QG₄₃, 5, 1, 0; 1998 QP₄₃, 5, 1, 0; 1998 QQ₄₅, 9, 2, 19;

1998 QZ₄₆, 3, 1, 0; 1998 QA₄₇, 5, 1, 0; 1998 QP₄₇, 9, 2, 10; 1998 QG₄₈, 3, 1, 0; 1998 QE₄₉, 3, 1, 0; 1998 QQ₄₉, 10, 2, 10; 1998 QN₅₀, 3, 1, 0; 1998 QO₅₀, 4, 1, 0; 1998 QU₅₀, 4, 1, 0; 1998 QF₅₁, 3, 1, 0; 1998 QH₅₁, 7, 2, 11; 1998 QG₅₂, 5, 1, 0; 1998 QE₅₂, 10, 2, 11; 1998 QK₅₃, 10, 2, 10; 1998 QE₅₄, 9, 2, 10; 1998 QQ₅₄, 4, 1, 0; 1998 QP₅₇, 4, 1, 0; 1998 QV₆₃, 8, 2, 10; 1998 QB₆₉, 4, 1, 0; 1998 QJ₆₉, 14, 3, 17; 1998 QR₆₉, 14, 3, 3; 1998 QF₇₀, 12, 3, 17; 1998 QX₇₂, 4, 1, 0; 1998 QN₇₃, 4, 1, 0; 1998 QV₇₃, 9, 2, 11; 1998 QK₇₅, 5, 1, 0; 1998 QN₇₅, 5, 1, 0; 1998 QM₇₆, 10, 2, 10; 1998 QR₇₇, 3, 1, 0; 1998 QW₇₇, 4, 1, 0; 1998 QQ₈₄, 13, 3, 10; 1998 QG₈₆, 5, 1, 0; 1998 QN₈₆, 7, 2, 11; 1998 QD₉₉, 10, 2, 10; 1998 QO₉₉, 3, 1, 0; 1998 QV₁₀₂, 5, 1, 0; 1998 RM₁₉, 4, 17; 1998 RV₄, 1, 0; 1998 RO₁, 3, 1, 0; 1998 RE₂, 8, 2, 10; 1998 RK₆, 5, 1, 0; 1998 RW₁₆, 9, 2, 6; 1998 RP₁₉, 10, 2, 10; 1998 RN₃₅, 4, 1, 0; 1998 RO₃₈, 5, 1, 0; 1998 RF₅₀, 4, 1, 0; 1998 RD₅₁, 5, 1, 0; 1998 RW₅₂, 5, 1, 0; 1998 RU₅₆, 8, 2, 11; 1998 RK₅₇, 5, 1, 0; 1998 RC₅₈, 5, 1, 0; 1998 RL₅₉, 4, 1, 0; 1998 RP₇₀, 13, 3, 10; 1998 RS₇₂, 7, 2, 11; 1998 RH₇₆, 10, 2, 10; 1998 RB₇₇, 9, 2, 11; 1998 RZ₇₉, 5, 1, 0; 1998 RC₈₀, 5, 1, 0; 1998 SD₁₀, 10, 2, 6; 1998 SK₂, 3, 1, 0; 1998 SG₅, 5, 1, 0; 1998 SX₇, 10, 2, 10; 1998 SA₁₀, 5, 1, 0; 1998 SG₁₀, 10, 2, 10; 1998 SJ₂₄, 5, 1, 0; 1998 SH₂₅, 9, 2, 10; 1998 SA₂₈, 5, 1, 0; 1998 SB₃₂, 8, 2, 11; 1998 SP₃₆, 14, 3, 18; 1998 SA₄₃, 10, 2, 11; 1998 SO₄₉, 3, 1, 0; 1998 SV₅₃, 5, 1, 0; 1998 SH₅₄, 4, 1, 0; 1998 SN₅₄, 5, 1, 0; 1998 SP₅₆, 5, 1, 0; 1998 SN₅₇, 4, 1, 0; 1998 SD₅₈, 9, 2, 10; 1998 SE₅₈, 4, 1, 0; 1998 SM₅₈, 3, 1, 0; 1998 SY₅₉, 4, 1, 0; 1998 SO₆₁, 8, 1, 0; 1998 SU₇₁, 10, 2, 11; 1998 SM₁₀₇, 3, 1, 0; 1998 SN₁₀₈, 3, 1, 0; 1998 SZ₁₁₄, 5, 1, 0; 1998 SK₁₂₁, 4, 1, 0; 1998 SD₁₂₂, 3, 1, 0; 1998 SO₁₂₉, 7, 2, 10; 1998 SR₁₃₀, 4, 1, 0; 1998 SE₁₃₂, 10, 2, 10; 1998 SW₁₃₂, 4, 1, 0; 1998 SV₁₃₄, 9, 2, 10; 1998 SZ₁₄₀, 8, 2, 11; 1998 SA₁₄₄, 4, 1, 0; 1998 ST₁₄₄, 7, 2, 10; 1998 SL₁₆₁, 10, 2, 10; 1998 SV₁₆₃, 8, 2, 2; 1998 TX₅, 3, 1, 0; 1998 TV₆, 5, 1, 0; 1998 TU₁₂, 5, 1, 0; 1998 TL₁₅, 5, 1, 0; 1998 TP₁₇, 15, 2, 11; 1998 TR₃₀, 6, 2, 11; 1998 TR₃₃, 3, 1, 0; 1998 TW₃₄, 3, 1, 0; 1998 UP₁, 37, 4, 5; 1998 UR₁₆, 4, 1, 0; 1998 UL₂₀, 3, 1, 0; 1998 VB₅, 3, 1, 0; 1998 VB₆, 8, 2, 11; 1998 VU₆, 14, 3, 7; 1998 VL₁₆, 4, 1, 0; 1998 VP₂₀, 9, 2, 10; 1998 VH₂₆, 4, 1, 0; 1998 VC₂₉, 9, 2, 11; 1998 VY₂₉, 9, 2, 11; 1998 WX₄, 5, 1, 0; 1998 WV₅, 10, 2, 10; 1998 WZ₅, 10, 2, 10; 1998 WA₁₅, 15, 2, 10; 1998 XQ₂₉, 4, 1, 0; 1998 XS₃₁, 10, 2, 11; 1998 XO₇₉, 5, 1, 0; 1999 GK₄, 5, 1, 0; 1999 HX₉, 5, 1, 0; 1999 JM₉, 9, 2, 6; 1999 JX₁₂, 3, 1, 0; 1999 JD₁₃, 6, 2, 2; 1999 JN₁₇, 20, 4, 16; 1999 JO₄₂, 10, 2, 32; 1999 JZ₇₉, 5, 1, 0; 1999 JK₈₁, 8, 2, 15; 1999 JL₈₁, 5, 1, 0; 1999 JM₈₁, 9, 2, 6; 1999 KF₄, 10, 2, 2; 1999 KG₄, 8, 2, 16; 1999 KQ₄, 15, 3, 10; 1999 KR₄, 25, 5, 556; 1999 KK₆, 5, 1, 0; 1999 KL₆, 9, 2, 2; 1999 KS₇, 10, 2, 6; 1999 KJ₁₅, 5, 1, 0; 1999 KK₁₅, 19, 4, 17; 1999 KM₁₅, 10, 2, 6; 1999 KA₁₆, 5, 1, 0; 1999 KJ₁₇, 10, 2, 2; 1999 LV₁, 4, 1, 0; 1999 LF₆, 20, 3, 3; 1999 LH₆, 5, 1, 0; 1999 LM₇, 4, 1, 0; 1999 LO₇, 8, 2, 16; 1999 LJ₁₄, 5, 1, 0; 1999 LU₂₆, 3, 1, 0; 1999 LO₂₈, 5, 1, 0; 1999 MA₃, 3, 1, 0; 1999 MJ₅, 5, 1, 0; 1999 MK₉, 5, 2, 8; 1999 ML₃₅, 7, 15; 1999 MT₃, 1, 0; 1999 MG₁, 8, 2, 16; 1999 MH₁, 3, 1, 0; 1999 MK₁, 5, 1, 0; 1999 ML₁, 10, 2, 7; 1999 MM₁, 5, 1, 0; 1999 MN₁, 15, 3, 11; 1999 MV₁, 17, 4, 16; 1999 MB₂, 5, 1, 0; 1999 NT₁₀, 10, 2, 16; 1999 NB₁, 4, 1, 0; 1999 NQ₁, 4, 1, 0; 1999 NP₁, 5, 1, 0; 1999 NV₁, 5, 1, 0; 1999 NM₂, 10, 2, 7; 1999 NN₂, 4, 1, 0; 1999 NO₂, 8, 2, 5; 1999 NT₂, 24, 5, 13; 1999 NF₃, 5, 1, 0; 1999 NU₃, 9, 2, 16; 1999 NB₄, 10, 2, 8; 1999 ND₄, 9, 2, 10; 1999 NH₄, 15, 3, 10; 1999 NR₄, 4, 1, 0; 1999 NS₄, 9, 2, 7; 1999 NT₄, 17, 4, 13; 1999 NX₄, 12, 3, 16; 1999 NZ₄, 5, 1, 0; 1999 NF₅, 10, 2, 10; 1999 NZ₅, 10, 2, 16; 1999 NG₆, 4, 1, 0; 1999 NZ₆, 15, 4, 569; 1999 NO₇, 9, 2, 21; 1999 NR₇, 10, 2, 9; 1999 NU₇, 13, 3, 10; 1999 NX₇, 5, 1, 0; 1999 NC₈, 3, 1, 0; 1999 ND₈, 4, 1, 0; 1999 NE₈, 3, 1, 0; 1999 NF₈, 19, 4, 16; 1999 NG₈, 5, 1, 0; 1999 NH₈, 14,

2, 5; 1999 NZ₅₆, 4, 1, 0; 1999 NA₅₇, 10, 2, 15; 1999 NB₅₇, 3, 1, 0; 1999 NC₅₇, 9, 2, 5; 1999 ND₅₇, 5, 1, 0; 1999 NF₅₇, 10, 2, 15; 1999 NH₅₇, 5, 1, 0; 1999 NN₅₉, 5, 1, 0; 1999 NQ₅₉, 15, 3, 15; 1999 NS₅₉, 4, 1, 0; 1999 NJ₆₂, 5, 1, 0; 1999 NY₆₂, 4, 1, 0; 1999 NW₆₃, 10, 2, 16; 1999 NH₆₄, 15, 3, 8; 1999 OB₁₅, 3, 15; 1999 OC₁₀, 2, 15; 1999 OH₄, 1, 0; 1999 OL₉, 2, 15; 1999 OO₅, 1, 0; 1999 OS₂₇, 6, 31; 1999 OW₉, 2, 10; 1999 OB₁, 5, 1, 0; 1999 OV₁, 10, 2, 15; 1999 OX₁, 5, 1, 0; 1999 OB₂, 5, 1, 0; 1999 OD₂, 5, 1, 0; 1999 OE₂, 5, 1, 0; 1999 OG₂, 15, 3, 6; 1999 OJ₂, 10, 2, 9; 1999 OL₂, 13, 3, 6; 1999 OM₂, 7, 2, 5; 1999 OW₂, 8, 2, 5; 1999 OB₃, 18, 4, 494; 1999 OH₃, 5, 1, 0; 1999 OO₃, 5, 1, 0; 1999 OP₃, 5, 1, 0; 1999 OS₃, 9, 2, 16; 1999 OT₃, 4, 1, 0; 1999 OW₃, 3, 1, 0; 1999 PC₄, 1, 0; 1999 PE₄, 1, 0; 1999 PF₅, 1, 0; 1999 PK₄, 1, 0; 1999 PM₄, 4, 1, 0; 1999 PV₁₇, 4, 16; 1999 PY₁₈, 4, 14; 1999 PZ₁₅, 3, 15; 1999 PB₁, 10, 2, 3; 1999 PC₁, 9, 2, 17; 1999 PH₁, 5, 1, 0; 1999 PP₁, 4, 1, 0; 1999 PR₁, 18, 3, 18; 1999 PU₁, 13, 2, 1; 1999 PV₁, 4, 1, 0; 1999 PX₁, 5, 1, 0; 1999 PA₂, 12, 2, 1; 1999 PB₂, 8, 2, 23; 1999 PV₂, 3, 1, 0; 1999 PN₃, 10, 2, 6; 1999 PP₃, 4, 1, 0; 1999 PR₃, 31, 7, 562; 1999 PT₃, 8, 2, 8; 1999 PY₃, 5, 1, 0; 1999 PA₄, 3, 1, 0; 1999 PB₄, 25, 4, 15; 1999 PD₄, 10, 2, 7; 1999 PE₄, 5, 1, 0; 1999 PF₄, 5, 1, 0; 1999 PG₄, 3, 1, 0; 1999 PH₄, 8, 2, 17; 1999 PK₄, 5, 1, 0; 1999 PO₄, 9, 2, 5; 1999 PP₄, 10, 2, 7; 1999 PS₄, 9, 2, 4; 1999 PT₄, 20, 4, 13; 1999 PU₄, 14, 3, 16; 1999 PV₄, 10, 2, 6; 1999 PW₄, 19, 4, 16; 1999 PY₄, 10, 2, 15; 1999 PZ₄, 11, 2, 1; 1999 PB₅, 8, 2, 3; 1999 PS₅, 8, 2, 7; 1999 PK₆, 10, 2, 25; 1999 QA₅, 1, 0; 1999 QC₉, 2, 17; 1999 QH₁₅, 3, 24; 1999 QJ₉, 2, 7; 1999 QO₃, 1, 0; 1999 QP₅, 1, 0; 1999 QT₁, 5, 1, 0; 1999 QU₁, 5, 1, 0; 1999 QV₁, 15, 3, 23; 1999 QZ₁, 23, 5, 14; 1999 QA₂, 5, 1, 0; 1999 QB₂, 5, 1, 0; 1999 QD₂, 4, 1, 0; 1999 QG₂, 3, 1, 0; 1999 QH₂, 5, 1, 0; 1999 QJ₂, 5, 1, 0; 1999 QL₂, 5, 1, 0; 1999 QM₂, 8, 1, 0; 1999 QP₂, 4, 1, 0; 1999 QQ₂, 20, 5, 13; 1999 QS₂, 4, 1, 0; 1999 QT₂, 4, 1, 0; 1999 RA₁₄, 14, 3, 15; 1999 RB₂₇, 5, 16; 1999 RC₁₅, 3, 16; 1999 RE₁₈, 4, 11; 1999 RF₂₂, 22, 5, 510; 1999 RM₁₅, 3, 13; 1999 RN₈, 2, 5; 1999 RS₄, 1, 0; 1999 RT₁₉, 4, 492; 1999 RU₁₀, 2, 1; 1999 RV₁₅, 3, 3; 1999 RY₉, 2, 9; 1999 RA₁, 5, 1, 0; 1999 RD₁, 5, 1, 0; 1999 RE₁, 17, 4, 79; 1999 RG₁, 5, 1, 0; 1999 RH₁, 13, 3, 83; 1999 RJ₁, 4, 1, 0; 1999 RK₁, 5, 1, 0; 1999 RL₁, 4, 1, 0; 1999 RM₁, 16, 3, 551; 1999 RN₁, 5, 1, 0; 1999 RP₁, 6, 2, 1; 1999 RS₁, 30, 4, 28; 1999 RT₁, 15, 3, 5; 1999 RU₁, 14, 3, 23; 1999 RV₁, 16, 3, 23; 1999 RX₁, 20, 4, 13; 1999 RY₁, 15, 3, 3; 1999 RZ₁, 20, 4, 5; 1999 RA₂, 20, 4, 13; 1999 RB₂, 5, 1, 0; 1999 RC₂, 5, 1, 0; 1999 RD₂, 14, 3, 9; 1999 RE₂, 4, 1, 0; 1999 RF₂, 5, 1, 0; 1999 RG₂, 5, 1, 0; 1999 RH₂, 5, 1, 0; 1999 RI₂, 14, 2, 4; 1999 RJ₂, 5, 1, 0; 1999 RK₂, 14, 3, 10; 1999 RL₂, 10, 2, 5; 1999 RM₂, 14, 3, 3; 1999 RN₂, 10, 2, 3; 1999 RS₂, 14, 3, 3; 1999 RE₃, 15, 3, 5; 1999 RF₃, 10, 2, 5; 1999 RG₃, 24, 5, 511; 1999 RH₃, 10, 2, 23; 1999 RK₃, 8, 2, 3; 1999 RN₃, 13, 3, 79; 1999 RO₃, 4, 1, 0; 1999 RP₃, 5, 1, 0; 1999 RU₃, 9, 2, 1; 1999 RV₃, 18, 4, 16; 1999 RB₄, 5, 1, 0; 1999 RD₄, 3, 1, 0; 1999 RE₄, 12, 3, 15; 1999 RF₄, 4, 1, 0; 1999 RJ₄, 5, 1, 0; 1999 RS₄, 32, 7, 541; 1999 RL₆, 12, 3, 3; 1999 RM₆, 20, 4, 499; 1999 RG₆, 10, 2, 5; 1999 RH₆, 10, 2, 5; 1999 RX₇, 9, 2, 3; 1999 RA₈, 7, 2, 28; 1999 RK₈, 10, 2, 1; 1999 RE₉, 3, 1, 0; 1999 RK₉, 23, 5, 13; 1999 RN₉, 13, 2, 1; 1999 RW₉, 9, 2, 5; 1999 RD₁₀, 18, 4, 533; 1999 RG₁₀, 5, 1, 0; 1999 RK₁₀, 4, 1, 0; 1999 RS₁₀, 30, 6, 79; 1999 RU₁₀, 14, 3, 8; 1999 RY₁₀, 25, 4, 21; 1999 RD₁₁, 5, 1, 0; 1999 RG₁₁, 15, 3, 484; 1999 RJ₁₁, 10, 2, 6; 1999 RM₁₁, 5, 1, 0; 1999 RN₁₁, 5, 1, 0; 1999 RO₁₁, 25, 4, 527; 1999 RP₁₁, 10, 2, 1; 1999 RT₁₁, 10, 2, 1; 1999 RV₁₁, 10, 2, 3; 1999 RY₁₁, 3, 1, 0; 1999 RB₁₂, 8, 2, 7; 1999 RD₁₂, 13, 2, 1; 1999 RH₁₂, 9, 2, 3; 1999 RL₁₂, 8, 2, 7; 1999 RP₁₂, 18, 4, 499; 1999 RR₁₂, 3, 1, 0; 1999 RS₁₂, 10, 2, 3; 1999 RT₁₂, 7, 2, 3; 1999 RV₁₂, 17, 4, 13; 1999 RW₁₂, 3, 1, 0; 1999 RZ₁₂, 18, 4, 8; 1999 RB₁₃, 13, 2, 1; 1999 RD₁₃, 8, 1, 0; 1999 RH₁₃, 5, 1, 0; 1999 RL₁₃, 17, 3, 7; 1999 RN₁₃, 13, 2, 1; 1999 RS₁₃, 4, 1, 0; 1999 RA₁₄, 10, 2, 1; 1999 RB₁₄, 8, 2, 7; 1999 RF₁₄, 28, 5, 8; 1999 RH₁₄, 11, 2, 1; 1999 RJ₁₄, 5, 1, 0; 1999 RK₁₄, 25, 5, 16; 1999 RL₁₄, 11, 2, 1; 1999 RN₁₄, 7, 1, 0; 1999 RO₁₄, 8, 1, 0; 1999 RQ₁₄, 15, 3, 6; 1999 RU₁₄, 9, 2, 4; 1999 RC₁₅, 34, 2, 21; 1999 RJ₁₅, 3, 1, 0; 1999 RK₁₅, 11, 2, 1; 1999 RL₁₅, 5, 1, 0; 1999 RM₁₅, 10, 2, 1; 1999 RN₁₅, 5, 1, 0; 1999 RQ₁₅, 4, 1, 0; 1999 RU₁₅, 8, 2, 5; 1999 RV₁₅, 2, 18; 1999 RY₁₅, 5, 1, 0; 1999 RA₁₆, 13, 3, 23; 1999 RD₁₆, 3, 1, 0; 1999 RE₁₆, 13, 3, 5; 1999 RK₁₆, 10, 2, 18; 1999 RT₁₆, 9, 2, 5; 1999 RU₁₆, 21, 5, 13; 1999 RV₁₆, 14, 3, 5; 1999 RB₁₇, 3, 1, 0; 1999 RE₁₇, 15, 3, 23; 1999 RF₁₇, 24, 5, 557; 1999 RJ₁₇, 5, 1, 0; 1999 RK₁₇, 12, 3, 8; 1999 RS₁₇, 5, 1, 0; 1999 RT₁₇, 14, 3, 532; 1999 RV₁₇, 4, 1, 0; 1999 RW₁₇, 10, 2, 9; 1999 RX₁₇, 5, 1, 0; 1999 RY₁₇, 23, 5, 524; 1999 RA₁₈, 5, 1, 0; 1999 RC₁₈, 3, 1, 0; 1999 RF₁₈, 8, 2, 3; 1999 RG₁₈, 9, 2, 76; 1999 RH₁₈, 31, 4, 28; 1999 RJ₁₈, 17, 4, 533; 1999 RN₁₈, 38, 8, 566; 1999 RO₁₈, 5, 1, 0; 1999 RP₁₈, 10, 2, 4; 1999 RR₁₈, 10, 2, 5; 1999 RS₁₈, 9, 2, 5; 1999 RT₁₈, 24, 4, 83; 1999 RU₁₈, 10, 2, 1; 1999 RW₁₈, 24, 5, 13; 1999 RY₁₈, 10, 2, 5; 1999 RJ₁₉, 9, 1, 0; 1999 RK₁₉, 9, 2, 5; 1999 RO₁₉, 19, 5, 13; 1999 RS₁₉, 15, 4, 911; 1999 RT₁₉, 14, 3, 5; 1999 RU₁₉, 16, 4, 10; 1999 RV₁₉, 5, 1, 0; 1999 RC₂₀, 10, 2, 28; 1999 RD₂₀, 5, 1, 0; 1999 RJ₂₀, 8, 2, 3; 1999 RK₂₀, 9, 2, 3; 1999 RL₂₀, 5, 1, 0; 1999 RN₂₀, 5, 1, 0; 1999 RO₂₀, 9, 2, 4; 1999 RT₂₀, 3, 1, 0; 1999 RU₂₀, 10, 2, 4; 1999 RA₂₁, 5, 1, 0; 1999 RC₂₁, 4, 1, 0; 1999 RF₂₁, 9, 2, 5; 1999 RH₂₁, 8, 2, 5; 1999 RJ₂₁, 8, 2, 5; 1999 RK₂₁, 12, 3, 83; 1999 RL₂₁, 18, 4, 13; 1999 RO₂₁, 10, 2, 1; 1999 RP₂₁, 5, 1, 0; 1999 RS₂₁, 9, 2, 18; 1999 RT₂₁, 4, 1, 0; 1999 RU₂₁, 5, 1, 0; 1999 RA₂₂, 9, 2, 5; 1999 RC₂₂, 9, 2, 5; 1999 RD₂₂, 17, 3, 468; 1999 RF₂₂, 4, 1, 0; 1999 RG₂₂, 15, 3, 15; 1999 RH₂₂, 9, 2, 5; 1999 RK₂₂, 4, 1, 0; 1999 RL₂₂, 14, 3, 5; 1999 RQ₂₂, 30, 5, 78; 1999 RR₂₂, 15, 3, 83; 1999 RS₂₂, 10, 2, 3; 1999 RT₂₂, 9, 2, 25; 1999 RB₂₃, 13, 3, 76; 1999 RC₂₃, 14, 2, 5; 1999 RD₂₃, 3, 1, 0; 1999 RF₂₃, 24, 5, 565; 1999 RH₂₃, 10, 2, 5; 1999 RN₂₃, 13, 3, 23; 1999 RO₂₃, 5, 1, 0; 1999 RQ₂₃, 9, 2, 1; 1999 RS₂₃, 4, 1, 0; 1999 RT₂₃, 9, 1, 0; 1999 RW₂₃, 10, 2, 5; 1999 RX₂₃, 14, 3, 83; 1999 RY₂₃, 4, 1, 0; 1999 RA₂₄, 5, 1, 0; 1999 RB₂₄, 39, 8, 572; 1999 RE₂₄, 3, 1, 0; 1999 RK₂₄, 5, 1, 0;

1999 RO₂₄, 5, 1, 0; 1999 RP₂₄, 8, 2, 5; 1999 RR₂₄, 9, 2, 3; 1999 RS₂₄, 10, 2, 2; 1999 RV₂₄, 18, 4, 86; 1999 RY₂₄, 9, 2, 2; 1999 RZ₂₄, 10, 2, 3; 1999 RA₂₅, 7, 2, 25; 1999 RB₂₅, 5, 1, 0; 1999 RE₂₅, 9, 2, 2; 1999 RN₂₅, 15, 3, 23; 1999 RT₂₅, 9, 2, 2; 1999 RU₂₅, 10, 2, 3; 1999 RX₂₅, 15, 3, 23; 1999 RC₂₆, 10, 2, 5; 1999 RE₂₆, 25, 5, 25; 1999 RG₂₆, 10, 2, 5; 1999 RH₂₆, 9, 2, 6; 1999 RJ₂₆, 10, 2, 5; 1999 RK₂₆, 10, 2, 23; 1999 RN₂₆, 10, 2, 5; 1999 RO₂₆, 9, 2, 3; 1999 RP₂₆, 5, 1, 0; 1999 RQ₂₆, 4, 1, 0; 1999 RU₂₆, 5, 1, 0; 1999 RV₂₆, 9, 2, 23; 1999 RA₂₇, 5, 1, 0; 1999 RE₂₇, 5, 1, 0; 1999 RF₂₇, 5, 1, 0; 1999 RG₂₇, 9, 2, 9; 1999 RH₂₇, 14, 3, 10; 1999 RJ₂₇, 18, 4, 13; 1999 RL₂₇, 14, 3, 4; 1999 RP₂₇, 10, 2, 5; 1999 RQ₂₇, 20, 4, 13; 1999 RR₂₇, 10, 2, 5; 1999 RT₂₇, 5, 1, 0; 1999 RU₂₇, 5, 1, 0; 1999 RV₂₇, 19, 4, 13; 1999 RW₂₇, 10, 2, 2; 1999 RX₂₇, 4, 1, 0; 1999 RY₂₇, 27, 5, 16; 1999 RA₂₈, 4, 1, 0; 1999 RB₂₈, 17, 4, 38; 1999 RC₂₈, 19, 4, 534; 1999 RD₂₈, 7, 2, 1; 1999 RE₂₈, 9, 2, 3; 1999 RF₂₈, 5, 1, 0; 1999 RG₂₈, 14, 3, 15; 1999 RS₂₈, 3, 1, 0; 1999 RT₂₈, 20, 4, 5; 1999 RV₂₈, 5, 1, 0; 1999 RZ₂₈, 13, 3, 32; 1999 RA₂₉, 8, 2, 2; 1999 RJ₂₉, 8, 2, 15; 1999 RM₂₉, 9, 2, 10; 1999 RO₂₉, 4, 1, 0; 1999 RP₂₉, 5, 1, 0; 1999 RQ₂₉, 5, 1, 0; 1999 RS₂₉, 4, 1, 0; 1999 RU₂₉, 9, 2, 2; 1999 RV₂₉, 10, 2, 6; 1999 RD₃₀, 3, 1, 0; 1999 RG₃₀, 5, 1, 0; 1999 RH₃₀, 9, 1, 0; 1999 RJ₃₀, 5, 1, 0; 1999 RL₃₀, 5, 1, 0; 1999 RN₃₀, 22, 5, 85; 1999 RP₃₀, 5, 1, 0; 1999 RR₃₀, 10, 2, 9; 1999 RS₃₀, 26, 4, 22; 1999 RY₃₀, 9, 2, 1; 1999 RZ₃₀, 14, 3, 81; 1999 RD₃₁, 28, 6, 11; 1999 RJ₃₁, 27, 5, 30; 1999 RK₃₁, 15, 3, 3; 1999 RL₃₁, 15, 3, 3; 1999 RM₃₁, 14, 3, 3; 1999 RP₃₁, 7, 1, 0; 1999 RR₃₁, 35, 7, 548; 1999 RS₃₁, 9, 2, 5; 1999 RU₃₁, 7, 2, 3; 1999 RV₃₁, 8, 2, 5; 1999 RX₃₁, 15, 3, 13; 1999 RB₃₂, 7, 2, 20; 1999 RC₃₂, 4, 1, 0; 1999 RD₃₂, 14, 3, 17; 1999 RF₃₂, 10, 2, 7; 1999 RH₃₂, 9, 2, 5; 1999 RJ₃₂, 25, 5, 13; 1999 RK₃₂, 10, 2, 5; 1999 RL₃₂, 15, 3, 5; 1999 RM₃₂, 10, 2, 1; 1999 RN₃₂, 15, 3, 13; 1999 RO₃₂, 24, 5, 13; 1999 RP₃₂, 8, 2, 30; 1999 RQ₃₂, 15, 3, 3; 1999 RS₃₂, 4, 1, 0; 1999 RX₃₂, 5, 1, 0; 1999 RZ₃₂, 5, 1, 0; 1999 RA₃₃, 9, 2, 3; 1999 RB₃₃, 17, 4, 83; 1999 RC₃₃, 10, 2, 7; 1999 RF₃₃, 10, 2, 1; 1999 RL₃₃, 27, 5, 8; 1999 RM₃₃, 23, 5, 503; 1999 RO₃₃, 4, 1, 0; 1999 RP₃₃, 7, 2, 5; 1999 RQ₃₃, 5, 1, 0; 1999 RS₃₃, 4, 1, 0; 1999 RT₃₃, 9, 2, 537; 1999 RU₃₃, 4, 1, 0; 1999 RV₃₃, 9, 2, 5; 1999 RZ₃₃, 5, 1, 0; 1999 RA₃₄, 10, 2, 5; 1999 RB₃₄, 10, 2, 6; 1999 RC₃₄, 9, 2, 5; 1999 RD₃₄, 23, 5, 91; 1999 RE₃₄, 23, 5, 11; 1999 RF₃₄, 18, 4, 13; 1999 RG₃₄, 14, 3, 76; 1999 RL₃₄, 10, 2, 3; 1999 RM₃₄, 15, 3, 3; 1999 RN₃₄, 10, 2, 3; 1999 RO₃₄, 20, 4, 475; 1999 RP₃₄, 19, 4, 13; 1999 RQ₃₄, 14, 3, 23; 1999 RR₃₄, 10, 2, 5; 1999 RU₃₄, 9, 2, 3; 1999 RV₃₄, 5, 1, 0; 1999 RW₃₄, 20, 4, 11; 1999 RY₃₄, 3, 1, 0; 1999 RZ₃₄, 19, 4, 19; 1999 RB₃₅, 9, 2, 8; 1999 RC₃₅, 28, 6, 15; 1999 RD₃₅, 38, 7, 88; 1999 RE₃₅, 8, 2, 23; 1999 RF₃₅, 35, 7, 565; 1999 RJ₃₅, 17, 3, 26; 1999 RL₃₅, 19, 4, 13; 1999 RM₃₅, 10, 2, 3; 1999 RN₃₅, 20, 4, 13; 1999 RO₃₅, 24, 5, 542; 1999 RP₃₅, 15, 3, 3; 1999 RQ₃₅, 5, 1, 0; 1999 RS₃₅, 10, 2, 5; 1999 RT₃₅, 10, 2, 5; 1999 RW₃₅, 3, 1, 0; 1999 RC₃₆, 8, 2, 4; 1999 RF₃₆, 8, 2, 4; 1999 RG₃₆, 16, 4, 17; 1999 RH₃₆, 3, 1, 0; 1999 RJ₃₆, 9, 2, 4; 1999 RL₃₆, 15, 3, 3; 1999 RM₃₆, 5, 1, 0; 1999 RO₃₆, 9, 2, 2; 1999 RP₃₆, 5, 1, 0; 1999 RV₃₆, 9, 2, 3; 1999 RW₃₆, 10, 2, 3; 1999 RX₃₆, 10, 2, 3; 1999 RY₃₆, 10, 2, 5; 1999 RC₃₇, 4, 1, 0; 1999 RD₃₇, 20, 4, 13; 1999 RE₃₇, 5, 1, 0; 1999 RF₃₇, 5, 1, 0; 1999 RG₃₇, 5, 1, 0; 1999 RH₃₇, 8, 2, 15; 1999 RJ₃₇, 14, 3, 30; 1999 RK₃₇, 9, 2, 3; 1999 RL₃₇, 10, 2, 3; 1999 RM₃₇, 10, 2, 3; 1999 RN₃₇, 10, 2, 3; 1999 RO₃₇, 10, 2, 3; 1999 RP₃₇, 15, 3, 3; 1999 RQ₃₇, 15, 3, 3; 1999 RS₃₇, 10, 2, 3; 1999 RT₃₇, 10, 2, 3; 1999 RV₃₇, 10, 2, 3; 1999 RW₃₇, 10, 2, 3; 1999 RX₃₇, 10, 2, 3; 1999 RY₃₇, 10, 2, 3; 1999 RZ₃₇, 5, 1, 0; 1999 RA₃₈, 10, 2, 3; 1999 RB₃₈, 10, 2, 3; 1999 RC₃₈, 10, 2, 3; 1999 RD₃₈, 10, 2, 3; 1999 RE₃₈, 15, 3, 3; 1999 RF₃₈, 10, 2, 3; 1999 RG₃₈, 10, 2, 3; 1999 RH₃₈, 10, 2, 3; 1999 RI₃₈, 25, 5, 574; 1999 RM₃₈, 19, 4, 475; 1999 RN₃₈, 9, 2, 3; 1999 RO₃₈, 15, 3, 3; 1999 RP₃₈, 6, 2, 73; 1999 RR₃₈, 14, 3, 10; 1999 RU₃₈, 18, 3, 23; 1999 RV₃₈, 10, 2, 17; 1999 RW₃₈, 3, 1, 0; 1999 RX₃₈, 10, 2, 17; 1999 RY

13, 2, 5; 1999 RW₇₀, 5, 1, 0; 1999 RG₇₁, 10, 2, 5; 1999 RK₇₁, 3, 1, 0; 1999 RN₇₁, 8, 2, 7; 1999 RR₇₁, 9, 2, 7; 1999 RZ₇₁, 4, 1, 0; 1999 RD₇₂, 3, 1, 0; 1999 RE₇₂, 4, 1, 0; 1999 RF₇₂, 5, 1, 0; 1999 RG₇₂, 3, 1, 0; 1999 RN₇₂, 4, 1, 0; 1999 RO₇₂, 5, 1, 0; 1999 RP₇₂, 4, 1, 0; 1999 RA₇₃, 5, 1, 0; 1999 RD₇₃, 5, 1, 0; 1999 RL₇₃, 10, 2, 15; 1999 RO₇₃, 5, 1, 0; 1999 RC₇₄, 7, 1, 0; 1999 RD₇₄, 5, 1, 0; 1999 RE₇₄, 8, 2, 21; 1999 RN₇₄, 3, 1, 0; 1999 RR₇₄, 10, 2, 7; 1999 RV₇₄, 8, 2, 7; 1999 RD₇₅, 4, 1, 0; 1999 RE₇₅, 10, 2, 7; 1999 RW₇₅, 9, 2, 5; 1999 RZ₇₅, 5, 1, 0; 1999 RL₇₆, 5, 1, 0; 1999 RM₇₆, 8, 2, 5; 1999 RA₇₇, 4, 1, 0; 1999 RD₇₈, 8, 1, 0; 1999 RO₇₉, 3, 1, 0; 1999 RE₈₁, 4, 1, 0; 1999 RF₈₁, 11, 3, 83; 1999 RN₈₁, 5, 1, 0; 1999 RO₈₁, 10, 2, 1; 1999 RQ₈₁, 28, 6, 533; 1999 RR₈₁, 5, 1, 0; 1999 RS₈₁, 5, 1, 0; 1999 RT₈₁, 9, 2, 5; 1999 RU₈₁, 10, 2, 1; 1999 RV₈₁, 9, 2, 5; 1999 RX₈₁, 4, 1, 0; 1999 RK₈₂, 20, 4, 76; 1999 RO₈₂, 14, 3, 5; 1999 RP₈₂, 13, 3, 5; 1999 RT₈₂, 3, 1, 0; 1999 RW₈₂, 10, 2, 5; 1999 RA₈₃, 7, 2, 1; 1999 RH₈₃, 4, 1, 0; 1999 RJ₈₃, 10, 2, 5; 1999 RV₈₃, 4, 1, 0; 1999 RB₈₄, 8, 2, 5; 1999 RC₈₄, 10, 2, 5; 1999 RN₈₄, 30, 5, 8; 1999 RP₈₄, 9, 2, 3; 1999 RS₈₄, 9, 2, 4; 1999 RM₈₅, 8, 2, 5; 1999 RT₈₅, 3, 1, 0; 1999 RZ₈₅, 8, 2, 7; 1999 RA₈₆, 11, 3, 501; 1999 RB₈₆, 8, 2, 7; 1999 RD₈₆, 15, 3, 77; 1999 RJ₈₆, 8, 2, 1; 1999 RS₈₆, 9, 2, 78; 1999 RT₈₆, 10, 2, 5; 1999 RW₈₆, 9, 2, 5; 1999 RD₈₇, 7, 2, 5; 1999 RF₈₇, 5, 1, 0; 1999 RJ₈₇, 4, 1, 0; 1999 RM₈₇, 7, 2, 5; 1999 RN₈₇, 3, 1, 0; 1999 RT₈₇, 10, 2, 5; 1999 RX₈₇, 8, 2, 5; 1999 RY₈₇, 3, 1, 0; 1999 RK₈₈, 19, 4, 10; 1999 RP₈₈, 8, 2, 5; 1999 RR₈₈, 15, 3, 3; 1999 RW₈₈, 12, 3, 3; 1999 RX₈₈, 9, 2, 1; 1999 RZ₈₈, 9, 2, 1; 1999 RB₈₉, 15, 3, 76; 1999 RE₈₉, 10, 2, 4; 1999 RJ₈₉, 4, 1, 0; 1999 RK₈₉, 10, 2, 5; 1999 RL₈₉, 3, 1, 0; 1999 RW₈₉, 8, 2, 5; 1999 RY₈₉, 10, 2, 5; 1999 RE₉₀, 10, 2, 5; 1999 RH₉₀, 4, 1, 0; 1999 RQ₉₀, 4, 1, 0; 1999 RE₉₁, 5, 1, 0; 1999 RF₉₁, 9, 2, 5; 1999 RJ₉₁, 10, 2, 5; 1999 RN₉₁, 4, 1, 0; 1999 RQ₉₁, 4, 1, 0; 1999 RT₉₁, 9, 2, 1; 1999 RV₉₁, 10, 2, 2; 1999 RW₉₁, 5, 1, 0; 1999 RX₉₁, 5, 1, 0; 1999 RZ₉₁, 10, 2, 2; 1999 RB₉₂, 10, 2, 2; 1999 RC₉₂, 10, 2, 3; 1999 RE₉₂, 10, 2, 5; 1999 RF₉₂, 10, 2, 5; 1999 RH₉₂, 13, 3, 3; 1999 RJ₉₂, 8, 2, 2; 1999 RK₉₂, 10, 2, 2; 1999 RL₉₂, 9, 2, 5; 1999 RO₉₂, 9, 2, 5; 1999 RP₉₂, 10, 2, 5; 1999 RV₉₂, 10, 2, 4; 1999 RD₉₃, 4, 1, 0; 1999 RX₉₂, 10, 2, 5; 1999 RB₉₃, 9, 2, 5; 1999 RC₉₃, 3, 1, 0; 1999 RE₉₃, 10, 2, 5; 1999 RF₉₃, 10, 2, 5; 1999 RH₉₃, 10, 2, 5; 1999 RN₉₃, 4, 1, 0; 1999 RO₉₃, 10, 2, 5; 1999 RT₉₃, 5, 1, 0; 1999 RV₉₃, 10, 2, 2; 1999 RC₉₄, 4, 1, 0; 1999 RD₉₄, 5, 1, 0; 1999 RH₉₄, 5, 1, 0; 1999 RK₉₄, 10, 2, 5; 1999 RP₉₄, 10, 2, 5; 1999 RV₉₄, 7, 2, 5; 1999 RY₉₄, 10, 2, 2; 1999 RZ₉₄, 4, 1, 0; 1999 RD₉₅, 25, 5, 501; 1999 RE₉₅, 10, 2, 2; 1999 RF₉₅, 12, 3, 3; 1999 RG₉₅, 10, 2, 3; 1999 RH₉₅, 10, 2, 5; 1999 RO₉₅, 10, 2, 5; 1999 RQ₉₅, 10, 2, 5; 1999 RX₉₅, 4, 1, 0; 1999 RY₉₅, 5, 1, 0; 1999 RZ₉₅, 10, 2, 5; 1999 RA₉₆, 9, 2, 5; 1999 RB₉₆, 4, 1, 0; 1999 RD₉₆, 13, 3, 7; 1999 RF₉₆, 9, 2, 5; 1999 RM₉₆, 9, 2, 5; 1999 RQ₉₆, 5, 1, 0; 1999 RF₉₇, 5, 1, 0; 1999 RM₉₇, 3, 1, 0; 1999 RN₉₇, 10, 2, 5; 1999 RW₉₇, 8, 2, 5; 1999 RX₉₇, 3, 1, 0; 1999 RH₉₈, 10, 2, 5; 1999 RM₉₈, 20, 4, 13; 1999 RQ₉₈, 10, 2, 5; 1999 RR₉₈, 10, 2, 497; 1999 RW₉₈, 9, 2, 6; 1999 RX₉₈, 10, 2, 6; 1999 RY₉₈, 24, 5, 15; 1999 RZ₉₈, 25, 2, 3; 1999 RB₉₉, 5, 1, 0; 1999 RC₉₉, 9, 2, 5; 1999 RS₁₀₀, 5, 1, 0; 1999 RV₁₀₀, 7, 1, 0; 1999 RA₁₀₁, 9, 2, 135; 1999 RQ₁₀₁, 5, 1, 0; 1999 RJ₁₀₁, 5, 1, 0; 1999 RD₁₀₂, 10, 2, 5; 1999 RE₁₀₂, 10, 2, 5; 1999 RF₁₀₂, 9, 2, 84; 1999 RJ₁₀₂, 9, 2, 27; 1999 RN₁₀₂, 10, 2, 7; 1999 RO₁₀₂, 4, 1, 0; 1999 RR₁₀₂, 9, 2, 82; 1999 RS₁₀₂, 10, 2, 7; 1999 RT₁₀₂, 9, 2, 82; 1999 RV₁₀₂, 4, 1, 0; 1999 RY₁₀₂, 8, 2, 82; 1999 RZ₁₀₂, 5, 1, 0; 1999 RA₁₀₃, 5, 1, 0; 1999 RB₁₀₃, 5, 1, 0; 1999 RE₁₀₃, 5, 1, 0; 1999 RF₁₀₃, 10, 2, 84; 1999 RG₁₀₃, 5, 1, 0; 1999 RH₁₀₃, 10, 2, 84; 1999 RL₁₀₃, 5, 1, 0; 1999 RM₁₀₃, 5, 1, 0; 1999 RQ₁₀₃, 5, 1, 0; 1999 RT₁₀₃, 15, 3, 13; 1999 RV₁₀₃, 5, 1, 0; 1999 RZ₁₀₃, 5, 1, 0; 1999 RF₁₀₄, 5, 1, 0; 1999 RG₁₀₄, 9, 2, 3; 1999 RJ₁₀₄, 5, 1, 0; 1999 RK₁₀₄, 5, 1, 0; 1999 RN₁₀₄, 5, 1, 0; 1999 RQ₁₀₄, 4, 1, 0; 1999 RD₁₀₄, 15, 3, 3; 1999 RE₁₀₅, 4, 1, 0; 1999 RH₁₀₅, 25, 2, 3; 1999 RJ₁₀₅, 5, 1, 0; 1999 RO₁₀₅, 10, 2, 73; 1999 RT₁₀₅, 5, 1, 0; 1999 RU₁₀₅, 5, 1, 0; 1999 RV₁₀₅, 5, 1, 0; 1999 RW₁₀₅, 5, 1, 0; 1999 RY₁₀₅, 9, 2, 73; 1999 RZ₁₀₅, 9, 2, 73; 1999 RA₁₀₆, 5, 1, 0; 1999 RO₁₀₆, 4, 1, 0; 1999 RU₁₀₆, 4, 1, 0; 1999 RG₁₀₇, 9, 2, 2; 1999 RL₁₀₇, 8, 2, 1; 1999 RM₁₀₇, 8, 2, 2; 1999 RO₁₀₇, 5, 1, 0; 1999 RY₁₀₇, 4, 1, 0; 1999 RC₁₀₈, 3, 1, 0; 1999 RD₁₀₈, 4, 1, 0; 1999 RG₁₀₈, 4, 1, 0; 1999 RM₁₀₈, 5, 1, 0; 1999 RO₁₀₈, 3, 1, 0; 1999 RV₁₀₈, 9, 2, 73; 1999 RT₁₀₈, 3, 1, 0; 1999 RX₁₀₈, 5, 1, 0; 1999 RD₁₀₉, 10, 2, 3; 1999 RH₁₀₉, 4, 1, 0; 1999 RJ₁₀₉, 15, 3, 16; 1999 RL₁₀₉, 5, 1, 0; 1999 RM₁₀₉, 4, 1, 0; 1999 RN₁₀₉, 5, 1, 0; 1999 RO₁₀₉, 10, 2, 72; 1999 RQ₁₀₉, 5, 1, 0; 1999 RR₁₀₉, 4, 1, 0; 1999 RS₁₀₉, 5, 1, 0; 1999 RU₁₀₉, 9, 2, 3; 1999 RV₁₀₉, 5, 1, 0; 1999 RY₁₀₉, 5, 1, 0; 1999 RZ₁₀₉, 5, 1, 0; 1999 RC₁₁₀, 5, 1, 0; 1999 RF₁₁₀, 5, 1, 0; 1999 RH₁₁₀, 9, 2, 466; 1999 RM₁₁₀, 5, 1, 0; 1999 RP₁₁₀, 5, 1, 0; 1999 RR₁₁₀, 5, 1, 0; 1999 RX₁₁₀, 8, 2, 72; 1999 RZ₁₁₀, 5, 1, 0; 1999 RB₁₁₁, 5, 1, 0; 1999 RE₁₁₁, 5, 1, 0; 1999 RN₁₁₁, 5, 1, 0; 1999 RJ₁₁₁, 13, 2, 3; 1999 RW₁₁₁, 4, 1, 0; 1999 RC₁₁₄, 5, 1, 0; 1999 RN₁₁₄, 10, 2, 24; 1999 RR₁₁₄, 12, 3, 30; 1999 RC₁₁₅, 10, 2, 495; 1999 RF₁₁₅, 9, 2, 23; 1999 RG₁₁₅, 5, 1, 0; 1999 RJ₁₁₅, 13, 3, 544; 1999 RM₁₁₅, 5, 1, 0; 1999 RS₁₁₅, 4, 1, 0; 1999 RW₁₁₅, 19, 4, 69; 1999 RX₁₁₅, 4, 1, 0; 1999 RY₁₁₅, 12, 3, 56; 1999 RA₁₁₆, 26, 6, 132; 1999 RG₁₁₆, 15, 3, 79; 1999 RT₁₁₆, 14, 3, 56; 1999 RW₁₁₆, 10, 2, 94; 1999 RX₁₁₆, 10, 2, 15; 1999 RO₁₁₇, 5, 1, 0; 1999 RX₁₁₇, 16, 4, 81; 1999 RA₁₁₈, 5, 1, 0; 1999 RE₁₁₈, 23, 5, 16; 1999 RF₁₁₈, 12, 3, 78; 1999 RJ₁₁₈, 5, 1, 0; 1999 RL₁₁₉, 5, 1, 0; 1999 RQ₁₁₉, 16, 4, 69; 1999 RT₁₁₉, 5, 1, 0; 1999 RW₁₁₉, 24, 5, 84; 1999 RY₁₁₉, 15, 3, 565; 1999 RH₁₂₀, 4, 1, 0; 1999 RK₁₂₀, 5, 1, 0; 1999 RP₁₂₀, 7, 2, 75; 1999 RS₁₂₀, 9, 2, 63; 1999 RV₁₂₀, 32, 7, 86; 1999 RJ₁₂₁, 7, 2, 11; 1999 RK₁₂₁, 5, 1, 0; 1999 RX₁₂₁, 6, 2, 69; 1999 RA₁₂₂, 12, 3, 91; 1999 RT₁₂₂, 4, 1, 0; 1999 RU₁₂₂, 4, 1, 0; 1999 RV₁₂₂, 4, 1, 0; 1999 RE₁₂₃, 10, 2, 5; 1999 RG₁₂₃, 9, 2, 5; 1999 RH₁₂₃, 3, 1, 0; 1999 RK₁₂₃, 5, 1, 0; 1999 RN₁₂₃, 5, 1, 0; 1999 RO₁₂₃, 7, 2, 26; 1999 RQ₁₂₃, 4, 1, 0; 1999 RR₁₂₃, 4, 1, 0; 1999 RU₁₂₃, 5, 1, 0; 1999 RY₁₂₃, 5, 1, 0; 1999 RZ₁₂₃, 16, 4, 90; 1999 RA₁₂₄, 5, 1, 0; 1999 RB₁₂₄, 10, 2, 5; 1999 RE₁₂₄, 8, 2, 3; 1999 RG₁₂₄, 5, 1, 0; 1999 RH₁₂₄, 5, 1, 0; 1999 RL₁₂₄, 10, 2, 73; 1999 RN₁₂₄, 5, 1, 0; 1999 RO₁₂₄, 8, 2, 3; 1999 RQ₁₂₄,

5, 1, 0; 1999 RD₁₂₅, 17, 3, 29; 1999 RL₁₂₅, 17, 4, 30; 1999 RN₁₂₅, 15, 3, 29; 1999 RV₁₂₅, 17, 4, 552; 1999 RX₁₂₅, 12, 3, 75; 1999 RY₁₂₅, 9, 2, 22; 1999 RF₁₂₆, 19, 4, 78; 1999 RG₁₂₆, 10, 2, 29; 1999 RG₁₂₇, 9, 2, 57; 1999 RL₁₂₇, 10, 2, 23; 1999 RA₁₂₈, 9, 2, 4; 1999 RB₁₂₈, 9, 2, 472; 1999 RJ₁₂₈, 5, 1, 0; 1999 RM₁₂₈, 15, 3, 29; 1999 RT₁₂₈, 32, 7, 570; 1999 RX₁₂₈, 5, 1, 0; 1999 RA₁₂₉, 5, 1, 0; 1999 RB₁₂₉, 18, 4, 30; 1999 RC₁₂₉, 18, 4, 29; 1999 RM₁₂₉, 10, 2, 23; 1999 RN₁₂₉, 9, 2, 23; 1999 RS₁₂₉, 15, 3, 23; 1999 RU₁₂₉, 23, 2, 23; 1999 RY₁₂₉, 4, 1, 0; 1999 RC₁₃₀, 5, 1, 0; 1999 RE₁₃₀, 13, 3, 76; 1999 RJ₁₃₀, 5, 1, 0; 1999 RP₁₃₀, 5, 1, 0; 1999 RS₁₃₀, 20, 4, 16; 1999 RT₁₃₀, 14, 3, 23; 1999 RW₁₃₀, 5, 1, 0; 1999 RM₁₃₁, 5, 1, 0; 1999 RW₁₃₁, 3, 1, 0; 1999 RA₁₃₂, 14, 3, 24; 1999 RE₁₃₂, 4, 1, 0; 1999 RG₁₃₂, 4, 1, 0; 1999 RP₁₃₂, 9, 2, 24; 1999 RV₁₃₂, 8, 2, 3; 1999 RA₁₃₃, 4, 1, 0; 1999 RB₁₃₃, 5, 1, 0; 1999 RE₁₃₃, 5, 1, 0; 1999 RG₁₃₃, 5, 1, 0; 1999 RH₁₃₃, 5, 1, 0; 1999 RM₁₃₃, 5, 1, 0; 1999 RN₁₃₃, 10, 2, 5; 1999 RO₁₃₃, 8, 2, 11; 1999 RQ₁₃₃, 4, 1, 0; 1999 RT₁₃₃, 9, 2, 82; 1999 RW₁₃₃, 10, 2, 82; 1999 RY₁₃₃, 5, 1, 0; 1999 RB₁₃₄, 5, 1, 0; 1999 RD₁₃₄, 10, 2, 550; 1999 RK₁₃₄, 11, 3, 68; 1999 RT₁₃₄, 12, 3, 75; 1999 RU₁₃₄, 15, 3, 29; 1999 RA₁₃₅, 14, 3, 23; 1999 RD₁₃₅, 19, 4, 30; 1999 RE₁₃₅, 13, 3, 23; 1999 RF₁₃₅, 17, 4, 30; 1999 RM₁₃₅, 20, 5, 83; 1999 RO₁₃₅, 10, 2, 1; 1999 RS₁₃₅, 12, 3, 23; 1999 RW₁₃₅, 15, 3, 23; 1999 RY₁₃₅, 13, 3, 23; 1999 RK₁₃₆, 8, 2, 23; 1999 RL₁₃₆, 9, 2, 23; 1999 RP₁₃₆, 9, 2, 23; 1999 RQ₁₃₆, 14, 3, 23; 1999 RS₁₃₆, 9, 2, 23; 1999 RU₁₃₆, 10, 2, 23; 1999 RZ₁₃₆, 8, 2, 23; 1999 RA₁₃₇, 10, 2, 23; 1999 RE₁₃₇, 5, 1, 0; 1999 RG₁₃₇, 14, 3, 29; 1999 RH₁₃₇, 13, 3, 8; 1999 RT₁₃₇, 22, 4, 7; 1999 RU₁₃₇, 13, 3, 23; 1999 RV₁₃₇, 12, 3, 23; 1999 RY₁₃₇, 12, 3, 23; 1999 RB₁₃₈, 19, 4, 526; 1999 RG₁₃₈, 5, 1, 0; 1999 RN₁₃₈, 5, 1, 0; 1999 RO₁₃₈, 8, 2, 25; 1999 RR₁₃₈, 5, 1, 0; 1999 RX₁₃₈, 8, 2, 3; 1999 RL₁₃₉, 8, 2, 23; 1999 RS₁₄₀, 22, 5, 517; 1999 RG₁₄₁, 17, 3, 29; 1999 RN₁₄₁, 5, 1, 0; 1999 RY₁₄₁, 10, 2, 4; 1999 RC₁₄₂, 18, 4, 30; 1999 RL₁₄₂, 13, 3, 30; 1999 RW₁₄₂, 14, 3, 30; 1999 RB₁₄₃, 15, 3, 30; 1999 RG₁₄₃, 5, 1, 0; 1999 RH₁₄₃, 15, 3, 30; 1999 RL₁₄₃, 13, 3, 30; 1999 RM₁₄₃, 15, 3, 30; 1999 RN₁₄₃, 24, 4, 76; 1999 RQ₁₄₃, 5, 1, 0; 1999 RS₁₄₃, 18, 4, 30; 1999 RT₁₄₃, 20, 4, 76; 1999 RU₁₄₃, 4, 1, 0; 1999 RW₁₄₃, 10, 2, 4; 1999 RA₁₄₄, 5, 1, 0; 1999 RE₁₄₄, 5, 1, 0; 1999 RO₁₄₄, 5, 1, 0; 1999 RS₁₄₄, 10, 2, 7; 1999 RU₁₄₄, 3, 1, 0; 1999 RV₁₄₄, 9, 2, 82; 1999 RA₁₄₅, 9, 2, 15; 1999 RB₁₄₅, 4, 1, 0; 1999 RD₁₄₅, 15, 3, 82; 1999 RH₁₄₅, 16, 4, 71; 1999 RP₁₄₅, 13, 3, 78; 1999 RU₁₄₅, 9, 2, 22; 1999 RZ₁₄₅, 5, 1, 0; 1999 RD₁₄₆, 25, 6, 569; 1999 RF₁₄₆, 15, 3, 25; 1999 RG₁₄₆, 10, 2, 3; 1999 RK₁₄₆, 19, 4, 78; 1999 RM₁₄₆, 15, 3, 8; 1999 RW₁₄₆, 4, 1, 0; 1999 RD₁₄₇, 5, 1, 0; 1999 RG₁₄₇, 5, 1, 0; 1999 RA₁₄₈, 18, 3, 30; 1999 RF₁₄₈, 14, 3, 25; 1999 RG₁₄₈, 17, 4, 567; 1999 RH₁₄₈, 14, 3, 25; 1999 RM₁₄₈, 20, 4, 29; 1999 RO₁₄₈, 15, 2, 23; 1999 RV₁₄₈, 9, 2, 29; 1999 RX₁₄₈, 5, 1, 0; 1999 RA₁₄₉, 9, 2, 1; 1999 RD₁₄₉, 14, 3, 23; 1999 RE₁₄₉, 18, 3, 23; 1999 RO₁₄₉, 14, 3, 23; 1999 RQ₁₄₉, 5, 1, 0; 1999 RS₁₄₉, 5, 1, 0; 1999 RW₁₄₉, 20, 3, 23; 1999 RX₁₄₉, 27, 6, 499; 1999 RY₁₄₉, 10, 2, 22; 1999 RA₁₅₀, 25, 4, 25; 1999 RB₁₅₀, 21, 5, 30; 1999 RC₁₅₀, 24, 5, 30; 1999 RE₁₅₀, 13, 3, 556; 1999 RF₁₅₀, 11, 2, 24; 1999 RJ₁₅₀, 5, 1, 0; 1999 RK₁₅₀, 11, 2, 2; 1999 RN₁₅₀, 5, 1, 0; 1999 RP₁₅₀, 14, 3, 23; 1999 RV₁₅₀, 10, 2, 23; 1999 RW₁₅₀, 3, 1, 0; 1999 RB₁₅₁, 5, 1, 0; 1999 RH₁₅₁, 4, 1, 0; 1999 RN₁₅₁, 9, 2, 23; 1999 RR₁₅₁, 4, 1, 0; 1999 RX₁₅₁, 10, 2, 23; 1999 RZ₁₅₁, 16, 3, 24; 1999 RF₁₅₂, 18, 4, 8; 1999 RG₁₅₂, 15, 3, 556; 1999 RM₁₅₂, 9, 2, 29; 1999 RO₁₅₂, 18, 3, 24; 1999 RR₁₅₂, 9, 2, 4; 1999 RX₁₅₂, 22, 4, 29; 1999 RY₁₅₂, 4, 1, 0; 1999 RB₁₅₃, 22, 5, 568; 1999 RE₁₅₃, 8, 2, 29; 1999 RE₁₅₄, 10, 2, 25; 1999 RF₁₅₄, 10, 2, 25; 1999 RG₁₅₄, 25, 6, 14; 1999 RK₁₅₄, 10, 2, 4; 1999 RM₁₅₄, 20, 4, 561; 1999 RS₁₅₄, 5, 1, 0; 1999 RT₁₅₄, 13, 3, 78; 1999 RZ₁₅₄, 5, 1, 0; 1999 RK₁₅₅, 3, 1, 0; 1999 RO₁₅₅, 5, 1, 0; 1999 RY₁₅₅, 8, 2, 5; 1999 RZ₁₅₅, 15, 3, 87; 1999 RE₁₅₆, 5, 1, 0; 1999 RJ₁₅₇, 11, 2, 24; 1999 RH₁₅₇, 10, 2, 23; 1999 RK₁₅₇, 9, 2, 23; 1999 RM₁₅₇, 8, 2, 23; 1999 RR₁₅₇, 9, 2, 7; 1999 RX₁₅₇

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7, 1; 1999 RJ172, 13, 3; 1999 RK172, 4, 1; 1999 RM172, 14, 3, 83; 1999 RW172, 4, 1, 0; 1999 RY172, 4, 1, 0; 1999 RZ172, 4, 1, 0; 1999 RA173, 4, 1, 0; 1999 RB173, 5, 1, 0; 1999 RC173, 4, 1, 0; 1999 RD173, 4, 1, 0; 1999 RE173, 4, 1, 0; 1999 RF173, 4, 1, 0; 1999 RG173, 4, 1, 0; 1999 RH173, 4, 1, 0; 1999 RI173, 4, 1, 0; 1999 RJ173, 4, 1, 0; 1999 RK173, 4, 1, 0; 1999 RL173, 4, 1, 0; 1999 RM173, 4, 1, 0; 1999 RN173, 4, 1, 0; 1999 RO173, 4, 1, 0; 1999 RP173, 4, 1, 0; 1999 RS173, 4, 1, 0; 1999 RT173, 4, 1, 0; 1999 RU173, 4, 1, 0; 1999 RV173, 4, 1, 0; 1999 RW173, 4, 1, 0; 1999 RY173, 4, 1, 0; 1999 RZ173, 4, 1, 0; 1999 RA174, 16, 3, 30; 1999 RF174, 16, 3, 24; 1999 RK174, 10, 2, 5; 1999 RP174, 5, 1, 0; 1999 RU174, 8, 2, 7; 1999 RV174, 4, 1, 0; 1999 RW174, 9, 2, 30; 1999 RY174, 3, 1, 0; 1999 RZ174, 5, 1, 0; 1999 RA175, 10, 2, 30; 1999 RF175, 5, 1, 0; 1999 RK175, 5, 1, 0; 1999 RP175, 5, 1, 0; 1999 RV175, 19, 4, 557; 1999 RZ175, 12, 3, 76; 1999 RB176, 8, 2, 3; 1999 RF176, 10, 2, 4; 1999 RG176, 14, 3, 83; 1999 RH176, 9, 2, 4; 1999 RI176, 9, 2, 29; 1999 RJ176, 7, 2, 76; 1999 RK176, 8, 2, 4; 1999 RL176, 5, 1, 0; 1999 RM176, 5, 1, 0; 1999 RN176, 5, 1, 0; 1999 RO176, 5, 1, 0; 1999 RP176, 5, 1, 0; 1999 RS176, 13, 3, 83; 1999 RT176, 23, 5, 532; 1999 RU176, 14, 3, 30; 1999 RV176, 5, 4, 83; 1999 RW176, 7, 2, 5; 1999 RY176, 8, 2, 78; 1999 RZ176, 13, 3, 30; 1999 RA177, 7, 2, 5; 1999 RF177, 7, 2, 5; 1999 RK177, 5, 1, 0; 1999 RP177, 5, 1, 0; 1999 RV177, 15, 3, 30; 1999 RZ177, 6, 2, 23; 1999 RB178, 15, 3, 30; 1999 RF178, 15, 3, 30; 1999 RG178, 33, 7, 557; 1999 RH178, 9, 2, 23; 1999 RI178, 9, 2, 23; 1999 RJ178, 5, 1, 0; 1999 RK178, 13, 3, 83; 1999 RL178, 3, 1, 0; 1999 RM178, 9, 2, 17; 1999 RN178, 4, 1, 0; 1999 RO178, 14, 3, 24; 1999 RP178, 3, 1, 0; 1999 RV178, 3, 1, 0; 1999 RW178, 5, 1, 0; 1999 RY178, 4, 1, 0; 1999 RZ178, 4, 1, 0; 1999 RA179, 4, 1, 0; 1999 RF179, 4, 1, 0; 1999 RK179, 3, 1, 0; 1999 RP179, 3, 1, 0; 1999 RV179, 3, 1, 0; 1999 RW179, 5, 1, 0; 1999 RY179, 4, 1, 0; 1999 RZ179, 4, 1, 0; 1999 RA180, 5, 1, 0; 1999 RF180, 5, 1, 0; 1999 RG180, 5, 1, 0; 1999 RH180, 5, 1, 0; 1999 RI180, 9, 2, 495; 1999 RJ180, 10, 2, 23; 1999 RK180, 10, 2, 23; 1999 RL180, 14, 3, 30; 1999 RM180, 5, 1, 0; 1999 RN180, 5, 1, 0; 1999 RO180, 5, 1, 0; 1999 RP180, 5, 1, 0; 1999 RS180, 15, 3, 69; 1999 RT180, 8, 2, 30; 1999 RU180, 5, 1, 0; 1999 RV180, 5, 1, 0; 1999 RW180, 5, 1, 0; 1999 RY180, 5, 1, 0; 1999 RZ180, 5, 1, 0; 1999 RA181, 5, 1, 0; 1999 RF181, 5, 1, 0; 1999 RG181, 5, 1, 0; 1999 RH181, 5, 1, 0; 1999 RI181, 5, 1, 0; 1999 RJ181, 5, 1, 0; 1999 RK181, 5, 1, 0; 1999 RL181, 5, 1, 0; 1999 RM181, 5, 1, 0; 1999 RN181, 5, 1, 0; 1999 RO181, 5, 1, 0; 1999 RP181, 5, 1, 0; 1999 RS181, 5, 1, 0; 1999 RT181, 5, 1, 0; 1999 RU181, 5, 1, 0; 1999 RV181, 5, 1, 0; 1999 RW181, 5, 1, 0; 1999 RY181, 5, 1, 0; 1999 RZ181, 5, 1, 0; 1999 RA182, 13, 3, 30; 1999 RF182, 14, 3, 30; 1999 RG182, 14, 3, 30; 1999 RH182, 14, 3, 464; 1999 RI182, 3, 1, 0; 1999 RJ182, 3, 1, 0; 1999 RK182, 4, 1, 0; 1999 RL182, 3, 1, 0; 1999 RM182, 3, 1, 0; 1999 RN182, 3, 1, 0; 1999 RO182, 3, 1, 0; 1999 RP182, 3, 1, 0; 1999 RS182, 3, 1, 0; 1999 RT182, 3, 1, 0; 1999 RU182, 3, 1, 0; 1999 RV182, 3, 1, 0; 1999 RW182, 3, 1, 0; 1999 RY182, 3, 1, 0; 1999 RZ182, 3, 1, 0; 1999 RA183, 15, 3, 30; 1999 RF183, 15, 3, 30; 1999 RG183, 15, 3, 30; 1999 RH183, 15, 3, 30; 1999 RI183, 15, 3, 30; 1999 RJ183, 15, 3, 30; 1999 RK183, 15, 3, 30; 1999 RL183, 15, 3, 30; 1999 RM183, 15, 3, 30; 1999 RN183, 15, 3, 30; 1999 RO183, 15, 3, 30; 1999 RP183, 15, 3, 30; 1999 RS183, 15, 3, 30; 1999 RT183, 15, 3, 30; 1999 RU183, 15, 3, 30; 1999 RV183, 15, 3, 30; 1999 RW183, 15, 3, 30; 1999 RY183, 15, 3, 30; 1999 RZ183, 15, 3, 30; 1999 RA184, 15, 3, 30; 1999 RF184, 15, 3, 30; 1999 RG184, 15, 3, 30; 1999 RH184, 15, 3, 30; 1999 RI184, 15, 3, 30; 1999 RJ184, 15, 3, 30; 1999 RK184, 15, 3, 30; 1999 RL184, 15, 3, 30; 1999 RM184, 15, 3, 30; 1999 RN184, 15, 3, 30; 1999 RO184, 15, 3, 30; 1999 RP184, 15, 3, 30; 1999 RS184, 15, 3, 30; 1999 RT184, 15, 3, 30; 1999 RU184, 15, 3, 30; 1999 RV184, 15, 3, 30; 1999 RW184, 15, 3, 30; 1999 RY184, 15, 3, 30; 1999 RZ184, 15, 3, 30; 1999 RA185, 15, 3, 30; 1999 RF185, 15, 3, 30; 1999 RG185, 15, 3, 30; 1999 RH185, 15, 3, 30; 1999 RI185, 15, 3, 30; 1999 RJ185, 15, 3, 30; 1999 RK185, 15, 3, 30; 1999 RL185, 15, 3, 30; 1999 RM185, 15, 3, 30; 1999 RN185, 15, 3, 30; 1999 RO185, 15, 3, 30; 1999 RP185, 15, 3, 30; 1999 RS185, 15, 3, 30; 1999 RT185, 15, 3, 30; 1999 RU185, 15, 3, 30; 1999 RV185, 15, 3, 30; 1999 RW185, 15, 3,

3, 4; 1999 SO₃ *, 72, 3; 1999 SP₃ *, 9, 2, 4; 1999 SQ₃ *, 12, 3, 25; 1999 SR₃ *, 9, 2, 1; 1999 SS₃ *, 10, 2, 4; 1999 ST₃ *, 8, 2, 4; 1999 SU₃, 3, 1, 0; 1999 SV₃ *, 34, 3, 6; 1999 SW₃ *, 48, 7, 32; 1999 SX₃, 15, 3, 3; 1999 SY₃, 13, 3, 30; 1999 SZ₃, 14, 3, 3; 1999 SA₄, 9, 2, 3; 1999 SB₄, 15, 3, 3; 1999 SC₄, 15, 3, 3; 1999 SD₄, 5, 1, 0; 1999 SE₄, 13, 2, 3; 1999 SF₄, 15, 3, 30; 1999 SG₄, 19, 4, 76; 1999 SH₄, 15, 3, 3; 1999 SM₄, 9, 2, 3; 1999 SN₄, 10, 2, 1; 1999 SO₄, 10, 2, 3; 1999 SP₄, 10, 2, 3; 1999 SQ₄, 10, 2, 3; 1999 SR₄, 15, 3, 469; 1999 SS₄, 10, 2, 3; 1999 SV₄, 3, 1, 0; 1999 SX₄, 5, 1, 0; 1999 SY₄ *, 8, 2, 1; 1999 SZ₄ *, 14, 3, 8; 1999 SA₅ *, 9, 2, 1; 1999 SB₅ *, 17, 3, 6; 1999 SC₅ *, 12, 2, 1; 1999 SD₅ *, 17, 3, 6; 1999 SE₅ *, 21, 4, 23; 1999 SF₅ *, 9, 2, 1; 1999 SG₅ *, 9, 2, 1; 1999 SH₅ *, 13, 2, 1; 1999 SJ₅ *, 27, 3, 7; 1999 SK₅ *, 17, 3, 8; 1999 SL₅ *, 30, 4, 18; 1999 SM₅ *, 53, 7, 15; 1999 SN₅ *, 5, 1, 0; 1999 SO₅ *, 7, 2, 15; 1999 SP₅ *, 10, 2, 1; 1999 SQ₅ *, 7, 2, 1; 1999 SR₅ *, 10, 2, 1; 1999 SS₅ *, 8, 2, 1; 1999 ST₅ *, 10, 2, 1; 1999 SU₅ *, 29, 4, 8; 1999 SV₅ *, 9, 2, 1; 1999 SW₅ *, 7, 2, 1; 1999 SX₅ *, 10, 2, 1; 1999 SY₅ *, 10, 2, 1; 1999 SZ₅ *, 10, 2, 1; 1999 SA₆ *, 10, 2, 1; 1999 SB₆ *, 9, 2, 1; 1999 SC₆ *, 9, 2, 1; 1999 SD₆ *, 9, 2, 1; 1999 SE₆ *, 7, 2, 1; 1999 SF₆ *, 9, 2, 1; 1999 SG₆ *, 10, 2, 1; 1999 SH₆ *, 10, 2, 1; 1999 SJ₆ *, 25, 4, 6; 1999 SK₆ *, 10, 2, 1; 1999 SL₆ *, 10, 2, 1; 1999 SM₆ *, 7, 2, 1; 1999 SN₆ *, 35, 6; 1999 SO₆ *, 10, 2, 1; 1999 SP₆ *, 9, 2, 1; 1999 SQ₆ *, 8, 2, 1; 1999 SR₆ *, 9, 2, 1; 1999 SS₆ *, 7, 2, 1; 1999 ST₆ *, 7, 2, 1; 1999 SU₆ *, 9, 2, 3; 1999 SV₆, 18, 4, 76; 1999 SW₆, 14, 3, 3; 1999 SX₆ *, 9, 2, 1; 1999 SY₆ *, 10, 2, 1; 1999 SZ₆ *, 10, 2, 1; 1999 SA₇ *, 10, 2, 1; 1999 SB₇ *, 10, 2, 1; 1999 SC₇ *, 10, 2, 1; 1999 SD₇ *, 10, 2, 1; 1999 SE₇ *, 9, 2, 1; 1999 SF₇ *, 9, 2, 1; 1999 SG₇ *, 9, 2, 1; 1999 SH₇ *, 10, 2, 1; 1999 SJ₇ *, 10, 2, 1; 1999 SK₇ *, 17, 4, 76; 1999 SL₇ *, 10, 2, 1; 1999 SM₇ *, 8, 2, 1; 1999 SN₇ *, 8, 2, 1; 1999 SO₇ *, 8, 2, 1; 1999 SP₇ *, 14, 3, 19; 1999 SQ₇ *, 15, 3, 19; 1999 SR₇ *, 10, 2, 1; 1999 SS₇ *, 9, 2, 1; 1999 ST₇ *, 10, 2, 1; 1999 SU₇ *, 8, 2, 1; 1999 SV₇ *, 7, 2, 1; 1999 SW₇ *, 8, 2, 1; 1999 SX₇ *, 9, 2, 1; 1999 SY₇ *, 9, 2, 1; 1999 SZ₇ *, 10, 2, 1; 1999 SA₈ *, 10, 2, 1; 1999 SB₈ *, 15, 3, 19; 1999 SC₈ *, 8, 2, 1; 1999 SD₈ *, 8, 2, 1; 1999 SE₈ *, 8, 2, 1; 1999 SF₈ *, 10, 2, 1; 1999 SG₈ *, 10, 2, 1; 1999 SH₈ *, 10, 2, 1; 1999 SJ₈ *, 9, 2, 1; 1999 SK₈ *, 9, 2, 1; 1999 SL₈ *, 10, 2, 1; 1999 SM₈ *, 10, 2, 1; 1999 SN₈ *, 9, 2, 1; 1999 SO₈ *, 10, 2, 1; 1999 SP₈ *, 10, 2, 1; 1999 SQ₈ *, 10, 2, 1; 1999 SR₈ *, 10, 2, 1; 1999 SS₈ *, 10, 2, 1; 1999 ST₈ *, 10, 2, 1; 1999 SU₈ *, 10, 2, 1; 1999 SV₈ *, 10, 2, 1; 1999 SW₈ *, 14, 3, 19; 1999 SX₈ *, 9, 2, 1; 1999 SY₈ *, 7, 2, 1; 1999 SZ₈ *, 13, 3, 19; 1999 SA₉ *, 9, 2, 1; 1999 SB₉ *, 6, 2, 1; 1999 SC₉ *, 8, 2, 1; 1999 SD₉ *, 13, 3, 19; 1999 SE₉ *, 9, 2, 1; 1999 SF₉ *, 9, 2, 1; 1999 SG₉ *, 14, 3, 19; 1999 SH₉ *, 9, 2, 1; 1999 SJ₉ *, 9, 2, 1; 1999 SK₉ *, 9, 2, 1; 1999 SL₉ *, 8, 2, 1; 1999 SM₉ *, 8, 2, 1; 1999 SN₉, 15, 3, 3; 1999 SO₉, 8, 2, 26; 1999 SQ₉, 5, 1, 0; 1999 SR₉, 10, 2, 12; 1999 SS₉, 4, 1, 0; 1999 ST₉, 9, 2, 3; 1999 SU₉, 14, 3, 3; 1999 SV₉, 15, 3, 3; 1999 SW₉, 9, 2, 1; 1999 SX₉, 13, 3, 23; 1999 SZ₉, 5, 1, 0; 1999 SA₁₀ *, 9, 2, 2; 1999 SD₁₀ *, 10, 2, 1; 1999 SE₁₀ *, 16, 3, 16; 1999 SF₁₀ *, 15, 2, 1; 1999 SG₁₀ *, 25, 4, 13; 1999 SH₁₀ *, 18, 3, 2; 1999 SJ₁₀ *, 12, 2, 1; 1999 SK₁₀ *, 9, 2, 5; 1999 SL₁₀ *, 9, 2, 4; 1999 SM₁₀ *, 9, 2, 8; 1999 SN₁₀ *, 8, 2, 8; 1999 SO₁₀ *, 5, 1, 0; 1999 SP₁₀ *, 5, 1, 0; 1999 SQ₁₀ *, 5, 1, 0; 1999 SR₁₀ *, 5, 1, 0; 1999 ST₁₀ *, 5, 1, 0; 1999 SU₁₀ *, 4, 1, 0; 1999 SV₁₀ *, 5, 1, 0; 1999 SW₁₀ *, 5, 1, 0; 1999 SX₁₀

1, 1; 1999 TH₇, 15, 3; 1999 TK₇, 8, 2, 3; 1999 TL₇, 4, 1, 0; 1999 TM₇, 5, 1, 10; 1999 TQ₇ *, 27, 6, 65; 1999 TR₇ *, 9, 2, 6; 1999 TS₇ *, 10, 2, 6; 1999 TT₇ *, 9, 2, 6; 1999 TU₇ *, 7, 2, 6; 1999 TV₇ *, 10, 2, 6; 1999 TW₇ *, 10, 2, 6; 1999 TX₇ *, 9, 2, 6; 1999 TY₇ *, 9, 2, 6; 1999 TZ₇, 8, 2, 5; 1999 TB₈, 10, 2, 13; 1999 TD₈, 9, 2, 3; 1999 TE₈, 9, 2, 3; 1999 TF₈, 5, 1, 0; 1999 TJ₈, 8, 2, 3; 1999 TK₈, 4, 1, 0; 1999 TL₈, 10, 2, 3; 1999 TM₈, 4, 1, 0; 1999 TO₈, 7, 2, 3; 1999 TP₈, 3, 10; 1999 TQ₈, 9, 2, 3; 1999 TS₈, 5, 1, 0; 1999 TT₈, 5, 1, 0; 1999 TU₈, 3, 1, 0; 1999 TV₈, 4, 1, 0; 1999 TW₈, 10, 2, 1; 1999 TX₈, 40, 5, 30; 1999 TY₈, 10, 2, 23; 1999 TZ₈, 5, 1, 0; 1999 TA₉, 7, 2, 3; 1999 TB₉, 5, 1, 0; 1999 TC₉, 14, 3, 4; 1999 TD₉, 5, 1, 0; 1999 TE₉, 10, 2, 1; 1999 TF₉, 5, 1, 0; 1999 TH₉, 15, 2, 1; 1999 TJ₉, 14, 3, 4; 1999 TK₉, 20, 3, 4; 1999 TL₉, 19, 3, 4; 1999 TM₉, 4, 1, 0; 1999 TN₉, 5, 1, 0; 1999 TO₉, 4, 1, 0; 1999 TP₉, 5, 1, 0; 1999 TQ₉, 10, 2, 4; 1999 TR₉, 5, 1, 0; 1999 TS₉, 5, 1, 0; 1999 TT₉, 5, 1, 0; 1999 TU₉, 5, 1, 0; 1999 TV₉, 15, 3, 15; 1999 TW₉, 10, 2, 4; 1999 TZ₉, 8, 1, 0; 1999 TA₁₀ *, 39, 8, 8; 1999 TB₁₀ *, 26, 5, 4; 1999 TC₁₀, 19, 2, 3; 1999 TD₁₀, 10, 2, 1; 1999 TE₁₀, 5, 1, 0; 1999 TF₁₀, 4, 1, 0; 1999 TG₁₀, 5, 1, 0; 1999 TH₁₀, 5, 1, 0; 1999 TI₁₀, 5, 1, 0; 1999 TJ₁₀, 5, 1, 0; 1999 TK₁₀, 4, 1, 0; 1999 TL₁₀, 5, 1, 0; 1999 TM₁₀, 5, 1, 0; 1999 TN₁₀, 5, 1, 0; 1999 TO₁₀, 5, 1, 0; 1999 TP₁₀, 5, 1, 0; 1999 TQ₁₀, 10, 2, 3; 1999 TR₁₀, 15, 3, 4; 1999 TS₁₀, 10, 2, 4; 1999 TT₁₀, 10, 2, 4; 1999 TU₁₀, 5, 1, 0; 1999 TV₁₀, 15, 3, 15; 1999 TW₁₀, 10, 2, 4; 1999 TZ₁₀, 8, 1, 0; 1999 TA₁₁, 5, 1, 0; 1999 TB₁₁, 5, 1, 0; 1999 TC₁₁, 18, 4, 44; 1999 TD₁₁, 5, 1, 0; 1999 TE₁₁, 5, 1, 0; 1999 TF₁₁, 5, 1, 0; 1999 TG₁₁, 10, 2, 4; 1999 TH₁₁, 10, 2, 4; 1999 TI₁₁, 10, 2, 4; 1999 TJ₁₁, 8, 2, 4; 1999 TK₁₁, 4, 1, 0; 1999 TL₁₁, 10, 2, 4; 1999 TM₁₁, 4, 1, 0; 1999 TN₁₁, 9, 2, 3; 1999 TO₁₁, 5, 1, 0; 1999 TP₁₁, 12, 3, 3; 1999 TQ₁₁, 4, 1, 0; 1999 TR₁₁, 4, 1, 0; 1999 TS₁₁, 4, 1, 0; 1999 TT₁₁, 4, 1, 0; 1999 TU₁₁, 4, 1, 0; 1999 TV₁₁, 4, 1, 0; 1999 TW₁₁, 4, 1, 0; 1999 TX₁₁, 4, 1, 0; 1999 TY₁₁, 4, 1, 0; 1999 TZ₁₁, 4, 1, 0; 1999 TA₁₂, 12, 3, 3; 1999 TB₁₂, 4, 1, 0; 1999 TC₁₂, 4, 1, 0; 1999 TD₁₂, 3, 1, 0; 1999 TE₁₂ *, 43, 7, 12; 1999 TF₁₂ *, 25, 4, 3; 1999 TG₁₂ *, 15, 2, 1; 1999 TH₁₂ *, 24, 3, 2; 1999 TI₁₂ *, 20, 4, 3; 1999 TJ₁₂ *, 3, 1, 0; 1999 TK₁₂, 10, 2, 3; 1999 TL₁₂, 10, 2, 3; 1999 TM₁₂, 10, 2, 3; 1999 TN₁₂, 10, 2, 3; 1999 TO₁₂, 10, 2, 3; 1999 TP₁₂, 10, 2, 3; 1999 TQ₁₂, 8, 2, 3; 1999 TR₁₂, 4, 1, 0; 1999 TS₁₂, 9, 2, 1; 1999 TU₁₂, 10, 2, 3; 1999 TV₁₂, 5, 10; 1999 TW₁₂, 7, 2, 3; 1999 TX₁₂, 10, 2, 3; 1999 TY₁₂, 10, 2, 5; 1999 TZ₁₂, 5, 1, 0; 1999 TA₁₃, 5, 1, 0; 1999 TB₁₃, 5, 1, 0; 1999 TC₁₃, 3, 1, 0; 1999 TD₁₃, 4, 1, 0; 1999 TE₁₃ *, 21, 3, 8; 1999 TF₁₃ *, 17, 4, 3; 1999 TG₁₃ *, 20, 3, 2; 1999 TH₁₃, 10, 2, 1; 1999 TI₁₃, 9, 2, 3; 1999 TJ₁₃, 10, 2, 4; 1999 TK₁₃, 5, 1, 0; 1999 TL₁₃, 5, 1, 0; 1999 TM₁₃, 5, 1, 0; 1999 TN₁₃, 5, 1, 0; 1999 TO₁₃, 5, 1, 0; 1999 TP₁₃, 10, 2, 1; 1999 TQ₁₃, 9, 2, 3; 1999 TR₁₃, 10, 2, 4; 1999 TS₁₃, 5, 1, 0; 1999 TT₁₃, 5, 1, 0; 1999 TU₁₃, 5, 1, 0; 1999 TV₁₃, 13, 14, 3, 4; 1999 TW₁₃, 5, 1, 0; 1999 TX₁₃, 5, 1, 0; 1999 TY₁₃, 5, 1, 0; 1999 TZ₁₃, 5, 1, 0; 1999 TA₁₄, 5, 1, 0; 1999 TB₁₄, 5, 1, 0; 1999 TC₁₄, 5, 1, 0; 1999 TD₁₄, 5, 1, 0; 1999 TE₁₄, 4, 1, 0; 1999 TF₁₄, 5, 1, 0; 1999 TG₁₄, 5, 1, 0; 1999 TH₁₄, 5, 1, 0; 1999 TI₁₄, 4, 1, 0; 1999 TJ₁₄, 4, 1, 0; 1999 TK₁₄, 5, 1, 0; 1999 TL₁₄, 3, 1, 0; 1999 TM₁₄, 3, 1, 0; 1999 TN₁₄, 3, 1, 0; 1999 TO₁₄, 3, 1, 0; 1999 TP₁₄, 4, 1, 0; 1999 TQ₁₄, 5, 1, 0; 1999 TR₁₄, 4, 1, 0; 1999 TS₁₄, 8, 2, 3; 1999 TU₁₄, 5, 1, 0; 199

2; 1999 TW₂₈ *, 10, 2; 2; 1999 TX₂₈ *, 9, 2; 2; 1999 TY₂₈ *, 10, 2; 2; 1999 TZ₂₈ *, 10, 2; 2; 1999 TA₂₉ *, 10, 2; 2; 1999 TB₂₉ *, 10, 2; 2; 1999 TC₂₉ *, 10, 2; 2; 1999 TD₂₉ *, 9, 2; 2; 1999 TE₂₉ *, 9, 2; 2; 1999 TF₂₉ *, 10, 2; 2; 1999 TG₂₉ *, 10, 2; 2; 1999 TH₂₉ *, 10, 2; 2; 1999 TJ₂₉ *, 9, 2; 2; 1999 TK₂₉ *, 9, 2; 2; 1999 TL₂₉ *, 9, 2; 2; 1999 TM₂₉ *, 8, 2; 2; 1999 TN₂₉ *, 10, 2; 2; 1999 TO₂₉ *, 10, 2; 2; 1999 TP₂₉ *, 9, 2; 2; 1999 TQ₂₉ *, 10, 2; 2; 1999 TR₂₉ *, 8, 2; 2; 1999 TS₂₉ *, 9, 2; 2; 1999 TT₂₉ *, 9, 2; 2; 1999 TU₂₉ *, 10, 2; 2; 1999 TV₂₉ *, 8, 2; 2; 1999 TW₂₉ *, 9, 2; 2; 1999 TX₂₉ *, 10, 2; 2; 1999 TY₂₉ *, 8, 2; 2; 1999 TZ₂₉ *, 9, 2; 2; 1999 TA₃₀ *, 8, 2; 2; 1999 TB₃₀ *, 10, 2; 2; 1999 TC₃₀ *, 9, 2; 2; 1999 TD₃₀ *, 9, 2; 2; 1999 TE₃₀ *, 9, 2; 2; 1999 TF₃₀ *, 10, 2; 2; 1999 TG₃₀ *, 7, 2; 2; 1999 TH₃₀ *, 10, 2; 2; 1999 TJ₃₀ *, 9, 2; 2; 1999 TK₃₀ *, 10, 2; 2; 1999 TL₃₀ *, 9, 2; 2; 1999 TM₃₀ *, 10, 2; 2; 1999 TN₃₀ *, 10, 2; 2; 1999 TO₃₀ *, 10, 2; 2; 1999 TP₃₀ *, 9, 2; 2; 1999 TQ₃₀ *, 10, 2; 2; 1999 TR₃₀ *, 10, 2; 2; 1999 TS₃₀ *, 9, 2; 2; 1999 TT₃₀ *, 8, 2; 2; 1999 TU₃₀ *, 10, 2; 2; 1999 TV₃₀ *, 10, 2; 2; 1999 TW₃₀ *, 8, 2; 2; 1999 TX₃₀ *, 10, 2; 2; 1999 TY₃₀ *, 10, 2; 2; 1999 TZ₃₀ *, 8, 2; 2; 1999 TA₃₁ *, 10, 2; 2; 1999 TB₃₁ *, 9, 2; 2; 1999 TC₃₁ *, 10, 2; 2; 1999 TD₃₁ *, 8, 2; 2; 1999 TE₃₁ *, 10, 2; 2; 1999 TF₃₁ *, 8, 2; 2; 1999 TG₃₁ *, 10, 2; 2; 1999 TH₃₁ *, 10, 2; 2; 1999 TJ₃₁ *, 10, 2; 2; 1999 TK₃₁ *, 10, 2; 2; 1999 TL₃₁ *, 8, 2; 2; 1999 TM₃₁ *, 10, 2; 2; 1999 TN₃₁ *, 10, 2; 2; 1999 TO₃₁ *, 9, 2; 2; 1999 TP₃₁ *, 10, 2; 2; 1999 TQ₃₁ *, 10, 2; 2; 1999 TR₃₁ *, 9, 2; 2; 1999 TS₃₁ *, 9, 2; 2; 1999 TT₃₁ *, 8, 2; 2; 1999 TU₃₁ *, 8, 2; 2; 1999 TV₃₁ *, 10, 2; 2; 1999 TW₃₁ *, 8, 2; 2; 1999 TX₃₁ *, 10, 2; 2; 1999 TY₃₁ *, 8, 2; 2; 1999 TZ₃₁ *, 9, 2; 2; 1999 TA₃₂ *, 8, 2; 2; 1999 TB₃₂ *, 9, 2; 2; 1999 TC₃₂ *, 9, 2; 2; 1999 TD₃₂ *, 8, 2; 2; 1999 TE₃₂ *, 8, 2; 2; 1999 TF₃₂ *, 9, 2; 2; 1999 TG₃₂ *, 9, 2; 2; 1999 TH₃₂ *, 9, 2; 2; 1999 TJ₃₂ *, 9, 2; 2; 1999 TK₃₂ *, 10, 2; 2; 1999 TL₃₂ *, 10, 2; 2; 1999 TM₃₂ *, 10, 2; 2; 1999 TN₃₂ *, 10, 2; 2; 1999 TO₃₂ *, 9, 2; 2; 1999 TP₃₂ *, 8, 2; 2; 1999 TQ₃₂ *, 9, 2; 2; 1999 TR₃₂ *, 8, 2; 2; 1999 TS₃₂ *, 9, 2; 2; 1999 TT₃₂ *, 8, 2; 2; 1999 TU₃₂ *, 9, 2; 2; 1999 TV₃₂ *, 8, 2; 2; 1999 TW₃₂ *, 8, 2; 2; 1999 TX₃₂ *, 8, 2; 2; 1999 TY₃₂ *, 9, 2; 2; 1999 TZ₃₂ *, 9, 2; 2; 1999 TA₃₃ *, 8, 2; 2; 1999 TB₃₃ *, 9, 2; 2; 1999 TC₃₃ *, 9, 2; 2; 1999 TD₃₃ *, 8, 2; 2; 1999 TE₃₃ *, 8, 2; 2; 1999 TF₃₃ *, 9, 2; 2; 1999 TG₃₃ *, 8, 2; 2; 1999 TH₃₃ *, 8, 2; 2; 1999 TJ₃₃ *, 9, 2; 2; 1999 TK₃₃ *, 8, 2; 2; 1999 TL₃₃ *, 8, 2; 2; 1999 TM₃₃ *, 8, 2; 2; 1999 TN₃₃ *, 8, 2; 2; 1999 TO₃₃ *, 8, 2; 2; 1999 TP₃₃ *, 8, 2; 2; 1999 TQ₃₃ *, 8, 2; 2; 1999 TR₃₃ *, 7, 2; 2; 1999 TS₃₃ *, 8, 2; 2; 1999 TT₃₃ *, 8, 2; 2; 1999 TU₃₃ *, 9, 2; 2; 1999 TV₃₃ *, 8, 2; 2; 1999 TW₃₃ *, 8, 2; 2; 1999 TX₃₃ *, 8, 2; 2; 1999 TY₃₃ *, 8, 2; 2; 1999 TZ₃₃ *, 8, 2; 2; 1999 TA₃₄ *, 7, 2; 2; 1999 TB₃₄ *, 8, 2; 2; 1999 TC₃₄ *, 8, 2; 2; 1999 TD₃₄ *, 10, 2; 2; 1; 1999 TE₃₄ *, 9, 2; 2; 1; 1999 TF₃₄ *, 9, 2; 2; 1; 1999 TG₃₄ *, 9, 2; 2; 1; 1999 TH₃₄ *, 10, 2; 2; 1; 1999 TJ₃₄ *, 8, 2; 2; 1; 1999 TK₃₄ *, 9, 2; 2; 1; 1999 TL₃₄ *, 10, 2; 2; 1; 1999 TM₃₄ *, 10, 2; 2; 1; 1999 TN₃₄ *, 10, 2; 2; 1; 1999 TO₃₄ *, 8, 2; 2; 1; 1999 TP₃₄ *, 9, 2; 2; 1; 1999 TQ₃₄ *, 10, 2; 2; 1; 1999 TR₃₄ *, 10, 2; 2; 1; 1999 TS₃₄ *, 10, 2; 2; 1; 1999 TT₃₄ *, 10, 2; 2; 1; 1999 TU₃₄ *, 10, 2; 2; 1; 1999 TV₃₄ *, 10, 2; 2; 1; 1999 TW₃₄ *, 10, 2; 2; 1; 1999 TX₃₄ *, 10, 2; 2; 1; 1999 TY₃₄ *, 7, 2; 2; 1; 1999 TZ₃₄ *, 10, 2; 2; 1; 1999 TA₃₅ *, 8, 2; 2; 1; 1999 TB₃₅ *, 10, 2; 2; 1; 1999 TC₃₅ *, 8, 2; 2; 1; 1999 TD₃₅ *, 9, 2; 2; 1; 1999 TE₃₅ *, 10, 2; 2; 1; 1999 TF₃₅ *, 10, 2; 2; 1; 1999 TG₃₅ *, 9, 2; 2; 1; 1999 TH₃₅ *, 10, 2; 2; 1; 1999 TJ₃₅ *, 9, 2; 2; 1; 1999 TK₃₅ *, 9,

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(11482), 10, 2, 9; (11483), 23, 5, 11; (11484), 27, 5, 15; (11485), 5, 1, 0; (11486), 13, 3, 15; (11489), 34, 7, 15; (11490), 10, 2, 1; (11491), 30, 6, 13; (11492), 20, 4, 13; (11493), 12, 3, 6; (11494), 5, 1, 0; (11495), 30, 5, 13; (11496), 5, 1, 0; (11497), 15, 3, 8; (11498), 8, 2, 1; (11499), 17, 4, 6; (11500), 9, 2, 7; (11501), 18, 4, 6; (11502), 5, 1, 0; (11503), 15, 3, 5; (11504), 15, 3, 8; (11505), 19, 4, 13; (11506), 13, 3, 18; (11507), 14, 3, 8; (11508), 5, 1, 0; (11510), 10, 2, 13; (11511), 5, 1, 0; (11512), 4, 1, 0; (11513), 19, 4, 13; (11514), 19, 4, 11; (11515), 5, 1, 0; (11516), 15, 3, 16; (11518), 10, 2, 10; (11519), 4, 1, 0; (11520), 14, 3, 16; (11521), 5, 1, 0; (11522), 10, 2, 6; (11523), 8, 2, 1; (11524), 10, 2, 7; (11525), 5, 1, 0; (11526), 10, 2, 7; (11527), 5, 1, 0; (11528), 5, 1, 0; (11529), 15, 3, 16; (11530), 20, 4, 13; (11531), 15, 4, 13; (11532), 18, 4, 3; (11533), 5, 1, 0; (11534), 24, 5, 13; (11535), 14, 3, 13; (11536), 5, 1, 0; (11538), 13, 3, 16; (11539), 10, 2, 15; (11541), 14, 3, 18; (11543), 5, 1, 0; (11544), 9, 2, 7; (11546), 20, 4, 16; (11547), 22, 5, 13; (11548), 10, 2, 7; (11549), 10, 2, 7; (11550), 5, 1, 0; (11552), 5, 1, 0; (11553), 9, 2, 5; (11554), 5, 1, 0; (11555), 4, 1, 0; (11556), 5, 1, 0; (11558), 5, 1, 0; (11560), 30, 5, 13; (11561), 5, 1, 0; (11563), 15, 3, 13; (11565), 5, 1, 0; (11566), 4, 1, 0; (11568), 5, 1, 0; (11569), 10, 2, 6; (11570), 5, 1, 0; (11571), 18, 4, 13; (11573), 35, 7, 17; (11574), 5, 1, 0; (11575), 10, 2, 5; (11576), 20, 4, 13; (11577), 15, 3, 16; (11578), 4, 1, 0; (11579), 30, 6, 15; (11580), 5, 1, 0; (11581), 5, 1, 0; (11582), 15, 3, 13; (11585), 23, 4, 13; (11586), 25, 5, 17; (11587), 4, 1, 0; (11588), 13, 3, 16; (11589), 5, 1, 0; (11590), 18, 4, 13; (11593), 5, 1, 0; (11596), 18, 4, 13; (11597), 5, 1, 0; (11599), 20, 3, 13; (11601), 5, 1, 0; (11603), 24, 5, 13; (11605), 18, 4, 17; (11607), 5, 1, 0; (11608), 15, 3, 17; (11612), 9, 2, 7; (11613), 19, 4, 16; (11614), 5, 1, 0; (11616), 5, 1, 0; (11617), 15, 3, 13; (11618), 10, 2, 7; (11623), 19, 4, 16; (11624), 17, 4, 13; (11626), 16, 4, 16; (11627), 15, 3, 16; (11628), 5, 1, 0; (11629), 10, 2, 9; (11631), 10, 2, 7; (11632), 18, 4, 13; (11634), 10, 2, 5; (11635), 33, 7, 15; (11636), 7, 2, 16; (11639), 14, 3, 16; (11640), 15, 3, 17; (11643), 5, 1, 0; (11645), 10, 2, 1; (11646), 15, 3, 13; (11648), 20, 4, 16; (11649), 8, 2, 9; (11650), 4, 1, 0; (11651), 12, 3, 3; (11652), 18, 4, 13; (11653), 4, 1, 0; (11654), 8, 2, 6; (11657), 23, 5, 17; (11658), 30, 6, 16; (11659), 20, 4, 13; (11660), 10, 2, 1; (11661), 19, 4, 13; (11662), 12, 3, 16; (11663), 5, 1, 0; (11664), 10, 2, 13; (11668), 5, 1, 0; (11672), 5, 1, 0; (11673), 5, 1, 0; (11674), 15, 3, 15; (11675), 5, 1, 0; (11677), 5, 1, 0; (11679), 9, 2, 3; (11681), 17, 4, 15; (11682), 28, 5, 16; (11684), 10, 2, 1; (11685), 10, 2, 10; (11686), 4, 1, 0; (11687), 15, 3, 9; (11688), 8, 2, 3; (11690), 17, 4, 13; (11692), 3, 1, 0; (11693), 15, 3, 10; (11694), 5, 1, 0; (11695), 4, 1, 0; (11696), 9, 2, 5; (11699), 19, 4, 9; (11700), 9, 2, 1; (11701), 14, 3, 6; (11703), 5, 1, 0; (11704), 19, 4, 5; (11707), 5, 1, 0; (11708), 9, 2, 1; (11709), 30, 6, 15; (11711), 24, 5, 15; (11712), 5, 1, 0; (11713), 9, 2, 6; (11714), 25, 5, 13; (11715), 23, 5, 13; (11716), 19, 4, 11; (11717), 5, 1, 0; (11720), 20, 4, 16; (11721), 15, 3, 13; (11722), 10, 2, 10; (11723), 10, 2, 5; (11724), 17, 4, 16; (11725), 5, 1, 0; (11726), 14, 3, 16; (11727), 20, 4, 9; (11729), 5, 1, 0; (11730), 13, 3, 8; (11731), 17, 4, 13; (11732), 9, 2, 1; (11733), 14, 3, 16; (11734), 5, 1, 0; (11736), 5, 1, 0; (11737), 9, 2, 11; (11739), 3, 1, 0; (11744), 15, 3, 7; (11745), 5, 1, 0; (11746), 21, 5, 17; (11748), 10, 2, 6; (11749), 5, 1, 0; (11751), 10, 2, 10; (11752), 8, 2, 1; (11754), 21, 5, 13; (11757), 4, 1, 0; (11758), 9, 2, 3; (11760), 5, 1, 0; (11763), 14, 3, 10; (11764), 18, 4, 13; (11765), 26, 5, 9; (11766), 8, 2, 16; (11772), 12, 3, 13; (11773), 3, 1, 0; (11774), 10, 2, 15; (11775), 3, 1, 0; (11777), 3, 1, 0; (11778), 5, 1, 0; (11779), 8, 2, 10; [97041, 9091, 468*, 1996/01/24-1999/10/22]

711 McDonald Observatory

J. G. Ries, McDonald Observatory, University of Texas, Austin, TX 78712-1013,

U.S.A. [moon@astro.as.utexas.edu]

0.76-m $f/3.0$ reflector + CCD

GSC

1998 UP₁, 3, 1, 0; 1999 TJ₁₂, 3, 1, 0; 1999 TK₁₂, 3, 1, 0; 1999 TL₁₂, 3, 1, 0; 1999 TN₁₂, 3, 1, 0; 1999 TM₁₃, 3, 1, 0; 1999 TO₁₃, 3, 1, 0; 1999 TT₁₆, 9, 3, 3; 1999 TX₁₆, 3, 1, 0; 1999 TY₁₆, 6, 2, 1; [39, 10, 0*, 1999/10/13-1999/10/16]

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

1998 KZ₄₆, 6, 2, 1; 1999 SM₅, 9, 2, 1; 1999 TU₈, 6, 2, 1; 1999 TA₁₀, 3, 1, 0; 1999 TL₁₃, 5, 2, 1; (1817), 5, 2, 1; (4835), 5, 2, 1; [39, 7, 0*, 1999/09/30–1999/10/21]

714 Bagdad

J. R. Bruton, Bagdad Observatory, P.O. Box 1191, Bagdad, AZ 86321, U.S.A.
[jbruton1@juno.com]

0.30-m $f/10$ Schmidt-Cassegrain + CCD, 0.25-m Schmidt-Cassegrain + CCD
GSC-1.1

1998 UP₁, 5, 2, 2; 1999 SM₅, 11, 5, 6; 1999 TA₁₀, 4, 2, 2; 1999 TN₁₃, 2, 1, 0; 1999 TO₁₃, 2, 1, 0; (699), 4, 2, 2; (3200), 4, 2, 1; (3579), 6, 2, 5; (8476), 8, 4, 6; [46, 9, 0*, 1999/10/03–1999/10/18]

715 Las Cruces

D. Dixon, 5975 Moonrise Vista, Las Cruces, NM 88012, U.S.A.

[ddixon@lascruces.com]

0.2-m $f/6.5$ Schmidt-Cassegrain + CCD, 0.3-m $f/3.5$ Schmidt-Cassegrain + CCD
USNO-A2.0

1998 MY₂₉, 3, 1, 0; 1999 RO₁₀₈, 3, 1, 0; 1999 SK, 1, 1, 0; 1999 TK₂ *, 11, 4, 10; (3200), 3, 1, 0; (3579), 6, 2, 8; (6489), 5, 2, 8; (7547), 6, 2, 8; [38, 8, 1*, 1999/10/02–1999/10/12]

716 Palmer Divide Observatory

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

[brianw_mpo@compuserve.com]

0.25-m $f/6.3$ Schmidt-Cassegrain + CCD
GSC, USNO-A2.0

1955 RE₁, 4, 2, 1; 1983 RL, 4, 2, 1; 1986 TR, 4, 2, 1; 1988 VL₂, 4, 2, 1; 1990 BO, 4, 2, 1; 1990 OG₄, 4, 2, 1; 1991 NB₁, 2, 1, 0; 1991 VA₃, 3, 2, 1; 1994 VD₇, 4, 2, 1; 1995 MB, 3, 2, 1; 1998 FR₄₇, 4, 2, 1; 1998 FH₁₁₅, 4, 2, 1; 1998 KZ₄₆, 4, 2, 1; 1998 PO₁, 4, 2, 1; 1999 CU₃, 3, 2, 1; 1999 JL₈₁, 4, 2, 1; 1999 NT₁, 3, 2, 1; 1999 OO₃, 3, 2, 1; 1071 T-3, 2, 1, 0; (11437), 3, 2, 1; (11441), 3, 2, 1; (11452), 4, 2, 1; (11482), 4, 2, 1; (11497), 4, 2, 1; (11549), 4, 2, 1; [89, 25, 0*, 1999/10/21–1999/10/22]

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@m.cc.utah.edu]

Observers P. Wiggins, H. Phaneuf

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

1971 UN₁, 6, 2, 1; 1982 UW₁, 5, 2, 2; 1995 UQ₄₄, 6, 2, 1; 1999 TZ₁₀, 3, 1, 0; 5485 T-2, 4, 1, 0; 3164 T-3, 6, 2, 1; [30, 6, 0*, 1999/10/04–1999/10/23]

719 Etscorn Observatory

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

[TheKs@aol.com]

Observers D. A. Klinglesmith III, R. Hueber

0.355-m Schmidt-Cassegrain + CCD
GSC

1994 PO₃₀, 2, 1, 0; 1998 UP₁, 13, 3, 2; 1999 SL₅, 2, 1, 0; 1999 SM₅, 3, 2, 1; 1999 SN₅, 2, 1, 0; 1999 TO₁₃, 4, 1, 0; 9509 P-L, 2, 1, 0; 3099 T-1, 2, 1, 0; (1796), 2, 1, 0; (3055), 2, 1, 0; (3200), 2, 1, 0; (3314), 6, 3, 5; (3731), 2, 1, 0; (3872), 2, 1, 0; (4002), 4, 2, 6; (4464), 6, 3, 5; (4561), 2, 1, 0; (4761), 7, 4, 10; (6838), 4, 2, 6; (8476), 2, 1, 0; (8689), 2, 1, 0; (8761), 2, 1, 0; (8905), 4, 2, 3; (8924), 2, 1, 0; (9014), 4, 2, 3; (9034), 2, 1, 0; (9056), 2, 1, 0; (9222), 4, 2, 3; (9346), 2, 1, 0; (9506), 2, 1, 0; (11174), 2, 1, 0; [99, 31, 0*, 1999/09/28–1999/10/14]

720 Universidad de Monterrey

P. V. Sada, Apartado Postal 134-C, MX-66270 San Pedro Garza García, Nuevo Leon, Mexico [psada@ix.netcom.com]

0.18-m $f/15.0$ Maksutov + focal reducer + CCD
USNO-A2.0

(85), 4, 1, 0; (141), 4, 1, 0; (216), 4, 1, 0; (248), 4, 1, 0; (604), 4, 1, 0; (699), 2, 1, 0; (916), 4, 1, 0; (2047), 6, 2, 16; (3314), 2, 1, 0; (5435), 3, 1, 0; [37, 10, 0*, 1999/10/07–1999/10/23]

721 Lime Creek

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

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

GSC

1999 TK₁₃ *, 6, 3, 4; [6, 1, 1*, 1999/10/11–1999/10/15]

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

1999 NW₁, 3, 1, 0; 1999 NF₅, 3, 1, 0; 1999 NR₁₁, 9, 3, 2; 1999 PS₅, 3, 1, 0; 1999 RT₁, 3, 1, 0; 1999 RK₂₁, 9, 3, 2; 1999 RL₂₂, 6, 2, 1; 1999 RW₇₅, 3, 1, 0; (2229), 7, 3, 5; (2415), 9, 3, 2; (8287), 3, 1, 0; (8579), 14, 5, 5; [72, 12, 0*, 1999/09/23–1999/10/02]

726 Brainerd

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

[jimw@brainerd.net]

0.280-m Schmidt-Cassigrain + CCD

GSC-1.1

1999 LF₆, 10, 2, 2; 1999 ML, 3, 1, 0; 1999 ND₄₃, 27, 5, 13; 1999 SM₅, 22, 4, 6; 1999 TY₂, 21, 1, 0; [83, 5, 0*, 1999/09/28–1999/10/11]

727 Zeno Observatory, Edmond

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

[tstaffor@agnetplex.com]

0.15-m $f/6$ refractor + CCD

GSC, USNO-SA2.0

1979 QM₁, 3, 1, 0; 1995 XH, 3, 1, 0; 1999 RC₃₅, 3, 1, 0; 1999 RO₃₉, 3, 1, 0; 1999 RP₃₉, 9, 3, 20; 1999 SW₆ *, 12, 5, 11; 1999 TM *, 12, 4, 11; 1999 TN *, 15, 6, 19; 1999 TQ₉, 3, 1, 0; (1624), 3, 1, 0; (1743), 3, 1, 0; (1770), 3, 1, 0; (2787), 3, 1, 0; (3979), 5, 2, 1; (4569), 6, 2, 5; (4781), 3, 1, 0; (5060), 5, 2, 1; (5185), 2, 1, 0; (7636), 3, 1, 0; (7754), 3, 1, 0; (8574), 3, 1, 0; (8652), 3, 1, 0; (9098), 3, 1, 0; [111, 23, 3*, 1999/09/30–1999/10/20]

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, K. Willnauer

Measurers G. Hug, G. Bell

0.30-m Schmidt-Cassegrain + CCD

GSC-1.1, USNO-A2.0

1998 FV₁₀, 6, 1, 0; 1998 FK₆₃, 5, 1, 0; 1999 OF₁, 3, 1, 0; 1999 PK₃, 3, 1, 0; 1999 PL₃, 4, 1, 0; 1999 PZ₃, 8, 2, 12; 1999 PK₄, 5, 1, 0; 1999 PR₄, 8, 2, 13; 1999 PS₄, 7, 2, 13; 1999 QA, 13, 3, 13; 1999 QP, 3, 1, 0; 1999 QH₂, 8, 2, 13; 1999 QJ₂, 3, 1, 0; 1999 RN₁, 8, 2, 14; 1999 RW₂₇, 3, 1, 0; 1999 RP₃₂, 9, 2, 40; 1999 RZ₃₂, 8, 2, 8; 1999 RV₃₃, 9, 2, 40; 1999 RB₃₅, 4, 1, 0; 1999 RO₃₆, 17, 4, 17; 1999 RB₃₉, 3, 1, 0; 1999 RJ₄₃, 7, 2, 10; 1999 RF₉₇, 4, 1, 0; 1999 RX₁₈₂, 4, 1, 0; 1999 RL₁₉₃, 9, 2, 8; 1999 RM₁₉₃, 15, 3, 30; 1999 RN₁₉₃, 5, 2, 16; 1999 SL₅, 4, 1, 0; 1999 TU, 3, 1, 0; 1999 TN₄, 3, 1, 0; 1999 TZ₄, 4, 1, 0; 1999 TC₅, 4, 1, 0; 1999 TH₅ *, 26, 6, 16; 1999 TA₆ *, 21, 5, 9; 1999 TB₆ *, 19, 5, 11; 1999 TC₆ *, 22, 5, 11; 1999 TG₆, 5, 1, 0; 1999 TP₇, 11, 1, 0; 1999 TU₈, 3, 1, 0; 1999 TX₉, 4, 1, 0; 1999 TA₁₀, 6, 1, 0; 1999 TZ₁₀, 7, 2, 5; 1999 TJ₁₃ *, 13, 4, 6; 1999 TL₁₃, 2, 1, 0; 1999 TN₁₃, 5, 1, 0; 1999 TT₁₈, 4, 1, 0; 1999 UB₂ *, 8, 2, 2; 1999 UM₃, 3, 1, 0; (112), 6, 1, 0; (3363), 4, 1, 0; [368, 50, 6*, 1999/09/04–1999/10/22]

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, R. Pepper, R. Wicker, J. Dellinger

Measurer W. G. Dillon

0.46-m reflector + CCD

USNO-A2.0

1999 RN₃₃, 3, 1, 0; 1999 RY₅₅, 3, 1, 0; 1999 TY₂, 3, 1, 0; [9, 3, 0*, 1999/10/02–1999/10/05]

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

1995 XC₅, 6, 2, 1; 1999 RW₁₅, 3, 1, 0; 1999 RE₁₆, 3, 1, 0; 1999 RK₁₆, 6, 2, 1; 1999 RK₃₄, 6, 2, 1; 1999 RO₃₄, 3, 1, 0; 1999 RQ₃₄, 3, 1, 0; 1999 RB₃₅, 34, 12, 19; 1999 RP₄₂, 3, 1, 0; 1999 RZ₄₃, 3, 1, 0; 1999 RS₄₄, 3, 1, 0; 1999 SH, 3, 1, 0; 1999 SR₄, 2, 1, 0; 1999 SM₅, 4, 1, 0; 1999 TP₇, 18, 6, 9; 1999 TX₉, 6, 2, 2; 1999 TS₁₁, 9, 4, 6; 1999 TJ₁₃, 3, 1, 0; 1999 TO₁₇, 7, 3, 3; 1999 TH₁₉, 9, 3, 3; 1999 UA₂ *, 17, 5, 5; 1999 UB₂, 5, 2, 2; [156, 22, 1*, 1999/10/01–1999/10/23]

740 SFA Observatory, Nacogdoches

W. D. Bruton, Box 13044, Nacogdoches, TX 75962 U.S.A.

[f_brutonwd@titan.sfasu.edu]

Observers B. D. McCormack, D. W. Carona, M. L. Johnson, W. D. Bruton,
G. M. Rodgers

Measurers D. W. Carona, W. D. Bruton

0.46-m Cassegrain reflector + CCD

GSC-1.1, USNO-A2.0

1997 AT, 9, 2, 1; 1999 NH₃₇, 15, 2, 1; 1999 SK, 8, 2, 1; 1999 TG₄ *, 16, 4, 6; 1999 TJ₁₇ *, 23, 5, 9; 1999 TK₁₇ *, 17, 4, 5; (7547), 7, 2, 1; [95, 7, 3*, 1999/10/02–1999/10/24]

744 Doyan Rose Observatory, Indianapolis

J. Ruthroff, 5221 Graceland Ave., Indianapolis, IN 46254, U.S.A.

[jruthroff@sprintmail.com]

0.25-m $f/5.5$ Schmidt-Cassegrain + CCD

GSC-1.1, USNO-A2.0

1981 DN₁, 2, 1, 0; 1981 EF₃₇, 4, 2, 3; 1985 TN, 2, 1, 0; 1990 OS₄, 2, 1, 0; 1995 BL, 2, 1, 0; 1995 MB, 6, 3, 11; 1995 XK₁, 2, 1, 0; 1998 QN₇, 2, 1, 0; 1998 QB₆₉, 3, 1, 0; 1999 OM₂, 2, 1, 0; 1999 OW₂, 4, 2, 1; 1999 RC₂, 2, 1, 0; 1999 SY₂, 4, 2, 4; 1999 SN₃, 2, 1, 0; (1206), 2, 1, 0; (1342), 2, 1, 0; (1453), 2, 1, 0; (6522), 2, 1, 0; (11277), 4, 2, 3; (11511), 2, 1, 0; [53, 20, 0*, 1999/10/01–1999/10/19]

746 Brooks Observatory, Mt. Pleasant

W. Osborn, Physics Department, Central Michigan University, Mt. Pleasant, MI

48859, U.S.A. [osborn@dune.phy.cmich.edu]

Observers W. Osborn, D. Ferrer, E. McDonald, Y. Sano, F. Welsh

Measurers D. Ferrer, E. McDonald, Y. Sano, F. Welsh

0.40-m $f/12$ Cassegrain reflector + CCD

USNO-A2.0

(863), 3, 1, 0; [3, 1, 0*, 1999/09/22]

747 Baton Rouge Observatory

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

[walt@sprintmail.com]

Observers W. R. Cooney, M. Hess, S. Lazar, P. Lazar

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

0.51-m $f/8.4$ reflector + CCD

USNO-A2.0

1996 AV, 3, 1, 0; 1999 NM₄₀, 8, 2, 1; 1999 PO₃, 4, 1, 0; 1999 RN₃₃, 6, 1, 0; 1999 RY₅₅, 5, 1, 0; [26, 5, 0*, 1999/08/13–1999/10/03]

750 Hobbs Observatory, Fall Creek

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

[elliottb@uwec.edu]

0.30-m $f/3.3$ reflector + CCD

GSC-ACT

1999 KF₄, 2, 1, 0; 1999 ND₄₃, 2, 1, 0; 1999 SM₅, 4, 1, 0; 1999 TO₁₃, 9, 1, 0; (699), 2, 1, 0; (3581), 3, 1, 0; (3731), 2, 1, 0; (6894), 4, 1, 0; [28, 8, 0*, 1999/09/23–1999/10/25]

757 High Point

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

[dkchesney@aol.com]

0.25-m Schmidt-Cassegrain + CCD

USNO-SA2.0

1999 RD₃₅, 4, 2, 1; 1999 TD *, 8, 4, 14; 1999 TE *, 6, 3, 5; 1999 TP₃ *, 8, 4, 12; 1999 TK₅ *, 6, 3, 5; 1999 TS₅ *, 6, 3, 9; 1999 TT₅ *, 6, 3, 9; 1999 TU₅ *, 6, 3, 9; 1999 TV₅ *, 4, 2, 1; 1999 TG₁₉ *, 4, 2, 3; 1999 UL₁ *, 4, 2, 1; 1999 UA₃ *, 4, 2, 3; 1999 UK₃ *, 4, 2, 1; (1311), 2, 1, 0; (1767), 2, 1, 0; (3395), 2, 1, 0; (7332), 2, 1, 0; [78, 17, 12*, 1999/10/01–1999/10/23]

801 Oak Ridge

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

1.5-m reflector + CCD

GSC

1998 FP₁₀₉, 2, 1, 0; [2, 1, 0*, 1992/09/25]

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

1997 CV₂₉, 2, 2, 1; 1999 DA, 2, 2, 1; 1999 DH₈, 2, 2, 1; 1999 KR₁₈ *, 5, 3, 8; 1999 OZ₃, 6, 2, 1; 1999 OC₄, 2, 1, 0; 1999 OD₄, 10, 2, 1; 1999 OE₄, 8, 2, 1; 1999 OF₄, 9, 2, 1; [46, 9, 1*, 1999/05/09–1999/08/07]

808 Carlos U. Cesco Observatory, El Leoncito

C. E. Lopez, Felix Aguilar Observatory, Benavidez 8175 (Oeste), AR-5407

Marquesado-San Juan, Argentina [clopez@info.unsj.edu.ar]

Observers M. R. Cesco, H. S. Lepez, J. E. Torres, J. A. Vicentela

Measurers R. A. Gil Hutton, C. E. Lopez, J. G. Sanguin

0.5-m $f/7.5$ double astrograph + CCD

PPM

1998 FZ₁₀₉, 2, 1, 0; [2, 1, 0*, 1994/07/12]

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)

C. Wolf, Max-Planck-Institut für Astronomie, Königstuhl 17, D-69117 Heidelberg,

Germany [cwolf@mpia-hd.mpg.de] (5)

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,
T. Kranz, C. Wolf

Measurers E. W. Elst, O. Hernius, C.-I. Lagerkvist, O. Hainaut, T. Kranz, C. Wolf
1.0-m Schmidt, 2.2-m $f/8$ reflector + CCD

{4} 1992 ET₁₄, 3, 1, 0; 1994 PK₁₈, 3, 1, 0; 1994 PD₂₃, 3, 1, 0; 1994 PO₃₈, 3, 1, 0; 1997 EF₅₆, 3, 1, 0; 1998 ER₁₉, 3, 1, 0; 1998 FH₂, 3, 1, 0; 1998 FW₃₀, 3, 1, 0; 1998 FJ₃₃, 3, 1, 0; 1998 MY₁₉, 3, 1, 0; 1998 MR₃₃, 3, 1, 0; 1999 RT₃₅, 3, 1, 0; 1999 RX₁₁₀, 3, 1, 0; 1999 RH₁₇₈, 3, 1, 0; 6020 P-L, 3, 1, 0; 4120 T-2, 6, 2, 7; 4141 T-3, 3, 1, 0; [54, 17, 0*, 1992/05/02–1998/06/01]

{5} 1999 UR₃ *, 5, 4, 4; [5, 1, 1*, 1999/10/20–1999/10/24]

{7} 4092 T-2, 3, 1, 0; [3, 1, 0*, 1993/10/22]

{8} 1973 UQ₅, 7, 7, 34; 1980 TZ₅, 2, 2, 26; 1992 EO₂₉, 1, 1, 0; 1994 JL₆, 5, 4, 18; 1995 SE₁₀, 1, 1, 0; 1995 SC₁₇, 5, 4, 23; 1995 SF₁₇, 5, 5, 23; 1995 SM₄₉, 14, 12, 35; 1997 EJ₃₄, 1, 1, 0; 1997 FK₃, 1, 1, 0; 1997 GQ₂₆, 2, 2, 5; 1998 FS₂₄, 2, 2, 2; 1998 FU₂₅, 2, 2, 2; 1998 FF₂₇, 2, 2, 2; 1999 NZ₆, 3, 3, 3; 1999 RK₁₄, 1, 1, 0; 1999 RF₁₈, 1, 1, 0; 1999 RB₂₈, 14, 11, 36; 1999 RP₃₄, 1, 1, 0; 1999 RN₆₄, 4, 3, 2; 1999 RQ₈₁, 3, 3, 5; 1999 RT₈₆, 3, 3, 31; 1999 RV₁₂₅, 2, 2, 2; 1999 RB₁₂₈, 2, 2, 5; 1999 RO₁₄₁, 2, 2, 2; 1999 RB₁₅₃, 2, 2, 2; 1999 RP₁₅₉, 1, 1, 0; 1999 RR₁₅₉, 1, 1, 0; 1999 RN₁₆₀, 2, 2, 8; 1999 RU₁₆₃, 2, 2, 4; 2740 P-L, 1, 1, 0; 6020 P-L, 2, 1, 0; 2024 T-1, 1, 1, 0; [98, 33, 0*, 1992/03/01–1998/03/02]

830 Hudson

S. Brady, 5 Melba Drive, Hudson, NH 03051, U.S.A. [sbrady@tiac.net]

0.25-m $f/5.6$ Newtonian reflector + CCD

GSC

1999 TU₈ *, 7, 3, 5; 1999 TL₁₃ *, 8, 3, 7; (4852), 6, 2, 5; (8689), 9, 3, 5; [30, 4, 2*, 1999/10/07–1999/10/15]

832 Etters

J. D. Fetter, Redland Observatory, 386 Cameron Street, Etters, PA 17319, U.S.A.

[jffetter@mindspring.com]

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

GSC, USNO-SA2.0

1998 DB₂₄, 4, 2, 2; 1998 MH₃, 4, 2, 1; (1367), 4, 2, 18; (4183), 4, 2, 20; (11500), 4, 2, 20; [20, 5, 0*, 1999/09/18–1999/10/16]

842 Gettysburg College Observatory

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

Observer L. Marschall

Measurer G. A. Snyder

0.4-m $f/11.5$ reflector + CCD

USNO-A2.0

1999 KK₆, 2, 1, 0; (32), 4, 1, 0; [6, 2, 0*, 1999/09/26–1999/10/01]

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

1988 UP, 5, 2, 1; 1997 AT₂₀, 6, 2, 1; 1998 GE₉, 6, 2, 1; 1999 SK, 5, 2, 1; (3314), 5, 2, 1; (3607), 6, 2, 1; (7547), 5, 2, 1; (8476), 6, 2, 1; [44, 8, 0*, 1999/10/06–1999/10/12]

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

1997 AZ₂, 6, 2, 4; 1998 RO₁, 6, 2, 9; 1999 LF₆, 9, 3, 10; 1999 ML, 5, 2, 7; 1999 NZ₄, 5, 2, 1; 1999 ND₄₃, 15, 5, 10; 1999 OP₃, 6, 2, 1; 1999 PJ₁, 4, 2, 2; 1999 PO₄, 6, 2, 4; 1999 QJ, 12, 4, 11; 1999 RE₁, 3, 1, 0; 1999 RK₁, 3, 1, 0; 1999 RT₁, 6, 2, 4; 1999 RW₁, 6, 2, 4; 1999 RC₂, 6, 3, 2; 1999 RD₂, 6, 2, 5; 1999 RE₂, 3, 1, 0; 1999 RU₂, 6, 2, 2; 1999 RV₂, 9, 3, 8; 1999 RB₃, 3, 1, 0; 1999 RC₃, 3, 1, 0; 1999 RK₁₆, 3, 1, 0; 1999 RY₁₈, 3, 1, 0; 1999 RG₂₂, 3, 1, 0; 1999 RH₂₇, 5, 2, 7; 1999 RC₂₈, 10, 3, 2; 1999 RQ₂₈, 3, 1, 0; 1999 RR₂₈, 3, 1, 0; 1999 RV₃₁, 4, 2, 1; 1999 RB₃₂, 3, 1, 0; 1999 RC₃₂, 3, 1, 0; 1999 RD₃₂, 2, 1, 0; 1999 RP₃₂, 6, 2, 1; 1999 RK₃₃, 3, 1, 0; 1999 RC₃₅, 3, 1, 0; 1999 RM₃₅, 3, 1, 0; 1999 RO₃₅, 6, 2, 4; 1999 RP₃₅, 3, 1, 0; 1999 RS₃₅, 3, 1, 0; 1999 RT₃₅, 6, 2, 1; 1999 RC₃₆, 3, 1, 0; 1999 RP₃₆, 5, 2, 2; 1999 RJ₄₂, 3, 1, 0; 1999 RP₄₃, 6, 2, 8; 1999 RQ₄₃, 3, 1, 0; 1999 RG₄₅, 9, 3, 11; 1999 RJ₄₅, 2, 1, 0; 1999 RL₄₅, 5, 1, 0; 1999 RA₁₄₉, 3, 1, 0; 1999 RC₁₅₀, 3, 1, 0; 1999 RE₁₉₀, 5, 2, 1; 1999 RA₁₉₂, 3, 1, 0; 1999 RU₁₉₃, 11, 2, 1; 1999 RX₁₉₃, 5, 2, 1; 1999 RY₁₉₃, 5, 2, 1; 1999 SM₁, 6, 2, 1; 1999 SU₁, 6, 2, 1; 1999 SD₂, 6, 2, 1; 1999 SE₂, 9, 3, 2; 1999 SO₂, 4, 2, 1; 1999 SP₂, 4, 2, 1; 1999 SL₅, 7, 1, 0; 1999 SN₅, 9, 3, 10; (3200), 6, 2, 1; (8752), 5, 2, 1; [336, 65, 0*, 1999/09/18–1999/09/29]

849 Everstar Observatory, Olathe

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

Observers M. Abraham, G. Fedon

0.25-m Schmidt-Cassegrain + CCD

GSC-1.1

1999 RB₃₅, 3, 1, 0; 1999 TO₃, 4, 1, 0; 1999 TP₇, 5, 1, 0; 1999 TX₉, 3, 1, 0; 1999 TS₁₁ *, 30, 5, 5; 1999 TO₁₇, 3, 1, 0; (11436), 3, 1, 0; [51, 7, 1*, 1999/10/01–1999/10/18]

850 Cordell-Lorenz Observatory, Sewanee

D. T. Durig, SPO 1242, Sewanee, TN 37383, U.S.A. [ddurig@sewanee.edu]

Observers D. T. Durig, E. U. Donev

0.3-m $f/5.7$ Schmidt-Cassegrain + CCD

GSC 1.1

1980 PJ₁, 4, 2, 1; 1981 DN₁, 7, 3, 5; 1988 VX₂, 8, 4, 5; 1990 OB₄, 9, 5, 8; 1991 PE₃, 4, 2, 1; 1993 PV₅, 6, 3, 5; 1997 CB₂₂, 8, 4, 5; 1999 SM₅, 4, 2, 1; 1999 TA₁₀, 4, 1, 0; 3045 P-L, 4, 2, 1; [58, 10, 0*, 1999/10/01–1999/10/15]

851 Burke-Gaffney Observatory, Halifax

D. Lane, Burke-Gaffney Observatory, Department of Astronomy and Physics, Saint
Mary's University, 923 Robie Street, Halifax, Nova Scotia, B3H 3C3 Canada

[dlane@ap.stmarys.ca]

0.4-m $f/12$ Cassegrain reflector + CCD

GSC

(454), 5, 2, 2; (743), 4, 2, 2; (872), 3, 2, 2; (3451), 10, 3, 6; [22, 4, 0*, 1999/09/20–1999/09/26]

852 River Moss Observatory, St. Peters

W. P. Norby, 654 River Moss Drive, St. Peters, MO 63376, U.S.A.

[wpnorby@prodigy.net]

0.25-m Schmidt-Cassegrain + CCD

GSC

(405), 6, 2, 1; (604), 6, 2, 1; (643), 6, 2, 3; (1698), 5, 2, 2; (2263), 5, 2, 2; [28, 5, 0*, 1999/10/01–1999/10/21]

853 Biosphere 2 Observatory

G. J. Garradd, Biosphere 2 Center, 32540 S. Biosphere Road, Oracle, AZ 85623,
U.S.A. [gordon@astro.bio2.edu]

Observers G. J. Garradd, B. Swift, D. J. Norlander

Measurer G. J. Garradd

0.5-m $f/8.1$ reflector

GSC-ACT

1998 UP₁, 3, 1, 0; 1999 QJ, 3, 1, 0; 1999 SM₅, 3, 1, 0; 1999 TZ₄, 3, 1, 0; 1999 TM₁₂, 5, 1, 0; 1999 TN₁₃, 4, 1, 0; 1999 UQ, 4, 1, 0; (16), 3, 1, 0; (63), 3, 1, 0; [31, 9, 0*, 1999/10/12–1999/10/22]

1999 OCT. 26

M.P.C. 36211

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

Measurer C. Jacques

0.30-m $f/3.3$ reflector + CCD

GSC

1992 OP₅, 3, 1, 0; 1994 VS₁, 3, 1, 0; 1998 FS₁₂₁, 3, 1, 0; 1998 UP₁, 1, 1, 0; 1999 PM, 3, 1, 0; 1999 PG₄, 3, 1, 0; 1999 RD₆₅, 3, 1, 0; 1999 RR₇₇, 3, 1, 0; 1999 RE₁₅₀, 3, 1, 0; 1999 RS₁₆₉, 3, 1, 0; 1999 SN₅, 3, 1, 0; 1999 SD₁₀, 4, 1, 0; 1999 SF₁₀, 3, 1, 0; 1999 TA₁₀, 3, 1, 0; 1999 TB₁₀, 2, 1, 0; 1999 TC₁₀, 6, 1, 0; 1999 TJ₁₂, 3, 1, 0; 1182 T-1, 3, 1, 0; (2025), 3, 1, 0; (5535), 3, 1, 0; (7385), 3, 1, 0; (8636), 3, 1, 0; (8896), 3, 1, 0; [70, 23, 0*, 1999/09/04–1999/10/13]

867 Saji Observatory

M. Yamanishi, 1071-1 Takayama, Saji, Yazu-Gun, Tottori-Ken, 689-13 Japan
[sajinet@infosakyu.ne.jp]

Observers M. Yamanishi, A. Miyamoto, M. Aimoto, T. Oribe

1.03-m $f/4.2$ reflector + CCD

GSC

1999 RG₃₃, 6, 2, 1; [6, 1, 0*, 1999/10/17–1999/10/18]

886 Susono

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

0.25-m $f/6.3$ reflector + CCD

GSC

1988 XB₂, 4, 2, 3; 1991 JD, 2, 1, 0; 1991 UE₂, 2, 1, 0; 1992 UX, 2, 1, 0; 1992 UY, 4, 2, 9; 1992 UT₃, 2, 1, 0; 1993 DD₂, 6, 3, 9; 1995 SK₂, 4, 2, 9; 1998 DB₂₄, 4, 2, 17; 1999 RR₂₀₁, 2, 1, 0; 1999 SE₄, 5, 2, 1; 1999 TT₈, 4, 2, 9; 1999 TJ₁₁, 2, 1, 0; 1999 TA₁₃, 4, 2, 1; 1999 TD₁₅, 2, 1, 0; 1999 UZ₂ *, 7, 3, 2; 1999 UC₃, 5, 2, 2; [61, 17, 1*, 1999/10/01–1999/10/22]

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

1987 BF, 3, 1, 0; 1988 TO₁, 2, 1, 0; 1988 XB₂, 3, 1, 0; 1989 WB₃, 4, 2, 12; 1991 JD, 2, 1, 0; 1992 UX, 5, 2, 10; 1992 UY, 3, 1, 0; 1993 BP₃, 3, 1, 0; 1993 DD₂, 3, 1, 0; 1993 EP, 2, 1, 0; 1994 AM₃, 3, 1, 0; 1994 PO, 3, 1, 0; 1995 QS, 3, 1, 0; 1995 SK₂, 2, 1, 0; 1995 TA₁, 3, 1, 0; 1995 UF₆, 2, 1, 0; 1995 UR₈, 2, 1, 0; 1995 WV₃, 3, 2, 6; 1996 AR₁, 3, 1, 0; 1997 AC₁₃, 4, 2, 1; 1997 CC₂₆, 3, 1, 0; 1998 DB₂₄, 3, 1, 0; 1998 FF₉, 3, 1, 0; 1998 FF₁₆, 3, 1, 0; 1999 PY₄, 2, 1, 0; 1999 PZ₄, 3, 1, 0; 1999 QH, 3, 1, 0; 1999 RD₁, 3, 1, 0; 1999 RE₁, 5, 2, 10; 1999 RM₃, 4, 2, 10; 1999 RR₂₀₁, 9, 3, 2; 1999 SW₃, 3, 1, 0; 1999 SE₄, 3, 1, 0; 1999 SL₈, 3, 1, 0; 1999 TW₂, 4, 1, 0; 1999 TS₈ *, 8, 3, 4; 1999 TT₈ *, 14, 5, 15; 1999 TJ₁₁ *, 6, 2, 1; 1999 TA₁₃ *, 5, 2, 1; 1999 TF₁₃, 3, 1, 0; 1999 TG₁₃, 5, 2, 8; 1999 TD₁₅ *, 16, 5, 10; 1999 UC₃ *, 9, 3, 3; (9166), 3, 1, 0; [181, 44, 6*, 1999/09/30–1999/10/23]

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

1999 GW₃, 3, 1, 0; (6831), 2, 1, 0; (10249), 2, 1, 0; [7, 3, 0*, 1999/02/06–1999/04/14]

900 Moriyama

Y. Ikari, Katube-Cho 626, Moriyama, Shiga-Ken 524, Japan
[ikari@gold.ocn.ne.jp]

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

GSC

1999 CU₃, 2, 1, 0; 1999 LF₆, 2, 1, 0; 1999 ND₄₃, 4, 2, 10; 1999 RC₂, 2, 1, 0; 1999 RV₂, 2, 1, 0; 1999 RH₂₇, 2, 1, 0; 1999 TA₁₀, 4, 2, 11; (10115), 2, 1, 0; (11628), 2, 1, 0; [22, 9, 0*, 1999/09/29–1999/10/21]

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

1997 EH₅₇, 3, 1, 0; 1997 UP₄, 3, 1, 0; 1998 CO₃, 3, 1, 0; 1998 ER₁₉, 3, 1, 0; 1998 HR₇₄, 3, 1, 0; 1999 RB₂₄, 3, 1, 0; 1999 RP₃₄, 3, 1, 0; 1999 RD₁₄₆, 3, 1, 0; 1999 RN₁₆₀, 3, 1, 0; 1999 TE₆, 3, 1, 0; 1348 T-2, 3, 1, 0; [33, 11, 0*, 1997/01/12–1998/09/11]

930 Papeete

R. Santallo, Po. Box 60972, 98704 FAAA Tahiti, French Polynesia

[rsantallo@southernstar.com]

Observer R. Santallo

Measurer R. Behrend

0.20-m Schmidt-Cassegrain $f/10.0$ + CCD

GSC 1.1

(1770), 9, 1, 0; [9, 1, 0*, 1999/09/19]

945 Monte Deva

R. Cuesta, Avda de Portugal 52 1 D, E-33207 Gijon, Asturias, Spain

[ruli12@bigfoot.com]

Observers R. Cuesta, J. Vidal

Measurer R. Cuesta

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

USNO-A2.0

(71), 2, 1, 0; [2, 1, 0*, 1999/10/09]

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 PT₁, 2, 1, 0; 1999 RS₃₂, 2, 1, 0; 1999 SM₅, 3, 1, 0; 1999 TU₉ *, 7, 2, 1; 1999 TA₁₀, 2, 1, 0; 1999 TK₁₁ *, 11, 3, 6; 1999 TL₁₁ *, 11, 3, 6; [38, 7, 3*, 1999/09/30–1999/10/15]

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

(439), 1, 1, 0; (453), 2, 1, 0; (457), 2, 1, 0; (552), 2, 1, 0; (1002), 4, 2, 84; (1388), 1, 1, 0; (1444), 2, 1, 0; (1742), 3, 2, 41; (1866), 2, 1, 0; (2076), 2, 1, 0; (2829), 2, 1, 0; (2883), 2, 1, 0; (3289), 2, 1, 0; (4339), 2, 1, 0; (4378), 1, 1, 0; (4667), 1, 1, 0; (4766), 2, 1, 0; (4804), 2, 1, 0; (5671), 1, 1, 0; (5738), 2, 1, 0; (5785), 2, 1, 0; (7358), 1, 1, 0; (8289), 1, 1, 0; [42, 23, 0*, 1998/11/21–1999/09/11]

952 Marxuquera

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[astsamor@arrakis.es]

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

GSC

1999 ND₄₃, 5, 1, 0; [5, 1, 0*, 1999/09/16]

964 Southend Bradfield

G. C. R. Sallit, Jacinth, Stanford Road, Southend Bradfield, Reading, Berkshire

RG7 6HL, England [100573.2667@compuserve.com]

0.30-m Schmidt-Cassegrain + CCD

GSC

1999 TY₂, 7, 1, 0; [7, 1, 0*, 1999/10/05]

ORBITAL ELEMENTS

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Cambridge, MA 02138, U.S.A. [gwilliams@cfa.harvard.edu]

C/1998 W3 (LINEAR)

Epoch 1998 Sept. 24.0 TT = JDT 2451080.5

<i>T</i>	1998 Oct. 6.7396 TT			Nakano	
<i>q</i>	4.914591	(2000.0)	P		Q
<i>z</i>	−0.000251	ω 6.8897	−0.4910800		+0.5875334
	±0.000005	Ω 123.9185	+0.7576844		−0.0762153
<i>e</i>	1.001233	<i>i</i> 129.1914	+0.4298311		+0.8056027

From 144 observations 1998 Nov. 25–1999 Oct. 20, mean residual 0^h.6.

C/1999 E1 (Li)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5

<i>T</i>	1999 Jan. 31.7064 TT			Nakano	
<i>q</i>	3.919971	(2000.0)	P		Q
<i>n</i>	0.0149553	ω 329.7585	−0.2580255		−0.7752426
<i>a</i>	16.315708	Ω 127.8327	+0.9659691		−0.2181677
<i>e</i>	0.759743	<i>i</i> 46.8867	+0.0180685		+0.5927915
<i>P</i>	65.9				

From 153 observations 1999 Jan. 22–Oct. 22, mean residual 0^h.6.

C/1999 H1 (Lee)

Epoch 1999 July 1.0 TT = JDT 2451360.5

<i>T</i>	1999 July 11.1720 TT			Nakano	
<i>q</i>	0.708107	(2000.0)	P		Q
<i>z</i>	+0.000363	ω 40.7012	−0.5563316		+0.8169390
	±0.000001	Ω 162.6506	+0.5665046		+0.2390494
<i>e</i>	0.999743	<i>i</i> 149.3529	+0.6079208		+0.5248487

From 685 observations 1999 Apr. 16–Oct. 23, mean residual 0^h.9.

C/1999 J3 (LINEAR)

Epoch 1999 Sept. 19.0 TT = JDT 2451440.5

<i>T</i>	1999 Sept. 20.1671 TT			Nakano	
<i>q</i>	0.976822	(2000.0)	P		Q
<i>z</i>	+0.000529	ω 161.9807	+0.5769793		+0.3479883
	±0.000006	Ω 228.9798	+0.5753939		+0.4688976
<i>e</i>	0.999483	<i>i</i> 101.6566	+0.5796696		−0.8118123

From 127 observations 1999 May 12–Oct. 24, mean residual 0^h.7.

C/1999 N4 (LINEAR)

T 2000 May 26.0791 TT

<i>q</i>	5.497041	(2000.0)	P		Q
		ω 90.6398	−0.2356180		−0.9671107
		Ω 345.8552	−0.9718272		+0.2350741
<i>e</i>	1.0	<i>i</i> 156.9148	+0.0059989		+0.0971449

From 99 observations 1999 July 12–Oct. 3.

P/1999 RO₂₈ (LONEOS)

T 1999 Oct. 2.3438 TT

<i>q</i>	1.231741	(2000.0)	P		Q
<i>n</i>	0.1488164	ω 219.8596	+0.9860811		−0.1486182
<i>a</i>	3.526703	Ω 148.4500	+0.1638041		+0.9452284
<i>e</i>	0.650739	<i>i</i> 8.1905	−0.0285010		+0.2906129
<i>P</i>	6.62				

From 91 observations 1999 Sept. 7–Oct. 20.

C/1999 S2 (McNaught-Watson)

T 1997 Nov. 24.3442 TT

<i>q</i>	6.490377	(2000.0)	P		Q
		ω 223.8534	+0.0794865		+0.4706478
		Ω 74.4099	−0.4558128		+0.8011279
<i>e</i>	1.0	<i>i</i> 65.8248	−0.8865193		−0.3697091

From 54 observations 1999 Sept. 19–Oct. 19.

C/1999 S3 (LINEAR)

T 1999 Nov. 9.0138 TT

<i>q</i>	1.894929	(2000.0)	P		Q
<i>n</i>	0.0119600	ω 44.1271	+0.6547328		−0.7305151
<i>a</i>	18.937172	Ω 11.8780	+0.0824342		−0.1862438
<i>e</i>	0.899936	<i>i</i> 70.5605	+0.7513518		+0.6570091
<i>P</i>	82.4				

From 356 observations 1999 Sept. 24–Oct. 24.

1999 OCT. 26

M.P.C. 36213

C/1999 S4 (LINEAR)

<i>T</i>	2000 July 26.3979 TT		Marsden	
<i>q</i>	0.766182	(2000.0)	P	Q
	<i>ω</i>	150.9998	+0.3097780	−0.8048642
	<i>Ω</i>	83.1500	−0.9406778	−0.1819239
<i>e</i>	1.0	<i>i</i>	149.3473	−0.1384302
				−0.5648871

From 181 observations 1999 Sept. 27–Oct. 25.

C/1999 T1 (McNaught-Hartley)

<i>T</i>	2000 Dec. 13.4105 TT		Nakano	
<i>q</i>	1.171797	(2000.0)	P	Q
	<i>ω</i>	344.7453	−0.9658437	−0.2555719
	<i>Ω</i>	182.4890	+0.1065838	−0.5422563
<i>e</i>	1.0	<i>i</i>	79.9800	−0.2361902
				+0.8004006

From 69 observations 1999 Oct. 7–21.

C/1999 T2 (LINEAR)

<i>T</i>	2000 Nov. 24.7083 TT		Marsden	
<i>q</i>	3.037269	(2000.0)	P	Q
	<i>ω</i>	104.6863	−0.1561471	−0.9582385
	<i>Ω</i>	14.8682	−0.7261446	−0.0530583
<i>e</i>	1.0	<i>i</i>	110.9853	+0.6695761
				−0.2810049

From 107 observations 1999 July 22–Oct. 21.

C/1999 T3 (LINEAR)

<i>T</i>	2000 Aug. 29.1385 TT		Marsden	
<i>q</i>	5.370459	(2000.0)	P	Q
	<i>ω</i>	210.9351	+0.7114986	−0.2236517
	<i>Ω</i>	223.5095	+0.6532493	−0.1387738
<i>e</i>	1.0	<i>i</i>	104.6325	−0.2589112
				−0.9647392

From 41 observations 1999 Oct. 3–25.

C/1999 U1 (Ferris)

<i>T</i>	1998 Aug. 14.2030 TT		Nakano	
<i>q</i>	3.080936	(2000.0)	P	Q
	<i>ω</i>	271.1476	−0.1098225	+0.5101041
	<i>Ω</i>	59.4825	+0.4745434	+0.7810390
<i>e</i>	1.0	<i>i</i>	98.0083	−0.8733542
				+0.3602387

From 62 observations 1999 Oct. 18–22.

59P/Kearns-Kwee

Epoch 1999 Sept. 19.0 TT = JDT 2451440.5

<i>T</i>	1999 Sept. 16.3402 TT		Marsden	
<i>q</i>	2.339176	(2000.0)	P	Q
<i>n</i>	0.1043341	<i>ω</i>	127.4463	+0.1576479
<i>a</i>	4.468741	<i>Ω</i>	313.0355	+0.8469252
<i>e</i>	0.476547	<i>i</i>	9.3521	+0.5078040
<i>P</i>	9.45			−0.0226798

From 136 observations 1981–1999, mean residual 0″.9. Nongravitational parameters
 $A_1 = +0.75$, $A_2 = -0.2321$.

88P/Howell

Epoch 1998 Sept. 24.0 TT = JDT 2451080.5

<i>T</i>	1998 Sept. 27.1871 TT		Marsden	
<i>q</i>	1.406130	(2000.0)	P	Q
<i>n</i>	0.1768496	<i>ω</i>	234.9110	+0.3818897
<i>a</i>	3.143402	<i>Ω</i>	57.6661	+0.9219335
<i>e</i>	0.552673	<i>i</i>	4.3984	−0.8210256
<i>P</i>	5.57			+0.3706121
				−0.4243550
				+0.1126296

From 258 observations 1987–1999, mean residual 0″.8. Nongravitational parameters
 $A_1 = +0.39$, $A_2 = -0.0502$.

141P/Machholz 2-D

Epoch 1999 Dec. 8.0 TT = JDT 2451520.5

<i>T</i>	1999 Dec. 9.9624 TT		Nakano	
<i>q</i>	0.748957	(2000.0)	P	Q
<i>n</i>	0.1888092	<i>ω</i>	149.2961	+0.8031442
<i>a</i>	3.009220	<i>Ω</i>	246.1392	−0.5602024
<i>e</i>	0.751113	<i>i</i>	12.8128	+0.4916163
<i>P</i>	5.22			+0.3365602
				+0.1457086

From 68 observations 1994–1999, mean residual 1″.1.

(11780)* 1942 TB = 1990 KE₃ = 1994 LK₁₀

Discovered 1942 Oct. 3 by L. Oterma at Turku.

Id. T. B. Spahr (*MPC* 30647), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	358.26407	(2000.0)		Williams	
<i>n</i>	0.24269482	<i>ω</i>	221.16002	P	Q
<i>a</i>	2.5454371	<i>Ω</i>	151.09952	+0.97293674	−0.21721230
<i>e</i>	0.2757720	<i>i</i>	9.38659	+0.23043878	+0.93730563
<i>P</i>	4.06			−0.01709026	+0.27253803
		<i>H</i>	12.9	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1942 10 03	062	1.1+	0.7+	1998 05 21	610	0.4−	0.1−	1998 06 28	699	0.5−	0.1+
1942 10 11	062	0.1−	0.9−	1998 05 21	610	1.5−	0.5+	1999 09 11	106	0.1+	0.5+
1942 11 05	062	0.6−	1.2−	1998 05 21	610	2.0−	0.6+	1999 09 11	106	0.3−	0.2+
1990 05 20	095	(2.2−	2.4−)	1998 05 23	704	0.4+	0.3−	1999 09 11	106	0.1−	0.5+
1994 05 14	304	0.5−	0.8+	1998 05 23	704	0.1+	0.3+	1999 09 16	704	0.3−	0.2+
1994 05 14	304	1.4−	0.8+	1998 05 23	704	0.6−	0.5+	1999 09 16	704	1.1−	0.2+
1994 05 14	304	1.0−	1.1+	1998 05 23	704	0.3+	0.4−	1999 09 16	704	0.7+	1.1−
1994 05 14	304	0.8−	1.4+	1998 05 23	699	0.9+	0.4−	1999 10 09	704	0.3+	0.4+
1994 06 11	691	0.1−	0.1+	1998 05 23	704	1.0+	0.3+	1999 10 09	704	0.3+	0.1−
1994 06 11	691	0.0	0.0	1998 05 23	699	0.3+	0.3−	1999 10 09	703	0.0	0.2+
1994 06 11	691	0.3−	0.1−	1998 05 23	699	0.0	0.1+	1999 10 09	704	0.3+	0.2+
1997 02 03	691	0.4−	0.1+	1998 06 03	704	0.7+	0.2−	1999 10 09	703	0.2−	0.3+
1997 02 03	691	0.2−	0.0	1998 06 03	704	0.1−	0.0	1999 10 09	703	0.0	0.1+
1998 05 05	699	0.9+	0.2+	1998 06 03	704	0.7−	0.8−	1999 10 09	704	0.6+	0.5−
1998 05 05	699	0.1−	0.5−	1998 06 03	704	0.7+	0.3+	1999 10 09	703	0.2−	0.3+
1998 05 05	699	0.5−	0.1+	1998 06 03	704	1.2+	1.8−	1999 10 09	704	0.2+	0.7−
1998 05 20	610	1.2+	0.2−	1998 06 28	699	0.3+	0.1−	1999 10 17	629	0.4−	0.0
1998 05 20	610	1.4+	0.9−	1998 06 28	699	0.2−	0.3−	1999 10 17	629	0.1+	0.3+
1998 05 20	610	1.5+	1.5−	1998 06 28	699	0.4−	1.0+	1999 10 17	629	0.7−	0.6+
1998 05 20	610	(1.8+	2.2−)	1998 06 28	699	0.1+	0.4−				
1998 05 21	610	0.1+	0.3−	1998 06 28	699	0.2+	0.5+				

(11781)* 1966 PL = 1994 CL₁₀ = 1998 HU₁₃₉

Discovered 1966 Aug. 7 at Boyden Observatory, Bloemfontein.

Id. T. Kobayashi (*MPC* 32207)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	56.33730	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27181916	ω 168.50089	+0.37688991	+0.92016343
<i>a</i>	2.3602029	Ω 123.55670	−0.85960053	+0.39012612
<i>e</i>	0.1230673	<i>i</i> 7.31341	−0.34502309	+0.03317948
<i>P</i>	3.63	<i>H</i> 14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1966 08 07	074	(0.3− 2.6+)	1998 03 24	704	0.2+ 0.2−	1998 06 17	704	0.4− 1.0−
1966 08 07	074	0.8− 1.6+	1998 03 24	704	0.7− 0.3−	1998 06 17	704	0.9+ 0.3+
1966 08 08	074	0.8+ 0.2+	1998 03 24	704	0.5− 0.2−	1998 06 17	704	0.0 1.1−
1966 08 08	074	2.0− 0.4+	1998 04 21	704	0.1+ 0.4+	1999 09 14	704	0.8− 0.6+
1966 08 09	074	0.8+ 0.8+	1998 04 21	704	0.7− 0.6+	1999 09 14	704	0.6− 0.7+
1966 08 10	074	0.0 0.2+	1998 04 21	704	0.1+ 0.1−	1999 09 14	704	0.7− 0.1+
1966 08 12	074	1.0+ 0.4+	1998 04 21	704	0.7+ 0.0	1999 09 14	704	1.2− 0.5+
1966 08 12	074	0.5− 0.1+	1998 04 21	704	0.5− 0.6+	1999 09 14	704	0.6− 0.1+
1966 08 16	074	(9.3− 5.8−)	1998 04 23	704	0.5+ 0.7+	1999 09 21	699	0.1+ 1.1+
1994 02 07	809	(1.1+ 2.4+)	1998 04 23	704	1.2+ 0.3+	1999 09 21	699	0.3+ 0.5+
1994 02 07	809	(1.1+ 2.2+)	1998 04 23	704	1.3+ 0.2−	1999 09 21	699	0.1+ 1.0+
1994 02 07	809	1.1+ 1.9+	1998 04 23	704	0.6+ 0.7+	1999 10 02	704	1.0+ 0.0
1994 02 09	809	0.1+ 0.5+	1998 04 23	704	0.3+ 1.0+	1999 10 02	704	0.0 0.0
1994 02 09	809	0.1− 0.5+	1998 05 16	704	0.0 0.9+	1999 10 02	704	0.6+ 0.1−
1994 02 09	809	0.3+ 0.5+	1998 05 16	704	1.3+ 1.1+	1999 10 02	704	0.2+ 0.4+
1994 02 12	809	1.1+ 1.7+	1998 05 16	704	0.3+ 0.5+	1999 10 02	704	0.7+ 0.4−
1994 02 12	809	(0.1+ 2.4+)	1998 05 16	704	0.1+ 0.7+	1999 10 08	704	0.2+ 0.0
1994 02 12	809	0.3+ 1.6+	1998 05 16	704	1.1− 0.8+	1999 10 08	704	0.0 0.0
1998 03 03	691	0.6− 0.4−	1998 05 23	699	0.3+ 0.2−	1999 10 08	704	0.0 0.0
1998 03 03	691	0.7− 0.3−	1998 05 23	699	0.0 0.3−	1999 10 08	704	0.3− 0.2+
1998 03 03	691	0.8− 0.6−	1998 05 23	699	0.1− 0.2−	1999 10 08	704	1.1− 0.3+
1998 03 24	704	0.2− 0.2−	1998 06 17	704	1.3− 0.3+			
1998 03 24	704	0.1+ 0.1−	1998 06 17	704	0.8− 1.9−			

(11782)* 1969 TT₁ = 1984 UE₁

Discovered 1969 Oct. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Id. C. M. Bardwell (*MPC* 9291)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Bardwell

<i>M</i>	352.63775	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.26350528	ω 355.50014	+0.92690215	−0.37484753
<i>a</i>	2.4095901	Ω 26.53833	+0.34561219	+0.83333587
<i>e</i>	0.1837029	<i>i</i> 2.37126	+0.14630317	+0.40625196
<i>P</i>	3.74	<i>H</i> 14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1969 10 08	095	(5.2+ 0.3+)	1995 08 29	809	0.2+ 0.2+	1998 05 24	704	1.2− 1.7+
1969 10 13	095	(5.8+ 4.2−)	1995 08 30	809	1.0+ 0.3+	1999 09 07	120	0.4− 0.3+
1969 10 16	095	(3.4+ 3.0−)	1995 08 30	608	0.0 0.2−	1999 09 07	120	0.0 0.0
1969 11 04	095	1.1+ 0.0	1995 08 30	608	0.0 0.2−	1999 09 07	120	0.6+ 0.1+
1969 11 11	095	0.0 0.4+	1995 08 31	608	0.1− 0.0	1999 10 10	704	1.0+ 0.1−
1969 11 13	095	1.0+ 0.6+	1995 08 31	608	0.3− 0.1−	1999 10 10	704	0.1− 0.1−
1984 10 28	046	(0.7− 3.3−)	1997 01 31	098	0.1− 1.0−	1999 10 10	704	0.7+ 0.3+
1984 10 28	046	(0.8− 3.3−)	1997 01 31	098	1.0+ 0.2−	1999 10 10	704	0.2− 0.5+
1984 10 29	046	2.1− 2.0−	1997 02 07	098	0.8− 0.4+	1999 10 10	704	0.6− 0.1+
1984 10 29	046	1.6− 0.6−	1997 02 07	098	(3.1+ 0.1−)	1999 10 12	106	0.2− 0.5+
1984 10 30	046	1.5− 0.6+	1997 02 08	098	1.5+ 1.4−	1999 10 12	106	0.4− 0.2+
1984 10 30	046	0.4+ 0.4−	1998 05 21	360	0.7− 0.2−	1999 10 12	106	0.1+ 0.3+
1990 03 27	675	0.2− 0.2+	1998 05 21	360	0.7− 0.3−	1999 10 17	629	0.9+ 0.4−
1990 03 27	675	0.6+ 0.8−	1998 05 21	360	0.7− 0.0	1999 10 17	629	0.3+ 0.2+
1990 04 01	675	0.6+ 0.1+	1998 05 22	704	1.1+ 1.1−	1999 10 17	629	0.7− 0.6−
1990 04 01	675	0.9− 0.0	1998 05 22	704	0.6+ 0.7−	1999 10 17	629	0.2− 0.7+
1995 08 16	608	0.9− 0.6−	1998 05 22	704	0.3+ 1.5+	1999 10 21	704	0.2− 0.2−
1995 08 16	608	0.4− 0.3−	1998 05 22	704	0.1− 0.8−	1999 10 21	704	0.1− 0.0
1995 08 17	608	0.3+ 0.0	1998 05 24	704	0.9− 0.2−	1999 10 21	704	0.0 0.3−
1995 08 17	608	0.3+ 0.0	1998 05 24	704	1.0− 0.2−	1999 10 21	704	0.2− 0.1−

1995 08 26	809	1.5+ 0.2+	1998 05 24	704	1.1− 1.9+	1999 10 21	704	0.3+ 0.1+
1995 08 27	809	1.3+ 0.1+	1998 05 24	704	1.8+ 0.6−			

(11783)* 1971 UN₁ = 1982 SX₁₀ = 1988 VZ₄

Discovered 1971 Oct. 26 by L. Kohoutek at Bergedorf.

Id. T. Kobayashi (*MPC* 14011)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	343.44557	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.17566645	ω 208.25076	+0.81287003	−0.58243710
<i>a</i>	3.1575010	Ω 187.37364	+0.53876517	+0.75389231
<i>e</i>	0.2153989	<i>i</i> 1.36412	+0.22130161	+0.30399573
<i>P</i>	5.61	<i>H</i> 13.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 10 26	029	0.5+ 0.1−	1993 09 18	010	(1.5+ 2.3−)	1999 10 10	704	0.1− 0.2+
1971 10 26	029	0.2− 0.5−	1993 09 18	010	(2.6+ 0.5−)	1999 10 10	704	0.2− 0.4+
1971 10 30	029	0.7+ 0.5−	1993 09 20	801	1.1+ 0.9+	1999 10 11	106	0.8− 0.3+
1971 11 10	029	0.4+ 0.0	1993 09 20	801	1.2+ 0.4−	1999 10 11	106	0.4− 0.6+
1971 11 10	029	1.7− 0.3−	1995 01 20	596	(2.7− 2.3+)	1999 10 11	106	0.5− 0.6+
1971 11 10	029	0.1+ 0.3+	1995 01 20	596	1.8− 0.2+	1999 10 11	718	1.0+ 0.5−
1971 11 10	029	0.2+ 1.5−	1996 03 20	098	0.1− 0.5−	1999 10 11	718	0.3+ 0.1+
1971 11 19	029	1.2+ 0.9+	1996 03 20	098	(2.7− 1.7−)	1999 10 11	718	0.7+ 0.2+
1982 09 27	095	0.4− 0.7+	1999 10 05	704	0.1+ 0.2+	1999 10 11	691	0.1− 0.1−
1984 01 25	675	0.9+ 0.1+	1999 10 05	704	0.3+ 0.1−	1999 10 11	691	0.0 0.0
1984 01 26	675	1.5+ 0.1−	1999 10 05	704	0.3+ 0.4+	1999 10 11	691	0.1− 0.1−
1988 11 15	875	(0.4+ 2.7−)	1999 10 05	704	0.5+ 0.0	1999 10 12	718	0.7− 1.2+
1988 11 15	875	1.7− 2.2−	1999 10 05	704	0.2+ 0.0	1999 10 12	718	1.0+ 0.0
1988 11 29	875	0.2− 0.1+	1999 10 06	691	0.0 0.2−	1999 10 12	718	0.1+ 0.0
1988 11 29	875	0.5− 0.7−	1999 10 06	691	0.0 0.0	1999 10 15	704	0.1+ 0.1−
1993 08 15	010	1.4− 0.7−	1999 10 06	691	0.4+ 0.4−	1999 10 15	704	0.1− 0.1+
1993 08 15	010	(2.2− 1.2−)	1999 10 07	704	0.1− 0.2+	1999 10 15	704	0.1− 0.2+
1993 08 15	010	1.3− 1.8−	1999 10 07	704	0.6+ 0.1−	1999 10 15	704	0.1+ 0.2+
1993 08 15	801	0.1+ 0.0	1999 10 07	704	0.1− 0.2+	1999 10 15	704	0.0 0.3+
1993 08 15	801	0.5− 0.5+	1999 10 07	704	0.1+ 0.1−	1999 10 16	629	0.8− 0.5−
1993 08 16	010	0.4− 0.8+	1999 10 07	704	0.1+ 0.5+	1999 10 16	629	0.6− 0.7+
1993 08 17	010	(0.2+ 2.2−)	1999 10 09	703	0.2− 0.5+	1999 10 16	629	0.2− 0.7+
1993 08 17	010	0.3− 0.3−	1999 10 09	703	0.4− 0.4+	1999 10 16	629	0.3− 0.0
1993 08 22	801	0.5− 0.5−	1999 10 09	703	0.1− 0.5+	1999 10 20	704	0.0 0.3−
1993 08 22	801	0.2+ 0.3−	1999 10 09	703	0.2− 0.6+	1999 10 20	704	0.9+ 0.5−
1993 09 12	801	0.2− 0.6+	1999 10 10	704	0.1− 0.1+	1999 10 20	704	0.6+ 0.5−
1993 09 12	801	0.3+ 0.1−	1999 10 10	704	0.4− 0.0	1999 10 20	704	0.6+ 1.0−
1993 09 18	010	1.6+ 1.3−	1999 10 10	704	0.2− 0.1+			

(11784)* 1971 UT₁ = 1976 QJ = 1982 SZ₅ = 1997 ER₄₇ = 1997 ET₅₉

Discovered 1971 Oct. 26 by L. Kohoutek at Bergedorf.

Id. D. W. E. Green (*MPC* 13593), G. V. Williams (*MPC* 32437)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Green

<i>M</i>	7.23095	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.17592578	ω 184.05703	+0.99748876	+0.07059062
<i>a</i>	3.1543974	Ω 171.88833	−0.06377860	+0.93061718
<i>e</i>	0.2178710	<i>i</i> 2.33789	−0.03079702	+0.35912202
<i>P</i>	5.60	<i>H</i> 13.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1954 12 21	675	0.5−	0.0	1997 03 13	809	1.1+	1.9−	1999 10 09	704	0.4−	0.4−
1954 12 21	675	0.2+	0.3+	1998 06 24	704	(0.1+	3.0+)	1999 10 09	703	0.3−	0.3+
1971 10 26	029	0.4−	0.3−	1998 06 24	704	0.1−	1.5−	1999 10 09	704	0.2−	0.4−
1971 10 30	029	0.2+	0.1−	1998 06 24	704	0.2−	1.4−	1999 10 09	703	0.4−	0.2+
1971 11 10	029	1.1+	0.2+	1998 06 24	704	(2.6−	2.2−)	1999 10 09	704	0.0	0.4−
1971 11 10	029	0.7−	0.5+	1999 06 13	703	1.3−	0.1+	1999 10 09	704	0.1−	0.4−
1971 11 19	029	0.3+	0.9−	1999 06 13	703	1.0−	0.1−	1999 10 09	120	0.3+	0.7−
1976 08 26	095	(3.7−	0.9+)	1999 06 13	703	0.5+	1.2+	1999 10 10	120	0.5−	0.5−
1980 04 08	675	0.8−	0.5−	1999 06 13	703	0.6−	0.1−	1999 10 15	704	1.0+	0.1+
1980 04 09	675	1.6−	0.8−	1999 10 03	629	0.2−	0.6−	1999 10 15	704	0.7+	0.2−
1982 09 16	095	0.9+	1.5+	1999 10 03	629	0.9+	0.9+	1999 10 15	704	1.0+	0.3−

1982 09 20	095	0.5+	1.0+	1999 10 03	629	0.9-	0.3+	1999 10 15	704	0.6+	0.3-
1982 09 26	095	1.6+	0.9+	1999 10 04	704	0.4-	0.8+	1999 10 15	704	0.6+	0.3-
1982 10 22	095	2.4-	0.0	1999 10 04	704	1.0+	0.7-	1999 10 15	127	0.0	0.7-
1988 11 12	046	(2.9-	0.4+)	1999 10 04	704	1.6+	0.8-	1999 10 15	127	0.2-	0.6-
1988 11 12	046	1.3-	0.1-	1999 10 04	704	1.1+	0.7-	1999 10 16	629	0.5+	0.3+
1992 06 03	675	0.2+	0.6+	1999 10 07	120	0.4+	0.1+	1999 10 16	629	0.7-	0.3+
1992 06 03	675	(0.8+	2.5-)	1999 10 07	120	0.1-	0.1-	1999 10 17	629	0.1-	0.1+
1992 06 05	675	1.3-	1.3+	1999 10 07	704	0.1+	0.2+	1999 10 17	629	0.6-	0.1-
1992 06 06	675	0.5+	0.1+	1999 10 07	704	0.2+	0.0	1999 10 17	127	(0.3-	2.4+)
1993 09 12	801	0.0	0.0	1999 10 07	704	0.7+	0.0	1999 10 17	629	0.4-	1.3-
1993 09 12	801	0.2-	0.0	1999 10 07	704	0.8-	0.5+	1999 10 17	629	1.2-	0.3+
1993 09 20	801	0.2-	0.7-	1999 10 07	120	0.3-	0.5-	1999 10 17	127	(0.3-	2.3+)
1993 09 20	801	0.2-	0.4-	1999 10 07	120	0.4-	0.5-	1999 10 17	629	0.8+	1.4-
1997 03 12	809	(3.1+	0.2+)	1999 10 07	704	0.2+	0.0	1999 10 17	127	(0.3-	2.4+)
1997 03 12	809	(2.8+	0.6+)	1999 10 08	120	0.5+	0.1-	1999 10 19	704	0.5-	0.7+
1997 03 12	809	(2.1+	2.2+)	1999 10 09	703	0.3-	0.0	1999 10 19	704	0.0	0.5+
1997 03 13	809	0.2-	0.6-	1999 10 09	704	0.2-	0.6-	1999 10 19	704	0.0	0.7+
1997 03 13	809	1.5+	0.8-	1999 10 09	703	0.3-	0.2+	1999 10 19	704	0.1-	0.4+

(11785)* 1973 AW₃ = 1981 YP = 1990 VS₁

Discovered 1973 Jan. 2 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. A. Lowe (*MPC* 17623), B. G. Marsden (*ibid.*), R. Nagata (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21211389	ω	83.34090	-0.84941480	-0.51334115		
<i>a</i>	2.7845604	Ω	65.70855	+0.41541956	-0.79343246		
<i>e</i>	0.0665237	<i>i</i>	7.71587	+0.32545521	-0.32702568		
<i>P</i>	4.65	<i>H</i>	12.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 01 02	095	0.1+	1.3+	1990 11 23	095	(2.7+	0.9+)	1999 10 04	703	0.2-	0.4+
1973 01 04	095	(0.1+	3.1+)	1990 12 23	877	1.2-	1.2-	1999 10 04	703	0.1-	0.4+
1981 12 20	046	(2.8-	1.1-)	1990 12 23	877	0.3+	0.7+	1999 10 04	703	0.3-	0.5+
1981 12 20	046	0.4+	0.4-	1994 09 10	675	0.1+	1.3+	1999 10 07	704	0.2+	0.1-
1985 09 21	675	1.2-	1.8-	1994 09 10	675	0.5+	1.1+	1999 10 07	704	0.5+	0.1+
1989 08 29	675	0.8+	0.6-	1995 12 28	072	1.1+	0.1+	1999 10 07	704	0.2-	0.4-
1989 08 29	675	0.9+	0.5+	1995 12 28	072	1.3+	0.1+	1999 10 07	704	0.5+	0.5+
1989 09 01	675	0.8+	1.8-	1997 04 09	801	0.0	1.1+	1999 10 07	704	0.2+	0.2+
1989 09 04	675	0.5-	0.5+	1997 04 09	801	0.6-	0.3+	1999 10 09	704	0.4+	0.0
1990 11 11	877	1.6-	1.1-	1998 07 13	689	0.3-	1.1+	1999 10 09	704	0.1+	0.0
1990 11 11	877	1.2-	0.7-	1999 09 15	120	0.4-	0.1-	1999 10 09	704	0.3+	0.2-
1990 11 12	877	0.1-	1.6+	1999 09 15	120	0.0	0.2-	1999 10 09	704	0.0	0.2-
1990 11 12	877	1.5+	0.7-	1999 09 15	120	0.2-	0.2-	1999 10 09	704	0.1+	0.6-
1990 11 15	095	(8.1+	0.7+)	1999 10 03	629	0.0	1.0+	1999 10 16	629	0.3-	0.5+
1990 11 15	095	(2.9+	3.8-)	1999 10 03	629	0.6+	0.7+	1999 10 16	629	1.8-	1.0-
1990 11 21	095	1.4+	0.3-	1999 10 03	629	0.6-	1.1+	1999 10 16	629	1.6-	1.9-
1990 11 21	095	(1.7+	4.3-)	1999 10 03	629	0.5+	0.9+				
1990 11 23	095	(3.8+	10.3-)	1999 10 04	703	0.3-	0.3+				

(11786)* 1977 QW = 1988 SW₄ = 1997 BY₇ = 1998 JD₁

Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. A. Doppler (*MPC* 35599)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18032590	ω	315.44311	+0.47527498	+0.87904869		
<i>a</i>	3.1028728	Ω	342.82645	-0.76793812	+0.39379782		
<i>e</i>	0.2643251	<i>i</i>	7.24634	-0.42940043	+0.26869439		
<i>P</i>	5.47	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 08 19	095	1.3+	1.0-	1999 07 23	704	0.0	0.2-	1999 10 09	703	0.4-	0.1+
1977 08 20	095	0.9-	1.8+	1999 07 23	704	0.1+	0.3-	1999 10 09	703	0.0	0.1+
1977 08 22	095	0.3+	0.4+	1999 07 23	704	0.2-	0.2-	1999 10 09	703	0.0	0.1+

1977 08 24	095	0.1-	1.9+	1999 07 23	704	0.1-	0.4-	1999 10 10	704	0.4+	0.1-
1977 09 09	095	0.1+	2.3-	1999 09 18	703	0.1+	0.2+	1999 10 10	704	0.5+	0.1-
1977 09 10	675	1.0+	1.3-	1999 09 18	703	0.2-	0.2+	1999 10 10	704	0.3+	0.1-
1988 09 17	095	2.3-	1.3-	1999 09 18	703	0.4-	0.3+	1999 10 10	704	0.3+	0.1-
1997 01 31	691	0.7-	0.0	1999 09 18	703	0.2+	0.2-	1999 10 10	704	0.3+	0.1+
1997 01 31	691	0.3+	0.0	1999 09 30	703	0.3-	0.1+	1999 10 11	704	1.3+	0.6+
1997 01 31	691	0.6-	0.1-	1999 09 30	703	0.1+	0.0	1999 10 11	704	0.2+	0.2+
1997 02 06	691	0.3-	0.2-	1999 09 30	703	0.1+	0.0	1999 10 11	704	0.2+	0.5+
1997 02 06	691	0.1-	0.1-	1999 09 30	703	0.2-	0.1+	1999 10 11	704	0.5+	0.0
1997 02 06	691	0.1-	0.2-	1999 10 04	704	0.2+	0.3+	1999 10 11	704	0.4-	0.5-
1997 03 11	327	0.9-	0.0	1999 10 04	704	0.0	0.1+	1999 10 11	704	1.4+	0.7+
1997 03 11	327	1.2+	0.1-	1999 10 04	704	0.2+	0.1+	1999 10 11	704	0.7+	0.5-
1997 03 11	327	0.4-	0.2-	1999 10 04	704	0.1+	0.1+	1999 10 11	704	0.2+	0.2-
1998 05 01	566	0.3-	0.2-	1999 10 04	704	0.2-	0.7+	1999 10 11	704	0.3+	0.6-
1998 05 01	566	0.4-	0.7-	1999 10 07	704	0.6+	0.7+	1999 10 11	704	1.9-	0.8-
1998 05 01	566	1.1+	0.6+	1999 10 07	704	0.0	0.6+	1999 10 19	704	0.4-	0.4-
1998 05 02	566	0.1-	1.1-	1999 10 07	704	0.6-	0.0	1999 10 19	704	0.7-	0.2-
1998 05 02	566	0.4-	0.9+	1999 10 07	704	0.0	0.0	1999 10 19	704	0.1+	0.0
1998 05 02	566	0.0	0.4+	1999 10 07	704	0.3-	0.7-	1999 10 19	704	1.3-	0.4-
1999 07 23	704	0.4-	0.2+	1999 10 09	703	0.7+	0.8+				

(11787)* 1977 QF₁ = 1990 QH

Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. S. Nakano (*MPC* 16868)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	24.38367	ω	344.99785	+0.94474182	+0.32737312		
<i>a</i>	2.6636768	Ω	355.77592	-0.27191968	+0.75359592		
<i>e</i>	0.1789301	<i>i</i>	13.36150	-0.18309176	+0.57001757		
<i>P</i>	4.35	<i>H</i>	12.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 08 19	095	(0.5+ 2.4+)	1990 09 24	809	0.5+ 0.4-	1999 09 04	703	0.1- 1.0+
1977 08 20	095	(1.9- 4.1+)	1990 09 24	809	0.4- 0.4-	1999 09 04	703	0.1- 1.0+
1977 08 22	095	0.6+ 1.1+	1990 10 27	413	1.2+ 1.0+	1999 09 26	699	0.4- 0.4+
1977 08 23	095	(3.7- 1.6+)	1990 10 27	413	0.0 0.3-	1999 09 26	699	0.0 0.3+
1977 08 24	095	0.0 0.3+	1993 03 21	809	(3.8- 1.3+)	1999 09 26	699	0.6- 0.5+
1977 09 08	095	(2.4- 0.8+)	1993 03 22	809	0.3+ 0.7+	1999 10 05	704	0.1+ 0.1-
1977 09 09	675	0.6+ 0.8-	1993 03 26	809	0.3- 0.8+	1999 10 05	704	0.3+ 0.1+
1977 09 10	675	0.3+ 0.4-	1993 04 17	413	(3.0+ 3.7+)	1999 10 05	704	0.5+ 0.1+
1977 09 10	095	0.7- 1.0-	1997 01 31	589	0.4- 0.2+	1999 10 05	704	0.5+ 0.3-
1977 09 18	095	(2.8+ 3.6-)	1997 01 31	589	0.6- 0.3+	1999 10 05	704	0.0 0.4-
1990 08 20	372	0.4- 0.3+	1997 01 31	589	0.2- 0.3-	1999 10 13	611	0.1- 0.6-
1990 08 20	372	0.5- 0.7+	1997 04 28	704	0.7- 0.2+	1999 10 13	611	0.1- 0.4-
1990 08 24	372	1.3+ 0.5-	1997 04 28	704	1.0- 0.1-	1999 10 14	704	0.1- 0.1-
1990 08 24	372	1.4+ 0.2-	1997 04 28	704	0.9- 0.5-	1999 10 14	704	0.0 0.2-
1990 09 14	675	0.8- 0.4+	1997 04 28	704	1.0- 0.1-	1999 10 14	704	0.0 0.3-
1990 09 14	675	0.5- 0.3+	1997 04 28	704	(3.6- 1.1-)	1999 10 14	704	0.2+ 0.1-
1990 09 20	675	0.5- 0.3+	1997 04 29	704	1.0+ 0.2+	1999 10 14	704	0.8- 0.1-
1990 09 20	675	0.5- 0.4-	1997 04 29	704	1.2+ 0.5-	1999 10 14	704	0.1- 0.1-
1990 09 21	801	0.5- 0.0	1997 04 29	704	0.7+ 0.3-	1999 10 14	704	0.0 0.2-
1990 09 21	801	0.4- 0.0	1997 04 29	704	0.9+ 0.9-	1999 10 14	704	0.1+ 0.0
1990 09 22	801	0.4+ 0.1+	1997 04 29	704	0.9+ 0.6-	1999 10 14	704	0.2+ 0.1+
1990 09 22	801	0.7- 1.0-	1999 09 04	703	0.4- 0.5+	1999 10 14	704	0.2+ 0.2+
1990 09 24	809	1.0+ 0.4-	1999 09 04	703	0.3- 0.5+			

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	15.68549		(2000.0)	P	Q
<i>n</i>	0.26989400	ω	6.90956	+0.78192254	+0.62263942
<i>a</i>	2.3714132	Ω	314.53450	-0.57394993	+0.70011594
<i>e</i>	0.2540215	<i>i</i>	2.43514	-0.24326657	+0.34951082
<i>P</i>	3.65	<i>H</i>	14.9	<i>G</i>	0.15

Residuals in seconds of arc

1977 08 21	095	0.1-	0.9-	1998 03 22	704	0.7-	0.0	1999 10 07	704	0.2+	0.4-
1977 08 23	095	0.7-	0.4-	1998 04 01	704	(2.2+	1.0+)	1999 10 07	704	0.2+	0.1-
1977 09 09	675	0.3+	0.7-	1998 04 01	704	0.5+	0.4-	1999 10 07	704	0.4+	0.2-
1977 09 09	095	0.2-	0.6+	1998 04 01	704	0.2+	0.1-	1999 10 09	703	1.7-	1.3-
1977 09 10	675	0.5+	1.0-	1998 04 01	704	(1.4+	3.1-)	1999 10 09	703	(2.2+	0.0)
1988 09 13	675	1.7+	0.4-	1998 04 19	704	0.6+	1.8+	1999 10 09	703	0.1+	0.4+
1988 09 13	675	0.9+	0.7-	1998 04 19	704	0.2-	0.6-	1999 10 09	703	0.2-	0.5+
1988 09 14	675	0.7+	0.6-	1998 04 19	704	0.5+	1.3-	1999 10 09	704	0.6-	0.3-
1988 09 14	675	1.0+	0.7-	1998 04 19	704	(3.1-	1.2+)	1999 10 09	704	0.9-	0.3-
1991 04 08	809	(11.9+	2.6-)	1999 08 13	699	0.1+	0.8+	1999 10 09	704	1.0-	0.5-
1991 04 08	809	(12.9+	5.0-)	1999 08 13	699	0.5+	0.4+	1999 10 09	704	0.6-	0.6-
1991 04 08	809	(15.4+	5.9-)	1999 08 13	699	0.3+	0.5+	1999 10 09	704	1.4-	0.2-
1991 04 10	809	0.8+	0.1-	1999 09 18	703	0.3+	0.3+	1999 10 13	704	0.1-	0.3+
1991 04 10	809	0.7-	0.3+	1999 09 18	703	0.2+	0.5+	1999 10 13	704	0.1-	0.5+
1991 04 10	809	0.1-	0.6-	1999 09 18	703	0.0	0.5+	1999 10 13	704	0.0	0.1+
1991 04 15	675	(2.4+	0.3-)	1999 09 18	703	0.0	0.9+	1999 10 13	704	0.1+	0.2+
1991 04 19	809	1.0+	0.7+	1999 09 30	703	0.3+	0.6+	1999 10 13	704	0.2+	0.3+
1991 04 19	809	0.0	1.9+	1999 09 30	703	0.2+	0.4+	1999 10 15	704	0.6-	0.3+
1991 04 19	809	0.5-	1.5+	1999 09 30	703	0.4+	0.7+	1999 10 15	704	0.0	0.4+
1998 03 20	704	0.4-	0.2+	1999 09 30	703	0.1-	0.3+	1999 10 15	704	0.1-	0.9+
1998 03 20	704	0.2-	1.3-	1999 10 04	704	0.4-	0.1+	1999 10 15	704	0.1+	0.7+
1998 03 20	704	0.2-	1.0-	1999 10 04	704	0.1+	0.0	1999 10 19	704	0.1+	0.1-
1998 03 20	704	0.2-	1.4-	1999 10 04	704	1.2+	0.7+	1999 10 19	704	0.0	0.0
1998 03 20	704	(0.2-	2.5-)	1999 10 04	704	0.2-	0.3-	1999 10 19	704	0.0	0.1-
1998 03 22	704	0.9-	0.5-	1999 10 04	704	0.3-	0.7-	1999 10 19	704	0.3-	0.2-
1998 03 22	704	(1.4-	2.4-)	1999 10 07	704	0.2+	0.5-	1999 10 19	704	0.3-	0.1-
1998 03 22	704	(0.1+	3.6-)	1999 10 07	704	0.3+	0.4-				

(11789)* 1977 RK = 1990 HM

Discovered 1977 Sept. 5 by H.-E. Schuster at the European Southern

Observatory.

Id. T. Urata (*MPC* 16421)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	175.01931		(2000.0)	P	Q
<i>n</i>	0.36145440	ω	133.84776	-0.96356779	-0.02445777
<i>a</i>	1.9517928	Ω	46.75300	-0.14590774	-0.78651795
<i>e</i>	0.0497712	<i>i</i>	21.44773	+0.22416075	-0.61708292
<i>P</i>	2.73	<i>H</i>	14.7	<i>G</i>	0.15

Residuals in seconds of arc

1977 09 05	809	0.5+	1.0+	1991 11 08	801	0.0	0.8+	1998 04 21	610	0.1+	1.5+
1977 09 06	809	0.3+	0.6+	1994 12 29	693	0.7-	1.2-	1998 04 22	127	0.5-	1.0-
1977 09 07	809	1.0-	0.7-	1994 12 29	693	(0.6-	2.3+)	1998 04 22	127	0.4-	1.2-
1977 09 11	809	1.9+	0.8-	1994 12 31	693	0.3-	0.6+	1998 04 24	566	0.3+	1.5-
1977 10 09	809	0.2+	0.2-	1994 12 31	693	0.1-	1.2-	1998 04 24	566	0.1+	1.3-
1977 10 10	809	0.2-	1.0-	1998 03 02	900	0.4-	0.1-	1998 04 24	566	0.3+	1.4-
1977 10 10	809	0.5+	1.0-	1998 03 02	900	0.4-	0.0	1998 04 27	689	0.2-	0.1+
1977 10 11	809	0.1-	0.1-	1998 03 31	127	0.2+	0.1-	1999 09 13	704	0.1+	1.1+
1990 04 23	385	0.4-	1.0+	1998 03 31	127	0.1-	0.2-	1999 09 13	704	0.1-	0.8+
1990 04 23	385	(5.3-	0.0)	1998 04 08	127	0.6+	0.7-	1999 09 13	704	0.4-	0.1+
1990 04 29	385	1.0+	1.9+	Y 1998 04 08	127	0.8+	0.3-	1999 09 30	704	0.4-	0.6+
1990 04 29	898	(1.5-	5.0-)	Y 1998 04 19	699	0.7-	0.3+	1999 09 30	704	0.4-	1.1-
1990 04 29	898	(0.7-	5.4-)	Y 1998 04 19	699	0.4-	0.3-	1999 09 30	704	1.0-	0.9-
1990 05 25	675	(1.4-	2.4-)	1998 04 19	699	0.0	0.6+	1999 09 30	704	1.2-	0.5-
1990 05 25	675	1.0-	0.6-	1998 04 20	610	0.9+	1.4+	1999 10 16	704	0.3-	0.6+
1991 10 04	801	0.2+	0.3+	1998 04 20	610	0.9+	1.3+	1999 10 16	704	0.1-	0.7+
1991 10 04	801	0.2+	0.5+	1998 04 20	610	1.1+	1.1+	1999 10 16	704	0.5-	1.1+

1991 10 07	801	0.3+	0.7+	1998 04 21	610	0.9+	0.6+	1999 10 16	704	0.4-	0.8+
1991 10 07	801	0.6-	1.6-	1998 04 21	610	0.6+	0.9+	1999 10 16	704	0.4-	0.8+
1991 11 08	801	0.0	0.7+	1998 04 21	610	0.4+	1.2+				

(11790)* 1978 RU = 1985 DT₃

Discovered 1978 Sept. 1 by N. S. Chernykh at the Crimean Astrophysical

Observatory.

Id. C. M. Bardwell (*MPC* 11836)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Bardwell

<i>M</i>	74.62761		(2000.0)	P	Q
<i>n</i>	0.23921278	ω	273.21466	+0.27166012	+0.96226097
<i>a</i>	2.5700789	Ω	12.58320	-0.85133775	+0.24801067
<i>e</i>	0.2526315	<i>i</i>	4.20021	-0.44880375	+0.11200236
<i>P</i>	4.12	<i>H</i>	13.8	<i>G</i>	0.15

Residuals in seconds of arc

1978 09 01	095	1.6+	0.9-	1998 05 01	704	0.2+	0.1-	1999 10 03	703	0.4-	0.5+
1978 09 05	095	(3.0+	0.3+)	1998 05 01	704	0.8+	1.0-	1999 10 07	704	0.1-	0.3-
1978 09 07	095	0.6+	0.4-	1998 05 01	704	(1.3+	3.6+)	1999 10 07	704	0.3-	0.6-
1978 09 12	095	0.1+	0.1-	1998 05 22	704	0.3+	0.6-	1999 10 07	704	0.0	0.5+
1978 09 28	095	(3.5+	1.5+)	1998 05 22	704	0.4-	1.3+	1999 10 12	704	0.5+	0.1+
1978 10 04	095	0.8-	1.4+	1998 05 22	704	1.3-	0.9+	1999 10 12	704	0.6+	0.6-
1978 10 09	095	1.5-	0.3-	1998 05 22	704	0.5-	1.3+	1999 10 12	704	0.1-	0.5-
1985 02 20	675	0.9+	2.2-	1998 05 22	704	0.3-	0.9+	1999 10 12	704	0.1+	0.6-
1985 02 22	675	0.3-	1.4-	1998 05 24	704	1.2-	1.2+	1999 10 12	704	0.0	0.2-
1989 02 02	675	0.7-	0.5-	1998 05 24	704	0.1-	0.1-	1999 10 13	704	0.1-	0.6-
1989 02 02	675	1.1-	0.3+	1998 05 24	704	0.3-	0.1+	1999 10 13	704	0.1-	0.1+
1993 01 22	691	0.4-	0.3+	1998 05 24	704	0.2+	0.9-	1999 10 13	704	0.6-	0.2-
1993 01 22	691	0.3+	0.9+	1998 05 24	704	1.2-	0.0	1999 10 13	704	0.5-	0.4-
1993 01 22	691	0.1-	0.6+	1998 06 16	704	(3.1+	1.0-)	1999 10 13	704	0.6-	0.5-
1993 01 26	691	0.1+	0.2+	1998 06 16	704	1.8-	1.9-	1999 10 15	704	0.0	0.2+
1993 01 26	691	0.1+	0.4+	1998 06 16	704	1.3+	0.6-	1999 10 15	704	0.2+	0.2+
1993 01 26	691	0.1+	0.5+	1999 10 03	704	0.5+	0.4-	1999 10 15	704	0.2-	0.2-
1998 04 22	704	1.5+	0.7-	1999 10 03	704	0.3-	0.8-	1999 10 15	704	0.2-	0.1+
1998 04 22	704	0.8+	0.5+	1999 10 03	704	0.1+	0.9-	1999 10 15	704	0.1-	0.1-
1998 04 22	704	0.2-	0.5-	1999 10 03	704	0.4-	0.7+	1999 10 22	704	0.7+	0.2+
1998 04 22	704	0.2+	1.2-	1999 10 03	704	0.7-	0.6-	1999 10 22	704	1.0+	0.2-
1998 04 22	704	0.2-	0.2-	1999 10 03	703	0.5-	0.3+	1999 10 22	704	0.8+	0.1+
1998 05 01	704	1.3+	1.1-	1999 10 03	703	0.1-	0.6+	1999 10 22	704	1.2+	0.1-
1998 05 01	704	(1.3+	4.4-)	1999 10 03	703	0.0	0.5+	1999 10 22	704	1.1+	0.4-

(11791)* 1978 SH₇ = 1999 RN₁₁₅

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

Observatory.

Id. G. V. Williams (*MPC* 35905)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	328.16893		(2000.0)	P	Q
<i>n</i>	0.23258753	ω	28.68622	+0.95865638	-0.28379012
<i>a</i>	2.6186559	Ω	347.74572	+0.23852803	+0.84161885
<i>e</i>	0.2404971	<i>i</i>	5.67883	+0.15518479	+0.45950070
<i>P</i>	4.24	<i>H</i>	14.6	<i>G</i>	0.15

Residuals in seconds of arc

1978 09 26	095	0.9-	0.1+	1999 09 07	704	0.5+	0.2-	1999 09 30	704	0.1+	0.3+
1978 10 02	095	0.5+	1.3+	1999 09 07	704	0.5+	0.3-	1999 09 30	704	0.4-	0.8+
1978 10 08	095	0.9-	0.3+	1999 09 07	704	0.4+	0.1+	1999 10 04	703	0.3-	0.1+
1978 11 28	675	0.0	0.8+	1999 09 07	704	0.8+	0.2+	1999 10 04	703	0.5-	0.7+
1978 11 29	675	0.2+	0.0	1999 09 07	704	0.7+	1.1+	1999 10 04	703	0.1-	0.3+
1997 02 08	566	0.5-	0.0	1999 09 09	704	0.0	0.0	1999 10 04	703	0.7-	0.1-
1997 02 08	566	0.4-	0.0	1999 09 09	704	0.5-	0.0	1999 10 15	704	0.6-	0.7-
1997 02 08	566	0.7+	0.2-	1999 09 09	704	0.2-	1.2-	1999 10 15	704	0.2-	0.2-
1998 04 21	704	0.2-	1.6+	1999 09 09	704	0.3+	0.6-	1999 10 15	704	0.3-	0.3-
1998 04 21	704	0.4-	1.2+	1999 09 09	704	0.3-	1.1-	1999 10 15	704	0.1-	0.3-
1998 04 21	704	1.5+	0.7+	1999 09 13	704	0.1+	0.1+	1999 10 15	704	0.2-	0.3-
1998 04 21	704	0.1+	0.6-	1999 09 13	704	0.2+	0.4-	1999 10 16	704	0.3-	0.1+

1999 07 21	699	0.7+	0.9-	1999 09 13	704	0.1-	0.2+	1999 10 16	704	0.1-	0.5-
1999 07 21	699	0.4-	0.3-	1999 09 13	704	0.6+	0.2-	1999 10 16	704	0.2+	0.6-
1999 07 21	699	0.3+	0.3-	1999 09 13	704	0.2+	0.3+	1999 10 16	704	0.2+	0.1-
1999 09 03	699	0.3+	0.5+	1999 09 30	704	0.1-	0.1+	1999 10 16	704	0.2-	0.1-
1999 09 03	699	0.0	0.3+	1999 09 30	704	0.3+	0.4+				
1999 09 03	699	0.7-	1.4+	1999 09 30	704	0.3-	0.1+				

(11792)* 1978 SX₇ = 1995 UE₁

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

Id. B. G. Marsden (*MPC* 25953)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
302.86453		(2000.0)			
<i>n</i>	0.23258233	ω	82.04172	+0.43600645	-0.89960957
<i>a</i>	2.6186949	Ω	342.04734	+0.79118094	+0.39615232
<i>e</i>	0.2898560	<i>i</i>	4.56181	+0.42887187	+0.18375515
<i>P</i>	4.24	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 09 26	095	1.2+	1.4-	1999 09 05	699	0.5-	1.7+	1999 09 14	106	1.0-	0.5+
1978 10 02	095	1.3+	1.3+	1999 09 05	699	1.0-	0.7+	1999 09 14	704	0.1-	0.7-
1978 10 08	095	0.7-	0.1+	1999 09 05	699	0.5-	1.6+	1999 09 14	704	0.5-	0.3-
1978 10 27	675	0.0	0.4-	1999 09 07	704	0.2-	0.1+	1999 09 14	704	0.4-	0.8-
1978 10 28	675	0.1-	0.1-	1999 09 07	704	0.3-	0.2+	1999 09 14	704	0.0	0.4-
1978 10 29	675	0.1+	0.0	1999 09 07	704	0.2-	0.4-	1999 09 14	704	0.4-	0.1+
1978 11 01	095	0.0	0.4+	1999 09 07	704	0.5-	0.1-	1999 09 30	704	0.1+	0.4+
1978 11 28	675	1.1-	0.5-	1999 09 07	704	0.0	0.3-	1999 09 30	704	0.8+	0.7+
1978 11 29	675	0.4-	0.7-	1999 09 08	704	0.2-	0.1+	1999 09 30	704	0.2-	0.3+
1995 10 22	046	0.0	0.3+	1999 09 08	704	0.4+	0.2-	1999 09 30	704	0.4-	0.0
1995 10 22	046	0.0	0.4+	1999 09 08	704	0.3-	0.4-	1999 10 05	704	1.0+	0.3-
1995 10 22	046	0.2-	0.3+	1999 09 09	704	0.0	0.5+	1999 10 05	704	0.6+	0.0
1995 10 22	046	0.1-	0.3+	1999 09 09	704	0.6+	0.7-	1999 10 05	704	0.7+	0.2-
1995 10 22	046	0.2-	0.4+	1999 09 09	704	0.7-	0.1-	1999 10 05	704	0.8+	0.3-
1995 10 22	046	0.2-	0.3+	1999 09 09	704	0.1+	0.1-	1999 10 05	704	0.7+	0.4-
1995 10 22	046	0.0	0.2+	1999 09 09	704	0.1-	0.2+	1999 10 07	704	1.2+	0.1+
1995 10 22	046	0.2-	0.4+	1999 09 09	704	0.4-	0.9-	1999 10 07	704	1.2+	0.0
1995 10 22	046	0.1-	0.1+	1999 09 09	704	0.1-	0.8-	1999 10 07	704	1.0+	0.2+
1995 10 22	046	0.4-	0.1+	1999 09 09	704	0.6+	0.1-	1999 10 07	704	0.1-	0.3-
1997 04 03	704	0.8+	0.8+	1999 09 09	704	0.9-	0.5-	1999 10 08	704	1.0+	0.3-
1997 04 03	704	1.5-	0.2-	1999 09 09	704	0.2-	0.1-	1999 10 08	704	0.3+	0.1+
1997 04 07	704	1.7+	0.9+	1999 09 13	106	1.6-	0.5+	1999 10 08	704	1.1+	0.1+
1997 04 07	704	0.3+	1.0+	1999 09 13	106	0.8-	0.8+				

(11793)* 1978 TH₇ = 1996 DG₁

Discovered 1978 Oct. 2 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. G. V. Williams (*MPC* 26737)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
324.40564		(2000.0)			
<i>n</i>	0.18601163	ω	256.99548	+0.71550275	-0.69249682
<i>a</i>	3.0393169	Ω	146.69338	+0.68822056	+0.67601414
<i>e</i>	0.1486455	<i>i</i>	9.66784	+0.12003448	+0.25189885
<i>P</i>	5.30	<i>H</i>	12.9	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1978 10 02	095	1.2-	0.4-	1997 04 07	809	(2.3-	4.6-)	1999 09 14	106	1.0-	0.2+
1978 10 08	095	(2.1-	3.1+)	1997 04 07	809	(1.5-	4.4-)	1999 10 02	704	0.3+	0.1-
1978 11 01	095	0.8+	1.8+	1997 04 07	809	(2.1-	4.8-)	1999 10 02	704	0.3+	0.0
1991 04 16	675	0.8+	1.5+	1997 04 08	809	(0.8-	3.2-)	1999 10 02	704	0.3-	0.2+
1991 04 16	675	0.4-	1.5+	1997 04 08	809	(1.5-	3.9-)	1999 10 02	704	0.4-	0.4-
1996 02 18	587	1.4-	0.7+	1997 04 08	809	(1.4-	3.2-)	1999 10 02	704	0.6-	0.3+
1996 02 22	587	0.3+	0.9-	1999 09 08	703	0.4-	0.4-	1999 10 05	703	0.2+	0.5+
1996 02 22	587	0.1-	1.3-	1999 09 08	703	0.1-	0.0	1999 10 05	703	0.3+	0.5+
1996 02 23	587	0.6+	0.6-	1999 09 08	703	0.0	0.4-	1999 10 05	703	0.3+	0.9+
1996 02 23	587	0.5+	0.4-	1999 09 08	703	0.3+	0.2-	1999 10 05	703	0.1+	0.8+

1996 02 28	587	0.5-	0.2-	1999 09 14	704	0.1-	0.4-	1999 10 08	704	0.3+	0.5+
1996 02 28	587	0.6+	0.1-	1999 09 14	704	0.0	0.1-	1999 10 08	704	0.5+	0.1-
1996 03 01	587	0.1-	0.8-	1999 09 14	704	0.0	1.0-	1999 10 08	704	0.6+	0.0
1996 03 01	587	0.7-	1.1+	1999 09 14	704	0.0	0.7-	1999 10 08	704	0.3+	1.2-
1996 03 10	587	0.2+	0.5+	1999 09 14	704	0.1-	0.5-				
1996 03 10	587	0.4+	0.2-	1999 09 14	106	0.4-	1.0+				

(11794)* 1978 VW₈ = 1993 OU₁₀

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

Id. T. Kobayashi (*MPC* 23968)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
292.50441		(2000.0)			
<i>n</i>	0.18065246	ω	338.06713	+0.50431438	-0.86238906
<i>a</i>	3.0991324	Ω	81.62255	+0.79875177	+0.44643525
<i>e</i>	0.1598747	<i>i</i>	2.55964	+0.32811983	+0.23870627
<i>P</i>	5.46	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 11 05	675	0.5-	1.1+	1996 02 12	327	1.0+	0.1-	1999 09 09	704	0.9-	0.5-
1978 11 06	675	0.5-	0.1+	1996 02 12	327	0.4+	0.1-	1999 09 09	704	0.2-	0.0
1978 11 07	675	0.1+	0.7+	1996 02 12	327	0.5+	0.1+	1999 09 09	704	1.8+	1.0-
1978 11 08	675	0.7-	0.4+	1996 02 15	691	0.6-	0.0	1999 09 13	704	0.5-	0.2-
1978 11 29	675	0.2+	0.1-	1996 02 15	691	0.2-	0.0	1999 09 13	704	0.7-	1.4+
1988 08 16	675	1.3+	0.8-	1996 02 15	691	0.3-	0.1-	1999 09 13	704	0.3-	0.3-
1988 08 16	675	0.8+	0.2-	1999 09 04	699	0.0	0.6+	1999 09 13	704	0.5-	0.5-
1988 09 11	675	1.0+	0.1-	1999 09 04	699	0.5+	0.6+	1999 09 30	704	0.2-	0.0
1988 09 11	675	0.0	1.3+	1999 09 04	699	0.1-	0.7+	1999 09 30	704	0.4+	0.0
1993 07 13	809	1.3+	0.6+	1999 09 07	704	0.2+	0.4-	1999 09 30	704	0.6+	0.3+
1993 07 13	809	0.2+	0.2-	1999 09 07	704	0.4-	0.5-	1999 09 30	704	0.3+	0.3-
1993 07 13	809	0.2-	0.2-	1999 09 07	704	0.2-	0.2-	1999 09 30	704	0.3+	0.0
1993 07 20	809	0.1+	1.7+	1999 09 07	704	0.4-	0.8-	1999 10 04	703	1.2+	0.5+
1993 07 20	809	0.9-	1.4+	1999 09 07	704	0.1-	0.5-	1999 10 04	703	0.3+	0.2+
1993 07 20	809	1.3-	1.9+	1999 09 09	704	0.2-	0.0	1999 10 04	703	0.0	0.1-
1993 07 24	809	1.5-	1.6-	1999 09 09	704	0.2+	1.0-	1999 10 04	703	0.8-	0.2-

(11795)* 1979 QM₁ = 1987 GH₁

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

Id. C. M. Bardwell (*MPC* 11996), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
27.59944		(2000.0)			
<i>n</i>	0.20227637	ω	145.52561	+0.93058146	+0.36606301
<i>a</i>	2.8741269	Ω	193.00318	-0.33975489	+0.85952752
<i>e</i>	0.1208564	<i>i</i>	1.01938	-0.13632594	+0.35666555
<i>P</i>	4.87	<i>H</i>	13.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1979 08 22	809	0.3+	0.2+	1998 06 20	703	0.5-	1.2+	1999 10 10	704	0.1+	0.4-
1979 08 22	809	0.2+	0.2+	1999 10 03	704	0.3+	0.6+	1999 10 10	681	0.0	0.5+
1979 08 22	809	0.2+	0.2-	1999 10 03	704	0.4-	1.0+	1999 10 10	704	0.1+	0.1-
1979 08 23	809	0.2-	0.6-	1999 10 03	704	0.9-	0.7+	1999 10 10	704	0.1+	0.4-
1979 08 23	809	1.2+	0.7-	1999 10 03	704	0.8-	0.9+	1999 10 11	106	0.6-	0.3+
1979 08 26	809	0.2+	0.4-	1999 10 03	704	0.7-	0.1-	1999 10 11	106	0.2+	0.1+
1979 08 26	809	0.4-	1.0-	1999 10 05	704	0.2+	1.3+	1999 10 11	106	0.3-	0.5+
1979 08 26	809	1.0-	0.9-	1999 10 05	704	0.6-	1.4+	1999 10 13	727	0.5-	0.9-
1979 08 30	809	0.8+	0.5-	1999 10 05	704	0.0	0.4+	1999 10 13	727	0.4-	0.2-
1979 08 30	809	0.1+	1.3-	1999 10 05	704	0.4+	0.6+	1999 10 13	727	0.3-	0.1-
1987 04 01	675	0.9+	0.2-	1999 10 05	704	0.2+	1.0+	1999 10 15	691	0.1-	0.2-
1987 04 01	675	0.8+	0.0	1999 10 07	704	1.2+	0.2+	1999 10 15	704	0.3-	0.0
1987 04 03	675	(3.4-	0.1-)	1999 10 07	704	1.2+	2.0-	1999 10 15	691	0.2-	0.3-
1987 04 03	675	0.6-	1.7-	1999 10 07	704	1.8+	0.9-	1999 10 15	704	0.4-	0.4-
1994 11 01	691	0.3+	0.1+	1999 10 07	704	0.6+	0.1+	1999 10 15	691	0.2-	0.2-
1994 11 01	691	0.3-	0.0	1999 10 07	704	0.1-	0.3-	1999 10 15	704	0.4-	0.4-
1994 11 01	691	0.2-	0.0	1999 10 08	120	0.7+	0.3-	1999 10 15	704	0.2-	1.0-
1997 04 02	691	0.2-	0.9+	1999 10 08	120	0.5+	0.3-	1999 10 15	704	0.7-	0.8-

1997 04 02	691	0.8+	0.7+	1999 10 08	120	0.3-	0.1-	1999 10 16	681	0.5-	0.7+
1997 04 08	691	0.3-	0.3+	1999 10 09	120	0.3+	0.1-	1999 10 16	681	0.6-	0.5+
1997 04 08	691	0.8-	0.4-	1999 10 09	691	0.5+	0.1+	1999 10 20	704	0.0	0.4+
1997 04 08	691	0.6-	0.1+	1999 10 09	691	0.6+	0.1+	1999 10 20	704	0.1-	0.5+
1997 04 16	691	0.3-	0.4-	1999 10 09	691	0.6+	0.1+	1999 10 20	704	0.1-	0.4+
1997 04 16	691	0.4-	0.5-	1999 10 10	681	0.2+	0.1-	1999 10 20	704	0.4-	0.4+
1997 04 16	691	0.3-	0.3-	1999 10 10	681	0.1+	0.4+	1999 10 20	704	0.4-	0.4+
1998 06 20	703	0.2+	1.2+	1999 10 10	704	0.1-	0.3-				
1998 06 20	703	1.0+	1.8+	1999 10 10	704	0.0	0.4-				

(11796)* 1980 DS₄ = 1980 FL = 1989 XP₂ = 1991 EL₈

Discovered 1980 Feb. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Id. B. G. Marsden (d, *MPC* 9203), A. Gnädig (*MPC* 32439)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26867432	<i>ω</i>	65.40678	-0.50903553	+0.86070256		
<i>a</i>	2.3785846	<i>Ω</i>	173.97226	-0.81637406	-0.47960480		
<i>e</i>	0.1999456	<i>i</i>	4.69661	-0.27279338	-0.17079325		
<i>P</i>	3.67	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1980 02 21	095	0.7-	2.1-	1999 07 23	704	0.7-	0.3-	1999 09 13	699	0.6-	0.2+
1980 03 16	809	0.3+	0.8+	1999 07 23	704	1.1-	0.4-	1999 09 13	699	0.2+	0.9+
1980 03 16	809	0.6+	0.5+	1999 07 23	704	1.0-	0.1-	1999 09 14	106	0.6+	0.7+
1980 03 16	809	0.2+	1.0+	1999 09 04	703	0.2-	0.6+	1999 09 14	106	1.0-	1.0+
1980 03 16	809	0.1-	1.0+	1999 09 04	703	0.7-	0.3+	1999 10 06	704	0.6-	0.3+
1980 03 17	809	0.3+	0.6+	1999 09 04	703	0.8-	0.3+	1999 10 06	704	0.0	0.9+
1980 03 17	809	0.3-	1.4+	1999 09 04	703	1.0-	0.2+	1999 10 06	704	0.5+	0.6+
1980 03 17	809	0.0	0.5+	1999 09 07	704	0.1+	0.4+	1999 10 06	704	1.0+	0.5+
1980 03 17	809	0.8+	0.0	1999 09 07	704	0.5+	0.1-	1999 10 06	704	1.6+	0.1-
1989 12 02	372	1.9-	0.0	1999 09 07	704	0.2+	0.4-	1999 10 15	704	0.4+	0.2+
1989 12 02	372	(4.1-	1.0+)	1999 09 07	704	0.0	0.8+	1999 10 15	704	1.1+	0.1+
1991 03 09	675	0.3-	1.4-	1999 09 07	704	0.1+	0.4-	1999 10 15	704	1.2+	0.3-
1991 03 09	675	0.3+	1.1-	1999 09 09	704	0.2-	0.8+	1999 10 15	704	1.3+	0.2+
1992 09 26	691	0.4+	0.7+	1999 09 09	704	0.0	0.0	1999 10 15	704	1.3+	0.1-
1992 09 26	691	0.6+	0.8+	1999 09 09	704	0.2+	0.1+	1999 10 16	704	1.0+	0.0
1992 09 26	691	0.3-	0.7+	1999 09 09	704	0.2+	0.5+	1999 10 16	704	1.6+	0.2+
1999 07 13	704	0.9-	0.8-	1999 09 13	704	0.4+	0.2-	1999 10 16	704	0.7+	0.4-
1999 07 13	704	0.8-	0.3-	1999 09 13	699	0.9-	0.2-	1999 10 16	704	1.0+	0.9-
1999 07 13	704	0.7-	0.2-	1999 09 13	704	0.3+	0.6-	1999 10 16	704	0.6+	1.0-
1999 07 13	704	0.6-	0.7-	1999 09 13	704	(0.5+	2.3-)				
1999 07 13	704	1.1-	0.7-	1999 09 13	704	0.1-	1.8-				

(11797)* 1980 FV₂ = 1990 QX₉

Discovered 1980 Mar. 16 by C.-I. Lagerkvist at the European Southern Observatory.

Id. G. V. Williams (*MPC* 17427)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22428475	<i>ω</i>	296.67963	+0.39296618	+0.91945726		
<i>a</i>	2.6828902	<i>Ω</i>	356.38111	-0.75120663	+0.31267161		
<i>e</i>	0.1863228	<i>i</i>	12.13075	-0.53034534	+0.23840055		
<i>P</i>	4.39	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 03 16	809	0.4-	0.7+	1990 09 24	809	1.0-	0.6+	1999 10 01	703	0.2-	0.0
1980 03 16	809	0.1+	0.2+	1990 09 24	809	0.6-	0.7+	1999 10 01	703	0.1-	0.1-
1980 03 16	809	0.0	0.5-	1990 09 24	809	0.4-	0.6+	1999 10 01	703	0.4-	0.2+
1980 03 16	809	0.2-	0.6-	1990 10 22	675	1.0+	1.6-	1999 10 01	703	0.3-	0.1+
1980 03 17	809	0.2+	0.5-	1990 10 22	675	(1.6+	3.8-)	1999 10 03	704	0.4-	0.8-
1980 03 17	809	0.4-	0.1+	1998 06 24	566	0.5-	0.3-	1999 10 03	704	0.0	0.3-
1980 03 17	809	0.0	0.6-	1998 06 24	566	0.2-	0.1-	1999 10 03	704	0.3-	0.0
1980 03 17	809	0.2+	0.1-	1998 06 24	566	0.2+	0.4-	1999 10 03	704	0.3-	0.9-
1980 03 23	809	0.9-	0.8-	1999 09 13	106	0.5-	0.1+	1999 10 03	704	0.8-	0.6-

1990 08 29	675	0.1+	1.7-	1999 09 13	106	0.1+	0.2+	1999 10 10	704	0.0	0.2-
1990 08 29	675	(3.6+	2.1-)	1999 09 13	106	0.2+	0.0	1999 10 10	704	0.3+	0.1-
1990 09 14	675	1.1+	0.5-	1999 09 18	704	0.7+	0.2+	1999 10 10	704	0.5+	0.4-
1990 09 14	675	(2.8-	0.2-)	1999 09 18	704	0.4+	0.1-	1999 10 10	704	0.3+	0.0
1990 09 14	675	0.7-	1.0-	1999 09 18	704	0.4+	0.2+	1999 10 21	704	0.5+	0.6-
1990 09 14	675	0.8-	0.3+	1999 09 18	704	0.5+	0.2+	1999 10 21	704	0.2+	0.2-
1990 09 20	675	0.6-	0.3-	1999 09 18	704	0.4+	0.5+	1999 10 21	704	0.2+	0.0
1990 09 20	675	0.2+	1.3-	1999 09 21	681	0.8-	0.7+	1999 10 21	704	0.2+	0.2-
1990 09 23	809	1.0+	0.8+	1999 09 21	681	0.4-	0.6+	1999 10 21	704	0.2+	0.1-
1990 09 23	809	0.8+	0.9+	1999 09 22	681	0.4+	0.7+				
1990 09 23	809	1.1+	0.9+	1999 09 22	681	0.1-	0.0				

(11798)* 1980 FH₅ = 1986 QE₃

Discovered 1980 Mar. 16 by C.-I. Lagerkvist at the European Southern Observatory.

Id. C. M. Bardwell (*MPC* 12126)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23596554	<i>ω</i>	82.84739	+0.21225441	-0.97697824		
<i>a</i>	2.5936040	<i>Ω</i>	354.74927	+0.77807227	+0.18226085		
<i>e</i>	0.1579179	<i>i</i>	13.57804	+0.59122889	+0.11088061		
<i>P</i>	4.18	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 03 16	809	1.2-	0.5-	1986 09 02	809	0.4+	0.9-	1990 07 30	675	0.3-	1.1+
1980 03 16	809	0.8-	0.8-	1986 09 02	809	0.6+	1.0-	1990 09 14	675	0.3-	1.8-
1980 03 16	809	0.2-	1.3-	1986 09 04	809	0.2+	0.1+	1990 09 14	675	(2.8-	2.1+)
1980 03 16	809	1.3-	1.6-	1986 09 04	809	0.1+	0.1+	1990 09 15	675	1.7-	0.7-
1980 03 17	809	0.9-	0.7-	1986 09 04	809	0.2+	0.1+	1990 09 15	675	(2.8-	0.7+)
1980 03 17	809	0.0	0.9-	1986 09 07	809	1.5+	0.9-	1994 07 12	675	0.8+	0.2+
1980 03 17	809	0.4-	0.4-	1986 09 07	809	1.4+	0.8-	1994 07 12	675	0.8-	1.3+
1980 03 17	809	0.7-	1.3-	1986 09 07	809	1.3+	0.9-	1999 09 26	699	0.5+	1.1-
1980 03 23	809	0.2-	0.7-	1986 09 09	809	0.9+	0.0	1999 09 26	699	1.2-	1.0+
1986 08 29	809	(2.8-	0.1+)	1986 09 09	809	0.9+	0.0	1999 09 26	699	0.3-	1.1+
1986 08 29	809	(2.7-	0.0)	1986 09 09	809	0.9+	0.1-	1999 10 05	704	0.1+	0.5-
1986 08 29	809	2.5-	0.1+	1986 09 11	809	1.8+	0.7+	1999 10 05	704	0.3+	0.2-
1986 08 31	809	0.5-	0.2-	1986 09 11	809	1.6+	0.5+	1999 10 05	704	0.5+	0.3-
1986 08 31	809	0.5-	0.2-	1986 09 11	809	1.6+	0.4+	1999 10 05	704	0.4+	0.2-
1986 08 31	809	0.4-	0.1-	1988 01 23	801	0.2+	1.4+	1999 10 14	704	0.4+	0.6-
1986 09 01	809	1.6-	0.3-	1988 02 17	801	0.3+	0.7+	1999 10 14	704	0.3+	0.5-
1986 09 01	809	1.5-	0.5-	1990 07 28	675	1.1+	1.0-	1999 10 14	704	0.3+	0.4-
1986 09 01	809	1.4-	0.6-	1990 07 28	675	0.3-	0.6+	1999 10 14	704	0.2+	0.5-
1986 09 02	809	0.1+	0.8-	1990 07 30	675	0.7-	0.7+	1999 10 14	704	0.1+	0.4-

(11799)* 1981 DG₂ = 1994 WM₁₃

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* 28838), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18495514	<i>ω</i>	107.76284	+0.84490215	+0.52243711		
<i>a</i>	3.0508799	<i>Ω</i>	220.94911	-0.53267347	+0.80204965		
<i>e</i>	0.1732726	<i>i</i>	10.09620	-0.04898299	+0.28944054		
<i>P</i>	5.33	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 02 09	413	0.9+	0.1+	1999 09 18	699	0.5-	0.2+	1999 10 12	704	0.3-	0.6+
1981 02 28	413	1.6-	0.3-	1999 09 18	699	0.7-	0.3+	1999 10 12	704	0.4-	0.6+
1981 02 28	413	1.5+	1.0-	1999 09 18	699	0.1-	0.0	1999 10 13	704	0.3+	0.2+
1981 03 06	413	1.3-	0.5+	1999 10 02	703	0.4-	0.4+	1999 10 13	704	0.0	0.2+
1981 03 06	413	2.1+	2.3-	1999 10 02	703	0.1-	0.0	1999 10 13	704	0.2+	0.0
1981 03 08	413	0.8-	1.4+	1999 10 02	703	0.6+	0.1+	1999 10 13	704	0.1-	0.0
1981 03 08	413	1.2+	0.1-	1999 10 02	703	0.6-	0.1-	1999 10 13	704	0.0	0.2+
1981 03 12	413	0.9-	0.2+	1999 10 03	704	0.5+	0.3+	1999 10 13	704	0.0	0.1+
1981 03 12	413	0.2-	0.6+	1999 10 03	704	0.7-	0.6-	1999 10 13	704	0.3-	0.3+

1981 04 08	413	2.1-	1.9+	1999 10 03	704	0.2+	0.5+	1999 10 13	704	0.1-	0.1+
1981 04 09	413	0.5+	0.2+	1999 10 03	704	0.1+	0.3+	1999 10 13	704	0.2-	0.2+
1981 04 09	413	0.3+	0.3+	1999 10 03	704	0.4+	0.1+	1999 10 13	704	0.0	0.1+
1981 05 01	413	1.1+	0.6-	1999 10 07	704	1.2+	1.4+	1999 10 13	704	0.0	0.1+
1994 11 27	675	0.2+	0.6+	1999 10 07	704	0.2+	0.4-	1999 10 13	704	0.6+	0.9+
1994 11 27	675	1.0+	1.2+	1999 10 07	704	0.6+	0.3-	1999 10 13	704	(2.3-	3.0+)
1994 12 01	691	0.6-	0.4-	1999 10 07	704	0.7+	0.3-	1999 10 13	704	0.6+	0.2-
1994 12 01	691	0.6-	0.4-	1999 10 07	704	0.2-	0.8-	1999 10 15	704	0.6-	0.7-
1994 12 01	691	0.5-	0.7-	1999 10 09	703	0.2-	0.2+	1999 10 15	704	0.1+	0.0
1997 04 11	691	0.1+	1.0+	1999 10 09	703	0.0	0.3+	1999 10 15	704	0.0	0.2-
1997 04 11	691	0.4+	1.4+	1999 10 09	703	0.0	0.1+	1999 10 15	704	0.1+	0.7-
1997 04 11	691	0.3+	0.9+	1999 10 09	703	0.2-	0.1+	1999 10 15	704	0.1-	0.1+
1998 06 19	704	0.4+	1.5+	1999 10 10	704	0.5+	0.6+	1999 10 18	691	0.4+	0.5-
1998 06 19	704	0.2+	1.8+	1999 10 10	704	0.1+	0.5+	1999 10 18	691	0.5+	0.6-
1998 06 19	704	0.8+	0.2+	1999 10 10	704	0.5+	0.9+	1999 10 18	691	0.4+	0.5-
1998 06 19	704	0.7-	0.9-	1999 10 10	704	0.1+	0.4+	1999 10 21	704	0.4-	0.3-
1998 06 19	704	0.1-	1.1-	1999 10 10	704	0.6+	0.2+	1999 10 21	704	0.7-	0.3-
1999 09 13	106	0.3-	0.3+	1999 10 12	704	0.4-	0.4+	1999 10 21	704	0.7-	0.5-
1999 09 13	106	0.3+	0.4-	1999 10 12	704	0.3-	0.5+	1999 10 21	704	0.7-	0.5-
1999 09 13	106	0.4+	0.4-	1999 10 12	704	0.6-	0.8+	1999 10 21	704	1.1-	0.5-

(11800)* 1981 DN₂

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>	0.18779706	ω	149.50419	+0.84886427	-0.50607253		
<i>a</i>	3.0200226	Ω	241.66550	+0.44319434	+0.83880816		
<i>e</i>	0.1132947	<i>i</i>	9.99110	+0.28811150	+0.20072736		
<i>P</i>	5.25	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 02 04	413	0.2-	0.4+	1994 11 29	675	1.3-	0.7-	1999 10 03	704	0.4+	0.1-
1981 02 08	413	0.5-	0.9+	1999 09 08	704	0.5-	0.1-	1999 10 03	704	0.7+	0.5-
1981 02 28	413	(2.8-	0.6+)	1999 09 08	704	0.2-	0.1-	1999 10 03	704	0.7+	0.2+
1981 02 28	413	1.1+	0.4-	1999 09 08	704	0.8-	0.2-	1999 10 03	704	0.2+	0.3-
1981 03 06	413	0.7+	0.0	1999 09 08	704	0.1-	0.3-	1999 10 03	704	0.3+	0.1-
1981 03 06	413	2.3+	0.1-	1999 09 08	704	1.0-	0.2+	1999 10 10	704	0.1-	0.6+
1981 03 08	413	0.7-	1.1+	1999 09 18	704	0.1-	0.4+	1999 10 10	704	0.2-	0.4+
1981 04 09	413	1.6-	1.8-	1999 09 18	704	0.3+	0.6-	1999 10 10	704	0.3-	0.0
1981 04 09	413	(1.5+	3.0-)	1999 09 18	704	0.5-	0.2+	1999 10 10	704	0.1+	0.0
1981 05 01	413	1.6+	0.3+	1999 09 18	704	0.4-	0.2-	1999 10 10	704	0.2+	0.0
1981 05 01	413	2.0-	2.2+	1999 09 18	704	0.2-	0.2-	1999 10 20	704	0.2-	0.0
1988 08 13	675	0.2+	0.7+	1999 10 03	704	0.1+	0.1-	1999 10 20	704	0.3-	0.8+
1988 08 13	675	0.4-	0.0	1999 10 03	704	0.3+	0.1-	1999 10 20	704	0.3-	0.6+
1994 10 03	675	0.3+	0.9+	1999 10 03	704	0.1+	0.3-	1999 10 20	704	0.2-	0.4+
1994 10 03	675	0.7+	0.7+	1999 10 03	704	0.8+	0.4-	1999 10 20	704	0.1+	0.6+
1994 11 29	675	(0.5+	2.9-)	1999 10 03	704	0.6+	0.0				

(11801)* 1981 EL₅ = 1987 KL₂

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* 17817)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18580397	ω	196.56422	+0.12286609	-0.98020607		
<i>a</i>	3.0415810	Ω	246.59587	+0.92863788	+0.16872929		
<i>e</i>	0.0978260	<i>i</i>	9.73893	+0.35005087	-0.10356872		
<i>P</i>	5.30	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1950 06 15	675	1.6-	1.3+	1981 04 09	413	0.8-	0.5+	1999 09 10	704	0.6-	0.3-
1950 06 15	675	0.7+	0.9-	1981 04 09	413	0.7+	0.6-	1999 09 14	704	0.0	0.3-
1955 04 16	675	0.5+	0.2+	1981 05 02	413	0.1+	0.9-	1999 09 14	704	0.1-	0.3+
1955 04 16	675	0.6+	0.5-	1981 05 03	413	1.3+	1.4-	1999 09 14	704	0.6-	0.0

1981 02 09	413	1.2-	0.4+	1987 05 30	413	0.3+	0.1-	1999 09 14	704	0.4+	0.3-
1981 02 09	413	0.7+	0.1+	1987 05 30	413	0.1+	0.2-	1999 09 14	704	0.9-	0.0
1981 03 02	413	1.5+	0.6+	1991 01 15	688	0.0	0.4+	1999 10 02	704	0.6+	0.2-
1981 03 07	413	1.8-	1.5+	1991 01 15	688	0.4+	0.2+	1999 10 02	704	0.8+	0.0
1981 03 07	413	0.1+	0.3+	1999 09 09	704	0.0	0.0	1999 10 02	704	0.0	0.2+
1981 03 10	413	2.2-	0.6+	1999 09 09	704	0.8+	0.7+	1999 10 02	704	0.5-	0.9-
1981 03 10	413	0.6-	0.6-	1999 09 09	704	0.1-	0.2+	1999 10 08	704	0.1-	1.1+
1981 03 12	413	0.7+	0.1-	1999 09 09	704	0.1-	0.2-	1999 10 08	704	0.5+	0.1-
1981 04 07	413	1.3-	1.0+	1999 09 09	704	0.1+	0.1-	1999 10 08	704	0.4-	0.5+
1981 04 07	413	2.1+	1.0-	1999 09 10	704	0.5-	0.3+	1999 10 08	704	0.6+	0.8+
1981 04 08	413	0.9-	1.2+	1999 09 10	704	0.4-	0.0	1999 10 08	704	0.3-	0.2+
1981 04 08	413	1.4+	0.1-	1999 09 10	704	0.2+	0.1+				

(11802)* 1981 EP₁₂ = 1989 SK₇

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* 27708), C. P. deSaint-Aignan (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29344326	ω	155.48339	+0.57355794	-0.81447088		
<i>a</i>	2.2427797	Ω	259.40439	+0.73609842	+0.55934932		
<i>e</i>	0.0731134	<i>i</i>	5.11119	+0.35943066	+0.15416072		
<i>P</i>	3.36	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 02 09	413	0.3-	0.7+	1989 11 01	675	1.1+	0.2-	1999 09 09	704	0.0	0.3+
1981 02 12	413	0.7+	0.2+	1989 11 01	675	0.3+	1.0+	1999 09 09	704	0.3-	0.3+
1981 02 14	413	1.2+	0.3-	1994 01 10	691	0.0	0.7+	1999 09 09	704	0.0	0.1-
1981 03 01	413	0.1-	0.7+	1994 01 10	691	0.1+	0.5+	1999 09 09	704	0.3-	0.2+
1981 03 01	413	0.8+	0.5-	1994 01 10	691	0.3+	0.5+	1999 09 09	704	0.4-	0.5+
1981 03 06	413	0.9+	1.5+	1998 04 01	704	0.7+	0.1-	1999 09 16	704	0.6-	1.1+
1981 03 06	413	1.4+	0.7-	1998 04 01	704	0.4+	0.5+	1999 09 16	704	0.1+	0.2+
1981 03 08	413	0.7-	0.6+	1998 04 01	704	0.2+	1.8-	1999 09 16	704	0.4+	0.0
1981 03 08	413	1.2+	0.3-	1998 04 01	704	(0.3+	2.2-)	1999 09 16	704	0.9+	0.5-
1981 03 12	413	0.6-	1.1+	1998 04 01	704	(0.5-	2.2-)	1999 10 01	703	0.0	0.7+
1981 03 12	413	0.1+	0.3+	1998 05 16	704	0.6-	0.4-	1999 10 01	703	0.4-	0.7+
1981 04 06	413	1.2-	0.9+	1998 05 16	704	0.1-	0.3-	1999 10 01	703	0.4-	0.8+
1981 04 06	413	(2.8+	2.4-)	1998 05 16	704	0.1-	0.7+	1999 10 01	703	0.0	0.4+
1981 04 08	413	2.3-	0.8+	1998 05 16	704	2.0+	1.5+	1999 10 02	704	0.0	0.2+
1981 04 08	413	1.0-	1.4-	1999 09 05	703	0.3-	0.2+	1999 10 02	704	0.2+	0.1+
1981 04 09	413	1.3-	0.0	1999 09 05	703	0.7-	0.6+	1999 10 02	704	0.4-	0.2+
1981 04 09	413	0.5+	1.5-	1999 09 05	703	0.8-	0.6+	1999 10 02	704	0.0	0.6-
1981 05 03	413	0.7-	0.8-	1999 09 05	703	1.1-	0.0	1999 10 09	704	0.3-	0.1+
1981 05 03	413	1.0+	2.2+	1999 09 08	699	0.5+	0.5+	1999 10 09	704	0.0	0.0
1989 09 02	675	1.0+	0.1+	1999 09 08	699	0.2-	0.9+	1999 10 09	704	0.1+	0.1-
1989 09 22	046	2.1-	1.8-	1999 09 08	704	0.1-	0.2-	1999 10 09	704	0.2-	0.1-
1989 09 22	046	1.1-	1.1-	1999 09 08	699	0.4-	0.5-	1999 10 09	704	0.2-	0.4-
1989 09 30	675	0.2+	0.3+	1999 09 08	704	0.4-	0.4-				
1989 09 30	675	2.1+	0.4-	1999 09 08	704	0.1+	0.3-				

(11803)* 1981 ES₁₂ = 1997 FW₂

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* 29608)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18645368	ω	262.22384	-0.25582994	-0.96202550		
<i>a</i>	3.0345112	Ω	203.28291	+0.95441432	-0.23568651		

1981 03 01	413	0.3+	0.1+	1997 03 12	809	(1.3− 3.2−)	1999 09 08	704	0.2+	0.6−
1981 03 06	413	0.9−	1.4+	1997 03 12	809	(1.6− 2.5−)	1999 09 08	704	0.7+	0.2+
1981 03 06	413	0.5−	0.1+	1997 03 31	704	0.5− 1.1+	1999 09 08	704	0.6−	0.2+
1981 03 08	413	0.2−	0.8+	1997 03 31	704	0.3− 0.6+	1999 09 08	704	0.3−	0.0
1981 03 08	413	1.1+	0.5−	1997 04 03	704	0.6− 0.1+	1999 09 09	704	0.3+	0.3+
1981 03 12	413	1.1−	1.2+	1997 04 03	704	0.3− 0.1−	1999 09 09	704	0.4−	1.1+
1981 04 06	413	(1.7− 3.5+)		1997 04 05	704	0.1+ 0.5+	1999 09 09	704	0.5+	0.4+
1981 04 06	413	1.2+	1.0−	1997 04 05	704	0.9+ 0.1−	1999 09 09	704	0.1−	0.4+
1981 04 08	413	0.8−	0.3−	1997 04 06	704	0.5− 1.0−	1999 09 09	704	1.5+	0.3−
1981 04 08	413	0.6+	1.6−	1997 04 06	704	1.1+ 1.4−	1999 09 14	704	(0.2+ 2.2+)	
1981 04 09	413	1.0−	1.1+	1997 04 07	704	0.2− 0.7+	1999 09 14	704	0.9−	0.4+
1981 04 09	413	0.9+	1.5−	1997 04 07	704	0.3− 0.8+	1999 09 14	704	0.3−	0.5−
1981 05 01	413	0.5+	1.1−	1998 06 19	704	0.2+ 0.2−	1999 10 08	704	0.0	0.1+
1981 05 03	413	0.2−	1.6−	1998 06 19	704	0.1− 0.6+	1999 10 08	704	0.7−	1.1+
1992 05 03	691	(3.2+ 0.7−)		1998 06 19	704	0.5− 0.3+	1999 10 08	704	0.6−	0.1−
1992 05 03	691	1.1+ 0.3−		1998 06 19	704	1.0− 0.1+	1999 10 08	704	0.3−	0.2−
1992 05 03	691	1.0+ 0.1−		1998 06 25	704	1.6+ 0.1+	1999 10 08	704	0.8+	0.9−
1997 03 11	809	(3.4− 0.7+)		1998 06 25	704	1.1− 0.6−				

(11804)* 1981 EE₁₃ = 1998 FE₁₁₉

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* 31709)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	57.69639		(2000.0)		P		Q
<i>n</i>	0.23537619	ω	322.57232		+0.31879454		+0.94502529
<i>a</i>	2.5979315	Ω	325.84376		−0.83526301		+0.24381068
<i>e</i>	0.1957333	<i>i</i>	7.44834		−0.44800194		+0.21790723
<i>P</i>	4.19	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 02 12	413	0.1+	0.6−	1998 03 31	704	(2.3+ 0.4+)	1999 10 03	704	0.1−	0.1+
1981 02 12	413	1.0−	0.0	1998 04 01	704	0.5− 0.4−	1999 10 03	704	0.4+	0.4−
1981 03 01	413	0.3+	1.3+	1998 04 01	704	0.8+ 1.0+	1999 10 03	704	0.2−	0.0
1981 03 08	413	(3.0− 1.1+)		1998 04 01	704	(2.5− 1.7−)	1999 10 03	704	0.3−	0.1−
1981 03 12	413	0.5+	0.2−	1998 04 01	704	0.4− 0.5+	1999 10 12	704	0.1−	0.2+
1981 04 08	413	1.5−	0.6+	1998 04 01	704	1.1− 1.4+	1999 10 12	704	0.5+	0.0
1981 04 09	413	1.3+	0.5−	1998 04 30	566	0.1− 0.6−	1999 10 12	704	0.4+	0.2−
1981 04 09	413	0.2−	0.4−	1998 04 30	566	0.4+ 0.9−	1999 10 12	704	0.1−	0.4+
1981 05 03	413	0.2+	0.4−	1998 04 30	566	0.4+ 1.0−	1999 10 12	704	0.2+	0.0
1993 01 29	691	0.2−	0.3−	1999 09 18	704	0.2+ 0.3−	1999 10 21	704	0.3−	0.6+
1993 01 29	691	0.1−	0.2−	1999 09 18	704	0.1− 0.7−	1999 10 21	704	0.7−	0.4−
1993 01 29	691	0.2+	0.3−	1999 09 18	704	0.1+ 0.2−	1999 10 21	704	0.1+	0.1−
1998 03 31	704	0.6+	0.9−	1999 09 18	704	0.1+ 0.9−	1999 10 21	704	0.0	1.0−
1998 03 31	704	0.4−	0.7−	1999 09 18	704	0.5+ 0.1−				
1998 03 31	704	0.8−	0.7−	1999 10 03	704	0.5+ 0.4+				

(11805)* 1981 EL₁₃ = 1997 GD₁₁

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* 29608)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	5.20754		(2000.0)		P		Q
<i>n</i>	0.18714858	ω	153.77823		+0.99485226		+0.08047691
<i>a</i>	3.0269949	Ω	201.87007		−0.09349688		+0.96332024
<i>e</i>	0.1227490	<i>i</i>	9.51592		+0.03908081		+0.25600309
<i>P</i>	5.27	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 02 12	413	(2.8+ 0.9−)		1998 06 25	704	0.1− 0.3−	1999 10 07	704	0.2+	0.2+
1981 03 01	413	1.2−	1.4+	1998 06 25	704	1.5+ 1.2−	1999 10 07	704	0.3−	0.8+
1981 03 08	413	0.2−	0.9+	1998 06 25	704	1.2− 1.0+	1999 10 07	704	0.3+	0.1+
1981 03 08	413	2.0+	0.5−	1999 09 18	703	0.6− 0.3−	1999 10 07	704	0.3+	0.4+
1981 03 12	413	0.1+	0.2+	1999 09 18	703	0.6− 0.6+	1999 10 09	704	0.3+	0.2+
1981 04 09	413	0.3+	0.0	1999 09 18	703	0.6− 0.2+	1999 10 09	704	0.2+	0.0

1981 04 09	413	1.7+	0.7−	1999 09 18	703	0.6− 0.1+	1999 10 09	704	0.2−	0.4+
1981 05 01	413	(0.3+ 2.7−)		1999 10 01	703	0.3− 0.0	1999 10 09	704	0.0	0.3+
1981 05 03	413	0.9−	1.9+	1999 10 01	703	0.4+ 0.1+	1999 10 09	704	0.1+	0.1+
1992 05 02	691	1.1−	1.9+	1999 10 01	703	0.1− 0.1−	1999 10 15	704	0.3+	0.2+
1992 05 02	691	0.8−	1.1+	1999 10 01	703	1.1− 0.3−	1999 10 15	704	0.9+	0.5+
1992 05 02	691	0.8−	0.6+	1999 10 04	704	0.1− 1.0−	1999 10 15	704	0.6+	1.8+
1997 03 11	809	(3.2− 0.7−)		1999 10 04	704	0.2+ 0.2−	1999 10 15	704	1.1+	0.4−
1997 03 11	809	(3.4− 0.7−)		1999 10 04	704	0.7− 0.3−	1999 10 15	704	1.7+	0.9+
1997 03 11	809	(4.4− 1.2−)		1999 10 04	704	1.0− 0.1−	1999 10 15	704	0.0	0.7+
1997 04 03	704	0.1+	1.1+	1999 10 04	704	0.3− 0.3+	1999 10 15	704	0.4+	1.7+
1997 04 03	704	0.6+	0.8+	1999 10 06	704	0.3− 0.2−	1999 10 19	704	0.6−	0.2+
1997 04 05	704	0.4+	0.0	1999 10 06	704	0.6− 0.2−	1999 10 19	704	0.5−	0.3+
1997 04 05	704	0.5+	0.3+	1999 10 06	704	0.5− 0.3−	1999 10 19	704	0.2−	0.5+
1997 04 07	704	0.1−	0.4−	1999 10 06	704	0.4− 0.2−	1999 10 19	704	0.4+	0.1+
1997 04 07	704	0.3+	0.5+	1999 10 06	704	0.7− 0.1+	1999 10 19	704	0.4+	0.1+
1998 06 25	704	1.2+	0.5+	1999 10 07	704	0.2+	0.0			

(11806)* 1981 EF₁₄ = 1998 HL₃₇ = 1998 HY₁₅₀

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>	105.52370		(2000.0)		P		Q
<i>n</i>	0.29151390	ω	339.00980		−0.40297973		+0.91415163
<i>a</i>	2.2526646	Ω	267.20388		−0.83328917		−0.38635689
<i>e</i>	0.1091156	<i>i</i>	2.52362		−0.37846598		−0.12269944
<i>P</i>	3.38	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 11 22	675	0.9−	2.3−	1998 03 25	699	0.1−	1.3+	1998 04 25	699	0.4+	0.4+
1979 11 24	675	0.9+	0.9−	1998 03 25	699	0.4+	0.7+	1998 04 30	699	0.1−	0.3−
1979 11 25	675	2.2+	2.1+	1998 03 25	704	0.1+	0.6+	1998 04 30	699	0.9+	1.2−
1981 02 12	413	0.7+	0.5−	1998 03 25	699	0.2+	1.4+	1998 04 30	699	0.5+	0.9−
1981 02 12	413	0.5+	0.4−	1998 03 25	704	0.3−	0.6+	1999 10 01	703	0.3−	0.1+
1981 03 01	413	0.9−	0.6+	1998 03 25	704	0.2+	0.2+	1999 10 01	703	0.6+	0.1−
1981 03 01	413	0.1+	0.8+	1998 03 25	704	0.6+	0.8+	1999 10 01	703	0.2+	0.3+
1981 03 06	413	0.2−	1.0+	1998 03 29	704	0.4−	0.1+	1999 10 01	703	0.6−	0.2+
1981 03 06	413	0.8+	0.2−	1998 03 29	704	1.0−	0.4+	1999 10 07	704	0.2−	0.1−
1981 03 08	413	0.5−	0.5+	1998 03 29	704	0.5−	1.1+	1999 10 07	704	0.1+	0.4−
1981 03 08	413	0.6+	0.6+	1998 03 29	704	0.1−	1.5+	1999 10 07	704	0.2+	0.3+
1981 03 12	413	1.5−	0.8+	1998 03 29	704	1.1−	0.9+	1999 10 07	704	0.1+	0.3−
1981 03 12	413	0.7+	0.5−	1998 04 01	704	1.2−	0.8+	1999 10 07	704	0.1+	0.1−
1981 04 06	413	1.8−	1.5+	1998 04 01	704	0.1−	1.0+	1999 10 10	704	0.2−	0.2+
1981 04 08	413	0.5−	0.1+	1998 04 01	704	0.5+	0.8−	1999 10 10	704	1.3+	0.1+
1981 04 09	413	0.3−	0.1+	1998 04 01	704	0.5−	0.8+	1999 10 10	704	0.5+	0.1+
1981 04 09	413	0.8+	1.0−	1998 04 01	704	0.4−	0.2−	1999 10 10	704	0.4+	0.5+
1981 05 01	413	0.1−	1.3−	1998 04 20	704	0.0	0.4−	1999 10 10	704	0.5+	0.5+
1981 05 03	413	0.6+	1.3−	1998 04 20	704	(2.1−	1.3+)	1999 10 13	704	0.1+	1.1+
1984 01 25	675	0.1+	0.0	1998 04 20	704	0.1+	1.7+	1999 10 13	704	0.1+	0.3−
1984 01 26	675	0.1−	0.5−	1998 04 20	704	0.0	0.1−	1999 10 13	704	0.1+	0.5−
1997 02 04	691	0.1−	0.7−	1998 04 20	704	0.5−	0.1−	1999 10 13	704	0.1−	0.5−
1997 02 04	691	0.5−	0.5−	1998 04 21	704	0.5−	0.2−	1999 10 13	704	0.2+	0.7−
1997 02 04	691	0.1−	0.3−	1998 04 21	704	0.5−	0.4−	1999 10 15	704	0.7−	0.4−
1998 03 20	327	0.2−	0.1−	1998 04 21	704	0.1+	0.1−	1999 10 15	704	1.2−	0.6−
1998 03 20	327	0.0	0.2+	1998 04 21	704	0.4−	0.5+	1999 10 15	704	0.6−	0.4−
1998 03 20	327	0.2−	0.2+	1998 04 21	704	0.2−	0.8+	1999 10 15	704	0.0	0.2−
1998 03 20	327	0.2−	0.1+	1998 04 22	704	0.3−	1.0−	1999 10 15	704	1.1−	0.1−
1998 03 22	704	0.0	0.5+	1998 04 22	704	0.1+	1.1−	1999 10 20	704	0.6−	0.7+
1998 03 22	704	0.7+	1.1−	1998 04 22	704	1.3+	1.4−	1999 10 20	704	0.1+	0.7+
1998 03 22	704	0.5+	0.6−	1998 04 22	704	0.1+	1.3−	1999 10 20	704	1.0−	1.0+
1998 03 22	704	1.1+	0.7−	1998 04 22	704	1.3+	1.6−	1999 10 20	704	0.3+	0.3−
1998 03 22	704	0.2+	1.2−	1998 04 25	699	0.4+	1.4−				
1998 03 25	704	0.7−	0.7−	1998 04 25	699	0.6+	0.4−				

(11807)* 1981 EH₁₇ = 1998 MC₈

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* 32210)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		P		Q	
54.81890		(2000.0)			
<i>n</i>	0.18242730	ω	92.85475	+0.20874914	+0.97765107
<i>a</i>	3.0789987	Ω	189.30756	−0.94734088	+0.19581257
<i>e</i>	0.1024848	<i>i</i>	8.87184	−0.24283546	+0.07652328
<i>P</i>	5.40	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1981 02 09	413	2.2+	1.4−	1998 05 26	704	(4.8−	1.8−)	1999 09 14	704	0.2+	0.1+
1981 02 12	413	(6.1−	1.8+)	1998 06 19	704	0.8+	1.2−	1999 09 14	704	0.6+	0.2−
1981 02 13	413	0.6+	0.1−	1998 06 19	704	0.5+	1.1+	1999 09 14	704	0.6+	0.6−
1981 03 01	413	1.3−	0.3−	1998 06 19	704	0.1+	0.0	1999 10 06	704	0.5−	1.1−
1981 03 01	413	(5.4+	3.5−)	1998 06 19	704	1.9−	1.8−	1999 10 06	704	0.1−	0.6−
1981 03 11	413	0.6+	1.2−	1998 06 25	704	1.5+	0.0	1999 10 06	704	0.1+	1.4−
1981 03 15	413	0.2−	0.5−	1998 06 25	704	0.0	1.0−	1999 10 06	704	0.5−	0.8−
1981 04 05	413	1.5−	0.5+	1998 06 25	704	1.3+	0.2+	1999 10 06	704	0.3−	1.3−
1981 04 05	413	(4.4+	6.3−)	1998 06 25	704	0.4+	0.1−	1999 10 07	704	0.1−	0.8+
1981 04 06	413	0.9−	0.0	1999 09 04	699	0.5−	0.1−	1999 10 07	704	0.3+	0.4−
1981 04 26	413	(1.1+	4.3−)	1999 09 04	699	0.2+	0.9−	1999 10 07	704	0.9−	0.2−
1981 05 02	413	0.6−	2.0−	1999 09 04	699	1.1−	0.1+	1999 10 07	704	0.3−	1.1+
1997 04 28	704	0.6−	1.0−	1999 09 07	704	0.2+	0.2+	1999 10 07	704	0.2+	0.4+
1997 04 28	704	0.3−	0.5−	1999 09 07	704	0.0	0.3+	1999 10 09	691	0.0	0.1−
1997 04 28	704	(1.2−	2.2−)	1999 09 07	704	0.2−	0.5−	1999 10 09	691	0.0	0.1−
1997 04 28	704	0.1+	1.8−	1999 09 07	704	0.3+	0.3−	1999 10 09	691	0.2+	0.2−
1998 05 23	704	0.1−	1.1+	1999 09 07	704	0.4+	0.4+	1999 10 15	704	0.3+	0.1−
1998 05 23	704	0.5−	1.1+	1999 09 09	704	0.4+	0.5−	1999 10 15	704	0.2−	0.1−
1998 05 23	704	0.4−	0.4+	1999 09 09	704	0.3+	0.2−	1999 10 15	704	0.2+	0.3−
1998 05 23	704	0.2+	1.2+	1999 09 09	704	0.2+	0.2+	1999 10 15	704	0.1+	0.7−
1998 05 26	704	0.5−	0.2−	1999 09 09	704	0.5+	0.1−	1999 10 15	704	0.4−	0.0
1998 05 26	704	0.2−	0.6+	1999 09 09	704	0.1−	0.3−	1999 10 16	691	0.3+	0.1−
1998 05 26	704	0.0	0.9−	1999 09 14	704	0.3+	0.4+	1999 10 16	691	0.4+	0.1−
1998 05 26	704	1.3−	0.5−	1999 09 14	704	0.5+	0.2+	1999 10 16	691	0.4+	0.1−

(11808)* 1981 EM₁₇ = 1994 LF

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* 23668)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		P		Q	
14.17115		(2000.0)			
<i>n</i>	0.24142443	ω	153.36015	+0.99252329	+0.11358914
<i>a</i>	2.5543588	Ω	200.26664	−0.12162105	+0.95123640
<i>e</i>	0.2421760	<i>i</i>	7.40873	+0.01028814	+0.28678708
<i>P</i>	4.08	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1981 02 12	413	0.1−	0.7−	1998 04 24	910	0.5+	0.5−	1998 06 16	704	(2.3−	1.8−)
1981 02 12	413	0.0	0.0	1998 04 24	910	0.5+	0.5−	1998 06 16	704	(1.3+	5.3−)
1981 03 01	413	0.9+	0.2−	1998 04 27	426	0.5−	0.4−	1998 06 27	699	0.6−	1.5−
1981 03 06	413	1.3−	1.4+	1998 04 27	426	0.4−	0.1+	1998 06 27	699	0.6−	0.2−
1981 03 06	413	0.4+	0.7+	1998 05 05	699	0.9−	1.2+	1999 09 15	120	0.3+	0.2−
1981 03 08	413	0.6−	0.2−	1998 05 05	699	0.5−	0.4+	1999 09 15	120	0.2−	0.5−
1981 03 08	413	(3.2+	2.1−)	1998 05 05	699	0.7+	1.2+	1999 09 22	120	0.0	0.0
1981 03 11	413	0.1−	0.1−	1998 05 05	426	0.4−	0.2−	1999 09 22	120	0.5+	0.4−
1981 03 11	413	0.9−	0.3+	1998 05 05	426	0.1+	0.1−	1999 10 03	704	0.3+	1.4+
1981 03 12	413	0.9+	0.5−	1998 05 05	426	0.3−	0.6+	1999 10 03	704	0.2+	0.6+
1981 03 15	413	(4.0−	2.4+)	1998 05 15	426	0.2−	0.5−	1999 10 03	704	0.8−	0.5+
1981 03 15	413	1.1−	1.7+	1998 05 15	426	0.0	0.2−	1999 10 03	704	0.4−	1.8−
1981 04 05	413	(3.0+	1.8−)	1998 05 15	426	0.6−	0.4−	1999 10 06	691	0.5−	0.0
1981 04 05	413	(5.1+	2.5−)	1998 05 22	704	0.5+	0.8−	1999 10 06	691	0.6−	0.0
1981 04 06	413	1.1+	1.5+	1998 05 22	704	0.1−	0.2−	1999 10 06	691	0.5−	0.0

1981 04 06	413	(4.2+	3.6−)	1998 05 22	704	1.1−	0.7−	1999 10 07	704	0.2+	1.3+
1981 05 01	413	0.3−	0.3−	1998 05 22	704	0.7−	1.2−	1999 10 07	704	1.0+	0.2+
1981 05 03	413	0.8−	0.4−	1998 05 22	699	0.4+	0.1−	1999 10 07	704	0.6+	0.5+
1989 03 07	675	0.6+	0.1−	1998 05 22	704	0.4−	1.2+	1999 10 07	704	0.5−	0.2−
1989 03 07	675	1.7+	1.0−	1998 05 22	699	0.8+	0.2−	1999 10 08	703	0.2−	0.7+
1994 06 05	560	0.4+	0.8+	1998 05 22	699	0.7+	0.8+	1999 10 08	703	0.2−	0.8+
1994 06 05	560	1.3−	0.9+	1998 05 23	699	0.1+	0.2−	1999 10 08	703	0.1−	0.7+
1994 06 05	560	0.7+	0.0	1998 05 23	699	0.7+	1.0+	1999 10 08	703	0.1+	0.4+
1994 06 06	560	0.1−	0.4+	1998 05 23	699	0.3+	0.9+	1999 10 10	704	0.1−	1.5+
1994 06 06	560	0.7+	1.2+	1998 05 24	704	1.0−	0.2+	1999 10 10	704	0.3+	1.3+
1994 06 06	560	0.0	0.5−	1998 05 24	704	0.6+	0.5+	1999 10 10	704	0.2−	1.2+
1994 06 07	560	(2.5+	0.5+)	1998 05 24	704	0.0	0.4−	1999 10 10	704	0.5+	0.7+
1994 06 07	560	2.0+	0.1−	1998 05 24	704	0.6−	1.0+	1999 10 10	704	1.4−	0.4+
1994 06 07	560	0.6+	0.2−	1998 05 24	704	1.3+	0.0	1999 10 15	704	0.3+	0.7−
1998 04 22	704	0.3−	1.0−	1998 05 24	699	1.0+	0.5+	1999 10 15	704	0.2+	0.7−
1998 04 22	704	(2.8−	0.2+)	1998 05 24	699	1.1+	0.3+	1999 10 15	704	0.0	0.5−
1998 04 22	704	0.5−	0.6+	1998 05 24	699	0.4+	0.5+	1999 10 15	704	0.0	0.9−
1998 04 22	704	1.5−	0.7+	1998 06 16	704	0.3−	0.3−	1999 10 15	704	0.1+	0.5−
1998 04 24	910	0.4+	0.5−	1998 06 16	704	1.3−	0.1+				

(11809)* 1981 EG₁₈ = 1996 XC₃₇

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

Id. T. Urata (*MPC* 29609)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		P		Q	
15.42479		(2000.0)			
<i>n</i>	0.28972661	ω	325.29989	+0.65827002	+0.75251330
<i>a</i>	2.2619194	Ω	345.83233	−0.67072651	+0.57418033
<i>e</i>	0.0620573	<i>i</i>	4.71230	−0.34176970	+0.32255340
<i>P</i>	3.40	<i>H</i>	15.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1981 02 02	413	0.1−	0.8−	1998 03 22	704	0.8−	1.0−	1999 09 07	704	0.2+	0.8−
1981 02 13	413	0.0	0.4+	1998 03 29	704	0.2−	0.3−	1999 09 09	704	0.8−	0.1−
1981 03 02	413	1.4+	0.4−	1998 03 29	704	(2.4+	0.5−)	1999 09 09	704	0.1+	0.5−
1981 03 03	413	2.1−	0.8+	1998 03 29	704	0.7−	0.1−	1999 09 09	704	0.5+	1.0−
1981 03 07	413	1.5−	0.7+	1998 03 29	704	0.5+	0.4+	1999 09 09	704	0.1+	1.2−
1981 03 07	413	1.7+	0.2−	1998 03 29	704	0.5−	0.5+	1999 09 09	704	0.1+	0.3−
1981 03 11	413	0.2+	0.6+	1998 04 01	704	0.8+	0.0	1999 09 30	704	1.0+	1.3+
1981 03 11	413	2.0+	1.2−	1998 04 01	704	(3.1+	0.5+)	1999 09 30	704	0.3−	0.4+
1981 03 16	413	2.2−	0.1+	1998 04 01	704	0.9−	0.5+	1999 09 30	704	1.4−	0.3−
1981 03 29	413	(2.9−	0.6+)	1998 04 01	704	(0.9+	2.1+)	1999 09 30	704	1.2−	0.5+
1981 04 11	413	0.4−	1.9−	1998 04 01	704	(0.7+	2.8+)	1999 10 05	704	1.5+	0.3−
1981 04 30	413	0.2+	0.2+	1999 09 04	699	0.1+	0.0	1999 10 05	704	0.1+	0.6−
1996 12 02	385	0.5+	0.4+	1999 09 04	699	0.9−	0.7+	1999 10 05	704	0.4+	1.0+
1996 12 02	385	0.0	0.1+	1999 09 04	699	0.5+	0.3+	1999 10 05	704	0.3+	0.6−
1996 12 02	385	0.6−	0.8−	1999 09 04	046	0.0	0.6+	1999 10 05	704	0.3+	1.1+
1996 12 08	385	0.4+	0.2−	1999 09 04	046	0.1−	0.6+	1999 10 15	704	0.0	0.6−
1996 12 08	385	0.1+	0.1+	1999 09 04	046	0.0	0.3+	1999 10 15	704	0.2+	0.2+
1996 12 08	385	0.1+	1.0−	1999 09 07	704	0.3−	0.1−	1999 10 15	704	0.3−	1.3+
1998 03 22	704	0.3−	0.3+	1999 09 07	704	0.0	0.9−	1999 10 15	704	(1.2+	2.4+)
1998 03 22	704	0.6+	1.2−	1999 09 07	704	0.5+	1.9−				
1998 03 22	704	0.8+	0.2−	1999 09 07	704	0.9+	0.7−				

Residuals in seconds of arc

1978 10 04	675	1.0-	0.1-	1981 05 02	413	0.2+	0.5-	1999 10 05	704	0.8-	0.2-
1978 10 05	675	0.3-	0.0	1988 09 16	675	0.5-	0.3-	1999 10 05	704	0.3-	1.0+
1981 02 09	413	(3.6+	1.9+)	1988 09 16	675	1.1-	0.3-	1999 10 05	704	0.2-	0.4+
1981 02 13	413	0.6+	0.0	1988 10 05	807	1.6+	1.7-	1999 10 05	704	0.4-	0.4-
1981 03 01	413	(2.7-	1.4+)	1988 10 07	807	1.2+	0.2+	1999 10 10	704	1.0-	0.1+
1981 03 02	413	0.1+	0.4+	1988 11 03	807	2.0+	1.4-	1999 10 10	704	0.2-	0.1-
1981 03 03	413	1.7-	1.1+	1988 11 05	807	0.4+	0.4-	1999 10 10	704	1.2-	1.0+
1981 03 07	413	0.1-	0.7-	1993 07 21	691	0.3-	1.2-	1999 10 10	704	0.4+	0.7-
1981 03 07	413	0.6+	0.1+	1993 07 21	691	0.1-	0.5-	1999 10 10	704	1.3-	0.5-
1981 03 07	413	0.6-	1.1-	1993 07 21	691	0.2+	0.4-	1999 10 15	704	(2.5+	0.1-)
1981 03 11	413	2.2-	0.4-	1994 11 05	691	0.4+	0.1-	1999 10 15	704	0.9+	0.0
1981 03 11	413	1.2+	0.4-	1994 11 05	691	0.1-	0.1-	1999 10 15	704	0.2+	0.7-
1981 03 11	413	0.1+	0.5-	1994 11 05	691	0.2+	0.1+	1999 10 15	704	1.4+	1.1-
1981 03 16	413	0.4-	1.1-	1997 04 30	691	0.1+	0.2+	1999 10 20	704	0.1-	0.1-
1981 03 29	413	0.0	0.0	1997 04 30	691	0.3+	0.3+	1999 10 20	704	0.2-	0.5+
1981 03 29	413	(4.2+	2.5-)	1997 04 30	691	0.2+	0.3+	1999 10 20	704	0.4+	1.0+
1981 04 08	413	0.7+	0.9-	1997 05 07	566	0.0	0.7+	1999 10 20	704	0.8+	1.3+
1981 04 08	413	0.1-	1.4-	1997 05 07	566	0.4+	0.9+	1999 10 20	704	0.0	0.1+
1981 04 11	413	0.4-	0.4-	1997 05 07	566	0.5-	0.4+				
1981 04 30	413	0.0	1.5-	1999 10 05	704	1.0+	0.5-				

(11811)* 1981 EH₁₉ = 1991 EL₁

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* 18107)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	164.41427	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.29578055	ω 201.91976	-0.90914584	+0.41646835
<i>a</i>	2.2309490	Ω 2.69700	-0.37266231	-0.81045806
<i>e</i>	0.0922693	<i>i</i> 3.43503	-0.18594794	-0.41196098
<i>P</i>	3.33	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1979 10 18	675	0.6+	0.1-	1998 05 22	704	0.0	1.5-	1999 10 10	704	0.2-	0.2-
1979 10 18	675	0.1-	1.0+	1998 05 24	704	0.0	0.3-	1999 10 10	704	0.6+	0.3-
1981 02 02	413	1.0+	0.8-	1998 05 24	704	0.2-	0.2-	1999 10 10	704	0.1-	0.1+
1981 02 13	413	1.1+	0.2+	1998 05 24	704	0.6+	0.6+	1999 10 10	704	0.0	0.1+
1981 03 02	413	1.3-	1.0+	1998 05 24	704	1.1+	0.2-	1999 10 10	704	0.1-	0.1-
1981 03 03	413	1.6-	0.3+	1998 05 27	428	0.9-	1.4+	1999 10 10	704	0.2-	0.1-
1981 03 03	413	0.1+	0.7+	1998 05 27	428	0.2+	0.2+	1999 10 10	704	0.3-	0.3+
1981 03 07	413	1.4-	0.3+	1998 05 28	428	0.9-	0.8-	1999 10 10	704	0.1-	0.4+
1981 03 07	413	1.3+	1.0-	1999 09 14	703	1.0-	0.3+	1999 10 11	704	1.0+	0.1-
1981 03 11	413	0.1+	0.3+	1999 09 14	703	0.1+	0.3+	1999 10 11	704	1.6+	0.4-
1981 03 11	413	0.6+	0.3-	1999 09 14	703	0.5-	0.1-	1999 10 11	704	0.5+	1.1-
1981 03 16	413	2.2-	0.5+	1999 09 14	703	0.5+	0.5+	1999 10 11	704	0.3+	1.1-
1981 03 16	413	2.3+	1.6-	1999 10 02	703	0.8-	0.0	1999 10 11	704	0.6-	0.3+
1981 03 29	413	(2.9-	0.4+)	1999 10 02	703	0.4-	0.3-	1999 10 11	704	0.0	0.1-
1981 03 29	413	0.1-	0.1-	1999 10 02	703	0.5-	0.8+	1999 10 11	704	0.5-	1.0-
1981 04 07	413	0.7-	0.6+	1999 10 02	703	1.2-	0.6+	1999 10 11	704	0.9-	0.4-
1981 04 07	413	1.4+	0.1-	1999 10 03	704	0.4+	1.1-	1999 10 13	704	0.6+	0.3-
1981 04 08	413	2.0-	0.7+	1999 10 03	704	0.1-	0.2-	1999 10 13	704	2.4+	0.0
1981 04 08	413	0.7+	0.3-	1999 10 03	704	0.3-	0.4+	1999 10 13	704	0.6-	0.2-
1981 04 30	413	0.4+	0.3+	1999 10 06	704	0.3-	0.1+	1999 10 13	704	0.3+	0.3+
1981 05 02	413	0.2-	0.5-	1999 10 06	704	0.2-	0.2+	1999 10 15	704	1.0+	0.5-
1991 02 11	675	0.2-	0.6-	1999 10 06	704	1.7-	0.3+	1999 10 15	704	0.1+	0.4-
1991 02 11	675	0.0	0.3-	1999 10 06	704	0.0	0.6+	1999 10 15	704	0.6+	0.5-
1991 03 12	675	0.4-	1.2-	1999 10 09	703	0.5-	0.4+	1999 10 15	704	1.2+	1.2-
1991 03 12	675	0.9-	0.9-	1999 10 09	703	0.0	0.2+	1999 10 18	691	0.3-	0.2-
1991 03 13	801	1.1+	0.6+	1999 10 09	704	0.2-	0.2-	1999 10 18	691	0.1-	0.2-
1991 03 13	801	0.9+	0.3+	1999 10 09	703	0.4-	0.4-	1999 10 18	691	0.3-	0.2-
1991 03 17	801	0.5-	0.5+	1999 10 09	703	0.9+	0.6+	1999 10 20	704	0.5-	0.3-
1991 03 17	801	0.3-	0.4+	1999 10 09	704	0.1+	0.1+	1999 10 20	704	0.1-	0.1-
1994 01 08	675	0.9+	0.8-	1999 10 09	704	0.1+	0.3-	1999 10 20	704	0.2-	0.3+
1994 01 08	675	0.5-	0.2-	1999 10 09	704	0.1+	0.2+	1999 10 20	704	0.2-	0.2-
1998 05 22	704	0.0	0.6-	1999 10 09	704	0.3+	0.3+	1999 10 20	704	0.1-	0.4+

1998 05 22	704	0.8+	0.4-	1999 10 10	704	0.5+	0.1-
1998 05 22	704	1.0-	0.8-	1999 10 10	704	0.4+	0.0

(11812)* 1981 EL₂₀

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

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	48.27709	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.18429507	ω 316.03723	+0.49375929	+0.86839260
<i>a</i>	3.0581603	Ω 343.38218	-0.74709388	+0.39666910
<i>e</i>	0.1078534	<i>i</i> 9.21195	-0.44503090	+0.29757003
<i>P</i>	5.35	<i>H</i> 13.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1981 02 09	413	0.6-	0.4-	1988 09 15	807	0.8+	1.1-	1999 09 18	703	0.4-	0.3+
1981 02 13	413	0.9+	0.3-	1988 09 16	807	0.2-	0.2-	1999 09 18	703	0.2-	1.1+
1981 03 02	413	1.9-	1.3+	1988 10 04	807	0.9+	0.3-	1999 09 18	703	0.7-	0.2+
1981 03 02	413	(5.6+	0.7-)	1988 10 05	807	0.1-	0.1+	1999 09 18	703	0.0	0.8+
1981 03 03	413	0.8-	0.3+	1988 10 07	807	0.8+	0.5-	1999 10 04	704	0.4+	0.5+
1981 03 03	413	(2.5+	1.1-)	1988 10 08	807	0.4+	0.4+	1999 10 04	704	0.3+	0.2+
1981 03 07	413	2.0-	0.6+	1988 10 08	807	0.8+	1.1-	1999 10 04	704	0.8-	1.2+
1981 03 07	413	0.6+	0.1-	1994 11 07	675	0.5+	0.5-	1999 10 04	704	0.2+	0.6+
1981 03 11	413	0.6+	0.7-	1994 11 07	675	0.0	0.2+	1999 10 04	704	0.6-	1.2+
1981 03 11	413	0.5-	0.9-	1999 09 05	699	0.8-	0.2-	1999 10 07	704	0.1-	0.6-
1981 03 11	413	2.3+	1.0-	1999 09 05	699	0.8-	0.1+	1999 10 07	704	0.3+	0.0
1981 03 15	413	2.1-	0.4+	1999 09 05	699	0.5-	0.6+	1999 10 07	704	0.2-	0.0
1981 03 15	413	0.0	0.1+	1999 09 07	704	0.2+	1.1-	1999 10 07	704	0.1-	0.3-
1981 03 16	413	0.2-	1.5-	1999 09 07	704	0.4+	0.6-	1999 10 07	704	1.3+	1.6-
1981 03 16	413	2.0-	0.2+	1999 09 07	704	0.3-	0.6-	1999 10 09	704	0.2+	0.3-
1981 04 05	413	(5.2+	1.7-)	1999 09 07	704	0.4-	0.2-	1999 10 09	704	0.1+	0.4-
1981 04 05	413	0.2+	0.1+	1999 09 07	704	0.6-	0.3-	1999 10 09	704	0.5-	0.4-
1981 04 06	413	0.0	0.3+	1999 09 13	120	1.2-	0.5-	1999 10 09	704	0.2-	0.0
1981 04 06	413	0.3+	0.5-	1999 09 13	120	0.3+	0.8-	1999 10 09	704	0.1-	0.9-
1981 04 12	413	1.4-	0.0	1999 09 13	120	1.2+	0.4-	1999 10 19	704	1.1+	0.1-
1981 04 12	413	1.8+	0.7-	1999 09 14	120	0.2+	1.7+	1999 10 19	704	1.2+	0.1-
1981 04 30	413	0.2+	0.7-	1999 09 14	120	0.1+	0.5-	1999 10 19	704	0.4-	0.5-
1981 05 02	413	2.2+	1.0-	1999 09 15	120	0.4+	0.4+	1999 10 19	704	0.6+	0.0
1988 09 14	807	1.2-	0.8-	1999 09 15	120	0.8-	0.3-	1999 10 19	704	0.4+	0.9+

(11813)* 1981 EQ₂₃ = 1994 SN₁₂

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* 24226)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.15500	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.17953442	ω 85.91617	-0.18726739	+0.98222751
<i>a</i>	3.1119856	Ω 173.25075	-0.93856080	-0.17511177
<i>e</i>	0.0933426	<i>i</i> 6.17958	-0.28988714	-0.06756470
<i>P</i>	5.49	<i>H</i> 13.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1981 02 09	413	0.6-	1.2-	1998 04 22	704	(0.4+	2.9+)	1998 05 25	699	1.7+	0.1-
1981 02 09	413	0.3+	2.0-	1998 05 01	704	0.4+	0.6-	1999 09 07	704	0.3+	0.1-
1981 02 13	413	0.7+	0.3-	1998 05 01	704	0.1-	0.4-	1999 09 07	704	0.0	0.1-
1981 03 03	413	1.0-	0.1-	1998 05 01	704	0.0	0.5-	1999 09 07	704	0.0	1.0-
1981 03 07	413	1.3-	0.4+	1998 05 01	704	0.5+	0.3-	1999 09 07	704	0.0	0.1-
1981 03 07	413	1.1+	0.8-	1998 05 01	704	0.6-	0.3-	1999 09 07	704	0.1-	0.0
1981 03 11	413	1.9-	0.1+	1998 05 01	699	0.0	0.1+	1999 09 09	704	0.4-	1.5-
1981 03 11	413	1.3+	1.8-	1998 05 01	699	0.1+	0.2-	1999 09 09	704	0.3+	0.2+
1981 03 16	413	0.0	0.9-	1998 05 01	699	0.7+	0.7-	1999 09 09	704	0.3+	0.4+
1981 04 05	413	1.2-	2.4-	1998 05 22	704	0.0	0.4-	1999 09 09	704	0.2+	0.1-
1981 04 26	413	(2.7+	1.8-)	1998 05 22	704	0.5-	0.6+	1999 09 09	704	0.1-	0.5-
1994 09 29	691	0.0	0.2-	1998 05 22	704	(2.7+	0.0)	1999 09 13	704	0.0	0.3+
1994 09 29	691	0.0	0.2-	1998 05 22	704	0.7-	0.1+	1999 09 13	704	0.3-	0.6-
1994 09 29	691	0.1-	0.1-	1998 05 22	704	0.0	0.4+	1999 09 13	704	0.1-	0.8-

1994 09 30	691	0.0	0.1+	1998 05 24	704	0.5-	0.3-	1999 09 13	704	0.5+	0.5-
1994 09 30	691	0.3-	0.3-	1998 05 24	704	1.0-	1.5+	1999 09 13	704	0.3+	1.2-
1994 09 30	691	0.7+	0.1-	1998 05 24	704	1.3-	1.3+	1999 09 30	704	0.4+	0.3+
1998 04 22	704	0.8+	0.0	1998 05 24	704	0.8-	1.1+	1999 09 30	704	(0.0	2.2-)
1998 04 22	704	0.2-	0.8+	1998 05 24	704	0.2-	0.9+	1999 09 30	704	(0.7+	2.2-)
1998 04 22	704	0.4+	0.4+	1998 05 25	699	0.2-	0.3-	1999 09 30	704	0.3+	1.7-
1998 04 22	704	1.6+	0.1-	1998 05 25	699	0.5+	0.0				

(11814)* 1981 EW₂₆ = 1989 VU₄

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

Id. A. Gnädig (*MPC* 34824), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	343.85555	ω	170.67914	+0.97266534	+0.23165636		
<i>a</i>	3.0742452	Ω	175.82225	-0.22471058	+0.95641744		
<i>e</i>	0.0550349	<i>i</i>	12.72379	-0.05854301	+0.17776675		
<i>P</i>	5.39	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 02 09	413	1.0+	1.2-	1999 09 07	704	1.1+	0.7-	1999 09 14	704	0.3-	0.5-
1981 02 12	413	0.3+	1.9-	1999 09 07	704	0.4+	0.4+	1999 09 14	704	0.3-	0.3-
1981 02 13	413	2.1-	2.2+	1999 09 07	704	1.0-	1.0+	1999 10 08	704	0.3-	0.4+
1981 03 02	413	0.3-	0.9-	1999 09 08	704	0.4+	0.4+	1999 10 08	704	0.2-	0.2+
1981 03 06	413	1.5-	0.3-	1999 09 08	704	1.0+	0.4+	1999 10 08	704	0.3+	0.6+
1981 03 06	413	1.0+	1.0-	1999 09 08	704	0.8+	0.4-	1999 10 13	704	0.8-	0.3+
1981 03 11	413	0.7-	0.2-	1999 09 08	704	0.5+	0.6-	1999 10 13	704	0.2+	0.6+
1981 03 15	413	0.9-	1.1-	1999 09 09	704	0.6+	0.5-	1999 10 13	704	0.2-	0.2+
1981 04 05	413	1.8+	1.5-	1999 09 09	704	0.2+	1.1-	1999 10 13	704	0.5-	0.4+
1981 05 01	413	0.4-	0.9-	1999 09 09	704	1.2+	0.9-	1999 10 13	704	0.2-	0.3+
1982 08 13	413	0.2-	2.3-	1999 09 09	704	0.6-	0.9-	1999 10 15	704	0.3-	0.1+
1982 08 13	413	0.3+	1.1-	1999 09 09	704	0.9-	0.0	1999 10 15	704	0.4+	1.0+
1989 11 06	809	1.0+	1.7-	1999 09 14	704	0.3+	0.3-	1999 10 15	704	1.2-	0.6-
1989 11 06	809	0.8+	2.2-	1999 09 14	704	0.4+	0.4-	1999 10 15	704	0.9-	1.0-
1989 11 06	809	0.7-	2.0-	1999 09 14	704	0.4-	0.4-				

(11815)* 1981 EG₃₁ = 1998 HT₉₃

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* 31947)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	18.88541	ω	2.10768	+0.86938560	+0.49310375		
<i>a</i>	2.5821555	Ω	328.28377	-0.45424230	+0.77212380		
<i>e</i>	0.1675147	<i>i</i>	3.47840	-0.19450606	+0.40084102		
<i>P</i>	4.15	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 02 12	413	1.0-	0.4-	1998 04 22	704	0.7+	1.7+	1999 10 07	704	0.7+	0.0
1981 03 02	413	1.5+	0.8+	1998 04 22	704	1.7-	0.6-	1999 10 07	704	0.7+	0.3+
1981 03 02	413	0.7-	0.8-	1998 05 01	704	(2.3-	0.2-)	1999 10 07	704	0.2+	0.5-
1981 03 06	413	1.8+	0.3-	1998 05 01	704	(0.3+	2.7+)	1999 10 07	704	0.2-	0.2-
1981 03 06	413	(6.1+	2.6-)	1998 05 01	704	0.9-	0.9-	1999 10 07	704	0.0	0.0
1981 03 11	413	(8.0+	0.4-)	1998 05 01	704	0.8+	1.4-	1999 10 10	704	0.1-	0.1-
1981 03 15	413	0.4+	0.8+	1998 05 01	704	1.2-	1.6-	1999 10 10	704	0.3+	0.0
1981 04 09	413	0.5+	0.1+	1999 09 18	703	0.9-	0.6+	1999 10 10	704	0.1-	0.0
1981 05 01	413	1.9-	0.1-	1999 09 18	703	0.3-	0.4+	1999 10 15	704	0.1+	0.3+
1981 05 03	413	0.9-	0.2+	1999 09 18	703	0.6-	0.7+	1999 10 15	704	0.2+	0.2+
1997 02 06	910	0.1+	0.0	1999 09 18	703	1.3-	0.4-	1999 10 15	704	0.0	0.5+
1997 02 06	910	0.1+	0.2-	1999 10 01	703	0.4-	0.1+	1999 10 15	704	0.4+	0.5+
1997 02 07	910	0.2-	0.0	1999 10 01	703	0.3-	0.2-	1999 10 15	704	0.0	0.6+
1998 04 21	704	1.5+	1.1-	1999 10 01	703	0.7-	0.0	1999 10 20	704	0.6+	0.2+
1998 04 21	704	1.2+	0.1-	1999 10 01	703	0.6-	1.0-	1999 10 20	704	1.8+	2.3-
1998 04 21	704	0.6+	0.7+	1999 10 04	704	0.4-	0.2+	1999 10 20	704	0.7+	0.1-
1998 04 21	704	0.4-	1.5+	1999 10 04	704	0.0	0.0	1999 10 20	704	0.7+	0.6-

1998 04 21	704	(0.3+	2.3+)	1999 10 04	704	0.5-	0.1+	1999 10 20	704	0.7+	0.2-
1998 04 22	704	0.0	0.0	1999 10 04	704	0.1-	0.5+				
1998 04 22	704	1.0-	0.9+	1999 10 04	704	0.2-	0.3+				

(11816)* 1981 EX₃₂ = 1998 GL₁₁

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* 32212)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	51.23445	ω	68.72226	+0.37470656	+0.92356250		
<i>a</i>	2.5932138	Ω	223.56206	-0.88840715	+0.33254916		
<i>e</i>	0.1887549	<i>i</i>	6.78420	-0.26519376	+0.19090144		
<i>P</i>	4.18	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 02 02	413	1.1-	1.2+	1998 04 21	704	1.0-	1.2+	1999 10 03	704	0.2+	0.2+
1981 02 14	413	1.1+	1.7+	1998 04 21	704	0.2-	0.8+	1999 10 03	704	0.5+	0.2-
1981 03 01	413	0.9-	0.4+	1998 04 22	704	1.1+	0.9-	1999 10 03	704	0.1+	0.9-
1981 03 01	413	1.2+	1.8-	1998 04 22	704	0.7+	0.4-	1999 10 10	704	0.0	0.2+
1981 03 07	413	0.9+	1.1-	1998 04 22	704	1.0-	0.1-	1999 10 10	704	0.0	0.1+
1981 03 11	413	1.9-	1.8+	1998 04 22	704	0.0	0.7-	1999 10 10	704	0.1-	0.3+
1981 03 11	413	0.1-	1.7-	1999 09 05	703	0.5+	0.4+	1999 10 10	704	0.2-	0.1+
1981 03 15	413	(3.0-	0.3+)	1999 09 05	703	(2.3+	0.7-)	1999 10 10	704	0.1+	0.2+
1981 03 15	413	0.0	0.3-	1999 09 05	703	0.8+	0.6-	1999 10 15	704	0.1-	0.1-
1981 04 30	413	0.2-	2.0-	1999 09 05	703	1.5+	0.3+	1999 10 15	704	0.1-	0.4+
1981 05 02	413	0.1-	0.2-	1999 09 18	704	0.3-	1.3-	1999 10 15	704	0.0	0.1+
1995 10 22	691	0.5+	0.3-	1999 09 18	704	0.2-	0.3-	1999 10 15	704	0.3-	0.0
1995 10 22	691	0.2+	0.1-	1999 09 18	704	1.2-	0.4-	1999 10 15	704	0.1+	0.2-
1995 10 22	691	0.3-	1.0+	1999 09 18	704	0.7-	1.0-	1999 10 20	704	0.2-	0.3-
1998 04 01	704	0.6+	0.9+	1999 09 18	704	0.3-	0.8-	1999 10 20	704	0.5+	0.2+
1998 04 01	704	0.4-	0.8-	1999 10 01	703	0.2+	0.7+	1999 10 20	704	0.1-	1.2-
1998 04 01	704	1.9+	0.6-	1999 10 01	703	0.6+	1.1+	1999 10 20	704	0.3-	0.3-
1998 04 01	704	(1.0-	2.3-)	1999 10 01	703	0.2+	0.5+	1999 10 20	704	0.4-	0.5-
1998 04 21	704	1.0-	0.4+	1999 10 01	703	0.4-	0.3+				
1998 04 21	704	0.5-	0.4+	1999 10 03	704	0.1-	0.4+				

(11817)* 1981 EQ₃₄ = 1995 SK₅₅ = 1998 FN₁₄₄

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* 32212)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	18.59119	ω	123.44522	+0.37930896	+0.92504277		
<i>a</i>	2.6277750	Ω	168.78963	-0.88008139	+0.36753753		
<i>e</i>	0.2034612	<i>i</i>	6.05530	-0.28562467	+0.09597933		
<i>P</i>	4.26	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 02 13	413	1.2-	0.8+	1999 09 02	621	0.0	0.0	1999 09 13	704	0.7+	0.2+
1981 03 02	413	0.4-	0.9-	1999 09 02	621	0.2+	0.2+	1999 09 13	704	0.0	0.2-
1981 03 07	413	0.1+	2.1-	1999 09 04	621	0.0	0.0	1999 09 13	704	0.1+	0.3-
1981 03 11	413	0.7+	1.0-	1999 09 04	621	0.0	0.0	1999 09 13	704	0.1+	0.6-
1981 03 16	413	(4.7-	1.3+)	1999 09 04	621	0.1+	0.1+	1999 10 05	704	0.6-	0.7+
1981 03 16	413	1.2+	1.5-	1999 09 04	621	0.1-	0.0	1999 10 05	704	0.3+	1.1+
1981 05 02	413	1.4-	1.4+	1999 09 04	621	0.1-	0.0	1999 10 05	704	0.0	1.4-
1981 05 03	413	0.2-	1.8+	1999 09 04	703	0.2+	0.1-	1999 10 05	704	0.1-	0.8+
1995 09 19	691	0.1-	0.3+	1999 09 04	703	0.1+	0.4+	1999 10 05	704	0.2+	0.5-
1995 09 19	691	0.1-	0.2+	1999 09 04	703	0.9-	0.0	1999 10 15	704	0.3-	0.4+
1995 09 19	691	0.1+	0.3+	1999 09 04	703	0.4-	0.9+	1999 10 15	704	0.4-	0.6+
1998 03 29	704	0.4+	1.9+	1999 09 06	699	0.5-	0.5+	1999 10 15	704	0.3-	0.5+
1998 03 29	704	0.9+	0.1+	1999 09 06	699	0.1+	0.7-	1999 10 15	704	0.7-	0.2+
1998 03 29	704	0.2-	1.0+	1999 09 06	699	0.1-	0.6+	1999 10 15	704	0.0	0.1+
1998 03 29	704	(0.7+	2.4+)	1999 09 07	704	0.2-	0.4-	1999 10 16	704	0.2+	0.4-
1998 03 29	704	0.2-	0.3-	1999 09 07	704	0.1+	0.8-	1999 10 16	704	0.1-	0.4-

1999 08 12	699	0.3+	0.3+	1999 09 07	704	0.4+	0.6-	1999 10 16	704	0.4-	0.2-
1999 08 12	699	0.3-	0.2-	1999 09 07	704	0.8+	0.6-	1999 10 16	704	0.3-	0.2-
1999 08 12	699	0.4+	0.7+	1999 09 07	704	0.2+	1.0-				
1999 09 02	621	0.0	0.1+	1999 09 13	704	0.5+	0.1+				

(11818)* 1981 EK₃₅

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>	14.34752	(2000.0)	P	Q			
<i>n</i>	0.19000958	ω	79.07576	+0.99989733	-0.00314080		
<i>a</i>	2.9965329	Ω	281.10311	-0.00271806	+0.91640015		
<i>e</i>	0.1018417	<i>i</i>	0.81637	+0.01406944	+0.40025105		
<i>P</i>	5.19	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 10 03	675	1.6+	1.9-	1996 02 10	327	0.3-	0.2+	1999 10 07	704	0.2-	1.0+
1978 10 04	675	0.6-	1.5-	1996 02 12	327	0.1-	0.3+	1999 10 07	704	1.4+	0.5+
1981 02 09	413	1.8-	0.7-	1996 02 12	327	0.2-	0.4+	1999 10 07	704	0.9+	1.0+
1981 02 13	413	0.9+	0.1+	1996 02 12	327	0.2+	0.4+	1999 10 07	704	0.1-	0.1-
1981 03 02	413	0.0	0.0	1997 07 03	691	0.1-	0.2+	1999 10 10	704	0.6+	0.3+
1981 03 07	413	2.3+	1.6-	1997 07 03	691	0.0	0.0	1999 10 10	704	0.4+	0.2-
1981 03 11	413	1.5+	0.8-	1997 07 03	691	0.2-	0.1-	1999 10 10	704	1.2+	1.4+
1981 03 29	413	1.5-	1.7+	1999 10 01	703	0.8-	0.4+	1999 10 10	704	0.3-	1.2+
1981 03 29	413	0.3-	1.8+	1999 10 01	703	0.6-	0.2+	1999 10 10	704	0.2+	0.3-
1981 04 26	413	0.8+	1.9-	1999 10 01	703	1.5-	0.8+	1999 10 15	704	0.4-	0.2-
1981 05 02	413	0.7-	0.8-	1999 10 01	703	0.1-	0.8+	1999 10 15	704	0.2-	0.2-
1993 06 22	691	0.4-	0.3+	1999 10 03	704	0.0	0.4+	1999 10 15	704	0.2-	0.0
1993 06 22	691	0.4-	0.6+	1999 10 03	704	0.2+	0.3+	1999 10 15	704	0.2+	0.5+
1993 06 22	691	0.7-	0.8+	1999 10 03	704	1.0-	0.0	1999 10 15	704	0.1+	0.6+
1993 07 31	413	0.2+	0.1+	1999 10 03	704	0.5-	0.2+	1999 10 21	704	0.1+	0.6-
1993 07 31	413	0.0	0.0	1999 10 03	704	0.6-	0.4-	1999 10 21	704	0.4+	0.5-
1994 11 05	675	0.8-	1.5-	1999 10 06	704	0.4+	0.1+	1999 10 21	704	0.1+	0.2-
1994 11 05	675	0.3+	1.8-	1999 10 06	704	0.4+	0.0	1999 10 21	704	0.3+	0.3-
1996 02 10	327	0.5+	0.2+	1999 10 06	704	0.3+	0.0	1999 10 21	704	0.1+	0.3-
1996 02 10	327	0.7-	0.7+	1999 10 06	704	0.4+	0.2+				
1996 02 10	327	0.2-	1.0+	1999 10 06	704	1.0-	0.4+				

(11819)* 1981 ER₃₅

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>	324.97395	(2000.0)	P	Q			
<i>n</i>	0.18919262	ω	108.38154	+0.76979398	-0.62460073		
<i>a</i>	3.0051530	Ω	290.48626	+0.51973789	+0.73295834		
<i>e</i>	0.1134070	<i>i</i>	8.06946	+0.37052631	+0.26952921		
<i>P</i>	5.21	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 12 20	675	(1.8-	2.7-)	1993 07 12	809	(1.4-	4.1+)	1999 09 08	704	0.4+	1.3-
1979 12 20	675	0.1-	1.0-	1993 07 12	809	(0.7-	4.4+)	1999 09 08	704	0.6+	0.0
1981 02 14	413	0.4+	0.9-	1993 07 23	809	1.5+	0.5-	1999 09 18	704	1.2-	0.7-
1981 03 02	413	1.7-	0.4-	1993 07 23	809	1.0+	0.0	1999 09 18	704	0.3-	0.3-
1981 03 02	413	(3.0+	0.2-)	1993 07 23	809	1.5+	1.0-	1999 09 18	704	1.0-	0.6-
1981 03 10	413	0.9-	0.6+	1995 12 26	691	0.6+	1.2-	1999 09 18	704	0.9-	0.8-
1981 03 10	413	(3.1-	0.6-)	1995 12 26	691	0.5+	1.3-	1999 09 18	704	1.1-	0.4-
1981 03 12	413	0.4-	0.4+	1995 12 26	691	0.4+	1.3-	1999 10 03	704	0.2+	0.3+
1981 04 09	413	1.4-	0.3+	1997 05 27	709	0.8-	0.2+	1999 10 03	704	0.3+	0.2-
1981 05 02	413	0.8-	1.2-	1997 05 27	709	0.1-	0.1-	1999 10 03	704	1.6+	0.4+
1981 05 03	413	0.5+	0.2+	1997 05 27	709	0.3-	0.4+	1999 10 03	704	0.3-	0.7+
1984 11 21	675	1.2+	0.6-	1997 05 27	709	0.0	0.3+	1999 10 20	704	0.5+	0.5+
1984 11 21	675	(3.4+	0.3+)	1997 05 27	709	0.0	0.2+	1999 10 20	704	0.1-	0.0
1993 07 12	809	0.5+	0.5-	1997 05 27	709	0.8+	0.1-	1999 10 20	704	0.7-	0.2+
1993 07 12	809	0.0	0.8-	1999 09 08	704	0.8+	0.2-	1999 10 20	704	0.8-	0.5+

1993 07 12	809	0.2-	0.0	1999 09 08	704	0.3+	1.1-	1999 10 20	704	0.7-	0.6+
1993 07 12	809	(2.0-	4.5+)	1999 09 08	704	0.3+	0.7-				

(11820)* 1981 EP₃₈

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>	344.69889	(2000.0)	P	Q			
<i>n</i>	0.18546062	ω	169.89157	+0.99764629	-0.05405295		
<i>a</i>	3.0453338	Ω	193.42534	+0.04300538	+0.97248000		
<i>e</i>	0.0722276	<i>i</i>	10.47012	+0.05340811	+0.22662949		
<i>P</i>	5.31	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1951 09 09	675	0.4-	0.5+	1992 04 07	691	0.1-	0.7-	1999 09 16	704	0.7-	0.3-
1951 09 09	675	0.0	0.3-	1992 04 07	691	0.2-	0.3-	1999 09 16	704	0.3-	0.7+
1978 10 04	675	0.6-	0.8-	1992 04 07	691	0.6+	0.0	1999 10 07	691	0.4+	2.0-
1978 10 05	675	1.1+	0.9+	1999 09 05	596	0.8-	0.2+	1999 10 07	691	0.3-	0.6-
1981 02 12	413	0.4+	0.1-	1999 09 05	596	0.3-	0.0	1999 10 07	691	0.6-	0.5-
1981 02 12	413	1.4-	0.5-	1999 09 05	596	0.6-	0.5-	1999 10 11	691	0.2+	0.0
1981 03 01	413	1.9-	1.3+	1999 09 07	704	0.2+	0.3+	1999 10 11	691	0.0	0.2-
1981 03 01	413	0.1-	1.0+	1999 09 07	704	0.1+	0.1-	1999 10 11	691	0.1+	0.2-
1981 03 06	413	1.2-	0.9+	1999 09 07	704	0.3+	0.7+	1999 10 13	704	0.1+	0.1+
1981 03 06	413	0.7+	0.3-	1999 09 07	704	0.8-	0.0	1999 10 13	704	0.7+	0.3-
1981 03 08	413	1.3+	0.1+	1999 09 07	704	0.3-	0.5+	1999 10 13	704	0.4+	0.2+
1981 03 08	413	2.1+	0.6-	1999 09 09	704	0.1-	0.9+	1999 10 13	704	0.2-	0.6-
1981 03 12	413	1.9-	1.3+	1999 09 09	704	0.4+	1.2+	1999 10 13	704	0.9+	0.2-
1981 03 12	413	1.9+	0.7-	1999 09 09	704	0.3-	1.3+	1999 10 15	704	0.3+	0.1+
1981 05 01	413	0.4-	1.4-	1999 09 09	704	0.2-	0.9+	1999 10 15	704	0.2+	0.2-
1988 08 15	675	0.8+	0.3+	1999 09 09	704	0.4-	0.1+	1999 10 15	704	1.0+	1.0-
1988 08 15	675	0.1+	0.6-	1999 09 16	704	0.5-	0.0	1999 10 15	704	0.6+	0.7-

(11821)* 1981 EG₄₄

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>	217.07193	(2000.0)	P	Q			
<i>n</i>	0.18356484	ω	98.20319	-0.35392236	-0.93454988		
<i>a</i>	3.0662653	Ω	12.71240	+0.77867174	-0.31623845		
<i>e</i>	0.0560683	<i>i</i>	9.63118	+0.51808231	-0.16312496		
<i>P</i>	5.37	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 10 03	675	0.2-	0.4-	1981 04 05	413	(4.0+	0.1-)	1999 07 14	704	0.3-	0.3-
1978 10 04	675	0.4+	0.1+	1981 04 06	413	1.0-	0.3+	1999 07 14	704	1.1-	0.4-
1981 02 09	413	0.2+	0.4+	1981 04 07	413	(2.9+	0.4-)	1999 09 11	704	0.4+	0.5-
1981 02 12	413	0.2+	1.0+	1981 04 10	413	0.5-	0.9+	1999 09 11	704	0.4+	0.6-
1981 02 13	413	0.4+	0.3+	1981 04 10	413	0.6+	0.1+	1999 09 11	704	0.9+	1.4+
1981 03 06	413	0.6-	1.7-	1981 05 01	413	1.4+	0.2+	1999 09 11	704	0.2+	0.6+
1981 03 06	413	0.6+	0.5+	1984 11 20	675	0.1-	0.2+	1999 09 11	704	1.3+	1.3+
1981 03 11	413	0.2-	1.5-	1984 11 21	675	0.0	0.0	1999 09 30	704	0.0	0.1+
1981 03 11	413	0.9+	1.1-	1999 07 14	704	0.7-	0.4-	1999 09 30	704	0.6-	0.1+
1981 03 15	413	0.5-	0.3+	1999 07 14	704	0.3-	0.5-	1999 09 30	704	0.1+	0.1-
1981 04 05	413	1.1-	0.6+	1999 07 14	704	0.6-	0.5-	1999 09 30	704	0.1+	0.1-

(11822)* 1981 TK

Discovered 1981 Oct. 6 by Z. Vávrová at Kleť.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	325.40970		(2000.0)	P	Q
n	0.27303626	ω	27.59358	+0.81511094	-0.57614449
a	2.3531837	Ω	8.40296	+0.42541858	+0.52451605
e	0.2487487	i	24.42603	+0.39320883	+0.62684962
P	3.61	H	13.8	G 0.15	U 2

1999 OCT. 26

M.P.C. 36225

Residuals in seconds of arc

1981 09 07	688	(3.9+ 0.1+)	1999 09 06	046	0.3+ 0.1-	1999 10 02	704	0.2- 0.5-
1981 10 06	046	1.6- 1.6+	1999 09 06	046	0.2+ 0.0	1999 10 02	704	0.4- 0.5-
1981 10 06	046	1.7- 0.2-	1999 09 06	046	0.2+ 0.1-	1999 10 02	704	0.6- 0.4-
1981 10 07	046	0.6- 0.2+	1999 09 08	703	0.0 0.0	1999 10 07	704	0.2- 0.1+
1981 10 07	046	0.5+ 0.9-	1999 09 08	703	0.0 0.3+	1999 10 07	704	0.2- 0.2-
1981 10 23	046	1.2+ 0.1-	1999 09 08	703	0.6+ 0.4-	1999 10 07	704	0.0 0.3-
1981 10 23	046	1.5+ 0.4-	1999 09 08	703	0.7+ 1.0-	1999 10 07	704	0.3- 0.6-
1981 11 03	046	1.0+ 0.4-	1999 09 11	699	0.1+ 0.9+	1999 10 07	704	0.5- 0.6-
1981 11 03	046	0.0 1.0+	1999 09 11	699	0.0 1.1+	1999 10 08	704	0.1- 0.1-
1981 12 29	801	1.8- 0.0	1999 09 11	699	0.3- 0.6+	1999 10 08	704	0.0 0.0
1981 12 30	801	0.8- 0.1+	1999 09 13	704	0.1+ 0.1-	1999 10 08	704	0.1+ 0.2-
1992 11 28	693	(4.2+ 0.1-)	1999 09 13	704	0.1- 0.4-	1999 10 15	704	0.1+ 0.1+
1992 11 28	693	1.2+ 0.4-	1999 09 13	704	0.3- 0.0	1999 10 15	704	0.2+ 0.0
1997 03 30	696	0.1+ 0.0	1999 09 13	704	0.3- 0.0	1999 10 15	704	0.3+ 0.1+
1997 03 30	696	0.0 0.2+	1999 09 13	704	0.0 0.0	1999 10 15	704	0.2+ 0.2-
1997 03 30	696	0.1- 0.3+	1999 09 13	106	0.1+ 0.8+	1999 10 15	704	0.3+ 0.1-
1999 08 26	046	0.8+ 0.3+	1999 09 13	106	0.4- 1.0+	1999 10 16	611	1.7+ 0.7+
1999 08 26	046	0.5+ 0.1+	1999 10 02	704	0.5- 0.2-	1999 10 16	611	1.2- 0.6-
1999 08 26	046	0.5+ 0.2+	1999 10 02	704	0.4- 0.6-			

(11823)* 1981 VF = 1959 TM = 1992 US₃

Discovered 1981 Nov. 2 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (*MPC* 21102)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	341.69720	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27022193	<i>ω</i> 320.75852	+0.99141394	+0.12262890
<i>a</i>	2.3694942	<i>Ω</i> 32.28403	-0.08797604	+0.88237026
<i>e</i>	0.2490827	<i>i</i> 4.87531	-0.09673992	+0.45429603
<i>P</i>	3.65	<i>H</i> 14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1959 10 06	024	(8.6- 0.7-)	1994 02 13	809	0.6- 0.9+	1999 09 11	704	0.6- 0.8+
1981 10 23	095	(1.7+ 3.2-)	1994 02 13	809	0.7- 0.6+	1999 09 11	704	0.8- 0.6-
1981 11 02	688	(1.6+ 3.1-)	1997 01 09	689(23.9- 6.2+)	1999 09 11	704	1.3- 0.5-	
1981 11 02	688	(0.5+ 2.6-)	1998 03 28	704 (3.7- 1.3+)	1999 09 13	106	1.1- 0.7-	
1981 11 05	688	0.3+ 1.8-	1998 03 28	704 0.0 0.1+	1999 09 13	106	0.7- 0.4-	
1981 11 05	688	0.1+ 1.3-	1998 03 28	704 0.1- 1.3-	1999 09 13	106	(0.6- 2.6-)	
1981 11 24	688	0.5+ 0.8-	1998 03 28	704 (1.8- 2.5-)	1999 09 29	704	0.2- 0.9-	
1981 11 24	688	0.8- 0.9-	1998 03 29	704 0.1+ 0.2-	1999 09 29	704	0.2+ 0.6-	
1981 11 24	095	(1.5- 2.7-)	1998 03 29	704 0.2- 1.1-	1999 09 29	704	0.1- 0.2-	
1981 12 02	688	1.7+ 1.5-	1998 03 29	704 0.0 1.0-	1999 09 29	704	0.8+ 0.2+	
1981 12 02	688	1.8+ 1.3-	1998 03 29	704 0.8- 0.1+	1999 09 29	704	1.7+ 0.9+	
1992 10 25	675	0.1- 1.1+	1998 03 29	704 0.0 0.6-	1999 09 29	704	0.2+ 0.0	
1992 10 25	675	0.1+ 1.3+	1998 04 19	704 0.5+ 0.3-	1999 09 29	704	0.4- 0.6+	
1992 10 27	385	0.2+ 1.0+	1998 04 19	704 0.8+ 0.7-	1999 09 29	704	0.9+ 0.5+	
1992 10 27	385	0.3+ 0.5+	1998 04 19	704 0.4- 0.1-	1999 09 29	704	0.2+ 0.2-	
1992 10 28	399	0.1- 0.0	1998 04 19	704 0.2+ 0.8-	1999 09 29	704	0.4+ 0.8+	
1992 10 28	399	0.7- 0.6+	1998 04 20	704 0.5- 0.9-	1999 09 30	704	0.4- 0.3-	
1992 10 30	385	(3.3- 0.0)	1998 04 20	704 1.0+ 1.2+	1999 09 30	704	0.3+ 0.3-	
1992 10 30	385	1.2- 1.4+	1998 04 20	704 (0.0 2.4-)	1999 09 30	704	0.1- 0.0	
1994 02 08	809	(2.4+ 3.7+)	1998 04 20	704 (1.5+ 2.4-)	1999 09 30	704	0.2+ 0.1-	
1994 02 08	809	(1.8+ 3.9+)	1998 04 22	704 0.4- 1.3-	1999 09 30	704	0.2+ 0.1-	
1994 02 08	809	(0.5+ 2.3+)	1998 04 22	704 0.3- 1.1+	1999 10 07	704	0.1- 0.6-	
1994 02 10	809	(2.8+ 2.6+)	1998 04 22	704 0.1- 1.1+	1999 10 07	704	1.1+ 0.5-	
1994 02 10	809	(1.6+ 3.6+)	1998 04 22	704 0.1- 1.4-	1999 10 07	704	0.1+ 1.2+	
1994 02 10	809	0.6- 1.8+	1999 09 11	704 0.1+ 0.0	1999 10 07	704	0.1+ 0.1+	
1994 02 13	809	0.9+ 0.6+	1999 09 11	704 0.1- 0.0				

(11824)* 1982 SO₅ = 1978 WV₁

Discovered 1982 Sept. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Id. T. Kobayashi (*MPC* 13691)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	339.92605	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.23019294	<i>ω</i> 353.11672	+0.99599268	+0.08943001
<i>a</i>	2.6367850	<i>Ω</i> 1.75326	-0.08054651	+0.90145422
<i>e</i>	0.3062809	<i>i</i> 1.73211	-0.03886955	+0.42353578
<i>P</i>	4.28	<i>H</i> 14.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1978 11 29	675	(2.9- 0.5-)	1997 01 09	691	0.7+ 0.2-	1999 09 13	106	0.3- 0.4-
1978 11 30	675	2.2- 0.5-	1997 01 09	691	0.6+ 0.3-	1999 09 13	106	0.8- 0.2-
1982 09 16	095	0.1+ 1.7+	1999 06 22	703	0.2- 0.4+	1999 09 29	704	1.0+ 0.9-
1982 09 19	095	0.6+ 0.7+	1999 06 22	703	0.9- 0.2-	1999 09 29	699	0.3- 0.2+
1982 09 21	095	0.3- 0.4+	1999 06 22	703	0.0 1.2+	1999 09 29	704	0.6- 0.2-
1995 10 15	691	0.3- 0.0	1999 06 22	703	0.6+ 0.7+	1999 09 29	699	1.8- 0.6+
1995 10 15	691	1.4- 0.1-	1999 07 14	704	0.4+ 0.1-	1999 09 29	704	0.1+ 0.1-
1995 10 15	691	0.3- 0.0	1999 07 14	704	0.8- 0.1+	1999 09 29	704	0.3- 0.8-
1995 10 20	411	0.0 0.5+	1999 07 14	704	0.3+ 1.2-	1999 09 29	699	0.5- 0.3+
1995 10 20	411	0.5+ 0.1+	1999 07 14	704	0.6- 0.9-	1999 09 30	704	0.7+ 0.8+
1995 10 21	411	0.6+ 0.4-	1999 07 14	704	1.6- 0.6-	1999 09 30	704	0.7+ 0.1-
1995 10 21	411	0.2+ 0.2-	1999 07 20	699	0.9- 0.0	1999 09 30	704	0.4+ 0.1+
1995 10 22	691	0.0 0.2-	1999 07 20	699	0.9- 0.1-	1999 09 30	704	0.8+ 0.1+
1995 10 22	691	0.3+ 0.0	1999 07 20	699	0.8- 0.5+	1999 09 30	704	1.0+ 0.5+
1995 10 22	046	0.0 0.2-	1999 09 07	704	1.7+ 0.1-	1999 10 11	691	0.2+ 0.3+
1995 10 22	046	1.6- 0.6-	1999 09 07	704	1.0+ 0.6-	1999 10 11	691	0.3+ 0.2+
1995 10 24	046	0.4+ 0.2+	1999 09 07	704	1.0+ 0.7-	1999 10 11	691	0.5+ 0.4+
1995 10 24	046	0.4+ 0.2+	1999 09 07	704	0.8- 1.3-	1999 10 15	704	0.7+ 0.0
1995 10 24	046	0.5+ 0.2+	1999 09 13	699	0.5- 0.3+	1999 10 15	704	0.2+ 0.6-
1995 10 24	046	0.4+ 0.2+	1999 09 13	699	0.3- 0.5+	1999 10 15	704	1.0+ 0.2+
1995 10 24	046	0.5+ 0.3+	1999 09 13	699	0.6- 0.1+	1999 10 15	704	1.0+ 0.2-
1997 01 09	691	0.7+ 0.2-	1999 09 13	106	0.3- 0.1+	1999 10 15	704	1.1+ 0.5-

(11825)* 1982 UW₁ = 1976 SQ₈ = 1988 VW₃ = 1998 MW₁₁

Discovered 1982 Oct. 16 by A. Mrkos at Kleť.

Id. A. Doppler (*MPC* 33924)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	20.55384	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.17351706	<i>ω</i> 143.55695	+0.94501011	+0.32273747
<i>a</i>	3.1835225	<i>Ω</i> 197.83829	-0.32571277	+0.91422766
<i>e</i>	0.1710221	<i>i</i> 9.94061	-0.02944633	+0.24500675
<i>P</i>	5.68	<i>H</i> 12.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1976 09 28	095	(1.6- 8.8+)	1999 09 14	046	0.0 0.0	1999 10 08	120	0.5+ 0.0
1982 10 16	046	0.1+ 1.6-	1999 09 14	046	0.0 0.1-	1999 10 08	106	0.7- 0.8+
1982 10 16	046	0.7+ 1.3-	1999 09 14	046	0.1- 0.1-	1999 10 09	703	0.5- 1.2-
1982 10 20	046	2.0- 1.1-	1999 10 04	704	0.2+ 0.0	1999 10 09	704	0.6- 0.1+
1982 10 20	046	0.3+ 1.4+	1999 10 04	704	0.7+ 0.9-	1999 10 09	703	1.9+ 0.7+
1982 10 21	046	0.4- 0.3+	1999 10 04	704	0.9+ 0.5-	1999 10 09	704	1.1- 0.5-
1982 10 21	046	1.6+ 0.7+	1999 10 04	704	0.8+ 0.5-	1999 10 09	703	0.4- 0.1-
1988 11 12	675	0.3- 0.3+	1999 10 04	704	0.6+ 1.2-	1999 10 09	704	0.1- 0.2-
1988 11 13	675	1.5- 1.3-	1999 10 05	704	0.1- 0.0	1999 10 09	703	0.2- 0.1+
1993 09 14	095	1.2+ 1.2+	1999 10 05	704	0.2- 0.2-	1999 10 09	704	0.3- 0.2-
1993 09 14	095	0.1+ 1.4+	1999 10 05	704	0.2- 0.3-	1999 10 09	704	0.5- 0.3-
1997 04 01	809	0.2- 0.1+	1999 10 05	704	0.3- 0.3-	1999 10 09	120	0.1+ 0.5-
1997 04 01	809	0.2+ 0.5-	1999 10 05	704	0.3- 0.5-	1999 10 10	120	0.3+ 0.3-
1997 04 01	809	0.2- 0.7-	1999 10 06	718	0.4+ 1.0+	1999 10 10	106	0.1- 0.7+
1997 04 11	704	1.0+ 1.0+	1999 10 06	718	0.2+ 1.5+	1999 10 10	106	0.8- 0.2+
1997 04 11	704	0.9+ 0.2+	1999 10 07	120	0.0 0.2-	1999 10 10	106	1.1- 0.5+
1998 05 28	704	0.0 1.0+	1999 10 07	120	0.9+ 0.9+	1999 10 15	704	0.1- 0.3-
1998 05 28	704	1.9- 1.7+	1999 10 07	704	0.1+ 0.3+	1999 10 15	704	0.3- 0.2-
1998 05 28	704	1.3- 0.9-	1999 10 07	704	0.2+ 0.1+	1999 10 15	704	1.9+ 0.3+
1998 06 19	704	0.3+ 0.5-	1999 10 07	704	0.2- 0.3+	1999 10 15	704	1.4- 1.2-
1998 06 19	704	0.2+ 0.2+	1999 10 07	704	0.1- 0.3+	1999 10 15	704	0.5- 0.4-
1998 06 19	704	0.1- 0.0	1999 10 07	704	0.4- 0.1-	1999 10 15	127	0.3- 0.2+
1998 06 19	704	0.5+ 0.8-	1999 10 07	120	0.7+ 0.2+	1999 10 15	127	0.1- 0

1998 06 25	704	0.1+	0.7-	1999 10 07	120	0.2-	0.0	1999 10 17	127	0.4+	0.9-
1998 06 25	704	0.4-	0.2-	1999 10 07	120	0.1-	0.1-	1999 10 18	046	0.0	0.1+
1998 06 25	704	0.2+	0.7-	1999 10 08	718	0.2+	0.2+	1999 10 18	046	0.0	0.1+
1998 06 25	704	0.3+	0.0	1999 10 08	718	0.3+	0.7+	1999 10 18	046	0.0	0.1+
1998 06 25	704	0.3-	0.4-	1999 10 08	718	0.4+	0.0	1999 10 19	704	0.1+	0.1+
1999 09 12	046	0.1-	0.3+	1999 10 08	120	0.0	0.0	1999 10 19	704	0.1+	0.3+
1999 09 12	046	0.1-	0.2+	1999 10 08	106	0.4-	1.5+	1999 10 19	704	0.2-	0.0
1999 09 12	046	0.1-	0.2+	1999 10 08	106	0.4-	0.5-	1999 10 19	704	0.2-	0.0

(11826)* 1982 UR₁₀ = 1976 SG

Discovered 1982 Oct. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. T. Kobayashi (*MPC* 11055), W. Landgraf (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	353.32234		(2000.0)	P	Q
<i>n</i>	0.17366007	ω	13.09540	+0.85521630	-0.51818556
<i>a</i>	3.1817746	Ω	18.12454	+0.47273264	+0.77248940
<i>e</i>	0.2066994	<i>i</i>	1.73596	+0.21243573	+0.36707473
<i>P</i>	5.68	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1976 09 20	049	0.0	0.7-	1993 09 23	675	0.5-	0.7-	1999 10 10	681	0.5-	0.8+
1976 09 20	049	0.7+	0.6-	1995 01 30	033	0.7+	0.2-	1999 10 10	704	0.2-	0.0
1976 09 20	049	0.5+	0.1-	1995 01 30	033	0.2-	0.5+	1999 10 10	704	0.2-	0.9+
1976 09 29	049	0.4+	0.8-	1995 02 02	033	0.9-	0.3+	1999 10 10	681	0.4-	1.1+
1976 09 29	049	1.3-	0.5-	1998 07 01	809	1.3-	1.8+	1999 10 10	704	0.7-	0.8+
1976 09 30	049	0.2-	0.7+	1998 07 01	809	0.1+	1.9+	1999 10 10	704	0.9-	0.7+
1976 09 30	049	0.2+	0.4+	1998 07 01	809	0.4+	1.3+	1999 10 10	704	0.9-	0.4+
1982 10 25	095	0.9-	1.5+	1999 10 03	704	1.6+	0.8-	1999 10 11	106	0.3+	0.1-
1982 11 09	095	0.8-	0.5+	1999 10 03	704	0.5-	1.0-	1999 10 11	106	0.3+	0.1-
1982 11 14	095	1.6+	0.4-	1999 10 03	704	0.5-	0.2+	1999 10 11	106	0.5+	0.2-
1988 12 01	054	0.4+	0.0	1999 10 06	704	1.5+	0.0	1999 10 16	681	0.4-	0.2+
1993 09 15	809	(2.3+	1.2-)	1999 10 06	704	0.2-	0.6-	1999 10 16	681	0.0	0.3+
1993 09 15	809	1.5+	1.4-	1999 10 06	704	0.1-	0.5+	1999 10 21	704	0.2+	0.0
1993 09 15	809	0.4+	1.4-	1999 10 06	704	1.8-	0.5-	1999 10 21	704	0.0	0.1-
1993 09 22	809	(2.4-	0.3+)	1999 10 07	704	0.8+	0.0	1999 10 21	704	0.5+	0.5+
1993 09 22	809	(2.8-	1.0+)	1999 10 07	704	0.4+	0.5+	1999 10 21	704	0.0	0.4+
1993 09 22	809	(3.0-	1.0+)	1999 10 07	704	0.6-	0.4-	1999 10 21	704	0.4-	0.1+
1993 09 23	675	0.5+	0.4-	1999 10 07	704	0.8+	0.6+				

(11827)* 1982 VD₅ = 1977 HW

Discovered 1982 Nov. 14 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Id. S. J. Bus (*MPC* 10943)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	292.29874		(2000.0)	P	Q
<i>n</i>	0.28619257	ω	209.48768	+0.21815600	-0.97503790
<i>a</i>	2.2805021	Ω	227.94485	+0.90593207	+0.21808259
<i>e</i>	0.1523374	<i>i</i>	3.19174	+0.36289812	+0.04172618
<i>P</i>	3.44	<i>H</i>	14.9	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1977 04 24	675	0.5+	0.1+	1998 05 24	704	1.6+	0.5-	1999 10 07	704	0.1-	0.2+
1977 04 25	675	0.0	1.2+	1998 05 24	704	(1.0-	2.3-)	1999 10 07	610	0.5+	0.8+
1982 11 12	095	1.4+	1.4+	1999 09 05	699	0.4-	0.7+	1999 10 07	610	0.5+	0.8+
1982 11 14	381	0.0	0.3-	1999 09 05	699	0.2-	0.0	1999 10 07	610	0.3+	0.7+
1982 11 14	381	0.2+	0.1-	1999 09 05	699	0.0	0.3+	1999 10 07	610	0.1+	0.7+
1982 12 13	381	0.1+	0.1-	1999 09 07	704	0.6+	0.6-	1999 10 07	610	0.0	0.6+
1982 12 14	381	0.5+	0.1+	1999 09 07	704	0.0	0.4-	1999 10 09	704	0.4+	0.7+
1982 12 14	381	0.8-	0.2+	1999 09 07	704	0.1+	0.6+	1999 10 09	704	0.1+	0.1+
1989 12 01	801	0.5-	0.0	1999 09 07	704	0.1+	0.5-	1999 10 09	704	0.1+	0.3-
1989 12 01	801	0.5-	0.3-	1999 09 07	704	0.3-	1.3-	1999 10 09	704	0.1+	0.0
1989 12 29	801	0.4-	1.0+	1999 09 18	703	0.6-	0.0	1999 10 09	704	0.1-	0.1+
1989 12 29	801	0.1-	1.0+	1999 09 18	703	0.3+	0.2+	1999 10 13	704	0.1-	0.1+
1989 12 29	046	(3.2+	0.1+)	1999 09 18	703	0.5-	0.0	1999 10 13	704	0.2-	0.1+

1989 12 29	046	(4.5+	1.1-)	1999 09 18	703	0.2-	0.2-	1999 10 13	704	0.1-	0.4+
1989 12 29	046	0.3-	1.3-	1999 09 30	703	0.6-	0.3+	1999 10 13	704	0.0	0.2+
1989 12 29	046	0.1+	1.5-	1999 09 30	703	0.9-	0.4+	1999 10 13	704	0.1-	0.2+
1989 12 31	046	0.6-	2.2+	1999 09 30	703	0.3-	0.4+	1999 10 15	704	0.5+	0.1-
1989 12 31	046	(4.8-	3.1+)	1999 09 30	703	0.4-	0.5+	1999 10 15	704	0.5+	0.1-
1990 01 01	046	0.2+	1.2+	1999 10 04	704	0.7+	0.6-	1999 10 15	704	0.4+	0.1+
1990 01 01	046	(0.3+	2.2+)	1999 10 04	704	0.0	0.2-	1999 10 15	704	1.1+	0.7+
1992 09 30	691	(3.6-	0.2+)	1999 10 04	704	0.4+	0.7-	1999 10 16	704	0.4+	0.5-
1992 09 30	691	1.3-	0.6-	1999 10 04	704	0.1+	0.1+	1999 10 16	704	0.4+	0.8-
1992 09 30	691	0.7-	0.8-	1999 10 04	704	0.7-	0.6-	1999 10 16	704	0.2-	0.8-
1994 04 04	675	1.5+	0.8+	1999 10 06	610	0.9+	0.7+	1999 10 16	704	0.0	0.7-
1994 04 04	675	0.3-	0.5+	1999 10 06	610	0.4+	0.9+	1999 10 16	704	0.1+	0.8-
1998 05 22	704	(1.0-	3.1+)	1999 10 06	610	0.0	1.1+	1999 10 19	704	0.6-	0.1-
1998 05 22	704	1.3-	0.5-	1999 10 06	610	0.4-	1.4+	1999 10 19	704	0.5-	0.3-
1998 05 22	704	0.0	1.6+	1999 10 06	610	0.8-	1.6+	1999 10 19	704	0.4-	0.5-
1998 05 22	704	1.7-	1.6+	1999 10 07	704	0.0	0.1-	1999 10 19	704	0.3-	0.6-
1998 05 24	704	0.6+	0.2+	1999 10 07	704	0.4+	0.3+	1999 10 19	704	0.3+	0.5-
1998 05 24	704	0.1+	0.3+	1999 10 07	704	0.0	0.1-				
1998 05 24	704	1.0+	1.2+	1999 10 07	704	0.0	0.4-				

(11828)* 1984 DZ = 1977 FC₂ = 1991 EJ₅

Discovered 1984 Feb. 26 by H. Debehogne at the European Southern Observatory.

Id. G. V. Williams (*MPC* 19294, *MPC* 34484), A. Doppler (*MPC* 34484)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	81.85268		(2000.0)	P	Q
<i>n</i>	0.27934243	ω	259.69269	-0.41228700	+0.91044942
<i>a</i>	2.3176336	Ω	345.81894	-0.77387128	-0.36919620
<i>e</i>	0.2084342	<i>i</i>	7.78512	-0.48077300	-0.18648328
<i>P</i>	3.53	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1953 09 06	675	0.2-	0.2-	1984 03 11	809	0.7-	0.2+	1998 03 04	704	1.0-	0.4+
1953 09 06	675	0.6+	0.5-	1991 02 13	675	0.7-	1.1+	1998 03 04	704	(2.2-	1.3+)
1977 03 26	095	1.1-	2.5-	1991 02 13	675	1.0+	0.4-	1998 04 27	699	0.2+	1.0+
1984 02 26	809	1.0-	0.7-	1991 02 20	898	(4.0-	0.7+)	1998 04 27	699	0.6-	1.0+
1984 02 26	809	0.8-	0.6-	1991 02 20	898	(2.6-	1.2+)	1998 04 27	699	0.2-	0.7+
1984 02 26	809	0.6-	0.5-	1991 03 12	675	0.5+	0.9-	1999 09 07	704	0.9+	0.7+
1984 02 27	809	0.8+	0.4-	1991 03 14	809	0.5+	0.5+	1999 09 07	704	0.8+	0.4+
1984 02 27	809	0.5+	0.5-	1991 03 14	809	0.8+	0.4+	1999 09 07	704	0.1+	0.1-
1984 02 27	809	0.3+	0.6-	1991 03 14	809	1.2+	0.6+	1999 09 07	704	0.4+	0.5-
1984 03 01	809	2.1-	0.2-	1991 03 17	809	0.0	0.3+	1999 09 29	703	0.5-	0.3+
1984 03 01	809	1.3-	0.3-	1991 03 17	809	0.7+	0.4+	1999 09 29	703	0.1-	0.1-
1984 03 01	809	0.6-	0.3-	1991 03 17	809	1.0+	0.3+	1999 09 29	703	0.4-	0.1+
1984 03 03	809	0.2+	0.4-	1998 02 19	699	0.1+	0.5+	1999 09 29	703	0.1-	0.5-
1984 03 03	809	0.4+	0.4-	1998 02 19	699	0.8-	1.5+	1999 10 04	704	1.6+	0.9+
1984 03 03	809	0.3+	0.3-	1998 02 19	699	1.1+	2.0+	1999 10 04	704	1.0+	0.2-
1984 03 04	809	1.3+	0.6-	1998 02 24	691	0.6+	0.1+	1999 10 04	704	0.5+	1.1-
1984 03 04	809	1.8+	0.8-	1998 02 24	691	0.7+	0.1+	1999 10 04	704	0.7+	1.0-
1984 03 04	809	2.1+	0.6-	1998 02 24	691	0.4+	0.0	1999 10 04	704	1.4+	1.2-
1984 03 05	809	1.3-	0.1+	1998 03 02	691	0.2+	0.0	1999 10 07	704	0.6-	0.1-
1984 03 05	809	0.7-	0.1+	1998 03 02	691	0.1+	0.0	1999 10 07	704	0.7-	0.2+
1984 03 05	809	0.3-	0.1-	1998 03 02	691	0.2+	0.3-	1999 10 07	704	0.6-	0.0
1984 03 06	809	0.2-	0.0	1998 03 03	704	0.3+	0.1+	1999 10 07	704	0.6-	0.1-
1984 03 06	809	0.3+	0.4-	1998 03 03	809	(2.5+	1.7-)	1999 10 07	704	1.0-	0.2-
1984 03 06	809	0.7+	0.6-	1998 03 03	704	0.3-	0.3-	1999 10 09	704	0.3-	0.3-
1984 03 08	809	0.6-	1.0+	1998 03 03	809	1.5+	1.5-	1999 10 09	704	0.2-	0.2+
1984 03 08	809	0.1+	1.0+	1998 03 03	809	(1.3+	2.6-)	1999 10 09	704	0.1-	0.2-
1984 03 08	809	0.5+	1.0+	1998 03 03	704	0.0	0.4-	1999 10 09	704	0.3-	0.2-
1984 03 09	809	0.1-	0.4-	1998 03 03	704	0.7+	1.5-	1999 10 09	704	0.4-	0.1+
1984 03 09	809	0.0	0.6-	1998 03 03	704	(2.1-	1.3-)	1999 10 15	704	0.4+	0.4-
1984 03 09	809	0.4+	0.6-	1998 03 04	809	(1.5+	2.6-)	1999 10 15	704	0.1-	0.9-
1984 03 10	809	1.5-	0.1-	1998 03 04	809	(2.3+	2.8-)	1999 10 15	704	0.3+	0.0
1984 03 10	809	1.3-	0.3-	1998 03 04	809	(1.9+	2.9-)	1999 10 15	704	0.8+	0.3-
1984 03 10	809	1.4-	0.4-	1998 03 04	704	1.4-	0.0	1999 10 15	704	0.1+	0.2-

1984 03 11 809 0.9- 0.3+ 1998 03 04 704 0.8- 0.0
 1984 03 11 809 0.8- 0.2+ 1998 03 04 704 1.2- 0.1-

(11829)* 1984 EU₁ = 1994 AL₁₅

Discovered 1984 Mar. 4 by H. Debehogne at the European Southern Observatory.

Id. G. V. Williams (*MPC* 23122)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	192.70763		(2000.0)	P	Q
<i>n</i>	0.28558109	ω	169.53002	-0.80340109	-0.59480375
<i>a</i>	2.2837563	Ω	333.91107	+0.54168755	-0.71093626
<i>e</i>	0.1387958	<i>i</i>	3.58271	+0.24722718	-0.37520413
<i>P</i>	3.45	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1984 03 04	809	0.4-	0.4-	1996 10 09	566	0.6-	0.1-	1999 09 07	704	0.1-	0.2+
1984 03 04	809	0.4-	0.3-	1996 10 09	566	0.6-	0.2-	1999 09 07	704	0.2+	0.3-
1984 03 04	809	0.0	0.5-	1998 04 21	704	(6.2-	0.3-)	1999 09 07	704	0.1-	0.2+
1984 03 05	809	0.9-	0.2+	1998 04 21	704	0.0	0.4-	1999 09 07	704	0.0	0.1-
1984 03 05	809	0.8-	0.2+	1998 04 21	704	0.4+	0.1-	1999 09 07	704	0.1+	0.0
1984 03 05	809	0.6-	0.5+	1998 04 21	704	0.9-	0.3-	1999 09 09	704	0.1+	0.1+
1984 03 06	809	0.7+	0.3+	1998 04 21	704	0.6-	1.8-	1999 09 09	704	0.1+	0.3+
1984 03 06	809	0.7+	0.3+	1998 04 22	704	0.5+	0.0	1999 09 09	704	0.7+	0.3-
1984 03 06	809	0.6+	0.2+	1998 04 22	704	0.5-	0.2-	1999 09 09	704	0.3+	0.9-
1984 03 10	809	0.9+	0.1-	1998 04 22	704	0.4+	1.0-	1999 09 09	704	1.0+	0.6+
1984 03 10	809	1.1+	0.1-	1998 04 22	704	0.0	0.8-	1999 09 13	704	0.7+	0.5-
1984 03 10	809	1.3+	0.3-	1998 04 22	704	0.6-	0.7-	1999 09 13	704	0.2-	0.4-
1984 03 13	809	0.8-	0.4-	1998 04 25	699	0.2+	0.4+	1999 09 13	704	0.4+	1.0-
1984 03 13	809	0.3-	0.3-	1998 04 25	699	0.1+	0.0	1999 09 13	704	0.4+	1.0-
1984 03 13	809	0.2+	0.2-	1998 04 25	699	0.0	0.4-	1999 09 13	704	0.3+	0.3-
1984 03 14	809	0.9-	0.2-	1998 05 01	704	0.5+	0.2+	1999 09 30	704	1.4+	0.8-
1984 03 14	809	0.9-	0.2-	1998 05 01	704	0.1+	0.1+	1999 09 30	704	0.2-	0.1-
1984 03 14	809	0.3-	0.1-	1998 05 01	704	0.1+	0.6+	1999 09 30	704	0.7+	1.2-
1994 01 08	675	0.8+	0.7-	1998 05 01	704	1.2-	1.0+	1999 09 30	704	(1.7-	3.1-)
1994 01 08	675	0.3-	1.6-	1998 05 01	704	0.1+	1.5+	1999 10 05	704	0.3+	0.1-
1994 01 09	675	0.4-	0.0	1999 09 04	699	1.2+	2.3+	1999 10 05	704	0.2-	0.3-
1994 01 09	675	0.5+	0.5-	1999 09 04	699	0.5-	0.8+	1999 10 05	704	0.8-	0.3-
1996 10 09	566	0.5-	0.1-	1999 09 04	699	0.1-	1.0+	1999 10 05	704	0.4-	0.1+

(11830)* 1984 JE = 1979 VV₁ = 1989 VB₅ = 1996 TR₁₃

Discovered 1984 May 2 by A. Mrkos at Kleť.

Id. A. Doppler (*MPC* 35909)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	229.46320		(2000.0)	P	Q
<i>n</i>	0.28913054	ω	112.89067	-0.71481703	-0.69676784
<i>a</i>	2.2650271	Ω	23.08244	+0.57291133	-0.63234948
<i>e</i>	0.1767752	<i>i</i>	8.74278	+0.40101026	-0.33859816
<i>P</i>	3.41	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1979 11 14	095	0.3+	0.4+	1999 08 22	699	0.0	0.5+	1999 10 02	704	0.6+	0.1-
1984 04 26	809	0.1-	0.6-	1999 08 22	699	0.2-	0.4+	1999 10 02	704	0.8+	0.1-
1984 04 26	809	0.7-	0.8-	1999 08 22	699	0.4+	0.2+	1999 10 02	704	0.7+	0.1+
1984 04 27	809	0.2-	0.4-	1999 09 05	699	0.0	0.9+	1999 10 07	704	0.2+	0.5-
1984 04 27	809	0.3+	0.0	1999 09 05	699	0.0	0.5+	1999 10 07	704	0.9+	0.1+
1984 04 30	809	0.8+	0.4-	1999 09 05	699	0.1-	0.3+	1999 10 07	704	0.5-	0.4-
1984 04 30	809	1.6+	0.0	1999 09 07	704	0.1-	0.5-	1999 10 07	704	0.0	0.4+
1984 05 02	046	(2.7+	3.3-)	1999 09 07	704	0.3-	0.1-	1999 10 07	704	1.2+	1.1-
1984 05 02	046	(2.8+	3.0-)	1999 09 07	704	0.1+	0.2+	1999 10 15	704	0.1+	0.6-
1984 05 05	809	0.7-	0.9+	1999 09 07	704	0.9-	0.6+	1999 10 15	704	0.5+	0.5-
1984 05 05	809	1.1-	1.3+	1999 09 07	704	0.0	0.1-	1999 10 15	704	0.1+	0.6-
1989 11 03	675	1.1-	0.9-	1999 09 14	704	0.4-	0.1+	1999 10 15	704	0.4+	0.7-
1989 11 03	675	1.4+	2.3-	1999 09 14	704	0.6-	0.2-	1999 10 15	704	0.2-	0.1-
1989 11 04	675	0.6+	0.6-	1999 09 14	704	0.7-	0.2-	1999 10 15	704	0.4+	0.2-
1989 11 04	675	0.3+	0.1+	1999 09 14	704	1.0-	0.1+	1999 10 15	704	0.0	0.4-

1996 10 05	327	0.6-	0.7+	1999 09 14	704	0.9-	0.1+	1999 10 15	704	0.0	0.1-
1996 10 05	327	0.5+	0.7+	1999 09 15	046	0.1+	0.4+	1999 10 15	704	0.1-	0.3-
1996 10 05	327	0.5-	0.3+	1999 09 15	046	0.0	0.4+	1999 10 15	704	0.1-	0.0
1996 10 13	327	0.4-	0.1-	1999 09 15	046	0.0	0.3+	1999 10 18	046	0.1+	0.1+
1996 10 13	327	0.6-	0.2-	1999 09 16	046	0.0	0.3+	1999 10 18	046	0.0	0.3+
1996 10 13	327	0.0	0.4+	1999 09 16	046	0.0	0.4+	1999 10 18	046	0.2+	0.2+
1996 10 26	327	0.5+	0.1+	1999 09 16	046	0.3+	0.3+	1999 10 19	046	0.5-	0.2+
1996 10 26	327	0.2+	1.0+	1999 10 02	704	0.3-	0.2+	1999 10 19	046	0.0	0.2+
1996 10 26	327	0.2-	0.5+	1999 10 02	704	0.0	0.3-	1999 10 19	046	0.0	0.3+

(11831)* 1984 SF₃ = 1954 UZ = 1997 UB₅ = 1999 FT₈

Discovered 1984 Sept. 28 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Id. A. Doppler (*MPC* 35910), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	109.48802		(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-				

(11832)* 1984 SC₆ = 1994 CM₁₆

Discovered 1984 Sept. 21 by H. Debehogne at the European Southern Observatory.

Id. G. V. Williams (*MPC* 23778)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	37.23902		(2000.0)	P	Q
<i>n</i>	0.26478838	ω	209.72863	+0.58951757	+0.80570744
<i>a</i>	2.4017996	Ω	96.45271	-0.72922216	+0.56146231
<i>e</i>	0.2081105	<i>i</i>	3.31651	-0.34742492	+0.18866792
<i>P</i>	3.72	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1984 09 21	809	0.4-	0.7+	1994 02 08	809	0.1-	0.1-	1998 03 29	704	0.5+	0.4-
1984 09 21	809	0.3-	0.7+	1994 02 10	809	0.1+	0.1-	1998 03 29	704	0.8-	0.7-
1984 09 21	809	0.1-	0.6+	1994 02 10	809	0.7+	1.1-	1998 04 20	704	0.1-	1.0+
1984 09 22	809	0.9+	0.9-	1994 02 10	809	1.4+	0.4-	1998 04 20	704	0.0	0.9+
1984 09 22	809	1.6+	0.7-	1994 02 13	809	1.2+	0.5-	1998 04 20	704	0.3-	0.8+
1984 09 22	809	2.0+	0.9-	1994 02 13	809	1.3-	1.2-	1998 04 20	704	0.1+	0.6+
1984 09 23	809	1.5+	0.1-	1994 02 13	809	1.0-	0.5-	1998 04 20	704	(3.0-	0.5+)
1984 09 23	809	1.6+	0.2-	1994 02 15	691	0.5-	0.5+	1999 09 14	691	0.2+	0.1+
1984 09 23	809	1.8+	0.4-	1994 02 15	691	0.5-	0.7+	1999 09 14	691	0.2+	0.0
1984 09 24	809	2.1-	0.9+	1994 02 15	691	1.0-	0.8+	1999 09 14	691	0.0	0.0
1984 09 24	809	1.7-	0.8+	1998 02 26	566	0.7-	1.1-	1999 10 03	703	0.5-	0.8+
1984 09 24	809	1.6-	0.7+	1998 02 26	566	0.8-	1.3-	1999 10 03	703	0.6-	0.4+
1984 09 26	809	0.0	1.0-	1998 02 26	566	0.4-	1.0-	1999 10 03	703	0.2-	1.0+
1984 09 26	809	0.6+	1.0-	1998 03 20	704	1.8-	0.4-	1999 10 03	703	0.5-	0.7+

1984 09 26	809	0.6+	0.7-	1998 03 20	704	0.7-	0.2-	1999 10 04	704	0.4+	0.1-
1984 09 27	809	0.5-	0.1-	1998 03 20	704	0.1+	0.6-	1999 10 04	704	0.3-	0.4-
1984 09 27	809	0.4-	0.0	1998 03 20	704	0.1-	0.0	1999 10 04	704	0.1-	0.5-
1984 09 27	809	0.2-	0.3+	1998 03 20	704	0.4+	0.6-	1999 10 04	704	0.1-	0.3-
1984 09 28	809	0.6-	1.0-	1998 03 22	704	0.6-	0.1-	1999 10 04	704	0.5-	0.2-
1984 09 28	809	0.6-	0.6-	1998 03 22	704	0.4-	1.0-	1999 10 07	704	0.2+	0.2-
1984 09 28	809	0.5-	0.4-	1998 03 22	704	0.1-	0.1+	1999 10 07	704	0.3+	0.3-
1984 09 29	809	0.6-	0.3-	1998 03 22	704	0.1-	0.9-	1999 10 07	704	0.3+	0.2-
1984 09 29	809	0.3-	0.2-	1998 03 22	704	(3.6-	1.3-)	1999 10 07	704	0.0	0.0
1984 09 29	809	0.3-	0.4-	1998 03 25	699	0.4+	1.1-	1999 10 07	704	0.4+	1.1-
1984 09 30	809	0.8+	0.7-	1998 03 25	699	1.3+	0.2-	1999 10 09	704	0.4-	0.2+
1984 09 30	809	0.7+	0.7-	1998 03 25	699	0.8-	0.3-	1999 10 09	704	0.2+	0.2+
1984 09 30	809	1.1+	0.6-	1998 03 28	704	0.7-	0.1-	1999 10 09	704	0.0	0.0
1984 10 01	809	0.3+	0.4-	1998 03 28	704	0.6+	0.2+	1999 10 09	704	0.0	0.2-
1984 10 01	809	0.4+	0.7-	1998 03 28	704	0.0	0.6-	1999 10 09	704	0.8+	0.2-
1984 10 01	809	0.8+	1.1-	1998 03 28	704	0.8-	0.9-	1999 10 15	704	0.3+	0.1+
1988 11 06	675	0.2-	0.3-	1998 03 28	704	0.1+	0.7-	1999 10 15	704	0.2+	0.0
1988 11 06	675	1.1-	0.5+	1998 03 29	704	0.2-	0.2-	1999 10 15	704	0.2-	0.0
1994 02 08	809	0.6+	0.7+	1998 03 29	704	0.5+	0.6-	1999 10 15	704	0.3+	0.2+
1994 02 08	809	0.9+	0.5+	1998 03 29	704	0.5+	0.5-	1999 10 15	704	0.1+	0.2-

(11833)* 1985 RW

Discovered 1985 Sept. 13 by Spacewatch at Kitt Peak.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	232.73466		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.35836206	ω	246.66807	-0.57214411	-0.76793199
a	1.9630048	Ω	241.41035	+0.81970356	-0.52379649
e	0.0754377	i	19.14547	+0.02715141	-0.36867016
P	2.75	H	15.4	G 0.15	U 2

Residuals in seconds of arc

1980 12 01	675	0.5-	0.2+	1985 10 14	691	0.1+	0.7+	1993 07 26	658	0.1+	0.6-
1985 09 13	691	1.7-	1.1-	1985 10 14	691	0.4+	0.9+	1993 07 26	658	0.2-	0.4-
1985 09 13	691	0.7-	1.1-	1985 10 14	691	0.7+	0.4+	1993 07 26	658	0.0	0.6-
1985 09 13	691	1.0-	0.9-	1985 12 05	691	0.1-	0.6-	1999 09 18	699	0.1-	1.3+
1985 09 14	691	0.2+	0.1+	1985 12 05	691	0.1-	0.6-	1999 09 18	699	0.3-	1.4+
1985 09 14	691	0.4+	0.1-	1985 12 05	691	0.9-	0.3-	1999 09 18	699	0.1-	0.7+
1985 09 14	691	0.1-	0.7+	1986 01 13	691	0.6-	0.2-	1999 10 05	704	0.3-	0.3-
1985 09 16	691	0.0	0.4+	1986 01 13	691	0.4+	0.3-	1999 10 05	704	0.1-	0.3+
1985 09 16	691	0.2+	0.4+	1986 01 13	691	0.9+	0.4-	1999 10 05	704	0.2-	0.2-
1985 09 16	691	0.2+	0.4+	1987 05 01	691	0.2+	1.1+	1999 10 05	704	0.4+	0.3-
1985 09 16	691	0.5-	1.0+	1987 05 01	691	0.1+	0.8+	1999 10 05	704	0.3+	0.3+
1985 09 16	691	0.0	0.5+	1987 05 01	691	0.2-	1.0+	1999 10 14	704	0.0	0.0
1985 09 17	691	0.4+	0.3+	1987 05 02	691	0.6-	1.0+	1999 10 14	704	0.0	0.3-
1985 09 17	691	0.6+	0.1-	1987 05 02	691	0.4-	0.9-	1999 10 14	704	0.1-	0.0
1985 09 17	691	0.2+	0.5+	1987 05 25	691	0.6+	0.2-	1999 10 14	704	0.1+	0.1-
1985 10 07	691	0.1+	0.5-	1987 05 25	691	0.8+	0.3+	1999 10 14	704	0.0	0.2+
1985 10 07	691	2.1+	0.0	1987 05 25	691	0.9+	0.2-				

(11834)* 1985 RQ₃ = 1984 FG₁

Discovered 1985 Sept. 7 by H. Debehogne at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 29910)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	71.24985		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21797871	ω	121.40726	+0.22298435	+0.97300153
a	2.7343871	Ω	161.19890	-0.94532987	+0.23074650
e	0.2578337	i	10.64770	-0.23796935	-0.00490585
P	4.52	H	14.1	G 0.15	U 1

Residuals in seconds of arc

1984 03 28	801	0.7+	1.5+	1994 10 01	675	1.3+	0.4+	1998 06 04	699	0.6-	0.2-
1985 08 18	095	(0.8-	8.9-)	1998 05 23	704	0.3+	0.9-	1998 06 04	699	0.7-	0.4+
1985 09 07	809	0.4-	0.3-	1998 05 23	704	1.0+	0.2-	1998 06 04	699	0.1-	0.6+
1985 09 07	809	0.1-	0.2-	1998 05 23	704	0.1+	0.6-	1998 06 13	610	0.2-	0.0

1985 09 07	809	0.2+	0.3-	1998 05 23	704	0.3+	0.5-	1998 06 13	610	0.5-	0.3+
1985 09 10	809	0.4-	0.3-	1998 05 23	704	0.6+	0.2-	1998 06 13	610	0.7-	0.4+
1985 09 10	809	0.2-	0.3-	1998 05 23	699	0.4+	0.0	1998 06 13	610	0.7-	0.5+
1985 09 10	809	0.0	0.2-	1998 05 23	699	0.1-	0.4+	1998 07 19	682	0.2+	0.6+
1985 09 12	809	0.4-	1.1+	1998 05 23	699	0.0	0.6+	1998 07 19	682	0.8+	0.2-
1985 09 12	809	0.2-	0.9+	1998 05 24	699	0.3-	0.7-	1998 07 19	682	0.5+	0.7+
1985 09 12	809	0.1-	1.0+	1998 05 24	699	0.3+	0.6-	1998 07 25	682	0.3+	0.2+
1985 09 14	809	1.6-	0.8+	1998 05 24	699	0.3+	0.5-	1998 07 25	682	0.5+	0.2+
1985 09 14	809	1.5-	0.8+	1998 05 26	704	0.2+	0.4-	1998 07 25	682	0.3+	0.0
1985 09 14	809	1.3-	0.6+	1998 05 26	704	0.6-	0.2+	1999 09 13	703	0.5-	0.2-
1985 09 17	809	1.4+	0.7-	1998 05 26	704	0.0	0.7-	1999 09 13	703	0.1+	1.5-
1985 09 17	809	1.2+	0.6-	1998 05 26	704	0.7+	1.3-	1999 09 13	703	0.4+	1.2+
1985 09 17	809	1.7+	0.5-	1998 05 26	704	0.1+	0.2-	1999 09 13	703	0.2-	0.8+
1985 09 19	809	0.2-	0.0	1998 05 26	610	0.8-	0.3+	1999 10 03	703	0.1+	0.1+
1985 09 19	809	0.2+	0.1+	1998 05 26	610	0.5-	0.2+	1999 10 03	703	0.0	0.1+
1985 09 19	809	0.3+	0.0	1998 05 26	610	0.3-	0.1+	1999 10 03	703	0.3-	0.8+
1985 09 21	809	0.1-	0.5-	1998 05 26	610	0.1-	0.2+	1999 10 03	703	0.1+	0.2-
1985 09 21	809	0.2+	0.5-	1998 06 03	704	0.3+	0.1-	1999 10 09	704	0.4+	0.6-
1985 09 21	809	0.3+	0.6-	1998 06 03	704	0.2+	0.2+	1999 10 09	704	0.3+	1.1-
1994 09 30	675	0.4-	0.5+	1998 06 03	704	0.5+	0.3-	1999 10 09	704	0.5-	0.1-
1994 09 30	675	1.3-	0.6+	1998 06 03	704	0.6-	0.6+	1999 10 09	704	0.4+	0.4-
1994 10 01	675	1.3+	0.9-	1998 06 03	704	1.1-	0.1+	1999 10 09	704	0.5-	0.2-

(11835)* 1985 RA₄ = 1994 PL₂₈

Discovered 1985 Sept. 10 by H. Debehogne at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 24559)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	62.10171		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21613790	ω	305.86630	+0.43971405	+0.89787774
a	2.7498907	Ω	350.14851	-0.77793509	+0.36872809
e	0.1010349	i	7.25708	-0.44885248	+0.24053101
P	4.56	H	13.3	G 0.15	U 1

Residuals in seconds of arc

1985 09 10	809	0.7-	0.1+	1994 08 13	809	0.2+	0.9-	1999 09 18	704	0.1+	1.6-
1985 09 10	809	0.5-	0.1+	1994 09 05	809	0.7-	1.0+	1999 09 18	704	0.4-	1.4-
1985 09 10	809	0.4-	0.1+	1994 09 05	809	0.7-	0.8+	1999 10 03	704	1.0+	0.2+
1985 09 11	809	0.5-	1.1+	1994 09 05	809	0.0	0.7+	1999 10 03	704	1.0+	0.3+
1985 09 11	809	0.3-	1.1+	1994 09 06	809	(1.0+	2.2+)	1999 10 03	704	0.1+	0.6+
1985 09 11	809	0.2-	1.3+	1994 09 06	809	0.9+	1.9+	1999 10 03	704	0.4+	0.2+
1985 09 12	809	0.5-	0.0	1994 09 06	809	(0.1+	2.2+)	1999 10 03	704	0.6+	0.3+
1985 09 12	809	0.4-	0.1+	1997 01 31	098	0.2+	1.7-	1999 10 07	704	0.2+	0.6+
1985 09 12	809	0.3-	0.1-	1997 01 31	098	0.5+	1.3-	1999 10 07	704	0.1+	0.5+
1985 09 16	809	0.2-	0.4-	1997 02 07	098	(2.3+	0.9-)	1999 10 07	704	0.4-	0.6+
1985 09 16	809	0.1-	0.5-	1997 02 07	098	1.1-	0.9-	1999 10 07	704	0.6-	0.3+
1985 09 16	809	0.1-	0.4-	1997 02 08	098	0.0	0.2-	1999 10 10	704	0.9-	0.3+
1985 09 17	809	0.4+	0.2+	1997 02 08	098	0.7+	0.6-	1999 10 10	704	0.3-	0.5+
1985 09 17	809	0.4+	0.1+	1997 02 09	596	0.5-	0.2-	1999 10 10	704	0.6-	0.4+
1985 09 17	809	0.7+	0.0	1997 02 09	596	0.0	0.2+	1999 10 10	704	0.8-	1.0+
1985 09 19	809	0.5+	0.2-	1997 02 09	596	0.3-	0.8+	1999 10 10	704	0.9-	0.8+
1985 09 19	809	0.6+	0.2-	1997 02 10	596	0.3-	0.5+	1999 10 11	106	0.2+	0.2+
1985 09 19	809	0.6+	0.1-	1997 02 10	596	0.1-	0.6+	1999 10 11	106	0.0	0.2+
1985 09 21	809	0.3+	0.8-	1997 02 10	596	0.7-	0.3-	1999 10 11	106	0.2-	0.0
1985 09 21	809	0.3+	1.0-	1999 09 05	703	0.1-	0.7-	1999 10 21	704	0.0	0.1+
1985 09 21	809	0.4+	0.8-	1999 09 05	703	0.1+	0.2+	1999 10 21	704	0.4+	0.5-
1994 08 12	809	0.9+	1.3-	1999 09 05	703	0.4+	0.3+	1999 10 21	704	0.0	0.6-
1994 08 12	809	0.4+	1.4-	1999 09 05	703	0.2+	0.1+	1999 10 21	704	0.3-	0.6-
1994 08 12	809	0.1-	1.2-	1999 09 18	704	0.7+	0.8-	1999 10 21	704	0.8-	1.0-
1994 08 13	809	0.3+	0.9-	1999 09 18	704	0.3+	0.9-				
1994 08 13	809	0.3+	0.6-	1999 09 18	704	0.7+	0.9-				

1999 OCT. 26

M.P.C. 36229

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
<i>M</i>	318.12514		(2000.0)	P		Q			
<i>n</i>	0.27447503	ω	289.76660	+0.42123456		-0.86117782			
<i>a</i>	2.3449531	Ω	131.91124	+0.90695107		+0.39959607			
<i>e</i>	0.3524317	<i>i</i>	22.47532	+0.00109430		+0.31415878			
<i>P</i>	3.59	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1986 02 05	675	0.1-	0.5-	1993 01 23	675	1.6+	1.3-	1999 09 11	704
1986 02 05	675	1.2+	0.2+	1993 01 26	675	1.8+	0.8-	1999 09 11	704
1986 02 07	675	2.6-	1.6-	1993 01 28	675	(2.7+ 1.4-)		1999 09 11	704
1986 02 07	675	1.8-	1.3+	1993 01 28	675	(1.9+ 2.9-)		1999 10 07	423
1986 02 10	675	(4.0+ 0.3+)		1994 05 03	658	0.8+	0.1-	1999 10 07	423
1986 03 03	675	1.2+	0.8+	1994 05 03	658	0.9+	0.3-	1999 10 07	423
1986 03 04	675	1.1+	1.5-	1994 05 03	658	0.6+	0.1+	1999 10 07	423
1986 03 07	675	1.4-	1.4+	1994 05 03	658	0.6+	0.1-	1999 10 08	423
1988 08 09	675	0.5+	0.5-	1994 05 03	658	0.9+	0.0	1999 10 08	423
1988 08 11	675	0.2-	0.9-	1997 03 09	689	0.9-	0.5-	1999 10 08	423
1988 09 07	675	(1.3- 2.8-)		1997 03 10	689	0.9-	0.1-	1999 10 20	423
1988 09 07	675	1.0-	1.6-	1997 03 27	689	1.6-	0.3-	1999 10 20	423
1992 09 30	801	0.2-	0.2-	1998 06 19	704	(2.3- 1.0-)		1999 10 20	423
1992 09 30	801	0.6+	0.8+	1998 06 19	704	(0.3- 2.3+)		1999 10 21	423
1992 10 24	801	0.6-	0.6+	1998 06 19	704	2.0+	2.0-	1999 10 21	423
1992 10 24	801	0.4-	0.4+	1998 06 19	704	0.7-	1.1-	1999 10 21	423
1992 10 27	801	0.5-	0.8+	1998 06 19	704	(3.4- 1.6+)		1999 10 21	423
1992 10 27	801	0.4-	0.9+	1999 09 11	704	0.2-	1.4+		
1993 01 23	675	(1.6+ 2.1-)		1999 09 11	704	0.1+	1.6+		

(11837)* 1986 GD = 1988 UR

Discovered 1986 Apr. 2 by P. Jensen at Brorfelde.

Id. S. Nakano (*MPC* 13858)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
<i>M</i>	188.93058		(2000.0)	P		Q			
<i>n</i>	0.25585762	ω	113.50619	-0.92635583		-0.36553489			
<i>a</i>	2.4573696	Ω	45.19654	+0.28166525		-0.83239580			
<i>e</i>	0.1920621	<i>i</i>	7.35445	+0.25005914		-0.41653509			
<i>P</i>	3.85	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2		
Residuals in seconds of arc									
1986 04 02	054	1.0+	0.1+	1991 08 06	675	(4.5- 2.6-)		1999 09 09	704
1986 04 04	054	0.3+	1.4+	1991 08 06	675	1.3+	0.5+	1999 09 09	704
1986 04 05	054	0.9+	0.3+	1992 11 18	399	0.1+	1.5+	1999 09 09	704
1986 04 08	054	(2.8- 0.9-)		1992 11 18	399	0.2+	1.8-	1999 09 13	704
1986 04 10	054	0.3+	1.7+	1992 11 25	691	0.3+	0.7+	1999 09 13	704
1988 10 18	372	(4.2- 0.0)		1992 11 25	691	0.6+	0.7+	1999 09 13	704
1988 10 18	372	2.1-	0.8-	1992 11 25	691	0.1+	0.8+	1999 09 13	704
1988 10 18	372	1.9-	0.5+	1998 05 22	704	0.1+	0.3+	1999 09 30	704
1988 10 18	372	(3.1+ 10.6-)		1998 05 22	704	1.0+	0.2+	1999 09 30	704
1988 10 22	372	1.5+	1.2+	1998 05 22	704	(2.0+ 2.3-)		1999 09 30	704
1988 10 22	372	1.8-	0.5-	1998 05 22	704	1.6-	0.3-	1999 09 30	704
1988 11 02	372	(1.7- 5.5-)		1998 05 22	704	1.0-	0.6-	1999 09 30	704
1988 11 02	372	(0.7+ 2.3-)		1999 09 04	699	0.7+	0.0	1999 10 16	704
1988 11 03	372	(3.6- 2.7-)		1999 09 04	699	0.1-	0.7+	1999 10 16	704
1988 11 03	372	(4.6+ 1.6-)		1999 09 04	699	0.4+	0.7+	1999 10 16	704
1988 11 05	372	0.4+	1.2-	1999 09 09	704	0.2+	0.3+	1999 10 16	704
1988 11 06	372	1.1+	0.7-	1999 09 09	704	0.3-	0.2+		

(11838)* 1986 PJ₁ = 1982 ST₃ = 1998 HX₄₀

Discovered 1986 Aug. 1 by E. F. Helin at Palomar.

Id. S. Nakano (*MPC* 32217)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
<i>M</i>	64.79037		(2000.0)	P		Q			
<i>n</i>	0.23597912	ω	151.10358	+0.19239725		+0.97962761			
<i>a</i>	2.5935044	Ω	129.92811	-0.91415327		+0.20024709			
<i>e</i>	0.2887248	<i>i</i>	4.30461	-0.35680121		+0.01519371			
<i>P</i>	4.18	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc									
1982 09 24	033	1.4-	1.4-	1986 09 04	809	1.4+	0.5+	1998 04 22	704
1982 09 24	033	0.5+	0.1+	1991 11 29	691	0.4+	0.2-	1998 04 22	704
1986 08 01	675	(8.9- 0.1+)		1991 11 29	691	0.4+	0.0	1998 04 22	704
1986 08 01	675	(4.2+ 0.1+)		1991 11 29	691	0.2+	0.1+	1998 04 22	704
1986 08 02	675	1.4+	0.3-	1994 05 13	691	0.0	1.2+	1998 04 22	704
1986 08 02	675	1.6+	0.9+	1994 05 13	691	0.1-	1.1+	1998 05 16	704
1986 08 04	675	(48.4+ 2.9+)		1994 05 13	691	0.0	1.0+	1998 05 16	704
1986 08 04	675	(48.2+ 2.3+)		1998 03 25	704	0.1+	0.0	1998 05 16	704
1986 08 28	809	1.0-	0.6+	1998 03 25	704	0.8+	0.2+	1998 05 16	704
1986 08 28	809	0.7-	0.6+	1998 03 25	704	0.7+	0.1+	1999 10 02	703
1986 08 28	809	0.5-	0.8+	1998 03 25	704	0.6+	0.8+	1999 10 02	703
1986 08 30	809	0.1+	1.0-	1998 03 25	704	0.8-	0.8-	1999 10 02	703
1986 08 30	809	0.2+	1.0-	1998 04 20	704	0.2-	0.2-	1999 10 02	703
1986 08 30	809	0.2+	1.1-	1998 04 20	704	0.3+	1.7-	1999 10 09	704
1986 09 01	809	2.1-	0.5-	1998 04 20	704	0.3+	0.4-	1999 10 09	704
1986 09 01	809	1.8-	0.5-	1998 04 20	704	0.4+	0.0	1999 10 09	704
1986 09 01	809	1.6-	0.5-	1998 04 20	704	1.2-	0.2-	1999 10 09	704
1986 09 02	809	0.5+	0.1+	1998 04 21	704	0.5+	0.1-	1999 10 09	704
1986 09 02	809	0.7+	0.3-	1998 04 21	704	1.0-	0.9+	1999 10 19	704
1986 09 02	809	0.9+	0.4-	1998 04 21	704	0.2-	0.1-	1999 10 19	704
1986 09 04	809	1.1+	0.6+	1998 04 21	704	0.2-	0.1-	1999 10 19	704
1986 09 04	809	1.2+	0.6+	1998 04 21	704	0.4-	0.1+	1999 10 19	704

(11839)* 1986 QX₁ = 1988 BK₁

Discovered 1986 Aug. 27 by H. Debehogne at the European Southern

Observatory.

Id. C. M. Bardwell (*MPC* 12960)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
<i>M</i>	59.27510		(2000.0)	P		Q			
<i>n</i>	0.30756542	ω	266.07202	+0.25140901		+0.96772081			
<i>a</i>	2.1735904	Ω	18.51773	-0.86456434		+0.23271237			
<i>e</i>	0.0984922	<i>i</i>	3.17772	-0.43511150		+0.09675431			
<i>P</i>	3.20	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1		
Residuals in seconds of arc									
1986 08 27	809	0.2-	1.2+	1986 09 11	809	0.6+	0.4-	1998 03 24	566
1986 08 27	809	0.0	1.2+	1986 09 14	809	1.6+	0.4-	1998 03 24	566
1986 08 27	809	0.2+	1.3+	1986 09 14	809	1.6+	0.4-	1998 04 19	704
1986 08 29	809	0.5-	1.0+	1986 09 14	809	1.5+	0.4-	1998 04 19	704
1986 08 29	809	0.2-	1.1+	1988 01 22	511	1.8-	1.8-	1998 04 19	704
1986 08 29	809	0.0	1.0+	1988 01 22	511	2.0+	0.3-	1998 04 19	704
1986 09 01	809	0.3-	1.3+	1988 01 22	303	(4.7- 2.7+)		1998 04 19	704
1986 09 01	809	0.3-	1.4+	1988 01 23	511	1.9-	1.0+	1999 09 07	704
1986 09 01	809	0.3-	1.0+	1988 01 23	511	0.9+	1.4-	1999 09 07	704
1986 09 02	809	0.8-	0.1+	1988 01 23	303	0.6+	1.0+	1999 09 07	704
1986 09 02	809	0.6-	0.4+	1998 02 21	691	0.8+	0.0	1999 09 14	684
1986 09 02	809	0.3-	0.5+	1998 02 21	691	0.8+	0.0	1999 09 14	684
1986 09 03	809	0.4-	0.3+	1998 02 21	691	0.8+	0.0	1999 09 16	684
1986 09 03	809	0.4-	0.2+	1998 03 02	809	0.7-	0.6+	1999 09 16	684
1986 09 03	809	0.0	0.3+	1998 03 02	809	0.3-	0.3+	1999 10 01	703
1986 09 03	809	1.1-	0.3-	1998 03 02	809	0.1+	0.9-	1999 10 01	703
1986 09 03	809	1.1-	0.2-	1998 03 20	704	0.1-	0.1-	1999 10 01	703
1986 09 03	809	0.8-	0.3-	1998 03 20	704	0.1-	0.7+	1999 10 01	703
1986 09 04	809	0.9-	0.1+	1998 03 20	704	0.4-	0.3+	1999 10 04	704
1986 09 04	809	1.0-	0.1-	1998 03 20	704	0.2-	0.5+	1999 10 04	704
1986 09 04	809	0.8-	0.2-	1998 03 20	704	0.4-	0.9+	1999 10 04	704
1986 09 04	809	0.2+	0.1-	1998 03 22	704	0.2-	0.2+	1999 10 04	704

1986 09 04	809	0.2+	0.3-	1998 03 22	704	0.2+	0.1+	1999 10 04	704	0.3-	1.0-
1986 09 04	809	0.3+	0.3-	1998 03 22	704	0.1+	0.2-	1999 10 05	704	0.1-	0.3-
1986 09 06	809	0.2+	0.8-	1998 03 22	704	0.1+	0.1-	1999 10 05	704	0.3-	0.1+
1986 09 06	809	0.4+	0.9-	1998 03 22	704	0.4+	0.3-	1999 10 05	704	0.4-	0.1+
1986 09 06	809	0.5+	0.9-	1998 03 24	704	0.2+	0.1+	1999 10 05	704	0.1-	0.0
1986 09 06	809	0.1-	0.2-	1998 03 24	704	0.6+	0.2+	1999 10 05	704	0.0	0.1-
1986 09 06	809	0.1-	0.3-	1998 03 24	704	0.1+	0.3+	1999 10 07	704	0.1+	0.5+
1986 09 06	809	0.2-	0.4-	1998 03 24	704	0.3+	0.4+	1999 10 07	704	0.2+	0.3+
1986 09 07	809	0.0	0.1-	1998 03 24	704	0.3-	0.6+	1999 10 07	704	0.0	0.2+
1986 09 07	809	0.1-	0.1-	1998 03 24	704	0.8+	1.1+	1999 10 07	704	0.0	0.3+
1986 09 07	809	0.0	0.0	1998 03 24	704	0.6+	0.6+	1999 10 07	704	0.2+	0.3+
1986 09 09	809	0.6-	0.4-	1998 03 24	704	0.3+	0.7+	1999 10 09	704	0.5-	0.2+
1986 09 09	809	0.4-	0.4-	1998 03 24	704	0.6-	0.1+	1999 10 09	704	0.2-	0.3+
1986 09 09	809	0.3-	0.3-	1998 03 24	704	0.2+	0.1-	1999 10 09	704	0.4-	0.4+
1986 09 09	809	0.2+	0.5-	1998 03 24	704	0.0	0.1-	1999 10 09	704	0.4-	0.5+
1986 09 09	809	0.1+	0.5-	1998 03 24	704	0.9-	0.7-	1999 10 09	704	0.2-	0.5+
1986 09 09	809	0.4+	0.2-	1998 03 24	704	0.6-	0.0	1999 10 11	106	0.5-	0.4+
1986 09 09	809	0.2+	0.3-	1998 03 24	704	0.8+	0.2+	1999 10 11	106	0.6-	0.4+
1986 09 09	809	0.1+	0.5-	1998 03 24	704	0.1-	0.2-	1999 10 11	106	0.1-	0.7+
1986 09 09	809	0.2+	0.7-	1998 03 24	704	0.0	0.1+	1999 10 15	704	0.0	0.5+
1986 09 10	809	0.7+	0.5-	1998 03 24	704	1.0-	1.1+	1999 10 15	704	0.1-	0.3+
1986 09 10	809	0.8+	0.4-	1998 03 24	704	0.2+	0.6+	1999 10 15	704	0.5+	0.5+
1986 09 10	809	0.7+	0.4-	1998 03 24	704	0.6-	0.3-	1999 10 15	704	0.3+	0.7+
1986 09 11	809	0.4+	0.1-	1998 03 24	704	0.8-	0.6+				
1986 09 11	809	0.7+	0.1-	1998 03 24	566	0.4+	0.1-				

(11840)* 1986 QR₂ = 1992 CG₆ = 1998 HD₁₂₅

Discovered 1986 Aug. 28 by H. Debehogne at the European Southern Observatory.

Id. G. V. Williams (*MPC* 31948)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	2.95150		(2000.0)	P	Q
n	0.23190908	ω	213.34590	+0.99180936	+0.00683759
a	2.6237606	Ω	145.56483	+0.02115780	+0.97597575
e	0.2950423	i	13.03536	-0.12596246	+0.21777184
P	4.25	H	13.8	G 0.15	U 2

Residuals in seconds of arc

1986 08 01	413	0.7-	2.1-	1986 09 12	809	1.0-	0.1-	1998 05 23	704	0.3-	0.9+
1986 08 01	413	0.6-	1.1+	1986 09 12	809	1.0-	0.3-	1998 06 02	699	0.2+	0.3+
1986 08 06	095	0.8+	2.4-	1992 02 02	809	0.5+	1.1-	1998 06 02	699	0.2+	0.1+
1986 08 28	809	0.1-	0.2-	1992 02 02	809	0.2-	1.2-	1998 06 02	699	0.9+	0.4+
1986 08 28	809	0.0	0.3-	1992 02 02	809	(0.3-	3.2-)	1999 09 14	704	0.0	0.2-
1986 08 28	809	0.1-	0.4-	1998 04 23	704	0.4+	1.7-	1999 09 14	704	0.2-	0.1-
1986 09 01	809	0.2+	0.1-	1998 04 23	704	1.0-	0.0	1999 09 14	704	0.0	0.2+
1986 09 01	809	0.2+	0.3-	1998 04 23	704	0.8-	1.5-	1999 09 14	704	0.1-	0.0
1986 09 01	809	0.4+	0.2-	1998 04 23	704	0.8-	0.6-	1999 09 14	704	0.1+	0.2-
1986 09 02	809	0.7+	0.2+	1998 04 24	704	0.7+	0.2-	1999 10 02	704	0.5+	0.1+
1986 09 02	809	0.6+	0.4+	1998 04 24	704	0.3-	0.0	1999 10 02	704	0.9+	0.1-
1986 09 02	809	0.5+	0.2+	1998 04 24	704	0.2-	0.2-	1999 10 02	704	0.6+	0.2+
1986 09 03	809	0.2+	0.3+	1998 04 24	566	0.2-	0.2-	1999 10 02	704	0.9+	0.2+
1986 09 03	809	0.3+	0.3+	1998 04 24	566	0.2+	0.6-	1999 10 08	704	0.3-	0.1+
1986 09 03	809	0.2+	0.1-	1998 04 24	566	0.1+	0.1+	1999 10 08	704	0.6-	0.3+
1986 09 09	809	0.1+	0.7+	1998 05 23	704	1.4-	0.4+	1999 10 08	704	0.9-	0.1-
1986 09 09	809	0.1+	0.5+	1998 05 23	704	0.4+	1.3+	1999 10 08	704	0.6-	0.3+
1986 09 09	809	0.2+	0.3+	1998 05 23	704	1.6+	1.0+	1999 10 08	704	0.5-	0.3+
1986 09 12	809	0.8-	0.2+	1998 05 23	704	0.0	1.1+				

(11841)* 1986 VW = 1976 SS₈ = 1998 FH₅₂

Discovered 1986 Nov. 3 by A. Mrkos at Kleť.

Id. S. Nakano (*MPC* 32217)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	9.72280		(2000.0)	P	Q
n	0.30099384	ω	323.45740	+0.92156635	+0.38736018
a	2.2051137	Ω	13.82220	-0.32563846	+0.80752710
e	0.2022104	i	6.20840	-0.21136473	+0.44480565
P	3.27	H	14.2	G 0.15	U 2

Residuals in seconds of arc

1976 09 28	095	(5.1+	3.6-)	1999 09 05	699	0.2+	0.0	1999 10 10	704	0.3+	0.2-
1986 11 03	046	0.0	0.1+	1999 09 12	046	0.5+	0.5+	1999 10 10	704	0.3+	0.2-
1986 11 04	046	(3.2+	0.6+)	1999 09 12	046	0.5+	0.5+	1999 10 10	704	0.3+	0.4-
1986 11 07	046	0.2-	0.1+	1999 09 12	046	0.4+	0.4+	1999 10 10	106	0.7-	0.3+
1986 11 07	046	(5.1+	0.7+)	1999 09 14	046	0.3+	0.1+	1999 10 10	106	0.1+	0.2-
1986 11 09	046	0.1-	0.3+	1999 09 14	046	0.4+	0.1+	1999 10 10	106	0.5+	0.5-
1986 11 09	046	0.1-	0.1+	1999 09 14	046	0.5+	0.1+	1999 10 13	127	0.7-	0.6-
1994 01 18	098	0.6+	0.1+	1999 09 29	120	0.7+	0.2-	1999 10 13	127	0.8-	0.6-
1994 01 18	098	0.0	0.5-	1999 09 29	120	0.8+	0.6-	1999 10 15	704	0.1+	0.3-
1998 03 20	704	0.7+	0.4+	1999 09 30	120	0.1-	0.2+	1999 10 15	704	0.2-	0.4-
1998 03 20	704	0.7+	0.9+	1999 09 30	120	0.3+	0.6+	1999 10 15	704	0.2-	0.3-
1998 03 20	704	0.8+	1.7+	1999 10 03	046	0.1+	0.1-	1999 10 15	704	0.5-	0.5-
1998 03 20	704	0.6+	1.8+	1999 10 03	046	0.0	0.0	1999 10 15	704	0.6-	0.4-
1998 03 20	704	1.1+	2.1+	1999 10 03	046	0.2+	0.2-	1999 10 15	127	0.3-	0.3+
1998 03 22	704	0.1+	0.8-	1999 10 03	046	0.2+	0.1-	1999 10 15	127	0.4-	0.4+
1998 03 22	704	0.6-	1.2-	1999 10 04	704	0.2+	0.7+	1999 10 15	127	0.3-	0.4+
1998 03 22	704	0.4-	1.4-	1999 10 04	704	0.1+	1.0+	1999 10 16	704	0.7-	0.2-
1998 03 22	704	0.4-	1.4-	1999 10 04	704	0.1-	0.4+	1999 10 16	704	0.5-	0.5-
1998 03 22	704	0.5-	1.8-	1999 10 04	704	0.2-	0.3+	1999 10 16	704	0.5-	0.2-
1998 03 24	566	0.4-	1.3-	1999 10 04	704	0.7-	0.4+	1999 10 16	704	0.4-	0.3-
1998 03 24	566	0.2-	0.9-	1999 10 06	704	0.1+	0.1+	1999 10 16	704	0.5-	0.3-
1998 03 24	566	0.1+	1.3-	1999 10 06	704	0.3+	0.2+	1999 10 16	704	0.4-	0.2-
1998 04 19	704	0.8-	0.2+	1999 10 06	704	0.3+	1.1+	1999 10 16	704	0.5-	0.3-
1998 04 19	704	1.3-	1.9-	1999 10 06	704	0.1-	0.5+	1999 10 16	704	0.3-	0.1-
1998 04 19	704	1.4-	1.7+	1999 10 06	704	0.1-	0.1+	1999 10 16	704	0.5-	0.4-
1998 04 19	704	0.4-	0.9-	1999 10 07	704	0.4+	0.2-	1999 10 16	704	0.1-	0.1+
1998 04 19	704	0.0	1.0+	1999 10 07	704	0.5+	0.4-	1999 10 17	127	0.1+	0.1+
1999 08 09	046	0.5+	0.1-	1999 10 07	704	0.4+	0.8-	1999 10 17	127	0.0	0.2+
1999 08 09	046	0.8+	0.1+	1999 10 07	704	0.6+	0.6-	1999 10 17	127	0.1-	0.2+
1999 08 09	046	0.5+	0.0	1999 10 07	704	0.2+	0.1-	1999 10 20	704	0.2-	0.3+
1999 08 21	046	0.1+	0.2-	1999 10 08	046	0.2+	0.1-	1999 10 20	704	0.3-	0.2+
1999 08 21	046	0.1+	0.2-	1999 10 08	046	0.1-	0.1-	1999 10 20	704	0.1+	0.1-
1999 08 21	046	0.1+	0.3-	1999 10 08	046	0.1-	0.1-	1999 10 20	704	0.1+	0.2-
1999 09 05	699	0.3+	0.0	1999 10 10	704	0.4+	0.3-	1999 10 20	704	0.0	0.6-
1999 09 05	699	0.1+	0.1+	1999 10 10	704	0.4+	0.1-				

(11842)* 1987 BR₁

Discovered 1987 Jan. 22 by E. W. Elst at the European Southern Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	288.73984		(2000.0)	P	Q
n	0.29188133	ω	171.91091	+0.08761432	-0.99407945
a	2.2507738	Ω	273.04596	+0.91031404	+0.10609580
e	0.0948900	i	3.68978	+0.40453934	-0.02344618
P	3.38	H	14.1	G 0.15	U 2

Residuals in seconds of arc

1987 01 22	809	0.9+	1.3+	1987 02 05	809	0.5-	1.5-	1999 07 23	704	0.3+	0.2-
1987 01 22	809	0.1+	1.6+	1996 12 07	411	1.0-	0.6-	1999 07 23	704	0.2-	0.2-
1987 01 22	809	0.5-	0.1+	1996 12 07	411	0.0	0.9-	1999 07 23	704	1.2-	0.5-
1987 01 23	809	(1.5-	2.6-)	1996 12 08	411	0.3+	0.1-	1999 07 23	704	0.7-	0.5-
1987 01 23	809	(1.5-	2.9-)	1996 12 08	411	0.0	0.3-	1999 07 23	704	0.9-	0.7+
1987 01 27	809	0.0	0.0	1998 05 22	704	(2.8+	0.4+)	1999 10 03	704	0.8+	0.2-
1987 01 27	809	0.1-	0.5+	1998 05 22	704	1.1-	1.3-	1999 10 03	704	0.2+	0.6-
1987 01 28	809	0.1+	0.3-	1998 05 22	704	1.2+	0.6-	1999 10 03	704	0.1+	0.0
1987 01 28	809	0.8+	0.0	1998 05 22	704	1.1+	0.2+	1999 10 03	704	0.0	0.5-
1987 01 28	809	0.2+	0.3+	1998 05 22	704	0.6-	0.3+	1999 10 03	704	0.1-	0.5-
1987 01 28	809	1.2-	1.2+	1998 05 24	704	0.8+	0.1+	1999 10 07	704	0.5+	0.3+

1987 01 28	809	0.2+	1.4+	1998 05 24	704	0.7-	0.3-	1999 10 07	704	0.7+	0.6+
1987 01 29	809	0.0	0.3+	1998 05 24	704	0.8-	1.0+	1999 10 07	704	0.2+	0.5+
1987 01 29	809	0.5-	0.9+	1998 05 24	704	0.2+	1.4+	1999 10 07	704	0.8+	0.5+
1987 01 30	809	0.3-	0.7-	1998 05 24	704	(2.7-	1.7+)	1999 10 07	704	0.4+	0.4+
1987 01 30	809	0.0	1.1-	1998 05 24	327	0.3+	0.4-	1999 10 10	704	0.7-	0.1+
1987 01 31	809	0.5-	0.0	1998 05 24	327	0.4+	0.3-	1999 10 10	704	0.0	0.2+
1987 01 31	809	0.4+	1.9-	1998 05 24	327	0.3+	0.3-	1999 10 10	704	0.1-	0.2+
1987 02 02	809	0.8-	0.2-	1998 05 24	327	0.5+	0.1-	1999 10 10	704	0.4-	0.0
1987 02 02	809	0.6+	0.0	1998 05 25	327	0.3+	0.1-	1999 10 10	704	0.3-	0.7-
1987 02 03	809	0.3+	0.5+	1998 05 25	327	0.1+	0.1-	1999 10 10	106	0.3-	0.7+
1987 02 03	809	1.2+	0.8+	1998 05 25	327	0.5+	0.3+	1999 10 11	106	0.1-	0.8+
1987 02 03	809	1.3+	0.6-	1998 05 25	327	0.3+	0.3+	1999 10 11	106	0.4-	0.5+
1987 02 03	809	0.6+	0.4+	1998 06 03	704	0.8-	0.0	1999 10 21	704	0.1-	0.1-
1987 02 03	809	0.4+	0.5-	1998 06 03	704	0.1-	1.4+	1999 10 21	704	0.0	0.1-
1987 02 03	809	0.1+	0.3+	1998 06 03	704	0.9-	0.2-	1999 10 21	704	0.2-	0.1+
1987 02 05	809	2.0-	0.5-	1998 06 03	704	0.9-	0.2-	1999 10 21	704	0.1+	0.0

(11843)* 1987 DM₆ = 1989 WJ₄

Discovered 1987 Feb. 23 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (*MPC* 15886)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	255.67354		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.28690706	ω	285.90611	-0.47256769	-0.88117772
a	2.2767144	Ω	192.32514	+0.83209387	-0.44076601
e	0.1515565	i	3.85172	+0.29034390	-0.17102968
P	3.44	H	14.4	G 0.15	U 1

Residuals in seconds of arc

1987 02 23	809	0.7+	0.3+	1987 03 07	809	0.0	0.6+	1997 01 13	732	1.6-	0.2-
1987 02 23	809	0.9+	0.4+	1987 03 07	809	0.0	0.8+	1999 09 13	118	0.2+	0.4+
1987 02 23	809	1.0+	0.4+	1987 03 07	809	0.7+	0.9+	1999 09 14	118	0.4+	0.1+
1987 02 24	809	0.2+	0.4-	1989 11 23	372	(2.7-	3.1-)	1999 10 04	704	0.4+	0.6+
1987 02 24	809	0.4+	0.4-	1989 11 23	372	(3.5+	2.4-)	1999 10 04	704	0.4+	0.1-
1987 02 24	809	0.9+	0.4-	1989 11 24	372	1.1+	1.2+	1999 10 04	704	0.4-	0.1+
1987 02 27	809	0.1-	0.1-	1989 11 24	372	1.6-	1.2+	1999 10 04	704	0.7-	0.7+
1987 02 27	809	0.0	0.5-	1989 11 26	372	0.0	0.6-	1999 10 04	704	0.7+	0.2+
1987 02 27	809	0.2+	0.4-	1989 11 26	372	0.6+	0.7-	1999 10 05	704	0.2+	0.3+
1987 03 01	809	0.4-	0.2+	1989 11 28	372	0.3+	1.7-	1999 10 05	704	0.4+	0.2+
1987 03 01	809	0.2-	0.3-	1989 11 28	372	(1.8+	3.3-)	1999 10 05	704	0.6+	0.0
1987 03 01	809	0.1+	0.0	1989 12 02	372	(3.5-	2.4-)	1999 10 05	704	0.2+	0.4-
1987 03 02	809	0.5-	0.6-	1989 12 02	372	1.6-	1.2-	1999 10 05	704	0.2+	0.2-
1987 03 02	809	0.0	1.2-	1989 12 04	372	1.5-	1.1-	1999 10 07	704	0.8+	0.2-
1987 03 02	809	0.5+	0.7-	1991 06 08	809	1.7-	0.6-	1999 10 07	704	0.8+	0.3+
1987 03 03	809	0.2+	0.3-	1991 06 08	809	1.7-	0.8-	1999 10 07	704	0.5-	0.1+
1987 03 03	809	0.1+	0.1-	1991 06 08	809	1.6-	0.1+	1999 10 07	704	0.8+	0.2-
1987 03 03	809	0.6+	0.3-	1992 09 30	691	0.3-	2.0-	1999 10 07	704	0.4+	0.2-
1987 03 04	809	0.4-	0.3-	1992 09 30	691	0.1-	0.2+	1999 10 09	704	0.8+	0.5+
1987 03 04	809	0.1-	0.0	1992 09 30	691	0.5-	0.4-	1999 10 09	704	0.0	0.6+
1987 03 04	809	0.2+	0.3-	1992 10 24	801	0.9+	1.4-	1999 10 09	704	0.6-	0.8+
1987 03 05	809	0.1+	0.2-	1992 10 24	801	0.7+	0.3+	1999 10 09	704	0.3+	0.6+
1987 03 05	809	0.2+	0.0	1994 03 14	675	1.2+	0.2-	1999 10 09	704	0.1-	0.7+
1987 03 05	809	0.3+	0.0	1994 03 14	675	0.0	1.0+	1999 10 11	106	1.1+	0.8-
1987 03 06	809	0.8-	0.7+	1994 04 03	675	0.1+	0.4+	1999 10 11	106	0.6+	0.1-
1987 03 06	809	0.6-	0.7+	1994 04 03	675	1.1+	0.8-	1999 10 15	704	0.6-	0.9+
1987 03 06	809	0.3-	0.6+	1994 04 04	675	0.6-	0.4+	1999 10 15	704	0.4-	1.1+
1987 03 06	809	0.1+	0.4+	1994 04 04	675	1.3-	0.4-	1999 10 15	704	0.8-	0.9+
1987 03 06	809	0.4+	0.2+	1997 01 12	732	0.9-	1.3-	1999 10 15	704	0.5-	1.3+
1987 03 06	809	0.7+	0.3+	1997 01 13	732	1.5-	0.3+				

(11844)* 1987 QW₂ = 1952 KF₁ = 1976 SV₃ = 1991 FO₆

Discovered 1987 Aug. 22 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (*MPC* 14197), G. V. Williams (*MPC* 21936)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	50.48296		(2000.0)	P	Q
n	0.17266441	ω	260.04539	+0.52399618	+0.85157742
a	3.1939945	Ω	41.56748	-0.77192712	+0.48257459
e	0.1504204	i	1.34873	-0.35993962	+0.20478685
P	5.71	H	12.7	G 0.15	U 1

Residuals in seconds of arc

1952 05 25	839	0.4+	0.3+	1994 12 03	098	1.8-	0.3-	1999 10 07	683	0.4+	0.9+
1976 09 24	095	0.4+	0.8-	1994 12 03	098	1.0+	0.8-	1999 10 07	704	0.3-	0.1+
1976 09 29	095	(3.6+	0.0)	1997 03 05	809	(2.7-	0.5-)	1999 10 07	704	0.1-	0.0
1980 04 08	675	0.2-	0.0	1997 03 05	809	(2.4-	1.4-)	1999 10 07	704	0.1+	0.3-
1980 04 09	675	0.5-	0.1-	1997 03 05	809	1.6-	1.4-	1999 10 07	704	0.6-	0.1+
1987 08 22	809	0.0	1.1-	1997 03 06	809	0.6+	1.2-	1999 10 07	704	0.4-	0.1-
1987 08 22	809	0.3-	0.5-	1997 03 06	809	0.6+	1.7-	1999 10 08	683	0.5+	0.0
1987 08 22	809	0.0	0.7-	1997 03 06	809	0.2-	1.8-	1999 10 08	683	0.3+	0.1-
1987 08 24	809	0.2+	0.4-	1999 09 05	699	0.4+	0.5-	1999 10 08	683	0.3+	0.2-
1987 08 24	809	0.8+	0.5-	1999 09 05	699	0.7-	0.6-	1999 10 09	704	0.1+	0.1+
1987 08 29	809	(3.4-	4.3+)	1999 09 05	699	0.4-	0.5-	1999 10 09	704	0.5-	0.3-
1987 08 29	809	(3.7-	4.1+)	1999 10 01	106	0.5-	0.0	1999 10 09	704	0.1-	0.3-
1987 08 29	809	(3.5-	3.9+)	1999 10 01	106	0.0	1.6+	1999 10 09	704	0.4-	0.4-
1987 09 01	809	0.1+	1.9-	1999 10 04	704	0.0	0.1-	1999 10 15	704	0.0	0.4-
1987 09 01	809	0.6+	0.2-	1999 10 04	704	0.3+	0.1-	1999 10 15	704	2.0+	0.4+
1991 02 13	675	0.9-	0.6-	1999 10 04	704	0.1-	0.1-	1999 10 15	704	0.3-	0.3-
1991 03 12	675	0.1+	0.3-	1999 10 04	704	0.5+	0.4-	1999 10 15	704	0.2+	0.5-
1991 03 12	675	1.6-	1.7-	1999 10 04	704	0.0	0.2+	1999 10 15	704	0.2+	0.3-
1991 03 20	809	(3.0-	3.4+)	1999 10 05	704	0.0	0.3-	1999 10 19	704	0.3+	0.2-
1991 03 20	809	1.1-	1.5+	1999 10 05	704	0.1-	0.4-	1999 10 19	704	0.1+	0.4-
1991 03 20	809	0.9+	0.2-	1999 10 05	704	0.1+	0.0	1999 10 19	704	0.3+	0.3-
1993 07 26	675	0.5-	1.2+	1999 10 05	704	0.1+	0.2-	1999 10 19	704	0.0	0.4-
1993 07 26	675	0.1+	0.5+	1999 10 05	704	0.1-	0.2-	1999 10 19	704	0.0	0.4-
1993 10 14	801	0.9-	0.0	1999 10 07	683	0.3+	0.7+				
1993 10 14	801	0.2+	0.6+	1999 10 07	683	0.6+	0.8+				

(11845)* 1987 RZ = 1981 NJ₁ = 1982 UK₁₀ = 1991 FF₃

Discovered 1987 Sept. 12 by H. Debehogne at the European Southern Observatory.

Id. H. Kaneda (*MPC* 15887), T. Kobayashi (*ibid.*), G. V. Williams (*MPC* 30446)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	18.35797		(2000.0)	P	Q
n	0.17198697	ω	227.25000	+0.99187084	+0.12394974
a	3.2023762	Ω	125.60991	-0.10394251	+0.91970044
e	0.2088893	i	2.02917	-0.07340424	+0.37254203
P	5.73	H	13.3	G 0.15	U 2

Residuals in seconds of arc

1981 07 02	805	0.3+	0.9+	1987 09 27	809	0.1+	1.0+	1999 10 07	704	0.6+	0.2-
1981 07 02	805	0.1-	0.4-	1991 03 20	809	0.1-	1.0+	1999 10 07	704	0.6+	1.1-
1982 10 23	095	0.1-	0.2+	1991 03 20	809	0.3+	0.5+	1999 10 07	704	0.1-	0.2-
1987 08 28	095	0.5+	0.5-	1991 03 20	809	0.7+	0.5-	1999 10 07	704	1.0-	0.8-
1987 08 31	095	0.6+	1.2+	1993 09 22	675	0.9-	0.4-	1999 10 10	704	0.2-	0.2+
1987 09 12	809	0.0	2.3-	1993 09 22	675	0.7-	0.0	1999 10 10	704	0.5-	0.1+
1987 09 12	809	1.4-	2.2-	1993 09 23	095	1.4+	0.1+	1999 10 10	704	0.3-	0.3-
1987 09 12	809	0.2-	2.0-	1993 10 12	095	0.5-	2.1+	1999 10 10	704	0.1-	0.1-
1987 09 15	809	1.3-	1.0-	1993 10 15	010	1.1+	1.0+	1999 10 10	704	0.7-	0.1-
1987 09 15	809	1.4-	1.0-	1993 10 15	010	0.5+	1.9+	1999 10 11	704	1.2+	0.6+
1987 09 15	809	1.4-	1.1-	1993 10 15	010	0.7+	1.1+	1999 10 11	704	0.0	0.5+
1987 09 19	809	0.0	0.3-	1996 03 17	691	0.3+	0.4+	1999 10 11	704	0.2-	0.2-
1987 09 19	809	0.1-	0.1-	1996 03 17	691	0.0	0.3+	1999 10 11	704	0.1+	1.0-
1987 09 19	809	0.5-	0.0	1996 03 17	691	0.0	0.5+	1999 10 11	704	2.2-	0.6-
1987 09 24	809	1.2+	1.0+	1999 10 02	703	0.2-	0.4+	1999 10 15	704	0.3-	0.1+
1987 09 24	809	0.6+	1.1+	1999 10 02	703	0.2-	0.6+	1999 10 15	704	0.6-	0.1+
1987 09 24	809	0.2-	1.0+	1999 10 02	703	0.3-	0.7+	1999 10 15	704	0.4-	0.2-
1987 09 24	095	0.6+	0.9-	1999 10 02	703	0.4-	0.4+	1999 10 15	704	0.5-	0.0
1987 09 26	809	0.5+	1.3+	1999 10 03	704	1.5+	0.5+	1999 10 20	704	0.1-	0.3+

1987 09 26	809	0.6+	1.1+	1999 10 03	704	(3.3+	1.0-)	1999 10 20	704	0.3-	0.4+
1987 09 26	809	0.2+	1.3+	1999 10 03	704	0.5+	0.5-	1999 10 20	704	0.2-	0.3+
1987 09 27	809	0.1-	0.9+	1999 10 03	704	1.3+	0.4-	1999 10 20	704	0.2-	0.4+
1987 09 27	809	0.0	1.0+	1999 10 03	704	0.8-	1.5-	1999 10 20	704	0.1-	0.4+

(11846)* 1987 SE₃ = 1975 TP₂ = 1991 RN₁₆ = 1997 BL₃

Discovered 1987 Sept. 21 by E. W. Elst at Smolyan.

Id. E. Bowell (*MPC* 29095), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	281.33686		(2000.0)		P		Q
n	0.24425277	ω	341.05723		+0.27012350		-0.95940816
a	2.5346017	Ω	93.20749		+0.89352673		+0.21843308
e	0.1204430	i	4.65629		+0.35866877		+0.17838993
P	4.04	H	13.9	G	0.15	U	1

Residuals in seconds of arc

1975 10 03	095	2.5+	1.1-	1997 02 11	411	0.9-	0.6+	1998 06 03	704	1.0+	0.1+
1975 10 13	095	0.8+	1.9-	1997 03 01	411	0.4-	0.8+	1999 09 07	699	0.2+	0.0
1987 09 21	071	(1.5+	4.0+)	1997 03 01	411	0.4-	0.2-	1999 09 07	699	0.0	1.1+
1987 09 21	071	(6.4+	0.6-)	1997 03 09	689	0.1+	0.0	1999 09 07	699	0.2-	0.2+
1987 09 22	071	(4.4-	3.0+)	1997 03 10	689	0.9+	0.4+	1999 09 09	704	0.3-	0.7+
1987 09 23	071	(5.5-	0.8-)	1998 05 21	360	0.1+	0.7-	1999 09 09	704	0.0	0.6+
1987 09 23	071	2.1-	1.2+	1998 05 21	360	0.0	0.9-	1999 09 09	704	0.3-	0.6+
1987 09 23	071	(3.5-	2.3+)	1998 05 21	360	0.0	0.7-	1999 09 09	704	0.2+	0.8+
1987 09 24	095	0.3+	0.2-	1998 05 22	704	0.9-	0.3+	1999 09 09	704	0.7+	1.1+
1987 09 24	071	(4.3-	0.2-)	1998 05 22	704	0.7-	0.2-	1999 09 13	704	0.3-	0.6+
1987 09 25	071	2.2-	1.7-	1998 05 22	704	0.2-	0.5-	1999 09 13	704	0.3+	0.1-
1987 09 27	095	(1.6+	2.7+)	1998 05 22	704	0.5-	1.5-	1999 09 13	704	0.1+	0.7+
1991 09 15	675	(1.8+	2.1-)	1998 05 22	704	0.0	1.5+	1999 09 13	704	0.0	0.5+
1991 09 15	675	0.9+	1.3-	1998 05 24	704	0.1-	0.9-	1999 09 13	704	0.1+	0.1+
1991 09 17	675	0.7+	1.9-	1998 05 24	704	1.0-	0.5-	1999 09 30	704	0.1-	0.7+
1991 09 17	675	0.6+	1.7-	1998 05 24	704	0.1+	0.1-	1999 09 30	704	0.4-	0.5+
1997 01 31	411	0.4+	0.3+	1998 05 24	704	0.0	1.0-	1999 09 30	704	0.1-	1.0+
1997 01 31	411	0.1-	1.0+	1998 05 24	704	(2.6-	0.9-)	1999 09 30	704	0.4-	0.3-
1997 02 01	411	0.6+	0.2+	1998 06 01	809	(2.5-	2.5-)	1999 09 30	704	0.1-	0.3-
1997 02 01	411	0.7+	0.1-	1998 06 01	809	(2.2-	3.5-)	1999 10 07	649	1.2-	0.7-
1997 02 04	691	0.0	0.4+	1998 06 01	809	(2.0-	4.1-)	1999 10 07	649	(3.1-	0.0)
1997 02 04	691	0.0	0.4-	1998 06 02	809	0.3+	0.8+	1999 10 07	649	(2.2-	0.1-)
1997 02 04	691	0.1+	0.3+	1998 06 02	809	1.2+	0.4+	1999 10 16	704	0.1+	0.5+
1997 02 10	691	0.1-	0.3-	1998 06 02	809	1.0+	0.6+	1999 10 16	704	0.3+	0.8+
1997 02 10	691	0.1-	0.2-	1998 06 03	704	0.1-	1.0+	1999 10 16	704	0.1-	0.5+
1997 02 10	691	0.2-	0.1-	1998 06 03	704	1.3-	1.0+	1999 10 16	704	0.0	0.8+
1997 02 11	411	0.5+	0.6+	1998 06 03	704	0.7+	0.5+	1999 10 16	704	0.8-	0.8+

(11847)* 1988 BY₂ = 1994 PF₇

Discovered 1988 Jan. 20 at Tautenburg.

Id. B. G. Marsden (*MPC* 24387)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	202.34717		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.22518378	ω	207.38980		-0.99498999		-0.04408303
a	2.6757446	Ω	329.67427		+0.08531272		-0.84231882
e	0.0646761	i	10.23666		-0.05212155		-0.53717380
P	4.38	H	13.4	G	0.15	U	1

Residuals in seconds of arc

1951 11 05	675	1.5-	0.1+	1994 09 04	809	(2.6-	0.4+)	1999 09 15	113	0.3-	0.3-
1951 11 05	675	1.1+	0.8-	1994 09 04	809	(2.3-	0.6+)	1999 09 15	113	0.2-	0.3-
1988 01 19	033	0.1+	0.8-	1994 09 04	809	(2.9-	0.8+)	1999 10 05	704	0.2+	0.1-
1988 01 20	033	0.1+	0.8-	1995 10 26	033	0.1-	0.2-	1999 10 05	704	0.3-	0.7-
1988 01 20	033	0.9-	0.7-	1995 10 26	033	0.4+	0.4-	1999 10 05	704	0.4+	0.2-
1988 01 21	033	1.6-	1.9-	1998 08 17	704	(3.1-	0.6+)	1999 10 05	704	0.0	0.4+
1988 02 14	809	0.3+	0.9-	1998 08 17	704	0.1+	1.0-	1999 10 05	704	1.1+	0.5-
1988 02 14	809	0.0	0.9-	1998 08 17	704	0.6-	1.1-	1999 10 12	704	0.4+	0.2-
1988 02 14	809	0.4+	1.0-	1998 08 17	704	1.8-	0.4+	1999 10 12	704	0.5+	0.1+
1988 02 17	809	(2.9-	0.5-)	1998 08 17	704	(2.4-	0.8+)	1999 10 12	704	0.4+	0.3-

1988 02 17	809	2.3-	0.4-	1999 09 07	703	0.4-	0.0	1999 10 12	704	0.1-	0.3-
1992 02 05	675	0.2+	0.1+	1999 09 07	703	0.2+	0.2+	1999 10 12	704	0.1+	0.2-
1992 02 05	675	0.1-	0.0	1999 09 07	703	0.2-	0.3-	1999 10 13	704	0.4+	0.1-
1992 03 01	033	0.4+	0.5-	1999 09 07	703	0.2+	0.2+	1999 10 13	704	0.3+	0.2+
1992 03 01	033	0.1+	0.2+	1999 09 10	113	0.4-	0.1+	1999 10 13	704	0.4+	0.0
1994 08 10	809	1.8+	1.5-	1999 09 10	113	0.3+	0.5+	1999 10 13	704	0.1-	0.2-
1994 08 10	809	0.9+	1.0-	1999 09 10	113	0.6-	0.7+	1999 10 13	704	0.2-	0.4-
1994 08 10	809	1.2+	0.8-	1999 09 10	113	0.4-	0.6+	1999 10 17	151	0.6+	0.2+
1994 08 11	809	1.4+	0.8-	1999 09 12	113	0.3+	0.4+	1999 10 17	151	0.4-	0.1+
1994 08 11	809	1.4+	0.7-	1999 09 12	113	0.5-	0.4+	1999 10 17	151	0.8-	0.1+
1994 08 11	809	1.7+	0.4-	1999 09 13	113	0.2-	0.2+	1999 10 17	151	0.1-	0.1+
1994 09 03	809	(3.9-	0.6+)	1999 09 13	113	0.5-	0.0	1999 10 18	113	1.8-	0.7+
1994 09 03	809	(3.8-	0.3-)	1999 09 14	113	0.1+	0.2-	1999 10 18	113	1.2-	0.1-
1994 09 03	809	(3.7-	0.6-)	1999 09 14	113	0.1-	0.1+				

(11848)* 1988 CW₂ = 1978 WC₁

Discovered 1988 Feb. 11 by E. W. Elst at the European Southern

Observatory.

Id. T. Kobayashi (*MPC* 13476)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	277.09666		(2000.0)		P		Q
n	0.22858344	ω	344.28929		+0.19083373		-0.98139381
a	2.6491479	Ω	94.70571		+0.90289468		+0.16702043
e	0.1274888	i	1.21784		+0.38518006		+0.09471202
P	4.31	H	14.2	G	0.15	U	1

Residuals in seconds of arc

1978 11 29	675	1.1-	0.9-	1988 02 23	809	1.0-	2.1+	1999 09 11	699	1.1-	0.1-
1978 11 30	675	1.7+	0.3+	1991 12 30	691	(2.3-	0.2-)	1999 09 11	699	0.2-	0.3+
1978 11 30	675	0.3-	0.2-	1991 12 30	691	(2.1-	0.5-)	1999 09 14	704	0.4-	0.7+
1978 12 01	675	0.5+	0.1-	1991 12 30	691	(2.3-	0.8-)	1999 09 14	704	0.8-	1.2+
1980 04 08	675	2.1-	0.9+	1994 07 08	809	0.9+	1.4+	1999 09 14	704	0.2+	0.6+
1980 04 09	675	2.3-	1.0+	1994 07 08	809	1.2+	1.5+	1999 09 14	704	0.8-	0.5+
1988 01 19	071	0.2-	0.9-	1994 07 08	809	1.5+	1.5+	1999 09 14	704	0.2-	0.7+
1988 01 19	071	0.4+	0.2-	1994 07 09	809	0.4+	0.2+	1999 10 07	704	0.0	1.8-
1988 02 11	809	1.0-	0.9+	1994 07 09	809	0.7+	0.2+	1999 10 07	704	0.2+	0.7-
1988 02 15	809	0.4+	0.7+	1994 07 09	809	0.9+	0.0	1999 10 07	704	0.3-	1.0-
1988 02 16	809	2.1+	0.3+	1999 09 07	704	0.7+	0.0	1999 10 07	704	0.9-	0.3-
1988 02 16	809	1.4+	0.2+	1999 09 07	704	0.5-	0.6+	1999 10 07	704	0.0	0.1-
1988 02 16	809	0.8+	1.1+	1999 09 07	704	0.6-	0.7+	1999 10 08	704	0.1-	0.3-
1988 02 17	809	0.2+	0.4+	1999 09 07	704	0.7-	0.4+	1999 10 08	704	0.3-	0.1-
1988 02 17	809	0.3+	0.1+	1999 09 07	704	0.3-	0.1+	1999 10 08	704	0.2-	0.3+
1988 02 17	809	0.9+	0.9+	1999 09 09	704	0.5-	0.4-	1999 10 15	704	1.1+	0.0
1988 02 21	809	0.6+	0.8+	1999 09 09	704	0.2-	0.6+	1999 10 15	704	0.3+	0.7-
1988 02 21	809	0.1-	0.2+	1999 09 09	704	0.7-	0.3+	1999 10 15	704	0.1+	0.6-
1988 02 21	809	0.9-	0.7+	1999 09 09	704	0.2-	0.7+	1999 10 15	704	0.8+	0.4-
1988 02 23	809	0.2+	0.3+	1999 09 09	704	0.2-	0.5+	1999 10 15	704	0.3+	0.4-
1988 02 23	809	0.2+	0.6+	1999 09 11	699	0.5-	1.3+				

(11849)* 1988 CF₇ = 1990 SX₁₄

Discovered 1988 Feb. 15 by E. W. Elst at the European Southern

Observatory.

Id. H. Kaneda (*MPC* 18113)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	26.52399		(2000.0)		P		Q
n	0.23269311	ω	135.01149		+0.98907243		-0.10015904
a	2.6178637	Ω	231.04491		+0.06164429		+0.94753202
e	0.2022928	i	7.99688		+0.13392426		+0.30356422
P	4.24	H	13.7	G	0.15	U	1

1999 OCT. 26

M.P.C. 36233

1988 02 21	809	0.2−	1.5−	1994 08 08	801	0.3−	0.9−	1998 06 26	704	0.9−	0.4+
1988 02 21	809	0.2−	1.6−	1994 08 08	801	0.4−	0.9−	1999 09 09	012	0.9−	0.1−
1988 02 21	809	0.4−	1.5−	1994 08 25	560	1.6+	1.4−	1999 09 09	012	0.6−	0.2−
1988 02 23	809	1.6−	0.2+	1994 08 25	560	(0.8+	2.2−)	1999 09 09	012	0.5−	0.2+
1988 02 23	809	1.1−	0.1+	1994 08 25	560	(0.1−	2.8−)	1999 10 12	704	0.4−	0.5−
1988 02 23	809	0.5−	0.0	1994 08 26	560	1.2+	0.2−	1999 10 12	704	0.2+	1.6−
1990 09 17	675	(1.0+	2.5−)	1994 08 26	560	0.7+	1.9−	1999 10 12	704	0.1−	1.7−
1990 09 17	675	1.6+	1.8−	1994 08 26	560	0.8+	0.8−	1999 10 12	704	0.2−	1.6−
1990 09 19	675	(2.3+	1.4−)	1998 06 24	704	0.2+	0.8−	1999 10 22	704	0.6−	1.9+
1990 09 19	675	(2.0+	2.3−)	1998 06 24	704	0.1+	0.6−	1999 10 22	704	0.6+	0.6−
1990 09 22	095	(0.5−	2.6−)	1998 06 24	704	0.8+	0.2+	1999 10 22	704	0.9+	0.5−
1990 09 22	095	0.0	1.0+	1998 06 24	704	0.4+	1.0−	1999 10 22	704	0.1+	1.2−
1990 10 27	413	0.7−	0.8−	1998 06 24	704	(3.6−	3.0−)	1999 10 22	704	0.7+	1.4−

(11850)* 1988 EY₁

Discovered 1988 Mar. 13 by P. Jensen at Brorfelde.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	240.88533		(2000.0)	P	Q		
<i>n</i>	0.22283951	ω	135.98433	−0.82123966	−0.56941194		
<i>a</i>	2.6944777	Ω	9.51127	+0.44303023	−0.67670420		
<i>e</i>	0.0973364	<i>i</i>	12.77687	+0.35956868	−0.46673490		
<i>P</i>	4.42	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 03 13	054	0.6−	0.3−	1998 08 29	426	0.3−	0.2+	1999 09 18	699	0.5+	1.1−
1988 03 14	054	0.6−	0.2−	1998 08 29	426	0.3+	0.0	1999 09 18	699	0.4−	1.6+
1988 04 13	054	0.3+	0.2+	1998 08 29	426	0.1−	0.0	1999 10 03	704	0.4+	0.3+
1988 04 20	413	0.7+	0.2+	1998 08 29	426	0.2−	0.1−	1999 10 03	704	0.7+	0.5+
1988 04 20	413	0.5+	0.6+	1999 09 12	703	0.7−	0.7+	1999 10 03	704	0.1−	0.0
1997 02 07	327	0.4−	0.3+	1999 09 12	703	1.1−	0.2+	1999 10 03	704	0.2+	0.4−
1997 02 07	327	0.5−	0.5+	1999 09 12	703	0.3−	0.3−	1999 10 03	704	0.0	0.2−
1997 02 07	327	1.5+	0.1+	1999 09 12	703	0.5−	0.2+	1999 10 12	704	0.2+	0.3−
1998 08 28	426	0.1+	0.0	1999 09 13	106	0.0	0.1+	1999 10 12	704	0.3+	0.3−
1998 08 28	426	0.1−	0.2−	1999 09 13	106	0.6−	0.1−	1999 10 12	704	0.6+	0.2−
1998 08 28	426	0.4+	0.0	1999 09 13	106	0.6−	0.4+	1999 10 12	704	0.1+	0.3−
1998 08 28	426	0.0	0.1+	1999 09 18	699	0.4−	0.7+	1999 10 12	704	0.6+	0.1−

(11851)* 1988 PD₁ = 1995 ME

Discovered 1988 Aug. 14 at Palomar.

Id. G. V. Williams (*MPC* 25425)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	8.26740		(2000.0)	P	Q		
<i>n</i>	0.27601731	ω	178.23815	+0.98739770	+0.14798066		
<i>a</i>	2.3362098	Ω	172.51571	−0.14995778	+0.98814754		
<i>e</i>	0.2182964	<i>i</i>	25.51303	−0.05058117	−0.04081854		
<i>P</i>	3.57	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 08 14	675	0.3−	0.2+	1995 08 24	801	0.1−	1.1+	1998 05 28	704	0.4+	1.4+
1988 08 16	675	0.4+	0.1+	1995 08 25	801	0.1−	0.8−	1998 05 28	704	0.6−	1.2−
1988 09 05	675	0.3+	0.1−	1995 08 25	801	0.1−	1.1−	1998 05 28	704	(0.6−	2.2+)
1988 09 08	675	(1.2−	27.9−)	1998 04 02	704	1.3+	0.7+	1999 09 13	413	0.7+	0.8−
1994 03 13	691	0.3−	0.0	1998 04 02	704	1.4+	0.7+	1999 09 13	413	0.5+	0.2+
1994 03 13	691	0.4−	0.1+	1998 04 02	704	1.5−	0.2+	1999 09 14	704	0.3−	0.3+
1994 03 13	691	0.5−	0.4+	1998 04 03	704	(2.5−	4.9+)	1999 09 14	704	0.1−	0.0
1995 06 23	693	0.1−	1.1−	1998 04 03	704	1.8−	1.8+	1999 09 14	704	0.1−	0.2−
1995 06 23	693	0.1+	1.4−	1998 04 03	704	0.8−	0.9+	1999 09 14	704	0.2−	0.1−
1995 06 24	693	0.9−	0.1−	1998 04 03	704	2.0−	0.2+	1999 09 14	704	0.2+	0.2−
1995 06 24	693	0.1−	1.3−	1998 04 24	704	1.0+	0.3+	1999 09 14	413	0.2+	0.3−
1995 07 26	801	0.1−	0.2+	1998 04 24	704	0.4+	1.0−	1999 09 14	413	0.3+	0.4−
1995 07 26	801	0.1−	0.6+	1998 04 24	704	1.0+	1.2+	1999 09 17	106	0.7+	1.2+
1995 07 31	816	0.4−	0.1+	1998 04 24	704	0.9+	0.5−	1999 09 17	106	1.2−	0.4−
1995 07 31	816	0.1−	0.6+	1998 04 24	704	1.2+	0.4−	1999 09 30	704	0.1+	0.5+
1995 07 31	816	0.0	0.7+	1998 04 28	704	1.1+	0.1−	1999 09 30	704	0.0	1.1+
1995 07 31	816	0.3+	0.8+	1998 04 28	704	0.5−	0.8+	1999 09 30	704	0.0	0.9+

1995 08 01	801	0.1+	0.7+	1998 04 28	704	0.7−	1.2−	1999 09 30	704	0.3−	0.6+
1995 08 01	801	0.3+	0.5+	1998 04 28	704	0.9+	0.3+	1999 09 30	704	0.4−	0.4+
1995 08 22	801	0.5−	0.2+	1998 04 28	704	0.1+	0.3−				
1995 08 24	801	(0.6−	2.1+)	1998 05 28	704	0.0	0.1−				

(11852)* 1988 RD = 1990 FG₂

Discovered 1988 Sept. 10 by V. Ivanova and V. Shkodrov at Smolyan.

Id. G. V. Williams (*MPC* 16430)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	330.57393		(2000.0)	P	Q		
<i>n</i>	0.26743031	ω	23.62881	+0.87432156	−0.48355072		
<i>a</i>	2.3859553	Ω	5.82787	+0.35337549	+0.57530424		
<i>e</i>	0.2305951	<i>i</i>	24.25926	+0.33269743	+0.65969972		
<i>P</i>	3.69	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 09 10	071	(2.7+	1.0−)	1999 09 09	106	0.1−	0.5+	1999 10 07	704	0.0	0.3−
1988 09 10	071	0.7−	1.0+	1999 09 09	106	0.0	0.5+	1999 10 07	704	0.3−	0.7+
1988 09 10	071	1.9−	1.7+	1999 09 09	106	0.4+	0.5+	1999 10 07	704	0.3+	0.1−
1988 09 12	071	(2.8−	4.2+)	1999 09 12	106	0.3−	0.4+	1999 10 07	704	0.2+	0.0
1988 09 12	071	0.3+	0.1−	1999 09 12	106	0.2−	0.0	1999 10 09	704	0.1+	0.1−
1988 09 13	071	0.5+	0.0	1999 09 12	106	0.1−	0.6+	1999 10 09	704	0.1+	0.0
1988 09 17	399	0.8+	0.3−	1999 09 14	704	0.3−	0.1−	1999 10 09	704	0.1+	0.0
1988 10 08	675	0.2+	1.9−	1999 09 14	704	0.1+	0.5−	1999 10 09	704	0.0	0.2−
1988 10 11	675	(0.9−	3.0−)	1999 09 14	704	0.2+	0.1−	1999 10 09	704	0.1−	0.1−
1990 03 17	046	0.5−	1.8−	1999 09 14	704	0.1−	0.1−	1999 10 13	704	0.1−	1.0−
1990 03 17	046	0.3+	0.5−	1999 09 14	704	0.1+	0.3−	1999 10 13	704	0.3−	1.2−
1990 03 18	046	(5.8+	1.0+)	1999 10 02	704	0.5+	0.1−	1999 10 13	704	0.1+	1.0−
1990 03 18	046	(4.3+	0.2+)	1999 10 02	704	0.6+	0.0	1999 10 13	704	0.1+	0.7−
1990 03 25	372	(3.1−	3.4+)	1999 10 02	704	0.3+	0.0	1999 10 13	704	0.2+	0.5−
1990 03 25	372	(0.3−	2.7−)	1999 10 02	704	0.5+	0.0	1999 10 15	704	0.1+	0.3+
1991 07 10	474	0.0	0.3−	1999 10 02	704	0.7+	0.2−	1999 10 15	704	0.3+	0.3+
1991 07 10	474	0.2+	0.2−	1999 10 05	704	0.2+	0.2+	1999 10 15	704	0.3−	0.4−
1992 10 28	801	0.0	0.8+	1999 10 05	704	0.3+	0.2+	1999 10 15	704	0.1+	0.5+
1992 10 28	801	0.7−	0.1+	1999 10 05	704	0.2−	0.2−	1999 10 15	704	0.2+	0.5+
1993 03 20	801	0.5+	0.6−	1999 10 05	704	0.0	0.7−	1999 10 16	704	0.2+	0.0
1993 03 20	801	0.4−	0.5−	1999 10 05	704	0.0	0.4−	1999 10 16	704	0.4+	0.1+
1993 03 23	801	1.5+	0.1−	1999 10 06	610	0.5−	0.4+	1999 10 16	704	0.2+	0.2+
1993 03 23	801	0.5+	0.5+	1999 10 06	610	0.3−	0.3+	1999 10 16	704	0.3+	0.1+
1994 04 09	801	1.0−	0.3−	1999 10 06	610	0.3−	0.2+	1999 10 16	704	0.2+	0.1+
1994 04 09	801	1.1−	0.3+	1999 10 06	610	0.2−	0.1−				
1994 04 15	801	1.3−	0.3+	1999 10 06	610	0.1−	0.2−				

(11853)* 1988 RV₁ = 1983 HJ₁ = 1990 FN₅

Discovered 1988 Sept. 7 at Tautenburg.

Id. G. V. Williams (*MPC* 22401)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	284.00562		(2000.0)	P	Q		
<i>n</i>	0.27756015	ω	91.00688	−0.21118386	−0.97732411		
<i>a</i>	2.3275444	Ω	11.22090	+0.86222938	−0.19371629		
<i>e</i>	0.0806145	<i>i</i>	4.55635	+0.46039317	−0.08550780		
<i>P</i>	3.55	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1983 04 16	033	1.5−	1.5+	1997 02 02	691	0.1+	0.5−	1999 10 12	106	0.2−	0.8−
1983 04 16	033	0.9−	1.1+	1997 02 02	691	0.0	0.4−	1999 10 12	704	0.3−	0.1+
1988 09 07	033	0.1−	0.4+	1997 02 02	691	0.3−	0.5−	1999 10 12	704	0.5−	0.1+
1988 09 08	033	0.6+	0.1+	1997 03 05	704	1.4+	0.9−	1999 10 12	704	0.2−	0.1+
1988 09 08	033	0.1+	0.7+	1997 03 05	704	0.3+	1.3−	1999 10 12	704	0.3−	0.1+
1988 09 10	675	0.3−	0.4−	1997 03 06	704	0.6+	0.0	1999 10 12	704	0.5−	0.3+
1988 09 10	675	0.0	1.0−	1997 03 06	704	0.5+	0.7−	1999 10 13	704	(2.8−	0.1+)
1988 09 11	675	0.2+	0.7+	1999 09 10	113	0.9−	0.9+	1999 10 13	704	0.2−	0.1+
1988 09 12	675	0.2−	0.7−	1999 09 10	113	1.4−	0.5+	1999 10 13	704	0.3−	0.0
1988 09 12	675	1.3+	0.7−	1999 09 12	113	0.5+	0.0	1999 10 13	704	0.2−	0.1+
1988 09 16	675	0.8+	0.4+	1999 09 12	113	0.2+	0.1−	1999 10 13	704	0.3−	0.2+

1988 09 16	675	0.5+	0.4+	1999 10 03	704	0.2-	0.5-	1999 10 15	704	0.2+	0.0
1988 10 07	675	0.3-	0.6-	1999 10 03	704	0.9-	0.5-	1999 10 15	704	0.4+	0.5+
1988 10 07	675	0.9+	1.4-	1999 10 03	704	0.7-	0.3+	1999 10 15	704	0.6+	0.4+
1988 10 09	675	2.3+	0.3-	1999 10 03	704	0.8-	0.4-	1999 10 15	704	0.4+	1.1+
1988 10 09	675	1.2+	2.4-	1999 10 03	704	1.3-	0.3-	1999 10 15	704	0.5+	1.2+
1990 03 22	071	(3.5+	1.8+)	1999 10 04	704	1.1-	0.3-	1999 10 18	113	0.3-	0.1-
1990 03 22	071	(2.1+	4.9+)	1999 10 04	704	0.8-	0.5-	1999 10 18	113	0.4-	0.1+
1994 03 10	413	0.5-	0.4-	1999 10 04	704	0.5-	1.0-	1999 10 22	704	0.2+	0.6-
1994 03 10	413	0.5-	0.7+	1999 10 04	704	0.1-	0.3+	1999 10 22	704	0.3+	0.3-
1995 08 23	033	0.5-	0.2+	1999 10 11	106	0.4+	0.2+	1999 10 22	704	0.4+	0.1-
1995 08 24	033	0.5-	0.5+	1999 10 11	106	0.3+	0.0	1999 10 22	704	0.1+	0.2+
1997 01 28	327	0.7-	0.3-	1999 10 11	106	0.3+	1.4+	1999 10 22	704	0.4+	0.0
1997 01 28	327	0.7+	0.4-	1999 10 12	106	0.6+	0.0				
1997 01 28	327	0.5+	0.4-	1999 10 12	106	0.1+	0.5+				

(11854)* 1988 RM₃ = 1998 FF₁₁₈

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

Id. G. V. Williams (*MPC* 31713)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	352.03703		(2000.0)	P	Q
<i>n</i>	0.26787525	ω	354.39187	+0.98657795	+0.16298847
<i>a</i>	2.3833125	Ω	356.18461	-0.14341314	+0.83577932
<i>e</i>	0.1454116	<i>i</i>	8.58704	-0.07808088	+0.52431641
<i>P</i>	3.68	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 09 08	033	0.1-	0.4+	1999 08 22	703	0.5+	1.1+	1999 09 14	151	0.3-	0.2-
1988 09 09	033	0.1+	0.5-	1999 08 22	113	1.1-	0.2-	1999 09 14	151	0.3+	0.3+
1988 09 09	033	0.1+	0.2+	1999 08 22	113	1.0-	0.3+	1999 09 14	151	0.5-	0.6+
1988 09 10	033	0.3-	0.4-	1999 09 03	151	0.9-	1.0-	1999 09 18	151	1.2+	1.1+
1988 09 10	033	0.7-	0.4-	1999 09 03	151	0.3-	0.7-	1999 09 18	151	0.4+	0.3+
1988 09 11	033	0.6-	0.2-	1999 09 03	151	1.4-	0.2-	1999 09 18	151	0.1+	0.0
1988 09 11	675	1.2+	1.0-	1999 09 03	151	0.6-	0.8-	1999 09 18	151	0.7+	0.1+
1988 09 11	675	1.5+	0.9-	1999 09 04	628	0.1+	0.1+	1999 09 18	151	0.2-	0.8+
1988 09 15	675	0.4+	1.0-	1999 09 04	628	0.3-	0.3+	1999 09 30	699	0.3+	0.8+
1988 09 15	675	1.0+	0.0	1999 09 04	628	0.2+	0.3-	1999 09 30	699	0.5+	0.6+
1988 09 15	675	0.8-	2.1-	1999 09 04	628	0.2+	0.6-	1999 09 30	699	0.2+	1.0+
1988 09 15	675	1.2+	0.0	1999 09 05	699	0.1-	0.6+	1999 09 30	691	0.7+	0.1+
1991 04 13	413	0.9-	1.4-	1999 09 05	699	0.1-	0.5+	1999 09 30	691	0.7+	0.0
1991 04 13	413	0.5+	0.0	1999 09 05	699	0.1-	0.1-	1999 09 30	691	0.6+	0.1+
1991 06 14	413	(2.7-	0.4+)	1999 09 05	113	1.3-	0.7+	1999 10 02	704	0.6-	0.7+
1991 06 14	413	1.2+	0.2-	1999 09 05	113	1.5-	0.8+	1999 10 02	704	0.6-	0.2+
1998 03 25	704	0.3+	0.5+	1999 09 05	113	1.1-	0.6+	1999 10 02	704	0.9-	0.4+
1998 03 25	704	(2.6+	0.3+)	1999 09 07	704	0.1-	0.1+	1999 10 02	704	1.3-	0.6+
1998 03 25	704	0.6+	0.5-	1999 09 07	704	0.2-	0.0	1999 10 02	704	1.6-	0.3+
1998 03 25	704	(1.4-	2.8+)	1999 09 07	704	0.1+	0.4-	1999 10 05	704	0.2+	0.1+
1998 03 25	704	(4.5-	2.7+)	1999 09 07	704	0.6-	0.2-	1999 10 05	704	0.3+	0.0
1998 03 31	704	0.2-	1.1+	1999 09 07	704	0.5-	0.4-	1999 10 05	704	0.3+	0.3+
1998 03 31	704	0.2+	0.6+	1999 09 07	151	0.2-	1.0-	1999 10 05	704	0.5+	0.0
1998 03 31	704	0.7+	0.0	1999 09 07	151	1.3-	0.0	1999 10 05	704	0.2+	0.2+
1998 03 31	704	0.3+	0.7+	1999 09 07	151	1.4-	1.1-	1999 10 06	151	0.5+	0.4+
1998 03 31	704	0.8+	1.6+	1999 09 07	151	1.1-	0.0	1999 10 06	151	1.2+	0.0
1998 04 01	704	0.1-	0.3+	1999 09 08	151	1.4-	0.6-	1999 10 06	151	1.0+	0.2+
1998 04 01	704	0.3-	0.9+	1999 09 08	151	1.0-	0.9-	1999 10 06	151	0.4+	0.2+
1998 04 01	704	0.5-	0.4+	1999 09 08	151	0.2-	0.2-	1999 10 06	151	0.6+	0.2+
1998 04 01	704	0.1+	0.6+	1999 09 08	151	0.8-	0.4-	1999 10 07	704	0.5+	0.1-
1998 04 20	704	0.5+	0.4+	1999 09 09	704	0.1+	0.0	1999 10 07	704	0.8+	0.0
1998 04 20	704	(2.9+	1.8-)	1999 09 09	704	0.2-	0.1+	1999 10 07	704	0.7+	0.3-
1998 04 20	704	1.2-	1.4-	1999 09 09	704	0.5-	0.3+	1999 10 07	704	0.8+	0.2+
1998 04 20	704	0.6+	1.0-	1999 09 09	704	0.2-	0.3+	1999 10 07	704	0.6+	0.5+
1998 04 20	704	0.5-	1.7-	1999 09 09	704	0.4-	0.1-	1999 10 07	151	1.3+	0.3-
1998 04 22	704	0.5-	0.4-	1999 09 10	151	0.6-	0.1-	1999 10 07	151	0.9+	0.0
1998 04 22	704	0.3-	1.1-	1999 09 10	151	0.2+	0.2-	1999 10 07	151	0.2+	0.4+
1998 04 22	704	0.3-	1.4-	1999 09 10	151	0.3-	0.1-	1999 10 07	151	0.4+	0.2-
1998 04 22	704	0.4+	0.8-	1999 09 10	151	0.4-	0.1+	1999 10 08	691	0.5+	0.1+
1998 04 22	704	0.1-	0.3-	1999 09 11	699	0.1+	0.3+	1999 10 08	691	0.6+	0.0
1998 04 30	699	0.5-	0.8+	1999 09 11	699	0.3+	0.4+	1999 10 08	691	0.6+	0.0

1998 04 30	699	0.2-	1.0+	1999 09 11	699	0.0	0.3+	1999 10 10	106	0.6+	0.6+
1998 04 30	699	0.1+	1.2+	1999 09 11	151	0.7-	0.6-	1999 10 10	106	1.2+	0.7+
1999 07 16	704	0.0	0.3-	1999 09 11	151	0.3-	0.5-	1999 10 10	106	0.8+	1.0+
1999 07 16	704	0.4-	0.0	1999 09 11	151	1.0-	0.1-	1999 10 10	106	0.8+	0.4+
1999 07 16	704	0.1-	0.2-	1999 09 11	151	0.3-	0.0	1999 10 10	106	0.1-	1.5+
1999 07 16	704	0.1-	0.7+	1999 09 12	151	1.0-	0.2-	1999 10 11	151	1.3+	0.2-
1999 07 19	113	0.6+	0.7+	1999 09 12	151	1.8-	0.3+	1999 10 11	151	0.7-	0.5+
1999 07 19	113	0.3-	0.3+	1999 09 12	151	0.5-	0.6-	1999 10 11	151	0.8-	0.5-
1999 08 19	113	0.6+	0.8+	1999 09 12	151	1.0-	0.2+	1999 10 15	704	0.3+	0.1-
1999 08 19	113	0.2+	0.5+	1999 09 13	151	0.4+	0.4+	1999 10 15	704	0.5+	0.2-
1999 08 21	151	0.5-	0.8-	1999 09 13	151	0.5-	0.1+	1999 10 15	704	0.4+	0.0
1999 08 21	151	0.6+	1.2-	1999 09 13	151	0.5-	0.0	1999 10 15	704	0.5+	0.1-
1999 08 22	151	0.8+	0.8-	1999 09 13	151	0.3-	0.2+	1999 10 15	704	0.0	0.4+
1999 08 22	151	0.5+	0.5-	1999 09 14	704	0.0	0.2-	1999 10 18	691	0.7+	0.1+
1999 08 22	151	0.7+	1.0-	1999 09 14	704	0.4+	0.3-	1999 10 18	691	0.7+	0.0
1999 08 22	151	1.5+	0.7-	1999 09 14	704	0.0	0.5-	1999 10 18	691	0.4+	0.0
1999 08 22	151	0.1+	0.8-	1999 09 14	704	0.0	0.6-	1999 10 18	113	0.5+	0.6+
1999 08 22	703	0.3+	0.2-	1999 09 14	704	0.2+	0.8-	1999 10 18	113	0.7+	0.6+
1999 08 22	703	0.2+	0.1-	1999 09 14	151	0.1-	0.2+				
1999 08 22	703	0.1-	0.7+	1999 09 14	151	0.7-	0.3+				

(11855)* 1988 RS₃ = 1997 AL₁₁

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

Id. G. V. Williams (*MPC* 28841)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	1.78304		(2000.0)	P	Q
<i>n</i>	0.27177272	ω	200.58992	+0.99927461	+0.03415959
<i>a</i>	2.3604717	Ω	157.43267	-0.02580874	+0.93250589
<i>e</i>	0.2439218	<i>i</i>	2.51403	-0.02800282	+0.35953565
<i>P</i>	3.63	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 09 08	033	0.2-	0.1-	1998 04 21	704	1.4+	0.6+	1999 10 10	704	0.4+	0.0
1988 09 09	033	0.2-	0.4-	1998 04 21	704	1.1+	0.2+	1999 10 10	704	0.3+	0.2+
1988 09 09	033	0.3+	0.3-	1998 04 22	704	0.8+	0.6-	1999 10 10	704	0.0	0.1-
1988 09 10	033	0.5-	0.4-	1998 04 22	704	0.4-	0.1+	1999 10 10	151	0.1+	0.7+
1988 09 10	033	0.3+	0.7-	1998 04 22	704	1.6-	0.5+	1999 10 10	151	0.1+	0.5+
1988 09 11	033	0.1+	0.3-	1998 04 22	704	0.9-	1.2+	1999 10 10	151	0.7-	0.5+
1988 09 11	675	0.7-	0.4-	1998 04 22	704	0.6+	0.8+	1999 10 10	151	0.0	0.1-
1988 09 11	675	0.7-	0.7-	1999 09 12	113	1.5-	0.1+	1999 10 11	106	0.2-	0.3-
1988 09 15	675	0.3+	0.1+	1999 09 12	106	0.0	0.2+	1999 10 11	106	0.7-	0.4-
1988 09 15	675	0.2+	0.3+	1999 09 12	106	0.2-	0.3+	1999 10 13	134	1.1+	0.6-
1988 09 18	807	1.5+	0.0	1999 09 12	113	(2.0-	0.3-)	1999 10 13	134	0.4+	0.1-
1988 10 05	807	0.7+	1.0-	1999 09 12	106	0.4-	0.5+	1999 10 13	134	0.2+	0.1-
1988 10 08	807	0.9+	1.1-	1999 09 13	113	0.8+	0.5+	1999 10 16	151	1.0-	0.6+
1997 01 02	691	0.4-	0.7-	1999 09 13	113	0.8+	0.7+	1999 10 16	151	0.4+	1.2+
1997 01 02	691	0.4-	0.5-	1999 10 01	703	0.2-	0.5+	1999 10 16	151	0.1+	1.1-
1997 01 02	691	0.4-	0.6-	1999 10 01	703	0.6-	0.6+	1999 10 18	113	0.5-	0.5-
1997 01 10	691	0.5-	0.5-	1999 10 01	703	0.2-	0.5+	1999 10 18	113	1.5-	0.4-
1997 01 10	691	0.7-	0.5-	1999 10 01	703	0.2+	0.5+	1999 10 20	704	0.2-	0.3+
1997 01 10	691	0.5-	0.6-	1999 10 07	704	0.8+	0.8+	1999 10 20	704	0.2-	0.2+
1997 01 11	691	0.7+	0.1+	1999 10 07	704	0.5-	0.1-	1999 10 20	704	0.2-	0.3+
1997 01 11	691	0.6+	0.3+	1999 10 07	704	0.7+	0.8+	1999 10 20	704	0.1-	0.5+
1997 01 11	691	0.8+	0.3+	1999 10 07	704	0.5-	0.3-	1999 10 20	704	0.2-	0.5+
1998 04 21	704	(2.6-	0.0)	1999 10 10	704	0.4+	0.1-				
1998 04 21	704	(1.6+	2.1+)	1999 10 10	704	0.5+	0.1-				

1999 OCT. 26

M.P.C. 36235

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	331.31866		(2000.0)	P	Q
<i>n</i>	0.26784231	ω	12.41112	+0.93402472	-0.35697690
<i>a</i>	2.3835079	Ω	8.53696	+0.31988221	+0.81986341
<i>e</i>	0.2327574	<i>i</i>	4.96878	+0.15897544	+0.44765108
<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-	1999 07 16	704	0.4+	0.7-	1999 09 30	699	0.6-	0.7+
1988 09 10	675	1.6+	1.2-	1999 07 16	704	0.1+	0.3+	1999 09 30	699	0.1-	0.4+
1988 09 11	071	0.7-	2.2+	1999 07 16	704	0.2+	0.8-	1999 10 02	704	0.1-	0.2-
1988 09 11	071	0.5+	1.7+	1999 08 12	699	0.1-	0.7+	1999 10 02	704	0.4-	0.4+
1988 09 12	675	2.0-	0.5-	1999 08 12	699	0.0	0.6+	1999 10 02	704	0.5-	0.2+
1988 09 12	675	1.9-	1.2-	1999 08 12	699	0.3-	0.6+	1999 10 02	704	0.8-	0.2-
1988 09 15	675	0.3+	0.4-	1999 09 07	704	0.2+	0.1+	1999 10 02	704	1.1-	0.9-
1988 09 15	675	0.6-	0.6-	1999 09 07	704	0.5+	0.2+	1999 10 07	704	0.5+	0.7-
1988 09 16	807	2.1+	0.0	1999 09 07	704	0.3+	0.5-	1999 10 07	704	0.0	0.5-
1988 09 18	807	1.5+	0.8-	1999 09 07	704	0.4+	0.3+	1999 10 07	704	0.2-	0.2+
1988 10 04	807	0.3+	0.3-	1999 09 07	704	0.2+	0.4+	1999 10 07	704	0.1+	0.1+
1988 10 05	807	0.9+	1.0-	1999 09 09	704	0.2+	0.6+	1999 10 07	704	0.2-	0.3+
1988 10 08	807	0.5+	1.4-	1999 09 09	704	0.6+	0.4+	1999 10 08	704	0.1-	0.2-
1988 11 04	807	0.7+	0.1-	1999 09 09	704	0.1-	0.0	1999 10 08	704	0.1+	0.1-
1988 11 06	807	0.7-	1.4-	1999 09 09	704	0.1-	0.3+	1999 10 08	704	0.3-	0.3+
1997 01 09	691	0.2+	0.3+	1999 09 09	704	0.9-	0.5-	1999 10 15	704	0.3+	0.3-
1997 01 09	691	0.0	0.1-	1999 09 14	704	0.1+	0.3+	1999 10 15	704	0.2+	0.0
1997 01 09	691	0.2+	0.0	1999 09 14	704	0.1-	0.4+	1999 10 15	704	0.1-	0.7+
1998 05 01	704	0.4+	1.0-	1999 09 14	704	0.1-	0.1+	1999 10 15	704	0.0	0.2-
1998 05 01	704	1.9-	0.7-	1999 09 14	704	0.1-	0.9+	1999 10 15	704	0.4-	0.1+
1998 05 01	704	0.2+	0.4-	1999 09 14	704	0.1+	0.6+				
1998 05 01	704	(3.2-	0.2-)	1999 09 30	699	(1.1-	2.3+)				

(11857)* 1988 RK₉ = 1993 OG

Discovered 1988 Sept. 1 by H. Debehogne at the European Southern Observatory.

Id. G. V. Williams (*MPC* 22485)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	47.86219		(2000.0)	P	Q
<i>n</i>	0.19201414	ω	177.20054	+0.79729002	+0.58728332
<i>a</i>	2.9756413	Ω	145.59069	-0.55847034	+0.80535290
<i>e</i>	0.1412950	<i>i</i>	14.27919	-0.22899674	+0.08065365
<i>P</i>	5.13	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1988 08 16	675	0.1+	0.2+	1994 12 27	292	0.4+	1.2+	1998 06 25	704	1.4-	0.8+
1988 08 16	675	0.1+	1.0+	1994 12 27	292	0.0	1.7+	1998 06 25	704	0.6+	0.1+
1988 09 01	809	0.9-	0.3+	1998 06 16	712	0.5+	0.0	1998 07 02	610	0.4+	0.8-
1988 09 02	809	0.5-	0.4+	1998 06 16	712	0.1-	0.5+	1998 07 02	610	0.7+	0.4-
1988 09 02	809	0.4-	0.5+	1998 06 16	712	0.3+	0.2-	1998 07 02	610	1.1+	0.1+
1988 09 05	809	0.4-	0.3-	1998 06 16	712	0.6+	0.0	1998 07 02	610	1.5+	0.5+
1988 09 05	809	0.4-	0.3-	1998 06 16	712	0.0	0.4+	1998 07 04	610	1.5+	0.7+
1988 09 05	809	0.6-	0.3-	1998 06 16	712	0.3-	0.4-	1998 07 04	610	1.3+	0.6+
1988 09 07	809	0.1+	0.9-	1998 06 17	712	1.7-	0.6-	1998 07 04	610	1.2+	0.5+
1988 09 08	809	0.1+	1.0-	1998 06 17	712	(2.9+	1.8+)	1998 07 04	610	1.1+	0.5+
1988 09 08	809	0.0	0.9-	1998 06 17	712	(1.0-	2.1-)	1998 07 14	104	0.6-	0.7-
1988 09 09	809	0.7+	2.0-	1998 06 17	712	0.7-	0.6+	1998 07 14	104	0.8-	0.7-
1988 09 10	809	0.8+	2.0-	1998 06 17	712	(3.1-	1.3-)	1998 07 14	104	0.9-	1.3-
1988 09 10	809	0.6+	2.0-	1998 06 18	712	0.7-	0.1-	1999 09 14	704	0.5-	1.0+
1988 09 10	675	0.2-	0.1+	1998 06 18	712	0.4-	0.5+	1999 09 14	704	0.3+	0.0
1988 09 10	675	0.1+	0.6-	1998 06 18	712	0.6-	1.2+	1999 09 14	704	0.2-	0.4+
1988 09 17	809	(8.9+	7.5-)	1998 06 18	712	0.1-	1.7+	1999 09 14	704	0.2+	0.2+
1988 09 17	809	(8.8+	7.4-)	1998 06 18	712	0.4+	0.0	1999 09 14	704	0.7-	0.5-
1988 09 17	809	(8.9+	7.5-)	1998 06 18	712	0.1+	0.2+	1999 10 02	704	0.3-	0.1-
1993 07 16	675	0.9+	1.2+	1998 06 18	712	0.4+	0.3+	1999 10 02	704	0.0	0.1+
1993 07 16	675	(0.3-	2.1+)	1998 06 18	712	0.4+	0.7+	1999 10 02	704	0.1-	0.3+
1993 07 20	675	0.3-	1.1-	1998 06 18	712	0.7+	0.5+	1999 10 02	704	0.2-	0.0

1993 07 20	675	0.6+	0.5+	1998 06 18	712	0.5-	0.3+	1999 10 02	704	0.8-	0.0
1993 08 15	801	0.2-	0.2+	1998 06 18	712	0.1+	0.1+	1999 10 08	704	0.4-	0.1+
1993 08 15	801	0.2-	0.6+	1998 06 19	704	0.5-	0.4-	1999 10 08	704	0.0	0.2+
1993 08 20	801	0.2-	0.5+	1998 06 19	704	0.7-	0.4+	1999 10 08	704	0.3-	0.3+
1993 08 20	801	0.3-	0.1+	1998 06 19	704	0.8-	0.6-	1999 10 08	704	0.4-	0.6+
1994 11 27	292	0.3-	0.5+	1998 06 19	704	0.4-	1.8+	1999 10 08	704	0.3-	0.3+
1994 11 27	292	1.7+	0.8+	1998 06 25	704	1.8-	0.4+				
1994 12 26	292	(2.6-	1.4-)	1998 06 25	704	0.9+	0.0				

(11858)* 1988 RC₁₁ = 1999 RK₁₁₅

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

Id. G. V. Williams (*MPC* 35912)

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	304.78150	+0.33105202	-0.94311272
<i>a</i>	3.1393820	Ω	125.85684	+0.87765493	+0.29579572
<i>e</i>	0.1675482	<i>i</i>	2.17134	+0.34659254	+0.15180013
<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	0.4-	0.7+	1999 09 07	704	0.6-	0.6-
1988 09 15	807	0.7-	0.2-	1999 08 03	691	0.1-	0.1+	1999 09 07	704	0.3-	0.2-
1988 10 05	807	0.1+	0.3-	1999 08 03	691	0.1-	0.1-	1999 09 07	704	0.2+	0.5-
1988 10 08	807	0.3+	0.7-	1999 08 03	691	0.2-	0.2+	1999 09 07	704	0.7-	0.5-
1988 11 03	807	0.4-	0.2+	1999 08 07	699	0.2+	0.1-	1999 09 09	704	1.1-	1.1+
1988 11 05	807	0.5+	0.3-	1999 08 07	699	0.4-	1.0-	1999 09 09	704	0.4-	0.2+
1993 07 13	809	(2.4+	0.1+)	1999 08 07	699	0.2+	0.3+	1999 09 09	704	0.7+	0.1-
1993 07 13	809	1.4+	0.3-	1999 08 08	699	0.4-	0.7+	1999 09 09	704	1.5+	0.1-
1993 07 13	809	0.8+	0.4-	1999 08 08	699	0.1-	0.8+	1999 09 09	704	0.2-	0.1+
1996 02 15	566	0.3+	0.0	1999 08 08	699	0.3-	1.6+	1999 09 13	704	0.1+	0.1-
1996 02 15	566	0.1+	0.0	1999 09 04	699	0.3+	0.0	1999 09 13	704	1.1+	0.8-
1996 02 15	566	0.3+	0.0	1999 09 04	699	0.4-	0.6+	1999 09 13	704	1.1-	0.3-
1997 05 07	566	0.2-	0.1+	1999 09 04	699	0.1+	0.0	1999 09 13	704	0.6+	0.2-
1997 05 07	566	0.5-	0.2-	1999 09 07	704	0.0	0.5+	1999 09 13	704	0.3+	0.3+

(11859)* 1988 SN₁

Discovered 1988 Sept. 16 by S. J. Bus at Cerro Tololo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	30.98062		(2000.0)	P	Q
<i>n</i>	0.27469278	ω	210.62457	+0.81925671	+0.56088106
<i>a</i>	2.3437136	Ω	114.78858	-0.49588633	+0.79744011
<i>e</i>	0.1655090	<i>i</i>	7.55052	-0.28794998	+0.22248978
<i>P</i>	3.59	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1988 09 15	675	0.4-	1.4-	1998 03 05	691	0.2-	0.0	1998 05 16	704	1.8+	1.1+
1988 09 15	675	0.4-	0.9-	1998 03 05	691	0.3-	0.1+	1998 05 16	704	0.2+	1.0+
1988 09 16	807	0.9+	1.2-	1998 03 24	704	0.3-	0.6-	1998 05 16	704	1.5+	0.6-
1988 09 18	807	1.5+	1.5-	1998 03 24	704	0.8-	0.9-	1998 05 16	704	1.2+	0.8+
1988 10 05	807	0.8-	0.2-	1998 03 24	704	0.0	0.7-	1998 05 28	704	0.2-	1.0+
1988 10 06	807	0.8-	0.0	1998 03 24	704	0.9-	0.4-	1998 05 28	704	0.0	0.4-
1988 10 07	807	0.5-	0.5-	1998 03 24	704	1.6-	1.2-	1998 05 28	704	(2.1+	0.7+)
1988 11 04	807	0.7+	0.9+	1998 04 21	704	0.1-	0.4-	1998 05 28	704	0.5-	0.5+
1988 11 06	807	1.8+	1.6+	1998 04 21	704	0.0	0.0	1998 05 28	704	(2.5-	0.5+)
1994 02 10	809	(0.1-	2.6+)	1998 04 21	704	0.6-	0.3-	1999 09 08	703	0.2-	0.2-
1994 02 10	809	1.0+	1.6+	1998 04 21	704	0.6-	0.4-	1999 09 08	703	0.3-	0.8+
1994 02 10	809	(1.0+	2.2+)	1998 04 21	704	0.3-	1.0-	1999 09 08	703	0.4+	1.1+
1994 02 13	809	(3.5+	3.6+)	1998 04 23	704	0.1+	0.5-	1999 09 08	703	1.7+	1.0+
1994 02 13	809	(3.2+	2.4+)	1998 04 23	704	0.6+	0.3-	1999 10 07	703	0.3-	0.2-
1994 02 13	809	(3.3+	2.2+)	1998 04 23	704	0.4+	0.3+	1999 10 07	703	0.2-	0.1-
1996 12 14	411	0.5-	1.0-	1998 04 23	704	0.5-	0.5-	1999 10 07	703	0.5-	0.3+
1996 12 14	411	0.3+	0.8-	1998 04 23	704	0.5-	1.4-	1999 10 07	703	0.2+	0.1+
1996 12 19	411	0.3-	1.1-	1998 04 24	704	0.5+	0.1-	1999 10 09	704	0.2-	0.0
1996 12 19	411	0.5-	0.6-	1998 04 24	704	0.1-	1.3+	1999 10 09	704	0.3-	0.1-
1997 01 11	566	0.2-	0.3-	1998 04 24	704	0.4-	0.5-	1999 10 09	704	0.2-	0.0

1997 01 11	566	0.3+	0.4+	1998 04 24	704	0.4+	0.5-	1999 10 09	704	0.3+	0.6-
1997 01 11	566	0.0	0.1-	1998 04 24	704	0.3-	0.2+	1999 10 09	704	0.4-	0.7-
1998 03 05	691	0.3-	0.0	1998 05 16	704	(2.4+	1.2+)				

((11860)* 1988 UP = 1982 RX₁ = 1997 EQ₅₈)

Discovered 1988 Oct. 16 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 13862), G. V. Williams (*MPC* 32219)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	17.27342		(2000.0)		P		Q
<i>n</i>	0.17624181	ω	250.63333		+0.93434660		+0.35386824
<i>a</i>	3.1506253	Ω	88.62455		-0.30911021		+0.86357786
<i>e</i>	0.1710259	<i>i</i>	2.41444		-0.17733389		+0.35918039
<i>P</i>	5.59	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 09 15	046	(7.4-	7.0-)	1998 06 24	704	0.3+	0.1+	1999 10 07	704	0.2-	0.3-
1982 09 15	046	(5.1-	4.2-)	1998 06 24	704	0.2-	0.3+	1999 10 07	704	0.2+	0.5-
1982 09 15	046	1.3+	1.0+	1998 06 26	704	1.8-	0.1+	1999 10 07	704	0.1-	0.2-
1982 09 15	046	(1.7-	3.1-)	1998 06 26	704	0.1+	0.4+	1999 10 07	704	0.3+	0.3+
1982 09 16	046	(3.0+	2.3-)	1999 09 08	704	0.0	1.4+	1999 10 07	704	0.1+	0.0
1982 09 16	046	(3.7+	2.3-)	1999 09 08	704	0.1-	0.1+	1999 10 07	704	0.2+	0.2-
1982 09 17	046	0.3-	1.2-	1999 09 08	704	0.7-	1.2+	1999 10 07	704	0.2-	0.1-
1982 09 17	046	0.9+	2.0-	1999 09 08	704	0.4-	0.7+	1999 10 07	704	0.6-	0.3-
1988 10 16	400	(2.6+	1.0-)	1999 09 08	704	1.0-	0.0	1999 10 07	704	0.2+	0.2+
1988 10 16	400	(3.6+	3.1-)	1999 09 14	106	0.0	0.8+	1999 10 07	704	0.2+	0.2-
1988 10 16	400	0.7+	0.8-	1999 09 14	106	0.1+	0.9+	1999 10 07	704	0.1+	0.2-
1988 11 02	400	(6.5-	1.3-)	1999 09 14	106	0.1+	0.3+	1999 10 07	704	0.2+	0.9-
1988 11 02	400	(3.1-	0.9-)	1999 10 02	703	0.0	0.4+	1999 10 07	704	0.0	1.1-
1988 11 02	400	(5.2-	1.5-)	1999 10 02	703	0.6-	0.5+	1999 10 08	704	0.3-	0.2-
1988 11 03	327	1.5-	1.9-	1999 10 02	703	0.4-	0.6+	1999 10 08	704	1.0-	0.1-
1988 11 08	400	(1.8-	2.6-)	1999 10 02	703	1.6-	0.2-	1999 10 08	704	0.4-	0.4+
1988 11 08	400	(3.9-	2.0-)	1999 10 04	704	0.3+	1.3+	1999 10 08	704	0.7-	0.2+
1997 03 10	809	(2.8+	0.9+)	1999 10 04	704	0.1-	0.5+	1999 10 09	704	0.1+	0.3-
1997 03 10	809	1.4+	1.4+	1999 10 04	704	0.1+	0.9+	1999 10 09	704	0.0	0.3-
1997 03 10	809	1.7+	1.2+	1999 10 04	704	0.3+	1.0+	1999 10 09	704	0.4-	0.1-
1997 03 11	809	0.7-	0.6+	1999 10 04	704	0.2-	1.2+	1999 10 09	704	0.1-	0.2-
1997 03 11	809	1.3+	1.4+	1999 10 06	843	0.2+	0.8+	1999 10 09	704	0.0	0.1-
1997 03 11	809	1.4+	0.9+	1999 10 06	843	0.2+	0.4+	1999 10 15	704	0.1+	0.2-
1997 04 06	566	0.7-	0.5-	1999 10 07	843	0.9+	0.9+	1999 10 15	704	0.6+	0.7-
1997 04 06	566	0.6-	0.5-	1999 10 07	843	1.3+	1.0+	1999 10 15	704	0.4+	0.8-
1997 04 06	566	0.9-	0.6-	1999 10 07	843	0.2-	0.8+	1999 10 15	704	0.0	0.4-
1998 06 24	704	(1.5-	3.7+)	1999 10 07	704	0.0	0.1-	1999 10 15	704	0.3+	0.3-
1998 06 24	704	0.6+	0.4-	1999 10 07	704	0.1+	0.1-				

((11861)* 1988 VY₂)

Discovered 1988 Nov. 10 by T. Kojima at Chiyoda.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	24.28038		(2000.0)		P		Q
<i>n</i>	0.17492631	ω	280.40249		+0.94344304		+0.26909382
<i>a</i>	3.1664013	Ω	64.21339		-0.15006468		+0.86747368
<i>e</i>	0.1036777	<i>i</i>	12.41999		-0.29562784		+0.41842315
<i>P</i>	5.63	<i>H</i>	10.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 11 10	808	0.6-	0.4+	1994 12 03	411	0.3-	0.3+	1999 09 16	704	0.3+	1.0-
1988 11 10	808	0.8-	0.4+	1994 12 03	411	0.4-	0.0	1999 09 16	704	0.4+	0.1-
1988 11 10	897	1.2+	0.1-	1997 04 07	809	(1.8+	2.5+)	1999 09 16	704	0.4-	0.7-
1988 11 10	897	0.8-	0.8-	1997 04 07	809	(1.7+	2.7+)	1999 09 30	703	0.0	0.3+
1988 11 12	046	1.6+	1.1-	1997 04 07	809	(1.5+	2.6+)	1999 09 30	703	0.1-	0.3+
1988 11 12	046	(3.4+	0.9-)	1997 04 08	809	(0.7+	4.0+)	1999 09 30	703	0.0	0.4+
1988 11 14	808	0.2+	0.1+	1997 04 08	809	(0.5+	3.8+)	1999 09 30	703	0.3-	0.2+
1988 11 14	808	1.4-	0.3-	1997 04 08	809	(0.2+	3.7+)	1999 10 04	703	0.2-	0.3+
1988 11 14	897	0.4-	0.3-	1998 06 06	689	0.8-	0.1+	1999 10 04	703	0.1-	0.3+
1988 11 14	897	0.3-	0.6-	1999 08 22	703	0.2+	0.0	1999 10 04	703	0.0	0.4+
1988 12 01	897	(2.1+	3.0-)	1999 08 22	703	0.0	0.2+	1999 10 04	703	0.2-	0.3+

1988 12 01	897	0.7+	0.7-	1999 08 22	703	0.4-	0.2+	1999 10 09	704	0.1+	0.1+
1993 07 27	675	1.8+	0.1+	1999 08 22	703	0.6-	0.0	1999 10 09	704	0.4-	0.3+
1993 07 27	675	0.9+	0.1-	1999 09 12	106	1.1+	0.6-	1999 10 09	704	0.7-	0.2-
1994 11 30	411	1.0+	0.2+	1999 09 12	106	0.3+	0.7+	1999 10 09	704	0.7-	0.0
1994 11 30	411	1.1+	0.2+	1999 09 12	106	0.3+	0.3+	1999 10 09	704	0.8-	0.1+

((11862)* 1988 XB₂ = 1997 EV₃₇)

Discovered 1988 Dec. 7 by Y. Oshima at the Gekko Observatory.

Id. G. V. Williams (*MPC* 29610)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	353.97794		(2000.0)		P		Q
<i>n</i>	0.26682840	ω	14.99846		+0.98745189		-0.15781945
<i>a</i>	2.3895421	Ω	354.07326		+0.13868648		+0.88371017
<i>e</i>	0.1964596	<i>i</i>	3.13019		+0.07553031		+0.44062383
<i>P</i>	3.69	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1988 12 01	888	(4.3+	6.6-)	1999 09 13	106	0.1-	0.2-	1999 10 11	704	2.0-	0.5-
1988 12 01	888	(6.4+	1.3-)	1999 10 01	888	0.8-	0.2-	1999 10 11	886	0.7+	1.1+
1988 12 01	888	(3.0+	5.3-)	1999 10 01	888	0.5+	0.2+	1999 10 11	886	0.6+	0.8+
1988 12 07	888	1.3-	2.7-	1999 10 01	888	0.0	0.2+	1999 10 12	704	0.5+	0.1+
1988 12 07	888	0.7-	2.5-	1999 10 02	703	0.4-	0.0	1999 10 12	704	0.5+	0.1+
1988 12 11	888	1.5+	0.5+	1999 10 02	703	0.6-	0.3+	1999 10 12	704	0.5+	0.2+
1988 12 11	888	0.2+	0.5-	1999 10 02	703	0.4-	0.3-	1999 10 12	704	0.3+	0.3+
1988 12 14	888	0.8+	0.3-	1999 10 02	703	0.3-	0.2-	1999 10 12	704	0.5+	0.3+
1988 12 14	888	1.6+	0.6+	1999 10 03	704	0.7+	0.2-	1999 10 13	704	0.2+	0.0
1988 12 15	888	0.3+	0.1+	1999 10 03	704	0.8-	1.1+	1999 10 13	704	0.2-	0.2+
1988 12 15	888	0.5-	0.4+	1999 10 03	704	0.3-	0.5+	1999 10 13	704	0.2+	0.1+
1989 01 03	888	(3.3+	4.7+)	1999 10 03	704	0.4+	0.6-	1999 10 13	704	0.0	0.2+
1989 01 03	888	(4.8+	1.1+)	1999 10 03	704	0.9-	0.0	1999 10 13	704	0.3+	0.0
1997 02 03	566	0.4+	0.7+	1999 10 07	704	0.3-	0.1+	1999 10 13	704	0.2-	0.3+
1997 02 03	566	0.1-	0.7+	1999 10 07	704	0.3-	0.2+	1999 10 13	704	0.3+	0.0
1997 02 03	566	0.4+	0.6+	1999 10 07	704	0.3-	0.5+	1999 10 13	704	0.3-	0.1-
1997 03 05	704	0.7+	0.1+	1999 10 07	704	0.2-	0.2+	1999 10 13	704	0.4+	0.0
1997 03 05	704	1.1-	0.7+	1999 10 07	704	0.9-	0.5+	1999 10 13	704	0.3-	0.2-
1997 03 06	704	1.9+	1.0+	1999 10 08	886	0.3-	0.7+	1999 10 13	704	0.5+	0.1-
1997 03 06	704	0.6-	1.3+	1999 10 08	886	1.1+	0.8+	1999 10 13	704	0.4+	0.3-
1998 05 22	704	0.1-	0.1+	1999 10 09	703	0.4-	0.1+	1999 10 13	704	0.3+	0.3-
1998 05 22	704	(2.3-	2.3+)	1999 10 09	703	0.1-	0.3+	1999 10 13	704	0.4+	0.1-
1998 05 22	704	0.4-	0.6+	1999 10 09	703	0.0	0.1-	1999 10 13	704	0.2+	0.4-
1998 05 22	704	(2.9-	0.1-)	1999 10 09	703	0.0	0.1-	1999 10 15	704	0.1-	0.3-
1998 05 24	704	0.8+	0.3+	1999 10 10	704	0.4-	0.2+	1999 10 15	704	0.1+	0.4-
1998 05 24	704	0.4+	1.8+	1999 10 10	704	0.0	0.3+	1999 10 15	704	0.1+	0.3-
1998 05 24	704	0.6+	0.2+	1999 10 10	704	0.1-	0.4+	1999 10 15	704	0.2-	0.4-
1998 05 24	704	(3.2-	0.0)	1999 10 10	704	0.4+	0.6+	1999 10 15	704	0.2-	0.0
1999 09 12	703	0.6-	0.5-	1999 10 10	704	0.3-	0.6+	1999 10 21	704	0.4-	0.3-
1999 09 12	703	0.3+	0.0	1999 10 11	704	2.3+	0.2+	1999 10 21	704	0.3-	0.2-
1999 09 12	703	0.6-	0.3+	1999 10 11	704	2.2+	0.9+	1999 10 21	704	0.3-	0.4-
1999 09 12	703	0.4-	0.6+	1999 10 11	704	1.2-	1.2+	1999 10 21	704	0.4-	0.1+
1999 09 13	106	0.4-	0.1-	1999 10 11	704	0.7-	0.2-	1999 10 21	704	0.2-	0.2-
1999 09 13	106	0.1+	0.5-	1999 10 11	704	1.3-	0.0				

((11863)* 1989 EX)

1989 03 10	877	(2.0+ 4.1-)	1997 04 15	491	(1.8- 2.6-)	1999 09 13	703	0.4+ 0.3-
1989 03 10	877	2.0+ 1.0-	1997 04 15	491	(1.7+ 2.5+)	1999 09 13	703	0.5+ 0.8+
1989 03 29	877	0.6+ 0.0	1997 04 15	491	0.7+ 0.7+	1999 09 13	703	0.5- 0.9+
1989 03 29	877	(3.6+ 0.7+)	1998 07 26	886	(5.4+ 0.9-)	1999 09 13	703	0.8- 0.7+
1989 04 01	675	0.7- 0.0	1998 07 26	886	1.6+ 0.7+	1999 10 02	704	0.8- 0.6+
1989 04 01	675	1.1- 1.2+	1998 07 26	886	0.4+ 0.7+	1999 10 02	704	0.5- 0.3+
1989 04 01	877	0.1+ 0.5+	1998 08 17	704	0.5- 1.0+	1999 10 02	704	0.5- 0.2+
1989 04 01	877	0.4+ 0.9+	1998 08 17	704	1.1- 0.2+	1999 10 02	704	0.1- 0.0
1993 03 23	675	0.2+ 0.1-	1998 08 17	704	1.1+ 0.3-	1999 10 02	704	0.2+ 0.1+
1993 03 23	675	0.8- 1.4+	1998 08 17	704	0.8- 0.7-	1999 10 09	704	0.5+ 0.1-
1997 02 12	411	0.2- 0.8+	1998 08 23	704	0.1- 0.0	1999 10 09	704	0.1+ 0.3-
1997 02 12	411	0.3+ 0.3+	1998 08 23	704	1.9- 0.5+	1999 10 09	704	0.2- 0.2-
1997 02 13	411	0.2+ 0.1+	1998 08 23	704	0.8+ 0.0	1999 10 09	704	0.1+ 0.1+
1997 02 13	411	0.3+ 0.5+	1998 08 23	704	(1.0- 2.4-)	1999 10 09	704	0.0 0.2+
1997 03 07	688	0.2- 0.3-	1999 09 08	703	0.9+ 0.3-			

(11864)* 1989 NH₁ = 1986 TV₁

Discovered 1989 July 10 by K. W. Zeigler at Palomar.

Id. T. Kobayashi (*MPC* 15254), B. G. Marsden (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	29.09915		(2000.0)	P	Q
<i>n</i>	0.30381827	ω	184.31949	+0.57027742	+0.81669518
<i>a</i>	2.1914259	Ω	120.47390	-0.75056577	+0.56171894
<i>e</i>	0.2026438	<i>i</i>	5.87883	-0.33381836	+0.13221507
<i>P</i>	3.24	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1986 10 06	688	0.3- 2.0-	1997 12 07	910	1.4- 0.1-	1999 09 14	704	0.6- 0.2+
1986 10 07	688	0.7+ 0.8+	1998 01 24	566	0.1- 0.3-	1999 09 14	704	0.2- 0.4-
1986 10 07	688	(3.4- 0.2+)	1998 01 24	566	0.4+ 0.8-	1999 09 14	704	0.8- 0.1-
1989 07 06	675	(0.2+ 3.4-)	1998 01 24	566	1.2+ 0.5-	1999 09 14	704	0.0 0.4-
1989 07 06	675	0.5- 1.6-	1998 03 03	699	1.0+ 0.2-	1999 09 14	106	0.5+ 0.7+
1989 07 07	675	0.9+ 1.8+	1998 03 03	699	0.9+ 0.1-	1999 09 14	106	0.0 0.9+
1989 07 07	675	1.8+ 1.3+	1998 03 03	699	0.7+ 0.5-	1999 09 15	106	1.0+ 0.5+
1989 07 10	675	0.5- 0.5-	1998 03 04	704	1.4- 0.0	1999 10 02	704	0.2- 0.1-
1989 07 10	675	0.3- 1.2-	1998 03 04	704	1.7- 0.1-	1999 10 02	704	0.3- 0.5-
1989 08 02	675	0.1- 0.9-	1998 03 04	704	(4.0- 2.2+)	1999 10 02	704	0.4- 0.0
1989 08 02	675	0.8- 0.5-	1998 03 04	704	(5.7- 2.2-)	1999 10 02	704	0.6- 0.3-
1992 04 30	801	(2.2- 0.6+)	1998 03 04	704	(3.5- 0.1+)	1999 10 02	704	0.7- 0.7-
1992 04 30	801	1.7- 0.8+	1998 03 25	704	1.0+ 0.5-	1999 10 05	703	0.1+ 0.2+
1992 05 07	801	0.9+ 1.1-	1998 03 25	704	1.1+ 0.1+	1999 10 05	703	0.2+ 0.4+
1992 05 07	801	1.0- 0.8+	1998 03 25	704	1.3+ 1.4+	1999 10 05	703	0.1+ 0.6+
1992 05 30	801	0.4+ 0.1+	1998 03 25	704	0.9+ 0.4+	1999 10 05	703	0.3+ 0.2+
1992 05 30	801	0.2+ 0.0	1998 03 25	704	0.1+ 0.1+	1999 10 08	704	1.2- 0.1-
1997 12 06	910	1.0- 0.2-	1999 09 08	703	0.0 0.5+	1999 10 08	704	0.9+ 0.3-
1997 12 06	910	1.0- 0.1-	1999 09 08	703	0.2+ 0.6+	1999 10 08	704	0.3- 0.2-
1997 12 06	910	0.7- 0.3-	1999 09 08	703	0.3+ 0.9+	1999 10 08	704	0.2+ 0.5-
1997 12 07	910	1.8- 0.0	1999 09 08	703	0.6+ 0.3-			
1997 12 07	910	1.2- 0.4-	1999 09 14	704	0.2+ 0.5-			

(11865)* 1989 SC = 1986 TF₈ = 1998 FB₁₈

Discovered 1989 Sept. 23 by Y. Mizuno and T. Furuta at Kani.

Id. S. Nakano (*MPC* 32220)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	48.74280		(2000.0)	P	Q
<i>n</i>	0.30063516	ω	298.89340	+0.40391519	+0.91473602
<i>a</i>	2.2068672	Ω	354.89559	-0.79277174	+0.34427918
<i>e</i>	0.2305586	<i>i</i>	6.78630	-0.45647069	+0.21149435
<i>P</i>	3.28	<i>H</i>	14.1	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1986 10 09	092	1.6- 0.9+	1998 02 27	566	0.6- 1.0-	1999 09 19	681	0.0 0.2-
1986 10 09	092	1.4+ 0.0	1998 02 27	566	0.8- 0.7-	1999 10 03	704	0.7+ 0.0
1989 09 04	071	0.9+ 0.5+	1998 02 27	566	1.0- 0.4-	1999 10 03	704	0.3+ 0.5+
1989 09 04	071	(3.0+ 0.3-)	1998 03 20	704	0.2+ 0.2+	1999 10 03	704	0.7- 0.3-

1989 09 23	403	(3.2- 0.9-)	1998 03 20	704	0.7+ 0.0	1999 10 03	704	0.0 0.0
1989 09 23	403	(2.7- 1.0-)	1998 03 20	704	0.5+ 0.3+	1999 10 03	704	0.1+ 0.5-
1989 09 24	403	(5.0- 1.8-)	1998 03 20	704	0.5+ 0.2+	1999 10 07	704	0.2- 0.1-
1989 09 24	403	2.1- 1.9-	1998 03 20	704	0.3- 0.8-	1999 10 07	704	0.3+ 0.3-
1989 09 27	675	0.2+ 0.2-	1998 03 22	704	0.3- 0.1+	1999 10 07	704	0.2+ 0.2-
1989 09 27	675	0.1+ 0.8-	1998 03 22	704	0.1+ 0.1+	1999 10 07	704	0.2+ 0.1+
1989 09 29	403	(3.8- 2.4+)	Y 1998 03 22	704	0.1- 0.6+	1999 10 07	704	0.4+ 0.3+
1989 09 29	403	1.3+ 0.3+	1998 03 22	704	0.2+ 0.9+	1999 10 12	704	0.1+ 0.2-
1989 09 30	809	0.0 0.4-	1998 03 22	704	0.2+ 0.7-	1999 10 12	704	0.1+ 0.2-
1989 09 30	809	0.5+ 0.3-	1999 09 12	681	0.3- 0.1-	1999 10 12	704	0.1+ 0.2-
1989 09 30	809	1.2+ 0.3-	1999 09 12	681	0.1- 0.3-	1999 10 12	704	0.1+ 0.3-
1989 10 01	809	0.7- 0.3+	1999 09 13	106	0.4- 0.7+	1999 10 12	704	0.0 0.3-
1989 10 01	809	0.1- 0.3+	1999 09 13	106	0.3- 1.3+	1999 10 19	596	0.2+ 0.5+
1989 10 01	809	0.1+ 0.2+	1999 09 13	106	1.1- 0.7+	1999 10 19	596	0.0 0.5+
1989 10 04	403	(25.5+ 1.5+)	1999 09 19	681	0.4- 0.2-			

(11866)* 1989 SL₁₂ = 1981 CC = 1991 BD₃

Discovered 1989 Sept. 30 by H. Debehogne at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 18118, *MPC* 26396)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	300.94166		(2000.0)	P	Q
<i>n</i>	0.19977022	ω	131.38917	+0.13557375	-0.99070661
<i>a</i>	2.8981146	Ω	310.81559	+0.90463406	+0.12829203
<i>e</i>	0.1631220	<i>i</i>	0.82991	+0.40405072	+0.04518362
<i>P</i>	4.93	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1981 02 06	801	0.3+ 1.6-	1995 12 03	327	0.6- 0.1-	1999 10 09	704	0.3- 0.4-
1989 09 27	675	0.8- 1.3-	1995 12 03	327	1.0- 0.6-	1999 10 09	704	0.0 0.2-
1989 09 30	809	0.4+ 0.1-	1995 12 06	327	0.5- 0.8-	1999 10 09	704	0.0 0.3-
1989 09 30	809	1.0+ 0.3-	1995 12 06	327	0.8- 0.4-	1999 10 09	704	0.1+ 0.2-
1989 09 30	809	1.4+ 0.1-	1995 12 06	327	0.7- 0.2+	1999 10 09	704	0.2- 0.1+
1989 10 01	809	0.3- 0.2-	1996 02 16	010	0.2- 0.5+	1999 10 10	106	0.1+ 0.7+
1989 10 01	809	0.1- 0.1+	1996 02 16	010	1.1+ 1.0+	1999 10 10	106	0.0 0.6+
1989 10 01	809	0.1- 0.4+	1996 02 16	010	1.1+ 0.1+	1999 10 10	106	0.1- 0.5+
1989 10 02	809	1.5- 1.0+	1996 02 17	010	0.1+ 0.4+	1999 10 11	106	0.6- 0.1+
1989 10 02	809	1.0- 0.9+	1996 02 17	010	0.0 0.7+	1999 10 11	106	0.4- 1.1+
1989 10 02	809	0.7- 0.8+	1996 02 17	010	1.6+ 0.4+	1999 10 15	704	0.2+ 0.3-
1991 01 15	033	1.1+ 0.2+	1999 10 04	704	0.1+ 0.8+	1999 10 15	704	1.2+ 0.8-
1991 01 15	033	0.0 0.4+	1999 10 04	704	0.4- 0.6+	1999 10 15	704	0.0 0.5-
1991 01 16	033	0.6- 0.1-	1999 10 04	704	0.4- 0.7+	1999 10 15	704	0.1- 0.0
1991 01 17	033	0.9- 0.3+	1999 10 04	704	0.9- 0.2+	1999 10 15	704	0.1+ 0.4-
1991 01 22	675	0.4+ 0.1-	1999 10 04	704	2.1- 1.6+	1999 10 16	704	0.1- 0.3-
1991 01 22	675	0.8- 0.5-	1999 10 06	704	0.4+ 0.1-	1999 10 16	704	0.0 0.3-
1993 07 12	809	(3.6- 3.0-)	1999 10 06	704	0.4+ 0.3-	1999 10 16	704	0.1- 0.0
1993 07 12	809	(4.9- 3.9-)	1999 10 06	704	0.5+ 0.4-	1999 10 16	704	0.1- 0.3-
1993 07 12	809	(5.8- 3.8-)	1999 10 06	704	0.6+ 0.5-	1999 10 16	704	0.1+ 0.2-
1994 10 01	675	0.7+ 0.4-	1999 10 06	704	0.5+ 0.4-	1999 10 19	704	0.7+ 0.5-
1994 10 01	675	0.4+ 0.3+	1999 10 07	704	0.4+ 0.4+	1999 10 19	704	0.5+ 0.4-
1995 11 04	327	0.2+ 0.6+	1999 10 07	704	0.1+ 0.3+	1999 10 19	704	0.8+ 0.3-
1995 11 04	327	0.2+ 0.8+	1999 10 07	704	0.3+ 0.1+	1999 10 19	704	1.4- 1.2-
1995 11 04	327	0.1+ 0.7+	1999 10 07	704	0.0 0.3+			
1995 12 03	327	0.4- 0.4-	1999 10 07	704	0.1- 0.3+			

(11867)* 1989 TW = 1994 CG

Discovered 1989 Oct. 4 by K. Suzuki and T. Furuta at Toyota.

Id. G. V. Williams (*MPC* 23123)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	354.17617		(2000.0)	P	Q
<i>n</i>	0.29685381	ω	84.48901	+0.98319444	-0.16501328
<i>a</i>	2.2255685	Ω	284.99135	+0.11833320	+0.90178802
<i>e</i>	0.1620402	<i>i</i>	4.63741	+0.13901776	+0.39943583
<i>P</i>	3.32	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1989 09 27	675	0.3+	1.7-	1994 02 15	675	0.9-	0.9-	1999 10 03	704	0.0	0.1+
1989 09 28	675	0.8+	2.0-	1998 04 22	704	0.5-	0.4+	1999 10 03	704	0.3+	0.2+
1989 09 28	675	(2.5+	4.2-)	1998 04 22	704	0.4+	0.1+	1999 10 03	704	0.6-	0.3+
1989 09 29	675	0.4+	1.4-	1998 04 22	704	0.2-	1.4-	1999 10 12	704	0.5+	0.3+
1989 09 29	675	(0.8-	3.1-)	1998 04 22	704	0.4+	0.6+	1999 10 12	704	0.3+	0.2+
1989 10 04	881	0.5+	1.1-	Y 1998 04 22	704	0.0	0.1+	1999 10 12	704	0.5+	0.1-
1989 10 04	881	(3.1+	0.7+)	1998 05 16	704	0.2+	1.5+	1999 10 12	704	0.5+	0.1-
1989 10 05	095	2.0-	1.3+	1998 05 16	704	0.1-	0.5-	1999 10 12	704	0.6+	0.0
1989 10 05	095	2.1+	1.0-	1998 05 16	704	0.4-	1.1-	1999 10 13	611	1.0+	0.5+
1989 10 08	881	(3.8-	2.1+)	Y 1998 05 16	704	0.9-	1.7-	1999 10 13	611	0.0	0.3+
1994 02 06	595	0.5-	0.1-	1999 09 09	681	0.3-	0.3-	1999 10 16	636	0.4-	0.9-
1994 02 06	595	0.1-	0.1-	1999 09 09	681	0.2-	0.1-	1999 10 16	636	0.4-	0.6-
1994 02 06	595	0.5+	0.0	1999 09 12	681	0.2-	0.3-	1999 10 17	636	0.4-	0.3+
1994 02 08	595	1.4+	0.1-	1999 09 12	681	0.4-	0.2-	1999 10 17	636	0.2-	0.2+
1994 02 08	595	0.3-	0.3-	1999 09 12	703	0.4-	0.7+	1999 10 17	636	0.0	0.5+
1994 02 11	595	0.8+	0.8+	1999 09 12	703	0.1-	0.2+	1999 10 22	704	0.5-	0.3+
1994 02 11	595	0.7+	1.4+	1999 09 12	703	0.0	0.9+	1999 10 22	704	0.7-	0.2+
1994 02 12	675	0.9-	0.3-	1999 09 12	703	0.1+	0.4+	1999 10 22	704	1.0-	0.4+
1994 02 12	675	0.3-	0.9-	1999 10 03	704	0.9+	0.1-				
1994 02 15	675	1.0-	1.3-	1999 10 03	704	0.1-	0.5+				

(11868)* 1989 TY = 1997 CY₂₉

Discovered 1989 Oct. 2 by R. P. Binzel at McGraw-Hill.

Id. G. V. Williams (*MPC* 30756)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.19177353	ω	266.11720	-0.48910029	+0.86945161		
<i>a</i>	2.9781297	Ω	334.23385	-0.72326323	-0.44883526		
<i>e</i>	0.1318108	<i>i</i>	9.20435	-0.48751534	-0.20639964		
<i>P</i>	5.14	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1989 10 02	697	0.5+	0.1-	1997 03 06	704	1.8+	0.3-	1999 09 09	704	0.6+	0.0
1989 10 03	697	0.8-	0.6-	1997 03 06	704	1.1+	0.1+	1999 09 09	704	0.7+	0.7+
1989 10 05	807	1.2+	0.4+	1999 09 04	703	0.8+	1.1+	1999 09 14	704	0.4-	1.3-
1989 10 06	807	0.2+	0.4+	1999 09 04	703	0.0	0.1-	1999 09 14	704	0.1+	0.4-
1989 10 29	807	1.1+	0.4-	1999 09 04	703	1.0-	0.8+	1999 09 14	704	0.1+	0.0
1989 11 29	688	0.6-	0.3-	1999 09 04	703	1.2-	0.8+	1999 09 14	704	0.4-	0.8-
1989 11 29	688	0.1+	0.0	1999 09 07	704	0.3-	0.5-	1999 09 14	704	0.5-	0.1+
1989 12 01	688	0.8-	0.3+	1999 09 07	704	0.5+	0.0	1999 10 13	704	0.5+	0.2+
1989 12 01	688	1.1-	0.2+	1999 09 07	704	0.8-	0.6+	1999 10 13	704	0.4+	0.2-
1992 04 06	809	0.9-	1.1-	1999 09 07	704	0.3-	0.4-	1999 10 13	704	0.6+	0.4-
1997 02 02	327	0.8-	0.5+	1999 09 07	704	0.3-	0.3+	1999 10 13	704	0.2+	0.7-
1997 02 02	327	1.3-	0.4+	1999 09 09	704	0.5+	0.4-	1999 10 13	704	0.1-	0.0
1997 02 02	327	0.1-	0.2+	1999 09 09	704	0.4+	0.2+				

(11869)* 1989 TS₂ = 1997 NC₅

Discovered 1989 Oct. 3 by S. J. Bus at Cerro Tololo.

Id. G. V. Williams (*MPC* 30272)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.08148580	ω	158.23972	+0.61825836	+0.77974632		
<i>a</i>	5.2692413	Ω	149.68619	-0.74689288	+0.62198702		
<i>e</i>	0.0424611	<i>i</i>	11.28294	-0.24476034	+0.07160885		
<i>P</i>	12.10	<i>H</i>	11.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 09 14	675	0.1+	1.0-	1997 07 07	910	0.1-	0.2-	1999 09 04	703	0.6+	0.1-
1988 09 14	675	0.1+	0.8-	1997 07 08	910	0.1-	0.2-	1999 09 04	703	0.2+	0.0
1989 10 03	807	0.8+	0.1+	1997 07 08	910	0.1-	0.1+	1999 09 04	703	0.3+	0.6+
1989 10 06	807	0.4+	0.3-	1997 07 08	910	0.2-	0.3-	1999 09 04	703	0.4-	0.2+
1989 10 30	807	0.8+	0.3+	1997 07 13	704	0.6-	0.4-	1999 09 09	704	0.3+	0.3+
1989 11 22	675	1.4+	1.5-	1999 07 13	704	0.1-	0.4-	1999 09 09	704	1.1+	0.4-
1989 11 28	688	0.6-	0.5+	1999 07 13	704	0.2-	0.2+	1999 09 09	704	0.9+	0.7-

1989 11 28	688	0.2-	0.5+	1999 07 13	704	0.1-	0.5+	1999 09 09	704	0.2-	0.2+
1990 01 28	688	1.0-	0.2+	1999 07 13	704	0.1-	0.0	1999 09 09	704	0.4+	0.8-
1990 01 28	688	1.9-	0.3+	1999 07 17	426	0.2-	0.5-	1999 10 15	691	0.2-	1.3+
1997 07 07	910	0.2+	0.2-	1999 07 17	426	0.9-	0.3-	1999 10 15	691	0.8-	1.4+
1997 07 07	910	0.0	0.2-	1999 07 17	426	0.6-	0.7-	1999 10 15	691	0.7+	2.0+

(11870)* 1989 TC₃ = 1991 EW₁

Discovered 1989 Oct. 7 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (*MPC* 19502)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.18566178	ω	301.57011	-0.35404662	-0.93487370		
<i>a</i>	3.0431337	Ω	169.07335	+0.89747541	-0.34736484		
<i>e</i>	0.1957808	<i>i</i>	7.80224	+0.26303779	-0.07313576		
<i>P</i>	5.31	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1989 09 28	809	0.1+	1.8+	1989 10 08	809	0.1-	0.4-	1999 09 07	704	1.6+	2.0-
1989 09 28	809	0.5+	0.9+	1989 11 02	675	0.9-	0.9-	1999 09 09	704	0.0	0.1-
1989 09 28	809	1.4-	0.1-	1989 11 02	675	0.0	0.7-	1999 09 09	704	0.4+	1.4-
1989 09 29	675	0.6+	0.7-	1989 11 05	675	0.6+	0.4-	1999 09 09	704	0.5-	0.5-
1989 09 29	675	1.9+	0.3-	1991 01 22	675	0.4-	0.5-	1999 09 09	704	0.1+	0.3-
1989 10 03	809	0.2-	1.6+	1991 01 22	675	0.2-	0.2-	1999 09 09	704	1.1-	1.0-
1989 10 03	809	0.2-	1.3+	1991 02 10	675	0.3-	0.4-	1999 09 13	704	0.3-	0.6-
1989 10 03	809	1.1-	1.2+	1991 02 10	675	1.0-	0.8-	1999 09 13	704	0.1+	0.6-
1989 10 07	809	0.1+	1.2-	1991 03 07	809	0.6+	0.2+	1999 09 13	704	0.3-	0.4-
1989 10 07	809	0.5+	0.8-	1991 03 07	809	1.1+	0.2-	1999 09 13	704	0.3+	0.2-
1989 10 07	809	0.7-	0.9-	1991 03 07	809	1.6+	0.0	1999 09 30	704	0.3+	0.2+
1989 10 07	809	0.9+	0.3+	1991 03 09	809	0.6-	1.2-	1999 09 30	704	0.4+	1.0+
1989 10 07	809	0.3+	0.5-	1991 03 09	809	0.5-	0.9-	1999 09 30	704	0.7-	0.4-
1989 10 07	809	0.2-	1.1-	1991 03 09	809	0.9-	0.6-	1999 10 05	704	0.5+	0.6+
1989 10 08	809	0.6+	0.6+	1997 05 09	691	0.1-	0.3-	1999 10 05	704	0.3+	0.3+
1989 10 08	809	0.0	0.3+	1997 05 09	691	0.1-	0.8+	1999 10 05	704	0.3-	0.2-
1989 10 08	809	0.2+	0.9+	1997 05 09	691	0.1+	0.5-	1999 10 05	704	0.2+	0.9+
1989 10 08	809	0.7-	0.6+	1999 09 07	704	0.0	0.6-	1999 10 05	704	0.8+	1.0+
1989 10 08	809	0.7-	0.4-	1999 09 07	704	0.2-	1.5-				

(11871)* 1989 TP₇ = 1989 SJ₈ = 1984 BL₃

Discovered 1989 Oct. 7 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (d, *MPC* 16003), G. V. Williams (*MPC* 25062)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>		<i>Q</i>	
<i>n</i>	0.29400243	ω	18.83917	-0.93339605	-0.35376409		
<i>a</i>	2.2399351	Ω	140.27832	+0.31595414	-0.88970432		
<i>e</i>	0.0737857	<i>i</i>	5.40439	+0.17013168	-0.28857787		
<i>P</i>	3.35	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1984 01 25	675	0.1+	0.2-	1998 05 22	704	0.1+	0.6+	1999 09 14	704	0.7+	0.3+
1984 01 26	675	0.1-	0.0	1998 05 22	704	0.9-	1.0-	1999 09 14	704	0.2+	0.2-
1989 09 28	809	0.6-	2.1-	1998 05 22	704	0.6+	0.5-	1999 09 14	704	1.2+	0.0
1989 09 28	809	0.9+	0.6-	1998 05 22	704	(2.2-	1.1+)	1999 10 02	704	0.1-	0.5+
1989 09 28	809	0.1-	0.1-	1998 05 23	699	0.4+	0.4+	1999 10 02	704	0.0	0.2-
1989 10 03	809	0.1+	1.0-	1998 05 23	699	0.2+	0.2+	1999 10 02	704	0.4+	1.2+
1989 10 03	809	0.4+	1.2-	1998 05 23	699	0.1-	0.6+	1999 10 02	704	0.9-	1.7+
1989 10 03	809	0.6-	0.8-	1998 05 24	704	0.1-	0.9-	1999 10 02	704	0.5-	0.7+
1989 10 07	809	(2.7+	1.3-)	1998 05 24	704	0.2-	0.3+	1999 10 05	703	1.2-	0.2+
1989 10 07	809	1.8+	1.6-	1998 05 24	704	0.9-	0.7+	1999 10 05	703	0.5-	0.0
1989 10 07	809	(0.6+	2.8-)	1998 05 24	704	0.1-	0.8-	1999 10 05	703	0.1-	0.7+
1989 10 08	809	0.4+	0.9-	1998 05 24	704	0.2-	0.8+	1999 10 05	703	0.8-	1.0+
1989 10 08	809	0.0	0.7-	1998 06 16	704	1.1+	0.5+	1999 10 07	704	1.3-	1.3+
1989 10 08	809	0.8+	0.3-	1998 06 16	704	1.3+	0.5-	1999 10 07	704	0.2-	0.3+
1998 05 05	699	0.8-	0.2+	1998 06 16	704	0.9-	1.9-	1999 10 07	704	0.3-	0.7+
1998 05 05	699	0.1-	0.6+	1998 06 16	704	(2.2-	0.4+)	1999 10 07	704	1.1-	0.7+

1998 05 05 699 0.1- 0.3+ 1999 09 14 704 0.9+ 1.0- 1999 10 07 704 0.1- 0.3-
 1998 05 22 704 0.7+ 0.7- 1999 09 14 704 0.9+ 1.1+

(11872)* 1989 WR = 1972 XN

Discovered 1989 Nov. 20 by S. Ueda and H. Kaneda at Kushiro.

Id. H. Kaneda (*MPC* 15723)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	340.53658		(2000.0)	P	Q		
<i>n</i>	0.28816758	ω	327.61318	+0.99194870	+0.11545452		
<i>a</i>	2.2700703	Ω	25.90844	-0.07499596	+0.86665717		
<i>e</i>	0.1815983	<i>i</i>	6.84015	-0.10204598	+0.48536131		
<i>P</i>	3.42	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1955 10 24	675	0.0	0.4+	1998 02 24	566	0.0	0.2-	1998 03 30	552	0.2+	1.1+
1955 10 24	675	0.2-	0.4+	1998 02 24	566	0.2+	0.1-	1998 03 30	552	0.1+	0.0
1972 12 02	095(10.8-	0.7-)		1998 03 20	704	0.8+	0.0	1999 09 11	704	0.4-	0.1+
1972 12 06	095 (5.2-	1.5+)		1998 03 20	704	1.0+	0.4-	1999 09 11	704	0.2-	0.4+
1989 10 26	399 (2.6-	1.2+)		1998 03 20	704	0.4+	0.6-	1999 09 11	704	0.4-	0.0
1989 10 26	399 1.9-	1.6+		1998 03 20	704	1.2+	0.3-	1999 09 11	704	0.0	0.6-
1989 11 20	399 0.2+	0.1-		1998 03 20	704	1.0+	0.5-	1999 09 13	106	1.8-	1.6-
1989 11 20	399 0.4-	0.2+		1998 03 21	691	0.6-	0.9-	1999 09 13	106	0.1+	0.5-
1989 11 20	399 0.5+	1.2-		1998 03 21	691	0.6-	0.8-	1999 09 13	106	1.8-	0.9-
1989 11 25	399 (3.1-	1.2-)		1998 03 21	691	0.6-	0.9-	1999 09 29	704	0.1+	0.1-
1989 11 25	399 1.7+	1.0-		1998 03 22	704	0.1+	0.5-	1999 09 29	704	0.7+	0.2+
1989 11 25	399 0.7-	0.1+		1998 03 22	704	0.2-	0.5+	1999 09 29	704	0.1-	0.0
1989 12 01	399 1.1+	0.9-		1998 03 22	704	0.3+	0.9-	1999 09 29	704	1.0+	0.1-
1989 12 01	399 0.3-	0.7+		1998 03 22	704	0.4-	0.4+	1999 09 29	704	0.2+	0.7+
1989 12 01	399 0.1+	0.4+		1998 03 29	704	0.2+	0.3+	1999 09 30	704	0.6+	0.4+
1989 12 01	399 1.0+	0.1+		1998 03 29	704	0.4-	0.3+	1999 09 30	704	0.6+	0.1+
1996 12 09	801 0.8-	0.2+		1998 03 29	704	0.1+	0.1+	1999 09 30	704	0.7+	0.3+
1996 12 09	801 0.8-	0.2-		1998 03 29	704	0.5-	0.5+	1999 09 30	704	1.0+	0.3+
1996 12 10	801 0.7-	0.2+		1998 03 29	704	1.0-	1.4+	1999 09 30	704	0.5+	0.5+
1996 12 10	801 1.8+	0.4-		1998 03 29	552	1.5-	0.8+				
1998 02 24	566 0.3-	0.0		1998 03 29	552	0.1+	0.2+				

(11873)* 1989 WS₂ = 1994 EP₁

Discovered 1989 Nov. 30 by M. Matsuyama and K. Watanabe at Kushiro.

Id. K. Watanabe (*MPC* 23337)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	309.94751		(2000.0)	P	Q		
<i>n</i>	0.29105265	ω	318.19307	+0.41114074	-0.90322713		
<i>a</i>	2.2550439	Ω	107.19647	+0.86679028	+0.34557182		
<i>e</i>	0.1360667	<i>i</i>	7.40140	+0.28220189	+0.25448156		
<i>P</i>	3.39	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1989 11 30	399	1.7+	1.1+	1997 01 12	367	0.9-	0.2-	1999 09 14	704	0.4+	1.4+
1989 11 30	399	(3.0+	1.3+)	1997 01 12	367	0.6-	0.1-	1999 09 14	704	1.2+	0.0
1989 11 30	399	0.7+	1.0+	1997 01 13	127	0.6+	0.4-	1999 09 14	704	0.9+	0.2+
1989 12 03	399	(0.9-	3.0+)	1997 01 14	127	0.5+	0.2-	1999 09 14	704	2.2+	0.2-
1989 12 03	399	(1.4+	3.8+)	1997 01 14	127	0.1-	0.2-	1999 09 14	704	0.4+	1.3-
1989 12 22	399	0.8-	0.9+	1997 01 14	127	0.1-	0.5-	1999 10 02	704	0.4-	0.1-
1989 12 22	399	0.5-	0.1-	1998 05 22	704	0.6-	1.2+	1999 10 02	704	1.2-	0.5-
1989 12 23	399	1.8-	0.9+	1998 05 22	704	0.2-	0.8+	1999 10 02	704	1.1-	0.3+
1989 12 23	399	1.2-	0.8+	1998 05 22	704	0.0	0.3-	1999 10 02	704	0.6-	0.5-
1990 01 02	399	(3.1+	1.2+)	1998 05 22	704	0.7-	0.2-	1999 10 08	704	0.1+	0.2-
1990 01 02	399	(0.3-	2.3-)	1998 05 24	704	0.2+	0.3-	1999 10 08	704	0.0	0.1+
1994 03 07	400	(1.9-	3.9+)	1998 05 24	704	1.2+	0.8+	1999 10 08	704	0.1-	0.4+
1994 03 07	400	0.6+	1.4-	1998 05 24	704	0.5+	0.9+	1999 10 08	704	0.3-	0.2+
1994 03 12	400	(3.2+	1.7+)	1998 05 24	704	1.3-	0.5+	1999 10 08	704	0.1-	0.3+
1994 03 12	400	1.1+	1.1+	1998 05 24	704	0.7+	0.7+				

(11874)* 1989 XD₁ = 1979 WS₃ = 1982 RA₃

Discovered 1989 Dec. 2 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (*MPC* 16031)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	344.47403		(2000.0)	P	Q		
<i>n</i>	0.29232224	ω	221.18237	+0.97902328	-0.19932294		
<i>a</i>	2.2485100	Ω	150.23581	+0.20201436	+0.92262025		
<i>e</i>	0.1616839	<i>i</i>	4.88046	+0.02652588	+0.33021545		
<i>P</i>	3.37	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 11 16	095	1.4+	0.7+	1998 04 21	910	0.4+	0.7-	1999 09 14	704	0.4+	0.2-
1982 09 13	095	0.5-	0.7+	1998 04 21	910	0.7+	1.3-	1999 09 14	704	0.2+	0.8-
1989 11 03	809	0.9+	0.0	1998 04 21	910	0.5+	1.2-	1999 09 21	699	0.1-	0.6+
1989 11 03	809	0.5+	0.8+	1998 04 22	704	1.5-	1.3+	1999 09 21	699	0.6+	0.4+
1989 11 03	809	0.2+	0.3+	1998 04 22	704	1.6-	1.1-	1999 09 21	699	0.2+	0.2+
1989 12 02	809	0.3-	1.7-	1998 04 22	704	0.4+	0.1+	1999 10 02	704	0.1-	0.0
1989 12 02	809	0.5-	0.8-	1998 04 22	704	0.0	0.7-	1999 10 02	704	0.3+	0.1+
1989 12 02	809	0.5-	1.4-	1998 04 22	704	0.5-	1.5-	1999 10 02	704	0.3-	0.2+
1989 12 03	809	0.0	1.5-	1998 04 24	910	0.9+	1.0-	1999 10 02	704	0.4+	0.5-
1989 12 03	809	0.4-	2.1-	1998 04 24	910	1.1+	0.9-	1999 10 02	704	0.4+	0.2-
1989 12 03	809	0.4-	2.1-	1998 04 24	910	0.9+	1.0-	1999 10 07	704	0.2+	0.2+
1994 02 11	691	0.7+	0.8+	1998 05 01	691	0.1-	0.0	1999 10 07	704	0.1+	0.2+
1994 02 11	691	0.9+	0.9+	1998 05 01	691	0.1-	0.0	1999 10 07	704	0.2+	0.1+
1994 02 11	691	1.0+	1.2+	1998 05 01	691	(2.1-	2.8+)	1999 10 07	704	0.1+	0.1+
1996 12 30	689	1.9-	0.0	1999 09 08	699	0.3-	0.0	1999 10 07	704	0.1-	0.0
1998 04 21	704	1.0-	0.4+	1999 09 08	699	0.2-	0.3+	1999 10 08	704	0.3-	0.1+
1998 04 21	704	1.0-	0.1+	1999 09 08	699	0.0	0.1+	1999 10 08	704	0.0	0.1+
1998 04 21	704	0.4-	0.3-	1999 09 14	704	0.4+	0.8-	1999 10 08	704	0.3-	0.2+
1998 04 21	704	1.0-	0.9-	1999 09 14	704	0.5+	0.9-	1999 10 08	704	0.2-	0.2+
1998 04 21	704	1.4-	0.2+	1999 09 14	704	0.6+	0.6-	1999 10 08	704	0.2-	0.6+

(11875)* 1989 YG₅ = 1968 DD₁ = 1979 BU = 1996 BE

Discovered 1989 Dec. 28 by E. W. Elst at Haute Provence.

Id. B. G. Marsden (*MPC* 26739), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Marsden			
<i>M</i>	188.67385		(2000.0)	P	Q		
<i>n</i>	0.17469361	ω	88.02774	-0.96427229	-0.05874814		
<i>a</i>	3.1692125	Ω	88.53724	-0.04854771	-0.91939853		
<i>e</i>	0.1522572	<i>i</i>	14.97521	+0.26042671	-0.38891515		
<i>P</i>	5.64	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1968 02 20	095	0.9+	2.0-	1996 01 27	046	0.4+	0.4+	1996 02 24	046	0.4-	0.0
1979 01 24	095	(3.4-	2.4-)	1996 01 27	046	0.1+	0.4+	1998 10 18	422	0.9-	0.2-
1989 12 28	511	0.2-	0.5-	1996 01 27	046	0.1+	0.4+	1998 10 18	422	1.1-	0.8-
1989 12 28	511	0.1+	1.8-	1996 01 31	046	0.1-	0.3-	1998 10 18	422	0.9-	0.4-
1989 12 29	511	0.5-	1.1-	1996 01 31	046	0.2-	0.0	1999 09 13	704	0.6+	1.5+
1989 12 29	511	2.4-	0.0	1996 01 31	046	0.4-	0.1-	1999 09 13	704	0.3+	0.8+
1989 12 29	511	0.1+	0.5-	1996 02 01	046	0.1-	0.2+	1999 09 13	704	0.0	0.9+
1990 01 03	511	0.1-	0.2-	1996 02 01	046	0.1-	0.1+	1999 09 13	704	0.3-	1.7-
1990 01 03	511	0.6+	0.4-	1996 02 01	046	0.1+	0.1+	1999 09 30	704	0.0	0.2+
1990 01 04	511	1.9-	0.3-	1996 02 06	046	0.4-	0.3-	1999 09 30	704	0.1+	0.1-
1990 01 04	511	1.5+	0.2+	1996 02 06	046	0.4+	0.1-	1999 09 30	704	0.0	0.1+
1993 07 27	675	0.3+	0.3+	1996 02 06	046	0.1+	0.0	1999 09 30	704	0.7-	1.1+
1993 07 27	675	0.5+	0.6+	1996 02 09	046	0.4+	0.1+	1999 09 30	704	1.6+	0.4-
1996 01 16	046	0.1-	1.8+	1996 02 09	046	0.5+	0.1+	1999 10 01	704	0.1-	0.1+
1996 01 16	046	(3.6+	2.0+)	1996 02 09	046	0.4+	0.2+	1999 10 01	704	0.2-	0.6+
1996 01 17	046	0.3+	0.2+	1996 02 22	046	0.1+	0.3+	1999 10 01	704	0.5+	0.8+
1996 01 17	046	0.3+	0.1+	1996 02 22	046	0.1+	0.4+	1999 10 01	704	0.2-	0.3-
1996 01 17	046	0.4+	0.2+	1996 02 22	046	0.0	0.3+	1999 10 01	704	0.1-	0.1+
1996 01 17	046	0.4+	0.2+	1996 02 24	046	0.3-	0.0				
1996 01 17	046	0.3+	0.2+	1996 02 24	046	0.3-	0.1+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	25.46629		(2000.0)	P	Q
<i>n</i>	0.25996433	ω	92.60825	+0.83479881	+0.54523936
<i>a</i>	2.4314213	Ω	234.36190	-0.53505377	+0.77079716
<i>e</i>	0.1564841	<i>i</i>	5.38857	-0.12972438	+0.32952357
<i>P</i>	3.79	<i>H</i>	14.2	<i>G</i>	0.15

Residuals in seconds of arc

1990 02 24	809	0.3+	0.4+	1995 09 26	587	0.5-	0.6+	1999 07 23	704	1.0+	0.2-
1990 02 24	809	1.7-	2.0+	1995 09 26	587	0.3-	0.2-	1999 07 23	704	1.0+	0.6-
1990 02 24	809	(2.5-	1.6+)	1995 12 19	704	(4.9+	1.7-)	1999 10 02	703	0.3-	0.3+
1990 03 02	809	1.7+	0.0	1995 12 20	704	(3.8+	2.5-)	1999 10 02	703	0.5-	0.8+
1990 03 02	809	1.1+	0.7+	1995 12 22	704	(5.9+	0.5+)	1999 10 02	703	0.5-	0.6+
1990 03 02	809	1.8+	0.1+	1995 12 22	704	(4.2+	0.7-)	1999 10 02	703	0.3-	0.3+
1990 03 04	809	0.2-	1.3+	1996 01 22	704	1.1+	0.9+	1999 10 03	704	0.0	0.3+
1990 03 04	809	1.0-	1.0+	1996 01 23	704	0.1+	0.0	1999 10 03	704	0.7-	0.4-
1990 03 04	809	0.5-	0.1+	1996 01 24	704	0.3+	0.2+	1999 10 03	704	0.0	0.3-
1995 08 29	608	0.1+	0.2+	1996 01 26	704	0.0	0.5+	1999 10 03	704	0.0	0.3-
1995 08 29	608	0.3+	0.2+	1998 04 01	704	0.1+	0.7-	1999 10 03	704	0.1+	0.2-
1995 08 29	587	0.2-	0.4+	1998 04 01	704	0.3+	0.0	1999 10 07	704	1.0-	0.2+
1995 08 29	587	0.2-	0.4+	1998 04 01	704	0.3+	0.2+	1999 10 07	704	0.3-	0.1-
1995 08 29	587	0.2-	0.4+	1998 04 01	704	1.4-	0.1-	1999 10 07	704	0.5-	0.1+
1995 08 30	587	0.2-	0.5+	1998 04 01	704	0.1-	1.0-	1999 10 07	704	0.3-	0.1+
1995 08 30	587	0.1-	0.3+	1998 04 21	704	0.5+	0.1+	1999 10 07	704	0.3-	0.1-
1995 08 30	587	0.1-	0.4+	1998 04 21	704	0.8+	0.2+	1999 10 10	704	0.4+	0.1-
1995 08 31	608	0.1-	0.2+	1998 04 21	704	0.5+	0.6+	1999 10 10	704	0.1+	0.1+
1995 08 31	608	0.1-	0.2+	1998 04 21	704	0.7+	0.6+	1999 10 10	704	0.2+	0.3+
1995 08 31	587	0.1+	0.0	1998 04 21	704	0.3+	1.1+	1999 10 10	704	0.4+	0.7+
1995 08 31	587	0.1+	0.2+	1998 04 22	704	0.4+	0.2+	1999 10 10	704	0.0	0.7+
1995 09 01	587	0.3+	0.1+	1998 04 22	704	0.4+	1.0+	1999 10 11	106	0.1-	0.3+
1995 09 01	587	0.1-	0.2+	1998 04 22	704	0.4+	0.7+	1999 10 11	106	0.0	0.5+
1995 09 02	587	0.3+	0.0	1998 04 22	704	0.7-	0.5+	1999 10 11	106	0.1-	0.3+
1995 09 02	587	0.1+	0.2+	1998 04 22	704	0.4+	1.3+	1999 10 11	691	0.1-	0.4+
1995 09 04	587	0.5+	0.0	1998 04 25	699	0.7+	0.1+	1999 10 11	691	0.1-	0.4+
1995 09 04	587	0.3+	0.0	1998 04 25	699	0.5+	0.1-	1999 10 11	691	0.0	0.4+
1995 09 15	658	0.3-	0.3-	1998 04 25	699	0.1+	0.5+	1999 10 20	704	0.1+	0.3+
1995 09 15	658	0.3-	0.2-	1998 05 16	704	0.5-	0.9-	1999 10 20	704	0.2+	0.1+
1995 09 15	658	0.3-	0.2-	1998 05 16	704	1.3-	0.5+	1999 10 20	704	0.0	0.1-
1995 09 15	587	0.1-	0.2-	1998 05 16	704	0.4-	0.6+	1999 10 20	704	0.0	0.0
1995 09 15	587	0.1+	0.2-	1998 05 16	704	0.1-	0.9-	1999 10 20	704	0.1+	0.1-
1995 09 17	587	0.6-	0.2+	1999 07 23	704	0.5+	0.2-				
1995 09 17	587	0.1-	0.1+	1999 07 23	704	0.4+	0.8-				

(11877)* 1990 EL₈ = 1991 PJ₁₄ = 1995 TU₂

Discovered 1990 Mar. 5 by H. Debehogne at the European Southern Observatory.

Id. A. Lowe (*MPC* 26168), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	96.42751		(2000.0)	P	Q
<i>n</i>	0.26783879	ω	291.69918	+0.24484539	+0.96951409
<i>a</i>	2.3835288	Ω	352.45402	-0.86018105	+0.21261887
<i>e</i>	0.0371574	<i>i</i>	4.21512	-0.44736930	+0.12180168
<i>P</i>	3.68	<i>H</i>	13.5	<i>G</i>	0.15

Residuals in seconds of arc

1986 03 04	675	0.8+	1.5+	1997 01 29	411	0.1+	0.0	1999 10 07	704	0.2+	0.4-
1986 03 04	675	0.5+	0.2-	1997 01 29	411	0.2-	0.1+	1999 10 07	704	0.1+	0.5+
1990 03 05	809	0.8-	1.6-	1997 03 02	104	0.2+	0.4-	1999 10 07	704	0.2-	0.7-
1990 03 05	809	0.6-	1.5-	1997 03 02	104	0.2+	0.1-	1999 10 07	704	0.8-	0.5-
1990 03 05	809	0.3-	1.1-	1997 03 02	104	0.2+	0.2-	1999 10 12	704	0.5+	0.2-
1990 03 06	809	1.1-	0.2-	1998 06 24	704	1.1+	0.3-	1999 10 12	704	0.8-	0.2-
1990 03 06	809	0.9-	0.3-	1998 06 24	704	0.2-	1.1+	1999 10 12	704	0.5+	0.5-
1990 03 06	809	0.7-	0.5-	1998 06 24	704	0.6+	0.2-	1999 10 12	704	0.1+	0.2-
1991 08 06	675	0.2-	1.1-	1998 06 24	704	1.2-	0.1-	1999 10 12	704	1.4-	0.4+
1991 08 06	675	0.4+	1.1-	1998 07 26	689	(4.9+	0.7+)	1999 10 15	704	0.2-	0.1+

1991 08 10	675	0.5+	0.2-	1999 10 03	704	1.3+	0.1-	1999 10 15	704	0.1+	0.4-
1991 08 10	675	1.6+	0.5-	1999 10 03	704	0.8-	0.3-	1999 10 15	704	0.1-	0.1+
1995 10 15	691	0.8-	0.3-	1999 10 03	704	0.6-	0.5+	1999 10 15	704	0.5-	0.0
1995 10 15	691	1.3-	0.1-	1999 10 03	703	0.1-	0.1+	1999 10 22	704	0.7+	0.0
1995 10 15	691	0.4-	0.1-	1999 10 03	703	0.6-	0.6+	1999 10 22	704	0.8+	0.1-
1995 10 21	691	0.8+	1.1-	1999 10 03	703	0.5-	0.4+	1999 10 22	704	0.5+	0.3-
1995 10 21	691	0.8+	0.3-	1999 10 03	703	0.4-	0.3+	1999 10 22	704	0.9+	0.3-
1995 10 21	691	0.0	0.1-	1999 10 07	704	1.0+	0.6-	1999 10 22	704	1.1+	0.2-

(11878)* 1990 HJ = 1953 GO₁ = 1968 KH = 1997 AU₁

Discovered 1990 Apr. 18 by T. Seki at Geisei.

Id. G. V. Williams (*MPC* 29298)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	215.87987		(2000.0)	P	Q
<i>n</i>	0.26593024	ω	110.85136	-0.94499339	-0.32286343
<i>a</i>	2.3949194	Ω	50.35094	+0.26906737	-0.85842496
<i>e</i>	0.1450211	<i>i</i>	3.90294	+0.18598453	-0.39857973
<i>P</i>	3.71	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

1953 04 07	210	(24.6-	7.9-)	X	1997 01 04	411	0.1-	0.4-	1999 10 04	704	1.1+	0.3+
1968 05 22	095	1.0+	0.6+		1997 01 04	411	0.3+	0.7-	1999 10 04	704	1.0+	0.6+
1986 03 04	675	0.4-	0.0		1997 01 08	411	0.0	1.0-	1999 10 07	704	0.2+	0.3-
1986 03 04	675	0.2+	2.2+		1997 01 08	411	0.3-	0.6-	1999 10 07	704	0.2-	0.4+
1990 04 01	675	1.0-	0.7+		1998 06 24	704	0.2-	0.9-	1999 10 07	704	0.7-	0.1-
1990 04 01	675	0.0	0.4+		1998 06 24	704	0.8+	1.2-	1999 10 07	704	0.4-	0.1+
1990 04 02	372	(2.5-	4.9+)		1998 06 24	704	(2.1+	1.0+)	1999 10 07	704	0.7+	0.4-
1990 04 02	372	(4.9-	3.5+)		1998 06 24	704	0.9-	0.6+	1999 10 09	704	0.1+	0.0
1990 04 18	372	(3.2-	0.4-)		1998 06 24	704	(6.4-	0.1+)	1999 10 09	704	0.6-	0.0
1990 04 18	372	(2.7-	0.6+)		1998 06 25	426	0.2+	0.0	1999 10 09	704	0.3-	0.4+
1990 04 22	675	0.5-	0.4-		1998 06 25	426	0.0	0.1-	1999 10 09	704	0.2-	0.2+
1990 04 22	675	0.1+	0.6-		1998 06 25	426	0.5+	0.1+	1999 10 09	704	0.4-	0.0
1990 04 24	372	0.2+	0.2+		1998 06 25	426	0.3+	0.1-	1999 10 15	704	0.3-	0.1+
1995 08 26	809	(3.6-	3.5+)		1998 06 26	426	0.2+	0.1+	1999 10 15	704	0.8-	0.0
1995 08 28	809	0.9+	0.6+		1998 06 26	426	0.2+	0.3-	1999 10 15	704	0.8-	0.6+
1995 08 29	809	0.4+	0.2-		1998 06 26	426	0.0	0.2-	1999 10 15	704	0.4-	0.1+
1995 08 31	809	1.6-	1.9-		1999 10 01	106	0.4-	1.7-	1999 10 15	704	0.8-	0.3+
1995 09 01	809	(2.4-	2.0-)		1999 10 01	106	0.3-	0.5+	1999 10 19	704	0.2+	0.0
1996 12 02	691	0.6+	0.0		1999 10 03	703	0.5-	0.9+	1999 10 19	704	0.1+	0.0
1996 12 02	691	0.6+	0.0		1999 10 03	703	0.3-	0.2+	1999 10 19	704	0.5+	0.2-
1996 12 02	691	0.6+	0.1-		1999 10 03	703	0.2-	0.3+	1999 10 19	704	0.6+	1.0+
1997 01 03	411	0.4-	0.5-		1999 10 03	703	0.1-	0.2-	1999 10 19	704	0.3-	0.9-
1997 01 03	411	0.1-	0.7-		1999 10 04	704	2.2+	0.1-				

(11879)* 1990 QR₁ = 1997 AE₁₄

Discovered 1990 Aug. 22 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 28843)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	351.17614		(2000.0)	P	Q
<i>n</i>	0.21231739	ω	194.35288	+0.80715444	+0.59014341
<i>a</i>	2.7827808	Ω	129.46958	-0.53966046	+0.74808506
<i>e</i>	0.0655216	<i>i</i>	1.13173	-0.23930797	+0.30347899
<i>P</i>	4.64	<i>H</i>	13.9	<i>G</i>	0.15

Residuals in seconds of arc

1990 08 16	809	0.2+	2.0+	1997 01 02	327	1.0+	0.3+	1998 04 21	704	0.4+	0.2-
1990 08 16	809	0.1+	0.6+	1997 01 02	327	0.8+	0.4+	1998 04 21	704	0.5+	0.5-
1990 08 16	809	0.0	0.6+	1997 01 02	327	0.5+	0.3+	1998 04 21	704	0.1-	0.4-
1990 08 20	809	1.0+	1.1+	1997 01 09	691	0.4-	0.0	1998 04 22	704	0.3-	1.7-
1990 08 20	809	0.1-	0.3-	1997 01 09	691	0.2-	0.2+	1998 04 22	704	0.6+	0.6-
1990 08 20	809	0.1+	0.4+	1997 01 09	691	0.3-	0.1+	1998 04 22	704	0.3-	0.0
1990 08 22	675	0.8-	0.1+	1997 01 11	327	0.8-	0.1-	1998 04 22	704	0.6-	0.6+
1990 08 22	675	0.1-	0.9+	1997 01 11	327	1.1-	0.2+	1998 04 22	704	0.3-	0.1+
1990 08 26	809	1.5-	0.3-	1997 01 11	327	0.4+	0.3+	1999 07 13	704	0.2+	0.4+
1990 08 26	809	0.7-	0.1-	1997 01 26	327	0.0	0.3+	1999 07 13	704	0.4+	0.1-

1990 08 26	809	0.4−	0.8−	1997 01 26	327	0.8+	0.8+	1999 07 13	704	0.4+	0.4−
1990 08 27	675	0.2+	1.5−	1997 01 26	327	0.1−	0.2+	1999 07 13	704	0.5+	0.1+
1990 08 27	675	0.3−	0.9+	1997 01 30	704	0.0	0.0	1999 07 13	704	0.5+	0.7−
1990 08 28	675	0.1+	0.8−	1997 01 30	704	1.2+	0.2−	1999 07 16	704	0.4+	0.1+
1990 08 28	675	1.2+	0.6−	1997 02 05	327	0.3+	0.7−	1999 07 16	704	0.1−	0.3+
1990 09 14	809	0.4−	1.2+	1997 02 05	327	0.0	0.1−	1999 07 16	704	0.1−	0.6−
1990 09 14	809	0.0	0.9+	1997 02 05	327	0.3−	0.2−	1999 07 18	106	0.8−	0.5+
1990 09 14	809	0.6+	1.0+	1998 03 25	704	0.3−	0.9+	1999 07 18	106	0.2+	0.6−
1990 09 14	675	0.3−	0.9−	1998 03 25	704	0.5−	1.0+	1999 07 18	106	0.1−	0.0
1990 09 14	675	1.2−	1.6−	1998 03 25	704	1.8+	1.4+	1999 07 20	699	0.6−	0.6+
1990 09 16	809	0.1+	1.3+	1998 03 25	704	0.1−	1.5+	1999 07 20	699	1.2+	0.4+
1990 09 16	809	0.2+	1.1+	1998 03 25	704	(2.2−	1.6+)	1999 07 20	699	0.6−	0.2−
1990 09 16	809	0.3+	1.1+	1998 03 29	704	0.1−	0.4+	1999 07 20	691	0.4+	0.2+
1990 09 19	675	(2.5−	0.6−)	1998 03 29	704	1.4+	0.2+	1999 07 20	691	0.2+	0.2+
1990 09 19	675	0.6+	1.3−	1998 03 29	704	0.4−	0.1−	1999 07 20	691	0.2+	0.4−
1990 09 23	809	0.3−	0.1+	1998 03 29	704	0.4−	0.4+	1999 10 05	704	0.8−	0.1+
1990 09 23	809	0.3−	0.0	1998 03 29	704	1.4−	0.5+	1999 10 05	704	0.0	1.0+
1990 09 23	809	0.1−	0.1+	1998 04 20	704	0.1+	0.0	1999 10 05	704	0.9−	0.8+
1990 09 24	809	0.0	1.2−	1998 04 20	704	0.7+	1.2−	1999 10 05	704	0.4−	1.3−
1990 09 24	809	0.2+	0.9−	1998 04 20	704	1.8+	1.4+	1999 10 05	704	0.3+	0.0
1990 09 24	809	0.6+	0.6−	1998 04 20	704	0.4−	0.0	1999 10 15	704	0.3−	1.0+
1996 12 18	327	0.6−	0.4+	1998 04 20	704	1.2−	0.7−	1999 10 15	704	0.0	0.2+
1996 12 18	327	0.7+	0.5+	1998 04 21	704	0.3−	0.5+	1999 10 15	704	0.1+	0.0
1996 12 18	327	1.1−	0.5+	1998 04 21	704	0.4+	0.4−	1999 10 15	704	1.1−	0.3+

(11880)* 1990 QQ₄ = 1986 UL = 1998 KB₂₅

Discovered 1990 Aug. 24 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 32221; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano			
<i>M</i>	356.38814	(2000.0)	
<i>n</i>	0.22102481	ω	319.51646
<i>a</i>	2.7092060	Ω	25.77387
<i>e</i>	0.0659865	<i>i</i>	7.64038
<i>P</i>	4.46	<i>H</i>	13.3
Residuals in seconds of arc			
<i>P</i>	4.46	<i>H</i>	13.3
<i>G</i>	0.15	<i>U</i>	1

1990 09 13	704	0.6+	0.2−
1990 09 13	704	0.0	0.5−
1990 09 13	704	0.1+	0.0
1990 09 13	704	0.0	0.1−
1990 09 13	704	0.3−	0.4−
1990 09 13	704	1.6−	1.0+
1990 09 13	704	0.1+	0.0
1990 09 13	704	0.4−	0.3+
1990 09 13	704	0.4−	0.2−
1990 09 13	704	0.3−	0.2−
1990 09 13	704	1.0−	0.3+
1990 09 13	704	0.2+	0.2−
1990 09 13	704	0.0	0.1−
1990 09 13	704	0.3−	0.4−
1990 09 13	704	0.4−	0.4−
1990 09 13	704	0.3−	0.7−
1990 09 13	704	0.1+	0.2+

(11881)* 1990 QO₆ = 1990 RG₇ = 1977 RM₈

Discovered 1990 Aug. 20 by E. W. Elst at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 18122)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden			
<i>M</i>	27.69773	(2000.0)	
<i>n</i>	0.22770690	ω	179.20805
<i>a</i>	2.6559420	Ω	157.72351
<i>e</i>	0.1724737	<i>i</i>	13.68827
<i>P</i>	4.33	<i>H</i>	14.2
Residuals in seconds of arc			
<i>P</i>	4.33	<i>H</i>	14.2
<i>G</i>	0.15	<i>U</i>	1

1997 09 08	675	0.0	0.9+	1998 04 19	688	0.2+	0.3+	1998 06 03	704	0.3−	1.7+
1977 09 09	675	0.4−	0.0	1998 04 19	688	0.2+	0.2+	1998 06 03	704	1.2+	0.8+
1990 08 16	809	0.2+	0.2−	1998 05 22	688	0.6−	0.4−	1998 06 03	704	0.5+	0.2−
1990 08 16	809	0.4+	0.5−	1998 05 22	688	0.3−	0.2−	1999 09 08	703	0.3+	0.7+
1990 08 16	809	0.5−	1.6−	1998 05 22	688	0.6−	0.7−	1999 09 08	703	0.7−	0.0
1990 08 20	809	0.6−	0.8+	1998 05 23	704	0.7−	0.5−	1999 09 08	703	1.1+	0.4+
1990 08 20	809	0.4−	0.4+	1998 05 23	704	(2.9−	1.7+)	1999 09 08	703	0.0	0.0
1990 08 20	809	1.1−	0.4+	1998 05 23	704	0.5−	1.6−	1999 10 02	704	0.4−	0.1+
1990 08 26	809	0.1−	0.7+	1998 05 23	704	1.2−	0.4−	1999 10 02	704	0.1+	0.4−
1990 08 26	809	0.2−	1.2+	1998 05 26	704	0.4+	0.7+	1999 10 02	704	0.3−	0.1−
1990 08 26	809	0.0	1.4+	1998 05 26	704	0.2+	0.2−	1999 10 02	704	1.3−	0.1−
1990 09 13	809	0.6+	0.5−	1998 05 26	704	1.5−	0.0	1999 10 02	704	0.7−	0.5−
1990 09 13	809	0.8+	0.5−	1998 05 26	704	0.5−	1.2−	1999 10 08	704	0.3+	0.8−
1990 09 13	809	1.3+	0.2−	1998 05 26	704	0.4+	0.1−	1999 10 08	704	0.4+	0.4−
1990 09 14	809	0.3−	0.5−	1998 06 02	699	0.7+	0.2+	1999 10 08	704	0.3+	0.0
1990 09 14	809	0.2+	0.5−	1998 06 02	699	1.7+	0.6+	1999 10 08	704	0.6+	0.6−
1990 09 14	809	0.3+	0.7−	1998 06 02	699	0.9+	0.2−	1999 10 08	704	0.2+	0.2+
1998 04 19	688	0.3+	0.4+	1998 06 03	704	0.7−	0.9−				

(11882)* 1990 RA₃

Discovered 1990 Sept. 14 by H. E. Holt at Palomar.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	339.55055	(2000.0)	
<i>n</i>	0.22234359	ω	149.63014
<i>a</i>	2.6984827	Ω	233.88514
<i>e</i>	0.1009596	<i>i</i>	1.13616
<i>P</i>	4.43	<i>H</i>	14.1
Residuals in seconds of arc			
<i>P</i>	4.43	<i>H</i>	14.1
<i>G</i>	0.15	<i>U</i>	1

1990 09 14	675	(1.2+	2.9−)	1997 04 09	684	0.1+	0.2+	1999 10 07	704	0.0	0.1+
1990 09 14	675	(0.5+	3.5−)	1997 04 09	684	0.1−	0.3+	1999 10 07	704	0.0	0.2−
1990 09 18	675	0.6−	1.2−	1997 04 14	684	0.1−	0.6−	1999 10 07	704	0.2−	0.3+
1990 09 18	675	(0.4+	3.1−)	1997 04 14	684	0.2−	0.0	1999 10 07	704	0.5−	0.1−
1990 09 22	809	0.0	0.3−	1997 04 14	684	0.4−	0.2−	1999 10 07	704	0.8−	0.1+
1990 09 22	809	0.7+	0.5−	1997 04 15	684	0.3−	0.3−	1999 10 08	468	0.1+	0.9+
1990 09 22	809	1.3+	0.6−	1997 04 15	684	0.3−	0.2−	1999 10 08	468	0.1+	1.3+
1990 09 23	809	(3.5+	0.3−)	1997 04 15	684	0.2−	0.1+	1999 10 09	704	0.5+	0.5−
1990 09 23	809	(3.8+	0.3−)	1999 09 05	699	0.3+	0.1−	1999 10 09	704	0.5+	0.0
1990 09 23	809	(4.3+	0.1−)	1999 09 05	699	0.3−	0.4−	1999 10 09	704	0.6+	0.1+
1990 09 24	809	0.8−	0.7+	1999 09 05	699	0.0	0.2+	1999 10 09	704	0.3+	0.1−
1990 09 24	809	0.4−	0.7+	1999 09 17	468	0.6−	0.9−	1999 10 09	704	0.6+	0.1+
1990 09 24	809	0.1−	0.7+	1999 09 18	468	0.7+	0.6−	1999 10 15	704	0.1+	0.3−
1995 10 30	327	0.7+	0.5−	1999 09 18	468	0.5−	0.8−	1999 10 15	704	1.2+	0.0
1995 10 30	327	0.6+	0.4−	1999 10 04	704	0.5−	0.7+	1999 10 15	704	(2.4+	0.7−)
1995 11 18	411	2.0−	0.3+	1999 10 04	704	0.0	0.2+	1999 10 15	704	(2.5+	2.0+)
1995 11 18	411	0.5−	0.3+	1999 10 04	704	0.1+	0.3−	1999 10 15	704	(4.1+	3.1+)
1995 11 20	411	0.0	0.9−	1999 10 04	704	0.4+	0.5−	1999 10 19	704	0.2+	0.2−
1995 11 20	411	0.2+	0.1+	1999 10 04	704	0.9−	0.7+	1999 10 19	704	0.2−	0.0
1995 12 01	411	0.2+	0.1−	1999 10 05	704	0.0	0.6+	1999 10 19	704	0.1−	0.3−
1995 12 01	411	0.9+	0.7+	1999 10 05	704	0.1+	0.3+	1999 10 19	704	0.5−	0.1−
1997 04 08	684	0.6+	0.1+	1999 10 05	704	0.1−	0.2+	1999 10 19	704	0.7−	0.6−
1997 04 08	684	0.4+	0.2+	1999 10 05	704	0.1−	0.1+				
1997 04 09	684	0.2+	0.3+	1999 10 05	704	0.1−	0.5+				

(11883)* 1990 RD₅ = 1990 QW₁₈ = 1994 NF₂

Discovered 1990 Sept. 15 by H. E. Holt at Palomar.

Id. S. Nakano (d, *MPC* 20912), B. G. Marsden (*MPC* 23974)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	297.72720		(2000.0)	P	Q
<i>n</i>	0.21783897	ω	168.67582	+0.63448874	-0.77024492
<i>a</i>	2.7355564	Ω	241.90784	+0.70332794	+0.60989642
<i>e</i>	0.0545030	<i>i</i>	4.18603	+0.32055241	+0.18641115
<i>P</i>	4.52	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1990 08 29	095	(2.9- 1.8+)	1998 06 26	704	0.2+ 0.8+	1999 09 12	699	0.2- 0.5+
1990 08 29	095	(2.3- 0.7+)	1998 06 26	704	1.0+ 0.1-	1999 09 12	699	0.2+ 0.5+
1990 09 15	675	0.6+ 1.5-	1998 06 26	704	0.0 0.4+	1999 09 14	704	(1.4- 3.0+)
1990 09 15	675	0.5+ 1.6-	1999 08 22	699	0.3- 0.7+	1999 09 14	704	0.0 0.0
1990 09 20	675	0.4+ 1.5-	1999 08 22	699	0.3- 1.0+	1999 09 14	704	0.1+ 0.1+
1990 09 20	675	0.4+ 0.1-	1999 08 22	699	0.1+ 0.4+	1999 09 14	704	0.2- 0.1+
1994 07 05	010	1.4+ 1.3-	1999 09 04	703	0.8- 0.2+	1999 09 14	704	0.2+ 0.5-
1994 07 05	010	0.5- 0.5-	1999 09 04	703	0.1- 0.1+	1999 10 01	703	0.3+ 0.2+
1994 07 05	010	1.5- 1.2-	1999 09 04	703	1.0- 0.0	1999 10 01	703	0.1+ 1.1-
1994 07 08	010	(1.2+ 2.1+)	1999 09 04	703	(2.1- 0.4+)	1999 10 01	703	1.1+ 0.1+
1994 07 08	010	0.5+ 0.6+	1999 09 07	704	0.2+ 0.7+	1999 10 01	703	0.2+ 0.4+
1994 07 08	010	0.5+ 0.9+	1999 09 07	704	0.2+ 0.3+	1999 10 02	704	0.1+ 0.7+
1998 05 24	704	0.3+ 0.3+	1999 09 07	704	0.1+ 0.4+	1999 10 02	704	0.3- 0.4-
1998 05 24	704	0.8+ 0.1-	1999 09 07	704	0.1+ 0.3+	1999 10 02	704	0.2- 0.2-
1998 05 24	704	1.5+ 0.6-	1999 09 07	704	0.2+ 0.3+	1999 10 02	704	1.0+ 0.3-
1998 05 24	704	1.1- 0.5-	1999 09 08	704	0.3+ 0.0	1999 10 07	703	0.4- 0.4+
1998 05 24	704	0.2+ 0.7+	1999 09 08	704	0.4+ 0.3-	1999 10 07	703	0.0 0.1-
1998 06 01	809	(3.0+ 2.0-)	1999 09 08	704	0.3+ 0.1+	1999 10 07	703	0.4+ 0.1+
1998 06 01	809	(2.6+ 2.3-)	1999 09 08	704	0.4+ 0.7+	1999 10 07	703	0.4+ 0.0
1998 06 01	809	(2.2+ 2.3-)	1999 09 09	704	0.2- 0.2+	1999 10 07	704	0.6- 0.2+
1998 06 02	809	(1.7+ 3.0-)	1999 09 09	704	0.3+ 0.8+	1999 10 07	704	0.0 0.0
1998 06 02	809	(1.1+ 3.2-)	1999 09 09	704	0.1- 0.5+	1999 10 07	704	0.1- 0.0
1998 06 02	809	(1.1+ 3.1-)	1999 09 09	704	0.6- 0.3+	1999 10 07	704	0.4- 0.0
1998 06 03	704	0.7+ 0.9-	1999 09 09	704	0.0 0.2-	1999 10 07	704	0.3- 0.1-
1998 06 03	704	1.1- 0.3+	1999 09 10	704	0.0 0.2-	1999 10 15	704	0.3- 0.2-
1998 06 03	704	1.2- 1.8+	1999 09 10	704	0.1+ 0.1+	1999 10 15	704	0.4- 0.5-
1998 06 03	704	0.2+ 0.2+	1999 09 10	704	0.0 0.7+	1999 10 15	704	0.6- 0.6-
1998 06 24	704	0.7- 0.3-	1999 09 11	106	0.2- 0.1-	1999 10 15	704	0.5- 0.6-
1998 06 24	704	1.5+ 0.0	1999 09 11	106	0.3- 0.4+	1999 10 15	704	0.6- 0.8-
1998 06 24	704	1.0- 1.2-	1999 09 11	106	0.2- 0.4+			
1998 06 26	704	1.4- 0.7-	1999 09 12	699	0.2- 0.3+			

(11884)* 1990 RD₆ = 1990 QV₁₀

Discovered 1990 Sept. 8 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (*MPC* 29097)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	52.73352		(2000.0)	P	Q
<i>n</i>	0.22965173	ω	320.71578	+0.56684582	+0.82157862
<i>a</i>	2.6409260	Ω	343.52509	-0.69153890	+0.43443069
<i>e</i>	0.1690594	<i>i</i>	12.37591	-0.44772734	+0.36915924
<i>P</i>	4.29	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1990 08 27	675	(17.4- 0.3+)	1990 09 16	809	0.2+ 1.2+	1999 09 07	703	0.4+ 0.9+
1990 08 27	675	1.2+ 1.4-	1990 09 16	809	0.4+ 1.2+	1999 10 05	704	0.4+ 0.5-
1990 09 08	809	0.9- 0.1-	1997 01 30	411	0.4- 0.2-	1999 10 05	704	0.2+ 0.2-
1990 09 09	809	0.6- 0.1+	1997 01 30	411	1.0- 0.5+	1999 10 05	704	0.3+ 0.4-
1990 09 09	809	0.3- 0.1+	1997 01 31	411	0.2+ 0.2+	1999 10 05	704	0.1- 0.7-
1990 09 09	809	0.1- 1.7+	1997 01 31	411	0.2+ 0.0	1999 10 05	704	0.2+ 0.1-
1990 09 10	809	0.3+ 1.5+	1997 03 04	704	0.9+ 0.1+	1999 10 12	704	0.1- 0.2-
1990 09 10	809	0.6+ 1.3+	1997 03 04	704	1.3+ 0.2-	1999 10 12	704	0.1- 0.2-
1990 09 12	809	0.8- 0.2-	1997 03 05	704	0.4+ 1.2+	1999 10 12	704	0.3- 0.3-
1990 09 12	809	0.5- 0.1-	1997 03 05	704	0.0 1.2+	1999 10 12	704	0.1- 0.1-
1990 09 12	809	0.1- 0.0	1997 03 06	704	0.5+ 1.1+	1999 10 12	704	0.1- 0.2-
1990 09 14	675	1.3- 1.4-	1997 03 06	704	0.8+ 1.1+	1999 10 13	704	0.2+ 0.3-
1990 09 14	675	1.3- 1.6-	1998 06 25	701	0.5- 0.5-	1999 10 13	704	0.2+ 0.1+

1990 09 14	809	0.2+ 0.5+	1998 06 25	701	0.3+ 0.1+	1999 10 13	704	0.5+ 0.0
1990 09 15	809	0.1+ 0.5+	1999 09 07	703	0.6- 0.4-	1999 10 13	704	0.1+ 0.3-
1990 09 15	809	0.1- 0.5+	1999 09 07	703	0.1- 0.1+			
1990 09 15	809	0.1- 1.1+	1999 09 07	703	0.1+ 0.9+			

(11885)* 1990 SS

Discovered 1990 Sept. 25 by Spacewatch at Kitt Peak.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	299.81272		(2000.0)	P	Q
<i>n</i>	0.44344862	ω	115.86283	-0.43684487	-0.89953682
<i>a</i>	1.7031014	Ω	0.04232	+0.65943147	-0.32042734
<i>e</i>	0.4747700	<i>i</i>	19.40875	+0.61181427	-0.29691720
<i>P</i>	2.22	<i>H</i>	18.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1990 09 25	691	0.1+ 0.1-	1990 10 22	691	1.2+ 0.3-	1999 09 13	046	0.4+ 0.3+
1990 09 25	691	0.6+ 0.4+	1990 11 14	691	0.5+ 0.6-	1999 09 13	046	1.0- 0.4-
1990 09 25	691	0.4+ 0.2+	1990 11 14	691	0.3+ 0.7-	1999 09 13	046	0.6+ 0.0
1990 09 26	691	0.8+ 0.3-	1991 03 15	691	0.7- 0.6- Y	1999 09 13	046	(2.6+ 0.5+)
1990 09 26	691	0.6+ 0.1-	1991 03 16	801	0.6+ 1.2-	1999 09 13	046	0.2+ 1.6+
1990 09 26	691	(2.1+ 0.8-)	1991 03 16	801	0.8+ 0.7-	1999 09 13	046	1.1+ 0.1-
1990 09 27	691	0.4- 1.1-	1991 03 20	801	0.2+ 0.1+	1999 09 13	046	0.9+ 0.5+
1990 09 27	691	0.5- 1.1-	1991 03 20	801	0.2+ 0.1-	1999 09 14	046	0.0 1.0+
1990 09 27	691	0.3- 1.1-	1991 03 22	568	0.5- 1.5+	1999 09 14	046	1.0- 1.4+
1990 09 27	691	0.4- 1.2-	1991 04 05	691	0.1+ 0.5-	1999 09 14	046	0.2+ 1.1+
1990 09 28	691	0.0 1.0-	1991 04 05	691	0.6- 0.7-	1999 09 14	046	0.1- 1.3+
1990 09 28	691	0.3- 0.5-	1991 04 05	691	0.2- 0.1-	1999 09 14	046	0.2+ 0.5+
1990 09 28	691	0.2+ 0.9-	1991 04 10	413	0.4+ 1.7+	1999 10 19	557	0.8- 0.9+
1990 09 28	691	0.2+ 0.6-	1991 04 10	413	(2.5+ 1.8-)	1999 10 19	557	0.6- 0.4+
1990 09 28	691	0.3+ 0.8-	1991 04 11	413	(2.0+ 3.5-)	1999 10 20	704	0.6+ 0.5-
1990 09 28	691	1.3+ 0.4-	1991 04 11	413	0.8+ 1.0-	1999 10 20	704	0.0 0.3-
1990 10 09	691	0.2- 0.5-	1991 04 12	801	1.6+ 0.0	1999 10 20	704	0.3- 0.4-
1990 10 09	691	0.5+ 0.0	1991 04 12	801	1.1- 1.1+	1999 10 20	704	0.6- 0.0
1990 10 09	691	0.8+ 0.1-	1991 04 18	691	0.5- 1.1-	1999 10 20	704	0.7- 0.3-
1990 10 22	691	0.9+ 0.6+	1991 04 18	691	0.7- 1.3-			
1990 10 22	691	0.3+ 0.4+	1991 04 18	691	1.2- 1.3-			

(11886)* 1990 TT₁₀ = 1992 BL₄ = 1993 FR₇₃

Discovered 1990 Oct. 10 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. K. Kinoshita (*MPC* 24389)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	4.97210		(2000.0)	P	Q
<i>n</i>	0.21513916	ω	345.16264	+0.93053412	+0.36611213
<i>a</i>	2.7583946	Ω	353.34380	-0.32831487	+0.82405577
<i>e</i>	0.1622292	<i>i</i>	4.08424	-0.16222082	+0.43231238
<i>P</i>	4.58	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1990 09 16	675	(3.9+ 2.1-)	1999 09 07	704	1.0+ 0.1-	1999 10 07	704	1.1- 0.4+
1990 10 10	033	1.0- 0.4+	1999 09 07	704	0.8+ 0.3+	1999 10 07	704	(2.1- 0.5+)
1990 10 11	033	0.1+ 0.3+	1999 09 07	704	0.4+ 0.5-	1999 10 08	704	0.1- 0.2-
1990 10 11	033	0.5+ 0.9+	1999 09 07	704	0.8+ 0.2-	1999 10 08	704	0.3- 0.5-
1990 10 12	033	0.5+ 0.5-	1999 09 07	704	0.8+ 0.3-	1999 10 08	704	0.8- 0.3-
1990 10 13	033	0.4- 0.5+	1999 09 14	704	0.5+ 0.1+	1999 10 08	704	0.5- 0.2-
1990 10 14	033	0.6- 0.7+	1999 09 14	704	0.1+ 0.6-	1999 10 08	704	0.7- 0.3+
1992 01 29	691	0.0 0.6-	1999 09 14	704	0.4+ 0.4+	1999 10 08	691	0.2- 0.3-
1992 01 29	691	0.1+ 0.5-	1999 09 14	704	0.1+ 0.8-	1999 10 08	691	0.1- 0.4-
1992 01 29	691	0.7+ 0.1+	1999 09 14	704	0.6+ 0.4-	1999 10 08	691	0.1- 0.4-
1992 01 30	691	0.6+ 0.2+	1999 09 16	120	1.5+ 0.1-	1999 10 09	704	0.3- 0.0
1992 01 30	691	0.5+ 0.1-	1999 09 16	120	0.7+ 0.1+	1999 10 09	704	0.7- 0.1+
1992 01 30	691	1.3- 0.5+	1999 09 28	120	0.3- 0.1+	1999 10 09	704	0.1- 0.0
1992 02 09	691	0.2- 0.1-	1999 09 28	120	0.1- 0.4+	1999 10 09	704	0.4- 0.0
1992 02 09	691	0.3- 0.3-	1999 09 28	120	0.3+ 0.0	1999 10 09	704	0.6- 0.2+
1992 02 09	691	0.1- 0.7-	1999 10 02	704	0.2- 0.2+	1999 10 09	704	0.1- 0.6-
1993 03 21	809	0.3- 0.4+	1999 10 02	704	0.3- 0.1-	1999 10 09	704	0.0 0.2-

1993 03 22	809	0.3+	0.2+	1999 10 02	704	0.4-	0.1-	1999 10 09	704	0.2-	0.5-
1999 08 12	699	0.8+	0.5+	1999 10 02	704	0.2-	0.3+	1999 10 09	704	0.2+	0.2+
1999 08 12	699	(2.1-	0.9+)	1999 10 02	704	0.3-	0.0	1999 10 10	691	0.0	0.4-
1999 08 12	699	1.5+	1.0+	1999 10 04	691	0.2-	0.2-	1999 10 10	691	0.1+	0.4-
1999 08 22	703	1.7+	1.1+	1999 10 04	691	0.2-	0.3-	1999 10 10	691	0.1+	0.5-
1999 08 22	703	0.2+	0.6+	1999 10 04	691	0.1-	0.3-	1999 10 13	691	0.0	0.0
1999 08 22	703	0.9-	0.7+	1999 10 05	704	0.4-	0.2-	1999 10 13	691	0.1+	0.1-
1999 08 22	703	0.0	0.5+	1999 10 05	704	0.1-	0.1-	1999 10 13	691	0.0	0.2-
1999 09 04	699	0.4+	0.1-	1999 10 05	704	0.1-	0.4+	1999 10 15	704	0.4-	0.8+
1999 09 04	699	0.2-	0.2+	1999 10 05	704	0.5-	0.5+	1999 10 15	704	0.3-	0.7-
1999 09 04	699	0.5+	0.7+	1999 10 05	704	0.4-	0.1-	1999 10 15	704	0.1+	0.5+
1999 09 05	120	(2.4-	0.9+)	1999 10 07	691	0.4-	0.2-	1999 10 15	704	0.0	0.8-
1999 09 06	120	1.0+	0.4-	1999 10 07	691	0.3-	0.1-	1999 10 19	691	0.1-	0.3-
1999 09 06	120	1.5+	0.4-	1999 10 07	691	0.5-	0.1+	1999 10 19	691	0.3-	0.2-
1999 09 06	120	(2.3+	0.6+)	1999 10 07	704	0.8+	0.3-	1999 10 19	691	0.4-	0.3-
1999 09 06	120	0.1+	0.7-	1999 10 07	704	0.2-	0.6+				
1999 09 06	120	0.5-	0.8+	1999 10 07	704	1.7-	0.2+				

(11887)* 1990 TV₁₂ = 1989 SX₁₃

Discovered 1990 Oct. 14 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. B. G. Marsden (*MPC* 18124)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.24045		(2000.0)	P		Q
<i>n</i>	0.08323976	ω	111.21282	+0.92244288	+0.13447606	
<i>a</i>	5.1949595	Ω	242.66871	-0.21480506	+0.95767322	
<i>e</i>	0.0924602	<i>i</i>	24.04442	+0.32087057	+0.25451560	
<i>P</i>	11.84	<i>H</i>	11.0	<i>G</i>	0.15	<i>U</i>
						0

Residuals in seconds of arc

1954 11 23	675	0.6-	0.1-	1990 11 14	675	0.3-	0.5-	1999 07 09	653	0.4-	0.1-
1954 11 23	675	0.4+	1.3+	1990 11 14	675	0.2-	1.1-	1999 07 09	653	0.4+	0.4-
1978 11 30	675	0.4+	0.4+	1991 12 12	033	0.0	1.0+	1999 07 10	653	0.1+	0.0
1978 12 01	675	0.5+	0.6+	1992 01 07	033	0.3+	0.3+	1999 07 12	704	0.4+	0.6-
1989 09 26	493	0.1+	2.2-	1997 06 27	327	0.7+	0.8-	1999 07 12	704	0.4+	0.7-
1989 09 27	493	(0.3-	3.1-)	1997 06 27	327	0.5-	0.1-	1999 07 12	704	0.2-	0.6+
1989 10 03	493	(5.7+	1.8+)	1997 06 27	327	0.4-	0.7-	1999 07 12	704	0.1+	0.4-
1989 10 03	493	(3.9+	3.4+)	1998 06 19	704	0.9+	0.1+	1999 07 12	704	0.1+	0.2+
1989 10 04	493	(5.3+	2.5+)	1998 06 19	704	0.7+	1.9+	1999 07 15	118	0.4+	0.4-
1989 10 05	493	(6.0+	3.4+)	1998 06 19	704	1.3+	1.1-	1999 07 15	118	0.6+	0.2-
1989 10 29	675	(2.7+	3.2+)	1998 06 19	704	1.5-	0.4-	1999 07 17	113	1.0-	0.4+
1990 10 14	033	0.1+	0.1+	1998 06 22	703	1.3-	1.6+	1999 07 18	113	1.0-	0.0
1990 10 15	033	0.0	0.7+	1998 06 22	703	1.5-	1.3+	1999 10 04	704	0.9-	0.6+
1990 10 15	033	0.3-	0.7+	1998 06 22	703	0.9-	1.1+	1999 10 04	704	0.1+	0.3+
1990 10 18	033	0.9+	0.3+	1998 06 25	704	0.5+	0.5+	1999 10 04	704	0.2-	0.3+
1990 10 18	033	0.1-	0.6+	1998 06 25	704	0.7+	1.5-	1999 10 04	704	0.6-	0.4+
1990 11 13	675	0.3+	1.1-	1998 06 25	704	0.3-	0.6+	1999 10 04	704	0.7+	0.6+
1990 11 13	675	0.7-	0.7-	1998 06 25	704	1.2+	1.6-				

(11888)* 1990 UD₃ = 1981 WB

Discovered 1990 Oct. 19 by A. Sugie at the Dync Astronomical Observatory.

Id. S. Nakano (*MPC* 17458)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	349.53422		(2000.0)	P		Q
<i>n</i>	0.21636916	ω	142.18411	+0.97925534	-0.17511230	
<i>a</i>	2.7479310	Ω	228.22316	+0.13591356	+0.94081502	
<i>e</i>	0.2918993	<i>i</i>	7.85777	+0.15028798	+0.29017716	
<i>P</i>	4.56	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>
						2

Residuals in seconds of arc

1981 11 28	879	0.6-	1.4-	1998 05 22	704	0.7+	0.1+	1999 10 03	704	0.1+	0.1-
1981 11 28	879	0.1+	1.2-	1998 05 22	704	(2.8-	1.2-)	1999 10 03	704	0.3+	0.4-
1981 11 29	879	(1.1-	3.3-)	1998 06 17	426	0.2+	0.0	1999 10 03	704	0.5+	0.3-
1981 11 29	879	(3.6-	3.0-)	1998 06 17	426	0.1+	0.4+	1999 10 10	704	0.5-	0.3+
1990 10 16	095	(0.2-	7.1+)	1998 06 17	426	0.6+	0.8+	1999 10 10	704	0.3-	0.5+
1990 10 16	095	(0.4+	9.7+)	1998 06 22	426	0.0	0.8+	1999 10 10	704	0.2-	0.3+

1990 10 19	402	0.4+	0.9+	1998 06 22	426	0.5-	0.1-	1999 10 10	704	0.5-	0.1+
1990 10 19	402	1.3+	1.2+	1998 06 22	426	0.4-	0.3+	1999 10 10	704	0.1+	0.7+
1990 10 20	402	0.2+	0.6-	1999 07 23	704	0.5-	0.5+	1999 10 13	704	(4.2+	0.3+)
1990 10 20	402	0.6-	0.7-	1999 07 23	704	0.0	0.2+	1999 10 13	704	0.1+	0.1-
1990 10 23	095	0.3-	0.2+	1999 07 23	704	0.5-	0.4+	1999 10 13	704	0.1+	0.1-
1990 11 14	095	0.6-	1.9+	1999 07 23	704	0.6-	0.1+	1999 10 13	704	0.0	0.1-
1990 11 14	095	(1.2-	2.6+)	1999 07 23	704	0.2-	0.3+	1999 10 13	704	0.1+	0.1+
1990 11 15	402	0.8+	0.2+	1999 09 18	704	0.5+	0.4+	1999 10 13	704	0.1+	0.1-
1990 11 15	402	(2.3+	0.7+)	1999 09 18	704	0.3+	0.0	1999 10 13	704	0.0	0.1+
1990 11 17	372	0.8+	1.6-	1999 09 18	704	0.0	0.2+	1999 10 13	704	0.1+	0.2-
1990 11 17	372	1.3-	0.8+	1999 09 18	704	0.4+	0.5-	1999 10 13	704	0.1+	0.1-
1990 11 21	372	(2.8-	0.1-)	1999 09 18	704	0.2-	0.6-	1999 10 13	704	0.1-	0.1-
1990 11 21	372	(1.5-	2.5+)	1999 10 01	703	0.2-	0.3+	1999 10 20	704	0.0	0.2-
1990 11 23	372	0.0	0.6+	1999 10 01	703	0.0	0.1+	1999 10 20	704	0.1-	0.2-
1995 12 30	292	1.4+	1.6+	1999 10 01	703	0.2-	0.3+	1999 10 20	704	0.3-	0.5-
1995 12 30	292	1.1-	0.8+	1999 10 01	703	0.1-	0.1+	1999 10 20	704	0.3-	0.1-
1998 05 22	704	1.5+	0.3-	1999 10 03	704	0.6+	0.4-	1999 10 20	704	0.1-	0.6-
1998 05 22	704	1.9-	0.7-	1999 10 03	704	0.3+	0.0				

(11889)* 1991 AH₂ = 1998 KZ₅₅

Discovered 1991 Jan. 7 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 31952)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	32.79338		(2000.0)	P		Q
<i>n</i>	0.21455224	ω	214.91454	+0.88637977	+0.36858000	
<i>a</i>	2.7634229	Ω	121.05624	-0.31404399	+0.92329806	
<i>e</i>	0.1793581	<i>i</i>	19.08778	-0.34015772	+0.10802533	
<i>P</i>	4.59	<i>H</i>	12.4	<i>G</i>	0.15	<i>U</i>
						1

Residuals in seconds of arc

1991 01 07	413	0.7+	0.3+	1998 05 26	704	0.3+	0.1-	1998 07 22	566	0.1+	0.1-
1991 01 08	413	0.0	0.7+	1998 05 26	704	0.4+	0.0	1999 09 14	704	0.1-	0.8+
1991 01 12	413	0.7-	0.1+	1998 05 26	704	0.1+	0.0	1999 09 14	704	0.4+	0.1-
1991 02 04	413	0.1-	0.1-	1998 05 26	704	0.1+	0.4-	1999 09 14	704	0.9+	0.3+
1991 02 04	413	0.4-	0.2-	1998 06 03	704	0.5+	0.1+	1999 09 14	704	1.0+	0.3-
1992 01 31	691	0.1+	0.2-	1998 06 03	704	0.5-	0.5+	1999 09 14	704	0.7+	1.1-
1992 01 31	691	0.5-	0.0	1998 06 03	704	0.5-	0.9+	1999 10 08	704	0.2-	0.4+
1992 01 31	691	0.4+	0.4-	1998 06 03	704	0.1-	0.9+	1999 10 08	704	0.0	0.6-
1998 05 23	704	0.7-	0.1+	1998 06 03	704	0.2+	0.7-	1999 10 08	704	0.0	0.6-
1998 05 23	704	0.8+	0.3-	1998 07 19	566	0.2-	0.4+	1999 10 08	704	0.0	0.9-
1998 05 23	704	0.0	0.4-	1998 07 19	566	0.4-	0.0	1999 10 08	704	0.3-	1.7-
1998 05 23	704	0.6-	0.9-	1998 07 19	566	0.2-	0.1+	1999 10 10	619	0.7-	1.5+
1998 05 23	704	1.5-	0.2-	1998 07 22	566	0.7+	0.0	1999 10 10	619	0.6-	0.1-
1998 05 26	704	0.7+	0.1-	1998 07 22	566	0.7+	0.2-	1999 10 10	619	0.4-	1.2+

(11890)* 1991 FF

Discovered 1991 Mar. 18 by R. H. McNaught at Siding Spring.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	169.15744		(2000.0)	P		Q
<i>n</i>	0.17007399	ω	199.57686	-0.99346572	-0.01760003	
<i>a</i>	3.2263448	Ω	338.45650	+0.08623257	-0.76299817	
<i>e</i>	0.0583599	<i>i</i>	17.88394	-0.07476506	-0.64616100	
<i>P</i>	5.80	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>
						2

Residuals in seconds of arc

1987 10 18	413	0.2-	0.2-	1993 08 13	675	1.8+	0.4-	1999 09 09	704	0.7+	0.2-
1991 03 18	413	0.3+	0.1-	1993 08 25	413	0.6-	1.2-	1999 09 09	704	0.5-	0.2+
1991 03 19	413	(0.1+	2.3+)	1993 08 25	413	0.6-	1.0-	1999 09 09	704	0.2-	0.3+
1991 03 21	413	0.5-	0.2+	1999 09 04	703	0.7-	0.7+	1999 10 04	704	0.2+	0.1+
1991 04 06	413	0.2-	0.2+	1999 09 04	703	1.2-	0.3+	1999 10 04	704	0.1+	0.7-
1991 04 13	413	0.3+	0.2-	1999 09 04	703	0.9-	0.3-	1999 10 04	704	0.2+	0.5-
1991 05 07	413	0.5+	0.5+	1999 09 04	703	0.0	0.1+	1999 10 04	704	0.9+	0.2-
1992 08 21	413	0.8+	0.9+	1999 09 07	704	0.6-	0.4-	1999 10 04	704	0.6+	0.3+
1992 08 21	413	0.7+	1.1+	1999 09 07	704	0.7-	0.3-	1999 10 09	704	0.2+	0.4+
1992 09 05	413	0.6-	0.4-	1999 09 07	704	0.4+	1.3+	1999 10 09	704	0.4+	0.3+

1992 10 06	413	0.4−	0.4−	1999 09 07	704	0.3−	0.5−	1999 10 09	704	0.0	0.0
1992 10 06	413	0.4−	0.6−	1999 09 07	704	0.5+	0.4+	1999 10 09	704	0.3−	0.1+
1992 10 12	413	0.0	1.0−	1999 09 09	704	0.4+	0.5+	1999 10 09	704	0.1−	0.0
1993 08 13	675	1.2+	1.5+	1999 09 09	704	0.1+	0.3+				

(11891)* 1991 FJ₂

Discovered 1991 Mar. 20 by H. Debehogne at the European Southern Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	170.47745	(2000.0)		P	Q		
<i>n</i>	0.29338398	ω	356.72585	−0.99803413	+0.06236533		
<i>a</i>	2.2430818	Ω	186.85897	−0.05625736	−0.93507618		
<i>e</i>	0.0931388	<i>i</i>	2.97565	−0.02762206	−0.34891705		
<i>P</i>	3.36	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1949 11 19	675	0.4+	0.3−	1998 05 06	566	1.2−	0.6−	1999 10 04	704	0.2+	0.0
1949 11 19	675	0.4+	0.2−	1998 05 06	566	0.2+	0.1−	1999 10 04	704	0.2+	0.5+
1988 05 10	675	0.8−	0.6−	1998 05 06	566	0.4−	0.4+	1999 10 04	704	0.3+	0.4+
1988 05 10	675	1.4−	1.1−	1998 05 22	704	0.8+	0.4+	1999 10 04	704	0.4−	0.0
1991 03 09	675	0.5−	0.0	1998 05 22	704	0.9+	0.3+	1999 10 04	704	1.4+	0.4+
1991 03 09	675	0.2+	0.8+	1998 05 22	704	0.2+	0.6+	1999 10 05	704	0.1+	0.2−
1991 03 12	675	0.4+	1.1−	1998 05 22	704	0.5+	0.7+	1999 10 05	704	0.2+	0.2−
1991 03 12	675	0.6+	0.2−	1998 05 22	704	0.3+	0.1+	1999 10 05	704	0.3+	0.0
1991 03 20	809	0.4−	0.1+	1998 05 22	566	0.5+	0.4−	1999 10 05	704	0.2+	0.2−
1991 03 20	809	0.2+	0.2+	1998 05 22	566	0.2+	0.2−	1999 10 05	704	0.2+	0.3−
1991 03 20	809	1.1+	0.1−	1998 05 22	566	0.6+	0.4+	1999 10 07	703	0.3+	2.5+
1991 03 21	809	0.5−	0.8+	1998 05 24	704	0.5+	0.1+	1999 10 07	703	0.2−	0.4+
1991 03 21	809	0.2−	1.2+	1998 05 24	704	1.4+	1.2−	1999 10 07	703	0.3−	0.1+
1991 03 21	809	0.3+	1.0+	1998 05 24	704	0.1−	0.5+	1999 10 07	703	0.2−	0.2+
1991 03 22	809	0.1−	0.2+	1998 05 24	704	0.5+	0.5+	1999 10 07	704	0.7−	0.1+
1991 03 22	809	0.0	0.2+	1998 05 24	704	0.8+	0.4−	1999 10 07	704	0.1−	0.0
1991 03 22	809	0.1+	0.3+	1999 09 05	699	0.4+	0.4−	1999 10 07	704	0.1−	0.0
1991 04 15	675	1.0−	0.4+	1999 09 05	699	0.0	0.1−	1999 10 07	704	0.3+	0.2−
1991 04 15	675	0.3+	0.3+	1999 09 05	699	0.5+	0.2+	1999 10 07	704	0.6−	0.0
1998 04 22	704	0.0	0.5+	1999 09 07	704	0.3−	0.6−	1999 10 09	704	0.7−	0.1+
1998 04 22	704	0.1−	1.1+	1999 09 07	704	0.3−	0.0	1999 10 09	704	0.6−	0.1−
1998 04 22	704	0.2+	0.9−	1999 09 07	704	0.0	0.6−	1999 10 09	704	0.9−	0.5+
1998 04 22	704	0.4−	0.5+	1999 09 07	704	0.2−	0.6+	1999 10 09	704	0.5−	0.0
1998 04 22	704	0.0	0.4−	1999 09 08	120	0.4+	0.4−	1999 10 09	704	0.8−	1.3+
1998 05 01	704	0.9−	0.3+	1999 09 08	120	0.0	0.1+	1999 10 15	704	0.0	0.1−
1998 05 01	704	0.4+	0.3−	1999 09 30	703	0.0	0.6+	1999 10 15	704	0.1−	0.2−
1998 05 01	704	0.2−	0.2−	1999 09 30	703	0.4+	0.1+	1999 10 15	704	0.0	0.0
1998 05 01	704	0.3−	0.4+	1999 09 30	703	0.8−	0.6+	1999 10 15	704	0.4+	0.4−
1998 05 01	704	0.8−	0.6+	1999 09 30	703	0.3−	0.2+	1999 10 15	704	0.1+	0.8+

(11892)* 1991 FT₂ = 1994 AT₁₅

Discovered 1991 Mar. 20 by H. Debehogne at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 23976)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	270.38518	(2000.0)		P	Q		
<i>n</i>	0.29774784	ω	79.85286	+0.01065454	−0.99987376		
<i>a</i>	2.2211112	Ω	9.56029	+0.88739798	+0.00402137		
<i>e</i>	0.0688204	<i>i</i>	4.06991	+0.46088101	+0.01537195		
<i>P</i>	3.31	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 03 09	675	0.3+	0.1−	1998 05 05	699	0.7+	1.4+	1999 09 30	703	0.1−	0.6+
1991 03 09	675	(0.6−	2.6−)	1998 05 24	704	1.8−	0.7−	1999 09 30	703	0.4−	0.3+
1991 03 20	809	0.3−	1.1+	1998 05 24	704	0.4+	0.1+	1999 10 01	327	0.5−	0.5−
1991 03 20	809	0.2+	1.1+	1998 05 24	704	1.4−	0.5+	1999 10 01	327	0.1−	0.2−
1991 03 20	809	0.5+	0.9+	1998 05 24	704	1.2−	1.1−	1999 10 01	327	1.6−	0.4+
1991 03 21	809	0.6−	0.5+	1998 05 24	704	0.7−	0.4+	1999 10 04	704	0.3−	0.3+
1991 03 21	809	0.1−	0.5+	1999 09 07	704	0.0	0.1+	1999 10 04	704	0.4+	0.0

1991 03 21	809	0.2−	0.6+	1999 09 07	704	0.6−	0.2−	1999 10 04	704	0.4+	0.2−
1991 03 22	809	0.7+	0.3+	1999 09 07	704	0.1+	0.4+	1999 10 04	704	0.7−	0.8+
1991 03 22	809	1.0+	0.2+	1999 09 07	704	0.6−	0.3+	1999 10 05	704	0.2+	0.5−
1991 03 22	809	1.5+	0.3+	1999 09 07	704	0.0	0.8+	1999 10 05	704	0.1−	0.9−
1991 04 15	675	0.3+	0.1+	1999 09 09	704	0.5−	1.4+	1999 10 05	704	0.1−	0.5−
1991 04 15	675	0.6+	1.9+	1999 09 09	704	0.1−	0.1+	1999 10 05	704	0.2−	1.0−
1994 01 14	033	0.9−	1.0+	1999 09 09	704	0.2+	1.1+	1999 10 05	704	0.2−	0.8−
1994 01 15	033	0.1+	0.7−	1999 09 11	120	0.7+	0.3+	1999 10 07	704	0.3−	0.8+
1994 01 15	033	0.7+	0.7−	1999 09 11	120	0.3+	1.1−	1999 10 07	704	0.5+	0.5−
1998 04 22	704	0.9+	0.9−	1999 09 16	691	0.5−	0.0	1999 10 07	704	0.7−	0.5+
1998 04 22	704	0.2+	1.9+	1999 09 16	691	0.4−	0.0	1999 10 07	704	0.0	0.8+
1998 04 22	704	0.7−	0.5−	1999 09 16	691	0.3−	0.0	1999 10 07	704	0.3−	0.5−
1998 04 22	704	0.3+	0.1−	1999 09 29	327	0.7+	0.3−	1999 10 09	704	0.2−	0.1+
1998 04 22	704	1.2+	1.0+	1999 09 29	327	0.5+	0.2−	1999 10 09	704	0.2+	0.4+
1998 05 01	704	0.3+	0.5+	1999 09 29	327	0.5+	0.0	1999 10 09	704	0.3−	0.3+
1998 05 01	704	1.5+	0.7−	1999 09 30	703	0.3−	0.4+	1999 10 09	704	0.1+	0.7+
1998 05 01	704	0.4+	1.2−	1999 09 30	703	0.8−	0.9+	1999 10 09	704	0.5−	0.7+
1998 05 01	704	0.2+	1.5−	1999 09 30	703	0.3−	0.4+	1999 10 15	704	0.5+	0.0
1998 05 01	704	(1.1+	2.4−)	1999 09 30	703	0.0	0.4+	1999 10 15	704	0.4+	0.6+
1998 05 05	699	0.4−	1.8+	1999 09 30	703	0.2−	0.1+	1999 10 15	704	0.2+	0.0
1998 05 05	699	0.6+	0.9+	1999 09 30	703	0.3−	0.8+	1999 10 15	704	1.1+	1.0+

(11893)* 1991 FZ₂ = 1993 RH₂₀

Discovered 1991 Mar. 20 by H. Debehogne at the European Southern Observatory.

Id. G. V. Williams (*MPC* 25330)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	227.75254	(2000.0)		P	Q		
<i>n</i>	0.18521823	ω	353.90260	−0.98552181	−0.16940187		
<i>a</i>	3.0479902	Ω	176.32186	+0.15983496	−0.94213722		
<i>e</i>	0.0246189	<i>i</i>	6.31402	+0.05656459	−0.28927575		
<i>P</i>	5.32	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 03 09	675	1.0−	1.4−	1993 09 22	809	(1.3−	2.3−)	1999 09 18	703	0.2−	0.5+
1991 03 09	675	0.4+	0.8−	1993 09 22	809	0.3+	2.0−	1999 09 18	703	0.4−	0.3+
1991 03 20	809	0.1+	0.7−	1993 09 22	809	(1.0−	3.3−)	1999 09 18	703	0.6+	0.0
1991 03 20	809	0.2+	0.7−	1998 07 25	557	(2.1−	0.5−)	1999 09 18	703	0.0	0.6−
1991 03 20	809	0.4+	0.3−	1998 07 25	557	1.5−	0.5+	1999 10 08	703	0.5+	0.2−
1991 03 21	809	0.2−	0.3+	1998 08 17	704	0.4+	0.1+	1999 10 08	703	0.1+	0.8+
1991 03 21	809	0.2−	0.2+	1998 08 17	704	0.7−	0.4−	1999 10 08	703	0.4+	0.3+
1991 03 21	809	0.1+	0.0	1998 08 17	704	0.3−	0.6−	1999 10 08	703	0.0	0.3+
1991 03 24	809	0.2+	0.7+	1998 08 17	704	0.6+	0.2+	1999 10 09	704	0.8+	0.5+
1991 03 24	809	0.6+	0.7+	1998 08 17	704	1.0−	0.1−	1999 10 09	704	0.5+	0.8+
1991 03 24	809	0.8+	0.6+	1998 08 23	704	0.9+	0.5+	1999 10 09	704	1.3−	0.6+
1991 03 25	809	0.5−	0.2−	1998 08 23	704	1.4+	0.3−	1999 10 09	704	1.1−	1.2−
1991 03 25	809	0.8−	0.0	1998 08 25	910	0.6+	0.3+	1999 10 10	704	0.0	0.6+
1991 03 25	809	0.7−	0.2−	1998 08 25	910	0.5+	0.3+	1999 10 10	704	0.4−	0.6+
1991 04 19	809	(2.4+	3.6−)	1998 08 26	910	0.6+	0.3+	1999 10 10	704	0.5+	0.2−
1991 04 19	809	(1.9+	3.0−)	1998 08 26	699	0.8+	0.9+	1999 10 10	704	0.3−	0.6−
1991 04 19	809	(2.6+	4.3−)	1998 08 26	699	0.9−	1.3+	1999 10 10	704	0.2−	0.8−
1993 09 15	809	(0.5−	3.5−)	1998 08 26	699	0.0	0.5+	1999 10 20	704	0.3+	0.1+
1993 09 15	809	(1.0−	3.7−)	1998 09 14	704	1.7−	0.2−	1999 10 20	704	0.2+	0.3−
1993 09 15	809	(2.4−	3.9−)	1998 09 14	704	1.0+	0.9+	1999 10 20	704	0.4−	0.4−
1993 09 20	691	0.1+	0.1−	1998 09 14	704	(0.1−	2.4−)	1999 10 20	704	0.4+	0.5−
1993 09 20	691	0.2+	0.5−	1998 09 14	704	1.3−	1.8−	1999 10 20	704	0.1−	0.1−
1993 09 20	691	0.2+	0.3−	1998 09 14	704	(2.6−	1.1−)				

1999 OCT. 26

M.P.C. 36245

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	97.03761	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27241302	ω 171.33472	-0.86698868	+0.49083304
<i>a</i>	2.3567715	Ω 38.45079	-0.46510410	-0.73498388
<i>e</i>	0.1887093	<i>i</i> 7.95890	-0.17891002	-0.46784787
<i>P</i>	3.62	<i>H</i> 14.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1991 04 03	376	(0.7- 3.2-)	1998 01 24	376	0.5+ 0.1-	1998 03 06	376	0.2- 0.2-
1991 04 03	376	(1.0- 2.4-)	1998 01 24	376	0.2+ 0.4+	1998 03 18	376	0.3+ 0.9+
1991 04 11	675	0.1+ 0.1+	1998 01 24	376	0.5+ 0.2+	1998 03 18	376	0.4- 0.1-
1991 04 11	675	1.3- 0.4-	1998 01 31	376	0.7+ 1.0+	1998 04 29	566	0.4+ 0.5+
1991 04 13	675	0.2+ 0.7+	1998 02 22	566	0.5+ 0.9-	1998 04 29	566	0.5+ 0.5+
1991 04 13	675	(4.2- 0.2+)	1998 02 22	566	0.0 0.4-	1998 04 29	566	0.3+ 0.3+
1991 04 16	376	0.5- 1.7-	1998 02 22	566	0.1+ 1.0-	1998 08 08	376	0.0 0.3+
1991 04 16	376	0.6- 0.3-	1998 02 23	566	0.0 1.0-	1998 08 08	376	0.7- 0.5-
1991 05 07	376	0.9+ 1.0-	1998 02 23	566	0.3- 0.7-	1999 09 11	704	0.7- 0.7-
1991 05 07	376	(0.1- 2.7-)	1998 02 23	566	0.1+ 0.7-	1999 09 11	704	0.1+ 0.1+
1996 10 08	566	(2.2+ 0.2-)	1998 02 27	098	0.7- 0.7+	1999 09 11	704	0.7- 0.1-
1996 10 08	566	1.4+ 0.6-	1998 02 27	098	0.8+ 0.7-	1999 09 11	704	0.9- 0.5-
1996 10 08	566	0.6+ 0.7-	1998 02 27	098	0.2+ 0.5-	1999 09 11	704	0.5- 0.4-
1996 10 09	566	0.6- 0.2-	1998 02 27	098	1.2- 0.1+	1999 09 30	704	0.4+ 0.1+
1996 10 09	566	0.6- 0.2-	1998 02 28	699	0.5- 1.0+	1999 09 30	704	0.4- 0.2-
1996 10 09	566	0.3+ 0.5-	1998 02 28	699	0.2- 1.3+	1999 09 30	704	1.1+ 1.4+
1996 10 09	566	1.0- 0.1-	1998 02 28	699	0.7- 0.9+	1999 09 30	704	0.6+ 0.8+
1996 10 09	566	0.3+ 0.1-	1998 03 02	376	0.5- 0.3+	1999 09 30	704	1.6+ 0.6+
1996 10 09	566	1.1+ 0.3-	1998 03 02	376	0.1+ 0.2+			

(11895)* 1991 GU₃ = 1981 QY = 1998 FS₂₇

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

Id. A. Gnädig (*MPC* 31716)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	358.58790	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27215401	ω 122.22527	+0.75129964	+0.65906903
<i>a</i>	2.3582666	Ω 196.62960	-0.63864934	+0.71295204
<i>e</i>	0.0933258	<i>i</i> 6.88475	-0.16636067	+0.23943142
<i>P</i>	3.62	<i>H</i> 14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1981 08 28	046	1.7+ 1.0-	1998 04 01	704	0.3+ 1.1+	1999 09 08	704	0.1+ 0.1-
1981 08 28	046	0.7+ 1.7-	1998 04 01	704	0.0 0.8-	1999 09 09	704	0.0 0.3+
1991 04 08	809	0.5- 1.4+	1998 04 01	704	0.3+ 0.7+	1999 09 09	704	0.4- 0.7+
1991 04 08	809	0.6+ 1.9+	1998 04 01	704	0.3- 1.7+	1999 09 09	704	0.5+ 0.4-
1991 04 08	809	(0.9- 2.1+)	1998 04 01	704	1.4+ 0.3+	1999 09 09	704	0.2+ 0.7+
1991 04 10	809	1.3- 1.4+	1999 05 21	704	1.0+ 0.6-	1999 09 09	704	0.1+ 0.4-
1991 04 10	809	0.6- 1.0+	1999 05 21	704	1.1+ 1.1-	1999 09 13	704	0.0 0.2+
1991 04 10	809	0.4+ 0.3+	1999 05 21	704	(2.1+ 1.2-)	1999 09 13	704	0.6- 0.1-
1991 04 15	675	1.4+ 1.5-	1999 07 13	704	0.3- 0.0	1999 09 13	704	0.4+ 0.8-
1991 04 15	675	0.2- 1.4-	1999 07 13	704	0.4- 0.1+	1999 09 13	704	0.3+ 0.5-
1991 04 19	809	1.5- 0.0	1999 07 13	704	0.6- 0.2+	1999 09 13	704	0.1- 0.7-
1991 04 19	809	(3.0- 1.0+)	1999 07 13	704	0.5- 0.3-	1999 09 30	704	0.2+ 0.1+
1991 04 19	809	0.3- 0.5-	1999 07 13	704	0.7- 0.1+	1999 09 30	704	0.4+ 0.6+
1992 09 29	691	0.3- 0.3+	1999 07 23	704	0.0 0.3+	1999 09 30	704	0.4+ 0.8-
1992 09 29	691	0.7- 0.1-	1999 07 23	704	0.6+ 0.6-	1999 09 30	704	0.6+ 0.2+
1992 09 29	691	1.1- 0.1-	1999 07 23	704	0.3+ 0.3-	1999 09 30	704	0.0 0.8-
1998 03 20	704	0.8- 0.0	1999 08 11	106	0.5- 0.1+	1999 10 13	704	0.0 0.0
1998 03 20	704	1.4+ 0.4-	1999 08 11	106	0.5- 0.6+	1999 10 13	704	0.0 0.2-
1998 03 20	704	1.0+ 0.1-	1999 08 11	106	0.1+ 0.1+	1999 10 13	704	0.0 0.1-
1998 03 20	704	0.3- 0.8-	1999 08 13	699	0.5- 0.1+	1999 10 13	704	0.4+ 0.3+
1998 03 20	704	0.3- 0.8-	1999 08 13	699	0.3+ 0.2-	1999 10 13	704	0.7+ 0.6+
1998 03 22	704	0.1- 0.4-	1999 08 13	699	0.0 0.1-	1999 10 15	704	0.5+ 0.3+
1998 03 22	704	0.2+ 0.4-	1999 08 22	703	0.2- 0.3-	1999 10 15	704	0.4- 0.5-
1998 03 22	704	0.2+ 0.2-	1999 08 22	703	0.4+ 0.4+	1999 10 15	704	0.3+ 0.3+
1998 03 22	704	0.6+ 0.9-	1999 08 22	703	0.0 0.6+	1999 10 15	704	0.9+ 0.7-
1998 03 22	704	0.3- 0.2+	1999 08 22	703	1.1- 0.1-	1999 10 16	704	0.1+ 0.2-
1998 03 29	704	0.6- 0.2+	1999 09 05	699	0.2- 1.4+	1999 10 16	704	0.8- 0.3-

1998 03 29	704	0.1+ 0.8-	1999 09 05	699	0.5- 1.2+	1999 10 16	704	0.1- 0.5+
1998 03 29	704	0.3- 0.5-	1999 09 05	699	0.3+ 0.5+	1999 10 16	704	0.1+ 0.2-
1998 03 29	704	0.1- 0.3-	1999 09 08	704	0.3+ 0.2+	1999 10 16	704	0.2+ 0.2+
1998 03 29	704	0.5- 1.0-	1999 09 08	704	0.6+ 0.3-			

(11896)* 1991 GP₆ = 1977 RB₁₇

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

Id. T. Kobayashi (*MPC* 23977)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	67.94539	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.26416042	ω 31.28046	-0.70783276	+0.70633203
<i>a</i>	2.4056045	Ω 193.66673	-0.65507793	-0.66074290
<i>e</i>	0.1651358	<i>i</i> 1.99768	-0.26428335	-0.25399582
<i>P</i>	3.73	<i>H</i> 15.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1977 09 09	675	1.7+ 0.6+	1992 10 04	691	0.9- 0.0	1998 01 30	910	1.6+ 0.6+
1977 09 10	675	1.3+ 0.4-	1992 10 04	691	0.9- 0.0	1998 01 30	910	1.3+ 0.5+
1988 09 10	675	0.7- 1.3+	1992 10 04	691	(2.3- 0.0)	1998 01 30	910	1.4+ 0.6+
1991 04 08	809	1.1- 0.4+	1996 09 12	691	0.6- 0.6+	1999 07 13	704	0.2- 0.3+
1991 04 08	809	1.4- 0.2+	1996 09 12	691	0.3+ 0.4+	1999 07 13	704	0.3+ 0.3-
1991 04 08	809	1.0- 0.8+	1996 09 12	691	0.7- 0.5+	1999 07 13	704	0.0 0.4-
1991 04 10	809	0.1+ 1.3+	1996 10 08	566	0.3+ 0.3-	1999 07 13	704	1.5+ 0.8+
1991 04 10	809	0.1- 1.0+	1996 10 08	566	0.1+ 0.1-	1999 07 13	704	0.5+ 0.2+
1991 04 10	809	0.2+ 0.9+	1996 10 08	566	0.1- 0.4-	1999 10 05	704	0.4- 0.2+
1991 04 19	809	0.1+ 0.6+	1996 10 09	566	1.1- 0.2+	1999 10 05	704	1.1+ 0.9+
1991 04 19	809	1.1+ 0.4+	1996 10 09	566	0.2- 0.3-	1999 10 05	704	0.3- 0.2+
1991 04 19	809	0.8+ 0.1+	1996 10 09	566	0.4- 0.2-	1999 10 05	704	0.7- 0.7+
1991 04 19	675	0.5- 1.3-	1996 11 08	691	1.1- 0.2+	1999 10 05	704	0.4+ 1.2+
1991 04 19	675	0.1+ 0.5-	1996 11 08	691	0.8- 0.4-			
1991 05 15	675	0.1- 0.7-	1996 11 08	691	1.2- 0.3-			

(11897)* 1991 GC₇ = 1977 CZ₂ = 1984 DR₂

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

Id. H. Kaneda (*MPC* 18637)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	188.91916	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28871751	ω 137.71466	-0.96965639	-0.24065526
<i>a</i>	2.2671868	Ω 28.44516	+0.19307828	-0.86182009
<i>e</i>	0.1080532	<i>i</i> 5.18303	+0.14995752	-0.44648760
<i>P</i>	3.41	<i>H</i> 14.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1953 02 15	675	0.2+	1.4+	1998 04 28	809	1.0+	0.9+	1999 09 14	704	0.1-	0.1-
1953 02 15	675	0.2+	0.3+	1998 04 28	809	1.1+	0.2-	1999 09 14	704	0.0	0.3-
1955 10 25	675	1.2-	0.9+	1998 04 28	809	0.5+	0.5-	1999 09 14	704	0.3-	0.3+
1955 10 25	675	0.4+	0.4+	1998 05 22	704	0.1+	0.2-	1999 09 14	704	0.3-	0.4+
1977 02 12	675	0.4-	0.3+	1998 05 22	704	0.5-	0.2-	1999 10 02	704	0.6-	0.4+
1977 02 13	675	0.5+	0.1-	1998 05 22	704	0.8-	0.4+	1999 10 02	704	0.2-	0.2+
1984 02 26	095	(1.1+	2.8-)	1998 05 22	704	0.4+	0.1-	1999 10 02	704	0.1-	0.3-
1991 04 08	809	1.6-	0.5+	1998 05 22	704	0.0	0.8+	1999 10 02	704	0.2-	0.5+
1991 04 08	809	1.0-	0.2-	1998 05 24	704	0.2-	0.1-	1999 10 02	704	0.2-	0.7-
1991 04 08	809	0.4-	0.3-	1998 05 24	704	0.7-	0.1+	1999 10 07	703	1.0-	0.9+
1991 04 10	809	0.2+	0.1+	1998 05 24	704	1.1+	0.6+	1999 10 07	703	0.4-	1.3+
1991 04 10	809	0.3-	0.0	1998 05 24	704	0.7-	0.4-	1999 10 07	703	0.3-	1.2+
1991 04 10	809	0.0	0.2+	1998 05 24	704	0.2-	0.3-	1999 10 07	703	0.3-	0.7+
1991 04 19	809	1.9+	0.1+	1998 06 16	704	0.8-	0.6+	1999 10 07	704	0.3+	0.1-
1991 04 19	809	1.1+	0.0	1998 06 16	704	1.4+	0.7-	1999 10 07	704	0.2+	0.2+
1991 04 19	809	1.5+	0.1+	1998 06 16	704	(0.2-	2.4-)	1999 10 07	704	0.3+	0.4+
1991 04 19	675	1.4-	1.5-	1998 06 16	704	0.4+	1.0+	1999 10 07	704	0.9+	0.5+
1991 04 19	675	0.3+	0.4-	1999 09 07	704	0.6+	0.2+	1999 10 07	704	0.5+	0.5-
1991 05 17	675	0.9-	0.3+	1999 09 07	704	0.2-	0.6+	1999 10 15	704	0.9+	0.7-
1991 05 17	675	0.2-	0.7+	1999 09 07	704	0.4+	1.8-	1999 10 15	704	0.0	0.5-
1998 04 25	809	(0.7-	2.1+)	1999 09 07	704	0.7-	0.5+	1999 10 15	704	0.5+	0.4-

1998 04 25 809 0.7− 1.4+ 1999 09 07 704 0.0 0.5− 1999 10 15 704 0.1+ 0.5−
 1998 04 25 809 (0.4− 2.3+) 1999 09 14 704 0.5− 0.3− 1999 10 15 704 0.0 0.5−

(11898)* 1991 GM₉ = 1991 HQ = 1973 AW = 1993 QU₇

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

Id. G. V. Williams (d, *MPC* 20313), K. Ichikawa (*MPC* 24104), T. Kobayashi (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	182.41792	(2000.0)	P	Q	
<i>n</i>	0.17122697	<i>ω</i> 44.30085	−0.99514787	−0.09435812	
<i>a</i>	3.2118452	<i>Ω</i> 130.26379	+0.07703276	−0.92347439	
<i>e</i>	0.1258000	<i>i</i> 2.09378	+0.06120997	−0.37187578	
<i>P</i>	5.76	<i>H</i> 13.1	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1949 11 25	675	1.4+	0.1+	1993 08 15	809	1.4+	0.2+	1999 09 07	704	0.9+	0.4−
1949 11 25	675	0.8+	1.0+	1993 08 15	809	0.8+	1.6+	1999 09 07	704	0.2−	0.3−
1973 01 01	095	2.0−	0.1−	1993 08 20	809	0.3−	0.8+	1999 09 07	704	0.3−	0.8+
1988 10 07	675	0.3−	0.0	1993 08 20	809	0.6−	0.4+	1999 09 08	704	0.9−	0.2+
1988 10 07	675	0.1−	0.5−	1993 08 20	809	0.7+	1.4+	1999 09 08	704	0.1+	0.4−
1991 04 10	809	(2.1− 1.2−)		1993 08 24	809	(1.7+ 3.2+)		1999 09 08	704	0.7+	0.5−
1991 04 10	809	(2.2− 2.2−)		1993 08 24	809	(2.2+ 2.0+)		1999 09 14	704	(2.1+ 1.7−)	
1991 04 10	809	(0.9− 2.3−)		1993 08 24	809	(1.6+ 2.3+)		1999 09 14	704	0.2+	0.1+
1991 04 11	033	0.2−	0.2+	1996 02 14	566	0.8+	0.7+	1999 09 14	704	0.6−	1.1+
1991 04 11	033	1.0−	0.7+	1996 02 14	566	0.6+	0.7+	1999 09 14	703	0.3−	0.1+
1991 04 12	033	1.5−	0.9+	1996 02 14	566	1.2+	0.9+	1999 09 14	703	0.4−	0.5−
1991 04 19	809	0.7−	0.2−	1997 05 03	809	1.7+	1.7+	1999 09 14	703	0.3−	0.5−
1991 04 19	809	1.7−	0.5+	1997 05 03	809	(1.3+ 2.1+)		1999 09 14	703	(0.5− 2.2−)	
1991 04 19	809	1.7−	0.5+	1997 05 03	809	0.5+	1.0+	1999 10 07	703	0.5−	0.0
1991 04 19	675	(0.5− 2.9−)		1997 05 04	809	(1.3+ 3.0+)		1999 10 07	703	0.0	0.4+
1991 04 19	675	0.4−	0.3−	1997 05 04	809	(1.4+ 2.4+)		1999 10 07	703	1.3−	0.7+
1991 04 19	675	1.0+	1.0−	1997 05 04	809	(1.4+ 4.0+)		1999 10 07	703	0.3+	0.1−
1991 04 19	675	0.5−	0.4+	1997 05 07	704	1.0+	0.3−	1999 10 15	704	0.2−	0.1−
1991 05 15	675	0.1+	1.2−	1997 05 07	704	0.8+	0.2−	1999 10 15	704	(0.4− 2.2−)	
1991 05 15	675	0.1−	0.5−	1997 05 07	704	0.9+	0.2+	1999 10 15	704	0.1−	0.8−
1991 05 17	675	0.3+	0.4−	1997 05 07	704	0.6+	0.1−	1999 10 15	704	0.1−	1.1−
1991 05 17	675	0.2+	0.2+	1997 05 07	704	0.5+	0.1+				
1993 08 15	809	(2.5+ 1.8+)		1999 09 07	704	0.1+	0.4−				

(11899)* 1991 GJ₁₀ = 1997 GZ₂₃

Discovered 1991 Apr. 9 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 30077)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	210.71849	(2000.0)	P	Q	
<i>n</i>	0.17409054	<i>ω</i> 113.31533	−0.89715372	−0.42704964	
<i>a</i>	3.1765274	<i>Ω</i> 41.64619	+0.31709627	−0.80057153	
<i>e</i>	0.0311781	<i>i</i> 9.78070	+0.30751449	−0.42037344	
<i>P</i>	5.66	<i>H</i> 12.9	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1989 11 02	675	2.1+	1.5+	1997 05 07	704	0.5+	0.3+	1999 09 14	704	0.1−	0.1+
1989 11 02	675	1.5−	0.2−	1997 05 07	704	0.3+	0.1+	1999 10 02	704	0.1+	0.5−
1990 01 30	675	1.4−	0.1−	1997 05 07	704	0.1+	0.2+	1999 10 02	704	0.4+	0.1+
1990 01 30	675	1.4+	0.9+	1997 05 07	704	1.7+	0.5−	1999 10 02	704	0.1+	0.2+
1991 04 09	033	0.6−	0.5+	1997 05 07	704	0.1−	0.7+	1999 10 02	704	0.2−	0.2+
1991 04 09	033	0.4−	0.7+	1997 05 07	704	0.5+	1.4−	1999 10 02	704	0.2+	0.1−
1991 04 11	033	0.9−	0.2+	1997 05 07	704	0.1−	0.3+	1999 10 07	704	0.7+	0.3+
1991 04 11	033	0.1−	0.1−	1997 05 07	704	0.2+	0.6−	1999 10 07	704	0.5−	0.1+
1991 04 12	033	0.1+	0.6−	1997 05 07	704	0.5−	0.7+	1999 10 07	704	0.5+	0.1+
1991 04 13	033	0.2+	0.6−	1999 09 08	699	0.6+	0.1−	1999 10 07	704	0.4−	0.7+
1991 04 19	675	0.2+	0.1−	1999 09 08	699	0.1−	1.3+	1999 10 07	704	1.0−	0.5−
1991 04 19	675	0.1−	0.1+	1999 09 08	699	0.5+	1.1+	1999 10 08	704	0.3−	0.1−
1991 05 05	413	0.3+	0.1+	1999 09 12	113	0.5−	0.3+	1999 10 08	704	0.2−	0.3+
1991 05 05	413	1.5+	0.6+	1999 09 12	113	0.9−	0.1+	1999 10 08	704	0.0	0.0

1997 04 06	704	0.0	1.3+	1999 09 12	113	0.5−	0.1+	1999 10 08	704	0.1+	0.0
1997 04 06	704	0.3+	0.1−	1999 09 12	113	0.6−	0.0	1999 10 08	704	0.1−	0.3+
1997 04 07	704	0.6−	0.8+	1999 09 14	704	0.1−	0.4−	1999 10 15	704	0.1−	0.2+
1997 04 07	704	0.6−	0.8+	1999 09 14	704	0.2−	0.3−	1999 10 15	704	0.0	0.1+
1997 04 11	704	0.1+	0.2+	1999 09 14	704	0.4−	0.4−	1999 10 15	704	0.7+	0.1+
1997 04 11	704	0.4−	0.1+	1999 09 14	704	0.5+	0.0	1999 10 15	704	0.1+	0.2−

(11900)* 1991 LV₂ = 1996 XS₃₃

Discovered 1991 June 6 by E. W. Elst at the European Southern Observatory.

Id. A. Gnädig (*MPC* 31531)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	14.71740	(2000.0)	P	Q	
<i>n</i>	0.26345260	<i>ω</i> 222.80315	+0.81310155	+0.57921094	
<i>a</i>	2.4099113	<i>Ω</i> 101.71264	−0.51675292	+0.76417157	
<i>e</i>	0.1892116	<i>i</i> 3.40416	−0.26801547	+0.28382477	
<i>P</i>	3.74	<i>H</i> 14.7	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1991 05 18	809	0.7−	0.4+	1998 04 04	691	0.2−	0.4−	1999 09 14	704	0.4−	0.1−
1991 05 18	809	0.5−	0.1−	1998 04 04	691	0.0	0.7−	1999 09 14	704	0.6−	0.4−
1991 05 18	809	(2.7− 0.1−)		1998 04 04	691	0.0	0.4−	1999 09 14	704	0.8−	0.3−
1991 06 06	809	0.1−	0.8+	1998 04 19	704	0.8−	0.4+	1999 09 14	704	0.7−	0.5−
1991 06 06	809	0.5−	0.7+	1998 04 19	704	2.0−	0.7−	1999 10 02	704	0.2+	0.1−
1991 06 06	809	0.0	0.3+	1998 04 19	704	(1.6− 2.4+)		1999 10 02	704	0.1−	0.5−
1991 06 08	809	(3.1+ 0.1−)		1998 04 19	704	0.1+	0.7+	1999 10 02	704	0.5−	0.1−
1991 06 08	809	1.4+	0.4−	1998 04 20	704	1.2−	1.6−	1999 10 02	704	0.9−	0.2+
1991 06 08	809	0.8+	0.1−	1998 04 20	704	(0.9+ 2.2+)		1999 10 02	704	0.3−	0.6−
1996 12 10	327	0.1+	0.5−	1998 04 20	704	0.1+	1.2+	1999 10 06	106	0.3+	0.1+
1996 12 10	327	1.1−	0.3+	1998 04 20	704	0.5+	0.4+	1999 10 06	106	0.0	0.6+
1996 12 10	327	0.7+	1.2+	1998 04 22	704	0.9+	0.2−	1999 10 06	106	0.4−	0.0
1996 12 19	327	0.5−	0.2−	1998 04 22	704	0.9−	0.7−	1999 10 07	704	0.2+	0.4−
1996 12 19	327	0.1−	0.2+	1998 04 22	704	0.3+	0.4+	1999 10 07	704	0.4+	0.8−
1996 12 19	327	0.8+	0.5+	1998 04 22	704	(2.1+ 3.7−)		1999 10 07	704	0.2−	0.5−
1998 03 22	704	0.6+	0.6−	1999 09 05	699	0.1−	0.8+	1999 10 07	704	0.0	0.3−
1998 03 22	704	0.4+	1.4−	1999 09 05	699	0.3+	0.8+	1999 10 07	704	0.6+	0.9−
1998 03 22	704	(0.0 2.5−)		1999 09 05	699	0.1+	0.3+	1999 10 08	704	0.4+	0.7−
1998 03 22	704	(3.0− 1.7−)		1999 09 07	704	0.9+	0.2+	1999 10 08	704	0.0	0.6−
1998 03 29	704	0.4+	1.0−	1999 09 07	704	1.3+	0.1+	1999 10 08	704	0.2+	0.4−
1998 03 29	704	0.5+	0.2−	1999 09 07	704	0.6+	0.4+	1999 10 12	046	0.0	0.5+
1998 03 29	704	(2.1+ 0.1+)		1999 09 07	704	0.5+	0.3+	1999 10 12	046	0.2+	0.3+
1998 03 29	704	0.1+	0.4+	1999 09 07	704	0.6+	0.6−	1999 10 12	046	0.0	0.4+
1998 03 29	704	0.9−	0.2−	1999 09 14	704	0.4−	0.2−				

(11901)* 1991 PV₁₁ = 1990 FG₅ = 1998 MR₉

Discovered 1991 Aug. 7 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 32224)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	124.97989	(2000.0)	P	Q	
<i>n</i>	0.26183692	<i>ω</i> 93.93886	−0.46723668	+0.87560881	
<i>a</i>	2.4198148	<i>Ω</i> 147.29304	−0.87414258	−0.43673963	
<i>e</i>	0.1565340	<i>i</i> 13.10015	−0.13253164	−0.20631941	
<i>P</i>	3.76	<i>H</i> 13.6	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1990 03 17	095	(3.9− 4.5+)		1998 06 19	704	0.2−	0.4−	1999 09 14	704	0.3−	0.2+
1990 03 17	095	0.4−	1.7−	1998 06 19	704	0.1−	0.1−	1999 09 14	704	0.7+	0.1+
1991 08 07	675	(0.2+ 2.3−)		199							

1991 09 16	675	0.1+	1.9-	1998 07 20	595	0.6-	1.0+	1999 10 08	704	0.7-	0.2+
1998 06 03	704	0.2+	0.4-	1998 07 20	595	0.8-	1.4+	1999 10 08	704	0.7-	0.1+
1998 06 03	704	0.4-	1.2-	1998 07 21	595	0.5-	0.5+	1999 10 08	704	1.0-	0.4+
1998 06 03	704	0.4+	0.1-	1998 07 21	595	0.8-	0.9+	1999 10 08	704	0.8-	0.5+
1998 06 03	704	1.4+	0.1-	1998 07 21	595	0.7-	1.3+	1999 10 08	704	1.1-	1.0+
1998 06 03	704	0.6+	0.4-	1999 09 14	704	1.0+	0.6-				

(11902)* 1991 PZ₁₂ = 1984 WH₁ = 1984 YF₃

Discovered 1991 Aug. 5 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 20338)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	339.48781		(2000.0)	P	Q
n	0.25970260	ω	80.50491	+0.73057579	-0.68025184
a	2.4330546	Ω	322.32125	+0.58224184	+0.66596820
e	0.1313485	i	5.56739	+0.35672603	+0.30617607
P	3.80	H	14.0	G 0.15	U 1

Residuals in seconds of arc

1984 11 20	010	1.1+	0.9+	1997 04 29	704	0.2+	0.4+	1999 10 12	704	0.1-	0.4-
1984 11 20	010	1.6+	0.5+	1997 04 29	704	0.9+	0.4-	1999 10 12	704	0.0	0.0
1984 11 22	010	1.5-	1.1-	1997 04 29	704	1.7+	0.2+	1999 10 12	704	0.1+	0.1-
1984 12 27	095	1.4-	1.8-	1997 04 29	704	1.5-	0.9-	1999 10 12	704	0.2-	0.3-
1991 08 05	675	0.5-	1.0-	1999 09 09	681	0.1+	0.9+	1999 10 12	704	0.3-	0.3-
1991 08 08	675	0.9+	0.5-	1999 09 09	681	0.4-	0.1+	1999 10 13	704	0.3-	0.3-
1991 08 08	675	0.3+	0.5-	1999 09 12	681	0.3-	0.4+	1999 10 13	704	0.1-	0.2-
1991 09 12	675	0.8+	0.0	1999 10 05	704	0.5+	0.1-	1999 10 13	704	0.4-	0.3-
1991 09 12	675	0.2+	0.6+	1999 10 05	704	0.4+	0.6+	1999 10 13	704	0.1+	0.5-
1994 06 12	691	0.1+	0.5+	1999 10 05	704	0.2+	0.8+	1999 10 13	704	0.2-	0.2-
1994 06 12	691	0.6-	0.3+	1999 10 05	704	0.6+	0.8+				
1994 06 12	691	0.5-	0.4+	1999 10 05	704	0.9-	1.4+				

(11903)* 1991 RD₇ = 1954 RW = 1987 SL₂₁

Discovered 1991 Sept. 2 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 20822)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	333.78401		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.24017723	ω	354.72840	+0.99948695	+0.02537227
a	2.5631941	Ω	3.97812	-0.00700691	+0.76872417
e	0.1825735	i	16.36483	-0.03125268	+0.63907699
P	4.10	H	13.1	G 0.15	U 2

Residuals in seconds of arc

1954 09 03	675	0.1+	0.2-	1995 12 19	704	0.1+	0.7+	1998 04 20	704	0.3-	0.2-
1954 09 03	675	0.0	0.4+	1995 12 19	704	0.3+	1.1+	1998 04 20	704	0.5+	0.3+
1987 09 18	095	(0.2+	2.6-)	1998 03 25	699	0.9+	0.6+	1998 04 20	704	0.6-	0.5+
1991 09 02	413	0.3+	0.0	1998 03 25	704	0.6+	0.1+	1998 04 20	704	0.1+	0.3-
1991 09 02	413	0.7+	1.0-	1998 03 25	699	0.5+	1.1+	1998 04 20	704	1.3-	0.5-
1991 09 03	413	0.9-	0.6+	1998 03 25	699	0.2+	0.6+	1999 09 11	704	0.5-	0.2-
1991 09 03	413	0.4-	0.4+	1998 03 25	704	0.2+	0.4+	1999 09 11	704	0.7-	0.2-
1991 09 12	095	(4.9-	9.2+)	1998 03 25	704	0.3+	0.3-	1999 09 11	704	0.7-	0.1+
1991 09 12	095	0.3-	0.4-	1998 03 25	704	0.3+	0.3-	1999 09 11	704	0.6-	0.5-
1991 09 17	675	0.8+	1.2-	1998 03 31	704	0.2+	0.3+	1999 09 11	704	1.7-	0.3+
1991 09 17	675	0.0	1.1-	1998 03 31	704	0.5+	1.2-	1999 09 29	704	0.4+	0.1-
1991 10 07	033	0.5-	0.0	1998 03 31	704	0.8+	0.4-	1999 09 29	704	0.9+	0.6+
1991 10 07	033	0.8-	0.7+	1998 03 31	704	(0.6-	2.5-)	1999 09 29	704	0.1+	0.1-
1991 10 08	033	0.4-	0.5+	1998 03 31	704	(1.0-	2.2-)	1999 09 29	704	0.6+	0.5+
1994 05 11	675	0.7+	0.0	1998 04 01	704	0.5+	0.4+	1999 09 29	704	0.6+	0.8+
1994 05 11	675	1.5-	1.0+	1998 04 01	704	0.6+	0.1+	1999 09 30	704	0.3+	0.0
1995 12 19	704	0.7+	0.7+	1998 04 01	704	0.7-	0.7-	1999 09 30	704	1.3+	0.1-
1995 12 19	704	0.1-	0.3+	1998 04 01	704	0.1-	0.6-	1999 09 30	704	0.8+	0.7-
1995 12 19	704	0.3-	0.3+	1998 04 01	704	1.4-	0.2+				

(11904)* 1991 TR₁

Discovered 1991 Oct. 13 by K. J. Lawrence at Palomar.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	356.41862		(2000.0)	P	Q
n	0.37023945	ω	145.65689	+0.96382385	-0.13056257
a	1.9207946	Ω	223.76790	+0.09657795	+0.98363650
e	0.0995608	i	19.62881	+0.24842761	+0.12414773
P	2.66	H	14.5	G 0.15	U 2

Residuals in seconds of arc

1991 10 13	675	0.2+	0.1+	1998 03 25	732	(1.6+	3.2-)	1999 10 12	704	0.3+	0.1+
1991 10 13	675	0.5-	0.5-	1998 03 26	732	0.8+	1.4+	1999 10 13	704	0.1-	0.7+
1991 10 14	675	1.1+	1.7-	1998 03 26	732	0.0	0.8+	1999 10 13	704	0.3+	0.8+
1991 11 01	675	0.1-	0.7+	1998 03 26	732	0.2+	1.4+	1999 10 13	704	0.2+	0.4+
1991 11 01	675	0.3-	0.7-	1999 07 22	704	0.4+	0.8+	1999 10 13	704	0.6+	0.2+
1991 11 03	675	0.4+	0.1-	1999 07 22	704	0.5+	0.2+	1999 10 13	704	0.4+	0.2+
1991 11 03	675	0.7-	0.7-	1999 07 22	704	1.5+	0.2+	1999 10 16	127	0.3-	0.7+
1993 05 17	675	1.5-	2.0+	1999 07 22	704	0.2+	0.7+	1999 10 16	127	0.2-	0.8+
1993 05 17	675	0.3-	2.3+	1999 09 03	704	0.5-	0.5+	1999 10 16	127	0.1-	0.6+
1993 05 19	675	0.6-	0.8+	1999 09 03	704	0.8-	0.3+	1999 10 17	127	1.3+	0.8-
1993 05 19	675	0.8-	0.0	1999 09 03	704	0.2+	1.1+	1999 10 17	127	1.2+	1.0-
1996 09 05	608	0.2+	0.1+	1999 10 05	704	0.7-	0.8+	1999 10 19	127	0.7-	0.4+
1996 09 05	608	1.0+	0.1-	1999 10 05	704	0.3-	0.6+	1999 10 19	127	0.6-	0.1+
1996 09 12	608	0.7+	0.2+	1999 10 05	704	0.4-	0.3+	1999 10 22	704	0.2-	0.3+
1996 09 12	608	0.8+	0.1+	1999 10 05	704	0.2-	0.7+	1999 10 22	704	0.0	0.1+
1996 10 15	801	(1.6+	2.3-)	1999 10 05	704	0.6-	0.6+	1999 10 22	704	0.4-	0.4+
1996 10 15	801	0.5+	0.5+	1999 10 12	704	0.3-	0.9+	1999 10 22	704	0.3-	0.3+
1998 03 24	732	1.7+	1.2+	1999 10 12	704	0.0	0.7+	1999 10 22	704	0.5-	0.3+
1998 03 24	732	0.5+	0.4+	1999 10 12	704	0.1-	0.4+				
1998 03 25	732	(2.8+	1.6-)	1999 10 12	704	0.4+	0.3+				

(11905)* 1991 VL₆ = 1993 FX₂₈

Discovered 1991 Nov. 6 by E. W. Elst at the European Southern Observatory.

Id. K. Ichikawa (*MPC* 25330), A. Milani (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	326.34696		(2000.0)	P	Q		
n	0.24043936	ω	203.43298	+0.65701359	-0.74718393		
a	2.5613308	Ω	205.84664	+0.72293688	+0.66215754		
e	0.1631737	i	13.29364	+0.21376485	+0.05712768		
P	4.10	H	14.4	G	0.15	U	2

Residuals in seconds of arc

1991 11 06	809	0.1-	1.1-	1998 06 21	910	0.2+	1.1-	1999 10 04	704	0.1-	0.3-
1991 11 06	809	0.0	1.1-	1998 06 21	910	0.0	0.6-	1999 10 04	704	0.2-	0.2-
1991 11 06	809	0.9-	1.5-	1998 06 22	910	0.3+	0.8-	1999 10 06	704	0.1-	0.2+
1991 11 07	675	0.0	0.1-	1998 06 25	910	0.7+	0.7-	1999 10 06	704	0.3-	0.4+
1991 11 07	675	1.8-	1.4-	1998 06 25	910	1.5+	0.8-	1999 10 06	704	0.3-	0.3+
1991 11 09	809	(0.3-	2.4+)	1998 06 25	910	0.9+	0.8-	1999 10 06	704	0.2-	0.3+
1991 11 09	809	0.3-	0.4-	1999 09 05	703	1.1-	1.3+	1999 10 06	704	0.2-	0.5+
1991 11 09	675	0.6-	1.1-	1999 09 05	703	0.3-	0.6+	1999 10 07	704	0.1-	0.5+
1991 11 09	675	0.1+	0.1-	1999 09 05	703	0.6+	0.5+	1999 10 07	704	0.2-	0.4+
1991 11 12	809	1.0+	0.5+	1999 09 05	703	1.3+	0.3-	1999 10 07	704	0.1-	0.2+
1991 11 12	809	1.5+	0.4+	1999 10 01	691	0.0	0.2+	1999 10 07	704	0.1+	0.6+
1991 11 12	809	0.4+	0.2-	1999 10 01	691	0.8+	1.2-	1999 10 10	704	0.7+	0.0
1991 12 01	675	0.8+	0.3-	1999 10 01	691	0.2-	0.1-	1999 10 10	704	1.1-	0.8-
1991 12 01	675	0.1-	1.3-	1999 10 02	703	0.2+	0.7+	1999 10 10	704	0.4+	0.3+
1993 03 21	809	0.2+	1.1+	1999 10 02	703	0.0	0.6+	1999 10 10	704	0.4+	0.1+
1993 03 22	809	1.0+	1.5+	1999 10 02	703	0.1+	0.6+	1999 10 15	704	0.2+	0.5+
1993 03 26	809	1.6-	1.0+	1999 10 02	703	0.0	0.4+	1999 10 15	704	0.1-	0.4+
1993 04 18	413	(4.0-	3.4+)	1999 10 03	704	0.1-	0.1+	1999 10 15	704	0.2+	0.9+
1995 10 23	033	0.3-	0.1-	1999 10 03	704	1.3-	0.0	1999 10 15	704	0.0	0.3+
1995 10 24	033	0.6+	0.1-	1999 10 03	704	0.1-	0.3-	1999 10 15	704	0.1+	1.1+
1995 10 24	033	0.3+	0.4-	1999 10 03	704	0.4-	0.4-	1999 10 20	704	0.0	0.1-
1998 06 19	704	(2.7-	0.3-)	1999 10 03	704	0.3-	0.2-	1999 10 20	704	0.0	0.1+
1998 06 19	704	0.8-	1.1+	1999 10 04	704	0.2+	0.5+	1999 10 20	704	0.0	0.2-
1998 06 19	704	(2.5-	0.9-)	1999 10 04	704	0.2+	0.3-	1999 10 20	704	0.2+	0.1-
1998 06 19	704	1.4-	1.9-	1999 10 04	704	0.1-	0.2+	1999 10 20	704	0.2+	0.5-

(11906)* 1992 AE₁ = 1954 WE₁ = 1983 EA₃

Discovered 1992 Jan. 10 by T. Hioki and S. Hayakawa at Okutama.

Id. E. Bowell (*MPC* 22815), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21776566	ω	27.02869	−0.56142420	−0.80691691		
<i>a</i>	2.7361702	Ω	97.66682	+0.72182824	−0.58598016		
<i>e</i>	0.1929801	<i>i</i>	10.67270	+0.40468117	−0.07424524		
<i>P</i>	4.53	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1954 11 20	675	0.3−	0.4−	1995 11 18	684	0.4+	0.7−	1999 09 08	703	0.1+	0.2+
1954 11 20	675	0.0	0.3+	1995 11 18	684	0.8+	0.0	1999 09 08	703	0.2+	0.9−
1983 03 14	095	0.8+	0.1−	1995 11 19	684	0.4+	0.0	1999 09 11	699	0.4−	0.2+
1992 01 10	877	1.2+	1.0+	1995 11 19	684	(2.2+ 0.5+)		1999 09 11	699	0.9−	1.0+
1992 01 10	877	0.1+	0.2+	1995 11 23	801	1.3−	0.1+	1999 09 11	699	0.5−	1.6+
1992 01 17	877	0.2+	0.1+	1995 11 23	801	0.1+	0.6−	1999 09 13	704	0.5−	0.4+
1992 01 17	877	(2.3+ 0.5−)		1998 06 16	426	0.3+	0.1−	1999 09 13	704	0.3−	0.7−
1992 01 25	877	0.0	1.6+	1998 06 16	426	0.0	0.4−	1999 09 13	704	0.5−	0.2+
1992 01 25	877	0.7−	1.5+	1998 06 16	426	0.9−	0.5+	1999 09 13	704	0.5−	0.3−
1992 01 28	877	(1.2+ 2.0−)		1998 06 17	426	0.1+	1.0+	1999 09 14	704	0.1−	0.7−
1992 01 28	877	(2.7− 1.6−)		1998 06 17	426	1.1−	0.2+	1999 09 14	704	0.2+	0.1−
1992 02 24	877	0.2+	0.3+	1998 06 26	704	1.2+	0.2−	1999 09 14	704	0.3+	0.1−
1992 02 24	877	1.0−	0.0	1998 06 26	704	0.3+	0.4+	1999 09 14	704	0.0	0.3−
1995 10 24	801	0.1+	0.1+	1998 06 26	704	0.4−	0.9+	1999 09 14	704	0.7+	0.1−
1995 10 24	801	0.3−	0.3+	1998 06 28	809	(2.1+ 3.4+)		1999 09 30	704	0.6+	0.5+
1995 10 29	801	0.4+	0.4−	1998 06 28	809	(2.3+ 3.3+)		1999 09 30	704	0.6+	0.6+
1995 10 29	801	0.6+	0.2−	1998 06 28	809	(2.0+ 3.3+)		1999 09 30	704	0.1−	1.0+
1995 11 18	801	0.0	0.2−	1999 09 08	703	0.0	0.7+	1999 09 30	704	0.4+	0.3+
1995 11 18	801	0.3−	0.6−	1999 09 08	703	0.0	0.3+	1999 09 30	704	0.3−	0.5+

(11907)* 1992 ER₈ = 1975 VL₂

Discovered 1992 Mar. 2 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 27713)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20557214	ω	238.80412	+0.56326341	+0.82491432		
<i>a</i>	2.8433253	Ω	65.55107	−0.73925808	+0.52875962		
<i>e</i>	0.0529099	<i>i</i>	2.98730	−0.36909594	+0.19982399		
<i>P</i>	4.79	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1975 11 02	095	0.7+	1.5−	1999 10 04	704	0.5+	0.1+	1999 10 11	704	0.0	0.1−
1989 07 31	675	0.4−	0.4−	1999 10 04	704	0.5−	0.8+	1999 10 11	704	0.2+	0.0
1989 07 31	675	0.1+	0.1+	1999 10 04	704	0.6+	0.9−	1999 10 11	704	0.2−	0.1−
1989 09 02	675	0.0	0.5+	1999 10 04	704	0.0	0.2−	1999 10 11	704	0.2−	0.3−
1989 09 02	675	0.1+	0.1+	1999 10 04	704	1.2−	0.0	1999 10 15	704	0.3+	0.3+
1992 03 02	809	0.1−	0.1−	1999 10 07	704	0.0	0.4−	1999 10 15	704	0.2+	0.4+
1992 03 05	809	0.1+	0.1+	1999 10 07	704	0.4+	0.1+	1999 10 15	704	0.6+	0.4+
1992 03 07	809	0.1+	0.0	1999 10 07	704	0.2+	0.3+	1999 10 15	704	0.3+	0.7+
1992 04 06	809	0.0	0.4+	1999 10 07	704	0.1+	0.2+	1999 10 15	704	0.1+	0.6+
1999 09 05	699	0.1−	1.1+	1999 10 07	704	0.1−	0.2−	1999 10 19	704	1.1−	0.2+
1999 09 05	699	1.2+	0.1−	1999 10 09	704	0.1−	0.1+	1999 10 19	704	0.2−	0.1−
1999 09 05	699	0.1−	0.8+	1999 10 09	704	0.1−	0.3−	1999 10 19	704	0.3−	0.1−
1999 10 03	703	0.1−	0.0	1999 10 09	704	0.2−	0.4−	1999 10 19	704	0.1−	0.3−
1999 10 03	703	0.2−	0.2+	1999 10 09	704	0.2−	0.0	1999 10 19	704	0.4−	0.5−
1999 10 03	703	0.1+	0.2−	1999 10 09	704	0.0	0.1+				
1999 10 03	703	0.4−	0.0	1999 10 11	704	0.1+	0.1−				

(11908)* 1992 GC₅ = 1996 BS

Discovered 1992 Apr. 4 by E. W. Elst at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 27713)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18512519	ω	136.57749	−0.90359222	+0.42662070		
<i>a</i>	3.0490113	Ω	68.71325	−0.40358400	−0.81725959		
<i>e</i>	0.0619311	<i>i</i>	2.39480	−0.14366995	−0.38740360		
<i>P</i>	5.32	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 04 04	809	1.3+	1.5−	1996 01 16	817	0.5−	0.1−	1999 09 09	704	0.6+	0.1+
1992 04 04	809	(1.0+ 2.2−)		1996 01 16	817	0.3−	0.3+	1999 09 09	704	0.9+	0.2−
1992 04 04	809	0.5+	1.9−	1996 01 16	817	0.1−	0.2+	1999 09 14	704	0.1+	1.2−
1992 04 06	809	(1.9+ 2.4−)		1996 01 20	709	0.4+	0.0	1999 09 14	704	0.8+	0.5−
1992 04 06	809	1.3+	1.7−	1996 01 20	709	0.4+	0.1−	1999 09 14	704	1.2+	0.1−
1992 04 06	809	0.5+	1.5−	1999 08 22	703	0.7−	0.3+	1999 09 14	704	1.1+	1.4−
1992 04 25	809	1.1−	1.1+	1999 08 22	703	0.2−	0.6+	1999 09 14	704	(2.0+ 0.8+)	
1992 04 25	809	0.9−	1.1+	1999 08 22	703	0.1+	0.4+	1999 09 14	703	0.7−	0.7−
1992 04 25	809	0.4−	1.3+	1999 08 22	703	0.6−	1.4+	1999 09 14	703	0.4−	0.4−
1992 05 01	809	(2.5+ 1.2+)		1999 09 07	704	0.1−	0.3−	1999 09 14	703	0.4−	0.5+
1992 05 01	809	(2.7+ 1.2+)		1999 09 07	704	1.1+	0.7+	1999 09 14	703	0.2+	0.3+
1992 05 01	809	(2.9+ 1.1+)		1999 09 07	704	0.2−	0.9+	1999 10 07	704	0.4+	0.4−
1992 05 02	809	0.9−	0.4+	1999 09 07	704	0.4−	0.0	1999 10 07	704	0.3+	0.0
1992 05 02	809	0.5−	0.2+	1999 09 07	704	0.5−	0.3−	1999 10 07	704	0.9−	0.0
1992 05 02	809	0.3−	0.0	1999 09 08	704	0.9+	0.9+	1999 10 07	704	0.1+	0.5−
1992 05 03	809	0.1−	0.9+	1999 09 08	704	0.7+	0.4+	1999 10 15	704	1.0−	0.7−
1992 05 03	809	0.2+	0.5+	1999 09 08	704	0.5+	0.1−	1999 10 15	704	0.6−	0.5−
1992 05 03	809	0.5+	0.4+	1999 09 08	704	0.3+	0.4+	1999 10 15	704	1.6−	0.3+
1994 10 09	691	0.2+	0.5+	1999 09 09	704	0.3+	0.0	1999 10 15	704	(2.3− 0.6−)	
1994 10 09	691	0.2+	0.4−	1999 09 09	704	0.1+	0.1−	1999 10 15	704	1.3−	0.5−
1994 10 09	691	0.4−	0.1+	1999 09 09	704	0.1+	0.1+				

(11909)* 1992 HD₅ = 1977 VS = 1994 VN₆

Discovered 1992 Apr. 25 by H. Debehogne at the European Southern

Observatory.

Id. S. Nakano (*MPC* 24393)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17655290	ω	296.52452	+0.88920588	+0.41261251		
<i>a</i>	3.1469232	Ω	39.97859	−0.22581220	+0.77153620		
<i>e</i>	0.1591289	<i>i</i>	17.91580	−0.39789666	+0.48423425		
<i>P</i>	5.58	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 11 11	805	0.6+	0.5−	1992 05 03	809	0.7−	0.4+	1999 09 30	704	0.1+	0.4−
1977 11 12	805	0.5−	0.4+	1992 05 03	809	0.6−	0.3+	1999 09 30	704	0.4+	0.0
1992 04 06	809	(3.8−	2.8−)	1992 05 03	809	0.6−	0.3+	1999 09 30	704	0.1+	0.4−
1992 04 06	809	(3.0−	3.2−)	1992 05 08	691	0.8−	1.0−	1999 09 30	704	0.3+	0.3−
1992 04 06	809	(3.3−	3.2−)	1992 05 08	691	1.1−	0.8−	1999 10 01	704	0.1+	0.1−
1992 04 25	809	(2.3−	1.0+)	1992 05 08	691	0.5−	1.2−	1999 10 01	704	0.3−	0.1−
1992 04 25	809	2.1−	1.1+	1994 11 04	400	0.7−	0.5−	1999 10 01	704	0.2−	0.6−
1992 04 25	809	1.8−	1.2+	1994 11 04	400	2.0+	0.4−	1999 10 01	704	0.0	0.1−
1992 05 01	809	0.1+	0.7+	1994 11 06	400	0.8−	0.5−	1999 10 01	704	0.8−	0.1−
1992 05 01	809	0.3−	0.6+	1994 11 06	400	0.4−	1.6+	1999 10 04	704	0.4+	0.9−
1992 05 01	809	0.5−	0.8+	1999 09 13	704	0.3+	0.2+	1999 10 04	704	0.5+	0.0
1992 05 02	809	1.3+	1.0−	1999 09 13	704	0.3−	0.4+	1999 10 04	704	0.4+	0.0
1992 05 02	809	1.3+	0.9−	1999 09 13	704	0.1−	0.2+	1999 10 04	704	0.3−	0.3−
1992 05 02	809	1.7+	0.8−	1999 09 13	704	0.5−	0.3+	1999 10 04	704	0.0	0.4−
1992 05 02	809	0.9+	1.6+	1999 09 14	704	0.2+	0.0	1999 10 04	704	0.2+	0.3−
1992 05 02	809	1.3+	1.5+	1999 09 14	704	0.0	0.1+	1999 10 04	704	1.0−	0.9+
1992 05 02	809	1.5+	1.5+	1999 09 14	704	0.2+	0.2+	1999 10 04	704	0.1	0.3+
1992 05 03	809	0.1−	1.5−	1999 09 14	704	0.0	0.1+	1999 10 04	704	0.1−	1.0+
1992 05 03	809	0.3+	1.5−	1999 09 14	704	0.1−	0.5+				
1992 05 03	809	0.5+	1.6−	1999 09 30	704	0.5+	0.4−				

Id. G. V. Williams (*MPC* 35915)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30022392	ω	47.33169	−0.41480455	+0.90976443		
<i>a</i>	2.2088820	Ω	198.18104	−0.84936608	−0.39356911		
<i>e</i>	0.1562100	<i>i</i>	2.99546	−0.32636550	−0.13203042		
<i>P</i>	3.28	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1992 05 28	894	1.4+	0.3−	1999 08 22	699	0.5−	1.5+
1992 05 28	894	0.7+	1.1−	1999 08 22	699	1.3−	0.6+
1992 06 02	894	0.1+	0.5+	1999 09 07	704	0.6−	0.3−
1992 06 02	894	1.2−	1.1+	1999 09 07	704	0.5−	0.2+
1992 06 03	809	0.5−	0.3−	1999 09 07	704	0.8−	0.1−
1992 06 03	809	1.1−	0.4−	1999 09 07	704	1.1−	0.1−
1992 06 03	809	0.5−	0.6−	1999 09 07	704	0.6−	0.2+
1992 06 09	809	(2.3+ 1.3−)		1999 09 09	704	0.9−	0.5+
1992 06 09	809	0.8+	0.3−	1999 09 09	704	0.4−	0.1+
1992 06 09	809	0.3+	1.0−	1999 09 09	704	1.0−	0.6+
1996 10 07	691	0.0	0.4−	1999 09 09	704	0.3−	0.5+
1996 10 07	691	0.1+	0.6−	1999 09 09	704	0.8−	0.2+
1996 10 07	691	0.0	0.6−	1999 09 14	704	0.3−	0.1+
1997 12 01	327	0.4+	0.3−	1999 09 14	704	0.5−	0.1+
1997 12 01	327	0.1−	0.5−	1999 09 14	704	0.1+	0.3−
1997 12 01	327	0.2−	0.0	1999 09 14	704	0.6−	0.2+
1997 12 29	327	0.5−	0.4−	1999 09 14	704	0.1+	0.2−
1997 12 29	327	0.5−	0.1−	1999 09 30	699	0.3−	0.7+
1997 12 29	327	0.1−	0.2+	1999 09 30	699	0.6−	0.9+
1998 03 19	104	0.5+	0.1+	1999 09 30	699	0.2+	0.1−
1998 03 19	104	0.3+	0.5+	1999 10 01	704	1.1+	0.3+
1999 08 22	699	1.4−	1.1+	1999 10 01	704	1.0+	0.1+
				1999 10 15	704	0.9+	1.3−

(11911)* 1992 LF = 1970 QC = 1993 PF₉

Discovered 1992 June 4 by C. S. Shoemaker at Palomar.

Id. E. Bowell (*MPC* 28586), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17234076	ω	224.49021	+0.93643280	−0.31267742		
<i>a</i>	3.1979920	Ω	152.51648	+0.32948780	+0.93959840		
<i>e</i>	0.1578523	<i>i</i>	20.17223	−0.12054628	+0.13923967		
<i>P</i>	5.72	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1970 08 28	095	0.5−	0.5+	1997 07 01	688	0.1−	0.4+
1992 06 04	675	0.8+	1.8−	1997 07 01	688	0.0	0.8+
1992 06 04	675	0.5+	0.7−	1997 07 01	688	0.6−	0.4+
1992 06 08	675	0.8+	1.3−	1997 07 02	688	0.1+	0.5+
1992 06 08	675	0.4−	0.7−	1997 07 02	688	0.0	0.6+
1992 06 25	675	(0.8+ 2.8−)		1998 06 14	689	0.8+	0.0
1992 06 25	675	(0.6+ 2.5−)		1998 06 19	704	0.3−	0.8+
1992 06 26	675	(0.1+ 2.6−)		1998 06 19	704	0.6−	0.7+
1992 06 26	675	0.1+	1.1−	1998 06 19	704	0.6−	0.4+
1992 06 29	675	(0.0 2.4−)		1998 06 19	704	0.4−	1.4+
1992 06 29	675	(1.5+ 2.7−)		1998 06 19	704	0.0	1.4+
1993 08 13	675	0.3+	0.1+	1998 06 25	704	1.1−	0.7−
1993 08 13	675	0.3+	0.3+	1998 06 25	704	0.1+	1.4+
1997 07 01	688	0.3−	0.6+	1998 06 25	704	0.1+	1.2−

(11912)* 1992 OP₅ = 1995 HH

Discovered 1992 July 30 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (*MPC* 25215)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28037635	ω	93.95994	+0.10669880	+0.99428893		
<i>a</i>	2.3119324	Ω	182.16883	−0.93385983	+0.09945015		
<i>e</i>	0.1373148	<i>i</i>	3.34931	−0.34135200	+0.03871940		
<i>P</i>	3.52	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1992 07 26	809	1.9+	1.1−	1999 07 13	704	0.2−	0.4+
1992 07 26	809	0.7+	0.4−	1999 07 16	704	0.1−	0.2+
1992 07 30	809	0.8+	0.8−	1999 07 16	704	0.1+	0.3+
1992 07 30	809	0.1−	0.5−	1999 07 16	704	0.2−	0.1+
1992 07 30	809	0.1+	0.6−	1999 07 16	704	0.1−	0.2+
1992 07 31	809	0.4+	0.9−	1999 07 16	120	0.4−	0.1+
1992 07 31	809	0.7−	1.7−	1999 07 16	120	0.7−	0.0
1992 07 31	809	1.1−	1.7−	1999 07 16	120	0.4−	0.2+
1995 04 20	400	0.5−	1.7+	1999 07 16	120	0.1−	0.2−
1995 04 20	400	1.4+	0.3−	1999 07 16	120	0.2+	0.4−
1995 04 24	400	1.0+	0.2−	1999 07 16	120	0.4−	0.1+
1995 04 24	400	0.1+	1.6−	1999 07 17	120	0.1+	0.9+
1995 04 26	691	0.5+	0.2+	1999 07 18	120	0.6−	0.2−
1995 04 26	691	0.1−	0.1+	1999 07 18	120	0.4−	0.1+
1995 04 26	691	0.3−	0.1−	1999 07 18	120	0.6−	0.2+
1995 05 07	397	1.0−	0.8−	1999 07 18	120	0.7−	0.2−
1995 05 07	397	0.3−	1.4+	1999 07 18	120	0.2−	0.3+
1996 10 12	104	0.0	0.8+	1999 07 21	699	0.3−	0.4+
1996 10 12	104	0.2−	0.7+	1999 07 21	699	0.2−	0.5+
1996 10 12	104	0.3−	0.4+	1999 07 21	699	0.3−	0.3+
1998 03 03	704	0.4−	0.8−	1999 07 23	704	0.6−	0.2−
1998 03 03	704	1.6−	1.7+	1999 07 23	704	0.3−	0.2+
1998 03 03	704	0.6+	0.4−	1999 07 23	704	0.8−	0.2+
1998 03 03	704	0.5+	1.8−	1999 07 23	704	0.6−	0.1+
1998 03 03	704	(3.1− 2.0+)		1999 07 23	704	0.8−	0.0
1999 07 13	704	0.5+	0.0	1999 08 07	699	0.1−	1.4+
1999 07 13	704	0.3+	0.1−	1999 08 07	699	0.1+	0.9+
1999 07 13	704	0.1−	0.1−	1999 08 07	699	0.2−	1.0+
1999 07 13	704	0.1+	0.3+	1999 09 07	704	0.9+	0.3−

(11913)* 1992 RD₃ = 1982 UY₈ = 1989 YH₉ = 1997 AX

Discovered 1992 Sept. 2 by E. W. Elst at the European Southern Observatory.

Id. A. Gnädig (*MPC* 31534)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28864021	ω	77.03727	+0.72943311	−0.68229524		
<i>a</i>	2.2675915	Ω	325.94825	+0.58879149	+0.66270048		
<i>e</i>	0.1604813	<i>i</i>	5.01984	+0.34821246	+0.30870906		
<i>P</i>	3.41	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1982 10 21	095	0.5+	0.5−	1999 07 23	704	0.3−	0.1+
1989 12 28	511	0.1+	0.5+	1999 07 23	704	0.0	0.2+
1989 12 28	511	0.6−	0.9−	1999 07 23	704	0.1+	0.0
1992 09 02	809	1.5+	0.9+	1999 07 23	704	0.6−	0.4+
1992 09 02	809	0.1−	0.4+	1999 09 05	703	0.5+	0.7+
1992 09 02	809	0.1−	0.4+	1999 09 05	703	0.5+	0.3+
1992 09 03	809	1.4−	0.0	1999 09 05	703	0.7+	0.4−
1992 09 22	809	0.6+	0.8−	1999 09 05	703	0.0	0.9−
1992 09 22	809	0.4+	0.4−	1999 09 13	106	0.1−	0.2+
1992 09 22	809	0.3+	0.7−	1999 09 13	106	0.1−	0.0
1992 09 23	809	0.0	0.1−	1999 09 13	106	0.2+	0.4+
1992 09 23	809	0.4−	0.1+	1999 09 18	704	0.1+	0.0
1992 09 23	809	1.1−	0.6+	1999 09 18	704	0.0	0.0
1997 01 02	411	0.1+	0.2+	1999 09 18	704	0.0	0.2+
1997 01 02	411	0.1−	0.6+	1999 09 18	704	0.2−	0.0
1997 01 03	411	0.3+	0.7−	1999 09 18	704	0.3−	0.2+

M.P.C. 36250

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1997 01 03 411 0.3+ 0.9+ 1999 10 01 703 0.2- 0.1+ 1999 10 21 704 0.2+ 0.2+
 1999 07 23 704 0.6- 0.3- 1999 10 01 703 0.2- 0.0

(11914)* 1992 RZ₃ = 1996 VS₂₁

Discovered 1992 Sept. 2 by E. W. Elst at the European Southern Observatory.
 Id. G. V. Williams (*MPC* 28586)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		82.68957		(2000.0)		P		Q	
<i>n</i>	0.28661319	ω	47.13821	-0.29907841	+0.95421578				
<i>a</i>	2.2782704	Ω	205.46078	-0.87880040	-0.27744884				
<i>e</i>	0.1190921	<i>i</i>	0.65770	-0.37183595	-0.11177829				
<i>P</i>	3.44	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1992 09 02	809	1.4+	1.3-	1998 03 26	566	0.2-	0.9-	1999 09 14	704	0.3+	0.0
1992 09 02	809	0.6+	1.1-	1998 03 26	566	0.3-	0.6-	1999 09 14	703	0.7-	0.8+
1992 09 02	809	0.5+	1.7-	1998 03 29	704	0.4-	0.6-	1999 09 14	703	0.5-	0.1+
1992 09 03	809	0.5+	1.3-	1998 03 29	704	0.3-	0.0	1999 09 14	703	0.7+	0.9+
1992 09 22	809	0.4+	1.8-	1998 03 29	704	1.0-	0.2+	1999 09 14	703	0.0	0.6+
1992 09 22	809	0.6-	1.4-	1998 03 29	704	0.9-	0.9+	1999 09 29	703	0.3+	0.4+
1992 09 22	809	(0.8-	2.2-)	1998 03 29	704	0.9-	0.2-	1999 09 29	703	1.0-	0.0
1992 09 23	809	1.4+	1.5-	1998 04 01	704	0.7+	0.1+	1999 09 29	703	0.4+	0.9+
1992 09 23	809	0.2+	1.7-	1998 04 01	704	0.7+	1.3-	1999 09 29	703	0.5-	0.1+
1992 09 23	809	0.7+	1.1-	1998 04 01	704	0.2-	0.2-	1999 10 02	704	0.4+	0.4-
1996 11 08	691	0.2+	1.0-	1998 04 01	704	0.1-	1.9-	1999 10 02	704	1.1-	0.2-
1996 11 08	691	0.2+	0.3-	1998 04 19	704	0.3+	0.1+	1999 10 02	704	0.6-	0.0
1996 11 08	691	0.2+	0.6-	1998 04 19	704	0.8+	0.1+	1999 10 02	704	1.4-	0.6-
1996 11 09	691	0.2+	0.6-	1998 04 19	704	0.6-	0.5+	1999 10 05	704	0.2+	0.4-
1996 11 09	691	0.1-	0.7-	1998 04 19	704	0.6-	0.2+	1999 10 05	704	0.2-	0.3-
1996 11 09	691	0.2+	0.6-	1998 04 19	704	0.2-	1.5+	1999 10 05	704	1.8+	0.3+
1998 03 20	704	0.1-	0.3-	1999 09 07	704	0.6-	0.8+	1999 10 05	704	1.2-	0.6-
1998 03 20	704	0.1+	0.7-	1999 09 07	704	0.3+	0.1+	1999 10 05	704	0.1+	0.1+
1998 03 20	704	0.1-	0.4-	1999 09 07	704	0.0	0.1-	1999 10 07	704	0.4-	0.6+
1998 03 20	704	0.3-	1.4-	1999 09 07	704	0.0	0.0	1999 10 07	704	0.3+	0.1+
1998 03 20	704	0.9+	0.3-	1999 09 07	704	1.4-	0.0	1999 10 07	704	0.3+	0.3-
1998 03 22	704	0.2+	0.1+	1999 09 09	704	0.7+	0.2+	1999 10 07	704	0.3-	0.3-
1998 03 22	704	0.3-	0.1+	1999 09 09	704	0.1-	0.4-	1999 10 07	704	0.0	1.0+
1998 03 22	704	0.3+	0.3-	1999 09 09	704	0.4+	0.1+	1999 10 15	704	0.5-	0.0
1998 03 22	704	0.8-	0.3-	1999 09 09	704	0.4+	0.2+	1999 10 15	704	0.5-	0.2-
1998 03 22	704	0.8-	0.5-	1999 09 09	704	1.0+	0.1-	1999 10 15	704	0.6-	0.2+
1998 03 24	566	0.2-	1.6-	1999 09 14	704	1.1+	0.9-	1999 10 15	704	0.3-	0.3-
1998 03 24	566	0.1+	0.8-	1999 09 14	704	1.8+	0.6+	1999 10 15	704	0.8-	0.6-
1998 03 24	566	0.0	1.3-	1999 09 14	704	0.7+	0.0				
1998 03 26	566	0.2-	0.3-	1999 09 14	704	0.6-	1.3+				

(11915)* 1992 SJ₁ = 1994 CB₁₅

Discovered 1992 Sept. 23 by K. Endate and K. Watanabe at Kitami.
 Id. B. G. Marsden (*MPC* 23674)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		336.40555		(2000.0)		P		Q	
<i>n</i>	0.27918486	ω	284.23747	+0.97296006	-0.21104456				
<i>a</i>	2.3185056	Ω	88.00979	+0.23097156	+0.88737927				
<i>e</i>	0.1971038	<i>i</i>	5.38873	+0.00092353	+0.40990027				
<i>P</i>	3.53	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1992 09 23	400	0.8-	0.8-	1998 04 22	704	0.3+	1.2+	1999 09 04	699	0.5+	0.5+
1992 09 23	400	(2.2+	0.6-)	1998 04 22	704	1.2-	1.0+	1999 09 04	699	0.2+	1.3+
1992 09 28	400	1.1+	0.9+	1998 04 22	704	0.1-	0.8+	1999 09 13	704	0.3+	0.7+
1992 09 28	400	(3.3+	0.8-)	1998 04 22	704	0.7-	0.9+	1999 09 13	704	0.3-	0.0
1992 10 01	400	(2.1-	0.2+)	1998 04 25	691	0.5-	0.0	1999 09 13	704	0.5-	0.3+
1992 10 01	400	0.3-	0.5-	1998 04 25	691	0.1+	0.1+	1999 09 13	704	0.2-	0.5-
1994 02 08	809	0.9+	0.3+	1998 04 25	691	0.0	0.1+	1999 09 13	106	0.5+	0.4+
1994 02 08	809	0.7+	0.7+	1998 04 25	691	0.1+	0.3-	1999 09 13	106	0.5-	1.4+
1994 02 08	809	0.4+	0.1+	1998 04 25	691	0.3+	0.0	1999 09 13	106	1.0-	0.1-

1994 02 10	809	1.0+	0.3+	1998 04 25	691	0.2+	0.1+	1999 09 30	704	0.3-	0.4-
1994 02 10	809	0.1+	1.3+	1998 04 26	557	0.2+	0.1-	1999 09 30	704	0.6-	0.3-
1994 02 10	809	1.0-	0.2+	1998 04 26	557	0.2-	0.5-	1999 09 30	704	0.6-	0.8-
1998 04 17	691	0.1+	0.3+	1998 04 26	557	0.3-	1.8-	1999 09 30	704	0.3-	0.3-
1998 04 17	691	0.5+	0.2+	1998 04 27	691	0.5+	0.3-	1999 09 30	704	0.6-	0.5-
1998 04 17	691	0.4+	0.0	1998 04 27	691	0.1-	0.1-	1999 10 04	703	0.3+	0.1+
1998 04 21	704	0.5-	0.8-	1998 04 27	691	0.2-	0.1-	1999 10 04	703	0.6+	0.1+
1998 04 21	704	0.4+	1.2-	1999 07 16	704	0.0	0.1-	1999 10 04	703	0.5+	0.3+
1998 04 21	704	(0.1-	2.1+)	1999 07 16	704	0.1+	0.1-	1999 10 04	703	0.4+	0.3+
1998 04 21	704	0.0	1.1+	1999 07 16	704	0.3+	0.3+				
1998 04 22	704	(2.3+	1.3+)	1999 09 04	699	0.3+	0.4+				

(11916)* 1992 ST₁₇ = 1998 HG₅₆

Discovered 1992 Sept. 24 by F. Börngen and L. D. Schmadel at Tautenburg.
 Id. A. Doppler (*MPC* 33232)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		209.03630		(2000.0)		P		Q	
<i>n</i>	0.27049043	ω	300.42870	-0.48588950	-0.87401641				
<i>a</i>	2.3679259	Ω	178.63410	+0.83453548	-0.46481725				
<i>e</i>	0.0661119	<i>i</i>	6.23570	+0.25973431	-0.14156357				
<i>P</i>	3.64	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1992 09 21	033	0.7+	0.5+	1998 04 22	704	0.2-	0.3+	1999 09 09	704	0.2+	0.4-
1992 09 21	033	0.7-	1.5-	1998 04 22	704	0.0	0.2-	1999 09 09	704	0.0	0.5-
1992 09 22	033	0.2-	0.8-	1998 04 22	704	0.8-	0.2-	1999 09 09	704	0.1+	0.2-
1992 09 24	033	0.1-	0.3+	1998 04 22	704	0.2+	0.5-	1999 09 09	704	0.4+	0.6-
1992 09 24	033	0.2+	0.7-	1998 04 22	704	0.8-	0.2+	1999 09 09	704	0.2+	1.1-
1992 09 26	033	0.4+	0.2-	1998 05 16	704	1.4-	1.0-	1999 09 13	704	0.3+	0.1-
1992 09 27	033	0.7+	0.4-	1998 05 16	704	0.1-	0.0	1999 09 13	704	0.2+	0.4+
1992 09 28	033	0.2+	0.1+	1998 05 16	704	0.7-	0.9+	1999 09 13	704	0.2+	0.0
1994 03 14	675	0.0	1.1-	1998 05 16	704	1.1-	0.2+	1999 09 13	704	0.7-	0.3-
1994 03 14	675	0.9-	1.1-	1998 05 16	704	1.8-	0.9-	1999 09 13	704	0.1+	0.1+
1998 03 29	704	0.0	0.9+	1999 07 13	704	0.4+	0.2+	1999 09 29	699	0.2-	1.1+
1998 03 29	704	0.2+	0.5+	1999 07 13	704	0.5+	0.5+	1999 09 29	699	0.4-	0.1+
1998 03 29	704	0.3+	0.4+	1999 07 13	704	0.2+	0.1+	1999 09 29	699	1.1+	1.8+
1998 03 29	704	0.0	0.5+	1999 07 13	704	0.0	0.2+	1999 09 30	704	0.7+	0.4+
1998 03 29	704	0.6-	0.2+	1999 07 13	704	0.2-	0.5+	1999 09 30	704	0.8+	0.9-
1998 04 21	704	0.7+	0.1+	1999 09 06	699	0.3+	1.0+	1999 09 30	704	0.4-	1.3-
1998 04 21	704	0.5+	0.5+	1999 09 06	699	0.1-	0.3+	1999 09 30	704	0.5-	0.2+
1998 04 21	704	0.9+	0.3-	1999 09 06	699	0.4-	0.6+	1999 09 30	704	0.6-	0.8-
1998 04 21	704	0.3+	1.0-	1999 09 07	704	0.3-	0.1-	1999 10 15	704	0.0	0.5-
1998 04 21	704	0.7+	0.6-	1999 09 07	704	0.1+	0.6-	1999 10 15	704	0.6-	0.3-
1998 04 21	910	1.0+	0.6-	1999 09 07	704	0.6-	0.9-	1999 10 15	704	0.2+	0.3+
1998 04 21	910	0.9+	0.4-	1999 09 07	704	0.3-	0.1+	1999 10 15	704	0.2+	0.4+
1998 04 21	910	1.0+	0.5-	1999 09 07	704	1.2-	0.1-	1999 10 15	704	0.4+	0.7+

(11917)* 1992 UX

Discovered 1992 Oct. 21 by T. Urata at the Nihondaira Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		340.38880		(2000.0)		P		Q	
<i>n</i>	0.27538928	ω	305.40909	+0.97004384	-0.20996071				
<i>a</i>	2.3397603	Ω	66.98774	+0.24259471	+0.86365284				
<i>e</i>	0.1273262	<i>i</i>	7.62906	-0.01275754	+0.45827970				
<i>P</i>	3.58	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	2		

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1992 11 18	385	1.5-	2.0+	1998 05 01	704	0.2+	0.5+	1999 09 19	886	1.2-	0.5+
1992 11 18	385	0.6+	0.1+	1998 05 01	704	(1.6-	2.5+)	1999 09 30	704	0.0	0.4-
1992 11 23	385	0.3-	0.1-	1998 05 01	704	2.0+	0.1-	1999 09 30	704	0.2-	0.1-
1992 11 23	385	1.0+	0.5-	1998 05 01	704	0.4+	0.2-	1999 09 30	704	0.4-	0.1-
1992 12 14	385	1.0-	1.6-	1998 05 01	704	0.0	1.0+	1999 09 30	704	0.0	0.3-
1992 12 14	385	0.1+	1.8-	1998 05 21	385	0.5-	0.3+	1999 09 30	704	0.0	0.0
1997 01 26	385	0.1-	0.0	1998 05 21	385	0.4-	0.2+	1999 10 01	888	0.3-	0.9+
1997 01 26	385	0.1+	0.8-	1998 05 21	888	0.7-	0.1-	1999 10 01	888	0.6-	0.3-
1997 01 26	385	0.3+	0.8-	1998 05 21	888	0.3-	0.4+	1999 10 01	888	0.8+	0.6-
1997 01 28	385	0.4-	0.6+	1998 05 21	888	0.5-	1.4+	1999 10 10	886	0.0	0.5+
1997 01 28	385	0.7+	0.8+	1998 05 22	704	0.2+	0.4-	1999 10 10	886	0.8+	0.4+
1997 03 04	385	(2.5-	0.0)	1998 05 22	704	1.4-	0.6-	1999 10 11	888	0.0	0.4+
1997 03 04	385	0.5-	0.6+	1998 05 22	704	0.2-	0.9-	1999 10 11	888	0.4-	0.5+
1998 03 24	704	0.9-	0.4+	1998 05 22	704	0.1-	0.9-	1999 10 16	704	0.1-	0.6+
1998 03 24	704	(2.2+	0.1+)	1998 05 22	704	0.1+	0.8+	1999 10 16	704	0.0	0.5+
1998 03 24	704	0.6+	1.7-	1999 09 08	703	0.1-	0.4+	1999 10 16	704	0.3-	0.3+
1998 03 24	704	1.7-	0.2-	1999 09 08	703	0.7+	0.1+	1999 10 16	704	0.2-	0.4+
1998 04 21	704	0.4+	0.4+	1999 09 08	703	0.7+	0.2-	1999 10 16	704	0.3-	0.6+
1998 04 21	704	0.4+	0.5+	1999 09 08	703	0.6+	0.6-				

(11918)* 1992 UY

Discovered 1992 Oct. 21 by T. Urata at the Nihondaira Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	342.04282		(2000.0)	P	Q
n	0.28058415	ω	206.80805	+0.89416318	-0.44774103
a	2.3107908	Ω	179.78944	+0.42846502	+0.85539676
e	0.1823088	i	6.51809	+0.12996126	+0.26043110
P	3.51	H	14.5	G 0.15	U 2

Residuals in seconds of arc

1992 10 21	385	0.0	1.4+	1998 04 30	691	0.3-	0.7+	1999 10 07	704	0.2+	0.0
1992 10 21	385	0.8-	1.2-	1998 04 30	691	0.1-	0.9+	1999 10 07	704	0.1-	0.4+
1992 10 25	385	1.1-	0.1+	Y 1998 04 30	691	0.0	0.7+	1999 10 07	704	0.1+	0.7+
1992 10 25	385	(2.5+	1.1+)	Y 1998 05 01	704	1.4+	0.6+	1999 10 08	106	0.8-	0.3+
1992 10 27	385	1.1-	0.0	1998 05 01	704	1.2+	1.2-	1999 10 08	106	0.8-	0.5+
1992 10 27	385	1.9+	0.0	1998 05 01	704	0.5+	1.0+	1999 10 09	704	0.1-	0.6+
1992 10 30	885	0.4+	0.3-	1998 05 01	704	0.3+	0.4-	1999 10 09	704	0.1+	0.5+
1992 10 30	885	1.3+	0.3-	1998 05 22	704	0.4+	0.2+	1999 10 09	704	0.0	0.3+
1992 11 14	385	0.4-	0.6+	1998 05 22	704	1.0-	0.2-	1999 10 09	704	0.4+	0.5+
1992 11 14	385	1.0+	0.8-	1998 05 22	704	2.1-	0.8-	1999 10 09	704	0.2+	0.3+
1992 11 23	385	0.1-	1.3-	1998 05 22	704	0.4-	1.3-	1999 10 09	888	0.2+	0.1-
1992 11 23	385	0.6-	1.2-	1998 05 22	704	(3.4-	0.8+)	1999 10 09	888	0.0	0.1-
1997 01 31	385	0.7+	0.2-	1998 05 24	704	1.1+	1.3-	1999 10 09	888	0.1-	0.0
1997 01 31	385	0.3-	1.7+	1998 05 24	704	0.2-	1.1-	1999 10 09	619	0.1-	0.5+
1997 02 03	385	0.5-	0.1+	1998 05 24	704	1.4-	1.1+	1999 10 09	619	0.9-	0.8+
1997 02 03	385	0.3+	0.4+	1998 05 24	704	(1.6-	2.4+)	1999 10 10	619	0.2+	0.5+
1997 02 03	385	0.4+	1.0+	1998 05 24	704	(2.4-	1.1+)	1999 10 11	886	0.1-	0.4+
1997 03 04	385	0.3-	0.5-	1999 09 14	703	0.1-	0.1-	1999 10 11	886	1.1-	0.3-
1998 04 22	704	0.5+	0.2+	1999 09 14	703	0.1-	0.2+	1999 10 19	704	0.3+	0.0
1998 04 22	704	0.2+	0.5+	1999 09 14	703	0.0	0.0	1999 10 19	704	0.0	0.1+
1998 04 22	691	0.8+	0.9+	1999 09 14	703	0.2+	0.1+	1999 10 19	704	0.3+	0.1-
1998 04 22	704	0.2-	1.0+	1999 10 07	106	0.1-	0.2-	1999 10 19	704	0.2+	0.2-
1998 04 22	691	0.6+	0.8+	1999 10 07	106	0.9-	0.1-	1999 10 19	704	0.5+	0.3-
1998 04 22	704	0.5-	0.8-	1999 10 07	106	0.1+	0.1+	1999 10 20	886	0.6-	0.2-
1998 04 22	691	0.8+	0.8+	1999 10 07	704	0.1+	1.0+	1999 10 20	886	1.2+	0.5-
1998 04 22	704	0.8-	1.8+	1999 10 07	704	0.2+	0.5+				

(11919)* 1992 UD₂

Discovered 1992 Oct. 25 by A. Natori and T. Urata at JCPM Yakiimo Station.

M.P.C. 36251

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	324.90341		(2000.0)		P		Q				
<i>n</i>	0.27369599	ω	336.91006		+0.89309508		−0.31961973				
<i>a</i>	2.3494007	Ω	45.87688		+0.44982086		+0.62427250				
<i>e</i>	0.2598282	<i>i</i>	26.16882		+0.00650928		+0.71283033				
<i>P</i>	3.60	<i>H</i>	14.5		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1992 10 25	885	0.6−	0.3+	1997 02 04	385	0.2+	0.5−	1998 04 24	704	0.8+	0.9+
1992 10 25	885	0.7+	0.2+	1997 03 04	385	0.3−	0.2+	1999 09 08	423	0.6+	1.5+
1992 10 25	885	1.8+	0.4+	1997 03 04	385	0.7−	0.3−	1999 09 08	423	0.3−	0.1+
1992 10 26	885	0.8+	0.7−	1997 03 07	385	0.5−	1.0+	1999 09 08	423	0.5+	1.6+
1992 10 26	885	0.0	0.3−	1997 03 07	385	0.6−	0.3−	1999 09 13	423	(2.8−	0.2+)
1992 10 26	885	0.3+	0.1−	1997 03 07	385	1.1−	0.4−	1999 09 17	423	0.1−	0.4+
1992 10 27	885	0.2−	0.3+	1998 04 21	704	1.3−	1.4−	1999 09 17	423	0.6−	0.3−
1992 10 27	885	0.4−	0.3+	1998 04 21	704	0.6−	1.3−	1999 09 18	423	0.1−	1.6−
1992 10 30	885	0.6−	0.5+	1998 04 21	704	0.7+	0.5−	1999 09 18	423	0.5−	1.0−
1992 10 30	885	0.5+	0.0	1998 04 21	704	0.3−	0.3+	1999 09 18	423	0.4−	1.6−
1992 11 22	885	0.6+	0.0	1998 04 21	704	0.9−	0.2+	1999 10 07	423	(0.6+	2.5−)
1992 11 22	885	0.6−	0.5−	1998 04 23	704	1.4+	0.2−	1999 10 07	423	0.5−	1.1−
1992 11 22	885	0.2−	0.8−	1998 04 23	704	0.6−	1.4−	1999 10 07	423	1.4−	1.5−
1992 11 24	385	(2.5−	1.6+)	1998 04 23	704	1.3−	0.4−	1999 10 08	423	(1.4+	2.8+)
1992 12 14	385	1.4−	0.9−	1998 04 23	704	0.6−	0.4+	1999 10 08	423	0.6+	1.2+
1992 12 14	385	0.1−	0.4−	1998 04 23	704	(2.9−	1.2+)	1999 10 09	423	0.9+	1.1+
1997 01 31	385	0.1+	0.5−	1998 04 24	704	1.1+	0.2+	1999 10 09	423	1.7+	0.0
1997 01 31	385	1.2+	0.1+	1998 04 24	704	0.5−	0.8+				
1997 02 04	385	1.1+	0.2−	1998 04 24	704	(0.5−	2.2−)				

(11920)* 1992 UY₂ = 1997 AM₁₄

Discovered 1992 Oct. 25 by N. Kawasato at Uenohara.

Id. G. V. Williams (*MPC* 28849)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	329.10554		(2000.0)		P		Q				
<i>n</i>	0.28323183	ω	211.13570		+0.55187499		-0.83309517				
<i>a</i>	2.2963673	Ω	205.42601		+0.78184328		+0.53242342				
<i>e</i>	0.0746140	<i>i</i>	4.97521		+0.29009493		+0.14992579				
<i>P</i>	3.48	<i>H</i>	14.2		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1988 08 15	675	1.3-	0.9+	1994 04 16	691	0.9-	0.2+	1999 09 14	120	0.2+	0.3-
1988 08 15	675	0.4+	1.0+	1994 04 16	691	0.4-	0.8+	1999 10 10	704	0.2+	0.3+
1988 08 16	675	0.3+	1.6-	1994 04 16	691	0.0	0.8+	1999 10 10	704	0.2-	0.2+
1988 08 16	675	(3.1+	1.0+)	1994 04 16	691	0.2+	0.7+	1999 10 10	704	0.1+	0.5-
1992 10 21	675	0.2+	0.2+	1997 01 09	327	1.2+	0.2-	1999 10 10	704	0.2-	0.4-
1992 10 21	675	1.3+	0.5+	1997 01 09	327	0.7-	0.0	1999 10 10	704	0.6-	0.9-
1992 10 22	675	1.2+	0.2+	1997 01 09	327	0.6-	0.4-	1999 10 14	691	0.0	0.3-
1992 10 22	675	0.2-	0.8-	1997 01 09	327	0.5-	0.1-	1999 10 14	691	0.0	0.3-
1992 10 25	376	0.9-	0.4+	1997 01 10	327	0.6+	0.1-	1999 10 14	691	0.1+	0.3-
1992 10 25	376	0.5+	1.3-	1997 01 10	327	1.1+	0.1+	1999 10 15	704	0.1-	0.3-
1992 10 27	376	(2.6-	0.7-)	1997 01 10	327	0.2-	0.1-	1999 10 15	704	0.4-	0.6-
1992 10 27	376	0.6-	0.6+	1997 01 10	327	0.1+	0.2-	1999 10 15	704	0.0	0.1-
1992 10 31	376	1.2+	0.9-	1997 01 10	327	0.9+	0.3-	1999 10 15	704	0.4-	0.2-
1992 10 31	376	(1.6+	2.2-)	1997 03 01	376	0.0	0.1-	1999 10 15	704	0.5-	0.2-
1992 11 14	376	0.1-	1.2+	1997 03 01	376	1.0+	0.3-	1999 10 16	691	0.0	0.2+
1992 11 14	376	1.0-	1.4+	1998 06 24	704	1.1+	1.1+	1999 10 16	691	0.1-	0.1+
1992 11 21	376	0.5-	0.2+	1998 06 24	704	1.5+	1.9-	1999 10 16	691	0.1-	0.2+
1992 11 21	376	0.3+	1.5+	1998 06 24	704	0.1-	1.3+	1999 10 21	704	0.1-	0.2+
1992 11 30	675	1.0-	0.8+	1999 09 13	120	0.5+	0.5-	1999 10 21	704	0.3-	0.0
1994 04 16	691	0.7-	0.1-	1999 09 13	120	0.1-	0.2-	1999 10 21	704	0.7-	1.6+
1994 04 16	691	1.3-	0.4+	1999 09 14	120	0.2+	0.5-	1999 10 21	704	0.0	0.3+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	174.05247		(2000.0)		P		Q				
<i>n</i>	0.22309083	ω	187.83666		+0.47366589		-0.85783974				
<i>a</i>	2.6924536	Ω	234.11161		+0.82079147		+0.51205396				
<i>e</i>	0.0156714	<i>i</i>	14.24667		+0.31928355		-0.04372319				
<i>P</i>	4.42	<i>H</i>	12.8		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1978 08 31	095	0.0	0.1-	1999 04 15	704	(2.2-	0.6+)	1999 05 13	704	1.4-	2.0+
1979 12 18	095	0.1+	0.3+	1999 04 15	699	0.6+	0.5-	1999 05 13	704	0.2-	0.2+
1992 10 21	675	0.2+	0.1-	1999 04 15	704	0.0	0.3+	1999 05 14	704	0.3-	0.8-
1992 10 21	675	0.9+	0.9+	1999 04 15	699	1.1+	0.4-	1999 05 14	704	0.5-	0.7-
1992 10 26	400	0.5-	0.5+	1999 04 15	704	0.2-	0.6-	1999 05 14	704	0.9-	0.4-
1992 10 26	400	0.8-	0.0	1999 04 15	699	1.1+	0.2-	1999 05 14	704	0.3-	0.2-
1992 10 27	372	(1.5-	2.3-)	1999 04 15	704	0.7+	0.7-	1999 05 14	704	1.4-	1.5+
1992 10 27	372	0.3-	1.8+	1999 04 15	704	0.3-	1.0-	1999 05 19	699	0.7+	0.3+
1992 10 28	400	0.3+	1.3+	1999 05 10	704	0.2-	0.2-	1999 05 19	699	0.5+	0.7+
1992 10 28	400	0.2-	0.0	1999 05 10	704	0.4-	0.0	1999 05 19	699	0.8+	0.3-
1992 10 28	399	(0.9+	2.3+)	1999 05 10	704	0.4-	0.6+	1999 06 06	699	0.1+	0.3+
1992 10 28	399	0.6-	0.2-	1999 05 10	704	0.4-	0.2+	1999 06 06	699	0.4+	0.7+
1992 11 01	400	(3.4+	0.8-)	1999 05 10	704	0.4-	0.3+	1999 06 06	699	0.1+	0.3+
1992 11 01	400	1.2+	2.0+	1999 05 12	699	1.7+	0.0	1999 06 09	704	0.5+	0.0
1992 11 16	400	0.7-	0.0	1999 05 12	699	1.2+	0.2-	1999 06 09	704	0.3-	0.0
1992 11 16	400	0.0	1.2-	1999 05 13	704	0.0	0.2-	1999 06 09	704	0.5-	1.3+
1992 11 27	675	0.3-	0.6+	1999 05 13	704	0.2+	0.8+	1999 06 09	704	0.5-	0.7+
1992 11 27	675	0.6+	0.7-	1999 05 13	704	0.2-	0.6+	1999 06 09	704	0.3-	1.4+

(11922)* 1992 UT₃ = 1985 UO₄

Discovered 1992 Oct. 27 by T. Urata at the Nihondaira Observatory.

Id. S. Nakano (*MPC* 21274)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	316.10269		(2000.0)		P		Q				
<i>n</i>	0.28238744	ω	17.96809		+0.23518830		-0.96756046				
<i>a</i>	2.3009427	Ω	58.52021		+0.87794472		+0.17075249				
<i>e</i>	0.1372376	<i>i</i>	6.21099		+0.41701263		+0.18619975				
<i>P</i>	3.49	<i>H</i>	13.8		<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1955 03 22	675	0.1+	0.7-	1992 11 14	385	0.1+	0.3-	1999 09 18	703	1.3+	0.4-
1955 03 22	675	0.3+	1.1-	1992 11 14	385	0.2+	0.2-	1999 10 10	385	0.1-	0.0
1985 10 22	095	0.4-	0.1+	1992 11 16	399	0.9-	0.7+	1999 10 10	385	0.1-	0.2+
1985 11 09	095	(3.4-	2.5+)	1992 11 16	399	0.8-	0.2+	1999 10 15	704	1.0+	0.6-
1985 11 11	095	1.8+	1.1-	1993 01 20	385	(2.9+	0.0)	1999 10 15	704	0.4+	0.4+
1990 01 29	675	0.9-	0.6+	1993 01 20	385	1.7+	1.0+	1999 10 15	704	0.2+	0.1-
1990 01 29	675	0.5-	0.9+	1994 05 06	596	(4.2-	0.9+)	1999 10 15	704	1.0+	1.1+
1992 10 21	675	0.9-	1.4-	1994 05 06	596	0.2+	1.0+	1999 10 15	704	0.8-	0.8+
1992 10 21	675	0.5+	0.0	1994 05 06	596	0.7+	1.0+	1999 10 16	611	1.3-	0.8-
1992 10 25	675	1.5-	0.5-	1997 01 20	385	0.1+	0.1+	1999 10 16	611	0.3-	0.1-
1992 10 25	675	0.4-	0.1+	1997 01 20	385	0.4+	0.5-	1999 10 20	385	0.2+	0.1-
1992 10 27	385	(2.2+	1.1+)	1997 02 03	385	0.4+	0.4+	1999 10 20	385	0.1+	0.1-
1992 10 27	385	1.7+	1.0+	1997 02 03	385	0.6+	0.1+	1999 10 20	886	0.7-	0.8-
1992 10 27	372	(5.0-	2.1+)	1999 09 12	106	0.1-	0.3+	1999 10 20	886	0.5+	0.3+
1992 10 27	372	(4.8-	2.5+)	1999 09 12	106	0.1+	0.6+	1999 10 21	704	0.4+	0.3-
1992 10 30	885	0.3+	0.4+	1999 09 12	106	0.2-	0.5+	1999 10 21	704	0.1-	0.6+
1992 10 30	885	1.0-	0.6-	1999 09 18	703	0.1+	1.4+	1999 10 21	704	0.2+	0.7+
1992 10 31	894	0.1-	0.7-	1999 09 18	703	0.0	0.2+	1999 10 21	704	0.2-	0.5+
1992 10 31	894	1.1-	0.9-	1999 09 18	703	0.9+	0.4+	1999 10 21	704	1.0-	0.5+

(11923)* 1992 WX = 1952 TC = 1981 UR₁₁ = 1988 PA₅

Discovered 1992 Nov. 17 by A. Sugie at the Dynic Astronomical Observatory.

Id. T. B. Spahr (*MPC* 30274)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	7.90249		(2000.0)		P			Q			
<i>n</i>	0.27270815		ω	209.21346		+0.94031282		+0.33189134			
<i>a</i>	2.3550708		Ω	131.20290		-0.28958964		+0.89648066			
<i>e</i>	0.2085843		<i>i</i>	5.73874		-0.17874465		+0.29354823			
<i>P</i>	3.61		<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1952 10 12	760	0.1+	0.1-	1998 03 25	704	0.8-	0.3-	1999 09 08	699	0.1+	0.8+
1952 10 12	760	0.0	0.2-	1998 03 25	704	0.2+	0.2+	1999 09 08	699	0.0	0.6+
1981 10 22	095	(5.0+	0.1+)	1998 03 25	704	1.1-	0.2-	1999 09 08	699	0.4+	0.6+
1988 08 09	095	(5.1+	10.5-)	1998 04 20	704	0.7+	0.4+	1999 09 14	704	0.3+	0.5+
1988 08 09	095	(0.1+	4.7-)	1998 04 20	704	0.5+	0.6-	1999 09 14	704	0.1+	0.1-
1992 11 17	402	0.5-	0.4-	1998 04 20	704	0.3-	0.8-	1999 09 14	704	0.1+	0.2-
1992 11 17	402	(2.3-	1.0+)	1998 04 20	704	0.0	0.0	1999 09 14	704	0.1-	0.0
1992 11 18	402	(0.0	2.1-)	1998 04 20	704	0.5-	0.2-	1999 09 14	704	0.4-	0.2-
1992 11 18	402	(2.7+	0.4-)	1998 04 21	704	0.0	0.2-	1999 09 21	699	0.2+	1.2+
1992 11 21	376	0.9+	0.1-	1998 04 21	704	0.6+	0.8+	1999 09 21	699	0.0	1.0+
1992 11 21	376	1.1-	0.8+	1998 04 21	704	0.1+	0.3+	1999 09 21	699	0.2+	1.1+
1992 11 22	376	1.7-	0.4-	1998 04 21	704	0.9+	0.0	1999 10 02	704	0.1+	0.1-
1992 11 22	376	1.7+	0.5-	1998 04 21	704	0.0	0.5-	1999 10 02	704	0.2+	0.1-
1992 11 26	693	1.0+	0.1+	1998 04 24	704	0.2+	0.4+	1999 10 02	704	0.1+	0.2-
1992 11 28	693	0.4-	0.8+	1998 04 24	704	0.1+	0.6+	1999 10 02	704	0.3-	0.3-
1992 11 28	693	0.1-	0.9+	1998 04 24	704	0.5+	1.4+	1999 10 02	704	0.4-	0.2-
1998 03 24	704	0.4+	0.1+	1998 04 24	704	0.3+	1.1+	1999 10 08	704	0.1-	0.6-
1998 03 24	704	(0.7+	2.3+)	1998 04 24	704	0.1-	1.2+	1999 10 08	704	0.3-	0.6-
1998 03 24	704	0.3-	0.0	1998 05 16	704	1.0+	0.8-	1999 10 08	704	0.3+	0.9-
1998 03 24	704	0.0	0.7-	1998 05 16	704	0.2+	0.2-	1999 10 08	704	0.1-	1.1-
1998 03 24	704	0.7-	0.7-	1998 05 16	704	0.1-	0.5+	1999 10 08	704	0.1-	1.0-
1998 03 25	704	0.2-	0.2-	1998 05 16	704	1.5-	0.8-				
1998 03 25	704	0.4-	0.1+	1998 05 16	704	0.3+	0.8-				

(11924)* 1992 WS₃ = 1997 CA₂₆

Discovered 1992 Nov. 17 by Y. Mizuno and T. Furuta at Kani.

Id. T. Urata (*MPC* 29101)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	278.04026		(2000.0)		P		Q				
<i>n</i>	0.27078795	ϖ	144.17495		-0.19649105		-0.98016255				
<i>a</i>	2.3661912	Ω	317.13997		+0.89048601		-0.16731760				
<i>e</i>	0.1922034	<i>i</i>	2.18514		+0.41039728		-0.10623654				
<i>P</i>	3.64	<i>H</i>	14.4		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1990 03 27	675	0.6+	1.1+	1999 09 18	703	0.2-	0.3+	1999 10 13	704	0.1-	0.1-
1990 03 27	675	0.0	0.4+	1999 10 04	704	0.5+	0.3+	1999 10 13	704	0.3-	0.1-
1990 04 22	675	0.1-	0.3-	1999 10 04	704	1.4+	0.3-	1999 10 13	704	0.3-	0.3-
1992 11 17	403	0.8+	0.4-	1999 10 04	704	1.2+	0.8-	1999 10 13	704	0.4-	0.5-
1992 11 17	403	0.3-	0.4-	1999 10 04	704	1.5+	0.1-	1999 10 15	704	0.3-	0.1+
1992 11 21	403	0.7+	0.1+	1999 10 07	704	0.0	0.5+	1999 10 15	704	0.3-	0.4+
1992 11 21	403	0.3-	0.1+	1999 10 07	704	0.2-	1.0+	1999 10 15	704	0.2-	0.2+
1992 12 02	403	1.1-	1.2+	1999 10 07	704	0.2-	0.6+	1999 10 15	704	0.2-	0.0
1992 12 02	403	0.4+	1.8-	1999 10 07	704	0.2-	0.8+	1999 10 15	704	0.7-	0.1+
1997 02 12	905	0.5+	0.6+	1999 10 07	704	0.1-	0.2+	1999 10 19	704	0.1+	0.0
1997 02 12	905	0.3+	0.8+	1999 10 09	704	0.3-	0.5+	1999 10 19	704	0.0	0.7-
1997 02 13	905	0.3+	0.1+	1999 10 09	704	0.7-	0.2+	1999 10 19	704	0.5+	0.5-
1997 02 13	905	0.6-	0.3-	1999 10 09	704	0.5-	0.2+	1999 10 19	704	0.1+	0.0
1999 09 18	703	0.4-	0.1+	1999 10 09	704	0.3-	0.1+	1999 10 19	704	0.3+	0.2-
1999 09 18	703	0.1-	0.3+	1999 10 09	704	0.4-	0.2+				
1999 09 18	703	0.2-	0.6+	1999 10 13	704	0.3-	0.0				

1999 OCT. 26

M.P.C. 36253

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	309.22952	(2000.0)	P	Q
<i>n</i>	0.26995370	ω 245.39505	+0.53649165	-0.84388947
<i>a</i>	2.3710635	Ω 172.15365	+0.78744507	+0.49836326
<i>e</i>	0.1935803	<i>i</i> 2.19228	+0.30349130	+0.19870736
<i>P</i>	3.65	<i>H</i> 15.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1992 12 21	372	0.4-	1.4-	1999 09 07	704	0.5+	0.1+	1999 09 29	703	(3.5-	2.0+)
1992 12 21	372	1.3+	0.1-	1999 09 07	704	0.5-	0.2-	1999 09 29	703	0.6-	0.8+
1992 12 23	372	1.5-	1.3-	1999 09 07	704	0.0	0.1-	1999 09 29	703	0.3-	0.1-
1992 12 23	372	1.0-	1.6-	1999 09 07	704	0.1-	0.2+	1999 10 02	704	0.7+	0.5-
1992 12 25	372	1.4+	0.6-	1999 09 07	704	0.0	0.5+	1999 10 02	704	0.2+	0.1+
1992 12 25	372	1.1+	0.6-	1999 09 09	704	0.5-	0.0	1999 10 02	704	0.4+	0.0
1997 01 30	411	0.0	1.9+	1999 09 09	704	0.4+	0.3-	1999 10 02	704	0.3-	0.2+
1997 01 30	411	0.7+	1.0+	1999 09 09	704	0.1-	0.1-	1999 10 02	704	0.1+	0.2+
1997 01 31	411	0.4-	1.0+	1999 09 09	704	0.3-	0.1-	1999 10 05	704	0.2+	0.1-
1997 01 31	411	1.5-	0.6+	1999 09 09	704	0.1-	0.1-	1999 10 05	704	0.3+	0.2-
1997 02 06	411	0.1-	0.4-	1999 09 11	106	0.2+	0.6+	1999 10 05	704	0.1+	0.2-
1997 02 06	411	0.4-	0.7+	1999 09 11	108	0.0	2.1-	1999 10 05	704	0.2+	0.7-
1997 02 11	411	0.7-	0.2-	1999 09 11	108	0.8+	0.4-	1999 10 05	704	0.2+	0.8-
1997 02 11	411	0.4-	0.3-	1999 09 11	106	0.2-	0.7+	1999 10 07	703	0.3-	0.6+
1997 03 05	704	1.5+	0.5+	1999 09 11	108	1.2-	1.7+	1999 10 07	703	0.3-	0.8+
1997 03 05	704	2.0+	1.3+	1999 09 12	108	(0.8-	4.1+)	1999 10 07	703	0.4-	1.0+
1997 03 06	704	0.5+	0.2+	1999 09 12	106	0.5-	0.4+	1999 10 07	703	0.3-	0.6+
1997 03 06	704	1.0+	0.2+	1999 09 14	704	0.2-	0.1-	1999 10 07	704	0.2+	0.1-
1998 06 21	688	0.4-	1.2-	1999 09 14	704	0.1+	0.0	1999 10 07	704	0.1+	0.1+
1998 06 21	688	0.3-	1.1-	1999 09 14	704	0.1-	0.1-	1999 10 07	704	0.3+	0.0
1998 06 21	688	0.0	1.2-	1999 09 14	704	0.0	0.1-	1999 10 07	704	0.5+	0.4-
1999 08 22	699	0.0	0.5-	1999 09 14	704	0.1+	0.3-	1999 10 07	704	0.9+	0.0
1999 08 22	699	0.2+	1.3+	1999 09 14	703	0.5-	0.9+	1999 10 15	704	0.0	0.2-
1999 08 22	699	0.2+	0.3+	1999 09 14	703	0.5-	0.3+	1999 10 15	704	0.2-	0.4-
1999 09 04	699	0.2-	0.8+	1999 09 14	703	0.0	0.0	1999 10 15	704	0.1+	0.2-
1999 09 04	699	0.1+	0.5+	1999 09 14	703	0.3+	0.6-	1999 10 15	704	0.5-	0.1-
1999 09 04	699	0.2-	1.3+	1999 09 29	703	0.5-	0.4+	1999 10 15	704	0.3-	0.7-

(11926)* 1992 YM₂ = 1996 XM₂₂

Discovered 1992 Dec. 18 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 28587)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	334.70112	(2000.0)	P	Q
<i>n</i>	0.25745516	ω 286.24812	+0.96643963	-0.21665070
<i>a</i>	2.4471935	Ω 86.42185	+0.25458579	+0.87959284
<i>e</i>	0.0986573	<i>i</i> 7.95044	-0.03435876	+0.42353147
<i>P</i>	3.83	<i>H</i> 14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1992 12 18	010	0.4+	1.5-	1998 04 23	704	1.2-	0.5-	1999 09 02	148	0.4-	1.2+
1992 12 19	010	0.2+	0.7-	1998 04 23	704	0.4+	0.8+	1999 09 02	148	0.6+	0.6-
1992 12 19	010	0.1+	0.2-	1998 04 23	704	0.3-	0.3+	1999 09 02	148	0.7+	0.6-
1992 12 19	010	0.8+	0.5-	1998 04 23	704	0.1+	0.1+	1999 09 13	704	0.3-	0.1+
1992 12 19	010	0.0	0.7-	1998 04 23	704	1.3-	0.2+	1999 09 13	704	0.2-	0.2+
1992 12 20	010	0.2-	0.6-	1998 04 30	566	0.6+	0.8-	1999 09 13	704	0.2-	0.3+
1993 01 16	010	0.6+	0.7+	1998 04 30	566	0.8+	0.8-	1999 09 13	704	0.1-	0.1+
1993 01 16	010	1.1-	0.9+	1998 04 30	566	0.3+	0.9-	1999 09 13	704	0.1-	0.2+
1993 01 16	010	0.6-	0.3+	1998 05 22	704	0.6+	0.0	1999 09 13	704	0.1+	0.2-
1993 01 17	010	0.2-	0.8+	1998 05 22	704	0.8+	0.1-	1999 09 13	704	0.1+	0.2-
1993 01 17	010	0.9-	1.8+	1998 05 22	704	0.5-	0.1+	1999 09 13	704	0.0	0.2+
1993 01 17	010	0.6+	0.9+	1998 05 22	704	1.2+	0.3-	1999 09 30	704	0.1+	0.8-
1996 12 08	691	0.2+	0.1-	1998 05 22	704	0.2+	0.4+	1999 09 30	704	0.3+	0.4-
1996 12 08	691	0.1+	0.1-	1998 05 24	704	0.2-	0.4+	1999 09 30	704	0.6+	0.1-
1996 12 08	691	0.0	0.2-	1998 05 24	704	0.0	0.5-	1999 09 30	704	0.2-	0.1-
1996 12 13	691	0.0	0.3-	1998 05 24	704	0.5-	1.0+	1999 09 30	704	0.2+	0.2-
1996 12 13	691	0.3-	0.0	1998 05 24	704	0.2+	0.9-	1999 10 04	703	0.5-	0.6+
1996 12 13	691	0.2-	0.1+	1998 05 24	704	0.3+	0.3-	1999 10 04	703	0.6-	0.3+
1998 04 21	688	0.1-	0.3+	1998 05 27	699	0.7-	0.8+	1999 10 04	703	0.0	0.3+

1998 04 21	688	0.1-	0.3+	1998 05 27	699	0.7-	0.0	1999 10 04	703	0.6-	0.5+
1998 04 21	688	0.0	0.2+	1998 05 27	699	0.2+	0.8+				

(11927)* 1993 BA = 1975 XV₄

Discovered 1993 Jan. 16 by T. Seki at Geisei.

Id. S. Nakano (*MPC* 28849)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	51.97528	(2000.0)	P	Q
<i>n</i>	0.23937930	ω 183.72459	+0.46725622	+0.85312468
<i>a</i>	2.5688869	Ω 114.25823	-0.80444715	+0.51913262
<i>e</i>	0.0619371	<i>i</i> 14.74574	-0.36679204	-0.05176488
<i>P</i>	4.12	<i>H</i> 12.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1975 12 03	095	0.5+	0.4+	1998 05 19	127	1.4+	0.7-	1998 06 22	636	2.1+	2.0-
1993 01 16	372	0.3+	2.0+	1998 05 23	704	0.9-	0.1+	1998 06 22	636	(2.9+	1.3-)
1993 01 16	372	0.2-	0.5-	1998 05 23	704	0.4-	0.2+	1998 06 22	636	1.0-	0.3+
1993 01 19	372	2.1-	0.5+	1998 05 23	704	0.0	0.1+	1998 06 25	610	0.9+	0.2+
1993 01 19	372	0.5+	0.2-	1998 05 23	704	0.1-	1.2-	1998 06 25	610	0.7+	0.4+
1993 01 22	372	1.7-	0.5+	1998 05 23	704	0.3-	0.8-	1998 06 25	610	0.4+	0.8+
1993 01 22	372	0.3-	0.2+	1998 05 23	699	0.1+	0.1+	1998 06 25	610	0.0	1.1+
1997 01 10	411	1.9+	0.0	1998 05 23	699	0.5+	0.2-	1998 06 28	691	0.1+	0.5-
1997 01 10	411	0.3+	0.3+	1998 05 23	699	0.2+	0.1-	1998 06 28	691	0.2+	0.2-
1997 01 11	411	0.5+	0.1-	1998 05 24	699	0.1-	0.1+	1998 06 28	691	0.2+	0.3-
1997 01 11	411	0.4+	0.1+	1998 05 24	699	0.3+	0.1+	1998 07 17	699	0.3+	0.9+
1998 04 19	688	0.2-	0.2-	1998 05 24	699	0.1-	0.2-	1998 07 17	699	0.4+	0.9+
1998 04 19	688	0.2-	0.7-	1998 05 26	704	1.0-	0.3-	1998 07 17	699	0.3+	1.2+
1998 04 19	691	1.2-	0.2+	1998 05 26	704	0.4-	0.5+	1999 09 09	106	0.5-	0.2+
1998 04 19	688	0.2-	0.1-	1998 05 26	704	1.1-	0.4-	1999 09 09	106	0.1-	0.1+
1998 04 19	691	1.4-	0.0	1998 05 26	704	0.8-	0.3+	1999 09 09	106	0.3-	0.1+
1998 04 19	691	1.1-	0.1+	1998 05 26	704	1.6-	0.2+	1999 09 13	704	0.2+	0.1+
1998 04 20	691	0.3+	0.3+	1998 06 03	704	0.0	0.2-	1999 09 13	704	0.3+	0.2+
1998 04 20	691	0.1+	0.1+	1998 06 03	704	0.9+	1.9+	1999 09 13	704	0.4+	0.0
1998 04 20	691	0.0	0.0	1998 06 03	704	0.1+	0.2+	1999 09 13	704	0.4+	0.3+
1998 04 24	691	0.8-	0.1-	1998 06 03	704	0.8-	0.0	1999 09 13	704	0.1-	0.1+
1998 04 24	691	0.3-	0.4-	1998 06 03	704	0.2-	0.7+	1999 09 30	704	0.3+	0.4+
1998 04 24	691	0.5-	0.0	1998 06 20	610	0.9+	0.3+	1999 09 30	704	0.0	0.2+
1998 05 18	127	2.1+	0.6+	1998 06 20	610	0.8+	0.1+	1999 09 30	704	0.2-	0.1-
1998 05 18	127	(2.3+	0.7+)	1998 06 20	610	0.7+	0.2-	1999 09 30	704	0.8-	0.3-
1998 05 19	127	1.5+	0.9-	1998 06 20	610	0.8+	0.4-	1999 09 30	704	0.6-	0.4-

(11928)* 1993 BT₂

Discovered 1993 Jan. 23 by K. Endate and K. Watanabe at Kitami.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	166.55893	(2000.0)	P	Q
<i>n</i>	0.23053277	ω 195.53904	-0.96371650	-0.26247266
<i>a</i>	2.6341931	Ω 329.11237	+0.25387645	-0.84510038
<i>e</i>	0.2083403	<i>i</i> 5.42854	+0.08244552	-0.46573968
<i>P</i>	4.28	<i>H</i> 13.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1955 03 24	675	0.1-	0.1-	1999 09 05	699	0.4-	0.7+	1999 09 30	704	1.1+	0.6-
1955 03 24	675	0.1-	0.3-	1999 09 07	704	0.3-	0.3+	1999 09 30	704	1.3+	0.8-
1989 03 09	675	0.3-	0.7-	1999 09 07	704	1.0-	0.2-	1999 10 02	703	0.1-	0.6+
1989 03 09	675	0.3-	0.5-	1999 09 07	704	0.7-	0.6+	1999 10 02	703	1.3-	1.7+
1993 01 23	400	(3.1-	0.4+)	1999 09 07	704	0.1-	0.3+	1999 10 02	703	0.4-	0.7+
1993 01 23	400	0.3-	0.4+	1999 09 07	704	0.3-	0.2-	1999 10 02	703	0.4-	1.7+
1993 01 24	400	0.7+	0.1-	1999 09 09	704	0.4+	0.7+	1999 10 02	704	0.6-	0.8-
1993 01 24	400	0.2+	0.5+	1999 09 09	704	0.1+	0.0	1999 10 02	704	1.1+	0.7-
1993 01 29	691	0.7-	0.2+	1999 09 09	704	0.9+	0.2+	1999 10 02	704	0.2+	0.2+
1993 01 29	691	0.7-	0.2+	1999 09 09	704	0.6-	0.4-	1999 10 02	704	1.4+	0.1-
1993 01 29	691	0.6-	0.2+	1999 09 09	704	0.8-	0.2-	1999 10 02	704	0.3+	0.1+
1993 02 13	400	1.2-	0.2-	1999 09 12	106	0.2-	0.4+	1999 10 05	704	0.3+	0.4-
1993 02 13	400	1.2+	0.2-	1999 09 12	106	0.4-	0.5+	1999 10 05	704	0.3+	0.7-
1993 03 20	801	0.4+	1.0-	1999 09 12	106	0.6-	0.0	1999 10 05	704	0.0	0.3-

1993 03 20	801	0.6+	1.2-	1999 09 14	704	1.2-	0.3-	1999 10 05	704	0.3+	0.3-
1993 03 23	801	0.1+	0.5-	1999 09 14	704	0.8+	0.7-	1999 10 05	704	0.1+	0.1-
1993 03 23	801	0.1+	0.7-	1999 09 14	704	0.3+	0.4-	1999 10 07	704	0.3-	0.5-
1997 02 12	689	(4.7-	1.2+)	1999 09 14	704	1.5+	0.4+	1999 10 07	704	0.1+	1.2-
1998 06 24	704	(2.5+	1.9+)	1999 09 30	704	0.8+	1.4-	1999 10 07	704	0.1-	0.1+
1998 06 24	704	0.3-	1.0-	1999 09 30	704	1.4+	1.5-	1999 10 15	704	0.2+	0.1-
1998 06 24	704	0.0	1.1+	1999 09 30	704	0.6+	1.1-	1999 10 15	704	0.1+	0.0
1999 08 18	859	0.4-	0.6-	1999 09 30	704	0.7+	0.5-	1999 10 15	704	0.5-	0.7+
1999 08 18	859	0.8-	0.0	1999 09 30	704	0.2+	0.8-	1999 10 15	704	1.0-	0.4+
1999 08 18	859	0.3-	0.4-	1999 09 30	704	0.0	0.3-	1999 10 15	704	1.2-	0.3-
1999 09 05	699	0.4-	0.8+	1999 09 30	704	1.7+	0.2-				
1999 09 05	699	0.4-	1.2+	1999 09 30	704	1.3+	0.5-				

(11929)* 1993 BG₃ = 1984 EB₁ = 1999 RB₅₄

Discovered 1993 Jan. 23 by K. Endate and K. Watanabe at Kitami.

Id. G. V. Williams (*MPC* 35917)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.26057				<i>P</i>		<i>Q</i>
<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-

(11930)* 1993 CJ₁ = 1989 CM₆ = 1991 VB₁₇

Discovered 1993 Feb. 15 by T. Hioki and S. Hayakawa at Okutama.

Id. E. Bowell (*MPC* 28587), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	219.55540				<i>P</i>		<i>Q</i>
<i>n</i>	0.23943871	ω	345.27176	-0.84160564	-0.53523666		
<i>a</i>	2.5684620	Ω	161.81034	+0.51598437	-0.83633720		
<i>e</i>	0.0987013	<i>i</i>	13.38449	+0.15956212	-0.11858248		
<i>P</i>	4.12	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1989 02 04	033	0.4-	1.3-	1993 03 01	894	0.4+	0.6-	1999 09 14	704	0.2+	0.4-
1989 02 04	033	0.1+	0.3-	1993 03 02	894	0.1+	0.3-	1999 09 14	106	0.6-	0.7+
1989 03 07	675	0.4-	1.0-	1993 03 02	894	0.3+	0.2+	1999 09 15	106	0.2-	0.4+
1989 03 07	675	0.4+	2.0-	1993 05 14	691	0.1-	0.0	1999 09 15	106	0.1+	0.2+
1989 03 29	675	0.2-	0.6-	1993 05 14	691	0.4-	0.2+	1999 10 02	704	0.1+	0.8-
1989 03 29	675	0.1+	0.2-	1993 05 14	691	0.2-	0.0	1999 10 02	704	0.2+	0.4-
1989 04 03	675	0.1-	0.3+	1997 01 18	540	0.3+	0.6+	1999 10 02	704	0.1+	1.7-
1989 04 03	675	0.5+	0.0	1997 01 18	540	0.2+	0.2+	1999 10 02	704	0.1-	0.5-
1991 11 13	675	0.1-	0.9+	1997 01 18	540	0.3+	0.4+	1999 10 02	704	0.2-	1.0-
1991 11 13	675	0.2-	0.8-	1999 09 07	704	0.6+	0.1+	1999 10 05	703	0.5-	0.4+
1993 02 15	877	1.6+	1.4+	1999 09 07	704	0.5+	0.7-	1999 10 05	703	0.5-	0.3+
1993 02 15	877	(2.1+	1.0+)	1999 09 07	704	0.8+	0.0	1999 10 05	703	0.2-	0.3+
1993 02 20	877	(1.1-	3.3+)	1999 09 08	699	0.9+	0.4+	1999 10 05	703	0.3-	0.0
1993 02 20	877	1.1-	1.2-	1999 09 08	699	0.0	0.7+	1999 10 08	704	0.4-	0.1-
1993 02 23	877	1.1-	0.6+	1999 09 08	699	0.1-	0.3+	1999 10 08	704	0.1+	0.2+

1993 02 23	877	0.8-	0.5-	1999 09 14	704	0.7+	0.8-	1999 10 08	704	0.1-	0.2-
1993 02 25	399	0.2-	0.7+	1999 09 14	704	0.2+	0.1+	1999 10 08	704	0.4-	0.1+
1993 02 25	399	0.1-	0.3-	1999 09 14	704	0.1-	1.0-	1999 10 08	704	0.3-	0.1+
1993 03 01	894	0.1-	0.3+	1999 09 14	704	0.6+	0.9-				

(11931)* 1993 DD₂ = 1995 UH

Discovered 1993 Feb. 22 by T. Urata at the Nihondaira Observatory.

Id. T. Urata (*MPC* 25960)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	284.25877				<i>P</i>		<i>Q</i>
<i>n</i>	0.23731239	ω	65.09724	+0.19334532	-0.97912041		
<i>a</i>	2.5837814	Ω	14.18742	+0.78216155	+0.11519259		
<i>e</i>	0.0681938	<i>i</i>	14.84051	+0.59231824	+0.16749296		
<i>P</i>	4.15	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 12 04	413	1.3-	1.2-	1997 04 26	689	1.7-	0.1+	1999 10 06	691	0.3+	0.0
1982 12 04	413	0.1+	0.2-	1997 04 27	689	(2.4-	1.3+)	1999 10 06	691	0.4+	0.1+
1982 12 05	413	(1.1-	3.8-)	1999 09 05	886	0.4+	0.5-	1999 10 06	691	0.3+	0.0
1982 12 05	413	0.1+	0.0	1999 09 05	886	0.4-	0.3-	1999 10 07	703	0.4-	0.3+
1993 02 22	385	1.0+	1.2+	1999 09 13	888	0.9+	0.5-	1999 10 07	703	0.1-	0.3+
1993 02 22	385	0.3+	0.1+	1999 09 13	888	0.5+	0.4+	1999 10 07	703	0.2-	0.3+
1993 02 23	385	1.6+	0.7+	1999 09 14	704	0.1-	0.4+	1999 10 07	703	0.1-	0.2+
1993 02 23	385	0.1+	1.1-	1999 09 14	704	0.1+	0.0	1999 10 07	704	0.0	0.3-
1993 03 21	885	0.8+	1.5-	1999 09 14	704	0.5-	0.2+	1999 10 07	704	0.1-	0.3-
1993 03 21	885	0.4-	1.0-	1999 09 14	704	0.4-	0.2+	1999 10 07	704	0.2-	0.0
1993 03 29	885	0.4-	0.3+	1999 09 14	704	0.5-	0.1+	1999 10 07	704	0.2+	0.1-
1993 03 29	885	1.1+	0.8-	1999 09 19	886	1.1-	0.6+	1999 10 07	704	0.0	0.0
1993 04 14	675	0.2-	0.7+	1999 09 19	886	0.8-	1.0+	1999 10 07	106	0.3+	0.4+
1993 04 14	675	0.6-	1.1+	1999 09 30	703	0.3-	0.3+	1999 10 07	106	0.0	0.6+
1995 10 16	905	0.8-	0.3-	1999 09 30	703	0.2-	0.3+	1999 10 07	106	0.7-	0.4+
1995 10 16	905	0.7-	0.1+	1999 09 30	703	0.4-	0.8+	1999 10 08	886	1.0+	0.4-
1995 10 17	905	1.2+	0.7-	1999 09 30	703	0.4-	0.4+	1999 10 08	886	1.0+	0.4-
1995 10 17	905	0.7+	0.0	1999 10 01	888	0.2-	0.0	1999 10 09	704	0.0	0.1-
1995 11 09	887	0.0	0.2-	1999 10 01	888	0.1+	0.1+	1999 10 09	704	0.0	0.1-
1995 11 09	887	0.4-	0.3+	1999 10 01	888	0.2+	0.5-	1999 10 09	704	0.1+	0.3-
1995 11 09	887	0.4-	0.3-	1999 10 01	886	1.8+	0.9+	1999 10 09	704	0.3+	0.5-
1995 11 16	385	0.2-	0.7+	1999 10 01	886	0.9+	1.6+	1999 10 09	704	0.2+	0.4-
1995 11 16	385	0.2-	0.8+	1999 10 02	704	0.3+	0.1-	1999 10 10	886	1.3+	1.0-
1995 11 16	385	0.4+	0.6+	1999 10 02	704	0.8-	0.0	1999 10 10	886	0.0	0.7-
1995 11 26	033	0.7+	0.1+	1999 10 02	704	0.4-	0.3-	1999 10 15	704	0.8-	0.2-
1995 11 26	033	0.9+	0.4-	1999 10 02	704	0.1+	0.2+	1999 10 15	704	0.7-	0.1-
1997 01 20	385	0.1+	0.5+	1999 10 02	704	0.2+	0.0	1999 10 15	704	0.9-	0.0
1997 01 20	385	0.4-	0.1+	1999 10 03	691	0.1+	0.6-	1999 10 15	704	0.6-	0.0
1997 02 03	385	0.7-	0.1-	1999 10 03	691	0.2+	0.6-	1999 10 15	704	1.0-	0.3-
1997 02 03	385	0.7-	0.3+	1999 10 03	691	0.2+	0.6-				

(11932)* 1993 EP = 1995 UG₄

Discovered 1993 Mar. 13 by H. Shiozawa and T. Urata at Fujieda.

Id. T. Urata (*MPC* 25960)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	205.07533				<i>P</i>		<i>Q</i>
<i>n</i>	0.23620733	ω	178.98456	-0.96246017	-0.26547970		
<i>a</i>	2.5918337	Ω	345.24278	+0.24743628	-0.77265039		
<i>e</i>	0.1239580	<i>i</i>	12.81263	+0.11156030	-0.57665579		
<i>P</i>	4.17	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1993 03 13	898	0.9+	0.7-	1997 01 20	385	0.1-	0.8-	1999 09 30	703	0.7-	0.1+
1993 03 13	898	1.0+	0.2-	1997 02 03	385	0.2-	0.1+	1999 09 30	703	0.2-	0.5+
1993 03 20	385	0.7+	0.4+	1997 02 03	385	0.1-	0.3+	1999 09 30	703	0.1-	0.2+
1993 03 20	385	0.6+	0.7+	1997 03 10	127	0.1+	0.7-	1999 10 01	888	0.6+	0.7-
1993 03 20	385	0.3+	0.8+	1997 03 10	127	0.3-	0.6-	1999 10 01	888	0.8+	0.9-
1993 04 10	411	1.6-	0.0	1997 03 27	327	0.0	0.4+	1999 10 03	704	0.5+	0.7-
1993 04 10	411	0.8-	0.1+	1997 03 27	327	0.0	0.3+	1999 10 03	704	0.5+	0.5-

1993 04 10	411	0.8–	1.8–	1997 03 27	327	0.2–	0.0	1999 10 03	704	0.2–	0.2–
1993 04 27	385	0.5–	1.4–	1999 09 04	888	0.5–	0.1+	1999 10 03	704	0.0	0.1+
1993 04 27	385	1.9–	0.4–	1999 09 04	888	0.1–	0.0	1999 10 03	704	0.3–	0.9–
1993 04 27	385	1.4–	0.6–	1999 09 04	888	0.2+	0.4+	1999 10 09	703	0.4–	0.1+
1995 10 20	385	0.1+	0.1–	1999 09 08	704	0.5+	0.1+	1999 10 09	703	0.3–	0.1+
1995 10 20	385	0.1+	0.3–	1999 09 08	704	0.1–	1.2–	1999 10 09	703	0.7–	0.2+
1995 10 20	385	0.2–	0.2+	1999 09 08	704	0.7–	0.9–	1999 10 09	703	0.3–	0.4+
1995 10 21	385	0.3+	0.8+	1999 09 08	704	0.7–	1.4–	1999 10 10	704	0.5+	0.3–
1995 10 21	385	0.2–	0.3+	1999 09 08	704	0.1–	0.9–	1999 10 10	704	0.5+	0.8–
1995 10 21	385	0.4+	0.4+	1999 09 18	704	0.4+	1.1+	1999 10 10	704	0.4+	0.5–
1995 11 16	385	0.4–	0.3+	1999 09 18	704	0.7+	0.3+	1999 10 10	704	0.4+	0.5–
1995 11 16	385	0.3–	0.6+	1999 09 18	704	0.4+	0.3+	1999 10 10	704	0.2+	0.4–
1995 11 16	385	0.9–	0.3+	1999 09 18	704	0.8+	0.1–	1999 10 20	704	0.1+	0.5–
1995 11 17	385	0.2–	0.1+	1999 09 18	704	0.2–	0.4–	1999 10 20	704	0.8+	0.3–
1995 11 17	385	0.2+	0.0	1999 09 19	888	0.5+	0.2+	1999 10 20	704	0.6+	0.3–
1995 11 17	385	0.2–	0.0	1999 09 19	888	0.6+	0.5+	1999 10 20	704	0.1+	0.1–
1997 01 20	385	0.2+	0.5–	1999 09 30	703	0.5–	0.0	1999 10 20	704	0.5+	0.2+

(11933)* 1993 ES = 1984 FO₁ = 1986 VU₃

Discovered 1993 Mar. 15 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 22061)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	138.10313		(2000.0)	$\mathbf{P}$		$\mathbf{Q}$	
n	0.22526383	ω	224.84805	−0.67898788		+0.73410079	
a	2.6751106	Ω	2.43411	−0.60529176		−0.55325784	
e	0.1912555	i	11.48301	−0.41544836		−0.39370267	
P	4.38	H	12.5	G	0.15	U	1

Residuals in seconds of arc

1977 10 07	675	0.8+	1.6–	1993 03 29	894	0.5–	0.4+	1999 10 03	704	0.4+	0.4+
1977 10 11	675	0.4–	0.5–	1993 03 29	894	0.1+	0.4+	1999 10 03	704	0.6–	1.0–
1977 10 11	675	0.7+	0.6+	1993 04 17	413	2.1+	0.6–	1999 10 03	704	1.2–	0.6–
1984 03 21	095	1.0–	0.6–	1995 10 24	327	0.0	0.1–	1999 10 08	106	0.3–	0.9+
1986 11 04	010	0.5–	0.6–	1995 10 24	327	0.2–	0.4+	1999 10 08	106	0.2–	1.1+
1986 11 04	010	(2.4+	0.4+)	1995 10 24	327	0.4–	0.6+	1999 10 08	106	0.2–	0.6+
1986 11 04	010	1.6+	0.8–	1995 10 25	327	0.1–	0.2+	1999 10 10	681	0.1+	0.9+
1986 11 05	010	(4.4–	0.2+)	1995 10 25	327	0.4+	0.8+	1999 10 10	681	0.1+	0.7+
1986 11 05	010	(8.9+	1.1+)	1995 10 25	327	0.2–	0.1–	1999 10 10	704	0.2–	0.2–
1993 03 15	400	0.6+	0.4+	1995 10 28	400	0.0	0.3+	1999 10 10	704	0.0	0.1–
1993 03 15	400	1.0–	0.1–	1995 10 28	400	0.2–	0.2+	1999 10 10	704	0.1+	0.1–
1993 03 17	894	0.4–	0.0	1995 11 18	400	0.3+	0.3+	1999 10 10	704	0.1+	0.0
1993 03 17	894	0.9–	1.0–	1995 11 18	400	0.9+	0.4+	1999 10 10	704	0.6+	1.2–
1993 03 19	809	0.6–	0.2–	1998 07 13	689	0.3+	0.4–	1999 10 16	681	0.0	0.4+
1993 03 20	809	0.7+	0.4+	1999 09 12	703	0.6–	0.8+	1999 10 16	681	0.0	0.2+
1993 03 20	400	(1.4+	2.3–)	1999 09 12	703	0.7–	0.4+	1999 10 21	704	0.4+	0.2–
1993 03 20	400	1.0–	1.2+	1999 09 12	703	0.3–	0.4–	1999 10 21	704	0.6+	0.7–
1993 03 24	809	(1.7–	2.3+)	1999 09 12	703	0.2+	0.1–	1999 10 21	704	0.3+	0.6–
1993 03 29	400	0.2+	0.6–	1999 10 03	704	0.1+	0.2–	1999 10 21	704	0.2+	0.8–
1993 03 29	400	0.3+	1.2–	1999 10 03	704	0.3–	0.4–	1999 10 21	704	0.2+	1.0–

(11934)* 1993 FL₄ = 1995 SU₂₉

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. K. Kinoshita (*MPC* 26173)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	299.56966		(2000.0)	$\mathbf{P}$		$\mathbf{Q}$	
n	0.24243044	ω	294.99276	+0.27881907		-0.96002234	
a	2.5472874	Ω	138.79217	+0.89413396		+0.25007156	
e	0.1338744	i	2.16088	+0.35040603		+0.12578282	
P	4.07	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1991 10 07	675	0.4+	1.3+	1999 09 14	120	0.2+	0.1–	1999 10 08	610	0.2–	0.2–
1991 10 07	675	(0.6+	3.0+)	1999 09 14	106	0.6+	0.1+	1999 10 08	610	0.3–	0.3–
1993 03 17	809	0.4–	0.1+	1999 09 14	106	0.1–	0.0	1999 10 08	610	0.5–	0.5–

1993 03 17	372	(0.8+	2.5+)	1999 09 14	120	0.4+	0.4–	1999 10 08	610	0.6–	0.7–
1993 03 18	809	0.7+	0.9+	1999 09 15	120	0.1–	0.2–	1999 10 09	704	0.4–	0.1–
1993 03 23	809	0.5+	0.9+	1999 09 15	120	0.2+	0.2–	1999 10 09	704	0.4–	0.3–
1993 03 23	691	0.3–	0.4–	1999 10 02	703	0.4+	0.5+	1999 10 09	704	0.2–	0.0
1993 03 23	691	0.2–	0.4–	1999 10 02	703	0.1–	0.2+	1999 10 09	704	0.1–	0.0
1993 03 23	691	0.2–	0.7–	1999 10 02	703	0.2+	0.6+	1999 10 09	704	0.1+	0.3–
1993 04 16	413	0.5–	0.4–	1999 10 02	703	0.3–	0.8+	1999 10 09	610	0.4+	0.0
1995 09 26	114	(3.8–	0.7–)	1999 10 04	704	0.4+	0.2–	1999 10 09	610	0.5+	0.3–
1995 09 26	114	1.2–	0.0	1999 10 04	704	0.6+	0.1–	1999 10 10	610	0.5+	0.7–
1995 09 28	114	0.2+	1.5+	1999 10 04	704	0.2–	0.2–	1999 10 10	610	0.5+	0.9–
1995 09 29	114	(2.3–	2.1+)	1999 10 04	704	0.3+	0.0	1999 10 10	610	0.6+	1.2–
1995 10 01	114	0.9+	0.7+	1999 10 04	704	0.1–	0.2–	1999 10 11	610	0.9+	0.4–
1995 10 16	114	(2.6–	1.0+)	1999 10 07	610	0.4+	0.6+	1999 10 11	610	0.4+	0.5–
1995 10 16	114	1.4–	0.1+	1999 10 07	610	0.1+	0.5+	1999 10 11	610	0.1+	0.4–
1995 10 17	114	(2.1+	1.3+)	1999 10 07	610	0.0	0.4+	1999 10 13	704	0.0	0.1+
1995 10 17	114	1.2–	0.3+	1999 10 07	610	0.2–	0.3+	1999 10 13	704	0.5+	0.2+
1995 10 18	114	0.1–	1.4+	1999 10 07	610	0.3–	0.2+	1999 10 13	704	0.9–	0.2+
1995 10 19	114	(3.2–	0.1+)	1999 10 07	610	0.5–	0.1+	1999 10 13	704	0.2–	0.4+
1995 10 19	114	(2.1+	1.9+)	1999 10 07	704	0.1+	0.5–	1999 10 13	704	0.2+	0.2+
1997 01 12	910	0.1+	0.6–	1999 10 07	704	0.0	0.4–	1999 10 15	704	0.1–	0.5–
1997 01 12	910	0.1–	0.4–	1999 10 07	704	0.2–	0.1–	1999 10 15	704	0.4+	0.7–
1997 01 12	910	0.0	0.3–	1999 10 07	704	0.1+	0.1+	1999 10 15	704	0.2–	0.8–
1999 07 25	118	0.7+	0.9+	1999 10 07	704	0.0	0.3–	1999 10 15	704	0.0	0.3–
1999 07 25	118	0.3+	0.9+	1999 10 07	610	0.4+	0.1–	1999 10 15	704	0.5+	0.5–
1999 07 25	118	0.1–	0.5+	1999 10 07	610	0.1+	0.1+	1999 10 16	691	0.1+	0.1–
1999 09 05	699	0.5–	0.2–	1999 10 07	610	0.1–	0.2+	1999 10 16	691	0.0	0.1–
1999 09 05	699	0.1–	0.2–	1999 10 07	610	0.2–	0.3+	1999 10 16	691	0.0	0.1–
1999 09 05	699	0.0	0.1–	1999 10 07	610	0.4–	0.5+				
1999 09 13	120	0.0	0.6–	1999 10 08	610	0.2–	0.1–				

(11935)* 1993 FB₈ = 1998 KC₁₉

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

Williams

M	53.41567		(2000.0)	P	Q
n	0.21290892	ω	210.88258	+0.30173723	+0.95119425
a	2.7776241	Ω	76.74578	−0.86059100	+0.30093739
e	0.1841247	i	3.81041	−0.41028986	+0.06830954
P	4.63	H	14.1	G 0.15	U 1

Residuals in seconds of arc

1993 03 17	809	0.9+	0.9−	1998 05 22	704	0.9+	0.6+	1999 10 02	704	0.2+	0.2−
1993 03 18	809	0.2−	0.6+	1998 05 22	704	0.8+	0.5+	1999 10 02	704	0.1−	0.1−
1993 03 19	691	0.1−	0.2+	1998 05 22	704	1.1−	0.7+	1999 10 02	704	0.6−	0.0
1993 03 19	691	0.1−	0.5+	1998 05 22	704	0.7+	0.9+	1999 10 02	704	0.8−	0.1+
1993 03 19	691	0.1−	0.3+	1998 05 22	704	(2.2−	0.1+)	1999 10 02	704	1.0−	0.7+
1993 03 23	809	0.3+	0.8+	1998 05 24	704	1.0+	0.1−	1999 10 07	704	0.7+	0.5+
1993 04 16	413	0.1+	0.4+	1998 05 24	704	0.4+	0.2−	1999 10 07	704	0.1−	0.2+
1997 02 03	691	0.2+	0.6+	1998 05 24	704	0.8+	0.6+	1999 10 07	704	0.1−	0.5−
1997 02 03	691	0.3+	0.6+	1998 05 24	704	0.3−	1.1+	1999 10 07	704	0.3−	0.4+
1997 02 03	691	0.3+	0.7+	1998 05 24	704	0.7+	0.5−	1999 10 09	704	0.4+	0.2+
1998 04 22	704	0.1+	0.1−	1998 06 21	701	0.2−	0.3−	1999 10 09	704	0.1+	0.4+
1998 04 22	704	0.2−	0.8+	1998 06 21	701	0.6+	1.2−	1999 10 09	704	0.1+	0.1+
1998 04 22	704	0.3−	0.3−	1999 09 08	699	0.6−	0.3+	1999 10 09	704	0.0	0.3+
1998 04 22	704	0.1+	1.1−	1999 09 08	699	0.1−	0.2+	1999 10 09	704	0.3+	0.2+
1998 04 22	704	1.2−	0.7+	1999 09 08	699	0.7−	0.5+	1999 10 15	704	0.3+	0.4+
1998 05 01	704	0.3−	0.3−	1999 10 01	703	0.9−	0.3+	1999 10 15	704	0.7+	0.0
1998 05 01	704	0.9+	0.1+	1999 10 01	703	0.3−	0.5+	1999 10 15	704	0.3+	0.0
1998 05 01	704	1.1−	0.4−	1999 10 01	703	0.8−	0.1+	1999 10 15	704	0.6+	0.0
1998 05 01	704	1.0−	0.8+	1999 10 01	703	0.6−	0.3+	1999 10 15	704	1.2+	0.1+

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	233.84070		(2000.0)	P	Q
<i>n</i>	0.24579990	ω	79.76212	−0.94379703	−0.32444039
<i>a</i>	2.5239548	Ω	81.28448	+0.27271683	−0.87230491
<i>e</i>	0.0714278	<i>i</i>	3.66192	+0.18674234	−0.36581768
<i>P</i>	4.01	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1977 03 15	381	0.6+	2.2−	1998 07 16	699	0.3+	0.9+	1999 10 10	704	0.5+	0.7−
1977 03 15	381	1.0−	0.5−	1998 07 16	699	0.6+	1.1+	1999 10 10	704	0.1−	1.0−
1989 03 07	675	0.5+	0.3−	1998 08 17	704	0.1−	0.1−	1999 10 15	704	0.3+	0.1+
1989 03 07	675	0.1−	0.6−	1998 08 17	704	1.0−	0.1−	1999 10 15	704	0.2−	0.1+
1989 03 29	675	0.2−	0.4+	1998 08 17	704	0.1−	0.6−	1999 10 15	704	1.7−	0.1+
1989 03 29	675	0.3−	0.4+	1998 08 17	704	0.8−	1.5−	1999 10 15	704	0.1−	0.1+
1991 11 06	691	0.5−	0.3−	1999 09 15	120	0.2−	0.5−	1999 10 15	691	0.3+	0.2+
1991 11 06	691	0.6−	0.3−	1999 09 15	120	0.0	0.6−	1999 10 15	691	0.1+	0.3+
1991 11 06	691	0.5−	0.4−	1999 10 06	691	0.1−	0.1+	1999 10 15	691	0.1+	0.3+
1993 03 17	809	0.1+	0.5+	1999 10 06	691	0.2−	0.1+	1999 10 19	691	0.2+	0.1+
1993 03 18	809	0.0	0.4+	1999 10 06	691	0.1−	0.1+	1999 10 19	691	0.0	0.3+
1993 03 19	691	0.1+	0.5+	1999 10 08	703	0.1−	0.4+	1999 10 19	691	0.2+	0.1+
1993 03 19	691	0.1+	0.5+	1999 10 08	703	0.2+	0.2+	1999 10 21	704	0.3+	0.6+
1993 03 19	691	0.2+	0.6+	1999 10 08	703	0.3−	0.6+	1999 10 21	704	0.6+	0.4+
1993 03 23	809	0.2+	0.9+	1999 10 08	703	0.2−	0.1+	1999 10 21	704	0.9+	0.2+
1993 04 16	413	(3.9+	3.5+)	1999 10 10	704	0.2+	0.4−	1999 10 21	704	0.7+	1.0+
1998 07 16	699	0.6+	0.9+	1999 10 10	704	0.4+	0.2−				

(11937)* 1993 FF₁₆ = 1995 WV₁

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. S. Nakano (*MPC* 26173)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	56.16298		(2000.0)	P	Q
<i>n</i>	0.21765092	ω	234.15236	+0.34189262	+0.93611401
<i>a</i>	2.7371318	Ω	56.04308	−0.82696290	+0.34138244
<i>e</i>	0.0900801	<i>i</i>	5.70559	−0.44636510	+0.08454931
<i>P</i>	4.53	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1990 09 28	675	0.3+	0.5−	1998 05 22	704	0.7+	0.2−	1999 10 02	704	0.8−	0.3−
1993 03 17	809	0.5+	0.9+	1998 05 22	704	0.9−	2.0−	1999 10 02	704	0.6−	0.5−
1993 03 18	809	0.3−	1.2+	1998 05 24	704	0.3−	0.1+	1999 10 02	704	0.7−	1.1−
1993 03 23	809	0.5+	0.7+	1998 05 24	704	0.3−	0.2+	1999 10 02	704	0.3+	0.5−
1993 04 16	413	0.3+	0.1+	1998 05 24	704	0.3+	0.1+	1999 10 02	704	0.3+	0.3−
1995 11 16	369	0.7+	1.0−	1998 05 24	704	0.8+	0.5−	1999 10 05	703	0.4−	0.9+
1995 11 16	369	0.1−	0.6−	1999 09 14	704	0.1+	0.4−	1999 10 05	703	0.1+	1.1+
1995 11 16	369	0.4+	0.6−	1999 09 14	704	0.3+	0.3+	1999 10 05	703	0.1+	0.9+
1995 11 18	369	0.8+	1.4−	1999 09 14	704	0.3−	0.9−	1999 10 05	703	0.6+	0.9+
1995 11 18	369	0.4+	0.6−	1999 09 14	704	0.6+	0.2−	1999 10 07	704	0.4−	0.2+
1995 11 18	369	0.1+	0.7−	1999 09 14	704	0.2+	0.4−	1999 10 07	704	0.5−	0.2−
1998 05 22	704	0.2−	0.4−	1999 10 01	106	0.5−	0.9+	1999 10 07	704	0.5−	0.5+
1998 05 22	704	0.6−	0.8−	1999 10 01	106	0.2+	0.6+	1999 10 07	704	0.1−	1.1+
1998 05 22	704	0.5−	0.9−	1999 10 01	106	0.1−	0.2+	1999 10 07	704	0.2−	0.7+

(11938)* 1993 FZ₂₆ = 1998 KZ₁₈

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* 31961)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	17.94289		(2000.0)	P	Q
<i>n</i>	0.21242161	ω	89.65301	+0.68522030	+0.72705177
<i>a</i>	2.7818705	Ω	223.70650	−0.69065172	+0.62977644
<i>e</i>	0.0583185	<i>i</i>	3.58707	−0.23124304	+0.27345448
<i>P</i>	4.64	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1993 03 21	809	0.5+	0.2+	1998 05 22	704	0.4+	0.9−	1999 09 09	704	0.2+	0.6+
1993 03 22	809	0.8+	0.1−	1998 05 22	704	0.3+	0.3+	1999 09 09	704	0.5+	0.2+
1993 03 26	809	0.3+	0.1+	1998 05 22	704	(0.2+	2.2+)	1999 09 09	704	1.0+	0.4+
1993 04 18	413	1.4−	0.7+	1998 05 22	704	(4.5−	0.7−)	1999 09 14	704	0.3−	0.7−
1995 10 15	327	0.3−	0.2+	1998 05 24	704	0.5+	0.1−	1999 09 14	704	0.1−	0.4+
1995 10 15	327	0.6+	0.0	1998 05 24	704	0.4+	0.0	1999 09 14	704	0.3+	0.1+
1995 10 15	327	0.2−	0.0	1998 05 24	704	0.5+	0.7+	1999 09 14	704	0.4+	0.0
1995 12 19	691	0.0	0.1+	1998 05 24	704	1.0−	2.0+	1999 09 14	704	0.3+	0.6−
1995 12 19	691	0.1−	0.1−	1998 05 24	704	(1.7−	2.3+)	1999 10 02	703	1.6−	0.1−
1995 12 19	691	0.0	0.2−	1999 09 07	704	0.5−	0.1+	1999 10 02	703	(2.3−	1.2+)
1998 05 01	704	0.3+	1.3−	1999 09 07	704	0.5−	0.1−	1999 10 02	703	0.4−	0.9+
1998 05 01	704	1.0−	1.5−	1999 09 07	704	0.1−	0.2−	1999 10 02	703	0.7−	0.3+
1998 05 01	704	0.7−	0.3−	1999 09 07	704	0.4+	0.1−	1999 10 13	704	0.2+	0.0
1998 05 01	704	0.4−	0.8+	1999 09 07	704	0.6−	0.2−	1999 10 13	704	0.2−	1.0−
1998 05 01	704	(3.8+	0.2+)	1999 09 09	704	0.0	0.5+	1999 10 13	704	(1.5−	3.1−)
1998 05 22	704	0.7+	0.2−	1999 09 09	704	1.4+	0.1−				

(11939)* 1993 FH₃₆ = 1962 XJ = 1978 SL₂ = 1997 EU₅₁

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. T. B. Spahr (*MPC* 30659)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	352.97429		(2000.0)	P	Q
<i>n</i>	0.23906838	ω	211.84820	+0.85835369	−0.51305126
<i>a</i>	2.5711137	Ω	179.00700	+0.49741793	+0.83088098
<i>e</i>	0.1683876	<i>i</i>	8.99715	+0.12571532	+0.21544188
<i>P</i>	4.12	<i>H</i>	12.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1962 12 01	760	0.4−	0.1−	1998 06 01	809	1.2+	0.1+	1999 10 08	703	0.1+	0.1+
1962 12 01	760	0.6+	0.6+	1998 06 01	809	1.6+	0.6−	1999 10 10	704	0.2+	0.1+
1978 09 26	095	0.0	0.4−	1998 06 01	809	(2.2+	0.2−)	1999 10 10	704	0.4+	0.0
1993 03 19	809	1.1−	1.0+	1998 06 02	809	1.4+	0.2−	1999 10 10	704	0.0	0.0
1993 03 20	809	(3.0−	0.7+)	1998 06 02	809	1.5+	0.3+	1999 10 10	704	0.6+	0.2+
1993 03 24	809	1.4−	0.8+	1998 06 02	809	0.6+	0.2+	1999 10 10	704	0.1+	0.4−
1993 04 18	413	1.5−	0.2+	1998 06 19	704	0.6−	0.1−	1999 10 16	636	0.1−	0.3+
1997 03 05	809	0.9+	0.9+	1998 06 19	704	0.4−	0.3−	1999 10 16	636	0.5−	0.1+
1997 03 05	809	1.3+	0.5+	1998 06 19	704	(1.3−	2.6+)	1999 10 16	636	0.7−	0.2+
1997 03 05	809	1.0+	0.3+	1998 06 19	704	(1.5−	2.9+)	1999 10 16	636	0.7−	0.8+
1997 03 06	809	0.1+	0.8+	1998 06 19	704	0.5−	0.3+	1999 10 16	611	0.0	1.9−
1997 03 06	809	1.4+	0.3+	1998 06 25	704	0.8−	0.7+	1999 10 16	611	0.9+	1.3+
1997 03 06	809	0.5+	0.4+	1998 06 25	704	1.1−	0.4+	1999 10 17	636	0.8−	0.2−
1997 03 08	809	0.3−	1.2−	1998 06 25	704	1.1−	0.3−	1999 10 17	636	0.6−	0.4−
1997 03 08	809	0.1+	1.8−	1998 06 25	704	(2.6−	1.7+)	1999 10 17	636	0.1−	0.7+
1997 03 08	809	0.3+	1.7−	1998 06 25	704	1.0−	0.8+	1999 10 19	704	0.4+	0.4+
1997 03 09	809	(2.8−	6.8−)	1999 09 11	106	0.3−	0.6+	1999 10 19	704	0.8+	0.3−
1997 03 09	809	(2.6−	7.0−)	1999 09 11	106	0.3−	0.1−	1999 10 19	704	0.1+	0.0
1997 03 09	809	(2.6−	7.3−)	1999 09 11	106	0.0	0.4−	1999 10 19	704	0.1+	0.2−
1997 04 09	691	0.6−	0.1+	1999 10 08	703	0.1+	0.0	1999 10 19	704	0.1−	0.2−
1997 04 09	691	0.6−	0.1+	1999 10 08	703	0.0	0.1+				
1997 04 09	691	0.4−	0.1−	1999 10 08	703	0.1−	0.1+				

(11940)* 1993 GR = 1976 UY₁₁ = 1981 UW₃ = 1983 CV = 1986 XW₃

Discovered 1993 Apr. 15 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Ichikawa (*MPC* 22241)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	120.01295		(2000.0)	P	Q
<i>n</i>	0.20927073	ω	171.58580	−0.85291067	+0.51984876
<i>a</i>	2.8097244	Ω	39.85565	−0.48322887	−0.75136597
<i>e</i>	0.1244884	<i>i</i>	4.29234	−0.19756833	−0.40645595
<i>P</i>	4.71	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 2

1999 OCT. 26

M.P.C. 36257

Residuals in seconds of arc

1976 10 22	381	0.0	0.3+	1998 05 24	704	0.8−	0.7−	1999 10 01	704	0.1+	0.3+
1976 10 22	381	0.4+	0.4+	1998 05 24	704	0.9−	0.2+	1999 10 01	704	0.6−	0.3−
1976 10 24	381	0.7−	0.0	1998 06 03	704	0.9+	0.1+	1999 10 01	704	0.7+	0.3+
1981 10 30	381	0.3+	0.1+	1998 06 03	704	1.2+	0.1−	1999 10 01	704	0.1+	0.2+
1981 10 30	381	0.6−	0.8−	1998 06 03	704	0.2−	0.4−	1999 10 01	704	1.0−	0.5+
1983 02 15	688	1.1−	0.5−	1998 06 03	704	0.8+	0.5+	1999 10 01	704	0.0	0.5−
1983 02 15	688	0.4−	0.9−	1999 09 07	699	0.4+	0.7+	1999 10 01	704	0.6−	0.3+
1983 02 19	688	1.4+	1.3−	1999 09 07	704	0.1+	0.2−	1999 10 01	704	0.0	0.0
1983 02 19	688	(1.4−	3.7−)	1999 09 07	704	0.4+	0.3−	1999 10 01	704	0.5−	0.0
1986 12 04	046	1.8+	1.7−	1999 09 07	704	0.3+	0.4−	1999 10 01	704	0.8−	0.1−
1986 12 04	046	0.5−	0.7−	1999 09 07	699	0.2+	0.5+	1999 10 01	704	0.2−	0.3−
1986 12 04	010	(7.3−	5.3−)	1999 09 07	704	0.1+	0.2−	1999 10 01	704	0.4−	1.1−
1986 12 05	010	(5.8+	7.9−)	1999 09 07	704	0.3−	0.9−	1999 10 01	704	1.3−	0.9−
1986 12 07	046	2.0−	0.5−	1999 09 07	699	0.5−	0.7−	1999 10 01	704	0.4−	0.6+
1986 12 07	046	(0.7+	6.6+)	1999 09 08	704	0.4−	0.5−	1999 10 01	704	0.6−	0.3−
1993 03 24	675	1.3+	0.3+	1999 09 08	704	0.6−	0.4−	1999 10 01	704	0.4−	0.5−
1993 04 14	894	0.8−	1.6−	1999 09 08	704	0.7+	0.3+	1999 10 01	704	0.9−	0.4+
1993 04 14	894	0.3+	0.0	1999 09 08	704	0.1−	0.4+	1999 10 02	704	0.5−	0.0
1993 04 15	399	2.1+	0.9−	1999 09 09	704	0.1+	0.3−	1999 10 02	704	0.6+	0.2+
1993 04 15	399	0.0	1.5−	1999 09 09	704	0.7+	0.0	1999 10 02	704	0.3−	1.6+
1993 04 16	399	0.2−	1.1+	1999 09 09	704	0.4+	0.0	1999 10 02	704	1.1+	1.0+
1993 04 16	399	0.6−	0.5−	1999 09 09	704	0.1+	0.1−	1999 10 07	649	(1.6+	2.3+)
1993 04 17	894	0.1−	0.2−	1999 09 09	704	0.5+	0.1+	1999 10 07	649	(3.0+	0.5+)
1993 04 17	894	0.8−	0.1−	1999 09 09	704	0.2+	0.0	1999 10 07	704	0.7+	0.2+
1993 04 19	361	(1.3+	2.7−)	1999 09 09	704	0.3+	0.4+	1999 10 07	704	0.1+	0.5−
1993 04 20	400	1.8−	1.0−	1999 09 09	704	0.4+	0.8−	1999 10 07	704	0.1+	0.0
1993 04 20	400	(2.8+	0.4−)	1999 09 09	704	0.6+	0.2+	1999 10 07	704	0.6−	0.0
1993 04 25	361	1.6+	0.6+	1999 09 09	704	1.2+	0.1−	1999 10 07	704	0.5+	0.2−
1993 04 25	361	0.8−	1.5+	1999 09 10	704	0.0	0.2+	1999 10 15	704	0.2+	0.2−
1993 04 25	361	(0.2−	3.3+)	1999 09 10	704	0.9+	0.3−	1999 10 15	704	0.6+	1.1−
1993 05 16	399	(3.0+	0.2+)	1999 09 10	704	0.3+	0.1+	1999 10 15	704	0.8+	0.2+
1993 05 16	399	(2.9+	0.3+)	1999 09 10	704	0.0	0.2−	1999 10 15	704	0.7+	0.3−
1998 05 22	704	0.9+	0.9−	1999 09 13	704	0.8+	0.3−	1999 10 15	704	0.1+	0.1+
1998 05 22	704	1.4−	0.8+	1999 09 13	704	0.9+	0.2+	1999 10 16	704	0.0	1.2+
1998 05 22	704	0.3+	0.6+	1999 09 13	704	0.1+	0.3+	1999 10 16	704	0.6+	0.7−
1998 05 22	704	1.4−	0.3+	1999 09 13	704	0.5+	0.4+	1999 10 16	704	0.3+	0.1−
1998 05 22	704	1.5−	0.6−	1999 09 30	704	1.0−	0.5−	1999 10 16	704	0.3−	0.4−
1998 05 24	704	0.1+	0.9−	1999 09 30	704	0.4−	0.8+	1999 10 16	704	0.3−	0.6−
1998 05 24	704	0.9+	0.9−	1999 09 30	704	0.5−	1.5−				
1998 05 24	704	1.0−	0.1−	1999 10 01	704	0.3−	0.4+				

(11941)* 1993 KT₁ = 1990 FU₁ = 1992 BX₅

Discovered 1993 May 23 by C. S. Shoemaker at Palomar.

Id. G. V. Williams (*MPC* 22413)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	59.37358		<i>P</i>	(2000.0)		<i>Q</i>	
<i>n</i>	0.36155669	ω	211.45827	+0.27790392	+0.86673327		
<i>a</i>	1.9514246	Ω	77.56859	−0.76958289	+0.45892228		
<i>e</i>	0.0499527	<i>i</i>	25.09504	−0.57490137	−0.19535554		
<i>P</i>	2.73	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 03 31	675	(2.3+	0.9−)	1993 06 27	413	(1.3+	2.1−)	1999 09 11	704	0.4−	0.4+
1990 04 01	675	0.3+	0.3−	1993 06 27	413	1.2+	1.2+	1999 09 11	704	0.7−	0.0
1992 01 26	691	0.5−	0.2+	1993 06 27	413	0.7−	0.6−	1999 09 11	704	0.7−	0.4−
1993 05 17	675	0.5+	0.5−	1993 07 10	413	0.4+	1.3+	1999 09 29	699	0.3−	0.5−
1993 05 17	675	1.0+	0.1−	1993 07 31	413	0.3−	1.3+	1999 09 29	699	0.6+	0.2−
1993 05 19	675	(2.6+	0.5+)	1993 07 31	413	0.2+	1.1+	1999 09 29	699	0.8−	0.2+
1993 05 19	675	0.8+	0.7−	1994 11 29	675	0.1+	0.2+	1999 09 30	704	0.3+	0.2+
1993 05 23	675	0.6−	0.1−	1994 12 01	675	0.0	1.0−	1999 09 30	704	0.2−	0.7−
1993 05 23	675	0.9−	0.8−	1994 12 01	675	0.2+	1.7−	1999 09 30	704	0.0	1.2−
1993 05 24	675	1.1−	1.3−	1998 02 01	689	0.5−	0.4+	1999 09 30	704	0.4−	0.3+
1993 05 25	675	0.1−	0.1+	1998 03 12	327	0.1−	0.0	1999 09 30	704	0.2+	1.0−
1993 05 26	675	0.5+	0.5−	1998 03 12	327	0.2−	0.0	1999 10 06	704	2.0+	0.4−
1993 06 15	675	0.9−	0.8−	1998 03 12	327	0.0	0.1+	1999 10 06	704	1.3+	0.1+

1993 06 15	675	1.2−	0.2−	1998 03 12	327	0.0	0.1+	1999 10 06	704	1.5+	0.3+
1993 06 16	675	0.1−	0.4−	1999 09 11	704	0.0	1.1+	1999 10 06	704	(2.4+	0.1+)
1993 06 20	675	0.0	0.5−	1999 09 11	704	0.2−	0.3+				

(11942)* 1993 NV = 1979 SQ₅ = 1997 EX₄₇

Discovered 1993 July 12 by E. W. Elst at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 29919, *MPC* 34502), A. Doppler (*MPC* 34502)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	92.06015		<i>P</i>	(2000.0)		<i>Q</i>	
<i>n</i>	0.20189943	ω	43.07559	+0.30945320	+0.95083189		
<i>a</i>	2.8777031	Ω	244.95426	−0.87616653	+0.27997525		
<i>e</i>	0.0554386	<i>i</i>	0.79356	−0.36955504	+0.13241066		
<i>P</i>	4.88	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1979 09 23	095	0.2−	0.6−	1997 03 13	809	0.2−	0.9+	1999 10 05	704	0.1+	0.1+
1993 07 12	809	0.0	0.3−	1997 03 13	809	0.1−	0.4−	1999 10 05	704	0.2+	0.2+
1993 07 12	809	0.2+	0.1+	1997 03 13	809	0.8−	1.1+	1999 10 05	704	0.4−	0.3+
1993 07 12	809	0.1+	0.1−	1997 04 01	809	(4.0+	1.0−)	1999 10 07	704	0.0	0.2−
1993 07 19	809	1.1+	0.7−	1997 04 01	809	(2.9+	1.1−)	1999 10 07	704	0.4−	0.2+
1993 07 19	809	0.1−	0.9−	1997 04 01	809	(3.6+	1.9−)	1999 10 07	704	0.1−	0.0
1993 07 19	809	0.2−	0.2−	1998 06 20	691	0.8+	0.5+	1999 10 10	704	0.5−	0.5+
1993 07 23	809	(3.1+	1.5+)	1998 06 20	691	1.0+	0.4+	1999 10 10	704	0.3−	0.4+
1993 07 23	809	(3.1+	2.3+)	1998 06 20	691	0.7+	0.7+	1999 10 10	704	0.0	0.2+
1993 07 23	809	(3.1+	2.0+)	1998 06 30	691	0.8−	0.6+	1999 10 10	704	0.8−	0.2+
1993 07 26	809	(4.1+	0.2−)	1998 06 30	691	0.7−	0.7+	1999 10 10	704	0.1+	0.4+
1993 07 26	809	(2.9+	0.5−)	1998 06 30	691	0.7−	0.5+	1999 10 10	691	0.0	0.1+
1993 07 26	809	(2.5+	0.0)	1998 08 17	704	0.2+	0.2+	1999 10 10	691	0.4+	0.2−
1994 10 11	691	0.3−	0.0	1998 08 17	704	0.0	0.0	1999 10 10	691	0.1+	0.2+
1994 10 11	691	0.4−	0.1+	1998 08 17	704	0.3−	1.8−	1999 10 19	691	0.2−	0.6+
1994 10 11	691	0.2−	0.0	1998 08 17	704	0.2−	0.6+	1999 10 19	691	0.0	0.4+
1995 12 20	566	1.4+	1.4−	1998 08 17	704	1.4+	0.5−	1999 10 19	691	0.1+	0.5+
1995 12 20	566	0.4+	1.5−	1999 10 03	704	0.7−	0.8−	1999 10 21	704	0.3−	0.2−
1995 12 20	566	1.2+	1.4−	1999 10 03	704	0.5+	0.2+	1999 10 21	704	0.3+	0.7+
1997 03 12	809	0.1+	0.9+	1999 10 03	704	1.0−	0.7+	1999 10 21	704	0.8−	0.3−
1997 03 12	809	0.3−	1.5+	1999 10 05	704	0.1+	0.4+				
1997 03 12	809	0.2+	2.0+	1999 10 05	704	0.1−	0.1+				

(11943)* 1993 OF₉ = 1983 RQ₇ = 1984 WM₂

Discovered 1993 July 20 by E. W. Elst at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 22959, *MPC* 35917)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	106.04678		<i>P</i>	(2000.0)		<i>Q</i>	
<i>n</i>	0.18791156	ω	299.27652	−0.47699795	+0.86893488		
<i>a</i>	3.0187957	Ω	301.64682	−0.74297140	−0.47888797		
<i>e</i>	0.0431603	<i>i</i>	8.92041	−0.46953855	−0.12497395		
<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−	0.3−	1999 09 08	699</

1998 05 28	704	0.1+	0.2-	1999 09 09	704	0.2+	0.3+	1999 10 04	704	0.1+	0.8-
1998 05 28	704	0.5-	0.4-	1999 09 09	704	0.1+	0.5+	1999 10 04	704	0.1+	0.6-
1998 05 28	704	1.1+	0.5-	1999 09 09	704	0.4-	0.2+	1999 10 04	704	0.0	0.6-
1998 05 28	704	(6.3-	1.6+)	1999 09 09	704	0.2-	0.7+	1999 10 04	704	0.9-	1.5-
1999 07 23	704	0.3+	0.8-	1999 09 10	704	0.5+	0.3+	1999 10 19	704	0.4+	0.2+
1999 07 23	704	0.7+	0.1-	1999 09 10	704	0.4-	0.1-	1999 10 19	704	0.3+	0.3-
1999 07 23	704	0.7+	0.6-	1999 09 10	704	0.0	0.5+	1999 10 19	704	0.4+	0.6-
1999 07 23	704	1.4+	0.7-	1999 09 10	704	0.1+	0.5+	1999 10 19	704	0.1+	1.3-
1999 07 23	704	0.1+	1.0+	1999 09 10	704	0.1+	0.2+				

(11944)* 1993 OK₉ = 1993 ON₁₃ = 1989 TZ₂

Discovered 1993 July 20 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (d, *MPC* 22935), A. Gnädig (*MPC* 31537)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams					
<i>M</i>	102.89200	(2000.0)	P	Q			
<i>n</i>	0.20048635	ω	146.98661	+0.10855234	+0.99327827		
<i>a</i>	2.8912092	Ω	129.21252	-0.92293159	+0.11571781		
<i>e</i>	0.0187736	<i>i</i>	2.97281	-0.36934222	+0.00276994		
<i>P</i>	4.92	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1954 08 04	675	0.4+	0.4-	1993 07 26	809	(5.1+	0.5-)	1999 10 07	704	0.0	0.0
1954 08 04	675	0.6+	0.2-	1993 07 26	809	(3.9+	0.5-)	1999 10 07	704	0.7+	0.1+
1989 09 29	675	0.1+	1.1-	1993 07 26	809	(2.9+	1.7+)	1999 10 07	704	0.2-	0.3+
1989 09 29	675	0.3+	1.4-	1998 06 19	691	0.3+	0.4+	1999 10 10	704	0.2+	0.2-
1989 10 07	809	0.4+	0.2-	1998 06 19	691	0.7+	0.8+	1999 10 10	704	0.4-	0.4+
1989 10 07	809	0.4+	0.9-	1998 06 19	691	0.6+	0.7+	1999 10 10	704	0.1+	0.0
1989 10 07	809	0.9-	0.0	1998 08 17	704	0.9+	0.1+	1999 10 10	704	0.2-	0.2-
1989 10 08	809	0.3+	0.5-	1998 08 17	704	0.6-	0.1+	1999 10 10	704	0.0	0.6-
1989 10 08	809	0.2-	0.9-	1998 08 17	704	0.2+	0.4-	1999 10 15	704	0.2-	1.0+
1989 10 08	809	0.4+	1.3-	1998 08 17	704	0.8+	1.0-	1999 10 15	704	0.4-	0.6+
1992 04 26	691	0.1-	0.5-	1998 08 17	704	1.3+	1.6-	1999 10 15	704	0.4-	0.3+
1992 04 26	691	0.3-	0.5-	1998 08 27	699	0.1-	0.5+	1999 10 15	704	0.7-	0.4+
1993 07 13	809	(1.8+	3.6+)	1998 08 27	699	0.1+	0.0	1999 10 20	704	0.3-	0.2+
1993 07 13	809	(1.2+	3.9+)	1998 08 27	699	1.4-	0.8-	1999 10 20	704	0.3+	0.5+
1993 07 13	809	(0.9+	3.5+)	1999 10 01	703	0.2+	0.7+	1999 10 20	704	0.1-	0.3+
1993 07 20	809	0.3-	0.1+	1999 10 01	703	0.3-	0.2+	1999 10 20	704	0.0	0.2-
1993 07 20	809	0.1-	1.0+	1999 10 01	703	0.2+	1.1+	1999 10 20	704	0.4+	0.5+
1993 07 20	809	0.7-	0.7+	1999 10 01	703	0.2+	0.7+				
1993 07 24	809	1.9-	1.8+	1999 10 07	704	0.8+	0.1-				

(11945)* 1993 PC₅ = 1996 CC₂

Discovered 1993 Aug. 15 by E. W. Elst at Caussols.

Id. T. Kobayashi (*MPC* 27715)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams					
<i>M</i>	46.12159	(2000.0)	P	Q			
<i>n</i>	0.18555548	ω	162.31651	+0.87511729	+0.48259189		
<i>a</i>	3.0442959	Ω	168.62536	-0.46297762	+0.85644527		
<i>e</i>	0.1257825	<i>i</i>	10.43004	-0.14078866	+0.18332095		
<i>P</i>	5.31	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 10 07	675	0.1+	0.3-	1996 02 15	566	0.5+	0.8-	1999 10 04	703	0.0	0.2+
1988 10 07	675	1.3-	1.2-	1996 02 16	566	0.4-	0.6-	1999 10 04	703	0.0	0.6+
1993 08 15	010	0.4+	0.1+	1996 02 16	566	0.0	0.6-	1999 10 04	703	0.6-	0.4+
1993 08 15	010	0.4+	1.7+	1996 02 16	566	0.1+	0.7-	1999 10 04	703	0.0	0.4+
1993 08 16	010	1.3+	0.3-	1997 04 28	118	0.5-	0.2-	1999 10 09	704	0.2-	0.4-
1993 08 16	010	1.2+	0.7-	1997 04 28	118	0.2-	0.4-	1999 10 09	704	0.1+	0.3-
1993 08 16	010	1.1+	0.9-	1997 04 29	118	0.8-	0.2+	1999 10 09	704	0.2-	0.2-
1993 08 19	010	1.4-	0.4-	1997 04 29	118	0.2-	0.6-	1999 10 09	704	0.1+	0.2-
1993 08 19	010	1.5-	0.2-	1997 04 30	118	0.3-	0.4-	1999 10 09	704	0.1+	0.0
1993 08 20	010	(2.2-	1.1-)	1997 04 30	118	0.4-	0.5-	1999 10 19	704	0.1-	0.3-
1993 09 09	691	0.4+	0.6-	1997 04 30	118	0.3-	0.6-	1999 10 19	704	0.3-	0.2-
1993 09 09	691	0.4+	0.7-	1998 07 14	682	0.3-	0.6-	1999 10 19	704	0.2-	0.3-

1993 09 09	691	0.6+	0.4-	1998 07 14	682	0.1-	0.4-	1999 10 19	704	0.3+	0.7-
1996 02 15	566	0.7+	0.9-	1998 07 15	682	0.7-	0.1-	1999 10 19	704	0.3+	0.7-
1996 02 15	566	0.6+	0.6-	1998 07 15	682	1.1+	0.3+				

(11946)* 1993 PB₇ = 1988 VV₆ = 1991 EX₃

Discovered 1993 Aug. 15 by E. W. Elst at Caussols.

Id. T. Kobayashi (*MPC* 24110)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams					
<i>M</i>	98.17163	(2000.0)	P	Q			
<i>n</i>	0.17552813	ω	74.71428	-0.38488108	+0.92296551		
<i>a</i>	3.1591596	Ω	172.64908	-0.85008649	-0.35402306		
<i>e</i>	0.1330022	<i>i</i>	0.49518	-0.35947115	-0.15100444		
<i>P</i>	5.62	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 10 07	675	0.1+	1.7-	1998 06 26	704	0.2+	1.5-	1999 10 04	704	0.5-	0.2-
1988 10 07	675	0.1-	2.4-	1998 06 26	704	(2.4+	1.4+)	1999 10 04	704	0.7+	0.3-
1988 10 13	675	0.3+	0.3-	1998 06 26	704	0.4-	1.4-	1999 10 04	704	0.6+	0.1+
1988 10 13	675	0.5+	0.5-	1998 06 26	704	0.7-	0.1+	1999 10 04	704	0.5+	0.5-
1988 11 03	033	0.0	0.0	1998 07 21	704	0.4+	0.4-	1999 10 05	704	0.0	0.2-
1988 11 03	033	0.7-	0.2-	1998 07 21	704	(2.9-	0.7+)	1999 10 05	704	0.3+	0.1-
1988 11 04	033	0.1+	0.3-	1998 07 21	704	(2.7-	0.1-)	1999 10 05	704	0.2-	0.6+
1991 03 12	809	0.1+	0.5+	1998 07 21	704	0.3+	0.2+	1999 10 05	704	0.1+	0.0
1991 03 12	809	0.6+	0.1+	1999 09 05	699	0.4-	0.7+	1999 10 05	704	0.4-	0.6-
1991 03 12	809	1.0+	0.1-	1999 09 05	699	0.1-	0.2-	1999 10 07	703	(0.0	2.1+)
1991 03 14	809	0.6-	0.3+	1999 09 05	699	0.1-	0.6+	1999 10 07	703	0.1-	0.2+
1991 03 14	809	0.5-	0.4+	1999 09 06	120	0.2-	0.4+	1999 10 07	703	0.1+	0.1+
1991 03 14	809	0.2-	0.4+	1999 09 06	120	(3.3+	0.6-)	1999 10 07	703	0.1-	0.3+
1991 03 16	809	0.1-	1.4-	1999 09 06	120	0.4+	0.0	1999 10 07	704	0.2-	0.5-
1991 03 16	809	0.1+	1.3-	1999 09 06	120	0.4+	0.2-	1999 10 07	704	0.2+	0.6-
1991 03 16	809	0.0	1.2-	1999 09 06	120	1.2-	0.2+	1999 10 07	704	0.7+	0.2+
1993 08 13	675	0.3+	0.1-	1999 09 07	704	0.0	0.3+	1999 10 07	704	0.3-	0.1-
1993 08 13	675	0.1-	0.1+	1999 09 07	704	0.7+	0.3+	1999 10 09	704	0.3-	0.0
1993 08 15	010	(1.0-	3.3-)	1999 09 07	704	0.0	0.4-	1999 10 09	704	0.1-	0.2+
1993 08 15	010	(0.5-	3.1-)	1999 09 07	704	0.6+	0.1-	1999 10 09	704	0.2-	0.2+
1993 08 15	010	(0.7-	4.1-)	1999 09 07	704	0.3+	0.1+	1999 10 09	704	0.3-	0.0
1993 08 17	010	(0.1+	4.9-)	1999 09 14	691	0.8-	0.1+	1999 10 09	704	0.3+	0.0
1993 09 18	010	0.1+	1.1-	1999 09 14	691	0.7-	0.1+	1999 10 15	704	0.4+	0.3-
1993 09 18	010	1.3+	0.6+	1999 09 14	691	0.8-	0.0	1999 10 15	704	0.1+	0.5-
1993 09 18	010	(2.2+	0.7+)	1999 09 30	703	0.1-	0.1+	1999 10 15	704	0.6+	0.1-
1997 01 19	327	0.0	0.6-	1999 09 30	703	0.2+	1.1+	1999 10 15	704	0.5+	0.0
1997 01 19	327	0.7-	1.2-	1999 09 30	703	0.5-	0.2+	1999 10 15	704	0.2-	0.1-
1997 01 19	327	1.5-	1.2-	1999 09 30	703	0.2+	0.9+				

(11947)* 1993 PK₇ = 1976 UP₉

Discovered 1993 Aug. 15 by E. W. Elst at Caussols.

Id. T. Kobayashi (*MPC* 24110)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams					
<i>M</i>	23.46914	(2000.0)	P	Q			
<i>n</i>	0.17047909	ω	231.52930	+0.75962173	+0.65035489		
<i>a</i>	3.2212317	Ω	87.90202	-0.59555370	+0.69784921		
<i>e</i>	0.1932797	<i>i</i>	0.20953	-0.26132476	+0.30007500		
<i>P</i>	5.78	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 10 22	381	0.4-	0.6+	1999 09 07	704	0.9+	0.4+	1999 10 05	704	0.0	1.7-
1976 10 22	381	0.2+	0.8+	1999 09 07	704	(2.6+	0.2+)	1999 10 05	704	0.8-	0.3-
1976 10 24	381	0.5-	0.9+	1999 09 08	691	0.3-	0.0	1999 10 07	703	0.5-	0.9+
1993 08 13	675	1.3+	0.4+	1999 09 08	691	0.4-	0.1+	1999 10 07	703	0.6-	0.5+
1993 08 13	675	1.2+	0.1-	1999 09 08	691	0.4-	0.2-	1999 10 07	703	0.8-	1.0+
1993 08 15	010	0.2+	0.7-	1999 09 09	704	1.1+	0.1+	1999 10 07	703	0.5-	0.6+
1993 08 15	010	0.1-	0.0	1999 09 09	704	0.9+	0.1-	1999 10 07	704	0.1-	0.5-
1993 08 15	010	0.5-	1.3-	1999 09 09	704	0.5+	0.7+	1999 10 07	704	0.6-	0.1-
1993 08 17	010	1.5-	1.7-	1999 09 09	704	0.3+	0.6+	1999 10 07	704	0.4-	0.8-
1993 09 18	010	0.4+	0.5-	1999 09 09	704	0.2+	0.3+	1999 10 07	704	0.0	0.1-

1993 09 18	010	1.2+	1.9-	1999 09 12	120	(2.9-	0.7-)	1999 10 07	704	0.6-	0.5-
1993 09 18	010	(0.4-	2.2-)	1999 09 12	120	0.2-	1.1-	1999 10 09	704	0.1-	0.6+
1998 05 22	704	0.6+	1.3+	1999 09 18	691	0.3-	0.0	1999 10 09	704	0.1-	0.4+
1998 05 22	704	0.3-	0.3-	1999 09 18	691	0.3-	0.1+	1999 10 09	704	0.1+	0.4+
1998 05 22	704	0.4+	0.1-	1999 09 18	691	0.3-	0.2+	1999 10 09	704	0.2+	0.2+
1998 05 22	704	0.4-	0.7-	1999 10 02	704	0.0	0.5+	1999 10 09	704	0.1-	0.6+
1998 05 24	704	0.1+	1.9+	1999 10 02	704	0.2+	0.2+	1999 10 15	704	0.1-	0.3+
1998 05 24	704	0.6+	0.3+	1999 10 02	704	0.2+	0.2+	1999 10 15	704	0.3+	0.1+
1998 05 24	704	0.3-	0.2-	1999 10 02	704	0.2+	0.2-	1999 10 15	704	0.4+	0.0
1998 05 24	704	0.8+	1.5+	1999 10 02	704	0.2+	0.8+	1999 10 15	704	0.1+	0.1-
1998 05 24	704	0.8-	0.6+	1999 10 05	704	0.4-	1.0+	1999 10 15	704	0.3+	0.0
1999 09 07	704	0.3+	0.3-	1999 10 05	704	1.1-	0.9+				
1999 09 07	704	0.4+	0.4-	1999 10 05	704	0.1-	0.1-				

(11948)* 1993 QQ₄ = 1973 AE₃ = 1991 EJ₈ = 1997 GW₂₄

Discovered 1993 Aug. 18 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 29920)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.17205773	ω	62.35589	-0.73576593	+0.67714472
<i>a</i>	3.2014982	Ω	160.25842	-0.63237004	-0.68105629
<i>e</i>	0.1162055	<i>i</i>	1.88553	-0.24239767	-0.27863482
<i>P</i>	5.73	<i>H</i>	13.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1973 01 02	095	0.1-	0.5-	1997 04 11	704	0.4-	0.4+	1999 10 02	704	0.5+	0.5-
1991 03 09	675	0.4-	0.4-	1997 04 11	704	0.1+	0.1+	1999 10 02	704	0.7-	0.5+
1991 03 09	675	0.1-	0.1-	1998 06 24	704	(4.4-	2.3-)	1999 10 02	704	0.5+	0.2+
1993 08 15	809	1.8+	0.6+	1998 06 24	704	(3.3-	0.9-)	1999 10 02	704	1.2+	0.2-
1993 08 15	809	0.3+	1.2-	1998 06 24	704	(3.9-	1.5-)	1999 10 05	704	0.0	0.0
1993 08 15	809	0.8+	1.4-	1998 06 24	704	(3.7-	0.5-)	1999 10 05	704	0.2-	0.1-
1993 08 18	010	(2.8-	1.5-)	1998 06 24	704	(5.3-	2.2-)	1999 10 05	704	0.1-	0.3-
1993 08 19	010	0.0	0.8-	1998 06 28	809	0.1+	0.8+	1999 10 05	704	0.3-	0.1+
1993 08 19	010	(0.6-	2.1-)	1998 06 28	809	0.6-	0.7+	1999 10 05	704	0.4-	0.4-
1993 08 19	010	(0.2+	2.3-)	1998 06 28	809	0.3-	0.3+	1999 10 07	703	0.5-	0.9+
1993 09 19	010	0.2-	0.5-	1998 07 01	809	(0.2-	2.5+)	1999 10 07	703	0.3+	0.5+
1993 09 19	010	0.3+	1.6-	1998 07 01	809	(0.7-	2.1+)	1999 10 07	703	0.0	0.6+
1993 09 20	010	(2.0+	2.2-)	1998 07 01	809	(0.9-	2.1+)	1999 10 07	703	0.2-	0.4+
1993 09 20	010	(1.5+	2.2-)	1999 09 07	704	0.4+	0.3+	1999 10 07	704	0.1-	0.2-
1993 09 20	010	0.1-	0.5-	1999 09 07	704	0.7-	0.4-	1999 10 07	704	0.0	0.3-
1997 03 12	809	0.7+	0.5+	1999 09 07	704	0.6-	0.5-	1999 10 07	704	0.8-	1.2-
1997 03 12	809	0.1+	0.6+	1999 09 09	704	1.7+	0.6-	1999 10 07	704	0.2+	0.2-
1997 03 12	809	0.4+	0.2+	1999 09 09	704	0.3+	0.2-	1999 10 09	704	0.3-	0.6+
1997 03 13	809	0.8+	1.4+	1999 09 09	704	0.2+	0.5-	1999 10 09	704	0.3-	0.3+
1997 03 13	809	1.7+	0.7+	1999 09 09	704	0.1-	0.4+	1999 10 09	704	0.0	0.8+
1997 03 13	809	0.2-	0.0	1999 09 09	704	0.1+	0.6+	1999 10 09	704	0.6+	0.1+
1997 04 03	704	0.6+	1.7-	1999 09 18	691	0.0	0.5-	1999 10 09	704	0.2-	0.7+
1997 04 03	704	0.5+	0.3-	1999 09 18	691	0.1+	0.4-	1999 10 15	704	0.1-	0.2+
1997 04 03	400	0.1+	0.2+	1999 09 18	691	0.1-	0.2-	1999 10 15	704	0.9-	0.6+
1997 04 03	400	(0.5+	2.2-)	1999 09 30	703	0.1+	0.9+	1999 10 15	704	0.5-	0.3+
1997 04 09	400	1.5-	0.0	1999 09 30	703	0.0	0.5+	1999 10 15	704	0.9-	0.5+
1997 04 09	400	1.0-	0.6-	1999 09 30	703	0.5-	0.8+	1999 10 15	704	0.4-	0.8+
1997 04 10	400	(2.1-	0.4-)	1999 09 30	703	0.5-	0.2+				
1997 04 10	400	1.0-	0.9-	1999 10 02	704	1.1+	0.2-				

(11949)* 1993 SD₂ = 1998 QV₆₂

Discovered 1993 Sept. 19 by K. Endate and K. Watanabe at Kitami.

Id. G. V. Williams (*MPC* 32455)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.18107480	ω	243.79337	-0.35251248	-0.93068689
<i>a</i>	3.0943115	Ω	227.20743	+0.89909878	-0.30785988
<i>e</i>	0.1781371	<i>i</i>	7.65570	+0.25953100	-0.19759606
<i>P</i>	5.44	<i>H</i>	11.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1993 09 19	400	0.7+	0.7+	1998 08 30	327	0.1+	0.5-	1999 09 12	106	0.2-	0.2+
1993 09 19	400	(0.9+	2.3-)	1998 08 30	327	0.3+	0.4-	1999 10 10	619	0.7+	0.2-
1993 09 21	400	0.7+	0.6+	1998 08 31	327	0.2+	0.2-	1999 10 10	619	0.4+	0.4-
1993 09 21	400	0.4-	0.2-	1998 08 31	327	0.3-	0.4-	1999 10 10	619	0.3+	0.1-
1993 10 06	400	1.2-	0.7-	1998 08 31	327	0.2+	0.3-	1999 10 12	704	1.3+	0.5+
1993 10 06	400	(3.2-	3.5-)	1998 09 14	704	1.5+	1.0+	1999 10 12	704	0.8+	0.7-
1996 05 15	566	0.2-	0.1-	1998 09 14	704	0.6+	0.2+	1999 10 12	704	0.8+	1.1-
1996 05 15	566	0.0	0.2-	1998 09 14	704	1.4+	0.0	1999 10 12	704	0.8+	1.0-
1996 05 15	566	0.0	0.5-	1998 09 14	704	1.9+	0.2+	1999 10 12	704	1.0-	1.1-
1998 08 24	704	0.0	0.4-	1998 09 14	704	1.5+	0.7-	1999 10 16	611	0.0	1.5+
1998 08 24	704	0.7-	0.3+	1998 09 18	704	0.8-	0.8+	1999 10 16	628	0.7-	0.0
1998 08 24	704	0.1+	0.6+	1998 09 18	704	1.3-	0.2+	1999 10 17	628	0.7-	0.2-
1998 08 24	704	0.0	0.4-	1998 09 18	704	0.2-	0.3-	1999 10 17	628	0.9-	0.2+
1998 08 24	704	0.6-	0.6-	1998 09 18	704	0.8-	0.9-	1999 10 17	628	0.6-	0.1+
1998 08 27	704	0.3-	0.0	1998 09 18	704	1.6-	0.6-	1999 10 21	704	0.1+	0.3+
1998 08 27	704	0.1+	0.1-	1998 10 11	699	0.2+	0.3+	1999 10 21	704	0.3-	0.0
1998 08 27	704	0.3-	0.7+	1998 10 11	699	0.2+	0.1-	1999 10 21	704	0.3-	0.2+
1998 08 27	704	0.5-	0.7+	1998 10 11	699	0.3+	0.1+	1999 10 21	704	0.1+	0.3+
1998 08 27	704	1.4-	0.7+	1999 09 12	106	0.0	0.3+	1999 10 21	704	0.3-	0.1-
1998 08 30	327	0.4+	0.4-	1999 09 12	106	0.0	0.4+				

(11950)* 1993 SG₅ = 1983 YL

Discovered 1993 Sept. 19 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 23342)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.17206433	ω	349.69949	-0.57231861	-0.81968501
<i>a</i>	3.2014163	Ω	135.20754	+0.75474937	-0.53789689
<i>e</i>	0.1542328	<i>i</i>	1.93833	+0.32063187	-0.19693506
<i>P</i>	5.73	<i>H</i>	13.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1983 12 29	033	0.0	0.1+	1996 03 19	566	1.3+	0.3+	1999 10 02	704	0.7-	0.1-
1983 12 30	033	0.1+	0.1-	1998 07 01	691	0.3+	0.5+	1999 10 02	704	0.2-	0.5+
1983 12 30	675	0.6+	0.5+	1998 07 01	691	0.4+	0.3+	1999 10 07	703	0.3-	0.8+
1984 01 08	675	0.8-	1.5+	1998 07 01	691	0.3+	0.3+	1999 10 07	703	0.7-	0.1+
1993 08 20	809	(1.5+	2.8+)	1998 07 25	691	1.2-	0.5+	1999 10 07	703	0.1+	1.3+
1993 08 20	809	(0.8+	2.4+)	1998 07 25	691	1.2-	0.3+	1999 10 07	703	0.3-	0.1+
1993 08 20	809	(0.3+	2.2+)	1998 07 25	691	1.1-	0.1+	1999 10 07	704	0.5+	0.6+
1993 08 24	809	1.3-	1.4+	1999 09 03	691	0.2-	0.5-	1999 10 07	704	0.7+	0.1+
1993 08 24	809	0.9+	0.8+	1999 09 03	691	0.2-	0.3-	1999 10 07	704	0.4+	0.5+
1993 08 24	809	1.5+	0.1+	1999 09 03	691	0.2-	0.4-	1999 10 07	704	1.0+	0.1-
1993 09 19	010	(4.2+	1.6-)	1999 09 07	704	0.1+	0.1+	1999 10 07	704	0.0	0.4+
1993 09 19	010	(3.0+	0.8-)	1999 09 07	704	0.8+	0.0	1999 10 09	704	0.2-	0.1+
1993 09 20	010	(2.8+	0.9+)	1999 09 07	704	0.8+	0.3-	1999 10 09	704	0.2+	0.2+
1993 09 20	010	(3.4+	1.7-)	1999 09 07	704	0.4+	0.1+	1999 10 09	704	0.4+	0.2-
1993 09 20	010	(3.8+	1.0-)	1999 09 07	704	0.3+	0.8-	1999 10 09	704	1.7+	0.1-
1994 11 27	675	0.6-	0.7-	1999 09 30	703	0.5-	0.4+	1999 10 09	704	0.4-	0.1+
1994 11 27	675	0.3-	0.1+	1999 09 30	703	1.6-	0.9-	1999 10 15	704	0.3-	0.1+
1996 03 11	691	0.6-	0.1+	1999 09 30	703	1.0-	0.4-	1999 10 15	704	0.4+	0.7-
1996 03 11	691	0.6-	0.5+	1999 09 30	703	0.8-	0.6-	1999 10 15	704	0.2+	0.1+
1996 03 11	691	0.5-	0.6+	1999 10 02	704	0.1-	0.7+	1999 10 15	704	0.6+	1.0-
1996 03 19	566	1.3+	0.2+	1999 10 02	704	0.8-	0.8+	1999 10 15	704	0.5+	0.4-
1996 03 19	566	0.7+	0.4+	1999 10 02	704	0.0	0.2+				

Residuals in seconds of arc

1994 01 12	595	0.1+	1.0-	1994 03 09	595	0.4-	0.2+	1996 05 21	595	0.5-	1.4-
1994 01 12	595	0.4+	0.2-	1994 03 09	595	1.0-	0.9+	1996 05 22	595	0.2-	1.7-
1994 01 12	595	1.3+	0.2+	1995 03 05	595	0.0	0.2-	1996 05 22	595	0.2-	0.2-
1994 01 15	595	0.7-	1.7-	1995 03 05	595	0.2-	0.4-	1999 09 02	595	0.4+	0.3-
1994 01 15	595	1.3-	0.6-	1995 03 10	691	0.4-	0.3+	1999 09 02	595	0.1-	1.3-
1994 01 15	595	1.3-	0.9-	1995 03 10	691	0.0	0.2-	1999 09 03	595	0.2+	0.6-
1994 01 18	595	0.6+	0.3+	1995 03 10	691	0.3-	0.5+	1999 09 03	595	0.3-	0.8-
1994 01 18	595	0.9+	0.7-	1995 05 02	595	(2.7-	1.4-)	1999 10 05	704	0.9+	0.7-
1994 01 30	595	0.5+	0.1-	1995 05 02	595	1.1+	1.0-	1999 10 05	704	0.6+	0.3-
1994 01 30	595	0.6+	0.1-	1995 05 03	595	(1.2-	2.1-)	1999 10 05	704	0.2-	0.6-
1994 01 31	595	0.2-	0.1-	1995 05 03	595	0.8-	1.8-	1999 10 05	704	0.3+	0.0
1994 01 31	595	0.5+	0.9+	1996 05 10	595	0.7-	0.4-	1999 10 05	704	0.1+	1.1-
1994 02 07	595	0.5-	0.4-	1996 05 10	595	0.4-	0.8-				
1994 02 07	595	0.9+	0.6-	1996 05 21	595	0.6+	0.2-				

(11952)* 1994 AM₃ = 1938 EU = 1981 EQ₄₈

Discovered 1994 Jan. 8 by H. Shiozawa and T. Urata at Fujieda.

Id. G. V. Williams (*MPC* 28301)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	203.44702		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.29778959	ω	166.03436	-0.98047943	-0.19654634
a	2.2209036	Ω	2.64881	+0.16719487	-0.84798717
e	0.0853936	i	6.76405	+0.10346965	-0.49222688
P	3.31	H	14.2	G 0.15	U 2

Residuals in seconds of arc

1938 03 06	053(37.0+	88.5+)	X	1996 11 16	385	0.8-	0.2+	1999 10 07	683	0.2+	0.3-
1981 03 01	095	1.1-	2.0-	1996 11 16	385	1.1-	0.1+	1999 10 07	683	0.3+	0.3+
1994 01 08	898	(2.3+	0.1-)	1996 11 16	385	0.9-	0.2+	1999 10 07	704	0.3+	0.0
1994 01 08	898	0.2+	0.8+	1997 01 14	118	0.5-	0.1-	1999 10 07	704	0.1+	0.3-
1994 01 21	898	0.8-	1.7+	1997 01 14	118	0.2-	0.1-	1999 10 07	683	0.5+	0.1+
1994 01 21	898	0.4+	0.1+	1997 02 02	118	0.3+	0.3+	1999 10 07	704	0.1-	0.8+
1994 01 22	898	0.3+	0.5+	1997 02 02	118	0.2+	0.3+	1999 10 07	704	0.2-	0.4+
1994 01 22	898	0.3-	0.3+	1997 02 10	118	0.1+	0.3+	1999 10 07	704	0.1+	0.4+
1994 01 29	385	0.7+	0.2+	1997 02 10	118	0.1-	0.4+	1999 10 08	683	0.1-	0.2-
1994 01 29	385	0.8+	0.7+	1997 02 16	118	0.7-	0.8+	1999 10 08	683	0.1+	0.2-
1994 01 29	385	0.6+	0.4+	1997 02 16	118	0.3-	0.6+	1999 10 08	683	0.1-	0.0
1994 02 07	385	0.1+	0.2-	1997 02 28	118	0.6+	0.4+	1999 10 08	888	0.5-	0.1+
1994 02 07	385	0.1-	0.2-	1997 02 28	118	0.5+	0.6+	1999 10 08	888	0.2-	0.3-
1994 02 07	385	0.3+	0.1-	1997 03 02	118	1.5+	0.2-	1999 10 08	888	0.1-	0.1-
1994 02 07	385	0.2+	0.1+	1997 03 02	118	1.2+	0.2+	1999 10 10	704	0.1+	0.5+
1994 02 14	033	0.4+	0.8-	1999 09 12	703	0.3-	0.4+	1999 10 10	704	0.1+	0.3+
1994 02 14	033	0.2+	0.2+	1999 09 12	703	0.2+	0.5+	1999 10 10	704	0.3+	0.1+
1994 02 15	033	0.7-	0.8+	1999 09 12	703	0.5+	0.0	1999 10 10	704	0.1+	0.4+
1994 03 04	033	0.6+	0.5+	1999 09 12	703	0.2+	0.2-	1999 10 10	704	0.3+	0.3+
1994 03 04	033	0.2-	1.3+	1999 09 13	106	0.1+	0.3+	1999 10 15	704	0.2-	0.1+
1994 04 05	675	0.7-	1.2-	1999 09 13	106	0.5-	0.4+	1999 10 15	704	0.1-	0.1+
1994 04 06	675	1.2-	0.6-	1999 09 13	106	0.4-	0.3+	1999 10 15	704	0.7-	0.4+
1994 04 06	675	(1.1-	3.8-)	1999 09 14	703	0.4-	0.8+	1999 10 15	704	0.3-	0.3+
1996 10 24	118	0.2-	0.3-	1999 09 14	703	0.8-	0.4+	1999 10 15	704	2.7+	0.3-
1996 10 24	118	0.0	0.3-	1999 09 14	703	0.2-	0.3+	1999 10 16	704	0.2-	0.5-
1996 10 24	118	0.2-	0.2-	1999 09 14	703	0.3-	0.3+	1999 10 16	704	0.1+	0.4-
1996 10 26	118	0.8+	0.4-	1999 10 02	703	0.5-	0.5+	1999 10 16	704	0.4-	0.5-
1996 10 26	118	0.3+	0.2-	1999 10 02	703	0.5-	0.4+	1999 10 16	704	0.2-	0.6-
1996 11 05	118	0.6-	0.1+	1999 10 02	703	0.2-	0.5+	1999 10 16	704	0.3-	0.6-
1996 11 05	118	0.4-	0.0	1999 10 02	703	0.6-	0.5+	1999 10 18	691	0.1+	0.1-
1996 11 12	801	0.2+	1.8-	1999 10 03	704	0.5+	0.0	1999 10 18	691	0.1-	0.3-
1996 11 12	801	0.0	0.8-	1999 10 03	704	0.0	0.1+	1999 10 18	691	0.1-	0.2-
1996 11 14	385	1.4+	1.6-	1999 10 03	704	1.1+	0.5-	1999 10 21	704	1.8-	0.0
1996 11 14	385	0.8+	1.9-	1999 10 03	704	0.0	0.0	1999 10 21	704	0.6+	0.0
1996 11 14	385	0.5+	1.3-	1999 10 03	704	0.5-	0.5-	1999 10 21	704	0.4+	0.5-

(11953)* 1994 BW

Discovered 1994 Jan. 19 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	108.18141		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.27839782	ω	123.52243	-0.65614123	+0.74456976
a	2.3228732	Ω	104.97292	-0.72767349	-0.58112264
e	0.0913871	i	7.30654	-0.19992494	-0.32850015
P	3.54	H	15.1	G 0.15	U 1

Residuals in seconds of arc

1991 04 16	675	0.4+	0.0	1998 03 24	704	0.5-	0.1-	1998 05 29	704	0.2+	0.1-
1991 04 16	675	0.3+	0.6+	1998 03 24	566	0.5-	0.5+	1998 05 29	704	0.8-	0.6-
1991 05 15	675	0.7-	1.0-	1998 03 24	566	0.2-	0.1+	1999 09 08	703	0.1-	0.1+
1991 05 15	675	0.4-	0.2-	1998 03 24	566	0.9-	1.2+	1999 09 08	703	0.6+	1.3+
1994 01 19	411	0.1+	0.1-	1998 04 24	704	0.2+	0.8+	1999 09 08	703	0.1+	0.2+
1994 01 19	411	0.9+	0.7+	1998 04 24	704	0.2+	0.2-	1999 09 08	703	0.1-	0.4+
1994 01 19	411	0.3+	0.5+	1998 04 24	704	0.0	0.1+	1999 09 30	704	0.2-	1.2-
1994 01 21	411	0.4+	0.7+	1998 04 24	704	(2.3+	0.1-)	1999 09 30	704	0.7-	0.5-
1994 01 21	411	0.2-	0.1-	1998 04 24	704	0.4-	0.1+	1999 09 30	704	0.1-	0.6+
1994 01 21	411	0.1+	0.0	1998 04 29	566	0.3+	0.6+	1999 09 30	704	0.1+	0.7-
1994 02 02	411	0.3-	0.9-	1998 04 29	566	0.1-	0.5+	1999 10 01	704	0.1-	0.6+
1994 02 02	411	0.1-	0.2-	1998 04 29	566	0.3+	0.7+	1999 10 01	704	0.0	0.5+
1994 02 02	411	0.8-	0.7-	1998 05 16	704	0.0	0.7+	1999 10 01	704	0.6-	0.9+
1998 03 02	900	0.4-	0.0	1998 05 16	704	0.1-	0.7-	1999 10 16	704	0.2+	0.5+
1998 03 02	900	0.3-	0.1-	1998 05 16	704	1.2+	1.2-	1999 10 16	704	0.3+	1.0+
1998 03 24	704	0.5+	0.3+	1998 05 16	704	1.1+	1.0-	1999 10 16	704	0.0	0.3-
1998 03 24	704	0.5-	0.9+	1998 05 16	704	0.6-	0.1-	1999 10 16	704	0.6+	0.3-
1998 03 24	704	0.7+	0.3-	1998 05 29	704	2.1+	0.1+	1999 10 16	704	0.2-	1.0-

(11954)* 1994 BY

Discovered 1994 Jan. 22 by H. Shiozawa and T. Urata at Fujieda.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	224.16898		(2000.0)	P	Q
n	0.29679283	ω	107.90574	-0.80540916	-0.59035610
a	2.2258733	Ω	35.96401	+0.50401975	-0.72909260
e	0.1094166	i	5.16556	+0.31189770	-0.34627106
P	3.32	H	14.5	G 0.15	U 1

Residuals in seconds of arc

1989 09 30	675	0.4+	0.3-	1999 09 14	106	0.3+	0.2+	1999 10 08	610	1.4+	0.6-
1989 09 30	675	0.3-	0.1-	1999 09 14	106	0.4-	0.2+	1999 10 08	610	1.0+	0.5-
1994 01 21	898	0.3+	1.1-	1999 09 14	106	1.0-	0.1-	1999 10 08	610	0.8+	0.3-
1994 01 22	898	1.1-	0.4-	1999 10 02	703	0.3+	0.8+	1999 10 08	610	0.4+	0.3-
1994 01 22	898	2.0+	0.8-	1999 10 02	703	0.2-	0.4+	1999 10 08	610	0.0	0.1-
1994 01 29	385	0.1+	0.3-	1999 10 02	703	0.0	0.6+	1999 10 09	704	0.3-	0.3+
1994 01 29	385	0.6-	0.2-	1999 10 02	703	0.2-	0.7+	1999 10 09	704	0.1-	0.0
1994 01 29	385	0.3+	0.1+	1999 10 02	385	0.1-	0.1+	1999 10 09	704	0.1+	0.1-
1994 02 07	385	0.3-	0.4+	1999 10 02	385	0.4-	0.7+	1999 10 09	704	0.2-	0.1-
1994 02 07	385	0.5-	0.1+	1999 10 02	385	0.3+	0.5+	1999 10 09	704	0.5-	0.3-
1994 02 07	385	0.1-	0.2-	1999 10 04	704	0.4+	0.3+	1999 10 09	610	0.2+	0.7-
1994 04 06	675	1.4+	1.1-	1999 10 04	704	0.7+	0.3-	1999 10 09	610	0.1+	0.4-
1994 04 06	675	1.7-	0.0	1999 10 04	704	0.2+	0.4+	1999 10 10	610	0.1-	0.2-
1996 10 11	385	1.1+	0.2-	1999 10 04	704	1.0+	0.8-	1999 10 10	610	0.3-	0.0
1996 10 11	385	0.1+	0.2-	1999 10 04	704	0.2-	0.2-	1999 10 10	610	0.4-	0.3+
1996 10 11	385	0.9+	0.0	1999 10 07	610	1.1+	0.0	1999 10 12	691	0.0	0.4-
1996 10 17	385	0.6-	0.6+	1999 10 07	610	0.8+	0.0	1999 10 12	691	0.1-	0.7-
1996 10 17	385	0.5-	0.1-	1999 10 07	610	0.6+	0.1-	1999 10 12	691	0.1+	0.4-
1996 10 17	385	0.1-	0.1+	1999 10 07	610	0.3+	0.1-	1999 10 13	704	0.1+	0.1+
1996 11 14	385	0.3-	0.3-	1999 10 07	610	0.0	0.2-	1999 10 13	704	2.0+	0.9+
1996 11 14	385	0.7-	0.5+	1999 10 07	610	0.4-	0.2-	1999 10 13	704	0.1+	0.1+
1996 11 14	385	0.8-	0.4-	1999 10 07	704	0.1-	0.9-	1999 10 13	704	0.0	0.4+
1998 05 22	888	1.1-	0.8-	1999 10 07	704	0.1-	0.1+	1999 10 13	704	0.6+	0.2+
1998 05 22	888	0.5+	0.5-	1999 10 07	704	0.1-	0.6-	1999 10 15	704	0.3-	0.2-
1998 06 24	704	0.2+	0.3-	1999 10 07	704	0.5-	0.3-	1999 10 15	704	1.4-	0.1-
1998 06 24	704	(2.5+ 0.5-)		1999 10 07	704	0.4+	0.3-	1999 10 15	704	1.1-	0.3-
1998 06 24	704	0.7+	0.4-	1999 10 07	610	0.0	0.3-	1999 10 15	704	0.6-	0.3-
1998 06 24	704	1.5-	1.8-	1999 10 07	610	0.1-	0.2-	1999 10 15	704	1.5-	0.2-
1999 09 05	699	0.2+	0.6+	1999 10 07	610	0.2-	0.2-	1999 10 16	691	0.4+	0.1-

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1999 09 05 699 1.2- 0.8+ 1999 10 07 610 0.3- 0.0 1999 10 16 691 0.2+ 0.1-
1999 09 05 699 0.2+ 0.3+ 1999 10 07 610 0.4- 0.0 1999 10 16 691 0.4+ 0.2-

(11955)* 1994 CA₁

Discovered 1994 Feb. 8 by D. D. Balam at the Dominion Astrophysical Observaotry, Victoria.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams	
<i>M</i>	53.49856	(2000.0)	
<i>n</i>	0.26534618	ω 67.14034	-0.12001876 +0.99253733
<i>a</i>	2.3984324	Ω 196.01138	-0.93710808 -0.12043484
<i>e</i>	0.0669517	<i>i</i> 4.48460	-0.32775592 -0.01910760
<i>P</i>	3.71	<i>H</i> 15.0	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1994 02 08	658	0.6+	0.2-	1996 09 09	104	0.1-	0.4-	1998 04 01	704	0.2-	0.2+
1994 02 08	658	0.7+	0.2-	1996 09 09	104	0.6+	0.4-	1999 09 06	699	0.3+	0.5+
1994 02 08	658	1.0+	0.1-	1996 09 09	104	0.5+	0.0	1999 09 06	699	0.4-	1.2+
1994 02 10	691	0.2+	0.4+	1997 01 15	658	0.2-	0.2-	1999 09 06	699	0.6-	0.2+
1994 02 10	691	0.1+	0.2+	1997 01 15	658	0.0	0.5+	1999 09 07	704	0.3+	0.1+
1994 02 10	691	0.4+	0.1+	1997 01 15	658	1.3-	0.0	1999 09 07	704	0.4-	0.0
1994 02 10	658	0.7-	0.3+	1998 01 11	658	0.1-	0.1-	1999 09 07	704	0.1+	0.9-
1994 02 10	658	1.0-	0.2+	1998 01 11	658	1.1-	0.0	1999 09 07	704	0.2-	0.1+
1994 02 10	658	0.9-	0.2+	1998 01 11	658	1.7-	0.1-	1999 09 08	703	0.2-	0.5+
1994 02 18	658	0.7+	0.4-	1998 03 03	704	0.3+	1.5+	1999 09 08	703	0.2+	0.5+
1994 02 18	658	0.4+	0.8-	1998 03 03	704	(1.4-	2.1+)	1999 09 08	703	1.2+	0.8-
1994 02 18	658	0.8+	0.4-	1998 03 03	704	1.0-	1.5-	1999 09 08	703	0.3+	1.4-
1994 02 18	658	0.8+	0.7-	1998 03 03	704	(2.1-	0.3+)	1999 09 09	704	0.3+	0.1-
1994 02 20	413	0.3-	0.5-	1998 03 03	704	1.3-	0.6+	1999 09 09	704	0.5+	0.5+
1994 02 20	413	0.8-	0.3-	1998 03 20	704	0.3+	0.8-	1999 09 09	704	0.2-	0.1-
1994 02 21	413	0.0	0.2-	1998 03 20	704	0.8+	0.7-	1999 09 09	704	0.2+	0.6+
1994 02 21	413	0.0	0.2-	1998 03 20	704	0.7+	1.0-	1999 09 09	704	0.0	0.7+
1994 03 06	658	0.3-	0.8+	1998 03 20	704	0.9+	1.4-	1999 09 13	704	0.4-	0.7+
1994 03 06	658	0.0	0.8+	1998 03 20	704	0.1+	0.4-	1999 09 13	704	0.4+	0.3+
1994 03 06	658	0.3+	0.9+	1998 03 22	704	0.2+	1.1+	1999 09 13	704	0.7-	1.0-
1994 03 07	658	0.4-	1.4+	1998 03 22	704	1.1-	0.4+	1999 09 13	704	0.3-	0.1-
1994 03 07	658	0.2-	1.0+	1998 03 22	704	1.1+	1.8-	1999 09 13	704	0.4-	0.2-
1994 03 07	658	0.3-	0.9+	1998 03 22	704	0.3-	0.7+	1999 10 15	704	0.8-	1.2+
1994 03 19	413	0.2-	0.1+	1998 03 22	704	1.3-	0.3-	1999 10 15	704	0.2+	0.5-
1994 03 19	413	0.3-	0.1+	1998 03 29	704	0.1+	0.9-	1999 10 15	704	0.5-	0.3-
1994 03 19	413	0.4-	0.1+	1998 03 29	704	0.8+	1.5+	1999 10 15	704	0.1+	0.5-
1996 08 24	658	0.8+	0.6-	1998 03 29	704	1.4+	0.5-	1999 10 15	704	0.4+	0.1+
1996 08 24	658	0.8+	0.1-	1998 03 29	704	0.8-	1.2-	1999 10 16	704	0.5+	0.7-
1996 08 24	658	0.6+	0.7-	1998 03 29	704	0.4-	0.9-	1999 10 16	704	0.1+	1.0-
1996 08 25	658	0.6-	0.1-	1998 04 01	704	(2.4-	0.1-)	1999 10 16	704	0.3+	0.0
1996 08 25	658	0.7+	0.1-	1998 04 01	704	0.5-	0.5+	1999 10 16	704	0.5-	0.7-
1996 08 25	658	0.3-	0.1+	1998 04 01	704	0.0	0.1-				
1996 09 09	104	0.3+	0.3-	1998 04 01	704	0.8+	0.7+				

(11956)* 1994 CL₁₄ = 1994 EE₇ = 1990 AY

Discovered 1994 Feb. 8 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (d, *MPC* 23958), S. Nakano (*MPC* 28852)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano	
<i>M</i>	348.46428	(2000.0)	
<i>n</i>	0.28219821	ω 263.94621	+0.97687469 -0.19460245
<i>a</i>	2.3019712	Ω 107.24993	+0.21366700 +0.90378789
<i>e</i>	0.1137168	<i>i</i> 5.32171	-0.00788985 +0.38117889
<i>P</i>	3.49	<i>H</i> 14.5	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1990 01 03	511	0.1-	0.5-	1994 03 10	010	0.4+	1.2+	1998 05 27	699	0.1-	0.5-
1990 01 03	511	0.3-	0.8-	1994 03 10	010	0.9-	0.7+	1998 05 27	699	0.5-	1.1-
1994 02 08	809	0.8+	1.6-	1994 03 10	010	0.1-	0.0	1998 05 27	699	0.6-	0.2+
1994 02 08	809	0.6+	1.2-	1996 12 14	411	0.7+	0.7+	1999 09 14	704	0.3+	0.4+
1994 02 08	809	0.4+	1.4-	1996 12 14	411	0.6-	1.2-	1999 09 14	704	0.1+	0.5+
1994 02 10	809	0.8+	0.3-	1996 12 16	411	0.6-	0.4+	1999 09 14	704	0.8+	0.3-

1994 02 10	809	0.8+	1.1-	1996 12 16	411	0.3-	0.7+	1999 09 14	704	0.2-	0.5-
1994 02 10	809	(1.4+	2.4-)	1998 05 22	704	0.8-	0.3+	1999 09 14	704	0.2-	0.4-
1994 02 13	809	2.0+	0.3-	1998 05 22	704	0.8+	0.1-	1999 10 02	704	0.2-	0.5+
1994 02 13	809	0.5+	1.2+	1998 05 22	704	2.0-	1.2+	1999 10 02	704	0.3-	0.9+
1994 02 13	809	0.9+	0.0	1998 05 22	704	0.4+	1.1+	1999 10 02	704	0.1+	0.2+
1994 02 15	691	0.3-	0.5+	1998 05 22	704	1.2+	0.6+	1999 10 02	704	0.3-	0.4+
1994 02 15	691	0.4-	0.6+	1998 05 24	704	0.4-	0.2+	1999 10 08	704	0.1-	0.3+
1994 02 15	691	0.4-	0.6+	1998 05 24	704	1.3+	0.7-	1999 10 08	704	0.1-	0.1+
1994 03 09	010	1.1-	0.4+	1998 05 24	704	0.4-	0.5-	1999 10 08	704	0.1-	0.3+
1994 03 09	010	1.1-	0.7+	1998 05 24	704	0.4-	1.0-	1999 10 08	704	0.3+	0.1+
1994 03 09	010	0.4-	0.1+	1998 05 24	704	0.2+	0.2-	1999 10 08	704	0.3+	1.8-

(11957)* 1994 DS = 1977 EU₃ = 1989 UL₆

Discovered 1994 Feb. 17 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 23245)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano	
<i>M</i>	285.82683	(2000.0)	
<i>n</i>	0.28854066	ω 32.29567	+0.09472846 -0.99355766
<i>a</i>	2.2681131	Ω 52.34391	+0.89584448 +0.05782684
<i>e</i>	0.1117488	<i>i</i> 4.50664	+0.43415341 +0.09746401
<i>P</i>	3.42	<i>H</i> 14.2	<i>G</i> 0.15 <i>U</i> 1

Residuals in seconds of arc

1954 06 30	675	0.6-	1.1-	1998 05 22	704	0.9-	1.1+	1999 10 02	703	0.2-	0.3+
1954 06 30	675	1.5+	1.8+	1998 05 22	704	0.7-	1.3-	1999 10 02	703	0.1-	0.1+
1977 03 15	381	0.8-	1.7-	1998 05 22	704	0.3-	0.8+	1999 10 02	703	0.1-	0.6+
1977 03 15	381	(3.1-	0.3-)	1998 05 22	704	2.0-	0.1+	1999 10 04	704	0.1+	0.3-
1989 10 26	033	1.3-	0.4+	1998 05 24	704	0.1-	0.0	1999 10 04	704	0.6+	0.2-
1989 10 26	033	0.9-	0.4+	1998 05 24	704	0.4+	0.2-	1999 10 04	704	0.6+	0.6-
1989 10 28	033	1.8-	0.2+	1998 05 24	704	0.7+	0.6-	1999 10 04	704	0.9+	1.1-
1991 05 13	675	0.0	0.3-	1998 05 24	704	1.9+	0.1-	1999 10 04	704	0.2-	1.3-
1991 05 15	675	0.1-	0.4-	1998 05 24	704	1.3-	0.2+	1999 10 07	704	0.4-	0.1+
1991 05 15	675	0.1+	0.1+	1998 06 03	704	1.5+	1.3+	1999 10 07	704	0.0	0.4-
1994 02 15	675	1.1+	0.8-	1998 06 03	704	0.2+	0.7+	1999 10 07	704	0.1+	0.3+
1994 02 15	675	0.6+	0.7+	1998 06 03	704	0.3-	0.2+	1999 10 07	704	0.1+	0.4-
1994 02 17	411	0.3-	0.3+	1998 06 03	704	0.4-	1.3-	1999 10 07	704	0.3-	0.1-
1994 02 17	411	0.2-	0.4+	1998 06 03	704	(3.3-	0.3+)	1999 10 09	704	0.1+	0.3-
1994 03 04	411	0.2+	0.0	1999 09 09	704	0.8+	0.5+	1999 10 09	704	0.1-	0.2-
1994 03 04	411	0.2-	0.2+	1999 09 09	704	0.4+	0.3-	1999 10 09	704	0.2-	0.0
1994 03 04	411	0.8+	0.1+	1999 09 09	704	0.7+	0.2-	1999 10 09	704	0.1-	0.2-
1994 03 06	411	0.1-	0.3-	1999 09 09	704	0.3+	0.0	1999 10 09	704	0.3-	0.1+
1994 03 06	411	0.2-	0.8+	1999 09 09	704	0.4-	0.5-	1999 10 15	704	0.2+	0.6+
1994 03 06	411	0.5-	0.3+	1999 09 14	106	0.4+	0.6-	1999 10 15	704	0.0	0.7+
1997 02 11	689	1.1+	1.1-	1999 09 14	106	0.6-	0.1-	1999 10 15	704	0.2-	0.7+
1997 02 12	689	1.3+	0.2+	1999 09 14	106	0.1+	0.1-	1999 10 15	704	0.1-	0.8+
1998 05 22	704	0.3-	0.9+	1999 10 02	703	0.1+	0.6+	1999 10 15	704	0.1+	0.9+

(11958)* 1994 EJ₇ = 1996 XT₁₅

Discovered 1994 Mar. 9 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 28590)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams	
<i>M</i>	335.33399	(2000.0)	
<i>n</i>	0.28441520	ω 293.02876	+0.91406215 -0.39187608
<i>a</i>	2.2899931	Ω 90.17602	+0.39975178 +0.82700257
<i>e</i>	0.1446464	<i>i</i> 5.99929	+0.06847548 +0.40311276
<i>P</i>	3.47	<i>H</i> 14.0	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1994 02 08	809	0.8+	1.4+	1997 01 04	327	0.7-	0.0	1998 05 24	704	0.0	0.3+
1994 02 0											

1994 02 13	809	(0.8+ 3.3+)	1998 04 22	704	1.3+ 0.8+	1999 09 08	703	0.4+ 1.3+
1994 02 13	809	(0.9+ 3.6+)	1998 04 22	704	0.8+ 0.1+	1999 09 08	703	0.1+ 0.8+
1994 03 09	010	(5.2- 1.4+)	1998 04 22	704	0.3- 0.2+	1999 09 08	703	0.3+ 0.4+
1994 03 09	010	(5.4- 1.0+)	1998 04 22	704	0.9- 1.2-	1999 09 08	703	0.1- 0.8-
1994 03 09	010	(5.0- 0.6+)	1998 04 25	699	0.8- 0.4+	1999 09 14	704	0.0 0.8+
1994 03 10	010	(3.7- 0.8+)	1998 04 25	699	0.3- 0.7+	1999 09 14	704	0.3- 0.6+
1994 03 10	010	(3.4- 0.9+)	1998 04 25	699	0.2+ 0.8-	1999 09 14	704	0.1- 0.2+
1994 03 10	010	(3.6- 0.6+)	1998 04 29	566	0.0 0.3-	1999 09 14	704	0.6- 0.4+
1996 12 10	327	0.2- 0.2+	1998 04 29	566	0.0 0.2-	1999 09 14	704	0.7- 0.1+
1996 12 10	327	0.1- 0.4-	1998 04 29	566	0.2+ 0.2-	1999 09 14	106	0.2+ 1.0+
1996 12 10	327	0.3- 0.2-	1998 05 01	704	0.2+ 0.5-	1999 09 15	106	0.5+ 0.8+
1996 12 11	327	0.2+ 0.3-	1998 05 01	704	0.3+ 0.5-	1999 09 15	106	0.2- 0.6+
1996 12 11	327	0.2+ 0.6-	1998 05 01	704	0.3- 0.6-	1999 10 02	704	(2.4- 0.8-)
1996 12 11	327	0.2+ 0.2-	1998 05 01	704	0.7+ 0.0	1999 10 02	704	0.1+ 0.0
1996 12 11	327	0.3+ 0.0	1998 05 01	704	0.2+ 0.1-	1999 10 02	704	0.0 0.2-
1997 01 02	905	0.7- 0.2+	1998 05 22	704	0.6- 1.3+	1999 10 02	704	0.1- 0.1-
1997 01 02	905	0.4- 0.1-	1998 05 22	704	0.6- 0.1-	1999 10 02	704	0.9- 0.7-
1997 01 02	327	0.1+ 0.4-	1998 05 22	704	0.9+ 0.8-	1999 10 08	704	0.1- 0.0
1997 01 02	327	0.4+ 0.2+	1998 05 22	704	1.7- 1.3-	1999 10 08	704	0.4- 0.1-
1997 01 02	327	0.5+ 0.2-	1998 05 22	704	0.6- 0.1+	1999 10 08	704	0.4- 0.0
1997 01 03	905	0.0 0.3+	1998 05 24	704	0.4- 0.2-	1999 10 08	704	0.3- 0.1+
1997 01 03	905	0.4+ 0.2-	1998 05 24	704	0.6+ 0.2-	1999 10 08	704	0.2- 0.2+
1997 01 04	327	0.5+ 0.0	1998 05 24	704	0.5- 0.7+			
1997 01 04	327	0.2+ 0.2-	1998 05 24	704	0.4- 1.2+			

(1159)* 1994 GG₁ = 1985 CD₁ = 1998 HX₆

Discovered 1994 Apr. 13 by K. Endate and K. Watanabe at Kitami.

Id. T. Urata (*MPC* 31725)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	79.41451		(2000.0)		P		Q
<i>n</i>	0.22918611	ω	69.80588		-0.82862144		+0.54220296
<i>a</i>	2.6445017	Ω	142.64719		-0.55975452		-0.79900004
<i>e</i>	0.1567496	<i>i</i>	13.27250		-0.00783421		-0.26002863
<i>P</i>	4.30	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1985 02 13	046	(2.2+ 3.5-)	1998 04 20	688	0.1+ 0.7+	1999 07 21	699	0.2+ 0.3+
1985 02 13	046	0.1- 1.2-	1998 04 20	688	0.2+ 0.7+	1999 07 21	699	0.8- 1.2+
1994 04 13	400	1.0+ 0.8-	1998 04 20	688	0.1+ 0.7+	1999 07 21	699	0.1+ 1.2+
1994 04 13	400	(3.4+ 3.8-)	1998 04 20	385	0.1+ 0.8+	1999 09 07	704	0.4- 0.8+
1994 04 15	400	1.5- 0.6+	1998 04 20	385	0.4+ 0.1+	1999 09 07	704	1.0- 0.4-
1994 04 15	400	0.3- 0.4+	1998 04 22	888	0.2- 0.5+	1999 09 07	704	0.7- 0.1-
1994 05 06	400	1.2+ 1.0-	1998 04 22	888	0.1- 0.4+	1999 09 07	704	0.1- 0.2-
1994 05 06	400	0.9- 1.1-	1998 04 22	888	0.4- 0.6+	1999 09 07	704	1.8- 0.8-
1998 03 25	704	0.4+ 0.1+	1999 07 13	704	0.6+ 0.5-	1999 10 15	704	0.2+ 0.3+
1998 03 25	704	0.4+ 0.0	1999 07 13	704	0.6+ 0.0	1999 10 15	704	0.4+ 0.5-
1998 03 25	704	0.3+ 0.4+	1999 07 13	704	0.5+ 0.4-	1999 10 15	704	0.9+ 0.6-
1998 03 25	704	0.5- 1.0-	1999 07 13	704	0.5+ 0.0	1999 10 15	704	0.5- 0.6+
1998 03 25	704	0.6- 0.3-	1999 07 13	704	1.2+ 0.1-			

(11960)* 1994 HA = 1990 KD₃ = 1990 ML₁ = 1991 TP₁₄

Discovered 1994 Apr. 17 by T. Kobayashi at Oizumi.

Id. E. Bowell (*MPC* 28853), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	57.22775		(2000.0)		P		Q
<i>n</i>	0.23666072	ω	69.95956		+0.01240952		+0.99582300
<i>a</i>	2.5885224	Ω	201.36566		-0.98488531		-0.00345730
<i>e</i>	0.1405858	<i>i</i>	14.37647		-0.17276266		+0.09123919
<i>P</i>	4.16	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 05 20	095	(0.4- 5.7+)	1998 03 28	704	0.1- 0.1+	1998 05 23	699	0.2- 0.5-
1990 05 20	095	(2.7- 0.1+)	1998 03 28	704	0.4+ 0.0	1998 05 23	699	0.0 0.3-
1990 06 16	808	0.1- 0.0	1998 03 29	704	0.0 0.2-	1998 05 23	699	0.1+ 0.1-
1990 06 16	808	0.3+ 0.2-	1998 03 29	704	0.0 1.1-	1999 09 07	703	0.6- 0.0

1991 10 07	675	0.3+ 0.7+	1998 03 29	704	1.7- 0.7-	1999 09 07	703	0.3- 0.5+
1991 10 07	675	0.2+ 1.6+	1998 03 29	704	0.4- 0.8+	1999 09 07	703	0.7- 0.3+
1991 10 13	691	0.6- 0.1+	1998 03 29	704	1.0- 0.9+	1999 09 07	703	1.2- 1.1+
1991 10 13	691	0.2- 0.0	1998 04 01	704	1.0- 0.4-	1999 09 08	699	0.9- 0.6+
1994 04 17	411	0.7- 0.3+	1998 04 01	704	1.1- 0.5+	1999 09 08	704	1.3+ 0.7-
1994 04 17	411	0.3+ 0.0	1998 04 01	704	0.8- 0.8+	1999 09 08	699	0.6- 0.7+
1994 04 17	411	1.0- 0.0	1998 04 01	704	0.8- 0.6+	1999 09 08	704	0.0 0.6-
1994 04 19	411	0.7+ 0.1+	1998 04 01	704	0.6- 0.8+	1999 09 08	704	0.1- 0.3-
1994 04 19	411	0.5+ 0.5+	1998 04 18	704	0.2+ 0.1+	1999 09 08	699	0.3- 0.8+
1994 04 19	411	0.7+ 0.7+	1998 04 18	704	0.2+ 0.1+	1999 09 08	704	0.2+ 0.2-
1994 05 06	411	0.6+ 0.6+	1998 04 18	704	0.4+ 0.1+	1999 09 08	704	0.3+ 0.3-
1994 05 06	411	0.5- 0.4+	1998 04 18	704	1.3+ 1.6-	1999 09 09	704	0.0 0.2-
1994 05 06	411	0.7- 0.4+	1998 04 18	704	0.1- 1.3-	1999 09 09	704	0.1- 0.9-
1994 05 08	411	0.5+ 1.0+	1998 04 19	367	0.1- 0.6+	1999 09 09	704	0.1- 0.6-
1994 05 08	411	0.6- 1.1+	1998 04 19	367	0.1+ 0.4+	1999 09 09	704	0.2+ 1.0-
1994 05 08	411	0.5+ 0.4+	1998 04 20	704	0.4- 0.6-	1999 09 09	704	0.0 1.0-
1995 12 27	327	0.1- 1.5-	1998 04 20	704	0.5+ 0.7-	1999 09 10	704	0.1+ 0.9-
1995 12 27	327	0.6- 0.3+	1998 04 20	704	0.1- 0.2+	1999 09 10	704	0.1- 0.6-
1995 12 27	327	0.1- 0.1+	1998 04 20	704	0.0 0.9+	1999 09 10	704	0.2- 0.4-
1998 03 03	704	0.6+ 0.1+	1998 04 20	704	1.2- 1.6-	1999 09 10	106	0.3- 0.5+
1998 03 03	704	0.1- 1.4+	1998 04 22	704	(0.4+ 3.6-)	1999 09 11	106	0.2- 0.2+
1998 03 03	704	1.3+ 1.5+	1998 04 22	704	0.2- 1.0-	1999 09 11	106	0.0 0.2+
1998 03 03	704	0.7- 0.4+	1998 04 22	704	0.0 0.4-	1999 09 16	704	0.9+ 0.5-
1998 03 03	704	1.3- 1.6+	1998 04 22	704	0.3+ 0.3-	1999 09 16	704	1.8+ 0.4-
1998 03 20	704	0.0 0.8+	1998 04 22	704	0.1+ 0.4-	1999 09 16	704	1.5+ 0.3-
1998 03 20	704	0.9- 0.5+	1998 04 28	699	0.2+ 0.7-	1999 10 01	703	0.4- 0.2+
1998 03 20	704	0.1+ 0.1+	1998 04 28	699	0.2+ 0.2-	1999 10 01	703	0.5- 0.4+
1998 03 20	704	0.8+ 0.5+	1998 04 28	699	0.4+ 0.0	1999 10 01	703	0.4- 0.1+
1998 03 20	704	0.2+ 1.4+	1998 04 30	699	0.4+ 0.1-	1999 10 01	703	0.7- 0.2+
1998 03 22	704	0.5- 0.4+	1998 04 30	699	0.7+ 0.3-	1999 10 04	704	0.6+ 0.5+
1998 03 22	704	0.6+ 0.7+	1998 04 30	699	0.2+ 0.0	1999 10 04	704	0.5+ 0.9+
1998 03 22	704	0.2- 0.6+	1998 05 01	699	0.4+ 0.0	1999 10 04	704	0.4+ 0.7+
1998 03 22	704	0.3- 0.5+	1998 05 01	699	0.4+ 0.0	1999 10 04	704	1.1+ 0.4+
1998 03 22	704	0.3- 0.4+	1998 05 01	699	1.2+ 0.9-	1999 10 04	704	1.1+ 0.4+
1998 03 24	699	0.8- 0.7+	1998 05 01	566	(0.4+ 2.1-)	1999 10 07	703	0.3- 0.2+
1998 03 24	699	0.8+ 0.1+	1998 05 01	566	0.5+ 1.4-	1999 10 07	703	0.5- 0.4+
1998 03 24	699	0.3+ 0.4+	1998 05 01	566	0.7+ 1.8-	1999 10 07	703	0.3- 0.4+
1998 03 25	704	0.5- 0.1+	1998 05 02	566	0.7+ 1.0-	1999 10 07	703	0.5- 0.2+
1998 03 25	704	0.3+ 0.2+	1998 05 02	566	0.6+ 0.8-	1999 10 09	704	0.1- 0.5+
1998 03 25	704	0.2- 0.4+	1998 05 02	566	0.9+ 1.3-	1999 10 09	704	0.3- 0.4+
1998 03 25	704	0.0 0.5+	1998 05 16	704	0.2- 0.1+	1999 10 09	704	0.0 0.8+
1998 03 25	704	(1.1+ 3.9-)	1998 05 16	704	0.4- 0.8-	1999 10 09	704	0.3- 0.5+
1998 03 28	704	0.1- 0.1+	1998 05 16	704	0.7- 0.1-	1999 10 09	704	0.1- 0.7+
1998 03 28	704	0.3+ 0.4+	1998 05 16	704	0.1- 0.1+			
1998 03 28	704	0.2+ 0.6-	1998 05 16	704	0.0 0.1+			

(11961)* 1994 PO = 1986 SF₁

Discovered 1994 Aug. 3 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 29105)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	180.68938		(2000.0)		P		Q
<i>n</i>	0.23855506	ω	241.22892		-0.93264547		+0.33075856
<i>a</i>	2.5748008	Ω	317.63092		-0.20826566		-0.81973128
<i>e</i>	0.1037401	<i>i</i>	12.34876		-0.29461474		-0.46758892
<i>P</i>	4.13	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 09 29	010	(7.5- 0.3-)	1997 03 03	691	0.2+ 0.2-	1999 10 05	704	0.7+ 0.0
1986 09 29	010	0.2+ 0.5+	1997 03 03	385	0.6- 0.1+	1999 10 05	704	0.3+ 0.1-
1994 08 03	905	0.4- 0.8+	1997 03 03	385	0.6- 0.1+	1999 10 05	704	1.4+ 0.0
1994 08 03	905	0.4+ 0.1+	1997 03 13	691	0.4+ 0.2-	1999 10 05	704	0.2- 0.4-
1994 08 09	905	0.2- 0.8-	1997 03 13	691	0.4+ 0.4-	1999 10 05	704	0.7+ 0.1+
1994 08 09	905	0.8+ 0.3+	1997 03 13	691	0.4+ 0.3-	1999 10 11	385	0.1- 0.5-
1994 08 29	905	2.1- 0.4+	1998 08 17	704	1.5+ 1.0-	1999 10 11	385	0.0 1.1-
1994 08 29	905	0.4+ 0.2-	1998 08 17	704	0.4- 1.0-	1999 10 11	888	0.3- 0.2-

1999 OCT. 26

M.P.C. 36263

1994 09 10	905	0.2−	0.5−	1998 08 17	704	1.2+	0.3−	1999 10 11	385	0.0	0.4+
1994 09 10	905	0.4+	0.9+	1998 08 17	704	0.4+	0.5−	1999 10 11	888	0.2−	0.4−
1997 02 12	905	0.3−	0.2−	1998 08 19	566	0.2−	0.4−	1999 10 11	888	0.0	0.4−
1997 02 12	905	0.5−	0.7−	1998 08 19	566	0.1−	0.4−	1999 10 14	704	0.3−	0.1−
1997 02 14	385	0.2−	0.1−	1998 08 19	566	0.2−	0.3−	1999 10 14	704	0.2−	0.4−
1997 02 14	385	0.4−	0.1−	1999 09 07	703	0.2+	0.2+	1999 10 14	704	0.1−	0.1−
1997 02 14	385	0.5−	0.0	1999 09 07	703	0.2−	0.6+	1999 10 14	704	0.3−	0.5−
1997 03 03	691	0.1+	0.0	1999 09 07	703	0.1+	0.7+	1999 10 14	704	0.3−	0.5−
1997 03 03	691	0.1+	0.2−	1999 09 07	703	0.1+	1.1+				

(11962)* 1994 PX = 1989 OS = 1992 EU₉

Discovered 1994 Aug. 14 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 23984)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	19.35221		(2000.0)	P	Q
<i>n</i>	0.21140728	ω	192.61725	+0.97726244	+0.19034386
<i>a</i>	2.7907617	Ω	155.79501	−0.16930335	+0.96574759
<i>e</i>	0.1505980	<i>i</i>	13.17070	−0.12764993	+0.17635420
<i>P</i>	4.66	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 07 29	675	1.0+	1.4−	1994 09 01	411	0.4+	0.5−	1998 06 27	699	0.4−	0.1−
1989 07 29	675	0.6+	2.2−	1994 09 01	411	0.4−	0.2+	1999 09 08	703	0.5+	0.0
1992 02 25	675	0.1−	0.5+	1994 09 12	675	0.4+	1.1−	1999 09 08	703	0.2−	0.9+
1992 02 27	675	0.8+	0.8+	1994 09 12	675	0.3−	0.1−	1999 09 08	703	0.3−	1.4+
1992 02 27	675	0.7−	0.9+	1994 10 01	675	0.5+	1.1−	1999 09 08	703	1.1−	1.2+
1992 02 28	675	0.9−	0.6−	1994 10 01	675	0.0	0.4−	1999 09 14	704	0.1−	0.1−
1992 02 28	675	0.5−	0.1−	1997 05 03	327	1.3+	0.4+	1999 09 14	704	0.4−	0.0
1992 03 02	809	1.2−	1.9+	1997 05 03	327	0.4+	0.4+	1999 09 14	704	0.2−	0.4+
1992 03 04	809	0.5+	0.2−	1997 05 03	327	1.7+	0.6+	1999 09 14	704	0.3−	0.3+
1992 03 07	809	0.7+	0.9+	1998 06 19	704	0.7−	0.9+	1999 09 14	704	0.4−	0.0
1994 08 14	411	0.6−	0.7+	1998 06 19	704	1.1+	0.5+	1999 10 02	704	0.5+	0.7+
1994 08 14	411	0.6+	0.7+	1998 06 19	704	0.0	1.0+	1999 10 02	704	0.6+	0.7+
1994 08 15	411	0.4−	0.1+	1998 06 19	704	0.7−	1.2+	1999 10 02	704	0.6+	0.7+
1994 08 15	411	0.5−	0.3+	1998 06 19	704	1.2+	1.1+	1999 10 02	704	0.7+	0.5+
1994 08 15	411	0.5−	0.0	1998 06 25	704	0.2+	1.2+	1999 10 02	704	0.4+	0.6+
1994 08 17	411	0.3−	0.1+	1998 06 25	704	0.2+	0.2+	1999 10 08	704	0.4−	1.0+
1994 08 17	411	0.5−	0.2+	1998 06 25	704	1.4+	0.1−	1999 10 08	704	0.5−	0.4+
1994 08 27	411	0.4+	0.4−	1998 06 25	704	0.9−	1.6+	1999 10 08	704	0.4−	1.0+
1994 08 27	411	0.1−	0.6−	1998 06 27	699	1.3−	1.4+	1999 10 08	704	0.5−	0.7+
1994 09 01	411	0.2−	0.4+	1998 06 27	699	0.7−	0.5+	1999 10 08	704	0.1+	0.6+

(11963)* 1994 PO₁₆

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern

Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	195.98715		(2000.0)	P	Q
<i>n</i>	0.21412927	ω	216.72210	−0.98344914	−0.16392831
<i>a</i>	2.7670607	Ω	313.65073	+0.18096321	−0.86766056
<i>e</i>	0.0590143	<i>i</i>	6.12246	+0.00894957	−0.46935344
<i>P</i>	4.60	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1989 07 29	675	0.5−	0.1−	1994 09 06	809	0.3+	1.2+	1999 10 10	704	0.1−	0.2−
1989 07 29	675	(3.6−	2.0−)	1994 09 06	809	0.8+	0.1+	1999 10 10	704	0.2−	0.1−
1992 02 05	691	0.5−	1.2−	1997 03 09	411	0.6+	0.6+	1999 10 10	704	0.1−	0.2+
1992 02 05	691	0.5−	1.5−	1997 03 09	411	0.2+	0.8+	1999 10 10	704	0.3−	0.5+
1992 02 05	691	0.7−	1.4−	1997 03 12	411	0.2+	0.4+	1999 10 10	704	0.4−	0.7+
1994 08 10	809	1.6−	1.9−	1997 03 12	411	0.1+	0.1+	1999 10 13	704	0.6+	0.7+
1994 08 10	809	(2.5−	1.8−)	1999 09 05	703	0.7+	0.0	1999 10 13	704	0.8−	0.4+
1994 08 10	809	(3.1−	1.8−)	1999 09 05	703	0.5−	0.3+	1999 10 13	704	0.2−	0.5+
1994 08 11	809	(2.5−	1.3−)	1999 09 05	703	0.5−	0.2+	1999 10 13	704	1.0−	0.3+
1994 08 11	809	(2.9−	0.7−)	1999 09 05	703	0.8−	1.9+	1999 10 13	704	0.4+	0.1+
1994 08 11	809	(3.7−	0.8−)	1999 09 08	704	0.6+	0.1−	1999 10 13	704	1.3−	0.5−
1994 08 12	809	1.1+	0.7−	1999 09 08	704	0.2+	0.3−	1999 10 13	704	0.0	0.4+

1994 08 12	809	0.1+	0.7−	1999 09 08	704	0.7−	0.4−	1999 10 13	704	0.3−	0.2+
1994 08 12	809	1.2−	0.4−	1999 09 08	704	0.1−	0.4−	1999 10 13	704	0.1−	0.2+
1994 08 13	809	0.6+	1.3−	1999 09 18	704	0.4+	0.1+	1999 10 13	704	0.6−	0.3+
1994 08 13	809	1.1−	0.8−	1999 09 18	704	1.7+	0.8−	1999 10 20	704	0.6+	0.5−
1994 08 13	809	0.4+	1.6−	1999 09 18	704	1.1+	1.2−	1999 10 20	704	0.3+	0.2−
1994 09 05	809	(2.2+	0.2−)	1999 10 01	703	0.4−	0.6+	1999 10 20	704	0.3+	0.9−
1994 09 05	809	1.2+	0.3+	1999 10 01	703	0.8−	0.7+	1999 10 20	704	1.1+	0.4−
1994 09 05	809	1.5+	0.3−	1999 10 01	703	0.6−	0.4+				
1994 09 06	809	1.3+	1.5+	1999 10 01	703	0.6−	0.7+				

(11964)* 1994 PY₁₇ = 1997 EV₄₂

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern

Observatory.

Id. G. V. Williams (*MPC* 29620)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	14.13980		(2000.0)	P	Q
<i>n</i>	0.19656254	ω	110.75432	+0.74054012	+0.67189421
<i>a</i>	2.9295587	Ω	207.03703	−0.62640309	+0.68337478
<i>e</i>	0.0755408	<i>i</i>	1.58708	−0.24335057	+0.28558201
<i>P</i>	5.01	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1994 08 10	809	1.6−	0.9+	1997 03 10	704	0.5+	0.6+	1999 09 07	704	0.3−	0.1+
1994 08 10	809	1.6−	0.4+	1997 03 11	704	0.2−	1.3+	1999 09 09	704	0.8−	0.6+
1994 08 10	809	(2.6−	1.3+)	1997 03 11	704	0.6+	1.4+	1999 09 09	704	0.5−	0.3−
1994 08 11	809	0.6+	0.3+	1997 03 12	704	(1.0+	2.0+)	1999 09 09	704	0.1−	0.0
1994 08 11	809	0.4+	0.1+	1997 03 12	704	(1.0+	2.3+)	1999 09 09	704	0.1−	0.4+
1994 08 11	809	0.9−	0.3+	1998 05 22	704	0.0	0.7−	1999 09 09	704	1.2−	0.1+
1994 09 04	809	1.2−	0.6−	1998 05 22	704	0.1−	0.0	1999 09 14	704	1.3+	0.2+
1994 09 04	809	1.7−	1.3−	1998 05 22	704	0.4−	0.6+	1999 09 14	704	0.5+	0.3+
1994 09 04	809	(2.3−	1.0−)	1998 05 22	704	0.5+	1.2+	1999 09 14	704	1.2+	1.9−
1994 09 05	809	0.7+	0.5+	1998 05 24	704	0.3−	0.4+	1999 09 14	704	0.9+	0.6−
1994 09 05	809	1.1+	0.8+	1998 05 24	704	0.6+	1.7−	1999 09 14	704	1.1+	0.0
1994 09 05	809	0.5+	0.4+	1998 05 24	704	(2.8−	0.8−)	1999 10 02	703	2.6−	0.7+
1994 09 06	809	(2.8+	1.2+)	1998 05 24	704	0.7+	0.4−	1999 10 02	703	0.9−	0.1+
1994 09 06	809	0.3+	1.9+	1998 05 24	704	0.9−	0.2+	1999 10 02	703	0.5−	0.3+
1994 09 06	809	1.1+	1.4+	1999 09 07	704	0.5−	0.7+	1999 10 02	703	0.4+	1.0−
1994 09 30	675	0.2−	0.3−	1999 09 07	704	0.1−	0.5+	1999 10 08	704	2.0+	0.0
1994 09 30	675	0.8+	0.6−	1999 09 07	704	1.1−	1.2+	1999 10 08	704	1.8+	1.0−
1997 03 10	704	0.4+	0.8+	1999 09 07	704	0.1+	0.1−	1999 10 08	704	0.4−	1.1−

(11965)* 1994 PF₂₀ = 1978 EE₉ = 1998 FY₁₂₅

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>	60.97485		(2000.0)	P	Q
<i>n</i>	0.19901787	ω	269.35599	−0.27963491	+0.95868198
<i>a</i>	2.9054138	Ω	344.10484	−0.78737130	−0.26014440
<i>e</i>	0.2229716	<i>i</i>	11.00456	−0.54940946	−0.11512491
<i>P</i>	4.95	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 03 15	675	1.1−	0.3−	1998 03 31	704	0.4−	0.0	1999 09 10	704	1.0+	0.7+
1978 03 16	675	0.5+	1.2−	1998 04 01	704	0.1−	0.0	1999 09 10	704	0.3+	0.7+
1994 08 12	809	0.7−	1.3−	1998 04 01	704	0.0	0.7+	1999 09 10	704	0.1−	0.8+
1994 08 12	809	0.4−	0.2−	1998 04 01	704	0.0	1.0−	1999 09 14	704	1.0+	0.1−
1994 08 12	809	1.0−	0.8−	1998 04 01	704	0.4−	0.3+	1999 09 14	704	0.2+	0.5+
1994 08 13	809	0.1+	0.0	1998 04 01	704	0.2−	0.5+	1999 09 14	704	1.6+	0.8−
1994 08 13	809	0.1+	0.3−	1998 05 01	566	0.0	0.9−	1999 09 14	704	0.5+	0.7−
1994 08 13	809	0.9−	0.1−	1998 05 01	566	0.1+	0.4−	1999 10 06	704	0.0	0.6−
1994 09 05	809	0.8−	0.9+	1998 05 01	566	0.8+	0.5−	1999 10 06	704	0.4+	0.1−
1994 09 05	809	0.6−	1.3+	1998 05 02	566	0.1+	0.5−	1999 10 06	704	0.1−	0.4−
1994 09 05	809	1.1−	1.1+	1998 05 02	566	0.4+	0.2−	1999 10 06	704	0.6+	0.3−
1994 09 06	809	0.7+	1.3+	1998 05 02	566	0.5+	0.4−	1999 10 06	704	0.1−	0.2−

1994 09 06	809	0.3−	1.4+	1999 09 03	691	0.2+	0.0	1999 10 07	704	1.2+	0.6+
1994 09 06	809	0.3+	0.8+	1999 09 03	691	0.2+	0.1+	1999 10 07	704	0.2+	0.4+
1998 03 22	699	0.1−	1.0+	1999 09 03	691	0.0	0.1−	1999 10 07	704	0.7+	0.2+
1998 03 22	699	0.3−	1.1+	1999 09 07	704	1.1−	0.6−	1999 10 07	704	0.6−	0.3−
1998 03 22	699	0.2+	0.6+	1999 09 07	704	0.4−	1.0−	1999 10 08	704	0.9+	0.3−
1998 03 26	566	0.0	0.4+	1999 09 07	704	0.9−	0.1−	1999 10 08	704	0.4−	0.0
1998 03 26	566	0.0	0.3+	1999 09 07	704	0.6+	0.4−	1999 10 08	704	0.1−	0.2+
1998 03 26	566	0.2−	0.3+	1999 09 09	704	0.2+	0.7−	1999 10 15	704	0.0	0.8−
1998 03 31	704	0.5+	0.0	1999 09 09	704	0.0	0.1+	1999 10 15	704	0.3+	0.7−
1998 03 31	704	0.5+	1.0−	1999 09 09	704	0.1−	0.4−	1999 10 15	704	0.1−	0.4−
1998 03 31	704	0.0	0.5+	1999 09 09	704	0.0	0.5−	1999 10 15	704	0.4−	0.2−
1998 03 31	704	1.9−	1.3−	1999 09 09	704	0.3+	0.6−	1999 10 15	704	0.2−	0.2−

(11966)* 1994 PJ₂₀ = 1995 YL₂₄

Discovered 1994 Aug. 12 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 26565)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			<i>P</i>			<i>Q</i>		
60.82649			(2000.0)					
<i>n</i>	0.20643157	ω	23.57660	+0.35173655	+0.93594090			
<i>a</i>	2.8354281	Ω	267.02060	−0.86157196	+0.31649161			
<i>e</i>	0.0376998	<i>i</i>	0.98720	−0.36602618	+0.15442701			
<i>P</i>	4.77	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1994 08 12	809	(0.2−	2.8+)	1997 04 13	691	0.5+	0.3+	1999 10 07	703	0.3+	0.2+
1994 08 12	809	0.4+	1.5+	1997 04 13	691	0.2+	0.5+	1999 10 07	704	0.1+	0.7−
1994 08 12	809	(0.4−	2.2+)	1999 09 14	691	0.2−	0.5−	1999 10 07	704	0.0	0.7−
1994 08 13	809	0.9−	1.0+	1999 09 14	691	0.0	0.3−	1999 10 07	704	0.1+	0.2−
1994 08 13	809	1.7−	1.4+	1999 09 14	691	0.0	0.4−	1999 10 07	704	0.2+	0.6+
1994 08 13	809	(2.2−	1.0+)	1999 09 29	703	0.1+	0.0	1999 10 09	704	0.1+	0.3+
1994 09 05	809	0.1+	1.7+	1999 09 29	703	0.3−	0.3−	1999 10 09	704	0.3+	0.4−
1994 09 05	809	0.7−	2.0+	1999 09 29	703	0.4+	0.4−	1999 10 09	704	0.3+	0.2−
1994 09 05	809	1.5−	1.7+	1999 09 29	703	0.0	0.4+	1999 10 09	704	0.4+	0.6−
1994 09 06	809	0.7−	1.3+	1999 10 04	704	0.0	0.4−	1999 10 09	704	0.7+	0.9−
1994 09 06	809	0.8−	1.5+	1999 10 04	704	0.6−	0.8−	1999 10 10	704	0.5+	0.5+
1994 09 06	809	0.0	1.6+	1999 10 04	704	0.4−	0.4−	1999 10 10	704	(2.7−	0.1+)
1995 12 22	566	1.2−	1.6+	1999 10 04	704	0.9−	0.2+	1999 10 10	704	0.1−	0.8−
1995 12 22	566	0.8−	1.5+	1999 10 04	704	0.5+	0.0	1999 10 10	704	0.0	1.3−
1995 12 22	566	0.7−	1.8+	1999 10 06	704	0.1−	0.5−	1999 10 10	704	0.2+	0.5−
1995 12 25	566	0.8+	0.4+	1999 10 06	704	0.2−	0.6−	1999 10 10	704	0.8+	1.1−
1995 12 25	566	0.6+	0.6+	1999 10 06	704	0.1−	0.4−	1999 10 10	704	0.4+	1.2−
1995 12 25	566	0.5+	0.4+	1999 10 06	704	0.1+	0.3−	1999 10 10	704	0.8+	1.0−
1997 04 07	691	0.1−	0.6+	1999 10 06	704	0.2−	0.4−	1999 10 10	704	0.2+	0.9−
1997 04 07	691	0.1−	0.3+	1999 10 07	703	0.1+	0.3+	1999 10 15	704	0.4+	0.6−
1997 04 07	691	0.1+	0.8+	1999 10 07	703	0.2−	0.1−	1999 10 15	704	0.3+	0.8+
1997 04 13	691	0.6+	0.2+	1999 10 07	703	0.2+	0.0	1999 10 15	704	0.9+	1.8+

(11967)* 1994 PW₂₀ = 1997 ES₄₉

Discovered 1994 Aug. 12 by E. W. Elst at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 30453)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			<i>P</i>			<i>Q</i>		
179.01773			(2000.0)					
<i>n</i>	0.21653829	ω	206.69205	−0.97521194	+0.22065711			
<i>a</i>	2.7464998	Ω	346.02598	−0.18884645	−0.86883672			
<i>e</i>	0.0227931	<i>i</i>	3.91701	−0.11531998	−0.44320785			
<i>P</i>	4.55	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1992 02 01	691	0.4−	0.1+	1998 06 26	704	1.1−	0.9+	1999 10 07	704	0.0	0.1+
1992 02 01	691	0.8−	0.1−	1998 06 26	704	0.6−	0.7−	1999 10 08	106	0.2−	0.4−
1992 02 01	691	(2.1−	1.9−)	1998 07 21	704	0.9+	0.8−	1999 10 08	106	0.1−	0.4+
1994 08 12	809	1.8+	0.7−	1998 07 21	704	0.4−	0.3−	1999 10 08	106	0.1+	0.6−
1994 08 12	809	0.8+	0.2−	1998 07 21	704	0.4−	0.3+	1999 10 09	691	0.3+	0.3−

1994 08 12	809	0.4+	0.4−	1998 07 21	704	1.3+	0.8+	1999 10 09	691	0.3+	0.2−
1994 08 13	809	0.1−	1.2−	1999 09 12	703	0.5+	0.4−	1999 10 09	691	0.3+	0.3−
1994 08 13	809	0.1−	0.7−	1999 09 12	703	0.3−	0.0	1999 10 10	704	0.4−	0.4+
1994 08 13	809	0.7−	1.5−	1999 09 12	703	0.9+	0.1+	1999 10 10	704	2.0−	0.5+
1994 09 05	809	0.8−	0.3+	1999 09 12	703	0.8−	0.6+	1999 10 10	704	1.5−	1.0+
1994 09 05	809	0.3+	0.9+	1999 10 02	703	0.5+	0.2+	1999 10 10	704	1.6−	1.0+
1994 09 05	809	0.6−	0.1+	1999 10 02	703	0.1+	0.0	1999 10 13	704	0.2−	0.2−
1994 09 06	809	0.5+	0.8+	1999 10 02	703	0.3+	0.5+	1999 10 13	704	0.1−	0.2−
1994 09 06	809	0.0	1.2+	1999 10 02	703	0.2+	0.4+	1999 10 13	704	0.2+	0.1−
1994 09 06	809	0.1−	1.7+	1999 10 03	704	0.4+	0.1+	1999 10 13	704	0.1−	0.0
1997 03 05	809	0.7+	0.4−	1999 10 03	704	0.7+	0.5−	1999 10 13	704	0.1−	0.1−
1997 03 05	809	0.3+	0.7−	1999 10 03	704	0.2+	0.7+	1999 10 15	704	0.0	0.4−
1997 03 05	809	0.5+	0.8−	1999 10 03	704	0.3+	0.0	1999 10 15	704	0.1+	0.5−
1997 03 06	809	1.0+	1.5+	1999 10 03	704	0.0	0.0	1999 10 15	704	0.9−	0.5−
1997 03 06	809	0.0	1.1+	1999 10 04	691	0.1−	0.6−	1999 10 15	704	0.2+	0.3−
1997 03 06	809	0.1−	1.0+	1999 10 04	691	0.0	0.5−	1999 10 20	704	0.3+	0.3+
1998 06 24	704	1.3−	0.6+	1999 10 04	691	0.1−	0.6−	1999 10 20	704	0.0	0.4+
1998 06 24	704	0.8+	0.0	1999 10 07	704	0.1+	0.6+	1999 10 20	704	0.1−	0.2+
1998 06 24	704	0.9−	1.2−	1999 10 07	704	0.2+	0.5−	1999 10 20	704	0.1+	0.7+
1998 06 26	704	0.6−	1.0+	1999 10 07	704	0.5+	0.2+	1999 10 20	704	0.3+	0.4+
1998 06 26	704	0.7+	0.3+	1999 10 07	704	0.1−	0.0				

(11968)* 1994 PR₂₇ = 1981 UJ₂₉ = 1990 TR₈ = 1990 TE₁₆

Discovered 1994 Aug. 12 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 29105), S. Nakano (d, *ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			<i>P</i>			<i>Q</i>		
228.60169			(2000.0)					
<i>n</i>	0.21714496	ω	128.89271	−0.75779091	−0.65232931			
<i>a</i>	2.7413819	Ω	10.41868	+0.57043112	−0.67333269			
<i>e</i>	0.0545238	<i>i</i>	4.69836	+0.31679848	−0.34797924			
<i>P</i>	4.54	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1	

Residuals in seconds of arc

1981 10 24	675	0.9+	0.8+	1997 04 05	816	0.6−	0.0	1999 10 04	704	0.4+	0.1−
1981 10 25	675	0.2−	0.0	1997 04 05	816	0.5−	0.2+	1999 10 04	704	0.1+	0.3+
1981 10 26	675	0.2−	0.2−	1997 04 05	816	0.6−	0.0	1999 10 04	704	0.4+	0.7−
1990 10 14	046	(5.6+	2.2−)	1997 04 05	816	0.5−	0.2+	1999 10 04	704	0.3+	0.2−
1990 10 14	046	(8.7+	1.3−)	1997 04 11	816	0.2−	0.2+	1999 10 05	704	0.1−	0.1+
1990 10 15	046	(10.4+	1.1−)	1997 04 11	816	0.2−	0.3+	1999 10 05	704	0.1+	0.1−
1990 10 15	046	(8.7+	1.4−)	1997 04 11	816	0.2+	0.4+	1999 10 05	704	0.3+	0.1−
1990 10 15	095	0.6−	0.7−	1997 04 11	816	0.0	0.3+	1999 10 05	704	0.2−	0.3+
1990 10 15	095	(1.1−	3.3−)	1997 04 11	816	0.2+	0.4+	1999 10 05	704	0.1−	0.3−
1994 08 12	809	0.5+	0.9−	1997 04 11	816	0.2+	0.6+	1999 10 07	704	0.2−	0.1−
1994 08 12	809	0.1+	0.9−	1997 04 12	816	0.5−	0.0	1999 10 07	704	0.3+	0.3+
1994 08 12	809	0.6−	1.5−	1997 04 12	816	0.7−	0.4+	1999 10 07	704	0.1−	0.1−
1994 08 13	809	1.4+	0.7−	1997 04 12	816	0.5−	0.2+	1999 10 07	704	0.6+	0.3−
1994 08 13	809	0.1+	1.0−	1997 04 12	816	0.5−	0.2−	1999 10 07	704	0.1+	0.4+
1994 08 13	809	1.1+	1.4−	1997 04 13	691	0.1−	0.4−	1999 10 09	704	0.1−	0.2−
1994 09 05	809	0.4+	0.5+	1997 04 13	691	0.3−	0.3−	1999 10 09	704	0.2+	0.1+
1994 09 05	809	0.0	0.5+	1997 04 13	691	0.5−	0.6−	1999 10 09	704	0.1+	0.3−
1994 09 05	809	0.1−	0.1+	1997 04 16	691	0.3−	0.8−	1999 10 09	704	0.5−	0.3+
1994 09 06	809	0.6+	0.9−	1997 04 16	691	0.2−	0.8−	1999 10 09	704	0.2−	0.5−
1994 09 06	809	0.3+	0.7−	1997 04 16	691	0.1−	0.8−	1999 10 15	704	0.1+	0.7−
1994 09 06	809	1.0−	1.4−	1998 06 26	704	0.0	0.9+	1999 10 15	704	1.3+	0.2−
1994 09 09	675	0.4−	0.2+	1998 06 26	704	(3.0−	1.0+)	1999 10 15	704	2.0+	0.6+
1994 09 09	675	1.3−	1.6+	1998 06 26	704	0.4+	0.3+	1999 10 15	704	(3.2+	2.1+)
1994 10 01	675	(3.4+	1.2+)	1998 06 26	704	0.2+	0.6+	1999 10 15	704	(3.9+	3.1+)
1994 10 01	675	0.1−	1.9+	1999 09 13	120	0.4−	0.2−	1999 10 19	704	0.4+	0.5−
1997 03 02	691	0.7+	1.0−	1999 09 13	120	1.0−	0.2−	1999 10 19	704	0.2−	0.3−
1997 03 02	691	0.6+	1.0−	1999 10 01	703	0.5−	0.2+	1999 10 19	704	0.1+	0.5−
1997 03 02	691	0.6+	0.9−	1999 10 01	703	0.4−	0.2+	1999 10 19	704	0.4+	0.1−
1997 03 07	691	0.1+	1.2−	1999 10 01	703	0.4−	0.2+	1999 10 19	704	0.0	0.4−
1997 03 07	691	0.1+	0.9−	1999 10 01	703	0.5−	0.2+				
1997 03 07	691	0.1+	0.9−	1999 10 04	704	0.1+	0.6−				

(11969)* 1994 PC₃₇ = 1976 UA₁₉ = 1990 VT₇

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 24570), A. Milani (unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	300.58163		(2000.0)	P	Q
<i>n</i>	0.21235941	ω	126.78657	+0.43117190	-0.90144916
<i>a</i>	2.7824137	Ω	297.62896	+0.81336730	+0.40679094
<i>e</i>	0.0822097	<i>i</i>	2.48886	+0.39054375	+0.14802210
<i>P</i>	4.64	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1976 10 24	381	0.2+	1.0+	1995 12 16	411	0.4+	0.9+	1999 10 07	704	0.3-	0.0
1976 10 24	381	1.2-	0.2-	1999 07 23	704	0.0	0.0	1999 10 07	704	0.3-	0.3-
1990 10 22	675	0.0	0.2+	1999 07 23	704	0.6+	0.6-	1999 10 09	704	0.1-	0.1-
1990 10 22	675	1.1+	0.3+	1999 07 23	704	0.0	0.6-	1999 10 09	704	0.4-	0.2-
1990 11 11	675	0.1-	0.3-	1999 07 23	704	0.4-	0.2+	1999 10 09	704	0.4-	0.6-
1990 11 11	675	0.2-	0.9-	1999 09 07	704	0.4+	0.4+	1999 10 09	704	0.6-	0.5-
1990 11 13	675	0.2+	0.8-	1999 09 07	704	0.9+	0.0	1999 10 09	704	0.2+	0.2-
1990 11 13	675	0.0	0.5+	1999 09 07	704	0.7+	0.1+	1999 10 13	704	0.1+	0.0
1992 03 02	809	0.8-	0.7+	1999 09 07	704	0.2-	0.2+	1999 10 13	704	0.2+	0.2-
1994 08 10	809	2.5+	1.1-	1999 09 07	704	0.4-	0.8-	1999 10 13	704	0.3+	0.1-
1994 08 10	809	0.8+	1.2-	1999 09 30	703	0.1-	0.3+	1999 10 13	704	0.5+	0.5-
1994 08 10	809	0.6+	1.4-	1999 09 30	703	0.5-	0.0	1999 10 15	704	0.2+	0.1+
1994 08 11	809	0.8-	0.7-	1999 09 30	703	0.2-	0.1+	1999 10 15	704	0.3+	0.3-
1994 08 11	809	0.8-	1.1-	1999 09 30	703	0.3-	0.3+	1999 10 15	704	0.6+	0.2+
1994 08 11	809	1.2-	0.8-	1999 10 04	704	0.6+	0.2-	1999 10 16	704	0.4-	0.6-
1994 09 03	809	0.5-	0.3+	1999 10 04	704	0.3-	0.6-	1999 10 16	704	0.7-	0.6+
1994 09 03	809	0.9-	0.3-	1999 10 04	704	0.7+	0.5-	1999 10 16	704	0.3-	0.1+
1994 09 03	809	0.3-	0.0	1999 10 04	704	0.3+	0.1+	1999 10 16	704	0.2-	0.0
1994 09 04	809	0.7+	4.1+	1999 10 04	704	0.5+	1.7-	1999 10 19	704	0.6-	0.1+
1994 09 04	809	0.5+	2.3+	1999 10 07	704	0.0	0.4+	1999 10 19	704	0.2+	0.7+
1994 09 04	809	0.7+	3.0+	1999 10 07	704	0.4-	0.1+	1999 10 19	704	0.6-	0.5+
1995 12 16	411	1.3+	0.1-	1999 10 07	704	0.9-	0.3+	1999 10 19	704	0.5-	0.3+

(11970)* 1994 TD

Discovered 1994 Oct. 4 by P. Sicoli and P. Ghezzi at Sormano.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	282.33967		(2000.0)	P	Q
<i>n</i>	0.18619506	ω	257.29554	+0.22916910	-0.97338638
<i>a</i>	3.0373204	Ω	179.45486	+0.91887567	+0.21610106
<i>e</i>	0.0490515	<i>i</i>	4.16446	+0.32116823	+0.07628424
<i>P</i>	5.29	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1994 10 04	587	0.7-	0.1+	1997 04 09	587	1.2+	0.7+	1999 09 29	703	0.1+	0.4+
1994 10 04	587	0.9+	1.8-	1997 04 12	587	0.1-	0.3+	1999 09 29	703	0.1-	0.3+
1994 10 05	587	1.2+	0.1-	1997 04 12	587	0.2-	0.3+	1999 09 29	703	0.5-	0.0
1994 10 05	587	0.0	0.9+	1997 05 08	587	0.5-	0.3+	1999 10 02	704	0.8-	0.1+
1994 10 10	587	0.8+	0.5-	1999 09 07	691	0.4-	0.4-	1999 10 02	704	0.6+	0.2+
1994 10 10	587	1.4+	0.8-	1999 09 07	691	0.5-	0.1-	1999 10 02	704	0.9+	0.1+
1994 10 15	587	0.8-	0.5-	1999 09 07	691	0.4-	0.2-	1999 10 02	704	1.1+	0.2+
1994 10 15	587	0.2-	0.7-	1999 09 07	704	0.3+	0.8+	1999 10 05	704	0.3+	0.1-
1994 10 15	587	0.3-	0.6+	1999 09 07	704	1.0-	0.1-	1999 10 05	704	0.4+	0.3-
1994 10 24	587	0.1-	1.3+	1999 09 07	704	0.4+	0.7-	1999 10 05	704	0.2+	0.0
1994 10 24	587	1.5-	0.8+	1999 09 07	704	0.4-	0.1-	1999 10 05	704	0.3+	0.6-
1994 11 25	587	0.1+	0.1+	1999 09 07	704	0.3+	0.5+	1999 10 05	704	0.1+	0.2-
1994 11 25	587	(0.9-	2.9-)	1999 09 09	120	0.5+	0.4+	1999 10 06	587	0.1+	0.6-
1995 01 01	587	1.0-	1.0+	1999 09 09	120	0.3+	0.1+	1999 10 06	587	0.8-	0.2+
1995 01 01	587	(2.4-	3.3+)	1999 09 09	120	1.3+	0.3+	1999 10 06	587	0.3+	0.2-
1996 01 16	587	0.0	1.2+	1999 09 14	704	(0.2+	3.2+)	1999 10 07	703	0.2-	0.1+
1996 01 16	587	0.0	0.4+	1999 09 14	704	1.0-	1.3+	1999 10 07	703	0.8-	0.4+
1996 01 17	587	0.4-	0.5-	1999 09 14	704	0.6-	0.0	1999 10 07	703	1.0-	1.0+
1996 01 18	587	0.3-	0.1-	1999 09 14	704	0.8-	0.0	1999 10 07	703	0.9-	0.8+
1996 02 14	587	0.2-	0.0	1999 09 14	703	0.3-	0.7+	1999 10 07	704	0.3+	0.3-

1996 02 14	587	1.4-	0.0	1999 09 14	703	1.0+	0.9+	1999 10 07	704	0.1+	0.8-
1996 02 15	587	0.2+	0.4-	1999 09 14	703	0.1-	0.6+	1999 10 07	704	0.7+	1.1-
1996 02 19	801	1.0+	0.7+	1999 09 14	703	0.5-	0.1-	1999 10 07	704	0.7+	1.3-
1996 02 19	801	1.3+	0.9-	1999 09 29	703	0.0	0.0	1999 10 07	704	0.1+	0.5-

(11971)* 1994 UJ₂ = 1968 TF = 1979 YU₉ = 1989 UR₆ = 1989 YL₈

Discovered 1994 Oct. 31 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Ichikawa (*MPC* 24400), S. Nakano (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	351.47278		(2000.0)	P	Q
<i>n</i>	0.19191893	ω	327.20284	+0.90658669	-0.37125623
<i>a</i>	2.9766253	Ω	55.87683	+0.42020728	+0.75009057
<i>e</i>	0.1579782	<i>i</i>	14.02862	+0.03906925	+0.54729604
<i>P</i>	5.14	<i>H</i>	12.7	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1968 10 15	095	1.0+	1.7-	1994 11 07	399	0.8-	1.1-	1999 09 30	703	0.2+	0.1+
1979 12 25	095	0.7+	0.9-	1994 11 10	894	1.5-	1.1+	1999 09 30	703	0.3+	0.0
1986 03 04	675	0.3-	0.2-	1994 11 10	894	0.1+	0.7-	1999 10 04	703	0.4+	0.3+
1989 10 26	033	0.4+	0.4+	1994 11 23	399	1.0-	0.1+	1999 10 04	703	0.2+	0.1+
1989 10 26	033	1.2+	0.6+	1994 11 23	399	2.1-	0.7+	1999 10 04	703	0.3+	0.4+
1989 10 28	033	0.7-	0.5-	1999 08 22	703	0.4+	0.2+	1999 10 04	703	0.3+	0.4+
1989 12 25	033	1.4+	0.1+	1999 08 22	703	0.3-	0.0	1999 10 09	704	0.1+	0.1-
1989 12 25	033	1.0-	0.1-	1999 08 22	703	0.2-	0.1+	1999 10 09	704	0.0	0.0
1994 10 31	399	0.3+	0.6+	1999 08 22	703	0.5-	0.4-	1999 10 09	704	0.1+	0.3-
1994 10 31	399	1.0+	0.6+	1999 09 30	703	0.2+	0.5+	1999 10 09	704	0.1-	0.0
1994 11 07	399	0.1-	1.8-	1999 09 30	703	0.2+	0.2+	1999 10 09	704	0.2-	0.1+

(11972)* 1994 VK = 1991 GE₇

Discovered 1994 Nov. 1 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 24400)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	264.01132		(2000.0)	P	Q
<i>n</i>	0.17252315	ω	74.04163	-0.00884213	-0.99962011
<i>a</i>	3.1957377	Ω	16.53111	+0.87878197	-0.02022461
<i>e</i>	0.1421009	<i>i</i>	5.26401	+0.47714156	+0.01872453
<i>P</i>	5.71	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1991 04 08	809	1.4+	0.9+	1994 11 08	411	0.1+	0.6-	1999 09 09	704	0.4+	0.2+
1991 04 08	809	1.4+	1.2+	1994 11 08	411	0.4-	0.1-	1999 09 09	704	0.8-	0.5+
1991 04 08	809	1.9+	0.3-	1994 11 09	411	0.7+	0.0	1999 09 09	704	0.8-	0.9+
1991 04 10	809	1.0-	0.2-	1994 11 09	411	0.5-	0.5+	1999 09 09	704	1.3-	0.7+
1991 04 10	809	0.5+	0.9-	1994 11 09	411	0.1+	0.1+	1999 09 09	704	0.1+	0.8+
1991 04 10	809	0.4-	1.1-	1994 12 02	675	0.1-	0.4+	1999 09 13	704	0.2-	1.5+
1991 04 19	675	1.6-	1.1+	1994 12 02	675	0.2+	0.1+	1999 09 13	704	0.0	0.6+
1991 04 19	675	1.1-	1.4+	1996 01 16	691	0.5-	0.0	1999 09 13	704	0.0	0.8-
1994 11 01	411	0.5-	0.8-	1996 01 16	691	0.1-	0.0	1999 10 04	703	0.4-	0.4+
1994 11 01	411	0.7+	0.1-	1996 01 16	691	0.0	0.0	1999 10 04	703	0.3+	0.1-
1994 11 02	411	0.0	0.5-	1996 01 24	691	0.1+	0.1+	1999 10 04	703	0.8+	0.8+
1994 11 02	411	1.3-	0.1-	1996 01 24	691	0.1+	0.1-	1999 10 04	703	0.5+	0.1-
1994 11 06	675	0.0	0.7-	1996 01 24	691	0.3+	0.1-	1999 10 16	704	0.5+	0.1-
1994 11 06	675	0.3+	0.6+	1999 09 07	704	0.6+	0.8-	1999 10 16	704	0.3+	1.5-
1994 11 06	675	0.7+	1.8+	1999 09 07	704	0.9+	0.8-	1999 10 16	704	0.5+	1.0-
1994 11 06	675	1.7-	1.2+	1999 09 07	704	0.1+	0.2-	1999 10 16	704	0.4-	1.1-
1994 11 07	675	1.0+	0.5-	1999 09 07	704	0.1-	0.5+				
1994 11 07	675	0.1+	0.6+	1999 09 07	704	1.0-	0.3-				

(1

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Nakano						
M	269.36253	(2000.0)			P		Q				
n	0.17507795	ω	68.48181		−0.06914322		−0.99701266				
a	3.1645727	Ω	25.55647		+0.88322060		−0.07722218				
e	0.1798962	i	4.57676		+0.46383249		−0.00157913				
P	5.63	H	13.9	G	0.15	U	1				
Residuals in seconds of arc											
1977 10 18	675	0.0	0.1+	1994 11 23	411	0.3+	0.3−	1999 09 14	704	0.7+	0.4+
1977 10 19	675	0.0	0.0	1994 11 23	411	0.7+	0.5+	1999 09 30	704	0.3−	0.3+
1994 11 01	411	0.6−	0.9−	1994 12 02	675	0.1−	0.6+	1999 09 30	704	0.5−	0.1+
1994 11 01	411	0.5−	0.5−	1994 12 02	675	0.1−	0.2+	1999 09 30	704	1.1−	0.1−
1994 11 03	411	0.4+	0.3+	1996 02 21	411	0.3−	0.5−	1999 09 30	704	0.3−	0.3−
1994 11 03	411	0.1−	0.4−	1996 02 21	411	0.5−	0.2+	1999 10 01	704	0.1+	0.0
1994 11 04	675	1.1+	1.1−	1996 02 22	411	0.5+	0.7+	1999 10 01	704	0.1+	0.3−
1994 11 04	675	0.7−	0.8+	1996 02 22	411	0.3+	0.3−	1999 10 01	704	0.6+	0.1−
1994 11 07	675	0.3+	0.3+	1999 09 09	704	0.5+	0.2+	1999 10 01	704	0.3−	0.7−
1994 11 07	675	1.1+	0.5+	1999 09 09	704	1.1+	0.3−	1999 10 01	704	0.3−	0.6+
1994 11 08	411	0.8−	0.5+	1999 09 09	704	1.0−	0.4+	1999 10 01	704	0.5−	0.3+
1994 11 08	411	0.3+	0.5−	1999 09 09	704	0.2−	1.1+	1999 10 01	704	0.5−	0.1−
1994 11 09	411	0.1+	0.9+	1999 09 09	704	0.0	0.1−	1999 10 01	704	0.7−	0.1−
1994 11 09	411	0.7+	0.9−	1999 09 14	704	0.6+	0.4−	1999 10 01	691	0.2+	0.3−
1994 11 10	411	1.2−	0.5+	1999 09 14	704	1.4+	0.2+	1999 10 01	691	0.2+	0.7−
1994 11 10	411	0.8−	0.8−	1999 09 14	704	0.2−	0.1+	1999 10 01	691	0.1+	0.2−

(11974)* 1994 YF = 1972 YK₁ = 1973 AU₂ = 1977 TX₄ = 1988 VG₁₁
= 1997 GC₄₁

Discovered 1994 Dec. 24 by T. Kobayashi at Oizumi.

Id. B. G. Marsden (*MPC* 30081), G. V. Williams (*ibid.*), C. M. Bardwell (d, *MPC* 6840)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Marsden					
<i>M</i>	356.91984		(2000.0)		P		Q				
<i>n</i>	0.18010239		ω 264.82169		+0.90546089		−0.42289952				
<i>a</i>	3.1054395		Ω 120.19181		+0.40404506		+0.83288923				
<i>e</i>	0.2153056		<i>i</i> 2.38758		+0.12995446		+0.35700354				
<i>P</i>	5.47		<i>H</i> 12.8		<i>G</i> 0.15		<i>U</i>	1			
Residuals in seconds of arc											
1972 12 30	095	0.9+	0.7+	1997 04 06	704	0.3+	0.0	1999 10 02	703	0.1−	0.6+
1973 01 02	095	(4.2−	0.4−)	1997 04 06	704	0.3+	0.5−	1999 10 02	703	0.0	0.4+
1977 10 07	095	0.2+	1.1−	1997 04 07	809	0.3+	0.8−	1999 10 02	703	0.1−	0.0
1988 11 03	327	0.5−	0.7+	1997 04 07	809	0.8+	0.3−	1999 10 10	704	0.9+	0.3+
1988 11 03	327	0.3−	0.3+	1997 04 07	809	0.3+	0.6−	1999 10 10	704	0.6+	0.1−
1994 12 24	411	0.8+	0.3+	1997 04 08	809	1.5+	0.6−	1999 10 10	704	0.5+	0.6+
1994 12 24	411	0.2−	1.5+	1997 04 08	809	0.0	1.0−	1999 10 10	704	0.4+	0.2−
1994 12 28	411	1.0+	1.0+	1997 04 08	809	0.5−	1.2−	1999 10 10	704	0.5−	0.3−
1994 12 28	411	0.1+	0.8+	1998 06 24	704	0.4−	0.9+	1999 10 15	704	0.5+	0.3+
1995 01 02	411	0.3−	0.8−	1998 06 24	704	0.3−	0.5−	1999 10 15	704	0.2+	0.1+
1995 01 02	411	0.9−	0.3+	1998 06 24	704	(2.8+	0.9+)	1999 10 15	704	0.2+	1.0−
1995 01 07	411	1.7−	0.7−	1998 06 24	704	0.2−	0.2+	1999 10 15	704	0.1+	0.6−
1995 01 07	411	0.9−	1.1−	1998 06 24	704	0.2−	0.9+	1999 10 20	704	0.2+	0.5−
1995 01 19	411	0.1−	0.4−	1998 06 26	704	2.2−	0.5+	1999 10 20	704	0.3+	0.5−
1995 01 19	411	0.1+	0.2+	1998 06 26	704	(3.0−	1.0−)	1999 10 20	704	0.0	0.2−
1996 03 11	691	0.2−	1.0+	1998 06 26	704	0.6+	0.7+	1999 10 20	704	0.3+	0.0
1996 03 11	691	0.3−	0.7+	1998 06 26	704	(0.3−	2.1+)	1999 10 20	704	0.7−	0.4−
1996 03 11	691	0.5−	0.5+	1999 10 02	703	0.1+	0.2+				

(11975)* 1995 FA₁

Discovered 1995 Mar. 31 by S. Mottola and E. Koldewey at the European Southern Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
<i>M</i>	98.15325		(2000.0)		P		Q				
<i>n</i>	0.31020991	ω	29.68958		−0.38814289		+0.92143584				
<i>a</i>	2.1612198	Ω	217.47904		−0.85106996		−0.36559893				
<i>e</i>	0.1280461	<i>i</i>	1.63416		−0.35358879		−0.13150447				
<i>P</i>	3.18	<i>H</i>	15.4		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1995 03 31	809	0.2+	0.9−	1998 03 04	704	(2.4−	0.8+)	1999 10 04	704	1.1−	0.3+
1995 03 31	809	(0.9+	4.1+)	1998 03 04	704	(2.7−	0.3+)	1999 10 04	704	0.9+	0.3+
1995 04 01	809	0.4+	0.1+	1998 03 04	704	(3.5−	0.0)	1999 10 06	704	0.3+	0.3−
1995 04 01	809	0.5+	0.1+	1998 03 20	704	0.8−	0.1−	1999 10 06	704	0.1−	0.2−
1995 04 01	809	0.4+	0.0	1998 03 20	704	0.4−	0.7+	1999 10 06	704	0.0	0.4−
1995 04 01	809	0.4+	0.1+	1998 03 20	704	1.3−	0.1+	1999 10 06	704	0.1+	0.3−
1995 04 02	809	0.4+	0.2−	1998 03 20	704	0.3−	0.3−	1999 10 06	704	0.4−	0.1−
1995 04 02	809	0.3+	0.3−	1998 03 20	704	(2.2−	0.0)	1999 10 07	683	1.2+	0.1−
1995 04 02	809	0.4+	0.4−	1998 03 22	704	0.5−	0.2+	1999 10 07	683	0.6+	0.0
1995 04 06	809	0.7−	1.7−	1998 03 22	704	0.5−	0.9−	1999 10 07	683	0.5+	0.3−
1995 04 06	809	0.9−	1.6−	1998 03 22	704	0.8+	0.5−	1999 10 07	704	0.5+	0.9−
1995 04 06	809	1.0−	1.5−	1998 03 22	704	0.4+	1.1−	1999 10 07	704	0.4+	0.4−
1995 04 23	658	1.0+	0.9+	1998 03 22	704	0.7−	1.3−	1999 10 07	704	0.5+	0.1−
1995 04 23	658	0.1−	1.2+	1998 03 29	704	0.2−	0.1−	1999 10 07	704	0.3−	0.5+
1995 04 23	658	0.1−	0.5+	1998 03 29	704	1.0−	0.1−	1999 10 07	704	0.7+	0.1−
1995 05 07	809	0.1−	0.1+	1998 03 29	704	0.6+	0.7−	1999 10 08	683	0.4−	0.6−
1995 05 07	809	0.2−	0.2+	1998 03 29	704	0.7+	0.9−	1999 10 08	683	1.0+	0.1−
1995 07 28	809	1.0−	0.0	1998 03 29	704	0.8+	0.3−	1999 10 08	683	1.1+	0.1−
1995 07 28	809	0.8−	0.1−	1998 04 01	704	0.3+	0.8+	1999 10 09	704	0.1−	0.4−
1995 07 28	809	1.0−	0.3−	1998 04 01	704	0.3+	0.1−	1999 10 09	704	0.3−	0.2−
1996 09 03	809	0.4−	0.5+	1998 04 01	704	0.6−	0.3+	1999 10 09	704	0.1+	0.3−
1996 09 03	809	0.2+	0.1+	1998 04 01	704	0.2−	1.5+	1999 10 09	704	0.3−	0.1+
1996 09 03	809	0.3+	0.0	1998 04 01	704	0.7+	0.8+	1999 10 09	704	0.7−	0.1+
1996 09 03	809	0.4+	0.1+	1999 09 18	703	0.8−	0.8+	1999 10 15	704	0.5−	0.2+
1996 10 07	691	0.3−	0.0	1999 09 18	703	0.0	0.5−	1999 10 15	704	0.7+	0.1−
1996 10 07	691	0.3−	0.1−	1999 09 18	703	0.2−	0.2−	1999 10 15	704	1.0+	0.5+
1996 10 07	691	0.6−	0.2−	1999 09 18	703	0.8−	0.0	1999 10 15	704	0.5+	0.8+
1998 03 03	704	0.1+	0.2+	1999 10 01	703	0.2−	0.0	1999 10 15	704	(2.8+	0.2+)
1998 03 03	704	0.2+	0.2−	1999 10 01	703	0.5−	0.3−	1999 10 19	704	0.2−	1.1−
1998 03 03	704	0.2+	0.4+	1999 10 01	703	0.5−	0.3−	1999 10 19	704	0.9−	0.6−
1998 03 03	704	0.3+	0.6+	1999 10 01	703	0.2+	0.1−	1999 10 19	704	0.5+	0.5−
1998 03 03	704	0.1+	0.2−	1999 10 04	704	0.3−	0.0	1999 10 19	704	0.7+	0.4−
1998 03 04	704	(2.5−	0.4+)	1999 10 04	704	0.5−	0.2−				
1998 03 04	704	(2.4−	0.4+)	1999 10 04	704	0.0	0.6+				

(11976)* 1995 JG

Discovered 1995 May 5 at Farra d'Isonzo.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i> 311.08309		(2000.0)		P		Q					
<i>n</i>	0.35383919	ω	49.16554	+0.12616483		−0.96866790					
<i>a</i>	1.9796972	Ω	35.37385	+0.76203860		−0.04343114					
<i>e</i>	0.0527450	<i>i</i>	21.68697	+0.63512172		+0.24453268					
<i>P</i>	2.79	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2				
Residuals in seconds of arc											
1995 05 05	595	0.1−	0.2+	1996 11 11	801	0.2−	0.5−	1998 05 17	595	1.1+	1.0+
1995 05 05	595	0.5−	0.0	1996 11 12	801	1.1−	0.6−	1999 09 11	595	0.4+	0.5−
1995 05 05	595	0.2+	0.0	1996 11 12	801	0.0	1.2+	1999 09 11	595	0.2+	0.3−
1995 05 06	595	0.5−	0.4+	1996 11 12	689	1.0+	0.7−	1999 09 12	595	0.0	0.2−
1995 05 06	595	0.2−	0.0	1996 12 02	595	0.0	0.5+	1999 09 12	595	0.1+	0.6−
1995 05 10	595	0.6−	1.2−	1996 12 02	595	0.2−	0.9+	1999 10 05	704	0.1−	0.1−
1995 05 10	595	0.3+	0.1−	1996 12 03	595	0.2+	0.4+	1999 10 05	704	0.3+	0.1+
1995 05 29	595	0.5+	1.0+	1996 12 03	595	0.0	0.2−	1999 10 05	704	0.3+	0.0
1995 05 29	595	0.3+	0.0	1997 01 12	595	0.9−	0.3−	1999 10 05	704	0.1−	0.4+
1995 06 01	595	0.3+	0.1−	1997 01 12	595	0.2+	0.9−	1999 10 05	704	0.2−	0.5+
1995 06 01	595	0.2−	0.4−	1997 01 13	595	1.1−	1.3+	1999 10 14	704	0.4−	0.1+
1996 10 12	595	0.2+	0.1−	1997 01 13	595	0.6−	0.2+	1999 10 14	704	0.1+	0.2−
1996 10 12	595	0.3−	0.0	1997 01 29	595	0.7+	1.0+	1999 10 14	704	0.2+	0.2−

1999 OCT. 26

M.P.C. 36267

1996 10 13	595	0.3-	0.3+	1997 01 29	595	0.8+	0.5-	1999 10 14	704	0.2+	0.8-
1996 10 13	595	0.1-	0.2+	1997 01 30	595	0.9+	0.1+	1999 10 15	704	0.1-	0.4+
1996 11 07	691	0.1+	0.4-	1997 01 30	595	(2.3+	0.5+)	1999 10 15	704	0.3-	1.5+
1996 11 07	691	0.1+	0.4-	1998 04 24	595	(2.1-	0.5+)	1999 10 15	704	0.5-	0.1+
1996 11 07	691	0.0	0.4-	1998 04 24	595	0.2+	0.3+	1999 10 15	704	0.4-	0.3+
1996 11 11	801	0.7+	0.3-	1998 05 17	595	(1.4+	2.2-)	1999 10 15	704	0.1-	0.4+

(11977)* 1995 OA

Discovered 1995 July 19 at Stroncone.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			Williams		
315.68686			(2000.0)		
			P		
			Q		
<i>n</i>	0.27755585	ω	150.08669	+0.41844283	-0.90194054
<i>a</i>	2.3275684	Ω	274.99620	+0.81058266	+0.42390836
<i>e</i>	0.0864689	<i>i</i>	6.15506	+0.40970886	+0.08249221
<i>P</i>	3.55	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

1995 07 19	589	0.4+	0.0	1995 10 19	589	0.2-	0.6-	1998 06 24	704	0.2-	1.0+
1995 07 19	589	0.2+	0.1+	1995 10 19	589	0.6-	0.9-	1998 08 21	739	0.0	0.4+
1995 07 19	589	0.6+	0.0	1996 11 09	589	0.1+	1.0+	1999 08 21	739	0.1+	0.1+
1995 07 19	589	0.3+	0.5+	1996 11 09	589	0.0	0.7+	1999 08 21	739	1.2+	0.7+
1995 07 20	589	0.6+	0.8-	1996 11 09	589	0.5+	1.0+	1999 08 21	739	0.3+	1.3+
1995 07 20	589	0.5+	1.1-	1996 11 09	589	0.3+	1.2+	1999 09 04	703	0.3+	0.2-
1995 07 20	589	1.5+	1.1-	1996 12 05	589	0.5+	0.6-	1999 09 04	703	0.4+	0.6+
1995 07 24	589	0.0	0.6+	1996 12 05	589	0.9+	1.0-	1999 09 04	703	0.4+	0.8+
1995 07 24	589	0.7-	0.1-	1996 12 07	589	0.5+	0.8-	1999 09 04	703	0.0	1.2+
1995 07 28	589	0.3+	0.5-	1996 12 07	589	0.3+	0.9-	1999 10 05	704	0.6+	0.3-
1995 07 28	589	1.3+	0.4+	1997 01 12	589	0.0	0.4-	1999 10 05	704	0.2-	0.5-
1995 07 28	589	(4.3+	0.3+)	1997 01 12	589	0.1-	0.5-	1999 10 05	704	0.6-	0.7+
1995 08 06	589	0.3-	0.1+	1997 01 27	589	0.7+	0.6-	1999 10 05	704	0.3+	0.3+
1995 08 06	589	0.2+	0.1-	1997 01 27	589	0.3-	0.3-	1999 10 05	704	1.5-	0.4-
1995 09 11	589	0.1-	0.1-	1997 02 03	589	0.1-	0.3-	1999 10 09	681	0.2+	0.3+
1995 09 11	589	0.7-	0.4+	1997 02 03	589	0.2-	0.5-	1999 10 09	681	0.3-	0.7+
1995 09 27	589	1.0+	0.9-	1997 02 03	589	0.2-	0.4-	1999 10 10	681	0.2+	0.8+
1995 09 27	589	0.3-	0.2-	1997 02 11	689	1.7+	0.2-	1999 10 10	681	0.1+	0.5+
1995 09 27	589	0.1-	0.1+	1997 02 12	689	0.2-	0.5+	1999 10 12	704	0.1-	0.2-
1995 09 28	589	0.9+	1.0+	1997 02 28	104	1.8-	0.1+	1999 10 12	704	0.5-	0.2-
1995 09 28	589	0.5+	0.2+	1997 02 28	104	1.1-	0.2+	1999 10 12	704	0.7-	0.6-
1995 09 28	589	0.4+	0.2-	1997 02 28	104	1.0-	0.2+	1999 10 12	704	0.8-	0.9-
1995 09 29	589	0.5-	0.1+	1997 02 28	589	0.2-	0.3+	1999 10 12	704	1.6-	0.7-
1995 09 29	589	0.0	0.7-	1997 02 28	589	0.1-	0.2-	1999 10 13	704	0.8+	0.0
1995 09 29	589	1.3-	0.4-	1997 02 28	589	0.6-	0.7-	1999 10 13	704	1.0+	0.3-
1995 09 30	589	0.3-	0.6-	1998 06 24	704	0.3-	0.2-	1999 10 13	704	1.0+	0.5-
1995 09 30	589	0.5-	0.3+	1998 06 24	704	0.8-	0.1+	1999 10 13	704	0.4+	0.5-
1995 10 14	589	0.9-	0.5-	1998 06 24	704	1.0+	0.4+	1999 10 13	704	0.1+	0.5-
1995 10 14	589	0.6-	0.2-	1998 06 24	704	(1.8-	2.3+)				

(11978)* 1995 SS₄ = 1971 BC = 1974 VQ = 1999 PM₄

Discovered 1995 Sept. 20 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 35605)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			Nakano		
279.77877			(2000.0)		
			P		
			Q		
<i>n</i>	0.23219500	ω	36.60892	+0.12186501	-0.99070774
<i>a</i>	2.6216063	Ω	46.47804	+0.88974643	+0.08207507
<i>e</i>	0.3019949	<i>i</i>	4.77744	+0.43988658	+0.10845207
<i>P</i>	4.24	<i>H</i>	13.7	<i>G</i>	0.15

Residuals in seconds of arc

1971 01 20	095	(3.8-	2.8-)	1999 08 13	360	0.7-	0.6+	1999 09 13	704	0.1-	0.4+
1974 11 12	095	0.5+	0.1-	1999 08 13	360	0.2-	0.6+	1999 09 13	704	0.4+	0.4+
1974 11 17	095	0.7-	0.8+	1999 08 13	360	0.3-	0.5+	1999 09 13	704	0.2-	0.8+
1995 09 20	400	1.6+	0.7-	1999 08 15	360	0.2+	0.0	1999 09 13	704	0.5+	0.9+
1995 09 20	400	0.1+	1.4-	1999 08 15	360	0.0	0.1+	1999 09 13	704	0.2-	0.2+
1995 09 21	400	2.0-	0.2-	1999 08 15	360	0.4-	0.1-	1999 09 29	704	1.2+	1.9-
1995 09 21	400	0.5+	0.1-	1999 08 15	360	0.5+	0.0	1999 09 29	704	0.7+	0.5-

1995 09 30	400	0.0	0.4+	1999 09 07	699	0.1+	0.2-	1999 09 29	704	(3.0+	0.1-)
1995 09 30	400	0.6+	0.0	1999 09 07	699	0.1+	0.5-	1999 09 30	704	1.0+	0.3-
1997 04 11	704	0.7-	0.1-	1999 09 07	699	0.4+	0.3+	1999 09 30	704	0.1+	0.7-
1997 04 11	704	0.1+	0.9-	1999 09 08	703	0.2-	0.7-	1999 09 30	704	0.7+	0.5+
1999 08 13	699	0.6-	0.3+	1999 09 08	703	0.4-	0.1-	1999 09 30	704	0.0	0.7-
1999 08 13	699	1.1-	0.7+	1999 09 08	703	1.5-	0.0	1999 09 30	704	0.3-	0.2-
1999 08 13	699	1.1+	0.9+	1999 09 08	703	0.7-	0.2-				

(11979)* 1995 SS₅ = 1995 UZ₇ = 1998 HK₉₉

Discovered 1995 Sept. 25 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (d, *MPC* 26379; *MPC* 31968)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			Williams		
51.27405			(2000.0)		
			P		
			Q		
<i>n</i>	0.24030250	ω	92.02125	+0.48313164	+0.86889947
<i>a</i>	2.5623032	Ω	207.69934	-0.86680160	+0.45733164
<i>e</i>	0.1658475	<i>i</i>	13.39594	-0.12344551	+0.18937127
<i>P</i>	4.10	<i>H</i>	14.8	<i>G</i>	0.15

Residuals in seconds of arc

1991 11 13	691	0.4+	0.4+	1998 04 22	704	0.7+	0.4+	1999 10 06	704	0.0	0.2-
1991 11 13	691	0.3+	0.5+	1998 04 22	704	(0.0	3.5+)	1999 10 06	691	0.2-	0.2-
1991 11 13	691	0.3+	1.5+	1998 04 22	704	0.1-	1.0+	1999 10 06	704	0.2-	0.4-
1995 09 25	327	0.2+	0.0	1998 05 01	704	0.7+	0.3-	1999 10 06	691	0.2-	0.2-
1995 09 25	327	0.8-	0.6-	1998 05 01	704	0.0	0.2-	1999 10 06	704	0.1-	0.0
1995 09 25	327	0.3+	0.3+	1998 05 01	704	1.4+	0.9-	1999 10 06	704	0.0	0.2-
1995 09 25	327	0.6-	0.0	1998 05 01	704	0.6-	0.7+	1999 10 06	704	0.2+	0.0
1995 09 25	327	0.1-	0.1+	1998 05 22	704	1.1-	1.1+	1999 10 07	691	0.1-	0.1-
1995 09 25	327	0.2-	0.3-	1998 05 22	704	0.7-	0.6+	1999 10 07	691	0.1-	0.2+
1995 09 27	327	0.7-	0.0	1998 05 22	704	0.1+	0.0	1999 10 07	691	0.7-	0.5-
1995 09 27	327	0.1+	0.2+	1998 05 22	704	1.5-	0.5-	1999 10 07	704	0.1-	1.1-
1995 09 27	327	0.3-	0.7-	1998 05 22	704	(3.5-	3.3+)	1999 10 07	704	0.1+	0.4-
1995 09 27	327	0.2+	0.2-	1998 05 24	704	0.2-	0.6-	1999 10 07	704	1.1-	0.8-
1995 10 15	327	0.9+	0.1+	1998 05 24	704	1.1+	0.7-	1999 10 07	704	0.1+	0.2+
1995 10 15	327	0.3+	0.1+	1998 05 24	704	1.2-	0.7+	1999 10 07	704	0.7+	1.0+
1995 10 15	327	0.2+	0.4+	1998 05 24	704	0.0	1.0+	1999 10 09	691	0.1-	0.4-
1995 10 25	046	0.1-	0.4+	1998 05 24	704	1.3-	0.4-	1999 10 09	691	0.1-	0.2-
1995 10 25	046	0.3-	1.1+	1999 09 12	703	0.4-	0.3-	1999 10 09	691	0.1-	0.2-
1995 10 25	046	0.7-	0.7+	1999 09 12	703	0.1-	0.3+	1999 10 10	704	0.6-	0.0
1995 10 25	046	0.5-	0.9+	1999 09 12	703	1.1+	0.0	1999 10 10	704	0.4+	0.6-
1995 10 25	046	0.6-	0.6+	1999 09 12	703	1.1+	0.4+	1999 10 10	704	0.3-	0.5-
1995 11 26	691	0.3+	0.1-	1999 09 14	703	0.3+	0.3+	1999 10 10	704	0.6-	0.2-
1995 11 26	691	0.2-	0.6+	1999 09 14	703	0.3+	1.2+	1999 10 10	704	0.2-	0.4-
1995 11 26	691	0.1-	0.3-	1999 09 14	703	0.2-	0.3-	1999 10 12	691	0.3-	0.0
1995 11 27	691	0.1-	0.3-	1999 09 14	703	0.1+	1.0+	1999 10 12	691	0.1-	0.0
1995 11 27	691	0.2+	0.2-	1999 10 01	691	0.3+	0.1-	1999 10 12	691	0.2-	0.1-
1995 11 27	691	0.1+	0.6-	1999 10 01	691	0.3+	0.1-	1999 10 15	704	0.1-	0.1-
1998 04 21	704	1.7+	0.6-	1999 10 01	691	0.5+	0.2-	1999 10 15	704	0.6+	0.4+
1998 04 21	704	0.2+	0.5-	1999 10 02	703	0.6+	0.7+	1999 10 15	704	0.0	0.1+
1998 04 21	688	0.2+	0.3+	1999 10 02	703	0.3-	0.0	1999 10 15	704	0.4-	1.6+
1998 04 21	688	0.2+	0.4+	1999 10 02	703	0.2-	0.1-	1999 10 15	704	1.2+	0.2+
1998 04 21	704	1.0+	0.4+	1999 10 02	703	0.1+	0.7+	1999 10 20	704	0.3+	0.2+
1998 04 21	688	0.4+	0.4+	1999 10 03	704	0.5-	0.4-	1999 10 20	704	0.0	0.3-
1998 04 21	704	0.5-	1.5+	1999 10 03	704	0.2+	0.1-	1999 10 20	704	0.2+	0.1+
1998 04 21	704	0.2-	0.7+	1999 10 03	704	0.6+	0.1-	1999 10 20	704	0.2+	0.2+
1998 04 22	704	0.5+	0.3-	1999 10 03	704	0.9-	0.2-	1999 10 20	704	0.1+	0.2+
1998 04 22	704	0.4-	0.8+	1999 10 06	691	0.1-	0.1-				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5	Williams									
<i>M</i>	80.52876		(2000.0)	P			Q			
<i>n</i>	0.25494988	ω	90.70405	−0.11098553			+0.99372465			
<i>a</i>	2.4631990	Ω	172.87868	−0.95061666			−0.10206775			
<i>e</i>	0.1040625	<i>i</i>	6.44298	−0.28984511			−0.04575465			
<i>P</i>	3.87 <th><i>H</i></th> <td>14.8</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td colspan="3">1</td></td>	<i>H</i>	14.8	<i>G</i>	0.15 <th><i>U</i></th> <td colspan="3">1</td>	<i>U</i>	1			
Residuals in seconds of arc										
1994 04 03	691	0.0	0.1+	1998 04 21	704	0.1+	0.7+	1999 10 02	704	0.2+ 0.2+
1994 04 03	691	0.1+	0.1−	1998 04 21	704	0.8+	1.2+	1999 10 02	704	0.0 0.0
1994 04 03	691	0.0	0.2−	1998 04 22	704	0.2−	0.2+	1999 10 02	704	0.1+ 0.6+
1995 08 24	809	0.6−	1.5−	1998 04 22	704	0.0	0.4−	1999 10 02	704	0.5− 0.1−
1995 08 25	809	1.0−	0.5−	1998 04 22	704	0.2+	0.7−	1999 10 02	704	0.0 0.1−
1995 08 25	809	0.8−	1.6−	1998 04 22	704	0.0	0.7−	1999 10 07	703	0.7+ 1.6+
1995 08 26	809	(3.1+ 4.0+)		1998 04 22	704	0.3+	1.4−	1999 10 07	703	0.2− 0.1−
1995 09 01	809	0.2+	0.4+	1998 05 01	704	0.3−	1.3−	1999 10 07	703	0.4− 0.2−
1995 09 17	691	0.8−	0.1+	1998 05 01	704	0.3−	1.2+	1999 10 07	703	0.2− 0.3+
1995 09 17	691	0.6−	0.1+	1998 05 01	704	0.7−	0.6+	1999 10 07	704	0.2− 0.6−
1995 09 17	691	0.7−	0.0	1998 05 01	704	0.3+	0.7+	1999 10 07	704	0.5+ 0.6+
1995 09 18	809	1.1+	0.2+	1998 05 01	704	(5.5+ 3.5+)		1999 10 07	704	0.1+ 0.5−
1995 09 19	809	0.7+	0.4−	1998 05 25	699	1.2+ 0.5+		1999 10 07	704	0.3− 1.2−
1995 09 19	809	0.8+	0.3−	1998 05 25	699	0.6+ 1.1+		1999 10 07	704	0.3− 0.0
1995 09 20	809	0.6+	0.9−	1998 05 25	699	0.6+ 0.0		1999 10 09	704	0.1+ 0.5+
1995 09 20	809	(4.4− 2.8−)		1999 09 08	699	0.3+ 1.7+		1999 10 09	704	0.2− 0.1+
1995 09 22	809	(2.2− 1.4−)		1999 09 08	699	0.4+ 1.1+		1999 10 09	704	0.3− 0.1−
1995 09 22	809	1.2+ 0.5−		1999 09 09	704	0.6− 0.3−		1999 10 09	704	0.3− 0.4+
1995 09 22	691	0.6− 0.1+		1999 09 09	704	0.1+ 0.3−		1999 10 09	704	0.0 0.3+
1995 09 22	691	0.5− 0.0		1999 09 09	704	0.1− 0.5−		1999 10 15	704	0.3+ 0.3+
1995 09 22	691	0.4− 0.0		1999 09 09	704	0.2− 0.6−		1999 10 15	704	0.7− 0.2+
1995 09 23	809	1.0+ 0.9+		1999 09 09	704	0.1+ 0.4−		1999 10 15	704	0.2+ 0.1+
1995 09 24	809	1.0+ 0.3+		1999 09 30	703	0.5− 0.4+		1999 10 15	704	0.1− 0.3+
1998 04 21	704	0.1− 0.1+		1999 09 30	703	0.8+ 0.1+		1999 10 15	704	0.2+ 0.2+
1998 04 21	704	1.9− 0.1+		1999 09 30	703	0.0 0.7+				
1998 04 21	704	0.2− 0.1+		1999 09 30	703	0.3− 0.0				

(11981)* 1995 UY₁ = 1997 EZ₂₀

Discovered 1995 Oct. 20 at the Osservatorio S. Vittore, Bologna.

Id. G. V. Williams (*MPC* 29303)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams		
M	236.18017		(2000.0)	P	Q	
n	0.22779737	ω	157.61755	-0.49781450	-0.86583755	
a	2.6552387	Ω	322.18647	+0.78283782	-0.42375019	
e	0.0641668	i	4.68355	+0.37329032	-0.26600962	
P	4.33	H	14.1	G	0.15	
					U	1

Residuals in seconds of arc										
1993 04 18	413	0.6+	1.1+	1999 09 07	704	1.2+	0.0	1999 10 07	704	0.3+ 0.4-
1995 10 20	552	0.0	0.4-	1999 09 07	704	0.2+	0.3+	1999 10 07	704	0.2- 0.4-
1995 10 20	552	0.2+	0.1+	1999 09 07	704	(2.1+ 0.7-)		1999 10 07	704	0.4- 0.4-
1995 10 20	552	0.3+	0.5-	1999 09 07	704	0.7+	0.1+	1999 10 07	704	0.6- 0.4+
1995 10 23	552	0.3-	0.7+	1999 09 07	704	1.8+	0.7-	1999 10 07	704	0.2- 0.7+
1995 10 23	552	0.7-	0.1-	1999 09 07	704	0.5+	0.5+	1999 10 09	704	0.3- 0.4-
1995 10 23	552	0.2-	0.5+	1999 09 07	704	0.4+	0.6+	1999 10 09	704	0.2+ 0.5+
1995 10 25	552	0.3+	0.6+	1999 09 08	704	0.1-	0.4+	1999 10 09	704	0.0 0.1+
1995 10 25	552	0.1-	1.2+	1999 09 08	704	0.3-	0.8+	1999 10 09	704	1.0- 0.2+
1995 11 18	552	0.3+	0.4-	1999 09 08	704	0.3+	0.1+	1999 10 13	704	0.3- 0.3+
1995 11 18	552	0.6-	1.0-	1999 09 08	704	0.3-	0.3-	1999 10 13	704	0.0 0.2-
1995 11 18	552	0.4+	0.2+	1999 09 09	704	0.0	0.0	1999 10 13	704	0.2+ 0.1+
1997 03 04	691	0.1-	0.4-	1999 09 09	704	0.3-	0.3-	1999 10 13	704	0.4- 0.1-
1997 03 04	691	0.1-	0.1-	1999 09 09	704	0.9+	0.8+	1999 10 13	704	0.7- 0.0
1997 03 04	691	0.4-	0.9-	1999 09 09	704	0.4+	0.4+	1999 10 15	704	0.8- 0.1-
1997 03 11	691	0.2-	0.0	1999 09 09	704	0.4+	0.0	1999 10 15	704	0.6- 0.2-
1997 03 11	691	0.3-	0.0	1999 09 09	704	0.3+	0.6-	1999 10 15	704	0.6- 0.3-
1997 03 11	691	0.8-	0.1-	1999 09 09	704	0.4-	0.6+	1999 10 15	704	0.3- 0.3-
1997 04 02	552	0.2+	0.9+	1999 09 09	704	0.2+	0.9+	1999 10 15	704	0.5- 0.7-
1997 04 02	552	0.5+	0.3+	1999 09 09	704	0.3+	0.1+	1999 10 16	704	1.0- 0.3+

1997 04 03	552	0.3+	0.0	1999 09 09	704	0.1−	0.3+	1999 10 16	704	0.3−	0.1−
1997 04 03	552	0.7+	0.3−	1999 10 04	704	0.2−	0.4−	1999 10 16	704	0.6−	0.3−
1999 08 31	552	0.2−	0.3−	1999 10 04	704	0.4−	1.0+	1999 10 16	704	0.2+	0.7−
1999 08 31	552	0.4+	1.0−	1999 10 04	704	0.2+	0.3−	1999 10 16	704	0.3−	1.1−
1999 09 07	704	1.8+	2.0−	1999 10 04	704	0.2−	0.0				
1999 09 07	704	0.7+	0.1+	1999 10 04	704	0.1+	1.7+				

(11982)* 1995 UF₆

Discovered 1995 Oct. 25 by Y. Shimizu and T. Urata at the Nachi-Katsuura

Observatory.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	4.00088		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22522701	ω	274.55404	+0.78609423	+0.59612401
a	2.6754021	Ω	48.95456	-0.44547096	+0.72962855
e	0.1877158	i	12.51094	-0.42849910	+0.33507961
P	4.38	H	13.5	G 0.15	U 1

Residuals in seconds of arc										
1995 10 25	905	1.3-	0.7+	1997 03 04	385	0.2-	1.0+	1999 09 11	704	0.2- 0.1+
1995 10 25	905	1.7+	1.0-	1997 03 04	385	0.6-	0.2-	1999 09 11	704	0.6- 0.6-
1995 10 26	905	0.8-	0.5+	1998 03 24	704	0.4+	0.2-	1999 09 11	704	0.6- 0.0
1995 10 26	905	0.6+	0.5-	1998 03 24	704	0.5-	0.7+	1999 09 11	704	1.0- 0.4-
1995 10 27	905	0.3-	0.6-	1998 03 24	704	0.8-	0.7-	1999 09 11	704	1.0- 0.6-
1995 10 27	905	0.4-	0.2+	1998 03 24	704	0.4-	0.9-	1999 09 19	385	0.1+ 0.4+
1995 10 30	905	0.8-	1.3+	1998 03 24	704	0.6-	0.6+	1999 09 19	385	0.4+ 0.1+
1995 10 30	905	0.7-	0.9-	1998 04 20	704	0.8-	0.4+	1999 09 19	385	0.1+ 0.0
1995 11 03	385	0.8+	0.1-	1998 04 20	704	1.5+	0.4-	1999 09 29	704	0.5+ 0.1-
1995 11 03	385	1.3+	0.2+	1998 04 20	704	0.9-	0.7-	1999 09 29	704	0.6+ 0.3-
1995 11 03	385	0.4+	0.0	1998 04 20	704	0.5-	0.4+	1999 09 29	704	0.5+ 0.6-
1995 11 12	905	0.4+	0.0	1998 04 20	704	0.8-	1.2-	1999 09 29	704	1.3+ 0.6+
1995 11 12	905	1.2+	0.9-	1998 04 21	704	0.5+	0.1-	1999 09 29	704	0.1- 0.6+
1995 12 17	385	0.2-	0.3+	1998 04 21	704	0.7-	1.3-	1999 09 30	704	0.8+ 0.4+
1995 12 17	385	0.7-	0.5-	1998 04 21	704	0.1+	0.9-	1999 09 30	704	0.5+ 0.4+
1995 12 17	385	1.0+	0.2-	1998 04 21	704	0.0	0.4-	1999 09 30	704	0.4+ 0.2+
1995 12 23	566	0.3-	0.8-	1998 04 21	704	0.1+	0.9-	1999 09 30	704	0.3+ 0.2+
1995 12 23	566	0.0	0.7-	1998 04 24	704	0.5-	0.4-	1999 09 30	704	0.7+ 0.3-
1995 12 23	566	0.3+	0.6-	1998 04 24	704	0.4+	0.6+	1999 10 02	385	0.3+ 0.0
1996 01 13	385	0.9+	0.9-	1998 04 24	704	0.3-	0.4+	1999 10 02	385	1.1- 0.1+
1996 01 13	385	0.1-	0.3-	1998 04 24	704	0.3+	0.5+	1999 10 02	385	0.6+ 0.5-
1996 01 13	385	0.1+	0.9-	1998 04 24	704	0.1-	0.9+	1999 10 03	888	0.2- 0.4-
1997 01 31	385	0.5-	0.2+	1998 05 16	704	1.1-	0.6-	1999 10 03	888	0.2+ 0.2-
1997 01 31	385	0.8+	0.4-	1998 05 16	704	0.6-	0.6-	1999 10 11	385	0.5- 0.6-
1997 02 04	385	0.2+	0.9+	1998 05 16	704	1.0+	1.6-	1999 10 11	385	0.8- 0.6-
1997 02 04	385	0.6+	0.1-	1998 05 16	704	0.3+	0.2-			

(11983)* 1995 U

1995 11 18	411	0.1+	0.0	1998 05 24	704	0.6+	0.2+	1999 10 07	704	0.4-	0.7+
1995 11 27	411	0.1+	0.8+	1998 05 24	704	0.1-	0.2-	1999 10 07	704	0.4-	0.6+
1995 11 27	411	0.9+	0.5-	1998 05 24	704	0.7-	0.8-	1999 10 07	704	0.1-	0.2+
1995 11 30	327	0.3+	0.1+	1999 09 09	704	0.3-	0.4+	1999 10 16	704	0.2-	0.4+
1995 11 30	327	0.1-	0.4-	1999 09 09	704	0.4+	0.5+	1999 10 16	704	0.2+	0.3+
1995 11 30	327	0.2+	0.3-	1999 09 09	704	0.3+	0.1-	1999 10 16	704	0.2-	0.2+
1995 12 02	327	0.6+	0.9+	1999 09 09	704	0.4-	0.5+	1999 10 16	704	0.3-	0.6+
1995 12 02	327	0.6+	0.6+	1999 09 09	704	0.6-	0.4+	1999 10 16	704	0.1+	0.4+
1995 12 02	327	0.1-	0.4+	1999 09 13	704	0.1+	0.2-				
1997 04 02	046	0.2+	0.2-	1999 09 13	704	0.1-	0.3+				

(11984)* 1995 UK₄₅ = 1996 YQ = 1998 HF₈₀ = 1999 RF₁₆₄

Discovered 1995 Oct. 20 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 35925)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	47.74483		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.23137036	ω	342.72440	+0.25289836		+0.96724060	
<i>a</i>	2.6278318	Ω	301.91963	-0.88455447		+0.22190839	
<i>e</i>	0.0795355	<i>i</i>	1.49143	-0.39192578		+0.12329758	
<i>P</i>	4.26	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1995 09 26	691	0.2+	0.3+	1998 05 01	704	1.4-	0.0	1999 09 14	704	0.0	0.0
1995 09 26	691	0.2+	0.2+	1998 05 01	704	0.3-	0.2+	1999 09 14	704	0.9+	0.5-
1995 09 26	691	0.1+	0.3+	1998 05 01	704	0.7-	0.1+	1999 09 14	704	0.2+	0.3-
1995 10 20	010	(1.0-	3.3+)	1998 05 01	704	0.7-	1.5+	1999 09 14	703	0.2-	0.7+
1995 10 20	010	(0.6+	2.7+)	1998 05 01	566	0.2+	0.7-	1999 09 14	703	0.2-	0.5+
1995 10 20	010	(0.2-	2.8+)	1998 05 01	566	0.7+	0.6-	1999 09 14	703	0.4+	0.3+
1995 10 23	010	0.3-	0.4+	1998 05 01	566	1.0+	0.6-	1999 09 14	703	0.1-	0.5+
1995 10 23	010	0.0	1.2-	1998 05 26	691	0.2-	0.0	1999 09 18	691	0.1-	0.3+
1995 10 23	010	0.3-	0.3+	1998 05 26	691	0.7+	0.2+	1999 09 18	691	0.0	0.3+
1996 12 20	411	0.8+	0.5+	1999 09 07	704	0.2+	0.4-	1999 09 18	691	0.0	0.2+
1996 12 20	411	0.2+	0.6+	1999 09 07	704	0.1-	0.2+	1999 10 05	704	0.2+	0.6+
1996 12 21	411	0.2-	0.1+	1999 09 07	704	0.1-	0.4-	1999 10 05	704	0.4-	0.1+
1996 12 21	411	0.6-	0.1-	1999 09 07	704	0.3-	0.8-	1999 10 05	704	0.2-	0.4+
1998 04 21	704	0.2+	0.6+	1999 09 07	704	0.4+	0.5-	1999 10 05	704	0.2+	0.0
1998 04 21	704	0.1-	0.2+	1999 09 09	704	0.3-	0.1-	1999 10 05	704	0.3-	0.2-
1998 04 21	704	0.6-	0.0	1999 09 09	704	0.2+	1.1-	1999 10 08	704	0.6-	0.2+
1998 04 21	704	0.4+	0.3-	1999 09 09	704	0.1-	0.1-	1999 10 08	704	0.0	1.0+
1998 04 21	704	0.3-	0.7+	1999 09 09	704	0.4-	0.4-	1999 10 08	704	0.1+	0.5+
1998 04 22	704	0.2+	0.5+	1999 09 09	704	0.0	0.2-	1999 10 15	704	0.0	0.1-
1998 04 22	704	1.0-	0.2+	1999 09 11	699	0.2-	0.2-	1999 10 15	704	0.1-	0.7+
1998 04 22	704	0.9+	0.1+	1999 09 11	699	0.2-	0.7+	1999 10 15	704	0.4+	0.7-
1998 04 22	704	0.8+	0.5-	1999 09 11	699	0.4-	0.6+	1999 10 15	704	0.2-	0.8-
1998 04 22	704	0.8+	0.2-	1999 09 14	704	0.0	0.4+				
1998 05 01	704	0.1+	0.2+	1999 09 14	704	0.6+	0.2-				

(11985)* 1995 VG = 1981 UP₁₄ = 1986 WJ₃

Discovered 1995 Nov. 1 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 26183)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	264.63953		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.21487944	ω	173.42460	-0.10742710		-0.99366721	
<i>a</i>	2.7606169	Ω	282.73875	+0.91062749		-0.08504517	
<i>e</i>	0.0489813	<i>i</i>	1.93519	+0.39902004		-0.07343570	
<i>P</i>	4.59	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1981 10 23	095	1.0-	1.0+	1997 03 11	886	0.4+	1.4-	1999 10 07	704	0.0	0.9-
1986 11 28	033	0.5+	0.3-	1998 06 06	689	0.3-	0.6-	1999 10 09	704	0.2+	0.3-
1986 11 28	033	0.2+	0.1-	1999 09 07	704	0.4-	0.1-	1999 10 09	704	0.3+	0.0
1986 11 28	033	0.1+	0.2-	1999 09 07	704	0.2-	0.1+	1999 10 09	704	0.3+	0.3-
1986 11 28	033	0.1-	0.2+	1999 09 07	704	0.5-	0.1-	1999 10 09	704	0.5+	0.0
1986 11 29	033	0.5+	0.8-	1999 09 07	704	0.4-	0.0	1999 10 09	704	0.5+	0.4-
1995 11 01	411	0.3+	1.2-	1999 09 07	704	0.6-	0.6-	1999 10 10	704	0.4+	0.2-

1995 11 01	411	1.0-	0.6+	1999 09 08	699	0.2-	0.8+	1999 10 10	704	0.4+	0.2-
1995 11 02	411	0.1+	0.2+	1999 09 08	699	0.4-	0.2-	1999 10 10	704	0.4+	0.4-
1995 11 02	411	0.2+	0.0	1999 09 08	699	0.3-	0.7+	1999 10 10	704	0.4+	0.2-
1995 11 03	411	0.7+	0.8+	1999 09 29	703	0.0	0.5+	1999 10 10	704	0.0	0.4-
1995 11 03	411	0.2-	0.4+	1999 09 29	703	0.4-	0.2+	1999 10 11	704	0.4+	0.2-
1995 11 11	411	0.5-	0.0	1999 09 29	703	0.5-	0.4+	1999 10 11	704	0.3+	0.3-
1995 11 11	411	0.2+	0.5-	1999 09 29	703	0.3-	0.3+	1999 10 11	704	0.5+	0.6-
1995 12 17	399	0.8+	0.4+	1999 10 04	704	0.3+	0.4+	1999 10 11	704	0.5+	1.0-
1995 12 17	399	1.5-	2.1-	1999 10 04	704	0.2+	0.9+	1999 10 11	704	0.7-	1.0-
1995 12 19	399	0.7-	0.2-	1999 10 04	704	0.0	0.5+	1999 10 13	704	0.4+	0.0
1995 12 19	399	(2.4-	0.7-)	1999 10 04	704	0.0	0.8+	1999 10 13	704	0.5+	0.0
1995 12 31	327	0.3+	0.6+	1999 10 04	704	0.1+	0.7+	1999 10 13	704	0.5+	0.2+
1995 12 31	327	0.6+	0.5+	1999 10 07	703	0.5-	0.1+	1999 10 13	704	0.7+	0.4+
1995 12 31	327	0.5-	0.2+	1999 10 07	703	0.8-	0.3+	1999 10 13	704	1.0+	1.0+
1996 01 04	327	0.1-	0.1+	1999 10 07	703	0.6-	0.4+	1999 10 15	704	0.5+	0.2-
1996 01 04	327	0.1+	0.2+	1999 10 07	703	0.0	0.5-	1999 10 15	704	0.3-	0.1-
1996 01 04	327	0.3-	0.2+	1999 10 07	704	0.4+	0.1+	1999 10 15	704	0.4-	0.5-
1997 03 09	886	0.1+	1.1+	1999 10 07	704	0.2+	0.5+	1999 10 15	704	0.7-	1.2-
1997 03 09	886	0.9-	1.0+	1999 10 07	704	0.2-	0.1+				
1997 03 11	886	0.3+	1.3-	1999 10 07	704	0.1+	0.5-				

(11986)* 1995 VP = 1985 SF₅ = 1990 VL₇

Discovered 1995 Nov. 3 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 26184)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	154.97236		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.21065466	ω	307.62943	-0.92163091		+0.37443914	
<i>a</i>	2.7974049	Ω	254.56430	-0.31433778		-0.87435550	
<i>e</i>	0.0559989	<i>i</i>	6.07065	-0.22757027		-0.30870341	
<i>P</i>	4.68	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1985 09 21	095	0.7-	1.5+	1999 07 23	704	0.1-	0.8+	1999 09 30	703	0.6-	0.1+
1990 10 22	675	0.3-	1.4+	1999 07 23	704	0.0	1.0-	1999 09 30	703	0.5-	0.1+
1990 10 22	675	0.6+	1.3+	1999 07 23	704	0.3+	0.3-	1999 09 30	703	0.5-	0.0
1990 11 11	675	0.1-	1.1-	1999 09 08	704	0.0	0.3-	1999 10 04	704	0.5+	0.1+
1990 11 11	675	0.3-	1.1-	1999 09 08	704	0.4+	0.2-	1999 10 04	704	0.3+	0.4+
1990 11 13	675	0.5+	0.6-	1999 09 08	704	0.2+	0.0	1999 10 04	704	0.3-	0.3+
1990 11 13	675	0.5+	1.5-	1999 09 08	704	0.2-	0.0	1999 10 04	704	0.7+	0.4-
1992 01 28	691	0.2+	0.0	1999 09 08	704	0.1-	0.0	1999 10 04	704	0.1+	0.4-
1992 01 28	691	0.1+	0.1-	1999 09 09	704	0.3+	0.1+	1999 10 09	703	0.2-	0.5+
1992 01 28	691	0.2-	0.1+	1999 09 09	704	0.0	0.2+	1999 10 09	703	0.5-	0.2-
1995 11 01	411	1.4+	1.1+	1999 09 09	704	0.1+	0.7+	1999 10 09	703	0.0	0.1+
1995 11 01	411	0.7+	0.4-	1999 09 09	704	0.0	0.2+	1999 10 09	703	0.6-	0.9+
1995 11 02	411	0.9-	1.2-	1999 09 09	704	0.3+	0.2-	1999 10 10	704	0.2+	0.0
1995 11 02	411	0.1+	0.3-	1999 09 09	704	0.1-	0.0	1999 10 10	704	0.3+	0.2+
1995 11 03	411	0.9-	1.4+	1999 09 09	704	0.4+	0.0	1999 10 10	704	0.3+	0.3+
1995 11 03	411	0.5+	0.6+	1999 09 09	704	0.1+	0.0	1999 10 10	704	0.2+	0.4+
1995 11 11	411	0.8-	0.4+	1999 09 09	704	0.0	0.6-	1999 10 10	704	0.2+	0.5+
1995 11 11	411	0.3-	0.0	1999 09 09	704	0.4-	0.2-	1999 10 20	704	1.0+	0.5-
1995 12 27	566	(1.5+	3.2-)	1999 09 18	703	0.8-	0.0	1999 10 20	704	0.3+	0.4-
1995 12 27	566	(1.7+	3.1-)	1999 09 18	703	0.6-	0.0	1999 10 20	704	0.4+	0.8-
1995 12 27	566	(1.6+	3.2-)	1999 09 18	703	0.7-	0.2+	1999 10 20	704	0.5+	1.1-
1999 07 23	704	0.5+	0.6+	1999 09 18	703	0.5-	0.1+	1999 10 20	704	0.5+	1.3-
1999 07 23	704	0.1-	0.4-	1999 09 30	703	0.3-	0.4+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	214.57380		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.22197382	ω	90.91790	-0.92349333		-0.31097935	
<i>a</i>	2.7014787	Ω	70.98998	+0.18187649		-0.87046938	
<i>e</i>	0.0927115	<i>i</i>	13.74327	+0.33775881		-0.38154279	
<i>P</i>	4.44	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1964 11 09	330	(7.9- 2.3+)	1995 12 18	400	0.4- 0.2-	1999 09 14	704 1.0+ 1.2-
1964 11 27	330	(7.1- 1.0+)	1997 03 03	327	0.5+ 0.6+	1999 09 14	704 1.0+ 0.2-
1983 01 09	095	(1.5- 2.9+)	1997 03 03	327	0.5+ 0.7+	1999 09 14	704 0.0 1.4-
1993 06 16	675	(0.5+ 3.0-)	1997 03 03	327	0.4+ 0.5+	1999 10 02	704 0.4- 0.2+
1993 06 20	675	0.5+ 0.5+	1997 03 30	367	0.2- 0.0	1999 10 02	704 0.8- 0.6+
1993 06 20	675	0.4- 0.1+	1997 03 30	367	0.5- 0.1-	1999 10 02	704 0.1- 0.2+
1995 11 15	400	0.6+ 1.5+	1997 04 07	367	0.8- 0.3+	1999 10 02	704 0.6- 0.3+
1995 11 15	400	1.4+ 0.7-	1997 04 07	367	0.5- 0.2+	1999 10 02	704 0.1+ 0.1+
1995 11 16	400	(0.9+ 3.5-)	1997 04 09	689	0.6+ 0.1+	1999 10 08	704 0.3- 0.7+
1995 11 16	400	(0.7+ 2.5-)	1997 04 28	367	0.3+ 0.9-	1999 10 08	704 0.4- 0.7+
1995 11 25	400	0.5- 0.3-	1997 04 28	367	0.4+ 0.6-	1999 10 08	704 0.7- 0.5+
1995 11 25	400	0.5- 0.9-	1999 09 14	704	0.8+ 0.1+	1999 10 08	704 0.4- 0.5+
1995 12 18	400	0.2- 0.1-	1999 09 14	704	0.7+ 0.5-	1999 10 08	704 0.4- 0.6+

(11988)* 1995 WB = 1978 WP₁₁ = 1982 UX₁ = 1986 TS₁₄

Discovered 1995 Nov. 16 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 26184)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	305.14431		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.23090100	ω	323.06811	+0.32123923		-0.94612581	
<i>a</i>	2.6313917	Ω	108.16240	+0.87875558		+0.28182129	
<i>e</i>	0.1182123	<i>i</i>	2.45112	+0.35297874		+0.15944499	
<i>P</i>	4.27	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc (or two decimals in units of degrees)							
1978 11 29	675	0.4- 0.4-	1997 04 06	611	1.0+ 0.5-	1999 10 07	704 0.8+ 0.7-
1978 11 30	675	0.4+ 1.3-	1999 09 05	699	0.3- 1.3+	1999 10 08	704 0.5+ 0.4-
1978 12 03	323	0.2- 1.6+	1999 09 05	699	0.5- 0.4+	1999 10 08	704 0.9+ 0.2-
1978 12 03	323	0.8+ 0.8+	1999 09 05	699	1.0- 1.0+	1999 10 08	704 1.7+ 1.3-
1982 10 16	046	0.7+ 1.7-	1999 09 15	106	0.4+ 0.7+	1999 10 08	704 1.5+ 1.1-
1982 10 16	046	0.2- 1.4-	1999 09 15	106	0.1- 1.1+	1999 10 09	704 0.3+ 0.0
1986 10 06	095(0.03+ 0.01+)		1999 09 15	106	0.4+ 0.3+	1999 10 09	704 0.2+ 0.4+
1995 11 16	411	0.5- 0.7+	1999 10 03	703	0.4- 0.6+	1999 10 09	704 0.2- 0.1-
1995 11 16	411	0.8+ 0.3+	1999 10 03	703	0.9- 0.0	1999 10 09	704 0.2+ 0.1+
1995 11 17	411	0.2- 0.2+	1999 10 03	703	0.3- 0.2+	1999 10 09	704 0.0 0.1-
1995 11 17	411	0.4+ 1.7+	1999 10 03	703	0.1- 0.4+	1999 10 11	704 0.4+ 0.4-
1995 11 24	411	0.4- 0.5-	1999 10 04	704	0.3+ 0.2+	1999 10 11	704 0.1- 0.8-
1995 11 24	411	1.3- 0.7-	1999 10 04	704	0.5- 0.2+	1999 10 11	704 0.1+ 1.0-
1997 04 01	611	0.3- 0.8-	1999 10 04	704	0.2+ 0.3-	1999 10 11	704 0.4+ 0.7-
1997 04 01	611	0.8+ 1.2-	1999 10 04	704	0.3- 0.1+	1999 10 11	704 0.8- 1.2-
1997 04 02	611	0.2- 1.3-	1999 10 04	704	0.6- 0.6+	1999 10 15	704 0.0 0.3+
1997 04 02	611	0.7+ 0.2+	1999 10 07	704	0.0 0.1-	1999 10 15	704 0.1+ 0.2-
1997 04 02	611	1.1- 0.2-	1999 10 07	704	0.3- 0.1+	1999 10 15	704 0.2- 0.5+
1997 04 02	611	0.1- 0.4-	1999 10 07	704	0.7- 0.6+	1999 10 15	704 0.0 0.2+
1997 04 06	611	1.9- 1.7+	1999 10 07	704	0.1- 0.8-		

(11989)* 1995 WN₅ = 1974 DE = 1983 AN₆ = 1985 QF₆

Discovered 1995 Nov. 24 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 26410)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	301.12839		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.21682303	ω	2.16531	+0.35316139		-0.93038146	
<i>a</i>	2.7440948	Ω	67.16606	+0.85675041		+0.27940061	
<i>e</i>	0.0324830	<i>i</i>	6.12415	+0.37584008		+0.23733024	
<i>P</i>	4.55	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1974 02 19	029	0.3- 0.4-	1995 12 22	411	0.2+ 0.3+	1999 10 04	704 0.4- 0.0
1974 02 20	029	1.6+ 0.4+	1997 01 09	327	1.2+ 0.1-	1999 10 04	704 0.4+ 0.2-
1983 01 15	095	1.8- 0.2-	1997 01 09	327	0.1+ 0.2+	1999 10 04	704 0.3+ 0.1-
1985 08 24	095	1.0+ 1.8-	1997 01 09	327	0.3- 0.4-	1999 10 04	704 0.1+ 0.8+
1994 09 07	675	0.7- 0.7+	1997 01 09	327	0.3- 0.2-	1999 10 07	704 0.1- 0.5+
1994 09 07	675	0.2- 0.7+	1998 06 24	704	0.6- 0.4+	1999 10 07	704 0.1- 0.3+
1994 10 01	675	0.5- 0.7-	1998 06 24	704	0.2+ 0.2-	1999 10 07	704 0.1- 0.1+
1994 10 01	675	0.5+ 1.9-	1998 06 24	704	0.4- 0.7-	1999 10 07	704 0.5+ 0.1+
1995 11 24	411	0.5- 0.9-	1998 06 24	704	0.0 0.3-	1999 10 07	704 0.8- 0.2-
1995 11 24	411	0.4+ 0.2-	1998 06 24	704	0.3+ 0.1-	1999 10 09	704 0.3+ 0.0
1995 11 26	411	0.8- 0.1-	1998 06 26	704	0.2- 0.3-	1999 10 09	704 0.2+ 0.0
1995 11 26	411	0.2- 0.1-	1998 06 26	704	0.6+ 0.5+	1999 10 09	704 0.3+ 0.2+
1995 11 28	411	0.0 0.1+	1998 06 26	704	1.2+ 0.5+	1999 10 09	704 0.1+ 0.1+
1995 11 28	411	0.6+ 0.1+	1998 06 26	704	0.4- 0.7+	1999 10 09	704 0.0 0.1-
1995 12 01	411	0.7- 0.2+	1998 06 26	704	0.7- 1.3+	1999 10 15	704 0.5+ 0.2+
1995 12 01	411	1.1- 0.1-	1999 09 15	106	0.8- 0.2+	1999 10 15	704 0.4+ 0.5+
1995 12 10	411	0.9+ 1.1+	1999 09 15	106	0.8- 0.2+	1999 10 15	704 0.4- 0.2-
1995 12 10	411	0.2- 0.8+	1999 09 15	106	0.1- 0.1+	1999 10 15	704 0.2+ 0.2-
1995 12 22	411	0.4- 0.7-	1999 10 04	704	0.3+ 0.2+	1999 10 15	704 0.5+ 0.1+

(11990)* 1995 WM₆ = 1986 TM₃ = 1997 FA₂

Discovered 1995 Nov. 21 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 32466)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	256.63339		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.22495443	ω	280.72337	-0.46548118		-0.88489430	
<i>a</i>	2.6775629	Ω	197.04941	+0.83301329		-0.43153490	
<i>e</i>	0.1750815	<i>i</i>	3.32597	+0.29902530		-0.17532741	
<i>P</i>	4.38	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1986 10 04	046	1.4+ 0.2+	1998 06 26	704	0.6- 1.4+	1999 10 06	704 0.5+ 0.4-
1986 10 04	046	2.1+ 0.4-	1998 06 26	704	1.0- 1.1-	1999 10 06	704 0.5- 0.5-
1986 10 05	046	(1.9- 3.4+)	1998 06 26	704	0.1+ 0.1-	1999 10 06	704 0.0 0.4-
1986 10 05	046	1.3- 1.7-	1999 09 05	699	0.9+ 0.4+	1999 10 06	704 0.0 0.5-
1986 10 09	046	(1.1- 2.9-)	1999 09 05	699	0.6- 0.6+	1999 10 07	703 0.2+ 0.1+
1986 10 09	046	(1.8+ 2.4-)	1999 09 05	699	0.2- 1.1+	1999 10 07	703 0.1+ 0.3+
1986 10 10	046	(0.1- 2.4-)	1999 09 07	704	0.4- 0.1-	1999 10 07	703 0.2+ 0.4+
1986 10 10	046	0.7- 0.2-	1999 09 07	704	0.1- 1.0+	1999 10 07	703 0.2- 0.3+
1995 11 21	399	0.5+ 0.4-	1999 09 07	704	0.1- 0.3+	1999 10 07	704 0.5- 0.1-
1995 11 21	399	1.3- 0.3-	1999 09 07	704	0.3- 0.9+	1999 10 07	704 0.3+ 0.2-
1995 11 25	399	1.2- 0.5+	1999 09 07	704	0.2- 0.1-	1999 10 07	704 0.5- 0.6-
1995 11 25	399	0.1+ 1.1+	1999 09 14	691	1.4+ 1.4+	1999 10 07	704 0.1- 0.5-
1995 12 14	399	0.1- 0.2+	1999 09 14	691	0.1+ 0.1+	1999 10 07	704 0.8- 0.0
1995 12 14	399	0.3- 1.3+	1999 09 14	691	0.0 0.1-	1999 10 09	704 0.2+ 0.1+
1997 03 29	327	0.5+ 1.0+	1999 09 29	703	0.3- 0.2+	1999 10 09	704 0.0 0.2+
1997 03 29	327	0.4+ 0.8+	1999 09 29	703	0.0 0.1+	1999 10 09	704 0.0 0.6+
1997 03 29	327	0.4+ 0.7+	1999 09 29	703	0.5+ 0.4+	1999 10 09	704 0.0 0.6+
1997 04 01	809	(3.6+ 2.1+)	1999 09 29	703	0.0 0.5+	1999 10 09	704 0.1+ 0.6+
1997 04 01	809	(3.7+ 1.9+)	1999 10 04	704	0.3- 0.1+	1999 10 15	704 0.5+ 0.1+
1997 04 01	809	(4.3+ 1.5+)	1999 10 04	704	0.2+ 0.0	1999 10 15	704 0.3+ 0.3+
1997 04 02	327	0.1- 0.6+	1999 10 04	704	0.7- 0.0	1999 10 15	704 0.4+ 0.2+
1997 04 02	327	0.5+ 0.1+	1999 10 04	704	0.8+ 1.5-	1999 10 15	704 0.1- 0.4+
1997 04 02	327	0.2+ 0.3+	1999 10 06	704	0.6- 0.9-		

(11991)* 1995 WK₇

Discovered 1995 Nov. 27 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	323.58812		(2000.0)	<i>P</i>		<i>Q</i>	
<i>n</i>	0.21746481	ω	337.71679	+0.71661844		-0.69028085	
<i>a</i>	2.7386932	Ω	66.33691	+0.65523037		+0.61722653	
<i>e</i>	0.0022926	<i>i</i>	6.25870	+0.23902129		+0.37754969	
<i>P</i>	4.53	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 03 18	675	0.1+	0.2+	1997 06 01	327	0.0	1.5+	1999 10 04	704	0.7+	0.2-
1988 03 18	675	0.5+	1.0+	1997 06 01	327	0.4+	0.7+	1999 10 04	704	0.0	0.2-
1995 11 27	411	0.1-	0.0	1997 06 01	327	0.2-	0.0	1999 10 04	704	0.5+	0.5+
1995 11 27	411	0.1+	0.5-	1997 06 01	327	0.8+	0.0	1999 10 04	704	0.3+	0.0
1995 11 28	411	0.5-	0.0	1998 05 29	704	0.9+	0.7+	1999 10 07	704	0.5+	0.8+
1995 11 28	411	0.7+	0.2-	1998 05 29	704	1.2+	0.6+	1999 10 07	704	0.5-	0.4+
1995 12 01	411	0.2+	0.4-	1998 05 29	704	0.6-	1.4+	1999 10 07	704	0.3+	0.4+
1995 12 01	411	0.6+	0.4-	1998 05 29	704	1.8-	1.5-	1999 10 07	704	0.6-	0.3+
1995 12 09	411	0.1-	0.9+	1999 09 15	106	0.2-	0.1-	1999 10 07	704	0.5-	0.5-
1995 12 09	411	0.2-	1.0-	1999 09 15	106	0.2-	0.7+	1999 10 09	704	0.4-	0.1+
1995 12 21	411	0.8-	0.5+	1999 09 15	106	0.0	0.9+	1999 10 09	704	0.2+	0.5-
1995 12 21	411	0.2-	1.1+	1999 10 03	703	0.3-	0.6+	1999 10 09	704	0.3-	0.0
1997 04 13	327	0.3+	0.5+	1999 10 03	703	0.6-	0.6+	1999 10 09	704	0.1-	0.1-
1997 04 13	327	0.2+	0.6+	1999 10 03	703	0.1+	0.8+	1999 10 09	704	0.1-	0.0
1997 04 13	327	0.3+	0.4+	1999 10 03	703	0.8-	0.1+				

(11992)* 1995 XH = 1974 HX₁ = 1992 EM₅

Discovered 1995 Dec. 2 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 26413)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21174539	ω	311.39044	+0.99458519	-0.08533566		
<i>a</i>	2.7877901	Ω	53.58812	+0.10272733	+0.89365714		
<i>e</i>	0.1062218	<i>i</i>	4.22668	-0.01572862	-0.44056186		
<i>P</i>	4.65	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1974 04 24	805	(0.2-	5.4-)	1999 09 28	681	0.5-	1.1+	1999 10 09	704	0.3-	0.0
1974 04 25	805	1.0-	0.3+	1999 09 28	681	0.1+	0.6+	1999 10 09	704	0.1-	0.1-
1985 09 21	675	0.1+	0.2+	1999 10 03	703	0.2-	0.0	1999 10 09	704	0.0	0.0
1985 09 21	675	0.7+	1.5+	1999 10 03	703	0.1-	0.3+	1999 10 09	704	0.2-	0.2-
1992 03 01	809	0.2+	1.2+	1999 10 03	703	0.6-	0.2-	1999 10 09	704	0.1-	0.1-
1992 03 04	809	0.1-	0.3+	1999 10 03	703	0.5-	0.3+	1999 10 15	704	0.1-	0.1-
1992 03 06	809	0.1+	0.8+	1999 10 04	704	0.3+	0.2-	1999 10 15	704	0.3-	0.0
1992 04 04	809	1.7-	0.7-	1999 10 04	704	1.1+	1.3-	1999 10 15	704	0.5-	0.1-
1995 12 02	411	0.5-	0.5+	1999 10 04	704	0.7+	0.7-	1999 10 15	704	0.2-	0.2+
1995 12 02	411	0.0	0.7-	1999 10 04	704	0.4+	0.7-	1999 10 15	704	0.4-	0.1-
1995 12 04	411	0.3+	0.6-	1999 10 07	727	0.5-	0.3+	1999 10 19	704	0.5-	0.2+
1995 12 04	411	0.4+	0.3+	1999 10 07	727	0.2+	0.3-	1999 10 19	704	0.1+	0.2-
1995 12 04	411	1.5+	0.5+	1999 10 07	727	0.3-	0.1+	1999 10 19	704	0.4+	0.2+
1995 12 25	411	0.5-	0.3-	1999 10 07	704	1.6+	0.9+	1999 10 19	704	0.1-	0.5-
1995 12 25	411	0.6-	0.1+	1999 10 07	704	0.3+	0.3-	1999 10 19	704	0.1-	0.5-
1997 03 04	411	0.6+	1.2-	1999 10 07	704	0.0	0.2-				
1997 03 04	411	1.0+	1.1-	1999 10 07	704	0.0	0.7-				

(11993)* 1995 XX = 1976 JA₉

Discovered 1995 Dec. 8 at Haleakala.

Id. G. V. Williams (*MPC* 29113)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18179192	ω	245.62084	+0.11422752	+0.98971405		
<i>a</i>	3.0861688	Ω	31.31586	-0.84085752	+0.14248812		
<i>e</i>	0.0338674	<i>i</i>	9.53850	-0.52906588	-0.01277654		
<i>P</i>	5.42	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 05 02	809	0.2+	0.3+	1996 02 10	608	0.2-	0.0	1999 09 07	699	1.1+	0.5-
1995 12 08	608	0.5+	1.1-	1996 03 10	608	0.0	0.3+	1999 09 07	699	0.8-	0.5+
1995 12 08	608	0.8+	0.1-	1996 03 10	608	1.7+	1.8+	1999 09 07	699	0.2-	0.5+
1995 12 08	608	1.0+	0.5-	1996 03 11	608	0.7-	0.4+	1999 09 13	704	0.0	0.1-
1995 12 12	608	0.3-	0.3-	1996 03 11	608	(3.3-	2.8+)	1999 09 13	704	0.4-	0.0
1995 12 12	608	0.3-	0.1-	1997 02 10	608	0.5-	0.2+	1999 09 13	704	0.3-	0.2+
1995 12 22	608	1.1-	0.2+	1997 02 10	608	0.5-	0.1+	1999 09 13	704	0.4-	0.3-
1995 12 22	608	0.5-	0.2-	1997 02 13	608	0.7+	1.1+	1999 09 13	704	0.9-	0.2+

1996 01 12	608	0.1-	0.8+	1997 02 13	608	1.1+	0.3-	1999 09 30	704	0.2+	1.1+
1996 01 12	608	0.1+	0.9+	1998 05 24	704	1.3+	1.2+	1999 09 30	704	0.0	0.4+
1996 01 13	608	0.6-	1.2+	1998 05 24	704	1.0-	1.0+	1999 09 30	704	0.3+	0.9+
1996 01 13	608	0.3-	0.7+	1998 05 24	704	(2.1+	2.1+)	1999 09 30	704	0.2-	0.3-
1996 02 10	608	0.5-	0.2-	1998 05 24	704	(1.3-	4.2+)	1999 09 30	704	0.5+	0.6+

(11994)* 1995 YP = 1982 DD₃ = 1982 HM₂

Discovered 1995 Dec. 19 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 26572)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20240261	ω	164.87802	+0.13737189	+0.98917955		
<i>a</i>	2.8729317	Ω	112.99602	-0.91449134	+0.14663464		
<i>e</i>	0.0121306	<i>i</i>	3.20747	-0.38057136	+0.00470175		
<i>P</i>	4.87	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 02 20	033	0.3-	0.2-	1998 06 26	704	0.2+	0.1+	1999 10 09	704	0.6+	0.2-
1982 02 20	033	0.2+	0.4-	1998 06 26	704	0.2-	1.2+	1999 10 09	704	0.8+	0.1+
1982 02 20	033	0.6-	0.1-	1998 06 26	704	1.0-	0.1+	1999 10 09	704	0.6+	0.0
1982 04 27	033	1.0+	0.2-	1998 06 26	704	1.5-	0.4+	1999 10 09	704	0.3+	0.4+
1982 04 27	033	1.1+	0.5-	1998 06 26	704	(2.3-	1.8+)	1999 10 09	704	0.5+	0.3-
1989 09 02	675	0.6-	1.0-	1998 06 27	809	1.6-	0.6-	1999 10 11	704	0.6+	0.5+
1989 09 02	675	0.2-	0.8-	1998 06 27	809	1.2-	0.3+	1999 10 11	704	0.1+	0.3-
1994 09 11	675	0.1-	0.2-	1998 06 27	809	1.3-	0.6-	1999 10 11	704	0.3+	0.3-
1994 09 11	675	0.2+	0.8-	1998 07 26	704	2.1+	1.6+	1999 10 11	704	0.1+	0.5-
1995 12 19	411	0.2-	1.0+	1998 07 26	704	0.5+	0.8+	1999 10 11	704	1.4-	0.8-
1995 12 19	411	0.2+	0.3-	1998 07 26	704	0.1+	0.9-	1999 10 15	704	0.1-	0.0
1995 12 20	411	0.8-	1.5+	1998 07 26	704	(2.3+	0.2-)	1999 10 15	704	0.3-	0.0
1995 12 20	411	0.9-	0.3+	1999 10 04	703	0.0	0.8+	1999 10 15	704	0.1-	0.2+
1995 12 23	566	0.8-	0.8+	1999 10 04	703	0.4-	0.8+	1999 10 15	704	0.0	0.4+
1995 12 23	566	0.3-	1.0+	1999 10 04	703	0.5-	0.7+	1999 10 15	704	0.2+	0.1-
1995 12 23	566	0.3-	0.9+	1999 10 04	703	0.4-	0.6+	1999 10 15	327	0.1+	0.1-
1995 12 26	411	0.5-	0.9+	1999 10 06	120	0.1-	0.7-	1999 10 15	327	0.3-	0.3+
1995 12 26	411	0.1+	0.1+	1999 10 06	120	0.4-	0.8-	1999 10 15	327	0.4-	0.1+
1995 12 30	411	0.3+	1.1-	1999 10 07	704	1.1+	0.3+	1999 10 18	327	0.3+	0.4-
1995 12 30	411	0.4+	1.1+	1999 10 07	704	0.0	0.2+	1999 10 18	327	0.4+	0.1-
1996 01 09	411	0.3-	0.1-	1999 10 07	704	0.0	0.4-	1999 10 18	327	0.3+	0.2+
1996 01 09	411	0.5+	1.3-	1999 10 07	704	0.6+	0.7-	1999 10 19	704	0.0	0.2+
1996 01 24	411	(2.3+	0.1-)	1999 10 07	120	0.4+	1.1+	1999 10 19	704	0.2-	0.2-
1996 01 24	411	1.1+	0.5-	1999 10 07	120	0.2-	0.2-	1999 10 19	704	0.0	0.1+
1997 03 10	689	(18.6-	7.7+)	1999 10 08	120	0.4-	0.9+	1999 10 19	704	0.3+	0.4+
1998 06 26	809	1.2+	0.3+	1999 10 08	120	0.4+	0.5+	1999 10 19	704	0.1-	0.3-
1998 06 26	809	1.1+	0.3+	1999 10 08	120	0.4-	0.4-				
1998 06 26	809	0.7+	0.9+	1999 10 08	120	0.0	0.2-				

(11995)* 1995 YB₁ = 1980 DS₃ = 1994 UE₁₃

Discovered 1995 Dec. 21 by T. Kobayashi at Oizumi.

Id. T. B. Spahr (*MPC* 30666), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17857123	ω	80.23106	-0.92740721	+0.36376162		
<i>a</i>	3.1231659	Ω	121.05396	-0.37050824	-0.86134580		
<i>e</i>	0.0926335	<i>i</i>	5.83810	-0.05137621	-0.35462783		
<i>P</i>	5.52	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 02 20	095	0.0	1.2-	1998 06 16	691	0.4-	0.6+	1999 09 07	704	0.8+	0.5-
1994 10 31	691	0.6-	0.5-	1998 06 16	691	0.2+	0.6+	1999 09 07	704	0.5+	0.2+
1994 10 31	691	0.5-	0.1-	1998 06 16	691	0.2-	0.3-	1999 09 07	704	0.6+	0.4-
1994 10 31	691	0.6-	0.3-	1998 06 24	704	0.7-	0.8-	1999 09 07	704	0.0	0.1-
1995 12 21	411	0.4+	0.2-	1998 06 24	704	0.2+	0.2+	1999 09 07	704	0.5-	0.4+
1995 12 21	411	0.1-	0.3-	1998 06 24	704	0.4-	1.4+	1999 09 14	704	0.7-	0.1+
1995 12 22	411	0.0	0.5+	1998 06 24	704	0.5+	0.1+	1999 09 14	704	0.8+	0.2+
1995 12 22	411	0.4-	0.5-	1998 06 28	809	(2.7+	4.0+)	1999 09 14	704	0.3-	0.6-

1995 12 29	411	0.2-	0.7+	1998 06 28	809	(2.1+	3.6+)	1999 09 14	704	1.0+	0.7-
1995 12 29	411	0.9+	0.6+	1998 06 28	809	(2.1+	3.8+)	1999 09 14	704	0.6+	0.8-
1995 12 31	411	0.8-	0.7+	1998 07 01	809	(2.8+	5.7+)	1999 10 08	704	0.2+	0.3-
1995 12 31	411	1.5-	0.6+	1998 07 01	809	(2.8+	5.4+)	1999 10 08	704	0.3-	0.0
1996 01 10	411	1.1+	1.3+	1998 07 01	809	(2.6+	5.5+)	1999 10 08	704	0.1+	0.1-
1996 01 10	411	0.5+	0.1-	1999 09 05	699	0.2-	1.0+	1999 10 08	704	0.0	0.2+
1996 01 24	411	1.1+	0.2+	1999 09 05	699	0.6+	1.5+	1999 10 08	704	0.4-	0.1-
1996 01 24	411	0.7-	0.8-	1999 09 05	699	0.4-	0.0				

(11996)* 1995 YC₁

Discovered 1995 Dec. 21 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	48.88017		(2000.0)	P	Q
<i>n</i>	0.18632368	ω	193.33773	+0.52821203	+0.80215654
<i>a</i>	3.0359225	Ω	109.20292	-0.74948431	+0.59458194
<i>e</i>	0.0556362	<i>i</i>	17.14919	-0.39908060	-0.05492901
<i>P</i>	5.29	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1991 02 10	675	0.7-	0.8+	1996 01 18	566	0.7-	0.7+	1999 09 13	704	0.9+	0.3-
1991 02 10	675	0.3-	1.1+	1996 01 18	566	0.8-	0.7+	1999 09 13	704	0.6-	0.2+
1993 07 24	675	0.6-	0.3-	1996 01 18	566	0.7-	1.1+	1999 09 13	704	0.4+	1.1-
1993 07 24	675	1.1+	0.1+	1996 01 24	411	1.4-	0.5-	1999 09 30	704	0.7-	1.2-
1995 12 21	411	0.7+	0.9-	1996 01 24	411	1.0+	0.4+	1999 09 30	704	1.0+	0.2+
1995 12 21	411	0.5-	0.2-	1997 05 28	824	0.3+	0.0	1999 09 30	704	0.5-	0.6+
1995 12 22	411	1.1+	1.2-	1997 05 28	824	0.3-	0.4-	1999 09 30	704	0.3+	0.5+
1995 12 22	411	1.9+	1.2-	1997 05 28	824	0.3-	0.1-	1999 09 30	704	0.1+	1.3+
1995 12 26	411	1.0+	0.6-	1997 06 04	824	0.3-	0.2+	1999 10 06	704	0.1-	0.3+
1995 12 26	411	1.9+	1.4-	1997 06 04	824	0.6-	0.4+	1999 10 06	704	0.7-	0.2+
1995 12 30	411	0.4-	0.4-	1997 06 04	824	0.2-	0.1+	1999 10 06	704	0.6-	0.2-
1995 12 30	411	1.6-	0.1-	1997 06 06	824	0.2+	0.3-	1999 10 06	704	0.4-	0.1+
1996 01 10	411	0.6-	0.5+	1997 06 06	824	0.2+	0.2-				
1996 01 10	411	0.8+	1.5+	1997 06 06	824	0.5+	0.2+				

(11997)* 1995 YU₉ = 1993 NN₂

Discovered 1995 Dec. 18 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 26747)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	6.05292		(2000.0)	P	Q
<i>n</i>	0.18867651	ω	65.63841	+0.98604080	+0.07018596
<i>a</i>	3.0106307	Ω	290.04750	-0.13098240	+0.88682366
<i>e</i>	0.0680688	<i>i</i>	9.24910	+0.10279669	+0.45674689
<i>P</i>	5.22	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1988 08 16	675	1.4-	1.8+	1995 12 23	691	0.0	0.1+	1999 09 08	704	0.0	0.6+
1988 08 16	675	0.6+	0.1-	1995 12 29	691	0.2+	0.3+	1999 09 08	704	0.2+	0.4-
1993 07 13	809	1.7+	0.1+	1995 12 29	691	0.3+	0.0	1999 09 08	704	0.7+	0.0
1993 07 13	809	0.7+	0.1-	1995 12 29	691	0.1+	0.3-	1999 09 18	704	0.9+	0.0
1993 07 13	809	0.0	0.6-	1996 01 13	691	0.7+	0.0	1999 09 18	704	0.9+	0.3-
1993 07 13	809	(3.7+	1.6+)	1996 01 13	691	0.5+	0.5+	1999 09 18	704	0.7+	0.1-
1993 07 13	809	(2.4+	1.7+)	1996 01 13	691	0.4+	0.2+	1999 09 18	704	0.5-	0.4-
1993 07 13	809	(1.6+	2.3+)	1996 01 19	691	0.3+	0.2-	1999 09 18	704	0.1-	0.6-
1993 07 20	809	0.3-	0.0	1996 01 19	691	0.3-	0.3+	1999 10 03	704	0.1+	0.5-
1993 07 20	809	0.7-	0.6+	1996 01 19	691	0.1-	0.2-	1999 10 03	704	0.4+	0.1-
1993 07 20	809	0.8-	0.1+	1997 06 11	696	0.1-	0.5+	1999 10 03	704	0.5+	0.2-
1993 07 24	809	0.2+	0.9-	1997 06 11	696	0.1+	0.6+	1999 10 03	704	1.1-	0.8+
1994 11 07	675	1.0+	0.5-	1997 06 11	696	0.1-	0.6+	1999 10 03	704	1.0-	1.3-
1994 11 07	675	1.6-	0.2-	1999 09 06	703	0.1-	1.2+	1999 10 10	704	0.0	0.0
1995 12 18	691	0.1-	0.0	1999 09 06	703	0.6-	0.5+	1999 10 10	704	0.3+	0.3+
1995 12 18	691	0.4-	0.2+	1999 09 06	703	1.1-	0.5+	1999 10 10	704	0.0	0.5+
1995 12 18	691	0.0	0.0	1999 09 06	703	(1.8-	2.4-)	1999 10 10	704	0.0	0.3+
1995 12 23	691	0.7-	0.3-	1999 09 08	704	0.1-	0.3-	1999 10 10	704	0.1-	0.6+
1995 12 23	691	0.2+	0.0	1999 09 08	704	0.2-	0.0				

(11998)* 1996 AG₇ = 1978 VT₅ = 1978 WO₁₁

Discovered 1996 Jan. 12 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 26750)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	353.89547		(2000.0)	P	Q
<i>n</i>	0.18298237	ω	258.37139	+0.96672873	+0.24491213
<i>a</i>	3.0727688	Ω	87.41940	-0.19629572	+0.89536244
<i>e</i>	0.2409502	<i>i</i>	4.23937	-0.16402301	+0.37194644
<i>P</i>	5.39	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1978 11 05	675	0.4-	0.7-	1996 01 18	691	0.5-	0.0	1999 09 09	704	0.6-	1.0-
1978 11 06	675	(21.9-	0.0)	1996 01 18	691	0.1-	0.3+	1999 09 13	704	0.6+	0.4+
1978 11 08	675	0.1-	0.5-	1996 01 25	691	0.1-	0.0	1999 09 13	704	0.1+	0.7+
1978 11 29	675	1.0-	0.0	1996 01 25	691	0.1-	0.0	1999 09 13	704	0.5+	1.1+
1978 11 30	675	1.1+	0.5-	1996 01 25	691	0.2-	0.2+	1999 09 30	704	0.9+	0.6-
1992 03 30	691	0.1+	1.1-	1997 02 07	691	0.7+	0.1-	1999 09 30	704	0.2-	0.1-
1992 03 30	691	(0.0	2.3-)	1997 02 07	691	0.4+	0.7+	1999 09 30	704	0.1+	0.1-
1992 03 30	691	0.7-	1.4-	1997 02 07	691	0.6+	0.6+	1999 09 30	704	0.4-	1.2-
1994 10 31	691	0.1+	0.5+	1999 09 08	703	0.6-	1.1+	1999 10 04	703	0.3-	0.6+
1994 10 31	691	0.3-	0.9+	1999 09 08	703	0.1-	0.6+	1999 10 04	703	0.6-	0.5+
1994 10 31	675	1.0+	0.5-	1999 09 08	703	0.3-	0.2+	1999 10 04	703	0.1-	0.7+
1994 10 31	675	1.1+	0.3+	1999 09 08	703	0.3-	0.4-	1999 10 04	703	0.2-	0.1-
1996 01 12	691	0.2-	0.3+	1999 09 09	704	0.3-	0.0	1999 10 07	704	0.6+	0.6-
1996 01 12	691	0.3-	0.2+	1999 09 09	704	0.3+	0.1+	1999 10 07	704	0.6+	0.8-
1996 01 12	691	0.0	0.0	1999 09 09	704	0.0	1.0-	1999 10 07	704	0.7+	0.1-
1996 01 18	691	0.5-	0.0	1999 09 09	704	1.2-	1.0-	1999 10 07	704	0.3-	0.2+

(11999)* 1996 BV₁

Discovered 1996 Jan. 23 by T. Kobayashi at Oizumi.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	275.89203		(2000.0)	P	Q
<i>n</i>	0.21382570	ω	158.94346	-0.73236236	-0.67818609
<i>a</i>	2.7696791	Ω	337.99095	+0.59920071	-0.59940786
<i>e</i>	0.2734581	<i>i</i>	9.35269	+0.32342525	-0.42517508
<i>P</i>	4.61	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1989 09 24	413	2.0-	0.5-	1996 02 20	411	0.3-	0.2-	1999 09 04	703	0.3-	1.4+
1989 09 24	413	1.9+	0.5+	1996 02 20	411	0.1-	0.1+	1999 09 04	703	0.6+	1.0+
1992 03 31	413	0.6+	0.4+	1996 03 15	566	0.5+	0.1+	1999 09 04	703	0.0	0.8+
1992 03 31	413	0.5-	0.2+	1996 03 15	566	0.4+	0.1+	1999 09 04	703	0.7+	0.8+
1994 08 11	675	0.7-	0.0	1996 03 15	566	0.2+	0.1+	1999 10 12	704	0.0	0.4-
1994 08 11	675	0.1-	1.2+	1996 03 19	566	0.7-	0.3+	1999 10 12	704	0.3-	0.6-
1996 01 23	411	0.1+	0.0	1996 03 19	566	0.5-	0.4+	1999 10 12	704	0.5-	0.9-
1996 01 23	411	0.2+	0.3+	1996 03 19	566	0.6-	0.3+	1999 10 12	704	0.5-	0.1-
1996 01 24	411	0.3+	0.1+	1996 03 22	566	0.2-	0.0	1999 10 12	704	0.0	0.3-
1996 01 24	411	0.0	0.1+	1996 03 22	566	0.3-	0.1-	1999 10 13	704	0.1+	0.3-
1996 01 30	411	0.1+	0.1-	1996 03 22	566	0.2-	0.1-	1999 10 13	704	0.3+	0.3-
1996 01 30	411	0.3+	0.3-	1998 10 14	910	0.1+	0.1+	1999 10 13	704	0.2-	0.3-
1996 02 12	411	0.5+	0.0	1998 10 14	910	0.3-	0.1-	1999 10 13	704	0.1+	0.3-
1996 02 12	411	0.5+	0.1-	1998 10 14	910	0.2+	0.1+	1999 10 13	704	0.1+	0.1+

(12000)* 1996 CK₂

Discovered 1996 Feb. 12 by S. Ueda and H. Kaneda at Kushiro.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	213.48922		(2000.0)	P	Q
<i>n</i>	0.18548280	ω	156.16564	-0.98217447	-0.18157060
<i>a</i>	3.0450911	Ω	13.64312	+0.12144833	-0.81045686
<i>e</i>	0.0811655	<i>i</i>	11.89940	+0.14346992	-0.55694865
<i>P</i>	5.31	<i>H</i>	12.6	<i>G</i> 0.15	<i>U</i> 1

1999 OCT. 26

M.P.C. 36273

Residuals in seconds of arc

1988 09 10	675	1.0+	0.0	1998 09 21	704	0.9−	0.3−	1999 10 08	106	0.3−	0.0
1988 09 10	675	0.5+	0.6−	1999 09 12	703	1.2−	1.1−	1999 10 08	106	0.8+	0.8−
1991 04 16	675	1.5−	0.0	1999 09 12	703	0.3−	0.6+	1999 10 08	106	0.3−	0.3+
1991 04 16	675	0.2−	1.1+	1999 09 12	703	0.3+	0.2+	1999 10 09	703	0.6−	0.0
1993 08 14	675	1.5+	1.3−	1999 09 12	703	0.4+	0.8+	1999 10 09	703	0.0	0.5+
1993 08 14	675	0.5+	0.8−	1999 09 14	703	0.1+	0.7+	1999 10 09	703	0.1−	0.0
1996 02 12	399	0.0	0.0	1999 09 14	703	0.0	0.4−	1999 10 09	703	0.9−	0.2−
1996 02 12	399	0.1+	0.2+	1999 09 14	703	0.1+	0.4−	1999 10 10	704	0.7+	0.2+
1996 02 16	399	1.0+	1.4−	1999 09 14	703	0.2+	0.1+	1999 10 10	704	0.3+	0.3−
1996 02 16	399	0.8+	1.0−	1999 10 02	703	0.5−	0.5+	1999 10 10	704	0.9+	0.3−
1996 02 22	399	0.9−	1.3−	1999 10 02	703	0.4−	0.6−	1999 10 10	704	0.5+	0.5−
1996 02 22	399	0.5−	0.2−	1999 10 02	703	0.2−	0.1+	1999 10 10	704	0.8+	0.5−
1996 02 24	399	1.4+	0.1−	1999 10 02	703	0.4−	0.4+	1999 10 15	704	0.5−	0.3−
1996 02 24	399	0.3−	0.3−	1999 10 03	704	0.8+	0.1−	1999 10 15	704	0.4−	0.0
1996 03 09	399	0.7−	1.0+	1999 10 03	704	0.2−	0.8+	1999 10 15	704	0.3−	0.2−
1996 03 09	399	1.0−	1.1−	1999 10 03	704	0.4+	0.1+	1999 10 15	704	0.8−	0.1+
1997 04 08	689	0.1−	1.0−	1999 10 03	704	0.7−	0.3−	1999 10 21	704	0.2+	0.3−
1997 04 27	689	0.1−	1.3−	1999 10 07	704	0.3+	0.2+	1999 10 21	704	0.5−	0.5−
1998 09 21	704	0.5+	0.1+	1999 10 07	704	0.6+	0.4−	1999 10 21	704	0.4−	0.3−
1998 09 21	704	0.3+	1.4−	1999 10 07	704	0.4+	0.4+	1999 10 21	704	0.3−	0.3−
1998 09 21	704	0.1+	2.0+	1999 10 07	704	0.4+	0.2−	1999 10 21	704	0.1−	0.1+
1998 09 21	704	0.4−	0.2−	1999 10 07	704	0.2+	0.2+				

(12001)* 1996 ED₉ = 1997 JV₂

Discovered 1996 Mar. 12 by Spacewatch at Kitt Peak.

Id. A. Gnädig (*MPC* 31387)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P	Q
<i>n</i>	0.17643061	ω	201.36074	+0.99501527	+0.02495180
<i>a</i>	3.1483772	Ω	156.57409	−0.00705627	+0.98338073
<i>e</i>	0.0419021	<i>i</i>	14.05517	−0.09947268	+0.17983255
<i>P</i>	5.59	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1996 03 12	691	0.9+	0.2+	1998 08 17	704	0.1+	0.4−	1999 09 14	704	0.5+	0.8−
1996 03 12	691	0.3+	0.5+	1998 08 17	704	0.2−	0.1+	1999 09 14	704	1.8+	1.4−
1996 03 12	691	0.3+	0.3+	1998 08 17	704	0.8−	1.0+	1999 10 02	704	0.2−	0.4+
1996 03 17	691	0.2+	0.4+	1998 08 25	910	0.4+	0.7+	1999 10 02	704	0.5−	0.3+
1996 03 17	691	0.2−	0.4+	1998 08 25	910	0.4+	0.5+	1999 10 02	704	0.1+	0.1−
1996 03 17	691	0.4−	0.4+	1998 08 25	910	0.4+	0.5+	1999 10 02	704	0.2−	0.3+
1996 03 23	691	0.4−	0.9+	1998 09 19	910	0.4+	0.5+	1999 10 07	703	0.8−	0.0
1996 03 23	691	0.1−	0.6+	1998 09 19	910	0.5+	0.6+	1999 10 07	703	0.4−	0.2+
1996 03 23	691	0.2−	0.5+	1998 09 19	910	0.4+	0.4+	1999 10 07	703	0.8−	0.1−
1997 05 04	721	1.0−	0.5−	1998 09 22	910	0.5−	0.4+	1999 10 07	703	0.2+	0.2−
1997 05 04	721	0.1−	1.3−	1998 09 22	910	0.4−	0.2+	1999 10 08	704	0.4−	0.6+
1997 05 06	721	0.4−	0.1−	1998 09 22	910	0.7−	0.2+	1999 10 08	704	0.3−	0.1+
1997 05 06	721	1.0+	0.1+	1999 09 14	704	1.0−	1.6+	1999 10 08	704	0.3+	0.1+
1998 08 17	704	0.3+	0.3+	1999 09 14	704	0.3+	0.7−	1999 10 08	704	0.1+	0.1−
1998 08 17	704	0.3−	0.7−	1999 09 14	704	1.6+	0.0	1999 10 08	704	0.0	0.4−

(12002)* 1996 FR₁

Discovered 1996 Mar. 19 by P. Pravec and L. Šarounová at Ondřejov.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P	Q
<i>n</i>	0.18844426	ω	100.33957	+0.72567243	+0.68098982
<i>a</i>	3.0131039	Ω	216.85306	−0.67780732	+0.68301876
<i>e</i>	0.1145264	<i>i</i>	9.42802	−0.11822335	+0.26407998
<i>P</i>	5.23	<i>H</i>	13.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1996 03 19	557	1.1+	0.2+	1998 08 26	557	0.1−	0.5−	1998 10 14	704	0.4−	0.3−
1996 03 19	557	1.0+	0.0	1998 08 26	557	0.2−	0.5−	1998 10 14	704	0.2+	0.2−
1996 03 20	557	1.1+	0.2+	1998 08 26	557	0.4−	0.4−	1998 10 14	704	0.8−	0.5+
1996 03 20	557	0.7+	0.0	1998 09 14	557	0.3−	0.1+	1998 10 14	704	0.1−	1.1+

1996 03 20	557	0.9+	0.3+	1998 09 14	557	0.4−	0.1+	1998 10 14	704	0.2−	0.1+
1996 03 20	557	1.1+	0.2+	1998 09 14	557	0.6−	0.1+	1998 10 15	704	0.9+	0.1+
1996 03 20	557	1.0+	0.3+	1998 09 14	557	0.5−	0.1−	1998 10 15	704	0.6+	0.4−
1996 03 21	557	0.9+	0.1+	1998 09 18	704	0.2−	0.4−	1998 10 15	704	1.1+	0.1+
1996 03 21	557	0.9+	0.3−	1998 09 18	704	0.0	1.1+	1998 10 15	704	0.4+	0.3+
1996 03 25	557	0.9+	0.6+	1998 09 18	704	1.4−	0.5+	1998 10 15	704	0.4+	0.7+
1996 03 25	557	0.5+	0.0	1998 09 18	704	0.7−	0.5+	1998 10 28	704	0.2−	1.0−
1996 03 25	557	0.0	0.4−	1998 09 18	704	1.5−	0.2−	1998 10 28	704	0.2+	0.5+
1996 03 25	557	0.2−	0.1+	1998 09 21	557	0.2−	0.4−	1998 10 28	704	1.7+	1.2−
1996 04 06	557	1.2−	0.1−	1998 09 21	557	0.1−	0.1−	1998 10 28	704	0.4+	0.4−
1996 04 06	557	0.5−	0.2+	1998 09 25	699	0.6+	0.3+	1998 10 28	704	0.1+	0.9+
1996 04 06	557	0.6−	0.6+	1998 09 25	699	0.2+	0.2+	1999 09 12	557	0.3−	0.2−
1996 04 15	557	0.7−	0.2+	1998 09 25	699	0.5−	0.3+	1999 09 12	557	0.3−	0.1−
1996 04 15	557	0.9−	0.2−	1998 09 26	704	0.3+	0.4−	1999 09 12	557	0.4+	0.1−
1996 04 15	557	1.4−	0.0	1998 09 26	704	0.2+	1.2−	1999 09 12	557	0.2+	0.9+
1996 04 20	557	1.3−	0.3+	1998 09 26	704	0.1+	0.5−	1999 09 12	557	0.5+	0.0
1996 04 20	557	1.9−	0.1−	1998 09 26	704	0.0	0.1+	1999 09 14	557	1.2−	0.7+
1996 04 20	557	1.1−	0.1+	1998 09 26	704	0.0	0.2−	1999 09 14	557	0.4−	0.0
1997 05 31	557	0.0	0.2+	1998 09 27	704	0.2+	0.1+	1999 09 14	557	1.0−	0.4+
1997 05 31	557	0.1+	0.2+	1998 09 27	704	0.5+	0.6+	1999 10 18	557	0.1+	0.1+
1997 06 01	557	0.2+	0.0	1998 09 27	704	0.6+	0.4+	1999 10 18	557	0.5+	0.5+
1997 06 02	557	0.5+	0.5−	1998 09 27	704	0.0	0.2−	1999 10 19	557	0.5−	0.5−
1997 06 02	557	0.3+	0.8−	1998 09 27	704	0.2−	0.9+	1999 10 19	557	0.8−	0.4+
1997 06 10	557	0.5−	0.0	1998 10 11	699	0.1−	0.4+	1999 10 19	557	0.6+	0.9−
1997 06 28	557	0.3−	0.6+	1998 10 11	699	0.3+	0.5+	1999 10 19	557	0.6+	0.1−
1997 06 28	557	0.3−	0.8+	1998 10 11	699	0.2−	0.3+	1999 10 19	557	1.1+	0.9−

(12003)* 1996 FM₅ = 1975 VG₆ = 1983 DR

Discovered 1996 Mar. 20 by T. Okuni at Nanyou.

Id. A. Gnädig (*MPC* 32470)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P	Q
<i>n</i>	0.15965199	ω	82.23408	−0.05356206	−0.99802724
<i>a</i>	3.3652693	Ω	10.99733	+0.83510350	−0.06275294
<i>e</i>	0.1009744	<i>i</i>	9.88620	+0.54747900	−0.00192005
<i>P</i>	6.17	<i>H</i>	12.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1975 11 06	095	0.1−	0.0	1998 07 24	566	0.6+	0.0	1999 10 07	704	0.1+	1.0−
1983 02 19	688	0.1−	0.5−	1998 07 24	566	0.3+	0.7−	1999 10 07	704	1.3−	0.5−
1983 02 19	688	0.7−	1.6−	1998 07 24	566	0.5+	0.5−	1999 10 10	704	0.6+	0.4−
1993 10 09	691	0.2−	0.2+	1998 07 31	699	0.4−	0.2+	1999 10 10	704	0.3+	0.0
1993 10 09	691	0.2−	0.2+	1998 07 31	699	0.4+	0.0	1999 10 10	704	0.5−	0.1−
1993 10 09	691	0.2−	0.1+	1998 07 31	699	0.0	0.4−	1999 10 10	704	0.2+	0.4−
1996 03 20	358	1.4+	0.4−	1998 08 21	566	0.1−	0.2−	1999 10 10	704	0.2+	0.3+
1996 03 20	358	1.0+	0.2+	1998 08 21	566	0.1−	0.2−	1999 10 11	106	0.3−	0.1−
1996 03 26	358	0.5−	0.7−	1998 08 21	566	0.1−	0.2+	1999 10 11	106	0.2−	0.4+
1996 03 26	358	(1.9−	2.4−)	1999 10 03	704	0.0	0.2+	1999 10 11	106	0.3+	0.0
1996 04 08	358	(2.9+	1.4+)	1999 10 03	704	0.2+	0.5−	1999 10 21	704	0.0	0.2+
1996 04 08	358	(1.5−	3.6+)	1999 10 03	704	0.1+	0.6−	1999 10 21	704	0.3−	0.1+
1996 04 09	358	(0.1+	2.5+)	1999 10 03	704	0.1−	0.1+	1999 10 21	704	0.1−	0.4+
1996 04 09	358	(1.5−	2.6+)	1999 10 07	704	0.9+	0.4−	1999 10 21	704	0.1+	0.4+
1996 04 20	358	1.5−	0.2+	1999 10 07	704	0.4+	0.5−	1999 10 21	704	0.5+	0.6+
1996 04 20	358	0.7−	0.5+	1999 10 07	704	0.2−	0.2+				

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+				

(12005)* 1996 KA₃ = 1987 SY₁₃ = 1997 JP

Discovered 1996 May 19 by R. Weber at Lincoln Laboratory ETS, New Mexico.

Id. G. V. Williams (*MPC* 30084, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	101.35320	(2000.0)	P	Q
<i>n</i>	0.17332927	ω 137.16860	+0.02229527	+0.99036325
<i>a</i>	3.1858215	Ω 133.60179	-0.96071114	+0.05905737
<i>e</i>	0.1513012	<i>i</i> 10.88020	-0.27665326	-0.12527111
<i>P</i>	5.69	<i>H</i> 12.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1987 09 22	095	1.4+	4.3-	1997 05 14	587	0.6+	0.5+	1998 08 20	566	0.2-	0.9-
1995 11 20	691	0.4+	0.1+	1997 05 27	587	0.8+	0.3+	1998 08 27	699	0.0	0.5+
1995 11 20	691	0.1+	0.2-	1997 05 27	587	0.1+	0.2-	1998 08 27	699	0.0	0.3+
1995 11 20	691	0.2+	0.3-	1997 05 27	587	0.6+	0.8+	1998 08 27	699	0.2-	0.3+
1996 05 19	704	0.2-	1.2-	1997 05 28	587	0.4+	0.3+	1998 09 14	699	0.5+	0.5+
1996 05 19	704	0.7+	0.8-	1997 05 28	587	1.0+	0.1+	1998 09 14	699	0.0	0.9+
1996 05 19	704	0.6-	0.1-	1997 05 28	587	0.4+	0.1+	1998 09 14	699	0.1-	0.3+
1996 05 19	704	0.4-	0.3+	1997 05 28	587	0.3+	0.2+	1998 09 24	699	1.1+	0.5+
1996 05 19	704	0.8+	0.8+	1997 05 30	587	0.6+	0.2+	1998 09 24	699	0.5+	0.7+
1996 05 21	704	0.1+	0.2+	1997 05 30	587	0.6+	0.1+	1998 09 24	699	0.2+	0.4+
1996 05 21	704	0.0	0.4+	1998 07 31	699	0.1-	0.5+	1998 10 17	699	1.2-	1.8+
1996 05 21	704	0.1+	0.2-	1998 07 31	699	0.2+	0.5+	1998 10 17	699	0.5-	1.5+
1996 05 21	704	0.4+	0.8-	1998 07 31	699	0.0	0.2-	1998 10 17	699	0.1-	0.1+
1996 06 19	704	2.5-	1.4+	1998 08 12	426	0.1-	0.5-	1999 09 13	703	0.1-	0.6+
1996 06 19	704	1.1+	0.6-	1998 08 12	426	0.0	0.4-	1999 09 13	703	0.4+	0.6+
1996 06 20	704	0.2-	0.1+	1998 08 12	426	0.0	0.6-	1999 09 13	703	0.3+	0.3+
1996 06 20	704	2.7-	1.5-	1998 08 13	426	0.1-	0.4-	1999 09 13	703	0.6-	1.2+
1996 06 20	704	1.0-	0.0	1998 08 13	426	0.1-	0.4-	1999 10 03	703	0.9-	1.6+
1997 05 02	587	0.1-	0.4-	1998 08 13	426	0.2-	0.3-	1999 10 03	703	0.7-	1.2+
1997 05 02	587	0.1-	0.5-	1998 08 17	704	0.1-	0.3-	1999 10 03	703	1.1-	0.8+
1997 05 02	587	0.9-	0.4-	1998 08 17	704	0.6-	0.1-	1999 10 03	703	0.8+	1.6+
1997 05 03	587	0.3-	0.4+	1998 08 17	704	0.5-	0.5-	1999 10 09	704	0.2+	0.1+
1997 05 03	587	0.8-	0.7+	1998 08 17	704	0.1-	0.9-	1999 10 09	704	0.2-	0.2-
1997 05 08	587	0.3+	0.4+	1998 08 17	704	0.1+	0.3-	1999 10 09	704	0.2+	0.4-
1997 05 08	587	0.1-	0.4+	1998 08 20	566	0.0	0.7-	1999 10 09	704	1.1+	1.0-
1997 05 14	587	0.3-	0.2-	1998 08 20	566	0.1-	0.6-	1999 10 09	704	0.7+	0.7-

(12006)* 1996 OO

Discovered 1996 July 20 by L. Šarounová at Ondřejov.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	189.17603	(2000.0)	P	Q
<i>n</i>	0.12396675	ω 18.02064	-0.34195895	+0.92908406
<i>a</i>	3.9835100	Ω 232.22188	-0.88262911	-0.36903369
<i>e</i>	0.0804192	<i>i</i> 10.27249	-0.32253671	+0.02483831
<i>P</i>	7.95	<i>H</i> 12.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1996 07 20	557	0.1-	0.4-	1997 08 03	557	0.3+	0.1+	1998 11 10	910	0.3-	0.3+
1996 07 20	557	0.1+	0.1+	1997 08 03	557	0.1+	0.1+	1998 11 11	910	0.4-	0.4+
1996 07 20	557	0.2+	0.4-	1997 08 03	557	0.2+	0.2+	1998 11 11	910	0.1-	0.3+
1996 07 21	557	0.0	0.4-	1997 08 07	557	0.0	0.3+	1998 11 17	910	0.2-	0.5+
1996 07 21	557	0.1-	0.4-	1997 08 08	557	0.1+	0.3+	1998 11 17	910	0.1-	0.6+
1996 07 21	557	0.1+	0.3-	1998 08 18	557	0.0	0.7-	1998 11 17	910	0.1-	0.7+
1996 07 26	557	0.2-	0.1-	1998 08 18	557	0.3-	0.1+	1998 11 18	704	0.3-	0.0
1996 07 26	557	0.2+	0.2+	1998 08 28	557	0.1-	0.8-	1998 11 18	704	1.9-	0.9+
1996 07 26	557	0.8-	0.3+	1998 08 28	557	0.4-	0.9-	1998 11 18	704	0.2-	0.2+
1996 07 26	557	0.5+	0.1-	1998 08 28	557	0.5-	0.9-	1998 11 18	704	1.4+	1.1+
1996 08 05	557	0.9+	0.6+	1998 09 27	557	0.8-	0.8-	1998 11 19	691	0.4-	0.1+
1996 08 05	557	0.8+	0.0	1998 09 27	557	0.7-	0.4-	1998 11 19	691	0.5-	0.2-
1996 08 05	557	0.8+	0.3-	1998 10 18	699	0.5+	0.6+	1998 11 19	691	0.4-	0.1-
1996 08 19	557	0.1-	0.7-	1998 10 18	699	0.6-	0.4+	1999 09 12	557	0.2+	0.0
1996 08 19	557	0.5+	0.2+	1998 10 18	699	0.3+	0.3-	1999 09 12	557	0.4-	0.4-
1996 10 11	557	1.1-	0.1-	1998 10 21	557	0.4+	0.2-	1999 09 12	557	0.1+	0.4+
1996 10 11	557	0.8-	0.1+	1998 10 21	557	0.1+	0.3-	1999 09 12	557	0.1-	0.2-
1996 10 11	557	0.9-	0.4+	1998 10 22	120	0.0	0.2-	1999 09 13	557	0.1+	0.2+
1996 10 12	557	0.2-	0.2+	1998 10 22	120	1.3+	0.0	1999 09 13	557	0.3-	0.2+
1996 10 12	557	0.4-	0.3+	1998 10 22	120	0.8+	0.4-	1999 09 13	557	0.3+	0.1+
1997 07 09	557	0.2-	0.1-	1998 10 29	704	0.2+	0.3-	1999 10 18	557	0.0	0.3-
1997 07 09	557	0.1-	0.0	1998 10 29	704	0.3-	0.2-	1999 10 18	557	0.1-	0.1+
1997 07 09	557	0.2-	0.1+	1998 10 29	704	0.9+	0.0	1999 10 20	557	0.0	0.3-
1997 07 10	557	0.2-	0.0	1998 10 29	704	0.6+	0.1+	1999 10 20	557	0.1+	0.5-
1997 07 10	557	0.2-	0.4+	1998 10 29	120	0.9+	0.4-				
1997 08 03	557	0.3+	0.1+	1998 10 29	120	0.7+	0.5-				

(12007)* 1996 TD₇ = 1991 ER₁ = 1998 HU₄

Discovered 1996 Oct. 11 by P. G. Comba at Prescott.

Id. G. V. Williams (*MPC* 31730)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	159.14662	(2000.0)	P	Q
<i>n</i>	0.29006884	ω 154.20893	-0.98947895	+0.13108820
<i>a</i>	2.2601399	Ω 33.50078	-0.14433219	-0.86521696
<i>e</i>	0.0999475	<i>i</i> 6.36762	-0.00998093	-0.48395816
<i>P</i>	3.40	<i>H</i> 15.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1991 03 14	046	0.2+	0.9+	1998 04 23	120	0.3+	0.2+	1998 06 01	691	0.3+	0.2+
1991 03 14	046	0.9+	1.3+	1998 04 23	120	0.0	0.5+	1998 06 01	691	0.1+	0.1-
1996 10 11	684	0.1+	0.1-	1998 04 23	120	0.2+	0.6+	1998 06 01	691	0.3+	0.1-
1996 10 11	684	0.1+	0.1+	1998 04 27	684	0.7-	0.4-	1999 09 06	684	0.2-	0.2-
1996 10 11	684	0.2+	0.0	1998 04 27	684	0.5-	0.5-	1999 09 06	684	0.4-	0.3-
1996 10 12	684	0.0	0.3-	1998 04 28	684	0.1+	0.6-	1999 09 07	684	0.5-	0.1+
1996 10 12	684	0.2-	0.2-	1998 04 28	684	0.1+	0.6-	1999 09 07	684	0.8-	0.2+
1996 10 12	684	0.3-	0.6-	1998 04 30	699	1.0+	0.9-	1999 09 07	704	0.4-	0.5+
1996 10 15	684	0.3+	0.4+	1998 04 30	699	0.6+	0.2-	1999 09 07	704	0.3-	0.2+
1996 10 15	684	0.4+	0.3+	1998 04 30	699	0.3+	0.1+	1999 09 07	704	0.5-	0.9+
1996 11 04	684	0.0	0.3+	1998 05 01	704	0.2-	0.4-	1999 09 07	704	0.6-	0.7+
1996 11 04	684	0.1-	0.3+	1998 05 01	704	0.1+	0.8+	1999 09 07	704	(0.4- 2.2+)	
1996 11 04	684	0.1-	0.2+	1998 05 01	699	0.1-	0.2-	1999 09 14	704	0.4+	0.1-
1998 04 20	120	0.7-	0.9+	1998 05 01	704	0.1+	0.1+	1999 09 14	704	0.3+	0.4+
1998 04 20	120	0.7-	1.5+	1998 05 01	699	0.3+	0.5-	1999 09 14	704	0.8-	1.3+
1998 04 21	704	0.8-	0.2+	1998 05 01	699	1.2+	0.6-	1999 10 02	684	0.3+	0.2-
1998 04 21	704	0.2-	0.5+	1998 05 01	704	0.3-	0.3-	1999 10 02	684	0.3+	0.1+

1998 04 21	704	1.0−	0.5+	1998 05 01	704	0.5+	0.2+	1999 10 03	684	0.4+	0.3−
1998 04 21	704	0.6−	0.8+	1998 05 15	684	0.2+	0.6−	1999 10 03	684	0.2+	0.3−
1998 04 21	704	1.4−	0.9+	1998 05 15	684	0.4+	0.5−	1999 10 08	704	0.2+	0.1−
1998 04 21	120	0.2−	0.6+	1998 05 16	684	0.2+	0.7+	1999 10 08	704	0.6+	0.1+
1998 04 21	120	0.1−	0.7+	1998 05 16	684	0.1+	0.7+	1999 10 08	704	0.1−	0.2+
1998 04 21	120	0.4−	0.7+	1998 05 16	704	0.3+	0.2−	1999 10 15	704	0.3−	0.2+
1998 04 22	704	0.1+	0.1−	1998 05 16	704	0.2−	0.8+	1999 10 15	704	0.6+	0.3−
1998 04 22	704	0.2+	0.1+	1998 05 16	704	1.3+	0.9−	1999 10 15	704	0.8−	0.7−
1998 04 22	704	0.9−	1.4−	1998 05 16	704	0.8+	0.8−	1999 10 15	704	0.0	0.0
1998 04 22	704	0.1−	0.7−	1998 05 26	691	0.1+	0.5−	1999 10 15	704	0.4+	0.0
1998 04 22	704	0.4+	0.9−	1998 05 26	691	0.1−	0.1−				

(12008)* 1996 TY₉

Discovered 1996 Oct. 11 by T. B. Spahr at the University of Arizona's Catalina Station.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.34915299	ω	344.77150	−0.33663508	+0.80255962		
<i>a</i>	1.9973716	Ω	263.45366	−0.80383457	−0.51734794		
<i>e</i>	0.3157121	<i>i</i>	29.71930	−0.49043532	+0.29706759		
<i>P</i>	2.82	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1949 11 30	675	0.8−	1.1−	1996 10 31	657	0.7+	0.2+	1998 02 15	732	0.1−	0.3−
1949 11 30	675	0.2−	0.2−	1996 10 31	657	1.2+	0.8+	1998 02 17	732	(2.9+	2.3+)
1987 04 30	413	(4.1+	2.6+)	1996 11 05	658	0.1−	0.1−	1998 02 17	732	(3.2+	1.0+)
1991 12 07	675	1.1+	1.4+	1996 11 05	658	0.0	0.2−	1998 02 17	732	0.8+	0.2+
1991 12 07	675	0.0	0.5+	1996 11 05	658	0.0	0.3−	1999 09 24	704	1.0+	0.2−
1996 10 11	693	0.6+	1.8−	1996 11 23	658	0.0	0.3−	1999 09 24	704	0.2+	1.1+
1996 10 11	693	0.7−	1.3−	1996 11 23	658	0.1−	0.3−	1999 09 24	704	0.3+	1.1+
1996 10 16	693	0.0	0.2−	1996 11 23	658	0.1+	0.5−	1999 09 24	704	0.5−	0.3+
1996 10 16	693	0.4−	0.5+	1996 12 09	801	0.7+	0.6+	1999 09 24	704	0.4+	1.7+
1996 10 16	693	0.0	0.2+	1996 12 09	801	1.8+	0.8+	1999 09 30	461	0.3+	0.6+
1996 10 16	693	0.3−	0.2+	1996 12 21	046	0.1+	0.2−	1999 09 30	461	0.1+	0.0
1996 10 17	693	0.8−	0.6−	1996 12 21	046	0.5+	0.3−	1999 09 30	461	0.3+	0.1−
1996 10 17	693	1.5−	0.2−	1996 12 21	046	0.3+	0.1−	1999 10 18	704	0.0	0.4−
1996 10 17	658	0.1−	0.1+	1997 10 18	658	0.4−	0.1+	1999 10 18	704	0.1−	0.2+
1996 10 17	658	0.0	0.1+	1997 10 18	658	0.1−	0.1+	1999 10 18	704	0.1−	0.2−
1996 10 17	658	0.1+	0.3+	1997 10 18	658	0.1−	0.3+	1999 10 18	704	0.5−	0.6−
1996 10 18	693	0.5−	0.3+	1997 10 19	658	0.3−	0.8−	1999 10 18	704	0.5−	0.1−
1996 10 18	693	0.2−	0.8−	1997 10 19	658	0.2−	0.1+				
1996 10 31	657	0.5+	0.0	1997 10 19	658	0.9−	0.2−				

(12009)* 1996 UE = 1983 VL₆

Discovered 1996 Oct. 16 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 34867), A. Gnädig (*ibid.*), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30328255	ω	303.19134	+0.96600904	+0.25388528		
<i>a</i>	2.1940058	Ω	42.15841	−0.20641083	+0.87088187		
<i>e</i>	0.2792479	<i>i</i>	4.15842	−0.15563133	+0.42084087		
<i>P</i>	3.25	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 05 27	413	1.5+	0.7+	1996 11 13	411	0.6−	0.2−	1999 07 14	704	0.1−	0.5+
1976 05 27	413	0.1+	0.6−	1996 11 16	817	0.1−	0.3−	1999 07 14	704	0.4−	0.9+
1976 05 29	413	1.3−	0.3+	1996 11 16	817	0.1+	0.2−	1999 07 14	704	1.0−	0.2−
1976 05 29	413	0.6−	0.1+	1996 11 16	817	0.0	0.3−	1999 07 14	704	0.2−	0.4−
1983 11 09	033	0.3+	0.6−	1996 11 17	817	0.1−	0.2−	1999 09 11	704	0.9+	0.2+
1983 11 10	033	0.8+	0.6−	1996 11 17	817	0.0	0.3−	1999 09 11	704	1.8+	0.2+
1996 10 16	411	1.2−	0.9+	1996 11 18	817	0.1+	0.3−	1999 09 11	704	0.4+	0.5+
1996 10 16	411	0.8−	1.5+	1996 11 18	817	0.2+	0.5−	1999 09 11	704	0.5+	0.1−
1996 10 17	411	1.1−	1.3+	1996 11 30	411	0.4+	0.4+	1999 09 11	704	0.2+	0.3−
1996 10 17	411	0.6−	1.3+	1996 11 30	411	0.2+	0.5+	1999 09 29	704	1.0+	0.9−
1996 10 20	411	0.4+	0.1−	1996 11 30	411	0.5+	0.3+	1999 09 29	704	0.5−	0.3+

1996 10 20	411	0.5−	0.1+	1998 04 20	691	0.6+	0.3+	1999 09 29	704	0.2−	1.3−
1996 10 29	411	0.3+	0.8−	1998 04 20	691	0.1+	0.2+	1999 09 29	704	0.1−	1.2−
1996 10 29	411	0.5+	0.1+	1998 04 20	691	0.6+	0.1+				
1996 11 13	411	0.1+	0.1+	1999 07 14	704	1.2−	0.5+				

(12010)* 1996 UN = 1991 BP₄

Discovered 1996 Oct. 18 at Klet.

Id. A. Doppler (*MPC* 34517), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29718778	ω	304.02894	−0.80208097	−0.59657171		
<i>a</i>	2.2239009	Ω	199.39260	+0.57176519	−0.75366833		
<i>e</i>	0.1404576	<i>i</i>	4.78861	+0.17248389	−0.27583735		
<i>P</i>	3.32	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 01 22	675	0.4−	0.1−	1998 03 24	046	1.3−	0.2−	1998 05 24	704	0.9+	0.4+
1991 01 22	675	0.2+	0.9+	1998 03 24	046	0.5−	0.3−	1998 05 24	704	0.2+	0.1+
1996 10 18	046	0.3−	0.1+	1998 04 10	046	0.8−	0.5+	1998 05 24	704	0.3−	0.9−
1996 10 18	046	0.2−	0.2+	1998 04 10	046	1.0−	0.5+	1998 05 24	704	1.2−	1.2−
1996 10 18	046	0.1−	0.4−	1998 04 10	046	0.6−	0.6+	1998 05 24	704	0.1+	0.6+
1996 10 18	046	0.1+	0.3+	1998 04 21	046	0.0	0.5+	1998 05 28	699	0.9−	1.1+
1996 10 19	046	0.0	0.1+	1998 04 21	046	0.2−	0.6+	1998 05 28	699	0.7+	0.5+
1996 10 19	046	0.0	0.1−	1998 04 21	046	0.2+	0.5+	1998 05 28	699	0.3−	0.2+
1996 10 19	046	0.3−	0.6−	1998 04 21	704	0.1+	0.1+	1999 09 07	704	0.4−	0.9+
1996 10 19	046	0.9−	0.0	1998 04 21	704	0.2+	0.1+	1999 09 07	704	0.6−	0.2−
1996 10 19	046	1.1+	0.8−	1998 04 21	704	0.2+	0.8−	1999 09 07	704	0.3−	0.5−
1996 10 23	046	1.1+	0.6+	1998 04 21	704	0.0	0.6+	1999 09 07	704	0.4−	0.4−
1996 10 23	046	0.5+	0.5+	1998 04 21	704	0.0	0.6+	1999 09 07	704	0.4−	0.3+
1996 10 23	046	0.8+	0.1+	1998 04 22	704	0.1+	0.2+	1999 09 09	704	0.6+	0.7−
1996 10 31	046	0.3+	0.2+	1998 04 22	704	0.3+	0.2+	1999 09 09	704	0.1+	0.8−
1996 10 31	046	0.8+	0.4−	1998 04 22	704	0.6−	0.3+	1999 09 09	704	0.4+	0.5−
1996 10 31	046	1.0+	1.0+	1998 04 22	704	1.5−	0.5+	1999 09 09	704	0.6+	1.0−
1996 11 02	046	0.5−	1.0+	1998 04 22	704	0.8−	0.6−	1999 09 09	704	(0.2−	2.4−)
1996 11 02	046	0.4−	0.3+	1998 04 29	566	0.9+	0.1−	1999 09 11	046	0.2−	0.3+
1996 11 02	046	0.2−	0.3+	1998 04 29	566	1.2+	0.4−	1999 09 11	046	0.3+	0.3+
1996 11 16	046	0.8−	0.2+	1998 04 29	566	0.9+	1.4−	1999 09 11	046	0.2−	0.1+
1996 11 16	046	0.3−	0.2−	1998 05 01	704	1.0+	0.0	1999 09 11	046	0.1+	0.0
1996 11 16	046	0.7−	0.2+	1998 05 01	704	0.9+	0.0	1999 09 11	046	0.5+	0.3+
1996 11 17	046	0.3−	0.4+	1998 05 01	704	0.5+	0.1+	1999 09 11	046	0.5+	0.5+
1996 11 17	046	0.3−	0.2−	1998 05 01	704	0.8+	0.0	1999 09 14	704	0.3−	1.0−
1996 11 17	046	0.7−	0.2+	1998 05 01	704	0.3+	0.6−	1999 09 14	704	0.4−	0.0
1996 12 11	046	0.5−	0.2+	1998 05 05	699	1.0+	0.5+	1999 09 14	704	0.5−	0.3−
1996 12 11	046	0.3+	0.2+	1998 05 05	699	0.8+	0.2−	1999 09 14	704	0.6−	0.3−
1996 12 11	046	0.5−	0.3−	1998 05 05	699	0.4+	0.1−	1999 09 14	704	0.1−	0.2+
1996 12 12	046	0.2−	0.1+	1998 05 07	046	0.2−	0.6−	1999 09 27	046	1.1+	1.2+
1996 12 12	046	0.1+	0.1+	1998 05 07	046	0.3+	0.1−	1999 09 27	046	0.5−	0.8+
1996 12 12	046	0.3−	0.1−	1998 05 07	046	0.1−	0.2−	1999 09 27	046	0.0	0.1−
1996 12 29	046	0.5+	0.7+	1998 05 08	046	0.3+	0.4−	1999 09 27	046	1.5+	0.1−
1997 01 08	046	0.4−	0.6+	1998 05 08	046	0.4+	0.1−	1999 09 27	046	0.3+	0.8+
1997 01 08	046	1.0+	1.3+	1998 05 08	046	0.1+	0.3−	1999 10 15	704	0.2−	0.1−
1997 01 08	046	0.0	0.8+	1998 05 22	704	0.0	0.2−	1999 10 15	704	1.4−	0.3+
1998 02 27	046	0.8−	0.3+	1998 05 22	704	1.7+	0.7+	1999 10 15	704	0.9−	0.7−
1998 02 27	046	1.1−	0.0	1998 05 22	704	0.0	1.1+	1999 10 15	704	0.7−	0.3+
1998 02 27	046	0.6−	0.5+	1998 05 22	704	0.1−	0.3+				
1998 03 24	046	0.9−	0.4−	1998 05 22	704	0.3−	1.9+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	288.26191		(2000.0)	P	Q
<i>n</i>	0.28227151	ω	325.99044	+0.55557012	-0.82096709
<i>a</i>	2.3015727	Ω	89.92299	+0.78916732	+0.47075061
<i>e</i>	0.1003492	<i>i</i>	7.57004	+0.26183349	+0.32312057
<i>P</i>	3.49	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 11 28	033	(3.9- 0.4-)	1998 04 21	704	0.3- 0.4+	1998 05 24	704	0.8+ 1.5-
1989 11 29	033	0.7- 1.4-	1998 04 21	704	0.5- 0.5+	1998 05 24	704	0.7- 0.3+
1989 12 02	033	(3.6- 0.5-)	1998 04 21	704	0.1+ 0.1+	1998 05 24	704	1.3+ 0.8+
1989 12 03	033	0.9+ 0.7-	1998 04 21	704	0.4+ 0.2+	1998 05 24	704	0.8+ 1.1-
1989 12 03	033	0.8+ 1.4-	1998 04 21	704	0.4- 0.3+	1998 05 24	704	0.6- 0.2+
1996 11 14	411	0.1- 0.4+	1998 04 23	704	0.3- 0.1-	1999 09 09	699	0.2- 0.7+
1996 11 14	411	0.2- 1.6+	1998 04 23	704	0.7- 0.0	1999 09 09	699	1.1- 0.1-
1996 11 15	411	0.9+ 0.2-	1998 04 23	704	0.5+ 0.4+	1999 09 09	699	0.4- 0.8+
1996 11 15	411	0.0 0.1-	1998 04 23	704	0.4+ 0.4+	1999 09 11	704	0.4+ 0.4-
1996 11 19	411	0.4+ 0.6+	1998 04 23	704	0.3+ 1.7+	1999 09 11	704	0.4- 0.2-
1996 11 19	411	0.5+ 1.1+	1998 04 23	704	0.8- 2.0-	1999 09 11	704	0.0 0.7-
1996 11 30	411	1.1- 0.3-	1998 04 23	704	0.4+ 0.2-	1999 09 11	704	0.1+ 0.4-
1996 11 30	411	0.9- 0.3+	1998 04 23	704	0.1- 0.2+	1999 09 11	704	0.1- 0.7-
1996 12 08	411	0.3+ 0.4-	1998 04 23	704	0.4- 1.1-	1999 09 29	704	0.2- 0.2+
1996 12 08	411	0.2+ 0.1-	1998 04 23	704	0.4+ 0.5-	1999 09 29	704	0.3- 0.2+
1997 01 11	327	0.5- 0.1-	1998 04 24	704	0.4- 0.1+	1999 09 29	704	0.4+ 0.8-
1997 01 11	327	0.1- 0.3-	1998 04 24	704	0.1+ 0.2+	1999 09 29	704	0.4+ 0.5-
1997 01 11	327	0.5- 0.0	1998 04 24	704	0.3- 0.7+	1999 09 29	704	0.2- 0.2+
1997 01 23	327	0.1- 0.2+	1998 04 24	704	0.3- 1.1+	1999 09 30	704	0.3+ 0.1+
1997 01 23	327	0.1+ 0.0	1998 05 22	704	0.9+ 0.4+	1999 09 30	704	0.0 0.2+
1997 01 23	327	0.2+ 0.5+	1998 05 22	704	1.1+ 1.8-	1999 09 30	704	0.4+ 0.4+
1998 04 21	688	0.5- 0.1+	1998 05 22	704	0.8- 1.0-	1999 09 30	704	0.5+ 0.8+
1998 04 21	688	0.3- 0.1+	1998 05 22	704	0.0 0.1+	1999 09 30	704	0.6+ 0.0
1998 04 21	688	0.3- 0.2+	1998 05 22	704	0.4+ 0.3-			

(12012)* 1996 VH₈ = 1982 UZ₁₁ = 1989 UK₅

Discovered 1996 Nov. 7 by K. Endate and K. Watanabe at Kitami.

Id. K. Ichikawa (*MPC* 29117)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	295.60727		(2000.0)	P	Q
<i>n</i>	0.28570859	ω	11.37012	+0.81332637	-0.57954742
<i>a</i>	2.2830768	Ω	24.26986	+0.52354683	+0.69062831
<i>e</i>	0.1459874	<i>i</i>	7.16045	+0.25376944	+0.43261683
<i>P</i>	3.45	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1982 10 15	413	0.6- 0.2-	1998 03 25	704	0.2+ 0.9+	1998 04 30	699	0.0 0.2-
1982 10 15	413	0.2+ 0.1+	1998 03 26	566	0.2- 0.1+	1998 04 30	699	0.5- 0.0
1982 10 22	095	(1.0- 2.8+)	1998 03 26	566	0.3- 0.1+	1998 05 01	699	0.5- 0.5-
1989 10 30	807	0.9+ 0.2-	1998 03 26	566	0.3- 0.1+	1998 05 01	699	0.0 0.1+
1989 11 01	807	0.4+ 0.5-	1998 03 28	704	0.8- 0.1-	1998 05 01	699	0.4- 0.4-
1996 11 03	400	0.1+ 1.6+	1998 03 28	704	1.1- 0.6+	1998 05 01	566	0.5- 0.7-
1996 11 103	400	1.0+ 1.1+	1998 03 28	704	0.4- 0.1-	1998 05 01	566	0.9- 0.5-
1996 11 07	400	0.9+ 1.0-	1998 03 28	704	0.1+ 0.2+	1998 05 01	566	0.6- 0.5-
1996 11 07	400	0.7+ 0.4-	1998 03 28	704	1.4- 0.2+	1998 05 16	704	1.1+ 0.5-
1996 11 08	400	1.6- 1.4-	1998 03 29	704	0.6- 0.1+	1998 05 16	704	1.0- 0.3-
1996 11 08	400	1.2- 0.9-	1998 03 29	704	0.4- 0.0	1998 05 16	704	0.5+ 0.1-
1996 11 13	400	0.1- 0.2+	1998 03 29	704	0.6- 0.5+	1998 05 16	704	0.8- 0.2+
1996 11 13	400	0.1+ 0.5+	1998 03 29	704	0.2- 0.4+	1998 05 16	704	0.3+ 0.4+
1996 11 16	400	0.1+ 0.2-	1998 03 29	704	0.1- 0.5-	1999 07 14	704	0.7+ 0.6+
1996 11 16	400	0.1+ 0.3-	1998 04 20	704	0.3- 1.0-	1999 07 14	704	0.5+ 1.2+
1998 03 22	704	0.4+ 0.5-	1998 04 20	704	0.4- 0.8-	1999 07 14	704	1.1+ 0.3+
1998 03 22	704	0.0 0.2-	1998 04 20	704	0.4+ 0.6-	1999 07 14	704	0.8+ 0.2+
1998 03 22	704	0.9+ 0.4-	1998 04 20	704	0.1+ 0.9-	1999 07 14	704	0.8+ 0.1-
1998 03 22	704	0.6- 0.4+	1998 04 22	704	0.4+ 0.3+	1999 09 11	704	0.4- 0.2+
1998 03 22	704	0.7+ 0.1-	1998 04 22	704	1.1+ 0.8+	1999 09 11	704	0.3- 0.1+
1998 03 22	360	0.7- 0.3+	1998 04 22	704	0.1+ 1.0-	1999 09 11	704	0.6- 0.3+
1998 03 22	360	0.7- 0.6+	1998 04 22	704	1.1+ 0.4-	1999 09 11	704	1.0- 0.5+

1998 03 22	360	0.8- 0.1+	1998 04 22	704	1.2+ 0.1-	1999 09 11	704	0.9- 0.3+
1998 03 24	699	1.6+ 1.8+	1998 04 24	699	0.3+ 0.1-	1999 09 29	704	0.9- 0.9-
1998 03 24	699	0.2+ 0.2+	1998 04 24	699	0.6- 0.0	1999 09 29	704	1.6- 0.9-
1998 03 24	699	0.1+ 0.3-	1998 04 24	699	0.0 0.2+	1999 09 29	704	1.1+ 1.3-
1998 03 25	704	0.3- 0.2+	1998 04 28	699	0.4+ 0.4-	1999 09 29	704	0.4+ 1.4-
1998 03 25	704	0.5+ 0.4+	1998 04 28	699	0.5+ 0.6-	1999 09 29	704	(2.0+ 3.0-)
1998 03 25	704	0.6+ 0.1-	1998 04 28	699	0.6+ 0.7-			
1998 03 25	704	0.3+ 0.1-	1998 04 30	699	0.4+ 0.9+			

(12013)* 1996 VU₈ = 1995 LE₁

Discovered 1996 Nov. 7 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 28603)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	282.37719		(2000.0)	P	Q
<i>n</i>	0.29417691	ω	216.31483	+0.43690375	-0.89811975
<i>a</i>	2.2390493	Ω	207.87960	+0.84840708	+0.42990107
<i>e</i>	0.1319263	<i>i</i>	6.13322	+0.29886541	+0.09255260
<i>P</i>	3.35	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 06 05	327	0.6- 0.8-	1998 04 30	699	0.5+ 0.1+	1999 09 09	704	0.1+ 0.8+
1995 06 05	327	0.2- 0.4+	1998 04 30	699	1.3+ 0.9+	1999 09 09	704	0.7+ 0.9+
1995 06 06	327	0.7+ 0.5-	1998 05 01	704	0.2+ 0.2-	1999 09 14	704	0.4- 0.1-
1995 06 06	327	0.4+ 0.8-	1998 05 01	704	0.2+ 0.4-	1999 09 14	704	0.7- 0.4+
1995 06 06	327	0.1- 0.8-	1998 05 01	699	0.6- 0.0	1999 09 14	704	0.6- 0.4+
1995 06 06	327	0.2+ 0.5-	1998 05 01	704	0.2+ 0.8+	1999 09 14	704	0.7- 0.1+
1995 06 06	327	0.1- 0.4-	1998 05 01	699	1.2+ 0.8+	1999 09 14	704	0.5- 0.1+
1995 06 06	327	0.4- 0.7-	1998 05 01	699	0.5+ 1.7+	1999 09 29	704	0.0 0.1-
1996 11 07	400	1.1- 0.3-	1998 05 01	704	1.1+ 0.1+	1999 09 29	704	0.9- 0.2-
1996 11 07	400	1.2+ 0.7-	1998 05 01	704	0.4- 0.1+	1999 09 29	704	0.3- 0.4-
1996 11 08	400	(0.3- 2.6-)	1998 05 22	704	1.8+ 1.7+	1999 09 29	704	0.5+ 0.9-
1996 11 08	400	1.5- 1.3-	1998 05 22	704	0.6- 0.6+	1999 10 02	703	0.9- 0.4-
1996 11 15	400	0.2+ 0.5+	1998 05 22	704	0.8+ 0.9-	1999 10 02	703	0.9- 0.1+
1996 11 15	400	0.3+ 0.4+	1998 05 22	704	1.0- 0.7-	1999 10 02	703	0.8+ 0.3-
1996 11 16	400	0.2+ 1.0+	1998 05 22	704	0.9+ 1.1+	1999 10 02	703	0.1+ 1.2+
1996 11 16	400	0.1- 0.0	1998 05 23	691	0.1- 1.3+	1999 10 02	704	0.3+ 0.4+
1996 12 02	399	(1.4+ 3.1+)	1998 05 23	691	0.5+ 1.2+	1999 10 02	704	0.0 0.4-
1996 12 02	399	0.8+ 0.9+	1998 05 23	691	0.3- 1.0+	1999 10 02	704	0.2+ 0.1+
1998 04 21	704	0.8- 0.7-	1999 09 07	704	0.3+ 0.2+	1999 10 02	704	0.3+ 0.2-
1998 04 21	704	0.2- 1.4-	1999 09 07	704	0.1+ 0.4+	1999 10 02	704	1.3+ 0.9-
1998 04 21	704	0.0 1.2-	1999 09 07	704	0.3+ 0.2-	1999 10 08	704	0.1+ 0.8-
1998 04 21	704	0.9- 1.2-	1999 09 07	704	0.2+ 0.3+	1999 10 08	704	0.3- 0.3+
1998 04 21	704	(3.0- 1.4-)	1999 09 07	704	0.1- 0.3+	1999 10 08	704	0.1- 0.4-
1998 04 22	704	0.5- 0.4-	1999 09 08	699	0.3- 0.2+	1999 10 15	704	0.3+ 0.1-
1998 04 22	704	1.6- 0.3+	1999 09 08	699	0.2- 0.7+	1999 10 15	704	0.7+ 0.1+
1998 04 22	704	1.0- 0.0	1999 09 08	699	0.3+ 0.8+	1999 10 15	704	0.2- 0.5-
1998 04 22	704	0.0 0.7-	1999 09 09	704	0.1- 0.3+	1999 10 15	704	0.4- 1.1-
1998 04 22	704	1.2- 0.6-	1999 09 09	704	0.1- 0.5+	1999 10 15	704	0.2+ 1.4-
1998 04 30	699	1.0+ 1.2+	1999 09 09	704	0.4+ 1.1+			

(12014)* 1996 VX₁₅ = 1987 HB₁

Discovered 1996 Nov. 5 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 28603)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	127.92846		(2000.0)	P	Q
<i>n</i>	0.26686764	ω	356.05908	-0.94594553	+0.32411181
<i>a</i>	2.3893078	Ω	202.86347	-0.29672840	-0.87953593
<i>e</i>	0.1587278	<i>i</i>	1.73629	-0.13091720	-0.34837922
<i>P</i>	3.69	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1987 04 21	675	2.4+	1.5+	1998 03 25	704	0.2+	0.4+	1998 04 30	699	0.2+	0.1-
1987 04 21	675	1.7+	0.8+	1998 03 25	704	0.3+	0.8+	1998 04 30	699	0.2-	0.3+
1987 04 23	046	(0.4-	3.5-)	1998 03 25	704	0.2-	0.8+	1998 05 01	699	0.0	0.3-
1987 04 23	046	2.2-	2.3-	1998 03 28	704	1.7+	0.8+	1998 05 01	699	0.0	0.1+

1987 04 24	046	0.3-	0.1-	1998 03 28	704	0.7+	1.1+	1998 05 01	699	0.1-	0.4-
1987 04 24	046	1.7-	1.1+	1998 03 28	704	0.9-	0.5-	1999 09 07	704	0.2-	0.9+
1987 04 27	046	0.1-	0.9-	1998 03 28	704	0.0	0.5-	1999 09 07	704	0.3+	0.4+
1987 04 27	046	0.3-	1.0-	1998 03 28	704	0.0	0.8-	1999 09 07	704	0.1+	0.3+
1996 11 05	691	0.1-	0.1-	1998 03 29	704	0.2+	0.4+	1999 09 07	704	0.1+	0.1+
1996 11 05	691	0.3-	0.1-	1998 03 29	704	0.1-	0.1+	1999 09 07	704	0.3+	0.3+
1996 11 05	691	0.1-	0.1+	1998 03 29	704	0.5+	0.2-	1999 09 09	704	0.2+	0.0
1996 11 11	691	0.1+	0.1-	1998 03 29	704	0.3-	0.0	1999 09 09	704	0.0	0.1-
1996 11 11	691	0.1+	0.1-	1998 03 29	704	0.5+	0.4-	1999 09 09	704	0.1+	0.1-
1996 11 11	691	0.2+	0.1-	1998 04 01	704	0.3+	0.6+	1999 09 09	704	0.1-	0.6-
1996 11 18	691	0.1+	0.1-	1998 04 01	704	0.1-	0.7+	1999 09 09	704	0.1-	0.6-
1996 11 18	691	0.0	0.1-	1998 04 01	704	0.2+	0.9+	1999 09 14	704	0.4+	0.1-
1996 11 18	691	0.1+	0.0	1998 04 01	704	0.3+	0.3+	1999 09 14	704	0.2+	0.2+
1998 01 06	688	0.1-	0.3-	1998 04 01	704	0.0	0.9+	1999 09 14	704	0.0	0.2+
1998 01 06	688	0.6-	0.2+	1998 04 04	699	1.8+	0.0	1999 09 14	704	0.5+	1.0+
1998 01 08	688	0.1+	0.1-	1998 04 04	699	0.8+	0.3-	1999 09 14	704	0.4+	0.0
1998 01 08	688	0.0	0.0	1998 04 04	699	0.3+	0.2-	1999 09 30	699	0.2+	1.6+
1998 03 20	704	0.2-	0.4+	1998 04 19	704	0.1+	1.3-	1999 09 30	699	0.8-	0.0
1998 03 20	704	0.3-	0.3+	1998 04 19	704	0.1+	0.1-	1999 09 30	699	1.4-	0.9+
1998 03 20	704	0.1+	0.7+	1998 04 19	704	0.6+	0.5-	1999 10 02	704	0.2-	1.0+
1998 03 20	704	0.8-	0.7+	1998 04 19	704	1.2-	0.9-	1999 10 02	704	(2.4-	1.1+)
1998 03 20	704	1.1-	1.2+	1998 04 20	704	0.5+	0.4-	1999 10 02	704	0.0	1.1+
1998 03 22	704	0.3-	0.1-	1998 04 20	704	0.0	0.7+	1999 10 02	704	0.0	0.9+
1998 03 22	704	0.6+	0.4+	1998 04 20	704	0.2+	0.1-	1999 10 02	704	0.4-	0.2-
1998 03 22	704	0.1-	0.2+	1998 04 20	704	0.5-	0.8-	1999 10 05	704	0.0	0.1-
1998 03 22	704	0.2-	0.3+	1998 04 20	704	0.6-	0.0	1999 10 05	704	0.2-	0.5-
1998 03 22	704	1.2-	0.4+	1998 04 22	704	0.2+	0.9-	1999 10 05	704	0.3-	0.7-
1998 03 24	699	0.2+	0.2-	1998 04 22	704	0.3-	0.7+	1999 10 05	704	0.6+	0.2+
1998 03 24	699	0.3-	0.2+	1998 04 22	704	0.4-	0.1+	1999 10 05	704	0.5-	1.9-
1998 03 24	699	0.3+	0.1+	1998 04 22	704	0.5+	1.2+	1999 10 08	704	0.7-	0.1-
1998 03 24	566	0.5-	0.0	1998 04 22	704	0.8-	1.1+	1999 10 08	704	0.2-	0.3-
1998 03 24	566	0.7-	0.2-	1998 04 24	699	0.1+	0.2-	1999 10 08	704	0.1+	0.6-
1998 03 24	566	0.0	1.4-	1998 04 24	699	0.1+	0.5-	1999 10 15	704	0.6+	0.4+
1998 03 24	566	0.7-	0.1-	1998 04 24	699	0.0	0.3-	1999 10 15	704	0.8+	0.6-
1998 03 24	566	0.2+	1.4-	1998 04 28	699	0.1-	0.1-	1999 10 15	704	0.1+	1.0-
1998 03 24	566	0.2-	1.7-	1998 04 28	699	0.1+	0.4-	1999 10 15	704	1.1+	1.3-
1998 03 25	704	0.9+	0.2-	1998 04 28	699	0.3-	0.1+	1999 10 15	704	0.9-	0.3+
1998 03 25	704	0.8+	0.4+	1998 04 30	699	0.0	0.1-				

(12015)* 1996 WA = 1984 BQ₁ = 1986 UM

Discovered 1996 Nov. 16 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 28604)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	298.09673	(2000.0)	<i>P</i>	Nakano	<i>Q</i>
<i>n</i>	0.30078770	ω	37.23388	+0.35050738	-0.93581314
<i>a</i>	2.2061210	Ω	32.29626	+0.84155311	+0.29717749
<i>e</i>	0.1356239	<i>i</i>	4.01332	+0.41101453	+0.18957668
<i>P</i>	3.28	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1984 01 24	381	1.0+	0.4+	1998 04 28	809	(3.4+	2.7+)	1999 10 04	704	0.2+	0.4+
1984 01 24	381	0.8-	1.9+	1998 05 22	704	1.2+	0.6-	1999 10 07	704	0.2+	0.1+
1986 10 28	046	1.5-	1.0-	1998 05 22	704	0.1-	1.1+	1999 10 07	704	(0.2+	2.5-)
1986 10 28	046	(1.2-	3.0-)	1998 05 22	704	0.7-	1.8-	1999 10 07	704	0.3+	0.1-
1986 11 03	046	0.2+	0.5+	1998 05 22	704	0.1+	0.1-	1999 10 07	704	0.4-	1.0-
1986 11 03	046	(0.2+	2.3+)	1998 05 24	704	0.3+	0.3-	1999 10 07	704	0.3+	0.3-
1986 11 07	046	(3.6+	0.1-)	1998 05 24	704	0.0	0.1+	1999 10 07	704	0.1-	0.0
1986 11 07	046	(7.1+	0.9+)	1998 05 24	704	0.8-	0.3+	1999 10 07	704	0.2-	0.5+
1986 11 09	046	0.7+	1.3+	1998 05 24	704	0.0	1.5+	1999 10 07	704	0.0	0.1-
1986 11 09	046	(2.6+	0.4-)	1999 09 08	699	0.8+	0.8+	1999 10 07	704	0.4+	0.3+
1996 11 16	411	0.4+	0.5+	1999 09 08	699	0.8-	0.8+	1999 10 07	704	0.1-	0.3+
1996 11 16	411	0.2+	0.1+	1999 09 08	699	0.4+	0.6+	1999 10 09	704	0.1-	0.0
1996 11 17	411	1.1+	0.3-	1999 09 09	704	0.1-	0.1-	1999 10 09	704	0.1-	0.0
1996 11 17	411	0.7+	0.1-	1999 09 09	704	0.2-	0.2-	1999 10 09	704	0.4-	0.2+
1996 11 19	411	0.6+	0.6-	1999 09 09	704	0.2-	0.1+	1999 10 09	704	0.1-	0.0
1996 11 19	411	1.1+	0.2+	1999 09 09	704	0.3-	0.2-	1999 10 09	704	0.2-	0.1+
1996 12 01	411	0.7-	0.8-	1999 09 09	704	0.6-	0.0	1999 10 10	691	0.0	0.3-

1996 12 01	411	1.0-	0.2-	1999 10 01	703	0.3-	0.3+	1999 10 10	691	0.0	0.3-
1996 12 01	411	0.5-	0.1-	1999 10 01	703	0.6-	0.1-	1999 10 10	691	0.1+	0.4-
1996 12 06	411	0.3-	0.6-	1999 10 01	703	0.3+	0.1+	1999 10 11	106	0.1-	0.2+
1996 12 06	411	0.5-	0.5-	1999 10 01	703	0.4+	0.2+	1999 10 11	106	0.5-	0.2-
1996 12 28	411	0.1-	0.5-	1999 10 04	691	0.0	0.3-	1999 10 11	106	0.0	0.1+
1996 12 28	411	0.6-	0.1+	1999 10 04	691	0.0	0.2-	1999 10 15	704	0.1+	0.0
1998 04 25	809	(1.4-	2.3-)	1999 10 04	691	0.1+	0.4-	1999 10 15	704	0.1+	0.0
1998 04 25	809	(1.0-	2.4-)	1999 10 04	704	0.0	0.1+	1999 10 15	704	0.1-	0.1-
1998 04 25	809	(0.7-	3.1-)	1999 10 04	704	0.3+	0.2-	1999 10 15	704	0.2+	0.2+
1998 04 28	809	(4.0+	0.6+)	1999 10 04	704	0.4+	0.3+	1999 10 15	704	0.0	0.0
1998 04 28	809	(3.5+	1.8+)	1999 10 04	704	0.8+	0.2-				

(12016)* 1996 XC = 1991 NU₂

Discovered 1996 Dec. 1 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 28869)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	61.26699		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.25903938	ω	167.53008	-0.10956504	+0.98717647
a	2.4372057	Ω	96.09503	-0.92169331	-0.05717478
e	0.1902701	i	6.70488	-0.37212490	-0.14904248
P	3.80	H	13.9	G 0.15	U 0

Residuals in seconds of arc

1991 07 03	809	0.7-	0.1-	1998 02 01	684	0.0	0.2-	1999 09 06	684	0.6-	0.2-
1991 07 03	809	0.1-	0.4+	1998 02 01	684	0.1+	0.3-	1999 09 06	684	0.5-	0.2-
1991 07 03	809	0.3+	0.5+	1998 03 01	684	0.2+	0.3+	1999 09 07	684	0.5-	0.1-
1991 07 04	809	0.4-	0.9-	1998 03 01	684	0.0	0.2+	1999 09 07	684	0.5-	0.1-
1991 07 04	809	0.1+	0.7-	1998 03 01	684	0.1+	0.3+	1999 09 08	703	0.3-	0.0
1991 07 04	809	0.5+	0.5-	1998 03 02	684	0.1-	0.8+	1999 09 08	703	0.0	0.1-
1991 07 05	809	0.3-	1.3-	1998 03 02	684	0.0	0.8+	1999 09 08	703	0.1+	0.3-
1991 07 05	809	0.1+	1.2-	1998 03 22	684	0.3-	0.3+	1999 09 08	703	0.5-	0.6-
1991 07 05	809	0.5+	1.1-	1998 03 22	684	0.3-	0.2+	1999 09 13	704	0.3+	0.3+
1996 12 01	684	0.2-	0.1-	1998 03 22	684	0.3-	0.4+	1999 09 13	704	0.3+	0.1+
1996 12 01	684	0.5-	0.4+	1998 03 23	684	0.2-	0.4+	1999 09 13	704	0.2+	0.2+
1996 12 02	684	0.4+	0.4-	1998 03 23	684	0.3-	0.4+	1999 09 13	704	0.3+	0.2+
1996 12 02	684	0.0	0.6-	1998 03 24	704	0.1+	0.2-	1999 09 30	684	0.1+	0.3+
1996 12 04	684	0.0	0.4-	1998 03 24	704	0.5+	0.0	1999 09 30	684	0.2+	0.4+
1996 12 04	684	0.1+	0.4-	1998 03 24	704	0.4+	0.6-	1999 09 30	704	0.2+	0.3+
1996 12 12	684	0.2+	0.2-	1998 03 24	704	0.0	0.6-	1999 09 30	704	0.1+	0.5+
1996 12 12	684	0.1+	0.0	1998 03 25	704	0.5-	0.5-	1999 09 30	704	0.4+	0.1-
1996 12 12	684	0.2+	0.1-	1998 03 25	704	0.3-	0.6-	1999 09 30	704	0.2+	0.5+
1996 12 17	684	0.2+	0.4-	1998 03 25	704	1.0-	0.5-	1999 09 30	704	0.6-	0.2-
1996 12 17	684	0.2+	0.3-	1998 03 25	704	0.1+	0.4-	1999 09 30	704	0.2-	0.1+
1996 12 17	684	0.1+	0.3-	1998 03 25	704	0.7-	0.4+	1999 09 30	704	0.5+	0.1-
1996 12 17	566	0.2-	0.5-	1998 03 25	566	0.3+	0.7+	1999 09 30	704	0.3-	0.7+
1996 12 17	566	0.6+	0.6-	1998 03 25	566	0.3+	0.6+	1999 09 30	704	0.2-	0.4+
1996 12 17	566	0.4+	0.4-	1998 03 25	566	0.2+	0.6+	1999 09 30	704	0.1+	0.9+
1996 12 30	684	0.3-	0.5-	1998 04 19	704	0.8+	0.4+	1999 10 01	684	0.0	0.3+
1996 12 30	684	0.2-	0.5-	1998 04 19	704	1.1+	0.5+	1999 10 01	684	0.1-	0.2+
1997 01 28	684	0.2+	0.5-	1998 04 19	704	0.3+	0.6+	1999 10 16	704	0.4-	0.2+
1997 01 28	684	0.7+	0.2-	1998 04 19	704	0.8+	0.5+	1999 10 16	704	0.2-	0.1-
1998 01 31	684	0.2+	0.2-	1998 04 19	704	0.0	1.0+	1999 10 16	704	0.0	0.1-
1998 01 31	684	0.1+	0.3-	1999 09 04	699	0.3-	0.8+	1999 10 16	704	0.5-	0.1+
1998 01 31	684	0.3+	0.3-	1999 09 04	699	0.0	1.1+	1999 10 16	704	0.4-	0.1+
1998 02 01	684	0.0	0.2-	1999 09 04	699	0.1-	1.3+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	55.84186		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28408786	ω	96.99763	+0.42221518	+0.90642773
<i>a</i>	2.2917519	Ω	197.98939	-0.84523387	+0.38922878
<i>e</i>	0.0589730	<i>i</i>	2.05885	-0.32758824	+0.16398087
<i>P</i>	3.47	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1991 04 08	809	0.8+	0.1+	1998 04 21	704	0.0	0.5+	1999 10 04	704	0.1+	0.4+
1991 04 08	809	0.5+	0.0	1998 04 21	704	0.1+	0.2-	1999 10 04	704	0.9-	0.5-
1991 04 08	809	0.5-	0.2-	1998 04 21	704	0.1-	0.3+	1999 10 04	704	0.2+	0.8+
1991 04 10	809	0.1+	0.6+	1998 04 22	704	0.5+	0.6+	1999 10 04	704	0.1-	0.2-
1991 04 10	809	0.6-	0.9-	1998 04 22	704	0.4+	0.7+	1999 10 04	704	0.4-	0.1-
1991 04 10	809	0.8-	0.8-	1998 04 22	704	0.3-	0.5+	1999 10 05	704	0.4-	0.1+
1996 12 02	411	1.2-	0.2-	1998 04 22	704	0.3+	0.2+	1999 10 05	704	0.6-	0.0
1996 12 02	411	0.0	1.2-	1998 04 22	704	0.5+	0.5+	1999 10 05	704	0.5-	0.3-
1996 12 03	411	0.3+	0.1-	1998 05 16	704	0.0	0.4+	1999 10 05	704	0.5-	0.1-
1996 12 03	411	0.4+	0.1+	1998 05 16	704	(2.4+	0.7+)	1999 10 05	704	0.7-	0.1+
1996 12 08	411	0.6-	0.2-	1998 05 16	704	1.6-	1.3-	1999 10 07	704	0.3-	0.0
1996 12 08	411	0.2+	0.3-	1998 05 16	704	1.0-	0.5-	1999 10 07	704	0.2-	0.1+
1996 12 19	411	(3.1+	0.3+)	1999 09 10	120	0.4+	0.3+	1999 10 07	704	0.4-	0.2+
1996 12 19	411	(4.6+	0.3+)	1999 09 11	120	0.6+	0.0	1999 10 07	704	0.5-	0.0
1996 12 28	411	1.1+	1.0+	1999 09 11	120	0.4+	0.2-	1999 10 07	704	0.3-	0.2+
1996 12 28	411	1.2+	0.7+	1999 09 12	120	0.1+	0.4+	1999 10 09	704	0.4+	0.0
1997 01 15	599	1.6-	0.7+	1999 09 12	120	0.7+	0.1+	1999 10 09	704	1.1+	0.1+
1997 01 15	599	0.0	0.1+	1999 09 13	120	0.4+	0.1+	1999 10 09	704	0.7+	0.4+
1998 03 29	704	0.4+	0.7-	1999 09 13	120	0.9+	0.5+	1999 10 09	704	0.5+	0.0
1998 03 29	704	0.7+	0.3-	1999 09 14	120	0.7+	0.9-	1999 10 09	704	0.8+	0.3-
1998 03 29	704	0.7+	0.7-	1999 09 14	120	0.3+	0.4-	1999 10 15	704	0.7-	0.3-
1998 03 29	704	0.2-	0.4-	1999 10 01	703	0.1-	0.1+	1999 10 15	704	0.1-	1.2-
1998 03 29	704	0.2+	0.1+	1999 10 01	703	0.1-	0.5+	1999 10 15	704	1.3-	0.9-
1998 04 21	704	0.4+	1.2+	1999 10 01	703	0.2+	1.2+				
1998 04 21	704	0.4-	1.1+	1999 10 01	703	0.5-	0.6+				

(12018)* 1996 XJ₁₅ = 1991 NM₃

Discovered 1996 Dec. 10 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. K. Ichikawa (*MPC* 29119)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	35.32977		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.26010701	ω	210.55505	+0.61090502	+0.78372461
<i>a</i>	2.4305320	Ω	97.33419	-0.70159853	+0.60153569
<i>e</i>	0.1745149	<i>i</i>	6.49084	-0.36681678	+0.15469505
<i>P</i>	3.79	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1991 07 06	809	0.4-	0.5-	1998 03 24	704	0.0	0.3-	1999 09 08	699	0.2+	0.2+
1991 07 06	809	0.3-	0.2-	1998 03 24	704	0.6-	0.0	1999 09 08	699	0.1-	0.4+
1991 07 06	809	0.1-	0.3-	1998 03 24	704	0.7+	1.5-	1999 09 08	699	0.2+	0.5+
1991 07 07	809	0.1+	0.3-	1998 03 24	704	0.1+	0.2+	1999 09 14	704	0.7+	1.6-
1991 07 07	809	0.7+	0.4-	1998 03 24	704	1.0-	0.0	1999 09 14	704	0.1+	0.1+
1996 12 08	327	0.4-	0.5-	1998 04 20	704	0.3+	0.9+	1999 09 14	704	0.5-	1.0+
1996 12 08	327	1.1-	0.1-	1998 04 20	704	0.2-	0.1+	1999 09 14	704	0.3+	1.4+
1996 12 08	327	0.8-	0.4-	1998 04 20	704	1.1+	0.8+	1999 09 21	699	0.6+	0.6+
1996 12 10	327	0.1+	0.2-	1998 04 20	704	0.4+	1.1+	1999 09 21	699	0.2+	0.3+
1996 12 10	327	0.4+	0.0	1998 04 20	704	(2.2-	0.6+)	1999 09 21	699	0.5+	0.6+
1996 12 10	327	0.3-	0.5+	1998 04 24	704	0.1-	0.2-	1999 10 02	704	0.1-	0.1-
1996 12 11	327	0.1+	0.2-	1998 04 24	704	0.0	0.4+	1999 10 02	704	0.4-	0.8-
1996 12 11	327	0.0	0.1+	1998 04 24	704	0.6+	1.2-	1999 10 02	704	0.2-	0.2-
1996 12 11	327	0.1+	0.1-	1998 04 24	704	0.2-	0.3+	1999 10 02	704	2.0-	0.9+
1996 12 18	327	0.7-	0.1+	1998 04 24	704	0.2+	1.1+	1999 10 02	704	0.7-	0.4-
1996 12 18	327	0.6+	0.4-	1998 05 16	704	1.1+	1.6+	1999 10 08	704	0.0	0.1-
1996 12 18	327	0.2+	0.4+	1998 05 16	704	1.1-	0.5-	1999 10 08	704	0.4-	0.3+
1996 12 19	327	0.5+	0.1-	1998 05 16	704	0.9+	1.1+	1999 10 08	704	0.0	0.0

1996 12 19	327	0.7+	0.0	1998 05 16	704	0.9-	0.9+	1999 10 08	704	0.0	0.2+
1996 12 19	327	0.9+	0.0	1998 05 16	704	(3.3-	0.4+)	1999 10 08	704	0.1-	0.5+

(12019)* 1996 XF₁₉ = 1998 HW₇₉

Discovered 1996 Dec. 8 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 31979)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	325.28515		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28206063	ω	143.03656	+0.90130879	-0.42848018
<i>a</i>	2.3027196	Ω	242.45043	+0.37829351	+0.85012705
<i>e</i>	0.1513035	<i>i</i>	4.11472	+0.21103668	+0.30608615
<i>P</i>	3.49	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1992 10 02	691	0.1+	0.5-	1998 05 01	704	(0.4-	2.3+)	1999 10 02	704	0.6-	0.8-
1992 10 02	691	0.2+	0.1-	1998 05 01	704	0.0	0.3+	1999 10 02	704	0.6-	0.3-
1992 10 02	691	0.0	0.1-	1998 05 01	704	0.8+	1.3+	1999 10 07	704	0.2+	0.1-
1996 12 08	411	0.7-	0.8+	1999 09 04	703	0.4-	0.0	1999 10 07	704	0.1+	0.0
1996 12 08	411	0.8-	0.9+	1999 09 04	703	0.1-	0.2+	1999 10 07	704	0.2+	0.0
1996 12 11	411	0.1+	0.2-	1999 09 04	703	0.1+	0.3+	1999 10 07	704	0.3-	0.0
1996 12 11	411	0.5+	0.4-	1999 09 04	703	0.2+	0.5+	1999 10 07	704	0.1-	0.1+
1996 12 14	411	0.3+	0.3+	1999 09 08	699	0.2+	0.7+	1999 10 09	704	0.3+	0.1-
1996 12 14	411	0.7+	0.3-	1999 09 08	704	0.1+	0.2+	1999 10 09	704	0.5+	0.4-
1996 12 19	411	0.1+	0.5-	1999 09 08	704	(1.5-	3.0+)	1999 10 09	704	0.1+	0.0
1996 12 19	411	1.2+	1.3-	1999 09 08	699	0.0	0.1+	1999 10 09	704	0.3+	0.0
1996 12 28	411	0.1-	0.8+	1999 09 08	704	0.2-	0.2-	1999 10 09	704	0.3+	0.1-
1996 12 28	411	1.2-	0.4-	1999 09 08	704	0.4-	0.2-	1999 10 10	610	0.5-	0.4-
1997 01 13	411	0.3+	0.2+	1999 09 08	699	0.3-	0.1+	1999 10 10	610	0.2-	0.4-
1997 01 13	411	0.5-	0.5+	1999 09 12	699	0.2+	0.3+	1999 10 10	610	0.0	0.4-
1998 04 21	704	0.3+	0.5-	1999 09 12	699	0.4+	0.4+	1999 10 10	610	0.2+	0.2-
1998 04 21	704	0.4+	0.1+	1999 09 12	699	0.2+	0.9+	1999 10 10	610	0.3+	0.2-
1998 04 21	704	0.7-	1.2+	1999 09 16	704	0.9+	0.4-	1999 10 16	610	1.3-	2.1+
1998 04 21	704	0.5-	1.1-	1999 09 16	704	0.6+	0.5-	1999 10 16	145	0.4-	1.0+
1998 04 21	704	1.2-	0.4-	1999 09 16	704	0.6+	0.7-	1999 10 16	610	0.9-	1.4+
1998 04 22	704	0.7+	0.4-	1999 09 16	704	0.5+	0.0	1999 10 16	610	0.5-	0.6+
1998 04 22	704	0.4+	1.6+	1999 10 01	703	0.1+	0.2-	1999 10 16	610	0.1-	0.2-
1998 04 22	704	0.8+	0.3-	1999 10 01	703	0.3-	0.2+	1999 10 16	145	0.2-	0.5-
1998 04 22	704	(0.7+	2.4-)	1999 10 01	703	0.0	0.0	1999 10 16	610	0.3+	0.9-
1998 04 22	704	0.7+	0.9-	1999 10 01	703	0.1-	0.1-	1999 10 16	145	0.4+	0.1-
1998 05 01	704	0.6-	0.9-	1999 10 02	704	0.3+	0.0				
1998 05 01	704	1.0-	0.6+	1999 10 02	704	0.3-	0.6-				

(12020)* 1996 XW₁₉ = 1987 KW₃ = 1992 UO₁₀

Discovered 1996 Dec. 11 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 28873)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	259.52009		(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.27331035	ω	206.02299	-0.24717976	-0.96175950
<i>a</i>	2.3516102	Ω	258.47273	+0.90870451	-0.18780927
<i>e</i>	0.1492715	<i>i</i>	6.91608	+0.33639006	-0.19936485
<i>P</i>	3.61	<i>H</i>	14.0	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1987 05 30	413	0.6+	0.5+	1996 12 19	411	0.3-	0.4+	1999 09 10	704	0.1-	1.3+
1987 05 30	413	0.3+	0.2+	1996 12 29	411	0.0	0.2+	1999 09 10	704	0.0	0.6+
1992 10 19	399	1.5-	1.6-	1996 12 29	411	0.1-	0.4+	1999 09 16	704	0.4+	0.3+
1992 10 19	399	0.3-	0.1-	1997 01 13	411	0.1-	0.5-	1999 09 16	704	0.1-	0.7-
1992 10 22	399	0.5+	0.2-	1997 01 13	411	0.5+	0.1-	1999 09 16	704	0.3+	0.4+
1992 10 22	399	1.9+	0.9+	1999 09 08	704	0.4+	0.2+	1999 10 04	704	0.3-	0.6-
1992 11 02	399	0.4-	0.3-	1999 09 08	704	0.1+	0.5-	1999 10 04	704	0.1+	0.5-
1992 11 02	399	0.0	0.6+	1999 09 08	704	0.1+	0.4-	1999 10 04	704	0.5-	1.1-
1992 12 14	010	(2.3+	2.6-)	1999 09 08	704	0.7+	0.1-	1999 10 04	704	0.1-	0.5-
1995 07 04	691	0.7-	0.3-	1999 09 08	704	0.2-	0.4-	1999 10 04	704	0.6-	0.5-
1995 07 04	691	0.4-	0.2-	1999 09 09	704	0.0	0.4+	1999 10 19	704	0.1-	0.7+
1995 07 04	691	0.6-	0.2-	1999 09 09	704	0.1+	0.7+	1999 10 19	704	0.3-	0.1+

1996 12 11	411	0.4+	0.3+	1999 09 09	704	0.3+	0.3+	1999 10 19	704	0.3+	0.0
1996 12 11	411	0.2+	0.3+	1999 09 09	704	0.2+	0.6+	1999 10 19	704	0.1-	0.5+
1996 12 12	411	0.5-	0.2+	1999 09 09	704	0.0	0.4+	1999 10 19	704	0.4+	0.3+
1996 12 12	411	0.2-	0.2+	1999 09 10	704	0.5-	0.3-				
1996 12 19	411	0.1-	0.3-	1999 09 10	704	0.3+	0.5+				

(12021)* 1996 XX₁₉ = 1992 PQ₃

Discovered 1996 Dec. 12 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 28873)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29396970	ω	251.03541	+0.99095464	+0.11540737		
<i>a</i>	2.2401014	Ω	102.29243	-0.08068788	+0.92017273		
<i>e</i>	0.1611562	<i>i</i>	4.01920	-0.10723040	+0.37411668		
<i>P</i>	3.35	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 08 05	675	0.3+	0.6-	1998 04 21	704	0.3+	0.0	1999 10 02	703	0.1+	0.1+
1992 08 05	675	0.6+	0.7-	1998 04 21	704	1.0-	1.5-	1999 10 02	703	0.7-	0.0
1992 08 06	675	0.5+	0.6-	1998 04 21	704	0.8-	1.4-	1999 10 07	704	1.0+	0.3+
1992 08 06	675	0.9-	0.3+	1998 04 21	704	1.9-	0.3-	1999 10 07	704	0.6+	0.4-
1996 12 12	411	0.1-	0.1-	1998 04 21	704	1.2-	0.5+	1999 10 07	704	0.2+	0.5-
1996 12 12	411	0.1+	0.9-	1998 04 21	910	1.2+	0.0	1999 10 07	704	0.3-	0.2-
1996 12 12	411	0.5+	0.2-	1998 04 22	910	1.1+	0.1-	1999 10 09	704	0.6+	0.4-
1996 12 13	411	0.2-	0.0	1998 04 22	910	1.0+	0.0	1999 10 09	704	0.6+	0.4-
1996 12 13	411	0.5+	0.5-	1998 04 22	704	0.3+	0.4+	1999 10 09	704	0.4+	0.2-
1996 12 19	411	0.3+	0.4-	1998 04 22	704	0.8+	0.7-	1999 10 09	704	0.3+	0.5-
1996 12 19	411	1.0+	0.3-	1998 04 22	704	0.6-	0.1-	1999 10 09	704	0.1-	0.2-
1996 12 29	411	0.4-	0.4-	1998 04 22	704	0.2+	0.6+	1999 10 19	704	0.3-	0.0
1996 12 29	411	0.5-	0.4+	1998 04 22	704	0.8+	0.3+	1999 10 19	704	0.3-	0.4+
1997 01 13	411	0.2-	0.3-	1999 09 15	106	0.0	0.4-	1999 10 19	704	0.4-	0.2+
1997 01 13	411	1.1-	0.2+	1999 09 15	106	0.1+	0.2+	1999 10 19	704	0.3-	0.2+
1998 04 20	688	0.3-	0.2-	1999 09 15	106	0.6-	0.5-	1999 10 19	704	0.5-	0.2+
1998 04 20	688	0.5-	0.1-	1999 10 02	703	0.2+	0.2+				
1998 04 20	688	0.4-	0.5-	1999 10 02	703	0.3-	0.5+				

(12022)* 1996 XH₂₆ = 1994 HT

Discovered 1996 Dec. 15 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 28874)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27501257	ω	250.14703	-0.00978225	-0.99994611		
<i>a</i>	2.3418965	Ω	200.41440	+0.92112787	-0.00765772		
<i>e</i>	0.1077931	<i>i</i>	0.57123	+0.38913719	-0.00701035		
<i>P</i>	3.58	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 04 16	691	0.1-	0.1+	1998 05 05	684	0.1+	0.6-	1999 10 04	704	0.6+	0.9+
1994 04 16	691	0.4-	0.3-	1998 05 23	684	0.1-	0.2+	1999 10 04	704	0.3+	0.2-
1994 04 16	691	0.2-	0.0	1998 05 23	684	0.1-	0.0	1999 10 05	704	0.1+	0.0
1994 04 19	691	0.3+	0.3+	1998 05 24	684	0.5-	0.2+	1999 10 05	704	0.3+	0.3-
1994 04 19	691	0.2+	0.1+	1998 05 24	684	0.2+	0.7+	1999 10 05	704	0.6+	0.3+
1994 04 19	691	0.2+	0.0	1999 09 07	704	0.8-	0.2+	1999 10 05	704	0.2-	0.3-
1996 12 15	684	0.4+	0.1+	1999 09 07	704	0.2+	0.3+	1999 10 05	704	0.1+	0.1-
1996 12 15	684	0.3+	0.1-	1999 09 07	704	1.0+	0.1+	1999 10 07	703	0.7-	0.1+
1996 12 17	684	0.1-	0.2-	1999 09 13	684	0.3-	0.2+	1999 10 07	703	0.2-	0.0
1996 12 17	684	0.1+	0.2-	1999 09 13	684	0.1-	0.1+	1999 10 07	703	0.8-	0.2-
1996 12 17	684	0.1-	0.3-	1999 09 14	684	0.7-	0.2+	1999 10 07	703	0.1-	0.9+
1996 12 18	684	0.2-	0.0	1999 09 14	684	0.4-	0.1+	1999 10 07	704	0.2+	0.2-
1996 12 18	684	0.2+	0.1-	1999 09 30	703	0.1-	0.5+	1999 10 07	704	0.2+	0.2-
1997 01 08	684	0.5+	0.1-	1999 09 30	703	0.3+	0.1+	1999 10 07	704	0.2+	0.5-
1997 01 08	684	0.4+	0.1-	1999 09 30	703	0.2+	0.1-	1999 10 07	704	0.3+	0.6-
1997 01 31	684	0.4-	0.8+	1999 09 30	703	1.0-	0.4+	1999 10 07	704	0.4+	0.7-
1997 01 31	684	0.4-	0.6+	1999 10 02	684	0.1+	0.2-	1999 10 09	704	0.2-	0.2-
1997 01 31	684	0.3-	0.2+	1999 10 02	684	0.1+	0.3-	1999 10 09	704	0.0	0.3-

1997 03 02	684	0.3-	0.0	1999 10 02	684	0.1+	0.2-	1999 10 09	704	0.0	0.1-
1997 03 02	684	0.1-	0.1-	1999 10 03	684	0.0	0.1-	1999 10 09	704	0.4-	0.2+
1997 03 02	684	0.0	0.2+	1999 10 03	684	0.1-	0.1-	1999 10 09	704	0.1-	0.3+
1998 05 05	684	0.8-	0.2+	1999 10 03	684	0.1-	0.3-				
1998 05 05	684	1.5+	0.6-	1999 10 04	704	0.7+	0.7+				

(12023)* 1996 YJ = 1989 YR₁ = 1992 SX₂₆

Discovered 1996 Dec. 20 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 28875)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27800088	ω	89.75346	+0.97668969	-0.18600513		
<i>a</i>	2.3250838	Ω	280.96481	+0.12618026	+0.90128398		
<i>e</i>	0.1364592	<i>i</i>	6.26540	+0.17365423	+0.39126626		
<i>P</i>	3.55	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 12 30	413	(5.0-	0.6+)	1998 05 22	704	0.2-	0.0	1999 09 09	704	0.1-	0.4+
1989 12 30	413	0.5+	0.7+	1998 05 22	704	0.2-	2.1+	1999 09 09	704	0.6-	0.8+
1989 12 31	413	0.6+	0.9+	1998 05 22	704	1.0+	0.2+	1999 09 18	704	0.3+	0.2+
1989 12 31	413	(2.6-	1.4+)	1998 05 22	704	0.9-	0.6+	1999 09 18	704	0.1+	0.2-
1992 09 30	675	0.1-	0.1+	1998 05 27	704	0.7+	0.1-	1999 09 18	704	0.6+	0.2+
1992 09 30	675	0.1+	0.9-	1998 05 27	704	0.4-	0.1-	1999 09 18	704	0.3-	0.0
1996 12 20	411	0.1+	0.6-	1998 05 27	704	0.5+	0.6+	1999 09 18	704	0.1+	0.5+
1996 12 20	411	0.7+	0.4-	1998 05 27	704	0.5+	0.7-	1999 10 03	704	0.3+	0.0
1996 12 21	411	0.9+	0.3+	1999 09 08	704	0.5+	0.2-	1999 10 03	704	0.3+	0.2+
1996 12 21	411	0.3-	0.3-	1999 09 08	704	0.0	0.5+	1999 10 03	704	0.1-	0.1+
1996 12 30	411	0.9-	0.1-	1999 09 08	704	0.5-	0.3-	1999 10 03	704	0.5+	0.3+
1996 12 30	411	0.5-	0.3+	1999 09 08	704	0.2+	0.0	1999 10 03	704	0.3-	0.3-
1997 01 07	411	0.2+	0.0	1999 09 08	704	0.6-	0.9+	1999 10 10	704	0.1-	0.2+
1997 01 07	411	0.5-	0.2+	1999 09 09	704	0.3+	0.0	1999 10 10	704	0.3-	0.5+
1997 01 26	411	0.1+	0.7+	1999 09 09	704	0.4-	0.3+	1999 10 10	704	0.8-	1.2-
1997 01 26	411	0.1-	0.2+	1999 09 09	704	0.2-	0.2+	1999 10 10	704	0.0	0.1+

(12024)* 1996 YN₂ = 1989 YY₆

Discovered 1996 Dec. 28 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 29119)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28199671	ω	152.47506	+0.73206499	-0.67998488		
<i>a</i>	2.3030676	Ω	250.43003	+0.61669765	+0.68722069		
<i>e</i>	0.1745455	<i>i</i>	2.50904	+0.28942159	+0.25563312		
<i>P</i>	3.50	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 12 25	033	0.3-	0.2-	1998 05 01	704	1.7-	1.0-	1999 09 14	704	0.6+	0.1-
1989 12 26	033	0.3+	0.2+	1998 05 01	704	(5.1-	2.5-)	1999 09 14	704	0.2+	0.7-
1989 12 26	033	0.0	0.1+	1998 08 22	699	0.8-	2.0+	1999 09 14	704	0.4+	0.2-
1996 12 28	411	0.9-	0.6-	1998 08 22	699	0.5-	1.2+	1999 09 14	704	0.2+	0.4-
1996 12 28	411	0.1-	0.2+	1998 08 22	699	0.2-	0.1+	1999 10 13	704	0.4+	0.1+
1996 12 29	411	0.0	0.3+	1999 09 07	704	0.1+	0.6+	1999 10 13	704	0.1-	0.3-
1996 12 29	411	0.2-	0.2+	1999 09 07	704	0.3-	0.1+	1999 10 13	704	0.1+	1.0-
1997 01 06	411	0.2+	0.0	1999 09 07	704	0.1-	0.3-	1999 10 13	704	0.4+	0.9-
1997 01 06	411	0.8-	0.1-	1999 09 07	704	0.2+	0.3-	1999 10 13	704	1.7-	1.4-
1997 01 15	411	0.3+	0.1+	1999 09 07	704	0.0	0.6-	1999 10 15	704	0.1+	0.7+
1997 01 15	411	0.7+	0.1-	1999 09 09	704	0.0	0.2+	1999 10 15	704	0.3+	0.1+
1997 01 26	411	0.3+	1.1-	1999 09 09	704	0.1+	0.3+	1999 10 15	704	0.2-	0.8-
1997 01 26	411	0.7+	0.2+	1999 09 09	704	0.2+	0.3+	1999 10 15	704	1.1+	0.9-
1998 05 01	704	1.4+	1.7-	1999 09 09	704	0.2+	0.9+	1999 10 15	704	0.8-	0.1+
1998 05 01	704	(4.8+	0.9-)	1999 09 09	704	0.4+	0.1-				
1998 05 01	704	0.6-	0.1+	1999 09 14	704	0.3+	0.5-				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	222.57145		(2000.0)	P	Q
<i>n</i>	0.27770885	ω	188.54237	-0.95299587	-0.30198687
<i>a</i>	2.3267135	Ω	333.83999	+0.28116852	-0.85128023
<i>e</i>	0.1049375	<i>i</i>	3.19237	+0.11288548	-0.42909894
<i>P</i>	3.55	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1958 01 24	330	0.5+	0.7+	1997 01 26	411	0.0	0.3-	1999 10 07	704	1.3-	0.6+
1990 01 25	372	0.2+	0.6+	1997 01 26	411	0.7+	0.0	1999 10 12	704	0.4+	0.1-
1990 01 25	372	1.1-	1.2-	1998 06 25	426	0.1-	0.1-	1999 10 12	704	0.1-	0.4+
1990 02 20	046	(3.3+	3.5-)	1998 06 25	426	0.3-	0.3+	1999 10 12	704	0.5+	0.1-
1990 02 20	046	(3.8+	3.0-)	1998 06 25	426	0.2+	0.1+	1999 10 12	704	0.2-	0.2-
1990 02 23	033	(7.1+	2.1-)	1998 06 26	426	0.7-	0.1-	1999 10 12	704	0.4-	0.3-
1990 02 23	033	1.7-	0.1+	1998 06 26	426	0.8+	0.2+	1999 10 15	704	0.2-	0.2+
1995 08 19	809	0.7+	0.1-	1999 10 03	704	0.0	0.2-	1999 10 15	704	0.9+	0.5-
1997 01 02	411	0.0	0.2-	1999 10 03	704	0.0	0.7-	1999 10 15	704	0.6+	0.2+
1997 01 02	411	0.4+	0.6-	1999 10 03	704	0.5-	0.8-	1999 10 15	704	0.4-	0.4+
1997 01 03	411	0.5+	0.5+	1999 10 03	704	0.1-	0.3+	1999 10 15	704	0.6-	0.4+
1997 01 03	411	0.1-	0.2+	1999 10 03	704	0.5-	1.1-	1999 10 21	704	0.2-	0.3-
1997 01 07	411	(12.5+	6.3-)	1999 10 07	704	0.4+	0.1-	1999 10 21	704	0.2+	1.2+
1997 01 07	411	(13.6+	4.9-)	1999 10 07	704	0.3-	0.0	1999 10 21	704	0.2-	0.0
1997 01 14	411	0.6+	0.2+	1999 10 07	704	0.4+	0.1+	1999 10 21	704	0.1-	0.3-
1997 01 14	411	0.3+	0.0	1999 10 07	704	0.4+	0.2+				

(12026)* 1997 AV₁ = 1994 JQ₉

Discovered 1997 Jan. 3 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 28878)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	319.36117		(2000.0)	P	Q
<i>n</i>	0.25862586	ω	69.83428	+0.88688208	-0.45453385
<i>a</i>	2.4398030	Ω	317.08893	+0.36540868	+0.79966888
<i>e</i>	0.1186593	<i>i</i>	6.97651	+0.28269536	+0.39233743
<i>P</i>	3.81	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1988 11 09	675	0.0	0.1+	1997 01 26	411	0.3-	0.3+	1999 09 09	704	0.1+	0.8-
1988 11 09	675	0.2+	1.8-	1997 01 26	411	0.0	0.2-	1999 09 09	704	0.5+	0.5-
1994 05 04	304	1.2-	0.4+	1999 07 16	704	0.3-	0.1-	1999 09 14	704	0.4-	0.3-
1994 05 04	304	0.1-	0.1-	1999 07 16	704	0.2-	0.2-	1999 09 14	704	0.9-	0.4-
1994 05 05	304	0.0	0.3+	1999 07 16	704	0.1-	0.2+	1999 09 14	704	0.5-	0.2-
1994 05 05	304	1.1+	0.8-	1999 07 16	704	0.3-	0.9+	1999 09 14	704	0.6-	0.5-
1996 12 13	691	0.0	0.2-	1999 08 22	699	0.4+	1.6+	1999 09 14	704	0.7-	0.4-
1996 12 13	691	0.1+	0.3+	1999 08 22	699	0.4+	0.5+	1999 10 02	704	1.0+	0.6+
1996 12 13	691	0.3+	0.2+	1999 08 22	699	0.6+	0.8+	1999 10 02	704	0.2+	0.5+
1997 01 03	411	0.3+	0.4+	1999 09 07	704	0.1-	0.0	1999 10 02	704	0.3+	0.3-
1997 01 03	411	0.3+	0.2+	1999 09 07	704	0.1+	0.3+	1999 10 02	704	0.0	0.3-
1997 01 04	411	0.3+	0.5+	1999 09 07	704	0.0	0.0	1999 10 02	704	0.4+	0.1+
1997 01 04	411	0.3+	0.2-	1999 09 07	704	0.1-	0.2+	1999 10 07	704	1.3+	0.2-
1997 01 08	411	0.1+	0.2-	1999 09 07	704	0.1+	0.2+	1999 10 07	704	0.8-	0.3+
1997 01 08	411	1.2+	0.6+	1999 09 09	704	0.1-	0.4+	1999 10 07	704	0.6+	0.8+
1997 01 14	411	0.0	0.3+	1999 09 09	704	0.6-	0.2-	1999 10 07	704	0.7-	0.4-
1997 01 14	411	1.2-	0.3+	1999 09 09	704	0.5-	0.7-				

(12027)* 1997 AB₅ = 1973 UD₅ = 1982 BY

Discovered 1997 Jan. 3 by N. Sato at Chichibu.

Id. T. Urata (*MPC* 28879)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	258.74936		(2000.0)	P	Q
<i>n</i>	0.26218310	ω	61.73280	-0.04121397	-0.99745911
<i>a</i>	2.4176843	Ω	30.79635	+0.87233991	-0.06427912
<i>e</i>	0.1658799	<i>i</i>	6.51701	+0.48715961	+0.03071682
<i>P</i>	3.76	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1973 10 27	033	0.3-	0.2-	1997 01 09	369	0.4+	0.9+	1998 05 24	704	0.7-	1.0-
1973 10 27	033	0.2-	1.1-	1997 01 15	369	0.4-	0.6+	1999 09 07	699	1.0-	0.2+
1973 10 28	033	1.1+	0.6-	1997 01 18	369	0.9-	0.4+	1999 09 07	699	0.6-	0.6+
1982 01 18	688	(2.2-	2.3-)	1997 01 18	369	0.6-	1.2+	1999 09 07	699	0.2-	0.3+
1982 01 18	688	0.3+	0.8-	1997 01 30	369	1.5-	0.6+	1999 09 13	704	1.1-	0.6+
1997 01 03	369	0.4+	0.1+	1997 01 30	369	0.2-	0.1-	1999 09 13	704	0.7+	0.8+
1997 01 03	369	0.4+	0.2+	1997 03 04	369	0.6-	1.2+	1999 09 13	704	0.3-	0.6+
1997 01 06	369	0.2+	0.6-	1997 03 04	369	0.1-	1.7+	1999 09 13	704	0.2-	0.2+
1997 01 06	369	0.1-	0.3+	1998 05 24	704	0.5+	1.8+	1999 09 13	704	0.3-	0.5-
1997 01 06	369	0.6+	0.2+	1998 05 24	704	0.0	0.8+	1999 09 30	704	1.1+	1.4+
1997 01 06	369	1.8+	2.1-	1998 05 24	704	0.1+	0.4+	1999 09 30	704	0.7+	0.4+
1997 01 09	369	0.2+	0.6+	1998 05 24	704	0.1+	0.4-	1999 09 30	704	0.4-	0.3+

(12028)* 1997 AK₇ = 1976 EU

Discovered 1997 Jan. 9 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 29634)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	75.36814		(2000.0)	P	Q
<i>n</i>	0.23565635	ω	155.81037	+0.33267425	+0.92561766
<i>a</i>	2.5958721	Ω	133.05835	-0.90048076	+0.36862499
<i>e</i>	0.1737038	<i>i</i>	14.29768	-0.28011114	-0.08571793
<i>P</i>	4.18	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1976 03 01	033	1.5+	0.6+	1998 05 23	704	0.9+	0.1-	1998 07 19	682	(4.0+	0.1+)
1976 03 02	033	0.9-	1.3+	1998 05 23	704	0.3-	0.4+	1998 07 19	682	0.2+	0.2+
1976 03 03	033	0.9-	1.5-	1998 05 23	704	0.3+	0.3-	1998 07 25	682	0.4-	0.1+
1976 03 03	033	0.3+	0.6-	1998 05 26	704	0.9+	0.2-	1998 07 25	682	0.3+	0.7+
1997 01 09	411	0.0	0.8+	1998 05 26	704	1.1-	0.4+	1998 07 25	682	0.9+	0.0
1997 01 09	411	0.6+	0.1-	1998 05 26	704	0.0	0.4-	1998 07 26	699	0.2+	0.0
1997 01 10	411	0.1-	0.5+	1998 05 26	704	0.4+	0.8-	1998 07 26	699	0.3+	1.2+
1997 01 10	411	1.1-	0.1+	1998 05 26	704	0.6-	1.2-	1998 07 26	699	0.6+	0.0
1997 01 13	411	0.8-	0.4-	1998 06 03	704	0.6+	0.1+	1999 09 14	704	0.2+	0.6+
1997 01 13	411	1.7-	0.6-	1998 06 03	704	0.1-	0.3+	1999 09 14	704	0.3-	0.4-
1997 02 14	411	0.1+	0.0	1998 06 03	704	0.5+	0.1-	1999 09 14	704	0.3-	0.2+
1997 02 14	411	0.9+	0.5-	1998 06 03	704	0.6+	0.7-	1999 09 14	704	0.4+	0.2-
1997 03 04	704	0.7+	0.1-	1998 06 03	704	0.7-	0.3+	1999 10 02	704	0.7+	0.4-
1997 03 04	704	0.2+	1.1-	1998 06 19	704	0.1-	0.2+	1999 10 02	704	0.4+	0.2-
1997 03 05	704	0.4+	0.1-	1998 06 19	704	0.2-	0.0	1999 10 02	704	0.1+	0.0
1997 03 05	704	0.4+	1.2+	1998 06 19	704	0.6-	1.2-	1999 10 02	704	0.1-	0.1+
1997 03 06	704	0.5+	0.0	1998 06 19	704	0.4-	0.5-	1999 10 08	704	0.7+	0.0
1997 03 06	704	0.0	0.0	1998 06 19	704	0.1+	0.9-	1999 10 08	704	0.7-	0.4-
1998 04 19	688	0.4-	0.1-	1998 06 19	691	0.3-	0.4-	1999 10 08	704	1.1-	0.3-
1998 04 19	688	0.2-	0.1+	1998 06 19	691	0.5-	0.0	1999 10 08	704	1.1+	0.9-
1998 04 19	688	0.3-	0.1+	1998 06 19	691	0.7-	0.2-	1999 10 08	704	0.1+	0.7-
1998 05 23	704	0.3+	0.1+	1998 07 19	682	0.3-	1.1+				

(12029)* 1997 AQ₂₂ = 1993 HT

Discovered 1997 Jan. 11 by the Beijing Schmidt CCD Asteroid Program at

Xinglong.

Id. G. V. Williams (*MPC* 29126)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	130.12953		(2000.0)	P	Q
<i>n</i>	0.21268864	ω	86.55429	-0.87759489	+0.46221783
<i>a</i>	2.7795417	Ω	120.93920	-0.47723421	-0.81709691
<i>e</i>	0.1598936	<i>i</i>	8.52904	-0.04554897	-0.34453928
<i>P</i>	4.63	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1993 04 16	399	0.9+	1.6+	1997 02 04	327	0.5-	0.5+	1999 09 08	703	0.3-	0.4+
1993 04 16	399	0.9+	0.2-	1997 02 04	327	0.1-	0.3+	1999 09 08	703	0.4-	0.6+
1993 04 19	399	0.9-	0.4+	1997 02 04	327	0.2+	0.5+	1999 09 08	703	0.8-	0.8+
1993 04 19	399	0.7-	0.8+	1997 02 06	327	0.6-	0.3+	1999 09 08	703	0.3-	1.0+
1997 01 11	327	0.4+	0.3-	1997 02 06	327	1.1-	0.4+	1999 09 13	704	0.5+	0.5+

1997 01 11	327	1.3+	0.3-	1997 02 06	327	0.2+	0.3+	1999 09 13	704	0.3+	0.2+
1997 01 11	327	0.6+	0.2-	1998 05 22	704	(2.5-	0.2+)	1999 09 13	704	0.5+	0.3+
1997 01 18	327	0.4-	0.3-	1998 05 22	704	0.4+	1.0+	1999 09 13	704	0.5+	0.5-
1997 01 18	327	0.4-	0.5-	1998 05 22	704	1.3-	0.1-	1999 09 30	704	0.3-	0.2+
1997 01 18	327	0.6-	0.4-	1998 06 24	704	0.1-	0.1+	1999 09 30	704	0.1+	1.1+
1997 01 31	691	0.1-	0.1+	1998 06 24	704	0.3+	0.0	1999 09 30	704	0.6-	0.7+
1997 01 31	691	0.2-	0.3+	1998 06 24	704	0.6+	0.9-	1999 09 30	704	0.0	1.2-
1997 01 31	691	0.2-	0.4+	1998 06 24	704	0.7+	0.6-	1999 09 30	704	0.9-	1.2-
1997 02 01	691	1.1+	0.6-	1998 06 24	704	1.0+	0.6-	1999 10 16	704	0.4-	0.0
1997 02 01	691	0.8+	0.3+	1998 06 26	704	0.8+	0.3-	1999 10 16	704	0.5+	0.6+
1997 02 01	691	0.7+	0.3+	1998 06 26	704	1.7-	0.5-	1999 10 16	704	0.2-	0.6+
1997 02 04	566	0.3-	0.8+	1998 06 26	704	0.6-	0.4+	1999 10 16	704	0.4-	0.0
1997 02 04	566	0.2-	0.7+	1998 06 26	704	0.3+	0.8+	1999 10 16	704	0.4+	0.8+
1997 02 04	566	0.1-	0.5+	1998 06 26	704	0.5-	1.7+				

(12030)* 1997 BF₃ = 1985 VD₅ = 1998 JY₃

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

Id. G. V. Williams (*MPC* 31985)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.28001180	ω	273.24436	+0.72814562	-0.68146781				
<i>a</i>	2.3139386	Ω	129.72970	+0.66070220	+0.66928701				
<i>e</i>	0.2213726	<i>i</i>	5.48583	+0.18241862	+0.29606845				
<i>P</i>	3.52	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1985 11 11	095	0.1-	0.5+	1997 03 06	704	0.8+	0.1-	1998 06 30	691	0.3+	0.2+
1997 01 30	411	0.3+	0.6-	1997 03 06	704	0.4+	0.0	1998 06 30	691	0.3+	0.1-
1997 01 30	411	0.7+	0.9-	1998 05 07	910	0.1+	0.2-	1999 09 15	106	0.3-	0.2-
1997 01 31	411	0.9-	0.3-	1998 05 07	910	0.2+	0.3-	1999 09 15	106	0.1+	0.2+
1997 01 31	411	0.1-	0.3+	1998 05 07	910	0.1-	0.1-	1999 09 15	106	0.1-	0.7-
1997 02 06	411	1.1-	0.6+	1998 05 08	910	0.1-	0.1+	1999 10 02	704	0.6+	0.1+
1997 02 06	411	1.1-	0.5+	1998 05 08	910	0.0	0.2+	1999 10 02	704	0.4+	0.3+
1997 02 14	411	0.3-	0.3+	1998 05 08	910	0.0	0.4+	1999 10 02	704	0.4+	0.0
1997 02 14	411	0.4-	0.6+	1998 06 19	691	0.3-	0.2+	1999 10 02	704	0.3+	0.0
1997 02 26	411	1.5-	0.3-	1998 06 19	691	0.2-	0.4+	1999 10 02	704	0.0	0.2+
1997 02 26	411	0.2+	0.4-	1998 06 19	691	0.1-	0.2+	1999 10 04	703	1.5-	0.2-
1997 03 04	704	1.4+	0.1+	1998 06 24	691	0.1+	0.0	1999 10 04	703	0.5-	0.4+
1997 03 04	704	0.5+	0.2+	1998 06 24	691	0.2-	0.8+	1999 10 04	703	0.0	0.9+
1997 03 05	704	1.4+	0.5+	1998 06 24	691	0.2+	0.3+	1999 10 04	703	0.1+	0.3+
1997 03 05	704	0.6+	0.6+	1998 06 30	691	0.4+	0.2+				

(12031)* 1997 BY₄ = 1985 WL = 1998 HJ₁₁₇

Discovered 1997 Jan. 30 by N. Sato at Chichibu.

Id. S. Nakano (*MPC* 31986), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.27552691	ω	309.23665	+0.93653708	-0.31121544				
<i>a</i>	2.3389811	Ω	69.43106	+0.35050918	+0.82279403				
<i>e</i>	0.1547690	<i>i</i>	9.92551	+0.00645126	+0.47555750				
<i>P</i>	3.58	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1985 11 20	095	0.4-	1.3+	1998 04 24	704	0.2+	0.4-	1999 09 30	704	0.2+	0.1-
1997 01 30	369	0.4-	0.1+	1998 04 24	704	0.5-	0.7-	1999 09 30	704	0.3+	0.1-
1997 01 30	369	0.3+	0.2+	1998 04 24	704	0.9-	0.7-	1999 09 30	704	1.3+	0.3+
1997 02 01	369	1.0-	0.2-	1998 04 24	704	0.1-	0.3-	1999 09 30	704	0.8+	0.1+
1997 02 01	369	0.9-	0.3-	1998 05 01	704	0.1+	0.1-	1999 10 01	704	0.0	0.5-
1997 02 06	369	0.3-	0.2-	1998 05 01	704	1.5+	0.1+	1999 10 01	704	0.1+	0.5-
1997 02 06	369	0.0	0.6-	1998 05 01	704	1.2-	0.3+	1999 10 01	704	0.4-	0.1-
1997 02 09	369	0.2-	0.4-	1998 05 01	704	0.5+	0.1-	1999 10 01	704	0.1-	0.1-
1997 02 09	369	0.8+	1.7-	1998 05 01	704	0.7+	1.0+	1999 10 01	704	0.2+	0.3-
1997 02 13	369	0.2+	1.2-	1998 05 22	704	0.7-	0.7-	1999 10 02	704	0.4+	0.8-
1997 02 13	369	0.3-	0.2-	1998 05 22	704	0.7-	0.5-	1999 10 02	704	0.1+	0.3-
1997 03 04	369	0.8+	0.7-	1998 05 22	704	0.2+	0.3+	1999 10 02	704	0.3-	1.1-

1997 03 04	369	0.5+	1.3-	1998 05 22	704	0.2-	1.8-	1999 10 02	704	0.6-	1.2-
1997 03 09	369	0.2+	0.6+	1998 05 22	704	0.5+	0.1+	1999 10 02	704	0.7-	1.1-
1997 03 09	369	0.5+	0.5+	1998 05 23	704	0.4-	0.4+	1999 10 04	704	0.1+	0.7-
1998 04 21	704	0.3-	0.1-	1998 05 23	704	0.5+	0.5-	1999 10 04	704	0.2-	0.9-
1998 04 21	704	0.4-	0.1+	1998 05 23	704	0.3-	1.0-	1999 10 04	704	0.2-	0.5-
1998 04 21	704	0.1+	0.3-	1998 05 23	704	1.1-	0.3+	1999 10 04	704	0.2-	0.7-
1998 04 21	704	0.1-	0.6+	1998 05 23	704	1.1+	0.3-	1999 10 04	704	0.2-	0.7-
1998 04 21	704	(2.3-	3.1+)	1998 06 20	701	0.2+	0.3+	1999 10 04	704	1.1+	0.5-
1998 04 23	704	0.1+	0.2+	1998 06 20	701	0.0	0.1+	1999 10 04	704	0.1+	0.6+
1998 04 23	704	0.2+	0.1-	1999 09 13	704	0.0	1.2+	1999 10 04	704	0.8+	0.0
1998 04 23	704	0.3+	0.0	1999 09 13	704	0.1-	0.7+	1999 10 04	704	0.6+	0.0
1998 04 23	704	0.0	0.6-	1999 09 13	704	0.5-	1.1+	1999 10 04	704	0.8+	0.5-
1998 04 23	704	1.2-	0.4-	1999 09 13	704	0.4-	0.7+				
1998 04 24	704	0.5-	0.8-	1999 09 30	704	0.2+	0.4-				

(12032)* 1997 BP₅ = 1977 RZ₁₈

Discovered 1997 Jan. 31 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 29310)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.26979574	ω	291.55771	+0.27062756	-0.96226049				
<i>a</i>	2.3719889	Ω	142.70340	+0.89976445	+0.24228030				
<i>e</i>	0.1845969	<i>i</i>	2.70122	+0.34232244	+0.12391534				
<i>P</i>	3.65	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1977 09 09	675	0.8-	0.7-	1997 03 05	684	0.4+	0.4+	1999 10 02	704	0.6+	0.1+
1977 09 10	675	0.7+	0.9+	1999 09 11	684	0.5-	0.8-	1999 10 02	704	0.5+	0.3+
1994 04 15	691	0.1-	0.3+	1999 09 11	684	0.4-	0.4-	1999 10 03	684	0.1-	0.4-
1994 04 15	691	0.5-	0.8-	1999 09 11	684	0.5-	0.6-	1999 10 03	684	0.1-	0.4-
1994 04 15	691	0.3+	0.8-	1999 09 12	684	0.0	0.7-	1999 10 07	703	0.4-	0.2-
1997 01 31	684	0.1-	0.3-	1999 09 12	684	0.1-	0.6-	1999 10 07	703	0.2-	0.5+
1997 01 31	684	0.1-	0.4-	1999 09 14	704	0.0	0.5-	1999 10 07	703	0.2-	0.0
1997 01 31	684	0.2-	0.4-	1999 09 14	704	0.7-	0.8+	1999 10 07	703	0.8-	0.4+
1997 02 01	684	0.2-	0.0	1999 09 14	704	0.1-	0.0	1999 10 07	704	0.4-	0.0
1997 02 01	684	0.3-	0.3+	1999 09 14	704	0.1+	0.5-	1999 10 07	704	0.8+	0.1-
1997 02 01	684	0.0	0.2+	1999 09 30	703	0.6-	0.1+	1999 10 07	704	0.1-	0.2+
1997 02 08	566	0.9-	0.4-	1999 09 30	703	0.3+	0.3+	1999 10 07	704	0.1+	0.4-
1997 02 08	566	0.2+	0.5-	1999 09 30	703	0.1+	0.7+	1999 10 07	704	0.8+	0.8-
1997 02 08	566	0.1-	0.6-	1999 09 30	703	0.5-	0.1+	1999 10 15	704	0.2+	0.4+
1997 02 16	684	0.2+	0.1+	1999 10 02	684	0.0	0.0	1999 10 15	704	0.4+	0.2-
1997 02 16	684	0.1+	0.1+	1999 10 02	684	0.0	0.1+	1999 10 15	704	0.2+	0.2+
1997 02 16	684	0.2+	0.2+	1999 10 02	704	0.0	0.2-	1999 10 15	704	0.5+	0.0
1997 03 05	684	0.3+	0.3+	1999 10 02	704	0.4+	0.3+	1999 10 15	704	0.5+	0.2+
1997 03 05	684	0.4+	0.3+	1999 10 02	704	0.5+	0.4+				

(12033)* 1997 BD₉ = 1986 GJ₁

Discovered 1997 Jan. 31 by U. Munari and M. Tombelli at Cima Ekar.

Id. G. Forti (*MPC* 29638), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	121.73199		(2000.0)	P	Q
n	0.17125476	ω	83.47145	-0.95785843	+0.28431907
a	3.2114977	Ω	113.04054	-0.27796048	-0.88161349
e	0.1280625	i	2.54516	-0.07242376	-0.37672314
P	5.76	H	13.5	G 0.15	U 1

1997 02 08	098	0.1−	1.4+	1998 05 26	104	0.3+	0.3+	1999 09 07	704	1.3−	1.2−
1997 02 08	098	0.5−	1.1+	1998 05 26	104	0.1−	0.3−	1999 09 07	704	0.1+	1.7−
1997 02 28	108	0.7+	0.5+	1998 05 26	104	0.0	0.1−	1999 09 07	704	0.1+	0.1+
1997 02 28	108	1.5+	0.7−	1998 06 24	704	0.3−	1.7−	1999 09 28	104	0.8+	0.5+
1997 02 28	108	0.1−	0.1+	1998 06 24	704	(2.0+	1.7−)	1999 09 28	104	1.2+	0.5−
1997 03 02	108	0.6+	0.6−	1998 06 24	704	0.1−	0.5−	1999 09 28	104	1.3−	0.5+
1997 03 02	108	0.3+	1.0+	1998 06 24	704	1.5−	1.7+				

(12034)* 1997 CR = 1990 SA₂₀ = 1998 KF₉

Discovered 1997 Feb. 1 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31986), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	2.45846		(2000.0)	P		Q
<i>n</i>	0.22180261	ω	209.40680	+0.96580981	+0.20670918	
<i>a</i>	2.7028687	Ω	137.72075	−0.16811197	+0.95880341	
<i>e</i>	0.1742884	<i>i</i>	13.44925	−0.19735699	+0.19485210	
<i>P</i>	4.44	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>
						1

Residuals in seconds of arc

1990 09 19	675	0.2−	1.8−	1998 05 23	704	0.7−	0.5+	1999 09 11	699	0.1−	0.3+
1990 09 19	675	0.9+	1.4−	1998 05 23	704	0.3+	0.1−	1999 09 13	704	0.1+	0.4+
1997 02 01	411	0.3−	0.3−	1998 05 23	704	0.4+	0.6+	1999 09 13	704	0.5+	0.2+
1997 02 01	411	0.4−	0.8−	1998 05 27	699	0.2+	0.9−	1999 09 13	704	0.2−	1.0+
1997 02 03	411	0.2−	0.1+	1998 05 27	699	0.1−	0.3+	1999 09 13	704	0.4+	0.2+
1997 02 03	411	0.1−	0.2+	1998 05 27	699	0.2+	0.4−	1999 09 13	704	0.0	0.6+
1997 02 11	411	0.5+	0.5−	1998 05 28	699	0.4+	0.1−	1999 09 17	106	0.1+	0.2+
1997 02 11	411	0.4−	0.1+	1998 05 28	699	0.4−	0.3+	1999 09 17	106	0.4+	0.6+
1997 03 05	411	0.6+	0.2−	1998 05 28	699	0.8−	0.1+	1999 09 17	106	0.1+	0.6+
1997 03 05	411	0.2−	0.4+	1998 06 18	699	0.4+	0.3+	1999 09 30	704	0.3+	0.5−
1998 04 24	704	0.1+	0.9−	1998 06 18	699	0.8−	0.3+	1999 09 30	704	0.3−	0.5+
1998 04 24	704	1.1−	0.5−	1998 06 18	699	0.8+	1.4+	1999 09 30	704	0.6−	1.2−
1998 04 24	704	0.8+	0.6−	1999 09 11	699	0.4−	0.3+	1999 09 30	704	0.1−	0.6−
1998 05 23	704	0.3+	0.5−	1999 09 11	699	1.0−	0.7+	1999 09 30	704	0.2+	1.4−

(12035)* 1997 CP₁₃ = 1978 EC₁ = 1994 LB₁₀ = 1995 UN₁₁

Discovered 1997 Feb. 1 by V. Goretta at Pianoro.

Id. G. Forti (*MPC* 29310), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	216.65777		(2000.0)	P		Q
<i>n</i>	0.25951476	ω	201.48873	−0.95737846	−0.28849988	
<i>a</i>	2.4342285	Ω	321.73436	+0.26817390	−0.86992982	
<i>e</i>	0.0762242	<i>i</i>	1.28970	+0.10728113	−0.39998741	
<i>P</i>	3.80	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>
						1

Residuals in seconds of arc

1978 03 05	095	0.6+	0.4+	1997 02 07	610	1.1+	0.4−	1998 06 24	104	0.4−	0.7−
1994 06 08	809	0.8−	1.1+	1997 02 08	610	(2.2−	0.8−)	1998 06 25	104	0.3−	0.4+
1994 06 08	809	0.6+	0.7+	1997 02 08	610	1.3−	0.4−	1998 06 25	104	0.3+	1.2+
1994 06 08	809	0.8+	0.6+	1997 02 09	610	0.1+	0.4+	1998 06 26	104	0.3+	0.3−
1994 06 09	809	(1.7+	3.4+)	1997 02 09	610	0.0	0.5−	1998 06 27	104	0.2−	0.4+
1994 06 09	809	(0.7−	4.1+)	1997 02 09	610	0.1−	0.2−	1998 06 27	104	0.2+	1.0+
1994 06 09	809	(1.1+	2.9+)	1997 02 09	610	0.1−	0.0	1999 10 03	704	1.5+	0.9+
1995 10 17	691	0.3−	0.1+	1997 02 09	610	0.0	0.2+	1999 10 03	704	0.2+	0.7+
1995 10 17	691	0.6−	0.1+	1997 02 14	610	0.1−	0.6−	1999 10 03	704	0.8+	0.2+
1995 10 17	691	0.4−	0.3−	1997 02 14	610	0.0	0.7−	1999 10 03	704	0.6+	0.7−
1995 10 22	691	0.7−	0.3−	1997 02 14	610	0.4+	0.6−	1999 10 06	704	0.0	0.1+
1995 10 22	691	0.6−	0.1−	1997 02 16	610	1.9+	1.3−	1999 10 06	704	0.2−	0.5+
1995 10 22	691	0.2−	0.1+	1997 02 16	610	1.7+	1.8−	1999 10 06	704	0.5−	0.0
1996 12 18	327	1.0+	0.0	1997 02 16	610	1.8+	1.0−	1999 10 06	704	0.4−	0.3+
1996 12 18	327	0.1+	0.9−	1997 02 17	327	0.6−	0.0	1999 10 06	704	0.5−	0.3+
1996 12 18	327	1.4−	0.8−	1997 02 17	327	0.8−	0.5−	1999 10 10	704	0.2−	0.4+
1997 02 01	610	1.2−	1.5+	1997 02 17	327	0.8−	0.1−	1999 10 10	704	0.4+	0.0
1997 02 01	610	0.6−	1.3+	1997 03 01	610	(2.9−	0.3+)	1999 10 10	704	0.5+	0.3−
1997 02 01	610	0.1−	1.3+	1997 03 01	610	(2.9−	0.3+)	1999 10 10	704	0.3−	0.8−
1997 02 04	566	1.2−	1.3+	1997 03 01	610	(2.9−	0.3+)	1999 10 10	704	0.4−	0.4−

1997 02 04	566	1.0−	1.4+	1997 03 05	704	0.8+	0.4+	1999 10 15	704	0.1−	0.3−
1997 02 04	566	0.8−	1.4+	1997 03 05	704	1.1+	0.4+	1999 10 15	704	0.0	0.1+
1997 02 06	327	1.2−	0.6+	1997 03 06	704	1.1+	0.7+	1999 10 15	704	0.0	0.3+
1997 02 06	327	0.3−	0.9+	1997 03 06	704	1.6+	0.7+	1999 10 15	704	0.5+	0.6+
1997 02 06	327	0.8−	0.6+	1997 04 08	104	0.8+	0.7+	1999 10 15	704	0.2+	0.8+
1997 02 06	104	0.9−	0.5−	1997 04 08	104	0.7+	1.2+	1999 10 21	704	1.4−	0.6+
1997 02 06	104	0.6−	0.1+	1997 04 08	104	0.1−	0.5+	1999 10 21	704	0.1+	1.0+
1997 02 06	104	0.8+	0.3+	1997 04 08	104	(0.6+	2.1+)	1999 10 21	704	0.9+	0.2+
1997 02 07	610	0.3−	0.0	1997 05 01	104	0.4−	0.4−	1999 10 21	704	0.4−	0.1+
1997 02 07	610	0.1−	0.2−	1997 05 01	104	0.1−	0.3−				
1997 02 07	610	0.7+	0.3−	1997 05 01	104	0.4−	0.6−				

(12036)* 1997 CR₁₉ = 1970 EO = 1986 XE₂

Discovered 1997 Feb. 11 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30461)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	213.47945		(2000.0)	P		Q
<i>n</i>	0.21905320	ω	120.75857	−0.77095956	−0.63547817	
<i>a</i>	2.7254380	Ω	19.88608	+0.53354504	−0.68070360	
<i>e</i>	0.0665789	<i>i</i>	7.14271	+0.34778016	−0.36443119	
<i>P</i>	4.50	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>
						2

Residuals in seconds of arc

1970 03 07	095	0.5−	1.1−	1999 08 22	703	0.6−	0.4−	1999 09 14	703	0.1+	0.0
1986 12 01	010	(4.7+	0.9−)	1999 08 22	703	0.8+	2.0+	1999 09 16	120	0.1+	0.7−
1986 12 01	010	(0.3−	3.7−)	1999 08 22	703	(1.4+	2.2+)	1999 09 16	120	0.5+	0.4−
1986 12 03	010	(3.0−	1.1+)	1999 09 05	699	0.1+	0.1+	1999 10 02	704	1.1−	0.4−
1986 12 03	010	1.2+	1.0+	1999 09 05	699	0.3+	0.1−	1999 10 02	704	0.3−	0.4−
1986 12 03	010	1.4−	1.0−	1999 09 05	699	0.3+	0.4+	1999 10 02	704	0.0	0.1−
1995 10 25	033	(4.7+	2.2+)	1999 09 07	704	0.1+	0.8−	1999 10 02	704	0.1−	0.3−
1995 10 25	033	(4.3+	2.1+)	1999 09 07	704	0.7+	0.3−	1999 10 07	704	(0.3+	3.3+)
1997 02 11	411	0.2−	0.8+	1999 09 07	704	0.5+	0.6−	1999 10 07	704	0.4−	0.5+
1997 02 11	411	0.1−	0.8+	1999 09 08	704	0.1−	0.4−	1999 10 07	704	0.3−	0.1+
1997 02 12	411	0.3−	0.5+	1999 09 08	704	0.3+	0.8−	1999 10 07	704	0.6−	0.4−
1997 02 12	411	0.0	0.2+	1999 09 08	704	0.5+	0.4−	1999 10 07	704	0.4−	0.8−
1997 02 14	411	0.0	0.2+	1999 09 08	704	0.1+	0.2−	1999 10 08	704	0.4−	0.5+
1997 02 14	411	0.3+	1.2−	1999 09 08	704	0.5+	0.5−	1999 10 08	704	0.3−	0.5+
1997 03 01	411	0.0	0.3−	1999 09 14	704	0.7+	0.7−	1999 10 08	704	0.1−	0.4+
1997 03 01	411	0.4−	0.7−	1999 09 14	704	0.4+	1.0−	1999 10 15	704	0.6−	0.5+
1997 03 09	411	0.1+	0.6−	1999 09 14	704	0.8+	0.6−	1999 10 15	704	0.3−	0.6+
1997 03 09	411	0.2+	0.1+	1999 09 14	704	0.1+	0.4−	1999 10 15	704	0.9−	0.8+
1999 08 12	699	0.1−	0.7+	1999 09 14	704	0.4+	0.6−	1999 10 15	704	0.5−	0.6+
1999 08 12	699	0.4+	0.7+	1999 09 14	703	0.5+	0.0	1999 10 15	704	0.0	0.5+
1999 08 12	699	0.1−	0.5+	1999 09 14	703	0.3−	0.4+				
1999 08 22	703	0.5+	0.7+	1999 09 14	703	0.0	0.1−				

(12037)* 1997 CT₁₉ = 2426 T-3

Discovered 1997 Feb. 11 by T. Kojima at the YGCO Chiyoda Station.

Id. G. V. Williams (*MPC* 29640)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	284.35879		(2000.0)	P		Q
<i>n</i>	0.26735946	ω	202.24182	+0.10745223	−0.99395926	
<i>a</i>	2.3863768	Ω	241.59590	+0.91595112	+0.10770685	
<i>e</i>	0.1742970	<i>i</i>	1.45522	+0.38663620	+0.02107649	
<i>P</i>	3.69	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>

1977 10 21	675	0.3-	0.6+	1977 03 05	704	0.4+	0.5+	1999 10 07	704	0.7-	0.3+
1977 10 21	675	(4.3+	0.1-)	1977 03 05	704	0.1-	1.2+	1999 10 07	704	0.1+	0.8+
1977 10 22	675	0.3+	1.4-	1977 03 06	704	0.8+	0.2-	1999 10 07	704	0.7-	0.7+
1977 10 22	675	0.1+	0.3-	1977 03 06	704	1.3+	1.4+	1999 10 07	704	0.4-	0.7+
1977 10 22	675	0.8+	0.7-	1977 03 07	897	2.0+	0.2-	1999 10 09	704	0.3-	0.3-
1977 10 22	675	0.3+	0.3+	1977 03 07	897	1.2+	0.4-	1999 10 09	704	0.2+	0.7+
1992 11 25	691	0.1+	0.4+	1999 09 07	704	0.7+	0.3+	1999 10 09	704	0.4-	0.1-
1992 11 25	691	0.0	0.2+	1999 09 07	704	0.2-	0.2+	1999 10 09	704	0.2-	1.0-
1997 02 11	897	0.0	0.6+	1999 09 07	704	0.3+	0.5+	1999 10 15	704	0.1-	0.3+
1997 02 11	897	0.8-	0.4+	1999 09 07	704	0.3+	0.7+	1999 10 15	704	0.0	0.4-
1997 02 12	897	0.9-	0.7+	1999 09 07	704	0.0	0.3-	1999 10 15	704	0.1-	0.9-
1997 02 12	897	0.6+	0.5-	1999 09 09	704	0.2+	0.3-	1999 10 15	704	0.3-	0.0
1997 02 13	360	0.7-	0.2+	1999 09 09	704	0.2-	0.6+	1999 10 15	704	0.0	0.3-
1997 02 13	360	0.8-	0.3+	1999 09 09	704	0.3+	0.3+	1999 10 15	704	0.1-	0.3+
1997 02 13	360	0.6-	0.4+	1999 09 09	704	0.8+	0.5+	1999 10 17	691	1.0-	0.5+
1997 02 13	587	0.4-	0.0	1999 09 09	704	1.6+	1.5-	1999 10 17	691	0.3-	0.7-
1997 02 13	587	0.6-	0.5+	1999 10 02	704	1.6+	0.7+				
1997 02 14	897	0.3+	1.7-	1999 10 02	704	0.3+	0.4+				

(12038)* 1997 CE₂₀ = 1995 WH₄₃

Discovered 1997 Feb. 12 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 29641)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.24000564	ω	256.09475	+0.99583454	-0.00575702
<i>a</i>	2.5644156	Ω	104.17617	+0.03961489	+0.92620530
<i>e</i>	0.1416538	<i>i</i>	5.38542	-0.08212331	+0.37697560
<i>P</i>	4.11	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1995 11 30	691	0.1+	0.2+	1998 05 24	704	1.2+	0.2-	1999 09 13	703	0.3-	0.6+
1995 11 30	691	0.1+	0.2+	1998 05 24	704	1.1-	0.3-	1999 09 13	703	0.2-	0.2+
1995 11 30	691	0.4+	0.5-	1998 05 24	704	1.2-	0.4-	1999 09 13	703	0.5+	0.9+
1995 12 14	691	0.2-	0.5+	1998 05 24	704	0.4-	0.7-	1999 10 07	704	0.9+	0.2+
1995 12 14	691	0.2-	0.4+	1998 05 24	704	0.8-	0.9-	1999 10 07	704	1.4-	0.3-
1995 12 14	691	0.5-	0.4+	1998 06 02	809	(0.6-	4.7-)	1999 10 07	704	0.7+	0.9+
1997 02 12	411	0.5-	0.0	1998 06 02	809	(1.5-	5.3-)	1999 10 07	704	0.3+	0.0
1997 02 12	411	0.5-	0.6-	1998 06 02	809	(1.3-	4.5-)	1999 10 08	703	0.4-	0.2+
1997 02 13	411	0.2-	0.3-	1998 06 20	566	0.9+	0.8-	1999 10 08	703	0.1+	0.2+
1997 02 13	411	0.1-	0.2-	1998 06 20	566	0.3-	0.7-	1999 10 08	703	0.2-	0.2+
1997 02 16	411	0.5+	0.1-	1998 06 20	566	0.7+	0.2-	1999 10 08	703	0.1-	0.1+
1997 02 16	411	0.0	0.2-	1998 06 24	704	1.3+	1.5+	1999 10 10	704	0.5+	0.6-
1997 02 26	411	0.5-	0.3-	1998 06 24	704	0.6+	1.5-	1999 10 10	704	0.6-	1.3-
1997 02 26	411	0.8+	0.5+	1998 06 24	704	0.6+	0.7-	1999 10 10	704	0.6+	1.4-
1997 03 09	411	(2.4+	0.8+)	1998 06 24	704	0.3+	0.0	1999 10 10	704	0.5+	1.7-
1997 03 09	411	0.4+	0.6+	1998 06 24	704	0.1+	0.1+	1999 10 10	704	0.3-	1.8-
1998 05 22	704	(2.1-	2.6-)	1998 06 26	704	1.7+	0.3-	1999 10 19	704	0.2+	0.4+
1998 05 22	704	0.3-	0.6+	1998 06 26	704	0.9+	0.6+	1999 10 19	704	0.1+	0.3+
1998 05 22	704	1.3-	0.3-	1998 06 26	704	0.1-	1.7+	1999 10 19	704	0.0	0.5+
1998 05 22	704	1.4-	1.1+	1998 06 26	704	1.1-	0.5+	1999 10 19	704	0.5-	0.6+
1998 05 22	704	0.2-	0.7+	1999 09 13	703	0.1+	0.5+	1999 10 19	704	0.1-	0.4+

(12039)* 1997 CB₂₂ = 1978 EZ = 1980 RY₄ = 1983 ED

Discovered 1997 Feb. 13 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 29312)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.21137821	ω	281.73275	+0.01054829	+0.99968483
<i>a</i>	2.7910176	Ω	348.79645	-0.86570035	-0.00227222
<i>e</i>	0.0884449	<i>i</i>	6.73337	-0.50045143	+0.02500149
<i>P</i>	4.66	<i>H</i>	12.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1978 03 05	095	(0.5+	2.9+)	1997 03 03	399	1.9+	1.1+	1999 10 03	704	(0.9-	3.2+)
1980 09 08	095	0.7-	0.2-	1997 03 03	399	0.8+	0.8-	1999 10 03	704	0.5-	0.1+

1983 03 08	046	(3.5+	1.5-)	1997 03 08	399	1.7-	0.9+	1999 10 03	704	0.6-	0.2-
1983 03 08	046	(3.4+	1.3-)	1997 03 08	399	1.9-	0.4+	1999 10 03	704	0.2-	0.2-
1983 03 09	046	0.2+	0.3+	1997 03 09	411	0.3+	0.0	1999 10 07	850	0.3+	0.3-
1983 03 09	046	1.7+	1.5-	1997 03 09	411	0.3+	0.2+	1999 10 07	850	0.0	0.2-
1983 03 10	046	0.0	0.4+	1997 04 28	704	1.1-	0.0	1999 10 07	850	0.2-	0.5-
1983 03 10	046	0.1+	0.1-	1997 04 28	704	0.9-	0.8-	1999 10 07	704	0.6+	0.2+
1983 03 12	046	1.3-	1.1-	1997 04 28	704	1.1-	0.9-	1999 10 07	704	0.1+	0.0
1983 03 12	046	(4.5-	0.4-)	1997 04 28	704	1.1-	1.0-	1999 10 07	704	0.8-	1.0-
1983 03 13	046	(3.7-	2.5-)	1997 04 28	704	1.0-	1.1-	1999 10 07	704	0.4-	0.6-
1983 03 13	046	0.1-	1.0-	1997 04 29	704	0.5+	0.9+	1999 10 07	704	0.4-	0.7-
1992 01 31	691	0.6-	0.6+	1997 04 29	704	1.3+	0.2-	1999 10 08	850	0.9+	0.8-
1992 01 31	691	0.8-	1.0+	1997 04 29	704	1.6+	1.0-	1999 10 08	850	0.5-	0.3-
1994 10 08	691	0.0	0.2+	1997 04 29	704	0.2+	0.6-	1999 10 10	704	0.5+	0.3-
1994 10 08	691	0.4-	0.1-	1997 04 29	704	0.7+	1.3-	1999 10 10	704	0.4+	0.4-
1994 10 08	691	0.3-	0.2+	1998 05 29	704	2.0+	0.3+	1999 10 10	704	0.4+	0.5-
1997 02 13	411	0.2+	0.1+	1998 05 29	704	1.3-	0.3+	1999 10 10	704	0.3+	0.4-
1997 02 13	411	1.2+	0.9+	1998 05 29	704	(1.6+	3.9-)	1999 10 10	704	0.6+	0.5-
1997 02 14	411	0.3+	0.5+	1998 05 29	704	0.8-	1.5-	1999 10 11	850	0.2-	0.3-
1997 02 14	411	0.1+	0.6+	1999 09 12	703	0.1-	0.0	1999 10 12	850	0.1-	0.4-
1997 02 16	411	0.1+	0.2+	1999 09 12	703	0.0	1.0+	1999 10 12	850	0.3-	0.7-
1997 02 16	411	0.3+	0.4+	1999 09 12	703	0.6-	0.5+	1999 10 21	704	0.6+	0.1+
1997 02 26	411	0.3+	0.7+	1999 09 12	703	0.4-	0.7+	1999 10 21	704	0.4+	0.3+
1997 02 26	411	0.3-	0.4+	1999 09 13	106	0.0	0.3+	1999 10 21	704	1.2+	0.2+
1997 03 01	399	0.1+	0.5+	1999 09 13	106	0.2-	0.5+	1999 10 21	704	0.7+	0.6+
1997 03 01	399	1.6-	1.4-	1999 09 13	106	0.1+	0.7+	1999 10 21	704	1.4+	0.6+

(12040)* 1997 EK₈ = 1993 BF₁₅ = 1995 SA₂₉

Discovered 1997 Mar. 8 by P. G. Comba at Prescott.

Id. G. V. Williams (*MPC* 29643)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		<i>P</i>	<i>Q</i>
<i>n</i>	0.26170112	ω	93.01550	+0.04733153	-0.99886803
<i>a</i>	2.4206518	Ω	354.26517	+0.89661434	+0.04457342
<i>e</i>	0.2050360	<i>i</i>	2.71441	+0.44027543	+0.01660957
<i>P</i>	3.77	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1993 01 22	691	(3.4+	1.3-)	1997 04 27	684	0.5-	0.2-	1999 10 05	684	0.4-	0.1+
1993 01 22	691	(3.1+	1.4-)	1997 04 27	684	0.3-	0.4-	1999 10 05	684	0.3-	0.0
1993 01 22	691	(3.5+	1.0-)	1999 09 12	120	0.6-	0.9-	1999 10 06	704	0.3-	0.2+
1993 01 22	399	0.4-	0.9-	1999 09 12	120	0.5+	0.2-	1999 10 06	704	0.1-	0.2+
1993 01 22	399	1.1+	0.8+	1999 09 13	470	0.4-	1.4+	1999 10 06	704	0.3-	0.3+
1993 01 23	400	0.3-	1.2-	1999 09 13	470	(1.0-	2.6+)	1999 10 06	704	0.2-	0.1-
1993 01 23	400	1.2-	0.6-	1999 09 13	684	0.1-	0.4-	1999 10 06	704	0.3-	0.2+
1995 09 20	691	0.2+	0.0	1999 09 13	684	0.1-	0.5-	1999 10 07	683	0.9+	0.8+
1995 09 20	691	0.1+	0.2-	1999 09 13	120	0.5-	1.0-	1999 10 07	683	0.9+	0.6+
1995 09 20	691	0.1-	0.0	1999 09 13	120	0.6+	0.4-	1999 10 07	683	0.7+	0.8+
1995 10 01	691	0.3+	0.2-	1999 09 14	684	0.1+	0.4-	1999 10 07	704	0.1-	0.4+
1995 10 01	691	0.0	0.1-	1999 09 14	684	0.2-	0.3-	1999 10 07	704	0.1+	0.2+
1995 10 01	691	0.0	0.1+	1999 09 16	684	0.4+	0.6-	1999 10 07	704	0.5-	0.6+
1997 03 08	684	0.5-	0.0	1999 09 16	684	0.3+	1.3-	1999 10 07	704	0.0	0.5+
1997 03 08	684	0.6-	0.1+	1999 09 18	684	0.1+	0.5-	1999 10 07	704	0.2-	0.4+
1997 03 09	684	0.7-	0.1-	1999 09 18	684	0.5+	0.3-	1999 10 08	683	0.0	0.1+
1997 03 09	684	1.0-	0.4-	1999 09 18	684	0.4+	0.0	1999 10 08	683	0.8+	0.2+
1997 03 10	684	0.5-	0.3-	1999 10 01	703	0.2-	0.3+	1999 10 08	683	0.5+	0.2+
1997 03 10	684	0.5-	0.3-	1999 10 01	703	0.6-	0.5+	1999 10 09	704	1.7+	0.1-
1997 03 10	684	0.5-	0.3-	1999 10 01	703	0.2-	0.6+	1999 10 09	704	0.4-	0.4+
1997 03 14	684	0.6+	0.6+	1999 10 01	703	0.8-	0.8+	1999 10 09	704	0.4-	1.0-
1997 03 14	684	1.4+	0.4+	1999 10 04	684	0.1-	0.3+	1999 10 09	704	0.1+	0.5-
1997 03 14	684	0.4+	0.7+	1999 10 04	704	0.5-	0.3+	1999 10 09	704	0.4-	0.2-
1997 03 31	684	0.1+	0.4+	1999 10 04	684	0.3-	0.3+	1999 10 15	704	0.1-	0.1-
1997 03 31	684	0.3-	0.4+	1999 10 04	684	0.2-	0.3+	1999 10 15	704	0.6-	0.2-
1997 04 09	704	2.1+	0.8+	1999 10 04	704	0.1+	0.3+	1999 10 15	704	1.0-	0.3-
1997 04 09	704	1.8+	1.2+	1999 10 04	704	0.3-	0.4+	1999 10 19	704	0.0	0.3-
1997 04 09	704	1.4+	1.2+	1999 10 04	704	0.3-	0.2-	1999 10 19	704	0.2-	0.7+
1997 04 09	704	1.1+	1.0+	1999 10 05	683	0.2+	0.2+	1999 10 19	704	0.5-	0.4-

1997 04 15 684 0.5− 0.1+ 1999 10 05 683 0.2+ 0.2+ 1999 10 19 704 0.4+ 0.1+
 1997 04 15 684 0.2− 0.1+ 1999 10 05 683 0.4+ 0.3+ 1999 10 19 704 0.7− 0.5+

(12041)* 1997 EQ₂₅ = 1993 QT₅

Discovered 1997 Mar. 5 by T. Urata at the Nihondaira Observatory.

Id. T. Urata (*MPC* 29644)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	34.76748		(2000.0)	P		Q	
<i>n</i>	0.16068701	ω	108.45070	+0.26087042		+0.96529169	
<i>a</i>	3.3508028	Ω	176.59500	−0.94627988		+0.25827048	
<i>e</i>	0.1032272	<i>i</i>	12.24075	−0.19105240		+0.03883693	
<i>P</i>	6.13	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 08 17	010(18.5− 35.3−)	1998 05 24	699	0.3+	0.3+	1999 09 06	888	0.6−	0.3−
1993 08 19	010 0.5− 1.2−	1998 05 26	704	1.0−	1.2−	1999 09 07	704	0.6+	0.1−
1993 08 19	010 1.0+ 0.1+	1998 05 26	704	0.8+	0.0	1999 09 07	704	0.1−	0.4−
1993 08 19	010 0.1− 1.0−	1998 05 26	704	0.2−	0.4−	1999 09 07	704	0.2+	0.8−
1993 09 18	010 (1.9+ 4.7+)	1998 05 26	704	0.9−	0.8+	1999 09 07	704	0.0	0.8−
1993 09 18	010 (0.7+ 3.4+)	1998 05 26	704	(0.4+ 2.3+)		1999 09 07	704	0.0	0.1+
1993 09 18	010 (0.5+ 3.3+)	1998 06 03	704	0.6−	0.5+	1999 09 08	385	0.5−	0.5−
1997 03 05	385 0.9− 0.2+	1998 06 03	704	0.6+	1.2+	1999 09 08	385	0.5+	0.2−
1997 03 05	385 0.7− 0.1−	1998 06 03	704	0.7+	0.9+	1999 09 09	704	0.7−	0.5−
1997 03 08	385 0.0 0.1+	1998 06 03	704	1.2−	0.7−	1999 09 09	704	0.4−	0.5−
1997 03 08	385 1.0− 0.4−	1998 06 04	699	0.4+	0.3+	1999 09 09	704	0.2+	0.0
1997 03 11	385 0.3+ 1.3+	1998 06 04	699	0.5−	0.1+	1999 09 09	704	0.5−	0.1+
1997 03 11	385 1.2− 0.5+	1998 06 04	699	0.5−	0.4+	1999 09 14	704	0.7−	0.4+
1997 03 18	385 1.1+ 0.1+	1998 06 15	699	0.0	0.7−	1999 09 14	704	0.9+	0.2−
1997 03 18	385 0.4+ 0.3+	1998 06 15	699	0.0	0.4+	1999 09 14	704	0.3+	0.1−
1997 04 29	704 0.1− 1.2−	1998 06 15	699	0.2+	0.0	1999 09 14	704	0.2−	0.5−
1997 04 29	704 0.2+ 0.4−	1999 07 24	385	1.7−	0.2+	1999 10 13	704	0.3−	0.9+
1997 04 29	704 1.7+ 0.4−	1999 07 24	385	0.6−	0.5+	1999 10 13	704	0.3+	0.9+
1997 04 29	704 0.5+ 1.3−	1999 07 24	385	0.4−	0.3+	1999 10 13	704	0.1+	0.6+
1998 05 23	704 0.9+ 1.0+	1999 08 31	385	1.1+ 0.0		1999 10 13	704	0.8+ 0.0	
1998 05 23	704 1.7+ 0.6−	1999 08 31	385	0.5+ 0.3+		1999 10 13	704	0.5+ 0.5−	
1998 05 23	704 1.0− 0.4+	1999 09 05	888	0.1− 0.4+		1999 10 15	704	0.7− 0.1+	
1998 05 23	704 0.6− 0.8−	1999 09 06	699	0.5+ 0.5+		1999 10 15	704	0.5− 0.3+	
1998 05 23	704 0.1− 1.2−	1999 09 06	699	0.3− 0.1−		1999 10 15	704	0.7+ 1.1+	
1998 05 24	699 1.0+ 0.5−	1999 09 06	699	0.4+ 0.0		1999 10 15	704	0.1− 0.2+	
1998 05 24	699 0.0 0.2+	1999 09 06	888	0.1+ 0.2−		1999 10 15	704	0.9+ 0.6+	

(12042)* 1997 FC = 1996 AS₃

Discovered 1997 Mar. 17 by C. Buil at Ramonville Saint Agne.

Id. G. V. Williams (*MPC* 29646)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	119.19939		(2000.0)	P		Q	
<i>n</i>	0.18996055	ω	92.77122	−0.72458864		+0.67071705	
<i>a</i>	2.9970485	Ω	129.41258	−0.68521982		−0.67650335	
<i>e</i>	0.0575723	<i>i</i>	11.83551	−0.07379097		−0.30410830	
<i>P</i>	5.19	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1996 01 15	552 0.6+ 0.6+	1997 04 10	132	0.2+	1.0+	1998 06 28	627	0.2−	1.2+
1996 01 15	552 0.2− 1.0−	1998 04 21	132	(0.8− 3.6+)		1999 09 04	703	0.1−	0.7+
1996 01 16	552 0.4− 0.8+	1998 04 21	132	(1.2− 2.9+)		1999 09 04	703	0.2+ 0.3+	
1996 01 16	552 0.7− 0.4−	1998 04 21	132	1.1− 1.4+		1999 09 04	703	0.1+ 0.2+	
1996 01 17	552 0.4+ 0.7−	1998 05 21	132	1.3+ 1.3+		1999 09 04	703	0.1+ 1.3+	
1996 01 17	552 0.1+ 0.6−	1998 05 21	132	(1.2− 3.8+)		1999 09 13	704	0.0 0.2−	
1996 01 17	552 0.5+ 0.2+	1998 06 17	148	0.4+ 1.1−		1999 09 13	704	0.7− 0.2−	
1997 03 17	959 0.4+ 1.4+	1998 06 17	148	1.6− 0.2−		1999 09 13	704	0.5− 0.6+	
1997 03 17	959 0.7+ 0.8+	1998 06 19	704	0.4+ 0.5+		1999 09 13	704	1.1− 0.1−	
1997 03 18	959 0.1+ 0.8+	1998 06 19	704	0.9− 0.1+		1999 09 14	106	0.0 0.6+	
1997 03 29	124 0.9− 0.2+	1998 06 19	704	0.0 0.2−		1999 09 14	106	0.5+ 0.1+	
1997 03 29	124 0.5− 0.1+	1998 06 19	704	0.5− 0.5−		1999 09 14	106	0.1− 0.2+	
1997 03 29	124 0.4+ 0.0	1998 06 19	132	0.7− 1.1−		1999 09 30	704	0.2+ 0.5−	

1997 03 30	124 0.7+ 0.7−	1998 06 19	132	0.5− 0.5−	1999 09 30	704	0.3+ 0.2−
1997 03 30	124 0.2+ 0.2+	1998 06 20	133	0.6+ 0.6−	1999 09 30	704	0.3− 0.3−
1997 03 30	124 0.0 0.6−	1998 06 20	133	1.1+ 0.8+	1999 09 30	704	1.2+ 0.6−
1997 03 31	132 0.4+ 0.3−	1998 06 20	133	1.3+ 0.5−	1999 09 30	704	0.4− 0.3+
1997 03 31	132 0.2− 0.3+	1998 06 25	704	0.0 0.5+	1999 10 04	703	0.3− 0.5+
1997 03 31	132 0.5+ 0.1+	1998 06 25	704	(2.6+ 0.6−)	1999 10 04	703	0.2− 1.0+
1997 04 05	124 0.9− 0.6+	1998 06 25	704	0.5− 0.3−	1999 10 04	703	0.5+ 0.6+
1997 04 05	124 1.7+ 0.2−	1998 06 25	704	0.4− 0.7−	1999 10 04	703	0.4− 0.5+
1997 04 10	132 0.1− 0.1+	1998 06 28	627	0.8+ 0.6−			
1997 04 10	132 1.6− 0.6+	1998 06 28	627	(2.2− 0.4−)			

(12043)* 1997 FN = 1953 VT₂ = 1984 WP₄ = 1989 XH₃

Discovered 1997 Mar. 22 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. K. Ichikawa (*MPC* 29930)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	351.43635		(2000.0)	P		Q	
<i>n</i>	0.19086854	ω	309.73013	+0.96156473		−0.19556435	
<i>a</i>	2.9875360	Ω	62.34127	+0.26629077		+0.83534590	
<i>e</i>	0.0595461	<i>i</i>	12.56833	−0.06695142		+0.51376241	
<i>P</i>	5.16	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1953 11 09	024 0.2− 0.6+	1997 03 28	327	0.1− 0.2−	1999 09 14	704	0.2− 0.4+
1984 11 20	010 0.2− 0.1−	1997 03 28	327	0.4+ 0.6+	1999 09 14	704	0.1+ 0.3+
1984 11 21	010 0.3− 0.4−	1997 05 23	327	1.1+ 0.5−	1999 09 14	704	0.1+ 0.1+
1989 12 02	808 0.1+ 0.7+	1997 05 23	327	0.9+ 0.6+	1999 10 02	704	0.1+ 0.1−
1989 12 02	808 0.2+ 0.2+	1997 05 23	327	0.6+ 1.1+	1999 10 02	704	0.4− 0.2+
1997 03 22	327 0.8− 0.8−	1998 05 25	327	0.0 0.8−	1999 10 02	704	0.5− 0.0
1997 03 22	327 0.7− 0.3−	1998 05 25	327	0.2+ 0.0	1999 10 02	704	0.1− 0.5−
1997 03 22	327 0.1− 0.7−	1998 05 25	327	0.2− 0.2+	1999 10 02	704	0.2− 0.0
1997 03 23	327 0.3− 0.4−	1998 05 25	327	0.4− 0.4−	1999 10 08	704	0.3+ 0.2+
1997 03 23	327 0.8− 0.1−	1998 05 29	327	0.5+ 0.6+	1999 10 08	704	0.5+ 0.2−
1997 03 23	327 0.4+ 0.4−	1998 05 29	327	0.1− 0.6+	1999 10 08	704	0.1+ 0.3−
1997 03 28	327 0.6− 0.6+	1999 09 14	704	0.1+ 0.4+	1999 10 08	704	0.2+ 0.6−
1997 03 28	327 0.5+ 0.8+	1999 09 14	704	0.1− 0.1−	1999 10 08	704	0.4+ 0.4−

(12044)* 1997 FU = 1970 WH = 1981 JL₅

Discovered 1997 Mar. 29 by M. Tombelli and G. Forti at Montelupo.

Id. G. V. Williams (*MPC* 29646)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	305.62139		(2000.0)	P		Q	
<i>n</i>	0.23617564	ω	6.34995	+0.58192588		−0.79298276	
<i>a</i>	2.5920656	Ω	48.23628	+0.73509135		+0.41802140	
<i>e</i>	0.1388755	<i>i</i>	13.99534	+0.34785484		+0.44321152	
<i>P</i>	4.17	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1970 11 26	095 (3.4− 8.2+)	1997 04 07	610	1.0+ 1.7+	1999 09 08	108	1.4− 1.0−
1981 05 08	675 0.9− 1.2−	1997 04 07	610	0.8+ 2.0+	1999 09 08	108	0.0 0.9−
1981 05 09	675 1.2− 1.5−	1997 04 08	610	1.5+ 1.1+	1999 09 08	108	0.4+ 0.6−
1989 03 30	675 0.5+ 0.4+	1997 04 08	610	1.5+ 1.3+	1999 09 08	108	0.5+ 1.0−
1989 03 30	675 0.6+ 0.2+	1997 04 08	610	1.6+ 1.7+	1999 09 09	108	0.3− 0.4+
1997 03 29	108 0.0 0.7−	1997 04 12	108	1.2− 0.4+	1999 09 09	108	1.3− 0.9+
1997 03 29	108 0.0 1.1−	1997 04 12	108	0.4+ 1.1+	1999 09 09	108	0.1− 0.3+
1997 03 29	108 0.6+ 0.5−	1997 05 02	108	0.6+ 0.1+	1999 09 13	704	0.6− 0.7+
1997 03 29	108 0.6+ 0.7−	1997 05 02	108	0.7+ 1.8+	1999 09 13	704	0.3− 0.7+
1997 03 30	108 0.3− 0.9+	1997 05 02	108	1.1− 1.1+	1999 09 13	704	0.4− 1.1+
1997 03 30	108 0.1+ 0.0	1998 05 24	704	(2.2+ 0.9−)	1999 09 13	704	0.8− 1.7+
1997 03 30	108 1.3− 0.8+	1998 05 24	704	1.0+ 1.9+	1999 09 13	704	0.5− 1.1+
1997 03 30	108 0.4+ 1.7+	1998 05 24	704	0.5− 0.9+	1999 09 13	704	0.6− 1.1+
1997 04 02	108 0.1+ 0.1−	1998 05 24	704	1.9− 0.4−	1999 09 13	704	0.3− 1.5+
1997 04 02	108 0.5− 0.2+	1998 05 25	104	0.1+ 0.3+	1999 09 13	704	0.7− 1.

1999 OCT. 26

M.P.C. 36285

1997 04 03	596	0.1−	0.2+	1998 06 24	104	0.0	0.3+	1999 09 30	704	0.0	1.0+
1997 04 03	596	0.1−	1.0+	1998 06 24	104	0.1+	0.4+	1999 09 30	704	0.1+	0.6+
1997 04 06	108	1.3+	0.7+	1998 06 24	104	0.2−	0.1−	1999 09 30	704	0.1−	1.4+
1997 04 06	108	0.4+	0.7−	1998 06 24	104	0.5−	0.7−	1999 10 01	104	0.1−	0.9+
1997 04 06	108	1.3+	1.1−	1998 06 27	104	0.3+	0.3+	1999 10 01	104	0.0	1.2+
1997 04 06	108	1.0−	0.0	1998 06 27	104	0.6−	0.0	1999 10 08	106	0.4−	0.2−
1997 04 07	610	1.1+	1.3+	1998 06 27	104	0.1+	0.4+	1999 10 08	106	0.1−	0.3+
1997 04 07	610	1.0+	1.4+	1999 09 08	108	1.3−	1.5−				

(12045)* 1997 FH₁ = 1982 UT₇ = 1986 RB₇ = 1990 RD₁₂

Discovered 1997 Mar. 30 by P. G. Comba at Prescott.

Id. G. V. Williams (*MPC* 29930)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	49.09405		(2000.0)		P		Q
<i>n</i>	0.23395039	ω	326.65983		+0.73359332		+0.67858086
<i>a</i>	2.6084761	Ω	350.33769		−0.56533049		+0.57913688
<i>e</i>	0.1900833	<i>i</i>	12.73458		−0.37715020		+0.45180581
<i>P</i>	4.21	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 10 21	095	1.4+	0.9−	1997 04 27	684	0.4+	0.3+	1999 09 03	704	0.5−	0.7+
1986 09 06	095	(4.0−	2.3+)	1997 04 27	684	0.1−	0.2−	1999 09 09	681	0.0	0.4+
1986 09 15	095	(1.0+	3.0−)	1997 04 27	684	0.4−	0.1−	1999 09 09	681	0.2−	0.3+
1986 10 02	095	1.8−	1.0+	1997 05 30	684	(2.3+	0.7−)	1999 09 12	681	0.2+	0.3+
1990 09 15	675	0.5+	0.3−	1997 06 05	684	0.4+	0.1−	1999 09 12	681	0.3+	0.4+
1990 09 15	675	0.5−	0.7+	1997 06 05	684	0.4+	0.1+	1999 10 05	704	0.0	0.7−
1997 02 04	691	0.4−	0.3−	1997 06 05	684	0.4−	0.1+	1999 10 05	704	0.0	1.0−
1997 02 04	691	0.4−	0.2−	1998 05 04	684	0.4+	0.4−	1999 10 05	704	0.2+	0.9−
1997 02 04	691	0.6−	0.5−	1998 05 04	684	0.6+	0.6−	1999 10 05	704	0.1+	0.6−
1997 03 30	684	0.6+	0.3+	1998 05 04	684	0.1+	0.9−	1999 10 05	704	0.2−	0.7−
1997 03 30	684	0.5+	0.3+	1998 05 05	684	0.0	0.5−	1999 10 06	684	0.1+	0.8−
1997 03 30	684	0.4+	0.3+	1998 05 05	684	0.6−	0.1+	1999 10 06	684	0.1+	0.7−
1997 03 31	684	0.2+	0.6+	1998 05 05	684	0.1−	0.8−	1999 10 07	684	0.0	0.4−
1997 03 31	684	0.8−	0.5−	1998 05 23	684	0.3−	0.1+	1999 10 07	684	0.1+	0.3−
1997 04 01	684	0.1+	0.3+	1998 05 23	684	0.1−	0.0	1999 10 14	704	0.8+	0.2−
1997 04 01	684	0.1+	0.4+	1998 05 23	684	0.0	0.2+	1999 10 14	704	0.0	0.7+
1997 04 01	684	0.3+	0.2+	1998 05 24	684	0.1−	0.4+	1999 10 14	704	0.4+	0.5+
1997 04 09	684	0.1+	0.3+	1998 05 24	684	0.0	0.4+	1999 10 14	704	0.0	0.9+
1997 04 09	684	0.1+	0.3+	1999 09 03	704	0.3−	0.1−	1999 10 14	704	0.1−	1.2+
1997 04 09	684	0.3+	0.3+	1999 09 03	704	0.6−	0.1−				

(12046)* 1997 FQ₄ = 1995 YO₂₀

Discovered 1997 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. G. V. Williams (*MPC* 29647)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	95.05146		(2000.0)		P		Q
<i>n</i>	0.17530748	ω	9.53394		−0.15585565		+0.98561272
<i>a</i>	3.1618099	Ω	251.52132		−0.91075249		−0.16901734
<i>e</i>	0.1011839	<i>i</i>	3.95371		−0.38241198		+0.00083587
<i>P</i>	5.62	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1995 12 25	691	0.0	0.2−	1998 06 24	704	0.8−	0.8−	1999 10 04	704	0.1−	0.2−
1995 12 25	691	0.3+	0.1+	1998 06 24	704	0.3+	0.3+	1999 10 04	704	0.4+	0.4−
1995 12 25	691	0.0	0.0	1998 06 26	704	0.9−	0.1−	1999 10 04	704	0.2−	0.1+
1995 12 30	691	0.1−	0.3−	1998 06 26	704	0.3+	1.4+	1999 10 07	704	0.1+	0.2+
1995 12 30	691	0.1−	0.1+	1998 06 26	704	0.9+	0.9+	1999 10 07	704	0.3−	0.2+
1995 12 30	691	0.1−	0.1+	1998 06 26	704	0.4+	1.0+	1999 10 07	704	0.1−	0.2−
1997 03 11	809	1.7−	2.1+	1998 06 26	704	0.6−	0.8−	1999 10 07	704	0.2+	0.1−
1997 03 11	809	(2.7−	1.9+)	1998 07 26	704	0.4−	0.1−	1999 10 07	704	0.6−	0.2+
1997 03 11	809	(3.0−	1.8+)	1998 07 26	704	1.7+	0.1+	1999 10 07	106	0.7−	0.5+
1997 03 12	809	1.0−	0.2−	1998 07 26	704	0.3−	0.9−	1999 10 08	106	0.5+	0.3+
1997 03 12	809	0.7−	0.4−	1998 07 26	704	1.1−	1.6−	1999 10 08	106	0.7−	0.0
1997 03 12	809	0.8−	0.0	1999 07 23	704	0.1+	0.1−	1999 10 10	704	0.0	0.1−

1997 03 31	704	0.7+	0.2+	1999 07 23	704	1.3+	0.8−	1999 10 10	704	0.2−	0.0
1997 03 31	704	0.6+	0.1+	1999 07 23	704	0.3−	0.2+	1999 10 10	704	0.0	0.1+
1997 04 03	704	0.4+	0.5+	1999 07 23	704	0.6+	0.2+	1999 10 10	704	0.1+	0.2+
1997 04 03	704	0.3−	0.5+	1999 09 18	703	0.1−	0.7+	1999 10 10	704	0.2−	0.1−
1997 04 05	704	0.4+	0.2+	1999 09 18	703	0.3−	0.1−	1999 10 15	704	0.0	0.3+
1997 04 05	704	1.4+	0.4+	1999 09 18	703	0.0	0.3+	1999 10 15	704	0.1+	0.0
1997 04 06	704	1.1+	0.6+	1999 09 18	703	0.0	0.1+	1999 10 15	704	0.1+	0.3+
1997 04 06	704	0.9+	0.3+	1999 10 01	703	0.2−	0.5+	1999 10 15	704	0.4+	0.2+
1997 04 07	704	0.4+	0.7+	1999 10 01	703	0.6−	0.5+	1999 10 20	704	0.0	0.1+
1997 04 07	704	0.3+	0.3+	1999 10 01	703	0.2−	0.4+	1999 10 20	704	0.2−	0.6+
1998 06 24	704	1.1+	0.5+	1999 10 01	703	0.0	0.2+	1999 10 20	704	0.3−	0.0
1998 06 24	704	0.1+	0.0	1999 10 04	704	0.0	0.2−	1999 10 20	704	0.1−	0.4+
1998 06 24	704	0.6−	0.4+	1999 10 04	704	0.0	0.4+	1999 10 20	704	0.2−	0.5+

(12047)* 1997 GX₃ = 1992 GV₇ = 1992 HJ₆ = 1999 QR₁

Discovered 1997 Apr. 3 by K. Endate and K. Watanabe at Kitami.

Id. A. Doppler (*MPC* 35942)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	28.10424		(2000.0)		P		Q
<i>n</i>	0.18991471	ω	311.87860		+0.91525904		+0.39593878
<i>a</i>	2.9975307	Ω	25.07067		−0.29763500		+0.78899865
<i>e</i>	0.0412476	<i>i</i>	10.11065		−0.27150379		+0.46980168
<i>P</i>	5.19	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 04 06	809	0.0	1.1−	1999 08 24	557	0.4−	0.0	1999 10 05	704	0.2−	0.6+
1992 04 06	809	0.5−	1.3−	1999 08 25	557	0.1−	0.1+	1999 10 05	704	0.5−	0.3+
1992 04 06	809	1.0−	1.3−	1999 08 25	557	0.3−	0.2−	1999 10 05	704	0.7−	0.8+
1992 04 25	809	0.9+	0.6+	1999 09 03	557	0.3−	0.0	1999 10 06	106	0.0	0.2−
1992 04 25	809	0.4+	1.9+	1999 09 03	557	0.1−	0.6−	1999 10 06	106	0.6−	0.0
1992 04 25	809	0.0	0.2+	1999 09 03	557	0.3−	0.4−	1999 10 07	106	0.2−	0.2+
1994 11 06	691	0.2−	0.1−	1999 09 03	557	0.4−	0.6−	1999 10 07	704	0.1−	0.5+
1994 11 06	691	0.2−	0.2+	1999 09 04	557	0.3+	0.2−	1999 10 07	704	0.2+	0.2+
1994 11 06	691	0.1−	0.3+	1999 09 05	699	0.4+	0.3−	1999 10 07	704	0.2+	0.2+
1997 03 12	809	1.9+	1.6−	1999 09 05	699	0.4−	0.5+	1999 10 07	704	0.8+	0.5+
1997 03 12	809	0.9+	1.5−	1999 09 05	699	0.3−	0.5+	1999 10 07	704	0.2+	0.5+
1997 03 12	809	0.7+	0.1−	1999 09 10	557	0.5−	0.3−	1999 10 09	704	0.9+	0.1+
1997 04 03	400	1.9−	0.3+	1999 09 10	557	0.2+	0.2+	1999 10 09	704	1.0+	0.0
1997 04 03	400	0.8−	0.0	1999 10 01	106	1.2−	1.4−	1999 10 09	704	0.9+	0.1+
1997 04 04	400	1.2+	0.3+	1999 10 01	106	0.2−	1.4−	1999 10 09	704	0.8+	0.2+
1997 04 04	400	0.4−	1.4+	1999 10 01	106	1.2+	0.1−	1999 10 09	704	0.8+	0.3−
1997 04 10	400	1.1−	0.7+	1999 10 02	703	0.1−	0.2−	1999 10 15	704	0.0	0.2−
1997 04 10	400	0.4−	0.3−	1999 10 02	703	1.0−	0.2−	1999 10 15	704	0.2−	0.2−
1997 04 11	704	(0.1−	2.1+)	1999 10 02	703	0.1−	0.1−	1999 10 15	704	0.0	0.1−
1997 04 11	704	0.2+	1.2+	1999 10 02	703	0.3−	0.3−	1999 10 15	704	0.4+	0.3+
1999 08 20	557	0.1−	0.0	1999 10 04	704	0.2+	0.8−	1999 10 15	704	0.0	0.5+
1999 08 21	557	0.1−	0.1−	1999 10 04	704	0.6+	0.1+	1999 10 19	704	0.4−	0.2−
1999 08 22	557	0.2−	0.1+	1999 10 04	704	0.2+	0.3+	1999 10 19	704	0.3−	0.2+
1999 08 22	557	0.2−	0.1+	1999 10 04	704	0.5+	0.1−	1999 10 19	704	0.4+	0.4−
1999 08 22	557	0.1−	0.3+	1999 10 04	704	0.4+	0.4−	1999 10 19	704	0.3−	0.4−
1999 08 22	557	0.1+	0.1+	1999 10 05	704	0.1−	0.4+				
1999 08 24	557	0.1+	0.1+	1999 10 05	704	0.3−	0.6+				

Residuals in seconds of arc

1996 01 13	399	1.0–	1.2+	1997 04 15	327	0.7+	0.5+	1999 09 13	704	0.1+	0.8+
1996 01 13	399	0.4–	1.2–	1997 04 15	327	0.2+	0.1–	1999 09 13	704	0.1+	0.7+
1996 01 18	399	0.9–	1.3+	1998 06 19	704	0.4–	1.8–	1999 09 14	106	0.2–	0.3+
1996 01 18	399	0.3–	0.5+	1998 06 19	704	0.1–	0.2–	1999 09 14	106	0.1+	0.3–
1996 01 21	399	1.5+	1.4–	1998 06 19	704	0.1–	1.1+	1999 09 30	704	0.7–	0.7–
1996 01 21	399	1.0+	0.2–	1998 06 19	704	(0.2–	2.6+)	1999 09 30	704	0.0	0.5–
1997 03 18	327	0.2–	0.3+	1999 09 04	699	0.2–	0.2+	1999 09 30	704	0.3+	0.6–
1997 03 18	327	0.0	0.4+	1999 09 04	699	0.7+	0.0	1999 09 30	704	0.7–	0.8–
1997 03 18	327	0.1+	0.3+	1999 09 04	699	0.7+	0.2+	1999 09 30	704	0.5–	0.7–
1997 04 02	327	0.2–	0.7+	1999 09 09	704	0.2–	0.0	1999 10 16	704	0.6+	1.0+
1997 04 02	327	0.4+	0.1+	1999 09 09	704	0.0	0.3–	1999 10 16	704	0.2+	1.3+
1997 04 02	327	0.6+	0.6+	1999 09 09	704	0.8–	0.7–	1999 10 16	704	1.0+	1.2+
1997 04 13	327	0.0	0.5+	1999 09 09	704	0.3–	0.5–	1999 10 16	704	0.0	0.7+
1997 04 13	327	0.1–	0.2+	1999 09 09	704	2.1–	0.9–	1999 10 16	704	0.8+	1.1+
1997 04 13	327	0.1+	0.3+	1999 09 13	704	0.3+	1.0+				
1997 04 15	327	0.1–	0.1–	1999 09 13	704	0.4+	1.2+				

(12049)* 1997 GT₃₂ = 1992 GM₁

Discovered 1997 Apr. 3 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 29935)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	4.45240	(2000.0)	P	Q	
<i>n</i>	0.19965774	ω	15.39504	+0.99258985	–0.12146102
<i>a</i>	2.8992029	Ω	351.57899	+0.10876875	+0.90113715
<i>e</i>	0.0998776	<i>i</i>	1.38948	+0.05417333	+0.41617191
<i>P</i>	4.94	<i>H</i>	13.2	<i>G</i>	0.15

Residuals in seconds of arc

1954 08 04	675	0.5–	0.0	1997 04 11	704	1.3+	0.5+	1999 10 07	120	0.5–	0.1–
1954 08 04	675	0.2+	0.2+	1998 06 24	704	0.2–	0.9–	1999 10 07	120	0.1–	0.1–
1992 04 03	303	0.9+	1.0+	1998 06 24	704	0.1+	1.4+	1999 10 08	120	0.2–	0.4–
1992 04 03	303	(2.5+	0.1+)	1998 06 24	704	0.0	0.2+	1999 10 08	120	0.4+	0.1+
1992 04 03	303	1.5+	1.9+	1998 06 24	704	0.2+	1.4+	1999 10 09	703	0.5–	0.3+
1992 04 04	303	1.7–	0.1–	1998 06 24	704	0.2+	0.4–	1999 10 09	703	0.3–	0.3+
1992 04 04	303	0.7–	0.2+	1999 09 14	703	0.1+	0.4+	1999 10 09	703	0.3–	0.2+
1992 04 04	303	(2.4+	0.1+)	1999 09 14	703	0.1–	0.5+	1999 10 09	703	0.5–	0.5+
1992 04 28	691	1.6+	0.5–	1999 09 14	703	0.0	0.6+	1999 10 10	704	0.1+	0.4+
1992 04 28	691	1.3+	0.2–	1999 09 14	703	0.2–	0.4+	1999 10 10	704	0.3–	0.2+
1992 04 28	691	1.1+	0.5–	1999 10 02	703	0.4–	0.5+	1999 10 10	704	0.2–	0.2+
1997 02 10	910	0.2–	0.3–	1999 10 02	703	0.0	0.0	1999 10 10	704	0.0	0.5+
1997 02 10	910	0.1–	0.3–	1999 10 02	703	0.5–	0.2+	1999 10 10	704	0.2–	0.1–
1997 02 10	910	0.2+	0.6–	1999 10 02	703	0.8–	0.1+	1999 10 11	106	0.3+	0.9+
1997 03 11	809	(2.2–	1.7+)	1999 10 03	704	0.3+	0.6+	1999 10 11	106	0.1–	0.1+
1997 03 11	809	0.7–	1.1+	1999 10 03	704	0.0	0.1+	1999 10 11	106	0.6+	0.2+
1997 03 11	809	1.4–	0.6+	1999 10 03	704	0.0	0.4+	1999 10 11	106	0.0	0.8+
1997 03 12	809	0.3+	1.6+	1999 10 03	704	0.6+	0.3–	1999 10 11	106	0.2–	0.8+
1997 03 12	809	1.4–	1.9+	1999 10 03	704	0.3–	0.3–	1999 10 11	106	0.2–	0.6+
1997 03 12	809	(1.8–	2.6+)	1999 10 06	704	0.2+	0.4+	1999 10 15	704	0.1–	0.2+
1997 03 13	809	0.2–	0.0	1999 10 06	704	0.4+	0.1+	1999 10 15	704	0.1–	0.4+
1997 03 13	809	0.8–	0.3+	1999 10 06	704	0.1+	0.4–	1999 10 15	704	0.2–	0.4+
1997 03 13	809	0.4–	0.3+	1999 10 06	704	0.0	0.3+	1999 10 15	704	0.1+	0.4+
1997 03 13	809	1.1–	2.1+	1999 10 06	704	0.1+	0.0	1999 10 15	704	0.1+	0.7+
1997 03 13	809	0.6+	2.1+	1999 10 07	704	0.0	0.2+	1999 10 20	704	0.1–	0.4–
1997 03 13	809	(1.2–	2.4+)	1999 10 07	704	0.1–	0.4+	1999 10 20	704	0.0	0.3–
1997 04 03	704	1.5+	0.4–	1999 10 07	704	0.2–	0.2+	1999 10 20	704	0.1+	0.4–
1997 04 03	704	1.8+	0.5–	1999 10 07	704	0.3–	0.3+	1999 10 20	704	0.2–	0.5–
1997 04 11	704	0.4+	0.1–	1999 10 07	704	0.1+	0.0	1999 10 20	704	0.2+	0.9–

(12050)* 1997 HE₁₄ = 1974 SC₁ = 1979 SM₈ = 1989 ST₁₄

Discovered 1997 Apr. 27 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 30672)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	351.92540	(2000.0)	P	Q	
<i>n</i>	0.19816348	ω	56.51384	+0.98373271	–0.17896526
<i>a</i>	2.9137591	Ω	313.79028	+0.15684986	+0.89788037
<i>e</i>	0.0902190	<i>i</i>	1.23326	+0.08756757	+0.40222167
<i>P</i>	4.97	<i>H</i>	13.1	<i>G</i>	0.15

Residuals in seconds of arc

1974 09 19	095	1.1–	1.2–	1999 09 05	699	0.1–	0.2+	1999 10 07	683	0.5+	0.2+
1974 09 23	095	1.7+	0.5+	1999 09 17	468	(1.0+	3.9+)	1999 10 07	704	0.2+	0.3–
1979 09 24	095	0.1–	1.6–	1999 09 18	468	(0.1+	4.0+)	1999 10 07	704	0.1–	0.2–
1989 09 26	399	(1.7+	4.5–)	1999 09 18	468	(0.5+	3.7+)	1999 10 07	704	0.2+	0.1–
1989 09 26	399	(0.1–	5.1–)	1999 09 18	703	0.5–	0.0	1999 10 07	704	0.2+	0.5–
1989 09 26	399	0.6+	0.6+	1999 09 18	703	0.1–	0.4–	1999 10 07	704	0.2–	0.3–
1992 03 25	691	0.1–	0.3+	1999 09 18	703	0.3–	0.3–	1999 10 08	683	(0.5+	3.2+)
1992 03 25	691	0.1–	0.1+	1999 09 18	703	0.7–	0.5–	1999 10 08	683	(0.4+	3.8+)
1994 10 12	033	0.3+	0.5–	1999 10 01	703	0.8–	0.0	1999 10 08	683	(0.1–	3.2+)
1994 10 13	033	0.7+	0.0	1999 10 01	703	0.5–	0.2–	1999 10 08	683	0.3+	0.5–
1997 03 10	809	0.3–	0.7–	1999 10 01	703	0.7–	0.4–	1999 10 08	683	0.4+	0.6–
1997 03 10	809	0.2–	1.1–	1999 10 01	703	0.6–	0.1–	1999 10 08	683	0.3+	0.8–
1997 03 10	809	0.5–	1.9–	1999 10 04	684	0.0	0.3–	1999 10 08	468	0.8+	0.5–
1997 03 11	809	(3.1+	3.4+)	1999 10 04	704	0.2–	0.4–	1999 10 08	468	0.4+	0.1+
1997 03 11	809	(2.7+	3.7+)	1999 10 04	684	0.1–	0.3–	1999 10 09	704	0.4+	0.6–
1997 03 11	809	(3.1+	3.4+)	1999 10 04	684	0.1–	0.2–	1999 10 09	704	0.1–	0.5–
1997 04 27	691	0.1+	0.0	1999 10 04	704	0.1–	0.3–	1999 10 09	704	0.1+	1.1–
1997 04 27	691	0.0	0.1–	1999 10 04	704	0.2–	0.5–	1999 10 09	704	0.0	1.0–
1997 04 27	691	0.0	0.1+	1999 10 04	704	0.4–	0.6–	1999 10 15	704	0.2–	0.3–
1997 05 08	691	0.0	0.8–	1999 10 05	683	0.1+	0.1–	1999 10 15	704	0.5+	0.2–
1997 05 08	691	0.4–	0.1–	1999 10 05	683	0.2+	0.1–	1999 10 15	704	0.2–	0.5+
1997 05 08	691	0.3–	0.2–	1999 10 06	704	0.2+	0.2–	1999 10 15	704	1.6+	1.1+
1998 06 24	704	0.5–	0.8–	1999 10 06	704	0.3–	0.4–	1999 10 15	704	2.3+	1.4+
1998 06 24	704	0.3+	0.7+	1999 10 06	704	0.3–	0.2–	1999 10 19	704	0.4–	0.1–
1998 06 24	704	0.9+	0.9+	1999 10 06	704	0.3–	0.2–	1999 10 19	704	0.7–	0.2–
1998 06 24	704	0.8–	0.4–	1999 10 06	704	0.5–	0.1–	1999 10 19	704	0.7–	0.3–
1999 09 05	699	0.1+	0.1+	1999 10 07	683	0.3+	0.0	1999 10 19	704	0.7–	0.2–
1999 09 05	699	0.5+	0.4–	1999 10 07	683	0.3+	0.1–	1999 10 19	704	0.8–	0.4–

(12051)* 1997 JO

Discovered 1997 May 2 by L. Šarounová at Ondřejov.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	211.11472	(2000.0)	P	Q	
<i>n</i>	0.28166735	ω	235.53585	–0.62440161	+0.78101064
<i>a</i>	2.3048626	Ω	355.76605	–0.65245483	–0.52997604
<i>e</i>	0.1723872	<i>i</i>	9.38731	–0.42944770	–0.33037521
<i>P</i>	3.50	<i>H</i>	14.2	<i>G</i>	0.15

Residuals in seconds of arc

1995 10 29	327	0.3–	0.1–	1998 08 18	557	0.7+	0.2–	1998 10 14	704	0.4+	0.4+
1995 10 29	327	0.0	0.3–	1998 08 28	704	1.5–	1.2–	1998 10 14	704	1.0+	0.9+
1995 10 29	327	0.4+	0.1+	1998 08 28	704	1.2–	1.6–	1998 10 14	704	0.1+	0.5–
1997 03 05	809	(3.6+	2.5+)	1998 08 28	704	1.1–	1.9–	1998 10 14	704	0.4+	0.7–
1997 03 05	809	(4.1+	2.5+)	1998 08 28	704	0.0	0.5–	1998 10 14	704	0.3+	0.4+
1997 03 05	809	(3.6+	1.9+)	1998 08 28	704	0.7–	1.9+	1998 10 14	699	0.3+	0.4+
1997 03 06	809	(2.8+	1.2+)	1998 09 14	704	0.5+	0.5–	1998 10 14	699	0.2+	1.6+
1997 03 06	809	(2.4+	1.1+)	1998 09 14	704	1.1+	1.5–	1998 10 14	699	0.6–	1.0+
1997 03 06	809	1.6+	1.4+	1998 09 14	704	0.2–	0.3–	1998 10 15	704	0.0	0.0
1997 05 02	557	0.3–	0.4–	1998 09 15	699	0.3+	1.2–	1998 10 15	704	0.1+	0.0
1997 05 02	557	0.4–	0.6–	1998 09 15	699	0.6+	0.2+	1998 10 15	704	0.8–	1.3+
1997 05 02	557	0.2–	0.2–	1998 09 15	699	0.6+	0.5+	1998 10 15	704	0.5–	0.8+
1997 05 03	557	0.0	0.6–	1998 09 18	704	0.5+	0.1–	1998 10 15	704	0.2–	0.2–
1997 05 03	557	0.1–	1.1–	1998 09 18	704	0.1+	0.9+	1999 09 14	557	0.2–	0.3–
1997 05 03	557	0.1–	0.4–	1998 09 18	704	0.9+	0.6–	1999 09 14	557	0.3–	0.5–
1997 05 04	557	0.4–	0.1–	1998 09 18	704	0.5–	0.6+	1999 09 15	557	0.0	0.9+
1997 05 04	557	0.5–	0.1–	1998 09 18	704	1.7–	0.4–	1999 09 15	557	0.1+	0.6+
1997 05 10	557	0.5–	0.5–	1998 09 26	704	1.1–	0.8–	1999 09 15	557	0.2+	0.3+
1997 05 10	557	0.4–	0.3–	1998 09 26	704	0.1+	1.0–	1999 09 15	557	0.4+	0.3+

1999 OCT. 26

M.P.C. 36287

1997 05 10	557	0.4−	0.5−	1998 09 26	704	1.0+	0.4+	1999 10 18	557	0.3−	0.3−
1997 06 01	557	0.6+	0.8+	1998 09 26	704	1.1−	0.1−	1999 10 18	557	0.3+	0.5−
1997 06 01	557	0.2+	1.6+	1998 09 27	704	0.2+	0.3+	1999 10 18	557	0.4−	0.4−
1997 06 01	557	0.6+	1.1+	1998 09 27	704	0.3+	0.2−	1999 10 19	557	0.2+	0.6−
1998 08 17	557	0.4+	0.0	1998 09 27	704	0.4+	0.9+	1999 10 19	557	0.4−	0.4−
1998 08 17	557	0.0	0.1+	1998 09 27	704	0.4+	0.6+				
1998 08 18	557	0.1−	0.1+	1998 09 27	704	0.3+	0.2−				

(12052)* 1997 JB₁₆ = 1977 UG₅ = 1999 NE₆₂

Discovered 1997 May 3 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 35943)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
2.07567		(2000.0)			
<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+				

(12053)* 1997 PK₂ = 1975 NW

Discovered 1997 Aug. 9 at Starkenburg Sternwarte, Heppenheim.

Id. G. V. Williams (*MPC* 33500)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
208.51342		(2000.0)			
<i>n</i>	0.27051076	ω	9.13702	+0.66404306	+0.74231650
<i>a</i>	2.3678073	Ω	302.52995	−0.69252818	+0.56549132
<i>e</i>	0.1411783	<i>i</i>	6.09475	−0.28187149	+0.35942425
<i>P</i>	3.64	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1954 12 30	675	1.2−	0.2+	1997 08 29	611	0.2+	0.1+	1997 10 28	628	(3.5−	2.4+)
1954 12 30	675	1.6+	0.7+	1997 08 31	611	0.1−	0.6+	1998 12 17	704	0.2−	1.1−
1975 07 11	095	1.1−	2.0+	1997 08 31	611	0.0	0.5+	1998 12 17	704	0.1−	0.3−
1990 12 19	675	1.2+	0.5+	1997 09 01	611	0.4+	0.1+	1998 12 17	704	0.7−	0.2−
1990 12 19	675	1.5−	0.5−	1997 09 01	611	0.5+	0.2−	1998 12 17	704	0.4−	0.6−
1997 08 09	611	0.1+	0.2+	1997 09 06	628	0.5−	0.2−	1998 12 17	704	0.2+	0.5−
1997 08 09	611	0.2+	0.3+	1997 09 06	628	0.6−	0.3+	1998 12 27	611	0.0	0.3+
1997 08 10	611	0.4+	0.2+	1997 09 06	628	0.9−	0.0	1998 12 27	611	0.3−	0.6+
1997 08 10	611	1.9+	0.0	1997 09 06	628	0.0	0.4−	1998 12 29	611	0.1+	0.7−
1997 08 10	611	0.4−	0.1+	1997 09 09	611	0.5−	0.1+	1998 12 29	611	1.2−	0.6+
1997 08 11	611	0.8+	0.2+	1997 09 09	611	0.2−	0.4−	1999 01 16	704	0.1−	0.5+
1997 08 11	611	0.0	0.1+	1997 09 11	611	0.3−	0.2+	1999 01 16	704	0.1+	1.8+
1997 08 12	611	1.2+	0.6+	1997 09 11	611	0.2−	0.5−	1999 01 16	704	0.1+	0.8+
1997 08 12	611	0.2−	0.2+	1997 09 23	611	0.9−	0.0	1999 01 16	704	(0.5−	2.1+)
1997 08 24	611	0.4−	0.5−	1997 09 23	611	0.5−	0.2−	1999 01 19	704	0.6+	0.8−
1997 08 24	611	0.4−	0.0	1997 10 23	861	0.9−	0.6−	1999 01 19	704	0.6+	0.1−
1997 08 24	611	0.4−	0.0	1997 10 23	861	1.0−	0.2+	1999 01 19	704	0.6+	0.9+
1997 08 25	611	0.2+	0.2+	1997 10 28	628	0.6+	1.8−	1999 01 19	704	(0.3+	2.2+)
1997 08 25	611	0.8+	0.2+	1997 10 28	628	1.4+	0.4+	1999 02 12	611	0.6+	0.8+
1997 08 29	611	0.3+	0.1−	1997 10 28	628	0.4−	0.3−	1999 02 12	611	0.3+	0.5+

(12054)* 1997 TT₉

Discovered 1997 Oct. 5 by L. Šarounová at Ondřejov.

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
6.08693		(2000.0)			
<i>n</i>	0.08546480	ω	39.32892	+0.11423180	−0.98580391
<i>a</i>	5.1043982	Ω	44.50945	+0.86149236	+0.03661007
<i>e</i>	0.0655460	<i>i</i>	10.10955	+0.49475450	+0.16386078
<i>P</i>	11.53	<i>H</i>	11.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1986 09 30	675	1.6−	0.7+	1997 11 01	557	0.2−	0.0	1998 12 11	699	0.4+	1.3−
1986 09 30	675	1.1+	0.5+	1997 11 01	557	0.3−	0.2−	1998 12 11	699	0.6+	0.9+
1996 10 07	809	0.3−	0.5−	1997 11 19	557	0.4−	0.2+	1998 12 17	704	1.4+	0.8−
1996 10 07	809	1.6+	0.6−	1997 11 19	557	0.2+	0.4+	1998 12 17	704	1.4−	0.3+
1997 10 05	557	0.1+	0.2+	1997 11 19	557	0.3−	0.4+	1998 12 17	704	0.2−	1.5−
1997 10 05	557	0.1+	0.1−	1997 12 06	910	0.1−	0.6+	1998 12 17	704	0.2−	0.3−
1997 10 05	557	0.1+	0.0	1997 12 06	910	0.0	0.4+	1998 12 17	704	1.9−	0.6−
1997 10 05	557	0.6+	0.1−	1997 12 06	910	0.9−	1.4+	1999 09 12	557	0.0	0.2+
1997 10 05	557	0.1+	0.2−	1998 01 31	557	1.1+	0.4+	1999 09 12	557	0.1−	0.2+
1997 10 06	557	0.2+	0.0	1998 01 31	557	0.2−	1.0−	1999 09 12	557	0.2+	0.2+
1997 10 06	557	0.2+	0.3+	1998 08 18	557	1.5+	0.7−	1999 09 12	557	0.1−	0.3+
1997 10 07	557	0.1+	0.1+	1998 08 20	557	0.5+	0.2+	1999 09 13	557	0.4−	0.4+
1997 10 07	557	0.3−	0.4+	1998 08 20	557	0.3+	0.4+	1999 09 13	557	0.2+	0.6+
1997 10 07	557	0.2+	0.4+	1998 08 21	557	0.6+	0.3−	1999 09 13	557	0.1+	0.1+
1997 10 19	658	0.9−	1.6−	1998 08 21	557	0.6+	0.5−	1999 09 13	557	0.4−	0.3+
1997 10 19	658	0.5−	0.9−	1998 08 21	557	0.5+	0.1+	1999 10 18	557	0.0	0.1+
1997 10 19	658	0.7−	0.1+	1998 09 30	557	0.0	0.1−	1999 10 18	557	0.4+	0.1−
1997 10 31	557	0.4−	0.0	1998 09 30	557	0.1+	0.1−	1999 10 19	557	0.4−	0.8−
1997 10 31	557	0.0	0.1−	1998 12 11	699	0.2+	1.4+	1999 10 19	557	0.1−	0.6−

(12055)* 1997 YR₁₁ = 1980 VW₃ = 1996 TC₅₂

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

Id. D. J. Asher (*MPC* 31257)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
290.37879		(2000.0)			
<i>n</i>	0.30256070	ω	11.37899	+0.91488700	−0.40297259
<i>a</i>	2.1974940	Ω	12.46999	+0.36096721	+0.78947429
<i>e</i>	0.0235085	<i>i</i>	6.48565	+0.18078844	+0.46297239
<i>P</i>	3.26	<i>H</i>	14.6	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1980 11 01	675	0.1+	0.1+	1997 12 30	411	(2.4+	0.0)	1999 07 14	704	0.1+	0.5+
1980 11 02	675	0.2−	0.1−	1997 12 30	411	1.4+	0.3+	1999 07 14	704	0.3−	0.2+
1993 11 20	691	1.1+	0.8−	1997 12 31	411	0.4+	0.7+	1999 07 14	704	0.1+	0.3+
1993 11 20	691	0.4+	0.1+	1997 12 31	411	0.7+	0.0	1999 07 14	704	0.3−	0.4+
1993 11 20	691	0.1−	0.3−	1998 01 09	411	0.7+	0.3−	1999 09 11	704	(2.5+	1.1+)
1996 09 17	566	0.1−	0.3+	1998 01 09	411	1.3+	0.3−	1999 09 11	704	1.8+	0.6−
1996 09 17	566	0.1−	0.7+	1998 01 09	411	1.0+	0.3+	1999 09 11	704	1.0+	0.1+
1996 09 17	566	0.2−	0.6+	1998 01 30	411	0.4+	0.0	1999 09 11	704	0.0	0.4−
1996 10 05	809	0.2−	0.0	1998 01 30	411	0.6+	0.5+	1999 10 15	704	0.2−	0.7−
1996 10 05	809	0.3+	0.5−	1998 03 04	704	1.9−	0.2+	1999 10 15	704	0.9−	0.0
1996 10 05	809	0.4−	0.1+	1998 03 04	704	0.6−	0.6+	1999 10 15	704	0.2−	0.6+
1996 10 06	809	0.1+	0.0	1998 03 04	704	1.7−	0.1+	1999 10 15	704	1.6−	0.1−
1996 10 06	809	0.2−	0.3+	1998 03 04	704	(2.6−	0.9+)				
1996 10 06	809	1.0−	0.2+	1998 03 04	704	(2.7−	0.8+)				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	44.45157		(2000.0)	P	Q
<i>n</i>	0.28548183	ω	171.69152	+0.18276516	+0.97768992
<i>a</i>	2.2842856	Ω	108.79153	-0.90819820	+0.20822252
<i>e</i>	0.1597536	<i>i</i>	6.27863	-0.37652745	-0.02767305
<i>P</i>	3.45	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1950 04 20	675	1.0+	0.3-	1998 01 30	411	0.1-	1.2+	1999 09 04	699	0.1+	0.6+
1950 04 20	675	0.4-	1.3+	1998 01 30	411	0.6-	0.9+	1999 09 04	699	0.1+	0.0
1989 11 03	809	0.5+	0.1+	1998 02 24	566	0.2-	0.1-	1999 09 04	699	0.2+	0.4+
1989 11 03	809	0.0	0.2+	1998 02 24	566	0.3+	0.0	1999 09 13	704	0.0	0.6+
1989 11 03	809	0.0	0.2+	1998 02 24	566	0.2-	0.1+	1999 09 13	704	0.1+	0.2+
1992 08 03	675	0.4-	0.2-	1998 03 03	699	0.4-	0.4+	1999 09 13	704	0.5-	0.1+
1992 08 03	675	0.1+	1.2-	1998 03 03	699	1.2+	0.2+	1999 09 13	704	0.1-	0.3+
1992 08 06	675	0.5-	0.4-	1998 03 03	699	0.1+	0.7-	1999 09 14	106	0.2+	0.9+
1992 08 06	675	0.4-	0.8-	1998 03 04	704	(4.0-	2.3-)	1999 09 14	106	0.3+	0.6+
1995 04 26	691	0.4+	0.2+	1998 03 04	704	(2.3-	0.2-)	1999 09 14	106	0.1+	0.3+
1995 04 26	691	0.2+	0.6+	1998 03 04	704	(3.2-	0.9-)	1999 09 30	704	0.2-	0.2-
1995 04 26	691	0.4+	0.6+	1998 03 04	704	(2.2-	0.8-)	1999 09 30	704	0.1-	0.2-
1997 12 30	411	0.7+	0.3-	1998 03 04	704	(3.7-	1.6-)	1999 09 30	704	0.0	0.3+
1997 12 30	411	(2.2+	1.8-)	1998 03 24	566	0.2+	0.1-	1999 09 30	704	0.0	0.4+
1997 12 31	411	0.7-	0.1+	1998 03 24	566	0.4+	0.1-	1999 09 30	704	0.3-	0.6+
1997 12 31	411	0.3+	0.9-	1998 03 24	566	0.2+	0.1-	1999 10 04	703	0.0	0.3+
1998 01 09	411	1.1-	0.1-	1998 03 25	704	0.7+	0.0	1999 10 04	703	0.4-	0.2-
1998 01 09	411	0.3+	0.2+	1998 03 25	704	0.4-	0.3-	1999 10 04	703	0.5-	0.1+
1998 01 28	566	0.8+	0.8+	1998 03 25	704	0.1+	0.3-	1999 10 04	703	0.1+	0.3+
1998 01 28	566	0.2-	0.3+	1998 03 25	704	0.9-	0.7+				
1998 01 28	566	0.1+	0.4+	1998 03 25	704	0.8-	0.2-				

(12057)* 1998 DK₁ = 1993 TV₄₃

Discovered 1998 Feb. 18 at Starkenburg Sternwarte, Heppenheim.

Id. G. V. Williams (*MPC* 31557)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	189.74140		(2000.0)	P	Q
<i>n</i>	0.31143800	ω	135.21317	-0.71299340	-0.70117071
<i>a</i>	2.1555345	Ω	0.26604	+0.63122724	-0.64198922
<i>e</i>	0.0526269	<i>i</i>	2.35897	+0.30527459	-0.31017652
<i>P</i>	3.16	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1949 12 22	675	1.9-	0.1+	1998 02 26	611	0.3+	0.0	1999 08 08	385	0.8-	0.4+
1949 12 22	675	1.8+	0.3+	1998 03 03	704	0.1+	0.6-	1999 08 08	385	1.3-	0.5-
1993 10 10	809	(1.9+	2.9+)	1998 03 03	704	0.1+	0.1-	1999 08 08	385	0.9-	0.2-
1993 10 10	809	(0.8+	2.2+)	1998 03 03	704	1.1+	0.2-	1999 08 11	385	0.2-	0.2+
1993 10 10	809	0.4-	1.2+	1998 03 03	704	0.9-	1.0-	1999 08 11	385	0.5-	0.4-
1993 10 22	809	0.7+	0.2-	1998 03 03	704	1.1+	0.8-	1999 08 11	385	0.1+	0.4-
1993 10 22	809	0.6-	1.4-	1998 03 09	611	0.2+	0.1-	1999 09 02	611	(1.8+	2.2+)
1993 10 22	809	0.9-	0.9-	1998 03 09	611	0.2-	0.5+	1999 09 02	611	1.5-	0.0
1996 09 10	566	0.7+	1.3+	1998 03 09	611	0.7-	0.0	1999 09 02	611	(3.3-	0.5-)
1996 09 10	566	0.4+	1.4+	1998 03 20	704	0.3+	0.4+	1999 09 07	704	0.0	0.4-
1996 09 10	566	0.6+	1.6+	1998 03 20	704	1.4+	0.6+	1999 09 07	704	0.2+	0.5-
1998 02 18	611	1.8-	0.9+	1998 03 20	704	0.7+	0.2+	1999 09 07	704	0.1+	0.1+
1998 02 18	611	0.1-	1.0+	1998 03 20	704	1.4+	0.2-	1999 09 07	704	0.4+	0.1+
1998 02 18	611	0.3+	0.3+	1998 03 20	704	0.8+	1.1+	1999 09 07	704	0.4+	0.0
1998 02 19	611	0.9+	1.1+	1998 03 22	704	0.1+	0.1-	1999 09 09	704	0.1-	0.2+
1998 02 19	611	0.7+	1.1+	1998 03 22	704	0.6+	0.3-	1999 09 09	704	0.6+	0.3+
1998 02 20	611	0.8+	0.2-	1998 03 22	704	0.8-	0.5+	1999 09 09	704	(2.0+	0.7-)
1998 02 20	611	0.2-	0.2-	1998 03 22	704	0.5-	0.3-	1999 09 09	704	0.2+	0.1+
1998 02 20	611	0.3-	0.7-	1998 03 22	704	0.2-	0.6-	1999 09 09	704	0.9+	0.1-
1998 02 23	611	1.7-	0.1+	1998 03 24	611	0.1-	0.2-	1999 09 13	699	0.7+	1.1+
1998 02 23	611	0.8-	0.2+	1998 03 24	611	0.3+	0.5-	1999 09 13	704	0.4+	0.3-
1998 02 23	611	0.5-	0.3+	1998 03 26	704	0.1-	0.5-	1999 09 13	699	0.1+	0.3-
1998 02 24	566	0.1-	0.2+	1998 03 26	704	0.2-	0.1-	1999 09 13	704	0.2+	0.7-
1998 02 24	566	0.3-	0.0	1998 03 26	704	0.3-	0.7+	1999 09 13	704	0.2+	0.2-
1998 02 24	566	0.0	0.0	1999 08 08	699	0.0	0.5+	1999 09 13	704	1.1-	0.3-

1998 02 26	611	0.1+	0.0	1999 08 08	699	0.4+	0.3+	1999 09 13	699	(0.3+	2.3+)
1998 02 26	611	0.0	0.3+	1999 08 08	699	0.1-	0.8+	1999 09 13	704	0.4-	0.1-

(12058)* 1998 DV₁₁ = 1995 QU₁₀

Discovered 1998 Feb. 24 at Haleakala by the JPL Near-Earth Asteroid

Tracking program.

Id. G. V. Williams (*MPC* 31990)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	94.81423		(2000.0)	P	Q
<i>n</i>	0.22445250	ω	36.22518	-0.92195864	+0.38676816
<i>a</i>	2.6815532	Ω	166.48512	-0.37245127	-0.87124351
<i>e</i>	0.1806303	<i>i</i>	4.92573	-0.10617117	-0.30223357
<i>P</i>	4.39	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1994 06 07	691	0.1-	0.3+	1998 03 20	704	0.7-	0.2+	1998 04 14	327	0.1+	0.5+
1994 06 07	691	0.2+	0.5+	1998 03 22	704	0.6+	0.2+	1998 04 14	327	0.2-	0.4+
1995 08 22	809	0.8+	1.5+	1998 03 22	704	1.4+	0.1-	1998 04 17	327	0.2-	0.2-
1995 08 25	809	1.3-	0.6-	1998 03 22	704	1.1+	0.5+	1998 04 17	327	0.6-	0.2+
1995 09 20	809	0.0	0.8+	1998 03 22	704	0.9+	0.4+	1998 04 17	327	0.4-	0.3+
1995 09 22	809	0.2-	0.2+	1998 03 22	704	0.6+	0.0	1998 04 18	327	0.0	0.3+
1998 02 24	566	0.1-	1.1-	1998 03 26	704	0.8+	0.3+	1998 04 18	327	0.5-	0.5+
1998 02 24	566	0.4-	1.2-	1998 03 26	704	0.5-	0.6+	1998 04 18	327	1.1-	0.2+
1998 02 24	566	0.3-	1.3-	1998 03 26	704	0.6-	0.8+	1999 07 13	704	0.0	0.4-
1998 02 25	566	0.5-	0.6-	1998 03 26	327	0.6-	0.1-	1999 07 13	704	0.3-	1.1-
1998 02 25	566	0.4-	0.8-	1998 03 26	327	0.9-	0.9-	1999 07 13	704	0.6-	0.4-
1998 02 25	566	0.4+	1.0-	1998 03 26	327	0.4+	0.4-	1999 07 13	704	0.9+	0.2-
1998 03 03	704	0.1+	0.3-	1998 03 28	327	0.1-	0.1-	1999 07 13	704	0.5-	0.6+
1998 03 03	704	(1.9+	2.9-)	1998 03 28	327	0.1-	0.0	1999 07 23	704	0.0	0.2-
1998 03 03	704	0.7-	0.1-	1998 03 28	327	0.0	0.0	1999 07 23	704	0.1-	0.1-
1998 03 03	704	0.7-	0.3+	1998 03 29	704	0.4+	0.8+	1999 07 23	704	0.7-	0.2-
1998 03 03	704	0.3-	0.2+	1998 03 29	704	0.5+	0.1+	1999 07 23	704	0.6+	0.0
1998 03 20	704	0.2+	0.3+	1998 03 29	704	0.0	0.3-	1999 10 15	691	0.5+	1.0-
1998 03 20	704	0.7+	0.0	1998 03 29	704	0.7+	0.3-	1999 10 15	691	0.8+	0.9-
1998 03 20	704	0.0	0.5-	1998 03 29	704	0.9+	0.2-	1999 10 15	691	0.6+	1.1-
1998 03 20	704	0.3-	0.6+	1998 04 14	327	0.2+	0.3+				

(12059)* 1998 ED₁₄ = 1978 GA₄ = 1987 RH = 1999 RP₁₆₇

Discovered 1998 Mar. 1 by E. W. Elst at the European Southern Observatory.

Id. E. Bowell (*MPC* 35951), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	47.34762		(2000.0)	P	Q
<i>n</i>	0.24354193	ω	211.91991	+0.05356459	+0.99657030
<i>a</i>	2.5395312	Ω	61.21953	-0.90036402	+0.07551651
<i>e</i>	0.1798069	<i>i</i>	4.12685	-0.43182804	-0.03383632
<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 24	704	0.4+	0.2+	1999 09 09	704	0.2-	0.6-
1987 09 01	809	0.7-	0.7+	1998 03 24	704	0.3-	0.1+	1999 09 09	704	0.4-	1.1-
1987 09 01	809	0.4-	0.4+	1998 03 24	566	0.1-	0.5+	1999 09 09	704	(2.3-	2.3-)
1987 09 01	809	0.2+	0.6+	1998 03 24	566	0.2-	0.1+	1999 09 13	704	0.2-	0.1+
1987 09 01	809	0.7+	2.1+	1998 03 24	566	0.2-	0.4+	1999 09 13	704	0.7-	0.5+
1991 09 30	691	0.1-	0.1-	1998 03 25	704	0.2-	0.0	1999 09 13	704	0.4-	0.4+
1991 09 30	691	0.2-	0.1-	1998 03 25	704	0.2-	0.8+	1999 09 13	704	0.3-	0.4+
1991 09 30	691	0.4-	0.0	1998 03 25	704	0.9-	0.4+	1999 09 30	704	0.6+	0.2+
1995 08 28	809	1.7-	1.4+	1998 03 25	704	0.4-	0.1+	1999 09 30	704	0.7+	0.8-
1995 08 29	809	(1.3-	2.3+)	1998 03 25	704	0.1+	0.6+	1999 09 30	704	0.3+	0.2+
1995 08 31	809	0.6+	0.8-	1998 04 19	704	0.6-	0.0	1999 09 30	704	0.4+	0.3-
1995 09 01	809	0.3-	1.2-	1998 04 19	704	0.7+	0.0	1999 10 07	704	0.2+	0.3-
1998 02 24	566	1.0+	0.2+	1998 04 19	704	0.4-	0.2+	1999 10 07	704	0.3-	0.6+
1998 02 24	566	1.4+	0.3+	1998 04 19	704	0.3-	0.0	1999 10 07	704	0.1-	0.2-
1998 02 24	566	1.1+	0.4+	1998 04 19	704	0.7-	0.1+	1999 10 07	704	0.0	0.7-
1998 03 01	809	(2.5+	0.6+)	1999 08 12	699	0.0	0.3+	1999 10 07	704	0.4-	0.3-
1998 03 01	809	(2.2+	1.4+)	1999 08 12	699	0.1-	0.3+	1999 10 16	704	0.4+	0.4-

1998 03 01	809	1.8+	0.7+	1999 08 12	699	0.2-	0.3+	1999 10 16	704	0.7+	0.3+
1998 03 02	809	(2.8+	3.4+)	1999 09 08	704	0.2+	0.0	1999 10 16	704	0.2+	1.2+
1998 03 02	809	(3.0+	2.4+)	1999 09 08	704	0.5+	0.4+	1999 10 16	704	0.6+	0.4+
1998 03 02	809	(2.8+	3.0+)	1999 09 08	704	0.2+	0.2+	1999 10 16	704	0.7-	0.6+
1998 03 24	704	0.2-	0.4+	1999 09 09	704	0.2-	0.8+				
1998 03 24	704	0.9+	0.1-	1999 09 09	704	0.6-	0.1-				

(12060)* 1998 FH₂ = 1987 DN₅

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 34907), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
106.23499		(2000.0)			
<i>n</i>	0.27019743	ω	236.65433	-0.70621852	+0.70310649
<i>a</i>	2.3696374	Ω	347.30511	-0.45585440	-0.54132118
<i>e</i>	0.2537945	<i>i</i>	22.20342	-0.54171226	-0.46109938
<i>P</i>	3.65	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1987 02 23	010	0.5-	1.9-	1998 03 20	704	0.0	0.3+	1999 09 09	704	0.1-	0.3+
1987 02 23	010	0.2-	0.2-	1998 03 22	704	0.7-	0.2+	1999 09 09	704	0.3-	0.1+
1989 10 09	675	0.3+	1.4+	1998 03 22	704	(3.1+	1.8-)	1999 09 09	704	0.3-	0.8+
1989 10 09	675	(2.0-	3.1-)	1998 03 22	704	0.5-	0.0	1999 09 18	703	0.1+	0.1+
1989 11 25	675	2.0-	0.4+	1998 03 22	704	0.1-	0.1-	1999 09 18	703	0.4-	0.1+
1989 11 25	675	0.5-	0.4-	1998 03 22	704	0.7-	0.5-	1999 09 18	703	0.2-	0.9-
1995 08 29	413	0.8-	0.3-	1998 03 26	704	0.3+	0.0	1999 09 18	703	0.1-	0.1-
1995 08 29	413	0.1+	0.3-	1998 03 26	704	0.3+	0.3-	1999 10 04	704	0.0	0.4+
1998 01 28	566	0.2+	1.0-	1998 03 26	704	0.3+	0.3-	1999 10 04	704	0.2+	0.3+
1998 01 28	566	0.6+	1.1-	1998 04 04	699	0.5-	0.4+	1999 10 04	704	0.8+	0.5+
1998 01 28	566	0.4+	1.0-	1998 04 04	699	0.5-	0.6+	1999 10 04	704	0.8+	0.7-
1998 02 27	809	0.6+	0.8+	1998 04 04	699	0.3+	0.6+	1999 10 10	704	0.4+	0.1-
1998 02 27	809	0.4+	0.2+	1999 09 08	704	0.3-	0.5+	1999 10 10	704	0.1-	0.1-
1998 02 27	809	0.1-	0.6+	1999 09 08	704	0.7+	0.6-	1999 10 10	704	0.0	0.3-
1998 03 20	704	0.4+	0.1-	1999 09 08	704	0.3+	0.2+	1999 10 10	704	0.1+	0.3-
1998 03 20	704	0.4+	0.3+	1999 09 08	704	0.8-	0.6+	1999 10 10	704	0.2+	0.4-
1998 03 20	704	0.1-	0.8+	1999 09 09	704	0.5+	0.3+				
1998 03 20	704	0.3+	0.3+	1999 09 09	704	0.2+	0.6+				

(12061)* 1998 FQ₂ = 1961 TM = 1977 EX₂

Discovered 1998 Mar. 21 by T. Stafford at the Zeno Observatory, Edmond.

Id. G. V. Williams (*MPC* 31745)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
52.46041		(2000.0)			
<i>n</i>	0.28648245	ω	279.62581	+0.54888199	+0.83545469
<i>a</i>	2.2789635	Ω	23.72711	-0.73788273	+0.49959472
<i>e</i>	0.1921180	<i>i</i>	3.88698	-0.39275647	+0.22895541
<i>P</i>	3.44	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1961 10 07	760	0.3+	1.3-	1998 03 30	727	0.1+	0.3+	1998 05 11	566	0.1+	0.8-
1961 10 07	760	0.1-	0.4+	1998 03 30	727	0.4-	0.6+	1998 05 11	566	0.3+	0.7-
1977 03 12	381	0.2+	0.6-	1998 03 30	727	0.1+	0.6+	1998 05 11	566	0.0	1.0-
1977 03 12	381	0.3+	0.7-	1998 04 01	727	0.8-	0.1+	1999 09 07	120	0.7+	0.0
1992 10 18	691	0.4+	0.1-	1998 04 01	727	0.3-	0.2-	1999 09 07	120	0.6+	0.8+
1992 10 18	691	0.7-	0.2-	1998 04 01	727	0.1-	0.0	1999 09 07	120	0.6+	1.1+
1997 12 04	910	1.4-	0.7-	1998 04 06	727	0.3-	0.4+	1999 09 23	120	0.6+	0.0
1997 12 04	910	1.6-	0.5-	1998 04 06	727	0.0	0.1+	1999 09 23	120	0.3+	0.1-
1997 12 04	910	1.7-	0.8-	1998 04 06	727	0.2-	0.0	1999 09 23	120	0.7+	0.2-
1998 03 20	704	1.1-	0.0	1998 04 15	727	0.0	0.1+	1999 10 03	704	0.6+	0.3+
1998 03 20	704	0.5-	0.4+	1998 04 15	727	0.5-	0.7+	1999 10 03	704	0.4+	0.5-
1998 03 20	704	(2.5-	0.6+)	1998 04 15	727	0.0	0.2+	1999 10 03	704	0.0	0.2-
1998 03 20	704	1.5-	0.4+	1998 04 16	727	0.7-	0.4-	1999 10 03	704	0.2+	0.0
1998 03 20	704	1.7-	0.4+	1998 04 16	727	0.1-	0.6+	1999 10 03	704	0.1-	0.4-
1998 03 21	727	1.2+	0.7+	1998 04 19	704	0.4+	0.5-	1999 10 06	704	0.2+	0.2-
1998 03 21	727	0.6-	0.0	1998 04 19	704	0.8+	0.9-	1999 10 06	704	0.1-	0.0

1998 03 21	727	0.6+	1.0-	1998 04 19	704	0.6-	1.6-	1999 10 06	704	0.4-	0.0
1998 03 22	699	0.2+	0.2+	1998 04 19	704	1.1-	0.3-	1999 10 06	704	0.2-	0.1+
1998 03 22	699	0.9+	0.2+	1998 04 20	704	0.1+	0.6-	1999 10 06	704	0.7-	0.1+
1998 03 22	699	1.1+	1.0+	1998 04 20	704	1.2+	0.2+	1999 10 07	704	0.3-	0.2-
1998 03 23	727	0.6+	0.1-	1998 04 20	704	1.1+	0.3-	1999 10 07	704	0.2+	0.4+
1998 03 23	727	0.5-	0.1+	1998 04 20	704	1.5-	1.5+	1999 10 07	704	0.8-	0.0
1998 03 23	727	0.7-	0.2-	1998 04 22	704	0.2+	0.4+	1999 10 07	704	0.3-	0.1-
1998 03 25	727	0.0	0.5+	1998 04 22	704	0.5+	0.5+	1999 10 10	704	0.3-	0.0
1998 03 25	727	0.7+	0.6+	1998 04 22	704	0.4-	0.8+	1999 10 10	704	0.3-	0.2-
1998 03 25	699	0.6+	0.0	1998 04 22	704	0.1-	1.5+	1999 10 10	704	0.1-	0.3-
1998 03 25	699	0.0	0.1+	1998 04 22	704	0.8-	0.3+	1999 10 10	704	0.2-	0.4-
1998 03 25	699	0.0	0.8+	1998 04 23	727	0.3+	0.4+	1999 10 10	704	0.1-	0.3-
1998 03 28	704	1.3+	0.1-	1998 04 23	727	0.1+	0.4-	1999 10 11	106	0.4+	0.2+
1998 03 28	704	0.1+	0.1+	1998 04 23	727	0.3-	0.5-	1999 10 11	106	0.2+	0.0
1998 03 28	704	0.1-	0.0	1998 04 30	699	0.6+	0.3-	1999 10 11	106	0.2+	0.4+
1998 03 28	704	0.2-	0.5+	1998 04 30	699	0.7+	0.6-	1999 10 21	704	0.5-	0.3+
1998 03 28	704	0.1-	1.2+	1998 04 30	699	0.4+	0.8-	1999 10 21	704	0.3-	0.0
1998 03 29	704	0.5+	0.4-	1998 05 01	727	1.0+	1.0-	1999 10 21	704	0.2-	0.3+
1998 03 29	704	0.3-	1.1+	1998 05 01	699	0.2-	0.8-	1999 10 21	704	0.1-	0.6+
1998 03 29	704	0.5+	0.5+	1998 05 01	699	0.5+	1.3-	1999 10 21	704	0.4-	0.6+
1998 03 29	704	0.1+	0.0	1998 05 01	727	0.2+	0.4-				
1998 03 29	704	0.1-	0.2-	1998 05 01	699	0.5+	1.6-				

(12062)* 1998 FB₁₀ = 1994 HJ

Discovered 1998 Mar. 24 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 31568)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
44.84692		(2000.0)			
<i>n</i>	0.23875287	ω	73.51074	+0.20251052	+0.97790204
<i>a</i>	2.5733784	Ω	208.33300	-0.93503701	+0.17732889
<i>e</i>	0.1934058	<i>i</i>	6.28229	-0.29102453	+0.11073421
<i>P</i>	4.13	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1991 10 04	691	0.3+	0.1-	1998 03 29	704	0.1+	0.3+	1999 09 15	681	0.2+	0.5-
1991 10 04	691	0.3+	0.1-	1998 03 29	704	0.0	0.5+	1999 09 15	681	0.3+	0.4-
1991 10 04	691	0.3-	0.3-	1998 03 29	704	0.3+	0.3+	1999 09 15	681	0.3+	0.7-
1994 04 16	691	0.2+	0.2+	1998 03 29	704	0.0	0.5+	1999 09 16	704	0.7+	0.8-
1994 04 16	691	0.1-	0.1+	1998 04 01	704	0.6-	0.4+	1999 09 16	704	0.1-	0.5-
1994 04 16	691	0.1-	0.1-	1998 04 01	704	0.2+	0.1+	1999 09 16	704	0.2+	0.5-
1994 04 19	691	0.1+	0.2-	1998 04 01	704	0.0	1.2+	1999 09 16	704	0.2-	0.8-
1994 04 19	691	0.2-	0.2+	1998 04 01	704	0.9-	1.1-	1999 09 16	681	1.7+	0.8+
1994 04 19	691	0.0	0.0	1998 04 01	704	(2.1-	0.6+)	1999 09 16	681	1.8+	0.5+
1998 03 04	704	(2.2-	0.9+)	1998 04 18	704	0.7+	0.1-	1999 09 21	560	0.5+	0.1+
1998 03 04	704	(2.6-	0.9-)	1998 04 18	704	1.2-	0.8-	1999 09 21	560	0.3+	0.2-
1998 03 04	704	1.4-	1.8-	1998 04 18	704	0.7+	1.0-	1999 09 21	560	0.0	0.0
1998 03 04	704	(2.2-	0.9-)	1998 04 18	704	0.3-	0.6-	1999 09 29	703	1.0-	0.4+
1998 03 04	704	(3.8-	1.8-)	1998 04 18	704	0.3-	0.3-	1999 09 29	703	1.4-	1.0-
1998 03 20	704	0.6+	0.3+	1998 04 19	704	1.9-	1.4+	1999 09 29	703	1.3-	0.4+
1998 03 20	704	0.1+	0.5+	1998 04 19	704	0.3-	1.1-	1999 09 29	703	1.1-	0.1-
1998 03 20	704	0.3-	1.0+	1998 04 19	704	0.3+	0.6-	1999 10 07	704	0.3-	0.3-
1998 03 20	704	0.4+	1.0+	1998 04 19	704	0.0	1.0-	1999 10 07	704	0.7-	0.2+
1998 03 20	704	(6.1-	2.3+)	1999 07 23	704	0.3+	0.1-	1999 10 07	704	0.0	0.1-
1998 03 22	704	0.1+	0.1+	1999 07 23	704	0.1+	0.2-	1999 10 07	704	0.7-	0.0
1998 03 22	704	1.1-	0.6+	1999 07 23	704	0.6+	0.5-	1999 10 07	704	0.4-	0.0
1998 03 22	704	0.5-	0.2+	1999 07 23	704	0.6+	0.4-	1999 10 09	704	0.5+	0.5+
1998 03 22	704	0.6-	0.7+	1999 07 23	704	0.8+	0.1-	1999 10 09	704	0.8+	0.8-
1998 03 24	691	0.1+	0.1-	1999 08 12	699	0.2+	0.7+	1999 10 09	704	0.4-	0.4-
1998 03 24	691	0.4+	0.4+	1999 08 12	699	0.8-	1.2+	1999 10 09	704	0.4-	0.3-
1998 03 24	691	0.3+	0.3+	1999 08 12	699	0.5-	0.8+	1999 10 09	704	1.4+	0.2-
1998 03 24	910	0.8+	0.7-	1999 09 07	704	0.2+	0.2-	1999 10 13	704	0.4+	0.5+
1998 03 24	910	1.0+	0.5-	1999 09 07	704	0.6+	0.1-	1999 10 13	704	0.2-	0.2+
1998 03 25	910	0.9+	0.7-	1999 09 07	704	0.1-	0.4-	1999 10 13	704	0.0	0.2+
1998 03 25	910	1.2+	0.5-	1999 09 07	704	0.6+	0.3-	1999 10 13	704	0.4-	0.2+
1998 03 25	910	1.2+	0.5-	1999 09 07	704	0.3+	0.4-	1999 10 13	704	0.1-	0.2-
1998 03 26	910	1.2+	0.3-	1999 09 08	699	0.3-	1.1+	1999 10 15	704	0.2-	0.0
1998 03 28	704	0.2-	0.3+	1999 09 08	699	0.6-	0.8+	1999 10 15	704	0.5-	0.2+

1998 03 28	704	0.5−	0.9+	1999 09 08	699	0.4−	0.9+	1999 10 15	704	0.1−	0.0
1998 03 28	704	0.3−	0.2+	1999 09 12	118	0.1−	0.4+	1999 10 15	704	0.3−	0.2−
1998 03 28	704	0.4−	0.0	1999 09 12	118	0.1−	0.2+	1999 10 15	704	0.5−	0.0
1998 03 28	704	0.2+	0.6−	1999 09 12	118	0.2−	0.7+				
1998 03 29	704	0.2+	0.6+	1999 09 12	118	0.1−	0.4+				

(12063)* 1998 FH₁₁ = 1987 DG₅ = 1991 JM₂

Discovered 1998 Mar. 22 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31568)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Nakano			
<i>M</i>	109.43197		(2000.0)	P		Q	
<i>n</i>	0.27419700	ω	97.65125	−0.66442503		+0.73817203	
<i>a</i>	2.3465380	Ω	130.02610	−0.73164245		−0.61058646	
<i>e</i>	0.1282219	<i>i</i>	8.77330	−0.15244248		−0.28685576	
<i>P</i>	3.59	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1987 02 23	010	0.6−	0.5+	1998 03 25	411	0.0	0.5+	1999 09 08	703	0.1−	0.2+
1987 02 23	010	0.4+	0.2+	1998 03 28	411	0.2−	0.1−	1999 09 08	703	0.1−	0.6+
1987 02 23	010	1.0+	1.3+	1998 03 28	411	0.3+	0.2+	1999 09 08	703	0.8−	0.2+
1991 05 08	413	0.6+	0.3−	1998 04 22	566	0.7−	0.0	1999 09 08	703	0.2+	0.2−
1991 05 08	413	(3.9+	2.1−)	1998 04 22	566	0.2+	0.2+	1999 09 13	704	0.2+	1.3−
1991 05 18	413	0.8−	1.1+	1998 04 22	566	0.6−	0.5+	1999 09 13	704	0.4−	0.1+
1996 12 07	691	0.2−	0.3+	1998 04 24	704	0.1+	0.6+	1999 09 13	704	0.3−	0.3−
1996 12 07	691	0.0	0.5+	1998 04 24	704	1.0−	1.0+	1999 09 13	704	0.1+	0.2−
1996 12 07	691	0.1−	0.3−	1998 04 24	704	0.6−	0.3+	1999 10 16	704	0.5+	0.5+
1998 03 22	411	0.0	0.9−	1998 04 24	704	0.7−	0.7+	1999 10 16	704	0.2+	0.9+
1998 03 22	411	0.3−	0.1−	1998 04 24	704	0.7−	0.6+	1999 10 16	704	0.1+	0.7+
1998 03 24	704	0.5+	0.3+	1998 04 28	012	0.4+	0.2+	1999 10 16	704	1.0+	0.3−
1998 03 24	704	0.3−	0.2−	1998 04 29	012	0.4−	0.1+	1999 10 16	704	0.3+	1.2+
1998 03 24	704	0.4+	0.7−	1998 04 29	012	0.3+	0.4+	1999 10 16	704	0.5−	1.1+
1998 03 24	704	0.0	0.7−	1998 05 16	704	0.6+	0.6+	1999 10 16	704	1.0−	0.1+
1998 03 24	704	0.2−	0.6−	1998 05 16	704	0.3+	1.5+	1999 10 16	704	0.5−	0.8+
1998 03 24	411	0.7+	0.4−	1998 05 16	704	1.7+	1.4−				
1998 03 25	411	0.3+	0.4−	1998 05 16	704	1.1+	0.3−				

(12064)* 1998 FZ₁₅ = 1991 RL₂₇

Discovered 1998 Mar. 28 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 31992)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	290.95985		(2000.0)	P		Q	
<i>n</i>	0.23897314	ω	202.24595	+0.57548830		−0.79205865	
<i>a</i>	2.5717968	Ω	213.64222	+0.79473256		+0.60036638	
<i>e</i>	0.0730497	<i>i</i>	21.56278	+0.19290769		−0.11046855	
<i>P</i>	4.12	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 09 11	675	0.5−	0.7−	1998 05 23	699	0.1−	0.6+	1999 08 21	739	0.2+	0.3+
1991 09 11	675	0.1+	1.3−	1998 05 26	704	0.2−	0.1+	1999 09 18	704	0.2−	0.3+
1991 09 13	675	0.3+	1.1−	1998 05 26	704	0.1−	0.3+	1999 09 18	704	0.1−	0.4+
1991 09 16	675	0.8−	1.3−	1998 05 26	704	0.1−	0.7+	1999 09 18	704	0.4−	0.4+
1991 09 16	675	(1.4−	2.4−)	1998 05 26	704	0.2−	0.0	1999 09 18	704	0.0	0.0
1991 09 17	675	0.6+	0.9−	1998 05 26	704	0.6−	0.9+	1999 09 29	703	0.3−	0.1+
1991 09 17	675	0.1−	0.6+	1998 06 03	704	1.7+	0.6+	1999 09 29	703	0.3−	0.3+
1993 02 18	413	0.1+	1.4−	1998 06 03	704	1.6+	0.7+	1999 09 29	703	0.5−	0.4+
1993 02 18	413	0.0	0.8−	1998 06 03	704	2.0+	0.6−	1999 09 29	703	0.3−	0.4+
1998 03 28	910	2.0−	0.3+	1998 06 03	704	1.2+	0.5−	1999 10 03	704	0.2−	0.4+
1998 03 28	910	1.3−	0.1−	1998 06 04	699	0.6+	0.4−	1999 10 03	704	0.1−	0.4+
1998 03 28	910	1.7−	0.5−	1998 06 04	699	0.5+	1.0+	1999 10 03	704	0.0	0.3+
1998 03 30	910	0.6−	0.2−	1998 06 04	699	0.9+	0.1+	1999 10 03	704	0.2+	0.2+
1998 03 30	910	0.5−	0.5−	1998 07 19	566	0.6−	2.0−	1999 10 03	704	0.3+	0.2+
1998 03 30	910	0.4−	0.4−	1998 07 19	566	0.4−	1.8−	1999 10 10	704	0.1+	0.0
1998 03 31	910	0.1+	0.4−	1998 07 19	566	0.1−	1.3−	1999 10 10	704	0.1+	0.1−
1998 03 31	910	0.2−	0.6−	1999 08 09	739	0.5+	0.1−	1999 10 10	704	0.3+	0.2−
1998 03 31	910	0.0	0.5−	1999 08 09	739	0.2+	0.1+	1999 10 10	704	0.1+	0.4−

1998 05 23	704	0.0	0.1−	1999 08 09	739	0.1+	0.2−	1999 10 10	704	0.0	0.5−
1998 05 23	704	0.3+	0.6+	1999 08 11	704	0.1+	0.3−	1999 10 20	704	0.1+	0.2+
1998 05 23	704	0.2−	0.5+	1999 08 11	704	0.4+	0.3−	1999 10 20	704	0.2−	0.3+
1998 05 23	704	0.8−	0.5−	1999 08 11	704	0.5+	0.4−	1999 10 20	704	0.1−	0.0
1998 05 23	699	0.2+	0.1+	1999 08 11	704	0.0	0.5−	1999 10 20	704	0.0	0.5+
1998 05 23	704	0.0	0.3+	1999 08 11	704	0.9−	0.2−	1999 10 20	704	0.2+	0.1+
1998 05 23	699	0.4−	0.0	1999 08 21	739	0.3+	0.1+				

(12065)* 1998 FA₃₃ = 3100 T-2

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31993)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	72.71925		(2000.0)	P		Q	
<i>n</i>	0.26532660	ω	96.87881	−0.21066138		+0.97742389	
<i>a</i>	2.3985504	Ω	160.93652	−0.91540393		−0.19140412	
<i>e</i>	0.1736210	<i>i</i>	2.85322	−0.34301227		−0.08948188	
<i>P</i>	3.71	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 09 19	675	0.5−	1.8−	1998 03 24	704	0.0	0.1+	1998 04 19	704	0.9+	0.8+
1973 09 19	675	2.0−	1.6+	1998 03 24	704	0.3−	0.2−	1998 04 19	704	0.4−	1.2+
1973 09 19	675	(2.5+	0.7−)	1998 03 24	704	0.1+	0.6−	1998 04 20	327	0.3−	0.2−
1973 09 19	675	(1.0+	2.9+)	1998 03 24	704	0.3+	0.3+	1998 04 20	327	0.0	0.4−
1973 09 20	675	0.3−	0.4−	1998 03 24	704	0.1+	0.0	1998 04 20	327	0.1+	0.4−
1973 09 20	675	1.3+	1.7+	1998 03 24	704	0.4−	0.3+	1998 04 24	327	0.3−	0.2−
1973 09 24	675	0.8−	1.5−	1998 03 24	704	0.3−	0.5+	1998 04 24	327	0.2+	0.3−
1973 09 24	675	0.3−	1.2+	1998 03 24	704	0.1−	0.6+	1998 04 24	327	0.1+	0.0
1973 09 24	675	0.5−	1.3−	1998 03 24	704	0.8−	0.6+	1999 09 07	704	0.5+	0.7+
1973 09 24	675	0.3−	1.3+	1998 03 24	704	0.2−	0.6+	1999 09 07	704	0.4−	0.2−
1973 09 25	675	(0.8−	2.5−)	1998 03 24	704	0.3−	0.5+	1999 09 07	704	0.8−	0.6−
1973 09 25	675	0.5+	0.4+	1998 03 24	704	0.4+	0.0	1999 09 07	704	0.1+	0.9+
1973 09 25	675	(0.1+	2.8−)	1998 03 24	704	0.6−	0.6−	1999 09 07	704	0.7−	0.8−
1973 09 25	675	0.7−	0.8−	1998 03 24	704	0.1−	0.7−	1999 09 08	704	0.6−	0.2+
1973 09 29	675	1.0+	0.8−	1998 03 24	704	0.6+	0.1+	1999 09 08	704	0.6+	0.2+
1973 09 29	675	0.2−	0.5−	1998 03 24	704	0.1+	0.2−	1999 09 08	704	0.5−	0.1−
1973 09 30	675	0.7+	1.0−	1998 03 24	704	0.5−	0.1+	1999 09 08	704	0.1−	0.8+
1973 09 30	675	2.0+	2.0−	1998 03 24	704	0.8−	0.2−	1999 09 09	704	0.5−	1.1+
1973 10 04	675	(3.8+	0.5−)	1998 03 24	704	0.1−	0.5+	1999 09 09	704	0.6+	0.4+
1973 10 04	675	(3.1+	3.0−)	1998 03 24	566	0.2+	0.4+	1999 09 09	704	0.9+	0.4+
1973 10 05	675	2.1+	1.9−	1998 03 24	566	0.2+	0.2−	1999 09 09	704	0.3−	0.2+
1973 10 05	675	1.0+	1.9−	1998 03 24	566	0.4+	0.4−	1999 09 09	704	0.5−	1.4+
1992 11 18	691	0.2−	0.7+	1998 03 26	704	0.6−	0.4−	1999 09 14	704	0.3+	0.5+
1992 11 18	691	0.3−	1.0+	1998 03 26	704	1.1+	0.8−	1999 09 14	704	0.6+	0.1+
1992 11 18	691	0.3−	0.6+	1998 03 26	704	1.4+	0.6−	1999 09 14	704	1.0+	0.2+
1998 03 20	704	0.8−	0.2−	1998 03 29	704	1.0−	0.9−	1999 10 07	703	0.2+	0.1−
1998 03 20	704	0.3+	0.1+	1998 03 29	704	0.1+	0.2−	1999 10 07	703	0.7−	0.2+
1998 03 20	704	0.1+	0.3−	1998 03 29	704	0.9−	0.4−	1999 10 07	703	0.5+	0.6+
1998 03 20	704	0.7+	1.8−	1998 03 29	704	0.5+	0.7−	1999 10 07	703	0.0	0.7+
1998 03 20	704	(0.4+	2.6−)	1998 03 29	704	0.9+	1.1−	1999 10 15	704	0.1+	0.9−
1998 03 22	704	1.1+	0.0	1998 04 18	327	0.1+	0.3+	1999 10 15	704	0.3−	1.3−
1998 03 22	704	0.3−	0.2+	1998 04 18	327	0.1+	0.4+	1999 10 15	704	0.1−	1.0−
1998 03 22	704	1.0−	0.2+	1998 04 18	327	0.5−	0.8+	1999 10 15	704	0.1+	1.3−
1998 03 22	704	1.1−	0.5−	1998 04 19	704	0.4−	0.2−	1999 10 15	704	0.4−	1.4−
1998 03 22	704	0.4−	0.6−	1998 04 19	704	0.2+	0.2−				
1998 03 24	704	0.3+	0.4+	1998 04 19	704	0.3−	0.5+				

1999 OCT. 26

M.P.C. 36291

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	34.62764		(2000.0)	P	Q
<i>n</i>	0.24191801	ω	81.06995	+0.41877497	+0.90713704
<i>a</i>	2.5508833	Ω	213.78444	-0.85978549	+0.38134348
<i>e</i>	0.2704113	<i>i</i>	4.28955	-0.29222670	+0.17798749
<i>P</i>	4.07	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 05 02	801	0.1-	0.9-	1998 04 18	704	1.0+	1.1-	1999 09 30	703	0.6-	0.2+
1995 10 22	691	0.3-	0.1-	1998 04 18	704	1.4+	1.2-	1999 10 04	704	0.1+	0.8-
1995 10 22	691	0.1-	0.1-	1998 04 18	704	0.1+	0.8-	1999 10 04	704	0.3+	0.4+
1995 10 22	691	0.0	0.3-	1998 04 18	704	(3.0-	1.7+)	1999 10 04	704	0.2-	0.4+
1995 10 27	691	0.0	0.2-	1998 04 19	704	0.1+	0.1-	1999 10 04	704	0.1-	0.5+
1995 10 27	691	0.2-	0.1+	1998 04 19	704	0.1-	0.2-	1999 10 04	704	0.2+	0.1+
1995 10 27	691	0.2+	0.1+	1998 04 19	704	0.4-	0.6-	1999 10 07	704	0.4-	0.9+
1998 03 20	704	0.4-	0.7-	1998 04 19	704	0.6-	0.5-	1999 10 07	704	0.3+	0.5-
1998 03 20	704	0.6-	0.6+	1998 04 19	704	1.0-	0.5-	1999 10 07	704	0.0	0.5-
1998 03 20	704	0.6+	0.5-	1999 07 23	704	0.6-	0.6-	1999 10 07	704	0.3+	0.4-
1998 03 20	704	1.5-	1.0+	1999 07 23	704	0.4-	0.7-	1999 10 07	704	0.2-	0.5-
1998 03 22	704	0.3-	0.7+	1999 07 23	704	0.4-	0.5-	1999 10 09	704	0.0	0.3-
1998 03 22	704	0.2-	1.6-	1999 07 23	704	0.9-	0.2-	1999 10 09	704	0.1-	0.2-
1998 03 22	704	0.4-	1.7-	1999 09 15	681	0.2+	0.5-	1999 10 09	704	0.0	0.2-
1998 03 22	704	1.4+	0.1+	1999 09 15	681	0.2+	0.7-	1999 10 09	704	0.2-	0.5-
1998 03 22	704	(4.1-	0.9+)	1999 09 15	681	0.0	0.4-	1999 10 09	704	0.0	0.1-
1998 03 29	704	0.2-	0.3+	1999 09 16	681	1.3+	0.3+	1999 10 13	704	0.1+	0.4-
1998 03 29	704	0.4-	1.0+	1999 09 16	681	0.7+	0.1+	1999 10 13	704	0.1-	0.5-
1998 03 29	704	0.0	1.6+	1999 09 16	681	1.7+	0.6+	1999 10 13	704	0.1-	0.8-
1998 03 29	704	0.7-	1.6+	1999 09 16	681	1.4+	0.6+	1999 10 13	704	0.3-	0.9-
1998 03 29	704	0.8+	0.7+	1999 09 18	703	0.2-	0.4+	1999 10 13	704	0.7-	1.0-
1998 04 01	704	0.3+	0.1-	1999 09 18	703	0.1-	0.0	1999 10 19	704	0.2-	0.4+
1998 04 01	704	0.9-	0.5-	1999 09 18	703	0.2-	0.2+	1999 10 19	704	0.1-	0.1-
1998 04 01	704	0.6+	0.9-	1999 09 18	703	0.0	0.1+	1999 10 19	704	0.3-	0.1+
1998 04 01	704	0.3-	1.3-	1999 09 30	703	0.0	0.2+	1999 10 19	704	0.7+	0.2+
1998 04 01	704	0.5-	0.5-	1999 09 30	703	0.2-	0.0	1999 10 19	704	0.2+	0.3+
1998 04 18	704	0.5+	0.1+	1999 09 30	703	0.3+	0.1+				

(12067)* 1998 FH₄₂ = 1991 NG₂ = 1154 T-1

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 31751)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	42.57171		(2000.0)	P	Q
<i>n</i>	0.25525218	ω	304.68444	+0.30163803	+0.95227456
<i>a</i>	2.4612539	Ω	342.68888	-0.81525803	+0.23218025
<i>e</i>	0.1783160	<i>i</i>	9.04362	-0.49433677	+0.19815522
<i>P</i>	3.86	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1971 03 24	675	0.4+	2.2-	1998 03 25	704	0.5+	0.7-	1999 09 07	704	0.8+	0.1+
1971 03 25	675	1.8-	0.5+	1998 03 25	704	0.7-	0.1-	1999 09 07	704	1.2+	0.5-
1971 03 25	675	0.2-	0.5-	1998 03 25	704	0.6-	0.2+	1999 09 07	704	0.3+	0.1-
1971 03 26	675	0.8-	0.7+	1998 03 25	704	0.6+	0.1+	1999 09 07	704	0.7+	0.3+
1971 03 27	675	0.5+	1.3-	1998 03 25	704	1.7+	1.1+	1999 09 09	704	0.3+	1.1-
1991 07 13	675	0.0	0.7+	1998 03 25	704	0.6-	0.2-	1999 09 09	704	1.0+	1.1-
1991 07 13	675	0.8-	0.6+	1998 03 25	704	0.0	0.5+	1999 09 09	704	0.7+	0.3-
1991 07 16	675	(2.6-	1.0-)	1998 03 25	704	0.5-	0.1-	1999 09 09	704	0.2+	0.4-
1991 07 16	675	0.1+	0.0	1998 03 25	704	0.1-	0.9-	1999 09 09	704	0.5+	1.7-
1994 03 04	691	1.2+	0.1+	1998 03 25	704	1.1-	0.3-	1999 10 04	704	1.5+	1.1-
1994 03 04	691	0.2+	0.4+	1998 03 25	704	1.1+	0.5-	1999 10 04	704	0.7-	0.4-
1994 03 04	691	0.0	0.0	1998 03 29	704	1.0+	0.3-	1999 10 04	704	0.0	0.3+
1994 03 10	691	0.0	0.2+	1998 03 29	704	0.6-	0.9+	1999 10 04	704	0.4-	0.4-
1994 03 10	691	0.0	0.1+	1998 03 29	704	0.1-	0.5-	1999 10 04	704	0.5-	0.5+
1998 03 20	704	0.5-	0.1-	1998 03 29	704	0.7+	0.7+	1999 10 07	704	1.1-	1.5-
1998 03 20	704	0.9+	1.8+	1998 04 18	704	2.0-	0.6-	1999 10 07	704	1.1-	0.4-
1998 03 20	704	(2.2+	0.6+)	1998 04 18	704	(2.6-	2.8-)	1999 10 07	704	1.0+	0.5-

1998 03 20	704	0.6-	1.6-	1998 04 18	704	(3.3-	0.6-)	1999 10 09	704	0.5-	0.2+
1998 03 20	704	0.6+	1.2+	1998 04 18	704	(2.5-	2.9-)	1999 10 09	704	0.1-	0.3+
1998 03 22	704	0.8-	1.0-	1998 04 19	704	(0.2+	2.2-)	1999 10 09	704	0.3-	0.2+
1998 03 22	704	0.7+	0.1+	1998 04 19	704	(2.1-	2.0-)	1999 10 09	704	0.2-	0.3+
1998 03 22	704	1.5-	1.3+	1998 04 19	704	0.6+	0.5+	1999 10 09	704	0.4-	0.2+
1998 03 22	704	0.4-	0.2+	1998 04 19	704	1.5-	1.6-	1999 10 15	704	0.1-	0.0
1998 03 25	704	0.6+	0.5-	1999 09 04	699	0.2-	0.5+	1999 10 15	704	0.1-	0.3-
1998 03 25	704	0.2-	0.0	1999 09 04	699	0.4+	0.7+	1999 10 15	704	0.2+	0.1+
1998 03 25	704	0.1+	0.8-	1999 09 04	699	0.5-	0.5+	1999 10 15	704	0.6+	0.5+
1998 03 25	704	0.0	1.1-	1999 09 07	704	0.1-	0.5-	1999 10 15	704	0.0	0.4+

(12068)* 1998 FZ₅₃ = 1975 TX₁ = 1982 UQ = 1996 VZ₁₄

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

Research Team at Socorro.

Id. A. Gnädig (*MPC* 31995)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.96849		(2000.0)	P	Q
<i>n</i>	0.28348184	ω	156.20841	+0.93844841	-0.34006222
<i>a</i>	2.2950169	Ω	223.82045	+0.30121206	+0.89152380
<i>e</i>	0.1888494	<i>i</i>	5.02098	+0.16907360	+0.29923737
<i>P</i>	3.48	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1975 10 03	095	0.2-	1.4-	1998 03 22	704	0.1+	1.6+	1998 04 18	704	0.2+	0.0
1982 10 17	688	(0.5-	4.8-)	1998 03 22	704	1.9-	0.2-	1998 04 18	704	0.6+	0.7+
1982 10 17	688	(1.3-	4.0-)	1998 03 22	704	1.7-	0.6+	1998 04 18	704	(2.9-	3.0-)
1982 10 24	688	1.3+	1.0-	1998 03 22	704	(3.1-	2.3+)	1998 04 18	704	(3.2-	1.8-)
1982 10 24	688	(1.2-	2.9-)	1998 03 28	704	0.6+	0.3-	1998 04 18	704	(4.5-	1.3-)
1996 11 05	691	0.3+	0.6+	1998 03 28	704	0.3+	0.7-	1998 04 19	704	0.4-	0.3+
1996 11 05	691	0.2+	0.5+	1998 03 28	704	0.6+	1.1-	1998 04 19	704	0.5+	0.8+
1996 11 05	691	0.3+	0.3+	1998 03 28	704	1.6+	0.9-	1998 04 19	704	1.2-	0.5+
1996 11 11	691	0.5-	0.5+	1998 03 28	704	1.1+	1.7-	1998 04 19	704	(2.1-	0.6-)
1996 11 11	691	0.5-	0.5+	1998 03 29	704	0.3-	0.4+	1998 04 19	704	(3.5-	1.7-)
1996 11 11	691	0.3-	0.6+	1998 03 29	704	1.6+	0.2+	1999 07 13	704	0.3+	0.8+
1997 01 08	327	0.4-	0.4+	1998 03 29	704	0.7-	0.5+	1999 07 13	704	0.1+	0.3+
1997 01 08	327	0.3-	1.0+	1998 03 29	704	(2.5+	0.2-)	1999 07 13	704	0.0	0.2+
1997 01 08	327	0.2-	0.8+	1998 03 29	704	1.5+	0.8+	1999 07 13	704	0.3-	0.2-
1998 02 26	566	0.5-	0.1-	1998 03 30	910	0.9+	0.2-	1999 07 13	704	0.0	0.1-
1998 02 26	566	0.2-	0.5-	1998 03 30	910	0.6+	0.3-	1999 07 19	704	0.5+	0.7+
1998 02 26	566	1.3-	0.3-	1998 03 30	910	0.6+	0.1+	1999 07 19	704	0.6+	0.3+
1998 03 20	704	0.8-	0.9+	1998 04 01	704	0.2-	0.1-	1999 07 19	704	0.4-	0.7+
1998 03 20	704	0.7-	0.1+	1998 04 01	704	0.6-	0.4+	1999 09 30	704	0.0	1.0+
1998 03 20	704	0.2+	0.3-	1998 04 01	704	0.6+	0.4+	1999 09 30	704	1.1-	0.0
1998 03 20	704	0.2-	0.9-	1998 04 01	704	0.2+	0.0	1999 09 30	704	1.5-	0.1-
1998 03 20	704	0.5-	0.4+	1998 04 01	704	0.2-	1.2+				

(12069)* 1998 FC₅₉ = 1989 WT₅ = 1992 PC₅ = 1995 KK₅

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 31753)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	21.98466		(2000.0)	P	Q
<i>n</i>	0.29037255	ω	156.39615	+0.82902670	+0.55875551
<i>a</i>	2.2585637	Ω	169.54524	-0.53079915	+0.79894195
<i>e</i>	0.1791710	<i>i</i>	7.12813	-0.17597442	+0.22245011
<i>P</i>	3.39	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 11 24	095	0.7+	1.3+	1998 03 22	704	0

1995 05 31	691	0.8+	0.3-	1998 03 28	704	0.1-	0.1+	1999 10 03	703	0.1-	0.3+
1995 05 31	691	1.4+	0.6-	1998 03 28	704	0.2-	0.4-	1999 10 03	703	0.2+	0.7+
1995 05 31	691	1.3+	0.2-	1998 03 28	704	0.4-	0.3-	1999 10 03	703	0.3+	0.3+
1995 06 03	691	0.7-	0.6+	1998 03 28	704	0.4+	0.6+	1999 10 03	703	0.3+	0.4+
1995 06 03	691	0.9-	1.4+	1998 03 29	704	0.7+	1.0-	1999 10 04	704	1.6-	1.9+
1995 06 03	691	1.2+	0.3+	1998 03 29	704	0.1-	0.2+	1999 10 04	704	0.4-	0.4+
1995 06 29	691	0.2-	1.1+	1998 03 29	704	0.6+	0.8-	1999 10 04	704	0.5+	0.2+
1995 06 29	691	0.1-	1.1+	1998 03 29	704	0.2+	0.6+	1999 10 04	704	0.3+	0.0
1995 06 29	691	0.1-	1.1+	1998 03 29	704	0.4+	1.4-	1999 10 04	704	0.3-	0.3+
1998 03 08	699	1.2-	0.2+	1998 04 20	704	0.2-	0.2+	1999 10 07	704	0.0	0.6-
1998 03 08	699	0.4+	0.1+	1998 04 20	704	0.5+	0.9+	1999 10 07	704	0.1-	0.6-
1998 03 08	699	0.0	1.0+	1998 04 20	704	0.7-	1.2+	1999 10 07	704	0.1-	0.4-
1998 03 20	704	0.4+	0.0	1998 04 20	704	0.1-	0.7+	1999 10 07	704	0.3-	0.4-
1998 03 20	704	0.2-	0.0	1998 04 20	704	0.6-	1.6+	1999 10 09	704	0.1+	0.3-
1998 03 20	704	0.0	0.3+	1998 05 01	566	0.2-	0.3-	1999 10 09	704	0.2+	0.5-
1998 03 20	704	0.3+	0.2-	1998 05 01	566	0.3-	0.2-	1999 10 09	704	0.4+	0.5-
1998 03 20	704	1.1-	0.3-	1998 05 01	566	0.5-	0.7-	1999 10 09	704	0.1+	0.5-
1998 03 22	704	0.1+	0.8-	1998 05 02	566	0.0	0.2-	1999 10 09	704	0.5+	0.7-
1998 03 22	704	0.2-	0.4-	1998 05 02	566	0.3-	0.2-				

(12070)* 1998 FK₆₃ = 1991 NM₈ = 1994 CP₁₆

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31755)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	79.09904		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$		
n	0.25954465	ω	211.13360	-0.21939806	+0.97497308		
a	2.4340416	Ω	46.21990	-0.88457759	-0.18324470		
e	0.1645467	i	2.85360	-0.41156650	-0.12589230		
P	3.80	H	14.6	G	0.15	U	1

Residuals in seconds of arc

1991 07 14	675	0.1-	0.2-	1998 03 29	704	0.0	0.8+	1999 09 08	611	0.4+	0.1-
1991 07 14	675	0.2+	0.8-	1998 03 29	704	0.9-	0.6+	1999 09 14	704	0.1+	0.1-
1992 11 28	691	0.6-	0.6+	1998 03 29	704	1.1-	0.7+	1999 09 14	704	0.1-	0.5-
1992 11 28	691	0.3-	0.2+	1998 03 31	704	0.3-	0.6+	1999 09 14	704	0.2-	0.4+
1992 11 28	691	0.5-	0.1+	1998 03 31	704	0.0	0.2+	1999 09 14	704	0.6-	0.4-
1994 02 08	809	1.1+	0.8-	1998 03 31	704	0.3-	1.2+	1999 09 14	704	0.2-	0.1-
1994 02 08	809	0.4-	0.5-	1998 03 31	704	0.2+	1.8+	1999 09 30	703	0.0	0.3-
1994 02 08	809	0.0	1.4-	1998 03 31	704	0.2+	1.2+	1999 09 30	703	0.3-	0.1+
1994 02 10	809	1.0+	0.3-	1998 04 19	704	0.0	0.2-	1999 09 30	703	0.4-	0.4+
1994 02 10	809	0.5-	1.0-	1998 04 19	704	0.4+	0.2-	1999 09 30	703	0.4+	0.1-
1994 02 10	809	1.5-	0.8-	1998 04 19	704	0.6-	0.5-	1999 10 02	704	0.4-	0.1-
1998 03 20	704	0.6+	0.6+	1998 04 19	704	0.0	0.0	1999 10 02	704	0.5-	0.1-
1998 03 20	704	0.4-	1.0+	1998 04 20	704	0.4+	0.1-	1999 10 02	704	0.4-	0.2+
1998 03 20	704	0.4+	0.4+	1998 04 20	704	0.1+	0.2-	1999 10 02	704	0.3+	0.6-
1998 03 20	704	0.5+	0.9+	1998 04 20	704	0.6+	0.3-	1999 10 02	704	0.2-	0.2+
1998 03 20	704	1.8+	0.8-	1998 04 20	704	0.4+	0.9-	1999 10 06	734	0.3+	0.0
1998 03 22	704	0.3-	0.7+	1998 04 20	704	1.0-	1.2-	1999 10 06	734	0.3+	0.3-
1998 03 22	704	0.3-	0.3+	1998 04 22	704	0.3+	0.0	1999 10 06	734	0.1+	0.0
1998 03 22	704	0.1-	0.1+	1998 04 22	704	0.7+	0.1-	1999 10 06	734	0.4+	0.2+
1998 03 22	704	0.1+	0.3+	1998 04 22	704	0.0	0.4+	1999 10 06	734	0.2-	0.0
1998 03 22	704	0.2-	0.2+	1998 04 22	704	0.3+	0.6-	1999 10 07	703	0.2-	0.2+
1998 03 28	704	0.0	0.3+	1998 04 22	704	0.3+	0.3-	1999 10 07	703	0.5-	0.8-
1998 03 28	704	0.2-	0.0	1998 04 22	699	0.6+	0.9-	1999 10 07	703	0.6-	0.2-
1998 03 28	704	0.0	0.3-	1998 04 30	699	0.2+	1.1-	1999 10 07	703	0.9-	0.3-
1998 03 28	704	0.3+	0.1-	1998 04 30	699	0.6+	0.8-	1999 10 09	704	0.3+	0.2-
1998 03 28	704	0.4-	0.7-	1998 05 01	699	0.2+	0.3-	1999 10 09	704	0.1+	0.1+
1998 03 29	704	0.4-	0.4+	1998 05 01	699	0.5+	0.1+	1999 10 09	704	0.4+	0.6-
1998 03 29	704	0.0	0.4+	1998 05 01	699	0.5+	0.9-	1999 10 09	704	0.1+	0.3-
1998 03 29	704	0.8-	0.5+	1999 09 08	699	0.2+	0.9+	1999 10 09	704	0.3+	0.3-
1998 03 29	704	0.2+	0.1+	1999 09 08	699	0.1-	0.2+	1999 10 15	704	0.3-	0.6+
1998 03 29	704	1.0-	0.6+	1999 09 08	699	1.6+	1.3+	1999 10 15	704	0.1-	0.4-
1998 03 29	704	0.1+	0.0	1999 09 08	611	0.5+	1.1+	1999 10 15	704	0.3+	0.0
1998 03 29	704	0.7-	0.8+	1999 09 08	611	0.2+	1.3+	1999 10 15	704	0.0	0.6+

(12071)* 1998 FV₆₃ = 1986 WN

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31998)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	301.33649		(2000.0)	P	Q		
n	0.29288319	ω	339.52342	+0.88881699	-0.45284224		
a	2.2456380	Ω	47.60469	+0.43257777	+0.77846081		
e	0.1559004	i	5.46022	+0.15126411	+0.43466387		
P	3.37	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1971 05 13	675	0.8+	0.6+	1998 03 22	704	0.3+	0.1-	1998 04 20	704	(0.3-	2.2+)
1971 05 14	675	0.6+	0.5-	1998 03 22	704	0.1+	0.7-	1998 04 20	704	0.3-	1.6+
1986 11 25	046	1.1-	0.7-	1998 03 22	704	0.5-	0.1-	1998 04 20	704	(3.3-	0.9+)
1986 11 25	046	1.3-	0.3+	1998 03 22	704	0.0	0.3+	1999 07 14	704	0.3-	0.6+
1986 11 26	046	(0.2-	2.9-)	1998 03 25	699	0.1-	0.5+	1999 07 14	704	0.3-	0.4+
1986 11 26	046	0.5-	0.6-	1998 03 25	699	0.7+	0.2-	1999 07 14	704	0.4-	0.4+
1986 11 28	046	0.1-	1.7+	1998 03 25	699	0.3+	0.4+	1999 07 14	704	0.4-	0.6+
1986 11 28	046	1.1+	0.7+	1998 03 28	704	0.4-	0.2+	1999 07 14	704	0.5-	0.3+
1994 01 14	691	1.0+	0.2+	1998 03 28	704	0.0	0.2+	1999 09 11	704	1.7+	0.8-
1994 01 14	691	0.8+	0.3-	1998 03 28	704	0.5+	0.4-	1999 09 11	704	1.4+	0.5+
1998 02 26	566	0.8-	1.5-	1998 03 28	704	0.2-	0.2+	1999 09 11	704	1.0+	0.4+
1998 02 26	566	0.8-	1.1-	1998 03 28	704	0.5-	0.7-	1999 09 11	704	0.1+	0.9-
1998 02 26	566	0.7-	0.7-	1998 03 29	704	0.1+	0.7+	1999 09 11	704	1.1-	0.5-
1998 03 20	704	0.2-	0.4-	1998 03 29	704	0.6+	0.5-	1999 09 29	704	0.2-	1.0-
1998 03 20	704	0.4-	0.0	1998 03 29	704	1.0+	0.5+	1999 09 29	704	0.8-	0.0
1998 03 20	704	0.4-	0.5+	1998 03 29	704	(1.2+	2.6-)	1999 09 29	704	0.0	0.5-
1998 03 20	704	0.2-	0.8+	1998 03 29	704	0.8-	0.7-	1999 09 29	704	0.5+	0.4+
1998 03 20	704	1.2-	0.2+	1998 04 20	704	0.6+	0.3+	1999 09 29	704	0.0	0.2+
1998 03 22	704	0.3+	0.0	1998 04 20	704	1.1+	1.7+				

(12072)* 1998 FA₆₅ = 1988 VL₅ = 1134 T-1

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31998)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	314.76448		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.25679078	ω	167.72490	+0.99054152	-0.13431017
a	2.4514127	Ω	200.05887	+0.11795129	+0.93801944
e	0.1228718	i	4.69540	+0.07010701	+0.31950010
P	3.84	H	14.4	G 0.15	U 2

Residuals in seconds of arc

1971 03 24	675	0.3+	1.4-	1998 03 22	704	(3.2-	0.1+)	1998 04 22	704	0.8-	0.7-
1971 03 25	675	0.7-	0.7-	1998 03 25	704	0.3+	0.4-	1998 04 22	704	0.4-	0.8-
1971 03 25	675	0.1-	0.3-	1998 03 25	704	2.0-	1.2-	1998 04 22	704	0.5+	1.3+
1971 03 26	675	1.0-	2.0-	1998 03 25	704	0.1-	1.4+	1998 04 22	704	0.8-	0.2-
1971 03 27	675	1.3-	1.9-	1998 03 25	704	0.7+	0.9+	1998 04 22	704	0.0	1.0+
1971 04 02	675	0.7+	0.0	1998 03 29	704	0.4+	0.3+	1999 07 13	704	0.8-	0.7-
1988 11 04	046	(3.9+	0.1+)	1998 03 29	704	0.6+	0.1-	1999 07 13	704	0.8-	0.3-
1988 11 04	046	0.9+	2.3-	1998 03 29	704	0.2+	0.5+	1999 07 13	704	0.3-	0.7-
1992 12 24	691	0.1+	0.0	1998 03 29	704	0.1-	1.8+	1999 07 13	704	0.7-	0.5-
1992 12 24	691	0.6-	0.5+	1998 03 29	704	(0.9+	2.0+)	1999 07 13	704	0.4-	0.1-
1992 12 24	691	0.2-	0.5+	1998 04 01	704	0.2+	0.3-	1999 09 09	704	0.1-	0.3+
1998 03 20	704	(2.8+	0.8+)	1998 04 01	704	0.8+	0.1+	1999 09 09	704	0.0	0.3-
1998 03 20	704	(3.6+	0.9-)	1998 04 01	704	0.3-	0.9+	1999 09 09	704	0.6+	0.1-
1998 03 20	704	(2.1+	1.3-)	1998 04 01	704	1.6+	0.4+	1999 09 09	704	0.4+	0.8-
1998 03 20	704	1.3+	1.2-	1998 04 01	704	(3.4-	0.6-)	1999 09 09	704	0.5-	0.7-
1998 03 22	704	0.1-	0.6+	1998 04 19	704	0.2+	0.0	1999 10 15	704	1.1-	1.1+
1998 03 22	704	0.4-	0.7+	1998 04 19	704	0.9+	0.1-	1999 10 15	704	1.8+	0.7+
1998 03 22	704	0.7-	0.6+	1998 04 19	704	0.8+	1.1+	1999 10 15	704	1.3+	1.0+
1998 03 22	704	0.2-	0.6-	1998 04 19	704	0.8-	1.7-	1999 10 15	704	2.2+	0.8+

1999 OCT. 26

M.P.C. 36293

(12073)* 1998 FD₆₆ = 1984 QO₁ = 1999 RQ₁₈Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid
Research Team at Socorro.Id. G. V. Williams (*MPC* 35962)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		61.53647		(2000.0)		P		Q	
<i>n</i>	0.26226759	ω	73.26773	+0.03909330	+0.99860373				
<i>a</i>	2.4171650	Ω	199.07907	−0.95319806	+0.02660041				
<i>e</i>	0.0819706	<i>i</i>	6.24001	−0.29980856	+0.04563999				
<i>P</i>	3.76	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1		

Residuals in seconds of arc

1984 08 21	675	0.0	0.4+	1998 04 19	704	0.2−	0.6−	1999 09 08	704	0.2+	0.2+
1994 04 06	033	0.2+	0.6−	1998 04 19	704	0.6+	1.1−	1999 09 08	704	0.5+	1.6−
1994 04 08	033	1.0−	0.9−	1998 04 19	704	1.5+	0.4−	1999 09 09	704	0.0	0.1+
1994 04 08	033	0.5−	0.9−	1998 04 19	704	0.7+	1.2−	1999 09 09	704	0.0	0.1+
1998 03 20	704	0.2−	0.2+	1998 04 22	704	0.0	0.5+	1999 09 09	704	0.1−	0.1−
1998 03 20	704	0.8+	0.0	1998 04 22	704	0.3−	0.1−	1999 09 09	704	0.0	0.4+
1998 03 20	704	(4.4+	0.1−)	1998 04 22	704	0.0	0.3+	1999 09 09	704	0.4−	0.5+
1998 03 20	704	0.5−	0.0	1998 04 22	704	0.3−	0.2+	1999 09 14	704	0.1−	0.1−
1998 03 20	704	0.2+	0.6+	1998 04 22	704	0.7+	1.2−	1999 09 14	704	0.4+	0.1−
1998 03 22	704	0.1+	0.4+	1998 04 24	699	0.2−	0.4−	1999 09 14	704	0.5+	0.3−
1998 03 22	704	0.6−	0.4+	1998 04 24	699	0.1+	0.9−	1999 09 14	704	0.4+	0.3+
1998 03 22	704	0.5−	0.1−	1998 04 24	699	0.1−	0.0	1999 09 14	704	0.6+	0.1−
1998 03 22	704	0.4−	0.1+	1998 04 28	699	0.1−	0.3−	1999 10 02	704	0.5+	0.6−
1998 03 22	704	0.2−	0.5+	1998 04 28	699	0.2+	0.2−	1999 10 02	704	1.5−	0.1+
1998 03 22	699	0.7−	0.6+	1998 04 28	699	0.2+	0.1−	1999 10 02	704	1.5−	0.3−
1998 03 22	699	0.7−	0.9+	1998 04 30	699	0.4−	0.4−	1999 10 02	704	1.4−	0.1+
1998 03 22	699	1.5−	1.9+	1998 04 30	699	0.5−	0.4−	1999 10 02	704	1.9−	0.2+
1998 03 24	699	0.3+	0.0	1998 04 30	699	0.1+	0.5−	1999 10 07	704	1.3+	0.4+
1998 03 24	699	0.4+	0.2−	1998 05 01	699	0.3+	0.3−	1999 10 07	704	0.3+	0.1−
1998 03 24	699	0.2−	0.3+	1998 05 01	699	0.1+	0.7−	1999 10 07	704	0.0	0.1−
1998 03 25	704	0.4+	0.4+	1998 05 01	699	0.1−	0.5−	1999 10 07	704	0.7+	0.1−
1998 03 25	704	0.1−	0.2−	1999 08 22	699	(0.6+	3.2+)	1999 10 07	704	0.8+	0.5−
1998 03 25	704	0.2+	0.6−	1999 08 22	699	1.1−	0.9+	1999 10 13	691	0.4+	0.4−
1998 03 25	704	0.1+	0.1+	1999 08 22	699	0.5−	0.7+	1999 10 13	691	0.4+	0.5−
1998 03 25	704	0.2−	0.3−	1999 09 04	703	0.0	0.9+	1999 10 13	691	0.4+	0.5−
1998 04 01	704	0.2−	0.7+	1999 09 04	703	0.1+	0.9+	1999 10 13	704	0.8+	0.1+
1998 04 01	704	0.3+	0.7+	1999 09 04	703	0.8−	0.0	1999 10 13	704	0.6+	0.3−
1998 04 01	704	0.1−	0.0	1999 09 04	703	0.7−	0.2−	1999 10 13	704	0.4+	0.5−
1998 04 01	704	0.3+	0.6+	1999 09 07	704	0.4−	0.0	1999 10 13	704	0.4+	0.4−
1998 04 01	704	0.0	0.3−	1999 09 07	704	0.2−	0.0	1999 10 15	704	0.8+	0.3−
1998 04 18	704	0.5+	0.5−	1999 09 07	704	0.3−	0.0	1999 10 15	704	0.8+	0.2−
1998 04 18	704	0.4−	0.5−	1999 09 07	704	0.4−	0.1−	1999 10 15	704	0.8+	0.8−
1998 04 18	704	0.0	1.1+	1999 09 07	704	0.1−	0.1+	1999 10 15	704	0.1+	0.4−
1998 04 18	704	0.1+	0.4+	1999 09 08	704	(0.1−	2.4+)	1999 10 15	704	0.7+	0.6−
1998 04 18	704	0.4+	0.3+	1999 09 08	704	0.3−	0.2−				

(12074)* 1998 FZ₆₈ = 1991 SV₂Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid
Research Team at Socorro.Id. G. V. Williams (*MPC* 31758)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		46.69635		(2000.0)		P		Q	
<i>n</i>	0.23687050	ω	81.87954	+0.18979329	+0.98031710				
<i>a</i>	2.5869938	Ω	199.32121	−0.95307035	+0.17064688				
<i>e</i>	0.1286469	<i>i</i>	9.45945	−0.23587160	+0.09928760				
<i>P</i>	4.16	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1991 09 29	691	0.0	0.1+	1998 04 18	704	0.7−	1.6+	1999 09 09	704	0.1+	0.5−
1991 09 29	691	0.2+	0.5+	1998 04 18	704	1.0−	0.2−	1999 09 09	704	1.2+	0.2−
1991 09 29	691	0.6−	0.4+	1998 04 20	704	0.2+	0.2+	1999 09 09	704	0.8+	0.2−
1991 10 13	691	0.2+	0.3+	1998 04 20	704	0.1−	0.6−	1999 09 09	704	0.5+	0.4+

1991 10 13	691	0.4+	0.5+	1998 04 20	704	0.6+	0.2+	1999 09 09	704	0.5+	0.2−
1991 10 13	691	1.0−	0.0	1998 04 20	704	1.1+	0.6+	1999 09 16	704	0.4+	0.0
1995 08 29	691	0.4+	0.1−	1998 04 20	704	0.3−	0.3+	1999 09 16	704	0.1−	0.3+
1995 08 29	691	0.4+	0.1−	1998 04 22	704	1.3+	0.4−	1999 09 16	704	0.4+	0.2−
1995 08 29	691	0.2+	0.1−	1998 04 22	704	0.8+	0.5+	1999 09 16	704	0.5+	0.3+
1998 03 20	704	1.0−	0.6−	1998 04 22	704	0.2−	0.2−	1999 09 18	704	0.2+	0.4+
1998 03 20	704	0.5−	1.0+	1998 04 22	704	0.7−	0.8+	1999 09 18	704	0.7+	0.6+
1998 03 20	704	0.4−	1.1+	1998 04 22	704	0.4+	0.3−	1999 09 18	704	0.6+	0.0
1998 03 20	704	0.8−	1.8+	1998 04 24	699	1.0+	0.6−	1999 09 18	704	0.9+	0.1+
1998 03 20	704	(4.8−	2.0+)	1998 04 24	699	0.8+	0.3+	1999 09 18	704	0.7+	0.3+
1998 03 22	704	0.3−	1.1+	1998 04 24	699	0.0	0.9+	1999 10 01	703	0.1+	0.0
1998 03 22	704	(1.2−	2.5−)	1998 04 28	699	1.0+	0.6−	1999 10 01	703	0.2+	0.1+
1998 03 22	704	(2.4−	1.5+)	1998 04 28	699	0.5+	0.7−	1999 10 01	703	0.3−	0.1+
1998 03 22	704	0.2−	0.1+	1998 04 28	699	0.1+	0.3−	1999 10 01	703	0.1−	0.4+
1998 03 24	699	0.8−	0.8−	1998 04 30	699	0.2+	0.2+	1999 10 02	704	1.1−	0.2−
1998 03 24	699	0.4−	0.2−	1998 04 30	699	0.6+	0.3−	1999 10 02	704	0.1−	0.8−
1998 03 24	699	1.1+	0.2−	1998 04 30	699	0.2+	0.2−	1999 10 02	704	0.6−	0.4−
1998 03 25	704	0.0	1.1−	1998 05 01	699	0.4+	0.1−	1999 10 02	704	0.7−	0.3+
1998 03 25	704	0.1−	0.7−	1998 05 01	699	0.8+	0.6−	1999 10 02	704	0.4+	0.6+
1998 03 25	704	0.0	0.3−	1998 05 01	699	1.1+	0.6−	1999 10 07	703	0.7+	0.4+
1998 03 25	704	0.2−	0.1−	1998 05 02	566	1.6−	1.9−	1999 10 07	703	1.2−	0.6+
1998 03 25	704	0.0	0.8−	1998 05 02	566	0.5−	1.1−	1999 10 07	703	0.6+	0.6+
1998 03 28	704	0.1+	0.3+	1998 05 02	566	0.4−	0.2−	1999 10 07	703	0.3−	0.2+
1998 03 28	704	0.2−	0.2+	1998 05 16	704	1.0−	0.7+	1999 10 07	704	0.1−	0.4−
1998 03 28	704	0.9+	0.1+	1998 05 16	704	1.5−	0.3+	1999 10 07	704	0.8−	0.6−
1998 03 28	704	0.1+	0.8+	1998 05 16	704	1.0−	0.6−	1999 10 07	704	0.4−	0.6−
1998 03 28	704	1.1−	0.7−	1998 05 16	704	(3.0−	1.6−)	1999 10 07	704	0.3−	0.3+
1998 03 29	704	0.2+	0.5+	1998 05 16	704	(3.8−	0.2−)	1999 10 07	704	0.1+	1.0−
1998 03 29	704	0.2+	0.4−	1999 09 04	703	0.7−	1.1−	1999 10 13	704	(3.0−	1.0−)
1998 03 29	704	0.1+	0.0	1999 09 04	703	0.3−	0.1+	1999 10 13	704	1.1−	0.6−
1998 03 29	704	0.1−	0.1−	1999 09 04	703	0.1−	0.1−	1999 10 13	704	1.0−	0.1−
1998 03 29	704	0.5+	0.0	1999 09 04	703	0.7−	1.0+	1999 10 13	704	0.9−	0.4−
1998 04 01	704	0.3−	0.3−	1999 09 05	703	0.2+	0.5+	1999 10 13	704	0.9−	0.4−
1998 04 01	704	0.4+	0.5+	1999 09 05	703	0.2−	0.1+	1999 10 15	704	0.2−	0.2−
1998 04 01	704	0.1−	0.1+	1999 09 05	703	0.1−	0.7+	1999 10 15	704	0.6−	0.3−
1998 04 01	704	0.7+	1.2+	1999 09 05	703	0.3−	0.1+	1999 10 15	704	0.6−	0.4−
1998 04 01	704	0.3−	1.6+	1999 09 08	704	1.0+	0.4+	1999 10 15	704	0.8−	0.5−
1998 04 18	704	0.3+	0.1+	1999 09 08	704	0.7+	0.5+	1999 10 15	704	1.2−	0.3−
1998 04 18	704	0.5+	0.1+	1999 09 08	704	1.7+	1.0+				
1998 04 18	704	0.4−	1.0+	1999 09 08	704	0.9+	0.1+				

(12075)* 1998 FX₆₉ = 1991 PE₁₆Discovered 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

M	59.87627		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.25527415	ω	145.89163	+0.16873791	+0.98440128
a	2.4611126	Ω	133.76674	−0.91901650	+0.17539649
e	0.1619278	i	3.95551	−0.35628106	+0.01379120
P	3.86	H	14.4	G	U
				0.15	2

1995 08 31	809	0.3−	0.3−	1998 04 20	704	0.3−	0.3+	1999 10 02	704	0.6−	0.2−
1995 09 01	809	1.1−	1.2−	1998 04 20	704	0.6+	1.3−	1999 10 02	704	0.1−	0.3−
1995 09 01	809	(2.0−	3.2+)	1998 04 22	704	0.1+	0.3−	1999 10 02	704	0.4+	0.1−
1995 09 22	809	0.9+	0.3+	1998 04 22	704	1.0+	0.9−	1999 10 02	704	0.6+	0.4−
1995 09 23	809	0.5+	0.2−	1998 04 22	704	0.3+	0.4−	1999 10 05	703	0.4+	0.1+
1995 09 23	809	(4.9+	1.8−)	1998 04 22	704	0.4+	0.3+	1999 10 05	703	0.3+	0.3+
1995 09 24	809	0.5+	0.6+	1998 04 22	704	0.4+	0.1−	1999 10 05	703	0.2−	0.1−
1998 03 20	704	0.3+	0.2−	1998 04 28	699	1.1+	0.3+	1999 10 05	703	0.2+	0.1+
1998 03 20	704	0.1−	0.1−	1998 04 28	699	0.6+	0.2+	1999 10 07	704	0.2−	0.3+
1998 03 20	704	0.1+	0.3+	1998 04 28	699	0.9+	0.7+	1999 10 07	704	0.1+	0.1−
1998 03 20	704	0.0	0.5−	1998 04 28	691	0.5−	0.3−	1999 10 07	704	0.4−	0.5−
1998 03 20	704	0.6+	0.3+	1998 04 28	691	0.3−	0.3−	1999 10 07	704	0.2+	0.2−
1998 03 22	704	0.5−	0.3−	1998 04 28	691	0.1−	0.1−	1999 10 07	704	0.6−	0.5−
1998 03 22	704	0.7−	0.3−	1998 04 30	699	1.1+	0.3−	1999 10 08	704	0.2−	0.1−
1998 03 22	704	0.3+	0.1−	1998 04 30	699	0.8+	0.5+	1999 10 08	704	0.4−	0.4−
1998 03 22	704	0.5−	0.3+	1998 04 30	699	1.4+	0.6+	1999 10 08	704	0.1−	0.5−
1998 03 22	704	0.1−	0.1+	1998 05 16	704	0.4+	1.2+	1999 10 08	704	0.1−	0.3−
1998 03 22	699	0.3−	0.4−	1998 05 16	704	(0.5+	2.3−)	1999 10 08	704	0.0	0.2−
1998 03 22	699	0.6−	0.6−	1998 05 16	704	0.9+	0.7+	1999 10 15	704	0.6+	0.1+
1998 03 22	699	1.1−	0.4+	1998 05 16	704	1.4−	0.5−	1999 10 15	704	0.3−	0.2+
1998 03 24	699	0.3−	0.6−	1999 09 08	699	0.3+	0.4−	1999 10 15	704	0.6+	0.2−
1998 03 24	699	0.6−	0.2+	1999 09 08	699	0.9−	0.1−	1999 10 15	704	0.5+	0.6−
1998 03 24	699	0.4−	0.2−	1999 09 08	699	0.4−	0.1+	1999 10 15	704	0.2+	0.5−

(12076)* 1998 FT₇₀ = 1981 JT₂

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31760)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	84.59619		(2000.0)	P	Q		
n	0.23015551	ω	210.59851	−0.44949069	+0.89266406		
a	2.6370709	Ω	32.72400	−0.80659488	−0.38956638		
e	0.2368001	i	3.53179	−0.38387866	−0.22669125		
P	4.28	H	14.7	G	0.15	U	2

Residuals in seconds of arc

1981 05 05	675	0.9+	0.9−	1998 03 25	699	0.3+	0.7+	1998 04 22	704	0.4−	0.1+
1981 05 06	675	0.4−	0.2+	1998 03 25	699	0.4+	0.0	1998 04 22	704	0.7−	0.2+
1981 05 08	675	0.6+	0.1−	1998 03 25	699	0.1+	0.2−	1998 04 22	704	0.5+	0.8−
1981 05 11	675	1.2−	0.9+	1998 03 25	704	0.2+	0.0	1998 04 22	704	0.5−	0.2+
1995 10 28	691	0.4+	0.2+	1998 03 25	704	0.2+	0.6+	1998 04 22	704	0.0	0.4−
1995 10 28	691	0.5+	0.3+	1998 03 25	704	0.8+	0.3+	1998 05 16	704	1.2+	0.5−
1995 10 28	691	0.3+	0.1+	1998 03 25	704	0.5−	0.7+	1998 05 16	704	(0.7+	2.9−)
1997 12 07	910	0.4−	0.1−	1998 03 25	704	0.2−	0.2+	1998 05 16	704	0.6+	1.8−
1997 12 07	910	0.9−	0.6−	1998 03 28	704	0.2+	0.5−	1999 09 07	704	0.7+	0.5−
1997 12 07	910	1.1−	0.3−	1998 03 28	704	0.2+	0.2+	1999 09 07	704	0.2−	0.9−
1998 03 20	704	0.4+	0.3−	1998 03 28	704	0.7+	0.4+	1999 09 07	704	0.9−	0.9+
1998 03 20	704	0.5+	0.2−	1998 03 28	704	1.2−	0.1−	1999 09 14	704	0.3−	0.1−
1998 03 20	704	0.4+	0.1−	1998 03 28	704	0.1−	0.7−	1999 09 14	704	0.3−	0.4+
1998 03 20	704	0.4+	0.8−	1998 03 29	704	0.4−	0.2+	1999 09 14	704	0.4−	0.8+
1998 03 20	704	0.2+	0.4+	1998 03 29	704	0.5+	0.4+	1999 09 14	704	0.2−	0.8−
1998 03 22	704	0.3+	0.2+	1998 03 29	704	0.2−	0.4+	1999 10 02	704	0.4+	0.4+
1998 03 22	704	0.4+	0.0	1998 03 29	704	0.2−	0.8−	1999 10 02	704	0.5+	0.2+
1998 03 22	704	0.3+	0.4+	1998 03 29	704	0.6+	0.3−	1999 10 02	704	1.4+	1.5+
1998 03 22	704	0.0	0.7−	1998 04 20	704	0.1−	1.0−	1999 10 02	704	0.1−	1.2+
1998 03 22	704	0.1+	0.6+	1998 04 20	704	0.9−	0.4−	1999 10 15	704	0.5−	0.7−
1998 03 22	699	0.0	0.9+	1998 04 20	704	1.6−	1.0+	1999 10 15	704	0.4−	1.4−
1998 03 22	699	0.0	0.0	1998 04 20	704	0.0	1.3+	1999 10 15	704	0.2+	0.9−
1998 03 22	699	0.8−	0.8−	1998 04 20	704	0.4−	0.3+	1999 10 15	704	0.8−	1.6−

(12077)* 1998 FZ₇₀ = 1981 FJ = 1995 SK₄₂

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31760)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	83.94180		(2000.0)	P	Q
n	0.23251970	ω	223.60172	-0.52448363	$+0.84886806$
a	2.6191651	Ω	15.15549	-0.69559430	-0.38258939
e	0.1428312	i	14.59487	-0.49098421	-0.36475796
P	4.24	H	13.9	G 0.15	U 2

Residuals in seconds of arc

1981 03 30	688	1.0+	1.2−	1998 03 24	704	1.2−	0.6+	1998 05 16	704	0.4+	0.4+
1981 03 30	688	0.8−	0.1−	1998 03 24	704	0.9−	0.3+	1998 05 16	704	1.0−	0.2+
1981 04 05	688	(5.3+	1.8+)	1998 03 25	704	0.2−	0.5+	1998 05 16	704	0.8−	0.4+
1981 04 05	688	0.7−	0.9+	1998 03 25	704	0.4+	0.0	1998 05 22	566	0.4−	0.4−
1995 09 25	691	0.1−	0.2+	1998 03 25	704	0.1−	1.1−	1998 05 22	566	0.1−	0.2+
1995 09 25	691	0.3+	0.1−	1998 03 25	704	1.9+	0.3+	1998 05 22	566	1.1+	1.3−
1995 09 25	691	0.1+	0.1+	1998 03 25	704	(5.2−	1.6+)	1999 09 07	699	0.2+	0.3−
1995 09 30	691	0.1+	0.0	1998 03 29	704	0.1+	0.4+	1999 09 07	699	0.0	0.1−
1995 09 30	691	0.1−	0.1+	1998 03 29	704	0.0	0.4+	1999 09 07	699	0.2−	0.2+
1995 09 30	691	0.4+	0.2−	1998 03 29	704	0.6−	0.8−	1999 09 09	704	0.0	0.5+
1998 03 20	704	0.4+	0.4−	1998 03 29	704	0.1−	0.9+	1999 09 09	704	0.6−	0.5−
1998 03 20	704	0.4+	0.7−	1998 03 29	704	1.1−	0.4+	1999 09 09	704	0.5−	0.2−
1998 03 20	704	0.1+	0.7+	1998 04 01	704	0.6−	0.1−	1999 09 09	704	0.1+	0.4+
1998 03 20	704	0.5+	0.4−	1998 04 01	704	0.4−	0.2+	1999 09 09	704	0.0	0.9+
1998 03 20	704	0.3−	0.4−	1998 04 01	704	0.6−	0.9−	1999 09 13	704	0.4+	0.6−
1998 03 22	704	0.6+	0.4−	1998 04 01	704	0.3−	0.4−	1999 09 13	704	0.7+	0.7−
1998 03 22	704	0.3+	0.4+	1998 04 01	704	0.4−	0.5−	1999 09 13	704	0.4+	0.5+
1998 03 22	704	0.5+	0.5+	1998 04 20	704	0.3−	0.4+	1999 09 30	704	0.3−	0.1−
1998 03 22	704	1.0+	0.6+	1998 04 20	704	0.8−	0.8−	1999 09 30	704	0.1+	0.4+
1998 03 22	704	0.2+	0.0	1998 04 20	704	0.6−	0.7+	1999 09 30	704	0.6−	0.3+
1998 03 24	704	0.2−	0.0	1998 04 20	704	0.2+	0.5+	1999 09 30	704	0.0	0.3+
1998 03 24	704	0.7+	0.8+	1998 04 20	704	0.3−	0.8+	1999 09 30	704	0.2−	0.3+
1998 03 24	704	1.0+	0.7+	1998 04 22	704	0.2+	0.5−	1999 10 01	557	0.8+	0.4+
1998 03 24	704	0.3−	0.5−	1998 04 22	704	0.7+	0.1+	1999 10 01	557	0.4+	0.3+
1998 03 24	704	0.3+	0.1−	1998 04 22	704	0.0	1.3−	1999 10 04	703	0.3−	0.4−
1998 03 24	704	0.3+	0.7+	1998 04 22	704	0.6+	0.3−	1999 10 04	703	0.5−	0.3−
1998 03 24	704	0.9−	1.1+	1998 04 22	704	0.5+	0.6−	1999 10 04	703	0.6−	0.4−
1998 03 24	704	0.1−	0.1+	1998 05 16	704	0.9+	0.6−	1999 10 04	703	0.5−	0.2−

(12078)* 1998 FJ₇₂ = 1973 UZ₅

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32260)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	5.97929		(2000.0)	P	Q
n	0.30245597	ω	153.45476	+0.95621713	+0.29246367
a	2.1980013	Ω	189.55811	−0.27863382	+0.89864137
e	0.1123243	i	3.68341	−0.08950973	+0.32696895
P	3.26	H	15.2	G 0.15	U 2

Residuals in seconds of arc

1973 10 31	033	1.2−	0.8−	1998 04 19	704	1.5+	0.0	1999 10 05	704	0.3+	0.3+
1973 11 02	033	1.2+	1.0+	1998 04 19	704	0.2−	1.3+	1999 10 05	704	0.3+	0.1+
1996 12 01	691	0.3−	0.1−	1998 04 19	704	(1.2−	2.4−)	1999 10 05	704	0.4+	0.2−
1996 12 01	691	0.3−	0.1−	1998 04 20	704	1.5+	0.1−	1999 10 05	704	0.6+	0.4−
1996 12 01	691	0.2−	0.1−	1998 04 20	704	(2.7+	0.8+)	1999 10 07	703	0.8−	0.0
1996 12 09	691	0.8+	0.2−	1998 04 20	704	0.9+	0.9−	1999 10 07	703	0.2−	0.2−
1996 12 09	691	0.2+	0.3−	1998 04 20	704	1.4−	2.0−	1999 10 07	703	0.2−	0.2−
1996 12 09	691	0.1+	0.3−	1998 04 22	704	1.0+	1.6−	1999 10 07	703	0.4−	0.1−
1998 03 20	704	(2.4+	1.4−)	1998 04 22	704	0.7−	0.3+	1999 10 07	704	0.4−	0.5+
1998 03 20	704	0.5+	1.2+	1998 04 22	704	0.8−	0.9+	1999 10 07	704	0.1−	0.5+
1998 03 20	704	0.6−	0.2+	1998 04 22	704	1.5−	0.3−	1999 10 07	704	0.3−	0.3+
1998 03 20	704	0.5+	0.7+	1998 04 22	704	(3.9−	0.6−)	1999 10 07	704	0.4−	0.3+
1998 03 22	704	0.9−	0.1+	1999 07 23	704	0.7+	0.4−	1999 10 07	704	0.2−	0.3+
1998 03 22	704	0.6−	0.4−	1999 07 23	704	0.1+	0.7−	1999 10 09	704	0.0	0.3+
1998 03 22	704	0.4+	0.6−	1999 07 23	704	0.3−	0.1−	1999 10 09	704	0.0	0.3+
1998 03 22	704	1.7−	0.4−	1999 07 23	704	0.6+	0.3−	1999 10 09	704	0.1−	0.2+

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M.P.C. 36295

1998 03 28	704	0.8+	0.1+	1999 08 13	699	0.2-	0.2-	1999 10 09	704	0.1-	0.3+
1998 03 28	704	0.1+	0.2-	1999 08 13	699	0.2+	0.4-	1999 10 09	704	0.0	0.1+
1998 03 28	704	0.1-	0.6+	1999 08 13	699	0.5-	0.1+	1999 10 11	106	0.0	0.1-
1998 03 28	704	0.5-	1.2-	1999 09 28	681	0.2-	0.3-	1999 10 11	106	1.1-	0.9-
1998 03 29	704	0.0	1.2-	1999 09 28	681	0.2-	0.3-	1999 10 15	704	0.1+	0.6-
1998 03 29	704	0.1+	0.2+	1999 10 04	704	0.1+	0.0	1999 10 15	704	0.3+	0.4-
1998 03 29	704	0.8+	1.4+	1999 10 04	704	0.4+	0.0	1999 10 15	704	0.1+	0.2-
1998 03 29	704	0.8-	1.1+	1999 10 04	704	0.7+	0.6+	1999 10 15	704	0.1+	0.6-
1998 03 29	704	(2.1-	2.0+)	1999 10 04	704	0.7+	0.2+	1999 10 15	704	0.4+	1.0-
1998 04 19	704	0.9+	1.0-	1999 10 04	704	0.1+	1.2+				

(12079)* 1998 FZ₇₃ = 1957 LE = 1991 NR₄

Discovered 1998 Mar. 22 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 31761, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.29708	(2000.0)	P	Q
<i>n</i>	0.26225583	ω	6.17737	-0.28068470
<i>a</i>	2.4172373	Ω	247.52339	-0.88165983
<i>e</i>	0.1704100	<i>i</i>	1.42431	-0.37933105
<i>P</i>	3.76	<i>H</i>	14.3	<i>G</i> 0.15
				<i>U</i> 1

Residuals in seconds of arc

1957 06 05	081	0.3-	0.7-	1998 04 20	704	0.4+	0.1+	1999 10 04	704	0.6+	0.0
1957 06 06	081	0.1+	0.9-	1998 04 20	704	0.4-	0.3-	1999 10 04	704	0.3+	0.5+
1991 07 08	809	0.9+	0.0	1998 04 20	704	0.2-	0.9+	1999 10 04	704	0.2+	0.2+
1991 07 08	809	1.3+	0.1-	1998 04 20	704	0.4+	0.7+	1999 10 04	704	0.1-	0.6+
1991 07 10	809	1.5-	0.5+	1998 04 20	704	0.8-	0.8+	1999 10 06	704	0.2+	0.4+
1991 07 10	809	0.6-	0.5+	1998 04 22	704	0.2-	0.1-	1999 10 06	704	0.2+	0.0
1991 07 10	809	0.0	0.5+	1998 04 22	704	1.0+	0.2+	1999 10 06	704	0.1+	0.2+
1994 03 09	691	0.4+	0.5-	1998 04 22	704	0.1-	0.9-	1999 10 06	704	0.1-	0.1+
1994 03 09	691	0.3+	0.5-	1998 04 22	704	0.6+	0.1+	1999 10 06	704	0.2-	0.4-
1998 03 22	704	0.4-	0.3+	1998 04 22	704	0.0	0.9-	1999 10 07	704	0.3-	0.5+
1998 03 22	704	0.4+	1.5+	1998 05 01	699	0.6+	0.5-	1999 10 07	704	0.4+	0.5+
1998 03 22	704	0.4-	0.4+	1998 05 01	699	0.1+	0.1-	1999 10 07	704	0.2+	0.3+
1998 03 22	704	0.3+	1.5-	1998 05 01	699	0.4+	0.1+	1999 10 07	704	0.0	0.1+
1998 03 22	704	0.6-	0.8+	1998 05 07	566	0.7+	0.2-	1999 10 07	704	0.4-	0.2+
1998 03 22	699	0.2-	1.2+	1998 05 07	566	0.3-	0.3-	1999 10 09	704	0.2+	0.3+
1998 03 22	699	0.1-	0.5+	1998 05 07	566	0.0	0.5-	1999 10 09	704	0.3+	0.3+
1998 03 22	699	0.5-	1.0+	1998 05 16	704	0.6+	0.7-	1999 10 09	704	0.1+	0.2+
1998 03 24	699	0.2+	0.4+	1998 05 16	704	0.1-	2.0-	1999 10 09	704	0.4+	0.2+
1998 03 24	699	0.4-	0.0	1998 05 16	704	3.3+	1.0+	1999 10 09	704	0.2+	0.1+
1998 03 24	699	0.6-	0.6+	1998 05 16	704	1.1+	0.8+	1999 10 13	704	0.3+	0.6-
1998 03 25	704	0.1+	1.1+	1998 05 16	704	2.3-	0.3+	1999 10 13	704	0.2+	0.5-
1998 03 25	704	0.1+	0.9+	1999 09 05	699	0.0	0.6+	1999 10 13	704	0.2-	0.8-
1998 03 25	704	0.3-	0.7+	1999 09 05	699	0.4+	0.7+	1999 10 13	704	0.2-	0.3-
1998 03 25	704	0.1-	1.0+	1999 09 07	704	0.6+	0.5-	1999 10 13	704	0.2-	1.0-
1998 03 25	704	0.2-	0.5+	1999 09 07	704	0.7+	0.3-	1999 10 15	704	0.3+	0.5+
1998 03 29	704	0.8+	0.4+	1999 09 07	704	0.1-	0.1-	1999 10 15	704	0.0	0.2+
1998 03 29	704	0.6+	0.4-	1999 09 18	703	0.4-	0.2+	1999 10 15	704	0.5-	0.0
1998 03 29	704	0.1-	1.8+	1999 09 18	703	0.3-	0.6+	1999 10 15	704	0.3-	0.3-
1998 03 29	704	0.2+	0.7+	1999 09 18	703	0.0	0.5+	1999 10 15	704	1.5-	0.7-
1998 03 29	704	0.1+	1.3+	1999 09 18	703	0.7-	0.8+	1999 10 19	704	0.3-	0.1-
1998 04 01	704	0.2-	0.4-	1999 10 01	703	0.2-	0.3+	1999 10 19	704	0.1-	0.3+
1998 04 01	704	0.2+	0.0	1999 10 01	703	0.8-	0.3+	1999 10 19	704	0.8-	0.5+
1998 04 01	704	0.7+	1.1-	1999 10 01	703	0.0	0.4+	1999 10 19	704	0.2-	0.1+
1998 04 01	704	2.0-	1.7-	1999 10 01	703	0.9-	0.4+	1999 10 19	704	0.2-	0.1+
1998 04 01	704	0.2-	1.1-	1999 10 04	704	0.2+	0.6+				

(12080)* 1998 FC₁₁₁ = 1979 SQ₁₀ = 1996 CG

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32002)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	7.89831	(2000.0)	P	Q
<i>n</i>	0.18861661	ω	25.25752	+0.46070890
<i>a</i>	3.0112682	Ω	272.51588	-0.83859654
<i>e</i>	0.0849798	<i>i</i>	9.01620	-0.29069426
<i>P</i>	5.23	<i>H</i>	12.3	<i>G</i> 0.15
				<i>U</i> 1

Residuals in seconds of arc

1979 09 29	095	0.0	0.2+	1998 05 21	426	0.3+	0.3+	1999 07 18	761	0.7-	0.0
1996 02 01	327	0.7+	0.1-	1998 05 21	426	0.0	0.3+	1999 07 23	704	1.1+	0.2+
1996 02 01	327	0.3-	0.3+	1998 05 21	426	0.0	0.4+	1999 07 23	704	0.6+	0.1+
1996 02 01	327	0.7+	0.0	1998 05 22	566	0.7-	0.2+	1999 07 23	704	0.8+	0.3+
1996 02 01	327	0.1-	0.3-	1998 05 22	566	0.3+	0.2+	1999 08 05	106	0.3+	0.2-
1996 02 02	327	0.3-	0.0	1998 05 22	566	0.1-	0.7+	1999 08 05	106	0.4-	0.9-
1996 02 02	327	0.2-	1.3+	1999 05 14	704	0.2-	0.3+	1999 08 05	106	0.9-	0.4+
1996 02 02	327	0.8-	0.5+	1999 05 14	704	1.1-	0.6-	1999 08 08	106	1.0-	0.4-
1998 03 31	704	1.2+	0.0	1999 05 14	704	0.1+	0.5-	1999 08 08	106	0.2-	0.1-
1998 03 31	704	0.5+	0.3+	1999 05 14	704	(1.1+	2.8-)	1999 08 08	106	1.0-	0.5+
1998 03 31	704	0.3-	0.6-	1999 07 13	704	0.6+	0.4-	1999 09 30	704	0.6-	0.8+
1998 03 31	704	0.1+	1.0-	1999 07 13	704	0.4+	0.0	1999 09 30	704	0.2+	0.2+
1998 03 31	704	0.8-	0.5-	1999 07 13	704	0.7+	0.3-	1999 09 30	704	0.2-	0.1+
1998 04 01	704	0.0	0.6+	1999 07 13	704	0.2+	0.2-	1999 09 30	704	0.1+	0.3+
1998 04 01	704	0.3+	0.5+	1999 07 13	704	0.8+	0.2+	1999 10 16	704	0.0	0.0
1998 04 01	704	0.6+	0.2+	1999 07 17	761	1.3-	0.2+	1999 10 16	704	0.2+	0.1+
1998 04 01	704	0.5-	0.3-	1999 07 17	761	1.0+	0.9+	1999 10 16	704	0.3+	0.2+
1998 04 01	704	0.4-	0.1-	1999 07 17	761	0.4-	0.4-	1999 10 16	704	0.0	0.0
1998 05 19	426	0.3+	0.3+	1999 07 18	761	0.6+	0.1-	1999 10 16	704	0.5+	0.1-
1998 05 19	426	(0.4+	2.2+)	1999 07 18	761	1.0-	0.1+				

(12081)* 1998 FH₁₁₅ = 1968 QT = 1992 PF₃

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>	335.44913	(2000.0)	P	Q
<i>n</i>	0.28602520	ω	104.43350	+0.96248500
<i>a</i>	2.2813917	Ω	270.46624	+0.20137837
<i>e</i>	0.2202321	<i>i</i>	5.13871	+0.18184988
<i>P</i>	3.45	<i>H</i>	13.6	<i>G</i> 0.15
				<i>U</i> 2

Residuals in seconds of arc

1968 08 27	095	(0.2-	3.3-)	1998 04 22	704	0.0	0.1+	1999 09 11	159	0.0	0.1-
1968 08 31	095	0.7-	2.1+	1998 04 22	704	0.9-	0.2-	1999 09 12	699	0.3-	1.0+
1992 08 06	675	0.1-	0.3+	1998 04 22	704	0.0	0.5+	1999 09 12	699	0.2-	0.9+
1992 08 06	675	0.2+	1.0-	1998 04 25	699	0.2-	0.4+	1999 09 12	699	0.4-	0.8+
1992 08 06	675	0.1+	0.7+	1998 04 25	699	0.4-	0.6+	1999 09 16	704	0.0	0.2-
1992 08 06	675	0.0	0.8-	1998 04 25	699	0.4-	0.6+	1999 09 16	704	0.4+	0.1-
1992 08 07	675	0.2+	0.7-	1998 05 16	704	0.4+	0.2-	1999 09 16	704	0.1-	0.2-
1992 08 07	675	0.3-	0.3-	1998 05 16	704	(2.1-	1.9+)	1999 09 16	704	0.3-	0.3-
1998 03 25	704	1.1+	0.7+	1998 05 16	704	1.5-	0.3-	1999 09 18	704	0.1+	0.2+
1998 03 25	704	0.8+	1.0+	1998 05 16	704	0.8+	1.1-	1999 09 18	704	0.1+	0.0
1998 03 25	704	1.6+	0.0	1999 07 23	704	1.0+	0.2+	1999 09 18	704	0.2+	0.1+
1998 03 25	704	0.6+	0.1-	1999 07 23	704	0.9+	0.1+	1999 09 18	704	0.1+	0.5+
1998 03 31	704	0.9+	0.4-	1999 07 23	704	0.8+	0.3+	1999 09 18	704	0.1+	0.4+
1998 03 31	704	0.2+	0.3+	1999 08 23	106	0.2-	0.1+	1999 10 01	703	0.0	0.1+
1998 03 31	704	0.2-	0.0	1999 08 23	106	0.1-	0.2-	1999 10 01	703	0.1-	0.0
1998 03 31	704	0.1-	0.4-	1999 08 23	106	0.1+	0.3+	1999 10 01	703	0.0	0.1+
1998 03 31	704	0.7-	1.1-	1999 09 08	704	0.5+	0.1-	1999 10 01	703	0.3-	0.0
1998 04 01	704	0.5+	0.6-	1999 09 08	704	0.4-	0.0	1999 10 04	704	1.0+	0.7

1998 04 21	704	0.5+	0.3+	1999 09 10	106	0.1+	0.3+	1999 10 22	716	1.6-	0.1-
1998 04 21	704	0.1-	0.8+	1999 09 10	106	0.3-	0.2+	1999 10 22	716	0.9-	0.1-
1998 04 22	704	0.3-	0.2-	1999 09 11	159	0.1-	0.2-				
1998 04 22	704	0.2-	0.1+	1999 09 11	106	0.0	0.2+				

(12082)* 1998 FS₁₁₈ = 1977 RZ₁ = 1990 SD₁₇

Discovered 1998 Mar. 31 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32004)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	28.98604		(2000.0)		P		Q
<i>n</i>	0.22559341	ω	313.07592		+0.68969034		+0.72410159
<i>a</i>	2.6725045	Ω	0.54238		-0.58644156		+0.56021011
<i>e</i>	0.2845734	<i>i</i>	12.36589		-0.42475114		+0.40229530
<i>P</i>	4.37	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 09 08	095	1.4-	2.5+	1998 03 25	704	0.5+	0.4-	1998 05 16	704	(2.2+	1.1-)
1977 09 09	675	1.1+	0.7-	1998 03 31	704	0.5-	1.5-	1998 05 16	704	0.5+	0.7+
1977 09 10	675	1.2+	0.9-	1998 03 31	704	0.0	0.5+	1998 05 16	704	0.2-	0.2-
1977 09 10	095	2.3-	1.5+	1998 03 31	704	0.7-	0.4+	1999 09 13	106	0.5+	0.8+
1990 09 14	675	0.2+	1.1-	1998 03 31	704	0.9-	0.6-	1999 09 13	106	0.0	0.4+
1990 09 14	675	0.2-	1.6-	1998 03 31	704	1.4-	0.7-	1999 09 13	106	0.1+	0.2+
1990 09 16	675	0.9+	0.2+	1998 04 01	704	0.6+	0.8-	1999 09 18	699	0.3+	0.7+
1990 09 16	675	0.2-	0.4+	1998 04 01	704	0.5+	0.2+	1999 09 18	699	0.0	1.6+
1998 03 20	704	0.4-	0.3-	1998 04 01	704	0.2+	0.8-	1999 09 18	699	0.1+	0.1-
1998 03 20	704	0.6+	0.3+	1998 04 01	704	0.0	1.6-	1999 10 03	704	0.3-	0.4+
1998 03 20	704	(2.5-	1.2+)	1998 04 18	704	0.2+	0.2-	1999 10 03	704	0.2-	0.2-
1998 03 20	704	(2.3-	1.1+)	1998 04 18	704	0.2+	0.8+	1999 10 03	704	0.0	0.4-
1998 03 22	704	1.0-	0.4+	1998 04 18	704	0.9-	0.8+	1999 10 03	704	0.0	0.4-
1998 03 22	704	0.2-	1.4+	1998 04 18	704	0.1-	0.5-	1999 10 03	704	0.1-	0.0
1998 03 22	704	1.0+	0.2+	1998 04 18	704	(2.9-	0.2-)	1999 10 12	704	0.8+	1.1-
1998 03 22	704	0.6+	1.7+	1998 04 20	704	0.5+	0.7-	1999 10 12	704	0.4+	0.7-
1998 03 22	704	(2.3-	2.5+)	1998 04 20	704	0.5-	0.3+	1999 10 12	704	0.2+	0.8-
1998 03 25	704	0.6+	0.6+	1998 04 20	704	1.6-	0.4+	1999 10 12	704	0.1-	1.0-
1998 03 25	704	0.6+	0.5+	1998 04 20	704	1.3-	0.7-	1999 10 12	704	0.2-	0.9-
1998 03 25	704	1.1+	0.5+	1998 05 16	704	0.9+	0.4-				
1998 03 25	704	0.4+	0.0	1998 05 16	704	0.0	1.8-				

(12083)* 1998 FS₁₂₁ = 1962 SS = 1990 TN₁₂ = 1997 CE₃

Discovered 1998 Mar. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31769)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	141.59886		(2000.0)		P		Q
<i>n</i>	0.31733903	ω	234.37359		-0.88140859		+0.47192940
<i>a</i>	2.1287291	Ω	333.76881		-0.41739743		-0.79801782
<i>e</i>	0.0018738	<i>i</i>	2.59850		-0.22112957		-0.37476685
<i>P</i>	3.11	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1962 09 26	033	0.5-	0.1+	1998 03 29	704	0.2+	0.6+	1999 09 08	699	0.5-	1.7+
1962 09 26	033	0.2+	0.5+	1998 04 01	704	0.0	0.6-	1999 09 08	699	0.6-	1.7+
1990 10 14	033	0.9-	0.3-	1998 04 01	704	1.0+	0.3-	1999 09 29	703	0.5-	0.2+
1990 10 15	033	0.1+	0.5+	1998 04 01	704	0.3-	0.2-	1999 09 29	703	0.5-	0.6+
1990 10 15	033	0.2+	0.6+	1998 04 01	704	0.4+	0.2-	1999 09 29	703	0.1-	0.4+
1990 10 18	033	1.0+	1.4+	1998 04 01	704	0.5+	0.2+	1999 09 29	703	0.5-	0.5+
1990 10 18	033	0.7+	1.0+	1998 04 04	699	0.3+	0.5+	1999 10 04	704	0.0	0.4+
1993 11 21	691	0.0	0.0	1998 04 04	699	0.7+	0.5+	1999 10 04	704	0.3-	0.1-
1993 11 21	691	1.2-	0.0	1998 04 04	699	0.8+	0.1+	1999 10 04	704	0.0	0.0
1997 02 03	566	0.1+	0.0	1998 04 18	704	0.0	0.2+	1999 10 04	704	0.6+	0.2+
1997 02 03	566	0.6-	0.1+	1998 04 18	704	0.9+	0.5+	1999 10 04	704	0.3+	0.3+
1997 02 03	566	0.5-	0.2-	1998 04 18	704	0.1+	0.2+	1999 10 07	704	0.1+	0.1+
1997 02 04	566	0.4-	0.1-	1998 04 18	704	0.6-	0.2+	1999 10 07	704	0.2-	0.0
1997 02 04	566	0.4-	0.2+	1998 04 18	704	0.4-	0.2+	1999 10 07	704	0.2+	0.2-

1997 02 04	566	0.5-	0.1+	1998 04 19	704	1.3+	0.1+	1999 10 07	704	0.1-	0.0
1998 03 20	704	0.3-	0.1+	1998 04 19	704	0.3+	1.3+	1999 10 07	704	0.2-	0.5+
1998 03 20	704	0.6-	0.4+	1998 04 19	704	0.2-	0.4+	1999 10 09	704	0.0	0.2-
1998 03 20	704	0.6-	0.2+	1998 04 19	704	0.1+	1.0+	1999 10 09	704	0.2+	0.0
1998 03 20	704	0.3-	0.4+	1998 04 20	704	0.8+	0.2+	1999 10 09	704	0.0	0.1-
1998 03 20	704	0.7-	1.0+	1998 04 20	704	0.4-	0.8+	1999 10 09	704	0.1-	0.1+
1998 03 22	704	0.4+	0.8+	1998 04 20	704	0.5+	0.0	1999 10 09	704	0.2-	0.2+
1998 03 22	704	0.1+	0.3-	1998 04 20	704	0.3-	0.7+	1999 10 10	859	0.4-	0.7+
1998 03 22	704	0.7+	1.6-	1998 04 20	704	1.0-	0.3+	1999 10 10	859	0.3+	0.2+
1998 03 22	704	0.7-	0.1-	1998 04 22	704	1.3+	0.4-	1999 10 10	859	0.0	0.5+
1998 03 22	704	0.2+	0.1+	1998 04 22	704	0.1+	0.0	1999 10 10	704	0.1-	0.2+
1998 03 24	566	0.1-	0.1+	1998 04 22	704	0.7+	0.3+	1999 10 10	704	0.6-	0.0
1998 03 24	566	0.1+	0.4+	1998 04 22	704	0.7+	0.5-	1999 10 10	704	0.2+	0.3+
1998 03 24	566	0.6-	0.0	1998 04 22	704	0.4+	0.7+	1999 10 10	704	0.6+	0.5+
1998 03 28	704	0.3-	0.0	1998 05 02	699	(2.0+	0.1-)	1999 10 10	704	0.1+	0.3+
1998 03 28	704	0.6-	0.2-	1998 05 02	699	0.6+	0.4+	1999 10 15	704	0.2+	0.3-
1998 03 28	704	0.1+	0.6+	1998 05 02	699	0.1-	0.0	1999 10 15	704	0.2-	0.1-
1998 03 28	704	0.7-	0.3+	1999 09 07	704	0.2+	0.4+	1999 10 15	704	0.1-	0.5-
1998 03 28	704	1.0-	0.1+	1999 09 07	704	0.2+	0.1+	1999 10 15	704	0.3+	0.4+
1998 03 29	704	0.6+	0.4+	1999 09 07	704	0.4-	0.3+	1999 10 15	704	0.1+	0.9-
1998 03 29	704	0.9+	0.0	1999 09 07	704	0.1+	0.3-	1999 10 15	704	0.1+	0.0
1998 03 29	704	0.2-	0.1-	1999 09 07	704	0.2-	0.6-	1999 10 15	704	0.9-	1.0-
1998 03 29	704	0.3+	1.3+	1999 09 08	699	0.6-	1.4+	1999 10 15	704	0.5+	0.6+

(12084)* 1998 FL₁₂₅ = 1991 SW₄ = 1994 GQ₁₀

Discovered 1998 Mar. 22 by T. Seki at Geisei.

Id. G. V. Williams (*MPC* 31769)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	85.73460		(2000.0)		P		Q
<i>n</i>	0.23794747	ω	26.48730		-0.66401333		+0.74250911
<i>a</i>	2.5791820	Ω	202.26027		-0.72065581		-0.66694131
<i>e</i>	0.0960329	<i>i</i>	13.45263		-0.19935271		-0.06220538
<i>P</i>	4.14	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 09 17	675	0.2-	0.2-	1998 04 18	704	1.2-	0.7-	1999 07 27	704	1.1+	1.0-
1991 09 17	675	0.6+	1.1-	1998 04 18	704	1.4-	1.1-	1999 09 08	704	0.5-	0.3-
1994 04 14	675	1.4+	1.8+	1998 04 19	704	0.3-	0.1-	1999 09 08	704	0.2-	0.3-
1994 04 14	675	(1.2+	2.3+)	1998 04 19	704	0.4-	0.2-	1999 09 08	704	0.0	0.5+
1994 04 15	675	(1.3+	2.0+)	1998 04 19	704	0.4-	0.9+	1999 09 09	704	0.2+	0.1+
1994 04 15	675	1.3-	0.4+	1998 04 19	704	0.7-	0.2+	1999 09 09	704	0.3-	0.7-
1998 03 22	372	0.7-	0.0	1998 04 19	704	0.6-	0.3+	1999 09 09	704	0.4-	0.4-
1998 03 22	372	0.0	1.6+	1998 04 20	704	0.4+	0.7-	1999 09 09	704	0.2-	0.2-
1998 03 25	372	0.0	0.2-	1998 04 20	704	0.2-	0.3+	1999 09 09	704	0.4-	0.1-
1998 03 28	704	0.4+	0.5-	1998 04 20	704	0.0	0.3-	1999 09 14	704	0.1-	0.3+
1998 03 28	704	(0.5+	2.1-)	1998 04 20	704	0.6+	0.4+	1999 09 14	704	0.2+	0.3-
1998 03 28	704	0.4+	0.0	1998 04 20	704	0.0	0.2+	1999 09 14	704	0.0	0.1-
1998 03 28	704	0.5+	0.1-	1998 05 02	699	0.1-	0.8-	1999 09 14	704	0.7+	0.2+
1998 03 28	704	0.9+	0.4+	1998 05 02	699	0.1-	0.9-	1999 09 14	704	0.5+	0.0
1998 03 29	704	(0.3+	2.2+)	1998 05 02	699	0.6+	0.3-	1999 10 02	704	0.0	1.1+
1998 03 29	704	0.2+	0.2-	1998 05 14	704	(0.0	2.1-)	1999 10 02	704	0.0	0.3+
1998 03 29	704	0.8+	0.1+	1998 05 14	704	0.1-	0.0	1999 10 02	704	0.3-	0.6+
1998 03 29	704	0.3-	0.4-	1998 05 14	704	0.9+	1.2-	1999 10 02	704	0.6+	0.6+
1998 03 29	704	0.3-	1.0+	1998 05 14	704	(2.4-	2.2-)	1999 10 02	704	0.3+	0.3-
1998 04 01	704	0.6+	0.4-	1999 07 22	704	0.0	0.1+	1999 10 08	704	0.8-	0.8+
1998 04 01	704	0.1+	0.2+	1999 07 22	704	0.4+	0.0	1999 10 08	704	0.3-	1.0+
1998 04 01	704	0.8+	0.7+	1999 07 22	704	0.1+	0.2-	1999 10 08	704	0.4-	0.7+
1998 04 01	704	0.8+	0.2+	1999 07 22	704	0.1+	0.0	1999 10 08	704	0.1-	1.1+
1998 04 01	704	0.5+	0.9+	1999 07 22	704	0.1-	0.3-	1999 10 08	704	1.2-	0.4+
1998 04 18	704	0.1-	0.1+	1999 07 27	704	(0.7+	3.2-)	1999 10 09	106	0.4-	0.2+
1998 04 18	704	0.6-	0.2-	1999 07 27	704	0.2+	1.4-	1999 10 09	106	0.5-	0.7+
1998 04 18	704	1.1-	0.2-	1999 07 27	704	0.6+	0.5-	1999 10 09	106	0.2+	0.7+

1999 OCT. 26

M.P.C. 36297

Id. A. Gnädig (*MPC* 34915), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	267.49671		(2000.0)	P	Q
<i>n</i>	0.30808189	ω	60.26821	+0.42009019	-0.90746170
<i>a</i>	2.1711606	Ω	4.90354	+0.80589660	+0.36995371
<i>e</i>	0.0626837	<i>i</i>	4.10793	+0.41719887	+0.19911683
<i>P</i>	3.20	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1976 05 27	413	1.1-	1.3+	1998 03 24	566	0.1-	0.7-	1999 08 13	699	0.3-	0.4-
1976 05 27	413	1.6+	0.7+	1998 03 28	704	0.1-	0.4-	1999 08 13	699	0.4+	0.0
1987 12 24	010	0.8-	1.0-	1998 03 28	704	0.6+	0.7+	1999 08 13	699	0.1-	1.0+
1987 12 24	010	0.2+	1.0-	1998 03 28	704	0.4+	1.0-	1999 09 07	704	0.6+	0.3-
1998 01 31	910	0.3-	0.5+	1998 03 28	704	(2.1+	0.8-)	1999 09 07	704	0.3+	0.1+
1998 01 31	910	0.1-	0.8+	1998 03 28	704	0.4+	1.5-	1999 09 07	704	0.4+	0.3-
1998 01 31	910	0.5-	0.7+	1998 03 29	704	0.5-	0.1+	1999 09 07	704	0.2+	0.5-
1998 02 27	910	0.5+	0.3+	1998 03 29	704	0.2+	0.2-	1999 09 07	704	0.2-	0.7-
1998 02 27	910	0.8+	0.4+	1998 03 29	704	0.7-	0.9-	1999 09 13	704	0.3+	0.6-
1998 02 27	910	0.6+	0.2+	1998 03 29	704	0.5+	0.2-	1999 09 13	704	0.3+	0.4-
1998 03 20	704	1.8-	0.3-	1998 03 29	704	1.5-	0.6+	1999 09 13	704	1.3+	0.2+
1998 03 20	704	0.5-	0.3-	1998 04 18	704	1.7+	0.5+	1999 09 13	704	0.2-	1.7-
1998 03 20	704	0.4+	0.1-	1998 04 18	704	0.1-	1.2+	1999 09 13	704	0.8-	0.9-
1998 03 20	704	(2.5-	3.6+)	1998 04 18	704	0.8-	0.0	1999 10 02	691	0.3+	0.4-
1998 03 22	704	0.2-	0.0	1998 04 18	704	0.3-	1.5-	1999 10 02	691	0.1+	0.4-
1998 03 22	704	1.0-	0.7-	1998 04 18	704	0.9-	1.2-	1999 10 02	691	0.2+	0.3-
1998 03 22	704	0.1+	0.7-	1998 04 19	704	0.4+	0.9+	1999 10 15	704	0.2+	0.8-
1998 03 22	704	0.1+	0.2+	1998 04 19	704	0.8+	0.1-	1999 10 15	704	0.1-	0.2-
1998 03 22	704	1.7-	1.9-	1998 04 19	704	0.1-	0.5+	1999 10 15	704	0.3+	0.9-
1998 03 24	566	0.1-	0.6-	1998 04 19	704	0.8-	0.6-	1999 10 15	704	0.9+	0.3-
1998 03 24	566	0.2+	0.4-	1998 04 19	704	1.0+	0.4-	1999 10 15	704	1.1-	0.4-

(12086)* 1998 HC₂₂ = 1995 OT₂

Discovered 1998 Apr. 20 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>	105.70713		(2000.0)	P	Q
<i>n</i>	0.26443632	ω	14.10394	-0.72033623	+0.69216664
<i>a</i>	2.4039309	Ω	209.85474	-0.64482192	-0.69212733
<i>e</i>	0.1072761	<i>i</i>	5.18139	-0.25557856	-0.20460963
<i>P</i>	3.73	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 07 22	691	0.1-	0.3+	1998 04 01	704	0.4+	0.1+	1999 09 04	703	0.7+	1.5+
1995 07 22	691	0.1+	0.1-	1998 04 01	704	1.3+	0.5+	1999 09 04	703	0.5-	1.0+
1995 07 22	691	0.2+	0.0	1998 04 01	704	0.5-	1.2-	1999 09 04	703	0.5+	0.7+
1995 07 30	691	0.2+	0.5-	1998 04 04	699	0.9+	0.0	1999 09 07	704	0.3-	0.0
1995 07 30	691	0.3-	0.6-	1998 04 04	699	1.0+	0.1-	1999 09 07	704	0.8+	0.4-
1995 07 30	691	0.3+	0.4-	1998 04 04	699	0.5+	1.0-	1999 09 07	704	0.0	0.3-
1996 12 08	691	0.1+	0.2+	1998 04 19	704	0.3-	0.2-	1999 09 09	704	0.1+	0.0
1996 12 08	691	0.0	0.2-	1998 04 19	704	0.1-	0.5+	1999 09 09	704	0.5-	0.0
1996 12 08	691	0.0	0.5-	1998 04 19	704	0.8+	1.3-	1999 09 09	704	0.6+	1.1-
1998 03 20	704	(2.2-	0.4-)	1998 04 19	704	0.6-	0.7-	1999 09 09	704	0.3+	1.4+
1998 03 20	704	1.8-	0.8-	1998 04 20	704	0.3+	0.0	1999 09 14	704	0.6-	0.1-
1998 03 20	704	0.5+	0.5+	1998 04 20	704	0.8-	0.8-	1999 09 14	704	0.2+	0.1-
1998 03 20	704	0.8-	1.3+	1998 04 20	704	0.9-	0.7-	1999 09 14	704	0.1+	0.1-
1998 03 20	704	(4.0-	0.2+)	1998 04 20	704	1.0-	0.6-	1999 09 14	704	0.3+	0.1-
1998 03 24	566	0.1-	0.5+	1998 04 20	704	0.3+	1.8-	1999 09 14	704	0.0	0.6+
1998 03 24	566	0.2-	0.3+	1998 04 22	704	0.0	0.7+	1999 09 14	703	0.1+	0.2+
1998 03 24	566	(2.5-	0.5-)	1998 04 22	704	0.5+	1.4+	1999 09 14	703	0.4+	0.0
1998 03 28	704	0.7+	0.3+	1998 04 22	704	0.7+	1.9+	1999 09 14	703	0.3-	0.3+
1998 03 28	704	0.5+	0.2+	1998 04 22	704	(0.8-	2.9+)	1999 09 14	703	0.1-	1.0+
1998 03 28	704	0.1-	1.0+	1998 04 29	566	0.2-	0.4-	1999 10 13	704	0.9-	1.0+
1998 03 28	704	0.6-	1.6+	1998 04 29	566	0.1-	0.3-	1999 10 13	704	0.1+	0.4+
1998 03 28	704	0.2+	0.7+	1998 04 29	566	0.3-	0.3-	1999 10 13	704	0.3+	0.3-

1998 03 29	704	0.3+	0.1+	1998 04 30	699	1.5+	0.5-	1999 10 13	704	0.7+	0.0
1998 03 29	704	1.2+	1.6-	1998 04 30	699	0.2+	0.8-	1999 10 13	704	0.5+	1.0-
1998 03 29	704	1.5-	1.3+	1998 04 30	699	1.0-	0.0	1999 10 15	704	0.5-	0.0
1998 03 29	704	0.4-	0.5+	1998 05 01	699	0.6+	0.0	1999 10 15	704	0.7-	0.4-
1998 03 29	704	0.2-	0.4+	1998 05 01	699	0.3-	0.1-	1999 10 15	704	0.7-	0.1-
1998 04 01	704	0.5+	0.5+	1998 05 01	699	0.1-	0.1+	1999 10 15	704	0.6-	1.0-
1998 04 01	704	0.6-	0.2+	1999 09 04	703	0.2+	0.1+	1999 10 15	704	1.4-	0.3-

(12087)* 1998 HB₃₀ = 1995 KA₅

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 32010)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	331.04430		(2000.0)	P	Q
<i>n</i>	0.29980641	ω	302.23711	+0.97676344	-0.20659272
<i>a</i>	2.2109323	Ω	69.73985	+0.21134578	+0.88429673
<i>e</i>	0.1611468	<i>i</i>	3.48534	+0.03558301	+0.41873470
<i>P</i>	3.29	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1994 01 17	691	0.7-	0.1+	1998 03 28	704	1.0+	0.9+	1998 05 03	691	1.0+	0.1+
1994 01 17	691	0.4+	0.5+	1998 03 28	704	0.2-	0.7+	1999 09 08	703	0.9-	0.1+
1994 01 17	691	0.3+	0.1+	1998 03 28	704	(2.9+	2.9+)	1999 09 08	703	0.4-	0.0
1995 05 27	691	0.3-	0.0	1998 03 28	704	0.9-	0.7-	1999 09 08	703	0.8-	0.4+
1995 05 27	691	0.4-	0.3-	1998 03 28	704	(5.7-	0.7-)	1999 09 08	703	1.1-	0.2+
1995 05 27	691	0.2-	0.2+	1998 03 29	704	0.0	0.2-	1999 09 09	704	0.5+	0.2-
1995 05 31	691	0.6+	0.4-	1998 03 29	704	0.2+	0.9+	1999 09 09	704	0.5-	1.3+
1995 05 31	691	(3.6+	2.0-)	1998 03 29	704	0.7-	0.1+	1999 09 09	704	1.2+	0.0
1995 05 31	691	(2.2+	0.9+)	1998 03 29	704	0.4+	1.9+	1999 09 09	704	1.0+	0.3+
1997 01 12	691	0.3+	0.8-	1998 03 29	704	(2.3-	0.3+)	1999 09 09	704	1.0+	0.7+
1997 01 12	691	0.1+	0.2-	1998 04 20	704	0.3+	0.6+	1999 09 13	704	0.8+	0.4-
1997 01 12	691	0.2+	0.2-	1998 04 20	704	0.4+	0.1+	1999 09 13	704	0.7+	0.0
1998 03 20	704	0.4+	1.1-	1998 04 20	704	1.4-	0.3-	1999 09 13	704	0.3+	0.4-
1998 03 20	704	0.2-	1.0-	1998 04 20	704	1.6-	1.0-	1999 09 13	704	0.5+	0.2-
1998 03 20	704	(1.7-	2.6+)	1998 04 20	704	(4.8-	1.3-)	1999 09 13	704	0.7+	0.6-
1998 03 20	704	0.3+	1.3-	1998 04 22	704	0.4+	0.1-	1999 09 30	704	0.2-	0.4-
1998 03 20	327	1.6-	0.5-	1998 04 22	704	1.1+	0.2+	1999 09 30	704	0.1+	0.4-
1998 03 20	327	0.9-	0.8+	1998 04 22	704	0.1+	0.5+	1999 09 30	704	0.3-	0.0
1998 03 20	327	1.7-	0.2-	1998 04 22	704	0.1+	0.6+	1999 09 30	704	0.4-	0.2+
1998 03 20	327	0.1-	0.0	1998 04 22	704	1.4+	1.0+	1999 09 30	704	0.8-	0.6+
1998 03 25	704	0.1+	1.2-	1998 04 24	691	0.5+	0.3-	1999 10 16	704	0.1+	1.4-
1998 03 25	704	0.8+	1.0+	1998 04 24	691	0.3+	0.3-	1999 10 16	704	0.5+	1.0-
1998 03 25	704	1.7-	1.4-	1998 04 24	691	0.4+	0.5-	1999 10 16	704	0.1-	0.7-
1998 03 25	704	0.2-	0.7-	1998 05 03	691	0.1+	0.6-	1999 10 16	704	0.5-	0.4-
1998 03 25	704	(2.2-	1.5-)	1998 05 03	691	0.9+	0.4-	1999 10 16	704	1.4-	0.4+

(12088)* 1998 HZ₃₁ = 1978 WV₅

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 32010)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	121.15373		(2000.0)	P	Q
<i>n</i>	0.27268627	ω	332.33159	-0.84558042	+0.52556943
<i>a</i>	2.3551968	Ω	239.67940	-0.46757092	-0.81377474
<i>e</i>	0.0734174	<i>i</i>	6.22834	-0.25762605	-0.24808756
<i>P</i>	3.61	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 11 29	675	0.1+	0.1+	1998 04 20	704	0.1-	0.6-	1999 09 09	704	0.2-	0.8+
1978 11 30	675	0.1-	0.2-	1998 04 20	704	0.6-	0.8-	1999 09 09	704	0.1-	0.7+
1996 12 05	691	0.1-	0.2+	1998 04 22	704	0.1+	0.0	1999 09 09	704	0.2+	1.1+
1996 12 05	691	0.1-	0.2+	1998 04 22	704	0.3-	0.1+	1999 09 09	704	0.8+	1.1+
1996 12 05	691	0.0	0.2+	1998 04 22	704	0.5-	0.2-	1999 09 16	704	0.7+	0.6+
1998 03 22	699	0.3-	0.4-	1998 04 22	704	0.1-	0.4-	1999 09 16	704	0.6+	0.5-
1998 03 22	699	0.4+	0.6+	1998 04 22	704	1.0-	0.4+	1999 09 16	704	0.1+	0.4-

1998 03 22	699	0.1−	0.5+	1998 04 30	699	0.3+	1.0−	1999 09 16	704	0.4−	0.1+
1998 03 25	704	(0.1+	2.4−)	1998 04 30	699	0.7+	0.7−	1999 10 01	703	0.1+	0.0
1998 03 25	704	1.5−	0.4−	1998 04 30	699	0.7+	0.7−	1999 10 01	703	1.2+	1.0−
1998 03 25	704	0.3+	0.1+	1998 05 16	704	(0.9+	2.3−)	1999 10 01	703	0.3−	0.0
1998 03 25	704	0.0	0.6+	1998 05 16	704	0.8+	0.4−	1999 10 01	703	0.2+	0.1+
1998 03 25	704	0.1+	1.0+	1998 05 16	704	0.5+	0.3−	1999 10 02	704	0.1−	0.8−
1998 03 31	704	0.1+	0.3−	1998 05 16	704	0.0	0.5+	1999 10 02	704	0.2−	0.2−
1998 03 31	704	0.0	0.2−	1998 05 16	704	0.5−	1.1−	1999 10 02	704	0.6+	0.6−
1998 03 31	704	0.9+	0.5+	1998 06 18	704	1.2+	1.4+	1999 10 02	704	0.6−	0.1−
1998 03 31	704	0.1−	0.2+	1998 06 18	704	1.1−	0.9−	1999 10 02	704	0.3−	0.5−
1998 04 01	704	0.3−	0.1−	1998 06 18	704	1.9−	1.1+	1999 10 07	703	0.3−	0.1−
1998 04 01	704	0.1−	0.8+	1998 06 18	704	2.0+	0.9−	1999 10 07	703	0.5−	0.1−
1998 04 01	704	0.0	0.4+	1999 09 05	703	0.5−	0.2−	1999 10 07	703	0.6−	0.1−
1998 04 01	704	0.6+	0.6+	1999 09 05	703	0.4−	0.0	1999 10 07	703	0.5−	0.1−
1998 04 01	704	(2.2−	3.6−)	1999 09 05	703	0.1−	0.7+	1999 10 09	704	0.2+	0.2−
1998 04 18	704	0.2−	0.3+	1999 09 05	703	0.9−	0.6+	1999 10 09	704	0.0	0.1+
1998 04 18	704	0.1−	0.4−	1999 09 08	704	0.2+	0.3+	1999 10 09	704	0.6+	0.7−
1998 04 18	704	0.2−	0.6+	1999 09 08	704	0.1+	0.2+	1999 10 09	704	0.1+	0.6−
1998 04 18	704	0.3−	0.6+	1999 09 08	704	0.3+	0.3+	1999 10 09	704	0.1−	0.8−
1998 04 20	704	0.4+	0.0	1999 09 08	704	0.0	0.8+				
1998 04 20	704	0.6+	0.1+	1999 09 09	704	0.0	0.7+				

(12089)* 1998 HO₃₅ = 1989 YN₉ = 1991 JQ₆ = 1994 FG

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

<i>M</i>	88.80449		(2000.0)	P	Q
<i>n</i>	0.27278200	ω	116.00165	−0.28312132	+0.95825993
<i>a</i>	2.3546458	Ω	137.48892	−0.89963610	−0.25097859
<i>e</i>	0.1188117	<i>i</i>	3.37254	−0.33241118	−0.13692203
<i>P</i>	3.61	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1989 12 29	511	(3.8+	0.1+)	1998 03 25	704	0.8+	1.2+	1999 09 14	704	0.5−	0.5−
1989 12 29	511	0.2+	0.0	1998 03 25	704	0.5−	1.4+	1999 09 14	704	0.0	0.4−
1991 05 12	809	0.8+	0.9+	1998 03 29	704	0.4+	0.4+	1999 09 14	704	0.5−	0.3−
1991 05 12	809	0.4+	1.3+	1998 03 29	704	1.3+	0.2+	1999 10 02	704	0.7+	0.4+
1991 05 12	809	0.6−	1.2+	1998 03 29	704	0.6−	0.0	1999 10 02	704	0.5+	2.0+
1994 03 17	104	0.6+	0.9+	1998 03 29	704	0.6+	0.6+	1999 10 02	704	0.7+	0.4+
1994 03 17	104	0.4+	0.3+	1998 03 29	704	0.1−	1.0+	1999 10 02	704	0.2−	0.1−
1994 03 17	104	0.3−	0.0	1998 04 20	704	0.4−	0.3−	1999 10 05	703	0.0	0.6+
1994 03 17	104	0.3−	1.5+	1998 04 20	704	0.1−	1.2−	1999 10 05	703	0.1−	0.1+
1994 03 17	104	0.2+	1.0+	1998 04 20	704	0.5−	0.5+	1999 10 05	703	0.4−	0.2+
1994 03 17	104	0.5+	0.6+	1998 04 20	704	0.1+	0.0	1999 10 05	703	0.1+	0.0
1994 03 17	104	0.6+	1.0−	1998 04 22	704	0.0	0.6−	1999 10 06	106	1.1−	0.6+
1994 03 18	104	0.4+	0.5+	1998 04 22	704	0.1−	0.9−	1999 10 06	106	0.3−	0.5+
1994 03 18	104	0.1+	0.3+	1998 04 22	704	0.4+	0.6−	1999 10 06	106	0.3+	0.4+
1994 03 18	104	0.5−	0.3+	1998 04 22	704	0.2+	0.7−	1999 10 07	703	0.0	0.4+
1994 03 18	104	0.3+	0.5+	1998 04 22	704	0.5+	1.3−	1999 10 07	703	0.1−	0.5+
1994 03 18	104	0.5+	0.7+	1998 05 01	699	0.3+	0.0	1999 10 07	703	0.2−	0.2+
1994 03 20	104	0.9+	0.8−	1998 05 01	699	0.1−	0.4+	1999 10 07	703	0.4−	0.4+
1994 03 20	104	0.1−	0.2+	1998 05 01	699	0.3+	0.4−	1999 10 07	704	0.1−	0.6−
1994 03 20	104	0.8−	0.3+	1998 05 16	704	(2.4+	0.7−)	1999 10 07	704	0.2−	0.0
1994 03 20	104	1.2−	0.1+	1998 05 16	704	0.7+	1.0+	1999 10 07	704	0.2+	0.2+
1998 03 22	704	0.3−	0.5−	1998 05 16	704	0.3+	0.4−	1999 10 07	704	0.1+	0.5+
1998 03 22	704	0.9−	0.3−	1998 05 16	704	1.8−	1.9+	1999 10 07	704	0.5+	0.1+
1998 03 22	704	0.8−	0.0	1998 05 16	704	(2.2−	2.2−)	1999 10 15	704	0.3−	0.2+
1998 03 22	704	0.3−	1.0−	1999 09 08	699	0.6−	1.3+	1999 10 15	704	0.3−	0.3+
1998 03 22	704	0.7−	0.0	1999 09 08	699	0.5−	1.0+	1999 10 15	704	0.2+	1.1−
1998 03 25	704	0.5+	0.7+	1999 09 08	699	0.0	1.2+	1999 10 15	704	0.2−	0.3+
1998 03 25	704	0.8+	1.0+	1999 09 14	704	0.2−	0.6−	1999 10 15	704	0.5−	0.4+
1998 03 25	704	0.6+	0.7+	1999 09 14	704	0.1−	0.2−				

(12090)* 1998 HX₃₆ = 1976 UN₉ = 1988 CC₅

Discovered 1998 Apr. 20 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32012)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	14.49231		(2000.0)	P	Q
<i>n</i>	0.21175173	ω	110.07063	+0.70066398	+0.71165349
<i>a</i>	2.7877344	Ω	204.64792	−0.69186707	+0.66015233
<i>e</i>	0.2229199	<i>i</i>	7.04909	−0.17432713	+0.24030857
<i>P</i>	4.65	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1976 10 22	381	0.4−	0.0	1998 04 21	704	0.7+	0.8+	1999 09 14	704	0.2+	0.7+
1976 10 22	381	0.4+	0.0	1998 04 21	704	1.1+	0.0	1999 09 14	704	0.3+	0.6+
1976 10 24	381	0.2−	0.3+	1998 04 21	704	0.5+	0.5−	1999 09 14	704	0.2+	0.6+
1988 02 13	809	0.3+	0.2+	1998 04 21	704	0.3−	0.5−	1999 09 14	704	0.0	0.4+
1998 03 22	704	1.1+	0.8+	1998 04 22	704	1.2+	1.3−	1999 09 14	704	0.5+	1.1+
1998 03 22	704	(0.8−	2.3+)	1998 04 22	704	0.3+	0.1+	1999 10 02	704	0.1+	0.1−
1998 03 22	704	(0.2+	2.3+)	1998 04 22	704	1.0−	0.8+	1999 10 02	704	0.7+	0.6−
1998 03 22	704	0.4−	0.6+	1998 04 22	704	0.9+	1.2−	1999 10 02	704	0.3−	0.0
1998 03 25	704	(2.2−	1.4+)	1998 05 16	704	0.5−	1.3−	1999 10 02	704	0.0	0.1+
1998 03 25	704	1.6−	0.1+	1998 05 16	704	(0.3+	2.3−)	1999 10 02	704	0.3−	0.4−
1998 03 25	704	(3.2−	1.0−)	1998 05 16	704	1.2−	1.4+	1999 10 07	703	0.2+	0.6+
1998 03 25	704	1.0−	0.0	1998 05 16	704	0.5−	0.0	1999 10 07	703	0.2−	0.0
1998 03 25	704	(3.0−	2.0+)	1999 09 05	703	0.3+	0.6+	1999 10 07	703	0.3+	0.5+
1998 03 29	704	0.3+	0.7−	1999 09 05	703	0.1−	0.6+	1999 10 07	703	0.2+	0.3+
1998 03 29	704	0.0	0.9+	1999 09 05	703	0.2−	0.7+	1999 10 07	704	0.7−	0.1−
1998 03 29	704	0.1−	1.0−	1999 09 05	703	0.7−	0.1+	1999 10 07	704	0.0	1.0−
1998 03 29	704	0.0	0.3−	1999 09 08	106	0.4−	0.1+	1999 10 07	704	0.1−	0.6−
1998 03 29	704	(4.7−	0.8−)	1999 09 08	106	0.1−	0.0	1999 10 07	704	0.3+	0.4−
1998 04 01	704	0.3−	0.5+	1999 09 08	106	0.3+	0.2+	1999 10 07	704	0.2−	0.8−
1998 04 01	704	1.3+	0.4−	1999 09 08	704	0.5+	0.3+	1999 10 13	704	0.6−	0.1+
1998 04 01	704	0.8+	0.8+	1999 09 08	704	0.1+	0.0	1999 10 13	704	0.7−	0.2−
1998 04 01	704	0.7−	0.7−	1999 09 08	704	0.3+	0.2−	1999 10 13	704	0.3−	0.6−
1998 04 01	704	(3.7−	0.4+)	1999 09 08	704	0.6+	0.0	1999 10 13	704	0.5−	0.1+
1998 04 20	704	0.3+	0.3+	1999 09 08	704	0.1+	0.1−	1999 10 13	704	0.8−	0.5−
1998 04 20	704	(2.8−	0.8−)	1999 09 09	704	0.5+	0.1+	1999 10 15	704	0.9−	0.2−
1998 04 20	704	1.5−	0.3−	1999 09 09	704	0.7+	0.0	1999 10 15	704	0.6−	0.4−
1998 04 20	704	0.2−	0.3+	1999 09 09	704	0.4+	0.0	1999 10 15	704	0.7−	0.1−
1998 04 20	704	0.0	0.4+	1999 09 09	704	0.4+	0.2−	1999 10 15	704	0.1−	1.2−
1998 04 21	704	0.3+	0.5+	1999 09 09	704	1.1+	0.3−	1999 10 15	704	0.5−	0.5−

(12091)* 1998 HS₉₆ = 1976 UR₁₂ = 1991 PK₂₁

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 34917), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	69.17422		(2000.0)	P	Q
<i>n</i>	0.25632190	ω	96.07660	+0.18236707	+0.98319842
<i>a</i>	2.4544013	Ω	184.45467	−0.93771607	+0.17148948
<i>e</i>	0.1031538	<i>i</i>	5.87101	−0.29568705	+0.06254779
<i>P</i>	3.85	<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+	0.1−	1998 05 24	704	0.6+	0.7+	1999 10 07	704	0.2−	0.3−
1976 10 22	381	0.0	0.6−	1998 05 24	704	1.5−	0.7+	1999 10 07	704	0.5+	0.1−
1979 06 24	413	1.0−	0.6+	1998 05 27	699	0.1−	0.2−	1999 10 07	704	0.1+	0.3+
1979 06 24	413	0.7+	1.2−	1998 05 27	699	0.3+	0.4−	1999 10 07	704	0.4+	0.1+
1991 08 09	675	1.1+	2.2−	1998 05 27	699	0.2+	0.3−	1999 10 07	704	0.0	0.4+
1991 08 09	675	0.5+	0.8−	1998 06 02	699	0.8+	0.2+	1999 10 07	704	0.4+	0.4−
1991 09 03	413	0.1−	0.4+	1998 06 02	699	0.2−	0.2+	1999 10 07	704	0.5+	0.2−
1991 09 03	413	0.7−	0.2+	1998 06 02	699	0.4+	0.3−	1999 10 07	704	0.3−	0.3+
1998 04 21	704	0.8+	0.1+	1999 09 05	699	0.4+	0.4+	1999 10 07	704	0.4+	0.1−
1998 04 21	704	0.2+	0.4−	1999 09 05	699	0.6+	0.4+	1999 10 07	704	0.6+	0.2+

1998 04 21	704	0.2+	0.3-	1999 09 05	699	0.3-	0.1+	1999 10 07	704	0.4+	0.2-
1998 04 21	704	0.8+	0.1-	1999 09 17	120	0.1-	0.0	1999 10 07	704	1.5+	0.6+
1998 04 21	704	(2.3+	0.3-)	1999 09 18	120	0.7-	0.6+	1999 10 07	704	0.1+	0.2-
1998 04 22	704	0.1+	0.1+	1999 09 18	120	0.0	0.1+	1999 10 07	704	0.2+	0.1+
1998 04 22	704	0.6+	0.2+	1999 09 21	120	0.1-	0.5-	1999 10 07	704	0.8+	0.1-
1998 04 22	704	0.4+	0.1-	1999 09 21	120	0.5+	0.4+	1999 10 07	704	0.2+	0.3+
1998 04 22	704	0.1+	0.6-	1999 09 21	120	1.0-	0.2-	1999 10 07	704	0.1+	0.0
1998 04 22	704	0.8-	0.6-	1999 09 21	120	0.5+	0.6-	1999 10 07	704	0.3+	0.2+
1998 04 25	699	1.0-	1.5+	1999 10 01	120	0.6+	0.3+	1999 10 08	704	0.4+	0.4+
1998 04 25	699	0.1+	0.6+	1999 10 01	120	0.9-	0.3-	1999 10 08	704	2.3-	1.2+
1998 04 25	699	0.1+	0.0	1999 10 02	703	0.0	0.2+	1999 10 08	704	2.8-	1.8+
1998 05 01	704	0.3-	0.6-	1999 10 02	703	0.0	0.1+	1999 10 08	704	(4.0-	2.1+)
1998 05 01	704	0.3-	0.1+	1999 10 02	703	0.0	0.1-	1999 10 08	704	(3.3-	2.1+)
1998 05 01	704	0.5-	0.4+	1999 10 02	703	0.1+	0.1+	1999 10 09	704	0.4+	0.2-
1998 05 01	704	0.7+	0.6+	1999 10 04	704	1.3+	0.4-	1999 10 09	704	0.0	0.1+
1998 05 01	704	0.3+	0.3+	1999 10 04	704	1.0+	0.5-	1999 10 09	704	0.3-	0.2-
1998 05 22	704	0.2-	0.5+	1999 10 04	704	0.5+	0.2-	1999 10 09	704	0.2+	0.0
1998 05 22	704	0.3+	0.8+	1999 10 04	704	0.1-	0.2-	1999 10 09	704	0.9+	0.4-
1998 05 22	704	0.6+	0.7+	1999 10 04	704	0.2-	0.0	1999 10 15	704	0.3-	0.0
1998 05 22	704	0.1+	0.3-	1999 10 07	704	0.1+	0.5+	1999 10 15	704	0.4-	0.3-
1998 05 22	704	0.2-	0.4+	1999 10 07	704	0.5+	0.2-	1999 10 15	704	0.3-	0.0
1998 05 24	704	0.5+	0.5+	1999 10 07	704	0.5+	0.2-	1999 10 15	704	0.1-	0.0
1998 05 24	704	0.2-	0.1-	1999 10 07	704	0.1+	1.0-	1999 10 15	704	0.3+	0.3+
1998 05 24	704	1.5-	0.6+	1999 10 07	704	0.2+	0.1-				

(12092)* 1998 HH₉₇ = 1979 TC₂ = 1979 UX₁ = 1987 ST₁₉

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Gnädig (*MPC* 32269), H. Oishi (d, *JAM* 1789)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	262.05944	(2000.0)	P	Q			
<i>n</i>	0.23915433	ω	210.38462	+0.45476337	-0.88725063		
<i>a</i>	2.5704977	Ω	212.74622	+0.84317978	+0.45686861		
<i>e</i>	0.1473269	<i>i</i>	8.21689	+0.28677191	+0.06369768		
<i>P</i>	4.12	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1979 10 14	095	(1.4-	3.6-)	1998 04 22	704	0.3+	0.4+	1998 05 22	704	0.9+	0.3-
1979 10 19	010	0.1-	0.4-	1998 04 22	704	0.5-	0.8+	1998 05 24	704	0.2-	0.1+
1979 10 23	010	0.7-	0.7-	1998 04 22	704	1.8-	0.2+	1998 05 24	704	0.5+	0.2-
1987 09 17	095	1.6+	1.9+	1998 04 29	566	0.2+	0.5-	1998 05 24	704	1.4-	1.8+
1994 05 01	691	0.1-	0.2+	1998 04 29	566	0.6+	0.1-	1998 05 24	704	1.1+	1.8-
1994 05 01	691	0.0	0.2-	1998 04 29	566	0.3+	0.4-	1998 05 24	704	0.8-	0.3-
1994 05 01	691	0.0	0.1-	1998 05 01	704	0.8+	0.2-	1999 07 13	704	0.7-	0.2-
1994 05 15	691	0.2+	0.1-	1998 05 01	704	0.3+	0.4-	1999 07 13	704	0.3-	0.5+
1994 05 15	691	0.2-	0.4+	1998 05 01	704	0.9+	0.2-	1999 07 13	704	0.5-	0.2-
1994 05 15	691	0.1-	0.1-	1998 05 01	704	0.9+	0.6+	1999 07 13	704	0.8-	1.6-
1998 04 21	704	0.1+	0.1+	1998 05 05	699	0.6+	1.2+	1999 07 13	704	0.9-	0.3-
1998 04 21	704	0.7+	0.0	1998 05 05	699	0.8+	0.7+	1999 09 13	704	1.0+	0.9+
1998 04 21	704	0.8+	1.2-	1998 05 05	699	0.1-	0.3-	1999 09 13	704	0.1-	0.4-
1998 04 21	704	0.1-	0.8-	1998 05 22	704	0.5-	1.3-	1999 09 13	704	0.1+	0.7-
1998 04 21	704	0.3-	0.2+	1998 05 22	704	1.0-	0.2+	1999 10 16	704	0.7+	0.9+
1998 04 22	704	0.8-	0.1+	1998 05 22	704	0.7-	0.0	1999 10 16	704	0.4+	0.4+
1998 04 22	704	0.4-	0.2+	1998 05 22	704	0.6-	1.3+	1999 10 16	704	0.5+	0.4-

(12093)* 1998 HF₉₉ = 3151 T-3

Discovered 1998 Apr. 21 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 32019)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	56.27194	(2000.0)	P	Q			
<i>n</i>	0.26715576	ω	103.53191	+0.36697595	+0.93013819		
<i>a</i>	2.3875897	Ω	188.03417	-0.88561159	+0.34503030		
<i>e</i>	0.0272253	<i>i</i>	5.37791	-0.28464147	+0.12568626		
<i>P</i>	3.69	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 07	675	1.9+	1.4-	1998 05 03	566	0.4+	1.5-	1999 09 29	703	1.6-	0.6+
1977 10 11	675	0.6-	0.5-	1998 05 22	704	0.7-	1.1-	1999 10 02	704	0.6+	0.5+
1977 10 11	675	0.2+	0.9-	1998 05 22	704	1.7+	0.2+	1999 10 02	704	0.1+	0.6-
1977 10 12	675	1.1+	1.2-	1998 05 22	704	1.4+	0.9+	1999 10 02	704	0.5-	0.7+
1977 10 12	675	2.0+	1.7-	1998 05 22	704	0.4+	1.1-	1999 10 02	704	0.0	0.7-
1977 10 16	675	1.2+	0.7-	1998 05 22	704	0.8-	0.3-	1999 10 02	704	0.3-	0.2+
1977 10 16	675	0.3+	0.3-	1998 05 24	704	0.4-	0.6-	1999 10 05	704	0.0	0.6+
1977 10 17	675	0.3-	0.4-	1998 05 24	704	0.1-	0.6-	1999 10 05	704	0.3+	0.4+
1977 10 17	675	0.2+	0.5+	1998 05 24	704	0.2-	0.7-	1999 10 05	704	0.1+	0.1+
1977 10 21	675	1.6-	1.5-	1998 05 24	704	0.5+	0.0	1999 10 05	704	0.2+	0.0
1977 10 21	675	1.3-	0.6-	1998 05 24	704	1.5-	0.7-	1999 10 05	704	0.3-	0.0
1977 10 22	675	0.1-	1.8-	1998 05 27	699	1.1+	0.2-	1999 10 07	704	0.2+	0.8+
1977 10 22	675	0.8+	2.3-	1998 05 27	699	1.4+	0.1+	1999 10 07	704	0.9+	0.2+
1994 03 16	691	0.1-	0.8-	1998 05 27	699	0.1-	0.6-	1999 10 07	704	0.7+	0.6-
1994 03 16	691	0.5-	0.9-	1998 06 02	699	(2.2-	0.0)	1999 10 07	704	1.2+	0.8+
1994 03 16	691	0.5-	0.2-	1998 06 02	699	1.7-	1.0-	1999 10 07	704	1.8+	0.5+
1998 04 21	704	0.3-	0.2-	1998 06 02	699	1.4-	0.0	1999 10 09	704	0.2-	0.0
1998 04 21	704	0.4-	1.2-	1999 09 07	704	0.2-	0.2+	1999 10 09	704	0.4-	0.1-
1998 04 21	704	0.2-	0.6-	1999 09 07	704	0.4-	0.1+	1999 10 09	704	0.4-	0.3+
1998 04 21	704	1.0-	0.3+	1999 09 07	704	1.1+	0.4+	1999 10 09	704	0.0	0.1+
1998 04 21	704	0.8+	1.3-	1999 09 07	704	1.0-	0.1-	1999 10 09	704	0.2+	0.1-
1998 04 22	704	0.5+	0.2+	1999 09 09	704	0.8-	0.4+	1999 10 15	704	0.6+	0.2+
1998 04 22	704	(2.3+	0.6+)	1999 09 09	704	0.2-	0.4+	1999 10 15	704	0.2-	0.1-
1998 04 22	704	0.0	0.4+	1999 09 09	704	0.2-	0.3+	1999 10 15	704	0.2-	0.4-
1998 04 22	704	0.0	0.8+	1999 09 09	704	0.4-	0.2+	1999 10 15	704	0.1+	0.2-
1998 04 22	704	0.5+	1.2+	1999 09 29	703	1.0-	0.1-	1999 10 15	704	0.2-	0.3-
1998 05 03	566	0.6-	0.1+	1999 09 29	703	0.8-	0.6+				
1998 05 03	566	0.6-	0.5+	1999 09 29	703	0.3-	0.2+				

(12094)* 1998 HX₉₉ = 1991 CB₆ = 1992 OQ₃

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>	190.52662	(2000.0)	P	Q			
<i>n</i>	0.29465011	ω	1.68303	-0.91831208	-0.39449871		
<i>a</i>	2.2366514	Ω	155.00294	+0.36227996	-0.87089773		
<i>e</i>	0.1038003	<i>i</i>	4.44731	+0.15954984	-0.29310052		
<i>P</i>	3.35	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 02 13	675	(0.5+ 2.0-)	1998 05 22	704	0.1- 1.3+	1999 09 09	704	1.5- 0.3-
1991 02 13	675	0.3+ 0.6+	1998 05 24	704	0.3- 0.4-	1999 09 09	704	1.1- 0.5-
1992 07 26	809	1.2+ 1.3-	1998 05 24	704	0.3+ 1.0-	1999 09 09	704	0.5- 0.9-
1992 07 26	809	1.3+ 1.5-	1998 05 24	704	0.2- 0.8+	1999 09 11	699	0.4- 0.7+
1992 07 26	809	0.6+ 1.1-	1998 05 24	704	0.5- 0.7-	1999 09 11	699	0.2+ 0.2+
1992 07 30	809	1.0- 1.6-	1998 05 24	704	1.5- 0.0	1999 09 11	699	0.8+ 1.0+
1992 07 30	809	(1.0- 2.1-)	1998 05 27	699	0.6- 0.8+	1999 09 14	704	0.6- 0.7+
1992 07 30	809	0.7- 1.2-	1998 05 27	699	0.0 0.2+	1999 09 14	704	0.0 0.4+
1998 04 21	704	0.1+ 0.1-	1998 05 27	699	0.4- 0.3+	1999 09 14	704	0.2- 0.6+
1998 04 21	704	0.4+ 0.6+	1999 08 22	703	0.1+ 0.1-	1999 09 14	704	0.2+ 0.4+
1998 04 21	704	0.5- 0.9+	1999 08 22	703	1.0+ 0.3+	1999 09 14	704	0.2- 0.2+
1998 04 21	704	0.7+ 0.6+	1999 08 22	703	0.6- 0.7+	1999 10 02	704	0.5+ 0.4-
1998 04 21	704	0.6+ 1.3+	1999 08 22	703	0.5+ 0.1+	1999 10 02	704	1.0+ 0.8+
1998 04 22	704	0.6+ 0.4+	1999 08 23	699	0.0 1.0+	1999 10 02	704	0.3- 0.8+
1998 04 22	704	0.2+ 0.5+	1999 08 23	699	0.4+ 1.2+	1999 10 02	704	(0.1+ 2.6+)
1998 04 22	704	0.7+ 0.1+	1999 08 23	699	1.6- 0.6+	1999 10 02	704	0.4+ 1.2+

1998 04 22	704	0.1+	0.2-	1999 09 04	691	0.7-	0.0	1999 10 07	704	0.5+	0.4-
1998 04 22	704	0.1+	0.8-	1999 09 04	691	0.6-	0.2+	1999 10 07	704	(0.0	2.5+)
1998 05 01	704	0.5+	0.3-	1999 09 04	691	0.8-	0.1-	1999 10 07	704	0.7+	1.5+
1998 05 01	704	0.0	0.3+	1999 09 05	699	0.2+	0.1+	1999 10 08	704	0.1+	0.6+
1998 05 01	704	0.2+	0.2-	1999 09 05	699	1.3+	0.2+	1999 10 08	704	0.2+	0.5+
1998 05 01	704	0.2+	0.4-	1999 09 05	699	0.4+	0.0	1999 10 08	704	0.4+	0.3+
1998 05 01	704	0.9+	0.2+	1999 09 07	704	0.5-	0.1+	1999 10 15	704	0.4+	0.5+
1998 05 22	704	0.2-	0.5+	1999 09 07	704	0.9-	1.0-	1999 10 15	704	0.2+	0.0
1998 05 22	704	0.9+	0.2-	1999 09 07	704	0.8-	1.1-	1999 10 15	704	0.3-	0.6+
1998 05 22	704	0.3-	1.4+	1999 09 09	704	0.4-	0.3-	1999 10 15	704	0.1-	0.6+
1998 05 22	704	0.6-	0.2+	1999 09 09	704	0.7-	1.1-	1999 10 15	704	0.2+	0.8+

(12095)* 1998 HE₁₀₂ = 1999 RO₁₀

Discovered 1998 Apr. 25 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 35988)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		180.00666		(2000.0)		P		Q	
<i>n</i>		0.20467770	ω	157.53106		-0.80462179		-0.59375693	
<i>a</i>		2.8516028	Ω	346.03990		+0.54091231		-0.72873786	
<i>e</i>		0.0190584	<i>i</i>	1.43476		+0.24494418		-0.34116542	
<i>P</i>		4.82	<i>H</i>	13.6		<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 01 01	691	0.2-	0.1+	1998 05 22	704	0.9+	1.8+	1999 09 07	704	0.6-	0.6-
1992 01 01	691	0.1-	0.1+	1998 05 22	704	0.9-	1.2-	1999 09 07	704	0.0	0.3-
1992 01 01	691	0.3+	0.1-	1998 05 22	704	0.0	0.1-	1999 09 07	704	1.1+	0.2+
1995 11 16	691	0.1-	0.1+	1998 05 22	704	0.1+	0.8-	1999 09 07	704	0.8-	0.6-
1995 11 16	691	0.1-	0.3-	1998 05 22	699	0.5-	0.3-	1999 09 08	704	0.1+	1.3-
1995 11 16	691	0.0	0.1+	1998 05 22	699	1.1-	0.4+	1999 09 08	704	0.2-	0.3-
1995 11 28	691	0.6+	0.0	1998 05 22	699	0.3+	0.2-	1999 09 08	704	0.1+	0.1+
1995 11 28	691	0.1-	0.3-	1998 05 24	704	0.4+	1.0-	1999 09 08	704	0.8+	0.0
1995 11 28	691	0.2-	0.3-	1998 05 24	704	1.0+	0.3-	1999 09 09	704	0.3+	0.9-
1998 04 25	809	1.8+	0.0	1998 05 24	704	1.7+	0.7+	1999 09 09	704	0.0	0.3-
1998 04 25	809	0.4+	0.6-	1998 05 24	704	(2.3-	1.5+)	1999 09 09	704	0.5-	0.2-
1998 04 25	809	0.1+	0.4-	1998 05 24	704	1.6-	0.6+	1999 09 09	704	0.2+	0.0
1998 04 28	809	(2.4	3.6+)	1998 06 16	704	0.5-	0.1+	1999 09 09	704	0.2+	0.4+
1998 04 28	809	(1.5+	3.0+)	1998 06 16	704	(1.4+	2.4+)	1999 09 13	699	1.0-	1.7+
1998 04 28	809	(1.6+	2.4+)	1998 06 16	704	1.4-	0.4+	1999 09 13	704	0.7+	0.4+
1998 05 01	704	(2.7-	0.6-)	1998 06 16	704	(3.5-	2.1+)	1999 09 13	699	0.9-	0.5+
1998 05 01	704	0.2+	0.1-	1999 08 07	699	0.2-	1.0+	1999 09 13	704	0.6+	0.5-
1998 05 01	704	(3.0-	0.3+)	1999 08 07	699	0.3-	0.1+	1999 09 13	704	0.7+	0.3-
1998 05 01	704	0.4+	0.9+	1999 08 07	699	0.2+	0.8+	1999 09 13	699	0.2+	0.8+
1998 05 05	699	1.0-	0.5-	1999 09 06	699	0.7+	1.3+	1999 09 13	704	0.0	1.3-
1998 05 05	699	0.2-	0.4-	1999 09 06	699	0.2+	0.7-	1999 09 13	704	1.0-	0.2-
1998 05 05	699	0.6-	0.1+	1999 09 06	699	0.1-	0.6+				
1998 05 22	704	0.2+	0.4+	1999 09 07	704	0.4-	0.4-				

(12096)* 1998 HL₁₂₀ = 1977 CN = 1990 MK

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

Id. G. V. Williams (*MPC* 32022)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		113.09639		(2000.0)		P		Q	
<i>n</i>		0.24037571	ω	82.78387		-0.78414883		+0.59590243	
<i>a</i>		2.5617829	Ω	133.60490		-0.62048695		-0.74822798	
<i>e</i>		0.1407065	<i>i</i>	13.84167		-0.01032257		-0.29164220	
<i>P</i>		4.10	<i>H</i>	13.3		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 02 11	675	0.4-	1.1-	1998 04 28	704	0.5-	0.4+	1998 06 18	699	0.8+	0.0
1977 02 11	675	(10.8+	9.1-)	1998 04 28	704	0.5-	0.2-	1998 06 18	699	0.4+	0.7+
1977 02 12	675	0.2+	1.4-	1998 04 28	704	(2.5-	0.4-)	1998 06 18	682	0.2+	0.3+
1977 02 12	675	0.1-	1.3-	1998 05 22	566	0.8+	0.7-	1998 06 18	682	0.4+	0.3+
1990 06 26	675	0.2+	1.5-	1998 05 22	566	0.4+	0.8-	1998 06 20	682	0.2+	0.1+

1990 06 26	675	0.2-	0.7-	1998 05 22	566	0.8+	1.0-	1998 06 20	682	0.0	0.1+
1990 06 28	675	0.8-	0.1+	1998 05 23	704	0.6+	0.0	1999 09 07	699	0.6-	1.2+
1990 06 29	413	1.5+	0.3+	1998 05 23	704	0.2-	0.5+	1999 09 07	699	0.2-	1.0+
1990 06 29	413	0.8-	0.4+	1998 05 23	704	0.0	0.6-	1999 09 07	699	0.1+	0.7+
1998 04 23	704	0.5-	0.1+	1998 05 23	704	0.8-	0.4+	1999 09 09	704	0.3+	0.6-
1998 04 23	704	0.9-	0.8-	1998 05 23	704	0.5-	0.4-	1999 09 09	704	0.4-	0.3-
1998 04 23	704	0.4-	0.2-	1998 05 25	704	0.1-	0.4+	1999 09 09	704	0.5-	0.8-
1998 04 23	704	0.2+	0.3-	1998 05 25	704	0.2-	1.4+	1999 09 09	704	0.1+	0.0
1998 04 23	704	0.6-	1.0-	1998 05 25	704	1.1-	0.3+	1999 09 09	704	0.0	0.0
1998 04 24	704	0.9-	0.1+	1998 05 25	704	0.4+	0.4-	1999 09 13	704	0.6-	0.6-
1998 04 24	704	0.1-	0.5-	1998 05 25	704	1.7-	0.1+	1999 09 13	704	0.2-	0.6-
1998 04 24	704	0.2+	0.1+	1998 06 17	704	1.3+	0.7-	1999 09 13	704	0.2-	1.0-
1998 04 24	704	1.2+	0.1-	1998 06 17	704	1.4+	0.2+	1999 09 13	704	0.9-	0.8-
1998 04 24	566	0.5-	0.2+	1998 06 17	704	(2.4+	0.6-)	1999 09 30	704	0.6+	1.0-
1998 04 24	566	0.5-	0.2+	1998 06 17	704	1.0+	0.3-	1999 09 30	704	1.1+	0.4-
1998 04 24	566	0.3-	0.4+	1998 06 17	704	(1.7+	2.6-)	1999 09 30	704	0.7+	0.6-
1998 04 28	704	0.6-	0.2+	1998 06 18	682	1.0+	0.0	1999 09 30	704	1.0+	1.2-
1998 04 28	704	0.3-	0.0	1998 06 18	699	1.0+	0.3+	1999 09 30	704	1.0+	0.6-

(12097)* 1998 HG₁₂₁ = 1984 SJ = 1996 XO₃₀

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

Id. G. V. Williams (*MPC* 32022)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		16.39919		(2000.0)		P		Q	
<i>n</i>		0.26548886	ω	207.52975		+0.95228936		+0.29567985	
<i>a</i>		2.3975731	Ω	135.05592		-0.25662681		+0.90988046	
<i>e</i>		0.1465270	<i>i</i>	6.14515		-0.16518975		+0.29101716	
<i>P</i>		3.71	<i>H</i>	14.0		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1984 09 23	071	(4.7-	2.1-)	1998 04 23	704	0.1-	0.2+	1998 05 27	699	0.6+	1.0-
1984 09 23	071	1.6+	2.0-	1998 04 23	704	0.2+	0.3+	1998 05 27	699	0.8+	0.9-
1984 09 23	071	(4.6-	1.3-)	1998 04 23	704	0.6+	0.8+	1998 05 27	699	0.5+	1.0-
1984 09 23	071	0.4+	0.5+	1998 04 23	704	0.3+	1.5+	1998 06 02	699	0.5+	0.3-
1984 09 24	071	1.4-	0.4-	1998 04 24	704	1.3+	0.1+	1998 06 02	699	0.0	0.2-
1984 09 25	071	0.6+	0.7+	1998 04 24	704	0.5+	0.9-	1998 06 02	699	0.6-	0.3+
1995 07 24	691	0.9-	0.4+	1998 04 24	704	0.5+	0.1+	1999 09 22	681	0.1+	0.4+
1995 07 24	691	1.0-	0.0	1998 04 24	704	0.4+	0.7-	1999 09 22	681	0.2+	0.1+
1995 07 24	691	0.9-	0.1+	1998 04 25	699	0.1+	0.2+	1999 09 23	681	0.2-	0.6+
1996 12 14	557	0.1-	0.1+	1998 04 25	699	0.8+	0.2+	1999 09 30	703	0.3-	0.4+
1996 12 15	557	0.3-	0.2+	1998 04 25	699	0.5+	0.3+	1999 09 30	703	0.1-	0.5+
1996 12 15	557	0.5-	0.5+	1998 04 29	566	0.0	0.1-	1999 09 30	703	0.1-	0.4+
1996 12 15	557	0.7-	0.3+	1998 04 29	566	0.1-	0.0	1999 09 30	703	0.4-	0.3+
1996 12 15	691	0.5+	0.1+	1998 04 29	566	0.2+	0.4-	1999 10 04	703	0.1+	0.3+
1996 12 15	691	0.4+	0.3-	1998 05 22	704	0.2-	0.7-	1999 10 04	703	0.1-	0.4+
1996 12 15	691	0.6+	0.0	1998 05 22	704	0.6-	0.2+	1999 10 04	703	0.1+	0.4+
1996 12 17	691	0.6-	0.2+	1998 05 22	704	0.0	0.8+	1999 10 04	703	0.0	0.3+
1996 12 17	691	0.6-	0.0	1998 05 22	704	0.3+	0.7-	1999 10 09	704	0.4+	0.1-
1996 12 17	691	0.5-	0.1+	1998 05 22	704	0.2+	0.3+	1999 10 09	704	0.1+	0.0
1998 04 21	704	0.2-	1.6+	1998 05 24	704	0.1-	0.1-	1999 10 09	704	0.3+	0.1+
1998 04 21	704	0.9-	0.5+	1998 05 24	704	0.2+	0.8-	1999 10 09	704	0.3+	0.0
1998 04 21	704	0.5-	0.1+	1998 05 24	704	1.0-	0.5+	1999 10 09	704	0.1+	0.0
1998 04 21	704	0.8-	0.9+	1998 05 24	704	0.3-	0.0				
1998 04 21	704	0.6-	0.9+	1998 05 24	704	(2.2+	0.1+)				

1999 OCT. 26

M.P.C. 36301

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

<i>M</i>	325.43938		(2000.0)	P	Q
<i>n</i>	0.17953723	ω	262.88597	+0.98418840	+0.00618103
<i>a</i>	3.1119531	Ω	96.64705	+0.06117934	+0.92602035
<i>e</i>	0.2077723	<i>i</i>	10.26580	-0.16622361	+0.37742297
<i>P</i>	5.49	<i>H</i>	12.8	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1978 12 22	095	0.0	0.1+	1998 04 24	704	0.5-	0.3+	1999 06 23	703	0.5-	0.0
1989 11 29	400	0.6-	0.4+	1998 04 24	704	0.3-	0.4+	1999 06 23	703	0.4-	0.1+
1989 11 29	400	1.1-	1.6+	1998 04 24	704	0.4-	0.3-	1999 06 23	703	0.4-	0.5+
1989 11 29	400	(0.3-	5.2+)	1998 05 23	704	1.7+	0.4-	1999 06 23	703	0.1+	1.5+
1989 12 03	400	0.6+	0.0	1998 05 23	704	1.0+	0.0	1999 07 14	704	0.2-	0.7-
1989 12 03	400	(2.9+	2.1+)	1998 05 23	704	0.4+	0.0	1999 07 14	704	0.1+	0.8-
1989 12 03	400	1.1+	1.6-	1998 05 23	704	0.6+	0.5+	1999 07 14	704	0.5+	1.0-
1998 03 22	327	0.5+	0.2-	1998 05 25	704	0.1-	0.3-	1999 07 14	704	0.1-	0.6-
1998 03 22	327	0.7+	0.0	1998 05 25	704	1.1-	0.5-	1999 07 14	704	0.1-	0.7-
1998 03 22	327	0.9+	0.3+	1998 05 25	704	(2.3+	1.0-)	1999 09 29	704	0.2+	0.2-
1998 04 23	704	0.5+	0.1+	1998 05 25	704	0.2-	0.0	1999 09 29	704	0.2-	0.2+
1998 04 23	704	1.9-	0.6+	1998 06 02	699	0.1+	0.1-	1999 09 29	704	0.4+	0.1+
1998 04 23	704	0.7-	0.8+	1998 06 02	699	0.5-	0.1-	1999 09 29	704	0.7+	1.9+
1998 04 23	704	0.4+	0.5-	1998 06 02	699	0.4-	0.0	1999 09 29	704	0.1+	0.6+

(12099)* 1998 HQ₁₂₄ = 1990 AK = 1991 LD₆

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

Id. G. V. Williams (*MPC* 32023)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	249.86575		(2000.0)	P	Q
<i>n</i>	0.27549581	ω	341.57361	-0.16480755	-0.98234363
<i>a</i>	2.3391570	Ω	117.83087	+0.91705874	-0.18566166
<i>e</i>	0.0564599	<i>i</i>	5.74619	+0.36310017	+0.02303773
<i>P</i>	3.58	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1990 01 03	511	0.2+	0.4-	1998 05 05	699	1.2-	0.5+	1999 09 09	704	0.8-	1.0-
1990 01 03	511	0.3-	0.0	1998 05 22	704	0.4+	0.6+	1999 09 09	704	0.6-	0.5-
1990 01 04	511	0.5+	0.6+	1998 05 22	704	0.4-	0.5+	1999 09 09	704	1.1+	0.3+
1990 01 04	511	0.4-	0.6+	1998 05 22	704	(0.1+	2.6-)	1999 09 13	704	(0.0	2.0-)
1991 06 06	809	(3.0+	0.0)	1998 05 22	704	0.2+	0.2-	1999 09 13	704	0.6+	1.0-
1991 06 06	809	0.3-	0.8+	1998 05 22	704	0.2+	0.3-	1999 09 13	704	0.1-	0.4+
1991 06 06	809	0.8+	1.2+	1998 05 24	704	0.4+	1.6+	1999 09 30	704	0.1+	0.2+
1998 04 23	704	0.1-	0.3-	1998 05 24	704	0.2+	0.4-	1999 09 30	704	0.1+	0.0
1998 04 23	704	0.4+	0.4-	1998 05 24	704	0.0	0.2-	1999 09 30	704	0.5-	0.5+
1998 04 23	704	0.1+	1.4-	1998 05 24	704	1.0+	0.4+	1999 09 30	704	0.1+	0.2-
1998 04 23	704	0.8+	1.5-	1998 05 24	704	0.6-	1.7-	1999 09 30	704	0.3+	0.5-
1998 04 24	704	0.3-	0.4+	1999 09 04	699	0.1+	0.7+	1999 10 16	704	0.0	0.3+
1998 04 24	704	0.4+	0.0	1999 09 04	699	0.3-	0.3-	1999 10 16	704	0.3+	0.6+
1998 04 24	704	0.3-	0.1+	1999 09 04	699	0.4+	0.7+	1999 10 16	704	0.3+	0.2+
1998 05 05	699	0.4-	0.8+	1999 09 09	704	0.9-	0.7-	1999 10 16	704	0.8+	0.7+
1998 05 05	699	0.9-	0.1+	1999 09 09	704	0.8-	0.4-	1999 10 16	704	(0.8+	2.4+)

(12100)* 1998 HR₁₄₉ = 1995 SE₁₉

Discovered 1998 Apr. 25 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 32026)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	103.72948		(2000.0)	P	Q
<i>n</i>	0.23540466	ω	231.18203	-0.48748034	+0.87309771
<i>a</i>	2.5977220	Ω	9.65252	-0.78565888	-0.43464811
<i>e</i>	0.0391622	<i>i</i>	2.71996	-0.38092393	-0.22086515
<i>P</i>	4.19	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 09 18	691	0.0	0.2+	1998 05 22	704	0.7+	1.9+	1999 09 07	704	0.3+	1.3+
1995 09 18	691	0.1+	0.3-	1998 05 22	704	(1.8+	3.0-)	1999 09 07	704	(0.2-	2.7+)
1995 09 18	691	0.8-	0.3-	1998 05 22	704	0.3+	1.2-	1999 09 14	704	0.4-	0.0
1995 09 24	691	1.7+	0.5-	1998 05 22	428	0.4-	0.0	1999 09 14	704	0.2+	0.1-
1995 09 24	691	0.0	0.0	1998 05 22	428	0.0	0.3-	1999 09 14	704	0.6-	0.4-
1995 09 24	691	0.2-	0.1+	1998 05 24	704	0.7+	0.3+	1999 09 14	704	0.5+	0.1-
1995 09 27	691	0.1+	0.0	1998 05 24	704	0.9-	0.1+	1999 09 14	704	1.5+	0.6-
1995 09 27	691	0.3+	0.1-	1998 05 24	704	0.3-	0.6-	1999 09 14	703	0.1+	0.1+
1995 09 27	691	0.7-	0.1-	1998 05 24	704	0.6-	1.2+	1999 09 14	703	0.6-	0.1+
1997 01 12	566	0.3+	0.4+	1998 05 24	704	1.1-	0.3+	1999 09 14	703	0.6+	0.7+
1997 01 12	566	0.1+	0.0	1998 05 25	428	0.3+	0.1-	1999 09 14	703	0.6-	0.9+
1997 01 12	566	0.2-	0.4+	1998 05 30	428	(2.4-	0.3+)	1999 10 05	704	0.8-	0.3-
1998 04 25	809	(1.5+	2.7+)	1998 06 20	428	0.3-	0.7-	1999 10 05	704	1.0-	0.0
1998 04 25	809	(2.2+	2.0+)	1998 06 20	428	0.1+	0.9-	1999 10 05	704	0.7+	0.2-
1998 04 25	809	(2.2+	1.9+)	1998 06 20	428	0.0	0.3-	1999 10 05	704	0.8-	0.4-
1998 04 28	809	(4.9+	3.2+)	1998 08 22	703	0.7-	0.9+	1999 10 05	704	0.0	0.1+
1998 04 28	809	(4.7+	1.9+)	1998 08 22	703	(2.0-	0.1-)	1999 10 18	691	0.1-	0.2-
1998 04 28	809	(4.1+	1.6+)	1998 08 22	703	0.7-	0.6-	1999 10 18	691	0.0	0.1-
1998 05 21	428	0.3-	0.8-	1998 08 22	703	0.5+	0.5+	1999 10 18	691	0.0	0.1-
1998 05 22	704	1.8+	1.4+	1999 09 07	704	1.2+	0.2+				

(12101)* 1998 JX₂ = 1992 EL₁₄ = 1997 EQ₄₂

Discovered 1998 May 1 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 32029)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	16.42978		(2000.0)	P	Q
<i>n</i>	0.19083248	ω	144.89509	+0.66100698	+0.74919756
<i>a</i>	2.9879124	Ω	166.31599	-0.72273887	+0.65074418
<i>e</i>	0.0883187	<i>i</i>	10.25217	-0.20178775	+0.12343023
<i>P</i>	5.16	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1992 03 01	809	0.1+	0.4+	1998 05 25	704	(2.6+	1.5+)	1999 09 13	704	0.2+	0.2-
1992 03 03	809	0.1+	0.3+	1998 05 25	704	(2.4-	0.4-)	1999 09 13	704	0.0	0.5-
1992 03 06	809	(2.9+	0.9-)	1998 05 28	691	0.3-	0.4+	1999 09 13	704	0.5+	0.3-
1992 03 09	809	(4.1-	2.2-)	1998 05 28	691	0.1-	0.3+	1999 09 13	704	0.4+	0.3-
1997 03 10	704	0.1-	0.7-	1998 05 28	691	0.1+	0.3+	1999 09 13	704	0.1+	1.4-
1997 03 10	704	0.2+	1.1+	1998 06 02	691	1.0-	0.1+	1999 09 30	704	0.0	0.5+
1997 03 11	704	0.1+	1.4+	1998 06 02	691	0.9-	0.1-	1999 09 30	704	0.4-	0.1+
1997 03 11	704	0.2-	0.6+	1998 06 02	691	0.6-	0.2+	1999 09 30	704	0.5-	0.5+
1997 03 12	704	0.6+	0.8+	1998 08 22	699	0.2-	0.8+	1999 09 30	704	0.7-	0.7+
1997 03 12	704	0.3+	0.5+	1998 08 22	699	1.6-	1.3+	1999 09 30	704	0.2-	0.3-
1998 05 01	699	1.2+	0.3+	1998 08 22	699	0.2+	1.2+	1999 10 05	704	(0.5+	2.1+)
1998 05 01	699	1.2+	0.1+	1999 09 05	699	0.1+	1.3+	1999 10 05	704	1.4+	0.1+
1998 05 01	699	0.5+	0.8+	1999 09 05	699	0.4-	1.2+	1999 10 05	704	0.1-	0.4-
1998 05 05	699	1.8+	0.0	1999 09 05	699	0.3-	1.3+	1999 10 05	704	0.2-	0.8+
1998 05 05	699	0.8+	0.1+	1999 09 07	704	0.5+	0.3-	1999 10 05	704	1.3-	0.3+
1998 05 05	699	0.9+	0.9+	1999 09 07	704	1.2+	0.8-	1999 10 15	704	0.8-	1.6+
1998 05 19	691	0.5-	0.3+	1999 09 07	704	1.0+	1.1-	1999 10 15	704	0.1+	0.6+
1998 05 19	691	0.1-	0.1+	1999 09 07	704	1.2+	0.5-	1999 10 15	704	0.5-	0.6+
1998 05 19	691	0.2-	0.2-	1999 09 07	704	0.9+	1.1-	1999 10 15	704	1.7+	0.0
1998 05 23	704	0.4+	0.1+	1999 09 07	106	0.4-	1.0+	1999 10 15	704	0.0	0.3-
1998 05 23	704	0.0	0.5-	1999 09 07	106	0.7-	0.9+	1999 10 16	704	1.2-	0.8+
1998 05 23	704	0.4+	0.4-	1999 09 09	704	0.6-	1.0-	1999 10 16	704	0.2-	0.5+
1998 05 23	704	0.4-	0.7-	1999 09 09	704	0.4+	0.5-	1999 10 16	704	1.1-	0.1-
1998 05 23	704	0.6-	1.2-	1999 09 09	704	0.4+	0.5-	1999 10 16	704	0.9-	0.4+
1998 05 25	704	1.0-	0.8-	1999 09 09	704	0.7+	0.4-	1999 10 16	704	0.2+	0.5-
1998 05 25	704	1.8-	0.3+	1999 09 09	704	0.2-	0.9-				

(12102)* 1998 JB₄ = 1990 TP₅ = 199

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	96.39078		(2000.0)	P	Q
<i>n</i>	0.22204172	ω	26.20329	-0.53140818	+0.83960979
<i>a</i>	2.7009279	Ω	212.05567	-0.80969027	-0.54247478
<i>e</i>	0.1312980	<i>i</i>	12.23985	-0.24901207	-0.02786597
<i>P</i>	4.44	<i>H</i>	13.7	<i>G</i>	0.15

Residuals in seconds of arc

1990 10 09	413	0.2-	1.2-	1998 05 05	426	0.1+	0.1-	1999 09 08	704	0.4-	0.0
1990 10 11	413	1.1+	1.4-	1998 05 15	426	0.4-	0.1-	1999 09 08	699	1.6-	0.8+
1995 10 27	399	0.8-	1.9-	1998 05 15	426	0.3-	0.5-	1999 09 08	704	0.4+	0.6+
1995 10 27	399	1.6+	0.2+	1998 05 15	426	0.2-	0.4-	1999 09 16	704	0.2-	0.2+
1995 10 28	399	1.2-	1.3+	1998 05 19	426	0.1+	0.2-	1999 09 16	704	0.2+	0.0
1995 10 28	399	(0.6+	2.8+)	1998 05 19	426	0.1-	0.2-	1999 09 16	704	0.8-	0.0
1998 04 22	704	0.9-	0.3+	1998 05 19	426	0.1+	0.2-	1999 09 16	704	0.2-	0.3-
1998 04 22	704	0.1+	0.4+	1998 05 21	426	0.2+	0.2-	1999 09 29	703	0.5+	0.2+
1998 04 22	704	0.6+	0.0	1998 05 21	426	0.1+	0.4-	1999 09 29	703	0.5+	0.1-
1998 04 22	704	0.1-	0.2+	1998 05 21	426	0.2+	0.1-	1999 09 29	703	0.9+	0.4-
1998 04 22	704	0.3+	0.2+	1998 05 22	704	0.7-	0.2+	1999 09 29	703	1.3+	0.0
1998 04 24	910	0.7+	0.8-	1998 05 22	704	0.4-	0.6+	1999 10 04	704	0.8+	0.6-
1998 04 24	910	0.8+	0.8-	1998 05 22	704	0.3-	0.5+	1999 10 04	704	0.0	0.1+
1998 04 24	910	0.8+	0.8-	1998 05 22	704	0.8-	0.5+	1999 10 04	704	0.3-	0.3-
1998 05 01	704	0.1-	0.7+	1998 05 22	704	1.6-	0.7-	1999 10 04	704	0.0	0.8+
1998 05 01	704	0.9+	0.8-	1998 06 20	688	0.3-	0.1+	1999 10 04	704	0.0	1.0+
1998 05 01	704	0.3+	0.9+	1998 06 20	688	0.1-	0.1+	1999 10 19	704	0.6-	0.1-
1998 05 01	704	(0.0	2.3+)	1998 06 20	688	0.4-	0.1+	1999 10 19	704	0.1-	0.4-
1998 05 05	699	0.7+	0.3+	1999 09 08	699	0.1+	0.6+	1999 10 19	704	0.3+	0.6-
1998 05 05	699	0.5+	0.8+	1999 09 08	704	0.1-	0.5+	1999 10 19	704	0.5+	1.0-
1998 05 05	699	0.2-	0.5+	1999 09 08	699	0.4-	1.2+	1999 10 19	704	0.1-	1.3-
1998 05 05	426	0.2+	0.2-	1999 09 08	704	0.7-	0.7+				
1998 05 05	426	0.3+	0.3-	1999 09 08	704	0.4-	0.5+				

(12103)* 1998 KL = 1975 XZ₃ = 1982 VY₁₂ = 1992 ST₁₈

Discovered 1998 May 19 by F. B. Zoltowski at Woomera.

Id. G. V. Williams (*MPC* 32030, *MPC* 35993)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	294.16690		(2000.0)	P	Q
<i>n</i>	0.28361307	ω	242.84749	+0.45500669	-0.89048800
<i>a</i>	2.2943089	Ω	180.08754	+0.84689511	+0.43278260
<i>e</i>	0.1611859	<i>i</i>	5.44160	+0.27520461	+0.14046472
<i>P</i>	3.48	<i>H</i>	14.3	<i>G</i>	0.15

Residuals in seconds of arc

1975 12 03	095	0.3-	1.5+	1998 05 27	426	1.2-	0.4+	1999 09 14	704	0.2-	0.2-
1982 11 14	095	(1.5-	7.8+)	1998 05 27	426	0.1-	0.0	1999 09 14	704	0.3-	0.2-
1982 12 21	095	(5.8-	3.5+)	1998 05 31	426	0.8+	0.1-	1999 09 14	704	0.1+	0.2-
1992 09 02	809	2.0+	0.0	1998 05 31	426	0.6-	0.0	1999 09 14	704	0.2+	0.0
1992 09 02	809	1.6+	0.2+	1999 08 22	699	0.1+	1.0+	1999 09 14	704	0.3-	0.0
1992 09 02	809	1.3+	0.2-	1999 08 22	699	0.1-	0.8+	1999 09 18	691	0.2+	0.3-
1992 09 22	809	0.3-	0.2-	1999 08 22	699	0.4-	1.1+	1999 09 18	691	0.2+	0.3-
1992 09 22	809	0.4-	0.2+	1999 08 23	699	0.6-	1.0+	1999 09 18	691	0.3+	0.1-
1992 09 22	809	1.1-	0.6-	1999 08 23	699	0.6-	0.4+	1999 10 02	704	0.5+	0.5-
1992 09 23	809	0.3-	1.0-	1999 08 23	699	0.8-	1.6+	1999 10 02	704	0.3+	0.5-
1992 09 23	809	0.4-	0.4-	1999 09 04	426	0.2-	0.3+	1999 10 02	704	0.1+	1.8-
1992 09 23	809	1.0-	1.5-	1999 09 04	426	0.1-	0.3+	1999 10 02	704	0.0	0.4-
1998 05 19	426	0.1-	0.0	1999 09 04	426	0.2-	0.3+	1999 10 02	704	0.1-	0.5-
1998 05 19	426	0.3-	0.1-	1999 09 07	704	0.0	0.2+	1999 10 05	704	0.1+	0.1+
1998 05 19	426	0.0	0.1-	1999 09 07	704	0.1+	0.1-	1999 10 05	704	0.3-	0.4+
1998 05 21	426	0.1-	0.1+	1999 09 07	704	0.0	0.1+	1999 10 05	704	0.6-	0.8-
1998 05 21	426	0.4-	0.3-	1999 09 07	704	0.1-	0.2+	1999 10 05	704	0.1+	0.5-
1998 05 21	426	0.6+	0.1-	1999 09 07	704	0.1+	0.3+	1999 10 05	704	0.1-	0.6-
1998 05 22	704	0.4+	0.8-	1999 09 09	704	0.0	0.6+	1999 10 07	704	0.2-	0.0
1998 05 22	704	0.8-	1.2+	1999 09 09	704	0.3+	0.5+	1999 10 07	704	0.2-	0.4-
1998 05 22	704	1.0-	0.5-	1999 09 09	704	0.8+	0.5+	1999 10 07	704	0.1+	0.1-
1998 05 22	704	1.5+	0.6-	1999 09 09	704	1.7+	0.6+	1999 10 07	704	0.3-	0.4-
1998 05 22	704	(3.9-	0.0)	1999 09 09	704	(2.7+	1.3+)	1999 10 07	704	0.4-	0.9-

1998 05 24	704	0.2+	0.6+	1999 09 09	426	0.3+	0.2+	1999 10 08	704	0.0	0.3-
1998 05 24	704	1.2-	0.7-	1999 09 09	426	0.1+	0.2+	1999 10 08	704	0.3+	0.6-
1998 05 24	704	1.3+	0.1+	1999 09 09	426	0.0	0.3+	1999 10 08	704	0.0	0.7-
1998 05 24	704	0.0	0.9+	1999 09 11	699	0.1+	0.8+	1999 10 15	704	0.2+	0.2+
1998 05 24	704	0.8-	0.4+	1999 09 11	699	0.0	0.9+	1999 10 15	704	0.2-	0.4-
1998 05 25	699	1.0+	0.7-	1999 09 11	699	0.1+	1.0+	1999 10 15	704	0.0	0.7-
1998 05 25	699	1.0+	0.2+	1999 09 12	106	0.8-	0.8+	1999 10 15	704	0.3-	0.3-
1998 05 25	699	0.3-	0.2+	1999 09 12	106	0.0	0.0	1999 10 15	704	0.5-	0.9-
1998 05 27	426	0.1+	0.5-	1999 09 12	106	0.5-	0.5+				

(12104)* 1998 KO₆ = 1976 DU

Discovered 1998 May 22 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 32276)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	75.22348		(2000.0)	P	Q
<i>n</i>	0.18871860	ω	166.25063	-0.42266834	+0.88625038
<i>a</i>	3.0101831	Ω	78.46790	-0.84871459	-0.31373201
<i>e</i>	0.0178868	<i>i</i>	11.15175	-0.31786007	-0.34078217
<i>P</i>	5.22	<i>H</i>	12.5	<i>G</i>	0.15

Residuals in seconds of arc

1976 02 28	033	0.9-	0.1-	1998 05 24	704	0.4-	0.0	1998 06 30	699	0.0	0.4-
1976 02 29	033	0.9+	0.1-	1998 05 24	704	0.3-	0.1-	1998 06 30	699	0.6+	0.1-
1996 11 26	327	0.6+	0.4+	1998 05 24	704	0.9-	0.0	1999 07 14	704	0.8+	0.4+
1996 11 26	327	0.5+	0.1-	1998 05 24	704	0.2-	0.0	1999 07 14	704	0.7+	0.3-
1996 11 26	327	0.5-	0.1+	1998 06 03	704	0.6+	0.1-	1999 07 14	704	1.0+	0.9-
1996 11 26	327	0.1-	0.3+	1998 06 03	704	1.0-	0.7+	1999 07 14	704	0.6+	1.3-
1998 05 05	699	0.3+	0.7+	1998 06 03	704	0.8+	1.1-	1999 07 14	704	(1.5+	2.2-)
1998 05 05	699	0.1+	0.4+	1998 06 03	704	0.6-	0.4-	1999 09 11	704	0.2+	0.0
1998 05 05	699	0.0	0.8+	1998 06 16	704	0.5+	0.1-	1999 09 11	704	0.6+	0.3-
1998 05 22	704	0.1-	0.5+	1998 06 16	704	0.5+	0.4+	1999 09 11	704	0.3+	0.3+
1998 05 22	704	0.2+	0.2+	1998 06 16	704	0.7-	0.8+	1999 09 11	704	0.1-	0.0
1998 05 22	704	0.5-	0.4-	1998 06 16	704	0.5-	0.1-	1999 09 11	704	0.1+	0.1-
1998 05 22	704	0.4-	0.7-	1998 06 18	704	(1.0-	2.2+)	1999 09 29	704	0.7-	0.1-
1998 05 22	699	0.1+	0.4+	1998 06 18	704	0.5-	0.3-	1999 09 29	704	0.9-	0.3+
1998 05 22	704	0.1-	0.3+	1998 06 18	704	0.0	1.1+	1999 09 29	704	1.0-	0.1-
1998 05 22	699	0.1-	0.2+	1998 06 18	704	0.3+	1.7-	1999 09 29	704	1.0-	1.9+
1998 05 22	699	0.2+	0.4+	1998 06 18	704	0.7+	1.6-	1999 09 30	704	1.0+	0.3+
1998 05 23	699	0.6+	0.3+	1998 06 27	699	0.3+	0.0	1999 09 30	704	0.4-	0.3+
1998 05 23	699	0.2+	0.7+	1998 06 27	699	0.3+	0.3-	1999 09 30	704	0.3+	0.2+
1998 05 23	699	0.4+	0.8+	1998 06 27	699	0.7-	0.3+	1999 09 30	704	0.2-	0.2+
1998 05 24	704	(2.5+	0.4-)	1998 06 30	699	0.4+	0.9-	1999 09 30	704	1.5-	0.1+

(12105)* 1998 KA₁₀ = 1982 YT₂ = 1985 PP

Discovered 1998 May 25 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. A. Gnädig (*MPC* 32484)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	332.32275		(2000.0)	P	Q
<i>n</i>	0.28539394	ω	247.54772	+0.87309938	-0.48480901
<i>a</i>	2.2847545	Ω	141.39887	+0.47216690	+0.81447866
<i>e</i>	0.1666379	<i>i</i>	4.73980	+0.12147384	+0.31872361
<i>P</i>	3.45	<i>H</i>	14.1	<i>G</i>	0.15

Residuals in seconds of arc

1982 12 22	095	(0.2+	2.8-)	1998 05 22	704	0.8+	0.3+	1999 09 14	704	0.7+	1.3-
1985 08 14	688	1.3+	0.8-	1998 05 22	704	0.1-	1.0+	1999 09 21	699	0.1-	0.0

1994 04 02	691	0.1+	0.6+	1998 05 25	327	0.2-	0.3-	1999 10 02	704	0.5+	0.2-
1994 04 02	691	0.0	0.4+	1998 05 25	327	0.6-	0.0	1999 10 02	704	0.5+	0.2-
1998 04 22	704	1.0-	0.0	1998 05 25	327	0.3-	0.5-	1999 10 02	704	0.1+	0.2-
1998 04 22	704	1.9-	0.6+	1998 05 26	327	0.1-	0.6-	1999 10 07	704	0.0	0.2-
1998 04 22	704	0.5-	0.1-	1998 05 26	327	0.5-	0.4-	1999 10 07	704	0.1+	0.2-
1998 04 22	704	1.1-	0.1+	1998 05 26	327	0.4-	0.7-	1999 10 07	704	0.1-	0.3-
1998 04 22	704	0.6-	0.7+	1998 05 26	327	0.5-	0.2+	1999 10 07	704	0.2-	0.3-
1998 04 25	699	0.4+	0.6+	1998 06 02	699	0.0	1.1-	1999 10 07	704	0.2-	0.1-
1998 04 25	699	0.3-	0.7+	1998 06 02	699	1.2+	0.7+	1999 10 08	704	0.0	0.2-
1998 04 25	699	0.3+	0.8+	1998 06 02	699	1.2+	0.1-	1999 10 08	704	0.0	0.3-
1998 05 01	704	0.7+	0.5+	1999 09 08	699	0.7-	0.9+	1999 10 08	704	0.1-	0.0
1998 05 01	704	0.0	0.4-	1999 09 08	699	0.3-	0.7+	1999 10 08	704	0.1-	0.2+
1998 05 01	704	0.2+	0.5-	1999 09 08	699	0.6-	0.5+	1999 10 08	704	0.1+	0.0
1998 05 01	704	1.0+	0.2-	1999 09 14	704	0.8+	0.1-	1999 10 08	106	0.0	0.5+
1998 05 01	704	0.2-	1.2-	1999 09 14	704	0.8+	0.6-	1999 10 08	106	1.3-	0.6+
1998 05 22	704	0.2-	1.0-	1999 09 14	704	0.8+	0.6-				
1998 05 22	704	0.6+	0.1-	1999 09 14	704	0.6+	0.1+				

(12106)* 1998 KQ₃₁ = 1995 QN₈

Discovered 1998 May 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. S. Nakano (*MPC* 32278)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	325.52677	(2000.0)	P	Q	
<i>n</i>	0.26883384	ω	194.94396	+0.79305709	-0.60792107
<i>a</i>	2.3776436	Ω	202.63104	+0.56867504	+0.76160644
<i>e</i>	0.1017104	<i>i</i>	5.76199	+0.21833268	+0.22447183
<i>P</i>	3.67	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1994 04 16	691	0.6+	0.1-	1998 06 29	691	0.0	0.4-	1999 10 07	683	0.1-	0.2+
1994 04 16	691	0.4+	0.2-	1998 07 24	691	0.8-	0.0	1999 10 07	683	0.2+	0.3+
1994 04 16	691	0.7-	0.7-	1998 07 24	691	0.3-	0.1+	1999 10 07	704	0.2-	0.2+
1994 05 03	691	0.4-	0.1-	1999 09 08	704	0.1+	0.4-	1999 10 07	704	0.1-	0.2+
1994 05 03	691	0.6-	1.0+	1999 09 08	704	0.4+	0.4-	1999 10 07	704	0.4+	0.0
1994 05 03	691	0.8+	0.3+	1999 09 08	704	0.1+	0.5-	1999 10 07	704	0.7-	0.1+
1995 08 28	691	0.1-	0.4-	1999 09 08	704	0.1-	0.3+	1999 10 07	704	0.9-	0.3+
1995 08 28	691	0.6-	0.4+	1999 09 08	704	0.5-	0.7-	1999 10 08	683	0.6+	0.3+
1995 08 28	691	0.0	0.1-	1999 09 09	704	0.2+	0.3+	1999 10 08	683	0.3+	0.2+
1995 09 02	691	0.3+	0.4-	1999 09 09	704	0.6+	0.3-	1999 10 08	683	0.1+	0.4+
1995 09 02	691	0.4+	0.3-	1999 09 09	704	0.8-	0.5+	1999 10 08	468	0.1-	0.3+
1995 09 02	691	0.3+	0.1-	1999 09 09	704	0.3-	0.2+	1999 10 08	468	0.1-	0.2-
1998 05 22	704	(2.3+	0.4-)	1999 09 09	704	0.5-	0.2-	1999 10 09	704	0.1-	0.0
1998 05 22	704	1.2-	1.5+	1999 09 29	468	0.0	0.1+	1999 10 09	704	0.4+	0.4+
1998 05 22	704	0.5+	1.0-	1999 10 01	703	0.3-	0.1+	1999 10 09	704	0.2-	0.1+
1998 05 22	704	(3.0-	2.1+)	1999 10 01	703	0.1-	0.9+	1999 10 09	704	0.3-	0.3+
1998 05 24	704	1.5+	0.8+	1999 10 01	703	0.0	0.6+	1999 10 15	704	0.1-	0.2+
1998 05 24	704	0.7+	0.5+	1999 10 01	703	1.1-	0.6+	1999 10 15	704	0.1+	0.2+
1998 05 24	704	0.3-	0.3-	1999 10 04	704	0.1-	0.3-	1999 10 15	704	0.2+	0.5+
1998 05 24	704	0.7-	1.4-	1999 10 04	704	0.9+	0.7-	1999 10 15	704	1.7+	0.7+
1998 06 16	691	0.6-	0.3+	1999 10 04	704	0.5-	0.7-	1999 10 15	704	(2.3+	1.5+)
1998 06 16	691	0.5-	0.3+	1999 10 04	704	0.6-	0.2-	1999 10 19	704	0.4+	0.1+
1998 06 16	691	0.3-	0.3+	1999 10 04	704	0.4+	0.7-	1999 10 19	704	0.0	0.4-
1998 06 22	691	0.6+	0.2-	1999 10 06	704	0.2+	0.0	1999 10 19	704	0.4-	0.5-
1998 06 22	691	0.7+	0.2+	1999 10 06	704	0.1+	0.2-	1999 10 19	704	0.4+	0.8-
1998 06 22	691	0.6+	0.2+	1999 10 06	704	0.1+	0.0	1999 10 19	704	0.1-	1.0-
1998 06 29	691	0.0	0.1+	1999 10 06	704	0.1-	0.1-				
1998 06 29	691	0.1+	0.2-	1999 10 07	683	0.1+	0.4+				

(12107)* 1998 KU₄₆ = 1979 OL₁₁ = 1989 RP

Discovered 1998 May 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. S. Nakano (*MPC* 32485), A. Gnädig (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Nakano			
<i>M</i>	250.81525	(2000.0)	P	Q	
<i>n</i>	0.30628639	ω	275.55778	-0.65507728	-0.75384008
<i>a</i>	2.1796374	Ω	215.53701	+0.72329682	-0.60616747
<i>e</i>	0.0272796	<i>i</i>	5.03186	+0.21843870	-0.25354711
<i>P</i>	3.22	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1979 07 24	413	0.5+	2.1+	1998 05 24	704	0.9-	1.3-	1999 10 05	704	1.2-	0.9-
1979 07 26	675	0.8+	0.8+	1998 06 24	704	0.2+	0.4+	1999 10 10	704	0.2+	0.5+
1979 07 28	413	1.8-	0.2+	1998 06 24	704	0.5+	0.0	1999 10 10	704	0.9-	0.8+
1989 09 03	511	1.1-	0.1+	1998 06 24	704	0.0	0.8+	1999 10 10	704	0.6-	0.2+
1989 09 03	511	1.5-	0.1-	1998 06 24	704	1.5+	0.8-	1999 10 10	704	0.2-	0.3+
1989 09 04	511	1.7+	1.4-	1998 06 26	704	0.7+	0.8+	1999 10 10	704	0.8-	0.2+
1989 09 04	511	1.5+	1.4-	1998 06 26	704	0.8+	0.3+	1999 10 15	704	0.1-	0.3+
1989 09 05	511(18.7-	37.0-)		1998 06 26	704	0.8+	0.2+	1999 10 15	704	0.0	0.3+
1998 05 22	704	0.8-	0.7-	1998 06 26	704	1.2-	0.8-	1999 10 15	704	0.1+	0.4+
1998 05 22	704	0.4+	0.1-	1999 09 08	120	0.5-	0.6-	1999 10 15	704	0.2+	0.9+
1998 05 22	704	1.2+	0.2+	1999 09 08	120	0.1+	0.6-	1999 10 21	704	0.2-	0.1+
1998 05 22	704	(1.6+	2.8-)	1999 09 08	120	0.6+	0.9-	1999 10 21	704	0.1+	0.2-
1998 05 24	704	0.1+	0.0	1999 10 05	704	0.9+	1.0+	1999 10 21	704	0.2+	0.1-
1998 05 24	704	0.9-	0.1+	1999 10 05	704	0.2+	0.1+	1999 10 21	704	0.1+	0.1+
1998 05 24	704	1.1-	0.2+	1999 10 05	704	1.1+	0.6-	1999 10 21	704	0.1-	0.4-
1998 05 24	704	1.3-	1.0-	1999 10 05	704	0.7+	0.7-				

(12108)* 1998 KJ₄₈ = 1992 HW

Discovered 1998 May 22 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. A. Doppler (*MPC* 32688)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	30.86425	(2000.0)	P	Q	
<i>n</i>	0.18111545	ω	155.21276	+0.72401060	+0.68919741
<i>a</i>	3.0938485	Ω	161.12987	-0.64668247	+0.69258996
<i>e</i>	0.1592594	<i>i</i>	5.06583	-0.24002173	+0.21289924
<i>P</i>	5.44	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1992 04 04	691	0.3+	0.1+	1998 06 24	704	0.7+	0.1-	1999 10 06	159	0.8+	1.9+
1992 04 04	691	0.3-	0.2-	1998 06 24	704	0.7-	1.8+	1999 10 06	159	0.8+	1.8+
1992 04 04	691	1.0+	0.6-	1998 06 24	704	(2.0-	2.4+)	1999 10 06	106	0.2+	0.4+
1992 04 23	691	0.1+	0.6+	1998 06 24	704	0.4-	0.4+	1999 10 06	106	0.3+	0.3-
1992 04 23	691	0.2-	0.4+	1998 06 26	704	0.7+	0.3+	1999 10 06	106	0.3+	0.2-
1992 04 23	691	0.2-	0.2+	1998 06 26	704	0.6+	1.6+	1999 10 07	703	1.0-	0.3-
1992 04 28	691	0.0	0.1+	1998 06 26	704	0.5+	0.5-	1999 10 07	703	1.1-	0.5-
1992 04 28	691	0.3-	0.2+	1998 06 26	704	0.1-	1.3-	1999 10 07	703	0.9-	0.1+
1992 04 28	691	0.1-	0.1+	1998 06 26	704	(2.9-	0.0)	1999 10 07	703	1.0-	0.1+
1995 12 18	691	0.1-	0.1-	1999 09 08	699	1.2-	0.2+	1999 10 07	704	0.0	0.7-
1995 12 18	691	0.1+	0.1+	1999 09 08	699	0.8-	0.0	1999 10 07	704	0.3-	1.2-
1995 12 18	691	0.1+	0.4+	1999 09 08	699	0.8-	0.9-	1999 10 07	704	0.0	0.6-
1998 05 22	704	1.4+	1.8+	1999 10 01	703	0.1-	0.3+	1999 10 07	704	0.8+	0.7-
1998 05 22	704	0.9+	0.6-	1999 10 01	703	0.1-	0.2+	1999 10 07	704	0.2+	0.5-
1998 05 22	704	(0.3+	3.9+)	1999 10 01	703	0.1+	0.0	1999 10 09	704	0.1+	0.3-
1998 05 22	704	0.5-	1.0+	1999 10 01	703	0.4+	0.2+	1999 10 09	704	0.2+	0.8-
1998 05 24	704	0.3+	0.8-	1999 10 02	704	0.1-	0.5-	1999 10 09	704	0.2+	0.8-
1998 05 24	704	0.8-	1.7-	1999 10 02	704	0.2-	0.3-	1999 10 09	704	0.4+	0.9-
1998 05 24	704	0.0	0.2-	1999 10 02	704	0.1+	0.5-	1999 10 15	704	0.2+	0.2-
1998 05 24	704	1.1-	1.4-	1999 10 02	704	0.2-	0.6-	1999 10 15	704	0.3+	0.0
1998 05 24	704	0.4-	1.0-	1999 10 02	704	0.0	0.5-	1999 10 15	704	0.4+	0.6-
1998 06 03	704	1.0-	0.8-	1999 10 06	159	0.2+	1.9+	1999 10 15	704	0.2-	0.0
1998 06 03	704	0.0	0.7+	1999 10 06	159	0.4+	1.9+	1999 10 15	704	0.2+	0.2-
1998 06 03	704	0.1+	1.5+	1999 10 06	159	1.1+	1.7+				
1998 06 03	704	0.1-	0.6-	1999 10 06	159	0.5+	2.0+				

(12109)* 1998 KD₅₁ = 1966 CR = 1971 HM = 1987 YH₆

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

Id. G. V. Williams (*MPC* 32034)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22039270	ω	111.12888	−0.46938695	+0.87529031		
<i>a</i>	2.7143838	Ω	130.33441	−0.85616940	−0.41892032		
<i>e</i>	0.1474550	<i>i</i>	8.78139	−0.21598577	−0.24160431		
<i>P</i>	4.47	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1966 02 14	330	0.1+	0.9−	1998 06 03	704	0.7+	1.6−	1998 07 20	566	0.1−	0.0
1966 02 25	330	0.4−	0.9−	1998 06 19	704	0.7−	0.7+	1999 09 14	704	0.1+	0.0
1971 04 27	095 (12.3−	5.7−)		1998 06 19	704	0.0		1999 09 14	704	0.1+	0.1+
1987 12 29	010	0.1−	0.6−	1998 06 19	704	0.1−	0.1+	1999 09 14	704	0.1−	0.1−
1987 12 29	010	0.0	1.4+	1998 06 19	704	0.6−	0.3+	1999 09 14	704	0.1+	0.1−
1998 05 23	704	1.1+	0.2−	1998 06 19	704	0.8−	0.0	1999 09 14	704	0.2+	0.0
1998 05 23	704	0.5−	1.3+	1998 06 20	566	0.2+	0.1−	1999 09 14	106	0.6+	0.0
1998 05 23	704	1.5−	0.4−	1998 06 20	566	0.2+	0.4−	1999 09 14	106	0.5+	0.3+
1998 05 23	704	0.2+	1.7−	1998 06 20	566	0.0	0.2−	1999 09 15	106	0.3+	0.1+
1998 05 25	699	0.2−	0.2−	1998 06 26	699	0.6+	0.2+	1999 10 02	704	0.3−	0.4−
1998 05 25	699	0.2+	0.7+	1998 06 26	699	0.4+	0.0	1999 10 02	704	0.2−	0.1−
1998 05 25	699	0.0	0.5+	1998 06 26	699	0.4+	0.1+	1999 10 02	704	0.0	0.2−
1998 05 26	704	0.0	0.2+	1998 07 01	699	0.1−	0.2−	1999 10 02	704	0.2+	0.4−
1998 05 26	704	0.3−	0.5+	1998 07 01	699	0.2+	0.1−	1999 10 02	704	0.1+	0.0
1998 05 26	704	0.4+	0.5−	1998 07 01	699	0.2−	0.1+	1999 10 08	704	0.2−	0.1−
1998 05 26	704	0.5+	0.8−	1998 07 13	689	0.1+	0.5−	1999 10 08	704	0.2−	0.1−
1998 05 26	704	0.3−	0.8+	1998 07 15	699	0.1+	0.5+	1999 10 08	704	0.1−	0.0
1998 06 03	704	0.1+	0.2+	1998 07 15	699	0.5−	0.6+	1999 10 08	704	0.3−	0.4−
1998 06 03	704	0.5+	0.3−	1998 07 15	699	0.0	0.1+	1999 10 08	704	0.2−	0.4−
1998 06 03	704	0.1+	0.0	1998 07 20	566	0.1−	0.0				
1998 06 03	704	(0.2+	2.8−)	1998 07 20	566	0.0	0.1−				

(12110)* 1998 KL₅₆ = 1978 EC₂ = 1978 GS = 1983 VO₄ = 1988 JR₁ = 1999 RG₁₂₀

Discovered 1998 May 22 by M. R. Burleigh and N. P. Bannister at La Palma.

Id. G. V. Williams (*MPC* 36000)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29367100	ω	260.31665	−0.98050317	+0.19510321		
<i>a</i>	2.2416201	Ω	290.93122	−0.16902681	−0.89816489		
<i>e</i>	0.1076284	<i>i</i>	1.43653	−0.10021715	−0.39399818		
<i>P</i>	3.36	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

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−

(12111)* 1998 LU = 1990 HB₇ = 1996 XJ₂₃

Discovered 1998 June 1 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 32284)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24034108	ω	339.03320	−0.65105080	+0.75636884		
<i>a</i>	2.5620290	Ω	250.28789	−0.68643847	−0.62244895		
<i>e</i>	0.0660970	<i>i</i>	3.87095	−0.32393685	−0.20115536		
<i>P</i>	4.10	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 04 29	413	0.0	0.2+	1998 06 26	704	0.9−	0.5−	1999 10 07	704	0.3−	0.2−
1996 12 12	691	0.4+	0.9+	1998 06 26	704	0.4−	0.1−	1999 10 07	704	0.2−	0.7−
1996 12 12	691	0.4+	0.9+	1998 06 26	704	1.1−	0.8−	1999 10 07	704	0.5−	0.1−
1996 12 12	691	0.4+	0.9+	1998 06 26	704	0.4−	0.6+	1999 10 09	703	0.4+	0.9+
1996 12 13	691	0.3+	1.3+	1999 07 23	704	0.2+	0.8+	1999 10 09	703	0.2+	1.1+
1996 12 13	691	0.1+	1.1+	1999 07 23	704	0.3−	0.3+	1999 10 09	703	0.2−	0.4+
1996 12 13	691	0.1+	1.1+	1999 07 23	704	0.5−	0.0	1999 10 09	704	0.3+	0.2−
1998 05 22	704	1.1−	0.0	1999 07 23	704	0.7−	0.3−	1999 10 09	703	0.1−	0.4+
1998 05 22	704	0.6−	0.3+	1999 07 23	704	0.1−	0.3−	1999 10 09	704	0.4+	0.1−
1998 05 22	704	0.1+	0.4−	1999 09 07	704	0.6−	0.8+	1999 10 09	704	0.6−	0.3−
1998 05 22	704	0.8+	0.1−	1999 09 07	704	0.3+	0.0	1999 10 09	704	0.4−	0.3−
1998 05 22	704	(1.7+	2.2+)	1999 09 07	704	0.3+	0.2+	1999 10 09	704	0.2−	0.7−
1998 06 01	809	2.0+	0.7+	1999 09 18	703	0.7+	0.0	1999 10 15	704	0.3+	0.3−
1998 06 01	809	0.3+	0.2+	1999 09 18	703	0.3−	0.2−	1999 10 15	704	0.1+	0.3−
1998 06 01	809	0.3+	0.4+	1999 09 18	703	0.2−	0.7+	1999 10 15	704	0.0	0.7−
1998 06 02	809	1.5+	1.2+	1999 09 18	703	0.2−	0.2−	1999 10 15	704	0.0	0.3−
1998 06 02	809	1.3+	0.5+	1999 09 30	703	0.8−	0.1+	1999 10 15	704	0.1+	0.8−
1998 06 02	809	1.5+	0.6+	1999 09 30	703	0.0	0.1+	1999 10 16	704	0.2−	0.2−
1998 06 03	704	0.6+	1.2+	1999 09 30	703	0.4−	0.0	1999 10 16	704	0.2+	0.3+
1998 06 03	704	0.6−	0.0	1999 09 30	703	0.1−	0.5+	1999 10 16	704	0.5+	0.2−
1998 06 03	704	0.1−	0.2+	1999 10 04	704	0.2−	0.5+	1999 10 16	704	0.6+	0.1−
1998 06 03	704	0.7−	0.3+	1999 10 04	704	1.3−	0.0	1999 10 16	704	0.7+	0.0
1998 06 24	704	(2.7−	0.4−)	1999 10 04	704	0.2+	0.5+	1999 10 19	704	0.3+	1.8+
1998 06 24	704	0.3−	0.6+	1999 10 04	704	0.1+	0.3+	1999 10 19	704	0.5+	0.3+
1998 06 24	704	0.6−	0.7+	1999 10 04	704	0.5+	0.4+	1999 10 19	704	0.0	0.2+
1998 06 24	704	1.1−	0.5+	1999 10 07	704	0.3−	0.5−	1999 10 19	704	0.3+	0.9+
1998 06 26	704	0.5−	0.5−	1999 10 07	704	0.6−	0.2−	1999 10 19	704	0.4+	0.1+

(12112)* 1998 MK₄ = 1931 CD = 1982 PU₁ = 1993 PN₄

Discovered 1998 June 23 by the Catalina Sky Survey.

Id. G. V. Williams (*MPC* 32285)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17893709	ω	99.60902	−0.19011987	+0.97058654		
<i>a</i>	3.1189073	Ω	157.70358	−0.98173401	−0.18683760		
<i>e</i>	0.1326901	<i>i</i>	22.91149	−0.00726426	−0.15183370		
<i>P</i>	5.51	<i>H</i>	12.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1931 02 10	754	0.7+	0.3+	1998 06 24	703	0.9+	0.0	1999 09 13	704	1.2−	0.1−
1982 08 13	095	0.3−	1.8+	1998 06 24	703	0.3−	0.3+	1999 09 17	106	0.3+	0.8+
1993 08 15	010	2.0−	0.8−	1998 07 02	658	0.3−	0.8+	1999 09 17	106	0.3−	0.2+
1993 08 15	010	(2.5−	0.3−)	1998 07 02	658	0.5−	0.7+	1999 09 30	704	0.4+	0.2+
1993 08 16	010	1.4−	1.8−	1998 07 02	658	0.6−	0.7+	1999 09 30	704	0.3+	0.1−
1993 08 16	010	1.2−	1.7−	1998 07 18	127	0.8+	0.4−	1999 09 30	704	0.3+	0.3+
1993 08 16	010	1.2−	1.1−	1998 07 18	127	0.6+	0.7−	1999 09 30	704	0.5+	0.5−
1993 08 19	010	(2.0+	2.8−)	1998 07 19	127	0.7+	0.2−	1999 09 30	704	0.4+	0.7−
1993 08 19	010	(2.4+	2.2−)	1998 07 19	127	1.4+	0.1−	1999 10 16	704	0.6+	0.6−
1993 08 20	010	(1.4+	2.9−)	1999 09 11	699	0.4−	0.7+	1999 10 16	704	0.6+	0.7+
1997 02 06	691	0.7−	0.0	1999 09 11	699	0.3−	1.1+	1999 10 16	704	0.9+	0.4+
1997 02 06	691	0.8−	0.4+	1999 09 11	699	0.4+	0.8+	1999 10 16	704	1.0+	0.3−
1997 02 06	691	0.7−	0.1+	1999 09 13	704	0.5−	0.3+	1999 10 16	704	1.0+	0.7+
1998 06 23	703	0.2+	0.5+	1999 09 13	704	0.5−	0.1−				
1998 06 23	703	1.0+	0.1+	1999 09 13	704	0.3+	0.2+				

(12113)* 1998 OH₁₂ = 1987 LC

Discovered 1998 July 29 by J. Broughton at Reedy Creek.

Id. A. Gnädig (*MPC* 34922), M. E. Sansaturio (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	47.74645		(2000.0)		P		Q
<i>n</i>	0.18903470	ω	239.03943		+0.92109785		+0.33452664
<i>a</i>	3.0068265	Ω	100.77736		-0.25044918		+0.90080033
<i>e</i>	0.1148505	<i>i</i>	11.69789		-0.29808381		+0.27685860
<i>P</i>	5.21	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 07 21	413	0.3+	0.8-	1998 07 30	428	0.2+	0.2+	1998 10 21	428	0.2-	0.8-
1977 07 21	413	0.2+	0.2-	1998 07 31	428	0.0	0.1+	1998 10 21	428	0.6+	0.6-
1987 06 02	413	1.7-	0.3-	1998 07 31	428	0.0	0.3+	1998 11 17	428	0.2-	1.1+
1987 06 02	413	0.3+	0.4+	1998 08 02	428	0.3+	0.1-	1998 11 17	428	0.5+	0.9+
1997 02 05	327	0.0	0.0	1998 08 10	428	0.1+	1.3-	1999 09 18	428	0.3-	0.8+
1997 02 05	327	1.2+	0.3+	1998 08 10	428	0.3-	1.3-	1999 09 18	428	0.0	0.5+
1997 02 05	327	0.5+	0.4+	1998 08 30	428	0.5-	0.4-	1999 09 19	428	0.9+	0.2-
1998 07 04	699	0.0	0.8+	1998 08 30	428	0.5-	0.3-	1999 09 19	428	0.3-	0.3-
1998 07 04	699	0.3+	1.3+	1998 09 13	428	0.1+	0.0	1999 10 04	428	0.2-	0.6-
1998 07 04	699	0.5+	1.5+	1998 09 13	428	0.4+	0.0	1999 10 19	704	0.7+	0.5+
1998 07 29	428	0.5-	0.3+	1998 09 25	428	0.5-	0.1-	1999 10 19	704	0.1+	0.2+
1998 07 29	428	0.1-	0.3+	1998 09 25	428	0.4-	0.4+	1999 10 19	704	0.1-	0.2-
1998 07 29	428	0.4+	0.5+	1998 10 07	428	0.1-	0.4-	1999 10 19	704	0.5-	0.2+
1998 07 30	428	0.1-	0.0	1998 10 07	428	0.1-	0.4-	1999 10 19	704	1.1-	0.0

(12114)* 1998 QJ₈ = 1927 BM = 1991 JS₂

Discovered 1998 Aug. 17 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Gnädig (*MPC* 32974), G. V. Williams (*ibid.*, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	338.84444		(2000.0)		P		Q
<i>n</i>	0.17415811	ω	276.80067		+0.51959985		-0.83891380
<i>a</i>	3.1757057	Ω	140.48721		+0.84936565		+0.48659384
<i>e</i>	0.1764242	<i>i</i>	14.74962		+0.09270378		+0.24382385
<i>P</i>	5.66	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1927 01 28	024(82.2-	39.2-)X	1998 08 17	704	0.4+	0.6+	1998 09 14	699	0.6+	0.8-	
1950 03 21	675	0.1+	0.5-	1998 08 17	704	0.8-	0.4+	1998 09 14	699	0.6+	0.4+
1950 03 22	675	0.2-	0.3-	1998 08 17	704	0.2+	0.0	1999 09 14	704	0.2-	0.6+
1976 11 16	413	0.1-	0.6-	1998 08 17	704	0.5+	0.3-	1999 09 14	704	0.0	0.6+
1982 09 24	413	0.0	0.1+	1998 08 17	704	0.0	0.2-	1999 09 14	704	0.3+	1.0+
1982 09 24	413	0.2+	0.8-	1998 08 23	704	1.1-	0.4+	1999 09 14	704	0.7+	0.7+
1991 05 08	413	(6.6+	2.0-)	1998 08 23	704	1.9-	0.6+	1999 09 14	704	0.4+	0.6+
1991 05 18	413	0.5-	0.3-	1998 08 23	704	1.0-	0.4-	1999 10 08	704	0.4-	0.3-
1991 05 18	413	0.7+	0.3-	1998 08 23	704	(2.6-	0.6+)	1999 10 08	704	0.7-	0.2-
1993 10 13	675	0.6+	1.0-	1998 08 23	704	(3.3-	0.8-)	1999 10 08	704	0.4-	0.1-
1993 10 13	675	0.4+	0.1-	1998 08 27	699	0.1-	1.0+	1999 10 08	704	0.0	0.4-
1998 07 14	699	0.5-	0.5+	1998 08 27	699	0.7+	1.0-	1999 10 08	704	0.3-	0.4-
1998 07 14	699	0.4+	0.3-	1998 08 27	699	0.0	0.7+				
1998 07 14	699	1.0+	1.5-	1998 09 14	699	0.6+	0.0				

(12115)* 1998 SD₂ = 1998 MA₁₃ = 1982 UN₃ = 1988 UD₁ = 1997 GC₁₆

Discovered 1998 Sept. 16 by the Catalina Sky Survey.

Id. A. Doppler (*MPC* 33013)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	175.53890		(2000.0)		P		Q
<i>n</i>	0.17093478	ω	332.82358		-0.94144982		-0.33442096
<i>a</i>	3.2155043	Ω	188.00389		+0.33708043		-0.93625775
<i>e</i>	0.1004818	<i>i</i>	17.91681		-0.00700194		-0.10762918
<i>P</i>	5.77	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 10 19	033	0.1-	0.5-	1998 09 24	118	0.2-	0.5+	1999 09 13	704	0.1-	0.5-
1982 10 19	033	0.1+	0.6-	1998 09 24	557	0.5-	0.2-	1999 09 14	704	0.7+	0.0
1988 10 17	071	0.9+	1.9+	1998 09 24	557	0.6-	0.3-	1999 09 14	704	0.9+	0.6-
1988 10 17	071	0.5-	0.4-	1998 09 24	118	0.3-	0.5+	1999 09 14	704	0.8+	0.6-
1993 09 12	675	0.2+	0.9+	1998 09 24	557	0.2-	0.3-	1999 09 14	704	0.9+	0.6-
1993 09 12	675	1.3+	0.3+	1998 09 24	557	0.1-	0.7-	1999 09 14	704	0.6+	0.5-
1994 10 06	691	0.9-	0.1-	1998 09 24	046	0.2-	0.2-	1999 09 14	704	0.6+	0.2-
1994 10 06	691	0.9-	0.1-	1998 09 24	046	0.4-	0.6-	1999 09 14	704	0.5+	0.2+
1994 10 06	691	0.9-	0.0	1998 09 24	046	0.2-	0.6-	1999 09 14	704	0.8+	0.3-
1997 04 03	704	0.4+	0.7+	1998 09 24	046	0.1-	0.6-	1999 09 14	704	0.6+	0.5-
1997 04 03	704	0.4+	0.9+	1999 09 05	703	0.0	0.3+	1999 09 14	704	0.8+	0.4-
1997 04 05	704	0.1+	0.4-	1999 09 05	703	0.8-	0.4+	1999 09 30	703	0.0	0.4+
1997 04 05	704	0.5+	0.8+	1999 09 05	703	0.8-	0.4+	1999 09 30	703	0.6-	0.2+
1998 06 19	704	0.1-	0.5-	1999 09 05	703	1.2-	0.2+	1999 09 30	703	0.7-	0.3+
1998 06 19	704	1.1+	0.3+	1999 09 08	699	0.3-	1.1+	1999 09 30	703	0.2-	0.3+
1998 06 19	704	(2.1-	0.8-)	1999 09 08	699	0.4-	0.3+	1999 10 02	703	0.4-	0.3+
1998 06 19	704	1.0-	1.8-	1999 09 08	704	0.8+	0.6-	1999 10 02	703	0.6-	0.2-
1998 06 25	704	0.7-	0.1-	1999 09 08	704	0.6+	0.9-	1999 10 02	703	0.4-	0.2+
1998 06 25	704	(2.8+	0.6+)	1999 09 08	699	1.1-	0.5+	1999 10 02	703	0.6-	0.0
1998 06 25	704	(1.0+	3.2+)	1999 09 08	704	1.1+	0.2-	1999 10 02	704	0.6-	0.4+
1998 06 25	704	1.3+	0.7+	1999 09 08	704	0.6+	0.0	1999 10 02	704	1.0-	0.9+
1998 06 25	704	0.5-	0.3+	1999 09 08	704	1.0+	0.0	1999 10 02	704	0.9-	0.8+
1998 09 16	703	1.4-	0.2+	1999 09 09	704	1.2+	0.3-	1999 10 02	704	0.3-	0.5+
1998 09 16	703	1.3-	0.2+	1999 09 09	704	0.7+	0.4-	1999 10 02	704	0.9-	0.7+
1998 09 16	703	1.9+	1.6+	1999 09 09	704	1.2+	0.1+	1999 10 07	649	0.8-	0.0
1998 09 18	703	0.2-	0.6+	1999 09 09	704	0.5+	0.0	1999 10 07	649	0.3+	0.1+
1998 09 18	703	0.3+	0.6+	1999 09 09	704	1.1+	0.0	1999 10 07	649	0.8-	0.1-
1998 09 18	703	0.6+	0.5+	1999 09 10	704	0.2+	0.3+	1999 10 08	704	0.4-	0.5+
1998 09 23	703	(0.2+	12.1+)	1999 09 10	704	0.4+	0.1+	1999 10 08	704	0.5-	0.5+
1998 09 23	703	(0.7-	12.4+)	1999 09 10	704	0.2-	0.5-	1999 10 08	704	0.8-	0.4+
1998 09 24	426	0.6-	0.7-	1999 09 13	704	0.4+	0.8-	1999 10 08	704	0.3-	0.9+
1998 09 24	426	0.0	0.7-	1999 09 13	704	0.4+	0.5-	1999 10 08	704	0.6-	0.4+
1998 09 24	426	1.1-	0.3-	1999 09 13	704	0.4+	0.6-				
1998 09 24	118	0.4-	0.3+	1999 09 13	704	0.4+	0.6-				

(12116)* 1999 JA₃₄ = 1985 XR₂ = 1992 BZ₄ = 1996 SZ₆

Discovered 1999 May 10 by the Lincoln Laboratory Near-Earth Asteroid

Research Team at Socorro.

Id. A. Doppler (*MPC* 35366), A. Gnädig (*ibid.*), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	73.94414		(2000.0)		P		Q
<i>n</i>	0.17056982	ω	263.17296		-0.94946649		-0.27564435
<i>a</i>	3.2200893	Ω	260.74525		+0.31251623		-0.87459089
<i>e</i>	0.0480774	<i>i</i>	8.74816		-0.02910291		-0.39888715
<i>P</i>	5.78	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 05 21	413	0.3-	0.6-	1996 09 19	327	0.5+	0.4+	1999 05 13	704	0.1-	0.3+
1976 05 21	413	0.2+	0.2-	1996 09 19	327	0.0	0.1+	1999 05 13	704	0.1+	0.4+
1976 05 31	413	0.3-	1.0-	1996 09 19	327	0.5+	0.3+	1999 05 13	704	1.2-	0.0
1976 05 31	413	0.7+	1.8-	1996 09 19	327	0.5+	0.3+	1999 05 13	704	0.8+	1.8+
1985 12 14	675(56.4+	0.1+)		1996 09 22	327	0.3+	0.1-	1999 05 13	704	0.4+	1.5+
1985 12 14	675(63.1+	1.0+)		1996 09 22	327	0.0	0.2-	1999 05 18	704	0.1-	0.3+
1990 10 16	675	1.6-	0.7+	1996 09 22	327	0.5+	0.6+	1999 05 18	704	0.3+	0.1+
1990 10 16	675	0.1+	0.4-	1996 09 22	327	0.4+	0.1-	1999 05 18	704	0.8-	0.8+
1992 01 26	691	0.2+	0.0	1998 01 25	566	0.4-	0.0	1999 05 18	704	0.4-	0.4+
1992 01 26	691	0.3-	0.2+	1998 01 25	566	0.5-	0.0	1999 05 18	704	0.6-	0.2+
1992 01 26	691	0.5-	0.0	1998 01 25	566	0.7-	0.0	1999 05 19	704	0.9-	1.7-
1992 01 28	691	0.2-	0.1-	1998 02 26	566	1.1+	0.2+	1999 05 19	704	0.8+	0.8+
1992 01 28	691	0.0	0.1+	1998 02 26	566	1.0+	0.0	1999 05 19	704	1.5+	0.6+
1992 01 30	809	1.3-	0.3-	1998 02 26	566	0.9+	0.1-	1999 05 19	704	0.5+	0.7+
1992 02 02	809	(2.6+	4.1+)	1999 05 10	704	0.6+	0.3-	1999 05 19	704	0.3-	0.9-
1992 02 02	809	(0.8+	2.9+)	1999 05 10	704	0.2-	0.2+	1999 06 06	699	0.5-	0.3-
1992 02 02	809	(0.5+	3.1+)	1999 05 10	704	0.7-	1.1+	1999 06 06	699	0.2+	0.1-

1993 04 17 413 1.0- 0.6- 1999 05 10 704 0.2+ 0.3- 1999 06 06 699 0.4+ 0.2+
 1993 04 17 413 0.3+ 1.1- 1999 05 10 704 0.5+ 0.6+

(12117)* 1999 JT₆₀ = 1987 ER = 1991 HV₁ = 1997 XQ₁₂

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

Id. G. V. Williams (*MPC* 35012), A. Doppler (*MPC* 35372)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	67.89610		(2000.0)	P	Q
<i>n</i>	0.25469910	ω	19.67131	-0.99930549	-0.03168675
<i>a</i>	2.4648157	Ω	158.48455	+0.02277718	-0.93588313
<i>e</i>	0.1779789	<i>i</i>	3.06475	+0.02949123	-0.35088276
<i>P</i>	3.87	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1987 03 03	688	0.7+	1.0-	1999 02 20	704	0.0	1.9-	1999 05 19	704	0.3-	0.4+
1987 03 03	688	0.5+	1.7+	1999 02 20	704	1.3-	0.6-	1999 05 19	704	0.7+	0.2-
1991 04 19	809	0.6-	0.3+	1999 02 20	704	(4.1-	0.0)	1999 05 19	704	0.5-	0.5+
1991 04 19	809	1.1-	0.2-	1999 05 10	704	0.6+	0.3-	1999 06 06	699	0.5+	0.4+
1991 04 19	809	(2.4-	0.2+)	1999 05 10	704	0.5-	0.6-	1999 06 06	699	0.8+	0.2+
1993 11 20	691	0.7+	0.3+	1999 05 10	704	0.3+	1.1-	1999 06 06	699	0.2+	0.6-
1993 11 20	691	0.5+	0.1+	1999 05 10	704	0.2-	0.5-	1999 06 09	704	0.0	0.9+
1993 11 20	691	0.1+	0.4+	1999 05 10	704	0.6+	0.7-	1999 06 09	704	0.0	0.4-
1996 09 08	566	0.3-	0.4-	1999 05 13	704	0.1-	0.6-	1999 06 09	704	0.0	0.7+
1996 09 08	566	0.1-	0.1-	1999 05 13	704	0.4-	0.3+	1999 06 09	704	0.6-	0.1-
1996 09 08	566	0.3-	0.4-	1999 05 13	704	0.9+	0.4+	1999 06 09	704	0.1+	0.5-
1997 12 04	704	0.1+	0.0	1999 05 13	704	0.3-	0.7-	1999 06 11	703	1.3+	0.3+
1997 12 04	704	(0.6+	2.1+)	1999 05 13	704	0.5+	0.5+	1999 06 11	703	0.6-	0.8-
1997 12 04	704	0.3-	0.0	1999 05 14	704	0.1+	1.4+	1999 06 11	703	0.4-	0.3+
1997 12 04	704	(2.5-	0.6+)	1999 05 14	704	0.2-	0.8-	1999 06 11	703	0.7-	0.1+
1997 12 04	704	1.0-	0.8+	1999 05 14	704	0.3-	0.1-	1999 06 11	703	0.6-	0.1+
1997 12 05	704	(2.1+	0.5-)	1999 05 14	704	0.7+	0.2+	1999 06 11	703	0.9-	0.6+
1997 12 05	704	1.3+	0.8-	1999 05 14	704	0.3+	0.2+	1999 06 11	703	0.5-	0.2-
1997 12 05	704	0.4-	0.2-	1999 05 18	704	0.1+	0.1+	1999 06 11	703	0.3-	0.4+
1997 12 05	704	(1.1+	2.2+)	1999 05 18	704	1.0+	0.3-	1999 06 15	704	0.7-	0.7+
1997 12 05	704	1.6+	0.6+	1999 05 18	704	0.1-	0.5-	1999 06 15	704	0.2+	0.8+
1997 12 30	566	0.9-	0.4-	1999 05 18	704	1.7+	0.4-	1999 06 15	704	0.4-	0.2-
1997 12 30	566	0.7-	0.7-	1999 05 18	704	0.1+	1.1+	1999 06 15	704	0.4-	0.6-
1997 12 30	566	0.8-	0.1-	1999 05 19	704	0.2-	0.3+	1999 06 15	704	0.8+	0.1+
1999 02 20	704	(2.2-	2.1-)	1999 05 19	704	0.3-	0.7+				

(12118)* 1999 NC₉ = 1976 YM₇ = 1977 AP = 1992 OG₈ = 1998 FM₁₃

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

Id. A. Doppler (*MPC* 36010), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	152.01127		(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-				

(12119)* 1999 NG₉ = 1982 VQ₁₁ = 1998 HW₁₂₇

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

Id. A. Doppler (*MPC* 36011), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	264.44416		(2000.0)	P	Q
<i>n</i>	0.28324798	ω	108.60772	+0.41482103	-0.90643429
<i>a</i>	2.2962799	Ω	316.60935	+0.78519404	+0.40068191
<i>e</i>	0.1116878	<i>i</i>	6.63500	+0.45977586	+0.13353237
<i>P</i>	3.48	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1982 11 09	095	0.5-	0.4+	1998 04 18	704	0.0	0.3+	1999 09 07	704	0.7+	0.3-
1993 11 21	691	0.2-	0.2-	1998 04 20	704	0.2+	0.7+	1999 09 07	704	0.4+	0.3+
1993 11 21	691	0.2-	0.2-	1998 04 20	704	0.0	1.3-	1999 09 07	704	0.3+	0.0
1993 11 21	691	0.8-	0.1-	1998 04 20	704	1.1+	1.0+	1999 09 07	704	0.2-	0.2-
1994 01 11	691	0.6+	0.0	1998 04 20	704	1.4+	0.3-	1999 09 07	704	0.3+	0.6-
1994 01 11	691	0.1+	0.4+	1999 07 13	704	0.1-	0.2+	1999 09 13	704	0.3+	0.3+
1994 01 11	691	0.1+	0.1-	1999 07 13	704	0.4-	0.1-	1999 09 13	704	0.4-	0.2+
1994 02 11	675	1.0+	1.6-	1999 07 13	704	0.3+	0.4-	1999 09 13	704	0.5-	0.0
1994 02 11	675	0.0	0.3-	1999 07 13	704	0.5-	0.0	1999 09 13	704	0.4+	0.0
1997 01 02	327	0.5-	0.5-	1999 07 13	704	0.1+	0.2+	1999 09 13	704	0.7-	0.9+
1997 01 02	327	0.4-	0.6-	1999 07 16	704	0.2-	0.5-	1999 10 06	704	0.0	0.1-
1997 01 02	327	0.3-	0.5-	1999 07 16	704	0.3-	0.3-	1999 10 06	704	1.2+	0.9-
1998 04 01	704	0.8-	0.8+	1999 07 16	704	0.7-	0.4-	1999 10 06	704	0.7+	0.7-
1998 04 01	704	0.9-	0.6+	1999 09 05	699	0.7-	0.0	1999 10 06	704	0.3+	0.5+
1998 04 01	704	0.2-	0.2+	1999 09 05	699	0.2-	0.2+	1999 10 06	704	0.6+	0.2+
1998 04 01	704	1.9-	0.9-	1999 09 05	699	0.0	0.4+	1999 10 15	704	0.5+	0.0
1998 04 18	704	0.5+	0.5-	1999 09 06	691	0.7+	0.0	1999 10 15	704	0.2-	0.8-
1998 04 18	704	0.2-	0.8-	1999 09 06	691	0.4+	0.3+	1999 10 15	704	0.6+	0.4-
1998 04 18	704	1.1-	0.5-	1999 09 06	691	(3.0+	5.2-)	1999 10 15	704	0.4+	0.6-

(12120)* 1999 NQ₄₁ = 1992 GQ₄ = 1993 TR₂₁ = 1996 TT₅₂ = 1998 FO₁₇

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

Id. G. V. Williams (*MPC* 36016)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	302.36812		(2000.0)	P	Q
<i>n</i>	0.31013689	ω	358.61342	+0.94144326	-0.33608432
<i>a</i>	2.1615590	Ω	21.08703	+0.31006802	+0.83145522
<i>e</i>	0.0128230	<i>i</i>	4.31239	+0.13244773	+0.44241332
<i>P</i>	3.18	<i>H</i>	15.0	<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	0.4-	0.4+	1999 08 13	703	1.4-	0.1-
1992 04 04	809	1.3-	0.2-	1998 03 20	704	0.3-	1.1-	1999 08 13	703	0.1-	0.0
1992 04 04	809	(3.7-	0.4+)	1998 03 20	704	1.1-	1.1-	1999 08 13	703	0.2+	0.4+
1992 04 06	809	1.2+	1.0-	1998 03 20	704	0.2-	1.1+	1999 08 13	703	0.9-	0.2-
1992 04 06	809	0.7-	0.9-	1998 03 20	704	0.3+	0.1+	1999 09 03	699	0.2+	0.3-
1992 04 06	809	0.0	1.2-	1998 03 20	704	0.9-	0.7-	1999 09 03	699	0.5-	0.9-
1993 10 10	675	0.4+	1.8-	1998 03 22	704	0.1+	0.3-	1999 09 03	699	0.1-	0.8-
199											

1996 10 05	809	1.0–	0.3+	1999 07 14	704	0.9+	0.3+	1999 09 11	704	0.2–	0.7–
1996 10 05	809	0.7–	0.3+	1999 07 14	704	0.1–	0.5+	1999 09 11	704	0.4–	0.6–
1996 10 06	809	0.1+	1.8–	1999 07 14	704	0.4+	0.0	1999 10 15	704	0.8+	0.0
1996 10 06	809	(0.6–	2.3–)	1999 07 14	704	0.4–	0.6–	1999 10 15	704	1.1+	0.4–
1996 10 06	809	(0.7–	2.4–)	1999 07 16	704	0.2+	0.5–	1999 10 15	704	0.6+	0.3+
1998 02 25	566	0.1–	0.3+	1999 07 16	704	1.6+	0.2–	1999 10 15	704	0.4+	0.0
1998 02 25	566	0.1–	0.3+	1999 07 16	704	1.5+	0.6–	1999 10 15	704	0.0	0.5+

(12121)* 1999 NX₄₈ = 1995 QJ₉ = 1996 TJ₃₆ = 1998 FZ₂₂

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

Id. G. V. Williams (*MPC* 36016)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	89.92810		(2000.0)	P	Q
<i>n</i>	0.24096735	ω	42.93120	−0.86354095	+0.50142631
<i>a</i>	2.5575880	Ω	166.85356	−0.50244107	−0.84646822
<i>e</i>	0.1130324	<i>i</i>	13.62053	−0.04301168	−0.17906203
<i>P</i>	4.09	<i>H</i>	14.0	<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–	1999 07 13	704	0.6–	0.2–
1994 03 12	691	0.2+	0.2+	1998 03 20	704	0.4+	0.1+	1999 07 13	704	0.6–	0.1–
1994 03 12	691	0.7+	0.5+	1998 03 20	704	0.5+	0.2–	1999 07 19	704	0.3–	0.2+
1994 04 03	691	0.2+	0.4–	1998 03 22	704	0.7–	0.4+	1999 07 19	704	0.2–	0.2–
1994 04 03	691	0.3+	0.4–	1998 03 22	704	0.3–	0.3–	1999 07 19	704	0.5–	0.1+
1994 04 03	691	0.3+	0.4–	1998 03 22	704	0.5–	0.2+	1999 09 08	704	0.5+	1.6+
1995 08 28	691	0.4–	0.2–	1998 03 22	704	0.1+	0.2–	1999 09 08	704	1.0+	0.3+
1995 08 28	691	0.9–	0.4–	1998 03 22	704	0.4–	0.1–	1999 09 08	704	0.2+	0.4–
1995 08 28	691	0.3–	0.0	1998 03 24	566	0.1–	0.9–	1999 09 08	704	0.1+	0.7–
1995 09 02	691	0.6–	0.2–	1998 03 24	566	0.5–	0.7–	1999 09 09	704	0.4+	0.5–
1995 09 02	691	0.3–	0.4–	1998 03 24	566	0.5–	1.0–	1999 09 09	704	0.3+	0.1+
1995 09 02	691	0.3–	0.4–	1998 03 26	704	0.4–	0.0	1999 09 09	704	0.4+	0.1+
1996 10 11	691	0.2+	0.1–	1998 03 26	704	0.8–	0.9+	1999 09 09	704	0.2+	0.1+
1996 10 11	691	0.0	0.1–	1998 03 26	704	0.8–	0.3–	1999 09 09	704	1.0+	0.3–
1996 10 15	691	0.2+	0.1+	1998 04 18	704	0.3+	0.2–	1999 09 13	704	0.7+	0.1+
1996 10 15	691	0.2+	0.1+	1998 04 18	704	0.3+	1.1+	1999 09 13	704	0.5+	0.8+
1996 10 15	691	0.3+	0.1–	1998 04 18	704	0.2+	1.8+	1999 09 13	704	0.3–	0.1–
1998 02 24	566	0.4+	0.1–	1998 04 18	704	1.4+	0.2+	1999 09 13	704	0.1+	0.2+
1998 02 24	566	0.2+	0.0	1998 04 18	704	(0.3+	2.9+)	1999 10 15	704	0.0	0.2+
1998 02 24	566	0.2+	0.2–	1999 07 13	704	0.5–	0.2–	1999 10 15	704	0.3+	0.5–
1998 03 20	704	0.3–	0.2+	1999 07 13	704	0.1+	0.2–	1999 10 15	704	0.5+	0.3+
1998 03 20	704	0.4–	0.4–	1999 07 13	704	0.5–	0.2–	1999 10 15	704	0.7+	0.0

(12122)* 1999 NV₅₅ = 1964 WZ = 1995 UT₄₇ = 1998 KY₃₅

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

Id. G. V. Williams (*MPC* 36020)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	148.66434		(2000.0)	P	Q
<i>n</i>	0.19072651	ω	290.19071	−0.98089682	−0.08004060
<i>a</i>	2.9890190	Ω	245.56411	+0.13380021	−0.93919339
<i>e</i>	0.0248029	<i>i</i>	11.22972	−0.14120530	−0.33393005
<i>P</i>	5.17	<i>H</i>	12.6	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1964 11 27	330	0.0	1.1–	1998 07 01	691	0.5–	0.4+	1999 09 09	704	0.1–	0.4–
1995 10 24	033	0.3–	0.4+	1998 07 13	699	0.3–	1.0+	1999 09 10	704	0.3–	0.1–
1995 10 25	033	1.1–	0.2+	1998 07 13	699	0.2+	0.5+	1999 09 10	704	0.3+	0.5+
1995 10 25	033	1.2+	0.3–	1998 07 13	699	1.7–	0.6–	1999 09 10	704	0.1+	0.4–
1995 10 26	033	0.4+	0.6+	1999 07 12	704	0.7+	0.6–	1999 09 14	704	0.2–	0.0
1998 05 22	704	0.7+	0.6–	1999 07 12	704	1.3–	0.9–	1999 09 14	704	0.1–	0.1–
1998 05 22	704	0.1+	0.8–	1999 07 12	704	0.1+	0.9–	1999 09 14	704	0.2+	0.2–
1998 05 22	704	0.6+	0.4–	1999 07 12	704	0.5+	0.2+	1999 09 14	704	0.0	0.1–
1998 05 22	704	0.8+	1.2–	1999 07 12	704	1.2–	0.1–	1999 09 14	704	0.9–	0.5–
1998 05 22	704	(1.4+	2.3–)	1999 07 22	704	0.5+	0.1–	1999 09 19	699	0.2–	1.0+

1998 05 24	704	1.0+	0.9–	1999 07 22	704	0.5+	0.4+	1999 09 19	699	0.8–	0.7+
1998 05 24	704	0.3+	0.5–	1999 07 22	704	0.1–	0.6+	1999 09 19	699	0.6+	1.3+
1998 05 24	704	0.4+	0.5–	1999 07 22	704	0.1+	0.0	1999 10 02	704	0.7+	0.9–
1998 05 24	704	0.3+	1.0–	1999 07 22	704	1.0+	0.0	1999 10 02	704	0.1+	0.3+
1998 05 24	704	0.0	0.9–	1999 09 07	699	0.6–	0.4+	1999 10 02	704	0.4+	0.0
1998 06 18	704	1.5–	0.1–	1999 09 07	699	0.2–	0.0	1999 10 02	704	0.5+	1.1–
1998 06 18	704	0.0	0.9+	1999 09 07	699	0.2–	0.2+	1999 10 02	704	1.4–	1.5–
1998 06 18	704	0.7+	1.9+	1999 09 08	704	0.1+	0.9+	1999 10 08	704	0.1+	0.8+
1998 06 18	704	(3.2–	1.5–)	1999 09 08	704	0.2+	0.2+	1999 10 08	704	0.6+	0.3–
1998 06 29	699	0.2–	0.6+	1999 09 08	704	0.1–	0.2–	1999 10 08	704	0.5+	0.3–
1998 06 29	699	0.4–	0.8+	1999 09 09	704	0.1+	0.1+	1999 10 08	704	0.1+	0.4+
1998 06 29	699	0.3+	0.8+	1999 09 09	704	0.3+	0.2+	1999 10 08	704	0.6+	0.6–
1998 07 01	691	0.5–	0.6+	1999 09 09	704	0.1+	0.1–				
1998 07 01	691	0.6–	0.7+	1999 09 09	704	0.1+	0.1–				

(12123)* 1999 OS = 1984 UZ₁ = 1997 BP₈

Discovered 1999 July 18 at Višnjan.

Id. S. Nakano (*MPC* 36023)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.20995		(2000.0)	P	Q
<i>n</i>	0.25892975	ω	206.71947	+0.89369674	−0.44867152
<i>a</i>	2.4378936	Ω	179.93897	+0.41853573	+0.83363551
<i>e</i>	0.1962292	<i>i</i>	2.31525	+0.16166006	+0.32209580
<i>P</i>	3.81	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1984 10 29	688	0.5+	0.5-	1999 08 03	595	0.1-	0.5-	1999 09 14	704	0.4-	0.1-
1984 10 29	688	0.4+	2.1-	1999 08 07	595	0.2+	0.2-	1999 09 14	704	0.4-	0.1-
1984 10 31	688	(2.8-	1.2-)	1999 09 07	704	0.2+	0.3+	1999 09 14	703	0.2-	0.4+
1984 10 31	688	0.3+	1.1-	1999 09 07	704	0.1+	0.4+	1999 09 14	703	0.3-	0.5+
1994 03 15	691	0.8-	0.1-	1999 09 07	704	0.1-	0.3+	1999 09 14	703	0.5-	0.6+
1994 03 15	691	0.7-	0.0	1999 09 07	704	0.2+	0.8+	1999 09 14	703	0.4-	0.4+
1994 03 15	691	0.4-	0.0	1999 09 07	704	0.1+	0.5+	1999 09 17	691	0.4-	0.0
1997 01 31	691	0.2+	0.2+	1999 09 08	704	0.1-	0.1-	1999 09 17	691	0.6-	0.3+
1997 01 31	691	0.2+	0.0	1999 09 08	704	0.3-	0.0	1999 09 17	691	0.5-	0.6+
1997 01 31	691	0.2+	0.3+	1999 09 08	704	(0.6-	3.0+)	1999 09 30	699	0.0	0.7+
1997 02 11	691	0.1-	0.3-	1999 09 08	704	0.4-	0.7-	1999 09 30	699	0.2+	0.7+
1997 02 11	691	0.2-	0.1-	1999 09 08	704	0.0	0.2+	1999 09 30	699	0.1-	1.1+
1998 05 01	704	0.4-	0.6-	1999 09 09	704	0.3+	0.2-	1999 10 02	704	0.3+	0.1-
1998 05 01	704	0.6+	1.3-	1999 09 09	704	0.7+	0.2-	1999 10 02	704	0.5-	0.1-
1998 05 01	704	0.8-	0.7-	1999 09 09	704	0.2-	0.6-	1999 10 02	704	0.3+	0.2-
1998 05 01	704	0.3-	0.3+	1999 09 09	704	(0.8-	2.3-)	1999 10 02	704	0.3+	0.1-
1998 05 01	704	0.4-	1.0+	1999 09 09	704	(1.4-	2.2-)	1999 10 02	704	2.0-	0.3+
1998 05 02	566	0.7-	0.8-	1999 09 11	704	0.2-	0.1+	1999 10 05	704	0.3+	0.1+
1998 05 02	566	0.6+	0.8-	1999 09 11	704	0.1-	0.1-	1999 10 05	704	0.2+	0.2+
1998 05 02	566	0.9-	1.0-	1999 09 11	704	0.2-	0.1-	1999 10 05	704	0.4-	0.1-
1998 05 22	704	0.2-	0.1+	1999 09 11	704	0.0	0.2-	1999 10 05	704	0.4+	0.5+
1998 05 22	704	1.1+	0.7-	1999 09 11	704	0.1-	0.0	1999 10 05	704	0.1-	0.1-
1998 05 22	704	0.9+	0.4+	1999 09 11	704	0.3-	0.1+	1999 10 07	704	0.5+	0.1+
1998 05 22	704	2.1+	0.3+	1999 09 11	704	0.0	0.2+	1999 10 07	704	0.1+	0.5-
1998 05 22	704	1.4-	0.4-	1999 09 11	704	0.2+	0.1-	1999 10 07	704	0.1+	0.2+
1999 07 16	704	0.3-	0.3+	1999 09 11	704	0.1-	0.1+	1999 10 07	704	0.5+	0.2-
1999 07 16	704	0.3-	0.1-	1999 09 11	704	0.6+	0.3+	1999 10 07	704	0.1+	0.0
1999 07 16	704	0.5+	0.7-	1999 09 11	704	0.4+	0.2-	1999 10 08	704	0.0	0.0
1999 07 16	704	0.4+	0.0	1999 09 11	704	0.3+	0.2-	1999 10 08	704	0.8+	0.9+
1999 07 18	120	0.6+	1.0+	1999 09 11	704	0.2+	1.1-	1999 10 08	704	0.5-	0.1-
1999 07 18	120	0.7+	0.0	1999 09 11	704	0.1-	0.8-	1999 10 15	704	0.5+	0.7+
1999 07 19	120	1.9+	0.5-	1999 09 11	704	0.6-	0.5-	1999 10 15	704	1.0+	0.9-
1999 07 19	120	0.8+	0.1-	1999 09 14	704	0.2-	0.2-	1999 10 15	704	1.0+	1.2-
1999 07 19	120	0.2-	0.2+	1999 09 14	704	0.2-	0.2-	1999 10 15	704	1.0-	1.8-
1999 08 03	595	1.1-	0.0	1999 09 14	704	0.5-	0.2-				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	356.55778	(2000.0)	P		Q	
<i>n</i>	0.19985743	ω	175.39465	+0.99362066	+0.11276853	
<i>a</i>	2.8972714	Ω	178.12932	-0.10452709	+0.92462069	
<i>e</i>	0.0775136	<i>i</i>	1.95481	-0.04233284	+0.36381292	
<i>P</i>	4.93	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1979 08 22	809	(0.9- 2.8-)	1999 07 16	704	0.1- 0.8+	1999 09 14	703	0.0	0.0
1979 08 22	809	0.6+ 1.6-	1999 07 16	704	1.1+ 0.8-	1999 09 14	703	0.2+ 0.4+	
1979 08 22	809	0.3- 2.1-	1999 08 22	703	0.1+ 1.3+	1999 09 14	703	0.5- 0.1+	
1979 08 23	809	1.4+ 0.8+	1999 08 22	703	0.5+ 0.3+	1999 09 14	703	0.2+ 0.2-	
1979 08 23	809	0.7+ 0.2-	1999 08 22	703	0.5+ 0.7+	1999 09 14	703	0.8- 0.2-	
1979 08 26	809	1.0+ 0.3+	1999 08 22	699	0.6- 0.5+	1999 09 14	703	0.8+ 0.2+	
1979 08 26	809	0.2- 0.1+	1999 08 22	703	1.2+ 0.3+	1999 10 02	704	0.1+ 0.6-	
1979 08 26	809	0.3- 0.4+	1999 08 22	699	0.2+ 0.1+	1999 10 02	704	0.3- 1.1-	
1979 08 30	809	0.7- 0.0	1999 08 22	699	0.9- 0.4+	1999 10 02	704	1.0- 1.0-	
1979 08 30	809	1.0- 0.6-	1999 09 06	120	0.7+ 0.4-	1999 10 02	704	1.5- 0.2-	
1992 04 03	033	0.0 0.9+	1999 09 06	120	0.2- 0.2+	1999 10 02	704	0.4- 0.1+	
1992 04 03	033	0.2+ 0.1-	1999 09 07	120	0.4+ 1.4+	1999 10 05	704	0.1- 0.2-	
1994 09 11	691	0.3- 0.4+	1999 09 07	704	0.7+ 0.2+	1999 10 05	704	0.3- 0.5-	
1994 09 11	691	0.5- 0.1+	1999 09 07	704	0.5+ 0.5+	1999 10 05	704	0.4- 0.4-	
1994 09 11	691	0.5- 0.2+	1999 09 07	704	0.9+ 0.2-	1999 10 05	704	0.7- 0.6-	
1998 05 22	704	(2.4+ 2.1+)	1999 09 07	704	0.0 1.0+	1999 10 05	704	0.7- 0.5-	
1998 05 22	704	0.0 0.5+	1999 09 07	704	0.8- 0.6+	1999 10 07	704	0.6- 0.1-	
1998 05 22	704	0.2- 1.0+	1999 09 07	120	0.5+ 0.0	1999 10 07	704	0.2- 0.0	
1998 05 22	704	1.7+ 0.7-	1999 09 07	120	0.7+ 0.3+	1999 10 07	704	0.2- 0.1+	
1998 06 24	704	0.7- 0.2+	1999 09 11	120	0.2+ 0.3-	1999 10 07	704	0.2+ 0.1-	
1998 06 24	704	(2.4+ 0.5-)	1999 09 11	120	1.7+ 0.2-	1999 10 07	704	0.0 0.1-	
1998 06 24	704	0.9+ 0.4-	1999 09 14	704	0.2+ 0.0	1999 10 15	704	0.5- 0.1-	
1998 06 26	704	1.3- 1.0+	1999 09 14	704	0.2+ 0.1-	1999 10 15	704	0.4- 0.0	
1998 06 26	704	(1.2+ 2.2+)	1999 09 14	704	0.8+ 0.6+	1999 10 15	704	0.7- 0.3-	
1998 06 26	704	0.7- 1.0-	1999 09 14	704	0.1- 0.1+	1999 10 15	704	0.8- 0.3-	
1998 06 26	704	0.7+ 1.0-	1999 09 14	704	0.3+ 0.1+	1999 10 15	704	0.6- 0.2-	
1998 06 26	704	0.4- 1.3+	1999 09 14	703	0.6+ 0.4+				
1999 07 16	704	1.1- 0.6+	1999 09 14	703	0.3+ 0.7+				

(12125)* 1999 RS₄ = 1978 VF₁₀ = 1978 WH₁₃ = 1998 KX₁₈

Discovered 1999 Sept. 3 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 36030)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.21093	(2000.0)	P		Q	
<i>n</i>	0.17944460	ω	235.85691	+0.59273395	+0.80538955	
<i>a</i>	3.1130239	Ω	70.49479	-0.73761873	+0.54472063	
<i>e</i>	0.1810986	<i>i</i>	0.22861	-0.32339616	+0.23372443	
<i>P</i>	5.49	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1978 11 05	675	0.4- 0.1-	1999 08 12	699	0.8- 0.9+	1999 09 14	703	0.1+ 0.5+	
1978 11 06	675	1.7+ 0.3+	1999 08 12	699	0.7+ 0.9+	1999 09 14	703	0.2- 1.2+	
1978 11 07	675	0.8- 0.3+	1999 08 12	699	0.3+ 1.5+	1999 09 14	703	0.5- 0.1-	
1978 11 08	675	(4.7+ 0.0)	1999 09 03	691	0.1+ 0.2+	1999 09 14	703	0.7- 0.1-	
1978 11 29	675	0.6- 0.1+	1999 09 03	691	0.1- 0.3+	1999 09 30	699	0.2+ 1.5+	
1978 11 30	675	(3.7+ 0.1+)	1999 09 03	691	0.2- 0.3+	1999 09 30	699	0.8+ 0.0	
1994 10 27	691	0.1+ 0.3-	1999 09 07	704	0.1+ 0.4+	1999 09 30	699	0.7+ 0.9-	
1994 10 27	691	0.0 0.3-	1999 09 07	704	0.0 0.7+	1999 10 02	704	0.7+ 0.9-	
1994 10 27	691	0.2+ 0.3-	1999 09 07	704	0.1+ 0.2+	1999 10 02	704	0.3+ 1.1-	
1998 04 22	704	0.1- 0.1+	1999 09 07	704	0.1- 0.3+	1999 10 02	704	0.4- 0.9-	
1998 04 22	704	0.5- 0.6+	1999 09 07	704	0.1- 0.2+	1999 10 02	704	1.2+ 1.1-	
1998 04 22	704	0.6+ 0.5-	1999 09 08	691	0.4- 0.4+	1999 10 02	704	0.4+ 0.9-	
1998 04 22	704	0.3- 1.0+	1999 09 08	691	0.4- 0.5+	1999 10 05	704	0.5+ 0.2-	
1998 04 22	704	(4.2- 0.4+)	1999 09 08	691	0.3- 0.3+	1999 10 05	704	0.1- 0.0	
1998 05 01	704	0.3- 0.3-	1999 09 09	704	0.3- 0.3+	1999 10 05	704	0.9- 0.4-	
1998 05 01	704	0.5- 0.9-	1999 09 09	704	0.7+ 0.6+	1999 10 05	704	0.4+ 0.1+	
1998 05 01	704	0.2- 0.4-	1999 09 09	704	0.0 0.9+	1999 10 05	704	0.6- 0.1+	
1998 05 01	704	0.1+ 0.2-	1999 09 09	704	0.4+ 0.6+	1999 10 07	704	0.2+ 0.2-	

1998 05 01	704	0.2- 0.7-	1999 09 09	704	0.7+ 1.1+	1999 10 07	704	0.7+ 1.3-	
1998 05 22	704	1.8+ 1.2-	1999 09 09	120	0.1- 0.2-	1999 10 07	704	0.3+ 1.1-	
1998 05 22	704	0.1- 0.2+	1999 09 09	120	0.0 0.2+	1999 10 07	704	0.5+ 0.7-	
1998 05 22	704	1.3- 0.7-	1999 09 10	120	1.7- 0.2-	1999 10 08	704	0.5+ 0.6-	
1998 05 22	704	0.5+ 0.8-	1999 09 10	120	0.6- 0.6+	1999 10 08	704	0.4- 0.9-	
1998 05 22	704	0.3+ 0.2+	1999 09 10	120	0.7- 0.4+	1999 10 08	704	0.7+ 1.8-	
1998 05 24	704	0.0 0.1+	1999 09 14	704	0.1- 0.1+	1999 10 15	704	0.6+ 0.3-	
1998 05 24	704	0.3- 0.2-	1999 09 14	704	0.7- 0.1+	1999 10 15	704	0.6+ 1.3-	
1998 05 24	704	0.3- 0.3+	1999 09 14	704	0.3- 0.3+	1999 10 15	704	0.4+ 0.1-	
1998 05 24	704	0.1+ 0.9+	1999 09 14	704	0.5- 0.4+	1999 10 15	704	0.5- 1.1-	
1998 05 24	704	0.1- 0.1+	1999 09 14	704	0.1+ 0.4+	1999 10 15	704	0.0 1.5-	

(12126)* 1999 RM₁₁ = A904 RD = 1975 RX₁ = 1978 VH₆ = 1985 JP₁**= 1987 SK₁₅ = 1988 RU₈ = 1996 HJ₂₂**

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 36031)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	21.91440	(2000.0)	P		Q	
<i>n</i>	0.08202855	ω	301.99403	+0.39852097	+0.91714408	
<i>a</i>	5.2459729	Ω	351.48675	-0.82901122	+0.35775525	
<i>e</i>	0.2081962	<i>i</i>	2.04015	-0.39232822	+0.17566423	
<i>P</i>	12.02	<i>H</i>	10.1	<i>G</i>	0.15	<i>U</i>

Residuals in seconds of arc

1904 09 13	754	1.1+ 2.8-	1999 07 16	704	1.8+ 0.0	1999 09 08	704	0.3- 0.3+	
1975 09 06	095	0.4- 0.7+	1999 07 16	704	0.9+ 1.3-	1999 09 08	704	0.4- 0.4-	
1978 11 05	675	0.3- 0.6-	1999 07 16	704	0.4- 1.3-	1999 09 09	704	0.9+ 0.0	
1978 11 06	675	0.2+ 0.3+	1999 07 21	699	0.0 0.5+	1999 09 09	704	0.1- 0.3-	
1978 11 08	675	0.4- 0.1-	1999 07 21	699	0.6- 0.4+	1999 09 09	704	0.3- 0.4-	
1985 05 14	675	(0.6- 3.3-)	1999 07 21	699	0.5- 0.6+	1999 09 09	704	0.4- 0.6+	
1987 09 24	095	(3.0+ 1.4+)	1999 08 07	699	0.2- 0.3+	1999 09 09	704	0.9- 0.1-	
1988 09 12	675	1.1+ 0.7-	1999 08 07	699	0.3- 0.7+	1999 09 09	704	0.3+ 0.5-	
1988 09 12	675	0.6+ 0.2-	1999 08 07	699	0.6- 0.5+	1999 09 09	704	0.1+ 0.2-	
1996 03 18	566	0.1+ 0.6-	1999 08 08	699	0.3- 0.5+	1999 09 09	704	0.1- 0.6-	
1996 03 18	566	0.0 0.3-	1999 08 08	699	0.2- 0.3+	1999 09 09	704	0.4- 0.1+	
1996 03 18	566	0.4- 0.2-	1999 08 08	699	0.2- 0.1+	1999 09 09	704	0.8- 0.6-	
1996 04 22	566	0.2- 0.4-	1999 09 03	691	0.0 0.9+	1999 09 13	704	1.5+ 0.1+	
1996 04 22	566	0.8- 0.3-	1999 09 03	691	0.1- 0.9+	1999 09 13	704	0.2+ 0.1-	
1996 04 22	566	0.1- 0.7-	1999 09 03	691	0.0 0.8+	1999 09 13	704	0.5+ 0.2-	
1996 04 22	566	0.3- 0.1+	1999 09 03	699	1.0+ 0.4+	1999 09 13	704	0.0 1.3-	
1996 04 22	566	0.3+ 0.7-	1999 09 03	699	0.2+ 0.7+	1999 09 13	704	(1.3- 2.0-)	
1996 04 22	566	0.4- 0.3-	1999 09 03	699	0.4- 0.2+	1999 09 29	699	0.6- 0.6+	
1996 04 23	566	0.0 0.2-	1999 09 07	704	0.0 0.3-	1999 09 29	699	0.5+ 0.3-	
1996 04 23	566	0.1- 0.3-	1999 09 07	704	0.2- 0.3-	1999 09 29	699	0.1+ 0.3+	
1996 04 23	566	0.0 0.5-	1999 09 07	704	0.1- 0.2-	1999 10 10	106	0.3+ 0.8-	
1998 05 28	704	0.5+ 0.5+	1999 09 07	704	0.2+ 0.1+	1999 10 10	106	0.5+ 0.4-	
1998 05 28	704	0.3- 2.0+	1999 09 07	704	0.4- 0.5-	1999 10 10	106	0.3+ 0.0	
1998 05 28	704	(0.7- 2.5+)	1999 09 08	704	0.4- 0.1-	1999 10 17	611	1.1- 0.0	
1998 05 28	704	(1.2- 2.8+)	1999 09 08	704	0.1+ 0.6-	1999 10 17	611	0.1- 1.0-	
1998 05 28	704	(4.3- 0.1+)	1999 09 08	704	0.1+ 0.3-				

(12127)* 1999 RD₃₇ = 1972 RD₃ = 1980 TE₁₅ = 1998 HM₅₇

Discovered 1999 Sept. 9 by K. Watanabe at Sapporo.

Id. S. Nakano (*MPC* 36039)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	2.81041	(2000.0)	P		<

1999 OCT. 26

M.P.C. 36309

1980 10 15	095	1.5+	1.2+	1998 05 16	704	1.6-	0.6-	1999 10 06	691	0.3+	0.0
1980 10 17	095	1.0+	0.3+	1998 05 16	704	1.0+	0.0	1999 10 06	691	0.3+	0.1+
1997 02 07	566	1.3-	0.1+	1998 05 16	704	0.9-	1.5+	1999 10 07	703	0.1+	0.4+
1997 02 07	566	1.0-	0.2+	1998 05 16	704	(3.8-	1.2-)	1999 10 07	703	0.2+	0.2+
1997 02 07	566	0.7-	0.2+	1999 08 13	699	0.1+	0.3-	1999 10 07	703	0.2+	0.2+
1998 03 03	910	0.2-	0.1+	1999 08 13	699	0.1-	0.1-	1999 10 07	703	0.4+	0.2+
1998 03 03	910	0.4-	0.2+	1999 08 13	699	0.1-	0.3-	1999 10 07	704	0.0	0.0
1998 03 03	910	0.2-	0.2+	1999 09 08	699	0.0	0.0	1999 10 07	704	0.0	0.1+
1998 03 29	704	0.5+	0.3-	1999 09 08	699	0.2-	0.0	1999 10 07	704	0.1+	0.1-
1998 03 29	704	0.8+	0.7-	1999 09 08	699	0.5+	0.0	1999 10 07	704	0.1-	0.3-
1998 03 29	704	0.4+	0.9-	1999 09 09	392	(2.7-	1.2-)	1999 10 07	704	0.1-	0.2-
1998 03 29	704	1.4+	0.9-	1999 09 09	392	(3.9-	1.0-)	1999 10 07	106	2.0-	1.9+
1998 03 29	704	0.4-	0.6-	1999 09 12	392	0.9-	1.4-	1999 10 07	106	0.3-	0.4+
1998 04 04	699	0.5-	0.2+	1999 09 12	392	1.3-	0.8-	1999 10 07	106	1.1+	0.3+
1998 04 04	699	0.8+	0.4+	1999 09 16	392	0.9-	0.4+	1999 10 09	704	0.4+	0.1-
1998 04 04	699	1.5+	1.3+	1999 09 17	392	2.1-	0.1+	1999 10 09	704	0.5+	0.0
1998 04 21	704	0.1+	0.8+	1999 09 17	392	(3.9-	0.6-)	1999 10 09	704	0.3-	0.2-
1998 04 21	704	0.2-	0.1+	1999 09 30	703	0.2+	0.2+	1999 10 09	704	0.5+	0.0
1998 04 21	704	1.5-	0.1-	1999 09 30	703	0.0	0.9+	1999 10 09	704	0.2-	0.3-
1998 04 21	704	0.4-	0.8-	1999 09 30	703	0.1+	0.2+	1999 10 15	704	0.1+	0.2+
1998 04 21	704	0.0	0.5-	1999 09 30	703	0.2+	0.2+	1999 10 15	704	0.3-	0.2+
1998 04 22	704	0.5+	0.3+	1999 10 02	704	0.4-	1.7-	1999 10 15	704	0.1+	0.3+
1998 04 22	704	1.1+	0.2+	1999 10 02	704	0.5+	0.1-	1999 10 15	704	0.1+	0.3+
1998 04 22	704	0.3-	0.4+	1999 10 02	704	0.2+	0.0	1999 10 15	704	0.2+	0.6+
1998 04 22	704	0.4+	0.3+	1999 10 02	704	0.4+	0.2-	1999 10 16	120	0.3-	0.2+
1998 04 22	704	0.1-	0.6+	1999 10 02	704	0.0	0.2-	1999 10 16	120	0.1+	0.3+
1998 04 25	699	(3.8+	0.4+)	1999 10 03	691	0.4+	0.4-				
1998 04 25	699	0.3+	0.4+	1999 10 03	691	0.5+	0.3-				

(12128)* 1999 RP₄₃ = 1978 SP₁ = 1997 EL₅₆ = 1998 MT₉

Discovered 1999 Sept. 13 by C. W. Juels at Fountain Hills.

Id. G. V. Williams (*MPC* 36040)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	347.24263	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.18812923	ω	188.32091	+0.99318982	-0.11639027
<i>a</i>	3.0164667	Ω	178.33586	+0.11454639	+0.96729755
<i>e</i>	0.1021027	<i>i</i>	10.36368	+0.02128644	+0.22536359
<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-	1.3+	1999 08 22	699	0.1+	1.2+	1999 09 19	848	0.2+	0.3+
1997 03 10	809	(2.3+	2.4+)	1999 08 22	699	0.1+	0.5+	1999 09 19	848	0.3+	0.1+
1997 03 10	809	(1.5+	2.8+)	1999 09 04	699	0.3+	0.3+	1999 09 19	848	0.4+	0.6+
1997 03 10	809	1.5+	1.8+	1999 09 04	699	0.2-	0.4+	1999 09 20	848	0.4+	0.5+
1997 03 11	809	0.7-	1.0+	1999 09 04	699	0.2-	0.3+	1999 09 20	848	0.1+	0.5+
1997 03 11	809	0.2-	0.9+	1999 09 07	691	0.3-	0.2-	1999 09 20	848	0.4+	0.6+
1997 03 11	809	0.1+	0.8+	1999 09 07	691	0.3-	0.1-	1999 09 22	848	0.6-	0.2+
1998 05 26	704	0.0	1.7-	1999 09 07	691	0.5-	0.1-	1999 09 22	848	0.7+	0.7+
1998 05 26	704	0.5-	0.2-	1999 09 07	704	0.3+	0.4+	1999 09 22	848	0.1-	0.3+
1998 05 26	704	1.2-	1.2+	1999 09 07	704	0.7+	0.2-	1999 09 23	848	0.5+	0.6-
1998 05 26	704	0.0	0.0	1999 09 07	704	0.3+	0.8-	1999 09 23	848	0.2+	0.4+
1998 06 03	704	(0.2-	2.6-)	1999 09 07	704	0.1-	0.7-	1999 09 23	848	0.2+	0.5+
1998 06 03	704	0.2-	1.7-	1999 09 07	704	0.1-	0.9-	1999 09 27	848	0.0	0.6+
1998 06 03	704	(0.1-	3.3-)	1999 09 13	678	0.7-	0.4+	1999 09 27	848	(0.5-	2.1+)
1998 06 03	704	0.3-	0.6-	1999 09 13	678	0.6+	0.2+	1999 09 27	848	0.5+	0.8+
1998 06 19	704	1.3+	0.3+	1999 09 13	678	0.5+	0.2+	1999 10 02	704	0.3+	0.7-
1998 06 19	704	1.4+	1.8+	1999 09 14	704	0.2+	0.4+	1999 10 02	704	0.5+	0.4-
1998 06 19	704	0.1+	0.1+	1999 09 14	678	1.0-	0.9+	1999 10 02	704	0.2+	0.5-
1998 06 19	704	1.0-	0.2+	1999 09 14	704	0.6+	0.3+	1999 10 02	704	0.3+	0.6-
1998 06 19	704	0.2+	1.2-	1999 09 14	704	0.5+	0.6+	1999 10 02	704	0.3-	0.4-
1998 06 25	704	0.0	0.1-	1999 09 14	678	0.4-	0.5+	1999 10 07	704	0.5+	0.9-
1998 06 25	704	0.4+	0.7-	1999 09 14	704	0.3+	0.3+	1999 10 07	704	0.2+	0.6-
1998 06 25	704	0.4+	0.1+	1999 09 14	704	0.4+	0.4+	1999 10 07	704	0.4-	0.9-
1998 06 25	704	0.4-	0.6+	1999 09 14	678	0.5+	0.3+	1999 10 07	704	0.7-	0.9-
1999 07 23	704	0.8-	0.7-	1999 09 16	691	0.4-	0.1+	1999 10 07	704	0.8-	1.1-
1999 07 23	704	0.3-	0.2+	1999 09 16	691	0.3-	0.0	1999 10 15	704	0.6-	0.8-
1999 07 23	704	0.0	0.1+	1999 09 16	691	0.4-	0.1-	1999 10 15	704	0.6-	1.2-

1999 07 23	704	0.2-	0.7-	1999 09 18	678	0.4-	1.1+	1999 10 15	704	1.0-	1.1-
1999 07 23	704	1.5+	0.1+	1999 09 18	678	0.2-	1.8+	1999 10 15	704	0.8-	1.2-
1999 08 22	699	0.1-	1.1+	1999 09 18	678	0.1+	1.5+	1999 10 15	704	0.3-	1.5-

(12129)* 1999 RB₁₃₈ = 1992 GV₁ = 1998 KR₂₀

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 36046)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	49.36419	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.17262052	ω	225.10976	-0.02788811	+0.99948312
<i>a</i>	3.1945359	Ω	43.29973	-0.91042869	-0.01879136
<i>e</i>	0.1481837	<i>i</i>	1.33615	-0.41272491	-0.02608396
<i>P</i>	5.71	<i>H</i>	13.1	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1992 04 05	691	0.2+	0.3+	1998 05 22	704	0.5+	1.5-	1999 09 09	704	0.3+	0.2-
1992 04 05	691	0.3+	0.4+	1998 05 22	704	(0.1-	2.7-)	1999 09 09	704	0.1+	0.2+
1992 04 05	691	0.1+	0.5+	1998 05 22	699	0.4-	0.4+	1999 09 09	704	(3.1+	0.9+)
1992 04 09	691	0.5+	1.1+	1998 05 22	699	0.6-	0.4+	1999 09 09	704	0.6-	0.1-
1992 04 09	691	0.4+	0.7+	1998 05 22	699	0.1+	0.3+	1999 09 09	704	0.3+	0.4+
1992 04 09	691	0.1-	0.4+	1998 05 24	704	0.5-	0.4+	1999 09 13	704	0.2+	0.6+
1994 10 08	691	0.3+	0.1-	1998 05 24	704	0.4-	0.5-	1999 09 13	704	0.4+	0.0
1994 10 08	691	0.1-	0.0	1998 05 24	704	0.7+	0.0	1999 09 13	704	0.1+	0.0
1994 10 08	691	0.1+	0.2-	1998 05 24	704	0.9+	0.3+	1999 09 13	704	0.1+	0.1-
1998 04 22	704	0.5-	0.0	1998 05 24	704	1.2+	0.9-	1999 09 13	704	0.1+	0.1-
1998 04 22	704	0.4+	0.2+	1999 08 07	699	0.2+	0.0	1999 09 29	704	0.1+	0.7-
1998 04 22	704	0.2-	0.5-	1999 08 07	699	1.0+	0.6+	1999 09 29	704	0.2-	0.1+
1998 04 22	704	0.6-	0.1+	1999 08 07	699	0.4+	0.2+	1999 09 29	704	0.9-	0.0
1998 04 22	704	1.1-	0.5-	1999 08 08	699	0.5+	1.1+	1999 09 29	704	0.5-	0.9-
1998 04 25	699	0.3+	0.1+	1999 08 08	699	0.3-	0.5+	1999 09 29	704	1.3-	0.7-
1998 04 25	699	0.3+	0.2+	1999 08 08	699	0.3+	0.3+	1999 09 30	704	0.0	0.6-
1998 04 25	699	0.1-	0.4-	1999 09 04	699	0.0	1.0+	1999 09 30	704	0.4-	0.3-
1998 05 01	704	0.0	0.2+	1999 09 04	699	0.2-	0.3+	1999 09 30	704	0.5-	0.4-
1998 05 01	704	0.1+	0.3-	1999 09 04	699	0.4-	0.9+	1999 09 30	704	0.3-	0.4-
1998 05 01	704	0.2-	0.4+	1999 09 07	704	0.5+	0.1+	1999 09 30	704	0.7-	0.4-
1998 05 01	704	(1.3-	3.7+)	1999 09 07	704	0.2+	0.3+	1999 10 04	703	0.1+	0.3+
1998 05 22	704	0.2-	0.2+	1999 09 07	704	0.2+	0.3-	1999 10 04	703	0.0	0.0
1998 05 22	704	0.0	1.3-	1999 09 07	704	0.3-	0.5-	1999 10 04	703	0.6-	0.3+
1998 05 22	704	0.5-	0.4-	1999 09 07	704	0.5+	0.4-	1999 10 04	703	0.5+	0.3+

(12130)* 1999 RD₁₄₆ = 1998 HE₄₄

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

Research Team at Socorro.

Id. G. V. Williams (*MPC* 36047)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	21.48720		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22976981	ω	112.06369	+0.57346061	+0.81893284
a	2.6400212	Ω	192.99929	-0.78329057	+0.54016864
e	0.1049332	i	5.65871	-0.23999751	+0.19382171
P	4.29	H	14.5	G 0.15	U 1

1998 03 29	704	1.3+	0.2+	1999 08 08	699	1.4-	0.2-	1999 10 06	704	0.1+	0.3-
1998 03 29	704	1.0+	1.8+	1999 08 22	699	0.4-	1.8+	1999 10 06	704	0.1+	0.2+
1998 03 29	704	(0.4-	2.9+)	1999 08 22	699	(2.3-	1.3+)	1999 10 06	704	0.2-	1.0-
1998 03 29	704	(1.6+	2.1+)	1999 08 22	699	0.2-	0.6+	1999 10 08	704	0.5-	0.6+
1998 04 20	704	0.3+	1.0-	1999 09 07	704	0.9+	0.2-	1999 10 08	704	0.0	0.1-
1998 04 20	704	0.1-	0.2-	1999 09 07	704	0.4+	0.1-	1999 10 08	704	0.5-	1.6-
1998 04 20	704	1.1-	0.6+	1999 09 07	704	0.0	0.3-	1999 10 15	704	0.6-	0.2+
1998 04 20	704	0.6+	1.2+	1999 09 07	704	0.4+	0.3-	1999 10 15	704	0.8-	0.8-
1998 04 20	704	0.2-	0.0	1999 09 07	704	0.4+	0.1-	1999 10 15	704	0.7-	0.2-
1998 04 21	704	0.2+	0.2-	1999 09 09	704	0.7+	0.0	1999 10 15	704	1.3-	1.3-
1998 04 21	704	0.7+	0.1+	1999 09 09	704	0.8+	0.2+				
1998 04 21	704	0.3-	0.3+	1999 09 09	704	0.7+	0.2+				

(12131)* 2085 P-L = 1998 KX₆₂

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* 32289)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19923611	ω	191.74636	-0.35276360	-0.93555352		
<i>a</i>	2.9032918	Ω	278.91196	+0.85990691	-0.31686245		
<i>e</i>	0.0271711	<i>i</i>	1.00029	+0.36894166	-0.15600574		
<i>P</i>	4.95	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1960 09 24	675	0.4-	0.5-	1997 02 13	327	0.5-	0.1-	1998 05 24	704	0.8-	0.7-
1960 09 26	675	0.1-	0.1+	1997 02 13	327	0.1+	0.2+	1998 05 24	704	0.5-	0.2+
1960 09 28	675	0.4-	0.6+	1997 02 13	327	0.3-	0.2+	1998 05 24	704	0.1-	0.7+
1960 09 29	675	0.6+	0.2+	1997 03 06	704	0.3+	1.1+	1999 09 05	691	0.0	0.3+
1960 10 22	675	0.4+	0.2-	1997 03 06	704	1.2+	0.7+	1999 09 05	691	0.1+	0.3+
1960 10 25	675	0.1-	0.1+	1998 04 25	809	0.3+	0.8+	1999 09 05	691	0.3-	0.4+
1960 10 26	675	0.0	0.2-	1998 04 25	809	0.0	0.5+	1999 09 13	691	0.1-	0.1+
1997 01 31	691	0.2+	0.2-	1998 04 25	809	0.4+	0.7-	1999 09 13	691	0.4-	0.5+
1997 01 31	691	0.3+	0.5-	1998 05 22	704	0.5+	0.6+	1999 09 13	691	0.1-	0.2+
1997 01 31	691	0.5+	0.6-	1998 05 22	704	(1.0+	3.2-)	1999 10 14	691	0.1+	0.3-
1997 02 13	327	0.4+	0.5+	1998 05 22	704	1.4+	0.3-	1999 10 14	691	0.1+	0.2-
1997 02 13	327	1.2-	0.4-	1998 05 22	704	(2.8-	0.1-)	1999 10 14	691	0.3+	0.3-
1997 02 13	327	0.7-	0.1+	1998 05 24	704	1.2-	1.2-				

(12132)* 2103 P-L = 1976 JN₁ = 1980 EF₂

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. K. HURUKAWA (*MPC* 9298)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22733454	ω	353.85873	-0.84614325	+0.53194999		
<i>a</i>	2.6588414	Ω	218.33670	-0.48670476	-0.79627403		
<i>e</i>	0.1387128	<i>i</i>	3.02405	-0.21716369	-0.28805708		
<i>P</i>	4.34	<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+	0.8+	1976 04 30	808	0.2-	0.6+	1999 10 06	704	1.4-	0.4-
1960 09 26	675	0.5+	0.8+	1976 05 02	095	0.9-	0.0	1999 10 06	704	0.2-	0.1+
1960 09 28	675	0.4-	0.2+	1976 05 03	808	0.5+	0.3+	1999 10 06	704	0.2-	0.2-
1960 10 17	675	0.4+	0.2+	1976 05 03	808	1.2-	0.4+	1999 10 06	704	0.0	0.1-
1960 10 22	675	0.4+	0.1-	1978 11 30	675	0.5-	0.7-	1999 10 06	704	0.2-	0.0
1960 10 22	675	1.6-	0.8-	1978 12 01	675	1.5+	0.7+	1999 10 07	704	0.0	0.3+
1960 10 25	675	0.2+	1.6-	1980 03 15	808	0.1+	1.4-	1999 10 07	704	0.0	0.7+
1960 10 26	675	0.1+	0.6-	1980 03 15	808	0.9-	1.5-	1999 10 07	703	0.2-	0.1-
1960 10 26	675	0.1-	1.6-	1989 05 07	675	0.6+	0.8-	1999 10 07	704	0.3+	1.2+
1973 09 19	675	0.8-	0.2+	1989 05 07	675	0.3+	0.5+	1999 10 07	703	0.3-	0.1+
1973 09 19	675	0.5-	0.4-	1991 12 01	675	0.3-	0.6-	1999 10 07	704	0.3+	0.1+
1973 09 20	675	0.6-	0.8+	1991 12 01	675	0.6-	1.6-	1999 10 07	703	0.1-	0.3+
1973 09 24	675	(4.4-	0.4+)	1991 12 03	675	(1.3-	2.3-)	1999 10 07	704	0.1-	0.1-
1973 09 24	675	(3.4-	0.2+)	1991 12 03	675	(1.6-	2.8-)	1999 10 07	703	0.5-	0.6+

1973 09 25	675	1.0-	1.8-	1991 12 06	675	(0.2+	2.4-)	1999 10 09	704	0.4-	0.8+
1973 09 25	675	(0.4-	2.9-)	1998 06 26	704	0.5+	1.7-	1999 10 09	704	0.3-	0.5+
1973 09 29	675	0.0	1.3+	1998 06 26	704	0.5-	0.2-	1999 10 09	704	0.3-	0.7+
1973 09 29	675	0.4+	1.1+	1998 06 26	704	0.2+	0.3-	1999 10 09	704	1.0-	0.7+
1973 09 30	675	0.2+	0.7-	1999 09 05	699	0.0	0.1+	1999 10 09	704	0.0	0.7+
1973 09 30	675	0.6+	2.5-	1999 09 05	699	1.1-	0.9+	1999 10 13	704	1.1+	0.4-
1973 10 04	675	2.0+	2.6-	1999 09 05	699	0.7-	0.8+	1999 10 13	704	0.9+	0.5-
1973 10 04	675	2.3+	1.5-	1999 09 30	703	0.6-	0.6+	1999 10 13	704	0.7+	0.3-
1973 10 05	675	1.9+	1.8-	1999 09 30	703	0.7-	0.5+	1999 10 13	704	0.6+	0.0
1973 10 05	675	0.9+	1.0-	1999 09 30	703	0.2+	0.6+	1999 10 13	704	0.3+	0.4-
1976 04 23	808	1.4+	0.9-	1999 09 30	703	0.1-	0.1-	1999 10 15	704	0.0	0.6+
1976 04 23	808	1.0+	0.9-	1999 10 04	704	0.8-	0.3-	1999 10 15	704	0.1-	0.3+
1976 04 27	808	0.2-	0.0	1999 10 04	704	0.2-	0.2+	1999 10 15	704	0.4+	0.9+
1976 04 27	808	1.2-	0.3-	1999 10 04	704	1.0+	0.3-	1999 10 15	704	0.3+	0.3-
1976 04 30	808	1.1-	0.7-	1999 10 04	704	0.6-	1.3-				

(12133)* 2558 P-L = 1973 AY₃ = 1984 BR₁

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 12690), G. V. Williams (*MPC* 22061)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17718073	ω	47.41969	+0.39818307	-0.91683073		
<i>a</i>	3.1394849	Ω	19.17679	+0.81309361	+0.33786425		
<i>e</i>	0.1675063	<i>i</i>	5.15662	+0.42465165	+0.21276550		
<i>P</i>	5.56	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1960 09 24	675	0.9+	1.1-	1988 11 10	046	1.8+	1.2-	1999 10 05	704	0.2-	0.1+
1960 09 26	675	0.5+	0.2-	1996 03 24	566	0.3-	0.5-	1999 10 07	704	0.8+	0.7+
1960 09 28	675	0.1+	0.3+	1996 03 24	566	0.1-	0.6-	1999 10 07	704	0.3+	0.5-
1960 09 29	675	0.6+	1.0-	1996 03 24	566	0.5-	0.5-	1999 10 07	704	0.1-	0.2-
1960 10 17	675	0.1-	0.5-	1999 10 02	703	0.6-	0.3+	1999 10 07	704	0.2-	0.1+
1960 10 22	675	0.1+	0.0	1999 10 02	703	0.8-	0.5+	1999 10 10	704	0.3-	0.6+
1960 10 25	675	0.7+	0.9-	1999 10 02	703	0.2+	0.7+	1999 10 10	704	0.1-	0.3+
1960 10 26	675	0.0	0.2-	1999 10 02	703	0.3-	0.7+	1999 10 10	704	0.2-	0.3+
1973 01 02	095	0.2+	1.9+	1999 10 02	120	0.2+	0.6-	1999 10 10	704	0.2-	0.1+
1973 01 04	095	1.0+	0.7+	1999 10 03	120	0.8+	1.1-	1999 10 10	704	0.2-	0.3+
1984 01 24	381	1.7+	2.0-	1999 10 04	704	0.1-	0.2+	1999 10 15	704	0.8+	0.4+
1984 01 24	381	2.1-	0.0	1999 10 04	704	0.6-	0.2+	1999 10 15	704	0.8+	0.1-
1988 10 07	675	1.3-	0.6-	1999 10 04	704	0.4-	0.3+	1999 10 15	704	0.3+	0.2-
1988 10 07	675	(0.9-	2.8-)	1999 10 04	704	0.7-	0.2+	1999 10 15	704	0.3-	0.6-
1988 11 04	046	1.2-	0.3-	1999 10 04	704	0.4-	0.3+	1999 10 15	704	0.1+	0.3-
1988 11 04	046	0.4+	0.7-	1999 10 05	704	0.2+	0.1+	1999 10 20	704	0.5+	0.7+
1988 11 05	046	(0.1-	3.7-)	1999 10 05	704	0.2-	0.3+	1999 10 20	704	0.6+	1.0+
1988 11 05	046	0.7-	2.0-	1999 10 05	704	0.2-	0.3+	1999 10 20	704	1.2-	0.1+
1988 11 10	046	(3.2+	0.4-)	1999 10 05	704	0.3+	0.6+	1999 10 20	704	0.4+	1.1+

(12134)* 2574 P-L = 2368 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. C. J. van Houten (*MPC* 12571)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17577516	ω	92.52028	-0.25163475	-0.96402165		
<i>a</i>	3.1561990	Ω	13.05484	+0.66630635	-0.23677266		
<i>e</i>	0.0832702	<i>i</i>	22.29282	+0.70193717	-0.12083449		
<i>P</i>	5.61	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1960 0

1960 10 22	675	0.8+	1.0+	1977 10 22	675	0.1-	0.3-	1999 09 13	704	0.5+	1.0+
1960 10 25	675	0.9+	0.2-	1977 10 22	675	0.7+	0.8-	1999 09 13	704	0.4+	0.3+
1960 10 26	675	0.3-	0.0	1991 03 13	801	0.2-	0.2-	1999 09 13	704	0.2+	0.1+
1977 10 07	675	2.0+	0.7-	1991 03 13	801	0.2-	0.8-	1999 10 16	704	0.6-	0.4-
1977 10 11	675	0.1+	0.2+	1991 03 13	801	0.3-	0.8-	1999 10 16	704	0.6-	0.1+
1977 10 11	675	0.1-	0.9+	1991 03 13	801	0.1-	0.9+	1999 10 16	704	0.4+	0.1-
1977 10 12	675	0.3-	0.0	1991 04 15	675	0.6-	0.1-	1999 10 16	704	0.5-	0.6+
1977 10 12	675	0.6-	1.0-	1991 04 15	675	0.9-	0.4+	1999 10 16	704	0.9+	0.2-
1977 10 16	675	0.2+	2.0-	1991 04 17	675	0.2+	1.3-				

(12135)* 3021 P-L = 1998 MF₃₄

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Doppler (*MPC* 34564)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		167.16726	(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.17587728	ω	245.89003	-0.97414175	+0.13508967		
<i>a</i>	3.1549772	Ω	301.41489	-0.02966703	-0.87110445		
<i>e</i>	0.0929098	<i>i</i>	12.25194	-0.22398153	-0.47215233		
<i>P</i>	5.60	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1960 09 24	675	0.7+	0.6-	1998 06 28	809	1.6-	1.4+	1999 09 18	704	1.3+	1.5-
1960 09 24	675	0.1+	0.0	1998 07 01	809	0.0	1.2-	1999 09 18	704	1.1-	0.1+
1960 09 25	675	1.3-	0.0	1998 07 01	809	0.1-	1.0-	1999 09 18	704	0.3-	1.3-
1960 09 25	675	(2.7-	1.0-)	1998 07 01	809	0.4-	1.2-	1999 09 18	704	0.4+	0.1+
1960 09 26	675	1.1+	0.1-	1998 07 26	704	0.8+	1.1-	1999 09 18	704	1.5+	0.6-
1960 09 26	675	0.3+	0.3+	1998 07 26	704	0.2-	0.6+	1999 09 18	704	0.3+	1.9-
1960 09 28	675	0.6+	0.5-	1998 07 26	704	1.2+	0.2-	1999 10 03	704	0.2+	0.8+
1960 09 28	675	0.1-	1.5-	1998 07 26	704	1.1+	0.6-	1999 10 03	704	0.5-	0.3+
1996 02 16	566	0.7+	0.4-	1999 09 08	704	0.4-	0.0	1999 10 03	704	0.2-	0.8+
1996 02 16	566	0.0	0.7+	1999 09 08	704	0.1+	1.0+	1999 10 03	704	0.5-	0.9+
1996 02 16	566	0.2-	0.9+	1999 09 08	704	0.4-	0.6+	1999 10 03	704	0.5-	0.6+
1998 06 24	704	0.6-	1.4-	1999 09 08	704	0.7-	0.4+	1999 10 10	704	0.4+	0.2-
1998 06 24	704	0.2+	1.8-	1999 09 08	704	0.6-	0.6+	1999 10 10	704	0.2-	0.1-
1998 06 24	704	0.8-	0.7+	1999 09 08	704	0.5-	0.7+	1999 10 10	704	0.3+	0.0
1998 06 24	704	1.1-	1.0-	1999 09 08	704	0.6-	0.6-	1999 10 10	704	0.1-	0.2-
1998 06 24	704	0.2+	1.0+	1999 09 08	704	0.9-	1.2+	1999 10 10	704	0.3+	0.6-
1998 06 26	704	1.0+	1.3+	1999 09 08	704	0.7-	0.2-	1999 10 20	704	0.3+	0.5+
1998 06 26	704	0.3-	0.3+	1999 09 08	704	0.5-	1.8+	1999 10 20	704	0.2+	0.0
1998 06 26	704	0.6+	0.0	1999 09 10	704	1.2+	0.6-	1999 10 20	704	0.5+	1.0-
1998 06 26	704	0.9+	0.7+	1999 09 10	704	0.1+	0.6+	1999 10 20	704	0.5+	0.7-
1998 06 28	809	0.4-	1.8+	1999 09 10	704	0.2+	1.2+	1999 10 20	704	0.5+	0.5-
1998 06 28	809	0.9-	2.0+	1999 09 18	704	1.0-	0.7+				

(12136)* 3045 P-L = 1990 RM₂

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. R. Nagata (*MPC* 17836)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		55.79523	(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.22883068	ω	337.43076	+0.65033277	+0.75294939		
<i>a</i>	2.6472394	Ω	332.81170	-0.65899684	+0.49326752		
<i>e</i>	0.1604107	<i>i</i>	12.72814	-0.37787624	+0.43560803		
<i>P</i>	4.31	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1960 09 24	675	0.3-	0.7+	1990 09 16	675	(0.3-	2.1-)	1997 02 18	327	0.3+	0.4-
1960 09 24	675	0.6+	0.3+	1990 09 17	675	0.1-	2.0-	1999 06 22	703	0.2-	0.5+
1960 09 25	675	0.8-	0.0	1990 09 17	675	0.5-	0.5-	1999 06 22	703	1.3+	1.6+
1960 09 25	675	0.1+	0.3-	1990 09 19	675	0.3-	1.6-	1999 06 22	703	0.0	1.1+
1960 09 25	675	1.0-	0.3+	1990 09 19	675	0.6-	0.9-	1999 06 22	703	0.4+	0.3-
1960 09 26	675	0.8+	1.0+	1990 09 19	675	0.7+	0.6-	1999 09 03	704	0.3-	0.3-
1960 09 26	675	1.4+	0.3+	1990 09 19	675	0.1-	0.9-	1999 09 03	704	0.3+	0.5-
1960 09 26	675	0.5+	0.6-	1990 09 22	095	(3.1+	2.4-)	1999 09 03	704	0.7-	0.1+

1960 09 27	675	0.4-	0.9+	1990 09 22	095	(2.6-	2.2+)	1999 10 14	704	0.3+	0.1+
1960 09 27	675	0.0	0.3-	1994 07 13	675	1.0+	0.5+	1999 10 14	704	0.4+	0.1+
1960 09 28	675	0.3+	0.5+	1994 07 13	675	0.2-	0.9+	1999 10 14	704	0.3+	0.1+
1960 09 28	675	0.2-	0.2+	1997 02 03	691	0.1+	0.0	1999 10 14	704	0.2+	0.1-
1960 09 28	675	0.2-	0.9+	1997 02 03	691	0.6+	0.2-	1999 10 14	850	0.5-	0.5+
1960 09 29	675	0.7-	0.9-	1997 02 03	691	0.4+	0.1-	1999 10 14	704	0.4+	0.2+
1960 09 29	675	0.2-	1.2+	1997 02 13	691	1.0-	1.1-	1999 10 14	850	0.3+	0.4+
1960 10 17	675	0.2-	0.2+	1997 02 13	691	0.1-	0.2+	1999 10 15	704	0.1+	0.0
1960 10 17	675	1.3-	0.2+	1997 02 13	691	0.1+	0.1+	1999 10 15	850	0.3-	0.3-
1960 10 24	675	0.8-	0.4+	1997 02 14	327	0.6-	0.0	1999 10 15	704	0.2+	0.2-
1990 09 11	657	1.4+	0.2+	1997 02 14	327	1.1-	0.2+	1999 10 15	704	0.3+	0.2-
1990 09 15	675	0.6+	1.6-	1997 02 14	327	0.5+	0.1+	1999 10 15	704	0.1+	0.2-
1990 09 15	675	0.4+	0.5-	1997 02 18	327	0.6-	0.0	1999 10 15	850	0.2+	0.1+
1990 09 16	675	(0.2+	2.4-)	1997 02 18	327	0.5-	0.2-				

(12137)* 4004 P-L = 1987 YH₅ = 1990 QM₈

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* 17461)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Marsden			
<i>M</i>		51.76524	(2000.0)	<i>P</i>	<i>Q</i>		
<i>n</i>	0.22804494	ω	328.35391	+0.65296192	+0.75686749		
<i>a</i>	2.6533167	Ω	342.35941	-0.67406712	+0.56377872		
<i>e</i>	0.0240786	<i>i</i>	5.32960	-0.34536104	+0.33061330		
<i>P</i>	4.32	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1960 09 24	675	0.2-	0.6+	1990 08 24	809	0.4+	0.7+	1999 10 01	703	0.2-	0.6+
1960 09 24	675	0.4+	0.5+	1990 08 24	809	(3.2+	2.6+)	1999 10 01	703	0.2-	0.9+
1960 09 25	675	0.3+	1.2+	1990 08 26	809	0.2-	0.5+	1999 10 01	703	0.0	0.0
1960 09 25	675	0.3+	0.5-	1990 08 26	809	0.2-	0.5+	1999 10 04	704	0.3-	0.2+
1960 09 26	675	0.5-	0.2+	1990 08 26	809	1.3-	0.0	1999 10 04	704	0.0	0.5-
1960 09 26	675	0.4+	0.2+	1993 03 21	809	0.1+	0.3-	1999 10 04	704	0.5-	0.4+
1960 09 28	675	0.5+	0.4-	1993 03 22	809	0.6+	0.7-	1999 10 04	704	0.0	0.2-
1960 09 28	675	2.0+	0.1-	1993 03 26	809	0.2-	0.3-	1999 10 04	704	1.5+	0.9+
1960 10 17	675	0.5-	0.9+	1994 07 09	675	1.4+	0.0	1999 10 07	704	1.1+	0.2+
1960 10 22	675	0.1-	0.8-	1994 08 06	675	1.8+	0.5+	1999 10 07	704	0.1-	0.3+
1960 10 24	675	0.1-	0.7-	1997 01 31	098	(4.6-	1.3+)	1999 10 07	704	0.6-	0.4-
1960 10 26	675	0.9-	0.5-	1997 01 31	098	1.6-	1.4-	1999 10 07	704	0.5-	0.5-
1987 12 24	010	1.0-	0.1+	1997 02 07	098	0.2+	0.7-	1999 10 10	704	0.0	0.1-
1987 12 24	010	0.3-	0.2+	1997 02 07	098	0.6+	0.4-	1999 10 10	704	0.2-	0.2+
1987 12 24	010	0.0	0.7+	1997 02 08	098	0.2-	0.1-	1999 10 10	704	0.1-	0.1+
1990 08 16	809	1.1-	0.5-	1997 02 08	098	0.8-	0.4+	1999 10 10	704	0.1+	0.0
1990 08 16	809	0.7-	0.8-	1999 09 18	704	1.8+	0.8-	1999 10 10	704	0.0	0.1+
1990 08 16	809	1.3-	1.6-	1999 09 18	704	0.2-	0.7-	1999 10 20	704	0.5+	0.2-
1990 08 18	809	1.4+	1.0-	1999 09 18	704	0.4+	0.7-	1999 10 20	704	0.0	0.2+
1990 08 18	809	1.1-	1.1-	1999 09 18	704	1.1+	0.3+	1999 10 20	704	0.7+	0.3-
1990 08 18	809	1.6-	0.8-	1999 09 18	704	1.1+	0.2-	1999 10 20	704	0.2+	0.3+
1990 08 24	809	1.0-	0.8-	1999 10 01	703	1.1-	0.6+	1999 10 20	704	0.5+	0.0

(12138)* 4053 P-L = 1998 FV₆₈

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* 31572), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

1960 09 28	675	0.7+	0.3-	1998 04 01	704	0.1-	0.3+	1998 04 22	704	0.1+	0.1+
1960 10 17	675	0.3-	1.0-	1998 04 01	704	1.5-	0.5+	1998 05 01	699	0.3+	0.6+
1960 10 22	675	0.3+	1.0-	1998 04 01	704	0.8-	0.2+	1998 05 01	699	1.0+	0.3-
1960 10 24	675	0.5+	0.5+	1998 04 03	704	0.1-	0.8-	1998 05 01	699	0.8+	0.7-
1960 10 26	675	0.3+	1.1-	1998 04 03	704	0.8+	0.7-	1998 05 02	566	1.0+	0.6-
1991 08 08	675	0.3-	0.4+	1998 04 03	704	1.2+	1.0-	1998 05 02	566	0.5+	1.5-
1991 08 08	675	0.7-	0.8+	1998 04 03	704	0.3+	1.4-	1998 05 02	566	0.8+	0.5-
1998 03 20	704	0.3+	0.1+	1998 04 03	704	(0.3-	2.4-)	1998 05 16	704	0.1+	1.4-
1998 03 20	704	0.5+	0.2+	1998 04 03	704	0.3-	0.4+	1998 05 16	704	1.3+	0.0
1998 03 20	704	(2.1+	3.3+)	1998 04 03	704	0.6-	0.8-	1998 05 16	704	(2.4+	1.5+)
1998 03 20	704	0.8-	1.8+	1998 04 03	704	0.3-	0.2-	1998 05 16	704	1.6+	0.6+
1998 03 20	704	0.6-	1.1-	1998 04 03	704	0.5-	0.1-	1998 05 16	704	0.5+	0.4+
1998 03 22	704	0.1+	0.5+	1998 04 03	704	0.1+	1.4-	1999 09 08	699	0.3-	0.3-
1998 03 22	704	0.9+	1.1+	1998 04 03	704	0.1-	0.4-	1999 09 08	699	0.0	0.2-
1998 03 22	704	0.7+	1.4+	1998 04 03	704	0.1+	0.5-	1999 09 08	699	0.0	0.4+
1998 03 22	704	0.0	0.4+	1998 04 03	704	0.5-	0.3-	1999 09 16	704	0.8+	0.1+
1998 03 22	704	0.8-	0.9+	1998 04 03	704	0.0	0.3-	1999 09 16	704	1.0+	0.7-
1998 03 24	699	1.2+	0.1+	1998 04 03	704	1.2+	0.2-	1999 09 16	704	0.2+	0.1-
1998 03 24	699	0.6-	1.2+	1998 04 03	704	0.7-	0.0	1999 10 04	704	0.9+	0.3+
1998 03 24	699	0.9-	0.2+	1998 04 03	704	0.5-	0.3-	1999 10 04	704	1.0+	0.3-
1998 03 25	704	0.7-	0.0	1998 04 03	704	0.2-	0.3-	1999 10 04	704	0.6+	0.1+
1998 03 25	704	0.3-	0.1-	1998 04 03	704	0.1+	0.2+	1999 10 04	704	0.7+	0.3+
1998 03 25	704	1.1-	0.3+	1998 04 03	704	0.4-	1.4-	1999 10 04	704	0.2+	0.1+
1998 03 25	704	1.0-	0.2+	1998 04 03	704	0.2-	0.2+	1999 10 07	704	0.5-	0.1+
1998 03 25	704	0.6-	0.3-	1998 04 03	704	0.6+	1.0+	1999 10 07	704	0.6-	0.2-
1998 03 26	566	0.2+	1.1-	1998 04 03	704	0.3-	1.1-	1999 10 07	704	0.3-	0.3-
1998 03 26	566	0.4+	0.6-	1998 04 03	704	0.8-	0.2+	1999 10 07	704	0.1+	0.4-
1998 03 26	566	0.1-	0.9-	1998 04 03	704	0.7-	0.4-	1999 10 07	704	0.3-	0.0
1998 03 28	704	0.5-	0.6+	1998 04 04	699	0.2-	0.0	1999 10 09	704	0.5-	0.0
1998 03 28	704	0.3+	0.5-	1998 04 04	699	0.2-	1.3-	1999 10 09	704	0.1+	0.1-
1998 03 28	704	0.2+	0.4-	1998 04 04	699	0.1-	0.7-	1999 10 09	704	0.5-	0.8-
1998 03 28	704	0.6+	0.1-	1998 04 20	704	0.3+	0.8+	1999 10 09	704	0.3+	0.0
1998 03 28	704	(0.5+	2.2+)	1998 04 20	704	0.1+	0.7+	1999 10 09	704	0.7-	0.1-
1998 03 29	704	0.1+	0.3+	1998 04 20	704	0.2+	0.5+	1999 10 15	704	0.5-	0.3+
1998 03 29	704	0.3+	0.8+	1998 04 20	704	0.4+	0.2+	1999 10 15	704	0.7-	0.3+
1998 03 29	704	0.1+	0.4+	1998 04 20	704	0.1-	0.3+	1999 10 15	704	0.2-	0.6+
1998 03 29	704	0.2-	0.9+	1998 04 22	704	0.1-	0.2+	1999 10 15	704	0.5-	0.5+

(12139)* 4055 P-L = 1992 UJ₁₀ = 1995 PX

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* 27925), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	159.35963		(2000.0)	P	Q
<i>n</i>	0.27872749	ω	240.82615	-0.90626975	+0.42152342
<i>a</i>	2.3210412	Ω	324.07857	-0.36676801	-0.82122618
<i>e</i>	0.1206127	<i>i</i>	3.07922	-0.21013414	-0.38458493
<i>P</i>	3.54	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1960 09 24	675	0.7+	0.0	1998 05 24	704	(6.3-	0.4+)	1999 10 08	691	0.3-	0.3+
1960 09 25	675	0.6-	1.0-	1999 09 05	703	0.2+	1.1+	1999 10 08	691	0.3-	0.3+
1960 09 26	675	0.5+	0.6-	1999 09 05	703	0.3+	0.5+	1999 10 08	691	0.5-	0.3+
1960 09 28	675	0.1+	0.7-	1999 09 05	703	0.4-	0.0	1999 10 10	704	0.3+	0.0
1960 10 17	675	1.0-	1.5-	1999 09 05	703	0.8+	0.3+	1999 10 10	704	0.2-	0.3-
1960 10 17	675	0.7+	0.0	1999 10 02	703	0.5-	2.0-	1999 10 10	704	0.1-	0.2+
1960 10 22	675	0.2+	0.8-	1999 10 02	703	0.2-	1.2+	1999 10 10	704	0.0	0.2-
1960 10 24	675	1.0+	0.5+	1999 10 02	703	0.3-	0.4+	1999 10 10	704	0.2-	0.2-
1960 10 26	675	0.5+	0.2+	1999 10 02	703	0.0	0.5+	1999 10 15	704	0.6+	0.1+
1992 10 20	675	0.7+	0.1+	1999 10 03	704	0.2+	0.2+	1999 10 15	704	0.3+	0.3+
1992 10 20	675	0.1-	0.4-	1999 10 03	704	0.8-	0.3+	1999 10 15	704	0.1+	0.0
1992 10 22	675	0.5-	0.4+	1999 10 03	704	0.3+	0.4+	1999 10 15	704	0.6+	0.1-
1992 10 22	675	1.0-	0.6+	1999 10 03	704	0.1-	0.2+	1999 10 15	704	0.7+	0.1+
1995 08 03	691	0.3-	0.3+	1999 10 03	691	0.5-	0.3+	1999 10 20	704	0.2-	0.3+
1995 08 03	691	0.3-	0.3+	1999 10 03	691	0.7-	0.4+	1999 10 20	704	0.7+	1.1-
1995 08 03	691	0.0	0.3+	1999 10 03	691	0.6-	0.4+	1999 10 20	704	0.1+	0.4-

1998 05 24	704	0.2+	0.8-	1999 10 07	704	0.6-	1.0-	1999 10 20	704	0.1-	0.4-
1998 05 24	704	0.1+	0.9+	1999 10 07	704	0.7+	0.9+	1999 10 20	704	0.3+	0.2-
1998 05 24	704	0.3-	0.4-	1999 10 07	704	0.3+	0.4-				

(12140)* 4087 P-L = 1993 BJ₁

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* 21806)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	198.43333		(2000.0)	P	Q
<i>n</i>	0.25208297	ω	155.38469	-0.92930392	-0.36931140
<i>a</i>	2.4818396	Ω	2.94396	+0.33270357	-0.83930442
<i>e</i>	0.1133029	<i>i</i>	2.02925	+0.16032014	-0.39897014
<i>P</i>	3.91	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1960 09 24	675	0.6-	1.2+	1995 09 20	809	0.5-	0.4-	1999 09 14	703	1.1-	0.7+
1960 09 24	675	0.2-	0.2-	1995 09 22	809	0.5+	1.9-	1999 09 14	703	1.3-	0.1-
1960 09 25	675	0.0	0.3+	1995 09 23	809	0.8+	0.1-	1999 09 14	703	0.2-	0.0
1960 09 26	675	1.0+	0.3-	1995 09 23	809	(7.6+	2.0-)	1999 09 29	703	1.7-	0.2+
1960 09 26	675	0.3+	1.4-	1995 09 24	809	0.6+	1.0+	1999 09 29	703	0.4+	0.3+
1960 09 27	675	0.5+	0.8-	1995 09 27	691	1.0-	0.3+	1999 09 29	703	0.3+	0.1+
1960 09 28	675	1.5+	1.5-	1995 09 27	691	0.4-	0.3+	1999 09 29	703	0.5-	0.9+
1960 10 17	675	0.6-	0.2+	1995 09 27	691	0.7-	0.1+	1999 10 02	704	0.1-	0.3+
1960 10 17	675	0.4+	1.0+	1997 01 01	817	0.2-	0.1+	1999 10 02	704	2.5+	0.4+
1960 10 22	675	1.1-	0.3+	1997 01 01	817	0.3-	0.2-	1999 10 02	704	0.6+	0.1+
1960 10 26	675	0.2+	0.7-	1997 01 01	817	0.3-	0.2+	1999 10 02	704	1.4+	1.0-
1990 05 26	675	1.0+	1.2+	1997 01 01	817	0.3-	0.1+	1999 10 05	704	0.5+	0.1-
1990 05 26	675	0.2+	1.3+	1997 01 11	566	0.2+	0.3+	1999 10 05	704	0.3+	0.0
1991 09 08	691	1.2-	0.5+	1997 01 11	566	0.1-	0.0	1999 10 05	704	0.4+	0.3+
1991 09 08	691	1.4-	0.0	1997 01 11	566	0.2+	0.3-	1999 10 05	704	0.3+	0.3+
1991 09 08	691	1.2-	0.0	1999 09 09	704	0.1+	0.8+	1999 10 09	704	0.4+	0.0
1993 01 16	010	(2.4+	0.0)	1999 09 09	704	0.9+	0.3+	1999 10 09	704	0.1-	0.2-
1993 01 16	010	1.0+	1.3+	1999 09 09	704	0.6-	0.7+	1999 10 09	704	0.1+	0.0
1993 01 16	010	0.2-	0.2+	1999 09 09	704	0.9+	0.5+	1999 10 09	704	0.3+	1.1-
1993 01 17	010	0.1-	0.7+	1999 09 09	704	0.9+	0.6+	1999 10 09	704	0.5+	1.0-
1993 01 17	010	0.7-	0.4+	1999 09 14	704	0.2-	0.5-	1999 10 15	704	0.8-	0.2-
1993 01 17	010	0.2+	0.8+	1999 09 14	704	0.5-	0.2+	1999 10 15	704	1.1-	0.0
1995 08 25	809	0.5-	0.4+	1999 09 14	704	0.4+	0.5+	1999 10 15	704	0.6-	0.6-
1995 09 01	809	0.3+	0.8+	1999 09 14	704	0.3-	0.5+	1999 10 15	704	0.5-	0.4-
1995 09 19	809	0.6+	0.4-	1999 09 14	704	0.2+	0.2+				
1995 09 19	809	0.1-	0.2-	1999 09 14	703	0.1-	0.7+				

(12141)* 4112 P-L = 1997 EO₅₆ = 1997 JV₁₈

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Gnädig (*MPC* 33324)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	273.18330		(2000.0)	P	Q
n	0.22886829	ω	128.41963	-0.35259633	-0.93571999
a	2.6469494	Ω	342.21840	+0.84781825	-0.31482428
e	0.0431542	i	1.91302	+0.39608086	-0.15910304
P	4.31	H	13.8	G	0.15
				U	1

1976 05 30	413	0.5+	0.9-	1998 06 26	704	0.1+	0.8+	1999 10 10	704	0.1-	0.2-
1984 03 11	413	0.6-	0.3-	1998 06 26	704	0.1-	0.2+	1999 10 15	704	0.1+	0.0
1984 03 11	413	0.4-	0.6-	1998 06 26	704	(0.7+	3.0-)	1999 10 15	704	0.1+	0.4-
1984 05 23	413	2.1+	0.1-	1998 06 26	704	(2.2+	2.5-)	1999 10 15	704	0.1+	0.3+
1984 05 23	413	0.0	0.2+	1999 10 03	704	0.1+	0.1-	1999 10 15	704	0.0	0.6+
1993 04 20	413	0.8-	0.1+	1999 10 03	704	0.1+	0.5-	1999 10 15	704	0.1+	0.6+
1993 04 20	413	0.9+	0.2-	1999 10 03	704	1.0-	0.7+	1999 10 21	704	0.1-	0.1+
1993 05 24	413	1.8-	0.0	1999 10 03	704	0.4+	0.4-	1999 10 21	704	0.5-	0.2-
1993 05 24	413	0.8+	0.4+	1999 10 03	704	0.1-	0.2-	1999 10 21	704	0.1-	0.2-
1997 03 10	809	0.2+	1.1-	1999 10 03	691	0.3+	0.3+	1999 10 21	704	0.4-	0.0
1997 03 10	809	0.8-	0.4-	1999 10 03	691	0.4+	0.3+	1999 10 21	704	0.1+	0.1-

(12142)* 4624 P-L = 1955 XM₁ = 1993 PD₈

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* 24757), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 303.91322			Williams		
(2000.0)			<i>P</i>	<i>Q</i>	
<i>n</i>	0.17694927	ω	284.15160	+0.30835909	-0.95051135
<i>a</i>	3.1422220	Ω	147.80883	+0.89796592	+0.27766926
<i>e</i>	0.1748715	<i>i</i>	4.08866	+0.31396159	+0.13938420
<i>P</i>	5.57	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1955 11 19	675	0.6-	0.5-	1997 06 05	691	0.2-	0.0	1999 10 05	703	0.3+	0.0
1955 12 11	675	0.6+	0.1+	1997 06 10	691	0.3-	0.0	1999 10 05	703	0.8-	0.1-
1960 09 24	675	0.2+	0.8-	1997 06 10	691	0.3+	0.3+	1999 10 05	703	0.6-	0.4-
1960 09 26	675	0.2+	0.6-	1997 06 10	691	0.3+	0.2+	1999 10 07	703	0.3-	0.2+
1960 09 27	675	0.6+	0.0	1999 09 07	704	0.7+	0.2+	1999 10 07	703	0.1-	0.2-
1960 09 28	675	1.3+	0.1+	1999 09 07	704	0.3+	0.6-	1999 10 07	703	0.1-	1.0-
1960 10 17	675	0.1+	0.5-	1999 09 07	704	0.4+	0.3-	1999 10 07	703	0.2-	0.3-
1960 10 22	675	0.5+	0.2-	1999 09 07	704	0.1+	0.5+	1999 10 07	704	0.6+	0.5+
1960 10 25	675	0.5-	0.4-	1999 09 07	704	0.2+	0.4-	1999 10 07	704	0.2+	1.3+
1960 10 26	675	1.6-	0.1-	1999 09 14	704	0.1+	0.4-	1999 10 07	704	0.5-	0.6+
1993 08 14	691	0.1-	0.0	1999 09 14	704	0.7+	0.5-	1999 10 07	704	0.3-	0.6+
1993 08 14	691	0.1-	0.2+	1999 09 14	704	0.2+	0.6+	1999 10 07	704	0.1+	1.3+
1993 08 14	691	0.1-	0.1+	1999 10 02	704	0.3-	0.8+	1999 10 15	704	0.2-	0.3-
1997 05 29	691	0.0	0.6-	1999 10 02	704	0.2-	0.0	1999 10 15	704	0.5-	0.3+
1997 05 29	691	0.1+	0.0	1999 10 02	704	0.2-	0.2+	1999 10 15	704	0.1+	0.1+
1997 05 29	691	0.2+	0.0	1999 10 02	704	0.0	0.5-	1999 10 15	704	0.4-	0.4+
1997 06 05	691	0.1-	0.0	1999 10 02	704	0.1-	0.2-	1999 10 15	704	0.3-	0.0
1997 06 05	691	0.5-	0.2-	1999 10 05	703	0.1+	0.5-				

(12143)* 4631 P-L = 1985 SS₆ = 1992 SA₂

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* 21120)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 143.15757			Marsden		
(2000.0)			<i>P</i>	<i>Q</i>	
<i>n</i>	0.27721911	ω	180.34833	-0.96931676	+0.24395942
<i>a</i>	2.3294530	Ω	13.88437	-0.22522598	-0.83229129
<i>e</i>	0.0472587	<i>i</i>	7.21719	-0.09847988	-0.49777003
<i>P</i>	3.56	<i>H</i>	14.4	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1955 03 23	675	0.0	0.7+	1998 04 20	704	0.3+	0.6-	1999 09 10	704	0.3-	0.3-
1955 03 23	675	0.5-	0.2+	1998 04 20	704	0.3+	0.8+	1999 09 10	704	0.2-	0.1+
1960 09 24	675	1.3+	0.8+	1998 04 20	704	0.9-	0.6+	1999 09 13	704	0.4-	0.1-
1960 09 26	675	0.0	0.3+	1998 04 21	704	0.9-	0.2+	1999 09 13	704	0.0	0.2-
1960 09 27	675	0.4+	0.5+	1998 04 21	704	0.1-	0.3+	1999 09 13	704	0.2+	0.0
1960 09 27	675	1.6+	0.2-	1998 04 21	704	1.1-	0.5+	1999 09 13	704	0.1+	0.1+
1960 09 28	675	0.7+	0.0	1998 04 21	704	0.8-	0.3-	1999 09 13	704	0.3+	0.1+
1960 10 17	675	0.8-	1.3-	1998 04 21	704	0.7-	0.7+	1999 09 30	704	0.5-	0.1+
1960 10 22	675	0.4-	0.5+	1998 04 22	704	1.1-	0.2+	1999 09 30	704	0.2+	0.1+
1960 10 22	675	0.5-	0.6-	1998 04 22	704	0.6-	0.3+	1999 09 30	704	0.1-	0.0

1960 10 24	675	0.7-	1.2+	1998 04 22	704	0.1-	0.7-	1999 09 30	704	0.6-	0.2-
1960 10 25	675	0.9-	1.2-	1998 04 22	704	0.7-	0.0	1999 09 30	704	0.1+	0.2-
1960 10 26	675	0.8-	0.3+	1998 04 22	704	0.4-	0.9-	1999 10 01	704	0.4+	0.6+
1985 09 22	095	1.2+	0.0	1998 04 25	699	0.9-	0.5-	1999 10 01	704	0.2-	0.2-
1992 09 21	033	0.3+	0.0	1998 04 25	699	0.7-	0.0	1999 10 01	704	1.2-	0.2+
1992 09 22	033	0.1+	1.6-	1998 04 25	699	0.1-	0.1-	1999 10 01	704	0.5+	0.1+
1992 09 23	033	0.2-	0.5+	1998 04 30	699	0.3-	0.1+	1999 10 01	704	1.0-	0.5+
1992 09 24	033	0.3-	0.1+	1998 04 30	699	0.2-	0.0	1999 10 01	704	0.0	0.2+
1992 09 26	033	0.2+	1.2+	1998 04 30	699	0.4-	0.3-	1999 10 01	704	0.3+	0.5+
1992 09 27	033	0.2+	0.0	1999 09 07	704	0.2+	0.3+	1999 10 01	704	0.8-	0.2+
1992 09 28	033	0.1-	0.2+	1999 09 07	704	0.4+	0.0	1999 10 01	704	0.1-	0.0
1998 03 25	699	1.4+	0.2-	1999 09 07	704	0.5+	0.1-	1999 10 01	704	0.1+	0.0
1998 03 25	699	0.4-	0.5+	1999 09 07	699	1.7+	0.5+	1999 10 01	704	0.4-	0.5-
1998 03 25	699	0.8+	0.1+	1999 09 07	704	0.7+	0.3-	1999 10 01	704	0.1+	0.1+
1998 03 25	704	0.7+	0.3-	1999 09 07	704	0.3-	0.1+	1999 10 01	704	0.1+	0.1+
1998 03 25	704	0.5+	0.1-	1999 09 07	699	(1.2+	2.1+)	1999 10 01	704	0.6-	0.2+
1998 03 25	704	0.7+	0.3+	1999 09 08	704	(1.0+	2.4+)	1999 10 01	704	0.4+	1.0+
1998 03 25	704	1.6+	0.7-	1999 09 08	704	0.0	0.1+	1999 10 01	704	0.0	0.0
1998 03 25	704	(2.1+	2.1-)	1999 09 08	704	0.8+	0.7-	1999 10 01	704	0.3-	0.1-
1998 03 29	704	1.3+	0.0	1999 09 09	704	0.6+	0.4+	1999 10 01	704	0.7-	0.6+
1998 03 29	704	0.8+	0.1+	1999 09 09	704	0.2+	0.2-	1999 10 15	704	0.0	0.1-
1998 03 29	704	1.0+	0.6+	1999 09 09	704	0.2+	0.6+	1999 10 15	704	0.0	0.5-
1998 03 29	704	1.2+	0.1+	1999 09 09	704	0.1-	0.6+	1999 10 15	704	0.4-	0.2-
1998 03 29	704	0.7+	1.0-	1999 09 09	704	0.3-	0.3-	1999 10 15	704	0.5-	0.3-
1998 04 01	704	0.2+	0.2+	1999 09 09	704	0.0	0.5+	1999 10 15	704	0.2-	0.1+
1998 04 01	704	0.2+	0.8+	1999 09 09	704	0.5-	0.0	1999 10 16	704	1.3-	0.3-
1998 04 01	704	0.6+	0.3+	1999 09 09	704	0.4-	0.7-	1999 10 16	704	0.4+	0.1-
1998 04 01	704	0.5+	0.1-	1999 09 09	704	0.8-	0.4-	1999 10 16	704	0.3+	0.1+
1998 04 01	704	0.4+	1.2+	1999 09 09	704	1.1-	0.7-	1999 10 16	704	0.3+	0.1-
1998 04 20	704	0.8-	0.8-	1999 09 10	704	0.4+	0.2-				

(12144)* 4661 P-L = 1992 EJ₂₅

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

<i>M</i> 270.39052			Williams		
(2000.0)			<i>P</i>	<i>Q</i>	
<i>n</i>	0.20118539	ω	16.69990	+0.32518436	-0.94487081
<i>a</i>	2.8845081	Ω	54.33916	+0.86212618	+0.27953366
<i>e</i>	0.0419202	<i>i</i>	2.70871	+0.38857892	+0.17052885
<i>P</i>	4.90	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	1

Residuals in seconds of arc

1960 09 24	675	0.5+	0.1-	1994 09 05	809	0.4+	0.4-	1999 09 08	643	0.8+	0.1-
1960 09 26	675	0.1-	0.0	1994 09 05	809	0.1-	0.6-	1999 09 08	643	1.0+	0.2-
1960 09 26	675	0.8+	0.5-	1994 09 05	809	0.2-	0.0	1999 09 09	704	0.8-	0.0
1960 09 27	675	0.1+	0.9+	1994 09 06	809	0.1-	1.0-	1999 09 09	704	0.4-	0.7+
1960 09 28	675	1.5+	0.1-	1994 09 06	809	0.4+	0.4-	1999 09 09	704	1.7-	0.3+
1960 10 17	675	0.0	0.1+	1994 09 06	809	0.6-	1.2-	1999 09 09	704	0.6+	0.9+
1960 10 22	675	0.4-	1.1-	1994 09 09	675	0.7-	1.4+	1999 09 13	704	0.2-	0.3+
1960 10 25	675	0.7-	1.7-	1997 04 02	704	0.3+	1.3+	1999 09 13	704	0.4-	0.4+
1960 10 26	675	0.5-	0.9-	1997 04 02	704	0.7+	0.8+	1999 09 13	704	0.4-	0.3+
1992 02 25	675	0.1+	1.5-	1997 04 02	704	0.1+	0.9+	1999 09 13	704	0.9-	0.3+

Id. G. V. Williams (*MPC* 26414)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	17.09183		(2000.0)		P		Q				
<i>n</i>	0.22666379	ω	290.46482		+0.72844370		+0.68411005				
<i>a</i>	2.6640842	Ω	26.41167		−0.59357635		+0.65711819				
<i>e</i>	0.0846956	<i>i</i>	4.76127		−0.34210655		+0.31652665				
<i>P</i>	4.35 <th><i>H</i></th> <td>15.2<th><i>G</i></th><td>0.15<th><i>U</i></th><td>1<td></td></td></td></td>	<i>H</i>	15.2 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>1<td></td></td></td>	<i>G</i>	0.15 <th><i>U</i></th> <td>1<td></td></td>	<i>U</i>	1 <td></td>				
Residuals in seconds of arc											
1960 09 24	675	1.0+	0.5+	1995 11 28	691	0.3+	0.3−	1999 09 07	704	0.7+	0.3+
1960 09 26	675	0.0	0.4−	1998 04 22	704	1.2−	0.8−	1999 09 07	704	0.4−	1.0+
1960 09 27	675	0.2+	0.6−	1998 04 22	704	0.6+	0.2−	1999 09 08	703	0.4−	0.1−
1960 09 28	675	1.3+	0.2−	1998 04 22	704	1.4−	0.2−	1999 09 08	703	0.6−	1.2+
1960 10 22	675	0.6−	0.5−	1998 04 22	704	0.2+	1.0−	1999 09 08	703	1.1−	0.2−
1960 10 26	675	0.6−	2.0−	1998 04 22	704	(2.5−	0.8+)	1999 09 08	703	0.1−	1.3−
1995 11 17	691	0.1−	0.1+	1998 05 01	704	1.4−	1.7+	1999 09 09	704	0.5+	0.5+
1995 11 17	691	0.1+	0.1+	1998 05 01	704	1.0+	1.5−	1999 09 09	704	0.0	1.5+
1995 11 17	691	0.5−	0.2+	1998 05 01	704	1.3+	0.2−	1999 09 09	704	0.7−	0.4−
1995 11 23	691	0.1−	0.3−	1998 05 01	704	0.6−	1.1−	1999 10 16	704	0.4−	0.5−
1995 11 23	691	0.3+	0.5−	1999 09 07	704	1.0+	0.3+	1999 10 16	704	0.1+	0.9−
1995 11 23	691	0.4+	0.3−	1999 09 07	704	0.1+	0.3−	1999 10 16	704	0.4−	1.1−
1995 11 28	691	0.7+	0.3−	1999 09 07	704	0.3+	0.7+	1999 10 16	704	0.3+	0.2−

(12146)* 6035 P-L = 2125 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. S. Nakano (*MPC* 15074)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	45.73693		(2000.0)	P		Q	
<i>n</i>	0.22814982	ω	300.02038	+0.49393258	+0.86949896		
<i>a</i>	2.6525035	Ω	359.57071	−0.71486636	+0.40512813		
<i>e</i>	0.1909712	<i>i</i>	11.30745	−0.49497141	+0.28256460		
<i>P</i>	4.32 <th><i>H</i></th> <td>14.0</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>1</td></td>	<i>H</i>	14.0	<i>G</i>	0.15 <th><i>U</i></th> <td>1</td>	<i>U</i>	1
Residuals in seconds of arc							
1960 09 24	675	0.3−	0.2−	1973 10 05	675	0.6+	0.7−
1960 09 25	675	0.2+	0.5+	1973 10 05	675	1.4+	0.3−
1960 09 26	675	0.8−	0.0	1990 07 29	675	0.3+	0.4+
1960 09 28	675	0.6−	0.1−	1990 07 29	675	1.8−	0.2+
1960 10 24	675	0.5+	0.2+	1990 07 30	675	0.5−	0.4−
1960 10 26	675	0.0	0.6+	1990 07 30	675	0.4−	0.6+
1964 08 08	675	1.7+	0.8−	1990 09 16	675	0.9−	1.2+
1973 09 19	675	0.3+	0.8+	1990 09 16	675	0.6+	0.5+
1973 09 19	675	0.1−	0.7+	1998 05 22	566	0.6−	0.3−
1973 09 20	675	1.5−	0.4−	1998 05 22	566	0.2+	0.0
1973 09 24	675	(2.3−	0.7+)	1998 05 22	566	0.1−	0.1−
1973 09 24	675	2.0−	0.1+	1999 09 18	704	0.5+	0.3+
1973 09 25	675	0.1+	1.9−	1999 09 18	704	0.1+	0.0
1973 09 25	675	0.6−	1.9−	1999 09 18	704	0.2−	0.8−
1973 09 29	675	0.2+	1.3+	1999 09 18	704	0.0	0.3−
1973 09 29	675	0.5+	0.3+	1999 09 18	704	0.6+	0.2+
1973 09 30	675	1.6+	1.6−	1999 10 01	703	0.2−	0.7+
1973 09 30	675	1.1+	1.9−	1999 10 01	703	0.4−	0.8+
1973 10 04	675	2.1+	1.2−	1999 10 01	703	0.6−	0.9+
1973 10 04	675	0.7+	1.6−	1999 10 01	703	0.3−	0.7+

(12147)* 6082 P-L = 1976 UB₅ = 1999 RS₁₂₇

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* 36051)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<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 <th><i>H</i></th> <td>14.4</td> <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>2</td></td>	<i>H</i>	14.4	<i>G</i>	0.15 <th><i>U</i></th> <td>2</td>	<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−
1960 09 25	675	0.8+	0.2+	1998 05 01	704	0.9+	1.3−
1960 09 26	675	0.0	0.5−	1998 05 01	704	1.4−	0.3+
1960 09 28	675	0.2−	0.9−	1998 05 22	704	0.4−	0.7−
1960 10 17	675	0.1+	1.0−	1998 05 22	704	0.4+	0.9+
1960 10 22	675	1.0+	0.4+	1998 05 22	704	(0.9+	3.7+)
1960 10 22	675	0.8−	0.6−	1998 05 22	704	1.7+	1.1+
1960 10 24	675	0.5+	0.5+	1998 05 24	704	0.3−	0.6+
1960 10 26	675	0.3+	0.0	1998 05 24	704	0.4+	0.5−
1976 10 30	095	0.1+	0.5−	1998 05 24	704	(2.7+	1.0+)
1998 04 22	704	0.4−	0.5+	1998 05 24	704	0.5−	1.6−
1998 04 22	704	0.1+	0.4−	1999 08 12	699	0.4+	0.1+
1998 04 22	704	0.6+	0.6−	1999 08 12	699	0.2+	0.1+
1998 04 22	704	(6.0−	1.4−)	1999 08 12	699	0.7+	1.4+
1998 05 01	704	0.4−	0.1−	1999 09 06	699	0.6+	0.9+
1998 05 01	704	0.5−	0.1+	1999 09 06	699	0.2+	1.9+

(12148)* 6636 P-L = 1990 WS₁₂

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* 29129)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

$\dot{M}$	176.59937		(2000.0)	P		Q	
n	0.20154514	ω	47.35170	−0.95865019		−0.27844337	
a	2.8810746	Ω	116.40284	+0.23810446		−0.89794813	
e	0.0175877	i	3.76495	+0.15587200		−0.34082024	
P	4.89	H	13.8	G	0.15	U	1
Residuals in seconds of arc							
1960 09 24	675	0.9+	1.2−	1999 09 07	704	0.4+	0.4+
1960 09 26	675	0.7+	1.1−	1999 09 07	704	0.1+	0.3+
1960 09 27	675	0.8+	0.9−	1999 09 08	703	0.5−	0.3−
1960 09 28	675	0.8+	0.3−	1999 09 08	703	0.5−	0.6−
1960 10 17	675	0.3+	0.3+	1999 09 08	703	0.1−	0.1−
1960 10 22	675	1.7−	0.7−	1999 09 08	703	0.0	0.2+
1960 10 24	675	0.0	0.1−	1999 09 09	704	0.4−	0.0
1960 10 26	675	0.0	0.4−	1999 09 09	704	0.5+	0.7+
1990 11 23	372	(0.7+	3.0−)	1999 09 09	704	0.1−	0.9+
1990 11 23	372	(1.6−	2.5−)	1999 09 09	704	0.5+	1.5+
1992 03 11	691	0.5−	0.2+	1999 09 10	704	0.9+	0.4+
1992 03 11	691	0.8−	0.2−	1999 09 10	704	0.1−	1.0+
1992 03 11	691	0.5−	0.5+	1999 09 10	704	0.6−	0.1−
1997 01 31	411	0.6+	0.6+	1999 09 13	704	0.5−	0.2−
1997 01 31	411	1.4+	0.4+	1999 09 13	704	0.4−	0.3+
1997 02 01	411	0.8+	0.2+	1999 09 13	704	0.1+	0.5−
1997 02 01	411	0.5+	1.2+	1999 09 13	704	0.3+	0.6−
1998 06 24	704	0.3−	0.6−	1999 09 13	704	0.6−	0.0
1998 06 24	704	0.9+	0.3−	1999 09 13	704	0.0	0.5+
1998 06 24	704	0.2−	0.1−	1999 09 13	704	0.4−	1.4+
1998 06 24	704	0.9−	0.3+	1999 09 13	704	0.5−	0.8+
1999 09 07	699	0.5−	0.3−	1999 09 13	704	0.0	0.1+
1999 09 07	704	0.3+	0.1−	1999 09 13	704	0.6−	0.0
1999 09 07	699	0.2+	1.0+	1999 09 13	704	0.4−	0.5+
1999 09 07	704	0.1+	0.5−	1999 09 13	704	0.5−	0.3−
1999 09 07	704	0.4+	0.0	1999 09 13	704	0.4−	0.1+
1999 09 07	699	0.8−	0.4+	1999 09 13	704	0.7−	0.3+

(12149)* 9099 P-L = 4300 T-3

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Kaneda (*MPC* 16036)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
<i>n</i>	28.90745	ω	(2000.0)	ω	
<i>a</i>	0.17687624	Ω	124.42174	Ω	
<i>e</i>	3.1430869	i	185.08635	i	
<i>P</i>	0.1090054	H	12.73292	H	
	5.57	G	0.15	G	
		U		U	
		1		1	

Residuals in seconds of arc

1960 10 17	675	0.1-	1.1+	1998 06 19	704	0.2+	1.0-	1999 09 14	704	0.1-	0.3-
1960 10 22	675	0.7+	0.6+	1998 06 19	704	0.3+	1.7+	1999 09 14	704	0.0	0.1-
1960 10 24	675	1.4-	2.0+	1998 06 19	704	0.7+	0.6+	1999 09 14	704	0.1+	0.3+
1960 10 26	675	0.1-	0.2-	1998 06 19	704	0.7-	1.7+	1999 09 14	704	0.3-	0.4-
1977 10 11	675	(3.6+	0.9-)	1998 06 19	704	0.8+	1.4-	1999 09 14	704	0.1+	0.1+
1977 10 11	675	(3.3+	1.0-)	1999 09 07	704	0.2-	0.3+	1999 10 03	691	0.0	0.1-
1977 10 12	675	1.8+	1.6-	1999 09 07	704	0.2-	0.3-	1999 10 03	691	0.1-	0.2-
1977 10 12	675	1.3+	1.3-	1999 09 07	704	1.0-	0.2+	1999 10 03	691	0.2-	0.2-
1977 10 16	675	0.4-	1.3+	1999 09 07	704	0.6-	0.2-	1999 10 06	704	0.3+	0.4+
1977 10 16	675	0.0	1.1+	1999 09 09	704	1.2+	0.1-	1999 10 06	704	0.3+	0.2+
1977 10 17	675	0.0	0.8+	1999 09 09	704	0.1+	0.4-	1999 10 06	704	0.1+	0.3+
1977 10 17	675	0.2-	1.1-	1999 09 09	704	0.2-	0.7-	1999 10 06	704	0.4+	0.4+
1977 10 21	675	0.0	0.9-	1999 09 09	704	0.9-	0.4+	1999 10 06	704	0.1+	0.4+
1977 10 21	675	0.6-	0.1+	1999 09 09	704	0.7-	0.5-	1999 10 10	691	0.2+	0.0
1977 10 22	675	2.2-	1.3-	1999 09 10	704	0.3-	1.6-	1999 10 10	691	0.2+	0.1-
1977 10 22	675	0.9+	1.3+	1999 09 10	704	0.8+	0.7+	1999 10 10	691	0.3+	0.1-
1998 05 23	704	0.4-	0.3+	1999 09 10	704	0.2-	0.3-	1999 10 15	704	0.0	0.0
1998 05 23	704	0.8-	0.5-	1999 09 10	704	0.4-	0.1-	1999 10 15	704	0.4+	0.0
1998 05 23	704	1.1-	1.2-	1999 09 10	704	0.5+	0.4+	1999 10 15	704	0.3+	0.0
1998 05 23	704	0.7-	0.4-	1999 09 10	704	0.1+	0.7-	1999 10 15	704	0.2+	0.0
1998 05 23	704	1.7+	0.2+	1999 09 10	704	0.3-	0.7+	1999 10 15	704	0.1-	0.1-

(12150)* 1051 T-1 = 1963 TF₁ = 1979 WF₂ = 1984 WB₅ = 1989 SY₇ = 1997 EC₄₈

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Doppler (*MPC* 33997), G. V. Williams (*ibid.*)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
<i>n</i>	211.19079	ω	(2000.0)	ω	
<i>a</i>	0.19025204	Ω	141.70815	Ω	
<i>e</i>	2.9939865	i	357.56134	i	
<i>P</i>	0.0552671	H	10.52837	H	
	5.18	G	0.15	G	
		U		U	
		2		2	

Residuals in seconds of arc

1963 10 15	760	(2.3+	4.0+)	1999 08 12	699	0.0	0.9+	1999 09 30	691	0.4+	0.1+
1963 10 15	760	1.1-	1.4-	1999 08 12	699	0.2-	0.5+	1999 09 30	699	0.7+	0.2+
1971 03 24	675	0.7+	1.6-	1999 09 04	691	0.6-	0.2-	1999 09 30	691	0.6+	0.2+
1971 03 24	675	0.0	1.8-	1999 09 04	691	0.7-	0.1+	1999 10 02	704	0.1-	0.5+
1971 03 25	675	0.2-	0.2-	1999 09 04	691	0.5-	0.1-	1999 10 02	704	0.4+	0.7+
1971 03 25	675	0.2-	0.2-	1999 09 05	552	0.3-	0.7-	1999 10 02	704	0.4-	0.1+
1971 03 25	675	1.4-	0.6+	1999 09 05	552	0.2-	1.0-	1999 10 02	704	0.2+	0.2+
1971 03 25	675	(10.0-	2.9+)	1999 09 07	704	0.7-	0.7+	1999 10 02	704	0.1-	0.2+
1971 03 26	675	0.2+	1.6-	1999 09 07	704	0.6-	0.2-	1999 10 05	704	0.8+	0.9+
1971 03 27	675	0.6-	0.8-	1999 09 07	704	0.7-	0.7-	1999 10 05	704	0.4+	0.4+
1979 11 16	095	0.5+	1.6+	1999 09 07	704	0.8-	0.3-	1999 10 05	704	0.4+	0.6+
1984 11 21	010	(0.6-	3.0+)	1999 09 07	704	1.3-	0.8-	1999 10 05	704	1.0+	0.5+
1989 09 27	675	0.8-	0.4-	1999 09 09	704	0.5-	0.1-	1999 10 05	704	0.2-	0.0
1989 09 28	675	0.4+	0.8-	1999 09 09	704	0.2-	0.3-	1999 10 07	704	(0.1+	2.3+)
1989 09 28	675	0.2-	0.0	1999 09 09	704	0.8-	0.4-	1999 10 07	704	1.0+	0.9+
1989 09 29	675	0.2-	0.4-	1999 09 09	704	0.5-	0.3-	1999 10 07	704	1.2+	1.9-
1989 09 29	675	0.3-	0.4+	1999 09 09	704	0.2-	0.9-	1999 10 07	704	0.2-	0.6-

1997 03 11	809	0.6+	1.8+	1999 09 14	704	0.4+	0.0	1999 10 08	691	0.1+	0.4+
1997 03 11	809	0.7+	1.7+	1999 09 14	704	0.9+	0.2-	1999 10 08	691	0.3+	0.4+
1997 03 11	809	0.3-	1.7+	1999 09 14	704	0.3+	0.0	1999 10 08	691	0.1+	0.3+
1997 03 12	809	(1.1+	2.5+)	1999 09 14	704	0.2+	0.3-	1999 10 15	704	0.1-	0.3-
1997 03 12	809	(0.9+	2.2+)	1999 09 30	699	0.8+	0.4+	1999 10 15	704	0.3+	0.2-
1997 03 12	809	(1.2+	2.5+)	1999 09 30	699	0.5+	1.0+	1999 10 15	704	0.5+	0.5-
1999 08 12	699	0.2+	0.6+	1999 09 30	691	0.4+	0.1+				

(12151)* 1220 T-1 = 1982 BH₂

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. D. W. E. Green (*MPC* 19320)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
<i>n</i>	208.74408	ω	(2000.0)	ω	
<i>a</i>	0.26048342	Ω	219.18118	Ω	
<i>e</i>	2.4281899	i	289.62928	i	
<i>P</i>	0.1435062	H	1.45872	H	
	3.78	G	0.15	G	
		U		U	
		2		2	

Residuals in seconds of arc

1971 03 24	675	0.2-	1.3-	1995 08 23	327	0.3+	0.2+	1999 10 07	704	0.5+	0.4-
1971 03 25	675	0.6-	0.3-	1995 08 23	327	0.1+	0.2-	1999 10 07	704	0.4+	0.2-
1971 03 25	675	0.3+	1.0-	1996 12 18	327	0.4-	0.3+	1999 10 07	704	0.0	0.4-
1971 03 26	675	0.1+	0.5-	1996 12 18	327	0.6-	0.4+	1999 10 07	704	0.4+	0.3-
1971 03 27	675	0.9-	1.2-	1996 12 18	327	1.1+	0.5+	1999 10 07	704	0.1-	0.3-
1971 04 02	675	1.4-	0.9+	1999 09 07	704	0.4+	0.2-	1999 10 09	704	0.4+	0.0
1971 04 16	675	(1.5+	3.9-)	1999 09 07	704	0.1-	0.3+	1999 10 09	704	0.2+	0.1-
1971 04 16	675	0.1-	2.3-	1999 09 07	704	0.7-	0.6-	1999 10 09	704	0.3-	1.3+
1982 01 16	046	1.2-	0.3+	1999 09 07	704	0.7+	0.4-	1999 10 09	704	0.2-	0.0
1982 01 16	046	2.4-	0.3-	1999 09 07	704	0.1-	0.1+	1999 10 12	691	0.0	0.0
1982 01 18	046	1.1+	1.9-	1999 09 09	704	0.8+	0.1+	1999 10 12	691	0.1+	0.0
1982 01 18	046	(0.6+	2.9+)	1999 09 09	704	0.2+	0.3-	1999 10 12	691	0.1+	0.1-
1982 01 19	046	0.8+	0.0	1999 09 09	704	1.0+	0.0	1999 10 15	704	0.2-	0.3-
1982 01 19	046	0.6-	1.7+	1999 09 09	704	1.0+	0.2-	1999 10 15	704	0.2-	0.3-
1982 01 19	095	1.9+	0.3+	1999 09 09	704	0.2+	0.6+	1999 10 15	704	0.4-	0.0
1982 01 20	095	0.5+	1.1-	1999 09 15	691	0.2-	0.0	1999 10 15	704	0.3-	0.4-
1992 11 25	675	1.4-	0.0	1999 09 15	691	0.2-	0.0	1999 10 15	704	0.2-	0.2-
1992 11 25	675	1.6+	0.6-	1999 09 15	691	0.2-	0.0	1999 10 17	691	0.3-	0.6-
1995 08 20	327	0.4+	0.1+	1999 10 06	704	0.3+	0.0	1999 10 17	691	0.2-	0.8-
1995 08 20	327	0.1+	0.3+	1999 10 06	704	0.3+	0.5-	1999 10 17	691	0.3-	0.8-
1995 08 20	327	0.4-	0.1+	1999 10 06	704	0.1-	0.4-	1999 10 19	691	0.1-	0.5-
1995 08 23	327	0.2-	0.2+	1999 10 06	704	0.1+	0.1-	1999 10 19	691	0.2-	0.4-
1995 08 23	327	0.3+	0.1-	1999 10 06	704	0.4+	0.7-	1999 10 19	691	0.2-	0.5-

(12152)* 1287 T-1 = 1981 EQ₂₂

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. D. W. E. Green (*MPC* 19321)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		<i>P</i>		<i>Q</i>	
<i>n</i>	88.50165	ω	(2000.0)	ω	
<i>a</i>	0.29415726	Ω	52.71086	Ω	
<i>e</i>	2.2391491	i	216.08571	i	
<i>P</i>	0.0193249	H	1.76483	H	
	3.35	G	0.15	G	
		U		U	
		1		1	

Residuals in seconds of arc

1971 03 24	675	1.0-	0.6+	1991 03 13	675	0.5+	0.6+	1999 10 01	703	0.1-	0.6-
1971 03 24	675	(2.5+	3.9-)	1998 04 21	704	1.0+	0.5+	1999 10 04	704	0.1-	1.0-
1971 03 25	675	0.2+	0.2-	1998 04 21	704	0.3+	0.8-	1999 10 04	704	0.6+	1.7-
1971 03 25	675	1.1+	0.7-	1998 04 21	704	0.8+	0.3-	1999 10 04	704	0.3-	1.5-
1971 03 25	675	0.2+	0.7-	1998 04 21	704	0.1+	0.6-	1999 10 04	704	0.3-	0.6-
1971 03 26	675	(2.9+	1.9-)	1998 04 21	704	0.4+	0.0	1999 10 04	704	0.1-	0.4-
1971 03 26	675	0.4-	1.1-	1998 04 24	734	0.3+	0.1-	1999 10 06	704	0.9+	0.9-
1971 03 26	675	0.4-	0.9-	1998 04 24	734	1.0-	0.1-	1999 10 06	704	0.7+	1.0-
1971 03 27	675	1.6+	2.4-	1998 04 24	734	0.8-	1.5-	1999 10 06	704	1.0+	1.0-

1971 04 02	675	1.6−	0.1−	1998 04 24	734	(0.3−	2.3−)	1999 10 06	704	0.8+	1.2−
1971 04 16	675	0.4+	1.3−	1998 04 24	734	0.1−	0.1−	1999 10 06	704	0.6+	1.0−
1971 04 16	675	0.9−	0.9+	1998 04 24	734	0.9−	0.4−	1999 10 07	704	0.5+	0.8+
1981 02 12	413	0.6+	1.9−	1998 04 25	699	0.1+	0.8−	1999 10 07	704	0.1−	0.5+
1981 02 13	413	1.2−	0.2−	1998 04 25	699	0.5+	0.6−	1999 10 07	704	0.0	0.2+
1981 03 02	413	0.8+	0.9−	1998 04 25	699	0.1−	1.0−	1999 10 07	704	0.3−	0.4−
1981 03 03	413	(3.8−	0.4+)	1998 04 26	734	0.1−	0.1+	1999 10 07	704	0.0	0.8+
1981 03 03	413	(3.1+)	0.7−)	1998 04 26	734	(3.0−	0.6+)	1999 10 08	106	0.0	0.2−
1981 03 07	413	1.7−	1.2+	1998 04 26	734	1.1−	0.5+	1999 10 08	106	0.4−	0.7−
1981 03 07	413	2.1−	1.1+	1998 04 26	734	1.0−	1.0−	1999 10 08	106	0.1−	0.8−
1981 03 07	413	0.4−	0.3−	1998 05 01	704	0.3−	0.2+	1999 10 09	704	0.5−	0.1−
1981 03 11	413	0.9−	1.5+	1998 05 01	699	1.0+	0.2−	1999 10 09	704	0.5−	0.2+
1981 03 11	413	0.2−	1.3+	1998 05 01	704	0.5−	0.3+	1999 10 09	704	0.4−	0.2+
1981 03 16	413	(3.3−	0.8+)	1998 05 01	699	0.3+	0.1+	1999 10 09	704	0.3−	0.0
1981 03 16	413	2.0−	0.3+	1998 05 01	704	0.3−	0.3+	1999 10 09	704	0.5−	0.0
1981 03 29	413	0.1+	1.3+	1998 05 01	699	1.2+	0.1+	1999 10 15	704	0.4+	0.0
1981 04 08	413	(2.6+	2.2−)	1998 05 01	704	0.2−	0.4+	1999 10 15	704	0.6+	0.2−
1981 04 11	413	0.3+	0.0	1998 05 01	704	0.4−	0.0	1999 10 15	704	0.4−	0.5+
1981 04 11	413	1.9+	0.8−	1998 05 22	704	(2.6+	1.6+)	1999 10 15	704	0.9+	1.1+
1981 04 26	413	1.8+	2.2−	1998 05 22	704	0.6+	1.5+	1999 10 15	704	1.6+	1.6+
1981 05 02	413	0.4−	0.9−	1998 05 22	704	(2.3+	0.9+)	1999 10 19	704	1.0−	0.6−
1984 01 25	675	0.8+	0.7+	1998 05 22	704	(2.5+	1.0+)	1999 10 19	704	0.3+	0.8−
1984 01 26	675	0.4+	0.1+	1999 10 01	703	0.0	0.3−	1999 10 19	704	0.0	0.8−
1991 03 09	675	0.7−	1.9−	1999 10 01	703	0.4+	0.1−	1999 10 19	704	0.3−	0.0
1991 03 09	675	0.3+	0.4−	1999 10 01	703	0.2+	0.5−	1999 10 19	704	0.3−	0.3+

(12153)* 3219 T-1 = 1992 OX₂

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. B. G. Marsden (*MPC* 21601)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	80.92869		(2000.0)	P	Q		
n	0.28991841	ω	272.24647	−0.44519577	+0.89491287		
a	2.2609217	Ω	331.25565	−0.79425268	−0.41040132		
e	0.1277358	i	3.63908	−0.41347722	−0.17521902		
P	3.40	H	15.4	G	0.15	U	1

Residuals in seconds of arc

1971 03 26	675	0.2+	0.5+	1998 03 04	809	(3.2−	0.9−)	1999 09 09	704	0.2−	0.7−
1971 03 26	675	0.3−	0.4−	1998 03 04	809	(2.9−	1.0−)	1999 09 14	704	0.2−	0.3+
1971 03 27	675	0.6−	1.0+	1998 03 04	809	(2.9−	0.7−)	1999 09 14	704	0.5−	0.2+
1971 04 02	675	0.0	0.1+	1998 03 04	704	1.1−	0.6−	1999 09 14	704	0.1+	0.8+
1971 04 16	675	1.4+	0.6−	1998 03 04	704	1.6−	0.7−	1999 09 14	704	0.0	0.1+
1971 04 16	675	1.9+	2.1+	1998 03 04	704	0.5−	0.8−	1999 09 14	704	0.4+	0.4−
1971 04 16	675	0.5+	0.0	1998 03 04	704	(2.9−	2.1−)	1999 09 14	703	0.3+	0.4+
1971 04 16	675	1.0−	1.1+	1998 03 04	704	(8.3−	2.6−)	1999 09 14	703	1.4−	1.3+
1992 07 26	809	0.5−	0.9−	1999 09 07	704	0.8−	0.8+	1999 09 14	703	0.5−	0.7+
1992 07 26	809	0.9+	0.9−	1999 09 07	704	0.1+	0.6+	1999 09 14	691	0.3−	0.2+
1992 07 26	809	(2.9+	0.1+)	1999 09 07	704	0.1+	0.4+	1999 09 14	703	0.1+	0.2+
1992 07 30	809	1.1+	1.3−	1999 09 07	704	0.0	0.5+	1999 09 14	691	0.3−	0.1+
1992 07 30	809	0.0	0.7−	1999 09 07	704	0.6+	0.4+	1999 09 14	691	0.0	0.0
1992 07 30	809	0.1+	0.6−	1999 09 08	704	0.5−	0.0	1999 09 18	691	0.0	0.2+
1997 12 08	910	0.4−	0.2+	1999 09 08	704	0.6+	0.0	1999 09 18	691	0.1−	0.1+
1997 12 08	910	0.8−	0.0	1999 09 08	704	0.1−	0.0	1999 09 18	691	0.1−	0.1+
1997 12 08	910	0.7−	0.0	1999 09 08	704	0.0	0.1−	1999 10 06	704	0.6+	0.1−
1998 03 03	704	(2.4+	3.8−)	1999 09 09	704	0.3+	1.5+	1999 10 06	704	0.6−	1.1−
1998 03 03	704	(3.1−	1.4−)	1999 09 09	704	0.3+	0.2−	1999 10 06	704	0.3−	0.3−
1998 03 03	704	1.3+	0.2−	1999 09 09	704	0.0	0.5−	1999 10 06	704	0.2−	0.4−
1998 03 03	704	1.8+	0.3−	1999 09 09	704	0.1+	0.0				

(12154)* 3329 T-1 = 1998 MM₉

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* 32291)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	30.09728		(2000.0)	P	Q		
n	0.18806637	ω	119.20096	+0.70486835	+0.70774658		
a	3.0171388	Ω	195.91094	−0.69599581	+0.67713393		
e	0.0520375	i	9.97590	−0.13693225	+0.20145572		
P	5.24	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1971 03 24	675	(6.0+	3.3−)	1999 09 07	704	0.6+	0.0	1999 10 07	704	0.4+	0.7−
1971 03 25	675	1.0+	0.2−	1999 09 07	704	0.0	0.6+	1999 10 07	704	0.3−	0.7+
1971 03 26	675	1.2−	1.7−	1999 09 07	704	0.1−	0.2+	1999 10 09	704	0.2−	1.2−
1971 03 26	675	0.8−	1.8−	1999 09 07	704	0.4+	0.6+	1999 10 09	704	0.4−	0.4−
1971 03 27	675	(4.5+	3.6−)	1999 09 08	699	0.1−	1.0+	1999 10 09	704	0.2−	0.4−
1971 04 02	675	1.5−	1.7−	1999 09 08	699	0.7−	1.1+	1999 10 09	704	0.3−	0.5−
1971 04 16	675	(0.1+	2.8−)	1999 09 08	699	0.1−	0.7+	1999 10 09	704	0.4−	0.3−
1971 04 16	675	0.4−	1.0−	1999 09 09	704	0.2+	0.5+	1999 10 13	704	0.5+	0.2+
1971 05 13	675	1.4+	0.9+	1999 09 09	704	0.1+	0.3−	1999 10 13	704	0.6+	0.1+
1971 05 14	675	0.8+	0.1−	1999 09 09	704	0.0	0.5+	1999 10 13	704	0.8+	0.1−
1971 05 16	675	0.1+	1.9+	1999 09 09	704	0.6+	0.3−	1999 10 13	704	0.4+	0.1+
1992 04 07	691	0.0	1.3+	1999 09 09	704	1.9+	0.2−	1999 10 13	704	0.0	0.4−
1992 04 07	691	0.2−	0.5−	1999 09 29	703	0.8−	0.6+	1999 10 15	704	0.5+	0.4−
1992 04 07	691	0.2+	1.0−	1999 09 29	703	0.3−	0.3+	1999 10 15	704	0.0	0.0
1998 06 03	704	0.7−	1.0+	1999 09 29	703	0.8+	0.0	1999 10 15	704	0.1+	0.6−
1998 06 03	704	0.6−	0.1−	1999 09 29	703	0.6+	1.4−	1999 10 15	704	0.1+	1.0−
1998 06 03	704	1.1+	0.3+	1999 10 02	704	0.0	0.8−	1999 10 15	704	0.1+	0.7−
1998 06 03	704	0.5−	0.4−	1999 10 02	704	0.2+	0.3+	1999 10 17	691	0.1−	0.4−
1998 06 19	704	1.6+	0.0	1999 10 02	704	0.8−	0.6−	1999 10 17	691	0.3−	0.0
1998 06 19	704	(2.7+	1.4−)	1999 10 02	704	0.3−	0.6−	1999 10 17	691	0.4+	0.7+
1998 06 19	704	0.8−	0.4+	1999 10 02	704	0.3+	0.2−	1999 10 18	012	0.4−	0.1+
1998 06 19	704	0.9+	1.0−	1999 10 07	704	0.3−	0.5−	1999 10 18	012	0.1−	0.6−
1998 06 25	704	0.1−	0.7−	1999 10 07	704	0.1+	0.5+	1999 10 18	012	0.2−	0.5−
1998 06 25	704	1.2−	0.9+	1999 10 07	704	1.0−	0.1−	1999 10 18	012	0.4−	0.3−
1998 06 25	704	0.5+	0.3+	1999 10 07	704	0.4−	0.4−	1999 10 18	012	0.3−	0.1+
1998 06 25	704	0.1−	0.7−	1999 10 07	704	0.0	1.0−				
1999 09 07	704	0.8+	0.0	1999 10 07	704	1.2−	1.8+				

(12155)* 4193 T-1 = 1991 PF₂₇ = 1993 BZ₅

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. B. G. Marsden (*MPC* 21807)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	325.62236		(2000.0)	P	Q		
n	0.26419524	ω	301.73660	+0.53216129	−0.84524834		
a	2.4053931	Ω	116.03614	+0.79392267	+0.47827176		
e	0.2059507	i	3.09905	+0.29409377	+0.23835136		
P	3.73	H	14.2	G	0.15	U	1

Residuals in seconds of arc

1971 03 24	675	1.4+	2.1−	1993 01 29	691	0.1−	0.2−	1999 10 07	704	0.9−	1.1−
1971 03 26	675	0.6−	0.9−	1993 02 20	010	0.7−	1.3+	1999 10 10	704	0.3+	0.3+
1971 03 26	675	1.6−	0.3−	1993 02 20	010	0.4−	1.7+	1999 10 10	704	0.1+	0.1−
1971 03 27	675	0.3+	2.4−	1993 02 20	010	0.7−	0.9+	1999 10 10	704	0.2−	0.1+
1971 04 02	675	1.9−	0.2+	1993 02 22	010	0.2+	1.2+	1999 10 10	704	0.0	0.1−
1991 08 05	809	0.1+	1.0−	1993 02 23	010	0.3−	1.4+	1999 10 10	704	0.5−	0.1+
1991 08 05	809	0.6+	0.2−	1999 09 15	106	0.2−	0.5+	1999 10 15	704	0.0	0.3−
1991 08 05	809	0.3−	0.4−	1999 09 15	106	0.6+	0.2+	1999 10 15	704	0.3−	0.1+
1993 01 27	010	0.8+	0.5−	1999 09 15	106	0.0	0.2+	1999 10 15	704	0.2−	0.2−
1993 01 27	010	0.4+	0.4−	1999 10 01	703	0.1+	0.1+	1999 10 15	704	0.3−	0.4−
1993 01 27	010	0.9+	1.4−	1999 10 01	703	0.3+	0.2+	1999 10 19	704	0.2+	0.8−
1993 01 28	010	0.2+	1.1−	1999 10 01	703	0.1+	0.2−	1999 10 19	704	0.0	0.5−
1993 01 28	010	0.4+	0.9−	1999 10 01	703	0.0	0.0	1999 10 19	704	0.1−	0.8−
1993 01 28	010	0.1+	0.6−	1999 10 07	704	1.1+	0.8+	1999 10 19	704	0.4−	0.9−
1993 01 29	691	0.3−	0.0	1999 10 07	704	1.3+	0.6−				
1993 01 29	691	0.4−	0.0	1999 10 07	704	0.0	0.1+				

(12156)* 1042 T-2 = 1982 VN₄ = 1993 FD₅₀

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 23533)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22847091	ω	140.59882	+0.99690984	+0.07618845		
<i>a</i>	2.6500177	Ω	215.04582	-0.07782367	+0.92475194		
<i>e</i>	0.1199045	<i>i</i>	1.90946	-0.01068862	+0.37286616		
<i>P</i>	4.31	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 09 19	675	0.0	0.9-	1995 11 24	596	0.0	0.5-	1999 10 06	704	0.0	0.1-
1973 09 19	675	0.7+	1.2-	1995 11 24	596	1.0-	0.5-	1999 10 06	704	0.4-	0.2-
1973 09 20	675	0.1-	2.5-	1995 12 14	560	0.8+	0.4+	1999 10 06	704	0.2-	0.4-
1973 09 24	675	1.0+	0.0	1995 12 14	560	0.6-	0.4+	1999 10 06	704	0.6+	0.4-
1973 09 24	675	1.7+	1.1-	1995 12 14	560	1.1+	0.7+	1999 10 06	704	0.4-	1.1-
1973 09 25	675	1.8-	0.3+	1997 03 15	691	1.4-	0.2-	1999 10 07	704	0.2+	0.2+
1973 09 29	675	1.3+	0.6-	1997 03 15	691	0.4-	0.9-	1999 10 07	704	0.1-	0.2-
1973 09 29	675	1.0+	0.8-	1997 03 15	691	0.5-	0.9-	1999 10 07	704	0.7+	0.5-
1973 09 30	675	0.1-	0.6-	1998 05 22	704	(2.1+	0.0)	1999 10 07	704	0.4-	0.4-
1973 09 30	675	0.5+	0.4+	1998 05 22	704	0.1-	1.3+	1999 10 07	106	0.5-	0.2+
1973 10 04	675	0.5+	2.4-	1998 05 22	704	0.3+	0.5-	1999 10 08	106	0.4-	0.8+
1973 10 04	675	(1.3+	2.7-)	1998 05 24	704	0.5+	0.0	1999 10 08	106	0.2+	0.2+
1973 10 05	675	0.7+	0.1+	1998 05 24	704	1.4-	0.3+	1999 10 09	704	0.6+	0.0
1973 10 05	675	0.9-	1.4+	1998 05 24	704	(2.9-	1.4+)	1999 10 09	704	0.2+	0.1-
1982 11 14	381	0.3-	0.0	1998 05 24	704	0.6-	0.4-	1999 10 09	704	0.3+	0.0
1982 11 14	381	1.1-	0.6+	1999 10 01	703	0.2+	0.4+	1999 10 09	704	0.6+	0.2-
1989 04 01	675	(3.3+	1.5-)	1999 10 01	703	0.3-	0.8+	1999 10 09	704	0.5+	0.0
1993 03 19	809	0.9+	0.6-	1999 10 01	703	0.5-	0.8+	1999 10 10	106	0.3-	0.5+
1993 03 20	809	0.2+	0.8-	1999 10 01	703	0.5-	0.4+	1999 10 10	106	0.2+	0.6+
1993 03 24	809	0.3+	0.9-	1999 10 04	704	0.4+	0.6-	1999 10 15	704	0.3+	0.3+
1993 04 17	691	0.2+	0.7-	1999 10 04	704	0.4+	0.3-	1999 10 15	704	0.1-	0.2+
1993 04 17	691	0.2-	0.6-	1999 10 04	704	0.5+	0.0	1999 10 15	704	0.7-	0.3+
1995 11 16	411	0.2-	1.3-	1999 10 04	704	0.3+	0.3+	1999 10 15	704	1.0-	0.8-
1995 11 16	411	0.9-	1.0-	1999 10 04	704	0.3-	0.1+	1999 10 15	704	1.2-	1.1-
1995 11 20	560	0.2-	0.1-	1999 10 05	704	0.4-	0.0	1999 10 19	704	0.2-	0.7+
1995 11 20	560	0.1-	0.2+	1999 10 05	704	0.0	0.4+	1999 10 19	704	0.2+	0.5+
1995 11 24	372	0.9+	0.5-	1999 10 05	704	0.1+	0.3+	1999 10 19	704	0.0	1.0+
1995 11 24	372	0.7+	1.6+	1999 10 05	704	0.0	0.8+	1999 10 19	704	0.2+	0.3+
1995 11 24	596	0.1-	0.7-	1999 10 05	704	0.1+	0.7+	1999 10 19	704	0.3-	0.5+

(12157)* 1070 T-2 = 1991 JJ₄

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* 18643)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26301726	ω	81.67728	-0.01229618	+0.99983294		
<i>a</i>	2.4125698	Ω	187.65720	-0.95272160	-0.01582108		
<i>e</i>	0.0939107	<i>i</i>	5.82533	-0.30359570	+0.00915349		
<i>P</i>	3.75	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 09 19	675	0.5+	1.9-	1998 03 03	704	1.1-	0.7-	1999 09 06	699	0.3+	0.2+
1973 09 19	675	0.6+	2.1-	1998 03 04	704	1.8-	0.2+	1999 09 06	699	0.0	0.5+
1973 09 20	675	0.1-	1.8-	1998 03 04	704	(2.9-	0.1-)	1999 09 06	699	0.1+	0.5+
1973 09 24	675	0.1+	0.4-	1998 03 04	704	(2.6-	0.7-)	1999 09 07	704	0.2-	0.3+
1973 09 24	675	0.6-	0.5-	1998 03 04	704	0.9-	1.0-	1999 09 07	704	0.5-	0.5+
1973 09 25	675	1.3+	1.6-	1998 03 04	704	(2.1-	1.7-)	1999 09 07	704	0.3-	0.1+
1973 09 25	675	0.1+	0.8+	1998 03 20	704	0.7+	0.3-	1999 09 07	704	0.1+	0.1+
1973 09 29	675	0.9+	0.6+	1998 03 20	704	0.8+	1.2-	1999 09 07	704	0.2+	0.2-
1973 09 29	675	1.0+	0.1-	1998 03 20	704	0.3+	0.6-	1999 09 09	704	1.2-	1.2-
1973 09 30	675	0.5-	0.9-	1998 03 20	704	0.3+	1.0-	1999 09 09	704	0.2+	0.7-

1973 09 30	675	1.5-	0.1-	1998 03 26	704	0.1-	1.0-	1999 09 09	704	0.2+	0.5-
1973 10 04	675	0.1+	1.7-	1998 03 26	704	0.1+	1.3-	1999 09 09	704	0.7-	0.8-
1973 10 04	675	1.0+	0.3-	1998 03 26	704	0.1-	1.3-	1999 10 13	704	0.1-	0.1+
1973 10 05	675	0.5-	1.9+	1998 03 29	704	0.9-	0.5-	1999 10 13	704	0.2+	0.7-
1973 10 05	675	0.2+	0.4-	1998 03 29	704	1.3-	0.9-	1999 10 13	704	0.6+	0.8-
1991 05 12	809	(1.2-	2.6-)	1998 03 29	704	0.7-	1.7-	1999 10 13	704	0.4+	0.8-
1991 05 12	809	(1.0-	3.4-)	1998 03 29	704	0.5+	1.8-	1999 10 13	704	0.4+	1.0-
1991 05 12	809	(1.4-	2.7-)	1998 03 29	704	(1.0+	2.2-)	1999 10 15	704	0.5+	0.6-
1991 05 17	809	0.2-	0.3-	1998 04 01	704	0.4+	1.1+	1999 10 15	704	1.2+	0.3-
1991 05 17	809	0.2+	0.3+	1998 04 01	704	(3.3-	0.7+)	1999 10 15	704	1.4+	0.8-
1991 05 17	809	0.1+	0.0	1998 04 01	704	0.9-	0.1-	1999 10 16	704	0.0	0.9-
1998 03 03	704	1.2+	1.0+	1998 04 01	704	0.5-	0.3-	1999 10 16	704	0.3+	0.5-
1998 03 03	704	0.2+	0.5-	1998 04 04	699	1.0-	1.2-	1999 10 16	704	0.1+	0.2-
1998 03 03	704	(2.3-	0.7-)	1998 04 04	699	0.4-	1.6-	1999 10 16	704	0.6-	0.6-
1998 03 03	704	0.1-	0.9-	1998 04 04	699	0.4+	0.2-				

(12158)* 1101 T-2 = 1987 KC₂ = 1993 OB₈

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 23987)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18959652	ω	91.16344	+0.41514410	-0.90970554		
<i>a</i>	3.0008835	Ω	334.30155	+0.82568103	+0.38116570		
<i>e</i>	0.0668695	<i>i</i>	1.26200	+0.38197672	+0.16476815		
<i>P</i>	5.20	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 09 19	675	0.7+	0.6-	1997 04 01	809	0.0	0.6-	1999 10 02	704	0.8+	0.2+
1973 09 19	675	0.6+	1.5-	1997 04 01	809	0.2-	0.1-	1999 10 02	704	0.2+	1.1-
1973 09 20	675	0.8+	0.6-	1999 08 23	470	0.3-	0.3+	1999 10 02	704	0.3+	0.2+
1973 09 24	675	0.5-	1.9-	1999 08 23	470	0.2+	0.7+	1999 10 02	704	0.2+	0.2-
1973 09 24	675	0.2-	0.2+	1999 09 04	699	0.5+	0.3+	1999 10 02	704	0.3+	0.3-
1973 09 25	675	(0.0	3.6-)	1999 09 04	699	1.3+	0.2+	1999 10 05	704	0.0	0.1-
1973 09 25	675	0.6-	0.6-	1999 09 04	699	0.5+	0.9+	1999 10 05	704	0.1-	0.2+
1973 09 29	675	1.0+	1.6-	1999 09 07	704	0.2-	0.1+	1999 10 05	704	0.7+	0.3-
1973 09 29	675	1.0+	1.6-	1999 09 07	704	0.2-	0.1-	1999 10 05	704	0.4+	0.5-
1973 09 30	675	0.4-	0.2+	1999 09 07	704	0.3-	0.1+	1999 10 05	704	0.9-	0.1-
1973 09 30	675	0.1+	0.1+	1999 09 07	704	0.0	0.7+	1999 10 07	704	0.3-	0.8-
1973 10 04	675	0.9+	1.1-	1999 09 07	704	0.0	0.4+	1999 10 07	704	0.7+	0.0
1973 10 04	675	1.0+	1.6-	1999 09 09	704	0.6+	0.0	1999 10 07	704	0.3-	0.0
1973 10 05	675	0.4+	0.5+	1999 09 09	704	(2.0-	2.0+)	1999 10 07	704	0.5+	0.6+
1973 10 05	675	0.9-	1.1+	1999 09 09	704	0.2-	0.4-	1999 10 07	704	0.6-	0.0
1987 05 30	413	0.2+	1.5-	1999 09 09	704	0.3-	0.1+	1999 10 09	704	0.0	0.1+
1987 05 30	413	0.5-	1.7-	1999 09 09	704	0.4-	0.5+	1999 10 09	704	0.5-	0.1+
1993 07 19	809	0.0	0.8-	1999 09 14	703	(2.0+	2.5+)	1999 10 09	704	0.2-	0.2+
1993 07 19	809	1.5-	0.4-	1999 09 14	703	0.4-	0.8+	1999 10 09	704	0.2-	0.4-
1993 07 19	809	1.9-	1.2-	1999 09 14	703	0.3+	1.1+	1999 10 09	704	0.1-	0.2-
1993 07 20	809	0.9+	1.3+	1999 09 14	703	0.0	1.0+	1999 10 15	704	0.5-	0.0
1993 07 20	809	0.1-	1.1+	1999 09 29	703	0.8-	0.7+	1999 10 15	704	0.5-	0.2+
1993 07 20	809	0.2-	1.3+	1999 09 29	703	0.2-	1.3+	1999 10 15	704	0.7-	0.0
1993 07 24	809	2.0+	1.2+	1999 09 29	703	0.5-	0.5+	1999 10 15	704	1.2+	0.1-
1997 04 01	809	0.4-	0.1+	1999 09 29	703	1.1-	0.5+	1999 10 15	704	1.2-	1.1-

(12159)* 1142 T-2 = 1991 NC₄ = 1998 GP₁₀

Residuals in seconds of arc

1973 09 19	675	0.5+	1.9-	1998 04 19	888	0.2+	0.6+	1999 09 07	704	0.0	0.4+
1973 09 20	675	0.2-	1.7-	1998 04 19	888	0.2+	0.3+	1999 09 07	704	0.5+	0.4+
1973 09 24	675	0.8+	0.4-	1998 04 19	888	0.4+	0.6+	1999 09 07	704	0.5+	0.3+
1973 09 24	675	1.0+	0.2-	1998 04 21	704	0.3+	0.2-	1999 09 07	704	0.6+	0.6-
1973 09 25	675	2.1+	0.7+	1998 04 21	704	0.4+	1.3+	1999 09 07	704	0.2+	0.5-
1973 09 25	675	0.8-	1.6-	1998 04 21	704	0.6+	0.3+	1999 09 09	704	0.0	0.1-
1973 09 29	675	1.0+	0.6-	1998 04 21	704	0.1-	0.4-	1999 09 09	704	0.2-	0.1-
1973 09 29	675	0.1+	0.3-	1998 04 21	704	1.6-	0.8-	1999 09 09	704	0.2+	0.6+
1973 09 30	675	1.2-	0.3-	1998 04 22	704	0.4+	0.3+	1999 09 09	704	0.3+	0.8+
1973 09 30	675	1.6-	0.2-	1998 04 22	704	0.2-	0.2-	1999 09 09	704	0.0	1.4+
1973 10 04	675	(1.6+	2.5-)	1998 04 22	704	0.0	0.2+	1999 09 14	704	0.6-	0.9+
1973 10 04	675	1.8+	2.0-	1998 04 22	704	0.8+	1.0+	1999 09 14	704	0.3-	1.4+
1973 10 05	675	(1.0+	2.7-)	1998 04 22	704	0.4+	0.1+	1999 09 14	704	0.3+	0.5+
1973 10 05	675	(1.8+	3.7-)	1998 04 25	699	0.0	0.0	1999 09 14	704	1.1-	0.5+
1991 07 08	809	1.3-	1.6-	1998 04 25	699	0.1+	0.0	1999 09 14	704	0.6+	0.5-
1991 07 08	809	0.3+	0.8-	1998 04 25	699	0.4+	0.3+	1999 10 05	704	0.4-	0.0
1991 07 08	809	1.7+	0.5-	1998 05 16	704	0.4+	0.1+	1999 10 05	704	0.5-	0.4+
1998 04 01	704	0.6+	0.8-	1998 05 16	704	0.8-	0.4+	1999 10 05	704	0.6-	0.3+
1998 04 01	704	0.0	0.7-	1998 05 16	704	0.5-	0.3+	1999 10 05	704	0.5-	0.4+
1998 04 01	704	0.3-	1.0-	1998 05 16	704	0.0	0.4-	1999 10 05	704	0.8-	0.3+
1998 04 01	704	0.5-	1.2-	1998 05 16	704	0.3-	0.6-	1999 10 08	704	0.3-	0.5-
1998 04 01	704	1.0-	2.1-	1998 05 25	699	0.1+	0.1+	1999 10 08	704	0.8-	0.0
1998 04 04	888	0.1-	0.1+	1998 05 25	699	0.3-	0.5+	1999 10 08	704	0.3+	0.3+
1998 04 04	888	0.1+	0.2+	1998 05 25	699	0.0	0.2+	1999 10 15	704	0.2-	0.1+
1998 04 04	888	0.2-	0.0	1999 09 04	691	0.5-	0.6+	1999 10 15	704	0.0	0.1+
1998 04 16	888	0.6+	0.6+	1999 09 04	691	0.2-	0.4+	1999 10 15	704	0.2-	0.6+
1998 04 16	888	0.0	0.2+	1999 09 04	691	0.3-	0.4+	1999 10 15	704	0.2-	0.2+

(12160)* 1152 T-2 = 1992 UU₈

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 21808)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	22.74986		(2000.0)	P	Q
n	0.26355918	ω	275.59302	+0.32593056	+0.94518511
a	2.4092616	Ω	13.48006	-0.83016004	+0.29619039
e	0.1949055	i	4.88711	-0.45233127	+0.13746405
P	3.74	H	14.4	G 0.15	U 2

Residuals in seconds of arc

1973 09 19	675	0.3-	0.1+	1973 10 04	675	1.6+	1.2+	1999 09 07	704	0.1+	0.6+
1973 09 19	675	0.0	1.9+	1973 10 04	675	(0.3-	2.9-)	1999 09 07	704	0.4+	0.0
1973 09 19	675	0.6-	0.7-	1973 10 04	675	1.6+	0.7-	1999 09 07	704	0.3-	0.5+
1973 09 19	675	0.8-	2.3+	1973 10 05	675	0.1+	0.8-	1999 09 13	699	0.0	0.2+
1973 09 20	675	2.2-	0.0	1973 10 05	675	1.0+	1.8-	1999 09 13	704	0.1+	0.2-
1973 09 20	675	0.7+	1.0+	1973 10 05	675	0.3+	0.9-	1999 09 13	699	0.0	0.4+
1973 09 24	675	0.7-	1.7-	1973 10 05	675	1.1+	0.4-	1999 09 13	704	0.7+	0.1-
1973 09 24	675	0.4-	2.0+	1992 10 27	372	(4.1-	0.4+)	1999 09 13	704	0.5+	0.2-
1973 09 24	675	0.5-	2.2+	1992 10 27	372	(5.2-	1.9+)	1999 09 13	704	0.7+	0.6-
1973 09 25	675	0.4-	0.0	1992 10 31	033	0.1-	0.5+	1999 09 13	699	1.0-	1.1+
1973 09 25	675	0.5-	1.3-	1992 10 31	033	0.4-	1.1+	1999 09 13	704	0.8-	1.1+
1973 09 25	675	0.8+	0.8+	1992 11 01	033	0.2-	0.7+	1999 09 30	704	0.1-	1.1-
1973 09 29	675	0.1-	2.1-	1998 02 27	566	1.0+	0.3+	1999 09 30	704	0.1-	0.4-
1973 09 29	675	0.5+	0.4-	1998 02 27	566	1.3+	0.1+	1999 09 30	704	0.4+	0.2-
1973 09 29	675	1.2-	2.4-	1998 02 27	566	1.5+	0.6+	1999 09 30	704	0.5-	0.0
1973 09 29	675	0.6+	0.3-	1998 03 04	704	0.9-	0.0	1999 09 30	704	0.6-	0.1+
1973 09 30	675	0.6+	2.1-	1998 03 04	704	0.5-	0.4+	1999 10 15	704	0.1-	0.1+
1973 09 30	675	0.2-	0.9+	1998 03 04	704	1.2-	1.0-	1999 10 15	704	0.3-	0.1+
1973 09 30	675	(1.0+	2.8-)	1998 03 04	704	1.2-	0.2-	1999 10 15	704	0.2-	0.1-
1973 09 30	675	0.4+	0.5+	1999 09 07	704	0.1+	0.3+	1999 10 15	704	0.1+	0.3-
1973 10 04	675	(0.4+	3.9-)	1999 09 07	704	0.0	0.2+	1999 10 15	704	0.0	0.1+

(12161)* 1158 T-2 = 1977 XZ₁

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 20831)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	312.20689		(2000.0)	P	Q
n	0.26529909	ω	188.62421	+0.60503864	-0.79593289
a	2.3987162	Ω	224.14742	+0.73223759	+0.56634853
e	0.2053231	i	1.68424	+0.31266013	+0.21386955
P	3.72	H	15.6	G 0.15	U 2

Residuals in seconds of arc

1973 09 19	675	0.8-	0.9-	1999 09 07	704	1.3-	0.7+	1999 10 06	704	0.1+	0.2-
1973 09 19	675	1.2+	1.5-	1999 09 07	704	0.6+	0.1+	1999 10 06	704	0.3+	0.0
1973 09 20	675	0.3-	0.4-	1999 09 07	704	0.4+	0.2+	1999 10 06	704	0.0	0.1-
1973 09 24	675	0.8+	0.5-	1999 09 07	704	0.4+	1.6+	1999 10 06	704	0.1+	0.2-
1973 09 24	675	1.1+	0.0	1999 09 08	704	0.9-	0.2+	1999 10 07	704	0.2-	0.3+
1973 09 25	675	(0.6-	3.9-)	1999 09 08	704	0.1+	1.0+	1999 10 07	704	0.4+	0.0
1973 09 25	675	0.4+	1.4-	1999 09 08	704	0.3-	0.9+	1999 10 07	704	0.2+	1.0-
1973 09 29	675	0.8+	1.1-	1999 09 08	704	0.7-	0.7+	1999 10 07	704	0.5+	0.3-
1973 09 29	675	0.5+	0.1-	1999 09 09	704	0.1+	0.0	1999 10 07	704	0.1+	0.4+
1973 09 30	675	1.1-	0.8-	1999 09 09	704	0.8+	0.1+	1999 10 09	704	0.4-	0.3+
1973 09 30	675	0.8-	0.6-	1999 09 09	704	0.9+	1.1-	1999 10 09	704	0.9-	0.2+
1973 10 04	675	(2.6+	3.0-)	1999 09 09	704	0.8+	0.4-	1999 10 09	704	0.7-	0.6+
1973 10 04	675	(1.4+	2.9-)	1999 09 09	704	1.0+	0.2+	1999 10 09	704	0.4-	0.0
1973 10 05	675	1.7+	1.7-	1999 09 14	703	0.1+	0.2-	1999 10 09	704	0.6-	1.3+
1973 10 05	675	(3.0+	0.5-)	1999 09 14	703	0.1+	0.7+	1999 10 12	691	0.2-	0.3+
1977 12 07	675	0.5+	0.3+	1999 09 14	703	0.5+	0.6+	1999 10 12	691	0.1-	0.3+
1977 12 08	675	0.4-	0.0	1999 09 14	703	0.7+	0.8+	1999 10 12	691	0.1-	0.4+
1994 05 02	691	0.5-	1.2-	1999 09 15	691	0.2-	0.6+	1999 10 15	704	0.2-	0.0
1994 05 02	691	0.2-	1.1-	1999 09 15	691	0.2-	0.3+	1999 10 15	704	0.1+	0.3-
1998 06 20	691	0.5+	0.6+	1999 09 15	691	0.3-	0.2+	1999 10 15	704	0.1+	0.3-
1998 06 20	691	0.5+	0.1+	1999 10 02	704	0.3+	0.3-	1999 10 15	704	0.4-	0.0
1998 06 20	691	0.2+	0.4+	1999 10 02	704	1.3-	0.4-	1999 10 15	704	0.9-	0.1+
1998 06 26	691	0.5-	0.3+	1999 10 02	704	0.1+	0.6+	1999 10 19	691	0.2-	0.0
1998 06 26	691	0.3-	0.0	1999 10 02	704	0.5-	0.7+	1999 10 19	691	0.2-	0.7-
1998 06 26	691	0.4-	0.4-	1999 10 02	704	0.2+	0.1+	1999 10 19	691	1.1-	0.5-
1999 09 07	704	0.0	0.2+	1999 10 06	704	0.2+	0.1-				

(12162)* 2145 T-2 = 1988 DZ₁ = 1990 RO₉

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Kaneda (*MPC* 16242), E. Bowell (*MPC* 18132)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	351.77777		(2000.0)	P	Q
n	0.22917654	ω	197.54700	+0.90107705	-0.43234908
a	2.6445754	Ω	188.31104	+0.42056315	+0.89016894
e	0.1646724	i	13.47451	+0.10576762	+0.14378296
P	4.30	H	14.2	G 0.15	U 1

Residuals in seconds of arc

1973 09 19	675	0.2-	0.8+	1988 02 23	809	0.0	0.2-	1998 06 25	704	0.1-	1.1+
1973 09 19	675	1.1+	0.6-	1988 02 23	809	0.3-	0.1+	1998 06 25	704	1.5-	1.0+
1973 09 20	675	2.0-	2.3-	1988 02 23	809	0.8-	0.4+	1999 10 03	703	0.1+	0.0
1973 09 24	675	2.2-	0.1+	1990 09 14	675	0.3-	0.2-	1999 10 03	703	0.0	0.3+
1973 09 24	675	(3.3-	0.7-)	1990 09 14	675	0.6+	0.5-	1999 10 03	703	0.0	0.1+
1973 09 25	675	1.4-	0.6-	1990 09 18	675	0.2+	0.5-	1999 10 03	703	0.4+	0.4+
1973 09 25	675	1.0-	2.0+	1990 09 18	675	0.9+	0.5-	1999 10 09	704	0.2-	0.6+
1973 09 29	675	2.1+	0.2-	1993 04 22	691	1.2+	0.3-	1999 10 09	704	0.2-	1.1+
1973 09 29	675	0.0	1.5-	1993 04 22	691	1.0+	0.7-	1999 10 09	704	0.0	0.2+
1973 09 30	675	0.4+	0.4-	1993 04 22	691	0.0	0.6-	1999 10 09	704	0.3-	0.5+
1973 09 30	675	0.4+	1.0-	1997 04 14	691	0.3+	0.4-	1999 10 09	704	0.0	0.8+
1973 10 04	675	1.6+	0.4-	1997 04 14	691	0.4+	0.3-	1999 10 19	704	0.0	0.2+
1973 10 04	675	1.0+	1.6-	1997 04 14	691	0.3+	0.4-	1999 10 19	704	0.2+	0.2+
1973 10 05	675	(3.3+	1.3-)	1997 04 15	691	0.2-	0.3-	1999 10 19	704	0.4-	0.1+
1973 10 05	675	0.8+	0.4-	1997 04 15	691	0.4-	0.6-	1999 10 19	704	0.0	0.2+
1988 02 16	809	0.3-	0.5-	1997 04 15	691	0.7-	0.3-	1999 10 19	704	0.1+	0.1+

1988 02 16 809 0.3- 0.1- 1998 06 25 704 0.2- 1.2+
 1988 02 16 809 0.3+ 1.1- 1998 06 25 704 0.5- 0.4-

(12163)* 3013 T-2 = 1990 RH₈

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* 17836)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23077846	ω	259.72811	+0.47528794	-0.87950725		
<i>a</i>	2.6323231	Ω	161.83527	+0.83420274	+0.44186149		
<i>e</i>	0.0701394	<i>i</i>	4.38590	+0.27965542	+0.17670718		
<i>P</i>	4.27	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1973 09 19	675	0.6-	0.4-	1990 09 22	809	1.1-	0.5+	1999 09 18	703	0.2-	0.1+
1973 09 19	675	0.1-	0.4-	1990 09 22	809	0.7-	0.4+	1999 09 18	703	(0.5+	2.0+)
1973 09 20	675	1.6+	1.6-	1990 09 22	809	0.4-	0.3+	1999 09 18	703	0.5-	1.2+
1973 09 24	675	0.4+	2.0-	1990 09 23	809	0.5+	0.6+	1999 10 08	703	0.4-	0.2+
1973 09 24	675	(0.9+	3.2-)	1990 09 23	809	0.6+	0.7+	1999 10 08	703	0.3+	0.2+
1973 09 25	675	2.0+	2.1-	1990 09 23	809	1.1+	0.6+	1999 10 08	703	0.1+	0.6+
1973 09 25	675	0.0	2.1-	1990 09 24	809	(1.5-	2.1+)	1999 10 08	703	0.6-	0.8+
1973 09 29	675	0.1-	0.9-	1990 09 24	809	1.1-	1.7+	1999 10 10	704	1.1+	0.4+
1973 09 30	675	0.4-	1.5-	1990 09 24	809	0.9-	1.4+	1999 10 10	704	0.3+	0.4-
1973 09 30	675	0.7-	1.5-	1990 09 25	809	1.4-	0.9+	1999 10 10	704	0.5+	1.0-
1973 10 04	675	1.5+	1.8-	1990 09 25	809	1.0-	0.9+	1999 10 10	704	1.6-	0.6+
1973 10 04	675	1.1+	2.0-	1990 09 25	809	0.7-	0.8+	1999 10 10	704	0.0	0.9-
1973 10 05	675	0.3+	1.9-	1998 06 24	704	0.3-	1.8+	1999 10 15	704	0.0	0.2+
1973 10 05	675	1.6+	0.4-	1998 06 24	704	0.8+	0.7-	1999 10 15	704	0.5+	0.0
1990 09 14	809	0.2+	0.0	1998 06 26	704	0.1+	0.5+	1999 10 15	704	0.1+	0.1-
1990 09 14	809	0.5+	0.1+	1998 06 26	704	0.2-	0.4-	1999 10 15	704	0.1+	0.2+
1990 09 14	809	0.7+	0.2+	1998 06 26	704	0.6+	0.4+	1999 10 15	704	0.3-	0.2+
1990 09 15	809	1.0-	0.2+	1998 06 26	704	1.2+	0.4+	1999 10 20	704	0.0	0.6+
1990 09 15	809	0.7-	0.3+	1998 07 26	704	0.3-	0.2+	1999 10 20	704	0.3-	0.2+
1990 09 15	809	0.3-	0.1+	1998 07 26	704	0.4-	0.3-	1999 10 20	704	0.1+	0.6+
1990 09 21	809	0.1+	1.6+	1998 07 26	704	1.7-	0.5+	1999 10 20	704	0.0	0.4+
1990 09 21	809	0.3+	1.5+	1998 07 26	704	0.0	0.4-	1999 10 20	704	0.4-	0.5+
1990 09 21	809	0.6+	1.3+	1999 09 18	703	0.1-	1.5+				

(12164)* 3067 T-2 = 1979 MN₆ = 1986 TV₄ = 1988 FL

Discovered 1973 Sept. 30 by C. J. van Houten and I. van Houten-Groeneveld
 on Palomar Schmidt plates taken by T. Gehrels.

Id. D. W. E. Green (*MPC* 14967)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30659131	ω	60.54592	-0.97412234	+0.22422037		
<i>a</i>	2.1781920	Ω	132.39524	-0.21842520	-0.90149431		
<i>e</i>	0.0673905	<i>i</i>	2.20980	-0.05810415	-0.37018000		
<i>P</i>	3.21	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1954 11 24	675	0.5-	0.9+	1988 03 17	399	(3.7-	1.8-)	1998 07 02	699	0.4-	0.8+
1954 11 24	675	1.2-	1.1+	1988 03 17	399	2.0+	1.1-	1999 10 03	704	0.7-	0.7+
1973 09 19	675	0.4+	1.1+	1988 03 18	675	(2.6-	0.1-)	1999 10 03	704	1.3+	0.4+
1973 09 19	675	0.6-	0.2-	1988 03 18	675	1.8-	0.2-	1999 10 03	704	0.9+	0.1+
1973 09 20	675	1.2+	0.2-	1998 05 15	689	(0.8+	2.1+)	1999 10 03	704	0.2-	0.7+
1973 09 24	675	0.9-	2.1-	1998 05 22	704	1.1-	0.3-	1999 10 03	704	0.2-	0.3-
1973 09 24	675	1.2+	1.6-	1998 05 22	704	(0.6+	3.4+)	1999 10 07	704	0.1-	1.1-
1973 09 25	675	(1.4+	2.6-)	1998 05 22	704	1.7-	1.8+	1999 10 07	704	0.7+	0.0
1973 09 25	675	1.1+	1.5-	1998 05 22	704	1.5+	0.6-	1999 10 07	704	0.0	0.8+
1973 09 29	675	0.0	1.2-	1998 05 24	704	0.7+	0.3+	1999 10 07	704	0.2+	0.2-
1973 09 29	675	1.1+	1.9-	1998 05 24	704	(0.2+	3.0+)	1999 10 10	704	0.1+	0.5+
1973 09 30	675	0.1-	1.4-	1998 05 24	704	(2.5-	1.8+)	1999 10 10	704	0.3-	0.8+
1973 09 30	675	0.2+	0.6-	1998 05 24	704	0.3-	0.0	1999 10 10	704	0.1+	0.9+
1973 10 04	675	(2.7+	2.1-)	1998 05 24	704	0.2-	0.7-	1999 10 10	704	0.0	0.8+

1973 10 04	675	2.5+	1.2-	1998 05 28	689	0.7+	1.8+	1999 10 10	704	0.5-	0.5+
1973 10 05	675	(1.3+	3.1-)	1998 06 02	809	0.7+	1.2-	1999 10 11	704	0.3+	0.3+
1973 10 05	675	2.0+	1.8-	1998 06 02	809	0.2-	1.7-	1999 10 11	704	0.2+	0.0
1979 06 23	413	0.7-	1.9+	1998 06 02	809	0.4-	1.6-	1999 10 11	704	0.5-	0.0
1979 06 24	413	(2.5-	1.2+)	1998 06 24	704	0.4-	0.8+	1999 10 11	704	0.6-	0.2+
1979 06 25	413	0.8-	2.0+	1998 06 24	704	0.6+	0.4-	1999 10 11	704	0.8-	0.3-
1979 06 29	413	0.0	1.8+	1998 06 24	704	0.5+	0.6+	1999 10 15	704	0.6-	0.7+
1979 07 24	675	(0.8+	3.1+)	1998 06 24	704	0.7+	0.1+	1999 10 15	704	0.4-	0.7+
1979 07 24	413	1.1-	1.1+	1998 06 26	704	0.1+	0.9+	1999 10 15	704	0.4-	0.3+
1979 07 25	675	(2.4+	3.0+)	1998 06 26	704	0.1+	1.2+	1999 10 15	704	0.6-	0.4+
1979 07 27	675	(2.8+	1.1+)	1998 06 26	704	0.7-	0.6-	1999 10 20	704	0.7-	1.3+
1979 08 23	675	0.6-	1.7+	1998 06 26	704	(1.2+	2.3+)	1999 10 20	704	0.5-	1.0+
1986 10 01	010	(4.6-	1.9+)	1998 06 26	704	0.5-	1.4-	1999 10 20	704	0.8-	1.2+
1986 10 01	010	(2.8+	2.9+)	1998 07 02	699	0.3-	0.1+	1999 10 20	704	0.4-	0.6+
1988 03 17	399	0.5+	1.9+	1998 07 02	699	1.1+	0.5+	1999 10 20	704	0.2-	0.8+

(12165)* 3289 T-2 = 1983 QN

Discovered 1973 Sept. 30 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)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19040735	ω	299.53308	-0.32508758	-0.94515775		
<i>a</i>	2.9923582	Ω	169.29565	+0.91576531	-0.32295088		
<i>e</i>	0.0217198	<i>i</i>	9.77716	+0.23599143	-0.04878071		
<i>P</i>	5.18	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 09 19	675	0.6+	1.3-	1983 08 31	675	1.0+	0.2+	1999 10 02	703	1.2-	0.7+
1973 09 19	675	0.3-	1.5-	1983 09 01	675	0.1+	0.1+	1999 10 02	703	0.4-	0.9+
1973 09 20	675	1.1-	0.9-	1983 09 02	675	0.0	0.1-	1999 10 02	703	0.6-	1.2+
1973 09 24	675	0.4+	1.0-	1983 09 02	675	0.2-	0.8+	1999 10 02	703	0.8-	0.7+
1973 09 24	675	0.7+	0.7+	1988 08 16	675	0.7-	0.0	1999 10 02	704	0.4-	0.1-
1973 09 25	675	0.4+	1.4-	1988 08 16	675	0.9-	1.6+	1999 10 02	704	0.0	0.2+
1973 09 25	675	0.5+	1.4-	1995 01 03	691	1.4-	0.0	1999 10 02	704	0.0	0.1+
1973 09 29	675	0.3+	0.3+	1995 01 03	691	1.4-	0.0	1999 10 02	704	0.0	0.7+
1973 09 29	675	0.8-	0.4+	1995 01 03	691	1.6-	0.2-	1999 10 02	704	0.2-	0.0
1973 09 29	675	1.3-	0.7-	1996 02 19	801	0.6+	1.7-	1999 10 06	106	0.1+	0.8+
1973 09 29	675	0.1+	0.6+	1996 02 19	801	0.4+	1.6-	1999 10 06	106	0.2-	0.2+
1973 09 30	675	(0.7+	3.5-)	1997 04 09	104	0.3-	0.0	1999 10 07	106	0.4-	0.1+
1973 09 30	675	0.6-	0.4-	1997 04 09	104	0.1-	0.3+	1999 10 07	704	0.1+	0.6+
1973 09 30	675	(0.1+	3.5-)	1997 04 09	104	0.1-	1.1+	1999 10 07	704	0.1-	0.4+
1973 09 30	675	0.1+	0.1-	1998 06 25	704	0.3+	0.1+	1999 10 07	704	0.1+	0.4-
1973 10 04	675	0.1+	0.7+	1998 06 25	704	1.8-	1.0-	1999 10 07	704	0.0	0.2-
1973 10 04	675	0.1+	0.7+	1998 06 25	704	1.2+	1.2-	1999 10 07	704	0.5+	0.1+
1973 10 04	675	0.3-	0.4-	1998 06 25	704	1.5+	0.3-	1999 10 09	704	0.3+	0.0
1973 10 04	675	0.8+	0.6+	1998 06 25	704	0.9-	0.2+	1999 10 09	704	0.2-	0.2+
1973 10 05	675	2.2+	1.9-	1999 09 09	704	0.5+	0.9+	1999 10 09	704	0.3-	0.1+
1973 10 05	675	1.0-	1.5-	1999 09 09	704	0.8+	0.7+	1999 10 09	704	0.1-	0.1-
1973 10 05	675	1.9+	2.4-	1999 09 09	704	1.5+	0.0	1999 10 09	704	0.1-	0.1+
1973 10 05	675	0.3-	0.5-	1999 09 09	704	0.6+	1.0+				
1983 08 30	675	1.0+	0.5-	1999 09 09	704	0.5+	1.8+				

(12166)* 3372 T-2 = 1988 FR = 1991 YR₂ = 1997 GN₃₉ = 1998 MK₃₈

Discovered 1973 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld
 on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Doppler (*MPC* 33536)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

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Residuals in seconds of arc

1973 09 19	675	0.2−	2.1−	1992 01 05	511	(3.4−	2.0+)	1999 09 14	704	0.3+	0.5+
1973 09 19	675	1.5−	1.1−	1992 01 05	511	(1.4+	2.2+)	1999 09 14	704	0.2−	0.1+
1973 09 20	675	0.5+	0.9−	1997 04 07	809	0.8+	1.1+	1999 09 14	704	0.5−	0.8+
1973 09 24	675	0.7−	1.8−	1997 04 07	809	1.3+	0.8+	1999 09 14	704	0.7−	0.2+
1973 09 24	675	0.4+	0.4−	1997 04 07	809	0.6+	1.4+	1999 10 02	704	0.2+	0.3+
1973 09 25	675	(3.9+	1.3−)	1997 04 08	809	0.2+	0.9+	1999 10 02	704	0.2+	0.7+
1973 09 25	675	(3.0+	3.4−)	1997 04 08	809	0.9−	0.8+	1999 10 02	704	0.2+	1.1+
1973 09 29	675	1.2+	1.9+	1997 04 08	809	0.7−	0.9+	1999 10 02	704	0.3−	0.2+
1973 09 29	675	1.0+	1.0+	1998 06 26	809	0.2−	0.9+	1999 10 02	704	0.3+	0.4+
1988 03 17	033	0.6+	1.1+	1998 06 26	809	0.8−	1.0+	1999 10 06	106	1.2−	1.1+
1988 03 18	033	0.5+	0.9+	1998 06 26	809	0.8−	0.6+	1999 10 07	106	0.3−	0.3+
1988 03 18	033	2.0+	0.1+	1998 06 27	809	(1.8−	5.0−)	1999 10 07	106	0.1−	0.9+
1991 12 31	511	1.3−	1.4+	1998 06 27	809	(2.1−	3.0−)	1999 10 08	704	0.0	0.4+
1991 12 31	511	0.3−	1.6−	1998 06 27	809	(0.9−	3.7−)	1999 10 08	704	0.2+	0.3+
1992 01 02	511	(2.1+	2.7+)	1999 09 12	118	0.7+	0.7+	1999 10 08	704	0.0	0.5+
1992 01 02	511	(3.3+	3.8+)	1999 09 12	118	0.3+	1.1+	1999 10 08	704	0.0	0.3+
1992 01 03	511	0.4−	1.7+	1999 09 13	118	0.2−	0.9+	1999 10 08	704	0.0	0.1+
1992 01 03	511	(3.8+	2.2+)	1999 09 13	118	0.2−	0.9+				

(12167)* 4306 T-2 = 1994 CD₁₅

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 26416)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	34.63570		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.26678170	ω	296.88999	+0.70780519	+0.70442397
a	2.3898209	Ω	18.48899	−0.57439514	+0.61750812
e	0.2172849	i	9.60303	−0.41119587	+0.34995798
P	3.69	H	14.2	G 0.15	U 2

Residuals in seconds of arc

1973 09 29	675	0.9−	1.3−	1998 03 28	704	1.4−	1.0−	1999 10 03	704	0.6+	0.5+
1973 09 29	675	0.7−	2.3−	1998 03 28	704	0.9−	0.9−	1999 10 03	704	0.3+	0.7+
1973 09 30	675	1.9+	1.0−	1998 03 28	704	0.8−	0.7−	1999 10 03	704	0.2+	0.6+
1973 09 30	675	0.6+	0.0	1998 03 28	704	0.9−	1.0−	1999 10 07	704	0.2+	0.1+
1973 10 04	675	1.2+	0.3−	1998 03 28	704	0.5−	1.7−	1999 10 07	704	0.4+	0.1−
1973 10 04	675	1.8−	1.3+	1998 03 29	704	0.4−	0.2−	1999 10 07	704	0.1+	0.3+
1973 10 04	675	1.1+	0.3−	1998 03 29	704	1.1−	0.2−	1999 10 07	704	0.8+	0.3+
1973 10 04	675	2.1−	0.4+	1998 03 29	704	0.6−	0.4−	1999 10 07	704	0.1−	0.3+
1973 10 05	675	1.4+	0.3−	1998 03 29	704	1.2−	0.4−	1999 10 08	106	0.1−	0.5+
1973 10 05	675	(2.9−	0.5+)	1998 03 29	704	1.6−	1.4−	1999 10 08	106	0.0	1.3+
1973 10 05	675	1.5+	0.0	1998 04 19	704	0.5+	0.4−	1999 10 08	106	0.0	0.2+
1973 10 05	675	(3.0−	0.6+)	1998 04 19	704	0.9+	0.1−	1999 10 10	704	0.2+	0.1−
1994 02 08	809	0.5+	1.7+	1998 04 19	704	1.1+	0.4−	1999 10 10	704	0.5+	0.1+
1994 02 08	809	0.7+	1.2+	1998 04 19	704	0.8+	0.6−	1999 10 10	704	0.3+	0.2−
1994 02 08	809	0.3−	0.9+	1998 04 20	704	0.1+	1.1−	1999 10 10	704	0.1+	0.1+
1994 02 10	809	1.4+	0.3−	1998 04 20	704	0.0	0.6−	1999 10 10	704	0.1+	0.0
1994 02 10	809	1.9+	0.8−	1998 04 20	704	0.1+	1.0−	1999 10 13	704	0.1−	1.1−
1994 02 10	809	1.0+	1.0−	1998 04 20	704	0.6−	0.4−	1999 10 13	704	0.1+	1.1−
1994 02 13	809	0.0	0.4+	1998 04 20	704	(0.8−	2.1−)	1999 10 13	704	0.0	1.2−
1994 02 13	809	1.4−	0.8+	1998 04 22	704	0.1+	0.3−	1999 10 13	704	0.1−	1.4−
1994 02 13	809	0.8−	1.1+	1998 04 22	704	0.2+	0.1−	1999 10 13	704	0.1+	1.4−
1998 03 20	704	0.4−	0.2+	1998 04 22	704	0.3−	0.2+	1999 10 15	704	0.2−	0.4−
1998 03 20	704	0.3−	0.2+	1998 04 22	704	0.1+	0.4+	1999 10 15	704	0.1−	0.3−
1998 03 20	704	0.6+	0.4−	1998 04 22	704	0.3−	0.4+	1999 10 15	704	0.3−	0.5−
1998 03 20	704	0.5−	0.3+	1998 04 30	699	1.5+	0.9−	1999 10 15	704	0.2+	0.6−
1998 03 22	704	0.4−	0.2−	1998 04 30	699	1.2+	0.1+	1999 10 15	704	0.6−	0.5−
1998 03 22	704	0.1+	0.5−	1998 04 30	699	0.7−	0.2+	1999 10 15	127	0.3−	0.1−
1998 03 22	704	0.2+	0.9−	1998 05 16	704	0.5+	0.1+	1999 10 15	127	0.3−	0.0
1998 03 22	704	2.0−	0.4+	1998 05 16	704	0.7+	1.0−	1999 10 17	127	0.6+	0.4−
1998 03 22	704	0.4−	0.2−	1998 05 16	704	1.0−	0.8+	1999 10 17	127	0.2+	0.5−
1998 03 25	704	0.6−	0.1−	1998 05 16	704	0.5+	1.0−	1999 10 19	127	0.4+	1.2−
1998 03 25	704	0.6−	0.3+	1998 05 16	704	0.4−	0.2+	1999 10 19	127	0.3+	1.2−
1998 03 25	704	1.2+	0.0	1999 09 14	703	0.1−	0.5+	1999 10 21	704	0.1+	0.3−
1998 03 25	704	(2.9−	1.9+)	1999 09 14	703	0.3−	0.8+	1999 10 21	704	0.0	0.2−

1998 03 25	704	0.6−	0.0	1999 09 14	703	0.0	0.8+	1999 10 21	704	0.1+	0.3−
1998 03 25	566	0.5−	0.1−	1999 09 14	703	0.3−	0.7+	1999 10 21	704	0.1+	0.6−
1998 03 25	566	0.3−	0.1−	1999 10 03	704	0.3+	0.2−	1999 10 21	704	0.0	0.3−
1998 03 25	566	0.5−	0.1−	1999 10 03	704	0.2+	0.7+				

(12168)* 5141 T-2 = 1978 QK₃

Discovered 1973 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 15087)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	15.61548		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.18824383	ω	22.02933	+0.79938533	+0.58407906
a	3.0152423	Ω	301.46293	−0.57293851	+0.67047540
e	0.0946238	i	9.50367	−0.18089933	+0.45750889
P	5.24	H	12.7	G 0.15	U 2

Residuals in seconds of arc

1955 03 24	675	1.1+	1.1+	1989 10 28	807	0.7+	0.7+	1999 09 16	704	0.3−	0.4+
1955 03 24	675	0.7+	0.9+	1991 01 16	675	0.6+	0.3+	1999 09 16	704	0.7−	0.5+
1973 09 19	675	(4.4+	0.5−)	1991 01 16	675	0.5−	0.2+	1999 10 01	703	0.4−	0.2+
1973 09 20	675	0.7−	0.2−	1991 02 07	675	0.1−	1.1+	1999 10 01	703	0.3−	0.6+
1973 09 20	675	0.4+	0.8−	1991 02 07	675	0.2−	1.5+	1999 10 01	703	0.6−	0.3+
1973 09 24	675	0.4−	2.0−	1994 11 04	670	1.1−	1.2+	1999 10 01	703	0.2−	0.5+
1973 09 24	675	0.7+	1.2−	1994 11 04	670	(1.1−	3.8+)	1999 10 04	704	0.8+	0.2+
1973 09 25	675	0.9−	0.9−	1994 11 04	670	0.3−	1.1−	1999 10 04	704	0.4+	0.4+
1973 09 25	675	(0.5+	2.6−)	1999 09 02	145	0.5−	0.4+	1999 10 04	704	0.1+	0.4−
1973 09 29	675	1.9−	0.5+	1999 09 02	145	0.2−	0.5+	1999 10 04	704	0.2−	0.3−
1973 09 29	675	2.0−	0.6−	1999 09 02	145	0.2−	0.2+	1999 10 04	704	1.7−	0.9−
1973 09 30	675	1.2+	0.6−	1999 09 02	145	0.5−	0.4+	1999 10 07	703	0.3−	0.4+
1973 09 30	675	0.9+	0.2+	1999 09 05	703	0.2−	0.0	1999 10 07	703	0.4−	0.4+
1973 10 04	675	1.6+	0.2−	1999 09 05	703	0.5−	0.1+	1999 10 07	703	0.3−	0.6+
1973 10 04	675	1.1+	0.0	1999 09 05	703	0.4−	0.5−	1999 10 07	703	0.3−	0.3+
1973 10 05	675	0.8+	1.4−	1999 09 05	703	1.2−	0.0	1999 10 09	704	1.3+	1.1+
1973 10 05	675	1.7+	1.2−	1999 09 08	704	0.2−	0.3+	1999 10 09	704	1.0+	0.3+
1978 08 24	414	0.6−	0.6+	1999 09 08	704	0.1+	0.4+	1999 10 09	704	1.1+	0.5−
1978 08 24	414	0.9−	0.7+	1999 09 08	704	0.1−	0.9+	1999 10 09	704	0.5+	0.1−
1978 08 26	414	0.1+	0.5+	1999 09 08	704	0.1+	1.1+	1999 10 09	704	0.6+	0.7−
1978 08 26	414	0.7+	0.8+	1999 09 16	704	0.2−	0.5+				
1984 11 21	010	1.0+	0.4+	1999 09 16	704	0.4+	0.3+				

(12169)* 2031 T-3 = 1999 JH₃₄

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* 35054)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	130.03344		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.29993064	ω	163.10400		−0.56133177		−0.82621456
a	2.2103217	Ω	321.00751		+0.75026484		−0.48370609
e	0.0236991	i	4.34849		+0.34929832		−0.28878697
P	3.29	H	15.3	G	0.15	U	2

Residuals in seconds of arc

1977 10 07	675	1.1+	0.6−	1977 10 21	675	0.3+	0.4−	1999 05 13	699	0.7−	0.9−
1977 10 11	675	0.6−	1.0+	1977 10 22	675	0.2−	0.3+	1999 05 13	704	0.1−	0.5−
1977 10 11	675	0.4−	0.7+	1977 10 22	675	1.1+	0.3+	1999 05 13	704	0.4+	0.0
1977 10 12	675	1.2−	0.8+	1992 03 02	809	0.0	0.0	1999 05 13	699	1.2+	0.5−
1977 10 12	675	0.5−	0.1−	1992 04 07	809	0.5−	0.8−	1999 05 13	704	0.7+	0.4+
1977 10 16	675	0.6+	0.5−	1997 11 30	566	0.3−	0.3+	1999 05 13	699	(1.6−	2.7−)
1977 10 16	675	0.4+	0.1−	1997 11 30	566	0.1+	0.7+	1999 05 18	704	0.5+	0.5+
1977 10 16	675	0.5+	0.8+	1997 11 30	566	0.1−	0.5+	1999 05 18	704	1.3−	0.9+
1977 10 16	675	0.4−	1.3−	1999 05 10	704	0.7+	0.4+	1999 05 18	704	0.2−	1.3+
1977 10 17	675	0.1−	1.9−	1999 05 10	704	(1.0−	2.2+)	1999 05 18	704	0.7+	0.6−
1977 10 17	675	0.6−	1.2+	1999 05 10	704	0.5−	0.2+	1999 05 18	704	0.5−	1.1+
1977 10 17	675	0.1−	2.4−	1999 05 10	704	0.8−	1.6+	1999 06 06	699	0.3+	0.4−

1977 10 17	675	0.7−	1.3+	1999 05 13	704	1.0−	1.5−	1999 06 06	699	0.1+	0.0
1977 10 21	675	1.4+	0.4+	1999 05 13	704	0.2+	0.6−	1999 06 06	699	0.8+	0.3−

(12170)* 2372 T-3 = 1976 JL₇ = 1996 BP₉

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* 27117)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	54.67065		(2000.0)	P	Q		
n	0.18296916	ω	60.42898	+0.61632395	+0.78601892		
a	3.0729167	Ω	247.69861	−0.73932305	+0.55648223		
e	0.2956607	i	2.98359	−0.27119407	+0.26926156		
P	5.39	H	14.0	G	0.15	U	1

Residuals in seconds of arc

1976 05 02	809	0.4+	1.0−	1993 09 18	010	1.1+	0.8+	1996 01 27	691	0.6+	0.2+
1977 10 07	675	1.4+	0.6+	1993 09 18	010	0.2+	1.4+	1998 06 03	704	1.1+	0.6−
1977 10 11	675	0.7+	0.4+	1993 09 20	675	0.1−	0.2−	1998 06 03	704	0.6−	0.3+
1977 10 11	675	0.3−	0.0	1993 09 20	675	0.8−	0.2+	1998 06 03	704	0.0	1.1+
1977 10 12	675	0.4+	1.0−	1996 01 13	691	0.2+	0.1−	1998 06 03	704	1.4−	0.2−
1977 10 12	675	1.2+	0.4−	1996 01 13	691	0.0	0.1−	1999 10 06	704	0.8+	1.0−
1977 10 16	675	1.5−	1.4−	1996 01 13	691	0.2+	0.0	1999 10 06	704	0.2+	1.2−
1977 10 16	675	0.3−	1.2−	1996 01 20	691	0.5−	0.7+	1999 10 06	704	0.1+	0.5−
1977 10 17	675	1.8−	0.4+	1996 01 20	691	0.0	0.4+	1999 10 06	704	0.2−	1.7−
1977 10 17	675	1.9−	0.5+	1996 01 20	691	0.5+	0.2+	1999 10 06	704	0.2−	1.5−
1977 10 21	675	1.7+	0.2−	1996 01 21	691	0.4−	0.5+	1999 10 22	704	0.3+	0.9+
1977 10 21	675	(2.7+	0.5−)	1996 01 21	691	0.1−	0.0	1999 10 22	704	0.3+	1.3+
1977 10 22	675	0.1+	0.2+	1996 01 21	691	0.1−	0.2+	1999 10 22	704	0.5−	0.7+
1977 10 22	675	0.2−	0.4+	1996 01 27	691	0.2+	0.2+	1999 10 22	704	0.0	1.2+
1993 09 18	010	0.5−	0.6+	1996 01 27	691	0.2+	0.2+	1999 10 22	704	0.3−	0.5+

(12171)* 2382 T-3 = 1998 HC₄₅

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	87.61211		(2000.0)	P	Q
n	0.21759596	ω	272.81637	−0.71757268	+0.69578933
a	2.7375926	Ω	311.27630	−0.62144948	−0.65978369
e	0.0593982	i	2.37101	−0.31446781	−0.28383569
P	4.53	H	14.8	G 0.15	U 2

Residuals in seconds of arc

1977 10 07	675	(4.0+	1.9−)	1998 03 25	704	0.4+	0.5−	1998 04 21	704	0.4−	0.1−
1977 10 11	675	1.1+	1.2+	1998 03 25	704	0.3−	0.6+	1998 04 22	704	0.9+	0.8−
1977 10 11	675	0.8−	0.2−	1998 03 29	704	0.9+	1.1+	1998 04 22	704	(2.3−	0.6−)
1977 10 12	675	0.4+	0.5+	1998 03 29	704	0.8−	1.3+	1998 04 22	704	(2.4−	1.1+)
1977 10 12	675	0.5+	1.1−	1998 03 29	704	(2.7−	0.6−)	1998 04 22	704	1.6−	0.8+
1977 10 16	675	0.9−	1.5−	1998 03 29	704	0.2−	1.4−	1998 04 22	704	1.2−	0.7+
1977 10 16	675	0.2+	1.8−	1998 04 01	704	1.0+	0.1−	1999 09 06	691	0.0	0.2+
1977 10 17	675	1.7−	0.4+	1998 04 01	704	1.1+	0.3+	1999 09 06	691	0.1−	0.3+
1977 10 17	675	1.1−	1.2+	1998 04 01	704	1.9+	1.6−	1999 09 06	691	0.1+	0.3+
1977 10 21	675	2.5+	0.6−	1998 04 01	704	(5.4−	1.7+)	1999 09 13	691	0.0	0.1+
1977 10 21	675	(3.4+	0.4+)	1998 04 20	704	0.7−	0.5−	1999 09 13	691	0.2−	0.2+
1977 10 22	675	0.2−	1.5−	1998 04 20	704	1.0+	0.3+	1999 09 13	691	0.1−	0.3+
1977 10 22	675	1.2+	0.5+	1998 04 20	704	0.9−	0.7−	1999 10 14	691	0.1−	0.2−
1995 10 28	691	0.1−	0.2+	1998 04 20	704	1.3−	0.1−	1999 10 14	691	0.1+	0.3−
1995 10 28	691	0.1−	0.4+	1998 04 21	704	0.4−	0.3+	1999 10 14	691	0.1−	0.2−
1995 10 28	691	0.1−	0.2+	1998 04 21	704	0.0	0.3+	1999 10 16	691	0.3+	0.3−
1998 03 25	704	1.6+	0.6−	1998 04 21	704	1.6−	0.8−	1999 10 16	691	0.3−	0.2−
1998 03 25	704	0.1+	0.2+	1998 04 21	704	0.2−	0.8−	1999 10 16	691	0.5+	0.5−

(12172)* 2390 T-3 = 1972 GC₂ = 1981 UF₉

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 12701), K. Hurukawa (unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Nakano

M	107.51788		(2000.0)	P	Q
n	0.26714327	ω	224.10997	−0.52205983	+0.85226145
a	2.3876641	Ω	14.52283	−0.74125642	−0.43410422
e	0.0690823	i	7.61392	−0.42189152	−0.29189716
P	3.69	H	13.6	G 0.15	U 1

Residuals in seconds of arc

1972 04 09	805	0.4−	0.1−	1994 02 15	675	1.2+	0.9−	1999 09 12	120	0.4−	0.0
1972 04 09	805	0.0	1.4−	1998 04 21	704	0.3−	1.0−	1999 09 12	120	0.6−	0.4−
1972 04 10	805	0.0	1.6+	1998 04 21	704	0.2+	0.5−	1999 09 12	120	1.4−	0.0
1972 04 10	805	1.2−	0.5+	1998 04 21	704	0.6−	0.8−	1999 09 12	120	0.5−	0.1−
1977 10 07	675	(2.9+	3.1−)	1998 04 21	704	0.1+	0.4−	1999 09 14	704	0.1−	0.2+
1977 10 07	675	1.5+	1.0+	1998 04 21	704	0.6−	0.4+	1999 09 14	704	0.0	0.2−
1977 10 11	675	0.4−	0.2+	1998 04 22	704	0.4+	0.7−	1999 09 14	704	0.0	0.6−
1977 10 11	675	0.3−	0.6+	1998 04 22	704	0.1−	0.8−	1999 09 14	704	0.0	0.3−
1977 10 12	675	0.1−	0.3−	1998 04 22	704	0.8−	0.2−	1999 09 14	704	0.0	0.5−
1977 10 12	675	0.8+	0.3+	1998 04 22	704	0.2−	0.2−	1999 09 30	703	1.3+	0.6−
1977 10 12	675	0.7+	0.7+	1998 04 22	704	0.9−	0.1−	1999 09 30	703	0.3−	0.1+
1977 10 12	675	1.4+	0.0	1998 04 24	758	0.1−	0.3+	1999 09 30	703	0.3−	0.7+
1977 10 16	675	1.8+	1.3−	1998 04 24	758	0.1−	0.1+	1999 09 30	703	0.5−	0.0
1977 10 16	675	1.2−	0.6+	1998 04 25	699	0.3−	0.2+	1999 10 02	704	0.2−	0.4+
1977 10 16	675	1.1+	1.8−	1998 04 25	699	0.2−	0.4+	1999 10 02	704	0.5−	0.1−
1977 10 16	675	0.3+	0.0	1998 04 25	699	0.2−	0.2+	1999 10 02	704	0.3−	0.5+
1977 10 17	675	0.7−	0.8−	1998 04 28	566	0.4−	0.6−	1999 10 02	704	0.9−	0.3+
1977 10 17	675	0.1−	0.4+	1998 04 28	566	0.3−	0.6−	1999 10 02	704	0.5−	0.1−
1977 10 17	675	0.8−	0.2+	1998 04 28	566	0.3−	0.7−	1999 10 07	703	0.5−	0.4+
1977 10 17	675	0.4−	0.2+	1998 05 01	704	0.3+	0.5−	1999 10 07	703	0.3−	0.7+
1977 10 21	675	0.3−	2.0+	1998 05 01	704	0.1+	0.6−	1999 10 07	703	0.1−	0.4+
1977 10 21	675	1.8+	1.8−	1998 05 01	704	0.1−	0.9−	1999 10 07	703	0.3−	0.5+
1977 10 21	675	0.9−	0.0	1998 05 01	704	0.5+	0.1+	1999 10 07	704	0.2+	0.3+
1977 10 21	675	(2.8+	0.8−)	1998 05 01	704	0.1−	0.7−	1999 10 07	704	0.1+	0.0
1977 10 22	675	0.6+	0.5+	1999 09 04	699	0.2+	0.3+	1999 10 07	704	0.2−	0.0
1977 10 22	675	1.3+	2.1−	1999 09 04	699	0.1+	0.7+	1999 10 07	704	0.8−	0.5−
1977 10 22	675	0.2+	0.0	1999 09 04	699	0.0	0.9+	1999 10 07	704	0.3−	0.7−
1977 10 22	675	0.2−	1.5−	1999 09 07	704	0.3+	0.2−	1999 10 09	704	0.1+	0.0
1981 10 30	381	0.6−	0.2−	1999 09 07	704	0.6+	0.2−	1999 10 09	704	0.3+	0.2−
1981 10 30	381	1.2−	1.1−	1999 09 07	704	0.7+	0.2−	1999 10 09	704	0.2+	0.1−
1988 10 07	675	0.1+	0.9−	1999 09 07	704	0.5+	0.2−	1999 10 09	704	0.2+	0.2−
1988 10 07	675	0.0	1.1−	1999 09 07	704	0.3+	0.4−	1999 10 09	704	0.0	0.3−
1990 01 26	675	0.0	1.6−	1999 09 08	704	0.4+	0.5+	1999 10 15	704	0.6+	0.3−
1990 01 26	675	1.2+	0.5−	1999 09 08	704	0.1+	0.0	1999 10 15	704	1.4+	0.5−
1990 01 30	046	0.7−	0.2+	1999 09 08	704	0.6−	0.7−	1999 10 15	704	1.2+	0.2−
1990 01 30	046	2.1−	0.7−	1999 09 08	704	0.2−	0.8−	1999 10 15	704	0.8+	0.4−
1990 02 20	675	0.3+	0.2+	1999 09 08	704	0.1−	0.3−	1999 10 15	704	1.4+	0.7−
1994 02 15	675	0.7+	1.1−	1999 09 12	120	0.7−	0.7−				

(12173)* 3135 T-3 = 1998 KM₁

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* 32038)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	231.52747		(2000.0)	P	Q
n	0.21748682	ω	262.58070	+0.02802090	−0.99958895
a	2.7385084	Ω	185.82392	+0.93908047	+0.02840254
e	0.0605047	i	3.42596	+0.34255320	+0.00390336
P	4.53	H	14.0	G 0.15	U 1

Residuals in seconds of arc

1977 10 07	675	1.6+	1.0-	1998 04 22	704	0.4-	1.1-	1998 05 24	704	0.0	0.9+
1977 10 11	675	0.2-	1.0+	1998 04 22	704	0.4-	0.9+	1998 05 24	704	1.7-	0.8-
1977 10 11	675	1.1-	1.2+	1998 05 01	704	0.2-	0.5-	1998 05 24	704	(0.5-	2.2-)
1977 10 12	675	1.6+	0.6-	1998 05 01	704	1.4+	0.1-	1999 09 09	704	0.0	0.3+
1977 10 12	675	0.1-	0.7-	1998 05 01	704	0.1-	1.5-	1999 09 09	704	1.5+	0.6+
1977 10 16	675	0.1+	1.9-	1998 05 01	704	0.5+	0.9-	1999 09 09	704	0.0	1.0+
1977 10 16	675	0.0	0.8-	1998 05 01	704	0.8-	0.9-	1999 09 09	704	1.6+	1.0-
1977 10 17	675	1.4-	0.0	1998 05 05	699	0.9-	0.5+	1999 09 09	704	0.4+	0.1-
1977 10 17	675	1.2-	0.4-	1998 05 05	699	0.1-	0.8-	1999 09 13	704	0.1-	0.2+
1977 10 21	675	0.3+	0.2+	1998 05 05	699	0.5+	0.0	1999 09 13	704	0.1+	0.7-
1977 10 21	675	1.2+	0.8+	1998 05 18	699	0.3+	0.5-	1999 09 13	704	0.4-	1.0+
1977 10 22	675	(3.3+	1.1-)	1998 05 18	699	0.2+	0.2+	1999 09 13	704	0.3-	1.3-
1977 10 22	675	0.4+	1.1-	1998 05 18	699	0.3+	0.2+	1999 09 13	704	0.2+	0.2-
1991 12 04	691	0.7-	0.8-	1998 05 22	704	0.0	0.0	1999 10 06	704	1.9-	0.6+
1991 12 04	691	0.7-	0.0	1998 05 22	704	0.8+	0.3+	1999 10 06	704	0.3+	0.0
1991 12 04	691	0.7-	0.9-	1998 05 22	704	0.3+	0.5+	1999 10 06	704	0.2-	0.2+
1991 12 04	691	1.2+	0.1+	1998 05 22	704	(1.6+	2.1-)	1999 10 06	704	0.1-	0.3-
1991 12 04	691	0.6+	0.1+	1998 05 22	699	1.7+	0.9+	1999 10 06	704	0.5+	0.3+
1991 12 04	691	0.6+	0.0	1998 05 22	699	0.4-	0.5+	1999 10 15	704	0.7-	0.6+
1998 04 22	704	0.8-	0.2-	1998 05 22	699	0.2-	0.5-	1999 10 15	704	0.7-	0.4+
1998 04 22	704	1.0-	0.8-	1998 05 24	704	0.2-	0.2+	1999 10 15	704	0.7-	0.3-
1998 04 22	704	0.3-	0.0	1998 05 24	704	0.5+	1.2-	1999 10 15	704	0.1-	0.6-

(12174)* 3164 T-3 = 1990 SP₁₀

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. E. Bowell (*MPC* 17654)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		347.46632		(2000.0)		P		Q	
<i>n</i>		0.22461287	ω	189.68551		+0.90104307		-0.42919360	
<i>a</i>		2.6802766	Ω	196.17666		+0.41145494		+0.89146139	
<i>e</i>		0.1124938	<i>i</i>	12.97732		+0.13720866		+0.14522208	
<i>P</i>		4.39	<i>H</i>	13.4		<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 10 07	675	0.5+	1.8-	1998 06 03	704	0.1+	0.7+	1999 10 07	704	0.1+	0.9+
1977 10 11	675	1.2-	1.1-	1998 06 03	704	0.5+	1.2+	1999 10 09	704	0.1-	0.1+
1977 10 11	675	0.6-	0.6-	1998 06 03	704	1.5-	1.0+	1999 10 09	704	0.2-	0.3+
1977 10 12	675	0.6+	1.7-	1998 06 03	704	0.6+	0.1+	1999 10 09	704	0.3-	0.2+
1977 10 12	675	1.1+	0.8-	1998 06 19	704	0.7+	0.5-	1999 10 09	704	0.1-	0.3+
1977 10 16	675	0.5+	0.4-	1998 06 19	704	0.3-	1.9+	1999 10 09	704	0.0	0.3+
1977 10 16	675	0.7+	1.5-	1998 06 19	704	0.1+	0.9+	1999 10 15	704	0.5-	0.5+
1977 10 17	675	0.1-	0.7+	1998 06 19	704	0.9+	0.8+	1999 10 15	704	0.2-	0.1-
1977 10 17	675	0.8-	0.4+	1998 06 19	704	0.5+	0.5-	1999 10 15	704	0.2-	0.6+
1977 10 21	675	0.9+	0.5+	1998 06 25	704	0.0	0.1+	1999 10 15	704	0.2-	0.5+
1977 10 21	675	1.2-	0.7+	1998 06 25	704	0.9-	0.6-	1999 10 15	704	0.3-	0.3+
1977 10 22	675	0.8+	1.5-	1998 06 25	704	1.2-	1.4-	1999 10 19	704	0.2-	0.7-
1977 10 22	675	1.1+	1.3-	1998 06 25	704	1.0-	0.1+	1999 10 19	704	0.2+	0.3+
1990 09 16	675	1.1+	0.3-	1999 09 14	703	0.2+	0.7+	1999 10 19	704	0.2+	1.0+
1990 09 16	675	2.0+	0.4-	1999 09 14	703	0.0	0.6+	1999 10 19	704	0.5-	0.9+
1990 09 19	675	0.4-	0.9-	1999 09 14	703	0.4+	0.8+	1999 10 20	718	0.3-	0.7+
1990 09 19	675	0.4-	0.2+	1999 09 14	703	0.2+	0.8+	1999 10 20	718	0.3-	0.3+
1990 09 20	675	0.9+	0.4-	1999 10 07	106	1.3+	0.3-	1999 10 20	718	0.6-	1.3+
1990 09 20	675	0.6-	0.1+	1999 10 07	106	0.0	0.8+	1999 10 21	718	0.1-	0.6+
1990 10 22	675	0.9-	1.3-	1999 10 07	704	0.1-	1.0+	1999 10 21	718	0.2-	0.1+
1990 10 22	675	1.1+	1.7-	1999 10 07	704	0.1-	0.6+	1999 10 21	718	0.2+	0.2+
1993 04 17	675	0.1-	0.2-	1999 10 07	704	0.3-	0.7+				
1993 04 17	675	1.2+	0.2+	1999 10 07	704	0.3-	0.7+				

(12175)* 3197 T-3 = 1988 VE₅ = 1988 VK₁₀ = 1989 YL₄

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 15908)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		356.84879		(2000.0)		P		Q	
<i>n</i>		0.18018004	ω	307.41153		+0.94785489		-0.31511139	
<i>a</i>		3.1045472	Ω	71.00019		+0.30602399		+0.85809309	
<i>e</i>		0.1892023	<i>i</i>	2.89211		+0.08899680		+0.40543933	
<i>P</i>		5.47	<i>H</i>	12.7		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 07	675	0.3-	0.9-	1989 12 31	413	0.3+	1.0+	1999 10 09	106	1.1+	0.6-
1977 10 11	675	1.4-	1.1+	1990 02 23	675	1.8+	1.2-	1999 10 10	704	0.4-	0.2+
1977 10 11	675	0.5+	1.0+	1997 05 26	910	0.4+	0.6+	1999 10 10	704	0.3-	0.3+
1977 10 12	675	1.3-	0.1-	1997 05 26	910	0.0	0.7+	1999 10 10	704	0.4-	0.2+
1977 10 12	675	0.3+	0.6-	1997 05 26	910	0.8-	0.1+	1999 10 10	704	0.5-	0.3+
1977 10 16	675	2.0+	0.9-	1998 06 26	704	(0.9+	2.2-)	1999 10 10	704	0.5-	0.3+
1977 10 16	675	1.7+	1.2-	1998 06 26	704	0.6+	0.1+	1999 10 11	106	0.2-	1.0+
1977 10 17	675	0.2+	0.9-	1998 06 26	704	(0.2+	2.4+)	1999 10 11	106	0.1-	0.2+
1977 10 17	675	0.2-	0.2-	1998 06 26	704	(2.4-	0.5+)	1999 10 15	704	0.2-	0.5+
1977 10 21	675	0.9-	0.8+	1999 10 01	703	0.3-	0.7+	1999 10 15	704	0.2-	0.4+
1977 10 21	675	1.3-	0.4+	1999 10 01	703	0.3-	0.3+	1999 10 15	704	0.2-	0.6+
1977 10 22	675	1.2+	1.1-	1999 10 01	703	0.1-	0.1+	1999 10 15	704	0.1-	0.5+
1977 10 22	675	1.4+	1.8-	1999 10 01	703	0.1-	0.3+	1999 10 16	120	0.1-	0.7+
1988 11 04	046	0.6+	1.8-	1999 10 02	120	0.3-	0.4+	1999 10 17	120	0.1+	0.6+
1988 11 04	046	(1.8+	2.6-)	1999 10 02	120	0.5-	0.7+	1999 10 20	704	0.5+	0.4+
1988 11 05	046	(7.3-	43.1-)	1999 10 07	704	0.0	0.5+	1999 10 20	704	0.6+	0.1-
1988 11 10	046	1.8+	1.0-	1999 10 07	704	0.2-	0.1-	1999 10 20	704	0.4+	0.2-
1988 11 10	046	1.4-	0.2+	1999 10 07	704	0.6-	0.0	1999 10 20	704	0.5+	0.5-
1989 12 30	413	1.8-	0.0	1999 10 07	704	0.7-	0.4+	1999 10 20	704	0.5+	0.6-
1989 12 30	413	0.7+	1.8+	1999 10 07	704	0.6-	0.2+				
1989 12 31	413	0.4-	2.0-	1999 10 08	106	0.4-	0.1+				

(12176)* 3468 T-3 = 1996 XS₂₂ = 1998 DP₃₃

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* 31577)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		78.22897		(2000.0)		P		Q	
<i>n</i>		0.26522520	ω	193.02988		-0.45512622		+0.89001108	
<i>a</i>		2.3991617	Ω	49.90409		-0.81372756		-0.40332087	
<i>e</i>		0.1413368	<i>i</i>	2.03847		-0.36153504		-0.21263243	
<i>P</i>		3.72	<i>H</i>	14.9		<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 07	675	1.0-	0.7-	1998 02 28	809	(1.4-	5.0-)	1999 09 07	704	0.1+	0.3-
1977 10 11	675	0.8-	0.3+	1998 02 28	809	(1.6-	4.8-)	1999 09 07	704	0.7-	0.1+
1977 10 11	675	0.6-	0.5+	1998 02 28	809	(0.9-	4.3-)	1999 09 07	699	0.7-	0.5+
1977 10 12	675	1.8+	0.2-	1998 03 03	704	0.4-	0.4-	1999 09 07	704	0.0	0.0
1977 10 12	675	2.0+	0.1+	1998 03 03	704	0.5-	0.1-	1999 09 07	704	0.2+	0.1+
1977 10 16	675	0.1+	1.1-	1998 03 03	704	1.6-	0.4+	1999 09 08	703	0.3-	0.5+
1977 10 16	675	0.5+	2.0-	1998 03 03	704	(0.9+	2.2+)	1999 09 08	703	0.6+	0.2+
1977 10 17	675	0.6-	0.3+	1998 03 03	704	1.1-	1.1+	1999 09 08	703	0.5+	0.2-
1977 10 17	675	1.7-	0.2-	1998 03 20	704	0.2-	0.4-	1999 09 08	703	1.0+	0.9-
1977 10 21	675	0.6+	0.3+	1998 03 20	704	1.5-	1.0+	1999 09 09	704	0.4-	0.3-
1977 10 21	675	0.4+	0.9+	1998 03 20	704	1.3-	0.7+	1999 09 09	704	0.3-	0.3-
1996 12 12	691	0.3-	0.2+	1998 03 20	704	1.2-	0.5+	1999 09 09	704	0.1+	0.4+
1996 12 12	691	0.4-	0.2-	1998 03 20	704	1.2-	0.5+	1999 09 09	704	0.4+	0.2+
1996 12 12	691	0.4-	0.1+	1998 03 22	704	0.7+	0.1+	1999 09 09	704	(2.4-	0.0)
1996 12 13	691	0.7+	0.5+	1998 03 22	704	1.3+	1.0+	1999 09 10	704	1.2-	0.1-
1996 12 13	691	0.7+	0.0	1998 03 22	704	(2.6+	1.5+)	1999 09 10	704	0.2-	0.8+
1996 12 13	691	1.1+	0.3+	1998 03 22	704	0.7+	0.4-	1999 09 10	704	0.2-	0.7-
1997 02 04	691	0.6-	0.0	1998 03 22	704	1.3+	0.4-	1999 09 10	704	0.1+	1.0+
1997 02 04	691	1.0-	0.2+	1998 03 25	566	0.2+	0.5+	1999 09 10	704	0.4-	0.3-
1997 02 04	691	0.7-	0.0	1998 03 25	566	0.3+	0.4+	1999 09 10	704	0.2-	0.0
1998 02 25	809	1.7+	0.3-	1998 03 25	566	0.0	0.3+	1999 09 13	704	0.1+	0.2-
1998 02 25	809	0.4+	0.6-	1998 03 29	704	0.3+	0.1+	1999 09 13	704	0.2+	0.6-
1998 02 25	809	0.3-	1.6-	1998 03 29	704	0.3+	0.6+	1999 09 13	704	0.2-	0.4-

1998 02 26	809	(1.8+ 2.3-)	1998 03 29	704	0.7- 0.0	1999 09 13	704	0.8+ 0.0
1998 02 26	809	0.8+ 0.7-	1998 03 29	704	0.1+ 0.8-	1999 10 07	704	0.1+ 0.0
1998 02 26	809	(3.7+ 1.4-)	1998 03 29	704	0.2- 0.7-	1999 10 07	704	0.7- 0.4+
1998 02 27	809	(2.8+ 0.8-)	1999 09 07	699	0.1+ 1.0+	1999 10 07	704	0.3- 0.1+
1998 02 27	809	1.0+ 0.3-	1999 09 07	704	0.0 0.3-	1999 10 07	704	0.5- 1.3+
1998 02 27	809	1.4+ 0.3-	1999 09 07	699	1.3+ 0.2-			

(12177)* 4074 T-3 = 1989 YV₁

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 15908)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		150.13644		(2000.0)		P		Q	
<i>n</i>		0.26543313	ω	91.48533		-0.98974368		+0.13079867	
<i>a</i>		2.3979086	Ω	96.03290		-0.14285113		-0.90900336	
<i>e</i>		0.0834778	<i>i</i>	3.31114		+0.00099816		-0.39573299	
<i>P</i>		3.71	<i>H</i>	14.9		<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc									
1977 10 07	675	(4.1+ 3.9-)	1998 04 22	704	0.1- 0.1+	1998 05 28	699	1.1- 0.6+	
1977 10 11	675	2.0+ 0.3-	1998 04 22	704	0.1- 0.0	1999 09 07	704	0.1+ 0.4-	
1977 10 11	675	1.0+ 1.4-	1998 04 22	704	0.1+ 0.8-	1999 09 07	704	0.3- 0.1-	
1977 10 12	675	0.0 1.6-	1998 04 22	704	0.5- 0.8-	1999 09 07	704	0.1+ 0.5-	
1977 10 12	675	1.4+ 1.4-	1998 04 22	704	0.3+ 0.5-	1999 09 07	704	0.1+ 0.3+	
1977 10 16	675	0.1- 1.1-	1998 05 01	704	0.5+ 0.0	1999 09 07	704	1.1- 0.4-	
1977 10 16	675	0.1- 0.2-	1998 05 01	704	0.5- 0.8+	1999 09 09	704	0.1- 0.6-	
1977 10 17	675	0.2+ 1.3-	1998 05 01	704	0.4- 0.0	1999 09 09	704	0.2- 1.2+	
1977 10 17	675	0.0 1.7-	1998 05 01	704	0.6+ 0.4+	1999 09 09	704	0.6+ 0.5+	
1977 10 21	675	(2.8+ 1.3-)	1998 05 01	704	0.2+ 0.1+	1999 09 09	704	0.5+ 0.2+	
1977 10 21	675	(1.9+ 3.4-)	1998 05 22	704	0.6- 0.8+	1999 09 10	046	0.9+ 1.0+	
1977 10 22	675	(1.5+ 3.4-)	1998 05 22	704	1.2- 0.1+	1999 09 10	046	1.2+ 0.5+	
1981 10 24	675	0.1+ 0.5+	1998 05 22	704	0.5- 0.4-	1999 09 10	046	0.9+ 0.7+	
1981 10 25	675	0.7- 0.6-	1998 05 22	704	0.1+ 1.0-	1999 09 13	704	0.3+ 0.4-	
1989 12 30	413	0.6- 0.8-	1998 05 22	704	0.1+ 1.9-	1999 09 13	704	1.0- 0.5+	
1989 12 30	413	(3.2+ 0.7-)	1998 05 24	704	(0.1- 3.4-)	1999 09 13	704	0.5- 0.5-	
1989 12 31	413	0.5+ 0.2+	1998 05 24	704	1.9- 0.2+	1999 10 16	704	1.3- 0.8+	
1998 04 21	704	0.5+ 0.6-	1998 05 24	704	0.4- 0.1+	1999 10 16	704	1.0- 0.1+	
1998 04 21	704	0.9+ 0.6-	1998 05 24	704	0.3+ 0.1-	1999 10 16	704	0.4+ 0.6+	
1998 04 21	704	1.1+ 0.9-	1998 05 24	704	1.8+ 0.9-	1999 10 16	704	0.3- 0.3+	
1998 04 21	704	0.8+ 0.3-	1998 05 28	699	0.7- 0.4+	1999 10 16	704	1.0- 0.5+	
1998 04 21	704	0.2+ 0.0	1998 05 28	699	2.0- 0.5-				

(12178)* 4304 T-3 = 1993 FT₂₀

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* 23534)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		208.34116		(2000.0)		P		Q	
<i>n</i>		0.22066086	ω	16.51730		-0.70145328		-0.70936872	
<i>a</i>		2.7121842	Ω	118.08819		+0.64474205		-0.67282893	
<i>e</i>		0.0269616	<i>i</i>	4.48497		+0.30376140		-0.20999347	
<i>P</i>		4.47	<i>H</i>	14.5		<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc									
1977 10 11	675	(3.0+ 1.8-)	1993 03 26	691	0.2- 0.0	1999 09 09	704	0.5- 0.7-	
1977 10 11	675	(3.0+ 1.0-)	1993 03 26	691	0.7- 0.8-	1999 09 09	704	0.0 1.2+	
1977 10 12	675	0.6+ 0.3-	1993 03 26	691	0.4- 0.4-	1999 09 09	704	0.5- 0.1-	
1977 10 12	675	0.4+ 1.7-	1993 04 16	413	1.3+ 0.8-	1999 09 09	704	0.2- 0.8+	
1977 10 16	675	0.2- 0.4-	1997 03 06	704	0.2+ 0.5+	1999 09 09	704	1.4- 0.4-	
1977 10 16	675	0.0 0.2+	1997 03 06	704	0.2+ 1.6+	1999 09 09	704	1.2+ 1.2+	
1977 10 17	675	0.7+ 0.3-	1998 05 24	704	0.1+ 0.8-	1999 09 09	704	0.5+ 0.1+	
1977 10 17	675	1.3- 1.0-	1998 05 24	704	0.2- 2.0-	1999 09 09	704	0.8+ 1.2+	
1977 10 21	675	0.5- 0.2-	1998 05 24	704	0.2- 1.3+	1999 09 10	704	0.5- 0.6+	
1977 10 21	675	0.5+ 1.1-	1999 09 07	704	0.3- 0.8-	1999 09 10	704	0.8- 0.4+	
1977 10 22	675	1.0+ 2.3-	1999 09 07	704	0.7- 0.9-	1999 09 10	704	0.5- 0.1+	

1977 10 22	675	1.0+ 1.5+	1999 09 07	704	0.1- 0.4+	1999 10 16	704	0.7+ 0.5+
1993 03 19	809	1.3- 1.3-	1999 09 07	704	0.3+ 0.3-	1999 10 16	704	0.5+ 0.6-
1993 03 20	809	0.3+ 0.8-	1999 09 07	704	0.3+ 0.1+	1999 10 16	704	0.6+ 0.3-
1993 03 23	809	0.0 0.8+	1999 09 09	704	0.3- 0.8+			

(12179)* 5030 T-3 = 1971 QB₂ = 1998 MM₈

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. A. Doppler (*MPC* 34000)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		27.08901		(2000.0)		P		Q	
<i>n</i>		0.17996592	ω	175.08747		+0.82222108		+0.55998045	
<i>a</i>		3.1070092	Ω	150.12964		-0.52892078		+0.81784334	
<i>e</i>		0.1969566	<i>i</i>	11.80091		-0.21022678		+0.13249211	
<i>P</i>		5.48	<i>H</i>	13.4		<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc									
1971 08 19	808	0.1+ 1.0-	1998 06 19	704	0.6+ 1.2-	1999 09 21	699	0.0 0.3+	
1977 10 11	675	1.2+ 1.4-	1998 06 19	704	1.2- 0.9+	1999 09 21	699	1.0+ 0.2+	
1977 10 11	675	0.5+ 1.8-	1998 06 19	704	0.7+ 0.4-	1999 10 02	704	1.0- 0.4+	
1977 10 12	675	(1.2+ 3.6-)	1998 06 19	704	0.4- 0.3-	1999 10 02	704	0.2- 0.6+	
1977 10 12	675	(0.2+ 2.8-)	1998 06 19	704	0.4+ 1.5+	1999 10 02	704	0.8- 0.3+	
1977 10 16	675	1.0- 1.4-	1998 06 25	704	1.1+ 0.6+	1999 10 02	704	0.2+ 1.2+	
1977 10 16	675	(0.5+ 2.8-)	1998 06 25	704	0.3- 0.3-	1999 10 02	704	0.6- 0.6+	
1977 10 17	675	(0.2- 3.0-)	1998 06 25	704	0.1- 0.2+	1999 10 05	703	0.3+ 0.0	
1977 10 17	675	(1.7- 3.8-)	1998 06 25	704	0.6+ 1.6-	1999 10 05	703	0.0 0.5+	
1977 10 21	675	1.2+ 1.7-	1999 09 08	699	0.9+ 0.6+	1999 10 05	703	0.3+ 0.4+	
1977 10 21	675	0.2+ 0.7-	1999 09 08	699	1.1+ 0.2+	1999 10 05	703	0.2+ 0.1+	
1977 10 22	675	0.6- 1.4-	1999 09 08	699	0.8+ 0.7+	1999 10 08	704	0.4- 0.0	
1977 10 22	675	0.9+ 0.8-	1999 09 14	704	0.2- 0.1+	1999 10 08	704	0.3- 0.3+	
1998 05 26	704	1.2- 0.2+	1999 09 14	704	0.4- 0.6+	1999 10 08	704	0.5- 0.2+	
1998 05 26	704	0.0 1.0+	1999 09 14	704	0.7- 0.9+	1999 10 08	704	0.2- 0.3+	
1998 05 26	704	(0.8- 3.3+)	1999 09 14	704	0.7- 0.6+	1999 10 08	704	0.3- 0.7+	
1998 05 26	704	(2.4- 1.2+)	1999 09 14	704	0.6- 0.1+				
1998 05 26	704	(0.5+ 2.2+)	1999 09 21	699	0.7- 0.7+				

(12180)* 5167 T-3 = 1993 PJ₉ = 1997 GN₂₈

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* 34000), A. Doppler (*ibid.*), M. E. Sansaturio (*MPC* 36055)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	31.04005		(2000.0)		P		Q				
n	0.17664369	ω	171.28053		+0.62992201		+0.76722949				
a	3.1458449	Ω	137.64214		-0.72293322		+0.63600340				
e	0.0794870	i	10.31586		-0.28384121		+0.08281657				
P	5.58	H	14.0		G	0.15	U	1			
Residuals in seconds of arc											
1977 10 11	675	1.7-	0.1+	1997 04 14	104	0.5-	0.0	1999 09 09	704	0.1+	0.6-
1977 10 11	675	0.6-	0.4-	1997 04 14	104	0.2-	0.5+	1999 09 09	704	0.6+	1.0+
1977 10 12	675	0.0	1.3-	1997 04 14	104	0.2-	0.6+	1999 09 09	704	0.4-	0.3+
1977 10 12	675	0.3+	1.8-	1997 04 14	104	0.4-	0.9+	1999 09 13	704	0.2-	1.1+
1977 10 16	675	1.7+	2.4-	1998 06 03	704	0.4+	1.0-	1999 09 13	704	0.3-	1.6+
1977 10 16	675	1.8+	2.2-	1998 06 03	704	0.2-	0.5+	1999 09 13	704	0.1-	1.9+
1977 10 17	675	0.4+	0.8-	1998 06 03	704	0.9+	1.1-	1999 09 13	704	0.1+	1.5+
1977 10 17	675	0.5+	1.3-	1998 06 03	704	0.9-	1.1-	1999 09 30	704	1.0-	0.4-
1977 10 21	675	0.5-	0.7+	1998 06 19	704	0.8-	1.2+	1999 09 30	704	0.8-	0.8+
1977 10 21	675	0.8-	0.9+	1998 06 19	704	0.6-	1.8-	1999 09 30	704	0.6-	0.5+
1977 10 22	675	1.0+	1.9+	1998 06 19	704	0.0	0.0	1999 09 30	704	0.8-	0.8+
1977 10 22	675	0.6+	1.6-	1998 06 19	704	0.5+	0.5-	1999 09 30	704	0.7-	0.4-
1993 08 13	675	0.6+	0.2+	1999 09 04	699	0.7+	1.1+	1999 10 16	704	0.1-	1.2+
1993 08 13	675	0.8-	1.2-	1999 09 04	699	0.5+	0.2+	1999 10 16	704	0.1+	0.1+
1997 04 13	104	0.3+	0.0	1999 09 04	699	0.0	0.2-	1999 10 16	704	1.1+	0.9+

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1997 04 13 104 0.9+ 0.7+ 1999 09 09 704 0.3- 0.4- 1999 10 16 704 0.1- 0.1-
 1997 04 13 104 0.9+ 1.2+ 1999 09 09 704 0.6- 0.2+

1973 UQ₅ = 1997 CH₅ = 1999 RS₃₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26664522	ω	178.38937	+0.98709015	-0.16005029		
<i>a</i>	2.3906363	Ω	190.82615	+0.14658497	+0.91803432		
<i>e</i>	0.1478992	<i>i</i>	1.85427	+0.06454363	+0.36276286		
<i>P</i>	3.70	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1973 10 27	033	0.8-	0.0	1995 09 17	691	0.1-	0.1+	1998 05 24	704	0.2-	0.8+
1973 10 27	033	(5.8-	0.1-)	1995 09 18	809	0.2-	0.2-	1998 05 24	704	0.6-	0.4-
1973 10 28	033	0.3+	0.2+	1995 09 20	809	0.9+	0.2-	1998 05 24	704	0.6-	0.2+
1973 10 31	033	0.8-	0.3+	1995 09 22	809	0.5+	0.4-	1999 09 13	120	0.8-	0.5-
1973 11 02	033	0.7+	0.8+	1997 02 06	566	1.1+	0.6+	1999 09 13	120	0.5+	0.3-
1973 11 03	033	0.1+	0.4+	1997 02 06	566	0.1-	0.7+	1999 09 14	120	0.1+	0.6-
1995 08 19	809	0.1-	1.4+	1997 02 06	566	0.1-	0.4+	1999 09 14	120	0.1+	0.0
1995 08 20	809	0.7-	0.6+	1997 02 07	566	0.1-	0.2-	1999 09 15	120	0.4+	0.5-
1995 08 22	809	0.4-	0.5+	1997 02 07	566	0.4-	0.6-	1999 09 15	120	1.4+	1.1-
1995 09 17	809	0.2-	0.3-	1997 02 07	566	0.7-	0.1-	1999 09 16	120	(2.2-	0.3+)
1995 09 17	691	0.2-	0.2-	1998 05 24	704	0.2+	1.0-	1999 09 16	120	0.2+	0.8-
1995 09 17	691	0.8-	0.2-	1998 05 24	704	1.4+	1.1-	1999 09 23	120	0.3-	0.4-

1978 RG₉ = 1999 RW₁₁₀

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23853502	ω	295.43830	+0.11743620	+0.99122827		
<i>a</i>	2.5749449	Ω	341.00913	-0.83104460	+0.06467137		
<i>e</i>	0.1474792	<i>i</i>	10.73668	-0.54366682	+0.11525678		
<i>P</i>	4.13	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1978 09 02	809	0.3-	0.6-	1999 09 05	703	0.5-	1.3+	1999 09 09	704	0.0	0.9-
1978 09 02	809	0.2-	0.6-	1999 09 08	704	0.0	0.1-	1999 09 09	704	0.1-	0.4+
1978 09 06	809	0.3-	0.7-	1999 09 08	704	0.1-	0.0	1999 09 09	704	0.2-	0.4-
1978 09 10	809	0.7-	1.5+	1999 09 08	704	0.3+	0.6-	1999 09 09	704	1.3-	0.1-
1978 09 10	809	0.0+	1.5-	1999 09 08	704	0.0	0.8-	1999 09 09	704	0.0	0.2+
1978 09 10	809	0.8+	2.0+	1999 09 08	704	1.1-	0.4-	1999 09 18	704	0.2-	0.9-
1978 09 10	809	0.6+	0.2-	1999 09 09	704	0.6-	1.1-	1999 09 18	704	0.9+	0.2-
1999 09 05	703	0.4-	0.9+	1999 09 09	704	0.7+	0.9-	1999 09 18	704	1.2+	1.2+
1999 09 05	703	0.0	1.4+	1999 09 09	704	0.1+	0.1+				
1999 09 05	703	1.0+	0.6+	1999 09 09	704	0.1+	0.6+				

1979 MX₈ = 1999 TW₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20356309	ω	79.11424	+0.46100181	+0.88730770		
<i>a</i>	2.8620026	Ω	218.34583	-0.82198544	+0.42156457		
<i>e</i>	0.0570602	<i>i</i>	1.17688	-0.33439090	+0.18699828		
<i>P</i>	4.84	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1979 06 24	413	1.2-	0.4-	1999 10 04	704	0.5-	0.4+	1999 10 06	704	0.0	0.3+
1979 06 25	413	0.3+	0.9+	1999 10 04	704	0.3+	0.3+	1999 10 06	704	0.1-	0.2-
1979 06 29	413	1.0+	0.4+	1999 10 04	704	0.1-	0.5+	1999 10 06	704	0.4+	0.8-
1979 07 24	675	1.2-	0.9-	1999 10 04	704	0.3-	0.9+	1999 10 06	704	0.2+	0.7-
1979 07 25	675	1.1+	0.1+	1999 10 06	704	0.0	0.6-				

1980 CJ = 1991 CT₄ = 1999 RK₁₄₅

Id. M. E. Sansaturio, G. V. Williams

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17713889	ω	211.07384	-0.96859380	-0.19023185		
<i>a</i>	3.1399792	Ω	317.00529	+0.24740586	-0.80163069		
<i>e</i>	0.0290883	<i>i</i>	13.57992	-0.02482727	-0.56674516		
<i>P</i>	5.56	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1980 02 13	801	0.6-	2.3+	1991 02 14	511	0.8-	1.2-	1999 09 14	704	0.1-	0.1-
1980 02 14	801	(5.5-	4.3+)	1999 09 09	704	0.5+	0.0	1999 09 14	704	0.3-	0.2-
1980 02 16	801	1.9+	0.1-	1999 09 09	704	0.4+	1.2+	1999 09 14	704	0.1-	0.5-
1980 02 18	801	0.7+	0.6+	1999 09 09	704	0.3+	0.7+	1999 09 14	704	0.9-	0.4-
1980 03 10	801	0.7-	1.1-	1999 09 09	704	0.3+	0.6+	1999 09 14	704	0.7-	0.6-

1980 RC = 1999 RR₁₆₈Id. G. V. Williams; 1980 RC = 1989 EO₃ (*MPC* 14781) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26035362	ω	240.83302	+0.61873489	-0.78499793		
<i>a</i>	2.4289969	Ω	170.75382	+0.77074791	+0.59899810		
<i>e</i>	0.2652771	<i>i</i>	11.03216	+0.15203548	+0.15804915		
<i>P</i>	3.79	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1980 09 03	552	0.8-	0.8-	1999 09 07	704	0.2+	0.6-	1999 09 17	691	0.4-	0.1-
1980 09 03	552	2.0+	0.7+	1999 09 07	704	0.0	0.1-	1999 09 17	691	0.2-	0.2-
1980 09 04	552	1.2-	2.0+	1999 09 07	704	0.1+	0.3-	1999 09 17	691	0.3-	0.3-
1980 09 04	552	1.1-	0.6+	1999 09 07	704	0.1-	0.2-	1999 09 30	699	0.2+	1.8+
1980 09 04	552	0.3-	0.2-	1999 09 07	704	0.1+	0.4-	1999 09 30	699	0.5+	1.2+
1980 09 10	552	0.5-	0.2-	1999 09 09	704	0.3+	0.7-	1999 09 30	699	0.0	0.8+
1980 09 10	552	0.6-	0.8-	1999 09 09	704	0.1+	0.0	1999 10 02	704	0.1+	0.3+
1980 09 10	552	0.7+	1.4-	1999 09 09	704	0.4+	0.2-	1999 10 02	704	0.4-	0.2+
1980 09 10	552	0.9-	1.0-	1999 09 09	704	0.5+	0.5+	1999 10 02	704	1.1-	0.3-
1980 09 12	552	2.5+	1.3+	1999 09 09	704	1.2+	1.1+	1999 10 02	704	0.9-	0.6+
1980 09 12	552	0.2+	0.4-	1999 09 09	120	0.8-	0.0	1999 10 02	704	1.6-	0.8-
1999 07 23	704	0.1+	0.3-	1999 09 09	120	0.3+	0.1+	1999 10 07	704	0.3+	0.2+
1999 07 23	704	0.2-	0.1-	1999 09 14	704	0.1+	0.2-	1999 10 07	704	0.3+	0.0
1999 07 23	704	0.3+	0.1+	1999 09 14	704	0.2-	0.0	1999 10 07	704	0.7+	0.4-
1999 08 22	699	0.0	0.6+	1999 09 14	704	0.0	0.2-	1999 10 07	704	0.7+	1.2-
1999 08 22	699	0.4-	0.2+	1999 09 14	704	0.1-	0.2-	1999 10 07	704	0.2+	1.1-
1999 08 22	699	0.3-	0.1+	1999 09 14	704	0.3+	0.0				

1980 TZ₅ = 1999 RB₁₇₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20524103	ω	0.74026	+0.97024633	-0.23623403		
<i>a</i>	2.8463825	Ω	13.29040	+0.22093764	+0.77419515		
<i>e</i>	0.1536071	<i>i</i>	13.34515	+0.09903845	+0.58720980		
<i>P</i>	4.80	<i>H</i>	11.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1980 10 13	095	1.3-	0.8+	1999 09 09	704	0.2+	0.1-	1999 09 30	704	0.9+	0.3+
1980 10 14	330	0.0	0.8-	1999 09 09	704	0.0	0.1+	1999 09 30	704	0.9+	0.7+
1980 10 28	330	1.3-	0.6-	1999 09 09	704	0.3-	0.1-	1999 09 30	704	0.6+	0.3+
1980 11 03	330	0.4+	0.7+	1999 09 09	704	0.4-	0.1-	1999 09 30	704	0.5+	0.6+
1980 11 10	330	2.4+	0.1-	1999 09 13	704	1.4-	0.7-	1999 10 17	611	0.9-	1.0+
1992 03 09	809	1.3+	0.3+	1999 09 13	704	0.1+	0.4-	1999 10 17	611	0.2-	1.1-
1992 04 04	809	0.9-	0.4+	1999 09 13	704	0.7-	0.4-				
1999 09 09	704	0.5-	0.3+	1999 09 30	704	0.8+	0.3+				

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1981 EN₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	205.97837		(2000.0)	P		Q	
<i>n</i>	0.29715683	ω	270.66868	−0.98709051	−0.14144378		
<i>a</i>	2.2240552	Ω	261.20185	+0.15957798	−0.90861057		
<i>e</i>	0.0814782	<i>i</i>	4.36066	−0.01368173	−0.39296373		
<i>P</i>	3.32	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 02 09	413	0.9−	0.5+	1981 04 06	413	0.6−	0.4+	1999 10 07	704	0.2+	0.2−
1981 02 12	413	0.3+	0.5−	1981 04 06	413	(3.5+	2.1−)	1999 10 07	704	0.2+	0.2+
1981 03 01	413	0.4+	0.3−	1981 04 08	413	0.1−	0.1−	1999 10 07	704	0.2+	0.5−
1981 03 06	413	0.8−	0.9+	1981 04 08	413	1.6+	1.0−	1999 10 07	704	0.7+	0.4−
1981 03 06	413	(3.0+	1.2−)	1981 04 09	413	0.0	0.4+	1999 10 08	106	1.0+	0.9−
1981 03 08	413	0.7−	0.4+	1981 04 09	413	0.6+	0.1−	1999 10 08	106	1.0−	0.1−
1981 03 08	413	0.8+	0.1+	1981 05 01	413	0.1+	0.5+	1999 10 08	106	0.3−	1.5+
1981 03 12	413	1.5−	0.1+	1981 05 03	413	0.4−	0.8+	1999 10 11	649	0.9−	1.1+
1981 03 12	413	1.2+	1.3−	1999 10 07	704	0.2+	0.0	1999 10 11	649	0.5−	0.1−

1981 ET₃₁ = 1989 TN₁₄ = 1999 RU₁₃₈Id. H. Kaneda (*MPC* 16577), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	272.55617		(2000.0)	P		Q	
<i>n</i>	0.19111989	ω	267.31262	+0.06167998	−0.99809287		
<i>a</i>	2.9849161	Ω	179.13920	+0.96893327	+0.05927854		
<i>e</i>	0.2352380	<i>i</i>	9.54708	+0.23950761	+0.01722450		
<i>P</i>	5.16	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 02 12	413	0.4−	0.4+	1981 03 15	413	0.1−	1.4−	1999 09 09	704	1.7+	1.8−
1981 02 12	413	1.0−	0.1+	1981 03 15	413	1.5+	1.6−	1999 09 09	704	0.8+	1.0+
1981 02 13	413	0.2+	1.1−	1981 05 01	413	0.7+	0.2−	1999 09 09	704	0.3+	0.4+
1981 03 02	413	2.6+	3.0−	1989 10 02	809	0.2−	1.3−	1999 09 09	704	0.7+	1.0+
1981 03 02	413	1.9−	0.5+	1989 10 02	809	0.0	1.0−	1999 09 14	704	0.4−	0.7−
1981 03 06	413	2.1−	1.0+	1989 10 02	809	0.5+	1.0−	1999 09 14	704	1.2−	0.1+
1981 03 06	413	1.5+	0.3−	1989 10 03	809	0.2+	1.2−	1999 09 14	704	0.5−	1.3−
1981 03 11	413	1.0−	1.6−	1989 10 03	809	0.5+	1.2−	1999 09 14	704	1.1−	0.0
1981 03 11	413	2.1−	1.5−	1989 10 03	809	0.8+	1.2−	1999 09 14	704	0.0	0.5−

1981 RR₁ = 1999 RG₁₈₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	352.26878		(2000.0)	P		Q	
<i>n</i>	0.21946043	ω	193.45896	+0.99164227	+0.11261441		
<i>a</i>	2.7220655	Ω	159.75107	−0.09497539	+0.96745070		
<i>e</i>	0.3095602	<i>i</i>	10.48072	−0.08732284	+0.22662113		
<i>P</i>	4.49	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1981 09 01	809	2.4−	0.4+	1981 09 18	809	0.0	0.8−	1999 09 07	704	0.9−	0.3+
1981 09 01	809	1.7−	0.3+	1981 09 18	809	0.1+	0.9−	1999 09 07	704	0.8−	0.6−
1981 09 01	809	1.2−	0.1+	1981 09 18	809	0.3+	1.1−	1999 09 07	704	0.4−	0.1+
1981 09 02	809	0.9−	0.1+	1981 09 20	809	1.2+	0.7+	1999 09 07	704	0.5−	0.1+
1981 09 02	809	0.1+	0.3+	1981 09 20	809	1.7+	0.6+	1999 09 09	704	0.4−	0.6−
1981 09 02	809	1.0+	0.0	1981 09 20	809	1.9+	0.4+	1999 09 09	704	1.1−	0.2−
1981 09 03	809	0.5−	1.3−	1981 09 21	809	0.2+	2.1−	1999 09 09	704	1.1−	0.6−
1981 09 03	809	0.2−	0.5−	1981 09 21	809	0.6+	2.0−	1999 09 09	704	1.3−	1.0−
1981 09 03	809	0.2+	0.0	1981 09 21	809	0.9+	1.9−	1999 09 11	699	0.4+	1.1+
1981 09 04	809	0.5+	1.6+	1993 03 19	691	0.2+	0.1−	1999 09 11	699	0.5+	0.9+
1981 09 04	809	0.1+	1.2+	1993 03 19	691	0.2−	0.1+	1999 09 11	699	0.7+	1.0+
1981 09 04	809	0.1+	0.8+	1993 03 19	691	0.0	0.3−	1999 09 14	704	0.6−	0.1−
1981 09 05	809	0.4−	1.0−	1999 07 23	704	0.6+	0.2+	1999 09 14	704	0.3−	0.2−
1981 09 05	809	0.7−	0.4−	1999 07 23	704	0.9+	0.2+	1999 09 14	704	0.0	0.2−
1981 09 05	809	0.1+	0.6−	1999 07 23	704	0.9+	0.3+	1999 09 14	704	0.3−	0.2+
1981 09 06	809	0.7−	1.1−	1999 07 23	704	0.8+	0.4+	1999 09 14	704	0.2−	0.0

1981 09 06	809	0.6−	0.6−	1999 07 23	704	0.2+	1.1−	1999 09 30	704	1.3+	0.1+
1981 09 06	809	0.9−	0.9−	1999 09 05	699	0.8+	0.5+	1999 09 30	704	0.8−	0.5+
1981 09 07	809	0.3+	1.7+	1999 09 05	699	0.6+	0.3+	1999 09 30	704	0.5+	0.7+
1981 09 07	809	0.8+	2.1+	1999 09 05	699	1.0+	0.2+	1999 09 30	704	0.2+	0.9+
1981 09 07	809	0.7+	1.8+	1999 09 07	704	0.7−	1.0−	1999 09 30	704	0.4+	0.3+

1982 UR₂ = 1998 HJ₁₄₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	183.65905		(2000.0)	P		Q	
<i>n</i>	0.21524395	ω	283.69133	−0.39378070	−0.91750544		
<i>a</i>	2.7574993	Ω	190.05557	+0.91731514	−0.38835067		
<i>e</i>	0.1371168	<i>i</i>	18.65897	+0.05890405	−0.08583424		
<i>P</i>	4.58	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1982 10 20	695	2.2−	0.7−	1998 04 21	704	0.4−	0.9−	1998 05 16	704	0.2+	0.8+
1982 10 22	695	0.2−	0.4+	1998 04 21	704	1.2−	0.3−	1998 05 16	704	0.4+	0.3−
1982 10 24	695	1.4+	2.1−	1998 04 21	704	0.1−	0.5−	1998 05 16	704	0.4+	1.4+
1982 10 25	807	(4.6−	1.0−)	1998 04 21	704	0.7−	0.1+	1998 05 16	704	0.4+	0.6−
1982 10 26	695	0.8+	0.7+	1998 04 21	704	0.2−	0.3+	1998 05 16	704	0.2+	0.5−
1982 10 27	807	0.2+	1.2+	1998 04 23	704	0.1+	0.1−	1998 05 23	699	0.4+	0.0
1998 03 24	704	0.4−	1.4−	1998 04 23	704	0.2−	0.3−	1998 05 23	699	0.7+	1.1+
1998 03 24	704	0.2+	0.2+	1998 04 23	704	0.4+	0.1−	1998 05 23	699	0.0	0.1−
1998 03 24	704	0.2−	0.6+	1998 04 23	704	(0.1−	6.6−)	1998 05 28	704	1.6+	1.1−
1998 03 24	704	0.2+	0.8+	1998 04 24	704	0.3+	0.3−	1998 05 28	704	(2.3+	0.1−)
1998 03 24	704	0.6−	1.2+	1998 04 24	704	(1.9−	4.4−)	1998 05 28	704	(2.6+	0.9+)
1998 04 04	699	0.9+	0.3−	1998 04 24	704	1.6−	0.1+	1998 05 28	704	(1.5−	2.4−)
1998 04 04	699	0.3+	0.1+	1998 04 24	704	0.3−	0.0	1998 05 28	704	(0.6+	2.7+)
1998 04 04	699	(2.5−	0.2+)	1998 04 24	704	0.3−	0.3−				

1982 UH₉ = 1999 RC₂₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	5.68250		(2000.0)	P		Q	
<i>n</i>	0.23212433	ω	343.86658	+0.99261002	+0.11927671		
<i>a</i>	2.6221384	Ω	9.36832	−0.09054221	+0.85047070		
<i>e</i>	0.3413236	<i>i</i>	7.88289	−0.08079265	+0.51232085		
<i>P</i>	4.25	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1982 10 21	095	0.5+	0.0	1999 09 08	678	1.0+	0.2−	1999 09 28	848	0.4−	0.2−
1982 10 22	095	0.1+	0.2+	1999 09 08	678	0.2−	0.2−	1999 09 28	848	0.3−	0.1+
1982 11 11	095	0.4−	0.6−	1999 09 09	678	0.5+	0.5−	1999 09 29	848	0.5−	0.2+
1998 04 21	704	1.8+	1.6+	1999 09 09	678	1.1+	0.4+	1999 09 29	848	0.4−	0.1+
1998 04 21	704	1.2−	1.1−	1999 09 14	678	0.5−	0.2−	1999 10 03	704	0.5+	0.7−
1998 04 21	704	0.2+	0.6+	1999 09 14	678	0.8−	0.1+	1999 10 03	704	0.3+	0.3+
1998 04 21	704	(1.8+	2.3+)	1999 09 18	678	0.5−	0.3+	1999 10 03	704	0.5+	0.3+
1998 04 21	704	(4.5−	0.1−)	1999 09 18	678	0.4−	0.3−	1999 10 03	704	0.8+	0.0
1998 05 01	704	0.7−	0.5+	1999 09 18	678	0.7−	0.3+	1999 10 03	704	0.5+	0.5+
1998 05 01	704	0.9+	1.0+	1999 09 27	848	0.4−	0.5+	1999 10 07	704	0.4+	0.6−
1998 05 01	704	(0.2+	2.1−)	1999 09 27	848	0.3−	0.3−	1999 10 07	704	0.2+	0.1+
1998 05 01	704	1.5−	1.0−	1999 09 27	848	0.4−	0.0	1999 10 07	704	0.5+	0.4+
1998 05 01	704	1.3+	0.2−	1999 09 27	848	0.3−	0.3+	1999 10 07	704	0.0	1.0+
1999 09 07	678	0.3−	0.0	1999 09 27	848	0.2+	0.2+	1999 10 13	611	1.2−	0.3+
1999 09 07	678	0.6+	0.4−	1999 09 28	848	0.0	0.6−	1999 10 13	611	0.1+	0.1−

1984 SG₆ = 1999 RG₁₁₆

Epoch 19

Residuals in seconds of arc

1984 09 22	809	1.4−	0.0	1984 09 28	809	1.4−	0.2−	1999 09 07	704	0.1+	0.5−
1984 09 22	809	1.2−	0.0	1984 09 28	809	1.3−	0.2−	1999 09 08	703	0.5−	0.1+
1984 09 22	809	1.3−	0.1+	1984 09 28	809	1.3−	0.0	1999 09 08	703	0.6−	0.5−
1984 09 23	809	0.3−	0.9+	1984 09 30	809	0.2+	0.6−	1999 09 08	703	0.5+	1.7+
1984 09 23	809	0.2+	0.9+	1984 09 30	809	0.5+	0.5−	1999 09 08	703	0.3+	1.0+
1984 09 23	809	0.4+	1.1+	1984 09 30	809	0.4+	0.2−	1999 09 09	704	0.8+	0.6+
1984 09 24	809	0.1+	0.6+	1984 10 01	809	1.4+	0.5−	1999 09 09	704	0.5−	0.1−
1984 09 24	809	0.1+	0.6+	1984 10 01	809	1.1+	0.2−	1999 09 09	704	0.3−	0.3+
1984 09 24	809	0.6+	0.6+	1984 10 01	809	0.8+	0.1−	1999 09 13	704	0.0	0.1−
1984 09 26	809	0.1−	0.3−	1999 07 13	704	0.2+	0.5−	1999 09 13	704	0.1−	0.1−
1984 09 26	809	0.4−	0.5−	1999 07 13	704	0.5−	0.8−	1999 09 13	704	0.4−	0.1+
1984 09 26	809	0.6−	0.7−	1999 07 13	704	0.5−	0.1−	1999 09 13	704	0.4+	0.0
1984 09 27	809	0.8+	0.1−	1999 07 13	704	0.0	0.6−	1999 09 13	704	0.2+	0.1−
1984 09 27	809	0.9+	0.0	1999 07 13	704	1.1−	0.4−	1999 09 30	704	0.3−	0.0
1984 09 27	809	0.8+	0.0	1999 09 07	704	0.2+	0.2+	1999 09 30	704	0.1−	0.0
1984 09 28	809	0.1+	0.5−	1999 09 07	704	0.3+	0.0	1999 09 30	704	0.8+	0.2−
1984 09 28	809	0.5+	0.4−	1999 09 07	704	0.2+	0.2+	1999 09 30	704	0.3−	0.5−
1984 09 28	809	0.5+	0.2−	1999 09 07	704	0.4+	0.4+	1999 09 30	704	0.6+	0.1+

1985 PH = 1987 DM₂ = 1999 SM₃

Id. G. V. Williams, T. B. Spahr

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	349.30651		(2000.0)	P	Q
<i>n</i>	0.21616714	ω	67.86835	+0.89455689	−0.42157693
<i>a</i>	2.7496427	Ω	316.67949	+0.28678708	+0.79616925
<i>e</i>	0.2820925	<i>i</i>	12.49718	+0.34281356	+0.43403619
<i>P</i>	4.56	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1985 08 14	688	1.4+	1.2−	1987 02 23	010	0.9+	0.9−	1999 09 22	704	0.2−	0.0
1985 08 14	688	0.7−	1.0+	1987 02 23	010	0.8−	0.5+	1999 09 22	704	0.6−	0.1−
1985 08 20	688	0.5−	0.3−	1987 02 23	010	0.1+	0.6+	1999 09 27	704	0.1−	0.6+
1985 08 20	688	0.2+	0.5−	1999 09 07	703	0.2−	1.2+	1999 09 27	704	0.6+	0.7−
1985 08 22	688	(3.2+ 0.1+)		1999 09 07	703	0.3+	0.2+	1999 09 27	704	0.3−	1.0−
1985 08 22	688	0.9+	0.3+	1999 09 07	703	0.4+	0.5+	1999 09 27	704	0.7+	0.2−
1985 09 14	688	(3.3− 0.6−)		1999 09 07	703	1.0+	0.0	1999 09 27	704	0.8−	0.2−
1985 09 21	675	(4.2− 1.4+)		1999 09 22	704	0.4−	0.1+				
1985 09 21	675	1.5−	1.0+	1999 09 22	704	0.1−	0.5−				

1988 BO₃ = 1999 TV₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	297.17933		(2000.0)	P	Q
<i>n</i>	0.23817383	ω	263.61640	−0.14821516	−0.98824195
<i>a</i>	2.5775476	Ω	195.06415	+0.95484992	−0.13311485
<i>e</i>	0.1259150	<i>i</i>	8.30738	+0.25747600	−0.07522151
<i>P</i>	4.14	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1988 01 18	809	0.6+	1.0−	1988 01 22	809	0.7−	1.1+	1999 10 07	704	0.2−	0.7−
1988 01 18	809	1.2+	1.0−	1988 01 25	809	0.7−	0.1+	1999 10 10	120	0.6+	0.1+
1988 01 18	809	1.3+	1.2−	1988 01 25	809	0.3−	0.2+	1999 10 10	120	0.3+	0.2−
1988 01 19	809	0.1−	0.4−	1988 01 27	809	0.3−	1.6+	1999 10 10	120	0.4−	0.1−
1988 01 19	809	0.1+	0.4−	1988 01 28	809	0.3−	0.5+	1999 10 11	120	0.1−	0.3+
1988 01 19	809	0.4+	0.4−	1988 01 29	809	0.5−	0.1−	1999 10 11	120	0.2+	0.1−
1988 01 20	809	0.1−	0.1−	1988 01 30	809	0.2−	0.8+	1999 10 13	120	0.5+	0.0
1988 01 20	809	0.2+	0.1−	1999 10 07	704	0.1+	0.4+	1999 10 13	120	(3.8+ 3.0−)	
1988 01 20	809	0.6+	0.0	1999 10 07	704	0.1−	0.5−	1999 10 15	120	0.5−	0.2+
1988 01 22	809	1.2−	0.4+	1999 10 07	704	0.5−	0.4+	1999 10 15	120	0.0	0.5+

1988 QF = 1999 RM₁₅

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	314.42873		(2000.0)	P	Q
<i>n</i>	0.35876416	ω	229.59784	+0.87065657	−0.46513072
<i>a</i>	1.9615378	Ω	156.71042	+0.47431678	+0.88006317
<i>e</i>	0.0945987	<i>i</i>	23.87603	−0.13031014	+0.09561501
<i>P</i>	2.75	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1988 08 18	675	(18.5− 54.4−)	1999 09 08	703	0.5−	0.6+	1999 09 13	704	0.1−	0.3+	
1988 08 19	675	(19.4− 57.5−)	1999 09 08	704	0.5+	0.0	1999 09 13	704	0.6−	0.0	
1988 09 11	675	0.6−	0.0	1999 09 08	703	1.0−	0.5+	1999 09 13	704	0.1+	0.0
1988 09 11	675	0.4−	0.6+	1999 09 08	704	0.7+	0.1+	1999 09 13	704	0.0	0.2+
1988 09 13	675	0.5−	0.5+	1999 09 09	704	0.2+	0.0	1999 09 13	704	0.2−	0.4−
1988 09 16	675	1.5+	0.9−	1999 09 09	704	1.1+	0.5−	1999 09 13	704	0.2−	0.3+
1998 01 25	566	0.2−	1.0−	1999 09 09	704	0.6+	0.0	1999 09 13	704	0.2−	0.0
1998 01 25	566	0.1+	0.8−	1999 09 09	704	0.3+	0.1−	1999 09 13	704	0.1−	0.5+
1998 01 25	566	0.5+	0.1−	1999 09 09	704	0.6+	0.1−	1999 09 13	704	0.1−	0.2+
1998 03 25	704	0.0	0.1+	1999 09 09	704	0.5+	0.0	1999 09 13	704	0.2+	0.5+
1998 03 25	704	1.1−	0.7+	1999 09 09	704	0.0	0.1−	1999 09 13	704	0.0	0.2−
1998 03 25	704	0.4−	0.1+	1999 09 09	704	0.2+	0.0	1999 09 13	704	0.6+	0.4+
1998 03 25	704	0.7+	0.7−	1999 09 09	704	0.2−	0.7−	1999 09 13	704	0.4+	0.3+
1998 03 25	704	0.4+	0.4−	1999 09 09	704	0.4+	0.2−	1999 09 13	704	0.1−	0.0
1999 08 08	699	0.5−	0.0	1999 09 10	704	0.3+	0.1+	1999 09 14	704	0.3+	0.7+
1999 08 08	699	1.0−	1.4−	1999 09 10	704	0.6+	0.8−	1999 09 14	704	0.7+	0.6+
1999 08 08	699	0.6−	0.2−	1999 09 10	704	0.9+	0.1+	1999 09 14	704	0.3−	0.1+
1999 08 17	691	0.8−	0.3−	1999 09 10	704	0.2+	0.2−	1999 09 14	704	0.0	0.3+
1999 08 17	691	0.7−	0.3−	1999 09 10	704	0.7+	0.1−	1999 09 14	704	0.1+	0.2+
1999 08 17	691	0.7−	0.3−	1999 09 10	704	0.6+	0.3−	1999 09 29	704	0.4+	0.1−
1999 09 07	699	1.2−	0.7+	1999 09 11	704	0.3+	0.0	1999 09 29	704	1.2−	0.2−
1999 09 07	704	0.5−	0.4−	1999 09 11	704	0.5+	0.2−	1999 09 29	704	(0.8− 2.6+)	
1999 09 07	704	0.0	0.1+	1999 09 11	704	0.5+	0.4+	1999 09 29	704	0.1+	0.4−
1999 09 07	699	1.3−	0.4+	1999 09 11	704	0.2+	0.1+	1999 09 29	704	0.2−	0.4+
1999 09 07	704	0.4−	0.4−	1999 09 11	704	0.4+	0.3+	1999 09 30	704	0.1+	0.1−
1999 09 07	704	0.0	0.5−	1999 09 11	704	0.2+	0.2−	1999 09 30	704	0.0	0.1−
1999 09 07	699	0.9−	0.2+	1999 09 11	704	0.0	0.0	1999 09 30	704	0.1−	0.3−
1999 09 07	704	0.4−	1.0−	1999 09 11	704	0.5+	0.0	1999 09 30	704	0.2−	0.3−
1999 09 08	703	1.1−	0.4−	1999 09 11	704	0.2+	0.4−	1999 09 30	704	0.0	0.4−
1999 09 08	703	0.4−	0.0	1999 09 11	704	0.3+	0.1−				
1999 09 08	704	0.4+	0.5+	1999 09 13	704	0.2−	0.4+				

1988 RY₃ = 1999 RF₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	350.24017		(2000.0)	P	Q
<i>n</i>	0.17652389	ω	174.46482	+0.97240238	+0.23328643
<i>a</i>	3.1472680	Ω	172.04220	−0.21496870	+0.90140526
<i>e</i>	0.1945207	<i>i</i>	1.37606	−0.09067564	+0.36475472
<i>P</i>	5.58	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1988 09 08	033	0.3−	1.4+	1999 09 07	704	0.2+	0.6+	1999 09 14	118	0.0	0.6−
1988 09 09	033	0.4−	0.2−	1999 09 09	704	0.3+	0.4+	1999 09 14	118	0.1+	0.4−
1988 09 09	033	0.3+	0.7+	1999 09 09	704	0.0	0.2+	1999 09 14	118	0.1+	0.6−
1988 09 10	033	0.3−	0.2+	1999 09 09	704	0.0	0.1−	1999 09 15	118	0.1+	0.2+
1988 09 10	033	1.1−	0.5−	1999 09 09	704	0.4+	0.3+	1999 09 15	118	0.2+	0.9+
1988 09 11	033	0.2−	0.8+	1999 09 09	704	1.0+	0.9+	1999 09 15	118	0.1−	0.5+
1988 09 11	675	0.1−	0.3−	1999 09 10	118	0.0	0.2+	1999 09 16	118	0.4+	0.4−
1988 09 11	675	0.6+	1.7−	1999 09 10	118	0.2−	0.0	1999 09 16	118	0.2+	0.2+
1988 09 15	675	0.6+	0.6−	1999 09 10	118	0.2−	0.1+	1999 09 29	704	0.7+	0.1−
1988 09 15	675	0.3+	0.7−	1999 09 11	118	0.5−	0.1−	1999 09 29	704	0.2+	0.5−
1988 10 08	807	1.3+	1.0+	1999 09 11	118	0.3−	0.2+	1999 09 29	704	0.4+	0.7−
1988 11 04	807	0.7−	1.0+	1999 09 11	118	0.3−	0.2−	1999 09 29	704	0.2+	1.0−
1988 11 06	807	0.5−	0.2+	1999 09 12	118	0.3+	0.6+	1999 09 29	704	0.5−	0.9−
1999 08 22	699	0.6−	0.5+	1999 09 12	118	0.6−	0.5+	1999 09 30	704	0.8+	0.2−
1999 08 22	699	0.7−	0.9+	1999 09 12	118	0.5−	0.7+	1999 09 30	704	0.3+	0.5−
1999 08 22	699	1.2−	0.9+	1999 09 13	704	0.5+	0.0	1999 09 30	704	0.4+	0.9−
1999 09 07	704	0.2+	0.1+	1999 09 13	704	0.3+	0.4−	1999 09 30	704	0.0	0.1+

1999 09 07	704	0.3+	0.1-	1999 09 13	704	0.0	0.9-	1999 09 30	704	0.3-	0.3-
1999 09 07	704	0.1+	0.1+	1999 09 13	704	0.2+	0.9-	1999 09 30	118	0.6-	0.3-
1999 09 07	704	0.1-	0.3+	1999 09 13	704	0.2+	1.3-	1999 09 30	118	0.7-	0.2+

1988 RL₁₂ = 1999 TX

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	336.44516		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.18264154	ω	195.97114	+0.77060662	-0.63730549
a	3.0765904	Ω	203.62069	+0.58544962	+0.70955005
e	0.1819983	i	0.38243	+0.25182173	+0.30063340
P	5.40	H	14.3	G 0.15	U 5

Residuals in seconds of arc

1988 09 14	807	0.8-	0.6+	1988 11 03	807	0.6+	1.1-	1999 10 06	120	0.7+	0.4-
1988 09 15	807	0.7-	0.2+	1988 11 06	807	0.5+	1.3-	1999 10 06	120	0.4-	0.1+
1988 09 15	675	1.7+	0.1-	1988 11 08	807	0.0	0.7-	1999 10 06	120	0.2-	0.3-
1988 09 15	675	1.0-	0.1-	1999 10 01	120	0.4+	0.3+	1999 10 07	704	0.3+	0.1-
1988 09 16	807	0.0	0.1-	1999 10 01	120	0.8-	0.4+	1999 10 07	704	0.5+	0.1-
1988 10 04	807	0.0	0.8+	1999 10 01	120	0.4-	0.4+	1999 10 07	704	0.3-	0.5+
1988 10 05	807	0.0	0.2+	1999 10 02	120	0.1-	1.1+	1999 10 07	704	0.2+	0.2+
1988 10 08	807	0.4+	0.1-	1999 10 02	120	0.1+	0.7-	1999 10 07	704	0.6-	0.1-

1989 TR₂ = 1999 UO₂

Id. G. V. Williams, H. Mikuz (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	313.49632		(2000.0)	P	Q
n	0.19902723	ω	29.08817	+0.16673391	-0.96783939
a	2.9053228	Ω	51.95908	+0.85207106	+0.04529306
e	0.1298972	i	13.83875	+0.49615997	+0.24745798
P	4.95	H	12.1	G 0.15	U 4

Residuals in seconds of arc

1989 09 28	675	0.5-	0.4-	1999 09 11	106	0.2-	0.1+	1999 10 18	701	0.4+	0.0
1989 10 03	807	0.8+	0.0	1999 09 11	106	0.2+	0.3+	1999 10 18	701	0.6+	0.0
1989 10 06	807	0.1-	0.5-	1999 10 02	703	0.7-	0.4+	1999 10 19	701	0.2+	0.0
1989 11 01	807	0.4-	0.7+	1999 10 02	703	0.4-	0.1+	1999 10 19	701	0.2+	0.3-
1989 11 21	095	0.3-	0.3-	1999 10 02	703	0.3-	0.2+	1999 10 19	701	0.0	0.0
1989 11 21	095	0.9+	0.2-	1999 10 02	703	0.3-	0.2+				
1999 09 11	106	0.4-	0.2-	1999 10 18	701	0.1+	0.0				

1989 TN₁₅ = 1999 RW₁₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	327.08422		(2000.0)	P	Q
n	0.29261535	ω	32.62055	+0.94865377	-0.31605780
a	2.2470081	Ω	345.78719	+0.27790177	+0.85207273
e	0.1538304	i	2.98529	+0.15108487	+0.41722838
P	3.37	H	15.3	G 0.15	U 3

Residuals in seconds of arc

1989 10 03	809	0.8-	0.7+	1999 08 21	691	0.4-	0.6+	1999 09 14	704	0.0	0.3-
1989 10 03	809	0.4-	0.9+	1999 08 21	691	0.2-	0.6+	1999 09 14	704	0.5+	0.0
1989 10 03	809	0.1+	1.0+	1999 08 21	691	0.9-	0.1+	1999 09 14	704	0.1+	0.3+
1989 10 05	809	0.2-	0.0	1999 09 07	704	0.0	0.3-	1999 09 14	704	0.3-	0.0
1989 10 05	809	0.0	0.1+	1999 09 07	704	0.1-	0.0	1999 09 14	704	0.1-	0.1+
1989 10 06	809	0.1+	0.3+	1999 09 07	704	0.3-	0.1-	1999 10 02	704	1.3+	0.2-
1989 10 06	809	0.6+	0.2+	1999 09 07	704	0.2+	0.7-	1999 10 02	704	1.2+	0.3+
1989 10 06	809	1.0+	0.2-	1999 09 07	704	0.1-	0.1-	1999 10 02	704	0.7+	0.1+
1989 10 07	809	0.4-	0.9-	1999 09 08	704	0.0	0.1-	1999 10 02	704	1.2-	0.8-
1989 10 07	809	0.1-	0.9-	1999 09 08	704	0.3-	0.2+	1999 10 05	739	0.9-	0.0
1989 10 07	809	0.0	0.8-	1999 09 08	704	0.2-	0.4-	1999 10 05	739	0.4-	0.1-
1998 03 29	704	1.1-	0.3-	1999 09 09	704	0.2+	0.2-	1999 10 05	739	1.0+	0.3-
1998 03 29	704	1.1+	0.3-	1999 09 09	704	0.1+	0.1-	1999 10 07	106	0.1-	0.6+
1998 03 29	704	1.5+	0.4-	1999 09 09	704	0.4+	0.1-	1999 10 07	106	0.3-	0.8+
1998 03 29	704	0.8-	1.2+	1999 09 09	704	0.1+	0.3-	1999 10 07	106	0.2+	0.5+

1998 03 29	704	0.6-	0.0	1999 09 09	704	0.0	0.1-	1999 10 08	106	1.1-	0.2+
1999 08 07	691	0.0	0.4+	1999 09 10	704	0.3+	0.6-	1999 10 08	106	0.7-	0.1+
1999 08 07	691	0.1+	0.2+	1999 09 10	704	0.1+	0.8-	1999 10 08	106	0.5+	0.4+
1999 08 07	691	0.0	0.4+	1999 09 10	704	0.7+	0.3-				

1990 DW = 1999 RR₂₂ = 1999 RM₁₉₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	285.48886		(2000.0)	P	Q
n	0.26682007	ω	98.43039	+0.33673349	-0.94011963
a	2.3895918	Ω	331.71406	+0.81414185	+0.31885507
e	0.0588714	i	6.39478	+0.47305771	+0.12044304
P	3.69	H	12.7	G 0.15	U 4

Residuals in seconds of arc

1990 02 18	399	0.6-	1.5-	1999 09 07	704	0.3+	0.0	1999 09 09	704	0.2+	0.2-
1990 02 18	399	(2.2+	2.5-)	1999 09 07	704	0.4+	0.1+	1999 09 09	704	0.5+	0.2+
1990 02 28	399	0.2+	0.4+	1999 09 07	704	0.6+	0.2+	1999 09 16	704	0.3+	1.1-
1990 02 28	399	1.6-	1.0-	1999 09 07	704	0.2-	0.2+	1999 09 16	704	0.2+	0.1+
1990 03 01	399	(2.6+	0.7+)	1999 09 07	704	0.3+	0.5+	1999 09 16	704	0.2+	0.5-
1990 03 01	399	0.3+	0.3+	1999 09 08	704	0.5+	0.2-	1999 09 16	704	0.4+	0.8-
1990 03 02	400	(5.1-	0.3-)	1999 09 08	699	0.3-	0.6+	1999 10 04	704	0.1+	0.1-
1990 03 02	400	1.4-	0.3+	1999 09 08	704	0.0	0.1+	1999 10 04	704	0.6-	0.2-
1990 03 06	809	1.2+	1.3+	1999 09 08	704	0.2+	0.3+	1999 10 04	704	0.2-	0.1+
1990 03 06	809	1.6+	1.4+	1999 09 08	699	0.4-	0.8+	1999 10 04	704	0.8-	0.3+
1990 03 06	809	1.7+	1.5+	1999 09 08	704	0.0	0.1-	1999 10 04	704	0.8-	0.1-
1999 07 16	704	0.5-	0.4+	1999 09 08	704	0.0	0.0	1999 10 07	704	0.3-	0.3+
1999 07 16	704	0.6-	0.4+	1999 09 08	699	0.0	0.7+	1999 10 07	704	0.1-	0.3-
1999 07 16	704	0.2-	0.2+	1999 09 09	704	0.0	0.2+	1999 10 07	704	0.6-	0.1-
1999 07 16	704	0.3-	0.8+	1999 09 09	704	0.2+	0.3+	1999 10 07	704	0.2+	0.3-
1999 07 16	704	0.2-	0.9+	1999 09 09	704	0.3+	0.2-	1999 10 07	704	0.7-	0.2-

1990 SS₃ = 1933 SS₁ = 1999 SQ₃

Id. G. V. Williams, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	353.98931		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22511611	ω	34.80284	+0.79526358	-0.60619973
a	2.6762807	Ω	2.56429	+0.50184146	+0.65005898
e	0.3119881	i	11.36506	+0.34016318	+0.45819779
P	4.38	H	13.6	G 0.15	U 2

Residuals in seconds of arc

1933 09 21	012	0.7-	1.2+	1990 10 08	372	0.3-	0.3-	1999 09 27	704	0.2-	0.1-
1933 09 25	012	(7.6+	1.8-)	1990 10 23	372	0.4-	1.9-	1999 09 27	704	0.0	0.1+
1990 09 20	372	(5.2-	0.7-)	1990 10 23	372	0.6-	0.5-	1999 09 27	704	0.1+	0.6-
1990 09 20	372	(4.4-	1.1+)	1996 02 15	372	0.8-	1.0+	1999 09 27	704	1.2-	0.1-
1990 09 27	402	(0.2-	2.0-)	1996 02 15	372	1.7+	0.8+	1999 09 28	704	0.2+	0.1-
1990 09 27	402	1.4+	0.1-	1999 09 03	704	0.4+	0.1+	1999 09 28	704	0.4+	0.3+
1990 09 30	372	1.4+	1.9+	1999 09 03	704	0.9+	0.6+	1999 09 28	704	0.5-	0.9-
1990 09 30	372	1.8-	1.6+	1999 09 03	704	0.1+	0.3-	1999 09 28	704	0.4+	0.2+
1990 10 08	372	0.3-	0.6-	1999 09 27	704	0.2+	0.5-				

1990 SW₈ = 1999 RK₄₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	321.20765		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21166089	ω	206.02260	+0.98994065	-0.12346058
a	2.7885321	Ω	160.69062	+0.13533543	+0.96871024
e	0.1358893	i	12.06225	-0.04125316	+0.21530897
P	4.66	H	13.7	G 0.15	U 3

Residuals in seconds of arc

1990 09 14	809	0.7-	0.4-	1999 07 13	704	0.3-	0.0	1999 09 13	704	0.3+	0.7-
1990 09 14	809	0.2-	1.7-	1999 07 13	704	0.2-	0.3-	1999 09 13	704	0.1+	0.0

1990 09 14	809	(0.5−	2.2−)	1999 07 13	704	0.2−	0.3−	1999 09 13	704	0.2+	0.4−
1990 09 22	809	0.1+	0.9−	1999 07 13	704	0.1−	0.0	1999 09 29	699	0.2−	0.6+
1990 09 22	809	1.2+	0.1−	1999 07 13	704	0.1+	0.0	1999 09 29	699	0.3+	1.5+
1990 09 22	809	1.7+	0.8−	1999 07 13	704	0.2−	0.0	1999 09 29	699	0.3−	0.6+
1990 09 25	809	0.7−	0.9−	1999 07 13	704	0.8−	0.1+	1999 09 30	704	1.2−	0.2+
1990 09 25	809	0.3−	0.9−	1999 07 13	704	0.3−	0.0	1999 09 30	704	0.2+	0.2+
1990 09 25	809	0.2+	0.8−	1999 07 13	704	0.4−	0.6−	1999 09 30	704	0.0	0.9+
1998 04 24	704	0.9−	1.8−	1999 07 23	704	0.1−	0.3−	1999 09 30	704	0.3−	0.7+
1998 04 24	704	0.2+	0.0	1999 07 23	704	0.4−	0.1−	1999 09 30	704	1.0+	1.3+
1998 04 24	704	0.7+	0.1+	1999 07 23	704	0.3−	0.0	1999 10 06	704	0.8−	1.6+
1998 04 24	704	0.6+	0.4−	1999 09 07	704	0.6+	0.3+	1999 10 06	704	0.0	0.9+
1998 05 23	704	0.7−	0.4−	1999 09 07	704	0.4+	0.6−	1999 10 06	704	0.1+	0.7+
1998 05 23	704	0.2+	0.4−	1999 09 07	704	0.0	0.2−	1999 10 06	704	0.0	1.2+
1998 05 23	704	0.6−	0.8−	1999 09 07	704	0.5+	0.2−	1999 10 06	704	0.3+	0.3+
1998 05 23	704	0.1−	1.4+	1999 09 07	704	0.1+	0.2−	1999 10 15	691	0.1−	0.3−
1998 05 23	704	0.3−	1.0−	1999 09 13	704	0.9+	0.1+	1999 10 15	691	0.0	0.3−
1999 07 13	704	0.1+	0.4−	1999 09 13	704	0.6+	0.3+	1999 10 15	691	0.0	0.4−

1990 TT = 1976 SR₂ = 1986 XR₁ = 1999 RJ₉₁

Id. A. Doppler, G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	319.64244		(2000.0)		P		Q
<i>n</i>	0.21403781	ω	24.01128	+0.80505167	−0.59234419		
<i>a</i>	2.7678489	Ω	12.46675	+0.51749557	+0.67496558		
<i>e</i>	0.0587342	<i>i</i>	8.50857	+0.28998299	+0.43994298		
<i>P</i>	4.60	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1976 09 24	095	(7.4+ 13.3+)	1999 08 22	703	0.2+	0.5−	1999 09 14	704	0.2+	0.3+	
1976 09 29	095	(22.3− 17.3−)	1999 08 22	703	0.1−	0.4−	1999 10 02	704	0.4+	0.1−	
1986 12 01	010	0.6+	2.2−	1999 08 22	703	0.7+	0.5−	1999 10 02	704	0.4+	0.2+
1986 12 01	010	1.3−	0.1−	1999 08 22	699	0.5+	0.3−	1999 10 02	704	0.1+	0.1−
1986 12 01	010	0.4+	0.1−	1999 08 22	703	0.4+	0.5−	1999 10 02	704	0.2−	0.4+
1990 10 10	400	0.8−	0.5+	1999 08 22	699	0.4+	0.4+	1999 10 02	704	0.3+	0.1+
1990 10 10	400	0.6−	1.3+	1999 09 07	704	0.4+	0.4−	1999 10 07	703	1.1−	1.5−
1990 10 11	400	0.7+	0.0	1999 09 07	704	0.0	0.4+	1999 10 07	703	0.0	0.6+
1990 10 11	400	0.7−	1.9+	1999 09 07	704	0.2+	0.4−	1999 10 07	703	0.5−	0.7+
1990 10 22	400	1.4−	0.3+	1999 09 07	704	0.2−	0.3−	1999 10 07	703	0.6−	0.7+
1990 10 22	400	0.4+	0.3+	1999 09 07	704	0.6−	0.1−	1999 10 07	704	0.5+	0.3+
1997 02 06	691	0.3+	0.1+	1999 09 14	704	0.2+	0.2−	1999 10 07	704	0.1−	0.9−
1997 02 06	691	0.1+	0.3+	1999 09 14	704	0.2+	0.4+	1999 10 07	704	0.6+	1.0−
1997 02 06	691	0.2+	0.1+	1999 09 14	704	0.1+	0.4+	1999 10 07	704	0.0	1.3−
1999 08 22	699	0.3−	0.7+	1999 09 14	704	0.1+	0.3+	1999 10 07	704	0.1−	0.7−

1990 TB₂ = 1993 FA₇₆

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	214.51288		(2000.0)		P		Q
<i>n</i>	0.18306857	ω	31.41961	+0.78814190	−0.61515466		
<i>a</i>	3.0718041	Ω	6.65610	+0.52184443	+0.65026176		
<i>e</i>	0.1379387	<i>i</i>	10.14829	+0.32635983	+0.44580757		
<i>P</i>	5.38	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1990 10 10	033	0.7−	0.2−	1990 10 12	033	0.6−	1.0−	1993 03 21	809	0.0	0.4−
1990 10 11	033	0.5+	0.5+	1990 10 13	033	0.0	0.9−	1993 03 22	809	0.0	0.5+
1990 10 11	033	0.8+	0.9+	1990 10 14	033	0.0	0.7+				

1990 TF₆ = 1999 RW₇₅

Id. M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	319.64290		(2000.0)		P		Q
<i>n</i>	0.21968941	ω	87.47356	+0.55198173	−0.83004300		
<i>a</i>	2.7201736	Ω	328.60187	+0.69134542	+0.50896098		
<i>e</i>	0.3428660	<i>i</i>	8.79458	+0.46621635	+0.22800730		
<i>P</i>	4.49	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1990 08 22	675	1.3−	1.8−	1990 10 11	413	0.4+	0.4+	1999 09 09	704	0.2+	0.2+
1990 08 22	675	1.0−	0.2−	1999 09 07	704	0.5−	0.7+	1999 09 09	704	0.2−	0.0
1990 09 16	675	0.9+	0.3+	1999 09 07	704	0.6−	0.5+	1999 09 09	704	0.5+	0.2−
1990 09 16	675	1.0+	0.2−	1999 09 07	704	0.1−	0.5+	1999 09 09	704	0.8+	0.1−
1990 09 19	675	1.2+	0.3−	1999 09 07	704	0.1+	0.7+	1999 10 02	723	0.8−	1.0−
1990 09 19	675	0.7+	0.2+	1999 09 07	704	0.2−	0.6+	1999 10 02	723	0.2+	0.8−
1990 10 09	413	1.1−	0.3−	1999 09 09	704	0.4+	0.3+	1999 10 02	723	0.7−	0.3+

1990 TH₈ = 1999 JQ₁₂₀

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	162.22764		(2000.0)		P		Q
<i>n</i>	0.28925402	ω	280.43816	−0.10011927	−0.99497394		
<i>a</i>	2.2643825	Ω	175.30685	+0.92092718	−0.09332483		
<i>e</i>	0.1335257	<i>i</i>	1.20894	+0.37665535	−0.03629498		
<i>P</i>	3.41	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 10 13	033	0.6+	0.5−	1997 12 04	704	0.2−	0.6+	1999 05 18	704	1.8+	0.5−
1990 10 13	033	0.2+	0.1+	1997 12 04	704	0.5−	0.2+	1999 05 18	704	0.8−	0.5−
1990 10 14	033	0.0	0.0	1999 05 13	704	0.7+	0.3+	1999 05 18	704	0.6+	0.5−
1990 10 18	033	0.8−	0.4+	1999 05 13	704	(0.3+ 2.4+)		1999 05 18	704	0.1−	0.4−
1997 12 04	704	0.1−	0.4−	1999 05 13	704	1.3+	1.6+	1999 05 18	704	1.2−	0.3−
1997 12 04	704	1.2+	0.5−	1999 05 13	704	0.8−	0.0				
1997 12 04	704	0.3−	0.0	1999 05 13	704	1.5−	0.0				

1990 VE = 1999 SE₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	325.92169		(2000.0)		P		Q
<i>n</i>	0.21454044	ω	345.37135	+0.55825484	−0.82182736		
<i>a</i>	2.7635242	Ω	70.57318	+0.77281610	+0.46518259		
<i>e</i>	0.1812674	<i>i</i>	6.93102	+0.30183906	+0.32894520		
<i>P</i>	4.59	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 11 10	885	1.3−	0.7−	1999 09 29	120	0.2+	0.3−	1999 10 04	703	0.3−	0.2+
1990 11 10	885	(2.5−	0.6−)	1999 09 29	120	0.7+	0.4−	1999 10 04	703	0.5−	0.0
1990 11 11	400	1.5+	0.8−	1999 09 29	120	0.3+	0.4−	1999 10 04	703	0.4−	0.0
1990 11 11	400	0.4+	0.8−	1999 09 29	120	0.8+	0.0	1999 10 04	703	0.4+	0.2+
1990 11 11	885	0.9+	1.0+	1999 09 30	120	0.3+	0.2−	1999 10 08	886	0.9−	0.3−
1990 11 11	885	0.6+	0.6−	1999 09 30	703	0.3−	0.1−	1999 10 08	886	0.5−	0.4+
1990 11 12	896	1.3−	1.2+	1999 09 30	703	0.4−	0.1+	1999 10 08	888	0.3+	0.9+
1990 11 13	896	(2.2−	0.5−)	1999 09 30	703	0.0	0.0	1999 10 08	888	0.2+	0.7+
1990 11 26	885	1.0−	0.7+	1999 09 30	703	0.2+	0.1+	1999 10 08	888	0.3+	0.3+
1990 11 26	885	1.9+	0.9−	1999 10 02	120	0.4−	0.6−	1999 10 09	886	0.1−	0.5+
1990 12 08	400	1.1−	0.0	1999 10 02	120	0.3+	0.3−	1999 10 09	886	0.0	0.7+
1990 12 08	400	0.6−	0.3+	1999 10 02	385	0.1−	1.2−	1999 10 09	886	0.6−	1.5+
1999 09 29	120	0.2+	0.0	1999 10 02	385	0.1+	0.8−				
1999 09 29	120	0.1+	0.2−	1999 10 02	385	0.0	0.6−				

1991 RG₁₄ = 1999 RU₁₂₉

Id. A. Doppler

1999 OCT. 26

M.P.C. 36329

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	322.40137		(2000.0)		P		Q				
<i>n</i>	0.24208873	ω	37.66987		+0.93729824		-0.34139358				
<i>a</i>	2.5496839	Ω	341.90504		+0.23870607		+0.77548920				
<i>e</i>	0.1896442	<i>i</i>	13.05526		+0.25395160		+0.53109973				
<i>P</i>	4.07	<i>H</i>	14.7		<i>G</i>	0.15	<i>U</i>	3			
Residuals in seconds of arc											
1991 09 13	675	0.1-	0.2-	1999 08 13	699	0.8-	0.4+	1999 09 30	704	0.5+	0.7-
1991 09 13	675	(3.0-	1.0+)	1999 09 07	704	0.2+	0.2+	1999 09 30	704	0.5-	0.9-
1991 09 14	675	0.9+	0.7-	1999 09 07	704	0.4+	1.2+	1999 09 30	704	0.2-	0.1+
1991 09 14	675	0.8+	0.5-	1999 09 07	704	0.5+	0.1+	1999 09 30	704	0.8+	0.4-
1991 09 15	675	1.5-	0.6-	1999 09 07	704	0.0	0.0	1999 09 30	704	1.8-	0.5+
1991 09 15	675	1.1-	0.5-	1999 09 07	704	0.3+	0.4+	1999 09 30	704	1.3-	0.6+
1991 09 17	675	0.7+	0.3-	1999 09 09	704	0.4-	0.0	1999 09 30	704	1.6-	1.0+
1991 09 17	675	1.0+	0.6-	1999 09 09	704	0.1-	0.2+	1999 09 30	704	0.5-	0.1+
1991 10 08	691	0.5-	0.8+	1999 09 09	704	0.1+	0.2+	1999 09 30	704	0.1-	0.2+
1991 10 08	691	0.3-	0.2+	1999 09 09	704	1.2+	0.6+	1999 09 30	704	0.3+	0.0
1991 10 08	691	0.3-	0.4+	1999 09 09	704	0.0	0.6+	1999 09 30	704	0.2+	0.5-
1995 09 02	010	1.3+	0.1-	1999 09 13	704	0.2-	0.1+	1999 09 30	704	0.8-	0.5-
1995 09 02	010	1.4+	0.2-	1999 09 13	704	0.4+	0.1-	1999 09 30	704	0.2+	0.1-
1995 09 02	010	1.4+	0.3-	1999 09 13	704	0.1-	0.5+	1999 09 30	704	0.5-	0.1-
1997 03 05	704	1.5+	0.5+	1999 09 13	704	0.1+	0.0	1999 09 30	704	0.4-	0.2-
1997 03 05	704	0.1-	1.9+	1999 09 13	704	0.8-	0.1+	1999 09 30	704	0.6-	0.1+
1999 08 13	699	0.0	0.0	1999 09 30	704	0.5+	0.5+				
1999 08 13	699	0.3-	0.2+	1999 09 30	704	0.7-	0.0				

1991 TU₁₃ = 1997 CO₁₂ = 1999 RV₁₄₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	297.93715		(2000.0)		P		Q			
<i>n</i>	0.22949806	ω	73.27224		+0.67269903		-0.73742163			
<i>a</i>	2.6421047	Ω	334.13646		+0.61474333		+0.60267397			
<i>e</i>	0.1191079	<i>i</i>	7.99943		+0.41178471		+0.30494822			
<i>P</i>	4.29	<i>H</i>	15.0		<i>G</i>	0.15	<i>U</i>	3		
Residuals in seconds of arc										
1991 10 08	033	0.4+	0.4+	1997 02 14	327	0.0	0.2+	1999 09 14	704	0.1+ 0.2+
1991 10 08	033	0.1-	0.2+	1997 02 14	327	0.3-	0.3+	1999 09 14	704	0.4+ 0.0
1991 10 09	033	0.0	0.1-	1997 02 14	327	0.5-	0.1+	1999 09 14	704	1.1+ 0.6+
1991 10 10	033	0.3-	0.2-	1999 09 07	704	1.0-	0.1+	1999 09 14	704	0.6+ 0.7+
1997 02 03	691	0.1-	0.2-	1999 09 07	704	0.3-	0.1-	1999 10 02	703	0.2+ 1.9+
1997 02 03	691	0.3+	0.3-	1999 09 07	704	0.3-	1.1-	1999 10 02	703	0.3- 0.1-
1997 02 03	691	0.3+	0.2-	1999 09 07	704	0.0	1.6-	1999 10 02	703	0.8- 1.6+
1997 02 07	691	0.5-	0.0	1999 09 09	704	0.3+	0.1-	1999 10 02	703	0.2+ 0.7-
1997 02 07	691	0.6-	0.2-	1999 09 09	704	0.3-	0.1+	1999 10 06	704	0.8+ 0.1-
1997 02 07	691	0.7-	0.1-	1999 09 09	704	0.4+	1.0-	1999 10 06	704	0.4+ 0.4-
1997 02 13	691	0.1+	0.7-	1999 09 09	704	0.0	0.2+	1999 10 06	704	0.2- 0.7-
1997 02 13	691	1.0+	0.3-	1999 09 09	704	0.0	0.3+	1999 10 06	704	0.2- 0.5-
1997 02 13	691	0.3+	0.0	1999 09 14	704	0.5+	0.3+	1999 10 06	704	0.7- 0.8-

1991 VY₅ = 1993 FK₈₄

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	329.95074		(2000.0)		P		Q			
<i>n</i>	0.24351596	ω	293.44740		+0.61343842		-0.78627085			
<i>a</i>	2.5397118	Ω	118.50619		+0.75181999		+0.55273923			
<i>e</i>	0.2245984	<i>i</i>	4.82853		+0.24178504		+0.27614759			
<i>P</i>	4.05	<i>H</i>	15.2		<i>G</i>	0.15	<i>U</i>	6		
Residuals in seconds of arc										
1991 11 02	809	0.7+	0.3-	1991 11 06	809	1.3-	0.5+	1993 03 25	691	1.3+ 0.4+
1991 11 02	809	0.8+	0.2-	1991 11 09	809	1.2+	0.6+	1993 03 25	691	1.3+ 0.4+
1991 11 02	809	0.8-	0.2-	1991 11 09	809	0.9-	0.5-	1993 03 25	691	1.3+ 0.0

1991 11 06	809	1.0+	0.2+	1991 11 09	809	0.1-	0.0
1991 11 06	809	0.5-	0.2-	1993 03 24	809	3.9-	0.9-

1991 XM = 1999 LJ₁₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	328.90168		(2000.0)		P		Q			
n	0.21576142	ω	82.63640		+0.80599517		+0.54896442			
a	2.7530886	Ω	243.82361		-0.59183666		+0.75374851			
e	0.1487509	i	14.28121		+0.01005768		+0.36124957			
P	4.57	H	13.0		G	0.15	U	4		
Residuals in seconds of arc										
1991 12 04	399 (3.1-	1.2-)	1991 12 14	399	0.9+	1.4+	1999 06 14	704	0.2+	0.5+
1991 12 04	399 (1.4-	2.2-)	1999 06 09	704	0.4+	0.5-	1999 06 14	704	0.0	0.3+
1991 12 05	399 1.2-	0.4-	1999 06 09	704	0.1-	0.1-	1999 07 13	704	0.3+	0.2+
1991 12 05	399 0.1-	0.3+	1999 06 09	704	0.2+	0.2-	1999 07 13	704	0.5-	0.3+
1991 12 07	691 0.2+	0.4-	1999 06 09	704	0.0	0.2+	1999 07 13	704	0.2-	0.0
1991 12 07	691 0.2+	0.4-	1999 06 09	704	0.1+	0.2-	1999 07 13	704	0.2-	0.2-
1991 12 07	691 0.0	0.4-	1999 06 14	704	0.3+	0.3+	1999 07 13	704	0.4-	0.4-
1991 12 14	399 (0.0	3.0+)	1999 06 14	704	0.1-	0.1+				

1992 DC₇ = 1999 RE₉₃

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	21.13892		(2000.0)			P		Q			
n	0.19983683	ω	207.35678			+0.85363615		+0.51874712			
a	2.8974705	Ω	121.31800			-0.46727473		+0.80252667			
e	0.0689610	i	3.15216			-0.23012962		+0.29470725			
P	4.93	H	14.1			G	0.15	U	5		
Residuals in seconds of arc											
1992 02 29	809	0.3+	0.1+	1999 09 14	704	0.0	0.6+	1999 10 02	704	0.1+	0.5+
1992 03 03	809	0.5-	0.3+	1999 09 14	704	0.8+	0.4+	1999 10 02	704	0.4-	0.2+
1992 03 07	809	0.3+	0.2-	1999 09 14	704	0.5-	1.3-	1999 10 02	704	0.1-	0.1-
1999 09 07	704	0.2-	0.2+	1999 09 30	684	0.1-	0.4+	1999 10 07	704	0.4+	0.5-
1999 09 07	704	0.4-	0.3-	1999 09 30	684	0.2-	0.3+	1999 10 07	704	0.1-	0.3-
1999 09 07	704	0.3-	0.1+	1999 09 30	684	0.4-	0.1+	1999 10 07	704	0.5+	0.2+
1999 09 07	704	0.6-	0.6-	1999 10 01	684	0.1-	0.3-	1999 10 07	704	0.3+	0.1+
1999 09 07	704	0.7-	0.2-	1999 10 01	684	0.1+	0.9-	1999 10 07	704	0.3+	0.5-
1999 09 14	704	0.8+	1.4+	1999 10 02	704	0.5+	0.5+				
1999 09 14	704	0.4-	0.2+	1999 10 02	704	0.5+	0.2+				

1992 ET₁₄ = 1999 TV₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	315.31530		(2000.0)		P		Q				
<i>n</i>	0.21497452	ω	200.84614		+0.43137852		-0.90155821				
<i>a</i>	2.7598029	Ω	223.61690		+0.83439841		+0.41271521				
<i>e</i>	0.0874018	<i>i</i>	2.76249		+0.34306247		+0.12984204				
<i>P</i>	4.58	<i>H</i>	13.8		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1992 03 01	809	0.2-	0.4+	1999 10 03	704	(2.6+	1.6-)	1999 10 07	704	0.3-	0.1+
1992 03 03	809	0.8-	0.0	1999 10 03	704	1.4+	1.4-	1999 10 07	704	0.4-	0.1+
1992 03 06	809	1.3+	0.0	1999 10 03	704	0.6+	0.8+	1999 10 07	704	0.3-	0.1-
1992 04 07	809	0.1-	0.3+	1999 10 03	704	0.4-	0.0	1999 10 07	704	0.2+	0.1-
1994 09 01	691	0.0	0.2+	1999 10 06	704	0.2+	0.2+	1999 10 11	106	0.5-	0.5+
1994 09 01	691	0.2-	0.2+	1999 10 06	704	0.0	0.1+	1999 10 11	106	0.5+	0.4+
1994 09 01	691	0.1-	0.4+	1999 10 06	704	0.1+	0.0	1999 10 11	106	1.2-	0.3+
1997 04 01	809	0.5+	0.4+	1999 10 06	704	0.2-	0.2+	1999 10 11	106	0.6-	0.6+
1997 04 01	809	0.2+	0.8+	1999 10 06	704	0.2+	0.1-	1999 10 11	106	0.1-	0.0
1997 04 01	809	0.2-	0.0	1999 10 07	704	0.6+	0.1+	1999 10 11	106	0.2-	0.7-

1992 ES₂₈ = 1977 EH₃ = 1982 DF₃ = 1999 RZ₁₇₀

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	18.71122		(2000.0)	P	Q
<i>n</i>	0.19840978	ω	302.00014	+0.80267636	+0.59617986
<i>a</i>	2.9113472	Ω	21.41759	-0.53057159	+0.72660064
<i>e</i>	0.0175056	<i>i</i>	2.62756	-0.27240495	+0.34149829
<i>P</i>	4.97	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1977 03 12	381	0.5-	0.4-	1992 03 09	809	0.5+	0.6+	1999 09 09	704	0.2+	0.7+
1977 03 12	381	2.1-	0.4+	1997 04 02	704	1.3+	1.4+	1999 09 09	704	0.3-	0.4+
1982 02 20	033	0.9+	0.9-	1997 04 02	704	0.0	0.7+	1999 09 09	704	0.4+	1.1+
1982 02 20	033	0.7+	0.5-	1997 04 02	704	1.1+	0.9+	1999 09 09	704	1.0+	0.8+
1982 02 20	033	2.1+	0.3-	1997 04 02	704	0.7+	0.9+	1999 09 11	699	0.0	0.0
1992 02 29	809	0.7-	1.0+	1999 09 07	704	0.5-	0.2-	1999 09 11	699	0.9-	1.1+
1992 03 03	809	1.5-	0.7+	1999 09 07	704	0.2+	0.1+	1999 09 11	699	0.3-	1.0+
1992 03 05	691	0.2+	0.1+	1999 09 07	704	0.9-	0.2+	1999 09 14	704	1.0+	0.1-
1992 03 05	691	0.2+	0.1+	1999 09 07	704	0.6-	0.2+	1999 09 14	704	0.8-	0.7-
1992 03 05	691	0.0	0.2+	1999 09 07	704	1.0-	0.4+	1999 09 14	704	0.2+	0.2+
1992 03 08	809	0.0	1.1+	1999 09 09	704	0.4-	0.7+				

1992 PK₁ = 1999 RK₁₄₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	322.64975		(2000.0)	P	Q
<i>n</i>	0.28569206	ω	66.14978	+0.93241973	-0.35147363
<i>a</i>	2.2831648	Ω	314.30526	+0.27386564	+0.83895528
<i>e</i>	0.1468587	<i>i</i>	6.74267	+0.23577756	+0.41547601
<i>P</i>	3.45	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 07 24	809	1.3+	0.1-	1999 07 16	704	0.2-	0.1+	1999 09 14	704	0.4+	0.8-
1992 07 24	809	0.3+	0.8-	1999 07 16	704	0.8-	0.4+	1999 09 14	704	0.3+	0.5-
1992 07 24	809	(0.7+	2.3-)	1999 07 16	704	0.6-	0.7+	1999 09 29	704	0.6+	0.0
1992 07 26	809	0.0	1.0-	1999 07 16	704	0.4-	1.1+	1999 09 29	704	0.5-	0.3-
1992 07 26	809	0.2-	1.3-	1999 09 07	704	0.1-	0.7+	1999 09 29	704	1.5-	0.1-
1992 07 26	809	0.5-	1.4-	1999 09 07	704	0.3+	0.7+	1999 09 29	704	0.3+	0.7-
1992 07 30	809	0.3+	1.0-	1999 09 07	704	0.1-	0.0	1999 09 29	704	0.4+	0.8+
1992 07 30	809	0.8+	1.3-	1999 09 07	704	0.3+	0.1+	1999 10 02	703	0.4+	0.2-
1992 07 30	809	0.7+	1.0-	1999 09 09	704	0.1+	0.1-	1999 10 02	703	1.4-	0.2+
1992 08 08	010	0.4-	1.7+	1999 09 09	704	0.8+	0.3-	1999 10 02	703	1.2-	0.7-
1992 08 08	010	0.2-	1.2+	1999 09 09	704	0.2-	0.3-	1999 10 02	703	0.7-	0.6-
1992 08 08	010	0.3-	0.5+	1999 09 09	704	0.4+	0.4-	1999 10 02	704	0.6+	0.1+
1992 08 09	010	1.5-	0.7+	1999 09 09	704	0.2-	0.3+	1999 10 02	704	0.4+	0.0
1992 08 09	010	0.5-	1.8+	1999 09 14	704	0.8+	0.3+	1999 10 02	704	0.1+	0.1-
1992 08 09	010	0.9+	0.9+	1999 09 14	704	0.1+	0.3+	1999 10 02	704	0.1+	0.2+
1999 07 16	704	0.4-	0.2-	1999 09 14	704	0.6+	0.0	1999 10 02	704	0.1+	0.4+

1992 QT = 1999 RV₂₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	34.55488		(2000.0)	P	Q
<i>n</i>	0.28041407	ω	304.64161	+0.25435492	+0.95288107
<i>a</i>	2.3117251	Ω	338.20894	-0.67547216	+0.05272236
<i>e</i>	0.1850266	<i>i</i>	26.44009	-0.69212784	+0.29872733
<i>P</i>	3.51	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1992 08 31	675	1.6+	1.1-	1998 03 25	566	1.0-	0.6-	1999 09 14	704	0.5+	0.3+
1992 09 01	675	0.9+	0.0	1999 08 12	699	0.1-	0.2+	1999 09 14	704	0.3+	0.2+
1992 09 01	675	0.5+	0.3-	1999 08 12	699	0.5-	0.3+	1999 09 14	704	0.9+	0.3+
1992 09 22	675	0.7+	0.7-	1999 08 12	699	0.6-	0.1-	1999 09 14	704	0.4+	0.3+
1992 09 22	675	0.8+	1.6-	1999 09 07	704	0.5-	0.0	1999 09 14	704	0.4+	0.2-
1992 09 25	675	0.1-	0.3-	1999 09 07	704	0.4-	0.0	1999 10 02	704	0.3-	0.3+
1998 01 25	566	0.1+	0.4-	1999 09 07	704	0.7-	0.3-	1999 10 02	704	0.2-	0.2+
1998 01 25	566	0.3+	0.3-	1999 09 07	704	0.6-	0.1-	1999 10 02	704	0.5-	0.4+

1998 01 25	566	0.5+	0.1-	1999 09 07	704	0.6-	0.6-	1999 10 02	704	0.5-	0.0
1998 02 25	566	0.2+	0.2+	1999 09 09	704	0.2-	0.1+	1999 10 02	704	0.0	0.4+
1998 02 25	566	0.5+	0.3+	1999 09 09	704	0.1+	0.3-	1999 10 07	703	0.4-	0.4+
1998 02 25	566	0.5+	0.5+	1999 09 09	704	0.2+	0.0	1999 10 07	703	0.5-	0.5+
1998 03 25	566	1.1-	0.2-	1999 09 09	704	1.1+	0.5+	1999 10 07	703	0.7-	0.4+
1998 03 25	566	1.2-	0.4-	1999 09 09	704	0.0	0.1+	1999 10 07	703	0.6-	0.5+

1992 RV₃ = 1999 RQ₉₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	348.44093		(2000.0)	P	Q
<i>n</i>	0.28309310	ω	34.24863	+0.99588539	+0.08237544
<i>a</i>	2.2971174	Ω	320.97237	-0.09058768	+0.89350949
<i>e</i>	0.1857726	<i>i</i>	3.43875	-0.00248184	+0.44142392
<i>P</i>	3.48	<i>H</i>	16.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 09 02	809	1.0+	0.5-	1999 09 07	704	0.5+	1.6+	1999 09 14	704	0.8-	0.4-
1992 09 02	809	0.2+	0.0	1999 09 07	704	0.7-	0.2-	1999 09 14	704	0.8-	0.8-
1992 09 02	809	0.4-	0.2-	1999 09 07	704	0.9-	0.4-	1999 09 14	704	0.6-	0.4-
1992 09 03	809	1.1+	0.5-	1999 09 09	704	0.2-	0.5+	1999 09 14	704	0.2+	0.2-
1992 09 22	809	(0.5-	2.8-)	1999 09 09	704	0.2+	0.1-	1999 09 14	704	0.3+	0.7-
1992 09 22	809	(0.2-	3.3-)	1999 09 09	704	0.1+	0.1-	1999 10 07	704	0.3+	0.5-
1992 09 22	809	1.0+	1.7-	1999 09 09	704	0.4-	0.3-	1999 10 07	704	0.4+	0.2-
1992 09 23	809	1.1-	0.3+	1999 09 09	704	0.8-	0.3-	1999 10 07	704	0.4-	0.0
1992 09 23	809	0.7-	0.7+	1999 09 10	704	0.2-	1.2+	1999 10 07	704	1.4+	0.3+
1992 09 23	809	0.7-	1.0+	1999 09 10	704	0.6+	1.3+	1999 10 07	704	0.0	0.1-
1999 09 07	704	0.7+	0.6+	1999 09 10	704	1.0+	0.1-				

1992 SQ₁ = 1998 FX₃₄ = 1999 RR₁₂₇

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	349.88279		(2000.0)	P	Q
<i>n</i>	0.27526570	ω	148.11206	+0.93375764	+0.35746780
<i>a</i>	2.3404605	Ω	190.98610	-0.34479182	+0.88517485
<i>e</i>	0.2231603	<i>i</i>	5.33049	-0.09599617	+0.29779566
<i>P</i>	3.58	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 09 26	372	(2.6+	3.4-)	1998 04 19	704	1.8+	1.3-	1999 09 14	704	0.2+	0.1-
1992 09 26	372	(2.7+	1.3-)	1998 04 19	704	1.3-	1.4+	1999 09 14	704	0.3-	0.3+
1992 10 01	372	0.1+	0.3-	1998 04 19	704	(0.3-	2.9+)	1999 09 14	704	0.4+	0.2+
1992 10 01	372	(0.2+	2.5+)	1999 09 06	699	0.3-	0.6+	1999 09 14	704	0.5+	0.1-
1992 10 02	372	(4.2-	0.1+)	1999 09 06	699	0.0	0.1+	1999 09 14	704	0.3+	0.1-
1992 10 02	372	(4.6-	0.6+)	1999 09 06	699	0.1-	0.0	1999 09 30	704	0.4-	0.1+
1998 03 20	704	0.5+	0.3-	1999 09 07	704	0.1+	0.0	1999 09 30	704	0.5-	0.2+
1998 03 20	704	0.3-	0.3+	1999 09 07	704	0.1-	0.1-	1999 09 30	704	0.4+	0.1-
1998 03 20	704	1.2-	0.5-	1999 09 07	704	0.2-	0.1-	1999 09 30	704	0.1-	0.0
1998 03 20	704	1.3+	0.7-	1999 09 07	704	0.0	0.4-	1999 09 30	704	0.4+	0.1-
1998 03 22	704	0.3-	0.2-	1999 09 07	704	0.1-	0.1+	1999 10 06	704	1.0-	0.8+
1998 03 22	704	0.6-	0.9-	1999 09 09	704	0.0	0.3+	1999 10 06	704	0.1+	0.1-
1998 03 22	704	0.7-	0.6+	1999 09 09	704	0.2-	0.3-	1999 10 06	704	0.1+	0.4-
1998 03 22	704	(2.5-	1.1-)	1999 09 09	704	0.0	0.3-	1999 10 06	704	0.4+	0.4+
1998 04 19	704	(0.3-	2.3+)	1999 09 09	704	0.1+	0.1-	1999 10 06	704	0.7+	1.1-
1998 04 19	704	0.7+	0.5+	1999 09 09	704	0.1-	0.2-				

1992 SW₁₄ = 1999 SW₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	327.75519		(2000.0)	P	Q
<i>n</i>	0.27497812	ω	31.46710	+0.94517577	-0.30720177
<i>a</i>	2.3420920	Ω	345.13664	+0.12712139	+0.65856078
<i>e</i>	0.2501463	<i>i</i>	25.58339	+0.30080377	+0.68696781
<i>P</i>	3.58	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 3

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Residuals in seconds of arc

1992 09 30	675	0.5−	1.8+	1999 09 30	704	0.1−	0.2−	1999 10 06	704	0.2−	0.8+
1992 09 30	675	0.3+	0.0	1999 09 30	704	0.4−	0.2−	1999 10 06	704	1.0+	0.1−
1992 10 02	675	0.5−	0.6+	1999 09 30	704	0.1−	0.2+	1999 10 06	704	0.0	0.1+
1992 10 02	675	0.3+	0.2+	1999 09 30	704	0.2−	0.2−	1999 10 06	704	0.1−	0.2−
1992 10 04	675	0.6−	1.4−	1999 09 30	704	0.4−	0.1+	1999 10 07	704	0.4+	0.3+
1992 10 04	675	1.2+	1.2−	1999 09 30	704	0.4−	0.1−	1999 10 07	704	0.4−	0.1−
1999 09 13	704	0.5+	0.5+	1999 09 30	704	0.5−	0.6−	1999 10 07	704	0.2−	0.5+
1999 09 13	704	0.5+	0.2−	1999 09 30	704	0.2−	0.2−	1999 10 08	699	0.0	0.3+
1999 09 13	704	0.3+	0.1+	1999 09 30	704	0.2−	0.3−	1999 10 08	699	0.5−	0.2+
1999 09 13	704	0.2+	0.1+	1999 09 30	704	0.0	0.2−	1999 10 08	699	0.2−	0.1+
1999 09 13	704	0.3+	0.4+	1999 09 30	704	0.0	0.3+	1999 10 13	704	0.1−	0.2−
1999 09 29	704	0.1+	0.4−	1999 09 30	704	0.3−	0.1−	1999 10 13	704	0.0	0.0
1999 09 29	704	0.7+	0.7−	1999 09 30	704	0.4−	0.1−	1999 10 13	704	0.1−	0.1+
1999 09 29	704	1.0+	0.5−	1999 09 30	704	0.4−	0.1+	1999 10 13	704	0.0	0.3+
1999 09 29	704	(0.2+	2.5−)	1999 10 04	703	0.2−	0.7+	1999 10 13	704	0.1−	0.2+
1999 09 29	704	0.8+	0.2+	1999 10 04	703	0.1+	0.6+	1999 10 15	704	0.2+	0.1+
1999 09 30	704	0.5−	0.2−	1999 10 04	703	0.2−	0.4+	1999 10 15	704	0.0	0.3−
1999 09 30	704	0.2−	0.3−	1999 10 04	703	0.3−	0.3+	1999 10 15	704	0.1+	0.1−
1999 09 30	704	0.3−	0.4−	1999 10 05	888	0.2−	0.2+	1999 10 15	704	0.1+	0.2−
1999 09 30	704	0.7+	0.1+	1999 10 05	888	0.3−	0.1+	1999 10 15	704	0.3+	0.3−
1999 09 30	704	0.3−	0.0	1999 10 05	888	0.3+	0.8−				
1999 09 30	704	0.1−	0.5−	1999 10 06	704	0.0	0.4+				

1992 SH₁₇ = 1999 RU₁₆₇

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		Williams		<i>Q</i>	
<i>M</i>	24.44919			<i>P</i>		<i>Q</i>	
<i>n</i>	0.27826854	ω	303.53266	+0.57468514		+0.81836752	
<i>a</i>	2.3235926	Ω	1.55743	−0.70315755		+0.49590129	
<i>e</i>	0.1221641	<i>i</i>	7.19806	−0.41869612		+0.29044194	
<i>P</i>	3.54	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 21	033	(3.3+	0.2+)	1998 03 24	704	0.2−	1.3−	1999 09 07	699	0.2+	1.9+
1992 09 21	033	0.3+	0.9+	1998 03 24	704	0.4+	0.3−	1999 09 07	704	0.2+	0.3−
1992 09 22	033	0.8−	0.0	1998 03 24	704	1.1+	0.0	1999 09 07	699	1.2+	0.8+
1992 09 24	033	0.3−	1.0+	1998 03 24	704	0.3+	0.4−	1999 09 07	704	0.5−	0.1+
1992 09 24	033	0.1+	0.1+	1998 03 24	704	0.0	0.6+	1999 09 07	704	0.2−	0.8−
1992 09 26	033	0.2+	0.1+	1998 03 24	704	1.1−	0.7+	1999 09 07	699	0.5−	0.6+
1992 09 27	033	0.2+	0.0	1998 03 24	704	1.2+	0.4+	1999 09 07	704	0.2−	0.1−
1992 09 28	033	0.7−	0.3−	1998 03 24	704	(7.3−	2.1−)	1999 09 07	704	0.2−	0.5−
1998 03 22	704	0.6−	0.7−	1998 03 24	704	(4.3−	0.3+)	1999 09 09	704	0.2−	0.6−
1998 03 22	704	0.8+	0.1−	1998 03 24	704	0.3+	0.8−	1999 09 09	704	0.5−	0.1+
1998 03 22	704	0.4+	0.5+	1998 03 24	704	0.1+	0.2−	1999 09 09	704	0.4−	0.3−
1998 03 22	704	0.1+	1.1+	1998 03 29	704	0.5+	1.2−	1999 09 09	704	0.0	0.4+
1998 03 22	704	0.5−	0.3+	1998 03 29	704	0.7+	0.0	1999 09 09	704	0.6+	0.4+
1998 03 24	704	0.3+	0.3−	1998 03 29	704	0.2+	0.7+	1999 09 14	704	0.1−	0.4−
1998 03 24	704	0.2−	0.7−	1998 03 29	704	0.2+	0.5−	1999 09 14	704	1.6+	0.4−
1998 03 24	704	0.9−	0.3+	1998 03 29	704	0.7+	0.9−	1999 09 14	704	0.6−	0.2+
1998 03 24	704	0.1−	0.8+	1998 04 19	704	0.1+	0.3+	1999 09 14	704	0.0	0.4−
1998 03 24	704	0.4−	0.5+	1998 04 19	704	1.2+	0.0	1999 09 14	704	0.1+	0.2−
1998 03 24	704	0.1−	1.1+	1998 04 19	704	1.1−	0.2−	1999 10 07	704	0.2+	0.6+
1998 03 24	704	1.1−	0.3+	1998 04 19	704	1.8−	1.9+	1999 10 07	704	0.0	0.1−
1998 03 24	704	0.5+	0.1+	1998 04 19	704	(2.4−	0.7−)	1999 10 07	704	0.5−	1.1−

1992 SR₂₃ = 1981 UN₉ = 1990 BL₄ = 1998 FO₉₇ = 1999 RS₁₂₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		Williams		<i>Q</i>	
<i>M</i>	2.95974			<i>P</i>		<i>Q</i>	
<i>n</i>	0.26639935	ω	55.78813	+0.75173083		+0.65523177	
<i>a</i>	2.3921070	Ω	263.15471	−0.62708807		+0.67519091	
<i>e</i>	0.1592164	<i>i</i>	4.31170	−0.20411105		+0.33880460	
<i>P</i>	3.70	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1981 10 30	381	0.0	0.2−	1998 03 31	704	(2.3−	0.9+)	1999 09 06	699	0.6+	0.7+
1981 10 30	381	0.5−	0.2−	1998 03 31	704	0.8−	0.0	1999 09 07	704	0.1+	0.2−
1990 01 24	033	0.9+	0.3−	1998 04 01	704	0.3−	1.6−	1999 09 07	704	0.0	0.1+
1990 01 25	033	0.0	0.4+	1998 04 01	704	0.2+	0.8−	1999 09 07	704	0.2−	0.2−
1992 09 23	033	0.5+	0.6−	1998 04 01	704	0.4−	0.9−	1999 09 07	704	0.1+	0.5−
1992 09 25	033	0.1+	0.4−	1998 04 01	704	0.8+	0.4−	1999 09 07	704	0.1−	0.2−
1992 09 25	033	0.3+	0.8−	1998 04 01	704	0.6−	0.0	1999 09 09	704	0.1+	0.6−
1992 09 27	033	0.1+	0.2−	1999 05 21	704	0.2−	0.4−	1999 09 09	704	0.0	0.7−
1992 09 28	033	0.1−	0.2−	1999 05 21	704	0.8+	1.6+	1999 09 09	704	0.2+	0.7−
1992 09 29	033	0.4+	0.2−	1999 05 21	704	0.3+	0.3+	1999 09 09	704	0.2−	0.5−
1998 02 22	566	0.3−	0.4+	1999 05 21	704	0.2−	0.4−	1999 09 09	704	0.2+	0.1−
1998 02 22	566	0.1−	0.2−	1999 05 21	704	0.5−	1.1+	1999 09 14	704	0.2+	0.5−
1998 02 22	566	0.2−	0.4+	1999 07 23	704	0.3+	0.3−	1999 09 14	704	0.2−	0.6−
1998 03 26	704	1.1−	0.5−	1999 07 23	704	0.8+	0.2−	1999 09 14	704	0.5−	0.8−
1998 03 26	704	0.3−	1.3−	1999 07 23	704	0.4+	0.2−	1999 09 14	704	0.1+	1.1−
1998 03 26	704	0.8−	1.1−	1999 07 23	704	0.1+	0.2−	1999 09 14	704	0.6−	1.4−
1998 03 31	704	0.2+	0.8−	1999 09 06	699	0.1+	1.0+				
1998 03 31	704	(1.8+	2.4−)	1999 09 06	699	0.2−	1.2+				

1992 SM₂₆ = 1999 UY

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		Williams		<i>Q</i>	
<i>M</i>	337.68085			<i>P</i>		<i>Q</i>	
<i>n</i>	0.28154698	ω	349.68139	+0.85084048		−0.51868962	
<i>a</i>	2.3055195	Ω	41.91205	+0.49056980		+0.72705929	
<i>e</i>	0.1219254	<i>i</i>	7.21150	+0.18818009		+0.44982870	
<i>P</i>	3.50	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1992 09 23	033	0.1−	0.0	1992 10 23	010	0.0	0.5−	1999 10 17	120	0.3−	0.1−
1992 09 25	033	0.2+	0.0	1992 10 23	010	0.0	0.5+	1999 10 18	120	0.2+	0.0
1992 09 25	033	0.1−	0.4−	1999 10 16	120	0.3−	0.3+	1999 10 19	120	1.0−	0.2−
1992 09 28	033	0.0	0.3+	1999 10 16	120	0.8+	0.8+	1999 10 19	120	0.5+	0.6−

1992 UR₂ = 1992 WG₉ = 1999 RD₄₂

Id. A. Doppler (d, *MPC* 36125; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		Williams		<i>Q</i>	
<i>M</i>	282.35678			<i>P</i>		<i>Q</i>	
<i>n</i>	0.27850357	ω	49.12956	−0.05902331		−0.95594600	
<i>a</i>	2.3222851	Ω	46.82288	+0.75546468		−0.23106258	
<i>e</i>	0.2466038	<i>i</i>	23.22295	+0.65252537		+0.18104510	
<i>P</i>	3.54	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 10 20	675	1.0+	1.3−	1999 09 11	704	0.1+	0.2+	1999 09 30	704	0.2+	0.2+
1992 10 20	675	0.4+	0.7−	1999 09 11	704	0.5+	0.2−	1999 09 30	704	0.5−	0.4+
1992 10 24	675	1.1−	1.6+	1999 09 13	413	0.7+	0.2+	1999 09 30	704	0.2−	0.3+
1992 11 26	675	0.1+	0.9−	1999 09 13	413	1.7+	0.2+	1999 10 06	704	0.7−	0.1+
1992 11 26	675	0.1−	0.1−	1999 09 14	413	0.2+	0.3−	1999 10 06	704	1.0−	0.0
1992 11 28	675	0.1−	0.2−	1999 09 14	413	0.1+	0.4−	1999 10 06	704	0.9−	0.5+
1992 11 28	675	0.5+	0.8+	1999 09 18	413	0.3+	0.4−	1999 10 06	704	1.1−	0.1+
1999 09 11	704	0.2−	0.0	1999 09 18	413	0.3+	0.2−	1999 10 07	413	0.0	0.5−
1999 09 11	704	0.0	0.3+	1999 09 30	704	0.0	0.4+	1999 10 07	413	0.0	0.5−
1999 09 11	704	0.2+	0.2−	1999 09 30	704	0.1+	0.6+				

Residuals in seconds of arc

1985 10 22	033	0.0	0.1+	1999 10 06	704	0.2+	0.2−	1999 10 07	704	0.0	0.1−
1992 10 27	372	0.3−	0.7−	1999 10 07	704	0.4−	0.1−	1999 10 07	120	0.8+	0.4−
1992 10 27	372	(2.6−	0.8+)	1999 10 07	704	0.3+	0.0	1999 10 07	120	0.1+	0.4−
1992 10 31	033	0.5+	0.3+	1999 10 07	704	0.2−	0.6+	1999 10 08	120	0.2+	0.1+
1992 10 31	033	0.2−	0.0	1999 10 07	704	0.5+	0.0	1999 10 08	120	0.4−	0.1−
1992 11 01	033	0.1+	0.1+	1999 10 07	704	0.2+	0.4+	1999 10 09	703	0.3−	0.4+
1999 10 06	704	0.3+	0.4−	1999 10 07	704	0.1−	0.3+	1999 10 09	703	0.2−	0.1+
1999 10 06	704	0.3+	0.3−	1999 10 07	704	0.3−	0.1+	1999 10 09	703	0.4−	0.0
1999 10 06	704	0.3+	0.3−	1999 10 07	704	0.2−	0.0	1999 10 09	703	0.2−	0.2+
1999 10 06	704	0.2+	0.5−	1999 10 07	704	0.8−	0.4+				

1992 XK = 1999 RA₁₅₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	311.57943		(2000.0)	P	Q
<i>n</i>	0.26515910	ω	118.10626	+0.75053308	−0.66053560
<i>a</i>	2.3995604	Ω	283.24173	+0.59893429	+0.69260005
<i>e</i>	0.2111928	<i>i</i>	1.16668	+0.27924507	+0.28982390
<i>P</i>	3.72	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 12 15	894	(2.2+	1.4+)	1999 09 07	704	1.4−	0.4+	1999 09 30	704	0.3+	0.4−
1992 12 15	894	0.7+	0.6+	1999 09 07	704	0.8−	0.2−	1999 09 30	704	0.2+	0.6−
1992 12 16	894	0.5+	0.3−	1999 09 09	704	0.3−	0.0	1999 09 30	704	0.7+	0.1−
1992 12 16	894	0.5+	0.4+	1999 09 09	704	0.2+	0.0	1999 09 30	704	0.3+	0.2−
1992 12 20	894	1.1+	1.3+	1999 09 09	704	0.3+	0.0	1999 09 30	704	0.2+	0.7−
1992 12 20	894	0.6+	0.1+	1999 09 09	704	0.0	0.9+	1999 09 30	704	1.1+	0.2−
1992 12 22	894	0.1−	0.7+	1999 09 09	704	0.1+	1.5+	1999 09 30	704	1.1+	0.3−
1992 12 22	894	0.3−	0.6+	1999 09 14	704	0.2+	0.1−	1999 09 30	704	1.0+	0.6−
1992 12 26	894	0.8−	0.6−	1999 09 14	704	0.1−	0.7−	1999 09 30	704	0.6+	0.1−
1992 12 26	894	1.5−	0.7−	1999 09 14	704	0.1+	0.2−	1999 10 01	678	0.7−	0.6−
1992 12 27	894	0.6+	1.2−	1999 09 14	704	0.0	0.1−	1999 10 01	678	0.1−	0.3−
1992 12 27	894	0.2−	1.0−	1999 09 14	704	0.5+	0.1−	1999 10 02	703	1.0−	1.0+
1992 12 29	894	1.0−	0.2+	1999 09 29	704	0.1+	0.3−	1999 10 02	703	0.1+	1.2+
1992 12 29	894	0.1−	0.0	1999 09 29	704	0.2+	0.1+	1999 10 02	703	0.3−	1.2+
1998 05 24	704	0.3−	0.5−	1999 09 29	704	0.2−	0.2+	1999 10 02	703	0.7−	1.0+
1998 05 24	704	0.5−	1.5+	1999 09 29	704	0.2+	0.1+	1999 10 02	704	0.5+	0.5−
1998 05 24	704	0.9+	1.0−	1999 09 29	704	0.1−	0.0	1999 10 02	704	0.7+	0.4−
1998 05 24	704	(0.9−	2.9+)	1999 09 30	678	0.2+	0.7+	1999 10 02	704	0.4+	0.2−
1999 09 07	704	1.2−	0.8−	1999 09 30	678	0.5−	0.0	1999 10 02	704	0.1+	0.6+
1999 09 07	704	0.9−	0.9−	1999 09 30	678	0.3−	0.1−	1999 10 02	704	0.3−	0.8−
1999 09 07	704	0.8−	0.6+	1999 09 30	704	0.7+	0.1−				

1992 YK = 1999 TX₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	297.86259		(2000.0)	P	Q
<i>n</i>	0.27007999	ω	81.72720	−0.02714627	−0.99941548
<i>a</i>	2.3703244	Ω	9.89984	+0.86297968	−0.03392134
<i>e</i>	0.0670739	<i>i</i>	6.94185	+0.50450883	+0.00424776
<i>P</i>	3.65	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 12 23	885	1.0+	1.3+	1999 10 03	120	0.1−	0.8+	1999 10 07	704	0.3+	0.6−
1992 12 23	885	0.5+	0.1−	1999 10 05	704	0.3+	0.6−	1999 10 07	704	1.0−	0.1−
1992 12 24	885	0.5−	0.0	1999 10 05	704	0.1+	0.4+	1999 10 10	385	0.0	0.4−
1992 12 24	885	0.8+	0.3−	1999 10 05	704	0.3−	0.0	1999 10 10	385	0.2−	0.3−
1993 01 02	885	0.1+	0.4−	1999 10 05	704	0.3+	1.0+	1999 10 20	385	0.5+	0.5−
1993 01 02	885	1.7−	0.4−	1999 10 05	704	1.0−	1.1+	1999 10 20	385	0.1−	0.7+
1999 10 02	120	0.1−	0.1+	1999 10 07	704	1.0+	1.1−				
1999 10 02	120	0.0	0.0	1999 10 07	704	0.3+	0.6−				

1993 AQ = 1999 RG₁₂₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	257.82545		(2000.0)	P	Q
<i>n</i>	0.24359952	ω	159.33589	+0.15163932	−0.97724471
<i>a</i>	2.5391310	Ω	281.71099	+0.88428301	+0.20117036
<i>e</i>	0.1009488	<i>i</i>	8.71220	+0.44164360	−0.06725515
<i>P</i>	4.05	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 01 13	399	0.3−	1.4+	1999 07 13	704	0.4−	0.2+	1999 09 09	704	0.2+	0.2−
1993 01 13	399	1.3+	0.7+	1999 07 13	704	0.2+	0.7+	1999 09 09	704	0.5+	0.0
1993 01 18	400	1.7+	1.1−	1999 07 13	704	0.4−	0.4+	1999 09 09	704	0.6−	0.1−
1993 01 18	400	(0.5−	3.1−)	1999 07 13	704	0.9−	0.3+	1999 09 14	704	0.9+	0.4+
1993 01 20	399	1.2−	0.2−	1999 09 08	704	(0.5+	3.7−)	1999 09 14	704	0.1+	0.1−
1993 01 20	399	1.1−	0.0	1999 09 08	704	0.3+	0.0	1999 09 14	704	0.0	0.3+
1997 01 10	566	0.3+	0.0	1999 09 08	704	0.8−	0.0	1999 09 14	704	0.0	0.5−
1997 01 10	566	0.0	0.0	1999 09 08	704	0.1−	0.3−	1999 09 14	704	0.4+	0.2−
1997 01 10	566	0.3−	0.1−	1999 09 09	704	0.4+	0.4+				
1999 07 13	704	0.6−	0.3−	1999 09 09	704	0.2+	0.4−				

1993 FR₅ = 1999 TK₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	7.32591		(2000.0)	P	Q
<i>n</i>	0.22875503	ω	275.94362	+0.98689959	+0.15435616
<i>a</i>	2.6478230	Ω	75.18376	−0.12202538	+0.90447460
<i>e</i>	0.0383949	<i>i</i>	2.78306	−0.10554150	+0.39761775
<i>P</i>	4.31	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 17	809	0.1−	0.3+	1999 10 03	691	0.1+	0.2+	1999 10 06	691	0.3+	0.1+
1993 03 18	809	0.5−	0.0	1999 10 03	691	0.2−	0.2+	1999 10 06	691	0.1−	0.3−
1993 03 23	809	0.9+	0.4−	1999 10 03	691	0.0	0.2+				
1993 04 16	413	0.4−	0.1+	1999 10 06	691	0.1−	0.3−				

1993 FR₂₁ = 1999 RJ₆₉

Id. M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	220.17130		(2000.0)	P	Q
<i>n</i>	0.21888084	ω	113.70043	−0.48458056	−0.87470220
<i>a</i>	2.7268687	Ω	5.30982	+0.76386127	−0.42804387
<i>e</i>	0.0282036	<i>i</i>	5.46714	+0.42626006	−0.22732026
<i>P</i>	4.50	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 21	809	0.1−	0.2+	1999 09 07	704	1.2−	0.7−	1999 09 07	704	0.1−	0.1−
1993 03 22	809	0.8+	0.3−	1999 09 07	704	0.2+	0.9+	1999 09 13	704	0.8+	0.9−
1993 03 26	809	0.7−	0.6−	1999 09 07	704	0.2−	0.8+	1999 09 13	704	1.3+	0.8−
1993 04 16	413	0.0	0.6+	1999 09 07	704	0.8−	0.2+	1999 09 13	704	0.2+	0.4+

1993 FT₂₁ = 1995 YN₂₀

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	231.45655		(2000.0)	P	Q
<i>n</i>	0.27685690	ω	64.93113	−0.21711023	+0.97609542
<i>a</i>	2.3314842	Ω	192.54187	−0.91143652	−0.20639062
<i>e</i>	0.1325668	<i>i</i>	2.65089	−0.34949481	−0.06812222
<i>P</i>	3.56	<i>H</i>	16.1	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1993 03 21	809	1.1−	1.0+	1995 12 25	691	0.8−	1.6−	1995 12 30	691	0.9+	1.5+
1993 03 22	809	0.7+	0.1+	1995 12 25	691	0.8−	1.1−	1995 12 30	691	0.0	1.7+
1993 03 26	809	0.6+	1.6−	1995 12 25	691	0.8−	1.0−				
1993 03 27	809	0.3−	0.4+	1995 12 30	691	1.4+	0.5+				

1999 OCT. 26

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1993 FO₂₃ = 1999 TZ₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	150.23030		(2000.0)	P	Q
<i>n</i>	0.22719962	ω	16.59583	−0.79519681	+0.60178461
<i>a</i>	2.6598939	Ω	200.94044	−0.57725658	−0.78882979
<i>e</i>	0.1123988	<i>i</i>	11.99534	−0.18557174	−0.12491131
<i>P</i>	4.34	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 21	809	0.2−	0.3+	1999 10 06	120	0.1+	0.6−	1999 10 07	120	0.0	0.0
1993 03 22	809	0.1−	0.0	1999 10 06	120	(3.5+	1.7+)	1999 10 07	120	0.9−	0.5−
1993 03 26	809	0.4+	0.4−	1999 10 07	704	0.2−	0.1−	1999 10 09	703	0.5+	0.0
1993 03 27	809	(0.8+	2.5−)	1999 10 07	704	1.1+	0.4+	1999 10 09	703	0.1−	0.1−
1993 04 15	675	0.1−	0.2−	1999 10 07	704	0.2−	0.6−	1999 10 09	703	0.8−	1.2−
1993 04 15	675	0.0	0.4+	1999 10 07	704	0.2−	1.3+	1999 10 09	703	0.3+	1.3+
1993 04 16	413	(1.0+	2.8+)	1999 10 07	704	0.4+	0.1+				

1993 FJ₂₅ = 1999 TY₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	276.35596		(2000.0)	P	Q
<i>n</i>	0.22879971	ω	93.94073	+0.11533694	−0.99325491
<i>a</i>	2.6474783	Ω	349.41394	+0.88367566	+0.10807806
<i>e</i>	0.0374737	<i>i</i>	3.71995	+0.45366807	+0.04199773
<i>P</i>	4.31	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 21	809	0.3−	0.1+	1999 10 04	704	0.1−	1.2+	1999 10 06	704	0.3−	0.4−
1993 03 22	809	0.9+	0.3−	1999 10 04	704	0.4−	0.3+	1999 10 06	704	0.4−	0.3−
1993 03 26	809	1.0−	0.5+	1999 10 04	704	0.6+	0.1+	1999 10 06	704	0.6−	0.1−
1993 04 18	413	0.4+	0.2−	1999 10 04	704	0.4+	1.3−	1999 10 06	704	0.3−	0.3+
1999 10 04	704	1.4+	0.5+	1999 10 06	704	0.3−	0.3−				

1993 FK₂₉ = 1999 RG₁₉₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	310.74140		(2000.0)	P	Q
<i>n</i>	0.22937238	ω	199.65424	+0.76389313	−0.63934143
<i>a</i>	2.6430698	Ω	200.86432	+0.62016641	+0.76489832
<i>e</i>	0.1199441	<i>i</i>	14.27267	+0.17849622	+0.07856906
<i>P</i>	4.30	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 03 21	809	2.1−	2.5+	1999 09 07	703	0.4−	0.4+	1999 10 01	703	0.1−	0.7+
1993 03 22	809	0.1−	0.7+	1999 09 07	703	0.6−	0.1+	1999 10 01	703	0.1−	0.2+
1993 03 26	809	0.6−	0.4−	1999 09 07	703	1.2−	0.2+	1999 10 01	703	0.4−	0.3−
1993 04 17	413	2.8+	3.8−	1999 09 08	704	0.5+	0.6−	1999 10 01	703	0.0	0.1+
1998 05 23	704	1.7+	1.4+	1999 09 08	704	0.2+	0.8+	1999 10 04	704	0.1−	0.0
1998 05 23	704	0.7−	0.6−	1999 09 08	704	0.3+	0.6−	1999 10 04	704	0.6+	0.6−
1998 05 23	704	2.3+	0.1−	1999 09 16	704	0.5−	0.5−	1999 10 04	704	0.1+	1.0−
1998 05 23	704	3.2−	0.2−	1999 09 16	704	0.4+	0.3+	1999 10 04	704	0.5+	0.4+
1999 09 07	703	0.2+	0.3−	1999 09 16	704	0.5+	0.2+				

1993 FP₂₉ = 1999 TU₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	178.19739		(2000.0)	P	Q
<i>n</i>	0.23767629	ω	3.46468	−0.89948767	+0.42812378
<i>a</i>	2.5811434	Ω	202.52439	−0.40617289	−0.89296047
<i>e</i>	0.1135849	<i>i</i>	13.18236	−0.16107609	−0.13903820
<i>P</i>	4.15	<i>H</i>	13.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 03 21	809	(1.9−	3.5+)	1999 10 07	704	0.3+	0.1−	1999 10 12	143	0.2+	0.5+
1993 03 22	809	0.2−	0.1+	1999 10 07	704	0.7−	0.4−	1999 10 13	143	0.5−	0.5+
1993 03 26	809	0.5−	0.3+	1999 10 07	704	0.3−	0.4−	1999 10 13	143	0.1−	0.1−

1993 04 17	413	0.7+	0.5−	1999 10 11	143	0.5+	0.8+	1999 10 13	143	0.0	0.8−
1999 10 07	704	0.3+	0.3+	1999 10 12	143	0.3+	0.2+	1999 10 13	143	0.2+	0.7−

1993 FD₃₀ = 1999 RR₁₄₇

Id. M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	356.69220		(2000.0)	P	Q
<i>n</i>	0.21622598	ω	106.58888	+0.93047716	+0.35925230
<i>a</i>	2.7491438	Ω	232.41390	−0.36107446	+0.86618738
<i>e</i>	0.0905934	<i>i</i>	5.19587	−0.06194749	+0.34735746
<i>P</i>	4.56	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 03 21	809	(2.9−	2.2+)	1999 09 08	699	0.5−	0.1−	1999 09 09	704	0.7+	0.7−
1993 03 22	809	0.7−	0.7+	1999 09 08	699	0.5+	0.1−	1999 09 14	704	0.8+	0.1+
1993 03 26	809	0.2−	1.1−	1999 09 08	704	0.2−	0.2−	1999 09 14	704	0.3−	0.2−
1993 04 17	413	1.0+	0.6+	1999 09 08	704	0.5−	0.5+	1999 09 14	704	0.2−	0.2+
1995 09 05	675	1.3−	1.0+	1999 09 08	699	0.4−	0.3+	1999 09 14	704	0.1−	0.5−
1995 09 05	675	1.2+	0.9−	1999 09 08	704	0.8−	0.9+	1999 09 14	704	0.0	0.2+
1999 09 05	703	1.4+	0.1−	1999 09 09	704	0.5+	0.6−	1999 10 02	703	0.2−	0.1+
1999 09 05	703	0.8−	0.3−	1999 09 09	704	0.5−	0.4−	1999 10 02	703	1.2−	0.3−
1999 09 05	703	0.1+	0.9+	1999 09 09	704	0.3−	0.4−	1999 10 02	703	0.7+	0.4+
1999 09 05	703	(1.4−	2.8+)	1999 09 09	704	0.4−	0.3−	1999 10 02	703	1.9+	0.8+

1993 FU₄₉ = 1999 TV₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	285.60471		(2000.0)	P	Q
<i>n</i>	0.23804919	ω	208.81289	+0.06943976	−0.99732076
<i>a</i>	2.5784472	Ω	237.21402	+0.92043425	+0.07294635
<i>e</i>	0.0672774	<i>i</i>	1.56832	+0.38468027	+0.00548871
<i>P</i>	4.14	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1993 03 19	809	0.0	0.0	1999 10 04	704	0.4+	0.4−	1999 10 06	704	0.1+	0.1−
1993 03 20	809	0.1+	0.1+	1999 10 04	704	0.5−	0.1+	1999 10 06	704	0.2+	0.0
1993 03 24	809	0.0	0.1−	1999 10 04	704	0.2−	0.9+	1999 10 06	704	0.1−	0.2+
1999 10 04	704	0.0	0.2−	1999 10 06	704	0.1+	0.1−				
1999 10 04	704	0.4+	0.1−	1999 10 06	704	0.3−	0.4−				

1993 FU₆₄ = 1999 RJ₁₅₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	334.88576		(2000.0)	P	Q
<i>n</i>	0.22196467	ω	107.14528	+0.98870146	−0.13254220
<i>a</i>	2.7015529	Ω	260.51365	+0.09566118	+0.91750866
<i>e</i>	0.1006677	<i>i</i>	4.07056	+0.11540519	+0.37498057
<i>P</i>	4.44	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1993 03 21	809	(3.3−	1.4+)	1999 09 05	703	0.5+	0.3+	1999 09 09	704	0.0	0.5−
1993 03 22	809	0.3−	0.5−	1999 09 05	703	1.0−	1.0+	1999 09 09	704	0.1−	0.2−
1993 04 17	413	0.4+	0.8+	1999 09 07	704	0.0	0.5−	1999 09 09	704	0.2−	1.1−
1995 10 25	033	0.3+	0.1+	1999 09 07	704	0.2+	0.5−	1999 09 09	704	0.2+	0.2−
1995 10 25	033	0.4−	0.2+	1999 09 07	704	0.0	0.1−	1999 09 09	704	0.5−	0.2−
1999 08 22	699	0.4−	1.6+	1999 09 07	704	0.7−	0.2+	1999 09 14	704	0.5+	0.6−
1999 08 22	699	(1.4+	3.2+)	1999 09 07	704	0.4−	0.6−	1999 09 14	704	0.0	0.0
1999 08 22	699	0.8+	0.4+	1999 09 08	699	0.5−	0.7+	1999 09 14	704	0.3−	0.1+
1999 09 05	703	0.6+	0.1+	1999 09 08	699	1.5+	0.9+	1999 09 14	704	0.6−	0.2−
1999 09 05	703	0.0	0.2−	1999 09 08	699	0.5+	0.5−				

1993 GC = 1999 TN₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	139.51770		(2000.0)	P		Q	
<i>n</i>	0.22287345	ω	20.45046	-0.75845805		+0.64745024	
<i>a</i>	2.6942041	Ω	200.46706	-0.62363968		-0.75421199	
<i>e</i>	0.1080885	<i>i</i>	12.30091	-0.18924836		-0.10941874	
<i>P</i>	4.42	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 04 10	894	(0.3- 2.5-)	1993 04 19	361	1.3+ 0.9+	1993 05 15	361	0.4+ 1.0-
1993 04 10	894	0.5+ 0.1-	1993 04 19	361	(3.1+ 1.5+)	1999 10 07	704	0.2- 0.3+
1993 04 13	894	0.6+ 1.2+	1993 04 25	361	0.1- 1.0-	1999 10 07	704	0.3+ 0.6+
1993 04 13	894	0.3- 0.2-	1993 04 25	361	1.2- 1.1-	1999 10 07	704	0.1- 0.1+
1993 04 14	894	(0.7+ 2.6+)	1993 04 25	361	0.4+ 1.0-	1999 10 07	704	0.3- 0.4-
1993 04 14	894	0.6- 0.3+	1993 04 25	361	0.4+ 0.9-	1999 10 13	557	0.1+ 0.0
1993 04 16	894	0.4+ 0.8-	1993 05 14	361	1.0+ 0.6+	1999 10 13	557	0.1+ 0.1-
1993 04 16	894	(2.4- 0.5-)	1993 05 14	361	0.6+ 0.0	1999 10 13	557	0.1+ 0.2-
1993 04 18	361	1.9- 1.9+	1993 05 14	361	0.4+ 1.8+	1999 10 13	557	0.1- 0.1-
1993 04 18	361	0.0 0.0	1993 05 15	361	1.7- 0.4-	1999 10 13	557	0.0 0.1-

1993 OX₆ = 1980 AF = 1998 MO₂₆ = 1999 RF₁₉₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	283.77815		(2000.0)	P		Q	
<i>n</i>	0.18718059	ω	322.26653	+0.16107957		-0.95639033	
<i>a</i>	3.0266498	Ω	117.25220	+0.95904940		+0.09340262	
<i>e</i>	0.1200019	<i>i</i>	15.90750	+0.23297557		+0.27675529	
<i>P</i>	5.27	<i>H</i>	11.9	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 01 14	330	0.9- 0.3-	1998 06 24	704	(0.5+ 3.0+)	1999 09 13	704	0.6+ 0.1+
1980 01 17	330	0.1+ 0.6+	1998 06 24	704	0.8- 0.3-	1999 09 13	704	0.8+ 0.0
1993 07 13	809	(3.7+ 0.5+)	1998 06 24	704	(2.8- 0.1+)	1999 09 13	704	0.8+ 0.5-
1993 07 13	809	(3.2+ 0.2+)	1998 06 24	704	1.0- 1.5+	1999 09 14	704	0.0 0.0
1993 07 13	809	(2.5+ 0.1+)	1998 06 26	704	(0.1- 3.0+)	1999 09 14	704	0.1+ 0.2-
1993 07 20	809	(2.4+ 0.4-)	1998 06 26	704	0.7- 0.1+	1999 09 14	704	0.0 0.1-
1993 07 20	809	1.9+ 0.3-	1998 06 26	704	0.3+ 0.4-	1999 09 14	704	0.2+ 0.2+
1993 07 20	809	1.5+ 0.2-	1998 06 26	704	0.2+ 0.5+	1999 09 14	704	0.0 0.1+
1993 07 24	809	(3.3+ 1.5-)	1998 07 21	704	0.1- 0.2+	1999 09 30	704	0.8- 0.0
1995 12 27	691	0.3+ 0.5-	1998 07 21	704	0.1- 0.3-	1999 09 30	704	0.7- 0.1-
1995 12 27	691	0.3+ 0.4-	1998 07 21	704	0.0 0.7-	1999 09 30	704	0.9- 0.1+
1995 12 27	691	0.4+ 0.2-	1998 07 21	704	0.3- 1.0-	1999 09 30	704	0.6- 0.0
1998 06 24	704	0.8- 0.8+	1999 09 13	704	0.9+ 0.5-	1999 09 30	704	1.0- 0.6+

1993 OM₈ = 1999 RL₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	13.10191		(2000.0)	P		Q	
<i>n</i>	0.18430824	ω	136.22981	+0.93609877		+0.35149482	
<i>a</i>	3.0580146	Ω	203.20098	-0.33114617		+0.86817666	
<i>e</i>	0.1269249	<i>i</i>	1.89928	-0.11858035		+0.35031511	
<i>P</i>	5.35	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 07 12	809	0.4+ 0.2-	1999 09 11	678	0.8- 0.2-	1999 10 04	704	0.1- 0.1+
1993 07 12	809	0.3+ 0.1-	1999 09 13	678	0.2- 1.0+	1999 10 04	704	0.1- 1.0-
1993 07 12	809	0.3- 0.0	1999 09 13	678	0.4+ 0.1-	1999 10 04	704	0.1- 1.6-
1993 07 13	809	1.3+ 0.1+	1999 09 14	678	0.2- 0.1+	1999 10 06	704	0.3+ 0.3-
1993 07 13	809	0.5+ 0.5+	1999 09 14	678	0.8- 0.3+	1999 10 06	704	0.1+ 0.2-
1993 07 13	809	0.7+ 0.1-	1999 09 14	120	0.2+ 0.4+	1999 10 06	704	0.0 0.4-
1993 07 19	809	1.0- 0.1-	1999 09 14	120	0.2+ 0.3-	1999 10 06	704	0.4+ 0.6-
1993 07 19	809	0.8- 0.2-	1999 09 15	120	(3.4+ 0.6-)	1999 10 06	704	0.3+ 1.9-
1993 07 19	809	1.0- 0.1-	1999 09 15	120	1.6+ 1.0+	1999 10 07	703	0.2+ 0.4+
1993 07 20	809	(2.6+ 4.1+)	1999 09 18	678	0.5+ 1.7+	1999 10 07	703	0.4- 0.7+
1993 07 20	809	(1.5+ 4.2+)	1999 09 18	678	0.4- 0.2+	1999 10 07	703	0.5- 0.4+
1993 07 20	809	(1.7+ 4.4+)	1999 09 30	678	0.0 0.5-	1999 10 07	703	0.3+ 0.4-

1993 07 24	809	(2.3+ 3.0+)	1999 09 30	678	1.0+ 0.8-	1999 10 07	704	0.1- 0.2+
1993 07 26	809	(2.4+ 3.4+)	1999 09 30	703	0.2- 0.3+	1999 10 07	704	0.1- 0.2+
1993 07 26	809	(2.2+ 3.6+)	1999 09 30	703	0.1- 0.7+	1999 10 07	704	0.3- 0.5-
1993 07 26	809	(0.9+ 4.3+)	1999 09 30	703	0.2- 0.3+	1999 10 07	704	0.5- 0.4+
1999 09 11	678	1.3+ 0.1-	1999 09 30	703	0.6- 0.0	1999 10 07	704	0.5- 0.5+
1999 09 11	678	1.1- 0.0	1999 10 04	704	0.2- 0.1-			
1999 09 11	678	0.1+ 0.1+	1999 10 04	704	0.3+ 0.0			

1993 PA₃ = 1991 BD₂ = 1999 RN₁₄₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	114.79978		(2000.0)	P		Q	
<i>n</i>	0.17022415	ω	256.98699	-0.87346795		+0.42067548	
<i>a</i>	3.2244471	Ω	307.34067	-0.23205506		-0.80229393	
<i>e</i>	0.1176239	<i>i</i>	17.95775	-0.42802359		-0.42350513	
<i>P</i>	5.79	<i>H</i>	12.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 01 21	511	0.3- 0.2-	1993 08 14	010	0.0 0.5-	1999 09 09	704	0.1+ 0.7+
1991 01 21	511	1.4- 1.6-	1993 08 15	010	0.9+ 1.4-	1999 09 09	704	0.4- 0.3+
1991 01 23	511	0.4+ 0.0	1999 09 08	704	0.7+ 0.4+	1999 09 14	704	0.1- 0.3-
1993 08 13	691	0.5+ 0.6+	1999 09 08	704	0.3+ 0.2+	1999 09 14	704	0.9- 0.6-
1993 08 13	691	0.6+ 0.7+	1999 09 08	704	0.1- 0.2-	1999 09 14	704	0.3- 0.3-
1993 08 13	691	0.4+ 0.0	1999 09 08	704	0.4+ 0.3-	1999 09 14	704	0.5+ 0.4+
1993 08 14	010	0.2- 0.6-	1999 09 08	704	0.2+ 0.3-	1999 09 14	704	0.3- 0.8+
1993 08 14	010	0.6- 1.1-	1999 09 09	704	0.4- 0.1-			

1993 TS₂₆ = 1999 GW₄₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.15326		(2000.0)	P		Q	
<i>n</i>	0.26742048	ω	58.89692	-0.89149206		+0.45222505	
<i>a</i>	2.3860138	Ω	147.96662	-0.43111186		-0.82844604	
<i>e</i>	0.1117400	<i>i</i>	2.92864	-0.13922810		-0.33040834	
<i>P</i>	3.69	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 10 09	809	0.1- 1.8-	1993 10 20	809	0.7- 0.6+	1999 04 12	704	0.1+ 0.5+
1993 10 09	809	0.2+ 0.2-	1999 03 23	703	0.4+ 0.6-	1999 04 12	704	0.6- 0.5-
1993 10 09	809	0.2+ 0.9-	1999 03 23	703	0.3+ 0.0	1999 04 12	704	0.0 0.2+
1993 10 11	809	0.5+ 0.4+	1999 03 23	703	0.4+ 0.5-	1999 04 12	704	0.1- 0.4+
1993 10 11	809	0.5- 0.5-	1999 03 23	703	0.5- 0.4-	1999 04 12	704	0.4- 0.9-
1993 10 11	809	0.9- 0.9-	1999 04 10	699	0.3- 1.1+	1999 04 16	704	0.4- 1.2+
1993 10 20	809	1.3+ 1.6+	1999 04 10	699	0.2+ 0.6+	1999 04 16	704	0.9+ 0.1-
1993 10 20	809	0.1+ 1.6+	1999 04 10	699	(3.8- 0.1+)	1999 04 16	704	0.0 1.2-

1993 TA₃₄ = 1997 YA₂ = 1999 LC₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	173.59382		(2000.0)	P		Q	
<i>n</i>	0.26879845	ω	4.49036	+0.19204211		-0.97829995	
<i>a</i>	2.3778523	Ω	74.45203	+0.89787188		+0.14315520	
<i>e</i>	0.1942106	<i>i</i>	4.63051	+0.39616400		+0.14978586	
<i>P</i>	3.67	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 10 09	809	1.6+ 0.3-	1993 10 21	809	0.1+ 0.9+	1999 06 08	691	0.3- 0.3-
1993 10 09	809	0.9+ 0.0	1993 10 21	809	1.5- 0.6+	1999 06 08	691	0.2- 0.0
1993 10 09	809	0.1+ 0.2-	1997 12 21	411	1.5+ 1.4-	1999 06 14	691	0.2+ 0.9-
1993 10 11	809	0.8- 1.0-	1997 12 21	411	0.1- 0.1-	1999 06 14	691	0.2+ 0.7-
1993 10 11	809	0.8- 1.4-	1997 12 24	411	0.6- 0.0	1999 06 14	691	0.3- 0.6-
1993 10 11	809	0.0 1.6-	1997 12 24	411	1.0- 0.1+			
1993 10 21	809	0.8+ 1.9+	1999 06 08	691	0.3- 0.1+			

1993 TC₃₈ = 1999 GL₃₉

Id. A. Doppler

1999 OCT. 26

M.P.C. 36335

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams			
<i>M</i>	313.11829		(2000.0)			P		Q	
<i>n</i>	0.27780058	ω	214.46231			+0.30776187		+0.94790685	
<i>a</i>	2.3262012	Ω	73.58234			−0.85253005		+0.31308521	
<i>e</i>	0.1432855	<i>i</i>	4.91535			−0.42246319		+0.05873893	
<i>P</i>	3.55	<i>H</i>	14.8		<i>G</i>	0.15		<i>U</i>	5
Residuals in seconds of arc									
1993 10 09	809	0.5+	0.4−	1993 10 21	809	0.5−	0.8−	1999 04 16	704 (2.0+ 2.9−)
1993 10 09	809	0.1+	0.2+	1999 04 12	704	0.7−	1.2−	1999 04 16	704 1.2+ 0.5−
1993 10 09	809	0.2−	0.2−	1999 04 12	704	0.4+	0.0	1999 04 17	703 0.8+ 0.3−
1993 10 11	809	0.2+	0.1+	1999 04 12	704	1.3+	0.4−	1999 04 17	703 0.9− 0.0
1993 10 11	809	0.6−	0.0	1999 04 12	704	1.0−	0.9+	1999 04 17	703 0.0 0.0
1993 10 11	809	0.1+	0.2+	1999 04 12	704	0.5−	0.6+	1999 04 17	703 0.3− 0.1+
1993 10 21	809	1.2+	0.5+	1999 04 16	704	1.2−	0.5+		
1993 10 21	809	0.8−	0.3+	1999 04 16	704	1.0+	0.3+		

1994 AV ₁₀ = 1998 HK ₆₈ = 1999 RH ₁₅₀									
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
						Doppler			
<i>M</i>	297.62792	(2000.0)		P		Q			
<i>n</i>	0.29310955	ω	67.22612	+0.66215256		−0.74897738			
<i>a</i>	2.2444817	Ω	341.24517	+0.65693674		+0.59572848			
<i>e</i>	0.1334100	<i>i</i>	4.32118	+0.36053864		+0.29006977			
<i>P</i>	3.36	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4		
Residuals in seconds of arc									
1994 01 08	691	0.2−	0.1+	1998 04 21	704	(2.5−	1.2−)	1999 09 09	704 0.3+
1994 01 08	691	0.7−	0.1+	1998 04 21	704	0.0	0.6−	1999 09 09	704 0.3+
1994 01 08	691	0.5−	0.2+	1998 04 21	704	1.0+	0.1−	1999 09 09	704 0.2−
1994 01 11	691	0.5−	0.3−	1998 04 21	704	1.2+	0.9+	1999 09 09	704 0.3−
1994 01 11	691	0.0	0.1−	1998 04 22	704	1.4−	0.8−	1999 09 13	704 0.5−
1994 01 11	691	0.4+	0.1+	1998 04 22	704	1.5−	1.7−	1999 09 13	704 0.5+
1994 01 16	691	1.9+	0.7+	1998 04 22	704	0.7−	0.4+	1999 09 13	704 0.2−
1994 01 16	691	(2.0−	3.7−)	1998 04 22	704	1.2+	1.5+	1999 09 13	704 0.0
1994 01 16	691	0.2−	0.2−	1998 04 22	704	0.1+	0.7+	1999 09 13	704 0.4−
1998 04 21	704	0.3+	0.2+	1999 09 09	704	0.2+	0.3−		

1994 BD ₁ = 1999 TE ₄									
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
				Williams					
<i>M</i>	315.34025	(2000.0)		P			Q		
<i>n</i>	0.30235602	ω	45.25708	+0.60349385			−0.79722595		
<i>a</i>	2.1984857	Ω	7.66573	+0.69603742			+0.51751043		
<i>e</i>	0.1455721	<i>i</i>	6.47035	+0.38900782			+0.31082752		
<i>P</i>	3.26	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5		
Residuals in seconds of arc									
1994 01 19	411	0.5+	1.5−	1994 02 13	411	0.8+	1.3−	1999 10 06	704 0.2− 0.2−
1994 01 19	411	0.5−	0.4+	1994 02 13	411	1.0+	0.1−	1999 10 06	704 0.9− 0.2−
1994 01 21	411	0.4−	1.7+	1994 02 14	411	0.1−	1.0+	1999 10 06	704 0.3− 0.2−
1994 01 21	411	0.5+	0.5−	1994 02 14	411	0.3−	0.6−	1999 10 06	704 0.6− 0.1−
1994 01 21	411	0.1+	0.2−	1994 02 14	411	0.1+	0.6+	1999 10 07	704 0.4+ 0.2+
1994 01 23	411	0.1−	0.3+	1999 10 01	104	0.1−	0.2−	1999 10 07	704 0.0 0.2+
1994 01 23	411	0.5−	0.4+	1999 10 02	104	1.2−	0.4−	1999 10 07	704 0.3+ 0.4+
1994 01 23	411	0.6−	0.8+	1999 10 02	104	0.3−	0.3−	1999 10 07	704 0.0 0.4+
1994 02 02	411	0.5−	0.4−	1999 10 04	108	(2.2+ 0.2−)		1999 10 07	704 0.1+ 0.3+
1994 02 02	411	0.0	0.9−	1999 10 04	108	0.3−	0.0	1999 10 07	104 1.5+ 0.0
1994 02 02	411	0.7+	0.1−	1999 10 04	108	1.5+	0.1+	1999 10 07	104 0.2+ 0.3+
1994 02 13	411	0.5−	0.5+	1999 10 06	704	0.2−	0.3−		

1994 ET = 1999 RZ₂₁₁
Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams				
<i>M</i>	337.82455		(2000.0)		P		Q		
<i>n</i>	0.29797050	<i>ω</i>	59.00133		+0.88494023		−0.46052329		
<i>a</i>	2.2200046	<i>Ω</i>	328.26732		+0.36961954		+0.78503611		
<i>e</i>	0.1358317	<i>i</i>	7.56860		+0.28330580		+0.41429049		
<i>P</i>	3.31	<i>H</i>	15.7		<i>G</i>	0.15	<i>U</i>	4	
Residuals in seconds of arc									
1994 03 06	104	(2.2− 1.0−)	1994 03 10	104	0.7+	0.8+	1999 09 08	704	0.4+ 0.8−
1994 03 06	104	1.3− 0.7−	1994 03 10	104	0.9+	0.7+	1999 09 08	704	0.1+ 0.3−
1994 03 06	104	1.0− 0.3−	1994 03 10	104	0.3+	0.7+	1999 09 08	704	0.6+ 0.1−
1994 03 06	104	1.0− 0.1+	1994 03 11	104	0.6+	0.7+	1999 09 08	704	0.3− 0.1−
1994 03 06	104	(4.5+ 0.6+)	1994 03 11	104	0.2−	0.5+	1999 09 18	704	0.1− 0.0
1994 03 07	104	0.6+ 0.7+	1994 03 11	104	0.9−	0.4+	1999 09 18	704	0.7+ 1.8−
1994 03 07	104	0.0 0.2+	1994 03 11	104	0.1−	0.3+	1999 09 18	704	0.4− 0.6−
1994 03 07	104	0.3+ 0.3−	1994 03 17	104	0.1−	0.1−	1999 10 03	704	0.5− 0.1−
1994 03 07	104	1.4+ 0.7−	1994 03 17	104	1.0−	0.5−	1999 10 03	704	0.9+ 0.6+
1994 03 08	104	1.3+ 0.2−	1994 03 17	104	0.4−	1.0−	1999 10 03	704	0.0 0.7+
1994 03 08	104	0.7− 0.3−	1999 09 05	703	0.8−	0.5+	1999 10 03	704	0.2+ 0.1−
1994 03 08	104	0.2− 0.5−	1999 09 05	703	1.2−	0.5+	1999 10 03	704	0.8− 0.1+
1994 03 08	104	0.5+ 0.7−	1999 09 05	703	0.1−	0.8+			
1994 03 10	104	(2.3+ 0.9+)	1999 09 05	703	1.1+	0.7+			

1994 EC ₂ = 1968 UB = 1999 RA ₄₃											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
				Williams							
<i>M</i>	302.25054			(2000.0)		P			Q		
<i>n</i>	0.28415674			ω 39.16527		+0.61828600			−0.77945915		
<i>a</i>	2.2913815			Ω 13.67584		+0.57030307			+0.35666121		
<i>e</i>	0.2550728			<i>i</i> 25.24274		+0.54081127			+0.51501089		
<i>P</i>	3.47			<i>H</i> 13.7		<i>G</i> 0.15		<i>U</i>		3	
Residuals in seconds of arc											
1968 10 22	095	0.9+	0.8−	1994 03 18	400	0.9−	3.9−	1999 09 05	413	1.9+	0.0
1994 03 12	400	1.2−	1.9+	1994 03 30	400	3.0−	0.7+	1999 09 18	413	0.4+	0.0
1994 03 12	400	2.0+	0.8−	1994 03 30	400	0.5−	1.5−	1999 09 18	413	0.3+	0.1+
1994 03 14	400	1.5−	1.6+	1999 09 03	413	0.5−	0.4−	1999 10 07	413	0.2+	0.5−
1994 03 14	400	1.8+	0.1−	1999 09 03	413	1.0−	0.1+	1999 10 07	413	0.3+	0.4−
1994 03 18	400	1.0+	0.1−	1999 09 05	413	0.4−	0.4−				

1994 EH ₆ = 1999 RP ₁₈₈									
Id. M. E. Sansaturio									
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5									
<i>M</i> 237.70802			(2000.0)		P		Q		
<i>n</i>	0.27554710	ω	91.59940		−0.32038811		−0.94658176		
<i>a</i>	2.3388668	Ω	17.22381		+0.81266854		−0.29446829		
<i>e</i>	0.0477776	<i>i</i>	7.08649		+0.48674562		−0.13142066		
<i>P</i>	3.58	<i>H</i>	15.3		<i>G</i>	0.15	<i>U</i>	5	
Residuals in seconds of arc									
1994 02 08	809	0.1+ 1.2+	1994 03 09	010	0.4+	0.6+	1999 09 09	704	1.0− 1.5+
1994 02 08	809	0.4+ 0.2−	1994 03 09	010	0.2−	0.4+	1999 09 09	704	0.4+ 0.9+
1994 02 08	809	0.5− 0.2+	1994 03 10	010	0.4+	2.1−	1999 09 14	704	0.3− 0.7−
1994 02 10	809	0.0 0.0	1994 03 10	010	0.6−	1.8−	1999 09 14	704	0.2+ 1.5−
1994 02 10	809	0.4+ 0.2+	1994 03 10	010	1.0−	1.3−	1999 09 14	704	0.1+ 0.0
1994 02 10	809	0.8− 0.3+	1999 09 09	704	0.2−	0.3+	1999 09 14	704	0.3+ 1.3−
1994 03 09	010	0.9+ 1.4+	1999 09 09	704	0.8−	0.9+	1999 09 14	704	1.9+ 1.3−

1994 JL₆ = 1999 RU₇₃
Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	37.90084	(2000.0)	P	Q
<i>n</i>	0.24510403	ω	101.08601	+0.52320913
<i>a</i>	2.5287298	Ω	200.48070	+0.48325634
<i>e</i>	0.0123603	<i>i</i>	2.32167	+0.20102739
<i>P</i>	4.02	<i>H</i>	15.1	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1994 05 04	691	0.1−	0.3−	1998 04 22	704	1.3+	0.6−	1999 09 09	704	0.3+	0.2+
1994 05 04	691	0.2+	0.1+	1998 04 22	704	1.3−	0.2+	1999 09 09	704	(2.3+ 0.7+)	
1994 05 04	691	0.9+	1.4−	1998 05 01	704	0.2−	0.3+	1999 09 09	704	1.3+	0.9+
1994 05 07	691	0.3−	0.3−	1998 05 01	704	1.4−	0.1−	1999 09 09	704	1.2+	0.7+
1994 05 11	691	0.0	0.1−	1998 05 01	704	0.1−	1.0−	1999 09 09	704	(3.0+ 0.1+)	
1994 05 11	691	0.0	0.1+	1998 05 01	704	1.0+	0.8−	1999 09 09	704	(2.5+ 0.8+)	
1994 05 11	691	0.8−	0.4+	1998 05 01	704	0.4+	1.6+	1999 09 14	704	0.4−	0.4+
1994 05 16	691	0.1−	0.3−	1998 05 24	704	0.9+	0.2−	1999 09 14	704	0.3−	0.6−
1994 05 16	691	0.1−	0.0	1998 05 24	704	0.7+	0.5−	1999 09 14	704	0.3+	1.0−
1994 05 16	691	0.2−	0.1−	1998 05 24	704	0.4+	1.8+	1999 09 14	704	0.2+	0.6−
1995 09 01	809	(3.1+ 0.9−)		1998 05 24	704	1.0−	0.7+	1999 09 14	704	0.2−	0.0
1995 09 17	809	0.4−	0.2+	1999 09 07	704	0.4−	0.0	1999 09 14	703	0.9−	0.1+
1995 09 18	809	0.6+	0.3+	1999 09 07	704	0.1+	0.1+	1999 09 14	703	0.1+	0.8+
1995 09 18	809	0.8+	0.1−	1999 09 07	704	0.1−	0.3+	1999 09 14	703	1.6−	1.0−
1995 09 19	809	0.6+	0.4−	1999 09 07	704	0.0	0.2−	1999 09 14	703	1.1+	0.4+
1995 09 23	691	0.2−	0.2−	1999 09 07	704	0.2−	0.1+	1999 09 18	691	0.2−	0.2+
1995 09 23	691	0.7−	0.0	1999 09 09	704	0.2+	1.0+	1999 09 18	691	0.2−	0.1+
1995 09 23	691	0.6−	0.1−	1999 09 09	704	0.9−	0.2−	1999 09 18	691	0.0	0.1+
1998 04 22	704	0.3−	0.4+	1999 09 09	704	0.2−	0.5−				
1998 04 22	704	0.3+	0.0	1999 09 09	704	0.5+	1.0−				

1994 LF₁ = 1999 SX₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	35.49599	(2000.0)	P	Q
<i>n</i>	0.21847022	ω	54.19937	+0.16900128
<i>a</i>	2.7302844	Ω	231.97142	+0.18192352
<i>e</i>	0.2482667	<i>i</i>	34.04440	+0.06861626
<i>P</i>	4.51	<i>H</i>	14.1	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1994 06 02	413	0.2+	0.6+	1999 09 22	704	0.6+	1.9+	1999 09 29	704	1.4+	1.0+
1994 06 02	413	0.1−	0.2−	1999 09 27	704	0.2−	0.7−	1999 09 29	704	1.0+	0.1+
1994 06 03	413	0.5−	0.3+	1999 09 27	704	0.6−	0.7+	1999 09 29	704	0.5+	1.1−
1994 06 03	413	(1.9+ 2.4−)		1999 09 27	704	0.2−	0.3+	1999 09 29	704	0.0	0.0
1994 06 20	413	0.1+	0.2−	1999 09 27	704	0.5−	0.9−	1999 09 29	704	0.1−	0.3−
1994 06 20	413	0.2+	0.1−	1999 09 28	704	0.1+	0.5−	1999 10 14	704	0.3+	0.2+
1994 06 20	413	0.3+	0.4−	1999 09 28	704	0.3−	0.3+	1999 10 14	704	0.7−	0.2+
1994 06 20	413	0.0	0.3−	1999 09 28	704	0.1+	0.5+	1999 10 14	704	0.1+	0.2+
1994 07 25	413	0.2−	0.1+	1999 09 28	704	0.4−	0.1+	1999 10 14	704	0.4−	0.1−
1994 07 25	413	0.1−	0.0	1999 09 28	704	0.3+	0.1−	1999 10 14	704	0.1+	0.1+
1994 08 26	413	0.1+	0.2+	1999 09 28	704	0.0	0.4−	1999 10 15	704	0.6−	0.0
1994 08 26	413	0.0	0.1+	1999 09 28	704	0.7−	0.4+	1999 10 15	704	0.6−	0.4−
1994 09 17	413	0.1+	0.1−	1999 09 28	704	0.1+	0.2−	1999 10 15	704	0.1+	1.3−
1994 09 17	413	0.0	0.0	1999 09 28	704	0.1+	0.9−	1999 10 15	704	0.3−	0.1+
1999 09 22	704	0.4+	0.3−	1999 09 28	704	0.3+	0.2+	1999 10 15	704	0.3−	0.2+
1999 09 22	704	0.6−	0.6−	1999 09 29	704	0.7+	0.3+				
1999 09 22	704	0.3−	0.9+	1999 09 29	704	0.8+	0.1+				

1994 LC₃ = 1998 FC₂₁ = 1999 RJ₁₃₀

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	42.19372	(2000.0)	P	Q
<i>n</i>	0.21711628	ω	106.32932	−0.13028543
<i>a</i>	2.7416234	Ω	155.90447	−0.95897814
<i>e</i>	0.2370297	<i>i</i>	9.02078	−0.25176703
<i>P</i>	4.54	<i>H</i>	14.4	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1994 06 10	675	1.2−	0.2−	1998 03 22	704	0.6+	0.3−	1999 09 07	704	0.0	0.1+
1994 06 10	675	(2.1− 0.6+)		1998 03 22	704	0.3−	0.2+	1999 09 09	704	0.3+	1.2−
1994 06 12	675	1.2+	0.0	1998 03 22	704	0.4+	0.0	1999 09 09	704	0.4−	0.3+
1994 06 12	675	(1.8+ 3.2−)		1998 03 26	704	0.6+	0.3+	1999 09 09	704	0.4+	0.2−
1998 02 27	566	0.0	0.2−	1998 03 26	704	0.8+	0.1−	1999 09 09	704	0.2+	0.4−
1998 02 27	566	0.2+	0.3−	1998 03 26	704	0.4+	0.9−	1999 09 09	704	0.3−	0.5−
1998 02 27	566	0.3−	0.1−	1999 09 03	699	0.3+	1.1+	1999 09 13	704	0.3+	0.5−
1998 03 20	704	0.4−	0.1−	1999 09 03	699	0.1−	0.6+	1999 09 13	704	0.8+	0.2+
1998 03 20	704	0.8−	0.7+	1999 09 03	699	0.9−	0.0	1999 09 13	704	0.1−	0.2+
1998 03 20	704	0.1−	0.2+	1999 09 07	704	0.0	0.7+	1999 09 13	704	0.1−	0.0
1998 03 20	704	0.0	0.7+	1999 09 07	704	0.1−	0.3+	1999 09 13	704	0.2−	0.8−
1998 03 20	704	0.7−	0.8+	1999 09 07	704	0.2−	0.1+				
1998 03 22	704	0.5−	0.7−	1999 09 07	704	0.2+	0.2+				

1994 PJ₇ = 1999 TK₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	34.38155	(2000.0)	P	Q
<i>n</i>	0.21103567	ω	167.86829	+0.76641982
<i>a</i>	2.7940369	Ω	152.15105	−0.59398225
<i>e</i>	0.0691072	<i>i</i>	3.25638	−0.24451122
<i>P</i>	4.67	<i>H</i>	14.1	<i>G</i> 0.15 <i>U</i> 5

Residuals in seconds of arc

1994 08 10	809	1.0+	0.0	1994 09 03	809	0.3−	0.6+	1999 10 04	691	0.1−	0.3+
1994 08 10	809	0.1−	0.2−	1994 09 03	809	0.8−	0.4+	1999 10 04	691	0.2−	0.1+
1994 08 10	809	0.7−	0.1+	1994 09 03	809	1.5−	0.1+	1999 10 04	691	0.2−	0.1+
1994 08 11	809	0.0	0.5−	1994 09 04	809	1.5+	0.6−	1999 10 06	691	0.5+	0.9−
1994 08 11	809	0.9−	0.2−	1994 09 04	809	0.1−	0.8−	1999 10 06	691	0.1−	0.1+
1994 08 11	809	0.8+	0.8+	1994 09 04	809	1.1+	0.4+	1999 10 06	691	0.1+	0.2+

1994 PS₇ = 1999 TQ₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	350.80901	(2000.0)	P	Q
<i>n</i>	0.20998670	ω	138.64990	+0.98392802
<i>a</i>	2.8033340	Ω	231.56258	+0.15501863
<i>e</i>	0.0940692	<i>i</i>	1.70453	+0.08862776
<i>P</i>	4.69	<i>H</i>	14.6	<i>G</i> 0.15 <i>U</i> 6

Residuals in seconds of arc

1994 08 10	809	0.9−	0.6+	1994 09 03	809	0.6+	1.1−	1999 10 04	704	1.6−	0.4+
1994 08 10	809	0.2+	0.9+	1994 09 04	809	0.4+	0.5−	1999 10 06	704	0.6+	0.2+
1994 08 10	809	0.1+	0.4−	1994 09 04	809	0.5−	0.4−	1999 10 06	704	0.2+	0.0
1994 08 11	809	0.1−	0.9+	1994 09 04	809	0.5+	0.3+	1999 10 06	704	0.8+	0.3−
1994 08 11	809	0.0	0.6+	1999 10 04	704	0.7−	1.0−	1999 10 06	704	0.9+	0.2−
1994 08 11	809	0.4−	0.7+	1999 10 04	704	0.4−	0.9+	1999 10 06	704	0.7+	0.4−
1994 09 03	809	0.6+	0.9−	1999 10 04	704	0.5−	0.3+				
1994 09 03	809	0.3−	1.2−	1999 10 04	704	0.4−	0.7+				

1994 PV₁₅ = 1999 RW₁₆₁

Id. G. V. Williams, A. Doppler, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	237.26542	(2000.0)	P	Q
<i>n</i>	0.19781290	ω	301.04045	−0.26987275
<i>a</i>	2.9172007	Ω	164.53525	+0.91642539
<i>e</i>	0.0654927	<i>i</i>	6.25804	+0.29552192
<i>P</i>	4.98	<i>H</i>	14.0	<i>G</i> 0.15 <i>U</i> 5

Residuals in seconds of arc

1994 08 10	809	0.4+	0.2+	1999 09 05	699	0.4−	0.3−	1999 09 14	704	0.2−	0.3+
1994 08 10	809	1.7−	1.1−	1999 09 07	704	0.3−	0.1−	1999 09 30	704	1.4+	0.1+
1994 08 10	809	1.1−	0.8−	1999 09 07	704	0.5−	0.3+	1999 09 30	704	0.2−	0.6+
1994 08 11	809	0.8−	0.0	1999 09 07	704	0.5−	0.2−	1999 09 30	704	1.2−	0.3−
1994 08 11	809	1.3−	0.7−	1999 09 07	704	0.5−	1.0+	1999 10 01	704	0.7+	0.7+
1994 08 11	809	1.1−	0.4−	1999 09 07	704	0.0	0.4+	1999 10 01	704	0.3+	0.6+

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1994 09 03	809	0.7+	0.2+	1999 09 09	704	0.8+	1.7-	1999 10 01	704	0.2-	1.2+
1994 09 03	809	0.2+	0.3-	1999 09 09	704	1.2+	0.4-	1999 10 01	704	0.6+	1.1-
1994 09 03	809	0.1+	0.5+	1999 09 09	704	0.0	0.3-	1999 10 01	704	0.2-	0.3+
1994 09 04	809	1.7+	1.1+	1999 09 09	704	0.1+	0.0	1999 10 01	704	0.2+	0.3-
1994 09 04	809	1.1+	0.3+	1999 09 14	704	0.4+	0.2-	1999 10 01	704	0.6+	0.5-
1994 09 04	809	1.2+	1.8+	1999 09 14	704	0.4+	0.6-	1999 10 01	704	1.2-	1.2-
1999 09 05	699	0.1-	0.1+	1999 09 14	704	0.2+	0.4-				
1999 09 05	699	1.0-	0.8+	1999 09 14	704	0.1+	0.1+				

1994 PK₁₈ = 1999 SJ₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20508748	ω	340.55187	+0.70110001	+0.71217993		
<i>a</i>	2.8478031	Ω	333.92511	-0.64306841	+0.61000078		
<i>e</i>	0.1594088	<i>i</i>	4.62937	-0.30809380	+0.34741732		
<i>P</i>	4.81	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 08 12	809	0.5+	0.9-	1997 02 10	691	0.2+	0.1+	1999 09 30	120	0.6+	1.0-
1994 08 12	809	0.3-	1.1-	1998 05 24	704	0.8+	1.2-	1999 09 30	120	0.2+	0.3+
1994 08 12	809	0.6-	0.3-	1998 05 24	704	0.6-	0.8-	1999 09 30	120	1.0-	0.4+
1994 08 13	809	(2.2+	1.0+)	1998 05 24	704	1.8-	0.3-	1999 10 02	120	0.7+	0.3-
1994 08 13	809	1.9+	1.5+	1998 05 24	704	0.8+	0.1-	1999 10 02	120	(2.9-	0.4-)
1994 08 13	809	1.7+	1.8+	1998 05 24	704	(3.6-	0.4-)	1999 10 04	704	0.9+	0.3+
1994 09 04	809	0.1-	0.2-	1999 09 07	704	0.4-	0.3-	1999 10 04	704	0.7+	0.3-
1994 09 04	809	0.9-	0.7+	1999 09 07	704	0.2-	0.3-	1999 10 04	704	0.3+	0.5+
1994 09 04	809	1.1-	0.7+	1999 09 07	704	0.1+	0.6-	1999 10 04	704	0.6+	0.8-
1994 09 05	809	0.7-	0.4-	1999 09 07	704	0.1+	0.8-	1999 10 04	704	0.9+	1.0-
1994 09 05	809	0.7-	0.3-	1999 09 07	704	0.2-	0.1-	1999 10 07	704	0.4+	0.2+
1994 09 05	809	1.6-	0.4-	1999 09 29	703	0.4-	0.1-	1999 10 07	704	0.4+	0.4-
1994 09 06	809	0.1+	1.2+	1999 09 29	703	0.0	0.9+	1999 10 07	704	0.1-	0.0
1994 09 06	809	0.3+	1.3+	1999 09 29	703	1.3-	0.0	1999 10 07	704	0.3-	0.4-
1994 09 06	809	0.6-	0.6+	1999 09 29	703	1.1-	0.0	1999 10 07	704	0.3+	0.1-
1997 02 10	691	0.2+	0.2+	1999 09 29	120	0.1+	0.2+	1999 10 14	120	1.2+	0.8-
1997 02 10	691	0.0	0.1+	1999 09 29	120	0.9-	0.6-	1999 10 14	120	1.0+	0.1+

1994 PS₂₆ = 1999 RW₁₇₂

Id. A. Doppler, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20376868	ω	298.50857	+0.20167133	-0.97091859		
<i>a</i>	2.8600772	Ω	139.19471	+0.95343174	+0.16444128		
<i>e</i>	0.1369936	<i>i</i>	11.38670	+0.22426902	+0.17400045		
<i>P</i>	4.84	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 08 12	809	1.1+	0.5+	1994 09 06	809	0.4-	1.6-	1999 09 13	704	0.1+	0.3+
1994 08 12	809	0.3-	0.1-	1994 09 06	809	0.5-	0.6-	1999 09 13	704	0.3+	1.1+
1994 08 12	809	0.8-	1.5+	1997 03 02	327	0.1+	0.5+	1999 09 13	704	0.0	1.0+
1994 08 13	809	1.0+	0.2+	1997 03 02	327	0.1-	0.2-	1999 09 13	704	0.4-	0.4-
1994 08 13	809	0.0	0.3-	1997 03 02	327	0.0	0.0	1999 09 30	704	0.5+	0.0
1994 08 13	809	0.5+	0.5-	1999 09 09	704	0.5-	0.5-	1999 09 30	704	0.2+	0.1-
1994 09 05	809	(0.0	2.3-)	1999 09 09	704	0.2+	0.5+	1999 09 30	704	0.3+	0.3+
1994 09 05	809	(0.9-	2.4-)	1999 09 09	704	0.0	0.0	1999 09 30	704	0.4+	0.4+
1994 09 05	809	(0.4-	2.6-)	1999 09 09	704	0.2-	1.0-				
1994 09 06	809	0.5-	0.2+	1999 09 09	704	0.9-	0.9-				

1994 PO₂₇ = 1999 RT₅₉

Id. A. Doppler

M.P.C. 36337

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19725604	ω	327.49018	+0.92350076	-0.38128138		
<i>a</i>	2.9226884	Ω	54.97946	+0.36201497	+0.83000543		
<i>e</i>	0.1016508	<i>i</i>	2.94544	+0.12685230	+0.40708168		
<i>P</i>	5.00	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1994 08 12	809	0.1-	0.3-	1994 09 06	809	0.2-	0.7-	1999 09 09	704	1.2-	0.6+
1994 08 12	809	1.5+	0.7+	1994 09 06	809	1.2-	1.8-	1999 09 09	704	0.3+	0.1+
1994 08 12	809	0.3+	0.5-	1999 09 07	699	(0.5-	2.4+)	1999 09 09	704	0.8-	0.4+
1994 08 13	809	(2.3+	1.2+)	1999 09 07	699	0.3+	0.6+	1999 09 09	704	0.9-	0.2-
1994 08 13	809	1.7+	0.0	1999 09 07	704	0.3-	0.5+	1999 09 09	704	0.4-	0.2-
1994 08 13	809	(2.6+	1.3+)	1999 09 07	699	1.3+	0.0	1999 09 30	704	0.8+	0.4+
1994 09 05	809	(2.6-	2.7-)	1999 09 07	704	0.1-	0.5+	1999 09 30	704	0.3-	0.3+
1994 09 05	809	(1.3-	2.8-)	1999 09 07	704	0.2-	0.5+	1999 09 30	704	1.6+	0.8-
1994 09 05	809	(2.5-	2.8-)	1999 09 07	704	0.4-	0.4+	1999 09 30	704	0.2-	0.8-
1994 09 06	809	0.5-	0.7-	1999 09 07	704	0.3-	1.3+	1999 09 30	704	0.2-	0.5-

1994 PH₂₉ = 1999 TS₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21945090	ω	160.14721	-0.28096475	+0.95807578		
<i>a</i>	2.7221443	Ω	93.50299	-0.88794529	-0.23731915		
<i>e</i>	0.0419379	<i>i</i>	3.22324	-0.36415927	-0.16053166		
<i>P</i>	4.49	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 08 12	809	0.1-	0.6+	1994 09 06	809	1.3-	0.4-	1999 10 06	120	0.9-	0.1+
1994 08 12	809	0.4-	0.6+	1994 09 06	809	0.2+	0.4-	1999 10 07	704	0.7+	0.4+
1994 08 12	809	1.6-	0.8+	1994 09 06	809	0.2-	0.7-	1999 10 07	704	0.0	0.1-
1994 08 13	809	1.8+	0.5-	1999 10 04	703	0.6-	0.2+	1999 10 07	704	1.3+	0.8-
1994 08 13	809	0.6+	0.6-	1999 10 04	703	0.8-	0.4-	1999 10 07	120	0.2-	0.9+
1994 08 13	809	0.3-	0.2-	1999 10 04	703	0.6-	0.8+	1999 10 07	120	1.1+	0.9-
1994 09 05	809	0.6+	0.3+	1999 10 04	703	0.5-	0.2+	1999 10 08	120	0.5+	0.7-
1994 09 05	809	0.6+	0.3+	1999 10 06	120	0.3+	0.7+	1999 10 08	120	0.5+	0.4-
1994 09 05	809	0.1-	0.1+	1999 10 06	120	0.9-	0.0				

1994 PP₃₆ = 1999 RX₅₉

Id. M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19224617	ω	127.15054	-0.06923593	-0.99421591		
<i>a</i>	2.9732466	Ω	326.53820	+0.86156905	-0.01810330		
<i>e</i>	0.0354746	<i>i</i>	8.56357	+0.50289677	-0.10586311		
<i>P</i>	5.13	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 08 10	809	0.6+	0.0	1994 09 03	809	0.3+	0.6+	1999 09 09	704	0.4-	1.5+
1994 08 10	809	0.1+	0.9-	1994 09 04	809	0.2+	0.1-	1999 09 09	704	0.1+	0.9+
1994 08 10	809	0.1-	0.8-	1994 09 04	809	0.3-	0.0	1999 09 09	704	1.2+	1.7+
1994 08 11	809	0.0	0.3+	1994 09 04	809	0.3-	0.4-	1999 10 13	691	0.1+	0.1+
1994 08 11	809	1.5-	0.3-	1999 09 07	704	0.6-	0.4-	1999 10 13	691	0.1-	0.5-
1994 08 11	809	0.0	0.0	1999 09 07	704	0.0	0.9-	1999 10 13	691	0.1+	0.4-
1994 09 03	809	1.3+	0.4+	1999 09 07	704	0.3-	0.5-				
1994 09 03	809	0.2-	1.1+	1999 09 07	704	0.1-	1.2-				

1994 TC₂ = 1968 QV₁ = 1978 NQ₅ = 1989 SR₁₃ = 1997 EA₄₄
= 1999 RG₁₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams			
<i>M</i>	17.06276		(2000.0)	P		Q	
<i>n</i>	0.19074848	ω	350.21579	+0.68730602		+0.71905187	
<i>a</i>	2.9887894	Ω	323.08269	−0.65432203		+0.55142656	
<i>e</i>	0.0907808	<i>i</i>	9.85767	−0.31539359		+0.42295763	
<i>P</i>	5.17	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1968 08 31	095	1.8+	2.3−	1997 03 11	704	0.3+	0.3−	1999 09 09	704	1.2−	1.0−
1978 07 10	675	0.6−	0.3−	Y 1997 03 12	704	0.0	0.3+	1999 09 14	704	0.1+	0.2+
1978 07 11	675	(2.7−	8.4+)	Y 1997 03 12	704	0.2−	1.0+	1999 09 14	704	0.0	0.5+
1978 07 13	675	1.3+	2.1−	Y 1999 08 08	699	0.8−	0.8+	1999 09 14	704	0.0	0.4+
1989 09 28	493	(4.4−	0.0)	1999 08 08	699	1.1−	0.9+	1999 09 14	704	0.2+	0.2+
1989 09 28	493	(3.8−	0.3−)	1999 08 08	699	0.7−	0.7+	1999 09 14	704	0.2−	0.2+
1989 10 03	493	0.3−	1.9−	1999 08 22	699	0.6−	0.8+	1999 09 29	704	0.4−	0.1−
1989 10 03	493	0.4−	1.3−	1999 08 22	699	0.2+	0.4+	1999 09 29	704	0.3+	0.1+
1994 10 04	033	0.4+	0.6−	1999 08 22	699	0.2−	0.5+	1999 09 29	704	0.4−	0.7−
1994 10 06	033	0.8+	0.9−	1999 09 05	699	0.0	0.6+	1999 09 29	704	0.1+	0.6−
1994 10 07	033	1.3+	0.8−	1999 09 05	699	0.1+	0.2+	1999 09 29	704	0.7−	0.7−
1994 10 10	596	(4.9+	0.4+)	1999 09 05	699	0.3+	0.8+	1999 10 02	703	0.1−	0.2+
1994 10 10	596	(3.9+	0.3+)	1999 09 07	704	0.2+	0.0	1999 10 02	703	0.0	0.5+
1994 10 10	596	1.6+	0.0	1999 09 07	704	0.3+	0.3+	1999 10 02	703	0.3−	0.4+
1994 10 11	596	1.4+	1.2+	1999 09 07	704	0.1−	0.0	1999 10 02	703	0.6−	0.4+
1994 10 11	596	1.8−	1.4+	1999 09 07	704	0.1+	0.6+	1999 10 02	704	0.1+	0.3+
1994 10 11	596	0.4−	1.1+	1999 09 07	704	0.1+	0.2+	1999 10 02	704	0.1−	0.5+
1994 10 12	596	(3.1+	0.2−)	1999 09 09	704	0.3+	0.3+	1999 10 02	704	0.7−	0.6−
1994 10 12	596	(2.7+	0.4−)	1999 09 09	704	0.6+	0.1−	1999 10 02	704	0.7−	0.9+
1994 10 12	596	(3.4+	1.0−)	1999 09 09	704	0.3−	0.0	1999 10 02	704	0.0	0.7−
1997 03 11	704	0.9+	0.3+	1999 09 09	704	0.2−	0.6−				

1994 VX₁ = 1999 TT₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams			
<i>M</i>	357.76072		(2000.0)	P		Q	
<i>n</i>	0.19041573	ω	274.62179	+0.97212259		−0.22646495	
<i>a</i>	2.9922704	Ω	98.47610	+0.23201586		+0.89166485	
<i>e</i>	0.0759129	<i>i</i>	3.52172	+0.03385721		+0.39197885	
<i>P</i>	5.18	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1994 10 31	691	0.1+	0.5+	1994 11 12	560	0.2−	0.9+	1999 10 07	704	0.2+	0.2+
1994 10 31	691	0.0	0.8+	1994 11 12	560	0.2+	0.1−	1999 10 07	120	0.2−	0.4−
1994 10 31	691	0.1+	0.7+	1999 10 04	703	0.0	0.9+	1999 10 07	120	0.3−	0.1−
1994 11 04	675	0.1+	1.5+	1999 10 04	703	1.0−	0.2−	1999 10 08	120	0.1+	0.2−
1994 11 04	675	0.2+	0.3+	1999 10 04	703	0.8−	0.6+	1999 10 08	120	0.0	0.6−
1994 11 06	596	0.8−	0.3+	1999 10 04	703	0.6−	0.4+	1999 10 14	327	0.5−	0.9+
1994 11 06	596	0.2−	0.3+	1999 10 06	120	0.4+	0.5−	1999 10 14	327	0.1−	0.5+
1994 11 06	596	0.5+	0.2+	1999 10 06	120	0.7+	1.0−	1999 10 14	327	0.1−	0.5+
1994 11 08	596	0.3−	1.8−	1999 10 06	120	1.4+	0.8−	1999 10 15	327	0.1+	0.5+
1994 11 08	596	0.3+	2.0−	1999 10 07	704	0.8+	1.2−	1999 10 15	327	0.1−	0.3+
1994 11 08	596	1.1+	2.0−	1999 10 07	704	0.5−	0.5−	1999 10 15	327	0.0	0.2+
1994 11 12	560	1.1−	0.4+	1999 10 07	704	0.4+	0.4+				

1994 WM₇ = 1999 RM₁₇₁

Id. A. Doppler				Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams			
<i>M</i>	343.87145		(2000.0)	P		Q		P		Q	
<i>n</i>	0.18247999	ω	211.22964	+0.99441355		−0.09239345					
<i>a</i>	3.0784060	Ω	153.92538	+0.10349449		+0.94850139					
<i>e</i>	0.2117665	<i>i</i>	6.66836	−0.02075044		+0.30299929					
<i>P</i>	5.40	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5				

Residuals in seconds of arc

1994 11 28	691	0.0	0.3+	1994 12 03	691	0.4+	0.0	1999 09 09	704	0.2+	1.1+
1994 11 28	691	0.3+	0.2+	1999 09 07	704	0.6+	0.3−	1999 09 09	704	0.9+	0.6+
1994 11 28	691	0.1−	0.3+	1999 09 07	704	1.3−	1.2+	1999 09 09	704	0.1−	0.4−
1994 12 01	691	0.8−	0.9−	1999 09 07	704	0.7+	0.3+	1999 09 14	704	1.6+	0.3−
1994 12 01	691	0.2−	0.2+	1999 09 07	704	0.4−	1.0−	1999 09 14	704	0.5−	0.8−
1994 12 01	691	0.2−	0.1−	1999 09 07	704	0.1+	1.4−	1999 09 14	704	1.3−	0.4+
1994 12 03	691	0.3+	0.0	1999 09 09	704	0.2−	0.4−				
1994 12 03	691	0.2+	0.2−	1999 09 09	704	0.4−	1.0+				

1994 WP₈ = 1999 TV₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams			
<i>M</i>	347.92594		(2000.0)	P		Q	
<i>n</i>	0.18152055	ω	180.76923	+0.92546555		−0.37274629	
<i>a</i>	3.0892438	Ω	201.50489	+0.34854913		+0.90774763	
<i>e</i>	0.0648887	<i>i</i>	10.63122	+0.14841502		+0.19249533	
<i>P</i>	5.43	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1994 11 28	691	0.1+	0.1+	1994 12 10	691	0.3−	0.2−	1999 10 06	704	0.9−	1.0+
1994 11 28	691	0.2+	0.0	1994 12 10	691	0.4−	0.2−	1999 10 06	704	0.6+	0.0
1994 11 28	691	0.3+	0.6−	1994 12 10	691	0.1−	0.0	1999 10 06	704	0.7+	0.6−
1994 12 04	691	0.1+	0.1+	1999 10 04	704	1.6+	0.3−	1999 10 06	704	0.5+	0.2−
1994 12 04	691	0.1+	0.4+	1999 10 04	704	1.3−	0.1−	1999 10 06	704	0.2−	0.1−
1994 12 04	691	0.1−	0.3+	1999 10 04	704	1.0−	0.4+				

1995 FA₁₆ = 1999 NN₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Doppler			
<i>M</i>	327.83173		(2000.0)	P		Q	
<i>n</i>	0.29430156	ω	151.03753	+0.95171668		+0.30625289	
<i>a</i>	2.2384171	Ω	191.18940	−0.29840734		+0.90684520	
<i>e</i>	0.1992662	<i>i</i>	6.23755	−0.07203076		+0.28955302	
<i>P</i>	3.35	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 03 28	691	0.5−	0.5+	1995 04 07	691	0.6+	0.2−	1999 07 19	704	0.2+	0.1−
1995 03 28	691	0.1−	0.1−	1995 04 07	691	0.1−	0.1−	1999 07 19	704	0.1−	0.6−
1995 03 28	691	0.1+	0.1+	1999 07 13	704	0.3+	0.3−	1999 07 19	704	0.4+	0.2−
1995 04 05	691	0.2−	0.0	1999 07 13	704	(1.5−	2.6−)	1999 07 19	704	0.2+	0.1−
1995 04 05	691	0.0	0.0	1999 07 13	704	0.2−	0.1−	1999 07 19	704	0.7−	0.4+
1995 04 05	691	0.1−	0.0	1999 07 13	704	0.1+	0.3+				
1995 04 07	691	0.3+	0.3−	1999 07 13	704	0.1−	0.7+				

1995 LK = 1999 ST₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams			
<i>M</i>	46.81113		(2000.0)	P		Q	
<i>n</i>	0.27929946	ω	20.28940	+0.75843587		+0.53479655	
<i>a</i>	2.3178713	Ω	301.73088	−0.64191737		+0.51405735	
<i>e</i>	0.2184952	<i>i</i>	25.97516	−0.11277027		+0.67062486	
<i>P</i>	3.53	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1995 06 05	413	0.3+	1.1−	1995 08 22	801	0.2+	0.3−	1995 10 27	801	0.1−	0.4+
1995 06 05	413	0.0	1.0−	1995 08 26	801	0.3+	0.0	1997 02 03	566	0.8−	0.7−
1995 06 08	413	0.3+	0.1+	1995 08 26	801	0.3+	0.1−	1997 02 03	566	0.3−	0.9−
1995 06 08	413	0.2+	0.1+	1995 09 24	801	0.1+	0.2−	1997 02 03	566	0.4−	0.7−
1995 06 19	413	0.4+	0.1+	1995 09 24	801	1.1−	1.1−	1999 09 24	704	0.1+	0.1−
1995 06 19	413	0.4+	0.2+	1995 09 25	801	0.1+	0.4+	1999 09 24	704	0.6−	0.8+
1995 07 20	413	0.4+	0.1+	1995 09 25	801	0.1+	1.0+	1999 09 24	704	0.3−	0.9+
1995 07 20	413	0.3+	0.1+	1995 09 28	801	0.0	0.0	1999 09 28	704	0.5+	0.5−
1995 07 25	033	0.7−	0.5+	1995 09 28	801	1.5+	1.4−	1999 09 28	704	0.6−	0.4+
1995 07 25	033	0.5−	0.2+	1995 10 25	801	0.3−	0.1+	1999 09 28	704	0.4+	0.9−
1995 07 26	033	0.3−	0.2−	1995 10 25	801	0.5−	0.0	1999 09 28	704	0.8+	0.3−
1995 08 22	801	0.4+	0.3−	1995 10 26	801	0.0	0.4+	1999 09 28	704	0.3−	0.1−

1995 OG₁₀ = 1999 RS₃₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 46.22016 (2000.0)			P		Q	
<i>n</i>	0.26603647	ω	152.48506	+0.28915512	+0.95697832	
<i>a</i>	2.3942818	Ω	134.31108	-0.88436758	+0.27669121	
<i>e</i>	0.1755461	<i>i</i>	1.93174	-0.36644685	+0.08737543	
<i>P</i>	3.70	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1995 07 21	033	0.2+	0.9+	1998 04 19	704	1.0-	1.1-	1999 10 01	106	0.3-	0.2+
1995 07 22	033	1.0+	0.4+	1999 08 22	699	0.3+	0.4+	1999 10 01	106	0.2+	0.3-
1995 07 23	033	1.6-	0.8-	1999 08 22	699	1.0+	1.6+	1999 10 01	106	0.4-	0.4-
1995 07 26	033	0.1+	0.4+	1999 08 22	699	0.5-	0.7-	1999 10 02	704	0.5-	0.0
1997 01 15	566	0.5-	0.5+	1999 09 07	704	0.2+	0.2-	1999 10 02	704	0.3+	0.3+
1997 01 15	566	0.6+	0.7+	1999 09 07	704	0.4+	0.3-	1999 10 02	704	0.0	0.2+
1997 01 15	566	0.4-	0.3+	1999 09 07	704	0.0	1.0-	1999 10 02	704	0.1-	0.7+
1998 02 25	566	0.6+	0.7-	1999 09 07	704	0.3-	0.6-	1999 10 02	704	0.8+	0.1-
1998 02 25	566	0.3+	0.9-	1999 09 07	704	0.5-	0.0	1999 10 06	106	1.2-	0.5-
1998 02 25	566	0.5-	1.1-	1999 09 11	120	0.8+	0.7-	1999 10 06	106	0.4-	0.4+
1998 03 20	704	0.6-	0.8+	1999 09 12	120	0.2-	0.7-	1999 10 06	106	0.6-	0.4+
1998 03 20	704	0.2+	0.6+	1999 09 12	120	0.7-	0.3+	1999 10 07	703	0.3-	0.6+
1998 03 20	704	0.2+	0.3+	1999 09 12	120	0.9+	0.8+	1999 10 07	703	0.7-	0.6+
1998 03 20	704	0.3+	0.1+	1999 09 14	704	0.3+	0.2-	1999 10 07	703	0.4-	0.1+
1998 03 20	704	0.2+	0.4-	1999 09 14	704	0.3-	0.1-	1999 10 07	703	0.5-	0.4+
1998 03 25	566	0.8-	0.4-	1999 09 14	704	0.0	0.1-	1999 10 07	704	0.8+	0.0
1998 03 25	566	0.9-	0.6-	1999 09 14	704	0.5+	0.4-	1999 10 07	704	1.0+	0.3-
1998 03 25	566	1.2-	0.4-	1999 09 14	120	1.2+	0.4-	1999 10 07	704	0.5+	0.2-
1998 04 19	704	0.9+	0.2+	1999 09 14	120	0.9-	0.6-	1999 10 07	704	0.0	0.2-
1998 04 19	704	0.6+	0.5+	1999 09 20	848	0.2-	0.3-	1999 10 07	704	0.3-	0.5-
1998 04 19	704	(2.2+	1.4+)	1999 09 20	848	0.1+	0.4-				
1998 04 19	704	1.0+	1.5+	1999 09 20	848	0.8+	0.4+				

1995 SE₁₀ = 1993 BU₁₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 197.55936 (2000.0)			P		Q	
<i>n</i>	0.23714949	ω	345.39001	-0.84593944	-0.53281681	
<i>a</i>	2.5849645	Ω	162.36066	+0.49632987	-0.80186879	
<i>e</i>	0.2212195	<i>i</i>	4.20082	+0.19504647	-0.27039358	
<i>P</i>	4.16	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1993 01 23	809	0.4+	0.2-	1995 09 22	691	0.1-	0.2+	1999 09 11	704	0.4+	0.2+
1993 01 28	809	0.2+	0.2+	1995 09 22	691	0.1-	0.1-	1999 09 11	704	0.7+	0.6-
1993 01 28	809	0.7-	0.3-	1995 09 22	691	0.2-	0.0	1999 09 11	704	0.2+	0.4-
1995 08 26	809	1.1+	0.9+	1999 08 21	691	0.2-	0.1+	1999 09 11	704	1.0-	0.5-
1995 09 17	691	0.2-	0.3+	1999 08 21	691	0.0	0.2+	1999 09 11	704	0.6+	0.5+
1995 09 17	691	0.5-	0.0	1999 08 21	691	0.4-	0.2-				
1995 09 17	691	0.2-	0.1-	1999 09 11	704	0.1+	0.8-				

1995 SC₁₇ = 1999 NP₄₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 11.66097 (2000.0)			P		Q	
<i>n</i>	0.22842210	ω	109.47650	+0.22192138	+0.97502377	
<i>a</i>	2.6503952	Ω	173.32643	-0.92091812	+0.21259468	
<i>e</i>	0.2436477	<i>i</i>	4.40143	-0.32040711	+0.06428176	
<i>P</i>	4.31	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1994 03 14	691	0.2-	0.2-	1995 09 23	691	0.1+	0.1-	1999 07 19	704	0.8-	0.4+
1994 03 14	691	0.0	0.1-	1995 09 24	809	(0.2+	2.4-)	1999 08 12	704	0.1+	0.3-
1994 03 14	691	0.0	0.1-	1995 09 27	691	0.3+	0.1+	1999 08 12	704	0.0	0.4-

1995 09 01	809	(2.6-	3.0-)	1995 09 27	691	0.0	0.1+	1999 08 12	704	0.3-	0.5-
1995 09 18	691	0.6-	0.1+	1995 09 27	691	0.3-	0.2-	1999 08 12	704	0.3-	0.1-
1995 09 18	691	0.7-	0.2+	1999 07 13	704	0.4-	0.3+	1999 08 12	704	1.5-	1.5+
1995 09 18	691	0.6-	0.0	1999 07 13	704	0.6+	0.2-	1999 09 13	704	0.0	0.8-
1995 09 19	809	0.1+	0.4-	1999 07 13	704	1.1+	0.2-	1999 09 13	704	0.2+	0.1+
1995 09 19	809	1.0+	0.2+	1999 07 13	704	0.9+	0.3-	1999 09 13	704	0.4+	0.2+
1995 09 20	809	0.9+	0.2-	1999 07 13	704	0.6+	0.5-	1999 09 13	704	0.3-	0.5-
1995 09 23	691	0.0	0.0	1999 07 19	704	0.4-	0.4+	1999 09 13	704	0.3+	0.5+
1995 09 23	691	0.1-	0.1-	1999 07 19	704	0.3-	0.4+				

1995 SF₁₇ = 1999 RQ₁₄₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 304.39664 (2000.0)			P		Q	
<i>n</i>	0.24052625	ω	240.11262	+0.61238387	-0.79048464	
<i>a</i>	2.5607139	Ω	172.09783	+0.75003266	+0.57655415	
<i>e</i>	0.2243961	<i>i</i>	4.57070	+0.24987398	+0.20668660	
<i>P</i>	4.10	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1995 09 01	809	(2.6-	2.4-)	1995 09 27	691	0.8-	0.0	1999 09 09	704	0.1+	0.8-
1995 09 18	691	0.2-	0.3+	1995 09 27	691	0.4-	0.1-	1999 09 09	704	0.1-	0.1+
1995 09 18	691	0.4-	0.3+	1999 09 07	704	1.3-	0.1-	1999 09 09	704	1.0+	0.3-
1995 09 18	691	0.2-	0.2+	1999 09 07	704	0.9-	0.7+	1999 09 14	704	0.4+	0.8-
1995 09 19	809	1.3+	0.1-	1999 09 07	704	0.6-	0.6+	1999 09 14	704	0.5+	0.5+
1995 09 20	809	1.2+	0.5-	1999 09 07	704	1.1+	0.0	1999 09 14	704	0.1+	0.4-
1995 09 23	809	(0.8-	3.8-)	1999 09 07	704	0.4-	1.1+	1999 09 14	704	0.0	0.4-
1995 09 24	809	(0.7-	2.7-)	1999 09 09	704	0.3+	0.6-	1999 09 14	704	0.3+	0.4-
1995 09 27	691	0.6-	0.1+	1999 09 09	704	0.5-	0.8+				

1995 SK₂₃ = 1981 UW₂₉

Id. G. V. Williams, A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 251.26395 (2000.0)			P		Q	
<i>n</i>	0.20927435	ω	40.88735	+0.41829187	-0.90593847	
<i>a</i>	2.8096920	Ω	24.60063	+0.78691486	+0.32535165	
<i>e</i>	0.1453335	<i>i</i>	9.07087	+0.45364845	+0.27096456	
<i>P</i>	4.71	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1981 10 25	675	0.3-	0.0	1995 09 25	691	0.0	0.1+	1995 09 30	691	0.1+	0.1+
1981 10 26	675	0.3+	0.1-	1995 09 25	691	0.0	0.0	1996 01 24	704	0.7+	0.9+
1995 09 19	691	0.2-	0.1-	1995 09 25	691	0.0	0.0	1996 01 24	704	0.8-	0.8-
1995 09 19	691	0.2-	0.3-	1995 09 30	691	0.2+	0.3+				
1995 09 19	691	0.1-	0.2-	1995 09 30	691	0.3+	0.2+				

1995 ST₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 32.80426 (2000.0)			P		Q	
<i>n</i>	0.23246904	ω	261.73085	+0.52234468	+0.83863309	
<i>a</i>	2.6195457	Ω	40.99308	-0.65992431	+0.51225196	
<i>e</i>	0.2939891	<i>i</i>	13.61713	-0.54005179	+0.18518226	
<i>P</i>	4.24	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1995 09 28	327	0.4+	0.2-	1995 09 29	327	0.3+	0.4-	1995 11 24	691	0.3-	0.1-
1995 09 28	327	0.5-	0.4+	1995 11 18	691	0.2-	0.1+	1999 10 07	106	0.3-	0.1+
1995 09 28	327	0.3-	0.1+	1995 11 18	691	0.3+	0.3+	1999 10 07	106	0.0	0.4-
1995 09 28	327	0.6-	0.2-	1995 11 18	691	0.2+	0.1-	1999 10 07	106	0.1+	0.1+
1995 09 29	327	0.5+	0.0	1995 11 24	691	0.2+	0.0	1999 10 08	106	0.2+	0.3+
1995 09 29	327	0.2+	0.3+	1995 11 24	691	0.2-	0.1-	1999 10 08	106	0.0	0.1-

1995 UK = 1999 RG₁₀₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	342.45699		(2000.0)	P	Q
<i>n</i>	0.23989927	ω	131.51493	+0.98174446	-0.17981771
<i>a</i>	2.5651736	Ω	238.93095	+0.14571779	+0.92053585
<i>e</i>	0.3042842	<i>i</i>	4.15059	+0.12224620	+0.34681313
<i>P</i>	4.11	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 10 17	367	0.0	0.6+	1999 09 08	699	0.4-	0.3-	1999 09 11	704	0.3+	0.1+
1995 10 17	367	0.4-	0.9+	1999 09 08	699	1.5-	0.4+	1999 09 16	704	0.8+	0.2+
1995 10 19	367	0.4+	0.5-	1999 09 08	699	0.3-	0.3+	1999 09 16	704	0.5+	0.7+
1995 10 19	367	0.1+	0.2+	1999 09 09	704	0.0	0.3-	1999 09 16	704	0.3-	0.3+
1995 10 20	367	0.2-	0.3-	1999 09 09	704	0.1-	0.2-	1999 09 16	704	0.2+	0.2-
1995 10 20	367	0.2+	0.5-	1999 09 09	704	0.2+	0.2-	1999 10 04	704	0.3+	0.5-
1995 10 25	367	0.1-	0.7+	1999 09 09	704	0.2-	0.4+	1999 10 04	704	0.2+	0.3+
1995 10 25	367	0.4-	0.1-	1999 09 09	704	0.2+	0.1+	1999 10 04	704	0.3+	0.2-
1999 09 04	703	0.3+	0.0	1999 09 10	704	0.7-	0.7+	1999 10 04	704	0.2+	0.0
1999 09 04	703	0.3+	0.4+	1999 09 10	704	0.3-	0.1-	1999 10 04	704	0.6+	0.2-
1999 09 04	703	0.8-	0.2+	1999 09 10	704	0.7+	0.5-	1999 10 07	704	0.5-	0.6-
1999 09 04	703	1.1-	0.2+	1999 09 11	704	0.5-	0.0	1999 10 07	704	0.2-	0.2-
1999 09 08	704	1.0+	0.3+	1999 09 11	704	1.1+	0.2+	1999 10 07	704	0.1-	1.1-
1999 09 08	704	0.3-	0.6-	1999 09 11	704	0.3+	0.4+	1999 10 07	704	0.4-	0.8-
1999 09 08	704	0.2-	0.0	1999 09 11	704	0.8+	0.0				

1995 UC₅

Id. V. S. Casulli (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	350.94083		(2000.0)	P	Q
<i>n</i>	0.22476432	ω	87.53272	+0.98394261	-0.15418825
<i>a</i>	2.6790725	Ω	281.32669	+0.10410471	+0.90493301
<i>e</i>	0.0552008	<i>i</i>	5.26089	+0.14497981	+0.39663867
<i>P</i>	4.39	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1995 10 26	596	0.7-	0.2-	1995 11 18	596	0.5-	0.7+	1999 10 04	596	0.3+	0.2+
1995 10 26	596	0.4-	0.5-	1995 11 18	596	0.1+	0.1+	1999 10 04	596	0.3+	0.0
1995 10 26	596	0.0	0.7-	1995 11 18	596	0.0	1.2-	1999 10 06	596	0.6-	0.5+
1995 10 26	596	0.1-	0.9-	1995 11 23	596	0.2+	0.0	1999 10 06	596	0.2+	0.1+
1995 10 27	596	0.3-	1.1+	1995 11 23	596	0.3+	0.4-	1999 10 06	596	1.0-	1.2-
1995 10 27	596	0.6+	0.8+	1995 11 23	596	0.3+	0.3+	1999 10 09	703	0.1-	0.1-
1995 10 27	596	1.1+	0.5+	1995 11 28	596	0.7-	0.3-	1999 10 09	703	0.0	0.9-
1995 11 14	596	0.6-	0.1+	1995 11 28	596	0.5+	0.5+	1999 10 09	703	0.1+	0.4+
1995 11 14	596	0.5+	0.3+	1999 10 04	596	0.8+	0.1-	1999 10 09	703	0.2-	0.8+
1995 11 14	596	0.2-	0.3-	1999 10 04	596	0.2+	0.3+				

1995 UV₈ = 1980 BP = 1999 UN₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	313.45271		(2000.0)	P	Q
<i>n</i>	0.24071547	ω	7.14273	+0.24717825	-0.96766795
<i>a</i>	2.5593718	Ω	68.55664	+0.88632290	+0.20484848
<i>e</i>	0.2543538	<i>i</i>	3.09264	+0.39157965	+0.14715925
<i>P</i>	4.09	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1980 01 23	095(34.2+ 15.9-)	1995 11 20	411	0.2+	0.2+	1999 10 07	704	1.0-	1.0-
1995 10 19	691 0.2+ 0.2-	1995 11 20	411	0.1+	0.6+	1999 10 07	704	0.2+	0.1-
1995 10 19	691 0.1- 0.3-	1995 11 21	399	1.1-	0.6+	1999 10 07	704	0.4+	0.5-
1995 10 19	691 0.1- 0.4-	1995 11 21	399	0.5-	1.0+	1999 10 18	701	0.5-	0.4+
1995 10 28	400 0.6+ 0.6+	1995 11 25	399	0.6-	0.3-	1999 10 18	701	0.5-	0.6+
1995 10 28	400 0.0 1.3-	1995 11 25	399	0.3-	0.4-	1999 10 19	701	0.3-	0.7+
1995 10 30	400 0.2+ 1.6-	1996 02 03	658	0.2-	0.2-	1999 10 19	701	0.0	0.5+
1995 10 30	400 0.5+ 0.1-	1996 02 03	658	0.3+	0.1-	1999 10 19	701	0.2-	0.6+
1995 11 18	411 0.6+ 0.1+	1996 02 03	658	0.1+	0.4-				
1995 11 18	411 0.7+ 0.6+	1999 10 07	704	1.4+	0.3-				

1995 UQ₁₁ = 1999 RE₉₀

Id. A. Doppler, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	70.02413		(2000.0)	P	Q
<i>n</i>	0.23934263	ω	258.00477	-0.03633509	+0.99831256
<i>a</i>	2.5691493	Ω	10.24190	-0.78879023	-0.00082001
<i>e</i>	0.0810759	<i>i</i>	14.75910	-0.61358760	-0.05806336
<i>P</i>	4.12	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1995 10 17	691	0.3-	0.1+	1999 09 05	699	0.3-	1.3+	1999 10 02	704	0.6-	0.1-
1995 10 17	691	0.4-	0.2+	1999 09 07	704	0.7+	0.2-	1999 10 02	704	0.3+	0.5-
1995 10 17	691	0.1-	0.1+	1999 09 07	704	0.5+	0.0	1999 10 07	704	0.2-	0.4+
1995 10 23	691	0.2+	0.1+	1999 09 07	704	0.1+	0.1+	1999 10 07	704	0.8-	0.4+
1995 10 23	691	0.3+	0.1+	1999 09 07	704	0.6+	0.3-	1999 10 07	704	0.4-	0.2+
1995 10 23	691	0.3+	0.1-	1999 09 07	704	0.1+	0.6-	1999 10 07	704	0.8-	0.3-
1995 10 28	691	0.4-	0.1+	1999 09 14	704	0.3+	0.3-	1999 10 07	704	0.2-	0.5+
1995 10 28	691	0.1-	0.1-	1999 09 14	704	0.2+	0.5-	1999 10 13	012	0.2+	0.5-
1995 10 28	691	0.0	0.1+	1999 09 14	704	0.8+	0.1+	1999 10 13	012	0.0	0.5-
1998 04 28	566	0.3+	0.1+	1999 09 14	704	0.1-	0.3-	1999 10 13	012	0.1+	0.5-
1998 04 28	566	0.2-	0.0	1999 09 14	704	0.3+	0.1-	1999 10 13	012	0.0	0.7-
1998 04 28	566	0.0	0.2+	1999 10 02	704	0.9-	0.0	1999 10 13	012	0.3+	0.3-
1999 09 05	699	0.1+	0.6+	1999 10 02	704	0.0	0.6+				
1999 09 05	699	0.5+	1.2+	1999 10 02	704	0.6-	0.1-				

1995 UE₁₂ = 1999 TB₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	285.56810		(2000.0)	P	Q
<i>n</i>	0.24384571	ω	85.67443	+0.00262006	-0.99999124
<i>a</i>	2.5374216	Ω	4.17963	+0.89880235	+0.00092427
<i>e</i>	0.1232577	<i>i</i>	2.56653	+0.43834630	+0.00408192
<i>P</i>	4.04	<i>H</i>	16.8	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1995 10 17	691	0.4-	0.3-	1995 10 22	691	0.3-	0.5+	1999 10 09	159	0.8-	1.0+
1995 10 17	691	0.1-	0.1-	1995 10 28	691	0.3+	0.2-	1999 10 11	159	0.5+	0.8+
1995 10 17	691	0.3+	0.3-	1995 10 28	691	0.0	0.2-	1999 10 11	159	2.1-	0.7-
1995 10 22	691	0.0	0.3+	1999 10 09	159	0.9+	0.9-	1999 10 11	159	0.1-	1.2-
1995 10 22	691	0.1+	0.4+	1999 10 09	159	1.5+	0.9+				

1995 VE₁ = 1999 RF₉₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	342.11726		(2000.0)	P	Q
<i>n</i>	0.22496935	ω	270.59590	+0.96307444	-0.26438352
<i>a</i>	2.6774445	Ω	104.73525	+0.26318357	+0.88461807
<i>e</i>	0.0993615	<i>i</i>	3.01586	+0.05676289	+0.38412527
<i>P</i>	4.38	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 11 15	411	(2.1- 2.0+)	1999 09 07	704	0.9- 0.0	1999 10 02	704	0.6- 0.1-
1995 11 15	411	(2.3- 0.3+)	1999 09 07	704	0.7- 0.3-	1999 10 02	704	0.4- 0.1-
1995 11 17	411	0.2+ 0.6-	1999 09 07	704	0.4- 0.1+	1999 10 02	704	1.0- 0.2+
1995 11 17	411	0.2- 0.8-	1999 09 07	704	0.8- 0.2+	1999 10 02	704	0.0 0.7+
1995 11 24	411	0.4- 0.5+	1999 09 08	699	0.8+ 0.5+	1999 10 07	703	0.2+ 0.1+
1995 11 24	411	0.6+ 0.9+	1999 09 08	699	0.8+ 0.2+	1999 10 07	703	0.4- 0.3-
1995 11 24	411	0.2- 0.4+	1999 09 08	699	0.8+ 0.3+	1999 10 07	703	0.5+ 0.1-
1995 12 22	691	0.2- 0.3-	1999 09 09	704	1.3+ 0.4-	1999 10 07	703	0.1+ 0.8-
1995 12 22	691	0.2+ 0.2-	1999 09 09	704	0.1+ 1.1-	1999 10 07	704	0.0 0.4-
1996 01 24	691	0.2+ 0.2-	1999 09 09	704	0.4+ 0.6+	1999 10 07	704	0.6- 0.7+
1996 01 24	691	0.2+ 0.3+	1999 09 09	704	0.2+ 0.4+	1999 10 07	704	0.1+ 0.5+
1996 01 24	691	0.3- 0.0	1999 09 09	704	0.5- 0.1+	1999 10 07	704	0.9+ 0.0
1999 09 07	704	0.6- 0.4-	1999 10 02	704	0.7+ 0.7-			

1995 VL₁₅ = 1998 ST₁₃₇

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29843191	ω	198.09292	−0.27799198	+0.95802715		
<i>a</i>	2.2177157	Ω	55.82169	−0.87053062	−0.22044047		
<i>e</i>	0.1651495	<i>i</i>	4.85599	−0.40607499	−0.18327571		
<i>P</i>	3.30	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1995 11 15	691	0.1+	0.2+	1995 11 27	691	0.0	0.4−	1998 09 27	704	1.8+	0.2−
1995 11 15	691	0.2+	0.1+	1995 11 27	691	0.2+	0.1+	1998 09 27	704	0.5+	0.5−
1995 11 15	691	0.3+	0.3+	1998 09 26	704	0.4−	1.1+	1998 09 27	704	1.1+	0.5−
1995 11 20	691	0.3−	0.0	1998 09 26	704	0.7−	0.6−	1998 09 27	704	1.3−	0.5+
1995 11 20	691	0.4−	0.3−	1998 09 26	704	0.5−	0.2+				
1995 11 20	691	0.1−	0.0	1998 09 26	704	0.5−	0.1−				

1995 WK₁ = 1999 UB₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23199382	ω	53.29268	−0.11454021	−0.99169814		
<i>a</i>	2.6231217	Ω	43.39957	+0.88216962	−0.12858729		
<i>e</i>	0.1336517	<i>i</i>	4.87929	+0.45679022	−0.00033607		
<i>P</i>	4.25	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 11 17	411	0.5+	0.6+	1995 11 29	411	0.8+	0.3−	1999 10 07	704	0.1−	0.4−
1995 11 17	411	0.8−	1.4+	1995 12 09	411	0.4−	0.6+	1999 10 16	120	0.2+	0.3−
1995 11 18	411	0.0	0.6−	1995 12 09	411	0.6−	0.4−	1999 10 16	120	0.1−	0.2+
1995 11 18	411	0.3+	1.2−	1999 10 07	704	0.0	0.2+	1999 10 17	120	0.2−	0.3+
1995 11 24	411	0.5+	0.3+	1999 10 07	704	0.4−	0.2−	1999 10 17	120	0.7+	0.1+
1995 11 24	411	0.3−	0.1−	1999 10 07	704	0.1−	0.0				
1995 11 29	411	0.0	0.3−	1999 10 07	704	0.0	0.1−				

1995 WN₄ = 1999 SX₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23502460	ω	284.73332	+0.77154170	−0.63216831		
<i>a</i>	2.6005218	Ω	114.52964	+0.60968151	+0.70272746		
<i>e</i>	0.1814401	<i>i</i>	4.49638	+0.18169168	+0.32640058		
<i>P</i>	4.19	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 11 20	411	0.2−	0.1−	1995 12 21	411	0.6+	0.5−	1999 10 04	703	0.7−	0.4−
1995 11 20	411	0.1+	0.1−	1995 12 21	411	1.4+	0.4−	1999 10 04	703	0.1+	0.2−
1995 11 24	411	0.2−	1.0+	1999 09 30	703	0.1+	0.3+	1999 10 07	704	0.6+	0.6−
1995 11 24	411	0.6+	0.3+	1999 09 30	703	0.7+	0.0	1999 10 07	704	0.3−	0.9+
1995 11 28	411	0.3−	0.1−	1999 09 30	703	0.4−	0.7−	1999 10 07	704	0.0	0.5+
1995 11 28	411	0.3−	0.1+	1999 09 30	703	0.5+	0.2+	1999 10 07	704	0.5+	0.2−
1995 12 01	411	0.5−	0.3−	1999 10 04	703	0.2+	0.2+	1999 10 07	704	0.7−	0.4−
1995 12 01	411	1.1−	0.1+	1999 10 04	703	0.5−	0.1+				

1995 WC₅ = 1986 VD₇ = 1999 UH

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22426192	ω	232.48822	−0.14734552	−0.98818903		
<i>a</i>	2.6830722	Ω	226.04150	+0.92491957	−0.12258351		
<i>e</i>	0.0707402	<i>i</i>	3.35221	+0.35044699	−0.09195496		
<i>P</i>	4.39	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 11 03	046	1.1+	1.0−	1998 06 24	704	0.1−	0.1+	1999 10 04	704	1.0−	0.2−
1986 11 03	046	(2.3+	3.0−)	1998 06 24	704	0.6+	0.3+	1999 10 06	704	0.0	0.2+
1994 09 01	691	0.9−	0.1−	1998 06 24	704	0.7+	1.2−	1999 10 06	704	0.2−	0.2+

1994 09 01	691	0.6−	0.4+	1998 06 24	704	(3.5−	0.9−)	1999 10 06	704	0.1+	0.2+
1994 09 01	691	0.3−	0.4−	1999 09 18	704	0.3−	0.7+	1999 10 06	704	0.0	0.1+
1995 11 24	411	0.6−	0.3−	1999 09 18	704	0.1+	0.3+	1999 10 06	704	0.2+	0.4+
1995 11 24	411	0.7−	0.8+	1999 09 18	704	0.4+	0.2+	1999 10 07	704	0.2+	0.6+
1995 11 25	411	0.2−	0.3+	1999 09 18	704	0.4+	0.2+	1999 10 07	704	0.1+	0.2+
1995 11 25	411	0.7−	0.4−	1999 09 18	704	0.2+	0.4−	1999 10 07	704	0.5+	0.6+
1995 11 28	411	0.5−	0.1−	1999 10 02	703	0.0	0.2−	1999 10 07	704	0.3+	0.4+
1995 11 28	411	0.1−	0.2−	1999 10 02	703	0.4−	0.1+	1999 10 07	704	0.1−	0.3+
1995 12 01	411	0.3+	1.0+	1999 10 02	703	0.7−	0.1+	1999 10 16	120	0.4+	0.8−
1995 12 01	411	0.7+	0.2−	1999 10 02	703	0.1−	0.0	1999 10 16	120	0.1+	0.5−
1995 12 09	411	0.8−	0.2−	1999 10 04	704	0.1−	0.7+	1999 10 17	120	0.8+	0.8−
1995 12 09	411	0.9+	0.6+	1999 10 04	704	0.8−	0.1+	1999 10 17	120	0.4+	0.9−
1995 12 20	411	0.9+	0.1−	1999 10 04	704	0.7−	0.0	1999 10 19	120	1.4+	0.6−
1995 12 20	411	0.2−	0.8−	1999 10 04	704	0.8−	0.1+	1999 10 19	120	0.2+	0.5−

1995 WB₉ = 1999 TA₁₃

Id. T. Kagawa

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23118631	ω	244.11320	−0.32119270	−0.88604580		
<i>a</i>	2.6292263	Ω	228.93555	+0.94670127	−0.30948455		
<i>e</i>	0.1353355	<i>i</i>	26.32030	−0.02432998	−0.34516975		
<i>P</i>	4.26	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 11 25	905	0.1+	0.4−	1995 12 22	385	0.6−	0.1+	1999 10 10	886	0.0	1.0−
1995 11 28	905	0.5−	0.8−	1996 01 13	385	0.8+	0.4+	1999 10 10	886	0.4−	0.6+
1995 11 28	905	0.5+	0.4−	1996 01 13	385	1.0+	0.1+	1999 10 10	888	0.0	0.3+
1995 11 30	905	0.9+	0.8+	1996 01 13	385	0.4+	0.2−	1999 10 10	888	0.1−	0.4+
1995 11 30	905	0.2−	0.8+	1999 10 05	704	0.1−	0.4−	1999 10 11	886	0.4−	0.3−
1995 12 01	385	0.2+	0.2−	1999 10 05	704	0.2+	0.1−	1999 10 11	886	0.1+	0.5−
1995 12 01	385	0.0	0.4+	1999 10 05	704	0.1+	0.8−	1999 10 17	106	0.6+	0.1+
1995 12 01	385	0.0	0.3−	1999 10 05	704	0.3+	0.1−	1999 10 18	106	0.1+	1.0+
1995 12 12	905	1.3−	0.5−	1999 10 05	704	0.5+	0.4−	1999 10 20	385	0.1−	0.3+
1995 12 12	905	0.5−	0.3+	1999 10 09	888	0.2−	0.4+	1999 10 20	385	0.1−	0.8+
1995 12 22	385	0.5−	0.0	1999 10 09	888	0.5−	0.1−				
1995 12 22	385	0.3−	0.1−	1999 10 09	888	0.0	0.1−				

1995 YN = 1999 SZ_s

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18662660	ω	327.01208	+0.35226789	−0.89507108		
<i>a</i>	3.0326365	Ω	101.06107	+0.90765379	+0.25550256		
<i>e</i>	0.0871546	<i>i</i>	16.17601	+0.22819274	+0.36546710		
<i>P</i>	5.28	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 12 19	411	0.7−	0.4+	1996 01 09	411	0.1−	0.1+	1999 09 11	704	0.5+	0.2−
1995 12 19	411	0.1−	0.0	1996 01 24	411	0.8+	0.6−	1999 09 11	704	1.0+	0.1−
1995 12 20	411	0.2−	0.0	1996 01 24	411	0.8−	0.5+	1999 09 11	704	0.9+	0.3+
1995 12 20	411	0.3−	0.6+	1996 03 23	801	0.4+	0.8+	1999 09 29	704	0.4+	0.9−
1995 12 21	566	0.4+	0.1+	1996 03 23	801	0.8+	0.7−	1999 09 29	704	0.1+	0.4+
1995 12 21	566	0.4+	0.1−	1996 03 24	801	0.2−	1.0−	1999 09 29	704	1.8−	0.0
1995 12 21	566	0.3+	0.1+	1998 06 26	704	1.0−	1.1+	1999 09 30	704	0.0	0.1+
1995 12 26	411	0.1+	0.3−	1998 06 26	704	0.6+	0.5+	1999 09 30	704	0.5−	0.2+
1995 12 26	411	0.1−	0.3+	1998 06 26	704	0.6+	0.7−	1999 09 30	704	0.6−	0.1−
1995 12 30	411	0.7−	0.2−	1998 06 26	704	(3.9−	1.2−)	1999 09 30	704	0.5−	0.3+
1995 12 30	411	0.5−	1.0+	1999 09 11	704	0.2+	0.2+	1999 09 30	704	0.3−	0.1−
1996 01 09	411	0.5+	0.7−	1999 09 11	704	0.6+	0.2−				

1995 YM₉ = 1999 RE₁₈₉

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	315.22193		(2000.0)	P		Q	
<i>n</i>	0.19113074	ω	203.52005	+0.74621527	−0.66565445		
<i>a</i>	2.9848031	Ω	198.22004	+0.61485050	+0.69386962		
<i>e</i>	0.1128401	<i>i</i>	1.49933	+0.25518940	+0.27468000		
<i>P</i>	5.16	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1995 12 18	691	0.3+	0.1+	1999 09 07	704	0.6+	1.2−
1995 12 18	691	0.3+	0.1−	1999 09 07	704	0.3−	0.3−
1995 12 18	691	0.2+	0.1−	1999 09 09	704	0.5−	0.6−
1995 12 23	691	0.0	0.0	1999 09 09	704	0.3+	0.9−
1995 12 23	691	0.2−	0.2+	1999 09 09	704	0.0	1.0+
1995 12 23	691	0.0	0.2−	1999 09 09	704	0.2−	0.4−
1995 12 29	691	0.1−	0.2+	1999 09 11	699	0.8+	0.2+
1995 12 29	691	0.2−	0.0	1999 09 11	699	1.2+	0.4+
1995 12 29	691	0.1−	0.3+	1999 09 11	699	0.4+	1.4+
1997 04 11	704	1.3+	0.8+	1999 09 14	704	0.4−	0.8+
1997 04 11	704	0.7−	0.8+	1999 09 14	704	0.7−	0.5−
1999 09 07	704	0.7+	1.4−	1999 09 14	704	0.2−	0.3+

1996 AV

Id. E. Bowell (1994 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	202.86529		(2000.0)	P		Q	
<i>n</i>	0.17483509	ω	197.97219	−0.81801831	−0.56420103		
<i>a</i>	3.1675027	Ω	307.15814	+0.54346337	−0.69440106		
<i>e</i>	0.0375143	<i>i</i>	8.07190	+0.18839747	−0.44663673		
<i>P</i>	5.64	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1994 11 07	675	0.7−	0.7−	1996 01 13	411	0.0	0.0
1994 11 07	675	0.6+	0.9+	1996 01 13	411	0.5−	0.8−
1996 01 11	411	0.2−	0.6−	1996 01 18	411	0.3+	0.2−
1996 01 11	411	0.4−	1.3+	1996 01 18	411	1.1−	0.5+
1996 01 12	411	1.8+	1.5−	1996 01 27	411	0.1+	0.4−
1996 01 12	411	0.2+	0.3+	1996 01 27	411	0.6+	1.2+

1996 AX₁ = 1999 TV₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	345.74153		(2000.0)	P		Q	
<i>n</i>	0.25553276	ω	149.22723	+0.52517558	−0.83063513		
<i>a</i>	2.4594519	Ω	268.49576	+0.73825265	+0.55284943		
<i>e</i>	0.4318857	<i>i</i>	10.66657	+0.42328907	+0.06635354		
<i>P</i>	3.86	<i>H</i>	16.5	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1996 01 14	595	0.1−	0.3−	1996 02 07	595	0.3+	0.3−
1996 01 14	595	0.6+	0.1−	1996 02 07	595	0.7−	0.2−
1996 01 15	595	0.2+	0.4−	1996 02 07	595	0.3+	0.1+
1996 01 15	595	0.1+	0.7−	1996 02 14	587	0.5−	0.5+
1996 01 15	595	1.1+	1.0−	1996 02 14	587	0.4+	1.1+
1996 01 16	595	0.2+	0.3−	1996 02 15	587	0.1+	0.7+
1996 01 16	595	0.1−	0.1−	1996 02 15	587	0.7+	0.9+
1996 01 16	595	0.1+	0.5−	1996 02 16	658	1.5+	0.3+
1996 01 16	595	0.0	0.1−	1996 02 16	658	0.8+	0.3+
1996 01 17	595	0.2−	0.1+	1996 02 16	658	0.8+	0.4+
1996 01 17	595	0.2−	0.1−	1996 02 25	658	1.1−	0.1+
1996 01 19	595	1.4−	0.2+	1996 02 25	658	0.2+	0.2+
1996 01 19	595	0.0	0.6+	1996 02 25	658	1.0−	0.4+
1996 01 19	595	0.4+	0.2+	1996 03 11	711	(2.6+ 0.0)	
1996 02 06	595	1.7−	0.2+	1996 03 11	711	1.2+	0.1+
1996 02 06	595	1.1−	0.2+	1996 03 14	658	0.7−	0.6−
				1999 10 13	704	0.8−	0.8+

1996 AB₇ = 1999 RW₁₃₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	317.64218		(2000.0)	P		Q	
<i>n</i>	0.17200899	ω	63.96780	+0.93869001	−0.32167122		
<i>a</i>	3.2021029	Ω	314.50773	+0.21976729	+0.83552427		
<i>e</i>	0.0845915	<i>i</i>	10.01737	+0.26563771	+0.44545127		
<i>P</i>	5.73	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1996 01 12	691	0.1+	0.4−	1996 01 25	691	0.3+	0.6+
1996 01 12	691	0.0	0.4−	1996 01 25	691	0.1+	0.1−
1996 01 12	691	0.2+	0.4−	1996 01 25	691	0.7+	1.2+
1996 01 19	691	0.3−	0.1+	1996 01 25	691	0.1−	0.2+
1996 01 19	691	0.0	0.1+	1996 01 25	691	0.6+	0.2+
1996 01 19	691	0.3−	0.5+	1996 01 25	691	0.2−	1.3+
1996 01 25	691	0.0	0.1+	1996 01 25	691	0.3+	0.3+

1996 BO₁ = 1999 RP₂₁₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	41.15765		(2000.0)	P		Q	
<i>n</i>	0.18288318	ω	9.14401	+0.75854669	+0.64177343		
<i>a</i>	3.0738797	Ω	310.30969	−0.60681336	+0.63261008		
<i>e</i>	0.0771350	<i>i</i>	8.50993	−0.23745414	+0.43351050		
<i>P</i>	5.39	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1996 01 16	411	0.3+	0.7+	1996 06 24	704	0.3−	0.5+
1996 01 16	411	0.1+	0.1−	1996 07 23	704	0.0	0.3+
1996 01 24	411	0.7+	0.8−	1996 07 23	704	1.2−	0.8+
1996 01 24	411	1.1+	0.7+	1996 07 23	704	0.2−	0.1+
1996 01 24	411	0.8−	0.3+	1996 07 23	704	0.4+	0.4+
1996 01 30	411	0.1+	0.9+	1996 09 05	703	0.1−	0.3+
1996 01 30	411	0.7−	0.8+	1996 09 05	703	0.4−	0.9+
1996 01 30	411	0.3−	0.1−	1996 09 05	703	0.8+	0.1+
1996 02 12	411	0.4+	0.4+	1996 09 05	703	1.2+	0.3−
1996 02 12	411	0.2−	1.2−	1996 09 08	704	0.4+	0.1+
1996 06 24	704	0.2+	0.7+	1996 09 08	704	0.2−	0.4+
1996 06 24	704	0.0	0.2+	1996 09 08	704	0.1−	0.6+
1996 06 24	704	0.2−	0.2−	1996 09 08	704	0.3−	0.2+

1996 CM₉ = 1999 RC₂₀₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	111.65017		(2000.0)	P		Q	
<i>n</i>	0.15724270	ω	273.79148	−0.45108162	+0.88304392		
<i>a</i>	3.3995575	Ω	328.35152	−0.68914447	−0.43679476		
<i>e</i>	0.0634649	<i>i</i>	14.28353	−0.56710252	−0.17159188		
<i>P</i>	6.27	<i>H</i>	12.0	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1996 02 12	399	0.6+	0.6−	1998 08 17	704	0.6+	0.2−
1996 02 12	399	1.9+	0.1−	1998 08 11	704	0.3+	0.4−
1996 02 16	399	1.1−	1.8−	1998 08 11	704	0.5−	0.5−
1996 02 16	399	0.2−	0.1−	1998 08 11	704	(2.2− 0.1+)	
1996 02 22	399	1.0−	1.4−	1998 09 08	704	0.4+	0.2−
1996 02 22	399	0.5−	0.5−	1998 09 08	704	0.5+	0.4−
1996 02 24	399	1.1−	1.1+	1998 09 08	704	0.4+	0.7−
1996 02 24	399	0.4−	0.8+	1998 09 08	704	0.5+	0.5−
1996 03 10	399	(4.2+ 2.6−)		1998 09 08	704	0.2+	0.1+
1996 03 10	399	(4.2+ 2.1−)		1998 09 18	704	0.9−	0.1+
1998 08 17	704	0.2−	0.9−	1998 09 18	704	0.7−	0.3−
1998 08 17	704	0.5−	0.9−	1998 09 18	704	1.2−	0.4−

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1998 08 17	704	0.8−	0.6−	1999 09 18	704	0.8−	0.5−	1999 10 03	704	0.4+	0.4+
1998 08 17	704	1.7+	0.5+	1999 09 18	704	0.6−	0.4+	1999 10 03	704	0.1−	0.2−

1996 TL₁₁ = 1999 RY₁₅₇

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30435573	ω	267.81897	+0.50650387	+0.86118706		
<i>a</i>	2.1888453	Ω	32.72370	−0.75650092	+0.46752876		
<i>e</i>	0.1392704	<i>i</i>	4.51467	−0.41371510	+0.19943347		
<i>P</i>	3.24	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1995 03 01	691	0.4−	1.0−	1996 10 21	400	0.3−	0.5+	1999 09 09	704	0.2−	0.7−
1995 03 01	691	0.6−	1.1−	1998 02 26	566	0.1+	0.4+	1999 09 13	704	0.1−	0.4−
1995 03 01	691	0.3−	0.7−	1998 02 26	566	0.1−	0.3+	1999 09 13	704	0.2−	0.3−
1996 10 08	566	0.1+	0.2+	1998 02 26	566	0.4+	0.6+	1999 09 13	704	0.3−	0.4−
1996 10 08	566	0.2−	0.1−	1999 08 12	699	0.3−	0.1+	1999 09 13	704	0.0	0.3−
1996 10 08	566	0.1+	0.1+	1999 08 12	699	0.2−	0.3+	1999 09 13	704	0.6+	0.3−
1996 10 11	400	0.7+	0.7−	1999 08 12	699	0.3−	0.2−	1999 09 30	704	0.5−	0.2−
1996 10 11	400	1.0+	0.5−	1999 09 09	704	0.3+	0.2−	1999 09 30	704	0.2−	0.5+
1996 10 14	400	0.0	0.8−	1999 09 09	704	0.5+	0.3+	1999 09 30	704	0.1−	0.4+
1996 10 14	400	0.5−	0.5−	1999 09 09	704	0.6+	0.5−	1999 09 30	704	0.2+	0.9+
1996 10 21	400	0.3−	0.2+	1999 09 09	704	0.2+	0.5−	1999 09 30	704	0.1−	1.6+

1996 TA₃₁ = 1999 GK₁₆

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21758586	ω	260.54500	+0.89558167	+0.43492733		
<i>a</i>	2.7376774	Ω	73.62643	−0.36020822	+0.83240862		
<i>e</i>	0.0993634	<i>i</i>	5.60192	−0.26111973	+0.34341535		
<i>P</i>	4.53	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 10 08	691	0.6−	0.2−	1996 10 18	691	0.2−	0.2−	1999 04 09	704	2.1−	0.5+
1996 10 08	691	0.4+	0.2+	1996 10 18	691	0.0	0.3−	1999 04 10	704	0.9+	1.2−
1996 10 08	691	0.4+	0.3+	1996 10 18	566	0.3−	0.1+	1999 04 10	704	0.2+	1.2−
1996 10 09	691	0.2+	0.3−	1996 10 18	566	0.2+	0.0	1999 04 10	704	1.7+	1.4−
1996 10 09	691	0.0	0.1+	1996 10 18	566	0.1−	0.0	1999 04 10	704	0.3−	1.0−
1996 10 09	691	0.0	0.2+	1999 04 09	704	1.4−	3.0+				
1996 10 18	691	0.0	0.1−	1999 04 09	704	1.0+	1.3+				

1996 VW₉ = 1999 RZ₁₈₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29745017	ω	161.05538	+0.63633179	+0.76931439		
<i>a</i>	2.2225928	Ω	148.38881	−0.72103905	+0.61937330		
<i>e</i>	0.1915701	<i>i</i>	6.23172	−0.27419800	+0.15662720		
<i>P</i>	3.31	<i>H</i>	16.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 11 03	691	0.3−	0.2+	1996 11 07	691	0.1−	0.0	1999 09 09	704	1.2−	0.2+
1996 11 03	691	0.1−	0.4−	1999 09 07	704	0.3+	0.5−	1999 09 09	704	0.0	0.6+
1996 11 03	691	0.3−	0.0	1999 09 07	704	0.0	0.2−	1999 09 09	704	0.4+	1.1+
1996 11 04	691	0.2+	0.1−	1999 09 07	704	0.2−	1.1+	1999 09 14	704	0.1+	0.5−
1996 11 04	691	0.1−	0.1−	1999 09 07	704	0.3+	0.1−	1999 09 14	704	0.0	0.6−
1996 11 04	691	0.2−	0.2+	1999 09 07	704	0.1+	0.0	1999 09 14	704	0.1+	0.7+
1996 11 07	691	0.9+	0.0	1999 09 09	704	0.4+	1.6−	1999 09 14	704	0.1+	0.2+
1996 11 07	691	0.0	0.2+	1999 09 09	704	0.2−	0.0	1999 09 14	704	0.1−	0.5−

1996 VS₁₃ = 1999 KQ₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23851533	ω	118.12692	+0.78969859	+0.61346274		
<i>a</i>	2.5750867	Ω	204.03444	−0.56815198	+0.72742384		
<i>e</i>	0.1495254	<i>i</i>	0.88530	−0.23147239	+0.30743783		
<i>P</i>	4.13	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 11 05	691	0.1−	0.2−	1996 11 10	691	0.1+	0.0	1999 05 17	703	0.4−	0.7−
1996 11 05	691	0.1−	0.1+	1996 11 10	691	0.2+	0.1+	1999 05 17	703	0.0	1.2+
1996 11 05	691	0.2−	0.1−	1996 11 18	691	0.1−	0.1+	1999 05 17	703	0.4−	1.6+
1996 11 06	381	0.3−	0.1−	1996 11 18	691	0.0	0.1−	1999 05 18	691	0.1−	0.4−
1996 11 06	381	0.4+	0.4+	1996 11 18	691	0.1−	0.1−	1999 05 18	691	0.2+	0.3−
1996 11 10	691	0.2+	0.0	1999 05 17	703	0.5+	0.8−	1999 05 18	691	0.1+	0.6−

1996 XK = 1999 RC₁₄₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29587105	ω	287.46494	+0.43248138	+0.90150111		
<i>a</i>	2.2304940	Ω	8.21460	−0.77896702	+0.38250955		
<i>e</i>	0.2135022	<i>i</i>	6.42454	−0.45405973	+0.20244059		
<i>P</i>	3.33	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 04 05	691	0.3−	0.5−	1999 09 05	699	0.2+	1.0+	1999 09 14	704	0.3+	0.7−
1995 04 05	691	0.0	0.2−	1999 09 07	704	0.4+	0.1−	1999 09 14	703	0.2−	0.2−
1995 04 05	691	0.3−	0.3−	1999 09 07	704	0.2+	0.4−	1999 09 14	703	0.0	0.3+
1996 12 01	691	0.1−	0.0	1999 09 07	704	0.4−	0.0	1999 09 14	703	0.0	0.9+
1996 12 01	691	0.6−	0.0	1999 09 07	704	0.4+	0.4−	1999 09 14	703	0.7+	1.1+
1996 12 01	691	0.5−	0.3−	1999 09 08	704	1.7+	0.3−	1999 10 02	704	1.2+	0.9+
1996 12 02	691	0.7+	0.0	1999 09 08	704	0.6+	0.1−	1999 10 02	704	0.5+	0.1−
1996 12 02	691	0.9+	0.1+	1999 09 08	704	0.2−	0.8−	1999 10 02	704	0.0	0.8+
1996 12 02	691	0.6+	0.2−	1999 09 08	704	0.1−	0.5−	1999 10 02	704	0.2+	1.4+
1996 12 09	691	0.3−	0.1−	1999 09 08	704	0.2+	0.6−	1999 10 07	704	0.5−	0.4+
1996 12 09	691	0.3−	0.1−	1999 09 09	704	0.1+	0.3−	1999 10 07	704	0.6−	0.5+
1996 12 09	691	0.2−	0.1+	1999 09 09	704	0.2+	0.2−	1999 10 07	704	0.6−	0.8+
1996 12 15	691	0.1−	0.1−	1999 09 09	704	0.3+	0.5−	1999 10 07	704	0.3−	0.6+
1996 12 15	691	0.3+	0.3−	1999 09 09	704	0.5+	0.8−	1999 10 07	704	0.7−	0.6+
1996 12 15	691	0.1+	0.1+	1999 09 09	704	0.4+	0.2−	1999 10 08	691	0.2−	0.2+
1999 08 12	699	0.3+	1.1+	1999 09 14	704	0.0	0.8−	1999 10 08	691	0.5−	0.1+
1999 08 12	699	0.1−	1.2+	1999 09 14	704	0.6−	0.9−	1999 10 08	691	0.4−	0.0
1999 08 12	699	0.6−	0.7−	1999 09 14	704	0.3−	0.7−	1999 10 18	012	0.2−	0.2−
1999 08 22	703	1.1−	0.4+	1999 09 14	704	0.0	0.7−	1999 10 18	012	0.0	0.2−
1999 08 22	703	0.5−	1.1+	1999 09 14	704	0.0	1.3−	1999 10 18	012	0.0	0.1+
1999 08 22	703	0.0	0.2−	1999 09 14	704	0.0	0.5−	1999 10 18	012	0.1−	0.1−
1999 08 22	703	1.0+	0.8+	1999 09 14	704	0.5+	1.0−	1999 10 18	012	0.1+	0.0
1999 09 05	699	1.0−	0.7+	1999 09 14	704	0.1−	0.7−				
1999 09 05	699	0.9−	0.0	1999 09 14	704	0.3+	0.6−				

1996 XX₄ = 1999 RE₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28844862	ω	339.63940	+0.93918718	+0.34340534		
<i>a</i>	2.2685955	Ω	0.27735	−0.30058205	+0.82270990		
<i>e</i>	0.1509570	<i>i</i>	5.40908	−0.16606586	+0.45301346		
<i>P</i>	3.42	<i>H</i>	16.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 12 06	691	0.0	0.1+	1996 12 08	691	0.2+	0.0	1999 09 11	704	0.1+	0.4−
1996 12 06	691	0.2+	0.1−	1996 12 08	691	0.2+	0.1−	1999 09 11	704	0.7+	0.1−
1996 12 06	691	0.1+	0.1+	1999 09 07	704	0.1−	0.8−	1999 09 11	704	0.4+	0.5+
1996 12 07	691	0.3−	0.2+	1999 09 07	704	0.1+	0.7+	1999 09 11	704	0.2−	0.1−
1996 12 07	691	0.2−	0.1−	1999 09 07	704	0.6−	0.1−	1999 09 11	704	0.7−	0.2−

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1996 12 07 691 0.5− 0.3− 1999 09 07 704 0.2+ 0.1−
 1996 12 08 691 0.2+ 0.1+ 1999 09 07 704 0.1− 0.6+

1996 XH₅ = 1999 RK₅₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	273.17389		(2000.0)	P	Q				
<i>n</i>	0.26702567	ω	67.57354	+0.50371290	−0.86371516				
<i>a</i>	2.3883651	Ω	352.12003	+0.74203119	+0.44232085				
<i>e</i>	0.0776656	<i>i</i>	6.87649	+0.44233814	+0.24155412				
<i>P</i>	3.69	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>		4	

Residuals in seconds of arc

1996 12 06	381	0.6−	0.3−	1996 12 14	896	0.2−	0.1+	1999 09 07	704	0.1+	0.7−
1996 12 06	381	0.4−	0.1−	1996 12 14	896	0.2−	0.0	1999 09 07	704	0.4+	0.6−
1996 12 06	381	0.2−	0.4−	1996 12 14	896	0.2−	0.1+	1999 09 07	704	0.0	0.1−
1996 12 07	381	0.2+	0.2+	1996 12 14	402	0.4−	0.0	1999 09 13	704	0.5+	0.2−
1996 12 07	381	0.4+	0.1−	1996 12 14	402	0.2+	0.3−	1999 09 13	704	0.2+	0.2−
1996 12 07	381	0.2+	0.2−	1996 12 14	402	0.3−	0.1−	1999 09 13	704	0.1+	0.6−
1996 12 08	381	0.1+	0.3+	1998 04 22	704	0.2+	0.6+	1999 09 13	704	0.2−	0.0
1996 12 08	381	0.1−	0.3+	1998 04 22	704	(3.1+ 1.4+)		1999 09 30	704	0.3+	0.1−
1996 12 10	908	0.7+	0.3+	1998 04 22	704	(2.2+ 0.0)		1999 09 30	704	0.4+	0.0
1996 12 10	908	0.8+	0.5+	1998 04 22	704	(4.4− 0.1−)		1999 09 30	704	0.8+	0.8+
1996 12 11	896	0.5+	0.4+	1999 07 14	704	0.6+	0.8+	1999 09 30	704	0.4−	0.2−
1996 12 11	896	0.0	0.3+	1999 07 14	704	0.7−	1.5+	1999 09 30	704	0.1−	1.0+
1996 12 11	896	0.0	0.5+	1999 07 14	704	0.7−	0.4+	1999 09 30	704	0.7−	0.7−
1996 12 11	867	0.0	0.0	1999 07 14	704	0.9−	0.7+	1999 09 30	704	0.4+	0.2+
1996 12 11	867	0.2−	0.1−	1999 09 07	704	1.0−	1.0−	1999 09 30	704	0.1−	0.5+
1996 12 11	867	0.5−	0.1−	1999 09 07	704	0.5+	0.5−				

1996 XC₉

Id. V. S. Casulli (1999 observations), E. Bowell (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	275.52118		(2000.0)	P	Q				
<i>n</i>	0.29671884	ω	337.14106	+0.21206081	−0.97070629				
<i>a</i>	2.2262434	Ω	100.46750	+0.91342998	+0.15579464				
<i>e</i>	0.0954860	<i>i</i>	6.59611	+0.34738433	+0.18291345				
<i>P</i>	3.32	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>		3	

Residuals in seconds of arc

1994 01 21	691	0.0	0.3+	1996 12 15	596	1.4−	1.0−	1999 09 13	704	0.2+	1.2+
1994 01 21	691	0.2−	0.2+	1998 05 22	704	0.6+	1.6+	1999 09 30	596	0.7−	0.7−
1994 01 21	691	0.2−	0.1−	1998 05 22	704	(2.4+ 1.3+)		1999 09 30	596	0.5−	0.3−
1996 11 03	691	0.0	0.4−	1998 05 22	704	0.1+	0.8+	1999 09 30	596	0.2−	0.5−
1996 11 03	691	0.1−	0.5−	1998 05 22	704	1.8+	0.7+	1999 10 01	596	1.0−	0.9−
1996 11 03	691	0.3+	0.4−	1998 05 22	704	0.7−	0.4+	1999 10 01	596	0.8−	0.3−
1996 12 04	596	1.8+	1.7+	1999 09 04	703	0.6+	0.5+	1999 10 01	596	1.1−	0.8−
1996 12 04	596	0.1+	0.3+	1999 09 04	703	0.4−	0.3−	1999 10 04	703	1.1+	0.1−
1996 12 04	596	0.8−	1.0+	1999 09 04	703	0.2−	0.5+	1999 10 04	703	0.1−	0.4+
1996 12 05	596	(1.1− 2.6+)		1999 09 04	703	0.8+	0.1+	1999 10 04	703	0.0	0.2+
1996 12 05	596	0.5−	0.9+	1999 09 13	704	0.0	0.3+	1999 10 04	703	0.3−	0.2+
1996 12 05	596	0.3+	1.0+	1999 09 13	704	0.4+	0.8+				
1996 12 15	596	0.0	0.3+	1999 09 13	704	0.8+	0.5+				

1996 XC₁₅ = 1987 FP = 1999 TU₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	235.75954		(2000.0)	P	Q				
<i>n</i>	0.28504870	ω	78.69248	−0.84806651	−0.52968501				
<i>a</i>	2.2865990	Ω	69.32181	+0.47981668	−0.77942601				
<i>e</i>	0.1141434	<i>i</i>	0.90214	+0.22485360	−0.33455775				
<i>P</i>	3.46	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>		5	

Residuals in seconds of arc

1987 03 21	046	1.2−	0.9−	1996 12 21	327	0.4+	0.3−	1999 10 09	120	0.7−	0.5−
1987 03 21	046	0.9+	0.4+	1996 12 21	327	0.2+	0.3−	1999 10 09	946	0.3−	0.7+

1996 12 10	327	0.3−	0.1−	1996 12 21	327	0.0	0.1+	1999 10 09	946	0.4+	0.4+
1996 12 10	327	0.2−	0.2+	1999 10 07	704	0.1−	0.3−	1999 10 09	946	0.5−	0.0
1996 12 10	327	0.1−	0.3+	1999 10 07	704	0.7−	0.6−	1999 10 09	946	0.1−	0.6+
1996 12 11	327	0.1−	0.0	1999 10 07	704	0.3+	0.1+	1999 10 10	120	0.0	0.2−
1996 12 11	327	0.1−	0.1−	1999 10 07	704	0.1−	0.1+	1999 10 10	120	1.1+	1.1+
1996 12 11	327	0.1−	0.2+	1999 10 07	704	0.8−	0.3+	1999 10 15	120	1.1−	0.7+
1996 12 18	327	0.3−	0.2+	1999 10 08	946	0.4−	1.8−	1999 10 16	120	0.3+	0.2+
1996 12 18	327	0.5+	0.0	1999 10 08	946	0.7+	0.9−	1999 10 16	120	0.6+	0.4+
1996 12 18	327	1.2+	0.0	1999 10 08	946	0.6+	0.9−	1999 10 17	120	0.4+	0.2+
1996 12 21	327	1.1−	0.2+	1999 10 08	120	0.3+	0.5−	1999 10 17	120	0.3+	0.2+

1996 YR₁ = 1999 RA₂₀₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	258.97248		(2000.0)	P	Q				
<i>n</i>	0.25681341	ω	165.11760	−0.34296656	−0.93495706				
<i>a</i>	2.4512687	Ω	304.86133	+0.85014600	−0.26787214				
<i>e</i>	0.0893295	<i>i</i>	6.34735	+0.39953187	−0.23259366				
<i>P</i>	3.84	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>		4	

Residuals in seconds of arc

1996 12 18	327	0.1−	0.1−	1997 01 31	691	0.1+	0.4+	1999 09 30	703	0.8−	0.8+
1996 12 18	327	0.2−	0.2−	1997 01 31	691	0.1−	0.4+	1999 09 30	703	1.9−	0.0
1996 12 18	327	0.3−	0.2−	1999 09 08	704	0.3+	0.9+	1999 09 30	703	0.1−	0.5+
1996 12 21	327	1.1−	0.1−	1999 09 08	704	1.5+	0.5−	1999 09 30	703	1.8−	0.8+
1996 12 21	327	0.2+	0.7−	1999 09 08	704	1.0+	0.4+	1999 10 03	704	0.1+	0.4−
1996 12 21	327	0.3−	0.4−	1999 09 08	704	0.2+	0.7−	1999 10 03	704	1.1+	0.3−
1996 12 21	327	0.8−	0.3−	1999 09 18	704	1.1+	0.2+	1999 10 03	704	1.0−	0.5−
1997 01 05	327	1.2+	0.1−	1999 09 18	704	0.4−	0.2−	1999 10 03	704	0.3−	0.5−
1997 01 05	327	0.6+	0.2+	1999 09 18	704	0.8+	0.1+	1999 10 03	704	0.0	0.1−
1997 01 05	327	0.7+	0.4+	1999 09 18	704	0.2+	0.7−				
1997 01 31	691	0.1−	0.4+	1999 09 18	704	0.2+	0.5+				

1997 AN₁ = 1999 SW₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	170.18235		(2000.0)	P	Q				
<i>n</i>	0.22649064	ω	233.30509	−0.97732775	−0.10652796				
<i>a</i>	2.6654418	Ω	299.90668	+0.18403867	−0.85471599				
<i>e</i>	0.1060208	<i>i</i>	12.18628	−0.10469111	−0.50804761				
<i>P</i>	4.35	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>		4	

Residuals in seconds of arc

1997 01 02	411	0.5−	0.4−	1997 01 26	411	0.6+	0.1+	1999 09 30	703	0.6−	0.3+
1997 01 02	411	0.0	0.2−	1997 01 26	411	0.8+	0.4+	1999 09 30	703	0.2−	0.2−
1997 01 03	411	0.6+	0.2−	1997 02 16	552	0.8−	0.8−	1999 09 30	703	1.7+	0.7+
1997 01 03	411	0.9−	0.3+	1997 02 16	552	0.2−	0.2+	1999 09 30	703	0.6+	0.1+
1997 01 09	411	0.1+	0.1−	1997 02 16	552	0.6−	0.4+	1999 10 01	703	0.1−	0.8−
1997 01 09	411	0.3+	0.0	1997 02 17	552	1.1+	0.7+	1999 10 01	703	0.6−	0.4−
1997 01 14	411	0.5+	0.0	1997 02 17	552	0.9−	0.2−	1999 10 01	703	1.0−	0.1+
1997 01 14	411	0.1+	0.2+	1997 02 17	552	0.3−	0.5−	1999 10 01	703	0.1+	0.2+

1997 AX₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	321.53274		(2000.0)	P	Q				
<i>n</i>	0.29273176	ω	121.17554	+0.48028670	−0.87348172				
<i>a</i>	2.2464124	Ω	299.91483	+0.77018989	+0.46347913				
<i>e</i>	0.1781186	<i>i</i>	5.27680	+0.41968109	+0.14905297				
<i>P</i>	3.37	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>		4	

Residuals in seconds of arc

1997 01 01	327	0.4+	0.6+	1997 02 15	691	0.2−	0.2+	1999 10 05	704	1.1+	0.2+
1997 01 01	327	0.3−	0.1−	1997 02 15	691	0.0	0.2+	1999 10 05	704	0.5+	0.4−
1997 01 01	327	0.5+	0.3−	1997 02 15	691	0.3−	0.2+	1999 10 05	704	1.2+	0.7+
1997 01 04	327	0.8−	0.2+	1997 03 02	691	0.0	0.0	1999 10 05	704	0.1−	0.3−
1997 01 04	327	0.4+	0.6−	1997 03 02	691	0.0	0.0	1999 10 05	704	0.6−	0.1−

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1997 01 04	327	0.3+	0.3+	1997 03 02	691	0.0	0.0	1999 10 06	684	0.5-	0.1-
1997 02 04	566	0.1+	0.0	1997 03 09	691	0.0	0.1-	1999 10 06	684	0.5-	0.1-
1997 02 04	566	0.1+	0.2-	1997 03 09	691	0.1+	0.1-	1999 10 07	684	0.5-	0.1+
1997 02 04	566	0.0	0.1-	1997 03 09	691	0.1-	0.3-	1999 10 07	684	0.6-	0.1-

1997 AR₆ = 1986 VU₂ = 1999 TE₁₃

Id. S. Nakano, T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.30220207	ω	197.01038	-0.30769850	-0.94161459				
<i>a</i>	2.1992322	Ω	271.07566	+0.88810674	-0.23267103				
<i>e</i>	0.1187739	<i>i</i>	7.85763	+0.34144991	-0.24336423				
<i>P</i>	3.26	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1986 11 04	010	1.7-	1.6-	1997 01 12	385	0.0	1.2+	1997 03 04	385	0.2-	0.7+
1986 11 04	010	2.3+	0.2-	1997 01 28	385	0.3+	0.8+	1999 10 10	385	0.6-	0.6+
1997 01 07	385	0.2+	0.5+	1997 01 28	385	1.2+	0.0	1999 10 10	385	0.8-	0.1+
1997 01 07	385	0.3+	0.0	1997 02 06	369	0.3-	1.8-	1999 10 11	385	0.7+	0.3+
1997 01 09	385	0.3-	0.5+	1997 02 06	369	0.7-	0.0	1999 10 11	385	0.1-	0.4+
1997 01 09	385	0.1-	0.1+	1997 02 06	369	0.9-	1.1-	1999 10 11	385	0.3+	0.1+
1997 01 12	385	0.3-	0.5-	1997 03 04	385	0.6+	0.0	1999 10 17	385	0.1+	0.0

1997 AA₁₀ = 1999 TR₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.24276234	ω	114.75174	+0.74509380	+0.66688769				
<i>a</i>	2.5449652	Ω	203.42484	-0.62048330	+0.68770911				
<i>e</i>	0.1158623	<i>i</i>	1.41250	-0.24461337	+0.28690937				
<i>P</i>	4.06	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	6		

Residuals in seconds of arc

1997 01 03	691	0.2-	0.3+	1997 01 17	691	0.4+	0.2-	1999 10 07	104	0.1-	0.3+
1997 01 03	691	0.1-	0.0	1997 01 17	691	0.1+	0.4+	1999 10 16	120	0.0	0.9-
1997 01 03	691	0.0	0.1-	1999 10 06	104	0.4+	0.5-	1999 10 16	120	0.6+	0.3-
1997 01 10	691	0.5-	0.1-	1999 10 06	104	0.6+	0.1-	1999 10 19	120	0.0	0.4+
1997 01 10	691	0.0	0.2+	1999 10 06	104	0.7+	0.2-	1999 10 19	120	0.9-	0.6-
1997 01 10	691	0.3+	0.3-	1999 10 07	104	0.7-	1.0+				
1997 01 17	691	0.0	0.2-	1999 10 07	104	0.5-	0.9+				

1997 AM₁₁ = 1999 TP₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.27563577	ω	149.95760	+0.75443397	-0.65603510				
<i>a</i>	2.3383652	Ω	251.05613	+0.59767248	+0.69992359				
<i>e</i>	0.2035786	<i>i</i>	1.28131	+0.27132450	+0.28235600				
<i>P</i>	3.58	<i>H</i>	16.3	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1997 01 02	691	0.3-	0.1+	1997 01 17	691	0.2+	0.2-	1999 10 04	704	0.2-	0.8+
1997 01 02	691	0.4-	0.1-	1997 01 17	691	0.3+	0.3-	1999 10 04	704	0.8-	0.4-
1997 01 02	691	0.4-	0.3-	1997 02 11	327	0.2-	0.4+	1999 10 06	704	0.1+	0.3+
1997 01 10	691	0.5-	0.0	1997 02 11	327	0.8+	0.3+	1999 10 06	704	0.1+	0.1+
1997 01 10	691	0.0	1.4-	1997 02 11	327	0.2-	0.4+	1999 10 06	704	0.2+	0.2+
1997 01 11	691	0.2+	0.4+	1997 02 11	327	0.4-	0.1+	1999 10 06	704	0.0	0.0
1997 01 11	691	0.2+	0.2+	1999 10 04	704	0.1-	0.3-	1999 10 06	704	0.3-	0.2-
1997 01 11	691	0.5+	0.5+	1999 10 04	704	0.1-	0.8+				
1997 01 17	691	0.1+	0.0	1999 10 04	704	0.9+	1.0-				

1997 AD₁₅ = 1978 WM₁₆ = 1999 RN₁₇₉

Id. A. Doppler, M. E. Sansaturio, E. Bowell

M.P.C. 36345

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.27721420	ω	324.37793	+0.58647744	-0.80538639				
<i>a</i>	2.3294804	Ω	89.56183	+0.76163259	+0.51223132				
<i>e</i>	0.1593030	<i>i</i>	4.93400	+0.27560844	+0.29828147				
<i>P</i>	3.56	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1978 11 30	675	1.2+	0.3-	1997 02 04	385	0.1-	0.6+	1999 09 09	704	0.1-	0.8+
1978 12 01	675	1.2-	0.2+	1997 02 04	385	0.1-	0.5-	1999 09 09	704	0.8+	1.4+
1997 01 09	385	0.6-	0.8+	1997 02 06	385	0.4-	1.0-	1999 09 13	704	0.1+	1.3-
1997 01 09	385	1.2+	0.4+	1997 02 06	385	1.3+	1.1-	1999 09 13	704	0.6-	0.9-
1997 01 10	566	0.7-	0.2+	1999 09 07	699	0.3-	0.8-	1999 09 13	704	0.8-	0.6+
1997 01 10	566	0.7-	0.0	1999 09 07	699	0.7-	1.3+	1999 09 13	704	0.8+	0.4-
1997 01 10	566	0.4-	0.4+	1999 09 07	699	0.1-	1.2-	1999 09 30	704	0.3-	0.5-
1997 01 13	385	0.0	0.1-	1999 09 09	704	0.2-	0.4+	1999 09 30	704	0.1+	1.0-
1997 01 13	385	0.4+	0.2+	1999 09 09	704	0.1+	1.0+	1999 09 30	704	0.3+	0.2-
1997 01 13	385	0.2+	0.0	1999 09 09	704	0.6+	0.8+	1999 09 30	704	0.3+	0.1-

1997 AD₁₈ = 1999 JY₁₀₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.16234190	ω	226.63228	+0.92666492	+0.37410048				
<i>a</i>	3.3279921	Ω	111.36843	-0.33250146	+0.86124193				
<i>e</i>	0.1013565	<i>i</i>	2.25358	-0.17531372	+0.34396389				
<i>P</i>	6.07	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1997 01 13	557	0.1-	0.5-	1999 04 22	691	0.2-	0.4-	1999 05 18	704	0.0	1.5+
1997 01 13	557	0.1+	0.2-	1999 04 22	691	0.0	0.4-	1999 05 23	691	0.4-	0.1-
1997 01 13	557	0.0	0.1-	1999 04 22	691	0.3+	0.2-	1999 05 23	691	0.0	0.4-
1997 01 13	557	0.1-	0.1-	1999 05 13	704	0.2+	1.2-	1999 05 23	691	0.4-	0.3-
1997 01 15	557	0.1-	0.6+	1999 05 13	704	1.5+	0.8+	1999 06 04	703	0.2+	0.1-
1997 01 15	557	0.3+	0.4+	1999 05 13	704	0.2-	0.7+	1999 06 04	703	0.6-	0.8+
1997 01 15	557	0.4+	0.3+	1999 05 13	704	(0.7+	2.6+)	1999 06 04	703	(2.9-	0.6+)
1997 01 16	557	0.1+	0.2-	1999 05 18	704	0.4-	0.0	1999 06 04	703	1.6+	0.7-
1997 01 16	557	0.4-	0.3+	1999 05 18	704	1.6-	0.0				
1997 01 16	557	0.2-	0.4-	1999 05 18	704	(0.7+	2.2+)				

1997 BM₁ = 1999 RN₇₅

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P		Q	
<i>n</i>	0.22709504	ω	294.95157	-0.15412241	+0.98777578				
<i>a</i>	2.6607105	Ω	326.15677	-0.89072651	-0.14913062				
<i>e</i>	0.0158270	<i>i</i>	2.40310	-0.42761263	-0.04537700				
<i>P</i>	4.34	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	5		

Residuals in seconds of arc

1997 01 29	817	0.8-	0.8+	1997 02 14	691	0.3+	0.2-	1999 09 14	704	1.3-	1.1+
1997 01 30	817	0.0	0.6+	1997 02 14	691	0.5-	0.3+	1999 09 14	704	0.2-	0.3-
1997 01 30	817	0.0	0.5+	1999 09 07	704	0.2+	0.5-	1999 09 14	704	0.5+	0.0
1997 02 03	566	0.1+	1.0-	1999 09 07	704	0.7+	0.8+	1999 09 14	704	0.5+	0.2-
1997 02 03	566	0.3+	0.6-	1999 09 07	704	0.5-	0.2+	1999 09 18	691	0.1+	0.1-
1997 02 03	566	0.5+	0.7-	1999 09 07	704	0.2+	0.2-	1999 09 18	691	0.1-	0.3-
1997 02 14	691	0.0	0.3+	1999 09 07	704	0.2-	0.3-	1999 09 18	691	0.0	0.3-

1997 BH₆ = 1999 RR₉₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	14.65497		(2000.0)	P		Q	
<i>n</i>	0.22921864	ω	174.46304	+0.87082978	+0.49079157		
<i>a</i>	2.6442515	Ω	156.08136	−0.45362128	+0.82416235		
<i>e</i>	0.1282837	<i>i</i>	3.94769	−0.18942867	+0.28263059		
<i>P</i>	4.30	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 31	691	0.1−	0.5+	1999 09 07	704	0.6−	0.3+	1999 09 14	704	0.5+	0.1+
1997 01 31	691	0.2−	0.3+	1999 09 07	704	0.3+	0.4+	1999 09 14	704	0.3+	0.2−
1997 01 31	691	0.2−	0.1+	1999 09 07	704	0.1+	0.7−	1999 10 07	703	1.8−	0.4+
1997 02 03	691	0.1+	0.2+	1999 09 07	704	0.1+	0.4+	1999 10 07	703	1.0−	0.1−
1997 02 03	691	0.3+	0.3−	1999 09 07	704	0.2+	1.6+	1999 10 07	703	1.8+	0.5+
1997 02 03	691	0.2+	0.4+	1999 09 14	704	0.4+	0.7−	1999 10 07	703	0.2+	1.1−
1997 02 11	691	0.2+	0.5−	1999 09 14	704	0.2−	0.4−				
1997 02 11	691	0.2−	0.6−	1999 09 14	704	0.3−	0.4−				

1997 CW₁ = 1999 UO₁

Id. Z. Moravec

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	232.85613		(2000.0)	P		Q	
<i>n</i>	0.26093424	ω	31.49624	−0.82149421	−0.55598272		
<i>a</i>	2.4253924	Ω	114.20471	+0.49006714	−0.80191617		
<i>e</i>	0.0832991	<i>i</i>	7.97930	+0.29151581	−0.21866335		
<i>P</i>	3.78	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 02	046	0.1−	0.8−	1997 02 10	046	0.4−	0.0	1999 10 04	703	0.6−	0.3+
1997 02 02	046	0.2−	0.2−	1997 02 10	046	0.4−	0.0	1999 10 04	703	0.1−	0.0
1997 02 02	046	0.7−	0.4−	1997 02 10	046	1.0−	0.6+	1999 10 04	703	0.4+	0.3−
1997 02 02	046	0.0	0.2−	1997 03 02	046	0.3−	0.0	1999 10 04	703	0.0	0.0
1997 02 02	046	0.5−	0.0	1997 03 02	046	0.4−	0.1+	1999 10 18	046	0.0	0.2−
1997 02 03	046	0.4+	0.1−	1997 03 02	046	0.3−	0.1+	1999 10 19	046	0.3+	0.4+
1997 02 03	046	0.3+	0.2−	1997 03 05	046	0.0	0.1+	1999 10 19	046	0.5+	0.2+
1997 02 03	046	0.4+	0.1−	1997 03 05	046	0.1−	0.2−	1999 10 19	046	0.0	0.3+
1997 02 03	046	0.2+	0.1−	1997 03 05	046	0.0	0.1+	1999 10 19	046	0.8−	0.6−
1997 02 03	046	0.4+	0.1−	1999 09 30	703	0.1−	0.4+	1999 10 19	046	0.5−	0.1−
1997 02 06	046	0.8+	0.7+	1999 09 30	703	0.6+	0.5−	1999 10 19	046	0.4−	0.2+
1997 02 06	046	0.8+	0.4+	1999 09 30	703	(2.3+	1.0−)				
1997 02 06	046	0.9+	0.5+	1999 09 30	703	0.6+	0.1−				

1997 CV₄ = 1999 RW₁₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.34458		(2000.0)	P		Q	
<i>n</i>	0.25946671	ω	91.47308	+0.64501855	−0.74801337		
<i>a</i>	2.4345290	Ω	316.98579	+0.57777601	+0.61123665		
<i>e</i>	0.2032951	<i>i</i>	13.24446	+0.50012593	+0.25858412		
<i>P</i>	3.80	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 01	369	0.3+	0.0	1997 02 09	369	0.3+	0.1+	1999 09 09	704	0.9+	0.4+
1997 02 01	369	0.3−	0.9+	1997 02 09	369	0.2+	0.4+	1999 09 09	704	0.0	0.0
1997 02 01	369	0.0	0.1−	1999 08 22	699	0.3+	0.7+	1999 09 14	704	0.2+	0.2+
1997 02 03	566	0.4−	0.3−	1999 08 22	699	0.4+	0.1−	1999 09 14	703	0.6−	0.5+
1997 02 03	566	0.2+	0.5−	1999 08 22	699	0.5−	0.3−	1999 09 14	704	0.4+	0.8−
1997 02 03	566	0.0	0.5−	1999 09 08	704	0.4−	0.7−	1999 09 14	703	0.1+	0.6+
1997 02 06	369	0.2+	0.2+	1999 09 08	704	0.2+	0.5−	1999 09 14	704	0.1−	1.0−
1997 02 06	369	0.0	0.3+	1999 09 08	704	0.1+	0.7−	1999 09 14	703	0.3−	0.5+
1997 02 07	566	0.5−	0.2−	1999 09 09	704	0.3−	0.3+	1999 09 14	704	0.1−	0.0
1997 02 07	566	0.3+	0.3−	1999 09 09	704	0.1−	0.1+	1999 09 14	703	0.1+	0.5+
1997 02 07	566	0.2−	0.1−	1999 09 09	704	0.2−	0.2+				

1997 CF₆ = 1999 NT₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	272.76572		(2000.0)	P		Q	
<i>n</i>	0.23047702	ω	79.79360	+0.51748846	−0.85172215		
<i>a</i>	2.6346179	Ω	338.42555	+0.67098240	+0.46359783		
<i>e</i>	0.2131848	<i>i</i>	12.93510	+0.53102571	+0.24422621		
<i>P</i>	4.28	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 01	327	0.0	0.0	1997 02 04	327	0.1+	0.3+	1999 07 14	704	0.3−	0.4+
1997 02 01	327	0.9+	0.3−	1997 02 14	327	0.7−	0.3+	1999 07 22	704	0.1−	0.1−
1997 02 01	327	0.2−	0.3−	1997 02 14	327	0.1−	0.3−	1999 07 22	704	0.7+	0.0
1997 02 02	327	0.2+	0.0	1997 02 14	327	0.3+	0.1+	1999 07 22	704	0.0	0.5−
1997 02 02	327	0.0	0.0	1999 07 14	704	0.0	0.2−	1999 07 22	704	0.1−	0.2+
1997 02 02	327	0.2−	0.0	1999 07 14	704	0.2+	0.8−	1999 07 22	704	0.9+	0.9+
1997 02 04	327	0.2−	0.1−	1999 07 14	704	0.4−	0.2+				
1997 02 04	327	0.1−	0.3+	1999 07 14	704	0.9−	0.1−				

1997 CF₉ = 1999 RA₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.14379		(2000.0)	P		Q	
<i>n</i>	0.26030618	ω	70.11598	+0.71944254	−0.69270341		
<i>a</i>	2.4292920	Ω	333.65025	+0.58691199	+0.64531453		
<i>e</i>	0.2357760	<i>i</i>	6.55132	+0.37139838	+0.32207321		
<i>P</i>	3.79	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 01	691	0.5−	0.2+	1999 09 08	704	0.2+	0.2−	1999 09 10	704	0.6−	0.4−
1997 02 01	691	0.6−	0.0	1999 09 08	704	0.0	0.1−	1999 09 10	704	0.3−	0.4−
1997 02 01	691	0.2−	0.1−	1999 09 08	704	0.1−	0.1+	1999 09 14	704	0.1+	0.1−
1997 02 07	691	0.6+	0.1+	1999 09 08	704	0.3+	0.1−	1999 09 14	704	0.1−	0.3−
1997 02 07	691	0.4+	0.0	1999 09 09	704	0.2+	0.0	1999 09 14	704	0.3+	0.3−
1997 02 07	691	0.5+	0.2−	1999 09 09	704	0.6+	0.3+	1999 09 14	704	0.1−	0.3−
1997 02 11	691	0.2−	0.3−	1999 09 09	704	0.1+	0.3+	1999 09 14	704	0.5−	0.3−
1997 02 11	691	0.3−	0.0	1999 09 09	704	0.3−	0.1+	1999 09 30	699	0.5+	0.3+
1997 02 11	691	0.0	0.1−	1999 09 09	704	0.2+	0.1+	1999 09 30	699	0.3+	0.7−
1999 09 05	691	0.1+	0.4+	1999 09 09	704	0.1−	0.4−	1999 09 30	699	0.5+	0.2−
1999 09 05	691	0.0	0.4+	1999 09 09	704	0.4−	0.1−	1999 10 02	704	0.3+	0.1−
1999 09 05	691	0.2+	0.5+	1999 09 09	704	0.4−	0.1−	1999 10 02	704	1.5+	0.5+
1999 09 07	704	0.2+	0.1−	1999 09 09	704	0.2−	0.8−	1999 10 02	704	0.0	0.3+
1999 09 07	704	0.2+	0.0	1999 09 09	704	0.1−	0.3+	1999 10 02	704	0.2+	0.5+
1999 09 07	704	0.2+	0.2+	1999 09 10	704	0.1+	0.1+	1999 10 02	704	0.1+	0.2+
1999 09 07	704	0.1+	0.1+	1999 09 10	704	0.3−	0.2−	1999 10 07	704	0.7−	0.0
1999 09 07	704	0.3+	0.2+	1999 09 10	704	0.0	0.1−	1999 10 07	704	1.2−	0.1−
1999 09 08	704	0.2−	0.0	1999 09 10	704	0.1−	0.1−	1999 10 07	704	1.0−	0.4+

1997 CL₁₃

Id. F. Manca (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	267.45776		(2000.0)	P		Q	
<i>n</i>	0.24124206	ω	321.96771	−0.19214812	−0.97652863		
<i>a</i>	2.5556460	Ω	138.85029	+0.93274103	−0.21255543		
<i>e</i>	0.1480849	<i>i</i>	8.50492	+0.30507911	+0.03481402		
<i>P</i>	4.09	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 31	691	0.2−	0.2−	1997 02 27	587	0.4+	1.4−	1997 03 31	587	0.1+	0.2+
1997 01 31	691	0.2−	0.4−	1997 02 27	587	0.6+	0.6−	1997 04 12	587	0.4−	0.5+
1997 01 31	691	0.0	0.4−	1997 02 27	587	0.3+	1.2−	1997 04 12	587	0.4−	0.1−
1997 02 07	587	0.5+	1.8+	1997 03 06	587	0.3+	0.4+	1997 04 30	587	0.8−	0.1+
1997 02 07	587	0.5+	1.4+	1997 03 06	587	0.2+	0.0	1997 04 30	587	0.6−	1.0+
1997 02 08	587	0.3−	0.3−	1997 03 06	587	0.2+	0.0	1999 09 28	587	0.2−	0.2+
1997 02 08	587	0.5+	0.1+	1997 03 16	587	0.0	0.2+	1999 09 28	587	1.0+	0.5−
1997 02 09	587	0.2−	0.0	1997 03 16	587	0.9+	0.4−	1999 09 28	587	0.2−	0.9+

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1997 02 13 587 0.7- 1.0- 1997 03 16 587 0.5- 1.0+ 1999 10 01 587 1.1- 0.5+
 1997 02 13 587 0.0 0.0 1997 03 31 587 0.4- 0.6+

1997 CB₂₆ = 1999 TJ₁₁

Id. T. Kagawa

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 315.78671 (2000.0)			Williams		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.27282823	ω 112.21581	+0.28438909	-0.95649445	
<i>a</i>	2.3543797	Ω 321.07453	+0.83701214	+0.28083881	
<i>e</i>	0.0681034	<i>i</i> 5.94943	+0.46747569	+0.07904389	
<i>P</i>	3.61	<i>H</i> 14.0	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 12	905	0.4-	0.3-	1997 03 05	385	0.2-	0.0	1999 10 09	888	0.6+	0.3-
1997 02 12	905	0.7-	0.9-	1997 03 05	385	0.4-	0.1+	1999 10 09	888	0.2+	0.1+
1997 02 13	905	1.1+	1.4+	1997 03 31	385	0.2-	0.1-	1999 10 09	888	0.5-	0.2+
1997 02 13	905	0.9+	0.2+	1997 03 31	385	0.3-	0.2+	1999 10 17	385	0.4+	0.3+
1997 02 18	385	0.1+	0.1+	1997 04 12	385	0.3+	0.5+	1999 10 17	385	0.2+	0.4+
1997 02 18	385	0.5-	0.0	1997 04 12	385	0.7+	0.4+	1999 10 20	886	0.8-	0.5-
1997 02 18	385	0.1+	0.3-	1999 10 08	888	0.7+	0.2-	1999 10 20	886	0.9-	0.8+
1997 03 03	385	0.2-	0.4-	1999 10 08	888	0.4+	0.1-				
1997 03 03	385	0.2-	0.7-	1999 10 08	888	0.2-	0.6-				

1997 CY₂₇ = 1999 RW₁₃₂

Id. M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 135.21052 (2000.0)			Williams		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.20430211	ω 234.21345	-0.94656476	+0.27022227	
<i>a</i>	2.8550967	Ω 320.59920	-0.12249928	-0.80620864	
<i>e</i>	0.0312922	<i>i</i> 16.10293	-0.29834391	-0.52631507	
<i>P</i>	4.82	<i>H</i> 12.6	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 06	327	0.9+	0.4+	1997 02 15	327	0.2+	0.1+	1999 09 09	704	0.2-	0.1+
1997 02 06	327	0.2-	0.1+	1997 02 17	327	0.2-	0.8-	1999 09 09	704	0.3-	0.4+
1997 02 06	327	0.8+	0.6+	1997 02 17	327	0.4+	0.5-	1999 09 09	704	0.3-	0.1+
1997 02 06	327	0.2-	0.2-	1997 02 17	327	0.9+	0.7-	1999 09 14	704	0.5+	0.1+
1997 02 06	327	0.3+	0.3+	1997 03 05	704	0.3+	0.1+	1999 09 14	704	0.6-	0.7-
1997 02 06	327	0.7-	0.3+	1997 03 05	704	0.2+	0.9+	1999 09 14	704	0.1+	0.4+
1997 02 15	327	1.1-	0.1-	1999 09 09	704	0.1+	0.7+				
1997 02 15	327	1.6-	0.5-	1999 09 09	704	0.7+	1.1-				

1997 DQ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 284.99942 (2000.0)			Williams		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.27107889	ω 100.43782	-0.22158043	-0.97512348	
<i>a</i>	2.3644978	Ω 2.38936	+0.82856879	-0.19152978	
<i>e</i>	0.1485873	<i>i</i> 8.31137	+0.51417494	-0.11158204	
<i>P</i>	3.64	<i>H</i> 14.7	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 16	124	0.1-	0.7-	1997 03 12	132	(2.5-	1.3-)	1999 10 11	143	0.9-	0.1+
1997 02 16	124	0.6+	0.5+	1997 03 12	959	0.9-	0.7+	1999 10 11	143	0.5-	0.1-
1997 02 18	910	0.2+	0.0	1997 03 13	132	(4.5-	0.2-)	1999 10 11	132	0.2+	0.3+
1997 02 18	910	0.3+	0.2+	1997 03 16	132	(3.0-	2.8-)	1999 10 11	132	0.8-	0.1+
1997 02 18	910	0.1+	0.1+	1997 03 27	132	(1.1-	2.5+)	1999 10 11	143	0.2-	0.3+
1997 03 06	627	(0.5-	2.2+)	1997 03 27	132	0.1+	0.6+	1999 10 11	143	0.2+	0.1+
1997 03 07	959	1.5-	0.2+	1997 03 27	132	(2.2+	0.4-)	1999 10 11	143	0.8-	0.3+
1997 03 08	630	0.2+	1.1+	1999 10 03	704	1.0+	1.2-	1999 10 14	132	0.5-	0.0
1997 03 08	959	0.1+	0.6-	1999 10 03	704	0.1-	1.0+	1999 10 14	132	0.7+	0.0
1997 03 09	959	(0.5+	2.7+)	1999 10 03	704	0.3+	0.4-	1999 10 14	132	0.4+	0.6-
1997 03 10	959	1.1+	1.3-	1999 10 03	704	0.6+	0.6+	1999 10 14	132	0.1+	1.2-
1997 03 11	132	0.9+	0.4-	1999 10 11	132	0.8-	0.3-				
1997 03 12	132	1.2-	0.5-	1999 10 11	143	1.1+	0.8+				

1997 EP = 1997 EA₈ = 1999 RE₄₉Id. A. Doppler (d, *MPC* 31609), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 23.25094 (2000.0)			Williams		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.17838893	ω 319.90860	+0.36196738	+0.92735238	
<i>a</i>	3.1252933	Ω 330.94273	-0.79741765	+0.25532714	
<i>e</i>	0.0592218	<i>i</i> 11.26219	-0.48280919	+0.27354273	
<i>P</i>	5.53	<i>H</i> 14.4	<i>G</i> 0.15	<i>U</i>	3

Residuals in seconds of arc

1997 02 08	566	0.6+	0.9-	1997 03 08	684	0.0	0.1+	1999 09 07	704	0.7+	0.1+
1997 02 08	566	0.6+	0.1-	1997 03 09	684	0.6-	0.0	1999 09 13	704	0.8-	0.5-
1997 02 08	566	0.6+	0.5-	1997 03 09	684	0.6-	0.2+	1999 09 13	704	0.5+	0.5-
1997 03 02	684	0.4-	0.1+	1999 07 14	704	1.6-	0.3+	1999 09 13	704	0.1-	0.3+
1997 03 02	684	0.3-	0.2-	1999 07 14	704	0.1+	0.8-	1999 09 13	704	0.3+	1.0+
1997 03 03	684	0.5-	0.3+	1999 07 14	704	0.5+	0.0	1999 09 13	704	0.6+	0.8+
1997 03 03	684	0.7-	0.1-	1999 09 07	691	0.0	0.3-	1999 09 14	691	0.4-	0.7-
1997 03 03	684	0.5+	0.1-	1999 09 07	691	0.0	0.2-	1999 09 14	691	0.2-	0.4-
1997 03 08	684	0.4+	0.5+	1999 09 07	704	0.1+	0.1+	1999 09 14	691	(2.3-	0.5-)
1997 03 08	684	0.1+	0.5+	1999 09 07	704	0.7+	0.4+				

1997 EV = 1999 TT₃₅

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 298.21242 (2000.0)			Williams		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.27498391	ω 66.28090	+0.11541117	-0.98522256	
<i>a</i>	2.3420591	Ω 18.48189	+0.70202143	-0.00923637	
<i>e</i>	0.2392022	<i>i</i> 23.52995	+0.70274189	+0.17102982	
<i>P</i>	3.58	<i>H</i> 15.4	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 01	599	0.2-	0.9+	1997 03 04	104	0.7-	0.9-	1997 03 27	658	0.6-	0.1+
1997 03 01	599	1.2-	0.0	1997 03 04	104	0.0	0.7-	1997 03 27	658	1.2-	0.5+
1997 03 01	599	0.9-	0.3+	1997 03 05	360	0.0	0.3+	1997 04 06	104	0.6+	0.1+
1997 03 02	587	0.0	0.1-	1997 03 05	360	0.0	0.2+	1997 04 06	104	0.2-	1.3-
1997 03 02	587	0.2+	1.1-	1997 03 05	360	0.2+	0.3+	1997 04 06	104	0.3+	0.5-
1997 03 03	596	0.7-	0.3+	1997 03 09	104	0.8+	1.3+	1999 10 04	704	0.2-	0.2+
1997 03 03	596	1.0+	1.4-	1997 03 09	104	1.1+	1.2+	1999 10 04	704	0.7+	0.4-
1997 03 03	596	2.3+	2.7-	1997 03 09	104	0.5+	1.4+	1999 10 04	704	2.3-	1.0-
1997 03 03	104	0.6+	0.3+	1997 03 10	104	1.0-	0.7+	1999 10 07	704	0.2+	0.0
1997 03 03	104	0.5+	0.2+	1997 03 10	104	0.4-	0.7+	1999 10 07	704	0.6+	0.4+
1997 03 03	104	0.3-	0.2-	1997 03 10	104	0.3-	1.0+	1999 10 07	704	0.4+	0.3+
1997 03 04	360	0.4-	0.2-	1997 03 13	104	0.9+	0.1+	1999 10 07	704	0.7+	0.3+
1997 03 04	360	0.3-	0.3-	1997 03 13	104	0.7+	0.4+	1999 10 07	704	0.0	0.2+
1997 03 04	360	0.1-	0.1-	1997 03 13	104	0.6+	0.2+				
1997 03 04	104	1.3-	1.1-	1997 03 27	658	0.8-	0.2+				

1997 EZ₃ = 1999 TZ₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 97.26919 (2000.0)			Williams		
			<i>P</i>	<i>Q</i>	
<i>n</i>	0.17342127	ω 244.74497	-0.43073503	+0.90247838	
<i>a</i>	3.1846947	Ω 359.74011	-0.79935329	-0.38168670	
<i>e</i>	0.0921065	<i>i</i> 4.21001	-0.41892918	-0.19961974	
<i>P</i>	5.68	<i>H</i> 14.5	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 02	691	0.3+	0.1+	1997 03 09	691	0.4-	0.0	1997 04 12	691	0.0	0.1-
1997 03 02	691	0.5+	0.2+	1997 03 09	691	0.4-	0.1+	1999 10 13	595	0.7-	1.5-
1997 03 02	691	0.0	0.2+	1997 03 14	691	0.3-	0.0	1999 10 13	595	1.3+	0.4-
1997 03 07	691	0.3+	0.1-	1997 03 14	691	0.0	0.2-	1999 10 13	595	0.4-	0.1+
1997 03 07	691	0.5+	0.1+	1997 03 14	691	0.2-	0.4-	1999 10 14	595	0.6-	0.7-
1997 03 07	691	0.2+	0.2-	1997 04 12	691	0.0	0.2+	1999 10 14	595	0.2+	1.3+
1997 03 09	691	0.7-	0.0	1997 04 12	691	0.2+	0.0	1999 10 14	595	0.2+	1.0+

1997 EG₇ = 1999 RS₁₉₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	327.77018		(2000.0)		P		Q
<i>n</i>	0.23609253	ω	64.74576	+0.90054622			-0.39349949
<i>a</i>	2.5926738	Ω	317.73954	+0.22833490			+0.78992223
<i>e</i>	0.2175213	<i>i</i>	15.95544	+0.36997255			+0.47029887
<i>P</i>	4.17	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 03 03	691	0.2+	0.3-	1999 09 08	704	0.1-	0.9-	1999 09 09	704	0.1+	0.0
1997 03 03	691	0.3-	0.1-	1999 09 08	704	0.3+	0.1-	1999 09 09	704	0.4-	0.2-
1997 03 03	691	0.2-	0.1-	1999 09 09	704	0.8+	0.8+	1999 09 16	704	0.6-	0.0
1997 03 08	691	0.1+	0.4-	1999 09 09	704	0.6-	0.3+	1999 09 16	704	0.7-	0.3-
1997 03 08	691	0.1-	0.1+	1999 09 09	704	0.1+	0.2-	1999 09 16	704	0.8-	0.0
1997 03 08	691	0.1+	0.1-	1999 09 09	704	0.1-	0.1-	1999 09 16	704	1.1-	0.1-
1997 03 13	691	0.2-	0.2+	1999 09 09	704	1.5+	0.7+	1999 09 30	703	0.6-	0.2+
1997 03 13	691	0.1-	0.1-	1999 09 09	704	0.4+	0.1+	1999 09 30	703	0.8+	0.7+
1997 03 13	691	0.2+	0.3+	1999 09 09	704	0.3+	0.4+	1999 09 30	703	0.8-	0.8-
1999 09 05	703	0.5+	0.0	1999 09 09	704	0.2-	0.4-	1999 09 30	703	0.8+	0.3+
1999 09 05	703	0.3-	0.1-	1999 09 09	704	0.4+	0.4-	1999 10 07	703	0.2+	0.6+
1999 09 05	703	1.0-	0.2+	1999 09 09	704	0.2-	0.5+	1999 10 07	703	0.8+	0.3-
1999 09 05	703	1.4-	1.2+	1999 09 09	704	0.2+	0.0	1999 10 07	703	0.1-	0.3+
1999 09 08	704	0.5+	1.4-	1999 09 09	704	0.6+	0.0	1999 10 07	703	0.0	0.0
1999 09 08	704	0.5+	0.8-	1999 09 09	704	0.2+	0.6-				

1997 ET₇

Id. E. Colombini (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	74.41464		(2000.0)		P		Q
<i>n</i>	0.17544038	ω	287.74223	+0.12715851			+0.98936095
<i>a</i>	3.1602129	Ω	348.82913	-0.71414937			+0.04186884
<i>e</i>	0.2364804	<i>i</i>	21.39686	-0.68834685			+0.13932665
<i>P</i>	5.62	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 03 07	552	1.5+	1.9-	1997 03 11	552	0.2-	0.4+	1997 04 28	704	0.2+	0.0
1997 03 07	552	1.1+	1.8-	1997 03 15	552	0.4+	0.9+	1997 04 28	704	1.2-	0.1-
1997 03 07	552	0.5-	0.2+	1997 03 15	552	0.6-	0.9+	1997 04 29	704	0.5+	0.2+
1997 03 07	552	0.4-	0.1+	1997 03 15	552	0.5-	1.0+	1997 04 29	704	1.3+	0.0
1997 03 08	552	0.2-	0.5-	1997 04 03	552	0.3+	0.3+	1997 04 29	704	0.4+	0.8-
1997 03 08	552	0.2-	0.4-	1997 04 03	552	0.2-	0.2+	1997 04 29	704	0.9+	0.2+
1997 03 08	552	0.4-	0.3-	1997 04 09	552	0.1+	0.3+	1997 04 29	704	1.4-	0.2-
1997 03 10	552	0.1-	0.1+	1997 04 09	552	0.3-	0.7+	1999 10 06	552	0.2-	0.0
1997 03 10	552	0.5+	0.0	1997 04 12	552	0.4+	0.0	1999 10 06	552	0.4-	0.8+
1997 03 10	552	0.3+	0.0	1997 04 12	552	0.3+	0.3-	1999 10 08	552	0.1+	1.0-
1997 03 11	552	0.2-	0.3+	1997 04 28	704	1.0-	0.1-	1999 10 08	552	0.5+	0.2+
1997 03 11	552	0.1-	0.4+	1997 04 28	704	0.7-	0.0				

1997 EX₁₃ = 1999 TW₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	335.54760		(2000.0)		P		Q
<i>n</i>	0.26904617	ω	97.02397	+0.69957052			-0.71396390
<i>a</i>	2.3763925	Ω	308.53987	+0.63994045			+0.64421131
<i>e</i>	0.1591352	<i>i</i>	2.14445	+0.31792657			+0.27431247
<i>P</i>	3.66	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 04	566	0.3-	0.1-	1997 03 10	691	0.0	0.2-	1999 10 11	106	0.2+	1.4-
1997 02 04	566	0.1-	0.1+	1997 03 10	691	0.2+	0.1-	1999 10 11	106	0.5-	0.0
1997 02 04	566	0.1+	0.0	1997 03 10	691	0.4+	0.0	1999 10 11	106	0.5+	0.8+
1997 03 03	691	0.5+	0.2-	1997 03 11	691	0.7-	0.1+	1999 10 12	106	0.1-	0.4+
1997 03 03	691	0.4+	0.0	1997 03 11	691	0.5-	0.4+	1999 10 12	106	0.5+	0.4+
1997 03 03	691	0.5+	0.2-	1997 03 11	691	0.7-	0.2+	1999 10 12	106	0.5-	0.2-

1997 ED₂₅ = 1998 KX₄₀ = 1999 RK₁₈₅Id. A. Doppler (*MPC* 34201), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	346.02123		(2000.0)		P		Q
<i>n</i>	0.21255197	ω	269.27768	+0.99353305			+0.00036411
<i>a</i>	2.7807330	Ω	90.69679	+0.04468341			+0.91805048
<i>e</i>	0.0610104	<i>i</i>	6.52006	-0.10438135			+0.39646336
<i>P</i>	4.64	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 07	691	0.2-	0.2+	1998 05 24	704	0.1-	1.4-	1999 09 09	704	1.1-	1.5-
1997 03 07	691	0.4-	0.2+	1998 05 24	704	0.1+	0.6+	1999 09 13	704	0.1+	0.4+
1997 03 12	691	0.8+	0.1+	1998 05 24	704	(1.2-	2.3+)	1999 09 13	704	0.4+	0.5+
1997 03 12	691	0.6+	0.1+	1998 05 24	704	0.4+	1.9+	1999 09 13	704	0.3-	0.6-
1997 03 12	691	0.6+	0.1-	1999 09 04	703	0.5-	0.1-	1999 09 13	704	0.7-	0.4+
1997 03 13	691	0.5-	0.0	1999 09 04	703	0.1+	0.1-	1999 09 30	704	0.3-	0.4-
1997 03 13	691	0.3-	0.1-	1999 09 04	703	0.8+	1.4+	1999 09 30	704	0.6+	0.9+
1997 03 13	691	0.5-	0.1-	1999 09 04	703	0.6+	0.7+	1999 09 30	704	0.3-	0.3+
1998 05 22	704	0.7+	0.2+	1999 09 09	704	0.6+	0.6+	1999 09 30	704	0.1+	0.3-
1998 05 22	704	1.4-	0.1-	1999 09 09	704	0.1+	1.4-	1999 09 30	704	0.5-	0.3-
1998 05 22	704	0.7+	0.4-	1999 09 09	704	0.1+	0.2-				
1998 05 22	704	0.3-	0.7-	1999 09 09	704	(0.2+	2.6-)				

1997 EJ₃₄ = 1977 UZ₃ = 1999 RR₁₇₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	354.39829		(2000.0)		P		Q
<i>n</i>	0.22006604	ω	308.34667	+0.97104322			+0.23666612
<i>a</i>	2.7170692	Ω	37.99512	-0.19931577			+0.87782876
<i>e</i>	0.0087360	<i>i</i>	3.03770	-0.13171290			+0.41642024
<i>P</i>	4.48	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 10 18	675	0.3+	0.4-	1999 09 07	704	0.6+	0.3+	1999 09 14	704	1.3-	0.3+
1977 10 19	675	0.1+	0.3-	1999 09 07	704	0.2+	0.2-	1999 09 14	704	0.1-	0.0
1993 03 19	809	0.1+	0.3+	1999 09 07	704	0.5-	0.5-	1999 09 14	704	0.4+	0.1+
1997 03 04	704	0.1-	1.0+	1999 09 07	704	0.3+	0.2+	1999 09 30	704	0.6+	0.1-
1997 03 04	704	1.5-	1.6-	1999 09 09	704	0.7-	0.4-	1999 09 30	704	0.1-	0.2+
1997 03 05	704	0.6-	0.8+	1999 09 09	704	0.2-	1.0+	1999 09 30	704	0.1+	0.0
1997 03 05	704	1.8+	0.7+	1999 09 09	704	0.9+	2.0+	1999 09 30	704	1.7-	0.0
1997 03 06	704	0.7+	0.7+	1999 09 09	704	0.9+	0.8+	1999 09 30	704	0.3-	1.9-
1997 03 06	704	0.2+	0.2+	1999 09 14	704	0.8-	0.1+				
1999 09 07	704	0.1+	0.2+	1999 09 14	704	0.4+	0.1+				

1997 EL₃₆ = 1999 RZ₁₅₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	181.86282		(2000.0)		P		Q
<i>n</i>	0.21619181	ω	190.76786	-0.92605392			-0.36865113
<i>a</i>	2.7494335	Ω	327.23242	+0.35639167			-0.78389191
<i>e</i>	0.0970747	<i>i</i>	8.58031	+0.12413346			-0.49960966
<i>P</i>	4.56	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 02 06	910	0.4+	0.1-	1997 03 06	704	0.0	0.7+	1999 09 09	704	0.1+	0.4-
1997 02 06	910	0.3+	0.0	1999 09 07	704	0.4-	0.3+	1999 09 09	704	0.5+	0.4+
1997 02 07	910	0.4+	0.1-	1999 09 07	704	0.3+	0.6-	1999 09 09	704	0.8-	0.2-
1997 03 04	704	0.4-	0.7-	1999 09 07	704	0.4-	0.3+	1999 09 14	704	(2.4-	0.9+)
1997 03 04	704	0.1+	0.4-	1999 09 07	704	0.0	0.0	1999 09 14	704	0.2-	0.0
1997 03 05	704	0.3-	0.0	1999 09 07	704	0.3-	0.5+	1999 09 14	704	0.1-	0.7-
1997 03 05	704	0.3-	0.0	1999 09 09	704	0.1-	0.4+	1999 09 14	704	1.5+	0.2+
1997 03 06	704	0.1-	0.6+	1999 09 09	704	0.2-	0.2-				

1997 EM₃₆ = 1999 RX₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	281.42411		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.28414756	ω	318.50509	−0.29553136	−0.95376526
a	2.2914309	Ω	148.56999	+0.90182786	−0.29741773
e	0.1856645	i	6.02228	+0.31522648	−0.04329570
P	3.47	H	15.3	G 0.15	U 4

Residuals in seconds of arc

1997 02 01	691	0.1−	0.1+	1997 03 06	704	0.1+	0.1+	1999 09 17	120	0.4−	0.8−
1997 02 01	691	0.0	0.1+	1997 03 06	704	0.1−	0.2+	1999 09 29	120	0.2−	0.3+
1997 02 01	691	0.1−	0.2+	1999 09 15	120	0.4−	0.2+	1999 09 29	120	(2.6+	0.2−)
1997 02 11	691	0.1+	0.2−	1999 09 15	120	0.1−	0.7−	1999 09 29	120	1.3−	0.8+
1997 02 11	691	(2.9+	0.0)	1999 09 15	120	1.0+	0.2−	1999 09 30	703	1.0−	0.2+
1997 02 11	691	0.2−	0.1−	1999 09 15	120	1.6−	0.3+	1999 09 30	703	0.3−	0.7+
1997 03 04	704	0.5+	1.2+	1999 09 16	120	1.9+	0.2+	1999 09 30	703	0.3+	0.8+
1997 03 04	704	0.2+	0.2+	1999 09 16	120	0.5+	0.7+	1999 09 30	703	0.8+	0.8−
1997 03 05	704	0.3−	1.9−	1999 09 17	120	0.6+	1.0−	1999 10 02	120	1.1+	0.4−
1997 03 05	704	0.1−	0.0	1999 09 17	120	1.3−	0.1+	1999 10 02	120	0.7+	0.7−

1997 EJ₅₅ = 1999 RQ₇₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	156.43380		(2000.0)	P	Q
n	0.17368184	ω	184.44448	−0.99941402	+0.03420673
a	3.1815086	Ω	357.51481	−0.03046431	−0.90531820
e	0.1215406	i	1.62687	−0.01560583	−0.42335429
P	5.67	H	13.8	G 0.15	U 4

Residuals in seconds of arc

1997 03 08	809	0.6+	0.4+	1997 03 11	809	0.4−	0.2+	1999 09 03	691	0.1−	0.1−
1997 03 08	809	0.2+	0.4+	1997 03 11	809	0.9−	0.2−	1999 09 07	704	0.1−	1.1+
1997 03 08	809	0.1−	0.8+	1997 05 03	691	0.4+	0.3−	1999 09 07	704	0.9+	0.5−
1997 03 09	809	1.1+	0.1+	1997 05 03	691	0.4+	0.2−	1999 09 07	704	0.6−	1.0−
1997 03 09	809	1.2+	0.2+	1997 05 03	691	(2.3+	3.4+)	1999 09 14	704	0.4−	0.4+
1997 03 09	809	0.1−	0.3−	1997 05 09	691	0.3−	0.2+	1999 09 14	704	1.0+	0.1−
1997 03 10	809	(2.1−	0.4−)	1997 05 09	691	0.3−	0.1−	1999 09 14	704	1.5−	0.3+
1997 03 10	809	0.8−	0.6−	1997 05 09	691	0.3−	0.2−	1999 09 14	704	0.3+	0.5+
1997 03 10	809	0.5−	0.8−	1999 09 03	691	0.2+	0.0				
1997 03 11	809	0.1−	0.6+	1999 09 03	691	0.1+	0.2−				

1997 FU₁ = 1999 SR₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	357.18272		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17048752	ω	273.13801	+0.96423311	−0.05629214
a	3.2211256	Ω	90.19621	+0.15612790	+0.91029497
e	0.0930614	i	15.01136	−0.21419286	+0.41011494
P	5.78	H	13.6	G 0.15	U 4

Residuals in seconds of arc

1997 03 30	691	0.1−	0.1+	1997 04 14	691	1.3+	0.3+	1999 09 30	704	0.2+	0.0
1997 03 30	691	0.1−	0.0	1997 04 14	691	0.0	0.1−	1999 09 30	704	0.6+	0.7+
1997 03 30	691	0.0	0.2−	1997 04 16	691	0.4−	0.2−	1999 09 30	704	0.3−	0.6−
1997 04 07	691	0.3−	0.2−	1997 04 16	691	0.5−	0.1−	1999 10 01	704	1.5−	0.8+
1997 04 07	691	0.3+	0.3+	1997 04 16	691	0.3−	0.0	1999 10 01	704	0.8−	0.3−
1997 04 07	691	0.1−	0.0	1999 09 30	704	0.4−	0.2+	1999 10 01	704	0.3+	0.0
1997 04 14	691	0.1+	0.2+	1999 09 30	704	0.6+	0.7+	1999 10 01	704	1.2+	1.6−

1997 FB₃ = 1999 TF₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	144.49681		(2000.0)		P		Q
n	0.17968864	ω	6.31468		−0.91080131		+0.40886348
a	3.1102046	Ω	198.14972		−0.38635795		−0.89297267
e	0.0222692	i	10.58073		−0.14549399		−0.18822983
P	5.49	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1997 03 11	809	(0.5−	2.8+)	1997 04 05	704	1.6+	0.4−	1997 05 09	691	(1.6+	4.0+)
1997 03 11	809	0.5−	1.8+	1997 04 05	704	0.0	0.2+	1999 10 08	684	1.0+	0.3−
1997 03 11	809	(0.6−	2.3+)	1997 04 07	704	0.5−	0.4−	1999 10 08	684	0.2−	0.0
1997 03 31	704	0.6+	0.3−	1997 04 07	704	0.2−	0.4−	1999 10 09	684	0.6−	0.2−
1997 03 31	704	0.2+	0.1−	1997 04 27	691	0.4−	0.1+	1999 10 09	684	0.7−	0.3+
1997 04 03	704	0.4−	0.2−	1997 04 27	691	0.5−	0.0	1999 10 12	684	0.3+	0.1+
1997 04 03	704	0.0	0.3−	1997 04 27	691	0.6−	0.1−	1999 10 12	684	0.3+	0.0
1997 04 03	704	0.0	0.3−	1997 05 09	691	0.4+	1.5+				
1997 04 03	704	0.1+	0.9−	1997 05 09	691	(3.4+	3.0+)				

1997 FC₃ = 1999 RN₃₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	349.19963		(2000.0)	P	Q
n	0.19652854	ω	155.60409	+0.97090990	−0.23926533
a	2.9298966	Ω	218.24283	+0.21715074	+0.89617449
e	0.1344867	i	0.85876	+0.10089362	+0.37366214
P	5.02	H	13.9	G 0.15	U 4

Residuals in seconds of arc

1992 04 07	691	0.2−	0.4+	1997 04 05	704	0.2+	0.1+	1999 09 29	120	0.0	0.1+
1992 04 07	691	0.0	0.0	1997 04 07	704	0.2−	0.9+	1999 10 01	703	0.3−	0.5+
1992 04 07	691	0.1−	0.1−	1997 04 07	704	0.1−	0.3+	1999 10 01	703	0.6−	0.4+
1994 11 10	691	0.1+	0.3+	1999 09 10	120	0.6+	0.4+	1999 10 01	703	0.4−	0.6+
1994 11 10	691	0.1+	0.3+	1999 09 11	120	0.9+	0.9+	1999 10 01	703	0.0	0.7+
1994 11 10	691	0.3−	0.4+	1999 09 11	120	0.0	0.1−	1999 10 04	704	0.8−	0.3+
1997 03 11	809	1.8+	0.0	1999 09 11	120	0.2+	0.2+	1999 10 04	704	0.4−	0.0
1997 03 11	809	0.8+	0.0	1999 09 11	120	0.5+	0.2−	1999 10 04	704	0.2−	0.2−
1997 03 11	809	0.9+	0.4−	1999 09 12	120	1.4−	1.1+	1999 10 04	704	0.4−	0.0
1997 03 31	704	1.1+	0.5−	1999 09 12	120	0.3+	0.5−	1999 10 04	704	0.4−	0.8+
1997 03 31	704	(2.6+	0.1+)	1999 09 13	120	0.7+	0.4+	1999 10 07	704	0.1−	0.0
1997 04 03	704	0.3+	0.9+	1999 09 13	120	0.2+	0.5+	1999 10 07	704	0.0	0.1+
1997 04 03	704	0.4−	1.7+	1999 09 14	120	0.2+	0.1+	1999 10 07	704	0.5−	0.2+
1997 04 03	704	0.2+	1.9+	1999 09 14	120	0.2+	0.1−	1999 10 07	704	0.4−	0.2+
1997 04 03	704	0.7−	1.5+	1999 09 29	120	0.0	0.2−	1999 10 07	704	0.9−	0.3−
1997 04 05	704	0.3−	1.4+	1999 09 29	120	0.5+	0.2+				

1997 FG₃ = 1997 GL₁₉ = 1999 TL₅

Id. G. V. Williams (d, MPC 31295; unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	299.80223		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.22023761	ω	247.30086	+0.25661268	−0.96644335
a	2.7156579	Ω	187.85746	+0.91522975	+0.24687368
e	0.0757863	i	4.91492	+0.31065163	+0.07099745
P	4.48	H	14.5	G 0.15	U 5

Residuals in seconds of arc

1997 03 31

M.P.C. 36350

1997 04 07	704	0.5+	0.9+	1999 10 06	120	0.4−	1.0+	1999 10 16	120	0.1−	0.5+
1999 10 01	120	0.1−	0.2−	1999 10 06	120	(2.3+	0.3−)				
1999 10 01	120	0.5+	0.7−	1999 10 07	704	0.1+	0.6−				

1997 FK₃ = 1999 SQ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	347.07018		(2000.0)	P	Q		
<i>n</i>	0.21565851	ω	201.89468	+0.88575847	−0.46364752		
<i>a</i>	2.7539643	Ω	185.86557	+0.45093887	+0.87060806		
<i>e</i>	0.1135127	<i>i</i>	12.15361	+0.10993668	+0.16453745		
<i>P</i>	4.57	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 03 08	809	0.4−	0.2−	1997 03 31	704	0.8+	0.5+	1999 10 02	120	0.5+	1.0+
1992 04 04	691	0.3−	0.2−	1997 03 31	704	0.6+	0.8−	1999 10 02	120	0.4+	0.1+
1992 04 04	691	0.4+	0.0	1997 04 03	704	0.8+	1.4+	1999 10 04	703	0.3−	0.0
1992 04 04	691	0.3+	0.0	1997 04 03	704	0.5+	1.4+	1999 10 04	703	0.6+	0.0
1993 06 16	691	0.1+	0.6+	1997 04 05	704	0.4−	1.4+	1999 10 04	703	0.3+	0.0
1993 06 16	691	0.1−	0.1+	1997 04 05	704	1.5−	0.3+	1999 10 04	703	0.2−	0.1+
1993 06 16	691	0.1+	0.1+	1999 09 14	703	1.1−	0.5+	1999 10 07	704	0.2+	0.0
1997 03 10	809	(0.3+	3.5−)	1999 09 14	703	0.6−	0.1−	1999 10 07	704	0.2+	0.6+
1997 03 10	809	(0.1+	3.3−)	1999 09 14	703	0.5−	0.1−	1999 10 07	704	0.5+	0.4−
1997 03 10	809	(0.1−	2.8−)	1999 09 14	703	0.3−	0.5+	1999 10 07	704	0.2−	0.0
1997 03 11	809	(1.4+	4.1−)	1999 09 29	120	1.9−	0.4+	1999 10 07	704	0.4+	0.2−
1997 03 11	809	(0.0	2.6−)	1999 09 29	120	0.8+	1.3+				
1997 03 11	809	(0.6−	2.2−)	1999 09 29	120	0.3+	0.7+				

1997 FC₄ = 1999 RG₁₆₃

Id. M. E. Sansaturio, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	265.44600		(2000.0)	P	Q		
<i>n</i>	0.19329357	ω	260.04558	+0.08711341	−0.99607867		
<i>a</i>	2.9624960	Ω	185.03445	+0.96900476	+0.08832300		
<i>e</i>	0.0886980	<i>i</i>	10.13687	+0.23117318	+0.00513211		
<i>P</i>	5.10	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 10 08	691	0.1−	0.6+	1998 06 19	704	0.2−	1.0−	1999 09 09	704	0.1−	0.0
1994 10 08	691	0.0	0.1+	1998 06 19	704	0.0	0.5+	1999 09 09	704	0.9+	0.9+
1994 10 08	691	0.2−	0.4+	1998 06 19	704	0.0	0.4+	1999 09 09	704	1.6+	1.3+
1997 03 31	704	0.3+	1.2+	1998 06 19	704	0.2+	1.0−	1999 09 14	704	1.3−	1.0−
1997 03 31	704	1.2−	0.0	1999 09 07	704	0.0	0.7−	1999 09 14	704	0.9−	0.5−
1997 04 03	704	0.0	0.5+	1999 09 07	704	0.3+	0.0	1999 09 14	704	0.1−	0.1+
1997 04 03	704	0.2−	0.4−	1999 09 07	704	0.3+	0.0	1999 09 14	704	0.3−	0.7−
1997 04 05	704	0.5+	0.3−	1999 09 07	704	0.4+	0.2−	1999 09 14	704	0.3−	0.1−
1997 04 05	704	0.0	0.6−	1999 09 07	704	0.0	0.0	1999 10 02	704	0.2+	0.5+
1997 04 06	704	0.7−	0.9+	1999 09 08	699	0.6−	0.7+	1999 10 02	704	0.1−	0.6+
1997 04 06	704	1.0+	1.8+	1999 09 08	699	0.1−	0.6+	1999 10 02	704	0.3+	0.7+
1997 04 07	704	0.6+	0.1+	1999 09 08	699	0.8−	0.3−	1999 10 02	704	0.8+	0.6+
1997 04 07	704	0.4+	0.2−	1999 09 09	704	0.7−	0.4−				
1998 06 19	704	(0.2−	2.7−)	1999 09 09	704	0.1+	0.4−				

1997 FD₄ = 1998 RW₁₆

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	13.57353		(2000.0)	P	Q		
<i>n</i>	0.29183759	ω	244.98717	+0.40754842	−0.91318160		
<i>a</i>	2.2509986	Ω	180.96807	+0.87330331	+0.39036083		
<i>e</i>	0.0491891	<i>i</i>	6.49368	+0.26691872	+0.11712296		
<i>P</i>	3.38	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 31	704	1.0+	1.0−	1998 08 17	704	1.9−	0.3+	1998 08 27	327	0.5−	0.6−
1997 03 31	704	0.9+	0.1+	1998 08 17	704	0.4+	0.0	1998 08 27	327	0.2−	0.4−
1997 04 03	704	0.5+	0.5−	1998 08 17	704	0.3+	0.8−	1998 09 14	704	1.2+	1.5−

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1997 04 03	704	0.1−	0.2+	1998 08 17	704	0.1+	1.8−	1998 09 14	704	1.3+	0.0
1997 04 05	704	1.0−	0.2−	1998 08 23	704	1.1+	0.1−	1998 09 14	704	0.5+	1.4+
1997 04 05	704	0.1+	0.7+	1998 08 23	704	(2.4−	0.9+)	1998 09 14	704	(3.1+	0.6+)
1997 04 06	704	0.9−	0.6+	1998 08 23	704	1.0−	0.1+	1998 09 14	704	(2.9+	0.3+)
1997 04 06	704	0.6−	0.2−	1998 08 23	704	(5.1−	0.7−)	1998 09 18	704	1.8−	1.3+
1998 07 29	327	0.4+	0.2+	1998 08 26	699	0.4−	0.0	1998 09 18	704	1.8+	0.4−
1998 07 29	327	0.5+	1.3+	1998 08 26	699	0.3+	0.9+	1998 09 18	704	(2.4−	1.1+)
1998 07 29	327	0.2−	0.6+	1998 08 26	699	0.0	0.2−	1998 09 18	704	0.4−	0.2+
1998 08 17	704	0.2+	0.6+	1998 08 27	327	0.3−	0.7−	1998 09 18	704	1.3−	0.6−

1997 FE₄ = 1999 RO₁₇₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Doppler			
<i>M</i>	169.18597		(2000.0)	P	Q		
<i>n</i>	0.17831463	ω	110.13111	−0.99440415	−0.09824897		
<i>a</i>	3.1261614	Ω	64.24713	+0.07342938	−0.90704002		
<i>e</i>	0.1062511	<i>i</i>	2.47070	+0.07595067	−0.40942099		
<i>P</i>	5.53	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1997 03 31	704	0.5−	0.2+	1997 04 06	704	0.6−	0.0	1999 09 09	704	0.9+	1.0−
1997 03 31	704	0.1+	0.5−	1997 04 06	704	0.2+	0.1+	1999 09 14	704	0.8−	0.4+
1997 04 03	704	0.0	0.1+	1997 04 07	704	0.1+	0.4+	1999 09 14	704	0.3−	1.2+
1997 04 03	704	0.4+	0.4+	1997 04 07	704	0.5−	0.5+	1999 09 14	704	0.5+	0.2−
1997 04 05	704	0.1+	0.0	1999 09 09	704	0.4−	0.0				
1997 04 05	704	0.8+	1.0−	1999 09 09	704	0.1+	0.4−				

1997 FJ₄ = 1999 UL

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	102.28569		(2000.0)	P	Q		
<i>n</i>	0.20158603	ω	306.13916	−0.05341024	+0.99849342		
<i>a</i>	2.8806849	Ω	320.79340	−0.90966102	−0.05384714		
<i>e</i>	0.0048760	<i>i</i>	1.14029	−0.41190312	−0.01055377		
<i>P</i>	4.89	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 10 09	691	0.1+	0.1+	1997 04 07	704	1.5+	1.5+	1999 10 06	704	0.3+	0.1+
1994 10 09	691	0.3−	0.1−	1997 04 07	704	0.7+	0.9+	1999 10 06	704	0.3+	0.4+
1994 10 09	691	0.1+	0.2+	1997 04 29	360	0.5−	0.1+	1999 10 07	704	0.6+	0.0
1997 03 29	327	1.6−	0.3+	1997 04 29	360	0.3−	0.0	1999 10 07	704	0.3+	0.9+
1997 03 29	327	1.3−	1.3+	1997 04 29	360	0.2−	0.3+	1999 10 07	704	0.2−	0.6+
1997 03 29	327	0.7−	1.2+	1998 06 26	704	1.3−	1.2+	1999 10 07	704	0.5+	0.4+
1997 03 31	704	0.0	1.5+	1998 06 26	704	1.8+	1.0+	1999 10 07	704	0.3−	0.5+
1997 03 31	704	0.1+	0.5−	1998 06 26	704	0.3+	0.7+	1999 10 16	120	0.4−	1.1+
1997 04 03	704	(2.5+	0.6−)	1998 06 26	704	0.9−	1.8−	1999 10 16	120	0.5−	0.7+
1997 04 03	704	0.8+	0.2−	1999 10 02	703	(2.2−	2.0+)	1999 10 17	120	0.6−	2.0+
1997 04 05	704	1.5+	0.8−	1999 10 02	703	0.5−	1.7+	1999 10 17	120	0.4−	0.8+
1997 04 05	704	1.0+	0.2+	1999 10 02	703	0.1+	0.1+	1999 10 19	120	0.8−	1.1−
1997 04 05	704	0.6+	0.1−	1999 10 02	703	1.0−	1.4+	1999 10 19	120	0.3+	0.6+
1997 04 05	704	1.0+	1.0+	1999 10 06	704	0.4+	0.0	1999 10 19	120	0.2−	0.3−
1997 04 06	704	0.3+	1.1+	1999 10 06	704	0.2+	0.0	1999 10 19	120	1.8−	1.5−
1997 04 06	704	0.6+	0.6+	1999 10 06	704	0.2+	0.1+				

1997 GK₈ = 1999 TC₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	159.34699		(2000.0)	P	Q		
<i>n</i>	0.17897294	ω	213.86099	−0.87384357	+0.48620298		
<i>a</i>	3.1184908	Ω	355.22899	−0.44053366	−0.79350645		
<i>e</i>	0.1028155	<i>i</i>	1.39097	−0.20573649	−0.36599752		
<i>P</i>	5.51	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5

1999 OCT. 26

1997 04 08	704	0.3−	0.6+	1999 10 06	704	0.1−	0.3+	1999 10 10	159	0.7+	1.2−
1997 04 08	704	0.6−	0.3+	1999 10 06	704	0.5−	0.2+	1999 10 10	159	(2.3+	0.1+)
1997 04 30	704	0.1−	0.3−	1999 10 06	704	0.3−	0.4+	1999 10 10	159	1.6−	0.2+
1997 04 30	704	0.1+	0.0	1999 10 06	704	0.3−	0.2+	1999 10 11	159	1.1−	0.4+
1997 04 30	704	0.2−	0.2+	1999 10 06	704	0.4−	0.5+	1999 10 11	159	0.9−	0.1−
1997 04 30	704	0.2−	0.4−	1999 10 07	159	0.5+	0.2−	1999 10 11	159	0.5−	1.4+
1997 04 30	704	0.6−	0.0	1999 10 07	159	0.2+	0.0	1999 10 11	159	0.3−	0.5+
1997 05 01	704	0.0	0.2+	1999 10 07	159	0.5+	0.2+	1999 10 11	159	1.4+	0.8−
1997 05 01	704	0.7+	0.3−	1999 10 07	159	0.1+	0.1−	1999 10 11	159	0.7+	0.8−
1997 05 01	704	0.2−	0.2+	1999 10 08	159	0.8−	0.1+	1999 10 11	159	0.2+	0.2−
1997 05 01	704	0.1+	0.1+	1999 10 08	159	0.4−	0.3+	1999 10 11	159	1.1+	0.9−
1997 05 01	704	0.2+	0.3−	1999 10 08	159	0.2−	0.3−	1999 10 11	159	1.1−	0.5+
1997 05 05	704	0.0	0.2−	1999 10 08	159	0.7+	0.1+				

1997 GF₉ = 1999 TJ₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	256.54628			<i>P</i>		<i>Q</i>	
<i>n</i>	0.23159394	ω	282.85217	−0.57981693	−0.80958660		
<i>a</i>	2.6261403	Ω	203.32459	+0.80800423	−0.55695013		
<i>e</i>	0.1019309	<i>i</i>	13.36941	+0.10460157	−0.18540790		
<i>P</i>	4.26	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 04 03	704	1.4+	0.1−	1997 04 10	910	0.3+	0.1−	1999 10 04	691	0.0	0.6−
1997 04 03	704	0.6+	0.4+	1997 04 10	910	0.1−	0.1+	1999 10 04	691	0.0	0.5−
1997 04 05	704	(2.6+	0.6−)	1997 04 10	910	0.1+	0.1+	1999 10 04	691	0.2+	0.7−
1997 04 05	704	1.4+	1.0−	1997 05 05	691	0.4−	0.1−	1999 10 14	595	0.6−	0.3+
1997 04 06	704	0.6+	0.5+	1997 05 05	691	0.3−	0.1−	1999 10 14	595	0.4−	0.3+
1997 04 06	704	0.5+	0.6−	1997 05 05	691	0.3−	0.2+	1999 10 19	595	0.5+	0.7+
1997 04 07	566	0.7−	0.0	1997 05 08	691	0.5−	0.4+	1999 10 20	595	0.3+	0.5+
1997 04 07	566	0.4−	0.3−	1997 05 08	691	0.6−	0.5+				
1997 04 07	566	1.3−	0.1−	1997 05 08	691	0.4−	0.4+				

1997 GM₁₁ = 1999 TZ₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	32.22304			<i>P</i>		<i>Q</i>	
<i>n</i>	0.18135688	ω	318.97581	+0.80524242	+0.59280485		
<i>a</i>	3.0911022	Ω	4.72266	−0.49475206	+0.68374636		
<i>e</i>	0.0505322	<i>i</i>	9.03195	−0.32681040	+0.42552712		
<i>P</i>	5.43	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 03 13	809	0.6+	0.8−	1997 04 06	704	0.6−	0.2−	1999 10 04	704	0.2+	1.2+
1997 03 13	809	0.8−	0.2−	1997 04 06	704	0.6−	0.5+	1999 10 04	704	0.1−	1.2+
1997 03 13	809	0.3−	0.3−	1997 04 07	704	0.9−	1.0−	1999 10 06	704	0.1−	0.1−
1997 03 31	704	0.9+	0.1−	1997 04 07	704	0.2−	0.9+	1999 10 06	704	0.1+	0.9−
1997 03 31	704	0.5+	0.4−	1999 10 04	704	0.6+	0.1+	1999 10 06	704	0.1+	1.0−
1997 04 03	704	0.5+	0.0	1999 10 04	704	0.2−	0.5−	1999 10 06	704	0.0	0.8−
1997 04 03	704	0.5+	0.7+	1999 10 04	704	0.1−	0.0				

1997 GE₂₀ = 1999 RN₈₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	267.64197			<i>P</i>		<i>Q</i>	
<i>n</i>	0.19617396	ω	281.07807	−0.00439740	−0.99996260		
<i>a</i>	2.9334261	Ω	169.16558	+0.93224566	−0.00679390		
<i>e</i>	0.0634890	<i>i</i>	2.27065	+0.36179924	+0.00535202		
<i>P</i>	5.02	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 04 07	691	0.0	0.5−	1997 04 11	704	0.6+	0.3+	1999 09 07	704	0.6−	0.7+
1992 04 07	691	0.1−	0.4−	1997 04 11	704	0.6+	0.6+	1999 09 07	704	0.2−	0.8−
1992 04 07	691	0.2−	0.1−	1999 08 22	703	0.5+	0.8−	1999 09 07	704	0.4+	0.2−
1997 04 03	704	0.4−	0.2−	1999 08 22	703	0.9+	0.7+	1999 09 14	704	0.6+	0.4−
1997 04 03	704	0.1−	0.0	1999 08 22	703	0.4−	1.0+	1999 09 14	704	0.4−	0.0

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1997 04 03	704	0.5−	0.2+	1999 08 22	703	0.4−	0.3+	1999 09 14	704	0.4+	0.9−
1997 04 03	704	0.0	0.5+	1999 09 04	699	0.8−	0.2+	1999 09 14	704	0.7+	0.3−
1997 04 05	704	0.6−	0.3−	1999 09 04	699	0.7+	0.9+	1999 09 14	704	0.1+	0.3−
1997 04 05	704	0.9+	0.7+	1999 09 04	699	0.9+	0.0	1999 10 07	704	0.5−	1.6+
1997 04 07	704	0.2+	0.7−	1999 09 07	704	0.2+	0.0	1999 10 07	704	0.9−	0.7−
1997 04 07	704	0.4−	0.2−	1999 09 07	704	0.8−	0.0	1999 10 07	704	0.5−	0.8−

1997 GL₂₁ = 1999 TG₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	300.05365			<i>P</i>		<i>Q</i>	
<i>n</i>	0.19450829	ω	81.43399	+0.16426593	−0.98641601		
<i>a</i>	2.9501492	Ω	359.11112	+0.89450598	+0.14913232		
<i>e</i>	0.0236280	<i>i</i>	1.48694	+0.41578332	+0.06886949		
<i>P</i>	5.07	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 04 02	704	0.3+	0.6−	1997 04 30	704	0.1−	0.0	1997 05 05	704	0.4−	0.1+
1997 04 02	704	0.7+	0.1+	1997 05 01	704	0.6+	0.1−	1997 05 05	704	0.8−	0.9−
1997 04 02	704	0.5−	1.0−	1997 05 01	704	0.2+	0.1+	1997 05 05	704	0.0	0.5+
1997 04 02	704	0.3−	0.9+	1997 05 01	704	0.3+	0.1−	1999 10 03	704	0.9+	0.6+
1997 04 06	704	0.0	0.1+	1997 05 01	704	0.3+	0.0	1999 10 03	704	0.1+	0.6+
1997 04 06	704	0.8−	0.3+	1997 05 05	704	0.0	0.0	1999 10 03	704	0.6−	0.2−
1997 04 08	704	0.5+	0.9+	1997 05 05	704	0.1−	0.1−	1999 10 03	704	0.9−	0.9−
1997 04 08	704	0.3+	1.1+	1997 05 05	704	0.6−	0.1−	1999 10 06	704	0.1+	0.3+
1997 04 30	704	0.1+	0.3−	1997 05 05	704	0.1+	0.1+	1999 10 06	704	0.2+	0.1−
1997 04 30	704	0.5+	0.0	1997 05 05	704	0.4−	0.2−	1999 10 06	704	0.1+	0.1+
1997 04 30	704	0.1+	0.2−	1997 05 05	704	0.1−	0.2+	1999 10 06	704	0.1+	0.3+
1997 04 30	704	0.2+	0.5+	1997 05 05	704	0.1+	0.6−	1999 10 06	704	0.3−	0.2+

1997 GN₂₂ = 1999 TB₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	210.05425			<i>P</i>		<i>Q</i>	
<i>n</i>	0.19513312	ω	235.40464	−0.99049048	−0.13709058		
<i>a</i>	2.9438481	Ω	296.71335	+0.13010194	−0.90585908		
<i>e</i>	0.0213202	<i>i</i>	0.74470	+0.04474487	−0.40078112		
<i>P</i>	5.05	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 04 02	704	0.7+	0.4−	1997 04 30	704	0.2+	0.2−	1997 05 05	704	0.3+	0.9+
1997 04 02	704	0.4+	1.3+	1997 05 01	704	0.2+	0.1+	1999 10 03	704	1.0+	0.9+
1997 04 06	704	0.2−	0.7−	1997 05 01	704	0.4−	0.1−	1999 10 03	704	0.4+	0.6+
1997 04 06	704	0.8−	1.0−	1997 05 01	704	0.5+	1.0−	1999 10 03	704	0.5−	0.2−
1997 04 08	704	0.2−	1.0+	1997 05 01	704	1.1−	0.5−	1999 10 06	704	0.0	0.2−
1997 04 08	704	0.0	0.1+	1997 05 01	704	0.1+	0.2−	1999 10 06	704	0.5−	0.1+
1997 04 30	704	0.6−	0.0	1997 05 05	704	0.0	0.3−	1999 10 06	704	0.1+	0.3−
1997 04 30	704	0.2+	0.3+	1997 05 05	704	0.1−	0.1−	1999 10 06	704	0.3−	0.4−
1997 04 30	704	0.6+	0.1−	1997 05 05	704	0.0	0.0	1999 10 06	704	0.2−	0.6−
1997 04 30	704	0.0	0.1+	1997 05 05	704	0.2+	0.8+				

1997 GT₂₂ = 1999 TV₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	105.92490			<i>P</i>		<i>Q</i>	
<i>n</i>	0.19073695	ω	239.98265	+0.18036399	+0.97593961		
<i>a</i>	2.9889099	Ω	40.99111	−0.82582021	+0.21791654		
<i>e</i>	0.0727259	<i>i</i>	10.76505	−0.53431247	−0.00736557		
<i>P</i>	5.17	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 04 06	704	0.0	0.1−	1997 05 01	704	0.0	0.0	1997 05 05	704	0.0	0.5−
1997 04 06	704	0.2−	0.0	1997 05 01	704	0.3−	0.3−	1997 05 05	704	0.7+	0.6+
1997 04 07	704	0.6−	0.5−	1997 05 01	704	0.3−	0.0	1999 10 03	704	0.1+	0.3−
1997 04 07	704	0.7+	1.0+	1997 05 01	704	0.1−	0.0	1999 10 03	704	0.7+	0.6+
1997 04 08	704	0.2+	0.3+	1997 05 05	704	2.1−	0.3+	1999 10 03	704	0.5+	1.2−
1997 04 08	704	0.6−	0.2−	1997 05 05	704	0.1+	0.1+	1999 10 03	704	0.2−	0.4+
1997 04 30	704	0.0	0.2−	1997 05 05	704	0.4+	0.3−	1999 10 03	704	0.6−	0.1+

1997 04 30	704	0.1+	0.1−	1997 05 05	704	0.1+	0.4+	1999 10 06	704	0.9+	0.3−
1997 04 30	704	0.3+	0.1+	1997 05 05	704	0.2−	0.4−	1999 10 06	704	0.4+	0.4+
1997 04 30	704	0.5+	0.2−	1997 05 05	704	0.1+	0.1+	1999 10 06	704	0.4−	0.0
1997 04 30	704	0.2+	0.2+	1997 05 05	704	0.2+	0.6−	1999 10 06	704	0.7−	0.1+
1997 05 01	704	0.0	0.3−	1997 05 05	704	0.5+	0.4+	1999 10 06	704	0.5−	0.1−

1997 GQ₂₆ = 1999 RR₁₆₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	301.75871	(2000.0)		P	Q		
<i>n</i>	0.21061114	ω	228.64535	+0.60923835	−0.79294329		
<i>a</i>	2.7977903	Ω	183.84841	+0.75960679	+0.58658020		
<i>e</i>	0.1418820	<i>i</i>	7.13897	+0.22765358	+0.16481688		
<i>P</i>	4.68	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 03 03	809	0.5−	0.1−	1999 09 07	704	0.1−	0.2−	1999 09 14	704	0.1+	0.8−
1992 03 08	809	0.3+	0.8−	1999 09 09	704	0.1−	0.1+	1999 09 14	704	0.3−	0.2−
1997 04 07	691	0.4+	0.3+	1999 09 09	704	1.0−	0.6+	1999 09 14	704	0.3+	1.1−
1997 04 07	691	0.2+	0.1+	1999 09 09	704	0.2−	0.1−	1999 09 14	704	0.2−	0.4−
1997 04 07	691	0.1+	0.4+	1999 09 09	704	1.1+	0.6+	1999 09 14	704	0.0	0.2+
1997 04 13	691	0.7−	0.1+	1999 09 09	704	1.1+	0.6+	1999 09 14	704	0.1−	0.1+
1997 04 13	691	0.0	0.1+	1999 09 14	704	0.3−	1.0+	1999 09 14	704	0.1−	0.5+
1997 04 13	691	0.2−	0.0	1999 09 14	704	0.6+	1.0−	1999 09 14	704	0.2−	0.3−
1997 04 16	691	0.1+	0.5−	1999 09 14	704	0.4−	0.0	1999 09 14	704	1.0−	0.4−
1997 04 16	691	0.4−	0.7−	1999 09 14	704	0.4+	0.0	1999 09 14	704	0.1+	0.0
1997 04 16	691	0.3+	0.2−	1999 09 14	704	1.0+	0.6−	1999 09 14	704	0.2−	0.5+
1999 09 07	704	0.6+	0.3+	1999 09 14	704	0.5+	0.4−	1999 09 14	704	0.7−	0.6−
1999 09 07	704	0.2−	0.9+	1999 09 14	704	0.1−	0.2−				
1999 09 07	704	0.3−	0.2+	1999 09 14	704	0.1+	0.3−				

1997 HS₁ = 1999 PG₃

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	313.09179	(2000.0)		P	Q		
<i>n</i>	0.24111222	ω	211.63040	+0.57656357	−0.81702034		
<i>a</i>	2.5565634	Ω	203.16284	+0.75341110	+0.53505565		
<i>e</i>	0.3469274	<i>i</i>	1.05265	+0.31614264	+0.21492607		
<i>P</i>	4.09	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1997 04 28	691	0.1+	1.2+	1997 04 30	691	1.0+	0.3−	1999 08 11	684	0.0	1.4+
1997 04 28	691	0.3−	1.1+	1997 05 03	691	1.1−	0.8−	1999 08 12	684	0.4−	1.3−
1997 04 28	691	0.1−	1.6+	1997 05 03	691	1.0−	1.2−	1999 08 12	684	0.2−	1.2−
1997 04 30	691	1.0+	0.1−	1997 05 03	691	1.0−	1.1−				
1997 04 30	691	1.4+	0.5−	1999 08 11	684	0.6+	1.2+				

1997 HY₆ = 1999 TD₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	92.50604	(2000.0)		P	Q		
<i>n</i>	0.18150000	ω	226.15265	+0.14645363	+0.97916794		
<i>a</i>	3.0894770	Ω	52.79203	−0.84937661	+0.19735224		
<i>e</i>	0.0226046	<i>i</i>	10.17136	−0.50706085	−0.04777271		
<i>P</i>	5.43	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 04 02	704	0.4−	0.1+	1997 05 01	704	0.0	0.1−	1999 10 07	704	0.5+	0.7+
1997 04 02	704	0.3−	0.7+	1997 05 01	704	0.2+	0.1+	1999 10 07	704	0.1+	0.6−
1997 04 30	704	0.2+	0.4−	1997 05 01	704	0.2+	0.3+	1999 10 15	327	0.1+	0.6−
1997 04 30	704	0.0	0.1−	1997 05 26	910	0.3−	0.4+	1999 10 15	327	0.4−	1.0−
1997 04 30	704	0.3+	0.1−	1997 05 26	910	0.5−	0.1+	1999 10 15	327	0.3−	0.3−
1997 04 30	704	0.1+	0.1+	1997 05 26	910	0.2−	0.4+	1999 10 18	327	0.3+	0.2+
1997 04 30	704	0.2+	1.1−	1999 10 07	704	0.8−	0.5+	1999 10 18	327	0.1+	0.1−
1997 05 01	704	0.4+	0.3−	1999 10 07	704	0.0	0.8+	1999 10 18	327	0.2−	0.0
1997 05 01	704	0.0	0.1−	1999 10 07	704	0.7+	0.3+				

1997 HP₁₁ = 1999 TQ₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	309.37047	(2000.0)		P	Q		
<i>n</i>	0.19695745	ω	104.10913	+0.31021169	−0.95057039		
<i>a</i>	2.9256415	Ω	327.80875	+0.86208526	+0.28730272		
<i>e</i>	0.0821727	<i>i</i>	1.46157	+0.40072149	+0.11778407		
<i>P</i>	5.00	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 04 08	704	0.4+	0.1−	1997 05 01	704	0.4−	0.7+	1999 10 07	704	0.4−	0.8+
1997 04 08	704	0.1−	0.7+	1997 05 01	704	0.3+	0.1−	1999 10 08	120	0.3+	0.2−
1997 04 30	704	0.3+	0.0	1997 05 05	704	0.1−	0.3−	1999 10 08	120	0.0	0.5−
1997 04 30	704	0.7−	0.0	1997 05 05	704	0.5+	0.3−	1999 10 09	120	0.1+	1.5−
1997 04 30	704	0.7−	0.1−	1997 05 05	704	0.3+	0.2−	1999 10 10	120	0.4+	0.1+
1997 04 30	704	0.0	0.0	1997 05 05	704	0.4+	0.1+	1999 10 12	691	0.1+	0.0
1997 04 30	704	0.0	0.1−	1997 05 05	704	0.3+	0.7−	1999 10 12	691	0.1+	0.1+
1997 05 01	704	0.1+	0.2+	1999 10 06	704	0.0	0.2+	1999 10 12	691	0.1+	0.0
1997 05 01	704	0.4+	0.3+	1999 10 06	704	0.1−	0.4+	1999 10 12	595	0.8−	0.1−
1997 05 01	704	0.0	0.3+	1999 10 06	704	0.3+	0.2+	1999 10 12	595	0.8−	0.4−
1997 05 01	704	0.7−	0.0	1999 10 06	704	0.2−	0.3+	1999 10 13	595	0.2−	0.1−
1997 05 01	704	0.2−	0.1+	1999 10 06	704	0.1+	0.3+	1999 10 13	595	0.2−	0.2−
1997 05 01	704	0.2+	0.3−	1999 10 07	704	0.2−	0.7+	1999 10 14	691	0.0	0.0
1997 05 01	704	0.5−	0.2−	1999 10 07	704	0.1−	0.2+	1999 10 14	691	0.0	0.2+
1997 05 01	704	0.4+	0.2+	1999 10 07	704	1.6+	0.5−	1999 10 14	691	0.0	0.1+

1997 HK₁₆ = 1999 RY₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	346.07136	(2000.0)		P	Q		
<i>n</i>	0.19428914	ω	16.73262	+0.97250994	−0.23285814		
<i>a</i>	2.9523671	Ω	356.73203	+0.21109830	+0.88383780		
<i>e</i>	0.1110265	<i>i</i>	1.23672	+0.09829512	+0.40571892		
<i>P</i>	5.07	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 04 09	691	0.1−	0.1−	1999 09 06	120	0.7−	0.1+	1999 09 30	703	0.0	0.3+
1992 04 09	691	0.2−	0.4−	1999 09 06	120	0.5−	0.3−	1999 10 04	704	0.4+	0.1+
1992 04 09	691	0.0	0.1−	1999 09 06	120	0.7−	0.3+	1999 10 04	704	0.1+	0.2−
1997 03 10	809	0.2+	1.3−	1999 09 06	120	1.2+	0.8−	1999 10 04	704	(0.1−	2.6+)
1997 03 10	809	0.1−	1.6−	1999 09 06	120	1.2+	0.2+	1999 10 04	704	0.9−	0.3−
1997 03 10	809	(0.2−	3.3−)	1999 09 06	120	0.1+	0.1+	1999 10 04	704	0.0	1.0−
1997 03 11	809	0.6+	1.5−	1999 09 07	704	0.1−	0.3+	1999 10 06	704	0.2+	0.3−
1997 03 11	809	(1.2+	2.2−)	1999 09 07	704	0.3−	0.0	1999 10 06	704	0.3+	0.4−
1997 03 11	809	(0.2−	2.2−)	1999 09 07	704	0.0	0.3−	1999 10 06	704	0.1+	0.4−
1997 03 31	704	1.4+	1.0+	1999 09 07	704	0.2+	0.2−	1999 10 06	704	0.2+	0.6−
1997 03 31	704	1.4+	0.6+	1999 09 07	704	0.6−	0.2−	1999 10 06	704	0.0	0.7−
1997 04 30	691	1.3−	0.3+	1999 09 08	120	0.1+	0.2+	1999 10 07	703	0.1−	0.3+
1997 04 30	691	1.0−	0.3+	1999 09 08	120	0.8+	0.2−	1999 10 07	703	0.1−	0.2+
1997 04 30	691	1.0−	0.1+	1999 09 11	120	0.6−	0.1+	1999 10 07	703	0.1−	0.2+
1997 05 08	691	0.5−	0.4+	1999 09 11	120	0.4+	0.2+	1999 10 07	703	0.5−	0.2+
1997 05 08	691	0.2−	0.2+	1999 09 29	120	0.7−	0.2+	1999 10 07	704	0.4+	0.6+
1997 05 08	691	0.4−	0.1+	1999 09 29	120	0.0	0.1+	1999 10 07	704	0.9+	0.2−
1999 09 05	699	0.8−	0.0	1999 09 30	703	0.0	0.3+	1999 10 07	704	0.6+	0.3+
1999 09 05	699	0.3+	0.7−	1999 09 30	703	0.2−	0.1+	1999 10 07	704	0.5+	0.2+
1999 09 05	699	1.2−	0.1+	1999 09 30	703	0.4+	0.1+	1999 10 07	704	0.4+	0.2+

Residuals in seconds of arc

1997 05 03	809	0.0	0.8+	1999 09 14	120	0.7+	1.1-	1999 10 08	703	0.6-	0.3+
1997 05 03	809	1.2-	0.2-	1999 09 14	120	0.4+	0.0	1999 10 08	703	1.1-	0.5+
1997 05 03	809	1.1-	0.4+	1999 10 02	120	0.5-	0.2+	1999 10 08	703	0.2-	0.3+
1997 05 04	809	(1.7+	3.0+)	1999 10 02	120	1.2+	0.2+	1999 10 08	703	0.8-	0.1+
1997 05 04	809	(1.9+	2.8+)	1999 10 02	691	0.4-	0.1-	1999 10 09	691	0.1+	0.2+
1997 05 04	809	(1.9+	4.3+)	1999 10 02	691	0.3-	0.2-	1999 10 09	691	0.3+	0.3+
1997 05 07	704	0.5+	0.2+	1999 10 02	691	0.5-	0.2-	1999 10 09	691	0.1+	0.2+
1997 05 07	704	0.7+	0.5+	1999 10 03	704	0.9+	0.0	1999 10 10	120	1.0+	0.4-
1997 05 07	704	0.7+	0.4+	1999 10 03	704	0.9+	0.2+	1999 10 10	120	0.7+	0.3-
1997 05 07	704	0.6+	0.3+	1999 10 03	704	0.4-	0.4-	1999 10 10	120	0.2-	0.4+
1997 05 07	704	1.1+	0.4+	1999 10 03	704	0.6+	0.5-	1999 10 11	120	0.3+	0.8+
1999 09 12	120	0.3-	0.5-	1999 10 03	704	1.4-	0.2-	1999 10 11	120	0.1+	0.6+
1999 09 12	120	0.3-	0.5-	1999 10 07	704	0.3+	0.9+	1999 10 11	120	0.4+	0.5+
1999 09 13	120	1.5-	0.7-	1999 10 07	704	0.3+	1.3+	1999 10 13	120	0.9+	0.3+
1999 09 13	120	0.4-	0.5-	1999 10 07	704	0.2-	0.2+	1999 10 13	120	0.1-	0.4+
1999 09 13	120	0.9-	0.1-	1999 10 07	704	0.9-	0.4+				

1997 LH₉ = 1998 SA₁₁₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	155.72653		(2000.0)	P	Q
n	0.24323038	ω	101.05879	+0.25059866	+0.96808299
a	2.5416993	Ω	183.46168	-0.91180918	+0.23465545
e	0.0987665	i	3.75430	-0.32527577	+0.08804623
P	4.05	H	14.9	G 0.15	U 4

Residuals in seconds of arc

1994 10 08	691	0.6+	1.1-	1997 06 07	809	0.1+	0.0	1998 09 26	704	0.2+	0.3-
1994 10 08	691	0.2+	0.8-	1997 06 08	809	0.5-	0.2-	1998 09 26	704	0.6+	1.1+
1994 10 08	691	0.3+	1.3-	1997 06 08	809	0.8+	0.8-	1998 09 26	704	1.1+	0.1-
1997 05 04	809	0.7-	0.1+	1997 06 08	809	0.1-	0.2-	1998 09 27	704	0.5+	1.2+
1997 05 04	809	0.4-	0.3+	1998 09 25	327	1.1-	0.0	1998 09 27	704	0.9-	0.8-
1997 05 04	809	0.4-	0.1-	1998 09 25	327	1.8-	0.1+	1998 09 27	704	2.0+	1.4+
1997 06 07	809	0.7+	0.1+	1998 09 25	327	1.4-	0.3+	1998 09 27	704	0.8+	0.8+
1997 06 07	809	0.5+	0.2+	1998 09 26	704	0.4-	0.3-	1998 09 27	704	0.5-	0.8-

1997 UK₉

Id. K. Lawrence (1990 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	194.29452		(2000.0)		P	Q	
n	0.28735017	ω	169.65191		+0.81852805	-0.49253642	
a	2.2743733	Ω	224.21393		+0.49211499	+0.86671286	
e	0.2245648	i	25.08705		+0.29636915	-0.07884597	
P	3.43	H	15.6	G	0.15	U	3

Residuals in seconds of arc

1990 10 14	675	0.7+	0.1-	1990 11 18	675	0.3+	1.0+	1997 11 02	673	0.7+	0.5-
1990 10 14	675	0.1-	0.3-	1997 10 30	566	0.5-	0.3+	1997 11 06	424	0.1-	0.2+
1990 10 14	675	0.9-	0.7+	1997 10 30	566	0.7-	0.6+	1997 11 06	424	0.6-	0.5+
1990 10 14	675	0.1+	0.6-	1997 10 30	566	0.3-	0.3+	1997 11 06	424	0.5-	0.3+
1990 10 17	675	1.1-	0.5-	1997 10 31	673	0.4+	0.5-	1997 11 23	424	0.4+	0.4-
1990 10 17	675	0.4+	0.4-	1997 10 31	673	0.4+	0.5-	1997 11 23	424	0.1-	0.5-
1990 11 18	675	0.9+	0.9+	1997 11 02	673	0.8+	0.4-				

1997 WR₂ = 1992 GJ₇ = 1999 JY₃₉ = 1999 LK₃₂Id. G. V. Williams (*MPC* 34879), S. Nakano (*ibid.*) M. E. Sansaturio (*ibid.*; d, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	175.79604		(2000.0)	P	Q
n	0.28713948	ω	197.40667	+0.22242344	-0.97471099
a	2.2754857	Ω	239.74666	+0.89744769	+0.21334606
e	0.0482405	i	1.43246	+0.38094022	+0.06649767
P	3.43	H	14.8	G 0.15	U 1

Residuals in seconds of arc

1992 04 04	809	(3.5-	1.2-)	1997 12 04	704	0.7+	1.8-	1999 05 18	704	0.1-	0.2-
1992 04 04	809	(4.7-	0.3+)	1997 12 04	704	0.5-	0.6-	1999 05 18	704	1.3-	0.4+
1992 04 04	809	(6.6-	0.4+)	1997 12 04	704	(1.1+	3.3+)	1999 05 18	704	1.0+	0.7+
1992 04 23	691	0.4+	0.2+	1997 12 05	411	0.7+	0.5+	1999 05 18	704	0.0	1.4+
1992 04 23	691	0.3+	0.5+	1997 12 05	411	0.5+	0.1-	1999 05 18	704	0.5-	0.3+
1992 04 23	691	0.3+	0.0	1997 12 21	411	0.9+	0.7+	1999 05 19	704	0.2+	0.3-
1993 09 14	691	0.5-	0.4-	1997 12 21	411	0.1-	0.3+	1999 05 19	704	1.2-	1.3-
1993 09 14	691	0.2+	0.1+	1998 01 07	699	0.0	0.1+	1999 05 19	704	0.4-	0.4-
1993 09 14	691	0.3+	0.5-	1998 01 07	699	1.0-	0.5+	1999 05 19	703	0.0	0.4-
1995 02 03	399	1.8-	1.2+	1998 01 07	699	0.4+	0.4+	1999 05 19	703	0.3+	0.2-
1995 02 03	399	0.8+	1.4-	1999 05 10	704	0.2-	0.4-	1999 05 19	703	0.8+	0.1-
1997 11 23	411	0.2+	0.3+	1999 05 10	704	0.4+	0.1+	1999 05 19	703	0.5+	0.9+
1997 11 23	411	0.6-	0.8+	1999 05 10	704	0.5-	1.9-	1999 06 14	699	0.4+	0.7+
1997 11 24	411	0.5-	0.4+	1999 05 10	704	0.4+	1.6-	1999 06 14	699	0.7+	1.5+
1997 11 24	411	0.4-	0.0	1999 05 10	704	0.2+	0.7-	1999 06 15	704	0.2+	0.5+
1997 11 30	411	0.8-	0.5-	1999 05 13	704	0.9+	0.4-	1999 06 15	704	0.3-	0.1+
1997 11 30	411	0.1-	0.1-	1999 05 13	704	0.2-	1.0-	1999 06 15	704	0.1+	0.7+
1997 12 04	704	0.3+	0.3-	1999 05 13	704	0.9-	0.4-	1999 06 15	704	0.6-	0.4+
1997 12 04	704	0.7+	0.6-	1999 05 13	704	0.2+	0.1-	1999 06 15	704	0.7-	0.3+

1998 BP₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	236.30814		(2000.0)	P	Q
n	0.43566535	ω	186.45197	-0.92126910	-0.35135470
a	1.7233257	Ω	331.15788	+0.37050078	-0.66242646
e	0.2568532	i	20.22551	+0.11828952	-0.66162002
P	2.26	H	17.7	G 0.15	U 2

Residuals in seconds of arc

1998 01 28	566	0.1-	1.3-	1998 02 07	046	0.2+	0.5+	1998 03 03	422	0.5-	0.7+
1998 01 28	566	0.2-	0.9-	1998 02 07	468	0.3+	0.5+	1998 03 04	711	0.4-	0.7+
1998 01 28	566	0.8+	1.0-	1998 02 07	468	1.0+	1.1+	1998 03 04	711	0.4-	0.8+
1998 01 29	566	0.1+	0.3-	1998 02 09	118	0.1-	0.6+	1998 03 08	860	0.1+	1.0-
1998 01 29	566	0.3+	0.2-	1998 02 09	118	0.2-	0.7+	1998 03 08	860	0.4+	1.3-
1998 01 29	566	0.3+	0.1-	1998 02 10	046	0.9+	0.0	1998 03 08	860	0.2+	0.9-
1998 01 29	046	0.4-	0.2-	1998 02 10	046	0.9+	0.0	1998 03 08	422	0.6-	0.3-
1998 01 29	046	0.1-	0.2-	1998 02 10	046	0.8+	0.0	1998 03 08	422	0.3-	0.5+
1998 01 29	046	0.2-	0.1-	1998 02 18	422	0.2-	0.7+	1998 03 08	422	0.5+	0.3-
1998 01 30	734	0.3+	0.2+	1998 02 18	422	0.1-	0.7+	1998 03 13	422	0.1+	0.4+
1998 01 30	734	0.9-	0.5-	1998 02 18	422	0.2-	0.5+	1998 03 13	422	0.2-	0.7+
1998 01 30	734	0.5+	0.4-	1998 02 19	046	0.8-	0.0	1998 03 13	422	0.4-	0.1+
1998 01 30	900	0.3-	0.2+	1998 02 19	046	0.7-	0.2+	1998 03 19	422	0.7-	0.3+
1998 01 30	900	0.1+	0.4-	1998 02 19	046	0.1-	0.2-	1998 03 19	422	0.3-	0.1-
1998 01 30	587	0.7+	0.0	1998 02 20	422	0.1+	0.4+	1998 03 19	422	0.4-	0.1-
1998 01 30	587	0.2+	0.1+	1998 02 20	422	0.7-	0.0	1998 03 20	426	0.5-	0.0
1998 01 30	587	0.4+	1.2-	1998 02 20	422	0.8-	0.2+	1998 03 20	426	0.6-	0.2-
1998 01 31	046	0.9+	0.0	1998 02 20	426	0.8-	0.1-	1998 03 20	426	0.8-	0.0
1998 01 31	046	0.5+	0.4-	1998 02 20	426	1.0-	0.4-	1998 03 24	860	0.1+	0.9-
1998 01 31	046	0.1+	0.9-	1998 02 20	426	0.7-	0.1-	1998 03 24	860	0.6-	0.6-
1998 01 31	897	0.3+	0.1-	1998 02 20	426	0.8-	0.4-	1998 03 24	860	0.5-	0.6-
1998 01 31	897	0.1+	0.2-	1998 02 21	557	0.8-	0.4+	1998 03 26	422	0.8+	0.0
1998 01 31	897	0.7-	0.1-	1998 02 21	557	0.7-	0.4+	1998 03 26	422	0.3+	0.1-
1998 01 31	360	0.7+	0.3-	1998 02 21	557	0.6-	0.4+	1998 03 26	422	0.2+	0.1-
1998 01 31	360	0.4+	0.2-	1998 02 21	118	0.3-	0.5+	1998 03 28	426	0.7+	0.6-
1998 01 31	360	0.6+	0.3-	1998 02 21	118	0.9-	0.3+	1998 03 28	426	0.7+	0.4-
1998 02 01	118	0.8+	0.5-	1998 02 21	360	0.4-	0.4+	1998 03 28	426	0.8+	0.5-
1998 02 01	118	0.7+	0.5-	1998 02 21	360	0.5-	0.7+	1998 04 03	422	0.5+	0.0
1998 02 01	118	0.4+	0.4-	1998 02 21	360	0.4-	0.8+	1998 04 03	422	0.5+	0.3+

1998 02 01	422	0.6+	0.1+	1998 02 24	422	0.2+	0.8+	1998 04 05	426	0.4+	0.2-
1998 02 01	422	0.9+	0.4-	1998 02 24	422	0.1-	0.5+	1998 04 05	426	0.1+	0.3-
1998 02 01	422	0.8+	0.2-	1998 02 25	566	0.3+	0.5-	1998 04 05	426	0.7+	0.1+
1998 02 01	557	0.9+	0.2-	1998 02 25	566	0.6+	0.6-	1998 04 15	860	0.4+	1.3-
1998 02 01	557	0.5+	1.2+	1998 02 25	566	0.3+	0.5-	1998 04 15	860	(2.2+	1.7-)
1998 02 01	557	1.0+	0.6-	1998 02 25	426	0.4+	0.0	1998 04 20	860	1.1+	0.4+
1998 02 04	118	0.4+	0.8+	1998 02 25	426	0.3+	0.1+	1998 04 20	860	1.0+	0.2-
1998 02 04	118	0.5+	0.1+	1998 02 25	426	0.3+	0.0	1998 04 20	860	0.1-	0.1-
1998 02 04	360	0.4+	0.3-	1998 03 02	402	1.1-	1.4-	1999 09 25	693	0.1-	1.0-
1998 02 04	360	0.6+	0.4-	1998 03 02	402	1.0-	1.4-	1999 09 25	693	0.1-	0.6-
1998 02 04	360	0.7+	0.1-	1998 03 02	402	1.1-	1.5-	1999 09 25	693	0.1+	0.1+
1998 02 06	118	0.1-	0.5+	1998 03 02	360	0.3-	0.7+	1999 09 25	693	0.5+	1.0-
1998 02 06	118	0.2-	0.5+	1998 03 02	360	0.3-	0.5+	1999 10 23	697	0.1+	0.3-
1998 02 06	360	0.0	0.3+	1998 03 02	360	0.5-	0.3+	1999 10 24	697	0.3+	0.2-
1998 02 06	360	0.1-	0.2+	1998 03 03	711	0.6-	0.6+	1999 10 24	697	0.4+	0.2-
1998 02 06	360	0.0	0.0	1998 03 03	711	0.8-	0.7+	1999 10 24	697	0.4+	0.4-
1998 02 07	046	0.1+	0.6+	1998 03 03	422	0.5-	0.4+				
1998 02 07	046	0.3+	0.3+	1998 03 03	422	0.7-	0.5+				

1998 BQ₃₃ = 1999 SK₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	16.99168		(2000.0)		P	Q
n	0.27649962	ω	224.00885		+0.54757100	+0.83231473
a	2.3334922	Ω	79.37174		-0.74145826	+0.53033611
e	0.1559510	i	5.02741		-0.38782167	+0.16123213
P	3.56	H	14.4	G	0.15	U 3

Residuals in seconds of arc

1998 01 31	411	0.7-	0.0	1998 03 24	704	0.0	0.7-	1999 09 11	704	0.4-	0.1+
1998 01 31	411	0.7-	1.1+	1998 03 25	704	0.3-	0.2-	1999 09 11	704	0.1-	0.3-
1998 02 01	411	0.9+	0.2+	1998 03 25	704	0.4-	0.4-	1999 09 11	704	0.2-	0.3-
1998 02 01	411	0.2+	0.5-	1998 03 25	704	1.4+	1.2-	1999 09 11	704	0.0	0.8-
1998 02 04	411	0.2+	0.3-	1998 03 25	704	0.1-	1.3-	1999 09 11	704	0.1+	0.6-
1998 02 04	411	0.4+	0.5-	1998 03 25	704	0.5-	1.0-	1999 09 29	704	1.1+	1.3-
1998 02 23	411	1.4-	0.2+	1999 07 16	704	0.2-	1.6+	1999 09 29	704	0.3+	0.9+
1998 02 23	411	0.3-	1.1+	1999 07 16	704	1.1+	1.5+	1999 09 29	704	0.7-	0.9-
1998 02 27	566	0.3+	0.4+	1999 07 16	704	0.4+	0.4-	1999 09 29	704	(3.8-	1.1+)
1998 02 27	566	0.2+	0.2+	1999 09 07	699	0.1+	0.5-	1999 09 30	704	1.1+	0.1-
1998 02 27	566	0.1+	0.5+	1999 09 07	699	0.0	0.4-	1999 09 30	704	0.8-	0.1+
1998 03 06	411	0.3+	1.2+	1999 09 07	699	0.2-	0.3-	1999 09 30	704	0.3-	0.3+
1998 03 06	411	1.7-	1.1+	1999 09 08	703	0.1+	0.6-	1999 09 30	704	0.2-	0.4+
1998 03 24	704	0.7+	0.7+	1999 09 08	703	0.2-	0.4-	1999 09 30	704	0.2-	1.3+
1998 03 24	704	0.9+	0.9-	1999 09 08	703	0.1-	0.1+				
1998 03 24	704	0.1-	1.7-	1999 09 08	703	0.1-	0.3-				

1998 CM₁ = 1999 RB₄₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	260.72747		(2000.0)		$\mathbf{P}$		$\mathbf{Q}$
n	0.37549666	ω	108.76149		+0.19447778		-0.96368456
a	1.9028242	Ω	328.20406		+0.71705895		+0.26697558
e	0.0699608	i	20.32379		+0.66933165		-0.00600897
P	2.62	H	16.5	G	0.15	U	4

Residuals in seconds of arc

1998 02 06	327	0.0	0.2-	1998 02 17	327	0.2+	0.2+	1999 09 14	704	0.1+	0.3+
1998 02 06	327	0.2-	0.7-	1999 09 09	704	0.9+	0.9-	1999 09 14	704	0.3-	0.4-
1998 02 06	327	0.1-	0.2-	1999 09 09	704	0.1-	0.6-	1999 09 30	703	0.5+	0.1+
1998 02 07	327	0.1-	0.2-	1999 09 09	704	0.5-	0.4+	1999 09 30	703	0.8-	0.2+
1998 02 07	327	1.7+	1.0+	1999 09 09	704	0.2+	0.4+	1999 09 30	703	0.9-	0.9-
1998 02 07	327	1.0-	0.1+	1999 09 09	704	0.7-	0.8+	1999 09 30	703	0.7+	0.4+
1998 02 17	327	0.3-	0.5-	1999 09 14	704	0.5+	0.4+				
1998 02 17	327	0.1-	0.4+	1999 09 14	704	0.4+	0.3-				

1998 CE₂

Id. M. Tombelli (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	63.43700		(2000.0)		P		Q
n	0.29151161	ω	323.45686		-0.21398512		+0.97390809
a	2.2526764	Ω	294.07766		-0.87547971		-0.22553012
e	0.2473231	i	4.74898		-0.43329626		-0.02528245
P	3.38	H	15.3	G	0.15	U	5

Residuals in seconds of arc

1998 02 06	327	0.3-	0.4-	1998 02 14	104	0.2-	0.1+	1998 02 26	104	0.3-	0.1-
1998 02 06	327	0.3+	0.4-	1998 02 14	104	0.2+	0.5+	1998 02 26	104	0.4-	0.1-
1998 02 06	327	0.1+	0.2-	1998 02 15	104	0.1+	0.2-	1998 02 26	104	0.0	0.2-
1998 02 13	104	0.7+	0.3+	1998 02 15	104	0.6+	0.6-	1999 09 10	108	(2.9-	1.3+)
1998 02 13	104	0.2+	0.4+	1998 02 15	104	0.1+	0.7-	1999 09 10	108	0.6-	1.2+
1998 02 13	104	0.4-	0.7+	1998 02 17	104	0.9-	0.2-	1999 09 10	108	0.2+	0.6+
1998 02 13	104	0.6+	0.3+	1998 02 17	104	0.5-	0.0	1999 09 29	104	0.4-	1.3-
1998 02 13	104	1.3+	0.1+	1998 02 17	104	0.2-	0.2+	1999 09 29	104	1.0+	0.5-
1998 02 14	104	0.5-	0.1+	1998 02 20	104	0.1-	0.2+	1999 09 29	104	0.3-	0.4+
1998 02 14	104	0.4-	0.2+	1998 02 20	104	0.1-	0.2+	1999 09 29	104	0.1+	0.3-

1998 CX₂ = 1999 NM₄₇

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	151.09581		(2000.0)		P		Q
n	0.26448952	ω	352.21558		-0.80882300		-0.58574033
a	2.4036085	Ω	151.72761		+0.54527950		-0.78021070
e	0.0534520	i	6.31403		+0.22017180		-0.21949837
P	3.73	H	14.2	G	0.15	U	5

Residuals in seconds of arc

1998 02 06	809	2.3-	2.0-	1998 03 03	809	0.2+	0.5-	1999 07 13	704	0.4+	0.1+
1998 02 06	809	1.3-	1.8-	1998 03 03	809	0.4-	0.2-	1999 07 13	704	0.4+	0.4+
1998 02 06	809	1.9-	2.8-	1998 03 04	809	0.1-	0.3-	1999 07 13	704	0.0	0.5+
1998 02 07	809	2.5+	2.3+	1998 03 04	809	0.0	0.1+	1999 07 19	704	0.2-	0.1-
1998 02 07	809	1.7+	2.8+	1998 03 04	809	0.3+	0.3-	1999 07 19	704	0.2-	0.3-
1998 02 07	809	1.3+	1.8+	1999 07 13	704	0.1-	0.2+	1999 07 19	704	0.4-	0.4-
1998 03 03	809	0.0	0.9+	1999 07 13	704	0.2-	0.3+	1999 07 19	704	0.3+	0.8-

1998 CO₃ = 1972 RG₂ = 1982 PS = 1982 RP₃ = 1999 RH₁₇₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	22.30451		(2000.0)		P		Q
n	0.29097732	ω	313.83875		+0.55834133		+0.82951615
a	2.2554331	Ω	350.07956		-0.73869347		+0.49020068
e	0.2107271	i	4.18295		-0.37760683		+0.26759344
P	3.39	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1972 09 11	095	0.0	0.1+	1998 03 04	704	(2.4- 1.2-)	1999 09 30	699	0.3- 0.7+
1982 08 14	095	0.7+	0.7+	1998 03 04	704	(3.4- 0.7-)	1999 09 30	699	0.0 0.7+
1982 08 16	095	0.6+	1.1-	1998 03 04	704	(2.9- 0.9-)	1999 10 02	678	0.7+ 0.1+
1982 09 13	095	0.3-	1.8-	1999 07 16	704	0.1+ 0.7-	1999 10 02	678	0.5+ 0.1+
1997 12 07	910	1.2-	0.2-	1999 07 16	704	0.1- 0.7-	1999 10 02	678	0.8+ 0.0
1997 12 07	910	1.3-	0.0	1999 07 16	704	0.3- 0.7-	1999 10 02	691	0.3+ 0.0
1997 12 07	910	1.4-	0.4+	1999 07 16	704	0.2- 0.7-	1999 10 02	691	0.3+ 0.1-
1998 02 06	809	(0.3+ 2.5+)		1999 08 22	703	0.1+ 0.1+	1999 10 02	691	0.3+ 0.0
1998 02 06	809	(0.6+ 2.9+)		1999 08 22	703	0.1+ 0.7+	1999 10 02	704	0.6+ 0.6+
1998 02 06	809	(0.6+ 2.3+)		1999 08 22	703	0.2+ 0.7+	1999 10 02	704	0.3+ 0.6+
1998 02 07	809	(3.1+ 1.9+)		1999 08 22	703	0.1- 1.8+	1999 10 02	704	0.3+ 0.8+
1998 02 07	809	1.7+ 1.9+		1999 08 22	699	0.2+ 1.0+	1999 10 02	704	0.2+ 0.3+
1998 02 07	809	(1.5- 3.1+)		1999 08 22	699	0.4- 1.1+	1999 10 02	704	0.7+ 0.8+
1998 02 24	566	0.1- 0.4+		1999 08 22	699	0.1- 0.9+	1999 10 03	678	0.5+ 0.3+
1998 02 24	566	0.1+ 0.5+		1999 09 07	704	0.5- 0.9+	1999 10 03	678	0.4+ 0.1-

1999 OCT. 26

1998 02 24	566	0.1−	0.4+	1999 09 07	704	0.6−	0.1+	1999 10 06	704	1.1+	0.5−
1998 03 03	704	0.1+	1.0−	1999 09 07	704	1.0−	0.3+	1999 10 06	704	0.2+	0.8−
1998 03 03	809	(2.0+	3.0+)	1999 09 07	704	1.3−	0.1+	1999 10 06	704	0.3+	0.9−
1998 03 03	704	0.0	0.4+	1999 09 07	704	1.3−	0.1−	1999 10 06	704	0.2+	0.6−
1998 03 03	809	(2.5+	1.9+)	1999 09 09	704	0.3−	0.0	1999 10 06	704	0.3−	0.9−
1998 03 03	809	(1.3+	2.4+)	1999 09 09	704	0.7−	0.3−	1999 10 07	704	0.8+	0.3+
1998 03 03	704	1.1+	0.2−	1999 09 09	704	0.8−	0.0	1999 10 07	704	0.1+	0.2−
1998 03 03	704	0.4+	0.0	1999 09 09	704	1.0−	0.2−	1999 10 07	704	0.0	0.0
1998 03 03	704	0.6+	0.0	1999 09 09	704	0.7−	0.6−	1999 10 07	704	0.1+	0.3−
1998 03 04	809	(1.2+	3.4+)	1999 09 14	704	0.4−	0.5+	1999 10 07	704	1.3−	0.5−
1998 03 04	809	(1.8+	3.6+)	1999 09 14	704	0.5−	0.1+	1999 10 16	611	0.2+	0.9−
1998 03 04	809	(1.9+	4.0+)	1999 09 14	704	1.8+	0.5−	1999 10 16	611	0.5+	0.4−
1998 03 04	704	(2.1−	0.2−)	1999 09 14	704	1.2−	0.7−				
1998 03 04	704	(2.3−	0.2−)	1999 09 30	699	0.2−	0.6+				

1998 DT₇ = 1999 RF₁₅₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	80.85399		(2000.0)	P	Q						
<i>n</i>	0.28578146	ω	296.31754	−0.53423782	+0.84339293						
<i>a</i>	2.2826887	Ω	301.27350	−0.74973458	−0.50402085						
<i>e</i>	0.1504467	<i>i</i>	3.84114	−0.39049713	−0.18614873						
<i>P</i>	3.45	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1992 08 06	675	0.0	1.1−	1998 03 04	704	0.3−	1.1+	1999 09 09	704	0.2−	0.2+
1992 08 06	675	0.9+	1.0−	1998 03 04	704	0.1+	0.7+	1999 09 09	704	0.6−	0.7+
1998 02 23	566	0.5+	0.5−	1998 03 04	704	0.1−	0.2−	1999 09 09	704	0.5−	0.2−
1998 02 23	566	0.5+	0.4−	1998 03 04	704	0.4−	0.7−	1999 09 14	704	0.2+	1.3−
1998 02 23	566	0.8+	0.7−	1998 08 22	699	0.6+	0.8+	1999 09 14	704	0.7−	0.2+
1998 02 24	566	0.4−	0.6−	1999 08 22	699	0.4−	0.5+	1999 09 14	704	0.0	0.2+
1998 02 24	566	0.4−	0.5−	1999 08 22	699	0.6−	0.3+	1999 09 14	704	0.5−	0.4+
1998 02 24	566	0.7−	0.4−	1999 09 07	704	0.2+	0.2+	1999 09 14	704	0.1−	0.0
1998 03 03	704	0.2−	0.5+	1999 09 07	704	0.1−	0.0	1999 10 02	704	0.8+	0.0
1998 03 03	704	0.5−	0.9+	1999 09 07	704	0.2−	0.3+	1999 10 02	704	1.1+	0.3+
1998 03 03	704	0.3+	0.2+	1999 09 07	704	0.2−	0.7−	1999 10 02	704	0.5+	1.1−
1998 03 03	704	0.4+	1.3−	1999 09 07	704	0.2−	0.6−	1999 10 02	704	(2.4+	0.4−)
1998 03 03	704	0.0	0.2+	1999 09 09	704	0.4−	0.1+	1999 10 02	704	1.2+	0.1−
1998 03 04	704	0.0	0.3+	1999 09 09	704	0.1−	0.1+				

1998 DJ₁₅ = 1999 RO₅₀

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	123.59513		(2000.0)	P	Q						
<i>n</i>	0.28055857	ω	201.51547	−0.98368420	+0.17848899						
<i>a</i>	2.3109313	Ω	348.69599	−0.14370874	−0.85489518						
<i>e</i>	0.0670377	<i>i</i>	6.59674	−0.10822749	−0.48713027						
<i>P</i>	3.51	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1998 02 22	566	0.2+	1.4+	1998 03 04	704	0.7−	3.3−	1999 09 07	704	0.1−	0.8+
1998 02 22	566	0.9+	1.5+	1998 03 20	704	1.4+	0.2−	1999 09 07	704	0.1+	0.0
1998 02 22	566	0.6+	1.5+	1998 03 20	704	0.8+	0.4−	1999 09 07	704	0.0	0.3+
1998 02 27	566	1.2+	1.1−	1998 03 20	704	0.1−	0.2+	1999 09 07	704	0.0	0.6−
1998 02 27	566	1.1+	0.8−	1998 03 20	704	1.2+	0.0	1999 09 11	704	0.0	0.0
1998 02 27	566	1.4+	1.3−	1998 03 20	704	0.9+	1.0+	1999 09 11	704	0.7−	0.6−
1998 03 04	704	1.9−	0.3+	1998 03 22	704	4.0−	0.5−	1999 09 11	704	0.7+	0.1−
1998 03 04	704	1.9−	0.4+	1998 03 22	704	1.0+	0.3+	1999 09 11	704	0.0	0.1−
1998 03 04	704	1.9−	0.4−	1998 03 22	704	0.7+	0.9+				
1998 03 04	704	1.8−	0.1−	1998 03 22	704	0.9+	0.5+				

1998 DN₁₇ = 1996 RL₂₄

Id. M. E. Sansaturio

M.P.C. 36355

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	176.59352		(2000.0)	P	Q						
<i>n</i>	0.21893746	ω	256.36098	+0.49245682	−0.86842873						
<i>a</i>	2.7263985	Ω	163.75267	+0.85671709	+0.47202521						
<i>e</i>	0.1945692	<i>i</i>	11.88070	+0.15336921	+0.15173574						
<i>P</i>	4.50	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1996 09 02	358	(2.8−	1.2−)	1998 02 23	691	0.1−	0.1−	1999 05 08	703	0.2+	0.8−
1996 09 02	358	(2.5+	0.6+)	1998 02 28	691	0.3−	0.1+	1999 05 08	703	0.1+	0.7+
1996 09 03	358	1.2−	0.7+	1998 02 28	691	0.3−	0.2+	1999 05 08	703	0.2−	0.2−
1996 09 03	358	1.1+	0.5−	1998 03 03	691	0.2+	0.1+	1999 05 08	703	0.2−	0.3+
1998 02 23	691	0.0	0.1−	1998 03 03	691	0.3+	0.2+				
1998 02 23	691	0.1−	0.1−	1998 03 03	691	0.3+	0.0				

1998 DD₂₄ = 1999 RD₁₆₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	80.28838		(2000.0)	P	Q						
<i>n</i>	0.29574332	ω	145.38800	−0.49757292	+0.86307303						
<i>a</i>	2.2311362	Ω	94.63043	−0.81421614	−0.43022276						
<i>e</i>	0.1469054	<i>i</i>	4.99319	−0.29912081	−0.26460030						
<i>P</i>	3.33	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1998 01 25	566	0.6+	0.3−	1998 03 04	704	0.3+	0.5+	1999 09 10	704	0.3−	0.8+
1998 01 25	566	0.2+	0.4−	1998 03 20	327	0.5−	0.4+	1999 09 10	704	0.7−	0.4+
1998 01 25	566	0.3+	0.3−	1998 03 20	327	1.0−	1.0+	1999 09 10	704	0.9−	0.6+
1998 02 28	732	0.3−	0.6−	1998 03 20	327	0.2−	0.7+	1999 09 10	704	0.6+	0.0
1998 02 28	732	0.0	1.8−	1998 03 20	327	0.5−	0.6+	1999 09 13	704	0.6+	0.3−
1998 03 01	732	0.1−	1.3−	1999 08 12	699	0.1−	0.7+	1999 09 13	704	0.3−	0.3−
1998 03 01	732	0.9−	0.3+	1999 08 12	699	0.7+	0.7−	1999 09 13	704	0.0	0.6−
1998 03 01	732	1.3+	1.9−	1999 08 12	699	0.7−	0.1−	1999 09 13	704	0.1−	0.2+
1998 03 03	704	0.9−	1.2−	1999 09 08	703	1.7+	0.5−	1999 09 30	704	0.6+	0.5+
1998 03 03	704	0.3−	0.5+	1999 09 08	703	0.8+	0.4−	1999 09 30	704	0.1−	0.6−
1998 03 03	704	0.3+	0.4+	1999 09 08	703	0.7−	0.2−	1999 09 30	704	0.6+	0.5−
1998 03 03	704	1.7+	1.4+	1999 09 08	703	0.2+	0.6−	1999 10 04	703	1.1−	0.2+
1998 03 03	704	0.9+	1.0+	1999 09 09	704	0.6−	0.3−	1999 10 04	703	0.6−	0.3+
1998 03 04	704	1.3+	1.2+	1999 09 09	704	0.6−	0.4−	1999 10 04	703	0.3+	1.4+
1998 03 04	704	1.5−	0.4+	1999 09 09	704	0.5−	0.5+	1999 10 04	703	0.5−	0.1−
1998 03 04	704	1.5−	0.7−	1999 09 09	704	0.2+	0.4+				
1998 03 04	704	0.6+	0.6+	1999 09 09	704	1.1+	0.1+				

1998 DG₂₄ = 1999 RO₇₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.72508		(2000.0)	P	Q						
<i>n</i>	0.26877906	ω	117.73442	−0.14537984	+0.98763596						
<i>a</i>	2.3779667	Ω	143.75679	−0.93908027	−0.11908625						
<i>e</i>	0.1795656	<i>i</i>	5.69334	−0.31143692	−0.10194939						
<i>P</i>	3.67	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1992 10 02	691	0.1+	0.1+	1999 09 07	704	0.1+	0.5−	1999 09 14	704	0.4−	0.2−
1992 10 02	691	0.0	0.3−	1999 09 07	704	0.7+	0.7+	1999 09 14	704	0.1−	0.2+
1992 10 02	691	0.0	0.1+	1999 09 08	703	0.4−	0.1−	1999 09 14	704	0.9−	0.5−
1998 02 22	691	0.1+	0.1+	1999 09 08	703	0.1−	0.2+	1999 09 14	704	0.1−	0.1+
1998 02 22	691	0.2−	0.6+	1999 09 08	703	0.5−	0.9+	1999 09 14	704	0.1−	0.1−
1998 02 22	691	0.1−	0.2−	1999 09 08	703	0.0	0.2+	1999 09 14	704	0.0	0.2+
1998 03 02	691	0.1−	0.4+	1999 09 14	704	0.5−	0.2+	1999 09 14	704	0.0	0.1+
1998 03 02	691	0.3−	0.1+	1999 09 14	704	0.4+	0.3−	1999 09 14	704	0.1+	0.4+
1998 03 02	691	0.1−	0.0	1999 09 14	704	0.0	0.5+	1999 09 30	704	0.2+	0.0
1998 03 04	691	0.5+	0.2−	1999 09 14	704	0.2−	1.0+	1999 09 30	704	0.4+	0.6−
1998 03 04	691	0.3+	0.1+	1999 09 14	704	0.6+	0.4+	1999 09 30	704	0.9+	1.3−

M.P.C. 36356

1999 OCT. 26

1998 03 04 691 0.3+ 0.2+ 1999 09 14 704 0.0 0.2−
 1999 09 07 704 0.7− 0.3− 1999 09 14 704 0.3+ 0.0

1998 ED = 1999 SP₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	18.43495		(2000.0)		P		Q
<i>n</i>	0.24134593	ω	266.64809		+0.48328256		+0.86614191
<i>a</i>	2.5549127	Ω	33.23775		−0.68217344		+0.46379292
<i>e</i>	0.1851835	<i>i</i>	13.44264		−0.54870517		+0.18626408
<i>P</i>	4.08	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 02 25	566	0.5+	0.4−	1998 03 24	704	1.1−	0.0	1999 09 11	704	0.7−	0.1+
1998 02 25	566	0.6+	0.1−	1998 04 04	888	1.0−	0.7−	1999 09 11	704	0.5−	0.3+
1998 02 25	566	0.7+	0.4−	1998 04 04	888	1.2−	0.1−	1999 09 11	704	0.4−	0.1+
1998 03 01	411	1.4+	0.3−	1998 04 04	888	0.6−	0.1+	1999 09 29	704	0.6+	0.3+
1998 03 01	411	0.7+	0.2+	1998 04 19	704	0.2+	0.2+	1999 09 29	704	0.1+	0.4+
1998 03 02	411	0.1+	0.1+	1998 04 19	704	0.7+	0.1+	1999 09 29	704	0.4−	0.0
1998 03 02	411	0.4+	0.2+	1998 04 19	704	0.0	0.3−	1999 09 29	704	0.1+	1.2−
1998 03 07	411	0.9−	0.2+	1998 04 19	704	1.5+	0.5−	1999 09 30	704	0.0	0.3+
1998 03 07	411	0.3−	1.0+	1998 04 19	704	0.3−	0.6−	1999 09 30	704	0.9+	0.1−
1998 03 16	411	0.2−	0.7+	1998 04 28	699	1.0+	0.8−	1999 09 30	704	0.9+	0.3−
1998 03 16	411	1.3−	0.1+	1998 04 28	699	0.4+	0.2+	1999 09 30	704	0.6+	0.2−
1998 03 24	704	0.3−	0.4−	1998 04 28	699	0.5+	0.7+	1999 09 30	704	0.7+	0.5−
1998 03 24	704	0.5−	0.0	1999 09 11	704	0.8−	0.1−				
1998 03 24	704	0.5−	0.2+	1999 09 11	704	0.6−	0.2+				

1998 EJ₂ = 1999 RR₁₅₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	6.64685		(2000.0)		P		Q
<i>n</i>	0.22374192	ω	136.12967		+0.81544304		+0.57797178
<i>a</i>	2.6872277	Ω	188.73093		−0.57173214		+0.79569023
<i>e</i>	0.1855058	<i>i</i>	12.03199		−0.09041569		+0.18117858
<i>P</i>	4.41	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 02	910	0.6−	0.4+	1998 03 29	704	(4.1−	1.8+)	1999 09 09	704	0.2+	0.4+
1998 03 02	910	0.7−	0.0	1998 04 21	704	0.1−	1.2+	1999 09 09	704	0.0	0.7+
1998 03 02	910	1.0−	0.2+	1998 04 21	704	0.8−	1.4+	1999 09 09	704	0.0	0.2−
1998 03 03	910	1.0−	0.4+	1998 04 21	704	0.3+	0.5+	1999 09 14	704	0.2−	0.1+
1998 03 03	910	0.2−	0.1+	1998 04 21	704	1.0+	0.4−	1999 09 14	704	0.1−	0.3+
1998 03 03	910	0.3−	0.5+	1998 04 22	704	1.4+	0.5+	1999 09 14	704	0.2−	0.1−
1998 03 25	704	0.0	0.5−	1998 04 22	704	1.1+	1.5−	1999 09 14	704	0.4−	0.0
1998 03 25	704	0.5+	0.9−	1998 04 22	704	(2.7−	1.9−)	1999 09 14	704	0.7−	0.1+
1998 03 25	704	1.8−	1.1−	1999 09 08	704	0.3+	0.5+	1999 10 07	704	0.3−	1.4−
1998 03 25	704	0.2+	1.3−	1999 09 08	704	0.3+	0.2−	1999 10 07	704	0.6+	0.8−
1998 03 29	704	1.4+	0.6+	1999 09 08	704	0.3−	0.0	1999 10 07	704	0.0	1.1−
1998 03 29	704	0.1−	0.7+	1999 09 08	704	0.8+	0.3+	1999 10 07	704	0.2−	0.4−
1998 03 29	704	0.6−	1.5−	1999 09 09	704	0.1+	0.5+				
1998 03 29	704	0.7+	0.7−	1999 09 09	704	0.1+	0.1+				

1998 EP₈ = 1999 RN₄₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	332.45110		(2000.0)		P		Q
<i>n</i>	0.42522381	ω	221.01483		+0.85217105		−0.51756802
<i>a</i>	1.7514228	Ω	169.31248		+0.51824910		+0.85513957
<i>e</i>	0.2726288	<i>i</i>	24.52938		−0.07226595		+0.02931987
<i>P</i>	2.32	<i>H</i>	18.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 02	910	0.9+	1.1−	1999 09 14	046	0.0	0.3+	1999 09 16	595	1.5−	0.6+
1998 03 02	910	1.0+	0.8−	1999 09 14	046	0.2+	0.4+	1999 09 16	118	0.2+	0.0
1998 03 02	910	1.0+	1.3−	1999 09 15	557	0.0	0.1−	1999 09 16	118	0.1+	1.2−

1998 03 05	658	1.3−	0.4+	1999 09 15	557	0.4+	0.3−	1999 09 16	118	0.3−	0.7−
1998 03 05	658	1.8−	0.1+	1999 09 15	557	0.1−	0.0	1999 09 16	848	0.7+	0.1−
1998 03 05	658	0.8−	0.6+	1999 09 15	118	0.1+	0.3+	1999 09 16	848	1.0+	0.6−
1998 03 06	658	0.6−	0.8+	1999 09 15	118	0.5+	0.5+	1999 09 16	848	0.4+	0.4−
1998 03 06	658	0.6+	0.3+	1999 09 15	118	0.5+	0.2+	1999 09 16	848	0.5−	0.2−
1998 03 06	658	0.2−	0.9+	1999 09 15	848	0.4+	0.3+	1999 09 16	848	0.1+	0.5−
1998 03 08	696	0.5+	0.4+	1999 09 15	848	0.5+	0.6−	1999 09 20	658	0.0	0.8−
1998 03 08	696	0.4+	0.1+	1999 09 15	848	0.0	0.2+	1999 09 20	658	0.2+	0.8−
1998 03 08	696	0.2+	0.3+	1999 09 15	658	0.0	0.5+	1999 09 20	658	0.0	0.9−
1999 09 14	704	0.3−	0.0	1999 09 15	711	0.1−	0.0	1999 10 02	595	1.3−	1.0+
1999 09 14	704	0.2−	0.0	1999 09 15	658	0.1+	0.7+	1999 10 02	595	0.4+	0.1+
1999 09 14	704	0.1+	0.5+	1999 09 15	711	1.3−	0.3−	1999 10 02	595	0.3−	0.1−
1999 09 14	704	0.0	0.3+	1999 09 15	658	0.3−	0.6+	1999 10 02	595	1.0−	0.1−
1999 09 14	704	0.1−	0.4+	1999 09 15	711	0.3−	0.3−	1999 10 02	595	0.7+	0.1−
1999 09 14	046	0.7+	0.9+	1999 09 16	595	0.1−	0.7+	1999 10 04	428	0.8+	0.2−
1999 09 14	046	0.2+	0.5+	1999 09 16	595	0.3−	0.2−				

1998 EA₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	67.69459		(2000.0)		P		Q
<i>n</i>	0.23960045	ω	158.14084		+0.00229500		+0.98931624
<i>a</i>	2.5673060	Ω	111.74513		−0.93915456		+0.05220181
<i>e</i>	0.2352251	<i>i</i>	9.02901		−0.34348720		−0.13611884
<i>P</i>	4.11	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 09	012	0.0	0.5+	1998 03 24	411	0.1−	0.1+	1998 05 04	012	0.1−	0.3−
1998 03 09	012	0.5−	0.1−	1998 03 24	411	0.7−	0.2−	1998 05 04	012	0.3−	0.3−
1998 03 09	012	0.2−	0.3+	1998 04 22	566	0.3−	0.3+	1998 05 16	704	0.4+	0.5+
1998 03 10	012	0.9−	0.4+	1998 04 22	566	0.2+	0.4+	1998 05 16	704	0.7−	0.1+
1998 03 10	012	0.1−	0.1+	1998 04 22	566	0.2−	0.5+	1998 05 16	704	0.3−	0.3−
1998 03 10	012	0.4−	1.1+	1998 04 22	012	0.0	0.0	1998 05 16	704	1.0+	0.3+
1998 03 20	012	0.2−	0.4+	1998 04 23	012	0.3−	0.2−	1998 05 16	704	0.7+	1.5−
1998 03 20	012	0.5−	0.8+	1998 04 23	012	0.6+	0.1+	1998 05 29	704	0.2−	0.6+
1998 03 20	012	0.5+	0.5−	1998 04 24	704	0.4+	0.2+	1998 05 29	704	0.7−	0.2+
1998 03 22	411	0.3−	0.7−	1998 04 24	704	0.9−	0.3+	1998 05 29	704	0.6+	0.9−
1998 03 22	411	0.2−	0.4−	1998 04 24	704	0.4+	0.1+	1998 05 29	704	0.2+	1.5−
1998 03 24	012	0.4+	0.1+	1998 04 24	704	0.3+	0.6+	1998 05 29	704	0.2−	1.6+
1998 03 24	012	0.7+	0.5+	1998 04 24	704	0.6−	0.4+	1999 10 12	012	0.0	0.0
1998 03 24	012	0.7+	0.1−	1998 04 27	566	0.8−	0.1+	1999 10 12	012	0.2+	0.5−
1998 03 24	704	0.0	0.5−	1998 04 27	566	0.5+	0.3−	1999 10 12	012	0.4−	0.2+
1998 03 24	704	0.4+	0.5−	1998 04 27	566	0.0	0.2−	1999 10 12	012	0.2+	0.5−
1998 03 24	704	0.2+	1.4−	1998 04 29	012	0.1−	0.0	1999 10 14	012	0.1+	0.2+
1998 03 24	704	1.4+	1.5−	1998 04 29	012	0.2+	0.5−	1999 10 14	012	0.0	0.1+
1998 03 24	704	(0.2−	4.6−)	1998 04 29	012	0.5−	0.6+	1999 10 14	012	0.1+	0.2+

1998 EK₁₁ = 1999 RB₉₆

Id. A. Doppler, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	74.18963		(2000.0)		P		Q
<i>n</i>	0.27228390	ω	164.80311		−0.22102276		+0.97295660
<i>a</i>	2.3575165	Ω	92.39302		−0.90164993		−0.17762502
<i>e</i>	0.1852478	<i>i</i>	3.85165		−0.37172077		−0.14766450
<i>P</i>	3.62	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 01	809	1.3+	0.3−	1998 03 25	704	0.0	0.7+	1999 09 07	704	0.1−	0.8−
1998 03 01	809	1.0+	0.4+	1998 03 25	704	0.4−	0.9+	1999 09 07	704	0.2+	0.3−
1998 03 01	809	1.4+	0.0	1998 03 26	704	0.3+	0.7−	1999 09 07	704	0.2−	0.6+
1998 03 02	809	0.5−	0.6+	1998 03 26	704	0.4+	0.7−	1999 09 07	704	0.1+	0.3−
1998 03 02	809	1.0−	0.4+	1998 03 26	704	0.3+	0.7−	1999 09 14	704	0.2+	0.1−
1998 03 02	809	1.0−	0.5+	1998 04 18	704	0.2−	0.4+	1999 09 14	704	0.0	0.1−
1998 03 24	704	0.1−	0.6−	1998 04 18	704	0.4−	1.2+	1999 09 14	704	0.2+	0.2+
1998 03 24	704	0.3+	0.5−	1998 04 18	704	0.4+	1.2+	1999 09 14	704	0.3+	0.4+
1998 03 24	704	0.3+	0.1−	1998 04 18	704	(5.1−	1.1+)	1999 09 14	704	0.1−	0.2+
1998 03 24	704	0.1+	0.8−	1999 08 22	699	1.4−	0.3+	1999 10 02	704	0.2+	0.6+

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1998 03 25	704	0.1+	0.4-	1999 08 22	699	(0.9+	2.0+)	1999 10 02	704	0.4+	0.1+
1998 03 25	704	1.5-	0.2+	1999 08 22	699	0.4+	1.1+	1999 10 02	704	0.2-	0.3-
1998 03 25	704	0.6-	0.5-	1999 09 07	704	0.3+	0.5-	1999 10 02	704	0.9-	0.0

1998 EE₁₂ = 1999 UL₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	50.29543		(2000.0)	P		Q	
<i>n</i>	0.28070076	ω	195.94340	+0.18374461		+0.97742442	
<i>a</i>	2.3101508	Ω	84.73227	-0.89002948		+0.21047163	
<i>e</i>	0.1439107	<i>i</i>	6.01258	-0.41723547		-0.01852547	
<i>P</i>	3.51	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 26	566	0.1-	0.2+	1998 04 02	809	(2.6+	3.0+)	1999 09 08	703	0.2-	0.2+
1998 02 26	566	0.2+	0.1-	1998 04 02	809	(2.8+	3.1+)	1999 09 08	703	0.3+	0.7+
1998 02 26	566	0.3+	0.1+	1998 04 03	809	1.3+	0.2-	1999 09 08	703	0.0	0.8+
1998 03 01	809	1.8+	0.1-	1998 04 03	809	1.5+	0.2-	1999 09 13	704	0.4-	0.4-
1998 03 01	809	1.3+	0.2+	1998 04 03	809	0.0	0.4-	1999 09 13	704	0.2-	0.1-
1998 03 01	809	1.8+	0.6-	1998 04 18	704	1.3+	0.5+	1999 09 13	704	0.2-	0.0
1998 03 02	809	1.4-	0.4+	1998 04 18	704	0.4-	1.1+	1999 09 13	704	0.4-	0.2-
1998 03 02	809	1.7-	0.2+	1998 04 18	704	1.3-	0.3-	1999 09 13	704	0.3-	0.2-
1998 03 02	809	1.6-	0.5+	1998 04 18	704	0.0	1.0+	1999 09 30	704	0.2+	0.0
1998 03 24	704	0.1-	0.1+	1998 04 19	704	1.3+	0.1+	1999 09 30	704	0.6+	0.1+
1998 03 24	704	0.1+	0.3-	1998 04 19	704	0.8-	0.4+	1999 09 30	704	0.5+	0.1-
1998 03 24	704	0.3+	0.8-	1998 04 19	704	0.5-	0.3+	1999 09 30	704	1.1+	0.1-
1998 03 24	704	0.2+	0.6-	1998 04 19	704	0.9-	0.8+	1999 09 30	704	0.3+	0.4-
1998 03 25	704	0.3-	0.3-	1998 04 19	704	0.0	0.6+	1999 10 18	701	1.1-	0.7-
1998 03 25	704	0.3-	0.6+	1998 05 14	704	0.1+	0.1-	1999 10 18	701	0.3-	0.2-
1998 03 25	704	0.5-	0.1-	1998 05 14	704	0.5+	0.6-	1999 10 18	701	0.1-	0.2-
1998 03 25	704	0.2-	0.3-	1998 05 14	704	0.7-	0.4+	1999 10 19	701	0.1-	0.1+
1998 03 25	704	0.4-	0.7-	1998 05 14	704	1.2-	1.6-	1999 10 19	701	0.2-	0.3+
1998 04 02	809	(2.8+	2.8+)	1999 09 08	703	0.0	0.3+	1999 10 19	701	0.2+	0.3+

1998 EW₁₂ = 1999 RZ₃₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	51.65744		(2000.0)	P		Q	
<i>n</i>	0.29882279	ω	290.54274	+0.40883513		+0.91258777	
<i>a</i>	2.2157814	Ω	3.60646	-0.79691201		+0.36026247	
<i>e</i>	0.1740423	<i>i</i>	5.57916	-0.44473035		+0.19337662	
<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 03 01	809	(1.6+	3.0+)	1998 03 22	327	0.4+	0.2-	1999 09 12	703	0.8+	0.2-
1998 03 01	809	(1.2+	3.4+)	1998 03 24	327	0.3+	0.1-	1999 09 12	703	0.6-	0.7-
1998 03 01	809	(1.1+	3.2+)	1998 03 24	327	0.7+	0.2+	1999 09 14	703	0.8-	0.1-
1998 03 02	809	(2.3+	3.4+)	1998 03 24	327	0.2-	0.1-	1999 09 14	703	0.2-	0.2+
1998 03 02	809	(2.4+	2.4+)	1998 03 24	327	0.5+	0.4+	1999 09 14	703	0.4-	0.3+
1998 03 02	809	(1.6+	3.1+)	1998 03 26	704	0.2+	1.8+	1999 09 14	703	0.1-	0.3+
1998 03 20	704	0.5-	0.9+	1998 03 26	704	0.5-	0.3+	1999 10 07	704	0.0	0.0
1998 03 20	704	0.4+	0.1-	1998 03 26	704	0.9-	0.7-	1999 10 07	704	0.5+	0.9-
1998 03 20	704	0.1-	0.1+	1998 04 18	704	0.7-	0.5+	1999 10 07	704	0.1+	0.4-
1998 03 20	704	0.2-	0.1-	1998 04 18	704	0.6-	0.6+	1999 10 07	704	0.6+	0.2-
1998 03 20	327	0.4+	0.1-	1998 04 18	704	0.7-	0.1+	1999 10 07	704	0.3-	0.1-
1998 03 20	327	0.3+	0.2+	1998 04 18	704	1.0-	0.2-	1999 10 09	703	0.2+	0.3+
1998 03 20	327	0.2+	0.0	1998 04 18	704	0.4-	0.6-	1999 10 09	703	0.8-	0.9+
1998 03 22	704	0.3+	1.7-	1998 04 19	704	0.7+	0.7-	1999 10 09	703	0.2-	0.2+
1998 03 22	704	0.4+	0.3-	1998 04 19	704	1.2-	0.6-	1999 10 09	703	0.4+	0.4+
1998 03 22	704	0.3+	1.2-	1998 04 19	704	0.3+	0.8+	1999 10 11	691	0.2+	0.3-
1998 03 22	704	0.2+	0.1+	1998 04 19	704	0.3+	0.7+	1999 10 11	691	0.2+	0.4-
1998 03 22	704	0.8+	0.3+	1998 04 19	704	(6.0-	0.6+)	1999 10 11	691	0.2+	0.4-
1998 03 22	327	0.2+	0.1-	1999 09 12	703	0.5+	1.2+				
1998 03 22	327	0.1-	0.4-	1999 09 12	703	0.7-	0.1-				

1998 FY₁ = 1999 RZ₅₅

Id. M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	270.77954		(2000.0)	P		Q	
<i>n</i>	0.30379243	ω	357.57332	+0.47363104		-0.87868248	
<i>a</i>	2.1915501	Ω	64.15092	+0.80916518		+0.40727643	
<i>e</i>	0.0711962	<i>i</i>	3.81786	+0.34774322		+0.24908434	
<i>P</i>	3.24	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 21	691	0.6-	0.7+	1998 03 22	691	0.9+	0.4+	1999 09 07	704	0.3-	0.3+
1998 03 21	691	0.5-	0.9+	1998 04 19	704	1.4+	0.8-	1999 09 07	704	0.7-	0.4-
1998 03 21	691	0.6-	0.7+	1998 04 19	704	1.1+	0.9+	1999 09 07	704	0.5+	0.0
1998 03 22	704	1.2+	0.4+	1998 04 19	704	0.4-	0.8-	1999 09 11	704	1.6+	0.1-
1998 03 22	704	0.6-	0.5+	1998 04 19	704	0.2-	0.3+	1999 09 11	704	0.1-	1.0-
1998 03 22	704	0.1+	0.9-	1998 04 20	704	0.2+	1.3+	1999 09 11	704	0.7-	0.0
1998 03 22	704	1.0-	3.0-	1998 04 20	704	0.6+	0.9-	1999 09 11	704	0.3-	0.2+
1998 03 22	704	0.6-	0.7-	1998 04 20	704	0.9-	1.0-	1999 09 11	704	0.0	0.7+
1998 03 22	691	0.9+	0.6+	1998 04 20	704	2.0-	1.1+				
1998 03 22	691	0.9+	0.5+	1999 09 07	704	0.2+	0.4+				

1998 FA₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	83.98283		(2000.0)	P		Q	
<i>n</i>	0.23604183	ω	93.15490	-0.24576854		+0.96890281	
<i>a</i>	2.5930451	Ω	162.53650	-0.92302574		-0.22487625	
<i>e</i>	0.2147937	<i>i</i>	5.49280	-0.29600897		-0.10323764	
<i>P</i>	4.18	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 23	557	0.7+	0.2-	1998 04 21	704	(2.4-	0.3+)	1998 04 24	327	0.2-	0.2-
1998 03 23	557	0.5+	0.1+	1998 04 22	704	0.5-	1.1-	1998 04 24	327	0.2-	0.5+
1998 03 24	557	0.6+	0.4+	1998 04 22	704	0.2-	0.1-	1998 04 24	327	0.1+	0.4+
1998 03 24	557	0.4-	0.1+	1998 04 22	704	0.4+	0.8+	1998 04 30	557	0.0	0.0
1998 03 26	557	0.9+	1.0+	1998 04 22	704	1.1+	0.7+	1998 04 30	557	0.4-	0.2-
1998 03 26	557	1.1+	0.9+	1998 04 22	704	0.7+	1.8-	1998 05 13	557	0.1+	0.5-
1998 03 30	557	0.1-	0.7+	1998 04 23	704	0.2+	0.1-	1998 05 13	557	0.1-	0.2-
1998 03 30	557	0.2-	0.4+	1998 04 23	704	(1.1-	2.3+)	1998 05 31	557	1.1+	0.6+
1998 04 16	557	0.2-	0.1+	1998 04 23	704	1.8-	0.0	1998 05 31	557	0.4+	0.3+
1998 04 17	557	0.3-	0.4+	1998 04 23	704	1.7-	0.0	1999 10 16	557	0.2-	0.3+
1998 04 21	704	0.5+	1.0-	1998 04 23	557	0.0	0.1-	1999 10 16	557	0.5-	0.3+
1998 04 21	704	1.5-	0.5-	1998 04 24	046	0.3+	0.2+	1999 10 16	557	0.3-	0.6+
1998 04 21	704	1.0-	0.2-	1998 04 24	046	0.4+	0.1+	1999 10 18	557	0.1+	0.0
1998 04 21	704	0.4+	0.2+	1998 04 24	046	0.3+	0.2+	1999 10 18	557	0.3+	0.6+

1998 FM₈ = 1999 RO₁₇₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.40854		(2000.0)	P		Q	
<i>n</i>	0.28700738	ω	318.37401	+0.97016550		+0.23724366	
<i>a</i>	2.2761838	Ω	28.01943	-0.18470029		+0.85668958	
<i>e</i>	0.2097663	<i>i</i>	6.10290	-0.15705000		+0.45803756	
<i>P</i>	3.43	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	(2.7+	1.2-)	1998 04 20	704	0.9+	1.1+	1999 09 13	704	0.3+	0.2+
1998 03 20	704	1.1+	0.8-	1998 04 20	704	0.6+	0.1+	1999 09 13	704	0.2+	0.2-
1998 03 20	704	0.6+	0.4-	1998 04 20	704	0.4+	0.3-	1999 09 13	704	0.4-	0.2+
1998 03 20	704	(6.3-	0.4+)	1998 04 20	704	0.1+	1.2+	1999 09 13	704	1.2+	0.5-
1998 03 21	691	0.1+	0.0	1999 09 07	699	0.4+	0.1-	1999 09 30	704	0.1+	0.0
1998 03 21	691	0.2+	0.1+	1999 09 07	699	0.2+	0.3-	1999 09 30	704	0.4-	0.3+
1998 03 21	691	0.1+	0.1+	1999 09 07	699	0.3+	0.1+	1999 09 30	704	0.2-	0.0
1998 03 22	704	0.8-	1.1-	1999 09 09	704	0.2-	0.1+	1999 09 30	704	0.4-	0.2-
1998 03 22	704	0.1-	0.1+	1999 09 09	704	0.2+	0.2+	1999 09 30	704	0.5-	0.3+
1998 03 22	704	0.3+	0.7-	1999 09 09	704	0.2-	0.4+	1999 10 07	704	0.6+	0.6-
1998 03 22	704	0.8-	0.6-	1999 09 09	704	0.4+	0.1-	1999 10 07	704	0.4+	0.1-
1998 03 22	704	(4.4-	0.4+)	1999 09 09	704	0.1+	0.1-	1999 10 07	704	0.4-	0.1-

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1998 03 25	691	1.0−	0.1−	1999 09 10	704	0.2−	0.0	1999 10 07	704	0.2+	0.6+
1998 03 25	691	1.2−	0.5+	1999 09 10	704	0.1−	0.3+	1999 10 07	704	1.0−	0.4−
1998 03 25	691	0.8−	0.4+	1999 09 10	704	0.5−	0.3−				

1998 FP₁₀ = 1999 RN₁₈₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 50.44255			(2000.0)			P			Q		
<i>n</i>	0.22446373	ω	274.53654	+0.03758295	+0.99925003						
<i>a</i>	2.6814637	Ω	357.55831	−0.80796569	+0.02489678						
<i>e</i>	0.2113749	<i>i</i>	12.63867	−0.58802974	+0.02965669						
<i>P</i>	4.39	<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+	1.2+	1998 03 29	704	0.5−	0.9+	1999 09 07	704	0.1−	0.2−
1998 03 22	704	0.8−	1.2−	1998 03 29	704	0.5−	0.0	1999 09 07	704	0.5−	0.9−
1998 03 22	704	0.8+	0.1+	1998 03 29	704	2.0−	0.9−	1999 09 07	704	0.1+	0.7+
1998 03 22	704	1.6+	1.1−	1998 04 01	704	1.1+	0.1+	1999 09 09	704	0.2+	1.4−
1998 03 22	704	(2.2+ 0.8−)		1998 04 01	704	(0.8+ 2.2+)		1999 09 09	704	0.7−	0.4+
1998 03 24	910	0.8+	0.0	1998 04 01	704	0.0	1.2+	1999 09 09	704	0.9−	0.4+
1998 03 24	910	1.1+	0.4+	1998 04 01	704	(2.9− 0.2+)		1999 09 09	704	0.6+	0.5+
1998 03 25	910	0.2+	0.1−	1998 04 01	704	1.7−	0.0	1999 09 09	704	0.8−	0.1+
1998 03 25	910	0.3+	0.2+	1998 04 18	704	(2.2− 3.4+)		1999 09 14	704	0.4+	0.3+
1998 03 25	910	0.7+	0.3+	1998 04 18	704	0.5+	0.8+	1999 09 14	704	(2.8+ 0.9+)	
1998 03 26	910	0.5+	0.2+	1998 04 18	704	0.2−	0.6−	1999 09 14	704	0.1−	0.4−
1998 03 28	704	1.3+	0.6−	1998 04 18	704	0.6+	0.2−	1999 09 14	704	0.4−	0.8+
1998 03 28	704	0.1−	0.8+	1998 04 19	704	0.8−	0.0	1999 09 14	704	0.5−	0.6+
1998 03 28	704	0.8−	1.1−	1998 04 19	704	0.8−	0.4−	1999 10 08	691	0.9+	0.5+
1998 03 28	704	(2.3− 1.6−)		1998 04 19	704	0.2+	1.0+	1999 10 08	691	0.8+	0.8+
1998 03 28	704	(0.1− 3.0−)		1998 04 19	704	1.7−	0.3−	1999 10 08	691	0.6+	0.6+
1998 03 29	704	0.2−	0.4+	1998 04 19	704	0.2+	1.7−				
1998 03 29	704	0.4+	1.6+	1999 09 07	704	0.3−	1.8−				

1998 FU₁₁ = 1999 RA₃₆

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 113.47835			(2000.0)			P			Q		
<i>n</i>	0.29950929	ω	56.30513	−0.74104249	+0.67141435						
<i>a</i>	2.2123942	Ω	165.86602	−0.62597638	−0.68667102						
<i>e</i>	0.0841770	<i>i</i>	1.79941	−0.24291891	−0.27872150						
<i>P</i>	3.29	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 4						

Residuals in seconds of arc

1998 03 20	704	0.0	0.1−	1998 03 24	566	1.1−	0.7−	1999 09 10	560	1.6−	0.7+
1998 03 20	704	0.2−	0.1+	1998 03 24	566	0.4−	0.3−	1999 09 10	560	1.7−	1.7+
1998 03 20	704	0.2−	0.6−	1998 03 25	566	0.0	0.5+	1999 09 10	560	1.4+	1.5+
1998 03 20	704	0.1−	1.2−	1998 03 25	566	0.4+	0.4+	1999 09 11	699	0.1+	1.0+
1998 03 20	704	0.7+	1.0−	1998 03 25	566	0.0	0.5+	1999 09 11	699	0.3−	1.2+
1998 03 22	704	0.1−	0.6+	1998 03 29	704	0.1−	0.6−	1999 09 11	699	0.9+	1.0+
1998 03 22	704	0.3+	0.7−	1998 03 29	704	1.2+	0.4+	1999 09 12	560	0.9−	0.8−
1998 03 22	704	0.5+	1.1−	1998 03 29	704	0.4+	0.1−	1999 09 12	560	0.0	0.1−
1998 03 22	704	(5.4+ 3.0−)		1998 03 29	704	0.7+	0.3−	1999 09 12	560	0.8+	0.5−
1998 03 24	704	0.0	0.2+	1998 03 29	704	0.6−	0.7−	1999 09 13	560	0.1−	0.9−
1998 03 24	704	0.2−	0.4+	1998 04 19	704	1.0+	0.3+	1999 09 13	560	0.1+	0.0
1998 03 24	704	0.3−	0.4+	1998 04 19	704	0.7−	0.1−	1999 09 13	560	0.3+	0.1−
1998 03 24	704	0.0	0.2+	1998 04 19	704	0.1+	0.6−	1999 09 14	704	0.3+	0.0
1998 03 24	704	0.4−	0.5+	1998 04 19	704	0.0	0.9+	1999 09 14	704	0.5+	0.3+
1998 03 24	704	0.1−	0.7+	1998 04 19	704	0.8−	0.7+	1999 09 14	704	0.0	0.3−
1998 03 24	704	0.7+	0.6+	1999 09 07	704	0.1+	1.0−	1999 09 14	704	0.5+	0.1+
1998 03 24	704	0.2+	0.1+	1999 09 07	704	0.5+	0.6−	1999 09 14	704	0.1−	0.5−
1998 03 24	704	0.6−	0.9+	1999 09 07	704	0.0	1.1−	1999 09 20	560	0.9+	0.1+
1998 03 24	704	0.2+	0.0	1999 09 07	704	0.8+	1.3−	1999 09 20	560	0.5−	0.4+
1998 03 24	704	0.5+	0.0	1999 09 07	704	0.7−	0.2−	1999 09 20	560	0.2−	0.0
1998 03 24	704	0.1+	0.1+	1999 09 09	704	0.1−	0.4−	1999 09 28	560	1.1−	0.9−
1998 03 24	704	0.5−	0.4−	1999 09 09	704	0.1−	0.2−	1999 09 28	560	0.3−	1.1+
1998 03 24	704	0.0	0.0	1999 09 09	704	0.3−	1.1−	1999 09 28	560	0.2+	0.6+

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1998 03 24	704	0.0	1.1+	1999 09 09	704	0.6+	0.2−	1999 09 28	560	0.3−	0.4+
1998 03 24	566	0.8−	0.4−	1999 09 09	704	0.1+	0.1−	1999 09 28	560	0.1+	0.6+

1998 FC₂₃ = 1999 RW₅₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 97.48410			(2000.0)			P			Q		
<i>n</i>	0.28755636	ω	225.30722	−0.74144195	+0.67098151						
<i>a</i>	2.2732859	Ω	356.81228	−0.57519885	−0.64083119						
<i>e</i>	0.0460063	<i>i</i>	7.13047	−0.34555769	−0.37298686						
<i>P</i>	3.43	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 4						

Residuals in seconds of arc

1998 02 25	566	1.4+	0.7−	1998 03 22	704	0.1−	0.1+	1999 09 07	704	0.3+	0.3−
1998 02 25	566	1.2+	0.5−	1998 03 22	704	0.3+	0.8−	1999 09 07	704	0.6+	0.6+
1998 02 25	566	1.2+	0.9−	1998 03 22	704	0.3−	1.2+	1999 09 13	704	0.1−	0.1−
1998 02 26	809	0.7−	1.3+	1998 03 22	704	(0.5+ 3.0+)		1999 09 13	704	0.2+	0.6+
1998 02 26	809	0.4−	1.2+	1998 03 26	704	0.7−	0.3+	1999 09 13	704	0.2+	0.2+
1998 02 26	809	2.0−	0.2+	1998 03 26	704	0.0	0.3−	1999 09 13	704	0.6+	0.3+
1998 03 20	704	0.2+	0.1+	1998 03 26	704	0.4+	0.9−	1999 09 13	704	0.4+	0.8−
1998 03 20	704	0.2−	0.4−	1999 08 13	699	0.1−	0.5−	1999 09 30	704	0.4−	0.1−
1998 03 20	704	0.5−	0.0	1999 08 13	699	0.2−	0.5−	1999 09 30	704	0.0	0.6+
1998 03 20	704	0.3+	0.1+	1999 08 13	699	1.3−	0.2+	1999 09 30	704	0.2−	0.6+
1998 03 20	704	0.3+	0.3+	1999 09 07	704	0.8+	0.0	1999 09 30	704	1.1−	0.2+
1998 03 22	704	0.1+	0.4+	1999 09 07	704	0.1−	0.0				

1998 FF₃₃ = 1999 RV₉₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 92.25565			(2000.0)			P			Q		
<i>n</i>	0.27101696	ω	79.37706	−0.49636533	+0.86781867						
<i>a</i>	2.3648580	Ω	160.81250	−0.82097674	−0.46078017						
<i>e</i>	0.1889495	<i>i</i>	3.94863	−0.28216776	−0.18593654						
<i>P</i>	3.64	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 4						

Residuals in seconds of arc

1998 02 24	566	0.3−	1.5−	1998 03 24	704	0.0	0.1+	1998 05 14	704	0.3+	0.7+
1998 02 24	566	0.9−	1.4−	1998 03 24	704	0.0	0.1−	1999 09 07	704	0.1−	0.2−
1998 02 24	566	0.1−	1.8−	1998 03 24	704	0.2−	0.4+	1999 09 07	704	0.7−	0.2−
1998 03 20	704	0.1−	0.1+	1998 03 24	704	1.1−	1.0−	1999 09 07	704	0.7+	0.4−
1998 03 20	704	0.3+	0.3+	1998 03 24	704	0.6+	0.0	1999 09 07	704	0.1−	0.1−
1998 03 20	704	1.0−	0.1−	1998 03 25	704	1.2+	0.8−	1999 09 07	704	0.2+	0.0
1998 03 20	704	0.8+	0.0	1998 03 25	704	1.0+	0.0	1999 09 14	704	0.2−	0.2−
1998 03 20	704	0.1+	0.5+	1998 03 25	704	0.2+	0.3−	1999 09 14	704	0.3+	0.1+
1998 03 22	704	0.7+	0.2+	1998 03 25	704	0.6+	0.9+	1999 09 14	704	0.4+	0.5+
1998 03 22	704	0.1−	0.1−	1998 03 25	704	0.3+	1.9+	1999 09 14	704	0.8+	0.5−
1998 03 22	704	0.0	0.1+	1998 03 29	704	0.3+	0.4+	1999 09 14	704	0.4+	0.7−
1998 03 22	704	0.7+	1.6−	1998 03 29	704	0.8−	0.4+	1999 10 02	704	0.5−	0.4−
1998 03 22	704	1.7−	0.4+	1998 03 29	704	0.1+	0.5+	1999 10 02	704	0.3−	0.5+
1998 03 24	704	0.2+	0.1+	1998 03 29	704	1.2−	0.6+	1999 10 02	704	0.3+	0.9−
1998 03 24	704	0.0	0.5+	1998 03 29	704	0.7−	0.1+	1999 10 02	704	0.5+	0.8+
1998 03 24	704	0.1+	0.3+	1998 04 19	704	1.4+	0.7−	1999 10 07	703	1.5−	0.4+
1998 03 24	704	0.1+	0.3+	1998 04 19	704	(2.5+ 1.1+)		1999 10 07	703	1.1−	1.0+
1998 03 24	704	0.1−	0.3+	1998 04 19	704	0.8+	0.6−	1999 10 07	703	0.4−	0.3+
1998 03 24	704	1.1+	1.2+	1998 04 19	704	1.2+	1.3+	1999 10 07	703	0.3−	0.1+
1998 03 24	704	0.5−	1.0+	1998 04 19	704	0.9−	0.6−	1999 10 07	704	0.0	0.4+
1998 03 24	704	0.2+	0.0	1998 05 14	704	1.5−	0.2+	1999 10 07	704	0.1−	0.7+
1998 03 24	704	0.1+	0.3+	1998 05 14	704	0.8−	0.5−	1999 10 07	704	1.2+	0.2+
1998 03 24	704	0.0	0.1−	1998 05 14	704	0.3−	1.2−				

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M.P.C. 36359

1998 FN₄₁ = 1999 UJ

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26798131	ω	293.98250	+0.36640412	+0.93045391		
<i>a</i>	2.3826836	Ω	357.50923	-0.83717681	+0.32878899		
<i>e</i>	0.2178563	<i>i</i>	2.48037	-0.40605789	+0.16171987		
<i>P</i>	3.68	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1998 03 20	704	0.1-	0.1-	1998 03 28	704	1.0-	0.0
1998 03 20	704	0.4-	0.8+	1998 03 28	704	0.6+	1.0-
1998 03 20	704	0.8-	0.2+	1998 03 28	704	1.2-	1.4-
1998 03 20	704	0.2+	0.6+	1998 03 29	704	0.2+	1.2-
1998 03 20	704	0.8-	1.4+	1998 03 29	704	1.2-	1.4+
1998 03 22	704	0.5-	0.3+	1998 03 29	704	0.9-	0.6-
1998 03 22	704	0.3-	1.7-	1998 03 29	704	1.1-	1.0+
1998 03 22	704	0.1-	0.5+	1998 03 29	704	0.6+	0.2-
1998 03 22	704	1.8+	1.1-	1998 04 01	704	0.2+	1.2+
1998 03 22	704	0.5+	0.1-	1998 04 01	704	0.4+	1.1+
1998 03 26	566	0.5+	0.2+	1998 04 01	704	0.5+	0.0
1998 03 26	566	0.1+	0.2-	1998 04 01	704	0.6+	1.3-
1998 03 26	566	1.2+	0.6-	1998 04 01	704	0.8+	0.4-
1998 03 28	704	0.6-	0.0	1999 10 04	704	0.0	0.6+
1998 03 28	704	0.8+	1.0+	1999 10 04	704	0.1-	0.6+

1998 FY₄₁ = 1999 RZ₁₇₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28770266	ω	353.11364	+0.88894186	+0.45690435		
<i>a</i>	2.2725152	Ω	339.60494	-0.41573158	+0.77562604		
<i>e</i>	0.1886719	<i>i</i>	5.26026	-0.19222283	+0.43547980		
<i>P</i>	3.43	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 20	704	0.8-	1.1-	1999 07 16	704	0.4-	1.1-
1998 03 20	704	1.2-	1.5+	1999 07 16	704	0.4-	1.0-
1998 03 20	704	0.2+	0.3-	1999 07 16	704	0.1-	0.5-
1998 03 20	704	1.5-	0.5-	1999 08 12	699	0.0	0.5+
1998 03 20	704	0.7-	1.5-	1999 08 12	699	0.4+	0.9+
1998 03 22	704	0.6+	0.4-	1999 08 12	699	0.3+	0.3+
1998 03 22	704	0.2+	1.5+	1999 08 22	703	0.4+	0.0
1998 03 22	704	0.3-	1.0-	1999 08 22	703	0.2+	0.2+
1998 03 22	704	0.1-	1.3-	1999 08 22	703	0.0	0.5+
1998 03 22	704	0.4-	0.1-	1999 08 22	703	0.4-	1.6+
1998 03 28	704	0.4+	0.7-	1999 08 22	699	0.3-	0.5+
1998 03 28	704	0.3-	0.6-	1999 08 22	699	1.2-	0.5+
1998 03 28	704	0.2-	0.0	1999 08 22	699	0.1+	0.5-
1998 03 28	704	0.8+	1.2-	1999 09 07	704	0.1+	0.4-
1998 03 29	704	0.8-	1.0-	1999 09 07	704	0.1+	0.1-
1998 03 29	704	0.4-	0.6+	1999 09 07	704	0.0	0.1+
1998 03 29	704	0.0	0.7-	1999 09 07	704	0.4+	0.3-
1998 03 29	704	0.6+	0.1+	1999 09 07	704	0.2+	0.2+
1998 03 29	704	1.1+	0.3-	1999 09 09	704	0.2+	0.2-
1998 04 19	704	(0.2-	2.1+)	1999 09 09	704	0.3+	0.3-
1998 04 19	704	(2.2-	1.1-)	1999 09 09	704	0.5+	0.8-
1998 04 19	704	0.1-	1.8+	1999 09 09	704	0.1+	0.8-
1998 04 19	704	(5.2-	0.2-)	1999 09 09	704	0.6-	1.2-

1998 FC₄₂ = 1999 RA₁₀₁

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17142197	ω	96.01721	+0.20293709	+0.97843403		
<i>a</i>	3.2094090	Ω	186.11148	-0.97866309	+0.20137821		
<i>e</i>	0.3205299	<i>i</i>	21.20862	-0.03217296	+0.04597457		
<i>P</i>	5.75	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1998 03 20	704	0.6-	0.5+	1998 03 29	704	1.0-	0.1-
1998 03 20	704	0.9+	1.1+	1998 03 29	704	0.7+	0.4-
1998 03 20	704	0.1+	1.4+	1998 03 29	704	0.5+	1.6-
1998 03 20	704	0.6+	1.0+	1998 04 01	704	0.5+	0.7+
1998 03 20	704	0.5+	0.1+	1998 04 01	704	1.3-	0.4+
1998 03 22	704	0.7+	0.2-	1998 04 01	704	0.6-	1.0-
1998 03 22	704	0.4+	0.8+	1998 04 01	704	0.1+	0.4-
1998 03 22	704	0.2+	0.3-	1998 04 01	704	0.6-	0.9-
1998 03 22	704	1.2-	0.5-	1998 04 18	704	0.4+	0.5+
1998 03 22	704	0.4+	0.6+	1998 04 18	704	0.4+	0.5+
1998 03 26	566	0.5+	0.1-	1998 04 18	704	0.1+	0.1-
1998 03 26	566	0.2+	0.2-	1998 04 18	704	0.7-	0.3+
1998 03 26	566	0.1-	0.2+	1998 04 19	704	0.8+	0.8+
1998 03 28	704	0.8-	0.7+	1998 04 19	704	0.9+	0.2+
1998 03 28	704	1.0-	0.5+	1998 04 19	704	0.4+	0.4-
1998 03 28	704	0.0	0.8-	1998 04 19	704	0.1-	1.1+
1998 03 28	704	0.7+	0.4-	1998 04 19	704	1.0+	0.2+
1998 03 28	704	1.5-	1.2-	1999 05 20	704	0.3+	0.0
1998 03 29	704	0.7-	0.5-	1999 05 20	704	0.0	1.5-
1998 03 29	704	0.8-	0.3-	1999 05 20	704	0.7-	0.4-

1998 FZ₄₆ = 1999 RA₄₀

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30885797	ω	280.88301	+0.06315225	+0.99796544		
<i>a</i>	2.1675220	Ω	352.72065	-0.88651645	+0.05206305		
<i>e</i>	0.1260363	<i>i</i>	3.96524	-0.45836707	+0.03680241		
<i>P</i>	3.19	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 20	704	0.5+	1.2-	1998 03 29	704	0.6+	0.0
1998 03 20	704	0.8-	0.8+	1998 03 29	704	0.2-	0.4-
1998 03 20	704	0.1+	0.8-	1998 03 29	704	0.1-	1.0-
1998 03 20	704	0.0	0.1+	1998 04 01	704	0.0	0.2-
1998 03 20	704	0.1-	0.9-	1998 04 01	704	0.9-	0.6-
1998 03 22	704	0.2+	1.1-	1998 04 01	704	0.7-	1.1-
1998 03 22	704	0.9+	0.1-	1998 04 01	704	1.0-	0.1-
1998 03 22	704	0.9+	0.4+	1998 04 01	704	0.1-	0.6+
1998 03 22	704	0.3+	0.5+	1998 04 18	704	0.2+	0.0
1998 03 22	704	0.9-	0.2-	1998 04 18	704	0.8+	0.7-
1998 03 28	704	0.2+	0.5+	1998 04 18	704	0.6+	0.6+
1998 03 28	704	0.2-	1.6+	1998 04 18	704	0.2+	0.2+
1998 03 28	704	0.0	0.8+	1998 04 18	704	0.4-	1.6+
1998 03 28	704	0.6-	1.3+	1998 04 19	704	0.2-	0.2+
1998 03 28	704	(3.6-	1.4+)	1998 04 19	704	0.1-	0.3-
1998 03 29	704	0.4+	0.2-	1998 04 19	704	0.3-	0.7-
1998 03 29	704	0.4+	0.7+	1998 04 19	704	0.2+	0.0

1998 FE₄₉ = 1999 TY₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26559673	ω	100.37618	+0.35858923	+0.93315764		
<i>a</i>	2.3969239	Ω	190.74005	-0.90051229	+0.33870648		
<i>e</i>	0.1972100	<i>i</i>	7.74429	-0.24594996	+0.12039413		
<i>P</i>	3.71	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.8+	0.1+	1998 03 29	704	0.3-	0.5+	1999 10 02	703	0.5-	0.3+
1998 03 20	704	0.3+	0.1-	1998 03 29	704	0.0	0.1+	1999 10 04	704	0.6+	0.8-
1998 03 20	704	0.5+	0.8-	1998 04 01	704	0.3-	0.7+	1999 10 04	704	0.2+	0.2-
1998 03 20	704	0.1+	1.3-	1998 04 01	704	1.5+	1.2+	1999 10 04	704	0.7+	0.5-
1998 03 20	704	0.3+	0.9-	1998 04 01	704	0.1-	2.0+	1999 10 04	704	0.1+	0.6-
1998 03 22	704	0.1+	0.2-	1998 04 01	704	0.7+	0.9-	1999 10 07	704	0.2-	0.1-
1998 03 22	704	0.2-	0.6-	1998 04 01	704	1.3-	0.7-	1999 10 07	704	0.8+	0.3-
1998 03 22	704	0.5-	0.1-	1998 04 19	704	0.7+	1.0-	1999 10 07	704	0.2+	0.2-
1998 03 22	704	0.2+	0.1-	1998 04 19	704	0.2+	0.7+	1999 10 07	704	0.1-	0.7-
1998 03 22	704	0.9-	0.2+	1998 04 19	704	0.5+	1.6+	1999 10 07	704	0.7-	0.2+
1998 03 28	704	0.0	0.2+	1998 04 19	704	0.8-	0.5-	1999 10 08	106	0.7-	0.3+
1998 03 28	704	0.1+	0.3-	1998 04 19	704	1.0-	0.2+	1999 10 08	106	0.8-	0.9+
1998 03 28	704	0.5-	0.1-	1998 04 24	699	0.5-	0.5-	1999 10 08	106	0.7+	0.3+
1998 03 28	704	0.5-	0.5+	1998 04 24	699	1.0+	1.2-	1999 10 10	106	0.2-	0.6+
1998 03 28	704	0.0	0.4+	1998 04 24	699	0.3-	1.3-	1999 10 10	106	0.0	0.1-
1998 03 29	704	0.6+	0.4+	1999 10 02	703	0.1+	0.1+	1999 10 15	164	0.2+	0.3+
1998 03 29	704	1.1+	0.5-	1999 10 02	703	0.2-	0.2-	1999 10 15	164	1.6+	0.1+
1998 03 29	704	1.7-	1.6+	1999 10 02	703	0.3-	0.1+	1999 10 16	164	1.4-	0.2-

1998 FM₄₉ = 1999 RK₈₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	31.37591	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.24177814	ω	109.71281	+0.43606623
<i>a</i>	2.5518670	Ω	186.29682	+0.42410920
<i>e</i>	0.1942289	<i>i</i>	12.52158	+0.16137791
<i>P</i>	4.08	<i>H</i>	14.4	<i>U</i>
			0.15	3

Residuals in seconds of arc

1998 03 20	704	0.5-	0.5+	1998 03 29	704	0.3+	0.8-	1999 09 16	704	0.2-	0.1-
1998 03 20	704	1.1-	0.3-	1999 07 23	704	0.1+	0.0	1999 10 02	704	0.5-	0.8-
1998 03 20	704	0.3+	0.4+	1999 07 23	704	0.1+	0.1+	1999 10 02	704	0.0	0.1-
1998 03 20	704	0.6+	0.5+	1999 07 23	704	0.5+	0.6-	1999 10 02	704	0.7+	0.2-
1998 03 20	704	0.6-	1.1-	1999 07 23	704	1.1+	0.0	1999 10 02	704	0.1+	0.6-
1998 03 22	704	0.4+	0.6-	1999 07 23	704	0.5+	0.3+	1999 10 02	704	0.1+	0.6-
1998 03 22	704	0.8-	0.0	1999 09 07	704	0.4-	0.3-	1999 10 03	691	0.1-	0.5-
1998 03 22	704	0.2+	0.3+	1999 09 07	704	0.2-	0.1+	1999 10 03	691	0.1-	0.5-
1998 03 22	704	0.9+	1.0+	1999 09 07	704	0.2-	0.5+	1999 10 03	691	0.0	0.5-
1998 03 22	704	1.0-	0.7+	1999 09 07	704	0.3-	0.1+	1999 10 06	704	0.4+	0.3+
1998 03 28	704	0.1+	0.7-	1999 09 07	704	0.1+	0.2+	1999 10 06	704	0.1+	0.2+
1998 03 28	704	0.5-	0.9-	1999 09 09	704	0.6-	0.1-	1999 10 06	704	0.5+	0.2-
1998 03 28	704	0.1+	0.1-	1999 09 09	704	0.6-	0.2+	1999 10 06	704	0.3+	0.3-
1998 03 28	704	0.4-	0.4-	1999 09 09	704	0.4-	0.8+	1999 10 06	704	0.2+	0.3-
1998 03 28	704	0.6-	0.6-	1999 09 09	704	0.2-	0.2+	1999 10 07	704	0.3-	0.4-
1998 03 29	704	0.3+	1.1-	1999 09 09	704	0.4-	1.5+	1999 10 07	704	1.5+	0.2-
1998 03 29	704	0.7+	0.1+	1999 09 16	704	0.7-	0.0	1999 10 07	704	0.4+	0.0
1998 03 29	704	0.2+	0.7+	1999 09 16	704	0.4+	0.3-	1999 10 07	704	0.1-	0.0
1998 03 29	704	0.9+	0.3-	1999 09 16	704	0.2-	0.2-	1999 10 07	704	0.3-	0.5-

1998 FC₅₈ = 1999 TB₃₀

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	43.21607	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.25894333	ω	303.15911	+0.40733576
<i>a</i>	2.4378084	Ω	350.87276	-0.82510455
<i>e</i>	0.1740722	<i>i</i>	2.12186	-0.39150998
<i>P</i>	3.81	<i>H</i>	15.0	<i>U</i>
			0.15	4

Residuals in seconds of arc

1998 03 20	704	0.8+	0.2+	1998 03 29	704	0.3+	1.0-	1998 04 20	704	0.2-	0.1+
1998 03 20	704	0.2+	0.3+	1998 03 29	704	0.9+	0.2+	1998 04 20	704	0.4+	0.2-
1998 03 20	704	1.1+	0.3+	1998 03 29	704	0.6+	0.8+	1998 04 20	704	0.8-	0.6-
1998 03 20	704	4.6-	0.6+	1998 03 29	704	1.0+	1.4+	1998 04 20	704	0.1-	0.2+
1998 03 22	704	0.3+	0.3-	1998 04 01	704	0.8-	1.9-	1999 10 04	704	0.0	0.1+
1998 03 22	704	0.5+	0.6+	1998 04 01	704	0.8+	1.1+	1999 10 04	704	0.4+	0.1+

1998 03 22	704	0.1+	0.3+	1998 04 01	704	0.2+	0.2+	1999 10 04	704	0.4-	0.3-
1998 03 22	704	0.3-	0.2-	1998 04 01	704	0.6+	0.1+	1999 10 04	704	0.3+	0.3-
1998 03 22	704	0.9-	2.3-	1998 04 01	704	0.1+	0.3-	1999 10 04	704	0.0	0.8+
1998 03 28	704	0.3+	0.2+	1998 04 19	704	0.2+	0.5-	1999 10 06	704	0.1-	0.1-
1998 03 28	704	0.2-	1.0-	1998 04 19	704	0.4-	1.2-	1999 10 06	704	0.1+	0.4-
1998 03 28	704	0.4+	0.8-	1998 04 19	704	0.4+	0.7+	1999 10 06	704	0.1-	0.1-
1998 03 28	704	1.3+	1.0+	1998 04 19	704	0.9+	1.4+	1999 10 06	704	0.1-	0.1-
1998 03 28	704	1.5-	0.6+	1998 04 19	704	1.4-	0.7+	1999 10 06	704	0.1-	0.1+
1998 03 29	704	0.3+	0.2-	1998 04 20	704	0.8-	0.3-				

1998 FR₆₂ = 1999 TH₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.88640	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.26678637	ω	54.73793	+0.27891562
<i>a</i>	2.3897930	Ω	231.47504	-0.89061403
<i>e</i>	0.1544113	<i>i</i>	1.73499	-0.35918342
<i>P</i>	3.69	<i>H</i>	15.3	<i>U</i>
			0.15	5

Residuals in seconds of arc

1998 03 20	704	0.8-	1.0-	1998 04 01	704	0.5+	0.4-	1998 04 29	566	0.5+	0.2-
1998 03 20	704	0.4+	0.1+	1998 04 01	704	1.7+	0.1+	1998 04 29	566	1.1+	0.1-
1998 03 20	704	1.3+	1.2-	1998 04 20	704	0.5+	1.1-	1999 10 04	704	0.4+	0.1+
1998 03 20	704	0.8+	2.2-	1998 04 20	704	0.8-	0.6+	1999 10 04	704	0.5-	0.2+
1998 03 20	704	1.0-	3.2-	1998 04 20	704	0.2+	1.6-	1999 10 04	704	0.5-	0.1+
1998 03 22	704	0.3-	3.6+	1998 04 20	704	0.1-	0.2-	1999 10 04	704	1.0+	0.2-
1998 03 22	704	0.8+	3.6+	1998 04 22	704	0.6-	1.2+	1999 10 04	704	0.5-	0.3+
1998 03 22	704	0.4-	0.4-	1998 04 22	704	0.4+	0.0	1999 10 06	704	0.0	0.1-
1998 03 22	704	3.8-	0.9+	1998 04 22	704	1.2-	0.2-	1999 10 06	704	0.1-	0.2-
1998 04 01	704	1.1+	0.4-	1998 04 22	704	1.5+	0.5-	1999 10 06	704	0.2+	0.1-
1998 04 01	704	0.6+	0.8+	1998 04 22	704	3.3-	2.1+	1999 10 06	704	0.1-	0.1-
1998 04 01	704	1.0+	0.1+	1998 04 29	566	0.2-	0.3-	1999 10 06	704	0.1+	0.2+

1998 FZ₆₄ = 1999 TN₃₁

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.19291	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28967265	ω	254.63744	-0.17000584
<i>a</i>	2.2622003	Ω	5.61567	-0.85065354
<i>e</i>	0.1147125	<i>i</i>	7.03256	-0.49748023
<i>P</i>	3.40	<i>H</i>	14.4	<i>U</i>
			0.15	4

Residuals in seconds of arc

1998 03 20	704	0.1+	0.2-	1998 04 04	699	0.7+	1.4-	1998 04 28	691	0.6+	0.2+
1998 03 20	704	0.7+	0.5-	1998 04 04	699	0.4-	0.6+	1998 04 30	699	0.2+	0.0
1998 03 20	704	0.4+	0.8-	1998 04 20	704	0.1+	0.0	1998 04 30	699	0.2+	0.3+
1998 03 20	704	0.4-	0.4+	1998 04 20	704	0.0	0.0	1998 04 30	699	0.1+	0.2+
1998 03 20	704	0.4-	0.5-	1998 04 20	704	0.1-	0.7-	1999 10 04	704	0.0	0.0
1998 03 22	704	0.2+	0.3+	1998 04 20	704	1.7-	0.8+	1999 10 04	704	0.2+	0.0
1998 03 22	704	0.4+	0.2-	1998 04 20	704	0.5-	0.0	1999 10 04	704	0.5-	0.1+
1998 03 22	704	0.5-	0.3+	1998 04 22	704	1.0-	0.2+	1999 10 04	704	0.2-	0.2-
1998 03 22	704	0.1-	0.1+	1998 04 22	704	0.2+	0.5-	1999 10 04	704	0.3-	0.1-
1998 03 22	704	0.6-	0.1+	1998 04 22	704	0.4+	0.0	1999 10 06	704	0.3+	0.0
1998 03 24	699	0.2-	0.8+	1998 04 22	704	0.6-	1.1-	1999 10 06	704	0.2+	0.1-
1998 03 24	699	0.5+	0.3+	1998 04 22	704	0.1-	0.3-	1999 10 06	704	0.2+	0.3-
1998 03 24	699	0.0	0.7+	1998 04 28	691	0.5+	0.3+	1999 10 06	704	0.4+	0.1+
1998 04 04	699	0.2+	1.0+	1998 04 28	691	1.4+	0.2+	1999 10 06	704	0.8-	1.0+

1998 FS₇₀

Id. J. L. Schiff (1999 observations)

1999 OCT. 26

M.P.C. 36361

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	20.92042	(2000.0)	P	Q
<i>n</i>	0.17478943	ω	261.31032	+0.21106673
<i>a</i>	3.1680543	Ω	21.47316	+0.22081368
<i>e</i>	0.1799605	<i>i</i>	13.63653	+0.05691131
<i>P</i>	5.64	<i>H</i>	13.5	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1994 10 08	691	0.3–	0.4+	1998 03 24	699	1.9+	0.2+	1998 04 20	704	0.4+	0.4+
1994 10 08	691	0.1–	0.1+	1998 03 24	699	1.1+	1.3–	1998 04 20	704	0.8+	0.7–
1994 10 08	691	0.2+	0.2–	1998 03 25	704	0.0	0.1–	1998 04 20	704	0.6–	0.3+
1998 03 20	704	1.2+	1.3–	1998 03 25	704	0.8+	0.4+	1998 04 22	704	0.1+	0.3–
1998 03 20	704	0.7–	0.2–	1998 03 25	704	0.0	0.8–	1998 04 22	704	0.7–	0.1–
1998 03 20	704	0.5–	0.1–	1998 03 25	704	0.2+	0.7–	1998 04 22	704	0.3+	0.4–
1998 03 20	704	0.3+	0.4+	1998 03 25	704	0.5–	0.2–	1998 04 22	704	0.7–	0.4+
1998 03 20	704	0.1+	0.7+	1998 03 26	566	0.0	0.5–	1998 04 22	704	1.1–	0.8+
1998 03 22	704	0.2–	0.0	1998 03 26	566	0.2–	0.7–	1998 05 01	699	0.8+	1.0+
1998 03 22	704	(0.1+ 2.1+)	1.8+	1998 03 26	566	0.3+	0.4–	1998 05 01	699	1.0+	0.5+
1998 03 22	704	1.8–	1.5+	1998 04 18	704	0.3+	0.1–	1998 05 01	699	0.9+	0.3+
1998 03 22	704	(2.3– 2.6–)	1.8+	1998 04 18	704	0.7–	0.2–	1999 09 27	465	0.7–	0.9+
1998 03 22	704	0.5–	1.8+	1998 04 18	704	1.0–	0.5–	1999 09 27	465	0.3–	0.2–
1998 03 22	699	0.2+	0.2+	1998 04 18	704	0.4–	0.8–	1999 10 01	465	(4.3+ 0.9–)	
1998 03 22	699	0.6–	0.1+	1998 04 18	704	1.2–	0.0	1999 10 01	465	1.1+	0.7–
1998 03 22	699	0.5+	0.2–	1998 04 20	704	0.4–	0.3+				
1998 03 24	699	0.9+	1.2+	1998 04 20	704	0.1+	0.6–				

1998 FG₇₁ = 1999 TQ₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	130.52569	(2000.0)	P	Q
<i>n</i>	0.28963900	ω	219.12211	+0.55487929
<i>a</i>	2.2623755	Ω	354.55099	+0.72633095
<i>e</i>	0.1284098	<i>i</i>	6.16085	+0.40565049
<i>P</i>	3.40	<i>H</i>	15.2	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1997 12 07	910	0.8–	0.6–	1998 03 25	704	0.5–	2.0–	1998 04 20	704	0.1–	0.4–
1997 12 07	910	0.6–	1.0–	1998 03 29	704	0.5+	0.1–	1998 04 22	704	0.1+	0.1+
1997 12 07	910	0.6–	1.4–	1998 03 29	704	0.6+	0.1+	1998 04 22	704	0.1+	0.2+
1998 03 20	704	0.3–	0.2–	1998 03 29	704	0.1+	0.3+	1998 04 22	704	0.4–	0.5+
1998 03 20	704	0.5+	0.7+	1998 03 29	704	0.1–	0.1–	1998 04 22	704	0.5–	0.7+
1998 03 20	704	0.8–	1.5+	1998 03 29	704	0.6+	1.1–	1998 04 22	704	0.1–	0.8+
1998 03 20	704	0.1–	1.4+	1998 04 01	704	0.6+	0.0	1998 05 16	704	0.3+	1.0–
1998 03 20	704	1.7–	1.8+	1998 04 01	704	0.9+	0.0	1998 05 16	704	0.9+	0.2–
1998 03 22	704	0.4–	0.5+	1998 04 01	704	0.2+	0.4+	1998 05 16	704	1.8–	1.1–
1998 03 22	704	0.2–	0.1+	1998 04 01	704	0.3+	0.2+	1998 05 16	704	4.4–	1.1–
1998 03 22	704	0.1+	0.4+	1998 04 01	704	0.3+	0.1–	1999 10 04	704	0.2+	0.6+
1998 03 22	704	0.0	0.8–	1998 04 18	704	0.4+	0.2–	1999 10 04	704	0.6–	0.3–
1998 03 22	704	0.6–	0.6–	1998 04 18	704	0.5+	0.2–	1999 10 04	704	0.5–	1.2+
1998 03 24	699	0.9+	1.3+	1998 04 18	704	0.0	0.4–	1999 10 04	704	0.3–	0.1–
1998 03 24	699	0.1+	0.6+	1998 04 18	704	0.2+	0.5+	1999 10 06	704	0.2+	0.3+
1998 03 24	699	1.4+	0.8+	1998 04 18	704	0.3–	0.8–	1999 10 06	704	0.5–	0.0
1998 03 25	704	0.6+	0.4+	1998 04 20	704	0.5+	0.2–	1999 10 06	704	0.2–	0.3+
1998 03 25	704	0.3+	0.4+	1998 04 20	704	0.8+	0.3–	1999 10 06	704	0.1–	0.3+
1998 03 25	704	1.1+	0.3–	1998 04 20	704	0.6–	0.0	1999 10 06	704	0.4+	0.2+
1998 03 25	704	0.1–	0.2–	1998 04 20	704	0.6+	0.8+				

1998 FK₇₁ = 1999 TG₃₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	102.22966	(2000.0)	P	Q
<i>n</i>	0.27875935	ω	355.87921	+0.88667138
<i>a</i>	2.3208643	Ω	246.61115	+0.81306921
<i>e</i>	0.1163764	<i>i</i>	1.37035	+0.35438171
<i>P</i>	3.54	<i>H</i>	15.6	<i>G</i> 0.15 <i>U</i> 5

Residuals in seconds of arc

1998 03 20	704	1.7+	0.5+	1998 03 22	704	0.3+	1.2–	1998 04 22	704	0.4+	1.0–
1998 03 20	704	1.4+	3.1–	1998 03 22	704	3.2–	1.4+	1999 10 04	704	1.0+	2.1–
1998 03 20	704	0.6+	1.9+	1998 04 20	704	0.6–	0.3+	1999 10 04	704	0.6–	0.0
1998 03 20	704	0.5+	0.5–	1998 04 20	704	0.1–	0.7+	1999 10 04	704	0.8–	0.9+
1998 03 20	704	1.4–	1.1–	1998 04 20	704	1.3+	0.8–	1999 10 06	704	0.1–	1.0–
1998 03 22	704	0.0	1.7+	1998 04 22	704	0.1+	1.1+	1999 10 06	704	0.1+	1.2+
1998 03 22	704	1.1–	1.4–	1998 04 22	704	1.1–	0.9–	1999 10 06	704	0.1–	0.4+
1998 03 22	704	0.9+	1.5+	1998 04 22	704	0.3+	0.6+	1999 10 06	704	0.5+	0.4+

1998 FZ₇₁ = 1999 TW₂

Id. T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	60.48691	(2000.0)	P	Q
<i>n</i>	0.26689037	ω	315.86326	+0.17313457
<i>a</i>	2.3891722	Ω	324.09219	+0.89361571
<i>e</i>	0.1753763	<i>i</i>	2.01338	+0.41409586
<i>P</i>	3.69	<i>H</i>	15.0	<i>G</i> 0.15 <i>U</i> 5

Residuals in seconds of arc

1998 03 20	704	0.5–	0.0	1998 03 29	704	0.1–	0.1+	1999 10 03	888	0.2–	0.2+
1998 03 20	704	0.0	0.0	1998 03 29	704	(0.8+ 2.4+)		1999 10 03	888	0.7–	0.4+
1998 03 20	704	0.1+	0.1–	1998 03 29	704	1.0+	0.6+	1999 10 06	704	0.1+	0.4–
1998 03 20	704	(5.0– 1.6–)		1998 03 29	704	0.6+	0.6–	1999 10 06	704	0.1+	0.5–
1998 03 22	704	0.3–	0.4+	1998 04 01	704	0.2+	0.1+	1999 10 06	704	0.2–	0.4–
1998 03 22	704	0.1+	0.4+	1998 04 01	704	0.4–	0.4+	1999 10 06	704	0.3+	0.3–
1998 03 22	704	0.2+	0.8+	1998 04 01	704	0.4+	0.1–	1999 10 06	704	0.2+	0.4–
1998 03 22	704	0.9+	0.3–	1998 04 01	704	0.3+	0.6–	1999 10 07	704	0.0	0.6+
1998 03 28	704	0.3+	0.1–	1998 04 01	704	0.2–	0.2+	1999 10 07	704	0.1–	0.2–
1998 03 28	704	0.3+	0.0	1999 10 02	385	0.9+	0.4+	1999 10 07	704	0.4+	1.1–
1998 03 28	704	1.0–	0.4–	1999 10 02	385	0.7+	0.0	1999 10 07	704	0.4+	0.7–
1998 03 28	704	0.2+	0.4–	1999 10 02	385	0.6–	1.2+	1999 10 07	704	0.4–	0.5–
1998 03 28	704	1.6–	0.6–	1999 10 03	888	0.1+	1.0+				
1998 03 29	704	0.5–	0.1+	1999 10 03	888	1.1–	1.1+				

1998 FP₇₅ = 1976 UC₉ = 1999 RW₈₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	25.21166	(2000.0)	P	Q
<i>n</i>	0.25499812	ω	267.32820	+0.68188335
<i>a</i>	2.4628884	Ω	45.77814	+0.64306671
<i>e</i>	0.1182685	<i>i</i>	3.67392	+0.34856893
<i>P</i>	3.87	<i>H</i>	15.1	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1976 10 22	381	0.1+	0.0	1998 04 21	704	0.6–	0.1+	1999 09 14	704	0.4+	1.0–
1976 10 22	381	1.1+	0.3+	1998 04 21	704	0.4+	0.3–	1999 09 14	704	0.1+	0.1–
1976 10 24	381	1.2–	0.4–	1998 04 21	704	0.6–	0.3–	1999 09 14	704	0.4+	0.1–
1998 03 24	704	0.6+	1.4–	1998 04 22	704	0.3+	0.4–	1999 09 14	704	0.1+	0.4–
1998 03 24	704	1.2+	0.2+	1998 04 22	704	0.6+	1.0–	1999 09 14	703	0.8–	0.1+
1998 03 24	704	0.3–	0.2–	1998 04 22	704	1.2+	0.6–	1999 09 14	703	0.2–	0.2+
1998 03 24	704	(2.4+ 0.8–)		1998 04 22	704	0.3+	0.1–	1999 09 14	703	0.7–	0.1–
1998 03 25	704	1.7+	0.3+	1999 08 22	703	0.7–	0.4–	1999 09 14	703	0.8–	0.7–
1998 03 25	704	1.1+	0.6+	1999 08 22	703	0.9–	0.1+	1999 10 02	704	0.3–	0.4–
1998 03 25	704	0.7–	1.1+	1999 08 22	703	0.0	1.8+	1999 10 02	704	1.2+	0.2+
1998 03 25	704	0.2–	1.3+	1999 08 22	703	0.2–	1.2+	1999 10 02	704	0.3+	0.4+
1998 03 29	704	0.8–	0.1–	1999 09 07	704	0.3+	0.3–	1999 10 02	704	0.2–	0.3+
1998 03 29	704	0.4+	1.4+	1999 09 07	704	0.8+	0.9–	1999 10 07	704	0.5–	0.8+
1998 03 29	704	1.8–	0.0	1999 09 07	704	0.4+	0.0	1999 10 07	704	1.0+	0.2+
1998 03 29	704	0.8–	0.6+	1999 09 07	704	0.3+	0.9–	1999 10 07	704	0.0+	0.1+
1998 03 29	704	(2.2– 0.2+)		1999 09 07	704	0.1+	0.3–	1999 10 07	704	0.1+	1.6+
1998 04 21	704	1.5–	0.4–	1999 09 14	704	0.5–	0.5–				

1998 FF₇₇ = 1999 SK₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	58.41905		(2000.0)	P		Q	
<i>n</i>	0.28899037	ω	169.94682	+0.41026359	+0.90794068		
<i>a</i>	2.2657595	Ω	124.22585	−0.84373780	+0.41351679		
<i>e</i>	0.1375412	<i>i</i>	5.94245	−0.34610738	+0.06817321		
<i>P</i>	3.41	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 24	704	1.1−	0.1−	1998 03 25	704	0.2−	0.4−
1998 03 24	704	0.1−	0.6−	1998 04 20	704	0.5+	0.9+
1998 03 24	704	1.0+	1.0−	1998 04 20	704	0.6−	0.0
1998 03 24	704	0.0	0.1−	1998 04 20	704	0.0	1.2−
1998 03 24	704	1.2+	2.0+	1998 04 20	704	0.9+	0.8−
1998 03 25	704	0.5−	0.2−	1998 04 24	704	1.2−	0.2+
1998 03 25	704	0.3+	0.1+	1998 04 24	704	0.5−	0.1+
1998 03 25	704	0.3−	0.5+	1998 04 24	704	1.1−	1.1−
1998 03 25	704	0.4−	0.0	1998 04 24	704	0.6+	0.4+
						1999 09 30	703
						1999 09 30	703
						1999 09 30	703
						1999 09 30	703
						1999 09 30	703
						1999 10 04	703
						1999 10 04	703
						1999 10 04	703
						1999 10 04	703

1998 FS₇₈ = 1999 RC₆₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	322.44035		(2000.0)	P		Q	
<i>n</i>	0.28022316	ω	262.21396	+0.95409671	−0.29031824		
<i>a</i>	2.3127749	Ω	114.63885	+0.29665260	+0.88227118		
<i>e</i>	0.1539629	<i>i</i>	4.64352	+0.04119100	+0.37055753		
<i>P</i>	3.52	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1998 03 24	704	0.6+	0.8+	1998 04 21	704	1.1−	0.6+
1998 03 24	704	1.4−	1.2−	1998 04 21	704	0.5+	0.6−
1998 03 24	704	0.4−	0.7+	1998 04 21	704	0.2+	1.3−
1998 03 24	704	2.0+	1.5+	1998 04 21	704	0.3+	2.8−
1998 03 25	704	0.5−	1.8+	1998 04 22	704	0.9−	2.0+
1998 03 25	704	0.4+	0.7−	1998 04 22	704	0.2−	0.9+
1998 03 25	704	1.2+	1.2+	1998 04 22	704	0.9+	0.9−
1998 03 25	704	2.0+	1.2−	1998 04 22	704	0.1+	0.2−
1998 03 25	704	2.0−	0.9+	1998 04 22	704	0.9−	0.8−
1998 04 21	704	0.5−	0.4−	1999 09 07	704	0.3−	0.2−
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 13	704
						1999 09 13	704
						1999 09 13	704
						1999 09 13	704
						1999 09 13	704

1998 FP₇₉ = 1999 SB₈

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	346.09254		(2000.0)	P		Q	
<i>n</i>	0.25586263	ω	289.64370	+0.97495129	+0.19787388		
<i>a</i>	2.4573375	Ω	59.06220	−0.13219761	+0.88276474		
<i>e</i>	0.1070330	<i>i</i>	6.80061	−0.17886804	+0.42611306		
<i>P</i>	3.85	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 24	704	0.2+	1.2+	1998 04 21	704	0.2+	0.1−
1998 03 24	704	(2.6+	1.7+)	1998 04 21	704	0.2+	0.5+
1998 03 24	704	(1.8+	2.4−)	1998 04 22	704	1.2+	0.5+
1998 03 24	704	0.6−	0.6+	1998 04 22	704	0.7+	0.0
1998 03 24	704	(4.3−	0.1−)	1998 04 22	704	0.5+	0.4−
1998 03 25	704	0.7−	0.1−	1998 04 22	704	0.8+	0.1−
1998 03 25	704	0.5−	0.5+	1998 04 22	704	1.1+	0.1−
1998 03 25	704	0.3+	0.9−	1998 05 02	691	0.6−	0.4−
1998 03 25	704	0.2−	0.7+	1998 05 02	691	0.1−	0.0
1998 03 25	704	0.3−	0.8−	1998 05 02	691	0.0	0.4−
1998 04 19	691	0.0	0.5−	1998 05 28	699	0.3−	0.4+
1998 04 19	691	0.2+	0.1+	1998 05 28	699	0.9−	0.0
1998 04 19	691	0.6−	0.4−	1998 05 28	699	1.0−	0.1+
1998 04 21	704	0.5+	0.5−	1999 09 07	699	0.6+	0.6−
						1999 09 30	704
						1999 09 30	704
						1999 09 30	704
						1999 09 30	704
						1999 09 30	704
						1999 09 30	704
						1999 09 30	704
						1999 09 30	704

1998 04 21	704	0.0	0.6+	1999 09 07	699	0.8+	1.0−	1999 09 30	704	0.2−	0.8+
1998 04 21	704	0.2+	0.9+	1999 09 07	699	0.1+	0.6−				

1998 FO₉₀ = 1998 EJ₁₂ = 1999 RL₁₆₀Id. A. Doppler, G. V. Williams (d); 1982 US₁ = 1998 EJ₁₂ (*MPC* 31524) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	85.14528		(2000.0)	P		Q	
<i>n</i>	0.26270500	ω	162.10733	−0.56680958	+0.82156969		
<i>a</i>	2.4144812	Ω	73.32274	−0.76346433	−0.49587845		
<i>e</i>	0.1386575	<i>i</i>	3.66527	−0.30959509	−0.28129664		
<i>P</i>	3.75	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 01	809	0.2+	0.3+	1998 03 26	704	0.5+	0.0
1998 03 01	809	0.2+	0.5+	1998 03 26	704	0.2−	0.4−
1998 03 01	809	0.4−	0.3+	1998 04 02	809	0.7+	0.0
1998 03 02	809	0.3+	0.9−	1998 04 02	809	0.1−	1.0−
1998 03 02	809	0.3+	0.6−	1998 04 02	809	0.5+	0.6−
1998 03 02	809	0.5−	0.2−	1998 04 03	809	0.4−	1.5−
1998 03 24	704	0.1+	0.2−	1998 04 03	809	(0.5−	2.5−)
1998 03 24	704	0.3+	0.1+	1998 04 03	809	(1.3−	2.2−)
1998 03 24	704	0.4+	0.5+	1998 04 19	704	0.7+	0.2−
1998 03 24	704	0.5−	0.3−	1998 04 19	704	1.6−	0.1+
1998 03 25	704	0.6−	0.3+	1998 04 19	704	(0.6−	3.7+)
1998 03 25	704	0.3+	1.1+	1998 04 19	704	(6.1−	0.6+)
1998 03 25	704	0.1+	1.3+	1999 09 07	704	0.3−	0.4−
1998 03 25	704	(0.2−	3.1+)	1999 09 07	704	0.4+	1.1+
1998 03 25	704	0.3−	1.6+	1999 09 07	704	0.1−	0.2+
1998 03 26	704	0.1+	0.1−	1999 09 07	704	0.4−	0.0
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704

1998 FR₉₀ = 1999 RG₆₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	2.84788		(2000.0)	P		Q	
<i>n</i>	0.28346757	ω	218.21489	+0.79467029	+0.60225371		
<i>a</i>	2.2950939	Ω	104.58451	−0.53581223	+0.75480633		
<i>e</i>	0.1258286	<i>i</i>	4.50942	−0.28531456	+0.25991897		
<i>P</i>	3.48	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 24	704	0.8−	0.4−	1998 04 02	809	(1.3+	3.4−)
1998 03 24	704	(1.2+	2.7−)	1998 04 03	809	0.5−	1.0−
1998 03 24	704	1.1+	0.0	1998 04 03	809	0.4+	1.1−
1998 03 24	704	0.7−	0.0	1998 04 03	809	0.3−	1.4−
1998 03 25	704	0.2−	0.6+	1998 04 19	704	(2.4+	0.9+)
1998 03 25	704	1.0+	1.4+	1998 04 19	704	(2.4+	0.8−)
1998 03 25	704	0.3+	1.6+	1998 04 19	704	0.6−	0.1−
1998 03 25	704	0.2+	0.1+	1998 04 19	704	1.0−	0.9−
1998 03 25	704	0.7+	1.6+	1999 07 21	699	0.1+	0.1+
1998 03 26	704	0.6+	0.2+	1999 07 21	699	0.0	0.0
1998 03 26	704	1.3+	0.5+	1999 07 21	699	0.2+	0.2+
1998 03 26	704	1.7−	0.9−	1999 08 13	699	0.2−	0.0
1998 04 02	809	(2.2+	2.4−)	1999 08 13	699	0.3−	0.2+
1998 04 02	809	(1.8+	2.7−)	1999 08 13	699	0.3−	0.2+
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704
						1999 09 07	704

1998 FQ₉₄ = 1998 EH₁₃ = 1998 ET₂₁ = 1999 LS₉Id. A. Doppler (d, *MPC* 36125), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	242.88684		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19339327	ω	237.61245	+0.89212693	−0.44287560
a	2.9614777	Ω	148.41298	+0.45015935	+0.85463947
e	0.0815124	i	9.81381	+0.03828963	+0.27102137
P	5.10	H	13.8	G	0.15
				U	5

Residuals in seconds of arc

1998 03 01	809	0.5+	0.3-	1998 03 24	704	0.4+	0.0	1999 06 08	704	0.2-	0.3-
1998 03 01	809	0.4+	1.9-	1998 03 24	566	0.3-	0.7-	1999 06 08	704	0.5+	0.3-
1998 03 01	809	0.1-	1.4-	1998 03 24	566	0.1-	0.8-	1999 06 08	704	0.4-	0.3-
1998 03 02	809	0.8-	1.6+	1998 03 24	566	0.2-	1.0-	1999 06 08	704	1.6-	0.5-
1998 03 02	809	0.0	1.5+	1998 03 25	704	0.6+	0.3-	1999 06 14	704	0.3+	0.7-
1998 03 02	809	0.7+	1.0+	1998 03 25	704	0.4+	0.5-	1999 06 14	704	0.4-	0.2+
1998 03 24	704	1.6-	0.9+	1998 03 25	704	0.2+	0.4-	1999 06 14	704	0.3+	0.4+
1998 03 24	704	1.4-	2.7+	1998 03 25	704	0.1+	0.2-	1999 06 14	704	0.2+	0.3+
1998 03 24	704	0.2+	0.7+	1998 03 25	704	1.0+	1.0-	1999 06 14	704	1.2+	1.3+

1998 FK₁₀₁ = 1999 RN₁₃₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	69.63949	(2000.0)	P	Q
<i>n</i>	0.23598730	ω 30.31218	-0.41665465	+0.90365633
<i>a</i>	2.5934445	Ω 215.33558	-0.86464505	-0.42756917
<i>e</i>	0.1338371	<i>i</i> 9.85758	-0.28069172	-0.02428661
<i>P</i>	4.18	<i>H</i> 14.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 31	704	0.5-	0.1-	1998 04 18	704	0.6-	0.6+	1999 09 09	704	0.6+	0.1+
1998 03 31	704	0.4-	0.4-	1998 04 18	704	0.4-	0.7+	1999 09 09	704	0.3-	0.2+
1998 03 31	704	0.4+	0.2+	1998 04 19	704	0.3+	0.0	1999 09 09	704	1.3+	0.2+
1998 03 31	704	1.0-	1.2-	1998 04 19	704	0.2+	0.4+	1999 09 14	704	0.3+	0.3+
1998 03 31	704	0.1+	1.1-	1998 04 19	704	0.0	0.7-	1999 09 14	704	0.4+	0.6-
1998 04 01	704	0.5-	0.2-	1998 04 19	704	0.1+	1.3-	1999 09 14	703	0.7-	0.2+
1998 04 01	704	0.4+	1.6+	1998 04 19	704	1.1+	1.8-	1999 09 14	704	0.1+	0.1-
1998 04 01	704	1.1+	1.1+	1999 09 08	699	0.6+	0.1-	1999 09 14	703	0.0	0.5+
1998 04 01	704	0.4+	0.5+	1999 09 08	699	0.6-	0.8+	1999 09 14	704	0.1+	0.4-
1998 04 01	704	0.2-	0.0	1999 09 08	699	0.6-	0.4-	1999 09 14	703	0.8-	0.1+
1998 04 18	704	0.2-	1.2+	1999 09 09	704	0.2-	0.5+	1999 09 14	704	0.3+	1.2-
1998 04 18	704	0.2-	0.5+	1999 09 09	704	0.6-	0.3+	1999 09 14	703	0.1+	0.5-

1998 FH₁₀₄ = 1999 RW₁₄₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	14.45456	(2000.0)	P	Q
<i>n</i>	0.26301390	ω 33.91711	+0.69008931	+0.71519669
<i>a</i>	2.4125903	Ω 279.99679	-0.68646802	+0.59837647
<i>e</i>	0.0992686	<i>i</i> 6.45828	-0.22921256	+0.36116380
<i>P</i>	3.75	<i>H</i> 14.7	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1998 03 31	704	0.5+	0.5+	1998 04 19	704	(1.4-	2.4-)	1999 09 14	704	0.4-	0.0
1998 03 31	704	0.1-	1.6+	1999 07 12	704	0.1+	0.6-	1999 09 14	704	0.3-	0.1+
1998 03 31	704	0.8+	0.2+	1999 07 12	704	0.3+	0.1-	1999 09 14	704	0.5-	0.2-
1998 03 31	704	1.3+	0.8-	1999 07 12	704	0.4+	0.1-	1999 09 14	704	0.2-	0.0
1998 04 01	704	0.0	0.4-	1999 07 12	704	0.3+	0.3-	1999 10 02	703	0.5-	0.3-
1998 04 01	704	1.2-	1.1+	1999 07 12	704	0.5+	0.4+	1999 10 02	703	0.4-	0.1-
1998 04 01	704	1.2-	1.8+	1999 09 04	703	0.2+	0.3+	1999 10 02	703	0.7-	0.2-
1998 04 01	704	1.3-	1.4+	1999 09 04	703	0.4-	0.0	1999 10 02	703	0.9-	0.0
1998 04 18	704	0.5+	0.8-	1999 09 04	703	0.0	0.4+	1999 10 02	704	0.0	0.3+
1998 04 18	704	0.3+	0.3-	1999 09 04	703	0.5-	0.0	1999 10 02	704	1.1+	0.5-
1998 04 18	704	0.2-	1.4-	1999 09 09	704	0.1+	0.3+	1999 10 02	704	1.3+	1.1-
1998 04 18	704	(0.9-	2.4-)	1999 09 09	704	0.2-	0.3+	1999 10 02	704	0.7+	0.1+
1998 04 19	704	0.0	0.5+	1999 09 09	704	0.0	0.3+	1999 10 07	703	0.2+	0.7+
1998 04 19	704	0.1-	1.3-	1999 09 09	704	0.2+	0.4+	1999 10 07	703	0.1-	0.0
1998 04 19	704	0.2+	1.3-	1999 09 09	704	0.7+	0.9+	1999 10 07	703	0.5-	0.1-
1998 04 19	704	0.8+	0.0	1999 09 14	704	0.3-	0.2-	1999 10 07	703	0.3-	0.1-

1998 FR₁₀₈ = 1990 DP₈ = 1999 RN₁₁₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	138.02001	(2000.0)	P	Q
<i>n</i>	0.25079765	ω 284.47527	-0.99319122	-0.05707816
<i>a</i>	2.4903119	Ω 252.33047	+0.09063786	-0.92625753
<i>e</i>	0.0405049	<i>i</i> 6.11835	-0.07318455	-0.37254405
<i>P</i>	3.93	<i>H</i> 14.6	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1990 02 24	809	1.1+	0.3+	1998 04 01	704	0.8-	0.4-	1998 04 20	704	(2.4-	2.7-)
1990 02 24	809	0.2+	0.4-	1998 04 01	704	1.1-	0.1-	1999 07 13	704	0.9+	0.7+
1990 02 24	809	1.4-	0.1-	1998 04 18	704	0.3-	0.4+	1999 07 13	704	0.0	0.6+
1996 12 15	691	0.7+	0.3-	1998 04 18	704	0.2+	0.7+	1999 07 13	704	0.7-	0.4-
1996 12 15	691	0.3+	0.6+	1998 04 18	704	0.3-	0.8+	1999 07 13	704	0.6-	0.6+
1996 12 15	691	0.7+	0.5-	1998 04 18	704	0.1-	0.7-	1999 07 13	704	0.5-	0.4-
1997 02 07	691	0.5-	0.1+	1998 04 18	704	0.4-	0.5-	1999 09 09	704	0.2+	0.1-
1997 02 07	691	0.8-	0.9-	1998 04 19	704	1.8+	0.3+	1999 09 09	704	0.2+	0.4+
1997 02 07	691	0.9-	0.3+	1998 04 19	704	0.1-	0.4-	1999 09 09	704	0.3+	0.3-
1998 03 31	704	0.2-	0.5+	1998 04 19	704	0.0	0.9+	1999 09 09	704	0.2-	0.7+
1998 03 31	704	0.3-	1.0-	1998 04 19	704	0.6-	0.4+	1999 09 13	704	0.6+	0.0
1998 03 31	704	0.6+	0.9-	1998 04 19	704	1.2+	0.5-	1999 09 13	704	0.2+	0.9-
1998 03 31	704	0.1-	0.5-	1998 04 20	704	0.1-	0.1+	1999 09 13	704	0.2-	0.4-
1998 04 01	704	0.2-	0.2+	1998 04 20	704	1.0+	0.2+	1999 09 13	704	0.1-	0.7-
1998 04 01	704	0.7-	0.0	1998 04 20	704	0.2+	0.2-	1999 09 13	704	0.2+	1.2-
1998 04 01	704	0.4-	0.5-	1998 04 20	704	0.7+	0.1-				

1998 FP₁₀₉ = 1999 RK₂₀

Id. S. Nakano, M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	105.66074	(2000.0)	P	Q
<i>n</i>	0.28459581	ω 261.24367	-0.59091861	+0.80458092
<i>a</i>	2.2890242	Ω 332.27126	-0.68148253	-0.53689314
<i>e</i>	0.0786991	<i>i</i> 7.26780	-0.43173692	-0.25376228
<i>P</i>	3.46	<i>H</i> 13.9	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1992 09 25	801	0.4+	0.7-	1998 04 19	704	0.4+	0.7-	1999 09 08	704	0.1+	1.6-
1992 09 25	801	0.4+	0.4-	1998 04 19	704	0.5+	1.3-	1999 09 08	699	0.5-	0.5+
1994 01 18	098	1.2-	1.0+	1998 04 19	704	0.2+	0.6+	1999 09 09	704	0.1-	0.4+
1994 01 18	098	1.2+	0.6-	1998 04 19	704	0.4+	0.4+	1999 09 09	704	0.3+	0.1+
1998 03 31	704	0.6-	0.3+	1998 04 19	704	0.8+	0.8+	1999 09 09	704	0.3-	0.1-
1998 03 31	704	0.3-	0.1+	1998 04 20	704	0.2-	0.3-	1999 09 09	704	0.3+	0.4-
1998 03 31	704	0.5-	0.2+	1998 04 20	704	0.0	0.1-	1999 09 09	704	0.1+	0.7-
1998 03 31	704	0.9-	0.7+	1998 04 20	704	0.1+	0.0	1999 09 16	704	1.1-	0.4-
1998 03 31	704	0.5-	0.4+	1998 04 20	704	0.7+	0.9-	1999 09 16	704	(0.3+	2.1-)
1998 04 01	704	0.2-	0.2+	1998 04 20	704	1.3+	0.9-	1999 09 16	704	1.1-	1.1-
1998 04 01	704	0.0	0.0	1999 09 07	704	0.3+	0.1+	1999 10 04	704	0.2+	0.7+
1998 04 01	704	(3.5-	0.3+)	1999 09 07	704	0.1-	0.3+	1999 10 04	704	0.4+	1.1+
1998 04 01	704	0.6-	1.0+	1999 09 07	704	0.1+	0.2+	1999 10 04	704	0.3-	0.5+
1998 04 01	704	0.5-	0.7+	1999 09 07	704	0.2-	0.1+	1999 10 04	704	0.9+	0.9+
1998 04 18	704	0.1+	0.4-	1999 09 07	704	0.2+	0.5+	1999 10 07	704	0.7-	0.8+
1998 04 18	704	0.3+	0.1+	1999 09 08	699	1.2+	0.1-	1999 10 07	704	0.7-	0.3+
1998 04 18	704	0.2+	0.8+	1999 09 08	704	(0.6-	4.5-)	1999 10 07	704	0.6-	0.5+
1998 04 18	704	0.9+	0.0	1999 09 08	699	0.2+	0.3+	1999 10 07	704	0.5-	0.5+
1998 04 18	704	0.2+	0.9+	1999 09 08	704	(0.3+	3.0-)	1999 10 07	704	0.6-	0.6+

1998 FZ₁₀₉ = 1981 UM₉ = 1999 RO₁₃₃

Id. A. Doppler, M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	24.16759	(2000.0)	P	Q
<i>n</i>	0.21062404	ω 24.99465	+0.42016221	+0.89923703
<i>a</i>	2.7976760	Ω 270.04899	-0.85170036	+0.34445886
<i>e</i>	0.1985921	<i>i</i> 6.99629	-0.31316165	+0.26966803
<i>P</i>	4.68	<i>H</i> 13.3	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1981 10 30	381	0.6−	0.6−	1998 04 19	704	0.2+	0.3+	1999 09 08	704	0.4+	0.0
1981 10 30	381	0.4−	0.8−	1998 04 19	704	0.3−	0.9+	1999 09 08	699	0.1+	0.2+
1994 07 12	808	1.2+	1.8+	1998 04 19	704	0.4−	0.5+	1999 09 09	704	0.1+	0.0
1994 07 12	808	0.3−	0.5+	1998 04 19	704	0.0	0.1+	1999 09 09	704	0.2+	0.1−
1995 11 24	691	0.1+	0.5+	1998 04 20	704	0.5+	0.0	1999 09 09	704	0.0	0.3+
1995 11 24	691	0.2+	0.6+	1998 04 20	704	0.8+	0.3+	1999 09 09	704	0.1+	0.5+
1995 11 24	691	0.3+	0.5+	1998 04 20	704	0.1−	0.1−	1999 09 09	704	0.5+	0.4+
1996 12 07	691	0.7+	0.8+	1998 04 20	704	0.2−	0.6−	1999 09 10	704	0.2+	0.2+
1996 12 07	691	0.5+	0.9+	1998 04 20	704	0.6−	0.1+	1999 09 10	704	0.8+	0.3+
1996 12 07	691	1.1+	0.8+	1999 07 12	704	0.1+	1.1−	1999 09 10	704	0.2+	0.4−
1998 03 31	704	0.1−	0.0	1999 07 12	704	0.4+	0.5+	1999 09 10	704	0.4−	0.8−
1998 03 31	704	0.1−	0.5−	1999 07 12	704	0.3−	0.1−	1999 09 10	704	1.2−	1.0+
1998 03 31	704	0.4−	0.4+	1999 07 12	704	0.2+	0.3−	1999 09 14	704	0.0	0.0
1998 03 31	704	0.7−	0.4+	1999 07 12	704	0.5−	0.4+	1999 09 14	704	0.1+	0.1−
1998 03 31	704	0.5−	0.5−	1999 07 23	704	0.5−	1.0−	1999 09 14	704	0.0	0.4−
1998 04 01	704	0.1−	0.4+	1999 07 23	704	0.0	0.9−	1999 09 14	704	0.0	0.2−
1998 04 01	704	0.4−	0.6+	1999 07 23	704	0.5−	0.5+	1999 09 14	704	0.3−	0.1−
1998 04 01	704	0.7−	0.9+	1999 09 04	703	0.1−	0.4+	1999 10 02	703	0.1+	0.1−
1998 04 01	704	0.4+	0.2−	1999 09 04	703	0.0	0.1+	1999 10 02	703	0.2−	0.1+
1998 04 18	704	0.1+	0.2+	1999 09 04	703	0.4−	0.2+	1999 10 02	703	0.0	0.2−
1998 04 18	704	1.0+	0.1+	1999 09 04	703	0.4−	0.3−	1999 10 02	703	0.3−	0.1+
1998 04 18	704	0.6+	0.2−	1999 09 08	699	0.1+	0.1+	1999 10 07	703	0.3−	0.0
1998 04 18	704	0.2+	1.1−	1999 09 08	704	0.3+	0.1+	1999 10 07	703	0.2−	0.1+
1998 04 18	704	0.2−	0.8−	1999 09 08	699	0.1+	0.5+	1999 10 07	703	0.1+	0.1+
1998 04 19	704	0.1−	0.1+	1999 09 08	704	0.1+	0.0	1999 10 07	703	0.2−	0.2+

1998 FT₁₁₀ = 1999 RY₁₉₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	9.06477	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.23083570	ω	86.99867	+0.73408342	+0.66396383
<i>a</i>	2.6318880	Ω	231.34591	−0.67263719	+0.68220739
<i>e</i>	0.2016224	<i>i</i>	10.50536	−0.09317051	+0.30617822
<i>P</i>	4.27	<i>H</i>	14.8	<i>G</i>	0.15

Residuals in seconds of arc

1998 03 31	704	0.7−	1.4+	1998 04 20	704	0.0	0.5−	1999 09 16	704	0.1+	0.8+
1998 03 31	704	0.2−	0.1+	1998 04 20	704	1.6+	0.5+	1999 09 16	704	0.2+	0.0
1998 03 31	704	1.0+	0.5−	1998 04 20	704	1.0+	1.2−	1999 09 16	704	1.2−	0.7+
1998 03 31	704	0.8+	1.9+	1998 04 20	704	0.9+	0.2−	1999 09 30	703	0.1−	0.0
1998 04 01	704	0.6−	1.0+	1999 07 12	704	0.4+	0.2+	1999 09 30	703	0.2−	0.6+
1998 04 01	704	(3.3−	1.2+)	1999 07 12	704	0.3+	0.2−	1999 09 30	703	0.2+	0.2+
1998 04 01	704	1.7−	0.6−	1999 07 12	704	1.2+	1.0−	1999 09 30	703	0.2−	0.3+
1998 04 01	704	0.2+	0.8−	1999 07 12	704	0.7+	0.4−	1999 10 07	703	0.7+	1.1+
1998 04 01	704	1.2−	1.1+	1999 09 10	704	0.2−	0.5−	1999 10 07	703	0.1−	0.1−
1998 04 19	704	0.6−	0.6+	1999 09 10	704	0.6−	0.6−	1999 10 07	703	0.2+	0.3+
1998 04 19	704	0.4−	1.5−	1999 09 10	704	1.0−	0.5−	1999 10 07	703	0.6−	0.2+
1998 04 19	704	0.2−	1.0+	1999 09 16	704	0.0	0.8+				
1998 04 19	704	0.7+	0.3+	1999 09 16	704	0.0	0.3−				

1998 FF₁₁₇ = 1999 RQ₃₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	44.45154	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.21787344	ω	61.14435	+0.03973631	+0.99351018
<i>a</i>	2.7352679	Ω	211.68187	−0.97283546	+0.01412230
<i>e</i>	0.1254016	<i>i</i>	11.70803	−0.22806181	+0.11286308
<i>P</i>	4.52	<i>H</i>	14.6	<i>G</i>	0.15

Residuals in seconds of arc

1998 03 25	704	0.5+	1.4+	1998 04 19	704	0.1+	0.0	1999 07 22	704	0.5+	0.7+
1998 03 25	704	0.8−	0.5−	1998 04 19	704	0.1+	0.4+	1999 07 22	704	0.5+	0.7+
1998 03 25	704	0.3+	0.2−	1998 04 19	704	1.5+	0.7−	1999 07 22	704	0.5+	1.7+
1998 03 25	704	0.9−	0.3+	1998 04 19	704	0.7+	1.5−	1999 07 22	704	1.1+	0.7+
1998 03 28	428	1.2−	1.0−	1998 04 20	704	0.4+	0.2+	1999 09 07	703	0.3−	0.0

1998 03 28	428	0.6+	0.6−	1998 04 20	704	0.2−	1.0+	1999 09 07	703	0.0	0.4+
1998 03 29	428	1.3−	0.9−	1998 04 20	704	0.9−	0.1+	1999 09 07	703	0.0	0.4−
1998 03 31	704	0.2−	0.5+	1998 04 20	704	0.8−	1.9+	1999 09 07	703	1.4−	0.5−
1998 03 31	704	0.3−	0.3+	1998 04 20	704	(2.7−	0.2−)	1999 09 08	704	0.5+	0.0
1998 03 31	704	1.0−	1.2+	1998 04 22	704	1.0+	0.2−	1999 09 08	704	0.1−	0.1+
1998 03 31	704	0.4+	0.1−	1998 04 22	704	0.1+	0.2+	1999 09 08	704	0.2+	0.2+
1998 03 31	704	(4.3−	0.4−)	1998 04 22	704	0.5−	1.2+	1999 09 08	704	0.2+	0.4−
1998 04 01	704	(1.4+	2.0−)	1998 04 22	704	0.8−	0.4−	1999 09 09	704	0.3+	0.6−
1998 04 01	704	(0.9+	5.3+)	1998 04 22	704	(2.1+	0.1+)	1999 09 09	704	0.4−	0.2+
1998 04 01	704	1.5+	0.7+	1998 05 01	699	1.6+	0.2−	1999 09 09	704	0.1+	0.4−
1998 04 01	704	0.0	0.7+	1998 05 01	699	1.1+	0.4−	1999 09 09	704	0.2+	0.0
1998 04 03	428	0.4+	0.7−	1998 05 01	699	0.4+	0.1−	1999 09 09	704	0.5−	0.2+
1998 04 03	428	0.3−	0.1−	1998 05 16	704	0.8−	0.1+	1999 09 14	703	0.3−	1.1−
1998 04 18	704	0.1−	0.4−	1998 05 16	704	0.6+	1.7−	1999 09 14	703	0.9−	0.4−
1998 04 18	704	0.4−	0.6+	1998 05 16	704	0.8−	0.7−	1999 09 14	703	0.5−	0.2−
1998 04 18	704	0.4−	0.9−	1998 05 16	704	0.0	1.1−	1999 09 14	703	0.5+	0.7−
1998 04 18	704	0.3+	0.7+	1998 05 16	704	(4.8−	3.0+)				

1998 FM₁₁₇ = 1999 RD₇₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	75.01116	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.21925673	ω	246.04646	−0.39084850	+0.92044672
<i>a</i>	2.7237511	Ω	0.97219	−0.73836343	−0.31098928
<i>e</i>	0.1786213	<i>i</i>	13.31962	−0.54959702	−0.23677732
<i>P</i>	4.50	<i>H</i>	14.7	<i>G</i>	0.15

Residuals in seconds of arc

1998 03 25	704	0.0	0.2+	1998 04 01	704	0.3−	0.7+	1999 09 07	704	(1.1+	2.2−)
1998 03 25	699	0.0	0.1−	1998 04 01	704	(2.2−	0.1+)	1999 09 07	704	0.1+	0.2−
1998 03 25	699	1.5+	0.1+	1998 04 20	704	0.1−	1.3+	1999 09 07	704	0.1−	1.3−
1998 03 25	704	1.1−	0.4+	1998 04 20	704	0.7+	0.6−	1999 09 07	704	0.4+	0.7+
1998 03 25	699	0.9+	0.4+	1998 04 20	704	(1.1−	2.4−)	1999 09 07	704	1.7+	0.9−
1998 03 25	704	0.7−	1.3+	1998 04 20	704	0.6+	1.3−	1999 09 07	704	0.0	0.9+
1998 03 25	704	1.4−	1.6+	1998 04 20	704	0.6−	0.7−	1999 09 14	704	1.4−	0.6−
1998 03 31	704	0.5−	0.7+	1998 04 30	699	0.7+	0.4−	1999 09 14	704	0.2−	0.3−
1998 03 31	704	1.2+	0.3−	1998 04 30	699	0.6+	0.5−	1999 09 14	704	0.9−	1.4+
1998 03 31	704	1.0−	1.0−	1998 04 30	699	0.7+	0.1−	1999 09 14	704	0.1−	0.3+
1998 03 31	704	0.4+	1.1−	1999 09 07	704	0.9+	1.0−	1999 10 07	704	0.2+	0.6+
1998 03 31	704	(2.1−	0.8−)	1999 09 07	704	0.8+	0.3+	1999 10 07	704	0.4−	0.0
1998 04 01	704	0.7−	0.1+	1999 09 07	704	0.4−	1.2−	1999 10 07	704	0.2−	1.0+
1998 04 01	704	0.6−	0.0	1999 09 07	704	0.0	0.3−	1999 10 07	704	1.2−	1.6+

1998 FT₁₂₁ = 1999 TN₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.05113	(2000.0)	<i>P</i>	Williams	<i>Q</i>
<i>n</i>	0.28944569	ω	76.09551	−0.14719645	+0.98907215
<i>a</i>	2.2633827	Ω	185.46057	−0.93795307	−0.14225414
<i>e</i>	0.1476986	<i>i</i>	5.02562	−0.31397013	−0.03873046
<i>P</i>	3.41	<i>H</i>	14.9	<i>G</i>	0.15

Residuals in seconds of arc

1998 03 20	704	0.6+	0.4−	1998 03 25	372	(3.1−	0.5−)	1998 05 02	699	0.3+	0.5+
1998 03 20	704	0.7+	0.3+	1998 04 20	704	0.1−	0.0	1998 05 02	699	0.3+	0.4−
1998 03 20	704	0.5+	0.4+	1998 04 20	704	0.1+	0.3+	1999 10 06	120	0.3−	0.1−
1998 03 20	704	0.0	0.8+	1998 04 20	704	0.2−	0.2+	1999 10 06	120	0.8+	0.2+
1998 03 20	704	0.1+	0.5+	1998 04 20	704	0.1−	0.3+	1999 10 07	704	0.5+	0.5+
1998 03 22	704	0.1−	1.0−	1998 04 20	704	0.1−	0.5−	1999 10 07	704	0.6+	1.1−
1998 03 22	704	1.3+	0.9−	1998 04 22	704	0.1−	0.8−	1999 10 07	704	0.3+	0.2−
1998 03 22	704	0.2+	0.6+	1998 04 22	704	0.1+	0.1+	1999 10 07	704	0.1−	0.8−
1998 03 22	704	0.7−	0.3+	1998 04 22	704	0.1−	0.4+	1999 10 07	120	1.3−	0.3+
1998 03 22	372	1.4−	0.4+	1998 04 22	704	0.3−	0.2−	1999 10 07	120	0.7−	0.0
1998 03 22	372	1.3−	0.9−	1998 04 22	704	0.6+	0.1+	1999 10 08	120	0.2−	0.5+
1998 03 25	372	(2.0+	0.8−)	1998 05 02	699	0.2−	0.2−	1999 10 08	120	0.5+	0.5+

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1998 FU₁₃₃ = 1999 RU₁₄₆

Id. M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 37.91184 (2000.0)			<i>P</i>			<i>Q</i>		
<i>n</i>	0.22417640	ω	96.82247	+0.17654139	+0.98420794			
<i>a</i>	2.6837545	Ω	183.42802	−0.96681518	+0.17092193			
<i>e</i>	0.1733413	<i>i</i>	12.51432	−0.18466602	+0.04604806			
<i>P</i>	4.40	<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 28	704	0.4+	1.9−	1998 04 20	704	4.0−	0.4−
1998 03 20	704	1.2+	1.0+	1998 03 28	704	0.5−	0.5−	1999 09 09	704	0.1+	0.9+
1998 03 20	704	0.0	1.0+	1998 03 28	704	0.9+	0.5−	1999 09 09	704	0.6−	0.1+
1998 03 20	704	0.4−	0.1+	1998 03 29	704	0.4+	0.7−	1999 09 09	704	0.5−	0.0
1998 03 20	704	2.0−	0.5−	1998 03 29	704	0.6+	0.1−	1999 09 09	704	0.3−	0.8−
1998 03 24	704	0.5+	0.1+	1998 03 29	704	1.2−	0.1−	1999 09 09	704	0.1−	0.2−
1998 03 24	704	0.3−	1.4+	1998 03 29	704	0.1+	0.9−	1999 09 14	704	0.4−	0.5−
1998 03 24	704	0.1+	0.1−	1998 03 29	704	0.2−	0.3+	1999 09 14	704	0.4+	0.3−
1998 03 24	704	0.9+	0.3−	1998 04 20	704	0.1+	0.8−	1999 09 14	704	0.0	0.1+
1998 03 24	704	0.4+	0.5−	1998 04 20	704	1.6+	1.6+	1999 09 14	704	0.6+	0.6+
1998 03 28	704	1.1+	1.1+	1998 04 20	704	1.6+	0.8+	1999 09 14	704	0.7+	0.0
1998 03 28	704	1.3−	0.6−	1998 04 20	704	0.1+	0.2+				

1998 GE₇ = 1999 SW₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 53.53381 (2000.0)			<i>P</i>			<i>Q</i>		
<i>n</i>	0.23339686	ω	177.32726	−0.02809656	+0.96596748			
<i>a</i>	2.6125987	Ω	90.97283	−0.92182405	+0.07444492			
<i>e</i>	0.1418258	<i>i</i>	14.90221	−0.38658892	−0.24771916			
<i>P</i>	4.22	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1998 04 02	704	0.3+	0.3+	1998 05 16	704	0.2+	1.1−	1999 09 11	704	1.2+	0.2−
1998 04 02	704	0.3+	0.4+	1998 05 16	704	0.3−	1.2+	1999 09 11	704	0.7+	0.3−
1998 04 02	704	0.4+	0.3−	1998 05 16	704	0.3−	0.7+	1999 09 11	704	0.9+	0.5−
1998 04 03	704	0.2+	0.2−	1998 05 29	704	0.3+	0.2+	1999 09 11	704	1.1+	0.5−
1998 04 03	704	0.2−	0.9+	1998 05 29	704	0.1−	0.5−	1999 09 29	704	0.4−	0.9−
1998 04 03	704	0.2−	0.2+	1998 05 29	704	0.2+	0.2−	1999 09 29	704	0.6−	0.6−
1998 04 03	704	0.5−	0.6+	1998 05 29	704	0.1+	1.1−	1999 09 29	704	0.1−	0.5+
1998 04 03	704	0.0	0.4+	1998 05 29	704	0.4−	1.1−	1999 09 29	704	0.5−	0.2+
1998 04 24	704	0.4−	0.4−	1998 06 21	699	0.5−	1.1+	1999 09 30	704	0.2−	0.4−
1998 04 24	704	0.0	0.3−	1998 06 21	699	0.2−	1.2+	1999 09 30	704	0.7−	0.5+
1998 04 24	704	0.8+	0.4−	1998 06 21	699	(0.3−	2.4+)	1999 09 30	704	0.9−	0.7+
1998 04 24	704	0.4−	0.4−	1998 06 22	699	0.4−	0.3−	1999 09 30	704	0.5−	1.1+
1998 04 24	704	0.2+	0.2+	1998 06 22	699	0.4−	0.8+	1999 09 30	704	1.0−	1.6+
1998 05 16	704	0.3+	0.6−	1998 06 22	699	0.3+	0.1+				
1998 05 16	704	0.3+	0.2−	1999 09 11	704	0.7+	0.4−				

1998 GO₁₀ = 1999 TY₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 56.10106 (2000.0)			<i>P</i>			<i>Q</i>		
<i>n</i>	0.23926935	ω	316.87498	+0.21772291	+0.97590854			
<i>a</i>	2.5696739	Ω	325.69325	−0.88852426	+0.19220130			
<i>e</i>	0.1854363	<i>i</i>	1.43513	−0.40388287	+0.10325302			
<i>P</i>	4.12	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1998 04 02	561	0.6+	0.3−	1998 04 20	704	0.3−	0.2+	1998 04 30	699	0.4+	0.3−
1998 04 02	561	0.3+	0.0	1998 04 21	704	0.3+	0.2+	1998 04 30	699	0.0	0.6+
1998 04 03	561	0.0	0.3+	1998 04 21	704	0.4+	0.1+	1999 10 04	704	0.1−	1.2−
1998 04 03	561	0.1−	0.4+	1998 04 21	704	0.4+	0.4−	1999 10 04	704	0.2+	0.6−
1998 04 03	561	0.0	0.2+	1998 04 21	704	0.1+	0.2+	1999 10 04	704	0.0	1.2−
1998 04 03	561	0.2+	0.1+	1998 04 21	704	0.5−	0.8−	1999 10 04	704	0.2+	0.0
1998 04 03	561	0.2−	0.1−	1998 04 22	704	0.0	0.5+	1999 10 06	704	0.0	1.1+
1998 04 03	561	0.3−	0.1−	1998 04 22	704	0.4−	0.1+	1999 10 06	704	0.3−	0.8+

1998 04 20	704	1.1+	0.5−	1998 04 22	704	0.7−	0.3−	1999 10 06	704	0.0	0.7+
1998 04 20	704	0.9+	0.2−	1998 04 22	704	1.3−	0.4+	1999 10 06	704	0.2+	0.5+
1998 04 20	704	1.1−	1.7−	1998 04 22	704	0.7−	1.1+	1999 10 06	704	0.3−	0.0
1998 04 20	704	0.0	0.3+	1998 04 30	699	1.3+	0.1+				

1998 HA

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 116.88684 (2000.0)			<i>P</i>			<i>Q</i>		
<i>n</i>	0.23908645	ω	160.10870	−0.87482911	+0.44458469			
<i>a</i>	2.5709842	Ω	47.82691	−0.47214186	−0.69360681			
<i>e</i>	0.0926574	<i>i</i>	15.04690	−0.10842555	−0.56679277			
<i>P</i>	4.12	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1998 03 24	704	0.1−	0.8+	1998 04 21	704	0.5+	0.4−	1998 05 01	704	0.7+	0.0
1998 03 24	704	0.5−	1.4+	1998 04 21	704	0.9−	0.3+	1998 05 01	704	0.1+	0.8−
1998 03 24	704	0.1+	1.5+	1998 04 21	704	0.4−	1.0−	1998 05 01	704	0.1−	0.3+
1998 03 24	704	(2.5−	1.3−)	1998 04 21	704	0.2+	0.2−	1998 05 01	704	0.4−	0.3+
1998 04 16	557	0.6+	0.4−	1998 04 21	704	(2.3−	0.2+)	1998 05 13	557	0.1−	0.1+
1998 04 17	557	0.1−	0.5−	1998 04 22	704	0.7+	0.8−	1998 05 13	557	0.8+	0.6+
1998 04 17	557	0.0	0.1−	1998 04 22	704	0.3+	0.2−	1998 05 13	557	0.0	0.7+
1998 04 17	557	0.3−	0.1−	1998 04 22	704	0.1+	0.5−	1998 05 31	557	0.2−	0.5+
1998 04 17	557	0.2+	0.2−	1998 04 22	704	0.3+	0.1+	1998 05 31	557	0.5−	0.7+
1998 04 19	557	0.5+	0.2−	1998 04 22	704	0.3+	0.7−	1999 09 29	684	1.0+	0.2−
1998 04 19	557	0.2+	0.3−	1998 04 30	557	0.2−	0.3−	1999 09 29	684	0.2−	0.1−
1998 04 20	557	0.3−	0.2−	1998 04 30	557	0.4−	0.2−	1999 09 30	684	0.5−	0.4+
1998 04 21	557	0.4−	0.5−	1998 05 01	704	0.7−	0.9+	1999 09 30	684	0.4−	0.0

1998 HN₁ = 1998 FN₇₃ = 1999 TC₃₅

Id. A. Doppler (d, *MPC* 34061), G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 233.82461 (2000.0)			<i>P</i>			<i>Q</i>		
<i>n</i>	0.36372076	ω	286.47324	−0.67512875	−0.71729972			
<i>a</i>	1.9436765	Ω	208.44187	+0.73531305	−0.67310672			
<i>e</i>	0.0814570	<i>i</i>	21.20719	−0.05929501	−0.18002350			
<i>P</i>	2.71	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1998 03 31	704	0.1+	0.3+	1998 04 20	704	0.0	0.6+	1998 04 22	704	0.5+	0.1+
1998 03 31	704	0.9−	0.1−	1998 04 21	704	1.2−	0.4−	1998 04 22	704	0.7−	0.4+
1998 03 31	704	1.4−	1.8−	1998 04 21	704	0.4+	0.3+	1999 10 03	704	0.1−	1.0+
1998 03 31	704	0.5+	0.5+	1998 04 21	704	1.0+	0.1−	1999 10 03	704	0.1+	0.0
1998 04 01	704	0.0	0.5+	1998 04 21	704	0.5+	0.4−	1999 10 03	704	0.3+	0.2+
1998 04 01	704	0.6+	1.0+	1998 04 21	704	0.1−	1.0−	1999 10 07	704	0.4+	0.7−
1998 04 01	704	0.5−	0.2+	1998 04 21	704	0.5+	0.8+	1999 10 07	704	0.0	0.1−
1998 04 01	704	0.8+	0.3−	1998 04 21	704	1.2−	1.6−	1999 10 07	704	0.4−	0.4−
1998 04 20	704	0.6−	1.1−	1998 04 21	704	0.3+	0.3−	1999 10 07	704	0.4−	0.3+
1998 04 20	704	0.4−	0.8+	1998 04 22	704	0.8+	0.6+	1999 10 07	704	0.3+	0.2−
1998 04 20	704	0.0	0.9+	1998 04 22	704	0.2−	0.4−				
1998 04 20	704	0.3+	0.9+	1998 04 22	704	0.8+	0.1−				

1998 HX₂ = 1999 TT₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 283.75688 (2000.0)			<i>P</i>			<i>Q</i>		
<i>n</i>	0.36280960	ω	245.16052	+0.07122727	−0.98812822			
<i>a</i>	1.9469294	Ω	202.08369	+0.99477310	+0.08038103			
<i>e</i>	0.1516703	<i>i</i>	21.22710	+0.07316529	−0.13092556			
<i>P</i>	2.72	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4	

Residuals in seconds of arc

1998 03 30	910	1.5+	1.0+	1998 04 22	704	0.3−	0.2−	1998 05 28	704	0.2+	0.0
1998 03 30	910	1.7+	0.8+	1998 04 22	704	0.3−	0.5−	1998 05 28	704	0.0	1.2+
1998 03 30	910	2.6+	0.9+	1998 04 23	704	0.1+	0.0	1998 05 28	704	1.2+	2.2+
1998 04 21	704	0.4−	0.3+	1998 04 23	704	0.8−	0.4−	1998 05 28	704	0.6+	0.9+
1998 04 21	704	0.2+	0.6+	1998 04 23	704	0.5−	0.6+	1999 10 03	704	0.0	0.1+

1998 04 21	704	0.3−	0.3+	1998 04 23	704	1.3−	0.9−	1999 10 03	704	0.5+	0.4−
1998 04 21	704	0.9−	1.4+	1998 04 23	704	0.7−	0.6−	1999 10 03	704	0.5+	0.5−
1998 04 21	704	0.4−	1.3+	1998 04 24	704	0.2−	0.3−	1999 10 03	704	0.4+	0.5−
1998 04 22	704	0.2−	0.0	1998 04 24	704	0.3−	0.9−	1999 10 03	704	0.4+	0.5−
1998 04 22	704	0.6−	0.1+	1998 04 24	704	0.5−	1.5−	1999 10 07	704	0.0	0.4+
1998 04 22	704	0.1−	0.5−	1998 04 24	704	0.5−	0.9−	1999 10 07	704	0.4−	0.4+
1998 04 22	704	0.5+	0.3−	1998 04 24	704	0.9−	0.8−	1999 10 07	704	0.4−	0.3+
1998 04 22	704	0.2−	0.2−	1998 05 23	699	0.4+	0.4−	1999 10 07	704	0.6−	0.3+
1998 04 22	704	0.2+	0.6−	1998 05 23	699	0.9+	0.1−	1999 10 07	704	0.5−	0.5+
1998 04 22	704	1.2−	0.5+	1998 05 23	699	0.8+	0.8−				
1998 04 22	704	0.4+	0.7−	1998 05 28	704	0.2−	0.8−				

1998 HH₄ = 1999 SD₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	8.98842	(2000.0)	P	Williams	Q
<i>n</i>	0.26197703	<i>ω</i>	276.11027	+0.98074190	+0.14802660
<i>a</i>	2.4189519	<i>Ω</i>	75.42909	−0.08092400	+0.90170956
<i>e</i>	0.1293640	<i>i</i>	7.56464	−0.17775443	+0.40621177
<i>P</i>	3.76	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 21	691	1.0−	0.2−	1998 05 22	704	0.7+	0.7+	1999 09 30	703	0.4−	1.0+
1998 04 21	691	1.0−	0.3+	1998 05 22	704	0.3−	0.1+	1999 10 02	120	0.4+	0.3+
1998 04 21	691	0.3+	1.6+	1998 05 24	704	0.5+	1.8−	1999 10 02	120	1.0+	0.0
1998 04 22	691	1.0+	0.1−	1998 05 24	704	0.8+	1.7+	1999 10 02	704	0.1+	0.2+
1998 04 22	691	1.1+	0.1+	1998 05 24	704	0.4−	0.4+	1999 10 02	704	0.1+	0.2−
1998 04 22	691	1.1+	0.0	1998 05 24	704	(3.7−	0.7+)	1999 10 02	704	0.7+	1.1−
1998 05 01	704	1.5−	0.7−	1999 09 29	120	1.2−	0.9−	1999 10 02	704	0.4+	0.7−
1998 05 01	704	0.4+	0.1+	1999 09 29	120	0.1−	0.9−	1999 10 02	704	0.4+	0.2+
1998 05 01	704	0.2+	1.8−	1999 09 29	120	0.9+	0.2−	1999 10 04	703	0.1−	0.3+
1998 05 01	704	0.9−	0.1−	1999 09 29	120	1.1+	0.2+	1999 10 04	703	0.8−	0.7+
1998 05 01	704	(4.6−	1.1−)	1999 09 30	703	0.2−	0.4+	1999 10 04	703	0.3−	0.3+
1998 05 22	704	0.8−	1.8−	1999 09 30	703	0.2−	0.2+	1999 10 04	703	1.1−	0.0
1998 05 22	704	0.0	1.4+	1999 09 30	703	0.7−	0.2+				

1998 HO₅ = 1999 RT₁₇₀

Id. A. Doppler, M. E. Sansaturio, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	273.35694	(2000.0)	P	Williams	Q
<i>n</i>	0.28928685	<i>ω</i>	277.95967	+0.15991153	−0.98676705
<i>a</i>	2.2642111	<i>Ω</i>	162.76865	+0.93759373	+0.14333302
<i>e</i>	0.1220903	<i>i</i>	5.19373	+0.30878197	+0.07580523
<i>P</i>	3.41	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 22	704	0.5+	0.1−	1998 05 24	704	0.8−	1.3−	1999 09 09	704	0.4+	0.1+
1998 04 22	704	0.9−	1.6−	1998 05 24	704	0.9+	1.1−	1999 09 11	699	0.1+	0.2+
1998 04 22	691	0.9−	0.7+	1998 05 24	704	0.2+	0.5−	1999 09 11	699	0.0	0.5+
1998 04 22	704	0.2−	0.3+	1999 09 07	704	0.1−	0.1+	1999 09 11	699	0.4+	0.9+
1998 04 22	691	0.9−	0.3+	1999 09 07	704	0.6+	0.4−	1999 09 14	704	0.0	0.3+
1998 04 22	704	(3.8−	0.1−)	1999 09 07	704	0.6+	0.1+	1999 09 14	704	0.1+	0.5+
1998 04 22	691	0.8−	0.5+	1999 09 07	704	0.6+	0.5−	1999 09 14	704	0.1−	0.2+
1998 04 22	704	(4.0−	1.6−)	1999 09 07	704	0.3−	1.1−	1999 09 14	704	0.4−	0.6+
1998 04 23	691	0.7+	0.6+	1999 09 08	691	0.0	0.4−	1999 09 14	704	0.2−	0.1+
1998 04 23	691	0.7+	0.5+	1999 09 08	691	0.0	0.5−	1999 10 07	704	0.1−	0.8−
1998 04 23	691	1.4+	0.5+	1999 09 08	691	0.0	0.3−	1999 10 07	704	0.4−	0.1+
1998 05 22	704	(1.5−	2.6−)	1999 09 09	704	0.2−	0.3−	1999 10 07	704	0.4−	0.3+
1998 05 22	704	0.0	1.1+	1999 09 09	704	0.1+	0.3+	1999 10 07	704	0.0	0.5−
1998 05 22	704	(3.3−	2.0+)	1999 09 09	704	0.4−	0.6+	1999 10 07	704	0.3+	0.2−
1998 05 22	704	(3.3−	0.5−)	1999 09 09	704	0.5−	0.2+				

1998 HD₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	159.67071	(2000.0)	P	Williams	Q
<i>n</i>	0.30114688	<i>ω</i>	38.09816	−0.93782631	+0.34634435
<i>a</i>	2.2043665	<i>Ω</i>	162.12438	−0.33399605	−0.88241999
<i>e</i>	0.0588875	<i>i</i>	4.29069	−0.09449046	−0.31840312
<i>P</i>	3.27	<i>H</i>	15.3	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 21	132	0.1−	0.8−	1998 05 01	704	0.4+	1.3+	1999 09 17	132	1.4−	0.8−
1998 04 21	132	0.8+	1.2−	1998 05 01	704	0.1+	0.0	1999 09 17	132	0.7−	0.9+
1998 04 21	132	0.1+	1.6−	1998 05 01	704	0.9+	0.8+	1999 10 05	615	0.8+	0.4−
1998 04 22	704	0.2+	0.3−	1998 05 01	704	1.0−	0.5+	1999 10 05	615	0.2+	0.1−
1998 04 22	704	0.0	0.7−	1998 05 05	132	0.4−	0.3−	1999 10 05	615	0.1+	0.3+
1998 04 22	704	0.1+	1.1−	1998 05 05	132	0.3+	0.5+	1999 10 06	132	(1.7+	2.9−)
1998 04 22	704	0.6−	0.4−	1998 05 22	704	0.2+	0.3+	1999 10 07	615	0.2−	0.0
1998 04 22	704	0.9−	1.2−	1998 05 22	704	0.1−	1.9+	1999 10 07	615	0.0	0.1−
1998 04 25	132	0.3+	0.6+	1998 05 22	704	0.0	1.4+	1999 10 07	132	0.7+	0.7−
1998 04 25	132	1.1+	0.9+	1998 05 22	704	0.1−	0.1−	1999 10 07	132	(4.5+	0.9−)
1998 04 25	699	0.6−	0.1+	1998 05 22	704	0.0	0.3+	1999 10 07	704	0.7+	0.7+
1998 04 25	699	0.4−	1.6+	1998 05 24	704	0.4+	0.8−	1999 10 07	704	0.4+	0.6+
1998 04 25	699	0.5+	0.1+	1998 05 24	704	1.1+	1.3−	1999 10 07	704	0.5+	0.9+
1998 04 27	132	1.6−	1.2+	1998 05 24	704	0.6+	0.1−	1999 10 07	704	0.6+	0.1+
1998 04 28	132	0.4+	0.1+	1998 05 24	704	0.2−	0.1−	1999 10 07	704	0.6−	0.2+
1998 04 28	132	0.1−	0.4+	1998 05 24	704	0.4+	1.3−	1999 10 10	132	0.1−	0.0
1998 04 30	566	0.0	0.0	1998 05 27	699	0.3+	0.3−	1999 10 10	132	1.2−	1.1−
1998 04 30	566	0.4−	0.3+	1998 05 27	699	1.5−	0.9−	1999 10 10	132	0.4−	0.3−
1998 04 30	566	0.0	0.1+	1998 05 27	699	0.0	0.5−	1999 10 10	132	0.3+	0.5−
1998 05 01	704	(2.6−	0.8−)	1999 09 16	132	0.4+	0.2+				

1998 HX₁₈ = 1999 TN₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	87.79843	(2000.0)	P	Williams	Q
<i>n</i>	0.29228090	<i>ω</i>	249.31286	−0.15308292	+0.98787516
<i>a</i>	2.2487220	<i>Ω</i>	11.96923	−0.85394582	−0.11907313
<i>e</i>	0.0905604	<i>i</i>	7.16072	−0.49733505	−0.09962059
<i>P</i>	3.37	<i>H</i>	15.4	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1996 09 22	327	0.2−	0.2+	1998 04 19	704	0.4+	0.5−	1999 10 04	704	0.3−	0.6+
1996 09 22	327	0.2+	0.3−	1998 04 19	704	0.2+	0.2−	1999 10 04	704	0.2−	1.3+
1996 09 22	327	0.3−	0.2+	1998 04 19	704	1.0−	1.3+	1999 10 04	704	1.2−	0.5+
1996 09 22	327	0.1+	0.7+	1998 04 19	704	0.9+	0.5+	1999 10 05	683	0.6+	0.1+
1998 03 20	704	0.5+	0.1+	1998 04 20	704	0.8−	0.1+	1999 10 05	683	0.3+	0.1−
1998 03 20	704	0.1−	0.5+	1998 04 20	704	0.2+	0.8−	1999 10 05	683	0.4+	0.0
1998 03 20	704	0.4+	0.6+	1998 04 20	704	0.4+	0.1−	1999 10 06	704	0.7−	0.5+
1998 03 20	704	0.7+	0.9−	1998 04 20	704	0.5−	0.1+	1999 10 06	704	0.8−	0.2+
1998 03 25	704	0.2+	0.3+	1998 04 22	704	0.2+	0.3−	1999 10 06	704	0.6−	0.0
1998 03 25	704	0.6+	0.2+	1998 04 22	704	0.8+	0.4+	1999 10 06	704	0.3−	0.1−
1998 03 25	704	0.0	0.0	1998 04 22	704	0.0	1.3−	1999 10 06	704	0.4−	0.5−
1998 03 25	704	0.8−	0.0	1998 04 22	704	0.9+	0.3+	1999 10 07	683	0.1−	0.4+
1998 04 01	704	0.6−	0.1+	1998 04 22	704	0.5−	0.4−	1999 10 07	683	1.1+	1.1+
1998 04 01	704	1.1−	0.7+	1998 04 24	699	0.8+	0.3+	1999 10 07	683	0.1−	0.3+
1998 04 01	704	(2.1−	0.9−)	1998 04 24	699	0.3+	1.5−	1999 10 07	704	0.2−	0.2+
1998 04 01	704	0.5−	0.5+	1998 04 24	699	0.7+	0.6−	1999 10 07	704	1.5+	1.4−
1998 04 01	704	1.1−	0.7+	1998 05 01	699	1.0+	0.2+	1999 10 07	704	0.9−	0.0
1998 04 18	704	0.2−	0.3−	1998 05 01	699	0.3+	1.3+	1999 10 07	704	0.2+	0.7−
1998 04 18	704	0.2−	0.5+	1998 05 01	699	0.1+	1.0+	1999 10 08	683	0.3−	0.2+
1998 04 18	704	0.0	0.2+	1999 10 04	704	0.4−	0.4+	1999 10 08	683	0.4+	0.0
1998 04 18	704	0.3−	0.3+	1999 10 04	704	(1.9−	2.1+)	1999 10 08	683	0.2+	0.1+

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1998 HN₂₁ = 1999 TK₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	25.50525		(2000.0)	P	Q
<i>n</i>	0.30573736	ω	121.42465	+0.79677704	+0.60348013
<i>a</i>	2.1822460	Ω	201.50482	-0.57911552	+0.74797579
<i>e</i>	0.0532988	<i>i</i>	4.84367	-0.17254437	+0.27630409
<i>P</i>	3.22	<i>H</i>	15.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 28	704	0.4+	0.9-	1998 04 01	704	1.1-	0.1+	1999 10 04	704	1.2+	0.8+
1998 03 28	704	2.7+	0.0	1998 04 01	704	0.0	1.5+	1999 10 04	704	0.1+	0.5+
1998 03 28	704	1.1-	1.2-	1998 04 20	704	1.1-	1.2+	1999 10 04	704	0.3+	0.2-
1998 03 28	704	1.4+	0.7-	1998 04 20	704	0.3+	0.9+	1999 10 04	704	0.3+	0.5-
1998 03 29	704	0.0	0.7-	1998 04 20	704	1.2-	0.4+	1999 10 06	704	0.0	0.1+
1998 03 29	704	1.2-	1.8-	1998 04 20	704	0.6+	0.2-	1999 10 06	704	1.8-	1.2-
1998 03 29	704	1.9-	1.7+	1998 04 22	704	0.6+	0.1-	1999 10 06	704	0.0	0.1+
1998 03 29	704	0.8-	2.0+	1998 04 22	704	0.1-	1.6-	1999 10 06	704	0.0	0.4+
1998 04 01	704	0.5+	0.5-	1998 04 22	704	0.8-	1.4+	1999 10 06	704	0.2-	0.4+
1998 04 01	704	0.4+	0.1+	1998 04 22	704	0.1+	0.9-				
1998 04 01	704	0.4+	1.2+	1998 04 22	704	2.2+	1.5-				

1998 HQ₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	73.78454		(2000.0)	P	Q
<i>n</i>	0.26347190	ω	61.34067	+0.31342030	+0.90424229
<i>a</i>	2.4097936	Ω	229.97333	-0.94835333	+0.28231366
<i>e</i>	0.1102257	<i>i</i>	22.25607	-0.04892524	+0.32038240
<i>P</i>	3.74	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 28	684	0.4+	0.5-	1998 05 22	704	1.2-	0.0	1998 05 24	704	0.2+	0.9+
1998 04 28	684	0.2+	0.4-	1998 05 22	704	1.0+	1.8-	1998 06 16	704	1.1+	0.1-
1998 04 29	684	0.1+	0.4+	1998 05 22	704	0.4+	1.0-	1998 06 16	704	0.4-	1.5+
1998 04 29	684	0.3+	0.2+	1998 05 22	699	0.4-	0.2+	1998 06 16	704	1.9-	0.4+
1998 05 01	684	0.1-	0.2+	1998 05 22	699	1.1+	0.5-	1998 06 16	704	1.0+	1.8-
1998 05 01	684	0.2-	0.1-	1998 05 22	699	0.6-	0.1-	1998 06 26	684	0.6-	0.1+
1998 05 02	684	0.6-	0.1-	1998 05 23	699	0.9+	0.1+	1998 06 26	684	1.0-	0.2-
1998 05 02	684	0.5-	0.1+	1998 05 23	699	0.4+	0.3+	1998 06 27	684	0.7-	0.1+
1998 05 17	684	0.1-	0.3-	1998 05 23	699	0.4+	0.9+	1998 06 27	684	0.0	0.3+
1998 05 17	684	0.1-	0.2-	1998 05 24	704	0.2-	0.2-	1999 10 06	684	0.2+	0.4-
1998 05 18	684	0.2-	0.0	1998 05 24	704	0.4-	0.5+	1999 10 06	684	0.2-	0.4-
1998 05 18	684	0.1+	0.0	1998 05 24	704	1.6+	1.2+	1999 10 07	684	0.2-	0.4+
1998 05 22	704	0.5-	0.9-	1998 05 24	704	0.5+	0.4+	1999 10 07	684	0.1+	0.1-

1998 HQ₂₇ = 1999 TW₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	25.18268		(2000.0)	P	Q
<i>n</i>	0.28545808	ω	94.14522	+0.84655673	+0.52771651
<i>a</i>	2.2844123	Ω	234.01814	-0.51614206	+0.78178354
<i>e</i>	0.2295557	<i>i</i>	4.94068	-0.13015019	+0.33215927
<i>P</i>	3.45	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1992 09 25	691	0.7-	0.0	1998 04 20	704	0.2-	0.9-	1998 05 03	696	0.1+	0.3+
1992 09 25	691	0.9+	0.1+	1998 04 20	704	0.2+	0.3+	1998 05 03	696	0.1-	0.3+
1992 09 25	691	0.2-	0.2+	1998 04 20	704	1.2+	0.4-	1998 05 04	696	0.3-	0.1+
1992 09 28	095	(0.7-	7.3+)	1998 04 20	704	0.8+	1.0-	1998 05 04	696	0.0	0.2+
1998 03 20	704	(3.6-	1.9-)	1998 04 20	704	0.2+	0.9-	1998 05 04	696	0.0	0.1+
1998 03 20	704	1.6-	0.3+	1998 04 22	691	0.0	0.5+	1999 10 03	704	0.9+	0.0
1998 03 20	704	(3.4-	2.4+)	1998 04 22	691	0.3-	1.0+	1999 10 03	704	0.2+	0.8-
1998 03 20	704	0.8-	0.2-	1998 04 22	691	0.2+	0.7+	1999 10 03	704	0.2-	1.2-
1998 04 01	704	0.4+	0.4-	1998 04 28	691	0.4-	0.3+	1999 10 03	704	0.4-	0.3-
1998 04 01	704	1.4+	0.1-	1998 04 28	691	0.5-	0.4+	1999 10 03	704	(1.1-	2.3-)
1998 04 01	704	0.3+	0.9-	1998 04 28	691	0.3-	0.4+	1999 10 07	704	0.1+	0.1+
1998 04 01	704	0.2+	0.9-	1998 04 30	691	0.3-	0.3+	1999 10 07	704	0.3-	0.0

1998 04 01	704	0.2-	0.2-	1998 04 30	691	0.4-	0.4+	1999 10 07	704	0.8-	0.8-
1998 04 04	699	0.4-	0.4-	1998 04 30	691	0.5-	0.4+	1999 10 12	106	0.3-	0.3+
1998 04 04	699	0.5+	1.5-	1998 05 02	696	0.2-	0.4+	1999 10 12	106	0.1-	0.7+
1998 04 04	699	1.8+	0.4-	1998 05 02	696	0.2-	0.4+	1999 10 12	106	0.3-	0.5+
1998 04 19	704	0.4+	0.8+	1998 05 02	696	0.1-	0.3+	1999 10 17	106	0.2+	0.8+
1998 04 19	704	0.2+	0.1-	1998 05 03	691	0.1-	0.8+	1999 10 17	106	0.4+	0.6+
1998 04 19	704	0.3+	0.6+	1998 05 03	691	0.2-	0.8+	1999 10 17	106	0.2+	0.7+
1998 04 19	704	0.6-	1.1-	1998 05 03	691	0.1-	0.8+				
1998 04 19	704	(5.3-	2.3-)	1998 05 03	696	0.1+	0.3+				

1998 HF₃₀ = 1999 SM₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	26.55354		(2000.0)	P	Q
<i>n</i>	0.26898903	ω	196.55971	+0.79091065	+0.61001184
<i>a</i>	2.3767290	Ω	125.74960	-0.55445339	+0.74786330
<i>e</i>	0.2114994	<i>i</i>	3.42141	-0.25892430	+0.26188935
<i>P</i>	3.66	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1994 03 05	691	0.5-	0.1+	1998 04 20	704	0.6+	0.6-	1998 05 03	691	0.3+	0.2-
1994 03 05	691	0.2+	0.2-	1998 04 22	704	0.7-	0.9+	1999 09 30	703	1.8+	0.8-
1994 03 05	691	0.2+	0.2-	1998 04 22	704	0.8+	0.1-	1999 09 30	703	0.0	0.1+
1998 03 20	704	0.0	0.1+	1998 04 22	704	0.0	1.0-	1999 09 30	703	1.0-	0.2-
1998 03 20	704	(0.4+	2.4-)	1998 04 22	704	0.8-	0.2+	1999 09 30	703	0.4+	0.1+
1998 03 20	704	0.1-	0.8+	1998 04 27	691	0.0	0.1-	1999 10 04	703	1.1-	0.1+
1998 03 20	704	(0.0	3.3+)	1998 04 27	691	0.2-	0.1-	1999 10 04	703	0.2+	1.3+
1998 04 20	704	0.3-	0.5+	1998 04 27	691	0.0	0.1-	1999 10 04	703	0.1+	0.4-
1998 04 20	704	(2.7+	1.4-)	1998 05 03	691	0.4+	0.1-	1999 10 04	703	0.4-	0.3-
1998 04 20	704	(1.3+	2.3-)	1998 05 03	691	0.0	0.0				

1998 HU₃₂ = 1999 UJ₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	60.05945		(2000.0)	P	Q
<i>n</i>	0.28036137	ω	253.93961	+0.40785495	+0.91259548
<i>a</i>	2.3120147	Ω	40.16908	-0.81977583	+0.37985167
<i>e</i>	0.1609079	<i>i</i>	2.55032	-0.40202230	+0.15126863
<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	1.7+	1.0+	1998 04 20	704	0.5-	0.2-	1999 10 01	703	0.4-	1.0+
1998 03 22	704	1.1+	1.4-	1998 04 20	704	0.5-	0.1+	1999 10 01	703	0.7+	0.5-
1998 03 22	704	0.6+	0.2-	1998 04 20	704	1.1-	0.7-	1999 10 01	703	0.3+	0.2+
1998 03 22	704	0.0	0.2-	1998 04 22	704	(2.4+	1.8+)	1999 10 03	704	0.1-	1.1+
1998 03 22	704	0.9-	0.4-	1998 04 22	704	0.9+	0.0	1999 10 03	704	0.6+	0.6-
1998 03 25	704	0.7+	0.3+	1998 04 22	704	1.7+	0.9-	1999 10 03	704	0.2+	0.8-
1998 03 25	704	1.0-	0.2+	1998 04 22	704	0.2-	1.1+	1999 10 07	704	0.0	0.1-
1998 03 25	704	1.3-	0.2-	1998 04 22	704	0.2-	1.0-	1999 10 07	704	0.2+	0.8+
1998 03 25	704	0.2+	0.9+	1998 04 28	699	0.4+	0.2-	1999 10 07	704	0.4+	0.1+
1998 03 25	704	1.0-	0.2-	1998 04 28	699	0.6+	0.6+	1999 10 07	704	0.7-	0.2-
1998 03 29	704	0.4-	0.1+	1998 04 28	699	0.9+	0.0	1999 10 07	704	0.1-	0.3-
1998 03 29	704	0.1+	0.3+	1998 05 16	704	0.9-	0.6-	1999 10 17	120	0.1-	0.6-
1998 03 29	704	1.1-	0.0	1998 05 16	704	1.1+	1.0-	1999 10 17	120	0.6+	1.3-
1998 03 29	704	0.6+	1.2+	1998 05 16	704	1.3-	1.7-	1999 10 20	120	0.5-	0.5-
1998 03 29	704	0.1-	0.8-	1998 05 16	704	0.7+	0.2-	1999 10 20	120	1.0-	0.3-
1998 04 20	704	0.4-	0.2+	1998 05 16	704	1.9-	1.4+				
1998 04 20	704	0.6+	0.8+	1999 10 01	703	0.7+	0.1+				

1998 HP₃₅ = 1999 RJ₉₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	291.57665	(2000.0)	P	Q
<i>n</i>	0.24388482	ω	207.35589	+0.90509943
<i>a</i>	2.5371504	Ω	177.77453	+0.41400256
<i>e</i>	0.0910202	<i>i</i>	9.48738	+0.09693766
<i>P</i>	4.04	<i>H</i>	14.0	<i>U</i>
			<i>G</i>	0.15
				4

Residuals in seconds of arc

1998 03 22	704	0.3−	0.5−	1998 04 20	704	0.4+	0.4+	1999 09 08	704	0.7+	0.6+
1998 03 22	704	0.4+	0.0	1998 04 20	704	0.6+	0.6+	1999 09 08	704	0.3−	0.1+
1998 03 22	704	0.4−	0.5−	1998 04 20	704	0.8+	1.5+	1999 09 08	704	0.1+	0.2+
1998 03 22	704	0.3−	0.3−	1998 04 20	704	1.9−	0.7−	1999 09 09	704	0.2−	0.9+
1998 03 22	704	0.6+	1.9−	1998 04 22	704	0.8+	0.8−	1999 09 09	704	0.2+	0.8−
1998 03 25	704	0.1−	1.2+	1998 04 22	704	0.8+	0.4+	1999 09 09	704	0.4−	0.9−
1998 03 25	704	0.0	0.5+	1998 04 22	704	0.5−	0.0	1999 09 09	704	0.0	0.5−
1998 03 25	704	0.5+	1.1+	1998 04 22	704	0.2+	1.5−	1999 09 09	704	0.1+	0.1−
1998 03 25	704	0.5−	0.6+	1998 04 22	704	1.2−	0.2−				
1998 04 20	704	0.0	0.0	1999 09 08	704	0.2−	0.5+				

1998 HQ₃₅ = 1999 RD₁₆₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	53.46590	(2000.0)	P	Q
<i>n</i>	0.24728517	ω	93.61143	+0.14932531
<i>a</i>	2.5138383	Ω	185.09699	−0.97100097
<i>e</i>	0.1101819	<i>i</i>	12.43726	−0.18670583
<i>P</i>	3.99	<i>H</i>	15.1	<i>U</i>
			<i>G</i>	0.15
				4

Residuals in seconds of arc

1998 03 22	704	1.1+	1.8−	1998 04 20	704	1.5−	1.1+	1999 09 14	704	0.7+	0.6−
1998 03 22	704	0.4+	0.3−	1998 04 22	704	1.3+	0.6+	1999 09 14	704	0.9+	0.4−
1998 03 22	704	1.9−	1.0+	1998 04 22	704	0.7+	1.0−	1999 09 14	704	0.7−	0.2−
1998 03 22	704	0.4−	0.8+	1998 04 22	704	0.1+	0.4+	1999 10 06	704	0.2−	0.0
1998 03 25	704	0.5−	0.4−	1998 04 22	704	0.7−	0.0	1999 10 06	704	0.0	0.0
1998 03 25	704	1.0+	0.8+	1998 04 22	704	1.2−	1.1−	1999 10 06	704	0.2+	0.1−
1998 03 25	704	0.7+	1.3+	1999 09 09	704	0.2−	0.5+	1999 10 06	704	0.1+	0.1+
1998 03 25	704	0.7−	1.5−	1999 09 09	704	0.2+	0.6−	1999 10 06	704	0.0	0.1−
1998 04 20	704	0.4+	0.4+	1999 09 09	704	0.1−	0.6+	1999 10 09	691	0.3−	0.0
1998 04 20	704	1.3+	0.5−	1999 09 09	704	1.2−	0.8+	1999 10 09	691	0.2−	0.1−
1998 04 20	704	(2.3−	0.6−)	1999 09 14	704	0.7+	0.1−	1999 10 09	691	0.1−	0.1+

1998 HY₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	71.24856	(2000.0)	P	Q
<i>n</i>	0.28440724	ω	214.75036	+0.19730720
<i>a</i>	2.2900359	Ω	66.66848	−0.88756618
<i>e</i>	0.1314758	<i>i</i>	2.90459	−0.41628853
<i>P</i>	3.47	<i>H</i>	14.7	<i>U</i>
			<i>G</i>	0.15
				4

Residuals in seconds of arc

1998 03 25	699	0.6+	0.2−	1998 04 21	704	1.0−	0.7+	1999 09 14	703	0.1+	0.1−
1998 03 25	699	0.1−	0.3−	1998 04 22	704	0.1+	0.1−	1999 10 02	703	0.1+	0.2+
1998 03 25	699	1.0+	0.3+	1998 04 22	704	0.2−	0.6−	1999 10 02	703	0.3−	0.0
1998 03 25	704	0.4−	0.1+	1998 04 22	704	0.1+	0.3−	1999 10 02	703	0.5+	0.0
1998 03 25	704	0.1+	0.2−	1998 04 22	704	0.6+	0.3−	1999 10 02	703	0.3−	0.2+
1998 03 25	704	0.4−	0.3−	1998 04 22	704	0.0	1.0−	1999 10 07	106	0.4−	0.2+
1998 03 25	704	0.1+	0.3−	1998 05 01	699	0.8+	0.2−	1999 10 07	106	0.2−	0.1+
1998 03 25	704	1.3−	0.4−	1998 05 01	699	0.5+	0.7+	1999 10 07	106	0.2−	0.5−
1998 04 20	704	0.1+	0.1−	1998 05 01	699	1.2+	0.1+	1999 10 07	704	0.5+	0.1−
1998 04 20	704	0.6+	0.0	1998 05 16	704	0.8+	0.5+	1999 10 07	704	0.1−	0.4−
1998 04 20	704	0.4+	0.4+	1998 05 16	704	0.5−	1.3−	1999 10 07	704	0.1−	0.1+
1998 04 20	704	0.2+	0.3+	1998 05 16	704	0.4+	0.6+	1999 10 07	704	0.2+	0.3−
1998 04 20	704	0.4−	1.2+	1998 05 16	704	1.3−	0.3+	1999 10 07	704	0.3−	0.5+
1998 04 21	704	0.7−	0.3+	1998 05 16	704	0.3−	1.9−	1999 10 10	120	0.3−	0.3−
1998 04 21	704	0.8−	0.2+	1999 09 14	703	1.1+	0.2−	1999 10 11	120	0.6+	0.5−

1998 04 21	704	0.6−	0.7+	1999 09 14	703	0.0	0.4+
1998 04 21	704	0.0	0.1+	1999 09 14	703	0.6−	0.0

1998 HE₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	69.98184	(2000.0)	P	Q
<i>n</i>	0.28239333	ω	52.86748	+0.30247984
<i>a</i>	2.3009107	Ω	234.81900	−0.89349536
<i>e</i>	0.1552196	<i>i</i>	3.65910	−0.33192165
<i>P</i>	3.49	<i>H</i>	14.3	<i>U</i>
			<i>G</i>	0.15
				4

Residuals in seconds of arc

1998 03 25	704	0.2+	0.5−	1998 04 20	704	0.4−	0.4+	1998 05 16	704	0.8+	0.5+
1998 03 25	704	1.4+	0.6−	1998 04 20	704	0.7−	0.3−	1998 05 16	704	1.3−	0.0
1998 03 25	704	0.6−	0.5−	1998 04 21	704	0.0	0.1−	1998 06 18	704	0.1+	1.0−
1998 03 25	704	0.3+	0.5−	1998 04 21	704	0.3−	0.0	1998 06 18	704	(3.2−	1.5+)
1998 03 25	704	0.1−	0.9−	1998 04 21	704	0.1−	0.2−	1998 06 18	704	0.9+	1.0+
1998 03 29	704	0.6+	0.6+	1998 04 21	704	0.5+	0.1−	1998 06 18	704	1.0−	0.3−
1998 03 29	704	0.6−	0.0	1998 04 21	704	1.0−	0.3−	1999 10 07	704	0.9+	0.1−
1998 03 29	704	0.6−	0.2−	1998 04 22	704	0.3+	0.3+	1999 10 07	704	0.5+	0.4−
1998 03 29	704	0.2−	0.4+	1998 04 22	704	0.8+	0.4−	1999 10 07	704	0.4+	0.3−
1998 03 29	704	0.7−	0.3−	1998 04 22	704	0.0	0.1−	1999 10 07	704	0.1−	0.6−
1998 04 01	704	0.6−	0.5+	1998 04 22	704	0.1+	0.3−	1999 10 08	106	0.1+	0.1+
1998 04 01	704	0.1−	0.8+	1998 04 22	704	0.0	0.1+	1999 10 08	106	0.4−	0.2−
1998 04 01	704	0.1+	1.2+	1998 04 25	699	0.0	0.3−	1999 10 08	106	1.1−	1.1+
1998 04 01	704	0.5+	0.1+	1998 04 25	699	0.7+	0.4−	1999 10 12	106	0.5−	0.4+
1998 04 01	704	0.0	1.0+	1998 04 25	699	0.5+	0.1−	1999 10 12	106	0.1+	0.4+
1998 04 20	704	0.3+	0.1+	1998 05 16	704	0.4+	0.4+	1999 10 12	106	0.2+	0.1+
1998 04 20	704	0.3−	0.9−	1998 05 16	704	0.1+	0.1+				
1998 04 20	704	0.2+	0.6+	1998 05 16	704	0.1−	0.1+				

1998 HD₄₂ = 1999 RK₈₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	299.05732	(2000.0)	P	Q
<i>n</i>	0.30974385	ω	279.70718	+0.60987126
<i>a</i>	2.1633872	Ω	132.56830	+0.75305604
<i>e</i>	0.1172002	<i>i</i>	4.24809	+0.24690818
<i>P</i>	3.18	<i>H</i>	17.2	<i>U</i>
			<i>G</i>	0.15
				5

Residuals in seconds of arc

1998 04 24	691	0.6−	0.2−	1998 05 02	691	0.0	0.1+	1999 09 07	704	0.3−	0.8+
1998 04 24	691	0.3+	0.2−	1998 05 02	691	0.1−	0.2+	1999 09 09	704	0.6−	0.2+
1998 04 24	691	0.4−	0.2−	1998 05 02	691	0.0	0.2+	1999 09 09	704	0.1+	0.4−
1998 05 01	691	0.1+	0.1−	1999 09 07	704	1.2+	0.1−	1999 09 09	704	0.7−	0.8−
1998 05 01	691	0.7+	0.1+	1999 09 07	704	0.4+	0.3+				

1998 HA₄₈ = 1999 RL₁₇₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	13.33690	(2000.0)	P	Q
<i>n</i>	0.24323765	ω	158.75884	+0.80163287
<i>a</i>	2.5416487	Ω	164.48018	−0.56198832
<i>e</i>	0.1463386	<i>i</i>	5.78529	−0.20384766
<i>P</i>	4.05	<i>H</i>	14.8	<i>U</i>
			<i>G</i>	0.15
				4

Residuals in seconds of arc

1998 03 29	704	0.9+	1.8+	1998 04 22	704	0.7+	1.0−	1999 09 09	704	0.2−	0.0
1998 03 29	704	0.8+	0.9−	1998 04 22	704	1.0−	1.0−	1999 09 09	704	0.3+	0.5+
1998 03 29	704	0.6−	0.0	1998 04 22	704	0.0	1.0+	1999 09 09	704	0.0	0.5+
1998 03 29	704	1.6−	1.1+	1998 04 22	704	0.3−	1.4−	1999 09 11	699	0.1−	0.6+
1998 03 29	704	1.2+	0.3−	1999 07 16	704	0.5+	0.4+	1999 09 11	699	0.2+	0.5+
1998 04 20	704	0.6+	1.0+	1999 07 16	704	0.2−	0.1+	1999 09 11	699	0.3+	0.2+
1998 04 20	704	1.1−	0.9+	1999 07 16	704	0.1+	0.5+	1999 09 14	704	0.1−	0.4−
1998 04 20	704	1.2+	0.8−	1999 07 16	704	0.3−	0.8−	1999 09 14	704	0.1+	0.1−
1998 04 20	704	0.6−	0.5+	1999 09 07	704	0.1−	0.1−	1999 09 14	704	0.0	0.1+

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M.P.C. 36369

1998 04 21	704	0.8−	0.6−	1999 09 07	704	0.2−	0.6−	1999 09 14	704	0.0	0.2+
1998 04 21	704	1.5+	0.8+	1999 09 07	704	0.7−	0.4−	1999 09 14	704	0.2−	0.8+
1998 04 21	704	0.7−	0.1+	1999 09 07	704	0.6−	0.3−	1999 10 02	704	0.4+	0.5−
1998 04 21	704	1.0+	0.8+	1999 09 07	704	1.2+	0.6−	1999 10 02	704	1.2+	1.0−
1998 04 21	704	0.5−	1.4−	1999 09 09	704	0.1−	0.1+	1999 10 02	704	0.8−	0.1+
1998 04 22	704	0.5−	0.6−	1999 09 09	704	0.2+	0.3−	1999 10 02	704	1.0−	0.8+

1998 HN₄₉

Id. M. Tichý (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28168988	ω	35.73469	−0.31783233	+0.94749037		
<i>a</i>	2.3047397	Ω	215.77103	−0.88332735	−0.30942018		
<i>e</i>	0.1148370	<i>i</i>	3.46007	−0.34455102	−0.08075366		
<i>P</i>	3.50	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 24	046	0.4−	0.5+	1998 05 22	699	0.3−	0.1+	1998 06 16	704	(0.7−	2.3+)
1998 04 24	046	0.1−	0.6+	1998 05 23	699	0.4−	0.2−	1998 06 16	704	(1.2+	2.8+)
1998 04 24	046	0.0	0.8+	1998 05 23	699	0.5−	0.1−	1998 06 16	046	0.2+	0.4+
1998 04 24	046	0.5−	0.7+	1998 05 23	699	0.3−	0.7−	1998 06 16	046	0.5+	0.5+
1998 04 25	699	0.8−	0.2+	1998 05 24	704	0.1+	0.2−	1998 06 16	046	0.1−	0.3−
1998 04 25	699	0.6+	0.1+	1998 05 24	704	0.3−	0.1+	1998 06 17	046	0.4+	0.0
1998 04 25	699	1.1+	0.5−	1998 05 24	699	0.1+	0.4−	1998 06 17	046	0.3+	0.0
1998 05 01	046	0.3+	0.8+	1998 05 24	704	0.4+	0.6+	1998 06 17	046	0.2+	0.7+
1998 05 01	046	0.4+	0.3+	1998 05 24	699	0.1−	0.9−	1999 10 06	704	0.5+	0.0
1998 05 07	046	0.8+	0.4−	1998 05 24	704	0.6−	0.6−	1999 10 06	704	0.7+	0.2−
1998 05 07	046	0.4+	0.1−	1998 05 24	699	0.2−	0.1−	1999 10 06	704	0.2+	0.1+
1998 05 07	046	0.1+	0.1−	1998 05 24	704	0.0	0.7−	1999 10 06	704	0.4+	0.3−
1998 05 16	046	0.3−	0.1−	1998 05 27	046	0.0	0.1+	1999 10 06	704	0.5+	0.1−
1998 05 16	046	0.1+	0.6−	1998 05 27	046	0.1−	0.0	1999 10 08	046	0.7−	0.1−
1998 05 16	046	0.6+	0.0	1998 05 27	046	0.2−	0.1+	1999 10 08	046	0.5−	0.2+
1998 05 22	704	0.6−	0.9−	1998 05 31	426	0.4+	0.0	1999 10 08	046	0.1−	0.3−
1998 05 22	704	1.2−	0.4−	1998 05 31	426	0.3+	0.2+	1999 10 19	046	0.5−	0.1+
1998 05 22	704	0.6+	0.1+	1998 05 31	426	0.2+	0.3+	1999 10 19	046	0.1−	0.2+
1998 05 22	704	0.1+	0.4+	1998 06 02	426	0.4−	0.1+	1999 10 19	046	0.2−	0.4+
1998 05 22	704	0.4−	1.6+	1998 06 02	426	0.2+	0.1+	1999 10 19	046	0.3−	0.4+
1998 05 22	699	0.4+	0.6−	1998 06 16	704	0.3+	1.0−	1999 10 19	046	0.0	0.4+
1998 05 22	699	0.1+	0.8−	1998 06 16	704	0.8−	1.1+				

1998 HK₅₀ = 1999 RG₁₄₃

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20926365	ω	126.37449	+0.56616418	+0.82425974		
<i>a</i>	2.8097877	Ω	178.06344	−0.80866144	+0.55713381		
<i>e</i>	0.1540449	<i>i</i>	12.55960	−0.15976484	+0.10098411		
<i>P</i>	4.71	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1993 03 26	691	0.4−	1.0−	1998 05 23	704	1.0+	0.2−	1999 09 14	704	0.2+	0.4+
1993 03 26	691	0.0	1.6−	1998 05 23	704	0.1+	0.1+	1999 09 14	704	0.4−	0.5+
1993 03 26	691	0.3−	1.1−	1998 05 23	704	1.0+	1.1−	1999 09 14	704	0.4−	0.2+
1998 03 24	691	0.0	0.5+	1998 05 23	704	(4.8−	0.8−)	1999 09 14	704	0.8−	0.7−
1998 03 24	691	0.1−	1.0−	1999 09 07	704	0.3−	0.7−	1999 09 14	704	0.3−	0.3+
1998 03 24	691	0.1−	0.5+	1999 09 07	704	0.1+	0.5+	1999 09 16	691	0.1+	0.5−
1998 04 23	704	1.3+	0.6+	1999 09 07	704	0.3+	1.1−	1999 09 16	691	0.2+	0.0
1998 04 23	704	0.3+	0.3+	1999 09 07	704	0.4+	0.4−	1999 09 16	691	0.1+	0.5−
1998 04 23	704	0.4−	0.3+	1999 09 07	704	0.3−	0.1+	1999 10 02	704	0.9+	0.2+
1998 04 23	704	(4.7−	2.7−)	1999 09 09	704	0.7−	0.4−	1999 10 02	704	1.2+	0.1+
1998 04 24	704	0.7+	0.8−	1999 09 09	704	0.1+	0.4+	1999 10 02	704	(0.2−	2.0+)
1998 04 24	704	(0.6−	2.9+)	1999 09 09	704	0.2−	0.3−	1999 10 02	704	0.6+	0.1+
1998 04 24	704	1.3+	0.1+	1999 09 09	704	0.1−	0.2+	1999 10 02	704	0.3+	0.8−
1998 04 29	691	0.9−	0.6+	1999 09 09	704	0.5+	0.5+	1999 10 07	703	0.7−	0.1+
1998 04 29	691	0.7−	0.4+	1999 09 09	704	0.7−	0.9+	1999 10 07	703	0.2+	0.2−
1998 04 29	691	0.8−	1.4+	1999 09 09	704	0.7+	0.4+	1999 10 07	703	0.3−	0.3−

1998 05 03	691	0.9−	0.3−	1999 09 09	704	0.1−	0.3−	1999 10 07	703	0.2+	0.2+
1998 05 03	691	(2.7−	0.1−)	1999 09 09	704	0.1−	0.2−				
1998 05 03	691	1.8−	0.2−	1999 09 09	704	0.4−	0.9−				

1998 HG₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27072217	ω	69.17449	+0.48025862	+0.87652899		
<i>a</i>	2.3665744	Ω	229.56988	−0.81973710	+0.43539504		
<i>e</i>	0.2024588	<i>i</i>	2.43813	−0.31206209	+0.20525128		
<i>P</i>	3.64	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 25	699	0.3+	0.2+	1998 04 01	704	(2.6+	4.7+)	1998 04 24	699	0.4+	0.7−
1998 03 25	699	0.1−	0.0	1998 04 20	704	0.2+	0.2−	1998 04 24	699	1.1−	0.1+
1998 03 25	699	0.5+	0.5−	1998 04 20	704	1.1+	0.2+	1998 04 25	699	1.0−	0.6−
1998 03 25	704	0.1+	0.2+	1998 04 20	704	0.4−	0.7+	1998 04 25	699	0.5+	0.4−
1998 03 25	704	0.3−	0.4+	1998 04 20	704	0.1+	0.6+	1998 04 25	699	1.4+	0.5−
1998 03 25	704	0.0	0.1−	1998 04 20	704	0.9−	0.4+	1998 05 16	704	0.4+	0.7−
1998 03 25	704	0.7+	0.8−	1998 04 21	704	0.3+	0.1+	1998 05 16	704	1.1−	0.0
1998 03 25	704	0.2−	0.8−	1998 04 21	704	0.4+	0.1+	1998 05 16	704	0.6−	0.9+
1998 03 29	704	0.5+	0.0	1998 04 21	704	0.1+	0.3+	1998 05 16	704	(0.3+	2.2+)
1998 03 29	704	0.1−	0.0	1998 04 21	704	0.5−	0.3−	1999 09 11	120	0.5+	0.1−
1998 03 29	704	0.6+	0.6+	1998 04 21	704	0.0	0.1−	1999 09 11	120	0.6−	0.8+
1998 03 29	704	0.8+	0.4+	1998 04 22	704	0.1−	0.3−	1999 09 11	120	0.9+	0.2+
1998 03 29	704	0.5−	0.3+	1998 04 22	704	0.5+	0.1+	1999 10 12	106	0.5+	1.0−
1998 04 01	704	(2.5+	2.2+)	1998 04 22	704	1.2−	0.4−	1999 10 12	106	0.3−	0.4−
1998 04 01	704	(1.7+	2.1+)	1998 04 22	704	0.2+	0.2+	1999 10 12	106	0.8−	0.4+
1998 04 01	704	(2.2+	2.5+)	1998 04 22	704	0.2−	0.3+				
1998 04 01	704	(4.2+	5.4+)	1998 04 24	699	0.7−	0.4+				

1998 HL₇₉ = 1999 TC₄

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30059100	ω	231.60458	−0.42054728	−0.90412598		
<i>a</i>	2.2070833	Ω	243.42257	+0.85649888	−0.36819910		
<i>e</i>	0.0251270	<i>i</i>	4.84098	+0.29924849	−0.21676168		
<i>P</i>	3.28	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 04 17	327	0.5−	0.7+	1998 04 21	704	0.3−	0.1+	1999 10 03	360	0.5−	0.1−
1998 04 17	327	0.5+	0.3−	1998 04 21	704	(3.2−	0.7+)	1999 10 03	360	0.3−	0.5−
1998 04 17	327	0.7+	0.5−	1998 04 21	704	0.5−	0.1−	1999 10 03	360	0.1+	0.1−
1998 04 20	402	0.1+	0.2−	1998 04 22	704	0.3+	1.3+	1999 10 04	360	0.0	0.0
1998 04 20	402	0.2−	0.7−	1998 04 22	704	0.5+	0.4−	1999 10 04	360	0.3−	0.1+
1998 04 20	402	0.3−	0.5+	1998 04 22	704	1.0−	0.9−	1999 10 04	360	0.1+	0.3+
1998 04 20	327	0.7+	0.2+	1998 04 22	704	0.9−	0.3−	1999 10 07	704	0.0	0.2+
1998 04 20	327	0.2−	0.1+	1998 04 22	704	0.2+	0.0	1999 10 07	704	0.1+	0.0
1998 04 20	327	0.3+	0.1+	1998 04 25	699	0.6+	0.0	1999 10 07	704	0.5+	0.1+
1998 04 21	704	0.8−	0.2−	1998 04 25	699	0.4−	0.4+	1999 10 07	704	0.4+	0.2−
1998 04 21	704	0.9+	0.0	1998 04 25	699	0.2+	0.2+	1999 10 07	704	0.1−	0.1+

1998 HM₉₂ = 1999 RC₁₀₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.

M.P.C. 36370

1998 04 21	704	0.0	0.1−	1998 05 01	704	1.5+	0.1−	1999 09 08	704	0.8+	0.1+
1998 04 21	704	0.6−	0.4−	1998 05 01	704	0.7+	0.1+	1999 09 08	704	0.1+	0.7−
1998 04 22	704	1.3−	0.5+	1998 05 22	704	1.0+	1.4+	1999 09 08	704	0.1−	0.7−
1998 04 22	704	0.1−	0.4+	1998 05 22	704	0.8+	1.7−	1999 09 09	704	0.1−	0.2+
1998 04 22	704	0.3+	0.4+	1998 05 22	704	1.1−	0.5−	1999 09 09	704	0.1+	0.4−
1998 04 22	704	1.3−	0.4−	1998 05 22	704	0.7−	0.6+	1999 09 09	704	0.0	0.7+
1998 04 22	704	1.1−	0.6+	1998 05 22	704	0.5−	1.3+	1999 09 09	704	0.2−	0.1+
1998 05 01	704	0.7+	0.2−	1998 05 24	704	1.2−	1.0+	1999 09 09	704	0.5−	0.6+
1998 05 01	699	1.2+	0.2−	1998 05 24	704	0.8−	0.4−				
1998 05 01	699	1.9+	0.2−	1998 05 24	704	0.2+	0.2+				

1998 HZ₉₂ = 1999 TX₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	45.52248		(2000.0)	P	Q
n	0.28864650	ω	329.00392	+0.67244612	+0.74011729
a	2.2675586	Ω	343.24928	−0.67434688	+0.60900646
e	0.0400274	i	1.29779	−0.30507785	+0.28519737
P	3.41	H	15.4	G 0.15	U 5

Residuals in seconds of arc

1998 04 21	704	0.6−	0.3+	1998 05 01	704	0.3−	0.0	1998 05 31	691	0.9−	0.2+
1998 04 21	704	1.8+	0.0	1998 05 01	704	0.3+	0.6−	1999 10 04	704	0.4−	0.4+
1998 04 21	704	2.8−	0.3−	1998 05 01	704	0.6+	1.0−	1999 10 04	704	0.3+	0.0
1998 04 21	704	0.2−	0.0	1998 05 01	704	0.8+	0.2−	1999 10 04	704	0.5+	0.7−
1998 04 21	704	0.3+	0.6−	1998 05 01	704	0.1+	0.7+	1999 10 04	704	0.3+	0.1+
1998 04 22	704	0.3+	0.2−	1998 05 26	691	0.7+	0.3+	1999 10 04	704	1.0+	0.2−
1998 04 22	704	0.0	1.0−	1998 05 26	691	2.1+	0.9+	1999 10 06	704	0.2−	0.3−
1998 04 22	704	0.6+	1.3−	1998 05 26	691	0.3+	0.2−	1999 10 06	704	0.0	0.0
1998 04 22	704	0.2+	0.9−	1998 05 27	691	0.1−	0.2−	1999 10 06	704	0.7−	0.2−
1998 04 22	704	0.2+	1.6−	1998 05 27	691	0.0	0.9+	1999 10 06	704	0.0	0.5−
1998 04 25	699	1.1−	2.0+	1998 05 27	691	0.5+	0.4+	1999 10 06	704	0.1+	0.6−
1998 04 25	699	1.8−	1.2−	1998 05 31	691	0.9−	0.8+				
1998 04 25	699	0.3−	0.2+	1998 05 31	691	0.4−	0.9+				

1998 HK₉₄ = 1999 TC₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	9.63607		(2000.0)	P	Q
n	0.26630144	ω	102.78882	+0.98572201	+0.16609409
a	2.3926934	Ω	247.65570	−0.16375137	+0.90735065
e	0.1784128	i	1.71349	−0.03921245	+0.38617038
P	3.70	H	14.7	G 0.15	U 5

Residuals in seconds of arc

1998 04 21	704	0.4−	1.1−	1998 05 01	704	0.6−	1.3+	1999 10 03	704	0.1−	0.2+
1998 04 21	704	1.8+	1.0−	1998 05 01	704	0.4+	0.1−	1999 10 03	704	0.3−	0.1+
1998 04 21	704	1.4+	1.1+	1998 05 01	704	0.9+	0.3+	1999 10 03	704	0.0	1.2+
1998 04 21	704	0.4+	0.0	1998 05 22	704	0.9+	0.5+	1999 10 03	704	0.3+	0.2−
1998 04 21	704	0.5−	1.1−	1998 05 22	704	0.3+	0.2−	1999 10 03	704	0.0	0.3−
1998 04 22	704	0.6−	0.2+	1998 05 22	704	0.2−	1.5−	1999 10 06	704	0.3+	0.1−
1998 04 22	704	0.7−	0.4+	1998 05 22	704	3.5−	0.4−	1999 10 06	704	0.1+	0.2−
1998 04 22	704	0.8−	0.2+	1998 05 24	704	0.2+	1.5+	1999 10 06	704	0.1+	0.2−
1998 04 22	704	1.5−	0.7+	1998 05 24	704	0.5+	0.2+	1999 10 06	704	0.1−	0.4−
1998 05 01	704	0.3−	0.3−	1998 05 24	704	1.2+	0.2+	1999 10 06	704	0.3−	0.2−
1998 05 01	704	1.0+	0.3+	1998 05 24	704	0.1−	1.1−				

1998 HA₉₈ = 1999 TG₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	33.13276		(2000.0)	P	Q		
n	0.22952538	ω	298.43168	+0.73961204	+0.66954929		
a	2.6418951	Ω	19.79184	−0.52494713	+0.63748602		
e	0.1982633	i	11.65329	−0.42119417	+0.38120247		
P	4.29	H	14.3	G	0.15	U	4

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Residuals in seconds of arc

1998 04 21	704	0.0	0.4−	1998 05 24	704	0.5−	1.6+	1999 10 07	704	0.2−	0.1−
1998 04 21	704	0.2+	1.0−	1998 05 24	704	1.7+	0.9−	1999 10 07	704	0.7−	0.1+
1998 04 21	704	0.1+	0.7+	1998 05 24	704	1.8−	0.1−	1999 10 07	704	0.3+	0.1−
1998 04 21	704	0.1−	0.5+	1999 10 06	691	0.2−	0.0	1999 10 07	704	0.3+	0.1−
1998 04 21	704	0.0	0.5+	1999 10 06	704	0.4−	1.1−	1999 10 07	120	0.9+	0.7−
1998 04 22	704	0.0	0.2−	1999 10 06	691	0.3−	0.1+	1999 10 07	120	0.6+	0.2+
1998 04 22	704	0.6−	0.2+	1999 10 06	704	0.6−	0.7−	1999 10 08	120	0.5+	0.2+
1998 04 22	704	0.1+	1.4+	1999 10 06	704	0.3−	0.7−	1999 10 08	120	1.0+	0.9+
1998 04 22	704	0.6−	0.7+	1999 10 06	691	0.2−	0.0	1999 10 09	703	0.1−	0.7+
1998 04 22	704	1.1+	0.2+	1999 10 06	704	0.5−	0.8−	1999 10 09	703	0.4−	0.2+
1998 05 22	704	0.4−	1.0−	1999 10 06	704	0.3−	1.0−	1999 10 09	703	0.0	1.1+
1998 05 22	704	(0.0	2.5−)	1999 10 06	120	0.7+	0.2−	1999 10 09	703	0.0	0.4+
1998 05 22	704	0.3−	0.0	1999 10 07	120	0.0	0.1+	1999 10 13	691	0.1−	0.8+
1998 05 22	704	1.4+	1.5−	1999 10 07	691	0.0	0.0	1999 10 13	691	0.1−	0.8+
1998 05 22	704	0.5−	0.4+	1999 10 07	691	0.2−	0.3−	1999 10 13	691	0.1−	0.8+
1998 05 24	704	0.3+	0.4+	1999 10 07	704	0.1−	0.1−				
1998 05 24	704	0.3+	0.4−	1999 10 07	691	0.0	0.1−				

1998 HC₁₀₂ = 1999 SQ₇

Id. G. V. Williams, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	54.82655		(2000.0)	P	Q
n	0.19059983	ω	225.89788	−0.02746885	+0.99126122
a	2.9903432	Ω	43.03459	−0.85463407	+0.04366060
e	0.0674767	i	10.89792	−0.51850368	−0.12447866
P	5.17	H	13.0	G 0.15	U 4

Residuals in seconds of arc

1998 04 25	809	0.6−	1.5−	1998 05 24	704	0.8+	0.8−	1999 09 11	704	0.1−	0.3−
1998 04 25	809	(1.9−	2.3−)	1998 05 24	704	0.3+	0.2−	1999 09 11	704	0.6−	0.0
1998 04 25	809	(0.9−	2.6−)	1998 05 24	704	0.8−	1.2−	1999 09 29	704	0.5+	1.3−
1998 04 28	809	(1.9+	2.8+)	1998 06 16	704	0.3+	0.2−	1999 09 29	704	0.5−	0.9+
1998 04 28	809	0.9+	1.4+	1998 06 16	704	1.8−	0.7+	1999 09 29	704	0.6+	0.3+
1998 04 28	809	0.7+	1.2+	1998 06 16	704	0.1+	0.3−	1999 09 29	704	1.1+	1.0+
1998 05 22	704	0.1−	0.6+	1998 06 16	704	(5.1−	0.1+)	1999 09 29	704	0.5+	1.8+
1998 05 22	704	1.0+	0.6+	1999 09 09	699	0.6−	0.2+	1999 09 30	704	0.3+	0.6−
1998 05 22	704	1.0+	0.0	1999 09 09	699	0.0	1.1−	1999 09 30	704	0.5+	0.1+
1998 05 22	704	0.1+	0.9+	1999 09 09	699	0.4−	0.5+	1999 09 30	704	0.1+	0.3−
1998 05 22	704	0.1+	0.1+	1999 09 11	704	0.1−	0.4−	1999 09 30	704	0.4−	0.2−
1998 05 24	704	0.9−	0.1−	1999 09 11	704	0.1+	0.3−	1999 09 30	704	0.4−	0.1+
1998 05 24	704	1.1−	1.0−	1999 09 11	704	0.6−	0.2−				

1998 HS₁₀₂ = 1999 RQ₃₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	21.54677		(2000.0)	P	Q
n	0.18545342	ω	301.86891	+0.76703633	+0.64147940
a	3.0454127	Ω	18.23892	−0.57419058	+0.69509281
e	0.2078362	i	2.31225	−0.28628736	+0.32457689
P	5.31	H	14.5	G 0.15	U 3

Residuals in seconds of arc

1998 04 25	809	0.9+	0.3+	1999 09 07	704	0.1−	0.1+	1999 09 14	120	0.6−	0.4−
1998 04 25	809	0.2+	0.1−	1999 09 07	704	0.3−	0.8+	1999 10 07	703	0.2−	0.2+
1998 04 25	809	0.4+	0.3+	1999 09 07	704	0.0	0.0	1999 10 07	703	0.7−	0.3+
1998 04 28	809	0.3−	0.2+	1999 09 07	704	0.5+	0.2−	1999 10 07	703	0.1+	0.2−
1998 04 28	809	0.7−	0.5−	1999 09 08	691	0.5−	0.2−	1999 10 07	703	0.3−	0.1+
1998 04 28	809	0.7−	0.9−	1999 09 08	691	0.3−	0.1−	1999 10 07	704	0.2+	0.4−
1998 06 02	701	0.1+	0.4−	1999 09 08	691	0.4−	0.0	1999 10 07	704	0.5+	0.2−
1998 06 02	701	0.6+	0.9+	1999 09 11	120	0.8+	0.0	1999 10 07	704	0.4+	0.0
1998 06 02	701	0.6−	0.2−	1999 09 12	120	0.4−	0.0	1999 10 07	704	0.0	0.1−
1998 06 03	701	0.3+	0.4+	1999 09 12	120	0.3+	0.2+	1999 10 07	704	0.4+	0.3−
1998 06 03	701	0.3−	0.0	1999 09 12	120	1.0+	0.6−				
1999 09 07	704	0.2+	0.5+	1999 09 14	120	0.3−	0.3+				

1999 OCT. 26

M.P.C. 36371

1998 HJ₁₀₅ = 1999 RD₁₅₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23628905	ω	126.64482	−0.07802908	+0.99484249		
<i>a</i>	2.5912361	Ω	138.73271	−0.94317931	−0.05260410		
<i>e</i>	0.0779192	<i>i</i>	5.63871	−0.32299266	−0.08672502		
<i>P</i>	4.17	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24	704	0.0	0.6+	1998 04 23	704	0.3+	0.4−	1999 09 09	704	(2.5+	0.3−)
1998 03 24	704	0.5−	1.0−	1998 04 24	704	0.0	0.6−	1999 09 09	704	0.8+	0.1+
1998 03 24	704	0.4−	0.7+	1998 04 24	704	0.4−	1.1+	1999 09 09	704	0.6+	0.7+
1998 03 24	704	(2.8−	1.1+)	1998 04 24	704	0.5+	0.3−	1999 09 13	704	0.4−	0.6+
1998 04 21	704	0.0	0.7+	1998 04 24	704	0.4+	0.3+	1999 09 13	704	0.3−	0.1+
1998 04 21	704	0.4−	1.2−	1998 04 24	704	0.8−	0.1−	1999 09 13	704	0.1+	0.7−
1998 04 21	704	0.3+	0.6+	1999 09 07	704	0.3−	0.1−	1999 09 13	704	0.3−	0.6−
1998 04 21	704	0.2−	0.1−	1999 09 07	704	0.0	0.5+	1999 09 13	704	0.5−	0.7−
1998 04 21	704	0.4−	0.4+	1999 09 07	704	0.0	0.3+	1999 09 30	704	0.0	1.4−
1998 04 23	704	0.0	0.6+	1999 09 07	704	0.4+	0.5+	1999 09 30	704	0.2+	0.7−
1998 04 23	704	0.0	0.0	1999 09 07	704	0.1−	0.1+	1999 09 30	704	0.7−	1.0+
1998 04 23	704	1.0+	1.4−	1999 09 09	704	0.0	0.5−				
1998 04 23	704	0.5+	0.2+	1999 09 09	704	0.3+	0.6+				

1998 HE₁₂₃ = 1999 SE₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26452272	ω	213.30381	+0.40309143	+0.90518947		
<i>a</i>	2.4034074	Ω	80.78568	−0.80701405	+0.42100419		
<i>e</i>	0.1142969	<i>i</i>	7.84424	−0.43156185	+0.05820213		
<i>P</i>	3.73	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 23	704	1.0−	0.3+	1998 04 25	699	0.2−	0.6+	1999 09 30	703	0.3−	0.1−
1998 04 23	704	0.5−	0.5−	1998 05 22	704	0.3−	0.6−	1999 09 30	703	1.9+	0.4+
1998 04 23	704	0.5+	0.2−	1998 05 22	704	1.3+	0.7−	1999 09 30	703	1.3−	0.6−
1998 04 23	704	0.8+	0.5−	1998 05 22	704	1.9−	1.1−	1999 09 30	703	1.1−	0.5+
1998 04 23	704	0.5−	1.2−	1998 05 22	704	0.2+	1.0+	1999 10 04	703	0.3+	0.2+
1998 04 24	704	0.3+	0.1−	1998 05 22	704	0.4−	0.7+	1999 10 04	703	0.5+	0.4−
1998 04 24	704	0.2+	0.5+	1998 05 24	704	0.2+	0.0	1999 10 04	703	0.0	0.3−
1998 04 24	704	0.2+	0.3+	1998 05 24	704	0.8+	0.0	1999 10 04	703	0.0	0.3+
1998 04 25	699	0.3+	0.3+	1998 05 24	704	0.8+	0.3+				
1998 04 25	699	0.0	0.6+	1998 05 24	704	0.8−	0.1+				

1998 HA₁₃₈ = 1999 RJ₁₂₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21146635	ω	138.39715	+0.60959439	+0.79210817		
<i>a</i>	2.7902419	Ω	169.04123	−0.76352717	+0.59720643		
<i>e</i>	0.1452644	<i>i</i>	9.37688	−0.21312189	+0.12613142		
<i>P</i>	4.66	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 25	704	1.8+	0.6+	1998 04 24	704	0.4+	0.4+	1999 09 09	704	0.4−	0.3−
1998 03 25	704	(3.7+	0.1−)	1998 04 24	704	0.2−	0.6−	1999 09 09	704	0.9+	0.1−
1998 03 25	704	(2.5+	0.3+)	1998 04 24	704	0.1−	0.3−	1999 09 09	704	0.2+	0.5−
1998 03 25	704	0.4+	0.9+	1998 04 24	704	(3.0+	2.8−)	1999 09 09	704	0.7−	0.9−
1998 03 25	704	(4.6−	0.4−)	1998 04 24	704	1.5−	1.1−	1999 09 09	704	0.3−	0.1−
1998 04 20	704	0.2−	0.6−	1998 05 16	704	(3.2+	1.0+)	1999 09 13	704	0.1−	1.2−
1998 04 20	704	0.8−	0.0	1998 05 16	704	1.6+	1.7−	1999 09 13	704	0.7+	1.4−
1998 04 20	704	0.2+	0.8+	1998 05 16	704	0.0	0.3−	1999 09 13	704	0.4−	0.8+
1998 04 20	704	1.3+	1.4+	1998 05 16	704	1.7−	1.3+	1999 09 13	704	(0.0	2.7+)
1998 04 20	704	0.6−	1.7+	1999 09 07	704	0.4+	0.9+	1999 10 04	703	0.4+	1.1+
1998 04 21	704	(0.4+	2.2−)	1999 09 07	704	0.3+	1.1+	1999 10 04	703	0.6−	0.5+

1998 04 21	704	0.7+	1.9−	1999 09 07	704	0.0	0.1+	1999 10 04	703	0.5+	0.1+
1998 04 21	704	1.0−	0.1−	1999 09 07	704	0.2−	0.1+	1999 10 04	703	0.2−	0.8+
1998 04 21	704	(1.1+	3.6−)	1999 09 07	704	0.3−	0.1−				

1998 JJ₁ = 1999 TE₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.36661458	ω	201.22733	+0.35011056	−0.90049257		
<i>a</i>	1.9334349	Ω	229.27745	+0.90096206	+0.39907744		
<i>e</i>	0.0931966	<i>i</i>	19.89832	+0.25630051	−0.17277247		
<i>P</i>	2.69	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 01	704	0.6−	0.5−	1998 05 18	699	0.6+	0.1+	1998 05 24	704	0.5+	0.3−
1998 05 01	704	0.8+	0.3−	1998 05 22	704	0.1+	0.5+	1999 10 05	704	0.5−	0.3+
1998 05 01	704	0.1−	1.0+	1998 05 22	704	0.6−	0.4−	1999 10 05	704	0.5+	0.2−
1998 05 01	704	0.1−	0.7+	1998 05 22	704	0.1+	0.6+	1999 10 05	704	0.1−	0.0
1998 05 01	566	0.0	0.2+	1998 05 22	699	0.6+	0.7−	1999 10 05	704	0.4−	0.1+
1998 05 01	566	1.6−	0.3−	1998 05 22	699	0.5+	0.6+	1999 10 06	704	0.1+	0.0
1998 05 01	566	0.0	0.1+	1998 05 22	704	2.1−	0.8−	1999 10 06	704	0.2+	0.0
1998 05 02	566	0.1+	0.3−	1998 05 22	699	0.8+	1.4−	1999 10 06	704	0.0	0.0
1998 05 02	566	0.5+	0.5−	1998 05 22	704	1.5−	0.5+	1999 10 06	704	0.1+	0.1−
1998 05 02	566	0.5+	0.3−	1998 05 24	704	0.3+	0.7+	1999 10 06	704	0.0	0.1−
1998 05 18	699	0.3+	0.5+	1998 05 24	704	0.2+	0.4+				
1998 05 18	699	0.6+	0.2−	1998 05 24	704	0.1+	0.0				

1998 KB

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>	0.24316388	ω	129.40424	+0.81062366	+0.58555088		
<i>a</i>	2.5421627	Ω	194.75555	−0.54242974	+0.74804777		
<i>e</i>	0.1309492	<i>i</i>	0.99221	−0.22058846	+0.31233748		
<i>P</i>	4.05	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 17	684	0.4−	0.2+	1998 06 03	684	0.4+	0.5−	1999 10 04	684	0.6−	0.2+
1998 05 17	684	0.1−	0.1+	1998 06 15	684	0.3−	1.1−	1999 10 04	684	0.5−	0.2+
1998 05 18	684	0.2+	0.5+	1998 06 15	684	0.1−	0.3−	1999 10 05	684	0.1+	0.2+
1998 05 18	684	0.1−	0.4+	1998 06 16	684	0.4−	0.6−	1999 10 05	684	0.0	0.0
1998 05 24	684	0.4+	0.3+	1998 06 16	684	0.2−	0.3−	1999 10 07	704	1.1+	0.5+
1998 05 24	684	1.0+	0.3+	1998 07 14	684	0.0	0.2+	1999 10 07	704	0.8−	0.1+
1998 06 02	684	0.2−	0.2+	1998 07 14	684	0.1−	0.2+	1999 10 07	704	0.3+	0.9−
1998 06 02	684	0.5−	0.2−	1998 07 14	684	0.4+	0.8+	1999 10 07	704	0.2+	0.8+
1998 06 03	684	0.0	0.2+	1998 07 15	684	0.1+	0.2−	1999 10 07	704	0.2+	0.8−

1998 KR₁ = 1968 UW₂ = 1999 SF₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.225519	ω	270.96991	+0.77022382	+0.61215126		
<i>a</i>	2.6967033	Ω	51.31037	−0.45485273	+0.72393788		
<i>e</i>	0.2020243	<i>i</i>	13.25433	−0.44706180	+0.31809554		
<i>P</i>	4.43	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1968 10 23	095	0.5+	0.7−	1998 05 22	704	0.1−	0.5+	1998 06 16	704	(3.2−	0.1−)
1998 04 22	704	0.1−	0.5−	1998 05 22	704	0.2+	0.7+	1998 06 18	704	1.6+	0.1−
1998 04 22	704	0.5−	0.2−	1998 05 22	704	0.2+	0.4+	1998 06 18	704	(1.0+	2.6−)
1998 04 22	704	0.7−	0.3−	1998 05 22	704	1.1+	1.4−	1998 06 18	704	0.4+	0.7−
1998 04 22	704	0.7−	0.5−	1998 05 22	704	0.7−	0.2+	1998 06 18	704	0.1−	1.0−
1998 04 22	704	0.4−	1.4−	1998 05 22	699	0.0	1.2+	1998 06 18	704	0.8−	1.4−
1998 04 25	699	0.0	0.5+	1998 05 22	699	0.3+	1.4+	1999 09 29	120	0.0	0.2−
1998 04 25	699	0.0	0.0	1998 05 22	699	0.3−	0.5+	1999 09 29	120	0.5−	0.2−
1998 04 25	699	0.1−	0.3+	1998 05 24	704	0.5+	0.6+	1999 09 29	120	0.0	0.1+
1998 05 01	704	0.1−	0.2+	1998 05 24	704	0.4+	0.5−	1999 09 29	120	1.0+	0.1+

1998 05 01	704	0.3−	0.8−	1998 05 24	704	0.6+	0.1+	1999 10 02	120	0.1+	0.1−
1998 05 01	704	0.0	0.5−	1998 05 24	704	0.8+	0.2−	1999 10 02	120	0.1−	0.2−
1998 05 01	704	0.3+	0.1+	1998 05 24	704	0.2+	0.7−	1999 10 04	703	0.3−	0.2+
1998 05 01	704	0.0	0.3+	1998 06 16	704	1.3+	0.2−	1999 10 04	703	0.2−	0.2+
1998 05 18	699	0.1−	1.0+	1998 06 16	704	1.0−	0.6+	1999 10 04	703	0.1−	0.2+
1998 05 18	699	0.2+	0.6+	1998 06 16	704	0.9−	0.5+	1999 10 04	703	0.2−	0.3+
1998 05 18	699	0.3−	0.7+	1998 06 16	704	0.8−	0.5−				

1998 KE₄ = 1999 RM₅₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	179.56095	(2000.0)		P	Q		
<i>n</i>	0.22076210	ω	316.82468	−0.87642265	−0.48128973		
<i>a</i>	2.7113549	Ω	194.42896	+0.45709930	−0.82130424		
<i>e</i>	0.0480216	<i>i</i>	3.59061	+0.15147134	−0.30629975		
<i>P</i>	4.46	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 05	699	0.4−	0.4+	1998 05 24	699	1.2+	0.1−	1999 09 07	704	0.4−	0.1+
1998 05 05	699	0.9−	1.2−	1998 05 24	699	0.4+	0.0	1999 09 07	704	0.0	0.2+
1998 05 05	699	0.1−	0.5−	1998 05 24	704	0.1+	0.6−	1999 09 09	704	1.4−	0.8−
1998 05 22	704	0.6−	0.1+	1998 05 24	704	0.6+	0.9+	1999 09 09	704	1.1+	1.2−
1998 05 22	704	0.2+	0.6−	1998 06 03	704	1.5−	1.0+	1999 09 09	704	0.4−	0.3+
1998 05 22	704	0.9−	0.7−	1998 06 03	704	(1.4+	2.2−)	1999 09 09	704	1.1+	1.2−
1998 05 22	704	0.7−	1.1−	1998 06 03	704	(2.2+	1.0−)	1999 09 14	704	0.5−	0.1+
1998 05 22	699	0.9+	0.8+	1998 06 03	704	1.1+	1.7−	1999 09 14	704	0.1−	0.2−
1998 05 22	704	0.3−	0.9+	1998 08 22	699	0.2+	1.1+	1999 09 14	704	0.3+	0.3+
1998 05 22	699	0.1−	0.2−	1999 08 22	703	0.7−	0.2+	1999 09 14	704	0.6−	0.4−
1998 05 22	699	0.5+	0.3+	1999 08 22	703	0.1+	0.3−	1999 09 14	704	0.4+	0.6−
1998 05 23	699	0.5+	1.7+	1999 08 22	703	0.2−	0.6+	1999 10 06	704	0.5+	1.4+
1998 05 23	699	0.7+	0.3+	1999 08 22	699	0.4−	1.0+	1999 10 06	704	0.1−	0.2−
1998 05 23	699	0.2−	0.7−	1999 08 22	703	1.4+	0.7−	1999 10 06	704	0.4+	0.2+
1998 05 24	704	0.6−	0.0	1999 08 22	699	0.8+	0.5+	1999 10 06	704	0.2+	0.5+
1998 05 24	704	0.3+	1.0+	1999 09 07	704	0.1−	0.1−	1999 10 06	704	0.7−	0.1−
1998 05 24	699	0.3−	0.5−	1999 09 07	704	0.6−	0.4−				
1998 05 24	704	0.1+	0.6+	1999 09 07	704	0.3−	0.0				

1998 KJ₄ = 1992 EQ₅ = 1999 RH₁₅₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	9.66976	(2000.0)		P	Q		
<i>n</i>	0.19614229	ω	219.97931	+0.79695808	+0.60119383		
<i>a</i>	2.9337418	Ω	102.96857	−0.53771342	+0.75024862		
<i>e</i>	0.0819489	<i>i</i>	3.44238	−0.27517646	+0.27512359		
<i>P</i>	5.02	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 03 01	809	0.7−	0.5+	1998 05 24	699	0.7+	1.4−	1999 09 13	704	0.2−	0.1+
1992 03 04	809	0.5+	1.2+	1998 05 24	699	0.9−	0.2+	1999 09 13	704	0.2−	0.4−
1992 03 06	809	0.9+	0.3+	1998 05 24	704	0.3+	0.2−	1999 09 13	704	0.2+	0.1−
1995 11 21	608	(3.1+	2.6−)	1998 05 24	699	0.2+	0.3+	1999 09 13	704	0.2+	0.7−
1995 11 21	608	(1.6+	2.2−)	1998 05 24	704	(2.6−	2.0+)	1999 09 13	704	0.8+	0.2−
1995 11 21	608	0.1−	1.7+	1999 09 07	704	0.7−	0.8−	1999 09 30	704	0.1−	0.4+
1998 05 22	699	0.1+	0.3+	1999 09 07	704	0.9−	0.4−	1999 09 30	704	0.7+	0.6+
1998 05 22	699	0.1−	1.0−	1999 09 07	704	0.7−	0.2−	1999 09 30	704	0.2+	0.3+
1998 05 22	699	0.1+	1.4+	1999 09 07	704	0.9−	0.3−	1999 09 30	704	0.5+	1.2+
1998 05 23	699	0.3−	0.5+	1999 09 07	704	0.8−	0.8−	1999 09 30	704	1.2+	0.6+
1998 05 23	699	0.2−	1.6+	1999 09 09	704	0.1+	0.6+	1999 10 04	703	0.1+	0.1+
1998 05 23	699	0.6+	0.6−	1999 09 09	704	0.1−	0.5+	1999 10 04	703	0.0	0.2+
1998 05 24	704	1.4+	0.5−	1999 09 09	704	0.1+	0.5+	1999 10 04	703	0.5−	0.0
1998 05 24	704	0.8−	0.1−	1999 09 09	704	0.1−	0.6+	1999 10 04	703	0.1+	0.5+
1998 05 24	704	0.7−	1.3+	1999 09 09	704	0.1−	0.2+				

1998 KS₄ = 1999 SY₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	352.07380	(2000.0)		P	Q		
<i>n</i>	0.25751141	ω	294.92129	+0.96090010	−0.24093632		
<i>a</i>	2.4468371	Ω	79.25753	+0.27634308	+0.86555346		
<i>e</i>	0.1234678	<i>i</i>	7.98372	−0.01747850	+0.43905227		
<i>P</i>	3.83	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 01 25	691	0.1−	0.3−	1998 05 24	699	0.1+	0.1−	1998 06 18	704	1.2−	1.3−
1993 01 25	691	0.2−	0.8−	1998 05 24	704	0.8+	0.2−	1998 06 30	699	1.0−	0.8−
1993 01 25	691	0.0	0.6−	1998 05 24	699	0.2−	0.1−	1998 06 30	699	0.9−	0.0
1998 05 05	699	0.4+	0.5+	1998 05 24	699	0.1−	0.0	1998 06 30	699	0.9−	0.3−
1998 05 05	699	0.4+	0.7+	1998 05 24	704	0.6+	0.1−	1999 09 30	703	0.0	0.1−
1998 05 05	699	0.2−	0.9+	1998 05 24	704	0.2−	1.5−	1999 09 30	703	0.4−	0.1+
1998 05 22	704	0.7−	0.6−	1998 06 03	704	1.1−	0.4−	1999 09 30	703	0.0	0.4−
1998 05 22	704	0.6−	0.8+	1998 06 03	704	0.8+	0.2−	1999 09 30	703	0.5−	0.2+
1998 05 22	704	0.2−	0.3+	1998 06 03	704	1.7−	0.1+	1999 10 02	704	0.3+	0.0
1998 05 22	704	0.0	0.3−	1998 06 03	704	0.3+	0.3+	1999 10 02	704	0.5+	0.3−
1998 05 22	704	0.3−	1.5+	1998 06 03	704	(4.4−	2.9+)	1999 10 02	704	0.4+	0.7−
1998 05 22	699	1.6+	0.4+	1998 06 16	704	0.1−	0.8+	1999 10 02	704	0.1−	0.5+
1998 05 22	699	0.7−	0.3−	1998 06 16	704	0.3+	0.0	1999 10 02	704	0.6−	0.2−
1998 05 22	699	0.4+	0.0	1998 06 16	704	(0.7−	2.2−)	1999 10 04	703	0.4+	0.0
1998 05 23	699	0.5+	0.7+	1998 06 16	704	(2.8−	1.3−)	1999 10 04	703	0.2+	0.1−
1998 05 23	699	0.0	0.7+	1998 06 18	704	0.9+	1.3−	1999 10 04	703	0.1+	0.0
1998 05 23	699	0.5+	0.1+	1998 06 18	704	0.9−	0.5−	1999 10 04	703	0.1+	0.1−
1998 05 24	704	0.5+	0.1−	1998 06 18	704	1.7+	0.3+				
1998 05 24	704	0.4+	1.1−	1998 06 18	704	0.2−	0.8−				

1998 KB₇ = 1999 RA₄₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	162.75609	(2000.0)		P	Q		
<i>n</i>	0.26413962	ω	338.76503	−0.98319920	+0.17384532		
<i>a</i>	2.4057307	Ω	211.40809	−0.14828473	−0.93847888		
<i>e</i>	0.0563938	<i>i</i>	6.13036	−0.10644705	−0.29838765		
<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 05 22	704	0.5−	0.4+	1999 09 05	699	0.1+	0.5+	1999 09 29	703	0.4−	0.7+
1998 05 22	704	0.7+	0.2−	1999 09 05	699	0.3−	0.7−	1999 09 29	703	0.1−	0.6+
1998 05 22	704	0.7+	0.4+	1999 09 05	699	0.9+	1.4+	1999 09 29	120	0.1+	0.6+
1998 05 22	704	0.1+	0.1−	1999 09 07	704	1.0+	1.2−	1999 09 29	120	1.2+	1.0+
1998 05 22	704	1.0−	0.5+	1999 09 07	704	0.4−	1.6−	1999 10 02	120	0.8+	0.4−
1998 05 22	699	0.3−	0.9−	1999 09 07	704	0.9−	0.1+	1999 10 02	120	1.7−	1.0−
1998 05 22	699	1.0+	0.2+	1999 09 13	120	0.4−	0.4−	1999 10 04	704	0.5+	0.3−
1998 05 22	699	0.3−	0.4+	1999 09 13	120	1.3+	0.4−	1999 10 04	704	0.3+	0.2+
1998 05 23	699	1.2−	0.8−	1999 09 13	120	1.6−	0.1−	1999 10 04	704	0.6+	0.3−
1998 05 23	699	0.5+	0.4+	1999 09 14	120	0.1−	0.2+	1999 10 04	704	0.3−	0.7−
1998 05 23	699	0.7+	0.1−	1999 09 14	120	0.1−	0.1+	1999 10 07	704	0.5+	0.1−
1998 05 24	704	1.7+	0.4−	1999 09 14	120	1.0−	0.1+	1999 10 07	704	0.1−	0.5+
1998 05 24	704	0.4−	0.0	1999 09 15	120	(6.3+	3.7+)	1999 10 07	704	0.7−	0.3−
1998 05 24	704	0.2−	1.5+	1999 09 15	120	1.6+	1.0+	1999 10 07	704	0.4+	0.3−
1998 05 24	704	0.6−	0.5+	1999 09 29	703	0.5−	0.3+	1999 10 07	704	0.3−	0.3−
1998 05 24	704	1.0−	1.8−	1999 09 29	703	0.4−	0.7+				

1999 OCT. 26

M.P.C. 36373

Residuals in seconds of arc

1988 03 13	054	1.8+	0.7+	1998 05 26	704	1.6-	1.5+	1999 09 09	704	1.1+	1.3+
1988 03 13	054	1.3-	0.9+	1998 06 03	704	1.1-	0.1-	1999 09 09	704	1.7+	2.0+
1998 05 23	704	0.1-	0.8-	1998 06 03	704	0.7-	0.3-	1999 09 13	704	0.4+	0.2+
1998 05 23	704	1.7+	0.0	1998 06 03	704	(0.4-	2.1+)	1999 09 13	704	0.3+	0.2-
1998 05 23	704	0.7+	0.4-	1998 06 03	704	0.4-	0.3-	1999 09 13	704	0.2+	0.3-
1998 05 23	704	1.1-	0.4-	1999 07 16	704	0.9-	1.2-	1999 09 13	704	0.3+	0.1-
1998 05 23	699	0.1+	0.9-	1999 07 16	704	0.5-	0.0	1999 09 30	704	0.1-	0.5-
1998 05 23	704	0.3-	1.6+	1999 07 16	704	0.1+	0.1-	1999 09 30	704	0.4-	0.5-
1998 05 23	699	0.2+	0.3+	1999 07 16	704	0.7+	0.6+	1999 09 30	704	0.1+	0.3-
1998 05 23	699	0.9+	0.4-	1999 07 16	704	0.3+	0.3-	1999 09 30	704	0.7-	0.0
1998 05 24	699	0.5+	0.8+	1999 08 12	699	0.3-	0.2-	1999 09 30	704	0.4-	1.2-
1998 05 24	699	0.1-	0.5+	1999 08 12	699	0.1-	0.0	1999 10 04	703	0.3-	0.0
1998 05 24	699	0.3+	0.0	1999 08 12	699	0.0	0.3+	1999 10 04	703	0.2-	0.0
1998 05 26	704	1.3+	0.3+	1999 09 09	704	0.7-	0.3+	1999 10 04	703	0.4-	0.1-
1998 05 26	704	0.5-	1.6-	1999 09 09	704	0.6-	0.7+	1999 10 04	703	0.4-	0.1-
1998 05 26	704	(2.3-	1.0+)	1999 09 09	704	0.2+	0.6+				

1998 KT₈

Id. T. Pauwels (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	63.27801		(2000.0)	P	Q
<i>n</i>	0.21021830	ω	163.53582	+0.19939023	+0.96979884
<i>a</i>	2.8012747	Ω	117.77955	-0.91601055	+0.23538446
<i>e</i>	0.1892417	<i>i</i>	9.13587	-0.34809224	-0.06390900
<i>P</i>	4.69	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1998 05 05	699	0.3-	0.0	1998 05 26	704	0.6+	0.1+	1999 09 21	699	1.2-	0.7-
1998 05 05	699	0.2-	0.3+	1998 05 26	704	0.4+	0.4+	1999 10 02	704	0.6-	1.0+
1998 05 05	699	0.1+	0.5-	1998 05 26	704	0.3-	0.8+	1999 10 02	704	0.5-	0.4+
1998 05 23	704	0.6+	0.2-	1998 06 03	704	0.2-	0.7-	1999 10 02	704	1.6-	0.3+
1998 05 23	704	0.6-	0.0	1998 06 03	704	0.3-	1.7+	1999 10 02	704	0.7-	0.5+
1998 05 23	704	0.3-	0.8-	1998 06 03	704	0.7+	0.0	1999 10 02	704	0.1+	0.5+
1998 05 23	704	0.2+	0.4-	1998 06 03	704	0.2-	0.3-	1999 10 14	012	0.2+	0.0
1998 05 23	699	0.1-	0.2-	1998 06 28	699	0.1+	0.1-	1999 10 14	012	0.0	0.2-
1998 05 23	704	0.4+	0.3-	1998 06 28	699	0.3-	0.4-	1999 10 14	012	0.1+	0.4-
1998 05 23	699	0.1-	0.0	1998 06 28	699	0.7-	0.1+	1999 10 14	012	0.4+	0.2+
1998 05 23	699	0.1-	0.9+	1999 09 14	704	1.6+	0.4-	1999 10 14	012	0.1+	0.2-
1998 05 24	699	0.1-	0.1-	1999 09 14	704	0.4+	0.4-	1999 10 18	012	0.1-	0.3-
1998 05 24	699	0.4-	0.1-	1999 09 14	704	1.0+	0.4-	1999 10 18	012	0.3+	0.0
1998 05 24	699	0.0	0.4-	1999 09 14	704	0.2-	0.3+	1999 10 18	012	0.1+	0.2-
1998 05 26	704	0.2+	0.1+	1999 09 21	699	0.6+	0.2-	1999 10 19	012	0.1-	0.2-
1998 05 26	704	0.7+	0.1+	1999 09 21	699	0.6-	0.7+	1999 10 19	012	0.6+	0.2-

1998 KN₉ = 1999 TT₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	123.87863		(2000.0)	P	Q
<i>n</i>	0.23906853	ω	31.87994	-0.19953781	+0.95816996
<i>a</i>	2.5711126	Ω	227.50796	-0.94731882	-0.24216487
<i>e</i>	0.0699751	<i>i</i>	16.15555	-0.25054286	+0.15253363
<i>P</i>	4.12	<i>H</i>	13.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 05 28	684	0.7+	0.3+	1998 06 25	704	1.3-	1.5-	1998 08 14	684	0.8+	0.3-
1998 05 28	684	0.4-	0.5+	1998 06 26	684	0.1-	0.6-	1998 08 14	684	0.8-	0.4+
1998 05 29	684	0.3+	0.0	1998 06 26	684	0.1-	1.0-	1999 10 03	704	0.5-	1.4+
1998 05 29	684	0.3+	0.1+	1998 06 27	684	0.2-	0.5+	1999 10 03	704	0.9-	0.8+
1998 06 02	684	0.2+	0.8-	1998 06 27	684	0.1+	0.5+	1999 10 03	704	0.7-	0.1-
1998 06 02	684	0.1+	0.4-	1998 07 18	684	0.1-	0.7+	1999 10 03	704	0.4-	0.3+
1998 06 03	684	0.0	0.0	1998 07 18	684	0.6-	0.3-	1999 10 06	704	1.4+	0.6-
1998 06 03	684	0.0	0.1-	1998 07 19	684	0.4+	0.1-	1999 10 06	704	0.7+	0.4-
1998 06 25	704	0.7+	1.8+	1998 07 19	684	0.1-	0.5+	1999 10 06	704	0.2+	0.4-
1998 06 25	704	1.3-	0.2-	1998 08 12	684	0.1+	0.2+	1999 10 06	704	1.0+	0.5-
1998 06 25	704	1.0+	0.8-	1998 08 12	684	0.2+	0.0	1999 10 06	704	1.0-	0.9-
1998 06 25	704	0.0	0.3+	1998 08 12	684	0.2+	0.2+				

1998 KZ₂₆ = 1999 UZ₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	11.10099		(2000.0)	P	Q
<i>n</i>	0.24075444	ω	304.71700	+0.97195538	+0.20515930
<i>a</i>	2.5590956	Ω	43.76465	-0.12129758	+0.85611111
<i>e</i>	0.1333402	<i>i</i>	9.56570	-0.20146871	+0.47432419
<i>P</i>	4.09	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1995 10 15	327	0.3-	0.6+	1998 05 24	704	(1.9+	2.3-)	1999 10 07	704	0.2-	0.2-
1995 10 15	327	0.5-	0.2+	1998 05 24	426	0.5+	0.6-	1999 10 07	704	0.0	0.7-
1995 10 15	327	0.3+	0.3+	1998 05 24	426	0.8+	0.0	1999 10 07	704	0.3-	0.4-
1998 05 22	704	0.6-	1.3+	1998 05 31	426	0.8+	0.0	1999 10 07	704	0.2-	0.2+
1998 05 22	704	0.7-	1.0+	1998 05 31	426	0.6+	0.6-	1999 10 07	704	0.3+	0.3+
1998 05 22	704	1.1-	1.1+	1998 05 31	426	0.1-	0.1+	1999 10 16	678	0.0	1.2-
1998 05 22	704	0.6+	1.9-	1998 06 16	426	0.8+	0.2+	1999 10 16	678	0.0	0.2-
1998 05 23	426	1.1+	0.2-	1998 06 16	426	0.4-	0.2-	1999 10 19	678	0.9-	0.8+
1998 05 23	426	1.1+	0.6+	1998 06 16	426	0.0	0.6-	1999 10 19	678	0.0	0.4-
1998 05 23	426	0.4-	0.0	1998 06 17	426	0.1+	0.1-	1999 10 21	678	0.8+	1.2+
1998 05 24	704	(1.5+	2.3-)	1998 06 17	426	0.4-	1.1-	1999 10 21	678	0.8+	0.3+
1998 05 24	704	1.8-	1.6+	1998 07 22	426	0.7-	0.1-				
1998 05 24	704	(1.3+	2.1+)	1998 07 22	426	0.1-	0.1-				

1998 KO₂₈ = 1999 SJ₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	43.43900		(2000.0)	P	Q
<i>n</i>	0.22086364	ω	218.56317	+0.45980030	+0.88394683
<i>a</i>	2.7105239	Ω	78.95940	-0.79176871	+0.45141247
<i>e</i>	0.0688817	<i>i</i>	4.96706	-0.40210196	+0.12192120
<i>P</i>	4.46	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 05 22	704	2.3+	0.7+	1998 05 24	704	0.9+	1.3-	1999 09 30	704	0.2+	1.2-
1998 05 22	704	1.1-	1.0+	1998 06 17	426	0.4-	1.0+	1999 10 01	704	0.0	1.3+
1998 05 22	704	1.4+	0.1+	1998 06 17	426	0.4+	0.2+	1999 10 01	704	0.5-	0.1+
1998 05 22	704	0.3-	0.4-	1998 06 22	426	0.3-	0.2-	1999 10 01	704	0.2+	0.6+
1998 05 24	704	0.5-	0.6+	1998 06 22	426	0.5+	0.5-	1999 10 01	704	0.4+	0.9+
1998 05 24	704	2.5-	0.1-	1999 09 30	704	0.5+	1.7-				
1998 05 24	704	0.4-	1.0-	1999 09 30	704	0.7-	0.2-				

1998 KH₃₂ = 1999 UQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	30.14742		(2000.0)	P	Q
<i>n</i>	0.24400600	ω	101.42403	+0.94126959	+0.33637067
<i>a</i>	2.5363103	Ω	238.92615	-0.32164662	+0.86670500
<i>e</i>	0.1940002	<i>i</i>	1.96934	-0.10273754	+0.36834387
<i>P</i>	4.04	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 05 22	704	1.1+	1.0-	1998 05 24	704	1.0+	1.8+	1999 10 20	327	0.2+	0.4-
1998 05 22	704	0.0	1.1-	1998 05 24	704	0.5+	1.7+	1999 10 20	327	0.2+	0.2-
1998 05 22	704	1.2-	0.9-	1998 06 20	691	0.2-	0.3-	1999 10 20	327	0.1+	0.0
1998 05 22	704	2.0-	0.9-	1998 06 20	691	0.6-	0.3-	1999 10 22	327	0.1-	0.1+
1998 05 22	704	1.3+	1.0-	1998 06 20	691	0.2-	0.2-	1999 10 22	327	0.1-	0.5+
1998 05 24	704	0.7-	2.0+	1998 06 27	691	0.2+	0.5-	1999 10 22	327	0.3-	0.7+
1998 05 24	704	0.6+	1.9+	1998 06 27	691	0.3+	0.3-				
1998 05 24	704	0.3-	0.4-	1998 06 27	691	0.3+	0.1+				

1998 KK₃₅ = 1999 SG₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		(2000.0)		P		Q	
<i>M</i>	38.88105						
<i>n</i>	0.19135161	<i>ω</i>	224.96601	+0.38997414	+0.90619053		
<i>a</i>	2.9825059	<i>Ω</i>	68.62464	−0.78777265	+0.42027247		
<i>e</i>	0.0713250	<i>i</i>	10.11354	−0.47679600	+0.04679509		
<i>P</i>	5.15	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22	704	0.1−	0.3−	1998 06 03	704	0.2+	1.2+	1999 09 29	704	0.1−	0.4−
1998 05 22	704	0.2+	0.3−	1998 06 03	704	1.4+	1.4−	1999 09 29	704	0.2−	0.1−
1998 05 22	704	0.5+	1.8+	1998 06 03	704	1.2+	0.7−	1999 09 29	704	0.2−	1.2+
1998 05 22	704	0.4+	0.4−	1998 06 03	704	0.8−	0.1+	1999 09 30	704	0.2+	0.4−
1998 05 22	704	1.9−	0.2−	1999 09 11	704	0.7+	0.2−	1999 09 30	704	0.2−	0.3+
1998 05 24	704	0.5−	0.2−	1999 09 11	704	0.5+	0.2−	1999 09 30	704	0.1−	0.6+
1998 05 24	704	0.1−	0.3+	1999 09 11	704	0.1+	0.3−	1999 09 30	704	0.9−	0.6+
1998 05 24	704	0.3+	0.2−	1999 09 11	704	0.4+	0.1−	1999 09 30	704	0.4−	0.1−
1998 05 24	704	0.7−	0.1−	1999 09 11	704	0.2+	0.8−				
1998 05 24	704	0.2+	0.5+	1999 09 29	704	(0.7+	2.4−)				

1998 KE₃₇ = 1999 TG₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		(2000.0)		P		Q	
<i>M</i>	121.24724						
<i>n</i>	0.30122440	<i>ω</i>	41.57805	−0.20615772	+0.97781328		
<i>a</i>	2.2039883	<i>Ω</i>	216.56972	−0.91343061	−0.20592150		
<i>e</i>	0.1188591	<i>i</i>	3.57496	−0.35091810	−0.03843846		
<i>P</i>	3.27	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	1.5+	1.5−	1998 05 24	704	0.7−	0.6−	1999 10 10	327	0.9−	0.4−
1998 05 22	704	1.8−	0.9+	1998 06 20	566	0.1−	0.5−	1999 10 11	327	0.3−	0.2+
1998 05 22	704	0.5+	0.3+	1998 06 20	566	0.1+	1.1−	1999 10 11	327	0.3+	0.3+
1998 05 22	704	0.2+	0.3+	1998 06 20	566	0.4−	0.6−	1999 10 11	327	0.3+	0.4+
1998 05 22	704	0.2+	0.1−	1998 06 29	699	0.6+	0.5+	1999 10 15	327	0.6+	0.3−
1998 05 24	704	0.2+	0.7−	1998 06 29	699	0.4−	0.8+	1999 10 15	327	0.7+	0.5−
1998 05 24	704	0.2+	0.2+	1998 06 29	699	0.3+	0.7+	1999 10 15	327	0.0	0.8+
1998 05 24	704	1.6+	1.5+	1999 10 10	327	0.3−	0.0				
1998 05 24	704	2.1−	0.1−	1999 10 10	327	0.4−	0.6−				

1998 KK₃₈ = 1984 UW₂ = 1999 RK₁₂₁

Id. A. Doppler, E. Bowell

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		(2000.0)		P		Q	
<i>M</i>	311.33520						
<i>n</i>	0.19034895	<i>ω</i>	145.60475	+0.89782560	−0.42029788		
<i>a</i>	2.9929702	<i>Ω</i>	239.77318	+0.36208948	+0.87442007		
<i>e</i>	0.1004590	<i>i</i>	8.74547	+0.25060010	+0.24236177		
<i>P</i>	5.18	<i>H</i>	12.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1984 10 26	688	0.3+	1.4−	1998 06 03	704	1.1+	0.2+	1999 09 09	704	0.1+	0.4−
1984 10 26	688	0.3−	1.3+	1998 06 03	704	0.6−	0.2−	1999 09 09	704	0.1−	0.0
1998 05 22	704	0.2+	0.9+	1998 06 03	704	(2.5+	1.6−)	1999 09 09	704	0.1−	0.7−
1998 05 22	704	0.4−	0.4+	1998 06 03	704	(2.5+	0.4−)	1999 09 14	704	0.1−	0.3+
1998 05 22	704	0.2−	0.8+	1998 06 03	704	(2.2+	2.3−)	1999 09 14	704	0.1−	0.1−
1998 05 22	704	0.3−	0.2−	1999 09 08	704	0.1−	0.3+	1999 09 14	704	0.2−	0.3−
1998 05 22	704	0.2+	0.3−	1999 09 08	704	0.1−	0.9+	1999 09 14	704	0.3−	0.0
1998 05 24	704	0.3+	0.2+	1999 09 08	704	0.0	0.2−	1999 09 14	704	0.4−	0.1−
1998 05 24	704	(3.3+	1.0−)	1999 09 08	704	0.0	0.1+	1999 09 19	699	0.9+	0.2−
1998 05 24	704	0.9−	0.4−	1999 09 08	704	0.3−	0.5−	1999 09 19	699	0.3+	0.4+
1998 05 24	704	0.5+	1.0−	1999 09 09	704	0.1+	0.1+	1999 09 19	699	0.4+	0.5+
1998 05 24	704	0.2+	0.5−	1999 09 09	704	0.1+	0.1−				

1998 KU₃₈ = 1990 HW₆ = 1999 RO₁₀₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		(2000.0)		P		Q	
<i>M</i>	211.54594						
<i>n</i>	0.23817840	<i>ω</i>	227.47131	−0.65166378	−0.74874511		
<i>a</i>	2.5775146	<i>Ω</i>	263.61082	+0.72678782	−0.57060976		
<i>e</i>	0.0773680	<i>i</i>	7.01123	+0.21705710	−0.33732071		
<i>P</i>	4.14	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 04 29	413	0.1+	0.6−	1998 06 03	704	0.7−	1.4−	1999 09 08	704	0.1−	0.8+
1998 05 22	704	1.2+	1.2−	1998 06 03	704	0.6−	0.3+	1999 09 09	704	0.4+	0.1−
1998 05 22	704	0.1−	0.4−	1999 09 05	703	0.1+	0.8−	1999 09 09	704	0.7+	0.3+
1998 05 22	704	1.8+	0.6+	1999 09 05	703	0.2+	0.9−	1999 09 09	704	0.6+	0.2+
1998 05 22	704	0.3+	0.1+	1999 09 05	703	1.3−	0.6−	1999 09 09	704	0.9+	0.5+
1998 05 24	704	0.5+	0.5−	1999 09 05	703	0.6−	0.0	1999 09 09	704	1.0+	0.5+
1998 05 24	704	0.2−	0.5−	1999 09 08	699	0.9−	0.6+	1999 09 30	703	0.3+	0.0
1998 05 24	704	0.3−	1.5+	1999 09 08	699	0.4−	0.9+	1999 09 30	703	0.1−	0.9−
1998 05 24	704	0.1−	0.0	1999 09 08	704	0.5+	0.6−	1999 09 30	703	0.7−	0.0
1998 05 24	704	0.1+	0.7+	1999 09 08	699	0.3−	0.6+	1999 09 30	703	1.0−	0.3−
1998 06 03	704	1.7−	0.3+	1999 09 08	704	0.4+	0.9+				
1998 06 03	704	0.2−	1.0+	1999 09 08	704	0.2+	0.9−				

1998 KQ₄₄ = 1999 TK₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		(2000.0)		P		Q	
<i>M</i>	128.41772						
<i>n</i>	0.26465927	<i>ω</i>	13.42627	−0.61355614	+0.78735784		
<i>a</i>	2.4025806	<i>Ω</i>	218.77539	−0.73307083	−0.59624773		
<i>e</i>	0.1028157	<i>i</i>	5.51030	−0.29352345	−0.15670441		
<i>P</i>	3.72	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.6+	0.2−	1998 06 03	704	0.2+	0.8+	1999 10 06	691	0.1+	0.3−
1998 05 22	704	0.3−	0.3+	1998 06 03	704	1.0+	0.5−	1999 10 06	691	0.1+	0.5−
1998 05 22	704	(2.4+	0.5+)	1998 06 03	704	0.3+	0.6−	1999 10 06	704	0.1−	0.1+
1998 05 22	704	0.7+	0.1−	1998 06 03	704	0.9−	0.2+	1999 10 06	704	0.2+	0.1−
1998 05 22	704	1.0−	0.7−	1999 10 03	704	0.6+	1.5+	1999 10 06	691	0.1−	0.5−
1998 05 24	704	0.3−	0.9−	1999 10 03	704	0.1−	0.0	1999 10 06	704	0.4+	0.2+
1998 05 24	704	0.7−	0.6+	1999 10 03	704	0.7−	0.4−	1999 10 06	704	0.3−	0.2+
1998 05 24	704	0.7+	1.3+	1999 10 04	704	0.5+	0.5−	1999 10 06	704	0.1+	0.1−
1998 05 24	704	0.3+	0.2−	1999 10 04	704	1.1−	0.4+				
1998 06 03	704	0.4−	0.1+	1999 10 04	704	0.4+	0.1+				

1998 KX₄₆ = 1999 TV₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		(2000.0)		P		Q	
<i>M</i>	163.12424						
<i>n</i>	0.27627333	<i>ω</i>	329.05574	−0.95664967	+0.29067595		
<i>a</i>	2.3347662	<i>Ω</i>	227.85408	−0.26195617	−0.88600047		
<i>e</i>	0.1362797	<i>i</i>	1.40161	−0.12728070	−0.36126258		
<i>P</i>	3.57	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.7−	1.3−	1998 06 03	704	0.1+	1.2+	1999 10 07	704	1.1−	0.5+
1998 05 22	704	1.0−	0.3+	1998 06 24	704	0.5−	0.5+	1999 10 10	688	0.4+	0.4−
1998 05 22	704	1.0−	0.9−	1998 06 24	704	1.4−	0.7−	1999 10 10	688	0.6+	0.4−
1998 05 22	704	1.7+	0.8−	1998 06 24	704	1.4+	1.8+	1999 10 10	688	0.5+	0.1+
1998 05 24	704	0.5−	0.4−	1998 06 24	704	1.4+	0.1−	1999 10 11	688	0.2−	0.2−
1998 05 24	704	1.6−	1.0−	1998 06 24	704	0.2−	1.1+	1999 10 11	688	0.7−	0.0
1998 05 24	704	0.7−	0.6+	1998 06 26	704	0.9+	1.1+	1999 10 11	688	1.2−	0.9−
1998 05 24	704	0.0	0.9−	1998 06 26	704	0.5−	0.9+	1999 10 11	688	0.6−	0.2−
1998 06 01	809	0.8+	1.5−	1998 06 26	704	(0.6+	2.4+)	1999 10 12	688	0.5+	0.1−
1998 06 01	809	1.2+	1.9−	1998 06 26	704	0.3−	0.4−	1999 10 12	688	0.3+	0.2−
1998 06 01	809	2.0+	1.6−	1998 07 02	699	0.0	0.7+	1999 10 12	688	0.2+	0.

1999 OCT. 26

1998 06 03 704 0.9− 0.9+ 1999 10 07 704 0.3− 1.2+
 1998 06 03 704 (2.4− 3.1+) 1999 10 07 704 0.4+ 0.0

1998 KJ₄₇ = 1999 SW₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	113.20142		(2000.0)	P	Q
<i>n</i>	0.23263571	ω	29.66933	−0.54928114	+0.83494614
<i>a</i>	2.6182943	Ω	207.05611	−0.78064357	−0.52721911
<i>e</i>	0.1257424	<i>i</i>	4.28521	−0.29813729	−0.15781305
<i>P</i>	4.24	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 05 22	704 0.2+ 0.1−	1998 06 26 704 0.2+ 0.1+	1999 09 29 461 0.4− 0.0
1998 05 22	704 0.2+ 0.1+	1998 06 26 704 0.5+ 0.0	1999 09 29 461 0.0 0.1−
1998 05 22	704 0.0 0.9−	1998 06 26 704 0.6+ 0.8−	1999 10 01 703 0.4− 0.3+
1998 05 22	704 (0.2− 2.2−)	1998 06 26 704 0.8− 1.9−	1999 10 01 703 0.3− 0.5−
1998 05 22	704 0.4− 0.2−	1999 09 18 703 0.3+ 0.0	1999 10 01 703 0.6− 0.5−
1998 05 24	704 0.5− 0.2−	1999 09 18 703 1.1+ 0.1−	1999 10 01 703 0.5− 0.1+
1998 05 24	704 0.2+ 1.0+	1999 09 18 703 0.8− 0.3−	1999 10 06 704 0.2− 0.2−
1998 05 24	704 0.3+ 0.6+	1999 09 18 703 0.9− 0.2+	1999 10 06 704 0.7− 0.4+
1998 05 24	704 0.3− 0.3+	1999 09 23 461 1.0+ 0.5+	1999 10 06 704 0.1+ 0.5−
1998 06 24	704 0.6− 1.5+	1999 09 23 461 0.5+ 0.1−	1999 10 06 704 0.3− 0.6−
1998 06 24	704 1.0+ 0.2−	1999 09 23 461 1.4+ 0.1+	1999 10 06 704 0.1+ 0.7−
1998 06 24	704 (2.7− 1.2+)	1999 09 25 461 0.0 0.5+	1999 10 07 704 1.7+ 0.7−
1998 06 24	704 0.2− 1.2+	1999 09 25 461 0.1− 0.8+	1999 10 07 704 0.5+ 0.3−
1998 06 24	704 0.0 0.2−	1999 09 25 461 0.9− 0.3+	1999 10 07 704 0.0 1.2+
1998 06 26	704 0.4− 0.3−	1999 09 29 461 0.4− 0.0	1999 10 07 704 0.1− 0.3+

1998 KV₅₀ = 1999 TJ₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	78.10587		(2000.0)	P	Q
<i>n</i>	0.23425369	ω	82.19588	+0.10615706	+0.99279813
<i>a</i>	2.6062241	Ω	194.25994	−0.97782181	+0.09409168
<i>e</i>	0.1514548	<i>i</i>	13.02636	−0.18054137	+0.07415270
<i>P</i>	4.21	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 05 23	704 0.0 1.1+	1998 05 26 704 0.2+ 0.2+	1999 10 07 704 0.4+ 0.4+
1998 05 23	704 0.4− 1.3−	1998 05 26 704 0.1− 0.1+	1999 10 07 704 0.3− 1.5−
1998 05 23	704 0.2+ 0.1−	1998 06 04 699 0.1+ 0.9−	1999 10 07 704 0.1− 0.4−
1998 05 23	704 0.7+ 0.9+	1998 06 04 699 0.3+ 0.2+	1999 10 07 704 0.9− 0.3−
1998 05 23	704 0.7− 1.9+	1998 06 04 699 0.3+ 0.2−	1999 10 10 120 0.3− 0.6+
1998 05 26	704 0.1− 0.1+	1998 06 15 699 0.2− 0.8−	1999 10 11 120 0.0 0.8+
1998 05 26	704 0.1+ 0.3+	1998 06 15 699 0.0 0.5−	1999 10 13 120 1.0+ 0.2+
1998 05 26	704 0.1− 0.2−	1998 06 15 699 0.3− 0.7−	1999 10 13 120 0.0 0.7+

1998 KW₅₁ = 1978 NV₇ = 1999 SE₅

Id. G. V. Williams, E. Bowell, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	328.73860		(2000.0)	P	Q
<i>n</i>	0.23830800	ω	266.37221	+0.84374885	−0.49915769
<i>a</i>	2.5765800	Ω	123.47309	+0.53616315	+0.80084328
<i>e</i>	0.1696331	<i>i</i>	13.68220	−0.02483846	+0.33089521
<i>P</i>	4.14	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1978 07 09	675 0.7− 1.2−	1998 06 19 704 1.1+ 0.2+	1999 09 13 704 0.6− 0.2+
1978 07 09	675 0.7+ 0.4+	1998 06 19 704 0.1− 0.9+	1999 09 30 704 0.0 0.4−
1998 05 23	704 0.6− 0.5+	1998 06 19 704 0.9+ 1.5−	1999 09 30 704 0.2+ 0.2−
1998 05 23	704 0.1− 1.6−	1998 06 19 704 1.1− 0.1−	1999 09 30 704 0.1+ 0.0
1998 05 23	704 0.1− 0.4+	1998 06 19 704 1.5− 0.6+	1999 09 30 704 0.1+ 0.3+
1998 05 23	704 0.3− 0.4+	1998 06 26 699 1.1+ 0.8+	1999 09 30 704 0.1+ 0.2+
1998 05 23	704 0.4− 0.1+	1998 06 26 699 0.3− 0.2−	1999 10 01 704 2.0+ 1.1+
1998 05 26	704 0.4+ 0.9−	1998 06 26 699 1.1+ 0.1−	1999 10 01 704 1.1+ 0.3+
1998 05 26	704 0.1+ 1.2+	1998 07 15 699 0.5+ 0.8−	1999 10 01 704 1.0+ 0.9−

M.P.C. 36375

1998 05 26	704 1.0− 1.6+	1998 07 15 699 0.3− 1.6−	1999 10 01 704 0.0 0.0
1998 05 26	704 0.1− 1.6−	1998 07 15 699 0.2+ 0.0	1999 10 01 704 0.4+ 0.3+
1998 05 26	704 0.8+ 1.4+	1999 09 11 699 0.4− 0.7+	1999 10 01 704 0.1+ 1.2−
1998 06 04	699 0.1+ 0.1−	1999 09 11 699 0.1− 0.7+	1999 10 01 704 0.8− 1.1−
1998 06 04	699 0.2+ 0.2−	1999 09 11 699 0.1− 0.2+	1999 10 06 704 0.2+ 0.6+
1998 06 04	699 0.0 0.5+	1999 09 13 704 0.4− 0.5+	1999 10 06 704 0.6− 0.7−
1998 06 15	699 0.0 0.7−	1999 09 13 704 0.5− 0.5+	1999 10 06 704 0.1− 1.0−
1998 06 15	699 0.2− 1.1+	1999 09 13 704 0.5− 0.4+	1999 10 06 704 0.5− 0.5−
1998 06 15	699 0.2− 0.4−	1999 09 13 704 1.1− 0.7+	

1998 KL₅₂ = 1999 TR

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	75.71159		(2000.0)	P	Q
<i>n</i>	0.21041253	ω	57.66306	−0.05903264	+0.99277173
<i>a</i>	2.7995506	Ω	209.49644	−0.97231282	−0.08089217
<i>e</i>	0.1130085	<i>i</i>	12.25313	−0.22610379	+0.08866084
<i>P</i>	4.68	<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 0.6+ 0.8−	1998 06 26 699 0.7+ 0.6+
1998 05 23	704 0.2− 0.8+	1998 06 17 691 0.3+ 1.4−	1998 06 26 699 0.1+ 0.7+
1998 05 23	704 0.0 0.4−	1998 06 17 691 0.9− 0.4+	1998 06 26 699 0.2+ 0.5+
1998 05 23	704 0.1+ 0.4+	1998 06 17 691 0.5− 0.2+	1999 10 01 120 1.2− 0.5+
1998 05 23	704 0.1+ 0.1−	1998 06 19 704 0.1+ 0.2+	1999 10 01 120 0.9+ 0.5+
1998 05 26	704 0.3− 0.2−	1998 06 19 704 0.6+ 0.3+	1999 10 01 120 1.8+ 0.1−
1998 05 26	704 1.0− 0.6+	1998 06 19 704 0.1+ 0.0	1999 10 02 120 1.1− 1.0−
1998 05 26	704 0.5+ 0.1−	1998 06 19 704 0.8− 0.4+	1999 10 02 120 0.4− 0.1+
1998 05 26	704 0.8+ 0.2−	1998 06 19 704 0.2− 2.0−	

1998 KY₅₃ = 1999 SD₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	39.17707		(2000.0)	P	Q
<i>n</i>	0.18665317	ω	185.48892	+0.41841908	+0.88999347
<i>a</i>	3.0323487	Ω	109.35194	−0.82582866	+0.45584674
<i>e</i>	0.0571093	<i>i</i>	11.07311	−0.37806414	−0.01074169
<i>P</i>	5.28	<i>H</i>	13.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 05 23	704 0.2+ 0.3−	1998 06 03 704 0.4− 0.6−	1999 09 11 704 0.4+ 0.1+
1998 05 23	704 0.6+ 0.0	1998 06 03 704 0.9+ 0.3+	1999 09 11 704 0.2+ 0.4+
1998 05 23	704 0.3+ 0.8+	1998 06 03 704 1.3− 1.3+	1999 09 29 704 0.6− 0.6−
1998 05 23	704 (3.7− 0.2−)	1998 06 24 704 0.8+ 1.4−	1999 09 29 704 0.2− 0.1+
1998 05 26	704 0.6− 1.2+	1998 06 24 704 1.0+ 0.1−	1999 09 29 704 (1.2− 3.0+)
1998 05 26	704 0.7− 0.9+	1998 06 24 704 0.2− 1.3+	1999 09 30 704 0.0 0.2−
1998 05 26	704 0.5− 0.0	1998 06 24 704 0.5+ 0.5+	1999 09 30 704 0.2− 0.4+
1998 05 26	704 0.2− 1.5−	1999 09 11 704 0.9+ 0.2−	1999 09 30 704 0.4− 0.7−
1998 05 26	704 0.6− 1.1−	1999 09 11 704 0.5+ 0.0	1999 09 30 704 0.4− 0.2+
1998 06 03	704 0.2+ 1.5−	1999 09 11 704 0.3+ 0.4+	1999 09 30 704 0.6− 0.0

1998 KS₅₄

Id. M. Tichý (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	142.64161		(2000.0)	P	Q
<i>n</i>	0.23915577	ω	51.99537	−0.88749056	+0.45741758
<i>a</i>	2.5704874	Ω	155.07734	−0.45337280	−0.84493376
<i>e</i>	0.0767865	<i>i</i>	7.62899	−0.08254465	−0.27722933
<i>P</i>	4.12	<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− 0.4−	1998 06 19 704 0.9− 0.3+	1999 10 07 046 0.6− 0.4−
1998 05 23	704 0.6+ 0.2−	1998 06 19 704 0.3+ 1.1+	1999 10 07 046 0.3− 0.4−
1998 05 23	704 1.2− 0.2−	1998 06 25 704 1.2− 0.1−	1999 10 07 046 0.7− 0.5−
1998 05 23	704 0.2− 0.2−	1998 06 25 704 1.0+ 1.0−	1999 10 07 046 0.8− 0.5−
1998 05 26	704 0.1+ 0.0	1998 06 25 704 1.0+ 0.0	1999 10 07 046 0.7− 0.5−
1998 05 26	704 0.4+ 0.6+	1998 06 25 704 0.1+ 0.6+	1999 10 07 046 0.7− 0.7−

1998 05 26	704	0.4+	0.6+	1998 07 01	699	1.1-	0.4-	1999 10 12	046	0.2+	0.4+
1998 05 26	704	0.7-	0.4-	1998 07 01	699	0.2+	0.5-	1999 10 12	046	0.1+	0.7+
1998 05 26	704	1.4+	0.2+	1998 07 01	699	0.2-	0.8+	1999 10 12	046	0.6+	0.2+
1998 06 19	704	0.7+	0.7-	1999 10 07	704	0.6+	0.0	1999 10 12	046	0.3+	0.8+
1998 06 19	704	0.5-	0.0	1999 10 07	704	0.9+	0.4-	1999 10 12	046	0.3+	0.6+
1998 06 19	704	(2.9-	0.2-)	1999 10 07	704	0.7+	0.7+				

1998 LN₂ = 1999 RY₁₈₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17596347	ω	205.75228	+0.94013668	-0.34037233		
<i>a</i>	3.1539468	Ω	174.06982	+0.33417346	+0.91091332		
<i>e</i>	0.1511258	<i>i</i>	9.48231	+0.06686647	+0.23320293		
<i>P</i>	5.60	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 06 01	809	0.8+	0.2-	1999 08 22	703	0.2+	0.6+	1999 09 14	704	0.6-	0.4-
1998 06 01	809	0.2+	0.4+	1999 09 07	704	1.0+	0.4-	1999 09 14	704	1.1-	1.2-
1998 06 01	809	0.6-	0.7-	1999 09 07	704	0.9+	0.6-	1999 09 14	704	1.3-	0.8-
1998 06 02	809	0.7+	0.2+	1999 09 07	704	0.0	0.0	1999 09 14	704	0.1-	0.5-
1998 06 02	809	0.4-	0.0	1999 09 07	704	0.5+	0.4-	1999 10 02	704	0.6-	0.8+
1998 06 02	809	0.7-	0.2+	1999 09 07	704	0.7+	1.2-	1999 10 02	704	0.5+	0.7+
1999 08 12	699	0.3-	0.6-	1999 09 09	704	0.1+	0.4-	1999 10 02	704	1.2+	0.1+
1999 08 12	699	0.5-	0.6+	1999 09 09	704	0.4+	0.2+	1999 10 02	704	1.8+	0.4+
1999 08 12	699	0.3+	1.1+	1999 09 09	704	0.3+	0.4+	1999 10 07	704	0.1-	0.7-
1999 08 22	703	0.3+	0.8+	1999 09 09	704	0.2+	0.0	1999 10 07	704	0.8-	0.3+
1999 08 22	703	0.3-	0.9+	1999 09 09	704	0.2-	0.6-	1999 10 07	704	0.8-	0.6+
1999 08 22	703	0.1-	0.2+	1999 09 14	704	0.9-	0.0	1999 10 07	704	0.1-	0.2+

1998 MC = 1999 TG₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23673863	ω	156.57330	-0.89832548	+0.43183219		
<i>a</i>	2.5879545	Ω	49.26283	-0.41806456	-0.78370794		
<i>e</i>	0.0938572	<i>i</i>	6.12320	-0.13503092	-0.44645586		
<i>P</i>	4.16	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 06 16	426	0.1-	0.2+	1998 06 26	426	0.0	0.3+	1999 10 01	703	0.6-	0.4+
1998 06 16	426	0.1+	0.0	1998 06 26	426	0.7-	0.1+	1999 10 01	703	0.5-	0.2-
1998 06 16	426	0.1+	0.3+	1998 06 26	426	0.3-	0.3-	1999 10 05	703	0.6+	0.0
1998 06 17	426	0.3+	0.2-	1998 07 01	426	0.2+	0.0	1999 10 05	703	0.2+	0.1+
1998 06 17	426	0.0	0.5-	1998 07 01	426	0.0	0.2+	1999 10 05	703	0.5+	0.5-
1998 06 17	426	0.1-	0.1-	1999 10 01	703	0.2-	0.4+	1999 10 05	703	0.3+	0.2+
1998 06 17	426	0.3+	0.0	1999 10 01	703	0.3-	0.3-				

1998 MD₉ = 1999 UM₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22291487	ω	240.33643	+0.80664225	-0.58293127		
<i>a</i>	2.6938704	Ω	154.92426	+0.58983690	+0.78342871		
<i>e</i>	0.1655478	<i>i</i>	13.30954	+0.03769223	+0.21547756		
<i>P</i>	4.42	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 05 26	704	0.0	0.6-	1998 06 25	704	(0.8+	2.3+)	1999 09 14	704	0.1-	0.2+
1998 05 26	704	0.3-	0.7+	1998 06 25	704	0.4+	0.6+	1999 10 02	704	0.0	0.0
1998 05 26	704	0.0	0.0	1998 06 25	704	0.2+	0.6+	1999 10 02	704	0.3-	0.4-
1998 05 26	704	0.1-	0.9-	1998 06 27	699	0.8-	1.5+	1999 10 02	704	0.6-	0.3+
1998 06 03	704	1.4+	0.3-	1998 06 27	699	0.2-	0.1+	1999 10 02	704	0.4-	0.3+
1998 06 03	704	1.7-	0.2+	1998 06 27	699	1.5+	1.1-	1999 10 02	704	0.6-	0.3+
1998 06 03	704	0.2-	0.8-	1999 09 08	703	0.3-	0.3-	1999 10 18	701	0.3+	0.2+
1998 06 03	704	0.3+	1.7-	1999 09 08	703	0.2+	0.1+	1999 10 18	701	0.0	0.1+
1998 06 19	704	0.8-	0.8+	1999 09 08	703	0.8+	0.1+	1999 10 18	701	0.0	0.1-

1998 06 19	704	0.1+	0.4-	1999 09 08	703	0.8+	0.2+	1999 10 19	701	0.1+	0.8-
1998 06 19	704	(1.2+	3.6+)	1999 09 14	704	0.4+	0.0	1999 10 19	701	0.2-	0.1-
1998 06 19	704	0.2-	1.2+	1999 09 14	704	0.0	0.2+	1999 10 19	701	0.3+	0.1-
1998 06 19	704	(1.4-	2.3+)	1999 09 14	704	0.1-	0.1-				
1998 06 25	704	0.6+	0.2-	1999 09 14	704	0.1+	0.1-				

1998 MT₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26196565	ω	253.77520	-0.78948389	+0.43976323		
<i>a</i>	2.4190220	Ω	310.00360	-0.05972424	-0.74932580		
<i>e</i>	0.6504644	<i>i</i>	33.98366	-0.61085858	-0.49509508		
<i>P</i>	3.76	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1953 10 02	675	0.2-	0.1-	1998 07 20	557	0.5+	0.5+	1998 08 15	108	0.8+	0.3+
1953 10 02	675	0.5+	0.2-	1998 07 21	046	0.2+	0.3+	1998 08 15	108	0.6-	1.2+
1998 06 29	704	1.4-	0.2-	1998 07 21	046	0.2+	0.2+	1998 08 15	108	(1.0+	3.7+)
1998 06 29	704	(2.7-	1.0+)	1998 07 21	046	0.4+	0.3+	1998 08 16	557	0.8+	0.5-
1998 06 29	704	(4.5-	0.2+)	1998 07 21	118	0.3+	0.2-	1998 08 16	557	0.1-	0.5-
1998 06 29	704	1.9-	0.8+	1998 07 21	118	0.4+	0.1+	1998 08 16	046	0.2-	0.4-
1998 06 30	704	1.3+	0.4-	1998 07 21	557	0.1+	0.1+	1998 08 16	046	0.0	0.5-
1998 06 30	704	0.7+	0.3+	1998 07 22	557	0.6+	0.0	1998 08 16	046	0.2-	0.5-
1998 06 30	704	0.7-	1.1+	1998 07 22	557	0.5+	0.7+	1998 08 17	426	0.6-	0.4-
1998 06 30	704	1.4-	0.1+	1998 07 24	557	0.6-	0.4+	1998 08 17	426	0.9-	0.2+
1998 06 30	704	1.0+	0.8+	1998 07 25	557	0.2-	0.1-	1998 08 17	426	0.6-	0.1-
1998 07 01	557	0.1-	0.7-	1998 07 25	557	0.1-	0.0	1998 08 17	118	0.8-	0.1-
1998 07 01	557	0.1+	0.8-	1998 07 25	557	0.1-	0.2-	1998 08 17	118	0.7-	0.1-
1998 07 01	557	0.2-	0.2+	1998 07 25	557	0.1-	0.3-	1998 08 18	046	0.0	0.0
1998 07 01	734	0.4-	1.0-	1998 07 30	633	0.9-	0.1-	1998 08 18	046	0.1+	0.2-
1998 07 01	734	1.1+	0.9-	1998 07 30	633	0.2-	0.3-	1998 08 18	046	0.0	0.0
1998 07 01	734	0.0	1.1-	1998 07 30	633	0.3+	0.0	1998 08 20	557	0.1-	0.4+
1998 07 01	426	0.6-	0.7-	1998 07 30	108	(2.5+	0.6+)	1998 08 20	557	0.1-	0.2+
1998 07 01	426	0.2-	0.5-	1998 07 30	108	2.0+	0.1+	1998 08 20	557	0.5-	0.4+
1998 07 01	426	0.8-	0.4-	1998 07 30	108	(2.4+	0.1+)	1998 08 20	557	0.4-	0.3+
1998 07 01	426	0.0	0.1-	1998 07 31	557	0.1-	0.1-	1998 08 20	360	0.2-	0.3+
1998 07 02	784	0.2+	0.6-	1998 07 31	557	1.0+	0.1-	1998 08 20	360	0.5-	0.1-
1998 07 02	784	0.0	0.2-	1998 07 31	557	0.1-	0.4-	1998 08 20	360	0.1-	0.2-
1998 07 02	784	0.1-	0.0	1998 08 01	557	0.6+	0.6-	1998 08 21	143	0.1+	0.6-
1998 07 02	784	0.1-	0.2-	1998 08 01	557	0.8-	0.2+	1998 08 21	143	(2.1-	0.4+)
1998 07 02	784	0.0	0.6-	1998 08 01	557	1.0+	0.5-	1998 08 27	704	0.3+	0.7+
1998 07 02	402	0.0	0.2-	1998 08 02	699	0.8+	0.2+	1998 08 27	704	0.3+	1.2+
1998 07 02	422	0.3-	1.0-	1998 08 02	699	1.0+	0.6+	1998 08 27	704	0.7+	1.8-
1998 07 02	422	0.2+	0.2-	1998 08 02	699	1.5+	0.5+	1998 08 27	704	1.0+	0.6+
1998 07 02	422	0.3-	0.1-	1998 08 02	658	0.3-	0.1+	1998 08 27	704	0.0	0.6+
1998 07 02	402	0.1+	0.3-	1998 08 02	658	0.1-	0.2+	1998 08 27	658	0.8-	0.2+
1998 07 02	422	0.8+	0.3-	1998 08 02	658	0.4-	0.1+	1998 08 27	658	1.2-	0.2+
1998 07 02	422	0.4-	0.4-	1998 08 03	658	0.3-	0.2+	1998 08 27	658	0.3-	0.0
1998 07 02	402	0.0	0.0	1998 08 03	658	0.1-	0.4+	1998 08 31	046	1.1-	0.3+
1998 07 03	402	0.8-	0.2+	1998 08 03	658	0.6-	0.3+	1998 08 31	046	0.8-	0.7+
1998 07 03	402	0.5-	0.2+	1998 08 04	954	0.4-	0.1-	1998 08 31	046	1.1-	0.2+
1998 07 03	402	0.6-	0.1+	1998 08 04	954	0.4-	0.1-	1998 09 02	860	(3.9-	1.0+)
1998 07 04	422	0.0	0.1-	1998 08 05	557	0.7-	0.1+	1998 09 02	860	0.2-	0.1+
1998 07 04	422	1.0-	0.4+	1998 08 05	046	0.0	0.0	1998 09 07	557	1.0-	0.8+
1998 07 04	422	0.5-	0.3+	1998 08 05	046	0.3-	0.1-	1998 09 07	557	0.0	0.2+
1998 07 05	402	0.6-	0.2+	1998 08 05	046	0.4+	0.1+	1998 09 07	557	0.1-	0.5-
1998 07 05	402	0.5-	0.1+	1998 08 05	557	0.5+	0.3-	1998 09 09	046	0.2-	0.1-
1998 07 05	402	0.7-	0.2+	1998 08 05	118	0.2+	0.1-	1998 09 09	046	0.3-	0.1+
1998 07 06	360	0.5-	0.3-	1998 08 05	118	0.4+	0.1-	1998 09 09	046	0.1-	0.1+
1998 07 06	360	0.7-	0.1+	1998 08 05	557	0.8+	0.1+	1998 09 09	118	0.6+	0.6-
1998 07 06	360	0.4-	0.2+	1998 08 06	954	(2.1+	0.1+)	1998 09 09	118	0.5+	0.1-
1998 07 10	658	0.6-	0.3+	1998 08 06	954	(2.3+	0.1-)	1998 09 09	118	0.5-	0.2-
1998 07 10	658	0.4-	0.0	1998 08 06	118	0.6+	0.0	1998 09 10	402	0.5-	0.1+
1998 07 10	658	0.5-	0.3+	1998 08 06	118	0.8+	0.0	1998 09 10	402	0.3-	0.1-
1998 07 15	557	0.1+	0.5+	1998 08 06	046	0.1-	0.3-	1998 09 10	402	0.5-	0.0
1998 07 15	557	0.6+	0.5+	1998 08 06	046	0.0	0.0	1998 09 17	360	0.0	0.2-
1998 07 15	557	0.1-	0.5+	1998 08 06	046	0.3-	0.1+	1998 09 17	360	0.2+	0.4-

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1998 07 16	104	1.1−	0.3−	1998 08 06	046	0.7+	0.4+	1998 09 17	360	0.0	0.0
1998 07 16	104	1.9+	0.3−	1998 08 10	557	0.3+	0.3+	1998 09 23	658	0.0	0.5+
1998 07 16	104	1.0+	0.4+	1998 08 10	557	0.2+	0.1+	1998 09 23	658	0.2−	0.6+
1998 07 16	104	0.8+	1.2+	1998 08 10	046	0.3+	0.1+	1998 09 23	658	0.4+	0.5+
1998 07 17	587	0.2+	0.1+	1998 08 10	046	0.1+	0.7+	1998 10 20	658	0.0	0.7−
1998 07 17	587	0.1+	0.3−	1998 08 10	046	0.1+	0.1+	1998 10 20	658	0.2−	0.7−
1998 07 18	046	0.4+	0.7−	1998 08 10	557	0.0	0.1+	1998 10 20	658	0.1−	1.1−
1998 07 18	046	0.4+	0.7−	1998 08 11	557	0.1+	0.2+	1998 10 24	557	0.5+	0.1−
1998 07 18	046	0.8+	0.4−	1998 08 11	557	0.0	0.1+	1998 10 24	557	0.0	0.0
1998 07 18	402	0.0	0.1−	1998 08 11	402	0.4+	0.2+	1998 10 24	557	0.8−	1.2−
1998 07 18	402	0.0	0.0	1998 08 11	402	0.1+	0.3+	1998 11 15	711	0.0	0.1−
1998 07 18	402	0.0	0.0	1998 08 11	402	0.0	0.4+	1998 11 16	711	0.6−	0.2−
1998 07 19	557	0.5+	0.1+	1998 08 11	108	0.1−	0.1+	1998 11 16	711	0.4−	0.1−
1998 07 19	557	0.6+	0.8+	1998 08 11	108	0.5−	0.6−	1998 11 17	711	0.5−	0.1+
1998 07 20	118	0.2+	0.3+	1998 08 11	108	0.7+	0.9−	1998 11 17	711	0.3−	0.3+
1998 07 20	557	0.4+	0.1−	1998 08 14	587	0.7+	0.1+	1999 10 07	104	0.4−	0.4+
1998 07 20	118	0.3+	0.2+	1998 08 14	587	0.1+	0.3+	1999 10 07	104	1.0−	0.5−
1998 07 20	046	0.1+	0.5−	1998 08 15	118	0.1+	0.2+	1999 10 07	104	(2.4−	0.2−)
1998 07 20	046	0.1+	0.7−	1998 08 15	118	0.5+	0.1+	1999 10 08	104	1.0+	0.7−
1998 07 20	046	0.1+	0.6−	1998 08 15	557	0.2+	0.3+	1999 10 08	104	0.5+	0.3−
1998 07 20	557	0.0	0.4+	1998 08 15	557	0.5+	0.3+	1999 10 08	104	0.3+	0.0

1998 MR₃₃ = 1999 SZ₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	78.57410		(2000.0)	P	Q
n	0.17765131	ω	184.24210	+0.18735327	+0.97703355
a	3.1339383	Ω	96.57870	−0.89820255	+0.21223194
e	0.1929570	i	5.86486	−0.39765681	−0.01905373
P	5.55	H	13.6	G 0.15	U 3

Residuals in seconds of arc

1992 05 02	809	0.6+	0.8+	1998 06 26	704	0.3−	0.3−	1998 07 24	566	1.7−	0.0
1992 05 02	809	0.1+	0.4+	1998 06 26	704	0.2+	0.0	1999 09 30	703	0.8−	0.6+
1992 05 02	809	0.5−	0.2−	1998 06 28	809	(0.8+	4.9+)	1999 09 30	703	0.4+	0.2−
1998 06 24	704	0.2−	1.1−	1998 06 28	809	(1.0+	5.0+)	1999 09 30	703	0.8−	0.2+
1998 06 24	704	0.6+	0.3−	1998 06 28	809	(0.6+	5.3+)	1999 09 30	703	0.5+	0.0
1998 06 24	704	0.3−	0.4−	1998 07 03	699	0.9+	0.6+	1999 10 04	703	0.2+	0.1−
1998 06 24	704	0.6+	0.3−	1998 07 03	699	0.9+	0.1−	1999 10 04	703	0.4−	0.0
1998 06 24	704	0.7+	1.2+	1998 07 03	699	0.8+	0.4+	1999 10 04	703	0.8+	0.4+
1998 06 26	704	0.1+	0.2−	1998 07 24	566	0.8−	0.0	1999 10 04	703	0.1−	0.0
1998 06 26	704	(0.3+	2.2−)	1998 07 24	566	1.3−	0.1+				

1998 OW₅

Id. P. G. Comba (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	241.67610		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17469033	ω	3.62475	-0.83038235	-0.53468205
a	3.1692522	Ω	142.64748	$+0.50449722$	-0.84091822
e	0.1009067	i	14.97565	$+0.23653268$	-0.08349641
P	5.64	H	13.0	G 0.15	U 4

Residuals in seconds of arc

1998 07 28	684	0.4−	1.7+	1998 08 17	704	0.1+	0.5+	1998 09 15	684	0.7−	0.6−
1998 07 28	684	1.3−	1.1+	1998 08 17	704	0.2+	0.8−	1998 09 15	684	0.7−	0.7−
1998 07 31	684	0.1−	0.5−	1998 08 17	704	0.8−	0.1−	1998 09 16	684	0.3−	0.2−
1998 07 31	684	0.2−	0.3−	1998 08 20	684	0.6+	0.3−	1998 09 16	684	0.3−	0.2−
1998 07 31	684	0.0	0.6−	1998 08 20	684	0.1+	0.3−	1998 09 21	699	0.1+	1.7+
1998 08 01	684	0.2+	0.0	1998 08 21	684	0.2+	0.3−	1998 09 21	699	0.3+	0.3+
1998 08 01	684	0.1+	0.2−	1998 08 21	684	0.2+	0.2−	1998 09 21	699	0.0	0.8−
1998 08 02	684	0.1+	0.6−	1998 08 23	704	1.7+	0.9+	1999 10 04	684	0.3+	0.2−
1998 08 02	684	0.0	0.4−	1998 08 23	704	0.1+	1.0+	1999 10 04	684	0.1−	0.2−
1998 08 17	704	0.3+	1.2−	1998 08 23	704	0.4−	0.5+	1999 10 05	684	0.1−	0.1+
1998 08 17	704	0.4+	0.9+	1998 08 23	704	0.3+	0.1−	1999 10 05	684	0.0	0.3+

1998 OW₁₁

Id. J. Broughton (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	318.03282		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19178744	ω	327.41995	+0.47358593	−0.85737156
a	2.9779857	Ω	93.58980	+0.84514601	+0.37796957
e	0.0939580	i	11.65195	+0.24788020	+0.34936085
P	5.14	H	14.7	G 0.15	U 4

Residuals in seconds of arc

1998 07 22	428	0.4−	0.1+	1998 07 31	428	0.8+	0.3+	1999 10 08	428	0.5−	0.3−
1998 07 22	428	0.0	0.0	1998 08 12	428	0.1−	0.4+	1999 10 09	428	0.6+	0.2+
1998 07 23	428	0.0	0.4−	1998 08 29	428	0.3−	0.7−	1999 10 09	428	0.4+	0.3+
1998 07 28	428	0.0	0.2+	1999 10 08	428	0.6−	0.2−				

1998 QF

Id. P. G. Comba (1999 observations)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	160.62796		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17270377	ω	252.61886	-0.63262862	$+0.77259723$
a	3.1935092	Ω	337.86559	-0.64552183	-0.56429035
e	0.0826603	i	8.18080	-0.42788153	-0.29098095
P	5.71	H	13.3	G 0.15	U 4

Residuals in seconds of arc

1998 08 17	684	0.3+	0.3−	1998 08 23	704	(0.2−	2.7+)	1998 09 18	704	0.2−	0.8−
1998 08 17	684	0.0	0.1−	1998 08 24	684	0.0	0.0	1998 09 18	699	0.7−	0.3+
1998 08 17	704	0.4−	0.2−	1998 08 24	684	0.3+	0.4+	1998 09 18	704	0.3+	1.3−
1998 08 17	704	0.4−	0.4+	1998 09 14	704	0.1+	1.5−	1998 09 18	704	0.5−	1.8−
1998 08 17	704	0.3−	1.0+	1998 09 14	704	0.1+	0.7+	1998 09 18	699	0.1−	0.1+
1998 08 17	704	1.3+	0.9+	1998 09 14	704	0.1−	0.2+	1998 10 10	684	0.5−	0.5−
1998 08 17	704	(2.3+	0.3−)	1998 09 14	704	0.3−	0.6+	1998 10 10	684	1.2+	0.2−
1998 08 18	684	0.5−	0.3−	1998 09 14	704	0.2+	0.5+	1998 10 11	684	1.2+	0.0
1998 08 18	684	0.2−	0.1−	1998 09 16	684	0.4−	0.1+	1998 10 11	684	1.5+	0.7+
1998 08 23	684	0.1−	0.2+	1998 09 16	684	0.2−	0.0	1999 10 06	684	0.1+	0.6+
1998 08 23	684	0.1−	0.3+	1998 09 17	684	0.4−	0.2−	1999 10 06	684	0.2+	0.5+
1998 08 23	704	0.0	0.2+	1998 09 17	684	0.6−	0.0	1999 10 07	684	0.1−	0.4−
1998 08 23	704	0.3+	0.7−	1998 09 18	704	1.5−	0.1+	1999 10 07	684	0.3−	0.4−
1998 08 23	704	0.7−	0.6−	1998 09 18	704	(1.3+	2.6−)				
1998 08 23	704	1.1+	1.3+	1998 09 18	699	0.2+	0.3+				

1998 QO₃₃ = 1993 SZ₁₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	113.16092		(2000.0)	P	Q		
n	0.18588008	ω	97.53516	+0.30448373	+0.95211840		
a	3.0407507	Ω	190.31928	−0.92332774	+0.28791813		
e	0.0084111	i	8.85404	−0.23399904	+0.10282849		
P	5.30	H	13.4	G	0.15	U	6

Residuals in seconds of arc

1993 09 16	809	1.3+	1.1+	1998 08 17	704	0.6−	0.5+	1998 08 23	704	1.2−	0.3−
1993 09 16	809	0.4+	0.4+	1998 08 17	704	0.8+	0.3−	1998 08 23	704	0.8+	0.2+
1993 09 16	809	0.4+	0.9−	1998 08 17	704	0.9+	1.4−	1998 08 26	699	0.3−	0.2−
1993 09 23	809	0.0	1.0+	1998 08 17	704	0.2+	0.3+	1998 08 26	699	1.2−	0.1−
1993 09 23	809	1.1−	0.7−	1998 08 23	704	0.3+	1.2+	1998 08 26	699	0.4−	0.4+
1993 09 23	809	0.9−	1.0−	1998 08 23	704	0.9+	0.7−				
1998 08 17	704	0.0	0.8−	1998 08 23	704	0.2−	1.0+				

1998 RM = 1992 JQ₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	283.34652		(2000.0)	P	Q
<i>n</i>	0.20970948	ω	270.89514	-0.45252487	-0.88210438
<i>a</i>	2.8058041	Ω	207.24385	+0.88868738	-0.43394000
<i>e</i>	0.0891973	<i>i</i>	16.60458	+0.07386456	-0.18327013
<i>P</i>	4.70	<i>H</i>	13.3	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1992 05 04	809	(1.2+ 2.7+)	1998 10 16	557	0.0	0.2+	1999 10 03	704	0.4-	0.4+	
1992 05 04	809	0.0	0.2-	1998 10 16	557	0.2+	0.1-	1999 10 03	704	0.5-	0.8-
1992 05 04	809	(1.2- 3.2-)	1998 11 12	557	0.1-	0.6+	1999 10 03	704	0.1-	0.5+	
1998 08 27	704	0.2+	0.1-	1998 11 12	557	0.1-	0.3+	1999 10 03	704	0.3-	0.2-
1998 08 27	704	0.5+	0.1-	1999 08 07	557	0.2-	0.5-	1999 10 03	704	0.1-	0.5-
1998 08 27	704	0.3+	0.2-	1999 08 07	557	0.5+	0.2-	1999 10 07	704	0.5-	0.8+
1998 08 27	704	0.5+	0.2-	1999 08 07	557	0.5+	0.4-	1999 10 07	704	0.0	0.6-
1998 08 27	704	(2.6+ 0.8+)	1999 08 08	557	0.2+	0.1-	1999 10 07	704	0.8+	1.7-	
1998 09 07	557	0.9-	0.2+	1999 08 08	557	0.2+	0.0	1999 10 07	704	0.3+	0.1-
1998 09 07	557	0.3+	0.0	1999 08 09	557	0.1-	0.5+	1999 10 08	703	0.3-	0.2+
1998 09 07	557	0.0	0.3+	1999 08 09	557	0.0	0.4+	1999 10 08	703	0.2-	0.4+
1998 09 09	557	0.3+	0.8+	1999 08 09	557	0.2+	0.0	1999 10 08	703	0.0	0.0
1998 09 09	557	0.8-	0.3+	1999 09 04	557	0.2-	0.1+	1999 10 08	703	0.1+	0.1-
1998 09 09	557	0.6-	0.6+	1999 09 04	557	0.2-	0.1-	1999 10 10	704	0.1-	0.2-
1998 09 13	557	0.1-	0.5+	1999 09 05	557	0.5-	0.1-	1999 10 10	704	0.1-	0.1-
1998 09 13	557	0.2+	0.0	1999 09 05	557	0.3+	0.0	1999 10 10	704	0.0	0.0
1998 09 20	557	0.4+	0.5-	1999 09 16	120	(2.0+ 0.5-)	1999 10 10	704	0.3-	0.1+	
1998 09 20	557	0.1-	0.7-	1999 09 16	120	0.1-	0.1+	1999 10 10	704	0.2-	0.4+
1998 09 20	557	0.1-	0.6-	1999 09 16	120	0.2-	0.2-	1999 10 20	704	0.5+	0.3+
1998 09 20	557	0.2-	0.8-	1999 09 18	703	0.2+	0.5+	1999 10 20	704	0.0	0.3-
1998 09 26	557	0.1+	0.1+	1999 09 18	703	1.1-	0.1+	1999 10 20	704	0.4+	0.2-
1998 09 26	557	0.2-	0.1-	1999 09 18	703	0.2+	1.2+	1999 10 20	704	0.3+	0.7-
1998 10 13	557	0.4+	0.6-	1999 09 18	703	0.7+	1.2+	1999 10 20	704	0.5+	0.3-

1998 RO₁ = 1999 SN₅

Id. A. Galád, A. Nakamura, C. Jacques

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	233.97255		(2000.0)	P	Q
<i>n</i>	0.99956158	ω	151.04545	-0.80383660	-0.59239485
<i>a</i>	0.9906715	Ω	351.95067	+0.44394517	-0.53702624
<i>e</i>	0.7200633	<i>i</i>	22.67985	+0.39592854	-0.60055904
<i>P</i>	0.99	<i>H</i>	18.0	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1998 09 14	704	0.4+	0.9-	1999 08 04	413	0.4+	0.5-	1999 09 27	402	1.3-	0.3+
1998 09 14	704	0.4+	0.8+	1999 08 04	413	0.3+	0.4-	1999 09 27	402	0.6+	0.4-
1998 09 14	704	0.1+	0.7+	1999 08 07	711	0.8-	0.4-	1999 09 27	402	1.0-	0.9-
1998 09 14	704	(0.6-	2.1+)	1999 08 07	711	1.4-	0.4-	1999 09 28	848	0.4-	0.9-
1998 09 15	426	0.9+	0.5-	1999 08 08	711	(2.0-	0.9-)	1999 09 28	848	0.3-	0.7+
1998 09 15	426	0.3-	0.2+	1999 08 08	711	1.2-	0.8-	1999 09 28	848	0.4-	0.3-
1998 09 15	426	0.4-	0.1-	1999 08 17	071	0.4+	0.7+	1999 09 29	848	0.6+	0.4+
1998 09 15	426	1.3-	0.0	1999 08 17	071	0.4+	0.8+	1999 09 29	848	0.2-	0.3+
1998 09 15	587	0.2+	0.2-	1999 08 18	071	0.2-	0.1-	1999 09 29	848	0.2+	0.3-
1998 09 15	587	0.9+	1.1+	1999 08 18	071	1.2-	0.0	1999 09 30	704	0.5+	0.3-
1998 09 15	587	0.9+	0.1+	1999 08 18	071	0.2-	0.5+	1999 09 30	704	0.5-	1.0-
1998 09 16	422	0.0	0.1+	1999 08 19	071	(5.3-	0.5+)	1999 09 30	704	0.3+	0.2-
1998 09 16	422	0.0	0.2-	1999 08 19	071	0.6-	0.7+	1999 09 30	704	0.9+	0.1+
1998 09 16	422	0.4+	0.1-	1999 08 19	071	0.7-	0.3+	1999 09 30	704	0.6+	0.0
1998 09 16	422	0.1+	0.2-	1999 08 22	402	0.5+	0.1-	1999 09 31	719	0.8-	1.2+
1998 09 16	426	0.1-	0.5-	1999 08 22	402	0.6-	0.3-	1999 09 31	719	0.5-	0.5+
1998 09 16	426	0.1-	0.5-	1999 08 22	402	0.3+	0.8-	1999 10 01	704	0.7+	0.2+
1998 09 16	426	0.1-	0.3-	1999 08 31	413	0.1+	0.3+	1999 10 01	704	1.1+	0.0
1998 09 16	557	0.2+	0.6-	1999 08 31	413	0.1+	0.3+	1999 10 01	704	0.4+	0.1+
1998 09 16	557	0.6-	0.0	1999 09 08	703	0.5-	0.1+	1999 10 01	402	0.4-	0.5-
1998 09 17	426	0.1+	0.0	1999 09 08	703	1.3-	1.7+	1999 10 01	402	1.2-	0.2+
1998 09 17	426	0.1+	0.1+	1999 09 08	703	1.6-	0.2-	1999 10 01	402	0.6+	1.1-
1998 09 17	426	0.8-	0.3-	1999 09 08	703	1.2-	0.8-	1999 10 01	402	0.6+	0.2-
1998 09 17	422	0.2-	0.2-	1999 09 08	118	0.3-	0.4+	1999 10 01	426	1.0-	0.3+

1998 09 17	422	0.1-	0.4-	1999 09 08	118	0.4-	0.3-	1999 10 01	426	0.2-	0.1+
1998 09 17	422	0.1+	0.2+	1999 09 09	704	0.1+	0.4+	1999 10 01	426	0.6-	0.3+
1998 09 17	587	0.2+	0.9-	1999 09 09	704	0.5+	0.2-	1999 10 01	104	0.3-	0.1+
1998 09 17	587	0.2+	0.7-	1999 09 09	704	0.2+	0.0	1999 10 01	104	0.5+	0.1-
1998 09 17	587	1.1-	1.1-	1999 09 09	704	0.6+	0.1+	1999 10 01	104	0.3-	0.0
1998 09 18	704	0.3-	0.6-	1999 09 09	704	0.8+	0.4-	1999 10 01	104	0.6-	0.1-
1998 09 18	704	1.1+	0.0	1999 09 12	360	0.1+	0.2+	1999 10 01	118	0.7-	0.5-
1998 09 18	704	1.7+	0.6+	1999 09 12	360	0.1-	0.3+	1999 10 01	118	0.6-	0.5-
1998 09 18	704	1.2-	1.6+	1999 09 12	360	0.1-	0.3+	1999 10 01	587	0.2+	0.9+
1998 09 18	422	0.1+	0.1+	1999 09 12	046	0.0	0.3+	1999 10 01	587	0.0	1.1+
1998 09 18	422	0.3+	0.4+	1999 09 12	046	0.6+	0.3+	1999 10 01	587	0.6+	0.2+
1998 09 18	422	0.5+	0.5+	1999 09 12	046	0.0	0.3+	1999 10 01	557	0.1-	0.1-
1998 09 18	557	0.3+	0.3-	1999 09 12	046	0.7+	0.1+	1999 10 01	557	0.2-	0.2-
1998 09 18	557	0.0	0.1-	1999 09 12	046	0.0	0.3+	1999 10 01	557	0.2-	0.1-
1998 09 18	557	0.1-	0.3-	1999 09 13	704	0.3-	0.3+	1999 10 01	046	0.1+	0.1-
1998 09 20	587	0.6-	1.0-	1999 09 13	704	0.7+	0.2+	1999 10 01	046	1.7-	0.1-
1998 09 20	587	(0.2-	2.5-)	1999 09 13	704	0.1+	0.4+	1999 10 01	046	0.3+	0.4+
1998 09 23	046	0.6+	0.1-	1999 09 13	704	0.0	0.2+	1999 10 01	046	0.3-	0.2-
1998 09 23	046	0.4+	0.1-	1999 09 13	704	0.1-	0.4+	1999 10 01	046	0.5-	0.0
1998 09 23	046	0.8-	0.7-	1999 09 14	118	0.8+	0.2+	1999 10 01	595	0.1-	0.2-
1998 09 23	046	0.1-	1.2-	1999 09 14	118	0.7+	0.2+	1999 10 01	595	0.2-	0.1-
1998 09 24	699	(2.6+	0.5-)	1999 09 14	118	0.5+	0.1+	1999 10 01	595	0.2+	0.1-
1998 09 24	699	1.4+	0.0	1999 09 16	595	0.5-	0.2-	1999 10 02	859	(3.7-	0.8-)
1998 09 24	699	1.4+	1.0-	1999 09 16	595	0.1-	0.0	1999 10 02	859	(4.2-	0.6-)
1998 09 27	422	0.4+	0.3-	1999 09 18	848	0.8+	0.4+	1999 10 02	859	(2.7-	0.2+)
1998 09 27	422	1.7+	0.1-	1999 09 18	848	0.1-	0.5+	1999 10 02	426	0.7-	0.3+
1998 09 27	557	0.0	0.2-	1999 09 18	848	0.3+	0.8-	1999 10 02	426	0.1-	0.2+
1998 09 27	557	0.6+	0.2+	1999 09 20	848	1.0-	0.1-	1999 10 02	426	0.2-	0.1-
1998 10 14	422	0.6-	1.2+	1999 09 20	848	0.6-	0.2-	1999 10 16	658	0.6+	0.0
1998 10 15	422	0.9+	0.1-	1999 09 20	848	0.1-	0.3+	1999 10 16	658	0.6+	0.2+
1998 10 15	422	0.0	0.4-	1999 09 27	848	(2.6-	0.0)	1999 10 16	658	0.1+	0.7+
1998 10 15	422	0.5-	1.1+	1999 09 27	848	0.1+	0.3+				
1999 08 04	413	0.2+	0.4-	1999 09 27	848	1.5+	0.2-				

1998 SO₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	135.11612		(2000.0)	P	Q
<i>n</i>	0.28197108	ω	22.03591	-0.77614323	+0.58806686
<i>a</i>	2.3032072	Ω	199.93492	-0.63055648	-0.72410657
<i>e</i>	0.7745298	<i>i</i>	41.86634	-0.00046061	+0.36034295
<i>P</i>	3.50	<i>H</i>	15.4	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1976 11 24	413	0.6+	0.4+	1998 09 23	658	0.6-	0.1-	1998 09 24	046	0.5+	0.1-
1976 11 24	413	0.6-	0.3-	1998 09 23	658	0.3-	0.4+	1998 09 25	422	0.5+	0.8+
1998 09 19	699	0.8+	0.4+	1998 09 23	658	0.8-	0.2-	1998 09 25	422	0.9+	0.9+
1998 09 19	699	1.4+	0.4+	1998 09 23	118	0.3+	0.2+	1998 10 02	402	0.8+	0.1-
1998 09 19	699	0.2-	0.1-	1998 09 23	118	0.0	0.4+	1998 10 02	402	0.8+	0.2-
1998 09 21	611	0.4+	0.6-	1998 09 23	118	0.6+	0.0	1998 10 02	402	0.4+	0.1+
1998 09 21	611	0.7+	0.8+	1998 09 23	587	0.2-	0.0	1998 10 13	422	0.9+	0.2-
1998 09 21	611	0.0	0.3+	1998 09 23	587	0.6+	0.0	1998 10 13	422	0.0	0.3-
1998 09 21	611	0.4-	0.8+	1998 09 24	557	0.0	0.0	1998 10 13	557	0.1-	0.0
1998 09 21	557	0.4-	0.1+	1998 09 24	557	0.3-	0.2-	1998 10 13	557	0.2-	0.9-
1998 09 21	557	1.1-	0.6+	1998 09 24	557	0.2-	0.2-	1998 10 18	704	0.3+	0.0
1998 09 21	954	0.7-	0.5-	1998 09 24	557	0.1+	0.3+	1998 10 18	704	0.9-	0.7-
1998 09 21	954	0.9-	0.7-	1998 09 24	725	0.0	0.0	1998 10 18	704	0.6+	0.8+
1998 09 21	954	0.9-	0.7-	1998 09 24	725	0.3-	0.3-	1998 10 18	704	1.2+	1.5+
1998 09 21	954	0.9-	0.8-	1998 09 24	725	0.6-	0.6-	1998 11 11	658	0.7-	0.4+
1998 09 21	954	0.5-	0.4-	1998 09 24	725	0.0	0.4-	1998 11 11	658	0.4-	0.1+
1998 09 22	557	0.1+	0.0	1998 09 24	046	0.2+	0.1+	1998 11 11	658	0.9-	0.3-
1998 09 22	557	0.1-	0.2+	1998 09 24	046	0.3+	0.1+	1998 11 11	658	0.5-	0.9-
1998 09 22	557	0.1-	0.0	1998 09 24	046	0.3+	0.3-				

1999 OCT. 26

M.P.C. 36379

1998 SM₁₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	26.30338		(2000.0)	P	Q
<i>n</i>	0.00294732	ω	131.67177	+0.70326507	+0.71081573
<i>a</i>	48.1783159	Ω	183.10749	-0.70161838	+0.69108368
<i>e</i>	0.3769761	<i>i</i>	13.46069	-0.11467295	+0.13093639
<i>P</i>	334	<i>H</i>	5.8	<i>G</i>	0.15

Residuals in seconds of arc

1998 09 16	691	0.1+	0.1-	1998 09 24	691	0.1+	0.1+	1998 10 06	691	0.3+	0.1-
1998 09 16	691	0.1+	0.3-	1998 10 04	691	0.4-	0.4+	1998 10 08	691	0.9+	0.1-
1998 09 16	691	0.3-	0.0	1998 10 04	691	0.0	0.2-	1998 10 08	691	0.9+	0.2-
1998 09 24	691	0.1+	0.1+	1998 10 04	691	0.1-	0.0	1998 10 10	691	0.5-	0.8+
1998 09 24	691	0.1-	0.1+	1998 10 06	691	0.1+	0.2-	1998 10 10	691	1.2-	0.3-

1998 UP₁

Id. J. E. Rogers (1999 observations)

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Williams

<i>M</i>	28.23057		(2000.0)	P	Q
<i>n</i>	0.98654636	ω	234.44731	-0.33618374	+0.92576169
<i>a</i>	0.9993656	Ω	18.43976	-0.58443940	-0.06098563
<i>e</i>	0.3449996	<i>i</i>	33.16758	-0.73851952	-0.37315686
<i>P</i>	1.00	<i>H</i>	20.3	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 10 18	704	0.9+	0.8-	1998 10 12	719	0.5-	0.2-	1998 10 13	704	(5.3-	3.5+)
1998 10 18	704	1.3+	0.7-	1998 10 12	719	1.3+	1.4-	1998 10 13	704	0.1+	0.3+
1998 10 18	704	1.8+	1.0-	1998 10 12	719	0.7-	0.4-	1998 10 13	670	0.7+	0.6+
1998 10 18	704	1.4+	1.3+	1998 10 12	719	0.2+	0.9-	1998 10 13	704	(5.5-	3.1+)
1998 10 18	704	0.4-	1.2+	1998 10 12	719	0.5-	0.4-	1998 10 13	711	0.9+	0.2+
1998 10 20	658	0.7-	0.1-	1998 10 12	704	0.3+	0.7-	1998 10 13	704	0.6+	0.3+
1998 10 20	658	0.6-	0.2-	1998 10 12	704	0.0	0.7-	1998 10 13	711	0.2-	0.0
1998 10 20	658	0.8-	0.0	1998 10 12	704	0.4-	1.0-	1998 10 13	711	0.2+	0.1+
1998 10 20	046	0.3+	0.5+	1998 10 12	670	0.6+	0.4-	1998 10 13	704	(5.6-	3.2+)
1998 10 20	046	0.4+	0.5+	1998 10 12	670	0.6-	0.6-	1998 10 13	670	0.7+	0.5+
1998 10 20	046	0.6+	0.4+	1998 10 12	670	1.7-	0.6+	1998 10 14	719	0.5-	0.9+
1998 10 20	046	0.5+	0.8+	1998 10 12	704	0.3+	0.4-	1998 10 14	719	1.6-	1.2-
1998 10 20	046	0.6-	0.3+	1998 10 12	670	0.4-	0.5+	1998 10 14	719	0.5+	0.1-
1998 10 21	557	0.8-	0.2+	1998 10 12	704	0.2+	0.5-	1998 10 14	719	1.9-	0.1-
1998 10 21	557	0.4-	0.4-	1998 10 12	670	0.4+	0.4-	1998 10 15	704	0.2+	0.4+
1998 10 21	557	0.0	0.7+	1998 10 12	704	0.0	0.5-	1998 10 15	704	0.0	0.4+
1998 10 21	468	0.3-	0.2-	1998 10 12	853	0.0	0.3-	1998 10 15	704	0.3+	0.6+
1998 10 21	468	0.3+	0.2-	1998 10 12	853	0.2-	0.1+	1998 10 15	704	0.3+	0.1+
1998 10 21	468	1.1+	0.3-	1998 10 12	853	0.4-	0.0	1998 10 15	704	0.3+	0.3+
1998 10 21	620	1.2-	0.7-	1998 10 12	704	0.2+	0.6-	1998 10 15	704	0.6+	0.2+
1998 10 21	620	(2.6-	0.0)	1998 10 12	704	0.2+	0.4-	1998 10 15	704	0.8+	0.7+
1998 10 22	658	0.3-	0.2+	1998 10 12	557	0.7-	0.4-	1998 10 15	704	0.7+	1.1+
1998 10 22	658	0.1-	0.0	1998 10 12	557	0.5-	0.3-	1998 10 15	704	0.4+	0.4+
1998 10 22	658	0.0	0.1+	1998 10 12	557	0.8-	0.2-	1998 10 15	704	0.5+	0.6+
1998 10 22	402	0.4-	0.1+	1998 10 12	557	1.0-	0.1+	1998 10 15	704	0.5+	0.6+
1998 10 22	402	0.7+	0.4-	1998 10 12	557	0.6-	0.2-	1998 10 15	704	0.4+	0.9+
1998 10 22	402	0.2+	0.2-	1998 10 12	046	0.2-	0.2+	1998 10 15	704	0.2+	0.1+
1998 10 23	118	0.4-	1.1+	1998 10 12	046	0.1-	0.6+	1998 10 15	704	0.3+	0.9+
1998 10 23	118	0.8+	0.4-	1998 10 12	046	0.1-	0.5+	1998 10 15	704	0.5+	0.5+
1998 10 23	118	0.9+	0.7-	1998 10 12	046	0.1-	0.2+	1998 10 15	118	0.1-	0.4-
1998 10 25	360	0.9-	0.0	1998 10 12	611	0.2-	0.3+	1998 10 15	118	0.2-	0.4+
1998 10 25	360	0.5+	1.2-	1998 10 12	611	0.6-	0.4+	1998 10 15	118	0.4+	0.1-
1998 10 25	360	0.3-	0.0	1998 10 12	611	0.0	0.1+	1998 10 16	714	(2.5-	0.3-)
1998 10 25	402	0.2+	0.5-	1998 10 13	719	0.7-	0.7+	1998 10 16	714	1.0-	1.0-
1998 10 25	402	0.2-	0.8-	1998 10 13	719	(2.3+	2.5-)	1998 10 16	714	1.4-	0.9-
1998 10 25	402	0.3+	0.9-	1998 10 13	719	0.3+	0.2+	1998 10 18	714	0.5-	1.2+
1998 10 27	658	0.7-	0.1-	1998 10 13	719	(7.8+	5.0-)	1998 10 18	714	0.3-	0.7-
1998 10 27	658	0.5-	0.6-	1998 10 13	859	0.4-	0.2-	1998 10 19	118	0.2-	0.5+
1998 10 27	658	0.4-	0.2-	1998 10 13	704	0.2+	0.7+	1998 10 19	118	0.1+	0.1+
1999 10 10	704	0.4+	0.4-	1998 10 13	704	(5.8-	3.4+)	1998 10 20	360	0.2+	0.1+
1999 10 10	704	0.4+	0.3-	1998 10 13	704	0.2-	0.4+	1998 10 20	360	0.5+	0.2+

1999 10 10	704	0.2+	0.1+	1999 10 13	704	(5.6-	3.4+)	1999 10 20	360	0.2+	0.1+
1999 10 10	704	0.3+	0.5+	1999 10 13	704	0.2+	0.2+				

1998 US₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	35.44950		(2000.0)	P	Q
<i>n</i>	0.00393707	ω	139.69604	+0.99050432	-0.05242024
<i>a</i>	39.7210578	Ω	223.82366	+0.01637349	+0.96285501
<i>e</i>	0.1466892	<i>i</i>	10.57644	+0.13650309	+0.26488178
<i>P</i>	250	<i>H</i>	7.9	<i>G</i>	0.15
				<i>U</i>	6

Residuals in seconds of arc

1998 10 22	695	0.3+	0.0	1998 12 17	950	0.1-	0.2-	1999 10 09	568	0.1+	0.2+
1998 10 22	695	0.2-	0.4-	1998 12 18	950	0.3+	0.4+	1999 10 09	568	0.1-	0.0
1998 11 18	695	0.3-	0.4+	1998 12 18	950	0.1-	0.5-	1999 10 09	568	0.3-	0.1+
1998 11 18	695	0.1+	0.3+	1999 10 06	568	0.1-	0.4-	1999 10 09	568	0.3+	0.1+

1998 WX₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	185.42001		(2000.0)	P	Q
<i>n</i>	0.00342231	ω	168.70165	-0.64942966	+0.76029257
<i>a</i>	43.6103697	Ω	60.79808	-0.69891821	-0.58954244
<i>e</i>	0.0347403	<i>i</i>	0.91974	-0.29959046	-0.27275432
<i>P</i>	288	<i>H</i>	6.6	<i>G</i>	0.15

Residuals in seconds of arc

1998 11 18	695	0.4+	0.1-	1998 12 18	950	0.1-	0.5-	1999 10 09	568	0.2-	0.1-
1998 11 18	695	0.4-	0.0	1998 12 18	950	0.2-	0.4-	1999 10 10	568	0.4-	0.2-
1998 11 26	695	0.3+	0.2+	1999 01 22	568	0.1+	0.2+	1999 10 10	568	0.1+	0.1+
1998 11 27	695	0.4+	0.3+	1999 01 23	568	0.2+	1.0+				
1998 12 18	950	0.6-	0.4-	1999 10 09	568	0.5+	0.1+				

1998 WA₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	4.88476		(2000.0)	P	Q
<i>n</i>	0.00351120	ω	268.94000	+0.70112976	-0.71292292
<i>a</i>	42.8711727	Ω	136.53306	+0.66124688	+0.64351169
<i>e</i>	0.0195449	<i>i</i>	1.04682	+0.26677636	+0.27862809
<i>P</i>	281	<i>H</i>	7.1	<i>G</i>	0.15

Residuals in seconds of arc

1998 11 19	695	0.2+	0.0	1998 11 26	695	0.1-	0.1+	1999 10 06	568	0.0	0.2-
1998 11 19	695	0.1-	0.1-	1998 11 27	695	0.0	0.0	1999 10 09	568	0.0	0.0
1998 11 19	695	0.0	0.1-	1998 11 27	695	0.0	0.2+	1999 10 09	568	0.1+	0.1+

1998 YW₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	350.04154		(2000.0)	P	Q
<i>n</i>	0.85427760	ω	194.75923	+0.29583260	+0.82570612
<i>a</i>	1.1000271	Ω	94.34239	-0.82034094	+0.47721653
<i>e</i>	0.4625055	<i>i</i>	28.79566	-0.48941170	-0.30078862
<i>P</i>	1.15	<i>H</i>	18.0	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 12 17	704	0.5-	0.9-	1998 12 20	557	0.2-	0.4+	1999 01 22	360	0.1-	0.1-
1998 12 17	704	1.8+	1.0-	1998 12 20	557	0.3+	0.6+	1999 01 22	360	0.0	0.5-
1998 12 17	704	0.6-	0.8-	1998 12 24	360	0.5-	0.1-	1999 01 22	360	0.3-	0.2-
1998 12 17	704	1.5+	0.9-	1998 12 24	360	0.2-	0.4-	1999 01 24	711	0.0	0.1-
1998 12 17	704	0.9-	1.6-	1998 12 24	360	0.2-	0.2-	1999 01 24	711	0.3-	1.0+
1998 12 18	402	0.3-	0.8+	1998 12 27	402	1.0+	0.4+	1999 02 20	711	0.1-	0.0
1998 12 18	402	0.8+	0.0	1998 12 27	402	0.1+	0.3+	1999 02 20	711	0.2-	0.2-
1998 12 18	402	1.0-	0.0	1998 12 27	402	0.1-	0.4+	1999 03 13	711	0.3+	1.0-
1998 12 18	587	0.5+	0.8-	1998 12 30	046	0.3+	0.5+	1999 03 14	711	0.2-	0.5-
1998 12 18	587	0.4-	1.2+	1998 12 30	046	0.4-	0.2+	1999 05 24	693	0.6+	0.9+

1998 12 18	046	0.8−	0.4+	1998 12 30	046	0.6+	0.7−	1999 05 24	693	0.1+	0.4+
1998 12 18	046	0.8−	0.3+	1998 12 30	046	0.1+	0.3−	1999 10 05	413	1.3−	0.0
1998 12 18	046	0.7+	0.1+	1998 12 30	046	0.4−	0.9−	1999 10 05	413	0.3+	0.3−
1998 12 18	587	0.4+	0.2−	1999 01 08	658	0.1−	0.0	1999 10 05	413	0.9+	0.1+
1998 12 18	046	0.8+	1.2+	1999 01 08	658	0.1+	0.2+	1999 10 06	413	0.2−	0.3+
1998 12 18	557	0.3−	0.9+	1999 01 08	658	0.1−	0.4−	1999 10 06	413	0.9+	0.3−
1998 12 18	557	0.3+	1.1+	1999 01 08	557	0.2−	0.1−	1999 10 07	413	0.3−	0.0
1998 12 18	557	1.1−	0.4+	1999 01 08	557	0.1+	0.2+	1999 10 07	413	0.3−	0.2+
1998 12 20	557	0.7+	0.6+	1999 01 08	557	0.0	0.2−				

1999 JT₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Gnädig

<i>M</i>	350.34652		(2000.0)	P	Q
<i>n</i>	0.30810388	ω	224.48982	+0.32729757	+0.93332692
<i>a</i>	2.1710572	Ω	65.12921	−0.81527630	+0.35787957
<i>e</i>	0.3991627	<i>i</i>	9.36108	−0.47770374	+0.02868912
<i>P</i>	3.20	<i>H</i>	16.7	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1980 09 30	413	0.2−	1.3+	1999 05 11	903	0.5−	0.4+	1999 05 16	118	0.4+	0.5−
1980 09 30	413	0.3−	0.1+	1999 05 11	903	1.5−	1.1−	1999 05 16	118	0.3−	0.1−
1996 08 12	413	1.3−	0.2−	1999 05 12	719	0.1+	0.1+	1999 06 08	704	0.1−	0.5+
1996 08 12	413	1.4+	0.1−	1999 05 12	719	0.3−	0.1+	1999 06 08	704	0.1+	0.6+
1999 04 12	704	0.6+	0.3+	1999 05 12	426	0.2−	0.6+	1999 06 08	704	(2.8−	0.2−)
1999 04 12	704	0.6−	0.2+	1999 05 12	426	0.3−	0.6+	1999 06 08	704	0.6−	1.1−
1999 04 12	704	0.0	0.4+	1999 05 12	426	0.1−	0.4+	1999 06 09	704	0.6+	0.3+
1999 04 12	704	0.4+	0.4+	1999 05 13	719	0.0	1.0+	1999 06 09	704	0.1−	0.4+
1999 04 12	704	0.2+	0.4−	1999 05 13	719	0.2+	1.0+	1999 06 09	704	0.6+	0.5+
1999 04 16	704	0.3−	0.6−	1999 05 13	719	0.7−	0.8+	1999 06 09	704	0.1+	0.3+
1999 04 16	704	0.6+	0.3−	1999 05 13	719	0.9+	0.4+	1999 06 09	704	0.3−	0.0
1999 04 16	704	0.7+	0.4+	1999 05 13	704	0.5−	0.3+	1999 06 10	704	0.9+	0.9−
1999 04 16	704	0.1+	0.8−	1999 05 13	704	(1.4−	1.7−)	1999 06 10	704	0.3−	0.2+
1999 04 16	704	0.8+	0.7−	1999 05 13	704	1.3−	1.1−	1999 06 10	704	0.2+	0.4−
1999 04 19	704	0.2+	0.3−	1999 05 13	704	(2.7−	2.2−)	1999 06 10	704	0.4−	0.2−
1999 04 19	704	0.0	0.6−	1999 05 13	704	0.6−	0.2−	1999 06 10	704	0.5−	0.4−
1999 04 19	704	1.4+	1.1+	1999 05 13	428	0.2+	0.7−	1999 06 10	704	0.2−	0.7+
1999 04 19	704	0.3+	0.5−	1999 05 13	428	1.0+	0.4−	1999 06 10	704	0.0	0.3−
1999 04 19	704	1.7+	0.5+	1999 05 15	704	0.0	0.3−	1999 06 10	704	(0.8−	1.7+)
1999 05 10	699	0.3−	0.3+	1999 05 15	704	0.2+	0.1+	1999 06 10	704	0.6−	1.1−
1999 05 10	699	0.6+	1.3+	1999 05 15	704	1.5−	0.3+	1999 06 10	704	(2.1+	2.2−)
1999 05 10	699	(0.4+	2.7+)	1999 05 15	704	0.8−	1.3+	1999 06 10	704	0.2+	0.4−
1999 05 11	903	1.3−	1.5−	1999 05 16	118	0.6+	0.0	1999 06 10	704	(0.6+	2.2−)

1999 JZ₇₉ = 1999 LU₂₀

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	140.00917		(2000.0)	P	Q
<i>n</i>	0.27864951	ω	18.35888	−0.46855821	−0.87527244
<i>a</i>	2.3214742	Ω	99.73125	+0.79454405	−0.47680161
<i>e</i>	0.1389323	<i>i</i>	6.98134	+0.38620326	−0.08098380
<i>P</i>	3.54	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1997 12 04	704	0.1+	0.2−	1999 05 14	704	0.7−	0.1−	1999 06 09	704	0.0	0.2+
1997 12 04	704	1.0+	0.7+	1999 05 14	704	0.2−	0.0	1999 06 09	704	0.2−	0.1−
1997 12 04	704	0.4−	0.3+	1999 05 18	704	1.0+	1.1−	1999 06 09	704	0.3−	0.2+
1997 12 04	704	0.6−	0.9−	1999 05 18	704	1.2−	0.4−	1999 06 09	704	0.2+	0.7−
1997 12 04	704	(1.4−	2.6+)	1999 05 18	704	1.5+	0.7+	1999 06 09	704	1.5−	1.4+
1999 05 13	704	0.8+	0.7−	1999 05 18	704	0.4−	0.6+	1999 06 15	704	0.3+	0.6−
1999 05 13	704	0.5−	0.2+	1999 05 19	704	0.3−	0.8−	1999 06 15	704	0.5+	0.1+
1999 05 13	704	1.6−	0.2+	1999 05 19	704	0.8−	0.9−	1999 06 15	704	0.1+	0.1−
1999 05 13	704	0.8+	2.0+	1999 05 19	704	1.1+	0.7+	1999 06 15	704	0.1+	0.0
1999 05 14	704	0.0	0.4−	1999 05 19	704	0.3−	0.2−	1999 06 15	704	0.2+	0.1+
1999 05 14	704	(2.2+	0.3−)	1999 05 19	704	1.4+	0.0				

1999 LF₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	340.53178		(2000.0)	P	Q
<i>n</i>	0.58949057	ω	140.61571	+0.96602490	+0.20642277
<i>a</i>	1.4086988	Ω	208.64257	−0.22525213	+0.96748725
<i>e</i>	0.2804244	<i>i</i>	18.93147	+0.12671765	+0.14614397
<i>P</i>	1.67	<i>H</i>	18.1	<i>G</i>	0.15
				<i>U</i>	0

Residuals in seconds of arc

1979 12 20	413	0.1−	2.0−	1999 08 02	658	0.1−	0.2−	1999 10 02	704	0.1+	0.0
1979 12 20	413	0.5+	1.6−	1999 08 02	658	0.4−	0.2−	1999 10 02	704	0.3−	0.3−
1999 06 10	704	0.7+	0.8−	1999 08 02	658	0.3+	0.2−	1999 10 02	704	0.0	0.7+
1999 06 10	704	0.4+	0.0	1999 08 03	046	0.2−	0.2+	1999 10 02	704	0.0	0.4+
1999 06 10	704	0.1+	0.1−	1999 08 03	046	0.2−	0.1−	1999 10 02	704	0.1+	0.2+
1999 06 10	704	0.1−	1.0−	1999 08 03	046	0.7−	0.0	1999 10 02	704	0.1−	0.2+
1999 06 11	704	0.7−	0.7−	1999 08 03	046	0.0	0.2+	1999 10 02	704	0.2−	0.2+
1999 06 11	704	0.1+	0.3+	1999 08 10	658	0.1−	0.3+	1999 10 03	629	1.1+	0.8+
1999 06 11	704	0.3+	0.0	1999 08 10	658	0.1+	0.2+	1999 10 03	629	0.9+	0.3+
1999 06 11	704	0.2−	1.5−	1999 08 10	658	0.1+	0.0	1999 10 03	629	0.7+	1.0+
1999 06 11	704	0.0	0.2+	1999 08 11	846	0.2−	0.2+	1999 10 03	629	0.3+	0.9−
1999 06 11	704	0.0	0.6−	1999 08 15	846	0.0	0.2+	1999 10 03	629	0.9+	0.8+
1999 06 11	704	0.4+	0.2+	1999 08 15	846	0.3−	0.1−	1999 10 03	629	0.2−	0.5+
1999 06 11	704	0.3−	0.6+	1999 08 15	846	0.3−	0.1−	1999 10 03	629	0.3+	0.4+
1999 06 11	704	0.0	0.1+	1999 08 16	846	0.4+	0.7+	1999 10 03	629	0.6−	0.1+
1999 06 11	704	0.3−	0.2−	1999 08 16	846	0.6+	0.7−	1999 10 03	629	0.8+	1.0−
1999 06 11	360	0.0	0.1−	1999 08 16	846	0.4+	0.4−	1999 10 04	704	1.4+	0.2−
1999 06 11	360	0.1−	0.1−	1999 08 16	846	0.0	1.0−	1999 10 04	704	1.0+	0.0
1999 06 11	360	0.3−	0.1+	1999 08 22	402	0.6−	0.1−	1999 10 04	704	(2.7+	0.8−)
1999 06 12	596	0.7+	1.5−	1999 08 22	402	0.2+	0.2−	1999 10 04	704	1.0+	1.3−
1999 06 12	596	0.2−	1.5−	1999 08 22	402	0.4−	0.2+	1999 10 04	704	0.5+	0.3−
1999 06 12	120	0.1−	0.4+	1999 08 23	595	0.3+	0.6−	1999 10 06	151	0.1+	0.1+
1999 06 12	120	0.5+	0.4+	1999 08 23	595	1.0+	0.5−	1999 10 06	151	0.8−	1.0+
1999 06 12	120	0.6−	1.0+	1999 08 23	595	0.3+	1.3−	1999 10 06	151	0.1−	0.3+
1999 06 12	557	0.1−	0.6+	1999 08 23	046	0.1−	0.4+	1999 10 06	151	0.4−	0.4+
1999 06 12	046	0.2+	0.3+	1999 08 23	046	0.1−	0.0	1999 10 06	151	0.4−	0.1+
1999 06 12	046	0.1−	0.6+	1999 08 23	046	0.2−	0.0	1999 10 06	151	0.2−	0.2+
1999 06 12	046	0.3−	1.0+	1999 08 24	647	0.5−	1.0+	1999 10 07	151	0.1+	0.1+
1999 06 12	046	0.2−	0.7+	1999 08 24	647	(1.3+	3.8+)	1999 10 07	151	0.0	0.0
1999 06 13	557	0.7−	0.5+	1999 08 24	647	1.4+	1.2+	1999 10 07	151	0.2+	0.1+
1999 06 13	557	0.1−	0.1+	1999 08 28	647	0.5+	0.9+	1999 10 07	151	0.4+	0.0
1999 06 13	557	1.0−	0.2−	1999 08 28	647	1.4+	0.7−	1999 10 07	151	0.0	0.2+
1999 06 13	859	1.2−	0.4+	1999 08 28	647	1.8+	0.8+	1999 10 07	151	0.1+	0.3−
1999 06 13	859	0.3−	0.0	1999 09 01	587	0.3−	1.5−	1999 10 09	726	0.2+	0.0
1999 06 13	859	1.4+	1.8−	1999 09 01	587	0.6+	0.2−	1999 10 09	726	0.2+	0.2+
1999 06 17	587	0.4−	0.4+	1999 09 08	360	0.1+	0.3−	1999 10 09	726	0.2+	0.1+
1999 06 17	587	1.6−	0.1−	1999 09 08	360	0.2−	0.2−	1999 10 09	726	0.0	0.1−
1999 06 19	658	0.1−	0.3+	1999 09 08	360	0.2+	0.3−	1999 10 09	726	0.2+	0.1−
1999 06 19	658	0.1−	0.5+	1999 09 12	046	0.2+	0.1−	1999 10 09	900	0.1−	0.8−
1999 06 19	658	0.2−	0.1+	1999 09 12	046	0.3+	0.2−	1999 10 09	900	0.4−	0.6−
1999 06 20	046	0.1+	0.3−	1999 09 12	046	0.1+	0.2−	1999 10 11	726	0.3−	0.1−
1999 06 20	046	0.4+	0.0	1999 09 12	046	0.0	0.1+	1999 10 11	726	0.3−	0.2−
1999 06 20	046	0.6−	0.5+	1999 09 12	557	0.0	0.5−	1999 10 11	726	0.1+	0.1−
1999 06 20	046	0.6−	0.2+	1999 09 12	557	0.1−	0.2−	1999 10 11	726	0.1−	0.5−
1999 06 23	118	0.7+	0.4−	1999 09 12	557	0.2−	0.1−	1999 10 11	726	0.1−	0.0
1999 06 23	118	0.0	0.4−	1999 09 12	557	0.2+	0.1+	1999 10 11	355	0.3+	0.1+
1999 06 25	046	0.3+	0.4+	1999 09 12	557	0.0	0.1−	1999 10 11	355	0.6+	0.2+
1999 06 25	046	0.2−	1.0−	1999 09 13	848	0.6−	0.3+	1999 10 11	355	0.4+	0.2−
1999 06 25	046	0.1−	0.0	1999 09 13	848	0.6−	0.9+	1999 10 13	071	0.0	0.3+
1999 06 25	046	0.3−	0.4−	1999 09 13	848	0.8−	0.5+	1999 10 13	071	0.4−	0.3−
1999 07 02	046	0.3−	0.7+	1999 09 14	540	0.0	1.2−	1999 10 14	151	0.4−	0.3−
1999 07 02	046	0.5+	0.9+	1999 09 14	540	0.0	0.1−	1999 10 14	151	0.4−	0.6−
1999 07 02	046	0.0	0.4+	1999 09 14	540	0.4−	0.2+	1999 10 14	151	0.3−	0.8−
1999 07 02	587	1.2+	0.5+	1999 09 18	848	0.1−	0.0	1999 10 16	046	0.4−	0.9+
1999 07 02	587	0.5−	1.1+	1999 09 18	848	0.4+	0.0	1999 10 16	046	0.6−	0.5−
1999 07 05	118	0.4+	0.6+	1999 09 18	848	0.3+	0.1−	1999 10 16	046	0.4−	0.0
1999 07 05	118	0.1+	0.6+	1999 09 19	848	0.4−	0.1−	1999 10 16	151	0.4+	0.1+
1999 07 05	118	0.4+	0.4+	1999 09 19	848	0.2+	0.7−	1999 10 16	151	0.4+	0.2−

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1999 07 10	661	0.0	0.7+	1999 09 19	848	0.0	0.2-	1999 10 16	151	0.4+	0.1-
1999 07 10	661	0.4+	0.4-	1999 09 20	848	0.3+	0.2+	1999 10 16	151	0.2+	0.0
1999 07 12	108	0.9+	1.0-	1999 09 20	848	0.2+	0.2-	1999 10 16	151	0.4+	0.4+
1999 07 12	108	(1.5+	4.6-)	1999 09 20	848	0.0	0.3-	1999 10 16	151	0.5+	1.0+
1999 07 12	108	(2.9+	3.7-)	1999 09 26	848	0.5+	0.4-	1999 10 16	118	0.4-	0.1+
1999 07 12	108	0.5-	1.4-	1999 09 26	848	0.1+	0.3-	1999 10 16	118	0.4-	0.0
1999 07 15	360	0.3+	0.1-	1999 09 26	848	0.3-	0.1+	1999 10 16	118	0.4-	0.1+
1999 07 15	360	0.3+	0.3+	1999 09 27	848	0.1+	0.6-	1999 10 17	138	0.1+	0.3-
1999 07 15	360	0.3+	0.4+	1999 09 27	848	0.2-	0.9-	1999 10 17	138	0.1-	1.2-
1999 07 15	587	0.9+	0.3-	1999 09 27	848	0.6+	0.3+	1999 10 17	138	0.2+	0.4-
1999 07 16	587	0.7+	0.9+	1999 09 27	355	0.3-	0.5-	1999 10 17	138	0.4+	0.5-
1999 07 17	071	(1.8+	3.3-)	1999 09 27	355	0.6+	0.4-	1999 10 17	360	0.1-	0.4+
1999 07 17	118	0.3+	0.2-	1999 09 27	355	0.4+	1.3-	1999 10 17	360	0.3-	0.5+
1999 07 17	071	0.2+	0.3-	1999 09 28	848	0.1+	1.0-	1999 10 17	360	0.0	0.5+
1999 07 17	118	0.1-	0.2+	1999 09 28	848	0.3+	0.6-	1999 10 17	360	0.4-	0.3+
1999 07 19	557	0.3-	0.6-	1999 09 28	848	0.2-	0.2-	1999 10 18	670	0.1+	0.4+
1999 07 19	557	0.4-	0.7-	1999 09 30	104	0.6+	1.2+	1999 10 18	670	0.1-	0.4+
1999 07 19	557	0.2-	0.4-	1999 09 30	104	0.1-	0.4+	1999 10 19	670	0.8+	0.4-
1999 07 22	402	0.2+	0.1+	1999 09 30	104	0.6+	0.7-	1999 10 19	670	0.0	0.9-
1999 07 22	402	0.5+	0.0	1999 09 30	104	0.6+	1.2-	1999 10 19	670	0.1-	0.9-
1999 07 22	402	0.5+	0.0	1999 10 01	704	0.0	0.4+	1999 10 22	046	0.2-	0.2+
1999 07 24	595	0.3-	0.4+	1999 10 01	704	0.7+	0.3+	1999 10 22	046	0.3-	0.7+
1999 07 24	595	0.2+	0.8-	1999 10 01	704	0.3+	0.2+	1999 10 22	046	0.4-	0.2+
1999 07 24	595	0.2+	0.7-	1999 10 01	704	0.3+	0.5+	1999 10 22	046	0.1-	0.3+
1999 07 31	658	0.2+	0.6+	1999 10 01	704	0.0	0.4+	1999 10 22	046	0.0	0.2+
1999 07 31	658	0.3-	0.1-	1999 10 01	151	0.2-	0.6+	1999 10 23	151	0.9-	0.7+
1999 07 31	658	0.3-	0.8+	1999 10 01	151	0.4-	0.5+	1999 10 23	151	0.5-	0.5-
1999 07 31	402	0.2-	0.1-	1999 10 02	704	0.0	0.3+	1999 10 23	151	1.1-	0.1+
1999 07 31	402	0.2+	0.6-	1999 10 02	704	0.2+	0.1+	1999 10 23	151	0.8-	0.5+
1999 07 31	402	0.3+	1.2-	1999 10 02	704	0.0	0.2+				

1999 LS₁₅ = 1992 ER₇ = 1998 GX₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	147.52922		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17087576	ω	324.43405	-0.45602369	-0.87093653
a	3.2162447	Ω	151.34489	+0.87903062	-0.47293651
e	0.0703474	i	22.44209	+0.13909552	+0.13341897
P	5.77	H	12.8	G 0.15	U 4

Residuals in seconds of arc

1992 03 01	809	(2.7-	3.8+)	1998 04 03	704	(1.9+	2.9+)	1999 06 12	704	0.1-	0.2-
1992 03 04	809	0.7-	0.4+	1998 04 03	704	0.8+	0.6-	1999 06 12	704	0.1+	0.3-
1992 03 09	809	0.7+	0.5-	1998 04 03	704	0.6+	0.4-	1999 06 12	704	0.1+	0.2-
1998 04 02	704	1.6+	0.6+	1998 04 03	704	0.9-	0.2-	1999 06 14	704	0.1+	0.2+
1998 04 02	704	1.2-	0.8+	1999 06 06	699	0.5+	0.0	1999 06 14	704	0.1+	0.0
1998 04 02	704	1.1-	0.1-	1999 06 06	699	1.2-	0.3+	1999 06 14	704	0.0	0.4+
1998 04 02	704	(2.0+	3.4+)	1999 06 06	699	0.1-	0.2+	1999 06 14	704	0.3+	0.4+
1998 04 03	704	0.1+	0.0	1999 06 12	704	0.3+	0.7-	1999 06 14	704	0.2-	0.1-

1999 NR₄ = 1984 UZ₃ = 1998 FA₁₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	335.00178		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.19049864	ω	51.59355	+0.92101216	+0.35922221
a	2.9914021	Ω	286.89813	-0.38806731	+0.81261806
e	0.1113767	i	9.05892	-0.03376926	+0.45892405
P	5.17	H	13.5	G 0.15	U 3

Residuals in seconds of arc

1984 10 20	095	0.5+	1.0-	1999 07 15	727	0.1+	0.1+	1999 08 07	699	0.1-	0.4-
1998 03 31	704	1.4+	0.3+	1999 07 15	727	0.4+	0.2-	1999 08 08	699	0.2+	0.0
1998 03 31	704	0.3+	1.4-	1999 07 15	727	0.4+	0.4+	1999 08 08	699	0.1-	0.3-
1998 03 31	704	1.5+	1.5+	1999 07 19	704	0.2+	0.2-	1999 08 08	699	0.3-	0.4+
1998 03 31	704	0.3-	1.5-	1999 07 19	727	0.3+	0.2+	1999 08 12	727	0.0	0.1+
1998 04 01	704	0.0	1.0-	1999 07 19	704	0.3+	0.3+	1999 08 12	727	0.8-	0.2-
1998 04 01	704	0.5-	0.2+	1999 07 19	727	0.6+	0.6-	1999 08 12	727	0.3-	0.1-

1998 04 01	704	0.0	0.4-	1999 07 19	704	0.4-	0.1-	1999 08 17	727	0.1-	0.0
1998 04 01	704	2.6-	1.6+	1999 07 19	727	0.4+	0.3-	1999 08 17	727	0.1-	0.2-
1999 07 13	704	0.3+	0.1-	1999 07 22	727	0.4+	0.0	1999 08 17	727	0.2-	0.6+
1999 07 13	704	0.0	0.5+	1999 07 22	727	0.1+	0.4+	1999 08 18	727	0.3-	0.6+
1999 07 13	704	0.4+	0.2+	1999 07 22	727	0.5+	0.1+	1999 08 18	727	0.1+	0.1+
1999 07 13	704	0.1+	0.1+	1999 08 02	727	0.5-	0.0	1999 09 30	704	0.5-	0.1+
1999 07 13	704	0.3+	0.5+	1999 08 02	727	0.6-	0.1-	1999 09 30	704	0.0	0.9+
1999 07 14	727	0.5+	0.1-	1999 08 02	727	0.8-	0.0	1999 09 30	704	0.3+	0.3+
1999 07 14	727	0.6+	0.8-	1999 08 07	699	1.0-	0.8-	1999 09 30	704	0.3-	0.2-
1999 07 14	727	0.0	0.8-	1999 08 07	699	0.4-	0.5+				

1999 NK₄₁ = 1978 QW = 1985 QD₄ = 1992 PP₃ = 1998 HZ₁₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	336.63193		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.28093392	ω	14.06390	+0.98742966	+0.14871127
a	2.3088724	Ω	337.17506	-0.15505635	+0.84565810
e	0.1743386	i	7.93476	-0.03066250	+0.51258886
P	3.51	H	14.6	G 0.15	U 3

Residuals in seconds of arc

1978 08 31	095	1.8-	0.6-	1998 04 18	704	0.4+	1.0+	1999 09 07	691	0.5+	0.1-
1978 09 05	095	(3.1-	4.7+)	1998 04 18	704	0.5-	1.4+	1999 09 07	691	0.5+	0.1+
1985 08 19	071	0.0	2.3+	1998 04 18	704	(1.6-	2.1-)	1999 09 07	704	0.0	0.1+
1985 08 19	071	1.0+	1.3+	1998 04 19	704	1.1-	1.0-	1999 09 07	704	0.5+	0.4-
1985 08 19	071	(3.3-	2.1+)	1998 04 19	704	0.7-	1.3-	1999 09 07	704	0.2+	0.1+
1985 08 20	071	0.4+	0.7+	1998 04 19	704	(2.3-	0.6+)	1999 09 07	704	0.2+	0.1-
1992 08 05	675	0.2-	0.2-	1998 04 19	704	(2.6-	1.2+)	1999 09 07	704	0.3+	0.1-
1992 08 05	675	0.9+	1.8-	1998 04 19	704	1.1-	0.0	1999 09 29	704	1.5+	0.2-
1992 08 06	675	1.0+	1.4-	1999 07 14	704	0.3+	0.1+	1999 09 29	704	0.4+	0.2-
1992 08 06	675	0.2-	0.9-	1999 07 14	704	0.4-	0.3-	1999 09 29	704	0.1-	0.6+
1998 03 20	704	0.7+	0.9+	1999 07 14	704	0.3+	0.4+	1999 09 29	704	0.0	0.1+
1998 03 20	704	0.0	0.4+	1999 07 14	704	0.6-	0.6+	1999 09 29	704	1.1+	0.8-
1998 03 20	704	0.5-	1.6+	1999 07 14	704	1.4-	0.9+	1999 09 30	704	0.0	0.0
1998 03 20	704	0.3+	0.3-	1999 07 16	704	0.1+	0.4+	1999 09 30	704	0.0	0.1-
1998 03 20	704	1.2+	0.2-	1999 07 16	704	0.2-	0.1+	1999 09 30	704	0.3-	0.3+
1998 04 01	704	0.6+	0.6-	1999 07 16	704	0.6-	0.1-	1999 09 30	704	0.4-	0.4+
1998 04 01	704	0.8+	0.5-	1999 09 03	699	0.9-	0.4-	1999 09 30	704	0.1-	0.3+
1998 04 01	704	0.3+	0.8-	1999 09 03	699	0.6-	0.4-	1999 10 03	691	0.5-	0.0
1998 04 01	704	0.6+	1.2-	1999 09 03	699	0.6-	0.9-	1999 10 03	691	0.5-	0.2+
1998 04 18	704	1.2-	0.6+	1999 09 07	691	0.4+	0.1+	1999 10 03	691	0.5-	0.2+

1999 OW₂ = 1986 SY₁ = 1986 TR₁₃ = 1992 BO₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	325.71871		(2000.0)	P	Q		
n	0.23293355	ω	100.04707	+0.54581715	-0.79590191		
a	2.6160620	Ω	313.50950	+0.55460052	+0.57751554		
e	0.1535560	i	21.17369	+0.62809386	+0.18170292		
P	4.23	H	12.4	G	0.15	U	2

Residuals in seconds of arc

1986 09 29	095	(4.0+	0.7-)	1999 07 23	704	0.6+	0.5-	1999 09 27	704	0.0	0.1-
1986 10 06	095	0.3-	0.0	1999 07 23	704	0.6+	0.3-	1999 09 27	704	0.3+	0.1+
1992 01 31	675	0.4+	0.4+	1999 07 23	704	0.6+	0.4-	1999 10 13	127	0.5+	0.4-
1992 02 01	675	0.0	0.4-	1999 07 23	704	0.8+	0.2-	1999 10 13	127	0.2+	0.3-
1992 02 01	675	0.0	1.1-	1999 09 22	699	0.1+	1.1+	1999 10 15	744	1.5-	0.2-
1992 03 01	033	0.0	0.8+	1999 09 22	699	0.2+	0.5+	1999 10 15	744	1.1-	0.1-
1992 03 01	033	0.1-	0.4+	1999 09 22	699	0.4-	0.7+	1999 10 15	127	0.3+	0.1-
1999 07 22	704	0.1-	0.6+	1999 09 22	704	0.2+	0.1+	1999 10 15	127	0.3+	0.1-
1999 07 22	704	0.1-	0.2+	1999 09 22	704	0.4+	0.1+	1999 10 16	744	0.5-	0.3-
1999 07 22	704	0.1+	0.5+	1999 09 22	704	0.6+	0.3+	1999 10 16	744	0.2-	0.4-
1999 07 22	704	0.4-	0.1+	1999 09 22	704	0.8+	0.5+	1999 10 19	127	0.0	0.7-
1999 07 22	704	0.7-	0.5+	1999 09 22	704	0.1+	0.1+	1999 10 19	127	1.1-	1.0-
1999 07 23	704	0.6+	0.4-	1999 09 27	704	0.2+	0.2+				

1999 OB₃ = 1989 WT₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	18.58668	(2000.0)	P		Q	
<i>n</i>	0.19069997	ω	93.23685	+0.96177206	+0.18002154	
<i>a</i>	2.9892963	Ω	256.46499	-0.24343144	+0.90719323	
<i>e</i>	0.0980304	<i>i</i>	12.25487	+0.12544177	+0.38025345	
<i>P</i>	5.17	<i>H</i>	12.3	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1989 11 28	033	1.8-	1.0-	1998 06 26	704	0.2+	1.4-	1999 09 21	699	0.3-	0.1-
1989 11 28	033	1.3+	0.8-	1998 06 26	704	0.3-	0.6-	1999 10 02	678	0.0	0.2+
1989 11 29	033	0.3-	0.7-	1998 06 26	704	1.5+	0.2+	1999 10 02	678	0.4+	0.0
1989 11 29	033	0.3+	0.6+	1998 06 26	704	0.5+	1.4+	1999 10 02	678	0.5-	0.3-
1989 12 03	033	0.4+	1.0+	1999 07 22	704	0.1-	0.2-	1999 10 03	678	1.1+	0.2+
1998 05 29	704	0.2+	0.2-	1999 07 22	704	(2.2+	0.4-)	1999 10 03	678	0.7+	0.1-
1998 05 29	704	1.2-	0.2-	1999 07 22	704	1.7+	0.6-	1999 10 05	704	0.8+	0.1+
1998 05 29	704	1.1-	0.3+	1999 07 23	704	0.0	0.1-	1999 10 05	704	0.5+	0.2-
1998 05 29	704	(2.0-	2.1+)	1999 07 23	704	0.5-	0.5-	1999 10 05	704	0.3+	0.1+
1998 06 24	704	(6.1+	3.8-)	1999 07 23	704	0.1-	0.0	1999 10 05	704	0.3+	0.1-
1998 06 24	704	0.2+	0.2-	1999 07 23	704	0.3-	0.0	1999 10 05	704	0.1+	0.1+
1998 06 24	704	0.4-	0.8+	1999 07 23	704	0.1-	0.5+	1999 10 13	611	1.7-	1.1+
1998 06 24	704	0.9-	0.3+	1999 09 21	699	1.3-	0.0	1999 10 13	611	0.1-	0.2+
1998 06 26	704	1.3+	0.7-	1999 09 21	699	1.0-	0.1-				

1999 PS₅ = 1978 RZ₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.60571	(2000.0)	P		Q	
<i>n</i>	0.23533979	ω	235.11192	+0.82567826	-0.56253926	
<i>a</i>	2.5981994	Ω	159.01946	+0.54854397	+0.78298376	
<i>e</i>	0.3445735	<i>i</i>	6.81460	+0.13173812	+0.26549203	
<i>P</i>	4.19	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1978 09 02	809	0.1-	1.9-	1999 08 21	691	0.4-	0.0	1999 09 13	704	0.3+	0.1+
1978 09 02	809	0.4-	1.0-	1999 08 22	699	0.5-	0.9+	1999 09 13	704	0.4+	0.3-
1978 09 02	809	0.1+	1.2-	1999 08 22	699	1.6-	1.8+	1999 09 30	704	0.6-	0.3-
1978 09 02	809	0.9-	1.4-	1999 08 22	699	0.3-	1.0+	1999 09 30	704	0.4+	0.4-
1978 09 06	809	0.2+	0.8-	1999 09 07	704	0.2+	0.4-	1999 09 30	704	0.3-	0.0
1978 09 10	809	0.7-	1.8+	1999 09 07	704	0.4+	0.5-	1999 09 30	704	0.3+	1.8-
1978 09 10	809	1.4+	0.1-	1999 09 07	704	0.5+	0.1-	1999 09 30	704	0.3-	1.3-
1978 09 10	809	1.4+	2.0+	1999 09 07	704	0.3+	0.3+	1999 10 02	723	(2.1-	3.1-)
1978 09 10	809	0.4-	0.6+	1999 09 07	704	0.4+	0.2-	1999 10 02	723	(0.8-	3.6-)
1999 07 16	704	0.2+	0.2+	1999 09 08	120	1.0+	0.3-	1999 10 02	723	0.3-	0.4+
1999 07 16	704	0.4+	1.3-	1999 09 08	120	0.2-	0.5+	1999 10 04	703	0.5+	1.0+
1999 07 16	704	0.5+	0.6+	1999 09 08	120	1.0+	0.3-	1999 10 04	703	0.3+	0.6+
1999 07 16	704	0.8+	0.8-	1999 09 09	704	0.1+	0.5-	1999 10 04	703	0.4+	0.1+
1999 08 12	691	0.5-	0.2+	1999 09 09	704	0.4+	0.5-	1999 10 04	703	0.1-	0.6+
1999 08 12	691	0.4-	0.2+	1999 09 09	704	0.4+	0.3-	1999 10 07	704	0.6-	1.1+
1999 08 12	691	0.3-	0.2+	1999 09 09	704	0.0	0.6-	1999 10 07	704	(1.3-	2.2+)
1999 08 17	691	0.4-	0.2+	1999 09 09	704	0.8+	0.6+	1999 10 07	704	1.5-	1.8-
1999 08 17	691	0.6-	0.2+	1999 09 09	120	0.2-	0.0	1999 10 08	106	0.3-	0.8+
1999 08 17	691	0.4-	0.2+	1999 09 09	120	0.2+	0.3+	1999 10 08	106	0.5+	0.3+
1999 08 21	691	0.7-	0.6+	1999 09 09	120	0.2-	0.2-	1999 10 08	106	0.0	0.5+
1999 08 21	691	0.6-	0.5+	1999 09 13	704	(2.6+	1.0+)				

1999 PK₆ = 1999 RE₁₄₃ = 1998 FK₃₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	22.37141	(2000.0)	P		Q	
<i>n</i>	0.28655073	ω	156.63872	+0.68258212	+0.72937341	
<i>a</i>	2.2786014	Ω	156.32568	-0.68720393	+0.66190987	
<i>e</i>	0.1945409	<i>i</i>	6.54706	-0.24866124	+0.17288655	
<i>P</i>	3.44	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1992 09 03	095	0.7-	1.0+	1998 03 29	704	1.2+	2.0-	1999 09 07	704	0.1-	0.2+
1992 09 03	095	0.3+	0.8+	1998 03 29	704	1.0-	0.3-	1999 09 09	704	0.2-	0.4-
1994 02 13	691	(5.8+	1.5+)	1998 03 29	704	0.8+	0.4+	1999 09 09	704	0.4+	0.1-
1994 02 13	691	0.0	0.8+	1999 08 13	699	1.0-	0.2-	1999 09 09	704	0.2+	0.1+
1994 02 13	691	0.1+	0.7+	1999 08 13	699	0.7-	0.1+	1999 09 09	704	0.1+	0.3+
1998 03 20	704	0.1-	1.3+	1999 08 13	699	0.4-	0.8+	1999 09 09	704	0.8+	0.2-
1998 03 20	704	1.2-	0.5-	1999 08 22	699	0.1-	0.2-	1999 09 14	704	0.8+	0.6+
1998 03 20	704	0.5-	0.4+	1999 08 22	699	0.0	0.3+	1999 09 14	704	1.2+	0.5-
1998 03 20	704	0.7-	0.2-	1999 08 22	699	0.8+	0.4-	1999 09 14	704	0.2+	0.5-
1998 03 22	704	0.3+	0.2-	1999 09 04	699	0.3-	0.1+	1999 09 14	704	0.4+	0.0
1998 03 22	704	0.5+	0.4-	1999 09 04	699	0.0	0.9+	1999 09 14	704	1.1+	0.7-
1998 03 22	704	1.7+	1.0+	1999 09 04	699	0.1+	0.6+	1999 10 02	704	0.6-	0.0
1998 03 22	704	0.8-	0.3-	1999 09 07	704	0.0	0.1+	1999 10 02	704	1.1-	0.1-
1998 03 22	704	(4.0-	0.2-)	1999 09 07	704	0.2+	0.3-	1999 10 02	704	0.5-	0.2-
1998 03 29	704	0.5+	0.8+	1999 09 07	704	0.2+	0.3-	1999 10 02	704	0.7-	0.1-
1998 03 29	704	0.6-	0.1+	1999 09 07	704	0.1+	0.2+	1999 10 02	704	1.1-	0.7-

1999 QZ₁ = 1994 PJ₃₄ = 1997 EZ₅₀Id. A. Doppler (*MPC* 36026), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	298.78638	(2000.0)	P		Q	
<i>n</i>	0.21764296	ω	238.29094	+0.33159467	-0.94325249	
<i>a</i>	2.7371985	Ω	192.38204	+0.89134028	+0.31944282	
<i>e</i>	0.0438991	<i>i</i>	4.78325	+0.30912375	+0.09072499	
<i>P</i>	4.53	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1994 08 10	809	0.2-	0.9+	1999 09 11	557	0.2+	0.2+	1999 10 07	704	0.9-	0.5+
1994 08 10	809	0.5-	0.6+	1999 09 11	557	0.8-	0.2-	1999 10 07	704	1.2+	0.4-
1994 08 10	809	0.5-	0.1-	1999 09 11	557	0.6-	0.1-	1999 10 08	683	0.5-	0.0
1994 08 11	809	0.7+	0.5-	1999 09 12	557	0.0	0.1-	1999 10 08	683	0.3+	0.3+
1994 08 11	809	0.7+	0.8-	1999 09 12	557	0.8+	0.6+	1999 10 08	683	0.3+	0.2+
1994 08 11	809	0.3+	1.6-	1999 09 12	557	0.7+	0.7+	1999 10 09	704	0.6+	0.0
1997 03 05	809	0.5+	0.3+	1999 09 13	557	0.0	0.5-	1999 10 09	704	1.2+	0.7+
1997 03 05	809	0.4+	0.1-	1999 09 13	557	0.3-	0.1+	1999 10 09	704	0.5+	0.3-
1997 03 05	809	1.1+	0.7-	1999 09 15	557	1.1-	0.1-	1999 10 09	704	1.2+	0.2+
1997 03 06	809	1.0-	0.8+	1999 10 02	703	1.2-	0.2-	1999 10 09	704	1.0+	0.2+
1997 03 06	809	0.2-	0.6-	1999 10 02	703	1.8-	0.7-	1999 10 15	704	0.3+	0.4+
1997 03 06	809	1.0-	0.4-	1999 10 02	703	0.2+	0.8+	1999 10 15	704	0.4-	0.4-
1999 08 20	557	0.3+	1.0+	1999 10 02	703	(3.8-	0.4+)	1999 10 15	704	0.0	0.3-
1999 08 20	557	0.1+	0.2+	1999 10 05	704	0.2-	0.2-	1999 10 15	704	0.1-	0.7-
1999 08 21	557	0.4-	1.0+	1999 10 05	704	0.4-	0.6-	1999 10 18	557	0.3+	0.5-
1999 08 24	557	0.1-	0.4+	1999 10 05	704	0.2-	0.1-	1999 10 18	557	0.4+	0.2+
1999 08 24	557	0.1+	0.0	1999 10 05	704	0.6-	0.0	1999 10 19	704	1.0+	0.6+
1999 08 24	557	0.1-	0.7+	1999 10 05	704	0.2-	0.0	1999 10 19	704	0.3+	1.4-
1999 08 25	557	0.4+	0.3+	1999 10 07	683	0.4-	0.6+	1999 10 19	704	0.0	1.3-
1999 08 25	557	1.1+	0.1+	1999 10 07	683	0.3-	0.6+	1999 10 19	704	0.3+	2.0-
1999 09 03	557	0.2+	0.1-	1999 10 07	683	0.6-	1.0+	1999 10 19	704	0.3+	1.3-
1999 09 03	557	0.5-	0.3+	1999 10 07	704	1.1-	0.1+				
1999 09 03	557	0.1-	0.7+	1999 10 07	704	0.7-	0.0				

1999 RA₁ = 1998 HM₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	118.28877	(2000.0)	P		Q	
<i>n</i>	0.27480943	ω	268.85921	-0.81404062	+0.57495869	
<i>a</i>	2.3430504	Ω	306.23167	-0.48407556	-0.74985816	
<i>e</i>	0.0721823	<i>i</i>	5.85041	-0.32094972	-0.32731520	
<i>P</i>	3.59	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of

1999 OCT. 26

M.P.C. 36383

1998 03 25	566	0.1+	0.3+	1999 09 05	703	0.0	0.6+	1999 09 14	704	0.2+	0.2+
1998 04 01	704	0.2+	0.3-	1999 09 05	703	0.5-	0.1-	1999 09 14	704	0.6+	0.1+
1998 04 01	704	0.2+	0.1-	1999 09 05	703	0.2-	0.5+	1999 09 14	704	0.7+	0.5-
1998 04 01	704	1.1+	0.5-	1999 09 05	703	(2.9+	0.7-)	1999 09 14	704	0.4+	0.3+
1998 04 01	704	(3.9+	3.1-)	1999 09 07	704	0.4-	0.6-	1999 09 14	704	0.3+	0.7-
1998 04 01	704	0.4-	0.9-	1999 09 07	704	0.1-	0.0	1999 09 14	703	0.4-	0.1+
1998 04 18	704	0.1-	0.2-	1999 09 07	704	0.1-	0.6-	1999 09 14	703	0.0	0.2-
1998 04 18	704	0.5-	1.5+	1999 09 07	704	0.0	0.1+	1999 09 14	703	0.1+	0.5+
1998 04 18	704	0.5-	0.0	1999 09 07	704	0.5+	0.1+	1999 09 14	703	0.0	0.3-
1998 04 18	704	0.1+	0.0	1999 09 08	704	0.2-	0.5-	1999 10 01	703	0.3+	0.7+
1998 04 18	704	(3.7-	1.7+)	1999 09 08	704	0.9+	0.3+	1999 10 01	703	(2.4-	0.3-)
1998 04 19	704	0.0	0.5+	1999 09 08	704	0.0	0.5-	1999 10 01	703	0.5-	0.2+
1998 04 19	704	0.1-	0.2+	1999 09 08	704	0.0	0.3-	1999 10 01	703	0.7+	1.1+
1998 04 19	704	1.0+	0.9+	1999 09 09	704	0.2+	0.5-	1999 10 07	703	0.3+	0.5+
1998 04 19	704	0.1+	1.2+	1999 09 09	704	0.3+	0.9-	1999 10 07	703	0.3-	0.4-
1998 04 20	704	0.3+	0.4+	1999 09 09	704	0.1+	0.1+	1999 10 07	703	1.1-	1.3-
1998 04 20	704	0.1+	0.6-	1999 09 09	704	0.4-	0.3-	1999 10 07	703	0.3-	1.0+
1998 04 20	704	0.4+	0.4-	1999 09 09	704	0.2-	0.7-				
1998 04 20	704	0.0	0.5-	1999 09 09	704	0.2-	0.3+				

1999 RH₁ = 1982 XN₁ = 1996 XF₃₂ = 1998 KP₁₃

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	286.08023		(2000.0)	P	Q
n	0.28383936	ω	341.92003	+0.46456982	-0.88468491
a	2.2930893	Ω	80.38223	+0.81724786	+0.41144815
e	0.0923019	i	2.25690	+0.34099974	+0.21918722
P	3.47	H	14.6	G 0.15	U 1

Residuals in seconds of arc

1982 12 13	381	0.4-	0.2-	1999 07 16	704	0.9-	0.1-	1999 09 09	704	0.1-	0.3+
1982 12 13	381	1.1+	0.3+	1999 09 04	126	0.1-	0.4+	1999 09 09	704	1.2+	0.9+
1982 12 14	381	0.8-	0.8+	1999 09 04	126	0.3+	0.4+	1999 09 09	704	0.2+	0.5+
1982 12 14	381	0.0	0.2-	1999 09 05	126	0.0	0.5+	1999 09 09	126	0.4+	0.2+
1996 12 04	098	0.2-	1.0+	1999 09 05	126	1.7-	1.0+	1999 09 09	126	0.9+	0.4+
1996 12 04	098	0.4-	0.3+	1999 09 05	126	0.7-	0.8-	1999 09 09	126	0.6+	0.3+
1996 12 06	098	0.4-	0.8+	1999 09 05	126	0.1-	0.0	1999 09 13	704	0.2-	0.3+
1996 12 06	098	0.6+	1.4+	1999 09 05	126	0.1+	0.1+	1999 09 13	704	0.2-	0.2+
1996 12 08	098	0.2-	0.6-	1999 09 07	699	0.1+	0.3+	1999 09 13	704	0.1+	0.0
1996 12 08	098	(2.8+	0.7+)	1999 09 07	704	0.1-	0.2-	1999 09 13	704	0.8-	0.1+
1998 04 22	704	0.3-	0.7+	1999 09 07	704	0.0	0.1-	1999 09 14	704	1.0+	0.6-
1998 04 22	704	0.3+	1.9+	1999 09 07	704	0.1+	0.4+	1999 09 14	704	0.4+	0.9-
1998 04 22	704	0.2+	1.2+	1999 09 07	699	1.4-	0.1-	1999 09 14	704	0.1-	0.8-
1998 04 22	704	0.1-	0.0	1999 09 07	704	0.1-	0.5+	1999 09 14	704	1.0-	0.3-
1998 04 22	704	0.4+	0.8-	1999 09 07	704	0.1+	0.1+	1999 09 14	704	0.5+	0.5-
1998 04 29	566	0.9+	1.0-	1999 09 07	699	0.0	0.5+	1999 09 14	704	0.4-	1.6-
1998 04 29	566	0.7+	0.6-	1999 09 07	126	0.2+	0.4+	1999 09 14	704	1.7+	0.9-
1998 04 29	566	0.6+	0.4-	1999 09 07	126	0.5+	0.6+	1999 09 30	704	0.1+	0.3-
1998 05 22	704	0.3-	0.5-	1999 09 07	126	0.5+	0.3+	1999 09 30	704	0.1+	0.4+
1998 05 22	704	0.8-	1.1+	1999 09 08	126	0.7+	0.5+	1999 09 30	704	0.0	0.3-
1998 05 22	704	(0.0	2.7+)	1999 09 08	703	0.6-	0.2+	1999 09 30	704	0.3-	0.2-
1998 05 22	704	0.3+	0.2-	1999 09 08	703	0.0	0.3+	1999 09 30	704	0.2+	0.1+
1998 05 22	704	0.0	1.3+	1999 09 08	703	0.3-	0.4+	1999 10 01	126	0.0	0.2+
1998 05 24	704	0.8+	1.4-	1999 09 08	703	0.1-	0.1-	1999 10 01	126	0.2-	0.0
1998 05 24	704	0.3+	0.5+	1999 09 08	126	0.7+	0.3+	1999 10 01	126	0.4-	0.1+
1998 05 24	704	0.3-	1.3+	1999 09 08	126	0.1-	0.3+	1999 10 07	704	1.2+	1.2-
1998 05 24	704	0.5-	0.4-	1999 09 08	126	0.2-	0.4-	1999 10 07	704	0.5-	0.1+
1998 05 24	704	0.9-	1.4+	1999 09 08	126	0.1-	0.1-	1999 10 07	704	0.6-	0.2+
1999 07 16	704	0.2-	0.1-	1999 09 09	704	0.1-	0.2-	1999 10 07	704	0.0	0.1-
1999 07 16	704	1.1-	0.7+	1999 09 09	704	0.3-	0.5-	1999 10 07	704	0.0	0.5-

1999 RP₁ = 1978 WQ₂₁ = 1989 GE₄ = 1989 GG₇ = 1997 GC₂₆
= 1998 KH₂₁

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	290.37099		(2000.0)	P	Q
n	0.23032548	ω	51.81199	+0.68868732	-0.72503002
a	2.6357733	Ω	354.64798	+0.64184893	+0.61374742
e	0.0691009	i	3.94763	+0.33725320	+0.31248292
P	4.28	H	14.0	G 0.15	U 1

Residuals in seconds of arc

1978 11 28	675	0.1+	0.6+	1998 05 24	704	0.9-	0.7+	1999 09 09	704	0.8-	0.6+
1978 11 29	675	0.2+	0.7+	1998 05 24	704	0.3+	0.5+	1999 09 09	704	0.2+	1.1-
1989 04 03	809	0.5-	0.8-	1998 05 24	704	1.7+	0.4+	1999 09 09	704	0.4-	1.2-
1989 04 03	809	1.7+	0.5-	1999 09 05	715	1.2+	1.6-	1999 09 09	704	0.6+	0.6+
1989 04 03	809	0.2+	1.3-	1999 09 05	715	1.1+	1.5-	1999 09 09	704	0.2-	0.8+
1989 04 06	809	1.9-	1.0+	1999 09 05	684	(4.3+	1.0-)	1999 09 09	704	1.0+	1.0+
1989 04 06	809	0.7-	0.7+	1999 09 05	684	(4.7+	1.2-)	1999 09 13	704	0.2-	0.3-
1989 04 06	809	0.9-	1.7+	1999 09 06	684	0.2-	0.6-	1999 09 13	704	0.1+	0.0
1997 04 09	046	0.1+	0.2-	1999 09 06	684	0.3-	0.5-	1999 09 13	704	0.5-	0.0
1997 04 09	046	0.3-	0.1-	1999 09 07	704	0.3-	0.3-	1999 09 13	704	0.4-	0.4-
1997 04 09	046	0.2+	0.2-	1999 09 07	704	0.1-	0.3+	1999 09 28	684	0.1+	0.5-
1997 04 09	046	0.1+	0.1+	1999 09 07	704	0.3-	0.0	1999 09 28	684	0.0	0.2-
1997 04 13	046	0.1-	0.2-	1999 09 07	704	0.1-	0.1-	1999 09 29	684	0.4+	0.6-
1997 04 13	046	0.1+	0.4-	1999 09 07	704	0.0	0.5+	1999 09 29	684	0.2+	0.2-
1997 04 13	046	0.1-	0.5-	1999 09 08	715	0.8-	0.9+	1999 09 29	704	0.2+	0.7-
1997 04 13	046	0.6-	0.4-	1999 09 08	715	0.1-	0.3-	1999 09 29	704	0.1-	0.4-
1997 04 13	046	0.6+	0.4-	1999 09 08	715	0.4-	0.8+	1999 09 29	704	0.9+	0.3+
1998 05 22	704	(2.3+	0.7+)	1999 09 08	715	0.1-	1.0+	1999 09 30	704	1.5+	0.1+
1998 05 22	704	0.6-	1.4+	1999 09 08	684	0.9-	0.4-	1999 09 30	704	0.6+	0.1-
1998 05 22	704	1.0+	1.6-	1999 09 08	684	0.6-	0.6-	1999 09 30	704	0.5+	0.1-
1998 05 22	704	0.5+	0.5+	1999 09 09	704	0.2-	0.3-	1999 10 04	703	0.4+	0.4+
1998 05 22	704	0.6-	0.8-	1999 09 09	704	0.6-	0.1+	1999 10 04	703	0.1+	0.5+
1998 05 24	704	1.1+	0.8-	1999 09 09	704	0.6-	0.1+	1999 10 04	703	0.4-	0.0
1998 05 24	704	0.1-	0.4-	1999 09 09	704	0.9-	0.3+	1999 10 04	703	0.5+	0.5+

1999 RR₁ = 1984 BK₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

M	96.31092		(2000.0)	P	Q
n	0.28779411	ω	287.01284	-0.55125286	+0.83344244
a	2.2720338	Ω	309.47054	-0.74518352	-0.51265557
e	0.1253430	i	2.87003	-0.37526232	-0.20629582
P	3.42	H	15.4	G 0.15	U 5

Residuals in seconds of arc

1984 01 25	675	0.0	0.0	1999 09 07	704	0.1-	0.1-	1999 09 08	704	0.1-	0.2-
1984 01 26	675	0.0	0.0	1999 09 07	704	0.3-	0.4+	1999 09 13	684	0.3+	0.4-
1999 09 05	684	0.0	0.3-	1999 09 08	704	0.2+	0.6+	1999 09 13	684	0.4+	0.1+
1999 09 05	684	0.1-	0.5-	1999 09 08	704	0.0	0.3-	1999 10 01	684	0.3-	0.3-
1999 09 06	684	0.2+	0.2-	1999 09 08	704	1.2+	0.2+	1999 10 01	684	0.4-	0.2-
1999 09 06	684	0.1+	0.2-	1999 09 08	704	0.7+	0.1-	1999 10 02	684	0.5+	0.3+
1999 09 07	704	0.1+	0.7+	1999 09 08	704	0.1-	0.1+	1999 10 02	684	0.1-	0.0
1999 09 07	704	0.8+	0.6-	1999 09 08	704	0.6-	0.3+				
1999 09 07	704	1.6-	0.3+	1999 09 08	704	0.8-	0.4+				

1999 RU₁ = 1997 AW₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	345.51216		(2000.0)	P	Q
n	0.27287522	ω	225.61020	+0.99859712	-0.05263187
a	2.3541094	Ω	137.40578	+0.05069275	+0.91858019
e	0.2214676	i	0.49136	+0.01529857	+0.39171460
P	3.61	H	16.4	G 0.15	U 5

1997 01 11	691	0.8+	0.7+	1999 09 11	120	0.4+	0.3-	1999 10 02	704	0.0	0.0
1997 01 11	691	0.6+	0.4+	1999 09 12	120	0.0	0.1-	1999 10 02	704	0.5+	0.2+
1999 09 05	120	(0.9-	2.4-)	1999 09 12	120	0.4+	0.7-	1999 10 02	704	0.8+	0.3+
1999 09 06	120	0.5-	1.4+	1999 09 12	120	(2.9+	0.6-)	1999 10 07	704	0.3+	0.2+
1999 09 06	120	0.3+	0.5-	1999 09 14	704	0.0	0.1-	1999 10 07	704	0.1-	0.3+
1999 09 06	120	1.5-	0.6+	1999 09 14	704	0.2+	0.3-	1999 10 07	704	0.0	0.5-
1999 09 06	120	1.7-	0.5+	1999 09 14	704	0.5+	0.2-	1999 10 07	704	0.2+	0.2-
1999 09 07	704	1.2+	0.3-	1999 09 14	704	0.2+	0.1-	1999 10 07	704	0.1-	0.1+
1999 09 07	704	0.0	0.9+	1999 09 14	704	0.3+	0.3-				
1999 09 07	704	0.6+	1.0+	1999 09 28	120	0.2+	1.6-				

1999 RW₁ = 1990 RJ₁₂ = 1993 FK₇₆

Id. G. V. Williams (*MPC* 36028), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	342.37031	(2000.0)		P	Q		
<i>n</i>	0.22323655	ω	5.02528	+0.97982499	-0.19981998		
<i>a</i>	2.6912819	Ω	6.50500	+0.18215558	+0.88491021		
<i>e</i>	0.2240105	<i>i</i>	1.95633	+0.08223337	+0.42072069		
<i>P</i>	4.42	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 09 15	675	0.4+	0.1-	1999 09 06	120	0.8+	0.2+	1999 09 27	848	0.1-	0.9+
1990 09 15	675	0.0	0.7-	1999 09 06	120	0.1+	0.4-	1999 09 27	848	0.6-	0.5+
1993 03 21	809	0.4+	1.2+	1999 09 07	704	0.3+	0.3-	1999 09 29	120	0.9-	0.2+
1993 03 22	809	0.8+	1.6+	1999 09 07	704	0.2+	0.1+	1999 09 29	120	1.2-	0.4+
1999 07 16	704	0.4-	0.1+	1999 09 07	704	0.1+	0.6+	1999 09 30	120	0.3-	0.3-
1999 07 16	704	0.5-	0.9-	1999 09 07	704	0.3+	0.1+	1999 09 30	120	0.7-	0.2-
1999 07 16	704	0.1+	1.1-	1999 09 07	704	0.2-	0.1+	1999 09 30	120	0.7-	0.5-
1999 07 16	704	0.3+	1.2-	1999 09 07	120	0.9+	0.3-	1999 10 02	704	0.8+	0.1+
1999 07 16	704	0.3+	0.4-	1999 09 07	120	0.4+	0.1-	1999 10 02	704	0.2+	0.7-
1999 08 22	703	0.5+	0.4+	1999 09 11	120	0.5+	0.2-	1999 10 02	704	0.3+	0.2-
1999 08 22	703	0.4-	1.0+	1999 09 11	120	0.5+	0.1-	1999 10 02	704	0.2-	0.1-
1999 08 22	703	0.2+	0.3+	1999 09 12	120	0.2+	0.1-	1999 10 02	704	0.7+	0.3-
1999 08 22	703	0.7-	0.1+	1999 09 12	120	0.3+	0.6+	1999 10 05	704	0.3-	0.0
1999 08 22	703	0.1-	0.4+	1999 09 12	120	0.5+	0.1-	1999 10 05	704	0.2-	0.0
1999 08 22	703	0.2-	0.8+	1999 09 14	704	0.3+	0.5-	1999 10 05	704	0.0	0.1-
1999 08 22	703	0.2-	0.8+	1999 09 14	704	0.4+	0.2-	1999 10 05	704	0.1-	0.2-
1999 08 22	703	0.1+	0.6+	1999 09 14	704	0.2+	0.2-	1999 10 05	704	1.1-	0.4-
1999 08 22	699	1.2-	1.0+	1999 09 14	704	0.1+	0.4-	1999 10 07	704	0.4-	0.0
1999 08 22	699	0.5-	0.4+	1999 09 14	704	0.1+	0.2-	1999 10 07	704	0.3-	0.0
1999 08 22	699	0.6-	0.1+	1999 09 14	703	0.1+	0.1-	1999 10 07	704	0.7-	0.2-
1999 09 04	699	0.7-	0.5+	1999 09 14	703	0.0	0.3+	1999 10 07	704	0.4-	0.0
1999 09 04	699	0.2+	0.3+	1999 09 14	703	0.1-	0.6-	1999 10 07	704	0.2-	0.1-
1999 09 04	699	0.3+	0.6+	1999 09 14	703	0.9+	0.4+	1999 10 15	704	0.2+	0.2+
1999 09 05	120	1.7+	1.3-	1999 09 23	848	0.2-	0.4+	1999 10 15	704	0.4-	0.0
1999 09 06	120	1.6+	0.2+	1999 09 23	848	0.3+	0.4+	1999 10 15	704	0.2-	0.2+
1999 09 06	120	0.2+	0.6-	1999 09 23	848	0.3-	0.7+	1999 10 15	704	0.2-	0.3-
1999 09 06	120	0.3-	0.8+	1999 09 27	848	0.4-	0.4+	1999 10 15	704	0.4-	0.2-

1999 RY₂ = 1997 HG₄ = 1998 MG₁₂

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	80.37099	(2000.0)		P	Q		
<i>n</i>	0.16992578	ω	72.42757	-0.31283757	+0.94980325		
<i>a</i>	3.2282206	Ω	179.32619	-0.93256061	-0.30664951		
<i>e</i>	0.1689336	<i>i</i>	12.45712	-0.18017592	-0.06196657		
<i>P</i>	5.80	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 09 18	010	0.1+	1.7+	1998 06 25	704	(0.7+	2.3-)	1999 09 14	704	(1.5+	2.3-)
1993 09 18	010	0.8-	1.9+	1998 06 25	704	0.1-	0.3-	1999 09 14	704	0.1+	0.8-
1993 09 18	010	(0.5+	2.8+)	1998 06 25	704	0.5-	0.3-	1999 09 14	704	0.2+	1.1-
1997 04 28	704	1.2-	1.1-	1999 08 12	699	0.1+	0.1-	1999 09 14	704	0.8+	0.6-
1997 04 28	704	0.2-	1.1-	1999 08 12	699	0.6+	0.9-	1999 09 14	704	1.6+	1.4-
1997 04 28	704	1.2-	1.9-	1999 08 12	699	1.0-	1.5+	1999 09 16	120	0.0	0.2-
1997 04 28	704	0.8-	1.2-	1999 09 06	120	1.0-	0.2+	1999 09 16	120	0.9+	0.8-

1997 04 28	704	(2.5-	1.4-)	1999 09 06	120	1.1-	0.7+	1999 09 29	120	0.5-	0.4-
1997 04 29	704	0.4+	1.8-	1999 09 06	691	0.6-	0.4-	1999 09 29	120	0.4+	0.2+
1997 04 29	704	1.5+	0.5-	1999 09 06	691	0.7-	0.2-	1999 10 02	704	0.6-	0.6-
1997 04 29	704	0.9+	0.7-	1999 09 06	691	0.6-	0.2-	1999 10 02	704	0.5-	0.9-
1997 04 29	704	1.0-	1.0-	1999 09 06	120	1.6+	1.1-	1999 10 02	704	0.5+	0.1-
1998 06 03	704	0.4+	0.1+	1999 09 06	120	0.4+	1.4-	1999 10 02	704	0.1-	0.6-
1998 06 03	704	1.1-	1.2+	1999 09 07	704	0.1+	0.1-	1999 10 02	704	0.5+	0.2-
1998 06 03	704	0.6-	0.3-	1999 09 07	704	0.1-	0.1+	1999 10 07	704	0.7-	0.8-
1998 06 03	704	0.2+	1.8+	1999 09 07	704	0.5+	0.0	1999 10 07	704	0.5-	0.1+
1998 06 19	704	0.6-	0.1-	1999 09 07	704	0.5+	0.6-	1999 10 07	704	0.9-	0.2-
1998 06 19	704	0.0	0.3-	1999 09 07	704	1.2+	0.1+	1999 10 07	704	1.0-	0.5-
1998 06 19	704	0.9+	1.2-	1999 09 07	120	0.0	0.2-	1999 10 07	704	0.2-	0.1-
1998 06 19	704	0.1+	1.7-	1999 09 07	120	1.0+	0.0				
1998 06 25	704	1.4+	0.6-	1999 09 08	120	1.3+	0.1+				

1999 RZ₂ = 1977 DX₅ = 1997 GK₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	306.64844	(2000.0)		P	Q		
<i>n</i>	0.20289489	ω	98.17324	+0.53353984	-0.84570279		
<i>a</i>	2.8682829	Ω	319.57551	+0.76912131	+0.49057651		
<i>e</i>	0.0795819	<i>i</i>	0.97615	+0.35183470	+0.21005114		
<i>P</i>	4.86	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5

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

1977 02 19	381	(0.07+	0.03-)	1999 09 07	704	0.8-	0.1+	1999 09 30	120	0.7+	0.2-
1977 02 19	381	(0.07+	0.03-)	1999 09 07	704	0.6-	0.3+	1999 09 30	120	0.3-	0.1-
1997 04 03	704	0.5+	0.2+	1999 09 07	704	0.3-	0.3+	1999 10 04	704	0.0	0.4-
1997 04 03	704	1.8-	0.1-	1999 09 07	704	0.7-	0.4+	1999 10 04	704	0.6-	0.5+
1997 04 05	704	0.2-	0.2+	1999 09 07	704	0.3-	0.6-	1999 10 04	704	0.6-	0.2+
1997 04 05	704	0.5+	1.5+	1999 09 08	120	1.2+	0.0	1999 10 04	704	0.3-	0.3+
1997 04 05	704	0.1-	1.1+	1999 09 08	120	1.4+	0.6+	1999 10 04	704	0.7-	0.3-
1997 04 05	704	0.4+	1.2-	1999 09 09	120	0.1-	0.2-	1999 10 06	704	0.0	0.1+
1997 04 06	704	0.5+	0.2-	1999 09 09	120	0.7+	1.0-	1999 10 06	704	0.0	0.2+
1997 04 06	704	0.6+	1.0-	1999 09 29	120	1.5+	0.1+	1999 10 06	704	0.1-	0.2+
1997 04 07	704	0.1-	0.1+	1999 09 29	120	0.9-	0.2-	1999 10 06	704	0.1-	0.3+
1997 04 07	704	0.3-	0.7-	1999 09 29	120	0.5+	0.2+	1999 10 06	704	0.0	0.3+
1999 09 06	120	0.0	0.5+	1999 09 29	120	0.3-	0.0	1999 10 07	704	(2.7+	0.8+)
1999 09 06	120	0.0	0.1-	1999 09 30	703	0.7-	0.1-	1999 10 07	704	1.8+	1.4-
1999 09 06	120	1.0+	0.6+	1999 09 30	703	0.5-	0.3+	1999 10 07	704	0.6+	0.3-
1999 09 06	120	0.7-	0.8-	1999 09 30	703	0.2+	0.1+	1999 10 07	704	0.5-	0.1+
1999 09 06	120	0.2-	0.4-	1999 09 30	703	0.2-	0.4+				

1999 RB₃ = 1984 CK = 1991 ET₃ = 1998 HL₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	162.80169		(2000.0)	P	Q
n	0.29112877	ω	197.56719	-0.98391164	+0.17838059
a	2.2546509	Ω	352.68680	-0.15313962	-0.87066268
e	0.0516985	i	4.46626	-0.09201170	-0.45839597
P	3.39	H	15.1	G 0.15	U 3

1999 OCT. 26

1999 09 06	120	0.1−	0.2+	1999 09 20	848	0.7−	0.5−	1999 10 07	703	0.9−	0.7+
1999 09 06	120	1.6+	0.9−	1999 09 20	848	0.7−	0.5−	1999 10 07	704	0.6+	0.2+
1999 09 06	120	1.4+	0.1+	1999 09 20	848	0.2−	0.5−	1999 10 07	703	0.2+	0.2+
1999 09 06	120	(4.6−	2.8−)	1999 09 29	120	0.1+	0.5−				
1999 09 06	120	0.7−	0.1−	1999 09 29	120	0.4−	0.6−				

1999 RD₃ = 1982 VW₈ = 1998 KB₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	302.81656	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28589599	<i>ω</i>	219.34484	+0.56331067 −0.82615766
<i>a</i>	2.2820790	<i>Ω</i>	196.38137	+0.76841216 +0.52917564
<i>e</i>	0.1357949	<i>i</i>	2.44376	+0.30368377 +0.19348557
<i>P</i>	3.45	<i>H</i>	14.8	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1982 11 09	095	0.5+	2.1−	1999 09 09	704	0.3+	0.5+	1999 10 04	691	0.3−	0.2−
1998 05 22	704	1.1−	0.1+	1999 09 09	704	0.1+	0.2+	1999 10 04	691	0.2−	0.1−
1998 05 22	704	0.7−	0.3−	1999 09 09	704	0.2+	0.3+	1999 10 06	704	0.3−	0.3−
1998 05 22	704	1.3−	0.9−	1999 09 09	704	0.8+	0.1−	1999 10 06	704	0.3−	0.3−
1998 05 22	704	0.9−	0.4−	1999 09 09	704	0.3+	0.0	1999 10 06	704	0.3−	0.3−
1998 05 24	704	0.2+	1.0+	1999 09 09	704	0.3−	0.2+	1999 10 06	704	0.3−	0.8−
1998 05 24	704	(0.0	2.6−)	1999 09 09	704	0.4+	0.4−	1999 10 06	704	0.3−	0.7−
1998 05 24	704	0.8+	0.2+	1999 09 09	704	0.1+	0.5−	1999 10 07	691	0.4−	0.1−
1998 05 24	704	1.0+	1.0−	1999 09 09	704	0.1+	0.3+	1999 10 07	691	0.6−	0.0
1998 05 24	704	1.3+	0.8−	1999 09 09	704	0.2+	0.2−	1999 10 07	691	0.3−	0.0
1999 09 06	120	1.8+	0.9−	1999 09 09	704	0.2−	0.2+	1999 10 07	704	0.0	0.4+
1999 09 06	120	0.3+	0.9−	1999 09 09	704	0.6−	0.1+	1999 10 07	704	0.0	0.4+
1999 09 06	120	0.4+	0.1+	1999 09 09	704	0.5+	0.1+	1999 10 07	704	0.7−	0.2+
1999 09 06	120	0.8−	0.5+	1999 09 11	120	0.6+	0.1−	1999 10 07	704	0.1+	0.1+
1999 09 07	704	0.1+	0.2−	1999 09 11	120	0.3+	0.0	1999 10 07	704	0.6−	0.2+
1999 09 07	704	0.7+	0.4+	1999 09 28	120	1.4+	0.3+	1999 10 08	691	0.5−	0.0
1999 09 07	704	0.3−	0.0	1999 09 28	120	0.1−	0.5+	1999 10 08	691	0.7−	0.1+
1999 09 07	704	1.7−	0.1+	1999 10 02	704	0.0	0.4+	1999 10 08	691	0.1−	0.1+
1999 09 07	704	0.3−	0.8−	1999 10 02	704	0.2+	0.2−	1999 10 09	691	0.5+	0.1−
1999 09 07	120	0.4−	0.2+	1999 10 02	704	0.2+	0.1−	1999 10 09	691	0.3+	0.0
1999 09 07	120	0.2+	0.4+	1999 10 02	704	0.2+	0.6+	1999 10 09	691	0.2+	0.1−
1999 09 09	704	0.2+	0.2+	1999 10 02	704	0.2+	0.5+				
1999 09 09	704	0.2−	0.3+	1999 10 04	691	0.2−	0.1−				

1999 RJ₃ = 1996 DQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	304.16340	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.18919256	<i>ω</i>	295.08939	+0.32428547 −0.94541291
<i>a</i>	3.0051537	<i>Ω</i>	135.94753	+0.88370506 +0.29064485
<i>e</i>	0.0773887	<i>i</i>	2.64986	+0.33749711 +0.14737709
<i>P</i>	5.21	<i>H</i>	14.7	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1994 10 31	691	0.0	1.3−	1996 02 17	010	2.0+	1.9+	1999 09 12	557	0.2−	0.6+
1994 10 31	691	0.6+	1.0−	1999 09 04	557	0.6−	0.5+	1999 09 13	557	0.1+	0.4+
1994 10 31	691	0.5+	1.2−	1999 09 04	557	0.3−	0.6+	1999 10 02	557	0.1−	0.5+
1996 02 16	010	0.1−	0.3+	1999 09 08	557	0.5+	0.1−	1999 10 02	557	0.1+	0.5+
1996 02 16	010	1.1−	0.6+	1999 09 08	557	0.3−	0.3+	1999 10 03	703	0.8−	0.6−
1996 02 16	010	0.2−	0.9−	1999 09 10	557	0.1−	0.3+	1999 10 03	703	0.4−	0.4−
1996 02 17	010	(3.4+	0.4+)	1999 09 10	557	0.1+	0.2+	1999 10 03	703	0.4+	0.4+
1996 02 17	010	(3.0+	1.4+)	1999 09 12	557	0.0	0.7+	1999 10 03	703	0.1+	0.6+

1999 RP₃ = 1996 VP₈ = 1998 HL₈₁

Id. M. E. Sansaturio

M.P.C. 36385

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	257.04191	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.28155767	<i>ω</i>	232.51659	+0.21755824 −0.97527298
<i>a</i>	2.3054611	<i>Ω</i>	205.00119	+0.92203051 +0.21842019
<i>e</i>	0.1445260	<i>i</i>	5.27723	+0.32020019 +0.03369326
<i>P</i>	3.50	<i>H</i>	14.9	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1996 11 06	399	(2.3+	0.9+)	1998 04 22	704	0.0	0.7−	1999 09 07	704	0.6−	0.5+
1996 11 07	399	0.9+	0.6−	1998 05 01	699	1.3+	0.6+	1999 09 07	704	0.2−	0.4−
1996 11 07	399	1.5+	1.0−	1998 05 01	699	0.2−	0.5+	1999 09 07	704	0.0	0.8−
1996 11 12	399	1.3−	0.3+	1998 05 01	699	0.0	0.7−	1999 09 07	704	0.7+	0.7−
1996 11 12	399	0.3−	1.0+	1999 07 13	704	0.4+	0.6−	1999 09 07	704	1.0+	0.7+
1996 11 15	399	0.8−	0.0	1999 07 13	704	1.1+	0.2+	1999 09 08	703	0.2−	0.3+
1996 11 15	399	(0.8−	2.3−)	1999 07 13	704	1.0+	0.1−	1999 09 08	703	0.3−	0.1+
1998 04 21	704	0.1−	0.0	1999 07 13	704	0.9−	1.8+	1999 09 08	703	0.1−	0.4+
1998 04 21	704	0.2−	0.0	1999 07 13	704	0.2+	0.6−	1999 09 08	703	0.3+	0.1−
1998 04 21	704	0.1+	0.6−	1999 09 04	703	0.7−	1.1+	1999 09 09	704	0.2−	0.1−
1998 04 21	704	0.2−	0.6+	1999 09 04	703	0.8−	0.0	1999 09 09	704	0.7+	0.6−
1998 04 21	704	1.1−	0.5+	1999 09 04	703	0.1−	0.2−	1999 09 09	704	0.5−	1.3+
1998 04 22	704	0.4+	0.4−	1999 09 04	703	0.4−	0.4−	1999 09 09	704	0.2−	1.2−
1998 04 22	704	0.6−	0.4+	1999 09 05	699	0.6+	0.2−	1999 09 09	704	0.1−	0.1+
1998 04 22	704	0.1−	0.3+	1999 09 05	699	0.2−	0.1−				
1998 04 22	704	0.6+	0.9−	1999 09 05	699	0.5−	0.4−				

1999 RS₃ = 1981 WN₂ = 1996 UY₄ = 1998 HM₃₈

Id. A. Doppler, G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	206.53653	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.26390906	<i>ω</i>	265.12826	−0.45391909 −0.88933023
<i>a</i>	2.4071317	<i>Ω</i>	212.05186	+0.85320350 −0.41593949
<i>e</i>	0.0665018	<i>i</i>	5.97262	+0.25690708 −0.18996337
<i>P</i>	3.73	<i>H</i>	14.6	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1981 11 24	033	0.4+	0.4+	1998 03 29	704	0.1−	0.9+	1998 05 16	704	1.4−	1.5−
1981 11 24	033	0.5−	0.2+	1998 04 20	704	0.8−	0.3+	1998 05 16	704	1.6+	1.7+
1996 10 19	910	0.4−	2.0+	1998 04 20	704	0.4−	1.1+	1999 09 04	703	0.4+	0.1+
1996 10 19	910	(0.1−	2.6+)	1998 04 20	704	1.0−	0.6+	1999 09 04	703	0.3+	0.6+
1996 10 19	910	(0.2−	2.8+)	1998 04 20	704	0.5−	0.3−	1999 09 04	703	0.1+	0.3+
1996 10 20	910	(2.2+	4.5+)	1998 04 21	704	0.2−	0.2−	1999 09 04	703	0.6−	0.5+
1996 10 20	910	(1.8+	4.7+)	1998 04 21	704	0.4−	0.3−	1999 09 08	703	0.6−	1.5+
1996 10 20	910	(1.5+	4.4+)	1998 04 21	704	0.6+	0.6−	1999 09 08	703	0.3+	1.0+
1998 03 25	699	1.6+	1.3+	1998 04 21	704	0.4−	1.5−	1999 09 08	703	0.2+	0.5+
1998 03 25	699	0.5+	0.8−	1998 04 21	704	1.1−	1.4−	1999 09 08	703	0.2−	0.3+
1998 03 25	699	0.7−	0.3+	1998 04 22	704	0.1+	0.0	1999 09 09	704	0.8−	0.0
1998 03 25	704	0.5+	0.5+	1998 04 22	704	0.0	1.5−	1999 09 09	704	0.1+	0.4−
1998 03 25	704	0.6+	0.2+	1998 04 22	704	0.0	1.7−	1999 09 09	704	0.2+	0.1+
1998 03 25	704	0.3+	0.3+	1998 04 22	704	0.1+	1.0−	1999 09 09	704	0.0	1.6−
1998 03 25	704	1.2+	0.7+	1998 04 22	704	0.1−	1.5−	1999 09 14	704	0.7+	0.2+
1998 03 25	704	(4.9−	2.1+)	1998 04 25	699	1.1+	1.4+	1999 09 14	704	0.2−	0.4−
1998 03 29	704	0.3+	0.8+	1998 04 25	699	0.5−	0.6+	1999 09 14	704	0.6−	0.3+
1998 03 29	704	0.8+	1.2+	1998 04 25	699	0.1+	0.1−	1999 09 14	704	0.2+	0.8−
1998 03 29	704	0.0	0.8+	1998 05 16	704	0.9+	0.1+				
1998 03 29	704	0.0	1.7+	1998 05 16	704	1.8−	1.4+				

1999 RD₄ = 1998 HV₁₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	358.65185	(2000.0)	<i>P</i>	<i>Q</i>
<i>n</i>	0.21671217	<i>ω</i>	157.28651	+0.80641148 +0.59012423
<i>a</i>	2.7450305	<i>Ω</i>	166.34448	−0.56433865 +0.78723558
<i>e</i>	0.1569811	<i>i</i>	9.29462	−0.17669865 +0.17892323
<i>P</i>	4.55	<i>H</i>	14.9	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 04 21	704	0.6−	1.5+	1999 09 04	703	0.4+	0.3+	1999 09 09	704	0.2+	0.1+
1998 04 21	704	0.0	0.7+	1999 09 06	699	0.9+	0.0	1999 09 09	704	1.0−	1.1−
1998 04 21	704	1.3+	0.4+	1999 09 06	699	1.1+	1.2+	1999 09 09	704	0.8−	0.0
1998 04 21	704	1.6+	0.9−	1999 09 06	699	0.0	0.4+	1999 09 13	704	0.0	1.5−
1998 04 21	704	1.7+	1.4−	1999 09 07	704	0.5−	0.6+	1999 09 13	704	0.1+	0.8−
1998 04 24	704	0.8−	1.0+	1999 09 07	704	0.7−	0.0	1999 09 13	704	0.4+	0.6−
1998 04 24	704	1.0−	1.3−	1999 09 07	704	0.2+	0.1+	1999 09 13	704	0.4+	0.0
1998 04 24	704	1.0−	0.9+	1999 09 07	704	0.3−	0.1−	1999 09 13	704	0.2−	0.6−
1998 04 24	704	0.1−	1.4−	1999 09 07	704	0.5+	1.0+	1999 09 30	704	0.3+	1.2+
1998 04 24	704	1.2−	0.5+	1999 09 08	703	0.2−	0.7+	1999 09 30	704	0.4−	0.4+
1999 09 04	703	0.2+	0.4+	1999 09 08	703	0.4−	0.3−	1999 09 30	704	0.4+	0.2+
1999 09 04	703	0.1+	0.3−	1999 09 08	703	0.2−	0.5+				
1999 09 04	703	0.0	0.9−	1999 09 08	703	0.7−	0.9−				

1999 RS₆ = 1997 CW₂₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	238.09891		(2000.0)	P	Q
<i>n</i>	0.26522794	ω	315.47618	−0.49251951	−0.86900012
<i>a</i>	2.3991452	Ω	163.84121	+0.83855689	−0.48847436
<i>e</i>	0.1761463	<i>i</i>	9.84283	+0.23290958	−0.07894037
<i>P</i>	3.72	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1997 02 07	327	0.3+	0.5+	1998 06 19	704	0.0	1.4+	1999 09 09	704	0.1−	0.5+
1997 02 07	327	0.3+	0.5+	1998 06 19	704	0.6−	1.0+	1999 09 09	704	0.6+	0.1+
1997 02 07	327	0.2+	0.4+	1998 06 19	704	0.4+	0.9−	1999 09 09	704	0.3−	0.3−
1997 02 07	327	0.1+	0.6+	1998 06 19	704	0.2−	0.2+	1999 09 09	704	0.1−	0.4−
1997 02 13	327	1.1−	0.2+	1998 06 19	704	(5.4−	0.1−)	1999 09 11	699	0.5+	0.0
1997 02 13	327	(2.3+	0.1−)	1999 09 03	691	0.3+	0.0	1999 09 11	699	0.1−	0.6+
1997 02 13	327	0.1+	0.5+	1999 09 03	691	0.3+	0.1−	1999 09 11	699	0.1−	0.5+
1998 05 26	704	1.2−	0.8+	1999 09 03	691	0.4+	0.2−	1999 09 14	704	0.1−	1.1+
1998 05 26	704	0.5−	0.4+	1999 09 07	704	0.6−	0.5+	1999 09 14	704	0.2−	0.3+
1998 05 26	704	0.2+	0.2+	1999 09 07	704	0.0	0.1−	1999 09 14	704	0.4−	1.2+
1998 05 26	704	0.6+	1.0−	1999 09 07	704	0.1+	0.1+	1999 09 14	704	0.2+	0.2+
1998 05 26	704	(5.3−	0.6+)	1999 09 07	704	0.1−	0.5+	1999 09 14	704	0.5+	0.8+
1998 06 03	704	0.7+	0.3+	1999 09 07	704	0.2+	1.0+	1999 10 07	704	0.4−	1.6−
1998 06 03	704	(3.8−	0.4+)	1999 09 08	691	0.4−	0.3+	1999 10 07	704	0.7+	1.1−
1998 06 03	704	1.0+	1.1−	1999 09 08	691	0.5−	0.2+	1999 10 07	704	0.0	1.4−
1998 06 03	704	(2.5−	1.4−)	1999 09 08	691	0.7−	0.4+	1999 10 07	704	0.1−	0.9−
1998 06 03	704	0.0	0.4+	1999 09 09	704	0.3+	0.5−	1999 10 07	704	0.3−	0.8−

1999 RB₉ = 1997 CB₁₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.90444		(2000.0)	P	Q
<i>n</i>	0.19501459	ω	312.09613	+0.52610068	+0.85019435
<i>a</i>	2.9450407	Ω	349.59246	−0.74454270	+0.44928921
<i>e</i>	0.0876713	<i>i</i>	6.25694	−0.41094311	+0.27442443
<i>P</i>	5.05	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 03 11	691	0.7+	0.4+	1997 02 11	691	0.7+	0.2−	1999 09 08	691	0.2+	0.0
1992 03 11	691	0.4−	0.3+	1997 02 11	691	0.7+	0.0	1999 09 08	691	0.2+	0.1+
1992 03 11	691	0.0	0.3−	1997 02 11	691	0.3+	0.1−	1999 09 08	691	0.2+	0.1+
1997 02 06	691	0.3−	0.0	1999 09 04	691	0.1+	0.1+	1999 09 17	691	0.3−	0.2−
1997 02 06	691	1.7−	0.4+	1999 09 04	691	0.3−	0.3+	1999 09 17	691	0.0	0.2−
1997 02 06	691	0.3+	0.3−	1999 09 04	691	0.1−	0.2+	1999 09 17	691	0.1−	0.0

1999 RS₁₀ = 1998 HW₁₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	287.96540		(2000.0)	P	Q
<i>n</i>	0.25791860	ω	246.22139	+0.70214829	−0.70578024
<i>a</i>	2.4442611	Ω	158.27568	+0.70996976	+0.68391792
<i>e</i>	0.0663283	<i>i</i>	14.73394	+0.05413613	+0.18474450
<i>P</i>	3.82	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1998 03 24	704	0.4−	0.2+	1999 07 13	704	0.8+	1.1+	1999 09 09	704	0.5−	0.0
1998 03 24	704	0.2−	0.0	1999 07 13	704	0.5+	0.7−	1999 09 09	704	0.2−	0.2+
1998 03 24	704	0.4−	0.6−	1999 07 13	704	1.6+	0.0	1999 09 09	704	0.0	0.1−
1998 03 24	704	0.4−	0.5−	1999 07 13	704	0.3−	0.9−	1999 09 09	704	0.2+	0.0
1998 03 24	704	0.3−	0.5−	1999 07 23	704	0.2−	0.2−	1999 09 09	704	0.8+	0.2−
1998 04 23	704	0.8+	0.7−	1999 07 23	704	0.4−	0.3−	1999 09 13	699	0.3−	0.2+
1998 04 23	704	1.1+	0.4−	1999 07 23	704	0.3−	0.5−	1999 09 13	699	0.2−	0.9+
1998 04 23	704	0.1−	0.8−	1999 08 07	699	0.1+	0.5+	1999 09 13	704	0.6−	0.8−
1998 04 23	704	0.1+	0.0	1999 08 07	699	0.7−	0.2+	1999 09 13	704	0.1+	0.0
1998 04 23	704	0.0	1.8−	1999 08 07	699	0.8−	0.4+	1999 09 13	699	0.7+	0.7+
1998 04 24	704	0.8+	0.1−	1999 09 07	704	0.0	0.0	1999 09 13	704	0.6+	0.2+
1998 04 24	704	1.8−	1.5+	1999 09 07	704	0.9+	1.1+	1999 09 13	704	0.1+	0.1−
1998 04 24	704	0.2−	0.0	1999 09 07	704	0.1−	0.2−	1999 09 13	704	0.1−	0.5+
1998 04 24	704	0.1+	0.1−	1999 09 07	704	0.1+	0.2−	1999 09 29	704	0.5+	0.4−
1998 04 24	704	0.5+	0.1−	1999 09 07	704	0.1−	0.8−	1999 09 29	704	0.0	0.2−
1998 05 16	704	0.0	0.1+	1999 09 08	704	0.7−	0.5−	1999 09 29	704	0.6+	0.3+
1998 05 16	704	0.1−	0.1+	1999 09 08	704	0.0	0.1−	1999 09 29	704	0.6+	0.6−
1998 05 16	704	0.4+	0.9+	1999 09 08	704	0.3−	0.2−	1999 09 29	704	0.1+	0.6−
1998 05 16	704	1.7+	0.1−	1999 09 08	704	0.9−	0.3−	1999 09 30	704	0.2+	0.4−
1998 05 16	704	(0.7+	2.3−)	1999 09 08	704	0.5−	0.6+	1999 09 30	704	0.5−	0.0
1998 05 28	704	0.2−	0.0	1999 09 09	704	0.1+	0.2+	1999 09 30	704	0.3−	0.6−
1998 05 28	704	0.5+	0.5+	1999 09 09	704	0.2−	0.2−	1999 10 04	703	0.0	0.0
1998 05 28	704	0.1−	0.2+	1999 09 09	704	0.0	0.2+	1999 10 04	703	0.1−	0.4+
1998 05 28	704	1.0−	0.5+	1999 09 09	704	0.3−	0.2−	1999 10 04	703	0.5+	0.1−
1998 05 28	704	1.5−	1.6+	1999 09 09	704	0.5−	0.6+	1999 10 04	703	0.3+	0.1−

1999 RY₁₀ = 1994 CE₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	300.20130		(2000.0)	P	Q
<i>n</i>	0.28112125	ω	77.62729	+0.70568813	−0.70592219
<i>a</i>	2.3078466	Ω	327.21777	+0.59873951	+0.63992282
<i>e</i>	0.1788250	<i>i</i>	6.43120	+0.37883409	+0.30359949
<i>P</i>	3.51	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1994 02 08	303	0.4−	0.3−	1999 09 07	704	0.1−	0.4−	1999 09 13	704	0.2−	0.4+
1994 02 09	303	0.4+	0.3+	1999 09 07	704	0.1−	0.5−	1999 09 13	704	0.0	0.1+
1999 07 21	699	0.1−	0.7+	1999 09 07	704	0.1+	0.6−	1999 09 13	704	0.0	0.0
1999 07 21	699	0.6+	0.1−	1999 09 07	704	0.2+	0.6−	1999 09 13	704	0.2−	0.2−
1999 07 21	699	0.2−	0.5+	1999 09 08	704	0.0	0.2−	1999 09 13	704	0.5−	0.4−
1999 08 03	691	0.0	0.2−	1999 09 08	704	0.3−	0.4−	1999 09 29	704	0.9+	0.1−
1999 08 03	691	0.0	0.2−	1999 09 08	704	0.0	0.4+	1999 09 29	704	0.2+	0.1−
1999 08 03	691	0.0	0.1+	1999 09 08	704	0.4−	0.6+	1999 09 29	704	0.1+	0.2−
1999 08 08	699	0.0	0.4+	1999 09 08	704	0.7−	0.3+	1999 09 29	704	0.7−	1.2+
1999 08 08	699	0.3−	0.0	1999 09 09	704	0.2+	0.5−	1999 09 29	704	0.4−	0.1+
1999 08 08	699	0.3+	0.0	1999 09 09	704	0.5+	0.4−	1999 09 29	699	0.2+	0.2+
1999 08 22	703	0.0	0.0	1999 09 09	704	0.3−	0.1−	1999 09 29	699	0.1−	0.3+
1999 08 22	703	0.3−	0.1+	1999 09 09	704	0.0	0.0	1999 09 29	699	0.0	0.6+
1999 08 22	703	0.2−	0.1−	1999 09 09	704	0.2−	0.4+	1999 09 30	704	0.4+	0.7−
1999 08 22	703	0.3+	0.1−	1999 09 09	704	0.5+	0.4−	1999 09 30	704	0.3+	0.1+
1999 09 03	699	0.7+	0.4+	1999 09 09	704	0.2−	0.1−	1999 09 30	704	0.2+	0.4−
1999 09 03	699	0.0	0.2+	1999 09 09	704	0.0	0.2−	1999 09 30	704	0.1+	0.8+
1999 09 03	699	(2.2+	0.8+)	1999 09 09	704	0.3+	0.2−	1999 09 30	704	0.6−	0.3+
1999 09 07	704	0.2+	0.3−	1999 09 09	704	0.3−	0.2−				

1999 OCT. 26

M.P.C. 36387

1999 RO₁₁ = 1980 FH₈ = 1992 SG₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	308.13914		(2000.0)	P		Q	
<i>n</i>	0.27969165	ω	56.28470	+0.79836129		-0.60139257	
<i>a</i>	2.3157040	Ω	340.62812	+0.51725218		+0.71102703	
<i>e</i>	0.1873338	<i>i</i>	5.32108	+0.30833330		+0.36437280	
<i>P</i>	3.52	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1980 03 23	809	0.0	0.3-	1999 09 07	704	0.0	0.3-	1999 09 30	704	0.2-	0.0
1992 09 22	809	1.1+	0.8-	1999 09 07	704	0.3-	0.5+	1999 09 30	704	0.6-	0.2+
1992 09 22	809	0.2-	1.1-	1999 09 07	704	0.1-	0.5-	1999 09 30	704	0.2-	0.2-
1992 09 22	809	0.0	0.2-	1999 09 08	704	0.1+	1.5+	1999 09 30	704	0.7-	0.9+
1992 09 23	809	0.6+	0.9+	1999 09 08	704	0.3+	0.2+	1999 09 30	704	0.2+	0.0
1992 09 23	809	0.8-	0.7+	1999 09 08	704	1.0+	0.3-	1999 09 30	704	1.0-	0.4-
1992 09 23	809	0.3-	0.7-	1999 09 09	704	0.1-	0.2-	1999 09 30	704	0.0	0.0
1998 04 21	704	(3.6-	1.2+)	1999 09 09	704	0.2-	0.0	1999 09 30	704	0.6-	0.1+
1998 04 21	704	0.4+	0.8+	1999 09 09	704	0.1-	1.2-	1999 09 30	704	0.6+	0.5-
1998 04 21	704	0.5+	0.5-	1999 09 09	704	0.1+	0.8-	1999 09 30	704	0.8-	0.4+
1998 04 21	704	1.1-	0.1+	1999 09 09	704	0.4+	0.0	1999 09 30	704	1.0-	0.6-
1999 09 03	691	0.5+	0.4+	1999 09 29	704	1.1+	0.3+	1999 10 04	703	0.4-	0.5+
1999 09 03	691	0.4+	0.6+	1999 09 29	704	0.7+	0.1+	1999 10 04	703	1.2-	0.2+
1999 09 03	691	0.4+	0.5+	1999 09 29	704	0.4-	0.1-	1999 10 04	703	1.0+	0.2+
1999 09 07	704	0.6+	0.1+	1999 09 30	704	0.0	0.1-	1999 10 04	703	0.4-	0.5+
1999 09 07	704	0.3+	0.3-	1999 09 30	704	0.3-	0.3-				

1999 RR₁₁ = 1991 EN₄

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	48.05831		(2000.0)	P		Q	
<i>n</i>	0.26754334	ω	70.26828	-0.26945943		+0.96294916	
<i>a</i>	2.3852832	Ω	184.14657	-0.93061270		-0.26330932	
<i>e</i>	0.2406296	<i>i</i>	8.73348	-0.24769260		-0.05828486	
<i>P</i>	3.68	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 03 12	809	0.3+	0.8-	1991 03 17	809	0.2-	0.1+	1999 09 09	704	0.1-	0.3+
1991 03 12	809	0.7+	0.6-	1999 09 07	704	0.2+	0.3-	1999 09 09	704	0.4+	0.0
1991 03 12	809	1.1+	0.3-	1999 09 07	704	0.3-	0.5+	1999 09 09	704	0.3+	0.9+
1991 03 14	809	0.3-	1.0+	1999 09 07	704	0.3+	0.5+	1999 09 09	704	0.7-	0.7+
1991 03 14	809	0.1+	0.9+	1999 09 07	704	0.4-	0.3-	1999 09 09	704	0.1+	0.2-
1991 03 14	809	0.7+	0.5+	1999 09 07	704	0.2+	0.1-	1999 09 14	704	0.4-	0.4-
1991 03 15	809	0.5-	0.2-	1999 09 08	704	0.2+	0.1+	1999 09 14	704	0.1-	0.2+
1991 03 15	809	0.4-	0.3-	1999 09 08	704	0.2+	0.2-	1999 09 14	704	0.6+	0.0
1991 03 15	809	0.2-	0.4-	1999 09 08	704	0.5+	0.2-	1999 09 14	704	0.1-	0.2+
1991 03 17	809	0.9-	0.0	1999 09 08	704	0.0	0.6-	1999 09 14	704	0.8-	0.4-
1991 03 17	809	0.5-	0.0	1999 09 08	704	0.2-	0.5-				

1999 RT₁₁ = 1988 VD₁₄ = 1998 KM₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	273.12755		(2000.0)	P		Q	
<i>n</i>	0.25843277	ω	117.67560	+0.40367785		-0.91391899	
<i>a</i>	2.4410181	Ω	308.45243	+0.81918820		+0.38168690	
<i>e</i>	0.0881857	<i>i</i>	3.10235	+0.40740015		+0.13808402	
<i>P</i>	3.81	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1988 11 04	327	1.3-	0.1-	1999 08 22	703	0.4+	0.2+	1999 09 09	704	0.0	0.1+
1988 11 04	327	1.1+	0.6+	1999 08 22	703	0.3-	0.6-	1999 09 09	704	0.3-	0.0
1998 05 22	704	0.7-	0.5+	1999 08 22	703	0.1+	0.2-	1999 09 09	704	0.5-	0.3-
1998 05 22	704	0.9+	1.0+	1999 08 22	699	0.1+	0.4+	1999 09 09	704	0.8-	0.0
1998 05 22	704	0.1-	1.0+	1999 09 07	704	0.3+	0.0	1999 09 13	704	0.2+	0.0
1998 05 22	704	0.7+	0.5+	1999 09 07	704	0.3+	0.7-	1999 09 13	704	0.3+	0.1+
1998 05 22	704	0.3+	0.4+	1999 09 07	704	0.3+	0.5-	1999 09 13	704	0.1+	0.4+
1998 05 24	704	0.3-	0.2+	1999 09 07	704	0.4+	0.3-	1999 09 13	704	0.7+	0.1+

1998 05 24	704	0.2-	0.6-	1999 09 07	704	0.1+	0.6-	1999 09 13	704	0.3+	0.4+
1998 05 24	704	1.8+	1.0-	1999 09 08	704	0.0	0.4-	1999 09 29	704	1.2+	0.7+
1998 05 24	704	1.0-	0.9-	1999 09 08	704	0.1-	0.2-	1999 09 29	704	0.3+	0.3-
1998 05 24	704	1.4-	0.9-	1999 09 08	704	0.2+	0.3-	1999 09 29	704	0.2-	0.1+
1999 08 22	699	0.6+	0.7+	1999 09 08	704	0.1-	0.6-	1999 09 29	704	0.4-	0.3-
1999 08 22	703	0.3-	0.5+	1999 09 09	704	0.2+	0.2+	1999 09 29	704	0.6-	1.3-
1999 08 22	703	0.2-	0.5+	1999 09 09	704	0.4+	0.1-	1999 09 30	704	0.5+	0.2+
1999 08 22	703	0.1-	0.5+	1999 09 09	704	0.3+	0.0	1999 09 30	704	0.3-	0.1-
1999 08 22	703	0.3-	0.0	1999 09 09	704	0.2-	0.1-	1999 09 30	704	0.4-	0.2+
1999 08 22	699	0.6-	0.2+	1999 09 09	704	0.1-	0.1+	1999 09 30	704	0.3-	0.6+
1999 08 22	703	0.0	0.6+	1999 09 09	704	0.4-	0.0	1999 09 30	704	0.9-	0.1+

1999 RU₁₂ = 1998 MW₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.82551		(2000.0)	P		Q	
<i>n</i>	0.08438148	ω	339.69248	+0.34824676		+0.92712311	
<i>a</i>	5.1479930	Ω	310.41860	-0.83299467		+0.23832823	
<i>e</i>	0.1846384	<i>i</i>	10.47732	-0.42993497		+0.28920996	
<i>P</i>	11.68	<i>H</i>	11.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 06 26	704	0.4-	0.6-	1999 09 07	704	0.1+	0.1-	1999 09 14	704	0.4-	0.2+
1998 06 26	704	0.5-	0.2-	1999 09 07	704	0.1+	0.5+	1999 09 14	704	0.3-	0.3-
1998 06 26	704	1.7-	0.1+	1999 09 07	704	0.1-	0.4-	1999 09 14	704	0.7-	0.4-
1998 06 26	704	0.9+	0.3+	1999 09 07	704	0.4-	0.7-	1999 09 14	704	0.8-	0.5+
1998 06 28	809	0.1+	0.7-	1999 09 08	704	0.7+	0.2-	1999 09 14	704	0.6-	0.2+
1998 06 28	809	1.0-	1.2-	1999 09 08	704	0.7+	0.1+	1999 10 02	703	1.2-	0.0
1998 06 28	809	0.6-	0.9-	1999 09 08	704	0.1-	1.0+	1999 10 02	703	0.7+	0.7-
1998 07 01	809	0.9+	0.9+	1999 09 09	704	1.2+	0.7+	1999 10 02	703	0.3-	0.0
1998 07 01	809	1.1+	1.3+	1999 09 09	704	0.2-	0.3-	1999 10 02	703	1.0+	0.1-
1998 07 01	809	1.1+	1.0+	1999 09 09	704	0.3+	0.6-				
1999 09 07	704	0.3-	0.6+	1999 09 09	704	0.4+	0.0				

1999 RA₁₃ = 1986 UN₄ = 1994 NN₁₂ = 1997 AB₈ = 1998 KC₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	9.63246		(2000.0)	P		Q	
<i>n</i>	0.21691193	ω	20.41262	+0.79864088		+0.59832056	
<i>a</i>	2.7433450	Ω	302.67064	-0.56226222		+0.70351202	
<i>e</i>	0.0916758	<i>i</i>	4.40767	-0.21455520		+0.38351447	
<i>P</i>	4.54	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1986 10 31	675	(2.1-	3.3+)	1998 04 21	704	1.0+	1.7+	1999 09 07	704	0.3+	0.4+
1986 10 31	675	0.8-	2.3+	1998 05 01	704	0.1+	0.0	1999 09 08	704	0.6-	0.2-
1986 11 05	675(22.5+	1.1-	-)	1998 05 01	704	0.1+	0.5+	1999 09 08	704	0.1+	0.3-
1986 11 05	675(20.7+	0.2+	-)	1998 05 01	704	0.3-	0.6-	1999 09 08	704	0.3-	0.3-
1994 07 08	809	0.8-	0.1-	1998 05 01	704	0.2-	0.2+	1999 09 08	704	0.5-	0.2-
1994 07 08	809	0.1-	0.0	1998 05 22	704	1.4-	0.4-	1999 09 09	704	0.1+	0.3-
1994 07 08	809	0.6+	0.0	1998 05 22	704	0.4-	1.7+	1999 09 09	704	0.6-	0.5-
1994 07 09	809	0.2-	1.0-	1998 05 22	704	0.3-	0.6+	1999 09 09	704	1.0-	0.8-
1994 07 09	809	0.7+	1.0-	1998 05 22	704	0.4+	0.5-	1999 09 09	704	0.8-	0.9-
1994 07 09	809	1.2+	1.3-	1998 05 22	704	0.5+	1.5+	1999 09 09	704	0.1-	1.3-
1997 01 02	691	0.2-	0.1-	1998 05 24	704	1.3+	0.2-	1999 09 14	704	0.0	0.2-
1997 01 02	691	0.3-	0.1-	1998 05 24	704	(1.4+	2.3+)	1999 09 14	704	0.1-	0.5-
1997 01 02	691	0.2+	0.1-	1998 05 24	704	0.8-	0.0	1999 09 14	704	0.3+	0.2+
1997 01 10	691	0.2+	0.4-	1999 09 05	699	1.2+	1.4+	1999 09 14	704	0.1-	0.2-
1997 01 10	691	0.0	0.2-	1999 09 05	699	0.0	0.8+	1999 09 14	704	0.0	0.0
1997 01 10	691	0.3+	0.2-	1999 09 05	699	0.6+	1.1+	1999 10 02	703	1.0-	0.5+
1998 04 21	704	1.0-	0.5-	1999 09 07	704	0.3-	0.6+	1999 10 02	703	0.2-	0.4+
1998 04 21	704	0.5+	0.2-	1999 09 07	704	0.2+	0.5+	1999 10 02	703	0.2+	0.0
1998 04 21	704	2.0+	0.8+	1999 09 07	704	0.3-	0.3+	1999 10 02	703	1.6+	1.6+
1998 04 21	704	0.4-	1.5+	1999 09 07	704	0.1-	0.7+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	308.40113		(2000.0)	P	Q
<i>n</i>	0.26792818	ω	266.87910	+0.71827182	-0.69491488
<i>a</i>	2.3829986	Ω	137.13757	+0.65672062	+0.66084228
<i>e</i>	0.1938512	<i>i</i>	2.89322	+0.22979037	+0.28351504
<i>P</i>	3.68	<i>H</i>	16.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 01 14	566	0.3+	0.3-	1999 09 08	704	0.2-	0.0	1999 09 09	704	0.0	0.5-
1997 01 14	566	0.1-	0.2-	1999 09 08	704	0.3-	0.6-	1999 09 09	704	0.0	0.4-
1997 01 14	566	0.1-	0.3-	1999 09 08	704	0.6-	0.5-	1999 09 09	704	0.0	0.3-
1997 02 09	691	0.1-	0.4+	1999 09 08	704	0.5-	0.3+	1999 09 09	704	0.1+	0.5-
1997 02 09	691	0.7-	0.2+	1999 09 08	704	0.5-	0.0	1999 09 09	704	0.5-	0.0
1997 02 09	691	0.7-	0.1+	1999 09 09	704	0.5-	0.9+	1999 09 09	704	0.9+	1.8-
1997 02 14	691	0.6+	0.1-	1999 09 09	704	0.0	0.5+	1999 09 13	704	0.1+	0.6-
1997 02 14	691	0.4+	0.1+	1999 09 09	704	0.1-	1.7+	1999 09 13	704	0.5+	1.5-
1997 02 14	691	0.4+	0.0	1999 09 09	704	1.4+	0.9+	1999 09 13	704	0.2-	0.4-
1999 09 07	704	0.1-	0.3-	1999 09 09	704	0.2-	0.5-	1999 10 04	703	0.5-	0.3-
1999 09 07	704	0.1+	0.8+	1999 09 09	704	0.3-	0.3+	1999 10 04	703	0.2+	0.0
1999 09 07	704	0.0	0.0	1999 09 09	704	0.1-	0.1-	1999 10 04	703	1.1+	0.5+
1999 09 07	704	0.2+	0.4+	1999 09 09	704	0.0	0.1-	1999 10 04	703	0.8-	1.4+
1999 09 07	704	0.0	0.3+	1999 09 09	704	0.8+	0.4+				

1999 RO₁₄ = 1998 HM₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	217.15859		(2000.0)	P	Q
<i>n</i>	0.25917373	ω	301.15179	-0.50821229	-0.86123142
<i>a</i>	2.4363634	Ω	179.39113	+0.81469101	-0.48106548
<i>e</i>	0.0249249	<i>i</i>	4.54589	+0.27928271	-0.16387935
<i>P</i>	3.80	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 25	699	0.3-	0.8-	1999 09 08	704	0.6-	0.1-	1999 09 14	704	0.0	0.6-
1998 04 25	699	1.1+	0.4-	1999 09 09	704	0.0	0.5-	1999 09 14	704	0.2-	0.2-
1998 04 25	699	0.7-	0.1-	1999 09 09	704	0.4-	0.2+	1999 09 14	704	0.1-	0.1-
1998 05 01	699	0.4-	0.5+	1999 09 09	704	0.0	0.2+	1999 09 14	704	0.2-	0.4-
1998 05 01	699	0.5+	0.2+	1999 09 09	704	0.7+	0.4+	1999 09 14	704	0.4-	0.1-
1998 05 01	699	0.1-	0.6+	1999 09 09	704	0.1-	0.1+	1999 09 30	699	0.5+	1.8+
1999 08 22	699	1.1+	0.8-	1999 09 09	704	0.1-	0.1-	1999 09 30	699	0.9+	0.3+
1999 08 22	699	0.1+	0.5+	1999 09 09	704	0.3-	0.8+	1999 09 30	699	0.5-	1.5+
1999 08 22	699	0.1-	0.0	1999 09 09	704	0.5-	0.4+	1999 10 01	704	0.5+	0.5+
1999 09 07	704	0.3+	0.0	1999 09 09	704	0.2-	0.8+	1999 10 01	704	0.8+	0.1-
1999 09 07	704	0.0	0.1+	1999 09 11	678	0.4-	1.4+	1999 10 01	704	0.5+	0.5-
1999 09 07	704	0.4+	0.6-	1999 09 11	678	0.1+	0.5+	1999 10 01	704	0.3+	1.2-
1999 09 07	704	0.2+	0.4-	1999 09 11	678	1.1-	0.5-	1999 10 01	704	0.1+	0.7-
1999 09 07	704	0.1+	0.3-	1999 09 13	678	1.3+	1.3-	1999 10 01	704	0.0	0.7-
1999 09 08	704	0.0	0.0	1999 09 13	678	0.2+	0.6-	1999 10 01	704	0.7-	0.3+
1999 09 08	704	0.5+	0.1+	1999 09 13	678	1.6-	0.7+	1999 10 01	704	0.9-	0.7-

1999 RQ₁₄ = 1994 CC₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.88088		(2000.0)	P	Q
<i>n</i>	0.28060186	ω	39.33982	+0.99255743	-0.11658108
<i>a</i>	2.3106936	Ω	327.30380	+0.08867833	+0.89000923
<i>e</i>	0.1209261	<i>i</i>	3.73554	+0.08346197	+0.44078614
<i>P</i>	3.51	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1994 02 11	691	0.3-	0.0	1999 09 07	704	0.1+	0.0	1999 09 30	699	0.1+	0.5+
1994 02 11	691	0.3-	0.1+	1999 09 08	704	0.6-	0.1+	1999 09 30	699	0.1-	0.2-
1994 02 11	691	0.3-	0.1-	1999 09 08	704	0.2+	0.4-	1999 09 30	699	0.1-	0.3-
1994 02 14	675	1.9+	1.3-	1999 09 08	704	0.2+	0.2-	1999 10 01	704	0.9+	0.4+
1994 02 14	675	1.5+	1.0-	1999 09 09	704	0.0	0.1-	1999 10 01	704	0.5+	0.8+
1994 02 16	691	0.2-	0.4+	1999 09 09	704	0.3-	0.2+	1999 10 01	704	0.5-	0.7-
1994 02 16	691	0.5-	0.4+	1999 09 09	704	0.3+	0.1+	1999 10 01	704	0.1-	0.0

1994 02 16	691	0.5-	0.1+	1999 09 09	704	0.8+	0.5-	1999 10 01	704	0.7-	0.8-
1994 02 19	691	0.7-	0.3+	1999 09 09	704	0.9+	0.5-	1999 10 01	704	0.7-	0.4-
1994 02 19	691	0.4-	0.8+	1999 09 09	704	0.3-	0.4-	1999 10 01	704	1.6-	0.0
1994 02 19	691	0.0	0.8+	1999 09 09	704	0.4-	0.2+	1999 10 06	704	0.9+	0.3+
1999 08 22	699	0.6+	1.0+	1999 09 09	704	0.3-	0.7+	1999 10 06	704	0.3+	0.0
1999 08 22	699	0.0	1.1+	1999 09 09	704	0.2-	0.3+	1999 10 06	704	0.5+	0.1+
1999 08 22	699	0.6-	0.5-	1999 09 09	704	0.2-	0.5+	1999 10 06	704	0.0	0.0
1999 09 07	704	0.0	0.2-	1999 09 14	704	0.3-	0.7-	1999 10 06	704	0.9-	0.1-
1999 09 07	704	0.6+	0.1-	1999 09 14	704	0.2-	0.1-	1999 10 07	704	0.7+	1.3+
1999 09 07	704	0.2+	0.1+	1999 09 14	704	0.2-	0.3-	1999 10 07	704	0.6+	0.7-
1999 09 07	704	0.3-	0.4-	1999 09 14	704	0.1+	0.1+	1999 10 07	704	(0.9+	2.2-)

1999 RJ₁₅ = 1998 HZ₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	6.41330		(2000.0)	P	Q
<i>n</i>	0.23328588	ω	305.76323	+0.82396108	+0.56612300
<i>a</i>	2.6134273	Ω	19.79206	-0.49391355	+0.73859859
<i>e</i>	0.1142002	<i>i</i>	4.12371	-0.27773646	+0.36602852
<i>P</i>	4.22	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1991 11 08	691	0.3-	0.2-	1999 09 07	704	0.4-	0.3+	1999 09 09	704	0.5-	0.5-
1991 11 08	691	0.2+	0.3+	1999 09 07	704	0.2-	0.6+	1999 09 09	704	0.8+	0.5+
1991 11 08	691	0.2-	0.7+	1999 09 07	704	0.3+	0.8+	1999 09 09	704	0.7+	0.8+
1998 04 21	704	0.2+	1.0+	1999 09 08	704	0.3+	0.5-	1999 09 09	704	1.5+	0.3-
1998 04 21	704	1.5+	0.4-	1999 09 08	704	1.0-	0.7+	1999 09 13	704	0.4-	0.2+
1998 04 21	704	0.3+	1.4-	1999 09 08	704	0.3+	0.2-	1999 09 13	704	0.2+	0.2-
1998 04 21	704	1.1-	1.9+	1999 09 08	704	0.6-	0.6-	1999 09 13	704	0.1-	0.4-
1998 04 22	704	0.5+	1.0-	1999 09 08	704	0.2+	0.1+	1999 09 13	704	0.1-	0.1-
1998 04 22	704	1.4-	0.5-	1999 09 09	704	0.3+	0.4+	1999 09 13	704	0.0	0.2-
1998 04 22	704	1.0+	0.0	1999 09 09	704	0.1+	0.2-	1999 09 30	704	0.4-	1.0-
1998 04 22	704	0.1-	0.5+	1999 09 09	704	0.0	0.0	1999 09 30	704	0.1-	0.7+
1998 04 22	704	0.3-	1.0+	1999 09 09	704	0.5-	0.8-	1999 09 30	704	0.2-	0.1+
1999 09 07	704	0.3+	0.5+	1999 09 09	704	0.3-	0.4-				
1999 09 07	704	0.1+	0.1-	1999 09 09	704	0.6-	0.0				

1999 RK₁₅ = 1998 HE₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.76608		(2000.0)	P	Q
<i>n</i>	0.22884577	ω	324.90404	+0.86903125	+0.49462972
<i>a</i>	2.6471230	Ω	5.48631	-0.42281785	+0.75426725
<i>e</i>	0.1693818	<i>i</i>	6.74576	-0.25692364	+0.43176655
<i>P</i>	4.31	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 20	704	1.0+	1.2+	1999 09 07	704	0.2-	0.0	1999 09 13	704	0.6-	0.4+
1998 04 20	704	0.5-	1.6+	1999 09 07	704	0.5-	0.2+	1999 09 13	704	0.5-	0.1-
1998 04 20	704	1.6-	1.1-	1999 09 07	704	0.1-	0.3+	1999 09 13	704	0.6-	0.3-
1998 04 20	704	1.4+	0.6-	1999 09 08	704	0.2-	0.2+	1999 09 30	704	0.3+	0.0
1998 04 21	704	1.0+	1.3-	1999 09 08	704	0.1+	0.1-	1999 09 30	704	0.6-	0.4-
1998 04 21	704	0.7+	0.7-	1999 09 08	704	0.6+	0.6-	1999 09 30	704	0.3-	0.5+
1998 04 21	704	0.5-	0.1-	1999 09 08	704	0.3+	0.8-	1999 09 30	704	0.0	0.8-
1998 04 21	704	1.1+	0.1+	1999 09 09	704	0.2+	0.3-	1999 10 01	704	1.5+	0.3-
1998 04 21	704	0.8+	0.1+	1999 09 09	704	0.9+	0.3-	1999 10 01	704	1.8+	0.3-
1998 04 22	704	0.2-	0.9+	1999 09 09	704	0.3+	0.0	1999 10 01	704	0.4-	0.9-
1998 04 22	704	0.7-	1.0+	1999 09 09	704	0.5+	1.1-	1999 10 01	704	0.2-	1.2-
1998 04 22	704	1.6-	0.4-	1999 09 09	704	0.7+	0.5-	1999 10 01	704	0.4-	0.9-
1998 04 22	704	0.8+	0.3-	1999 09 09	704	0.4-	0.2+	1999 10 01	704	0.8-	0.9-
1998 04 22	704	1.8-	0.4-	1999 09 09	704	0.7-	0.3+	1999 10 01	704	0.4-	0.1-
1999 08 12	699	0.1-	0.5+	1999 09 09	704	0.1+	0.6+	1999 10 04	703	0.4+	1.2+
1999 08 12	699	0.6+	0.0	1999 09 09	704	0.3-	0.9+	1999 10 04	703	0.1+	1.3+
1999 08 12	699	0.4+	0.2-	1999 09 09	704	0.2-	0.7+	1999 10 04	703	0.7+	0.1+
1999 09 07	704	0.0	0.2+	1999 09 13	704	0.4-	0.1+	1999 10 04	703	0.2-	2.0+
1999 09 07	704	0.3-	0.1+	1999 09 13	704	0.8-	0.5+				

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1999 RL₁₅ = 1996 VZ₂₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	112.95156	(2000.0)	P		Q	
<i>n</i>	0.26906634	ω	75.91944	−0.82866945	+0.55389532	
<i>a</i>	2.3762737	Ω	137.63413	−0.54856517	−0.77499994	
<i>e</i>	0.0813443	<i>i</i>	6.87514	−0.11127980	−0.30426150	
<i>P</i>	3.66	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1994 01 12	691	0.5+	0.8+	1998 04 20	704	0.4+	0.1−	1999 09 09	704	0.4+	1.5+
1994 01 12	691	0.3+	0.6+	1998 04 20	704	0.7+	0.1+	1999 09 09	704	0.0	0.3+
1994 01 12	691	0.5−	0.7+	1998 04 20	704	0.0	0.6+	1999 09 09	704	0.0	0.4+
1996 11 03	691	0.0	0.2+	1998 04 20	704	0.9+	0.1+	1999 09 09	704	0.2+	1.2−
1996 11 03	691	0.1−	0.3−	1998 04 20	704	1.4−	0.6−	1999 09 09	704	0.3−	0.5+
1996 11 03	691	0.2−	0.3−	1999 09 07	704	0.2−	0.4+	1999 09 09	704	0.7−	0.4+
1996 11 11	691	0.0	0.2+	1999 09 07	704	0.1+	0.9+	1999 09 09	704	0.2+	0.3−
1996 11 11	691	0.0	0.2+	1999 09 07	704	0.6−	0.1+	1999 09 09	704	1.0+	0.2−
1996 11 11	691	0.0	0.3+	1999 09 07	704	0.4−	1.0+	1999 09 09	704	0.8−	0.3−
1996 11 19	691	0.1+	0.4−	1999 09 07	704	0.2+	0.5+	1999 09 13	704	0.8−	0.6+
1996 11 19	691	0.3+	0.1+	1999 09 08	704	0.0	0.0	1999 09 13	704	0.2+	0.8+
1996 11 19	691	0.2+	0.1+	1999 09 08	704	0.1−	0.4−	1999 09 13	704	0.0	0.0
1998 03 26	566	0.0	0.7+	1999 09 08	704	0.5+	0.0	1999 09 13	704	0.0	0.0
1998 03 26	566	0.2+	0.7+	1999 09 08	704	0.1+	1.3−	1999 09 13	704	0.1−	0.0
1998 03 26	566	0.1−	0.7+	1999 09 08	704	0.2−	0.1−				

1999 RV₁₆ = 1977 XO₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.06454	(2000.0)	P		Q	
<i>n</i>	0.26435323	ω	154.69748	+0.96555741	−0.25936366	
<i>a</i>	2.4044346	Ω	220.35261	+0.23294895	+0.89719650	
<i>e</i>	0.1852555	<i>i</i>	1.83392	+0.11590370	+0.35744782	
<i>P</i>	3.73	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1977 12 07	675	0.1+	0.1+	1999 09 09	704	0.6−	0.7−	1999 09 14	703	0.5−	0.4+
1977 12 08	675	0.1−	0.1−	1999 09 09	704	0.3−	0.4−	1999 09 30	699	0.7+	0.9+
1999 09 07	704	0.0	0.4+	1999 09 10	704	0.0	0.0	1999 09 30	699	0.5+	0.1−
1999 09 07	704	0.2+	0.0	1999 09 10	704	0.3+	0.0	1999 09 30	699	0.2−	0.1−
1999 09 07	704	0.2−	0.2−	1999 09 10	704	0.2+	0.1−	1999 10 02	704	0.3−	0.2+
1999 09 07	704	0.0	0.7−	1999 09 10	704	0.1+	0.1+	1999 10 02	704	1.2−	0.4−
1999 09 07	704	0.1−	0.2−	1999 09 10	704	0.1−	0.2−	1999 10 02	704	0.5−	0.2−
1999 09 08	704	0.0	0.1−	1999 09 10	704	0.1−	0.2−	1999 10 02	704	0.1+	0.4−
1999 09 08	704	0.1−	0.3−	1999 09 11	699	0.3+	1.0+	1999 10 02	704	0.3−	0.6−
1999 09 08	704	0.1+	0.4+	1999 09 11	699	0.3+	0.4+	1999 10 06	704	0.6+	0.0
1999 09 08	704	0.1+	0.6+	1999 09 11	699	0.7+	0.7+	1999 10 06	704	0.7+	0.1+
1999 09 09	704	0.2+	0.1−	1999 09 14	704	0.2−	0.7−	1999 10 06	704	0.3+	0.2−
1999 09 09	704	0.0	0.1−	1999 09 14	704	0.9+	0.1−	1999 10 06	704	0.4+	0.1−
1999 09 09	704	0.4+	0.2+	1999 09 14	704	0.4+	0.4−	1999 10 06	704	0.0	0.1−
1999 09 09	704	0.1+	0.5+	1999 09 14	704	0.0	0.7−	1999 10 07	704	0.3+	0.7−
1999 09 09	704	0.3+	0.3+	1999 09 14	704	0.1+	0.7−	1999 10 07	704	0.2−	0.1−
1999 09 09	704	0.4−	0.3+	1999 09 14	703	0.1−	0.1−	1999 10 07	704	0.3−	0.6+
1999 09 09	704	0.4−	0.1+	1999 09 14	703	0.4−	0.4+	1999 10 07	704	0.7−	1.2+
1999 09 09	704	0.9−	0.1−	1999 09 14	703	0.6−	0.4+				

1999 RE₁₇ = 1978 WX₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.28043	(2000.0)	P		Q	
<i>n</i>	0.27709783	ω	172.87230	+0.79314172	−0.60715737	
<i>a</i>	2.3301326	Ω	224.62859	+0.55536763	+0.75324036	
<i>e</i>	0.1510773	<i>i</i>	3.90264	+0.24998601	+0.25296027	
<i>P</i>	3.56	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i> 6

Residuals in seconds of arc

1978 11 29	675	0.9−	0.2−	1999 09 09	704	0.5+	0.1+	1999 10 02	704	0.5+	0.2+
1978 11 30	675	0.9+	0.2+	1999 09 09	704	0.6+	0.2+	1999 10 02	704	1.6+	0.3+
1999 09 04	703	0.9−	1.8+	1999 09 09	704	0.3+	0.0	1999 10 02	704	1.0+	0.3+
1999 09 04	703	0.4−	0.9−	1999 09 09	704	0.1+	0.3−	1999 10 02	704	0.4+	1.3−
1999 09 04	703	0.8−	0.4−	1999 09 10	704	0.0	0.5−	1999 10 07	703	0.8−	0.6+
1999 09 04	703	1.2−	0.3−	1999 09 10	704	0.1+	0.3−	1999 10 07	703	0.1−	0.2+
1999 09 07	704	0.9+	0.5+	1999 09 10	704	0.4−	0.6−	1999 10 07	703	0.5−	0.4+
1999 09 07	704	0.4+	0.2−	1999 09 14	704	0.7−	0.1+	1999 10 07	703	0.7−	0.4+
1999 09 07	704	1.1+	0.0	1999 09 14	704	0.5+	0.8−	1999 10 07	704	1.1−	0.3+
1999 09 08	704	0.2−	0.5+	1999 09 14	704	0.2−	0.2+	1999 10 07	704	0.6−	0.3−
1999 09 08	704	0.7+	0.4+	1999 09 14	704	0.7−	0.0	1999 10 07	704	0.4+	0.6−
1999 09 08	704	0.1−	0.2+	1999 09 14	704	0.9−	0.2+	1999 10 07	704	0.1−	0.3+
1999 09 09	704	0.2+	0.5+	1999 10 02	704	1.7+	0.3−	1999 10 07	704	0.7−	0.5−

1999 RF₁₇ = 1978 RF₇

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	22.67479	(2000.0)	P		Q	
<i>n</i>	0.28233072	ω	340.46922	+0.62010028	+0.78161313	
<i>a</i>	2.3012508	Ω	327.74965	−0.70191675	+0.51431828	
<i>e</i>	0.1264168	<i>i</i>	7.26732	−0.35041194	+0.35292722	
<i>P</i>	3.49	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1978 09 02	809	0.4−	0.6−	1998 04 01	704	1.0+	0.6−	1999 09 09	704	0.2+	0.5−
1978 09 02	809	0.2+	0.2−	1998 04 01	704	(4.7−	1.6−)	1999 09 14	704	0.6+	0.3−
1978 09 02	809	0.9+	0.1−	1999 07 16	704	1.3−	0.4−	1999 09 14	704	0.3+	0.2−
1978 09 02	809	0.2−	1.3−	1999 07 16	704	0.6−	1.0−	1999 09 14	704	0.6+	0.5−
1978 09 06	809	0.2−	1.1−	1999 07 16	704	0.1+	0.4−	1999 09 14	704	0.4+	0.5−
1978 09 10	809	0.6−	1.2+	1999 07 16	704	0.0	1.0−	1999 09 14	704	0.8+	0.3−
1978 09 10	809	1.2+	1.7−	1999 08 22	699	0.0	1.1+	1999 09 14	703	0.1+	0.3+
1978 09 10	809	0.4+	1.2+	1999 08 22	699	0.1−	0.7+	1999 09 14	703	0.7+	0.8+
1978 09 10	809	0.7+	0.1−	1999 08 22	699	1.0+	0.4+	1999 09 14	703	0.2+	0.6+
1992 09 23	691	0.9−	0.6−	1999 09 04	703	0.5+	0.4+	1999 09 14	703	0.2+	0.2+
1992 09 23	691	0.0	0.4−	1999 09 04	703	0.1+	0.4+	1999 10 02	704	1.2−	0.1+
1992 09 23	691	0.4−	0.1+	1999 09 04	703	0.1−	0.6+	1999 10 02	704	1.2+	0.3−
1994 01 21	691	0.5−	0.6−	1999 09 04	703	0.6−	1.5+	1999 10 02	704	0.3−	0.6−
1994 01 21	691	0.1−	0.6−	1999 09 07	704	0.3−	0.1−	1999 10 02	704	0.8−	0.0
1994 01 21	691	0.1+	0.3−	1999 09 07	704	0.4−	0.2+	1999 10 02	704	0.5−	0.2+
1998 03 24	566	1.3−	2.0−	1999 09 07	704	0.1+	0.1+	1999 10 07	703	0.5+	0.4+
1998 03 24	566	(2.2−	2.5−)	1999 09 07	704	0.3+	0.4+	1999 10 07	703	1.4+	0.6+
1998 03 24	566	(1.7−	2.6−)	1999 09 07	704	0.3−	0.2+	1999 10 07	703	0.5+	0.5−
1998 03 29	704	0.4−	0.8−	1999 09 08	704	0.0	0.2+	1999 10 07	703	0.2+	0.1+
1998 03 29	704	0.8−	1.4+	1999 09 08	704	0.4−	0.2−	1999 10 07	704	0.3−	0.6−
1998 03 29	704	0.1−	0.7−	1999 09 08	704	0.0	0.0	1999 10 07	704	0.6−	0.3−
1998 03 29	704	1.5−	0.0	1999 09 08	704	0.1+	0.0	1999 10 07	704	0.9−	0.9−
1998 03 29	704	1.4−	0.7−	1999 09 09	704	0.0	0.7−	1999 10 07	704	0.4−	0.7−
1998 04 01	704	0.3−	0.6−	1999 09 09	704	0.1+	0.6−	1999 10 07	704	0.5−	0.1−
1998 04 01	704	1.3+	0.7+	1999 09 09	704	0.2+	0.3−				
1998 04 01	704	1.2+	0.6−	1999 09 09	704	0.4+	0.1+				

1999 RJ₁₇ = 1977 RY₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	7.64241	(2000.0)	P		Q	
<i>n</i>	0.26838034	ω	141.76986	+0.78729078	+0.61658170	
<i>a</i>	2.3803213	Ω	180.16556	−0.59904393	+0.76470988	
<i>e</i>	0.2331142	<i>i</i>	9.70540	−0.14601231	+0.18720527	
<i>P</i>	3.67	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i> 5

M.P.C. 36390

1999 09 04	703	0.7+	1.1+	1999 09 09	704	0.3−	0.9−	1999 09 14	703	0.4+	0.2+
1999 09 07	704	0.2−	0.2−	1999 09 09	704	0.3−	1.4−	1999 10 07	704	0.2−	1.0+
1999 09 07	704	0.7−	0.2−	1999 09 11	699	0.0	0.8+	1999 10 07	704	0.1+	0.4−
1999 09 07	704	0.0	0.5+	1999 09 11	699	0.6+	0.8+	1999 10 07	704	0.2+	0.8−
1999 09 07	704	0.3−	0.4+	1999 09 11	699	0.2−	0.6+	1999 10 07	704	0.1−	0.0
1999 09 07	704	0.1−	0.4+	1999 09 14	704	0.5+	0.1−	1999 10 07	704	0.3−	0.7+
1999 09 08	704	0.5−	0.6+	1999 09 14	704	0.4+	0.0				
1999 09 08	704	0.4−	0.5+	1999 09 14	704	0.4+	0.4+				

1999 RX₁₇ = 1998 MK₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	292.05901		(2000.0)	P	Q		
<i>n</i>	0.27401978	ω	205.37097	+0.34749975	−0.93743685		
<i>a</i>	2.3475496	Ω	224.30312	+0.86543204	+0.32940849		
<i>e</i>	0.1999355	<i>i</i>	1.75216	+0.36093118	+0.11270407		
<i>P</i>	3.60	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 06 26	691	0.4+	0.6+	1999 09 09	704	0.0	0.6−	1999 09 14	704	0.7+	0.8−
1998 06 26	691	0.2+	0.4−	1999 09 09	704	0.3−	0.3−	1999 09 14	704	0.1−	0.1−
1998 06 26	691	0.4+	0.1−	1999 09 09	704	0.3+	0.3−	1999 09 14	704	0.4+	0.3−
1998 07 01	691	0.4−	0.1+	1999 09 09	704	0.4+	0.6−	1999 09 14	704	0.5−	0.3+
1998 07 01	691	0.3−	0.0	1999 09 09	704	0.6+	0.8+	1999 09 14	703	1.3−	0.3+
1998 07 01	691	0.3−	0.1+	1999 09 09	704	0.2−	0.2+	1999 09 14	703	0.6+	0.6+
1999 09 07	704	0.3−	0.1−	1999 09 09	704	0.4+	1.0+	1999 09 14	703	0.1−	0.1−
1999 09 07	704	0.1+	0.1−	1999 09 10	704	0.3+	0.0	1999 09 14	703	0.2−	0.8+
1999 09 07	704	0.6−	0.0	1999 09 10	704	0.4+	0.1+	1999 09 30	699	0.2+	0.0
1999 09 07	704	0.1+	0.2−	1999 09 10	704	0.4−	1.0−	1999 09 30	699	0.6−	0.0
1999 09 07	704	0.2−	0.0	1999 09 10	704	0.2+	0.1+	1999 09 30	699	0.2−	1.3+
1999 09 08	704	1.8−	1.0+	1999 09 10	704	0.8+	0.2+	1999 10 06	704	0.3−	0.1+
1999 09 08	704	1.0+	0.4−	1999 09 10	704	1.0+	0.8+	1999 10 06	704	0.1−	0.1−
1999 09 08	704	0.5+	1.1−	1999 09 11	699	0.2−	0.2+	1999 10 06	704	0.3+	0.2+
1999 09 09	704	0.2+	0.1−	1999 09 11	699	0.1+	0.1−	1999 10 06	704	0.4+	0.2−
1999 09 09	704	0.7−	1.2−	1999 09 11	699	0.6−	1.3+	1999 10 06	704	0.4−	0.2+
1999 09 09	704	0.2−	0.3−	1999 09 14	704	0.3+	1.1−				

1999 RY₁₇ = 1991 VC₁

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	335.88671		(2000.0)	P	Q		
<i>n</i>	0.23992740	ω	63.82927	+0.96359250	−0.26558278		
<i>a</i>	2.5649731	Ω	311.55558	+0.22819786	+0.87712946		
<i>e</i>	0.2314846	<i>i</i>	2.36716	+0.13933852	+0.40013709		
<i>P</i>	4.11	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1991 11 04	399	0.5+	0.8+	1999 09 07	704	0.0	0.4−	1999 09 14	704	0.4+	0.2−
1991 11 04	399	0.1−	0.3+	1999 09 08	704	0.3−	0.3+	1999 09 14	704	0.8+	0.4−
1991 11 05	399	0.8−	1.0+	1999 09 08	704	0.3+	0.0	1999 09 14	704	0.4+	0.0
1991 11 05	399	0.3−	0.8+	1999 09 08	704	0.2+	0.3−	1999 09 14	704	0.7+	0.2−
1991 11 11	399	0.4+	0.8−	1999 09 08	704	0.3+	0.8−	1999 09 14	704	0.4+	0.2−
1991 11 11	399	0.1−	0.8−	1999 09 09	704	0.4−	0.1−	1999 09 14	703	0.1−	0.8+
1997 03 05	691	0.1+	0.1−	1999 09 09	704	0.3−	0.8−	1999 09 14	703	0.0	0.5+
1997 03 05	691	0.1−	0.2−	1999 09 09	704	0.2−	0.2−	1999 09 14	703	0.0	0.5+
1997 03 05	691	0.0	0.0	1999 09 09	704	0.3−	0.6−	1999 09 14	703	0.1+	0.6+
1998 05 01	704	0.4−	1.5+	1999 09 09	704	0.3−	0.9−	1999 10 02	704	0.2+	0.0
1998 05 01	704	(1.3−	3.1+)	1999 09 09	704	0.1+	0.2−	1999 10 02	704	1.1+	0.6−
1998 05 01	704	0.5+	1.0−	1999 09 09	704	0.1+	0.2+	1999 10 02	704	0.3−	0.3−
1998 05 01	704	(6.7−	1.7+)	1999 09 09	704	0.2−	0.1+	1999 10 02	704	0.1−	0.2−
1999 07 16	704	0.0	0.4+	1999 09 09	704	0.1+	0.4−	1999 10 02	704	0.7−	0.1+
1999 07 16	704	0.6−	0.2+	1999 09 09	704	0.0	0.1+	1999 10 06	704	0.5+	0.2−
1999 07 16	704	0.5−	0.3−	1999 09 10	704	0.5+	0.5−	1999 10 06	704	0.2+	0.4−
1999 07 16	704	0.1+	0.6+	1999 09 10	704	0.3+	0.1+	1999 10 06	704	0.1−	0.7−
1999 08 22	699	0.4+	1.0+	1999 09 10	704	0.5−	0.8+	1999 10 06	704	0.4−	0.3−
1999 08 22	699	0.4−	0.1−	1999 09 10	704	0.2+	0.5−	1999 10 06	704	0.5−	0.6−
1999 08 22	699	0.8−	1.0+	1999 09 10	704	0.4−	0.2−	1999 10 07	704	0.2−	0.2+

1999 OCT. 26

1999 09 07	704	0.0	0.2−	1999 09 10	704	0.5+	1.0−	1999 10 07	704	0.1+	0.1−
1999 09 07	704	0.1+	0.3+	1999 09 11	699	0.7−	1.2+	1999 10 07	704	0.6−	0.6+
1999 09 07	704	0.0	0.2−	1999 09 11	699	0.6+	0.6+	1999 10 07	704	0.1−	0.6+
1999 09 07	704	0.4+	0.1−	1999 09 11	699	0.4−	1.4+	1999 10 07	704	0.0	0.3−

1999 RE₁₈ = 1985 OA₁ = 1998 HP₁₀₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.86193		(2000.0)	P	Q		
<i>n</i>	0.21917331	ω	95.51305	−0.05590895	+0.99814482		
<i>a</i>	2.7244422	Ω	171.17310	−0.96694258	−0.04811350		
<i>e</i>	0.1417726	<i>i</i>	9.03829	−0.24878952	−0.03730961		
<i>P</i>	4.50	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1985 07 20	413	0.0	1.1−	1998 04 24	704	0.2−	0.3+	1999 09 08	704	0.6+	0.1−
1988 03 24	704	1.9+	0.9+	1998 04 24	704	0.2+	0.6+	1999 09 08	704	0.6+	0.0
1988 03 24	704	(2.6−	2.1−)	1998 04 24	704	1.1−	0.3+	1999 09 08	704	0.8+	0.3+
1988 03 24	704	0.3+	0.7+	1998 04 24	704	0.6+	0.7+	1999 09 09	704	0.2+	0.2+
1988 03 24	704	0.3−	0.6+	1998 05 16	704	0.0	0.4−	1999 09 09	704	0.1+	0.2−
1988 03 24	704	1.0−	0.2+	1998 05 16	704	0.0	0.4+	1999 09 09	704	0.3+	0.2+
1998 04 04	699	0.1−	0.7−	1998 05 16	704	1.8+	1.2+	1999 09 09	704	0.7+	1.2+
1998 04 04	699	(2.2+	0.7+)	1998 05 16	704	0.9−	1.5+	1999 09 09	704	(2.2+	1.8+)
1998 04 04	699	(0.5+	3.2+)	1998 05 16	704	1.8−	1.6−	1999 09 11	699	0.6+	0.2+
1998 04 21	704	0.6−	0.1+	1998 08 22	699	0.8+	0.2+	1999 09 11	699	0.3+	0.5+
1998 04 21	704	0.1−	0.1+	1998 08 22	699	1.5−	0.1+	1999 09 11	699	0.8+	0.4+
1998 04 21	704	0.4−	0.5−	1998 08 22	699	0.0	0.3+	1999 09 14	704	0.7−	0.2−
1998 04 21	704	0.0	0.3−	1999 09 05	691	0.0	0.0	1999 09 14	704	0.6−	0.5+
1998 04 21	704	0.4−	0.5−	1999 09 05	691	0.1−	0.0	1999 09 14	704	0.2−	0.1−
1998 04 23	704	0.4+	0.2+	1999 09 05	691	0.0	0.1−	1999 09 14	704	0.8−	0.0
1998 04 23	704	1.3+	0.6+	1999 09 07	704	0.1−	0.7−	1999 09 14	704	0.8−	0.1+
1998 04 23	704	0.0	0.2−	1999 09 07	704	0.2+	0.1+	1999 09 17	691	0.5−	0.1−
1998 04 23	704	0.1−	0.2−	1999 09 07	704	0.2−	0.3−	1999 09 17	691	0.2−	0.0
1998 04 23	704	0.8+	1.6−	1999 09 07	704	0.2+	0.3−	1999 09 17	691	0.4−	0.0
1998 04 24	704	0.1+	0.5−	1999 09 07	704	0.4−	0.1−				

1999 RG₁₈ = 1998 KN₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.93469		(2000.0)	P	Q		
<i>n</i>	0.23216625	ω	229.70715	+0.90370516	−0.41159771		
<i>a</i>	2.6218227	Ω	153.94424	+0.42643940	+0.88990745		
<i>e</i>	0.1372141	<i>i</i>	15.57220	−0.03829390	+0.19660125		
<i>P</i>	4.25	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 02 18	327	0.1+	0.5+	1999 07 16	704	0.5+	0.6−	1999 09 09	704	0.2−	0.5+
1997 02 18	327	0.0	0.2+	1999 08 12	699	0.7−	0.4+	1999 09 09	704	0.3−	0.7+
1997 02 18	327	0.0	0.5+	1999 08 12	699	0.3−	0.4+	1999 09 09	704	0.4−	0.4+
1998 05 23	704	1.1+	1.3−	1999 08 12	699	0.2−	0.5−	1999 09 09	704	0.4+	1.5+
1998 05 23	704	(2.1+	0.4+)	1999 09 07	699	0.2+	0.5+	1999 09 09	704	(2.0+	2.8+)
1998 05 23	704	0.6−	0.0	1999 09 07	704	0.6−	0.2+	1999 09 13	704	0.2−	0.3−
1998 05 23	704	1.2+	0.7−	1999 09 07	704	0.4−	0.2+	1999 09 13	704	0.6−	0.3−
1998 05 23	704	1.8−	1.1+	1999 09 07	704	0.4−	0.3+	1999 09 13	704	0.3−	0.3+
1998 05 26	704	(3.0+	1.2−)	1999 09 07	699	1.1+	0.9−	1999 09 13	704	0.5−	0.2+
1998 05 26	704	0.2+	1.5+	1999 09 07	704	0.3−	0.2+	1999 09 30	704	0.7+	0.3−
1998 05 26	704	1.2−	0.4−	1999 09 07	704	0.2−	0.0	1999 09 30	704	0.4+	0.1−
1998 05 26	704	0.8−	0.6−	1999 09 07	699	0.7+	0.2+	1999 09 30	704	1.1+	0.1−
1998 05 26	704	0.8−	0.4+	1999 09 08	704	0.5−	0.4+	1999 09 30	704	1.2+	0.9−
1998 05 27	699	1.2+	0.5+	1999 09 08	703	0.0	0.1−	1999 09 30	704	0.8+	0.5+
1998 05 27	699	0.6+	0.0	1999 09 08	703	0.0	0.5−	1999 10 04	703	0.0	0.2−
1998 05 27	699	1.2+	0.2−	1999 09 08	703	0.1+	0.3−	1999 10 04	703	0.1−	0.1+
1999 07 16	704	0.2−	0.3+	1999 09 08	704	0.7−	0.6+	1999 10 04	703	0.0	0.4−
1999 07 16	704	0.3+	0.1−	1999 09 08	703	0.3+	1.2−	1999 10 04	703	0.2−	0.6−
1999 07 16	704	0.4−	1.0−	1999 09 08	704	0.1−	0.9+				

1999 OCT. 26

M.P.C. 36391

1999 RJ₁₈ = 1997 CE₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	334.48343	(2000.0)	P		Q	
<i>n</i>	0.25782360	ω	260.69265	+0.96531824	-0.25553484	
<i>a</i>	2.4448616	Ω	114.09759	+0.25658770	+0.89074952	
<i>e</i>	0.2055585	<i>i</i>	3.36013	+0.04820224	+0.37585533	
<i>P</i>	3.82	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1997 02 06	566	0.3-	0.2+	1999 09 07	704	0.6-	0.3-	1999 09 10	704	0.1+	0.7-
1997 02 06	566	0.0	0.1+	1999 09 07	699	0.6-	0.3+	1999 09 10	704	0.4+	0.3+
1997 02 06	566	0.0	0.0	1999 09 07	704	0.4+	0.3-	1999 09 10	704	0.1+	0.4-
1997 02 07	566	0.4-	0.2+	1999 09 07	704	0.7-	0.4-	1999 09 10	704	0.2-	0.9-
1997 02 07	566	0.7-	0.3+	1999 09 07	699	0.4-	0.1-	1999 09 13	704	0.2+	0.4+
1997 02 07	566	1.5+	0.3-	1999 09 08	704	0.2-	0.3-	1999 09 13	704	0.2-	0.5+
1998 04 22	704	0.1+	0.2-	1999 09 08	704	0.3-	0.4+	1999 09 13	704	0.3+	0.3+
1998 04 22	704	0.6-	1.3+	1999 09 08	704	0.3-	0.8-	1999 09 13	704	0.2+	0.6+
1998 04 22	704	(2.7+	1.1-)	1999 09 08	704	0.2-	0.2-	1999 09 13	704	0.4+	0.6+
1998 04 22	704	0.3+	1.5-	1999 09 09	704	0.1-	0.4-	1999 09 30	704	0.8-	0.3-
1999 07 16	704	0.1+	0.5+	1999 09 09	704	0.5+	0.1+	1999 09 30	704	1.0-	0.1-
1999 07 16	704	0.2+	0.1-	1999 09 09	704	0.2+	0.0	1999 09 30	704	0.3-	0.4+
1999 07 16	704	0.1+	0.2+	1999 09 09	704	0.2+	0.1+	1999 09 30	704	0.1+	0.4+
1999 08 12	699	0.1-	0.8+	1999 09 09	704	0.2+	0.1-	1999 09 30	704	1.1-	0.9+
1999 08 12	699	0.3-	0.3+	1999 09 09	704	0.3+	0.0	1999 10 07	704	0.7+	0.5-
1999 08 12	699	0.6-	0.3+	1999 09 09	704	0.3+	0.3-	1999 10 07	704	0.2-	0.9+
1999 09 07	699	0.1+	0.5-	1999 09 09	704	0.6+	0.5+	1999 10 07	704	0.3+	0.9-
1999 09 07	704	0.2-	0.0	1999 09 09	704	0.4+	0.1-	1999 10 07	704	0.1+	0.7-
1999 09 07	704	0.2-	0.1+	1999 09 09	704	1.6+	0.9+	1999 10 07	704	0.1+	0.8-

1999 RN₁₈ = 1992 UN₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	351.93179	(2000.0)	P		Q	
<i>n</i>	0.27532769	ω	154.71294	+0.98241897	+0.18465079	
<i>a</i>	2.3401092	Ω	194.72501	-0.18434027	+0.93615560	
<i>e</i>	0.1570209	<i>i</i>	6.21440	-0.02952356	+0.29919354	
<i>P</i>	3.58	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1992 10 19	399	0.9+	1.6+	1999 08 22	699	0.4-	1.4+	1999 09 09	704	0.8+	0.0
1992 10 19	399	1.2-	1.3+	1999 08 22	699	0.1-	1.3+	1999 09 09	704	0.6+	0.4+
1992 10 22	399	0.3-	0.3-	1999 09 04	703	0.4+	0.1+	1999 09 09	704	1.0+	0.6+
1992 10 22	399	0.0	0.4-	1999 09 04	703	0.1+	0.0	1999 09 09	704	1.4+	0.8+
1998 03 20	704	(0.3-	2.5-)	1999 09 04	703	0.1-	0.5-	1999 09 14	704	0.0	0.4-
1998 03 20	704	0.4-	1.3-	1999 09 04	703	0.7-	0.3+	1999 09 14	704	0.0	0.2-
1998 03 20	704	1.5+	0.0	1999 09 07	704	0.1-	0.3-	1999 09 14	704	0.2-	0.4-
1998 03 20	704	0.1+	0.3+	1999 09 07	704	0.2-	0.1+	1999 09 14	704	0.0	0.5-
1998 03 25	704	0.7+	0.6+	1999 09 07	704	0.2+	0.0	1999 09 14	704	0.1-	0.4-
1998 03 25	704	0.4+	0.6-	1999 09 07	704	0.0	0.4+	1999 10 02	704	0.3-	0.1-
1998 03 25	704	(2.4-	1.5+)	1999 09 07	704	0.1-	0.5+	1999 10 02	704	0.2-	1.1-
1998 03 25	704	(5.4-	1.0+)	1999 09 08	704	0.2+	0.3-	1999 10 02	704	0.7-	1.5-
1998 03 29	704	1.2+	0.5+	1999 09 08	704	0.6-	0.6-	1999 10 02	704	0.7-	0.6-
1998 03 29	704	0.4-	0.4+	1999 09 08	704	0.2-	0.1+	1999 10 02	704	0.0	0.4-
1998 03 29	704	1.9-	0.3+	1999 09 08	704	0.5-	0.5-	1999 10 06	704	0.2-	0.4-
1998 03 29	704	1.1+	0.3+	1999 09 08	704	0.1-	0.1+	1999 10 06	704	0.1-	0.3-
1998 03 29	704	0.1-	0.8+	1999 09 08	704	0.4-	0.4-	1999 10 06	704	0.3-	0.4-
1998 04 01	704	(2.1+	2.1-)	1999 09 08	704	0.5-	0.1-	1999 10 06	704	0.1-	0.3-
1998 04 01	704	(0.3+	2.4-)	1999 09 08	704	0.2-	0.3-	1999 10 06	704	0.4-	0.5-
1998 04 01	704	1.5-	1.0+	1999 09 09	704	0.1-	0.3-	1999 10 07	704	0.0	0.2+
1998 04 01	704	(2.4+	0.7+)	1999 09 09	704	0.3+	0.4+	1999 10 07	704	0.1-	0.3-
1998 04 01	704	(4.1-	1.8-)	1999 09 09	704	0.2+	0.5-	1999 10 07	704	0.6+	1.9+
1998 04 22	704	0.6-	1.2+	1999 09 09	704	0.1+	0.1+	1999 10 07	704	0.4-	0.1-
1998 04 22	704	(0.5-	2.3-)	1999 09 09	704	0.2-	0.2+	1999 10 07	704	0.3+	0.1+
1998 04 22	704	0.0	1.3-	1999 09 09	704	0.1+	0.1-	1999 10 10	106	0.4+	1.3+
1998 04 22	704	0.6+	0.3-	1999 09 09	704	0.3-	0.4-	1999 10 10	106	0.6+	0.3+
1998 04 22	704	(0.8+	3.6-)	1999 09 09	704	0.2-	0.3-				
1999 08 22	699	0.2+	1.4+	1999 09 09	704	0.9+	0.2+				

1999 RR₁₈ = 1989 SO₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	26.16879	(2000.0)	P		Q	
<i>n</i>	0.29550243	ω	115.50721	+0.51746340	+0.85566338	
<i>a</i>	2.2323486	Ω	185.67702	-0.81263695	+0.48829282	
<i>e</i>	0.1680950	<i>i</i>	4.91417	-0.26805377	+0.17149431	
<i>P</i>	3.34	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1989 09 28	809	0.1+	1.3+	1999 09 08	704	0.6+	0.4-	1999 09 14	704	0.0	0.0
1989 09 28	809	0.8+	1.3+	1999 09 08	704	0.2-	0.1+	1999 09 14	704	0.2+	0.1-
1989 09 28	809	1.1+	1.1+	1999 09 09	704	0.3-	0.3-	1999 09 14	704	0.2+	0.6-
1989 09 29	809	1.2-	0.5+	1999 09 09	704	0.0	0.1-	1999 09 14	704	0.0	0.1-
1989 09 29	809	1.1-	0.2+	1999 09 09	704	0.1+	0.1-	1999 09 30	699	0.1+	0.5+
1989 09 29	809	1.0-	0.2-	1999 09 09	704	0.4-	0.1-	1999 09 30	699	0.5+	0.5+
1999 09 04	703	0.7+	1.1+	1999 09 09	704	0.2-	0.1+	1999 09 30	699	0.2+	0.7+
1999 09 04	703	0.0	1.0+	1999 09 09	704	0.3-	0.4-	1999 09 30	691	0.2+	0.6-
1999 09 04	703	0.4-	0.7+	1999 09 09	704	1.2+	0.7-	1999 09 30	691	0.1-	0.4-
1999 09 04	703	0.1-	0.5+	1999 09 09	704	0.1-	0.3-	1999 09 30	691	0.1-	0.4-
1999 09 07	704	0.3+	0.1-	1999 09 09	704	0.1+	0.4+	1999 10 02	704	0.4-	0.2-
1999 09 07	704	0.0	0.2-	1999 09 09	704	0.5-	0.4+	1999 10 02	704	0.2+	0.5-
1999 09 07	704	0.0	0.3-	1999 09 10	704	0.3-	0.2-	1999 10 02	704	0.1+	0.6-
1999 09 07	704	0.3-	0.3-	1999 09 10	704	0.4-	0.2-	1999 10 02	704	1.1+	0.1+
1999 09 07	704	0.0	0.6-	1999 09 10	704	0.2-	0.1+	1999 10 02	704	1.1+	0.2-
1999 09 08	704	0.2+	0.4-	1999 09 10	704	0.0	0.2+	1999 10 07	704	0.4+	0.2+
1999 09 08	704	0.3+	0.2-	1999 09 10	704	0.1-	0.4-	1999 10 07	704	0.3-	0.9-
1999 09 08	704	0.0	0.5-	1999 09 10	704	0.3-	0.1-	1999 10 07	704	0.4-	0.1+
1999 09 08	704	0.3+	0.1+	1999 09 11	699	0.2+	0.6+	1999 10 07	704	0.2-	0.9-
1999 09 08	704	0.0	0.1-	1999 09 11	699	0.2+	0.6+	1999 10 07	704	0.8-	0.7-
1999 09 08	704	0.7-	0.6-	1999 09 11	699	0.0	0.6+				
1999 09 08	704	0.3-	0.4-	1999 09 14	704	0.0	0.1+				

1999 RU₁₈ = 1977 UD₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	331.03889	(2000.0)	P		Q	
<i>n</i>	0.31194247	ω	129.20288	+0.94948201	-0.31329800	
<i>a</i>	2.1532099	Ω	249.06192	+0.28161532	+0.87609611	
<i>e</i>	0.1898198	<i>i</i>	1.11157	+0.13848005	+0.36646961	
<i>P</i>	3.16	<i>H</i>	16.5	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1977 10 18	675	0.2+	0.2+	1999 09 09	704	0.3+	0.2+	1999 09 30	699	0.5+	0.1-
1977 10 19	675	0.3-	0.1-	1999 09 09	704	0.3-	0.8-	1999 09 30	699	0.5+	0.9+
1999 09 04	703	(0.5-	3.0+)	1999 09 09	704	0.2-	0.4+	1999 10 02	691	0.2-	0.1+
1999 09 04	703	0.0	1.2+	1999 09 09	704	0.3+	0.9-	1999 10 02	691	0.1-	0.1+
1999 09 04	703	1.8-	1.4+	1999 09 09	704	0.3-	0.7-	1999 10 02	691	0.0	0.1+
1999 09 04	703	(2.1-	0.7-)	1999 09 10	704	0.3+	0.8-	1999 10 06	704	0.3+	0.1-
1999 09 07	704	(0.9-	2.6+)	1999 09 10	704	0.0	0.2-	1999 10 06	704	0.5-	0.2-
1999 09 07	704	0.3+	0.5+	1999 09 10	704	0.5-	0.3-	1999 10 06	704	0.1-	0.2-
1999 09 07	704	0.0	0.3+	1999 09 10	704	0.5+	0.2-	1999 10 06	704	0.1-	0.1-
1999 09 07	704	0.3+	0.2-	1999 09 10	704	0.0	0.9-	1999 10 06	704	0.1-	0.0
1999 09 07	704	0.4+	0.8+	1999 09 10	704	0.1-	0.2-	1999 10 07	704	0.2-	0.2+
1999 09 08	704	0.1+	0.0	1999 09 11	699	0.1+	1.7+	1999 10 07	704	0.3-	0.0
1999 09 08	704	0.5-	0.1+	1999 09 11	699	0.4-	0.8+	1999 10 07	704	0.2-	0.1+
1999 09 08	704	0.0	1.2-	1999 09 11	699	0.5-	0.7+	1999 10 07	704	0.1-	0.3-
1999 09 08	704	1.6+	1.0-	1999 09 14	704	1.1+	0.2+	1999 10 07	704	0.5-	0.1-
1999 09 09	704	0.6-	0.2-	1999 09 14	704	0.2+	0.2-	1999 10 09	691	0.2+	0.0
1999 09 09	704	0.1+	0.4-	1999 09 14	704	0.6-	0.3-	1999 10 09	691	0.2+	0.1+
1999 09 09	704	0.1+	0.6+	1999 09 14	704	0.6-	0.4-	1999 10 09	691	0.2+	0.0
1999 09 09	704	0.5+	0.4-	1999 09 14	704	0.6-	0.3-				
1999 09 09	704	0.3+	0.1+	1999 09 30	699	0.7+	0.1+				

1999 RX₁₈ = 1998 EG₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	32.21969	(2000.0)	P	Q
<i>n</i>	0.27779185	ω 283.21947	+0.35028685	+0.93663063
<i>a</i>	2.3262500	Ω 7.29060	-0.84433811	+0.31793987
<i>e</i>	0.2020353	<i>i</i> 2.12738	-0.40545318	+0.14709625
<i>P</i>	3.55	<i>H</i> 17.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 01	691	0.4+	0.2+	1999 09 08	704	0.1-	1.0+	1999 09 09	704	0.2-	0.6-
1998 03 01	691	0.7+	0.0	1999 09 08	704	0.6-	0.2+	1999 09 09	704	0.2+	0.9-
1998 03 01	691	0.2+	0.2+	1999 09 08	704	0.5-	0.2+	1999 09 09	704	0.8-	0.4+
1998 03 05	691	0.6-	0.1+	1999 09 08	704	0.0	0.0	1999 09 11	699	1.1-	0.2+
1998 03 05	691	0.5-	0.2-	1999 09 09	704	0.1+	0.3+	1999 09 11	699	0.2+	0.5+
1998 03 05	691	0.2-	0.0	1999 09 09	704	0.0	1.5-	1999 09 11	699	0.7+	0.1+
1999 09 07	704	0.1-	0.3+	1999 09 09	704	0.6+	0.4-	1999 09 14	704	0.5+	0.2+
1999 09 07	704	0.3+	0.4+	1999 09 09	704	0.9+	0.0	1999 09 14	704	0.2-	1.3-
1999 09 07	704	1.1+	0.0	1999 09 09	704	0.2-	0.2-	1999 09 14	704	0.9+	0.9+
1999 09 07	704	0.4-	0.2+	1999 09 09	704	0.5-	0.2-	1999 09 14	704	0.3+	0.1-
1999 09 07	704	1.3-	0.2+	1999 09 09	704	0.4-	0.1+	1999 09 14	704	0.4+	0.2+

1999 RY₁₈ = 1991 SU₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	10.47306	(2000.0)	P	Q
<i>n</i>	0.36985882	ω 333.59302	+0.80616612	+0.58867406
<i>a</i>	1.9221122	Ω 349.69142	-0.46656672	+0.57044220
<i>e</i>	0.0843780	<i>i</i> 19.47388	-0.36388416	+0.57276396
<i>P</i>	2.66	<i>H</i> 15.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1991 09 09	691	0.2+	0.0	1999 09 09	704	0.7+	1.3+	1999 09 14	704	0.2-	0.0
1991 09 09	691	0.4+	0.3+	1999 09 10	704	0.2-	0.2+	1999 09 14	704	0.4-	0.2-
1991 09 09	691	0.2+	0.0	1999 09 10	704	0.1+	0.3-	1999 09 28	848	0.1-	0.4+
1991 09 11	675	0.4-	0.5-	1999 09 10	704	0.1+	0.2+	1999 09 28	848	0.1+	0.0
1991 09 16	675	0.6+	0.5-	1999 09 10	704	0.2-	0.1+	1999 09 28	848	0.3+	0.2+
1991 09 16	675	0.0	0.3-	1999 09 10	704	0.3+	0.0	1999 10 01	703	0.2+	0.5+
1999 09 07	704	0.1+	0.0	1999 09 10	704	0.2-	0.2+	1999 10 01	703	0.4-	0.6+
1999 09 07	704	0.0	0.3-	1999 09 10	704	0.3-	0.3+	1999 10 01	703	0.4-	0.1+
1999 09 07	704	0.1-	0.2-	1999 09 10	704	0.1+	0.1+	1999 10 01	703	0.2-	0.2-
1999 09 07	704	0.1-	0.4-	1999 09 10	691	0.4-	0.5+	1999 10 02	704	0.6-	0.4-
1999 09 07	704	0.0	0.6-	1999 09 10	691	0.1-	0.4+	1999 10 02	704	0.0	0.3-
1999 09 08	704	0.3-	0.0	1999 09 10	691	0.1-	0.2+	1999 10 02	704	1.2+	0.0
1999 09 08	704	0.1-	0.2+	1999 09 11	704	0.0	0.0	1999 10 02	704	0.6+	0.5-
1999 09 08	704	0.3-	0.1-	1999 09 11	704	0.0	0.0	1999 10 02	704	0.0	0.3-
1999 09 08	704	0.0	0.4+	1999 09 11	704	0.3-	0.2-	1999 10 07	703	0.4-	0.0
1999 09 09	704	0.2-	0.0	1999 09 11	704	0.4-	0.2-	1999 10 07	703	0.1+	0.2+
1999 09 09	704	0.3+	0.2+	1999 09 11	704	0.3-	0.1+	1999 10 07	703	0.6-	0.3+
1999 09 09	704	0.0	0.1-	1999 09 11	704	0.1-	0.0	1999 10 07	703	0.3-	0.3+
1999 09 09	704	0.3+	0.4-	1999 09 11	704	0.3-	0.1+	1999 10 07	704	0.5+	0.1+
1999 09 09	704	0.0	0.4-	1999 09 11	704	0.3-	0.0	1999 10 07	704	0.3-	0.4-
1999 09 09	704	0.3+	0.2+	1999 09 11	704	0.2-	0.2-	1999 10 07	704	0.2-	0.4-
1999 09 09	704	0.3+	0.4-	1999 09 14	704	0.0	0.4-	1999 10 07	704	0.2+	0.2-
1999 09 09	704	0.5+	0.1+	1999 09 14	704	0.2-	0.7-	1999 10 07	704	0.7+	0.4+
1999 09 09	704	0.2+	0.8+	1999 09 14	704	0.4+	0.0				

1999 RM₁₉ = 1998 KX₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	7.61195	(2000.0)	P	Q
<i>n</i>	0.18990951	ω 164.86783	+0.80189567	+0.59633696
<i>a</i>	2.9975854	Ω 158.39785	-0.55798894	+0.76944720
<i>e</i>	0.1699754	<i>i</i> 5.71820	-0.21356891	+0.22876457
<i>P</i>	5.19	<i>H</i> 15.0	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 05 22	704	0.9+	0.9-	1998 05 24	704	0.1-	0.2-	1999 09 09	704	1.4+	0.7+
1998 05 22	704	(0.5+	2.3-)	1999 09 07	704	1.6-	1.1-	1999 09 09	704	1.5+	0.9+
1998 05 22	704	0.6+	1.3-	1999 09 07	704	0.1+	0.9-	1999 09 09	704	0.3+	0.7+
1998 05 22	704	0.7-	0.3-	1999 09 07	704	0.7-	1.1-	1999 09 13	704	0.2+	0.2-
1998 05 22	704	1.2+	0.5-	1999 09 08	704	0.0	0.2+	1999 09 13	704	0.5-	0.1-
1998 05 24	704	0.8-	1.1+	1999 09 08	704	0.9-	0.2-	1999 09 13	704	0.4+	0.4-
1998 05 24	704	0.2+	0.5+	1999 09 08	704	0.1+	0.1+	1999 09 13	704	1.1-	0.2+
1998 05 24	704	0.5-	1.6+	1999 09 08	704	0.0	0.5-				
1998 05 24	704	0.8-	0.1-	1999 09 09	704	0.8+	1.6+				

1999 RN₁₉ = 1993 OJ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	190.52611	(2000.0)	P	Q
<i>n</i>	0.19902923	ω 153.13823	-0.91819530	-0.39612271
<i>a</i>	2.9053032	Ω 3.52765	+0.35720426	-0.83019401
<i>e</i>	0.3561183	<i>i</i> 1.90500	+0.17123816	-0.39225591
<i>P</i>	4.95	<i>H</i> 13.3	<i>G</i> 0.15	<i>U</i> 7

Residuals in seconds of arc

1993 07 20	809	0.6+	0.6+	1999 09 09	704	0.9+	0.5-	1999 09 09	704	0.1+	0.1+
1993 07 20	809	0.0	0.4+	1999 09 09	704	0.5+	0.2-	1999 09 09	704	1.0-	0.8+
1993 07 20	809	0.2-	0.1+	1999 09 09	704	0.9+	0.1+	1999 09 09	704	1.7-	0.1+
1993 07 24	809	0.4-	1.0-	1999 09 09	704	0.6+	0.1-	1999 09 09	704	1.7-	0.1+
1999 09 07	704	0.3-	1.4-	1999 09 09	704	0.1-	0.3+	1999 09 09	704	1.9-	0.6-
1999 09 07	704	0.1+	1.6-	1999 09 09	704	1.1+	0.5-	1999 09 10	704	0.4-	0.8+
1999 09 07	704	0.3-	0.8-	1999 09 09	704	0.3+	0.1-	1999 09 10	704	0.5-	0.9+
1999 09 08	704	1.0+	0.3-	1999 09 09	704	1.7+	0.4-	1999 09 10	704	1.4-	1.3+
1999 09 08	704	1.6+	0.0	1999 09 09	704	0.2+	0.5-	1999 09 10	704	0.7-	0.7+
1999 09 08	704	0.9+	0.0	1999 09 09	704	0.2+	0.6+	1999 09 10	704	0.4-	1.2+
1999 09 08	704	0.1+	0.5-	1999 09 09	704	0.6+	0.4-	1999 09 10	704	0.1+	1.5+
1999 09 08	704	0.3+	1.2-	1999 09 09	704	0.0	0.1+	1999 09 10	704	0.5-	1.4+
1999 09 08	704	0.6+	0.9-	1999 09 09	704	0.4+	0.3-	1999 09 10	704	(0.5-	2.5+)
1999 09 08	704	0.1-	1.1-	1999 09 09	704	0.0	0.1+	1999 09 10	704	0.4-	0.7+
1999 09 08	704	0.9+	1.2-	1999 09 09	704	0.7-	0.2+	1999 09 10	704	0.4-	0.7+
1999 09 09	704	1.3+	0.3+	1999 09 09	704	0.3+	1.0-	1999 09 10	704	0.6-	0.5+
1999 09 09	704	0.3+	0.7+	1999 09 09	704	0.9-	0.4-	1999 09 10	704	0.2+	0.3-
1999 09 09	704	0.3+	0.1-	1999 09 09	704	0.1-	0.8-	1999 09 10	704	0.5-	1.3+
1999 09 09	704	0.2+	0.2+	1999 09 09	704	0.1-	0.6-	1999 09 10	704	0.0	0.1+
1999 09 09	704	0.4+	0.3+	1999 09 09	704	0.8-	0.2-	1999 09 10	704	0.5-	0.7+

1999 RS₁₉ = 1998 KY₅₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.42142	(2000.0)	P	Q
<i>n</i>	0.19127863	ω 174.31462	+0.94723707	+0.31804481
<i>a</i>	2.9832644	Ω 166.92756	-0.30059320	+0.92459594
<i>e</i>	0.1291431	<i>i</i> 10.15219	-0.11129090	+0.20968989
<i>P</i>	5.15	<i>H</i> 14.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1997 04 09	704	1.1+	0.8+	1999 09 04	691	1.2-	0.1-	1999 09 11	699	0.1+	0.0
1997 04 09	704	0.1+	0.0	1999 09 04	691	0.9-	0.3-	1999 09 11	699	0.1+	0.6+
1997 04 09	704	0.7-	1.2+	1999 09 04	691	0.9-	0.4-	1999 09 11	699	0.3+	0.0
1997 04 09	704	0.0	0.0	1999 09 07	704	0.2-	0.7-	1999 09 14	704	0.2-	0.8+
1998 05 23	704	0.3-	0.5-	1999 09 07	704	0.7-	0.1-	1999 09 14	704	0.2-	1.1+
1998 05 23	704	0.1+	0.4-	1999 09 07	704	0.2-	0.1-	1999 09 14	704	0.3-	0.3+
1998 05 23	704	1.0+	0.7-	1999 09 07	704	0.1-	0.7-	1999 09 14	704	0.1-	0.5+
1998 05 23	704	(2.5-	0.5+)	1999 09 07	704	0.4+	0.5-	1999 09 14	704	0.4-	0.1+
1998 05 26	704	0.2+	0.4+	1999 09 08	704	0.2+	0.7-	1999 10 02	704	1.1-	0.9-
1998 05 26	704	0.1-	0.8+	1999 09 08	704	0.4+	1.6+	1999 10 02	704	0.5+	0.9-
1998 05 26	704	0.3-	1.2-	1999 09 08	704	0.3+	0.0	1999 10 02	704	0.1+	0.7+
1998 05 26	704	0.6-	1.8+	1999 09 09	704	0.4-	0.5+	1999 10 02	704	0.4+	0.1-
1999 07 16	704	0.3+	0.1-	1999 09 09	704	0.1-	0.6+	1999 10 07	704	1.4+	1.1-
1999 07 16	704	0.3-	0.7-	1999 09 09	704	1.2+	0.6+	1999 10 07	704	0.7-	0.0

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1999 07 16	704	0.0	0.6−	1999 09 09	704	1.1+	0.1−	1999 10 07	704	1.1−	0.7+
1999 07 16	704	0.4+	0.6−	1999 09 09	704	1.6+	1.9+				

1999 RO₂₀ = 1998 FB₁₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	13.93395	(2000.0)		P		Q	
<i>n</i>	0.27694023	ω	128.75948	+0.81564012		+0.57790697	
<i>a</i>	2.3310165	Ω	195.99737	−0.55692522		+0.77139132	
<i>e</i>	0.1348692	<i>i</i>	5.72097	−0.15673382		+0.26641878	
<i>P</i>	3.56	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 29	704	0.4−	0.6+	1999 09 07	704	0.1+	0.0	1999 10 02	704	0.2+	0.8+
1998 03 29	704	0.9−	0.2−	1999 09 07	704	0.3+	0.4+	1999 10 02	704	0.5−	0.7+
1998 03 29	704	0.3+	1.0−	1999 09 07	704	0.7−	0.0	1999 10 02	704	0.5−	0.3+
1998 03 29	704	0.3−	0.2+	1999 09 07	704	0.2+	0.5−	1999 10 02	704	0.8−	0.8+
1998 04 01	704	0.5+	0.4−	1999 09 07	704	0.2+	0.1+	1999 10 06	704	0.5+	0.2−
1998 04 01	704	0.1−	0.7−	1999 09 07	704	0.5+	1.0+	1999 10 06	704	0.1−	0.5−
1998 04 01	704	0.3+	1.4+	1999 09 07	704	0.7−	0.3+	1999 10 06	704	0.4+	0.5−
1998 04 01	704	0.5+	0.1−	1999 09 08	704	0.4+	0.4−	1999 10 06	704	0.4+	0.7−
1999 09 07	704	0.0	0.1−	1999 09 08	704	0.3+	0.4−	1999 10 06	704	0.2+	0.6−
1999 09 07	704	0.1−	0.2−	1999 09 08	704	0.3+	0.4−				
1999 09 07	704	0.3−	0.3+	1999 09 08	704	0.1−	0.4−				

1999 RK₂₁ = 1998 FD₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	11.13945	(2000.0)		P		Q	
<i>n</i>	0.31133738	ω	299.35739	+0.80394384		+0.59437840	
<i>a</i>	2.1559989	Ω	24.19085	−0.52759490		+0.72812681	
<i>e</i>	0.1696896	<i>i</i>	2.75743	−0.27444110		+0.34138787	
<i>P</i>	3.17	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1992 05 08	691	0.3+	1.2+	1999 07 16	704	0.5+	0.1−	1999 09 09	704	0.4+	0.3−
1992 05 08	691	0.3+	0.6+	1999 07 16	704	0.8+	0.7−	1999 09 14	704	1.6−	1.4−
1992 05 08	691	0.5+	1.1+	1999 07 16	704	0.9+	1.3−	1999 09 14	704	0.0	1.0−
1996 10 04	691	0.4−	0.8+	1999 08 22	703	0.2+	1.4+	1999 09 14	704	0.5+	0.8−
1996 10 04	691	0.0	0.8+	1999 08 22	703	0.5−	1.1+	1999 09 14	704	0.0	0.6−
1996 10 04	691	0.2−	0.8+	1999 08 22	703	1.1−	1.3+	1999 09 30	723	1.0+	0.6−
1998 03 20	704	(1.1+	2.7−)	1999 08 22	703	0.7−	1.2+	1999 09 30	723	0.3−	0.2−
1998 03 20	704	1.6−	1.1−	1999 09 05	699	0.1+	1.1+	1999 09 30	723	0.3−	0.1−
1998 03 20	704	0.5+	0.3+	1999 09 05	699	0.4−	1.3+	1999 10 01	723	0.1−	0.1−
1998 03 20	704	0.3+	0.3+	1999 09 05	699	0.0	1.1+	1999 10 01	723	0.1+	0.1−
1998 03 20	704	(4.2−	1.0−)	1999 09 07	704	0.3+	0.1−	1999 10 01	723	0.2−	0.0
1998 03 22	704	1.3−	0.8+	1999 09 07	704	0.3−	1.0−	1999 10 02	723	0.2+	0.2+
1998 03 22	704	(2.6+	0.3+)	1999 09 07	704	0.4+	0.1−	1999 10 02	723	0.5+	0.8+
1998 03 22	704	(1.7+	3.9+)	1999 09 07	704	0.6+	0.0	1999 10 02	723	1.4−	0.0
1998 03 22	704	(0.3+	3.2+)	1999 09 07	704	0.1−	0.2+	1999 10 02	704	0.4−	0.2−
1998 03 26	704	0.9+	1.1−	1999 09 08	704	0.2+	0.3+	1999 10 02	704	0.2−	0.1+
1998 03 26	704	0.0	0.7−	1999 09 08	704	0.6+	0.2−	1999 10 02	704	0.2−	0.4+
1998 03 26	704	0.8+	0.4−	1999 09 08	704	0.5+	0.9−	1999 10 02	704	0.3−	0.2+
1998 04 17	691	0.1−	0.2−	1999 09 08	704	0.6+	0.5−	1999 10 07	704	0.3−	0.1+
1998 04 17	691	0.5−	0.2−	1999 09 08	704	0.8+	0.2−	1999 10 07	704	0.5−	0.0
1998 04 17	691	0.5−	0.2+	1999 09 09	704	0.5+	0.4−	1999 10 07	704	0.4−	0.1−
1998 05 02	691	0.3+	0.0	1999 09 09	704	0.5+	0.4−	1999 10 07	704	0.5−	0.3+
1998 05 02	691	0.5+	0.2+	1999 09 09	704	0.4+	0.5−	1999 10 07	704	0.3−	0.0
1998 05 02	691	0.4+	0.4+	1999 09 09	704	0.6+	0.5−				

1999 RR₂₁ = 1993 QN₆

Id. A. Doppler

M.P.C. 36393

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	73.40109	(2000.0)		P		Q	
<i>n</i>	0.16880985	ω	152.71872	−0.07177503		+0.99656894	
<i>a</i>	3.2424319	Ω	113.14100	−0.92309367		−0.05071719	
<i>e</i>	0.1050909	<i>i</i>	2.56894	−0.37781798		−0.06540729	
<i>P</i>	5.84	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1993 08 20	809	0.1−	1.4+	1999 08 22	703	1.0−	0.7+	1999 09 14	704	0.1−	0.0
1993 08 20	809	0.0	1.2+	1999 08 22	703	0.2+	0.4−	1999 09 14	704	0.7+	0.8−
1993 08 20	809	0.2−	1.5+	1999 08 22	703	1.2−	1.8+	1999 09 14	704	0.0	0.2−
1993 08 24	809	0.1+	0.4−	1999 09 07	704	0.1−	0.7+	1999 09 14	704	1.0+	1.2−
1993 08 24	809	0.3−	0.5−	1999 09 07	704	1.1+	0.8+	1999 09 14	703	0.4−	0.4+
1993 08 24	809	0.6−	0.4−	1999 09 07	704	1.1−	0.4−	1999 09 14	703	0.1+	0.5+
1994 11 05	691	0.2−	0.4+	1999 09 08	704	0.2+	0.6−	1999 09 14	703	0.0	0.4−
1994 11 05	691	0.0	0.1+	1999 09 08	704	0.0	1.7−	1999 09 14	703	0.3+	0.2−
1994 11 05	691	0.1−	0.7+	1999 09 08	704	0.8+	0.9−				
1999 08 22	703	1.2−	0.2+	1999 09 08	704	1.9+	1.5−				

1999 RD₂₂ = 1993 OA₆ = 1995 YR₂₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	88.84107	(2000.0)		P		Q	
<i>n</i>	0.18603551	ω	155.54690	−0.20686697		+0.97758950	
<i>a</i>	3.0390568	Ω	102.49535	−0.90409330		−0.17575550	
<i>e</i>	0.0465327	<i>i</i>	2.29223	−0.37392695		−0.11588255	
<i>P</i>	5.30	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1993 07 20	809	0.6+	1.3−	1999 08 22	703	0.0	0.7+	1999 09 14	704	0.3+	0.1+
1993 07 20	809	0.1+	0.5−	1999 08 22	703	0.1+	0.8+	1999 09 14	704	0.5+	0.0
1993 07 20	809	0.0	0.4−	1999 08 22	699	0.2+	0.3+	1999 09 14	704	1.0+	0.4−
1993 07 24	809	1.3+	1.3−	1999 08 22	703	0.5−	1.0+	1999 09 14	704	0.0	0.5+
1994 10 09	691	0.6−	0.0	1999 08 22	699	0.0	0.1−	1999 09 14	704	0.9+	0.2+
1994 10 09	691	0.6−	0.0	1999 09 07	704	0.5+	0.4+	1999 10 02	704	2.0+	0.5−
1994 10 09	691	0.9−	0.0	1999 09 07	704	0.7−	0.1+	1999 10 02	704	0.6−	0.5−
1995 12 21	566	0.3+	0.5−	1999 09 07	704	0.1−	0.3+	1999 10 02	704	0.1−	0.4−
1995 12 21	566	0.6+	0.1−	1999 09 07	704	0.5−	0.4−	1999 10 02	704	0.6−	1.0+
1995 12 21	566	0.0	0.2−	1999 09 07	704	0.4−	0.7−	1999 10 02	704	0.1−	0.5−
1995 12 24	566	0.2−	0.0	1999 09 08	704	0.1−	0.1+	1999 10 02	704	0.5+	0.4−
1995 12 24	566	0.2+	0.3−	1999 09 08	704	0.4−	0.5+	1999 10 02	704	0.2+	0.4−
1995 12 24	566	0.3−	0.3−	1999 09 08	704	0.2−	0.2+	1999 10 02	704	1.1−	0.4+
1998 06 26	704	0.7−	0.8−	1999 09 08	704	0.4−	0.4−	1999 10 02	704	0.1−	0.4−
1998 06 26	704	0.4−	2.0+	1999 09 09	704	0.1+	0.4+	1999 10 07	704	(1.5+	2.2−)
1998 06 26	704	0.1−	0.6+	1999 09 09	704	0.4+	0.7+	1999 10 07	704	0.1+	0.4−
1998 06 26	704	(5.6−	0.0)	1999 09 09	704	0.0	0.9+	1999 10 07	704	0.5+	1.5−
1999 08 22	699	0.4−	0.3−	1999 09 09	704	0.3+	0.3+	1999 10 07	704	0.2−	1.4−
1999 08 22	703	0.0	0.8+	1999 09 09	704	0.4−	0.3+				

1999 RK₂₂ = 3318 T-2 = 1991 EE₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	261.99350	(2000.0)		P		Q	
<i>n</i>	0.18945286	ω	63.31818	−0.33761464		−0.94109212	
<i>a</i>	3.0024004	Ω	46.42702	+0.85400974		−0.31474867	
<i>e</i>	0.1743987	<i>i</i>	1.50478	+0.39583293		−0.12360783	
<i>P</i>	5.20	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 19	675	1.2+	0.6−	1991 03 13	809	0.7+	0.6−	1999 09 08	704	0.7−	0.9+
1973 09 19	675	1.0−	0.6−	1991 03 13	809	1.0+	0.5−	1999 09 08	704	0.5−	0.8+
1973 09 20	675	2.7+	0.8−	1991 03 13	809	0.8+	0.4−	1999 09 14	703	0.5−	0.2+
1973 09 24	675	0.9−	0.1−	1999 09 07	704	0.7+	0.1−	1999 09 14	703	0.3+	0.6+
1973 09 24	675	0.4−	0.4+	1999 09 07	704	0.7+	1.0+	1999 09 14	703	0.4−	0.4+
1973 09 25	675	0.4+	1.1−	1999 09 07	704	0.1+	0.2+	1999 09 14	703	0.7−	1.2+
1973 09 25	675	0.4−	0.9−	1999 09 07	704	1.2+	0.3−	1999 10 07	704	0.7−	0.8−

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1991 03 11	809	1.2−	0.6+	1999 09 07	704	0.2−	1.0−	1999 10 07	704	0.4−	0.4−
1991 03 11	809	0.7−	0.4+	1999 09 08	704	0.4−	0.4+	1999 10 07	704	0.2−	0.2+
1991 03 11	809	0.5−	0.7+	1999 09 08	704	0.1+	0.4+	1999 10 07	704	0.3−	0.2+

1999 RT₂₂ = 1997 ER₄₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	359.38883		(2000.0)	P		Q	
<i>n</i>	0.17483779	<i>ω</i>	154.16236	+0.99099051		+0.12438527	
<i>a</i>	3.1674700	<i>Ω</i>	198.89145	−0.13307088		+0.95641458	
<i>e</i>	0.0901626	<i>i</i>	8.82272	+0.01516418		+0.26419588	
<i>P</i>	5.64	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 12	809	(0.5+ 2.5+)	1999 09 07	704	0.4+ 0.2+	1999 09 09	704	0.4− 0.8−
1997 03 12	809	0.8− 0.4−	1999 09 07	704	0.4+ 0.1−	1999 09 09	704	0.2+ 0.8+
1997 03 12	809	1.2− 0.6+	1999 09 07	704	0.2+ 0.4+	1999 09 09	704	0.0 0.2+
1997 03 13	809	1.0− 0.2+	1999 09 07	704	1.1+ 0.3+	1999 09 09	704	0.1+ 0.2−
1997 03 13	809	1.3+ 0.6−	1999 09 08	704	0.2+ 0.1+	1999 10 04	704	1.2− 1.0−
1997 03 13	809	1.1− 0.9+	1999 09 08	704	0.1+ 0.4−	1999 10 04	704	0.9− 0.0
1997 04 03	704	1.0+ 0.1+	1999 09 08	704	0.2+ 0.3+	1999 10 04	704	0.3− 0.4−
1997 04 03	704	1.7+ 0.9−	1999 09 08	704	0.0 0.3−	1999 10 04	704	0.3− 0.6+
1999 09 07	704	0.5+ 0.5+	1999 09 09	704	0.1− 0.3−			

1999 RB₂₃ = 2087 T-1

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	329.97388		(2000.0)	P		Q	
<i>n</i>	0.19238902	<i>ω</i>	216.99910	+0.84558031		−0.53358570	
<i>a</i>	2.9717746	<i>Ω</i>	175.15827	+0.52487559		+0.82523427	
<i>e</i>	0.1658024	<i>i</i>	11.43981	+0.09746564		+0.18513426	
<i>P</i>	5.12	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1971 03 25	675	0.9−	0.4−	1999 09 07	704	0.6−	1.3−	1999 09 14	703	0.8−	0.1+
1971 03 25	675	1.3−	0.6+	1999 09 08	704	0.2−	0.7+	1999 09 14	703	0.7−	0.0
1971 03 26	675	0.4+	0.7−	1999 09 08	704	0.1−	0.4+	1999 09 14	703	0.5−	0.1−
1971 03 27	675	0.7−	2.2+	1999 09 08	704	0.1−	0.4+	1999 09 14	703	0.3−	0.2−
1971 04 02	675	0.3−	0.5+	1999 09 08	704	0.2−	0.4+	1999 09 14	703	0.1−	0.2+
1971 04 16	675	1.2+	1.8−	1999 09 08	704	0.1−	0.0	1999 09 14	703	0.8−	0.6−
1971 04 16	675	1.7+	0.8−	1999 09 09	704	1.1−	0.9+	1999 09 14	703	0.4+	0.8−
1992 04 26	691	0.1−	0.5−	1999 09 09	704	0.1−	0.2+	1999 10 02	704	1.2+	1.0−
1992 04 26	691	0.1−	0.7−	1999 09 09	704	0.5−	0.6+	1999 10 02	704	0.4+	0.0
1992 04 26	691	0.0	0.3+	1999 09 09	704	0.6−	0.7+	1999 10 02	704	1.0+	0.1−
1999 07 23	704	0.6+	0.3+	1999 09 09	704	0.4−	0.8+	1999 10 02	704	1.0+	0.4−
1999 07 23	704	1.4+	0.0	1999 09 14	704	0.2+	0.6+	1999 10 02	704	0.6+	0.0
1999 07 23	704	1.0+	0.5−	1999 09 14	704	0.4+	0.5+	1999 10 07	704	0.0	0.7−
1999 09 07	704	0.0	0.1+	1999 09 14	704	0.2+	0.3+	1999 10 07	704	0.2+	0.5−
1999 09 07	704	0.4−	0.2−	1999 09 14	704	0.2+	0.4+	1999 10 07	704	0.0	0.4−
1999 09 07	704	0.2−	0.7−	1999 09 14	704	0.0	0.3+	1999 10 07	704	0.6+	0.7−
1999 09 07	704	0.6−	0.8−	1999 09 14	703	0.6−	1.0+	1999 10 07	704	0.2+	0.7−

1999 RF₂₃ = 1976 UE₁₂ = 1998 HJ₂₃

Id. G. V. Williams (MPC 36034), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	11.03309		(2000.0)	P		Q	
<i>n</i>	0.25586283	<i>ω</i>	171.42096	+0.84020632		+0.54173891	
<i>a</i>	2.4573362	<i>Ω</i>	155.72998	−0.50090985		+0.79226883	
<i>e</i>	0.1969236	<i>i</i>	3.33654	−0.20770813		+0.28076513	
<i>P</i>	3.85	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1976 10 22	381	1.0+	0.2−	1999 08 22	703	0.4+	0.7+	1999 09 14	704	0.3+	0.1−
1976 10 22	381	0.5−	1.1−	1999 08 22	699	0.6−	0.5+	1999 09 14	704	0.1+	0.0

1998 03 29	704	0.7−	1.4−	1999 09 03	620	0.3+	1.2+	1999 09 14	704	0.0	0.2−
1998 03 29	704	1.1+	1.2−	1999 09 04	620	0.0	0.1+	1999 09 14	703	0.0	0.4+
1998 03 29	704	0.4+	0.0	1999 09 04	620	0.1−	0.5−	1999 09 14	703	0.2−	0.2+
1998 03 29	704	1.0−	1.1+	1999 09 04	699	0.1−	1.3+	1999 09 14	703	0.4−	0.8+
1998 03 29	704	(3.0−	2.5+)	1999 09 04	699	0.3+	1.1+	1999 09 14	703	0.4−	0.0
1998 04 20	704	0.1+	0.8−	1999 09 04	699	0.3−	0.4+	1999 10 02	704	0.1−	0.8−
1998 04 20	704	1.0−	1.4−	1999 09 07	704	0.5+	0.1+	1999 10 02	704	0.3−	0.4−
1998 04 20	704	0.1−	0.2−	1999 09 07	704	0.6+	0.4−	1999 10 02	704	0.8+	0.7−
1998 04 20	704	(1.4−	2.4−)	1999 09 07	704	0.3+	0.2−	1999 10 02	704	1.9+	1.0−
1998 04 22	704	0.3+	1.1−	1999 09 07	704	0.6+	0.1−	1999 10 07	704	0.2−	0.1−
1998 04 22	704	(0.5+	2.4−)	1999 09 07	704	0.1−	0.4+	1999 10 07	704	0.1−	1.1−
1998 04 22	704	0.6+	0.7+	1999 09 08	704	0.8+	0.0	1999 10 07	704	0.0	0.6−
1998 04 22	704	1.5−	0.6−	1999 09 08	704	0.0	0.1−	1999 10 07	704	0.3−	0.7−
1998 05 01	691	0.2−	0.8−	1999 09 08	704	0.9+	0.1+	1999 10 07	704	0.1−	1.1−
1998 05 01	691	0.2−	0.7−	1999 09 08	704	0.7+	0.1+	1999 10 15	704	0.8−	0.8−
1998 05 01	691	0.4−	0.9−	1999 09 08	704	0.1+	0.7−	1999 10 15	704	0.8−	0.9−
1999 08 22	703	0.3+	0.3−	1999 09 10	620	0.3+	0.1−	1999 10 15	704	1.4−	1.0−
1999 08 22	699	0.1+	0.3−	1999 09 11	620	0.0	0.0	1999 10 15	704	0.7−	0.3−
1999 08 22	703	0.1+	0.1−	1999 09 11	620	0.3−	0.2+	1999 10 15	704	0.6−	0.5−
1999 08 22	703	0.1+	0.1+	1999 09 14	704	0.4+	0.0				
1999 08 22	699	0.2−	0.9+	1999 09 14	704	0.6−	0.4−				

1999 RY₂₃ = 1998 MH₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	62.81644		(2000.0)	P		Q	
<i>n</i>	0.19187661	<i>ω</i>	122.60565	+0.14796395		+0.98606423	
<i>a</i>	2.9770630	<i>Ω</i>	155.55940	−0.95778607		+0.16203585	
<i>e</i>	0.0956193	<i>i</i>	10.59195	−0.24648027		−0.03770575	
<i>P</i>	5.14	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	0.5−	0.4−	1999 09 05	699	0.1−	1.4+	1999 09 14	704	1.3+	0.9−
1998 05 23	704	0.4+	0.6−	1999 09 05	699	0.5−	0.4−	1999 09 14	704	0.3+	1.2−
1998 05 23	704	0.4+	0.4+	1999 09 07	704	0.1−	0.1−	1999 09 14	704	0.6+	0.5−
1998 05 23	704	0.4−	0.4−	1999 09 07	704	0.0	0.9−	1999 09 14	703	0.8+	0.2−
1998 06 19	704	0.5+	0.4−	1999 09 07	704	0.4+	0.4−	1999 09 14	703	0.1−	0.4+
1998 06 19	704	1.0+	1.1+	1999 09 07	704	0.2−	1.5−	1999 09 14	703	0.5−	1.4+
1998 06 19	704	0.8−	0.0	1999 09 07	704	0.7−	0.5−	1999 09 14	703	0.6−	0.1−
1998 06 19	704	(2.5−	0.2+)	1999 09 08	704	0.3−	0.3+	1999 10 02	704	0.4−	0.2−
1998 06 25	704	0.1−	0.4+	1999 09 08	704	0.1−	0.0	1999 10 02	704	0.4−	0.2+
1998 06 25	704	0.0	1.1−	1999 09 08	704	0.4+	0.0	1999 10 02	704	0.0	0.1+
1998 06 25	704	0.5−	1.1+	1999 09 08	704	0.4+	0.3+	1999 10 02	704	0.4−	0.7+
1999 09 05	699	0.1−	1.5+	1999 09 14	704	0.4+	0.5+				

1999 RR₂₄ = 1991 PR₅

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	102.23780		(2000.0)	P		Q	
<i>n</i>	0.25805992	<i>ω</i>	282.36897	−0.49212728		+0.86720385	
<i>a</i>	2.4433687	<i>Ω</i>	317.87284	−0.74822467		−0.46596846	
<i>e</i>	0.0795433	<i>i</i>	6.50125	−0.44493886		−0.17558722	
<i>P</i>	3.82	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1991 08 03	809	0.2+	1.0−	1999 09 07	704	0.1−	0.3−	1999 09 08	704	0.2−	0.2−
1991 08 03	809	0.0	0.2+	1999 09 07	704	0.5−	0.4−	1999 09 08	704	0.4+	1.5−
1991 08 03	809	0.3+	0.7+	1999 09 07	704	0.4+	0.5−	1999 10 04	704	0.2−	1.6+
1991 08 04	809	(2.3+ 0.1+)		1999 09 07	704	0.7+	0.2+	1999 10 04	704	0.2+	0.7−
1991 08 05	809	0.2−	0.3+	1999 09 07	704	0.2+	1.0+	1999 10 04	704	0.3−	1.1−
1991 08 05	809	0.3+	0.6+	1999 09 08	699	0.2−	1.1+	1999 10 04	704	1.0+	0.0
1991 08 05	675	0.4−	0.3+	1999 09 08	699	0.4−	1.0+	1999 10 04	704	0.3−	1.1−
1991 08 05	809	0.2−	0.1+	1999 09 08	699	0.4−	0.4−	1999 10 07	704	0.6−	0.6+
1991 08 05	675	0.1−	1.0+	1999 09 08	704	0.7+	0.0	1999 10 07	704	0.5−	0.2+
1991 08 07	675	0.8+	1.1−	1999 09 08	704	0.8+	0.1−	1999 10 07	704	0.2+	0.1−
1991 08 07	675	0.8−	0.9−	1999 09 08	704	0.4−	0.2−	1999 10 07	704	0.4−	0.7+

1999 OCT. 26

M.P.C. 36395

1999 RE₂₅ = 1971 DM₁ = 1977 XM₁ = 1982 BZ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	254.57142		(2000.0)	P		Q	
<i>n</i>	0.26324474	ω	195.76513	−0.35292434	−0.93512044		
<i>a</i>	2.4111797	Ω	274.90946	+0.86182772	−0.31177354		
<i>e</i>	0.1241195	<i>i</i>	1.81352	+0.36427653	−0.16836574		
<i>P</i>	3.74	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1971 02 18	095	2.1+	4.7+	1999 09 07	704	1.0−	0.0
1977 12 07	675	0.3+	0.0	1999 09 08	704	0.4+	1.2+
1977 12 08	675	0.3−	0.3−	1999 09 08	704	0.3−	0.8+
1982 01 19	095	0.5−	1.6−	1999 09 08	704	0.6−	0.7+
1999 09 07	704	0.0	0.3+	1999 09 08	704	0.7−	0.3+
1999 09 07	704	0.6−	1.0+	1999 10 04	704	0.2+	0.4+
1999 09 07	704	0.5−	0.2+	1999 10 04	704	1.0+	1.2−
1999 09 07	704	0.5−	0.4+	1999 10 04	704	0.3+	0.6−

1999 RN₂₅ = 1998 FQ₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.45008		(2000.0)	P		Q	
<i>n</i>	0.30775087	ω	324.33331	+0.88549809	+0.46434107		
<i>a</i>	2.1727172	Ω	8.05190	−0.39374392	+0.76903134		
<i>e</i>	0.1095130	<i>i</i>	6.86720	−0.24669587	+0.43929281		
<i>P</i>	3.20	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 20	704	0.1−	1.0−	1999 09 08	704	0.7+	0.4+
1998 03 20	704	0.6+	1.0−	1999 09 08	704	0.1+	0.5+
1998 03 20	704	0.4+	0.2−	1999 09 08	704	0.0	0.5+
1998 03 20	704	0.4−	0.1−	1999 09 11	120	0.3+	0.0
1998 03 20	704	1.2−	0.6+	1999 09 12	120	1.4+	0.5+
1998 03 22	704	1.0+	0.3−	1999 09 12	120	0.7−	0.1−
1998 03 22	704	0.3−	0.1−	1999 09 12	120	1.1+	0.2+
1998 03 22	704	1.7−	0.1+	1999 09 12	120	0.1+	0.0
1998 03 22	704	0.2−	0.3+	1999 09 12	120	0.1−	0.2−
1998 03 22	704	1.1+	0.5+	1999 09 14	704	0.5−	0.3−
1999 09 07	704	0.9+	0.1−	1999 09 14	704	0.0	0.2+
1999 09 07	704	0.6+	0.8−	1999 09 14	704	0.6−	0.5+
1999 09 07	704	0.2+	0.0	1999 09 14	704	0.5−	0.2−
1999 09 07	704	0.1−	0.9−	1999 09 14	704	0.8−	0.2+
1999 09 07	704	0.6−	0.9−	1999 09 14	120	0.4−	0.5−
1999 09 08	704	0.4+	0.0	1999 09 14	120	0.6−	0.6−
1999 09 08	704	0.5+	1.0+	1999 09 29	703	0.3−	0.5+

1999 RX₂₅ = 1980 TU₃ = 1987 YQ₅ = 1998 FZ₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	7.80704		(2000.0)	P		Q	
<i>n</i>	0.31107669	ω	319.13060	+0.88369410	+0.46771652		
<i>a</i>	2.1572033	Ω	13.01875	−0.40587524	+0.78492448		
<i>e</i>	0.1817924	<i>i</i>	4.59723	−0.23313093	+0.40636784		
<i>P</i>	3.17	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1980 10 07	675	1.7+	1.4−	1998 03 29	704	1.4−	1.3−
1980 10 09	675	0.2−	1.4−	1998 03 29	704	1.6−	0.2−
1980 10 10	675	0.1−	0.1+	1999 08 22	699	0.8+	1.8+
1987 12 24	010	1.6−	0.8−	1999 08 22	699	0.1−	1.1+
1987 12 24	010	1.9+	0.9+	1999 08 22	699	1.0+	0.7+
1998 02 27	566	0.2−	0.8+	1999 09 07	704	0.2+	0.7−
1998 02 27	566	0.5−	0.7+	1999 09 07	704	0.3+	0.7−
1998 02 27	566	0.1+	0.8+	1999 09 07	704	0.6+	0.3−
1998 03 20	704	0.5+	1.3−	1999 09 07	704	0.0	0.1−
1998 03 20	704	0.7−	0.1−	1999 09 07	704	0.2+	0.1−
1998 03 20	704	0.9+	1.1−	1999 09 08	704	0.2+	0.5−

1998 03 20	704	1.0+	0.2+	1999 09 08	704	0.1+	0.5+	1999 10 02	704	0.3+	0.5+
1998 03 20	704	0.3+	0.1+	1999 09 08	704	0.5−	0.4−	1999 10 02	704	0.5+	0.6+
1998 03 22	704	0.5+	0.3−	1999 09 08	704	0.1+	0.4−	1999 10 07	703	0.5−	0.5+
1998 03 22	704	1.1+	1.9−	1999 09 08	704	0.5−	0.1+	1999 10 07	703	0.6−	0.1+
1998 03 22	704	0.5−	0.0	1999 09 12	120	0.4+	0.5−	1999 10 07	703	0.5−	0.3+
1998 03 22	704	(5.0−	1.1+)	1999 09 12	120	0.3+	0.9−	1999 10 07	703	0.5−	0.5+
1998 03 26	704	1.2−	0.8+	1999 09 12	120	0.3−	0.5−	1999 10 07	704	0.1+	0.2+
1998 03 26	704	0.0	0.8+	1999 09 12	120	0.2+	0.7−	1999 10 07	704	0.3+	0.0
1998 03 26	704	0.2+	1.9+	1999 09 12	120	0.2+	0.6−	1999 10 07	704	0.2−	0.1−
1998 03 29	704	0.3−	0.3+	1999 09 14	704	0.0	0.5−	1999 10 07	704	0.2+	0.3−
1998 03 29	704	0.8−	0.3−	1999 09 14	704	0.1−	0.1−	1999 10 07	704	0.1−	0.1−
1998 03 29	704	1.4+	1.4−	1999 09 14	704	0.2−	0.4−				

1999 RQ₂₆ = 1992 HM₄ = 1998 MK₁₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	128.59477		(2000.0)	P		Q	
<i>n</i>	0.18298235	ω	53.35830	−0.70666049	+0.70715058		
<i>a</i>	3.0727690	Ω	171.55106	−0.68988731	−0.68113927		
<i>e</i>	0.0852950	<i>i</i>	9.34335	−0.15711923	−0.18970332		
<i>P</i>	5.39	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1992 04 30	033	0.5+	0.6−	1999 09 07	704	0.5+	0.5−
1992 05 01	033	1.0−	0.3−	1999 09 07	704	0.2+	0.9−
1992 05 04	033	0.1+	0.8−	1999 09 08	704	0.4+	0.2−
1998 06 19	704	1.1−	0.4+	1999 09 08	704	0.5+	1.2−
1998 06 19	704	0.0	1.0+	1999 09 08	704	0.6−	0.0
1998 06 19	704	1.1+	0.6+	1999 09 09	704	0.6+	0.2−
1998 06 19	704	(0.0	2.3+)	1999 09 09	704	0.6−	0.4+
1998 06 19	704	1.5−	0.4−	1999 09 09	704	0.9+	0.1−
1998 06 25	704	1.4+	0.0	1999 09 14	704	0.2+	0.2−
1998 06 25	704	(2.3−	0.8−)	1999 09 14	704	0.0	0.0
1998 06 25	704	0.4+	0.2−	1999 09 14	704	0.2+	0.8+
1998 06 25	704	0.4−	0.0	1999 09 14	704	0.1−	0.1+
1999 09 07	704	0.9−	1.5−	1999 09 14	704	0.0	0.6+

1999 RX₂₆ = 1998 DD₁₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	49.28183		(2000.0)	P		Q	
<i>n</i>	0.29639423	ω	226.25688	+0.20012369	+0.97943982		
<i>a</i>	2.2278685	Ω	55.30397	−0.88978928	+0.19256066		
<i>e</i>	0.1811776	<i>i</i>	1.77442	−0.41015307	+0.06014999		
<i>P</i>	3.33	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1998 02 24	691	0.0	0.2+	1999 09 08	704	0.5−	0.3−
1998 02 24	691	0.0	0.5+	1999 09 08	704	0.5+	0.6+
1998 02 24	691	0.1−	0.3+	1999 09 08	704	0.5−	0.5−
1998 02 28	691	0.2+	0.5−	1999 09 14	704	0.3−	0.2+
1998 02 28	691	0.7+	0.2−	1999 09 14	704	0.0	0.5−
1998 02 28	691	0.7−	0.5−	1999 09 14	704	1.1+	0.2−
1999 09 07	704	0.5−	0.1−	1999 09 14	704	0.4+	0.6−
1999 09 07	704	0.9+	0.7+	1999 09 14	704	0.5−	0.0
1999 09 07	704	1.1+	0.9−	1999 09 30	703	0.3−	0.3+
1999 09 08	704	0.4−	1.0+	1999 09 30	703	0.4−	0.0

1999 RF₂₇ = 1989 ET₁₁ = 1998 MR₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	139.90061		(2000.0)		P			Q			
<i>n</i>	0.23376711	ω	69.58859		-0.85282251		+0.51482266				
<i>a</i>	2.6098394	Ω	141.25394		-0.51589600		-0.80467078				
<i>e</i>	0.2548785	<i>i</i>	8.03402		-0.08090167		-0.29574069				
<i>P</i>	4.22	<i>H</i>	13.0		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1951 02 04	675	0.4-	0.5+	1999 09 07	704	1.0+	0.5+	1999 09 09	704	0.4-	0.3+
1951 02 04	675	0.5+	0.0	1999 09 07	704	0.4+	1.0-	1999 09 09	704	0.5-	0.1-
1989 03 03	808	0.2+	0.9+	1999 09 07	704	0.4-	0.5-	1999 09 09	704	0.0	0.3+
1989 03 03	808	0.0	0.1-	1999 09 08	704	1.4+	0.5+	1999 09 09	704	0.1-	0.4-
1998 06 24	704	0.4+	0.4-	1999 09 08	704	0.0	1.1+	1999 09 14	704	0.3+	0.1+
1998 06 24	704	0.3+	0.1-	1999 09 08	704	0.3+	0.3+	1999 09 14	704	0.2-	0.1-
1998 06 24	704	1.1+	0.2-	1999 09 08	704	0.1+	0.0	1999 09 14	704	0.2-	0.2-
1998 06 24	704	0.6-	0.3+	1999 09 08	704	0.1-	0.2-	1999 09 14	704	0.4-	0.1-
1998 06 24	704	0.2-	0.6+	1999 09 09	704	1.0+	0.3-	1999 09 14	704	0.1-	0.3+
1998 06 26	704	0.2+	0.9-	1999 09 09	704	0.5-	1.9+	1999 10 02	704	0.7-	0.1-
1998 06 26	704	0.9-	1.7+	1999 09 09	704	1.1-	0.3+	1999 10 02	704	0.2-	0.2-
1998 06 26	704	0.1+	0.7-	1999 09 09	704	0.3+	0.1-	1999 10 02	704	0.7+	0.7-
1998 06 26	704	0.3-	0.2-	1999 09 09	704	0.2-	0.2+	1999 10 02	704	0.2-	0.7+
1998 06 26	704	0.2-	0.8+	1999 09 09	704	0.8-	0.4-	1999 10 02	704	0.2+	0.5-

1999 RT₂₇ = 1981 SW₈ = 1981 UL₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	282.87708		(2000.0)			P		Q	
<i>n</i>	0.27011274	ω	278.41493			+0.15697408		-0.98748807	
<i>a</i>	2.3701327	Ω	162.53211			+0.92469154		+0.14160625	
<i>e</i>	0.1645513	<i>i</i>	2.87359			+0.34684967		+0.06939009	
<i>P</i>	3.65	<i>H</i>	15.2		<i>G</i>	0.15		<i>U</i>	4
Residuals in seconds of arc									
1981 09 24	033	0.3-	0.1+	1999 09 07	704	0.6+	0.2+	1999 09 11	699 (1.1- 2.2+)
1981 09 24	033	0.2-	0.1-	1999 09 08	120	0.0	0.8-	1999 09 11	120 1.3+ 1.2-
1981 10 25	675	0.4-	0.1-	1999 09 08	120	0.6+	0.4-	1999 09 11	120 0.4- 0.6-
1981 10 26	675	0.7+	0.2+	1999 09 08	120	0.6+	0.7-	1999 09 14	704 0.6- 0.1-
1999 08 22	703	0.3-	0.6+	1999 09 08	120	0.2-	0.1+	1999 09 14	704 1.0- 0.4-
1999 08 22	703	0.7-	0.5+	1999 09 09	120	(3.0+ 1.0+)		1999 09 14	704 1.1- 0.4-
1999 08 22	703	0.0	0.9+	1999 09 09	704	0.4-	0.1-	1999 09 14	704 1.7- 0.7-
1999 08 22	703	1.4+	1.3+	1999 09 09	704	1.0+	0.3-	1999 09 14	704 1.1- 0.6-
1999 08 22	703	1.0+	0.8+	1999 09 09	704	0.1+	0.2-	1999 09 28	120 0.2+ 0.8-
1999 08 22	703	0.6+	0.2+	1999 09 09	704	0.3+	0.6-	1999 09 28	120 0.4- 0.3-
1999 08 22	703	1.0-	1.2-	1999 09 09	704	0.0	0.1+	1999 10 02	704 0.3+ 0.9+
1999 08 22	703	1.0-	0.1-	1999 09 11	699	0.5+	0.4+	1999 10 02	704 1.4+ 1.4+
1999 09 07	704	0.1+	0.6+	1999 09 11	699	0.5+	1.6+	1999 10 02	704 0.3- 0.1-
1999 09 07	704	0.0	0.7-	1999 09 11	699	0.2-	1.6-	1999 10 02	704 0.1+ 0.5+
1999 09 07	704	0.3-	0.4+	1999 09 11	699	0.2+	1.1+	1999 10 02	704 0.4- 0.8+
1999 09 07	704	0.1-	0.5-	1999 09 11	699	0.6+	0.1-		

1999 RW₂₇ = 1978 RU₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	331.66723		(2000.0)		P		Q				
<i>n</i>	0.23405588	ω	41.76962		+0.45406425		-0.88642815				
<i>a</i>	2.6076923	Ω	21.69930		+0.73946340		+0.31868504				
<i>e</i>	0.2859047	<i>i</i>	14.06237		+0.49701059		+0.33568583				
<i>P</i>	4.21	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1978 09 08	010	0.0	0.6-	1999 10 02	120	0.1+	0.0	1999 10 07	704	0.3+	1.2-
1978 09 09	010	0.2+	0.3+	1999 10 02	120	0.1-	0.0	1999 10 07	704	0.9+	0.5-
1999 09 08	120	0.1+	0.0	1999 10 03	120	0.5+	0.0	1999 10 07	704	0.5+	0.2-
1999 09 08	120	0.5+	0.1+	1999 10 03	703	0.5-	1.0+	1999 10 07	704	1.2+	0.3-
1999 09 08	120	0.2+	0.1+	1999 10 03	703	0.5-	0.4+	1999 10 07	704	0.1+	0.6+
1999 09 09	120	1.2-	0.2-	1999 10 03	703	0.6-	0.2+	1999 10 16	611	0.4+	0.3-

1999 09 09	120	0.3-	0.0	1999 10 03	703	0.3-	0.5+	1999 10 16	611	0.7-	0.4-
1999 09 11	120	0.2+	0.2+	1999 10 05	704	0.3-	0.2-	1999 10 20	734	0.3-	0.7+
1999 09 11	120	0.1+	0.3+	1999 10 05	704	0.1-	0.2-	1999 10 20	734	0.2-	0.0
1999 09 11	120	0.5+	0.2+	1999 10 05	704	0.1+	0.0	1999 10 20	734	0.2-	0.1+
1999 09 17	120	0.3-	0.4-	1999 10 05	704	0.0	0.0				
1999 09 17	120	0.2-	0.3-	1999 10 05	704	0.0	0.2+				

1999 RA₂₈ = 1994 TO₁₂ = 1997 CE₁₉ = 1998 HU₁₀₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	53.16623		(2000.0)	P			Q				
<i>n</i>	0.18172581	ω	237.77855		+0.09006533		+0.99578901				
<i>a</i>	3.0869172	Ω	37.40053		-0.90401658		+0.08894620				
<i>e</i>	0.1720190	<i>i</i>	1.61349		-0.41790222		+0.02219950				
<i>P</i>	5.42	<i>H</i>	14.5	<i>G</i>	0.15		<i>U</i>	1			
Residuals in seconds of arc											
1994 10 10	691	0.0	0.1-	1998 05 01	566	0.1+	0.6-	1999 09 08	552	0.0	0.2-
1994 10 10	691	0.5+	1.3-	1998 05 05	699	0.6+	0.5+	1999 09 08	552	0.0	0.6+
1994 10 10	691	0.1-	0.4-	1998 05 05	699	0.9-	0.0	1999 09 09	704	0.3+	0.8+
1994 10 12	691	0.1+	0.4+	1998 05 05	699	0.1-	0.6+	1999 09 09	704	0.1-	0.0
1994 10 12	691	0.1+	0.2-	1998 05 24	704	0.8-	0.6-	1999 09 09	704	0.1-	0.2+
1994 10 12	691	0.3+	0.3-	1998 05 24	704	0.8+	0.7+	1999 09 09	704	0.1+	0.4+
1997 02 01	327	0.9+	0.1+	1998 05 24	704	0.7-	0.5+	1999 09 09	704	0.2-	0.4-
1997 02 01	327	0.8-	0.7+	1998 05 24	704	0.9+	0.4-	1999 09 10	552	0.2+	0.2+
1997 02 01	327	1.1+	0.6+	1998 05 24	704	0.9-	0.8+	1999 09 10	552	0.0	0.8-
1997 02 06	327	1.0-	0.2+	1999 08 12	699	0.6+	0.4-	1999 09 10	552	0.7-	0.4-
1997 02 06	327	0.6+	0.0	1999 08 12	699	0.5-	1.4+	1999 09 11	552	0.6-	0.0
1997 02 06	327	1.4-	0.2+	1999 08 12	699	0.5+	0.1-	1999 09 11	552	0.2+	0.0
1997 02 06	327	0.2+	0.5+	1999 09 04	691	0.5-	0.1+	1999 09 11	552	0.3+	0.5+
1997 02 06	327	0.1-	0.8+	1999 09 04	691	0.4-	0.4+	1999 09 12	552	0.2-	0.8-
1997 02 06	327	1.6+	0.1-	1999 09 04	691	0.4-	0.4+	1999 09 12	552	0.4+	0.3-
1998 04 25	809	(2.8+	0.9+)	1999 09 05	552	1.0-	0.9-	1999 09 14	704	1.5+	1.0-
1998 04 25	809	(2.3+	0.4+)	1999 09 05	552	0.0	1.3-	1999 09 14	704	0.8+	0.3+
1998 04 25	809	2.0+	0.3-	1999 09 05	552	0.6-	0.7+	1999 09 14	704	0.3-	0.2-
1998 04 28	809	(3.2+	0.6+)	1999 09 07	704	0.0	0.9+	1999 09 14	704	0.1-	1.6+
1998 04 28	809	(2.6+	0.1+)	1999 09 07	704	0.1-	0.5+	1999 10 08	552	0.0	0.7+
1998 04 28	809	(2.6+	0.3+)	1999 09 07	704	1.0+	0.2-	1999 10 08	552	0.1+	0.3-
1998 05 01	566	0.2-	0.4-	1999 09 07	704	0.9-	0.9+				
1998 05 01	566	0.7-	0.7-	1999 09 08	552	1.1-	0.4+				

1999 RD₂₈ = 1976 SM₉ = 1986 UT₁ = 1996 SU₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	19.30361		(2000.0)			P		Q			
n	0.29817471	ω	131.03065			+0.47603401		+0.87936324			
a	2.2189908	Ω	167.38345			-0.82069516		+0.44853282			
e	0.1988199	i	2.77615			-0.31599222		+0.15980804			
P	3.31	H	15.4		G	0.15		U	4		
Residuals in seconds of arc											
1976 09 29	095	0.6+	1.7-	1999 09 08	678	0.2-	0.1+	1999 09 13	704	0.3-	0.4-
1986 10 27	010(21.2-	0.7+)		1999 09 08	678	0.2+	0.0	1999 09 13	704	0.6-	0.5-
1996 09 21	327	0.2+	0.1+	1999 09 09	678	0.7+	0.5+	1999 09 18	678	1.1-	0.7+
1996 09 21	327	0.1-	0.3+	1999 09 09	678	0.3+	0.4+	1999 09 18	678	0.8-	0.3+
1996 09 21	327	0.5+	0.2-	1999 09 09	704	0.4+	0.2-	1999 09 18	678	1.0-	0.7+
1996 09 23	327	0.4-	0.5-	1999 09 09	704	0.4+	0.6-	1999 09 29	704	0.5+	0.8+
1996 09 23	327	0.2-	0.3+	1999 09 09	704	0.2+	0.6-	1999 09 29	704	1.2+	0.5-
1996 09 23	327	0.3+	0.2+	1999 09 09	704	0.2+	1.0-	1999 09 29	704	0.7+	0.6-
1996 09 23	327	0.5-	0.8+	1999 09 09	704	0.0	0.9-	1999 09 29	704	0.2-	0.8-
1999 09 07	704	0.3-	0.3-	1999 09 13	678	0.4-	0.5-	1999 09 30	678	0.6-	0.9+
1999 09 07	704	0.0	0.1-	1999 09 13	678	0.4-	0.1+	1999 09 30	678	1.1-	0.7+
1999 09 07	704	0.1+	0.1-	1999 09 13	678	0.7+	0.2+	1999 09 30	704	0.5+	0.8+
1999 09 07	704	0.1-	0.6+	1999 09 13	704	0.0	0.2-	1999 09 30	704	(2.6+	0.5-)
1999 09 07	704	0.3+	0.6+	1999 09 13	704	0.3+	0.6+	1999 09 30	704	(2.7+	3.3-)
1999 09 08	678	0.7+	0.4+	1999 09 13	704	0.9-	0.0				

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1999 RS₂₈ = 3078 T-3

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	333.38806		(2000.0)	P		Q	
<i>n</i>	0.17802479	ω	193.73556	+0.89391540		-0.44295180	
<i>a</i>	3.1295536	Ω	193.21324	+0.43436939		+0.89383459	
<i>e</i>	0.2198686	<i>i</i>	17.47050	+0.11062769		+0.06966661	
<i>P</i>	5.54	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1977 10 07	675	1.6+	1.4-	1999 09 07	703	0.1-	0.0	1999 09 15	557	0.2-	0.5-
1977 10 11	675	0.6-	0.4+	1999 09 07	703	0.2+	0.6-	1999 09 15	557	0.2-	0.1-
1977 10 11	675	1.4-	1.5+	1999 09 08	557	0.2-	0.1-	1999 09 27	557	0.2+	0.0
1977 10 12	675	2.0-	2.0-	1999 09 08	557	0.1-	0.1+	1999 09 27	557	0.2+	0.1-
1977 10 12	675	0.6-	0.9-	1999 09 08	557	0.1+	0.2-	1999 09 27	557	0.2+	0.1+
1977 10 16	675	0.4+	0.9+	1999 09 08	557	0.1-	0.1-	1999 09 27	557	0.2+	0.4+
1977 10 16	675	(0.8-	2.7+)	1999 09 08	704	1.6+	1.1+	1999 09 29	703	0.4-	0.4+
1977 10 16	675	0.4+	1.0+	1999 09 08	704	0.8+	0.5+	1999 09 29	703	0.4+	0.0
1977 10 16	675	(0.4-	3.6+)	1999 09 08	704	0.2-	0.6-	1999 09 29	703	0.4+	0.1-
1977 10 17	675	1.4-	1.7+	1999 09 08	704	1.0-	0.0	1999 09 29	703	0.0	0.3-
1977 10 17	675	0.4+	0.3-	1999 09 08	557	0.3-	0.4-	1999 10 04	704	0.7+	0.2+
1977 10 17	675	0.3-	2.0+	1999 09 08	557	0.2-	0.2-	1999 10 04	704	0.4+	1.1+
1977 10 17	675	0.3+	0.1-	1999 09 08	557	0.1-	0.1-	1999 10 04	704	0.2-	1.5+
1977 10 21	675	0.8+	0.8-	1999 09 08	557	0.0	0.2+	1999 10 07	557	0.0	0.6-
1977 10 21	675	1.6+	1.9-	1999 09 12	557	0.1-	0.2-	1999 10 07	557	0.4-	0.3-
1977 10 22	675	0.9+	0.3-	1999 09 12	557	0.0	0.1-	1999 10 07	557	0.6+	0.1-
1999 09 07	703	0.3-	0.9+	1999 09 12	557	0.0	0.1-				
1999 09 07	703	1.5-	0.8-	1999 09 15	557	0.4-	0.5-				

1999 RY₂₉ = 1998 BB₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	102.18482		(2000.0)	P		Q	
<i>n</i>	0.35170759	ω	270.85793	-0.65197921		+0.73217395	
<i>a</i>	1.9876880	Ω	316.24716	-0.53131625		-0.62659845	
<i>e</i>	0.0550976	<i>i</i>	16.55872	-0.54094931		-0.26701255	
<i>P</i>	2.80	<i>H</i>	16.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 26	566	0.5-	0.1-	1999 09 05	703	0.5+	0.5-	1999 09 09	704	0.0	0.1-
1998 01 26	566	0.5-	0.3-	1999 09 05	703	1.7+	0.4+	1999 09 09	704	0.0	0.5-
1998 01 26	566	0.6-	0.4-	1999 09 08	704	0.1-	0.2-	1999 09 30	703	0.0	0.2-
1998 01 28	566	0.5+	0.1-	1999 09 08	704	0.5+	0.9+	1999 09 30	703	0.1+	0.2+
1998 01 28	566	0.4+	0.7+	1999 09 08	704	0.7-	0.4-	1999 09 30	703	0.4+	0.0
1998 01 28	566	0.7+	0.2+	1999 09 09	704	0.4-	0.3+	1999 09 30	703	0.7-	0.4-
1999 09 05	703	0.4+	0.7+	1999 09 09	704	0.4-	0.0				
1999 09 05	703	0.8-	0.8-	1999 09 09	704	0.4-	0.4+				

1999 RZ₃₀ = 1998 BC₁₀

Id. S. Nakano, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	120.25534		(2000.0)	P		Q	
<i>n</i>	0.36937102	ω	254.02069	-0.65519123		+0.74280146	
<i>a</i>	1.9238041	Ω	333.44021	-0.51985644		-0.57558654	
<i>e</i>	0.0593114	<i>i</i>	17.94100	-0.54815484		-0.34197387	
<i>P</i>	2.67	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 01 24	566	0.6+	0.1-	1999 09 08	704	0.2+	0.1-	1999 09 18	704	0.4+	0.1+
1998 01 24	566	0.5+	0.4-	1999 09 08	704	0.0	0.1+	1999 09 18	704	0.3+	0.0
1998 01 24	566	0.5+	0.3-	1999 09 08	704	0.5-	0.1-	1999 10 03	703	0.2-	0.3+
1998 01 26	566	0.0	0.6+	1999 09 08	704	0.3-	0.1-	1999 10 03	704	0.0	0.2+
1998 01 26	566	0.1-	0.5+	1999 09 08	704	0.3-	0.5-	1999 10 03	703	0.3-	0.2+
1998 01 26	566	0.5+	0.4+	1999 09 09	704	0.3-	0.0	1999 10 03	704	0.0	0.0
1998 02 24	566	0.5-	0.3-	1999 09 09	704	0.3-	0.1+	1999 10 03	703	0.2-	0.3+
1998 02 24	566	0.5-	0.2-	1999 09 09	704	0.9-	0.1+	1999 10 03	704	0.3-	0.0
1998 02 24	566	0.6-	0.2-	1999 09 09	704	0.6-	0.2+	1999 10 03	703	0.2-	0.0

1998 04 29	566	0.5-	0.5+	1999 09 09	704	0.2-	0.0	1999 10 03	704	0.1-	0.2-
1998 04 29	566	0.1+	0.0	1999 09 13	703	0.3+	0.9+	1999 10 03	704	0.1+	0.0
1998 04 29	566	0.3+	0.1+	1999 09 13	703	0.5-	0.0	1999 10 12	704	1.3+	0.1+
1999 07 23	704	0.2-	0.1+	1999 09 13	703	0.6-	0.0	1999 10 12	704	0.8+	0.3+
1999 07 23	704	0.1+	0.6-	1999 09 13	703	0.6-	0.4-	1999 10 12	704	1.0+	0.1+
1999 07 23	704	0.0	0.1-	1999 09 18	704	0.6+	0.5-	1999 10 12	704	0.9+	0.4-
1999 07 23	704	0.8-	0.3+	1999 09 18	704	0.7+	0.1-				
1999 07 23	704	0.1-	0.4+	1999 09 18	704	0.2+	0.4-				

1999 RJ₃₁ = 1985 SA₄ = 1991 GT₁₁ = 1998 FJ₁₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.71790		(2000.0)	P		Q	
<i>n</i>	0.28044953	ω	285.95873	-0.02232736		+0.99898722	
<i>a</i>	2.3115302	Ω	342.62054	-0.85995245		-0.03911886	
<i>e</i>	0.0983145	<i>i</i>	7.51477	-0.50988555		+0.02223169	
<i>P</i>	3.51	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1985 09 20	095	0.8-	1.5+	1999 09 09	704	0.2+	0.3-	1999 10 01	704	0.0	0.2-
1991 04 11	033	0.0	0.3-	1999 09 09	704	0.2+	0.1-	1999 10 01	704	0.2+	1.1-
1991 04 11	033	0.3-	0.0	1999 09 09	704	0.2-	0.6-	1999 10 01	704	0.5+	0.1-
1998 03 22	704	0.3+	0.3+	1999 09 09	704	0.0	0.2-	1999 10 01	704	0.2+	0.2-
1998 03 22	704	0.2+	0.7+	1999 09 09	704	0.5-	0.2-	1999 10 01	704	0.2-	0.3+
1998 03 22	704	0.2+	0.3+	1999 09 09	120	0.6-	0.1+	1999 10 01	704	1.3-	0.1-
1998 03 22	704	0.3+	0.5-	1999 09 09	120	1.1+	0.3+	1999 10 02	704	0.5-	0.2+
1998 03 22	704	0.1+	1.1-	1999 09 09	120	1.0-	0.4-	1999 10 02	704	0.7-	0.5+
1998 03 26	704	0.2-	0.5-	1999 09 10	120	0.1+	0.3+	1999 10 02	704	0.1-	0.4+
1998 03 26	704	0.3-	0.1+	1999 09 10	120	0.9-	0.1+	1999 10 02	704	0.3-	0.5+
1998 03 26	704	0.5-	0.6+	1999 09 14	704	0.1+	0.3-	1999 10 02	704	0.7-	0.2+
1999 08 12	699	0.2-	1.3+	1999 09 14	704	0.1-	0.5+	1999 10 06	704	1.0+	0.0
1999 08 12	699	0.2-	1.3+	1999 09 14	704	0.2+	0.2+	1999 10 06	704	0.7+	0.1-
1999 08 12	699	0.0	1.1+	1999 09 14	704	0.1+	0.4-	1999 10 06	704	0.4+	0.5+
1999 09 07	704	0.1+	0.6-	1999 09 14	704	0.2+	0.1-	1999 10 06	704	0.4+	0.8+
1999 09 07	704	0.2+	0.8-	1999 09 28	120	0.2-	0.2+	1999 10 06	704	1.3-	0.6+
1999 09 07	704	0.3-	1.1-	1999 09 28	120	0.5+	0.8-	1999 10 07	704	0.6+	0.3-
1999 09 07	704	0.2-	1.2-	1999 09 30	699	0.8+	0.9+	1999 10 07	704	0.3+	0.1+
1999 09 07	704	0.2-	1.9-	1999 09 30	699	0.5-	0.4+	1999 10 07	704	0.6+	0.5-
1999 09 08	120	0.3-	0.5-	1999 09 30	699	0.7+	0.3-	1999 10 07	704	0.5+	0.2-
1999 09 08	120	0.2-	0.2-	1999 10 01	704	1.1+	0.1-				
1999 09 08	120	0.1-	0.1-	1999 10 01	704	1.2+	0.7+				

1999 RL₃₁ = 1982 RS₁ = 1989 UH₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	328.58012		(2000.0)	P		Q	
<i>n</i>	0.29107910	ω	25.79882	+0.85657140		-0.51588488	
<i>a</i>	2.2549074	Ω	5.30628	+0.44772855		+0.73126087	
<i>e</i>	0.1443150	<i>i</i>	7.56496	+0.25656302		+0.44622901	
<i>P</i>	3.39	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1982 09 15	046	(6.7—	2.6+)	1999 09 05	699	0.2+	0.3—	1999 10 04	704	0.3+	0.4+
1982 09 15	046	1.8—	1.4+	1999 09 09	120	0.4—	0.5—	1999 10 04	704	0.0	0.2+
1982 09 15	046	1.5—	0.6—	1999 09 09	120	0.6—	0.1+	1999 10 04	704	0.4—	0.0
1982 09 15	046	0.0	0.4—	1999 09 10	120	0.2+	0.3—	1999 10 04	704	0.7—	0.0
1982 09 16	046	(5.5+	0.7+)	1999 09 10	120	0.6+	0.4—	1999 10 06	704	0.4+	0.1—
1982 09 16	046	(5.9+	0.8+)	1999 09 11	120	0.3—	0.3—	1999 10 06	704	0.4+	0.1+
1982 09 17	046	0.9+	0.2+	1999 09 11	120	0.3+	0.5—	1999 10 06	704	0.1+	0.2—
1982 09 17	046	1.7+	0.7+	1999 09 29	120	0.2+	0.4+	1999 10 06	704	0.1—	0.2—
1989 10 29	400	0.3—	2.3—	1999 09 29	120	0.4+	0.1+	1999 10 06	704	0.2+	0.1+
1989 10 29	400	0.9—	1.6—	1999 09 30	703	0.1+	0.3+	1999 10 07	704	0.0	0.1+
1989 10 29	400	1.8+	0.3—	1999 09 30	703	0.1—	0.2+	1999 10 07	704	0.2+	0.1—
1989 11 04	400	1.0—	2.0+	1999 09 30	703	0.3—	0.3+	1999 10 07	704	0.3+	0.0
1989 11 04	400	0.3+	2.1+	1999 09 30	703	0.1+	0.2+	1999 10 07	704	0.1+	0.2+
1989 11 04	400	(0.6—	5.6+)	1999 09 30	120	1.0—	0.6+	1999 10 07	704	0.3+	0.2+
1999 08 13	699	0.5—	0.0	1999 09 30	120	0.4+	0.3—	1999 10 08	106	0.1+	0.3—
1999 08 13	699	0.2+	0.2—	1999 09 30	120	0.1+	0.2—	1999 10 08	106	0.1—	0.3+

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1999 08 13	699	0.1+	0.2-	1999 10 02	120	0.3+	0.7-	1999 10 08	106	0.1-	0.6-
1999 09 05	699	0.4+	0.0	1999 10 02	120	0.7-	0.1+				
1999 09 05	699	0.1+	0.0	1999 10 04	704	0.1+	0.2+				

1999 RS₃₁ = 1981 UB₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	302.09876		(2000.0)	P	Q	Williams					
<i>n</i>	0.21485623	ω	227.22789	+0.58892478	-0.80811573						
<i>a</i>	2.7608157	Ω	186.71735	+0.76583947	+0.56228357						
<i>e</i>	0.0589519	<i>i</i>	5.29618	+0.25818118	+0.17545984						
<i>P</i>	4.59	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1981 10 25	675	0.4-	0.1-	1999 09 09	704	0.5+	0.6+	1999 09 14	703	1.8+	0.1-
1981 10 26	675	0.3+	0.6+	1999 09 09	704	0.3+	0.3+	1999 09 14	703	0.5-	0.4-
1993 05 24	691	0.4-	0.2+	1999 09 09	704	0.7-	0.1-	1999 09 21	595	0.5-	0.5+
1993 05 24	691	0.3-	0.0	1999 09 09	595	0.2-	0.2+	1999 09 21	595	0.4+	0.3+
1993 05 24	691	0.8+	0.1+	1999 09 10	595	0.1-	0.0	1999 10 02	704	1.4-	0.1-
1999 09 07	704	0.8-	0.5+	1999 09 11	120	1.8+	1.5-	1999 10 02	704	0.3+	1.0-
1999 09 07	704	0.2-	0.2+	1999 09 11	120	1.4+	0.0	1999 10 02	704	1.1-	0.3-
1999 09 07	704	0.6-	0.2-	1999 09 14	704	0.1+	0.3+	1999 10 02	704	0.9+	1.1-
1999 09 07	704	0.1-	0.4-	1999 09 14	704	0.4+	0.1+	1999 10 07	704	0.3-	0.1-
1999 09 07	704	0.7+	0.0	1999 09 14	704	0.2-	0.6+	1999 10 07	704	0.1-	0.3-
1999 09 09	595	0.1-	0.1+	1999 09 14	704	0.2-	1.0+	1999 10 07	704	0.2-	0.0
1999 09 09	595	0.0	0.2-	1999 09 14	704	0.1+	0.3+	1999 10 07	704	0.7-	0.3-
1999 09 09	704	0.4+	0.2+	1999 09 14	703	0.1+	0.1+	1999 10 07	704	0.5-	0.2+
1999 09 09	704	0.0	0.5+	1999 09 14	703	0.8-	0.0				

1999 RV₃₁ = 1981 UC₂ = 1998 KD₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	74.32447		(2000.0)	P	Q	Williams					
<i>n</i>	0.21172802	ω	251.87326	-0.09160467	+0.99575031						
<i>a</i>	2.7879426	Ω	12.88184	-0.89679436	-0.07835485						
<i>e</i>	0.0244699	<i>i</i>	2.43743	-0.43286079	-0.04839244						
<i>P</i>	4.66	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1981 10 30	381	0.5-	0.5+	1999 09 09	704	0.4+	0.5+	1999 09 28	848	0.0	0.2+
1981 10 30	381	0.3+	0.3+	1999 09 09	704	0.9+	0.6+	1999 09 28	143	0.2-	0.3+
1998 05 22	704	0.8+	0.0	1999 09 09	704	0.9+	0.6+	1999 09 28	143	0.4-	0.1+
1998 05 22	704	1.2-	0.6+	1999 09 09	148	1.2+	1.2+	1999 09 28	143	0.6-	0.9+
1998 05 22	704	0.3+	0.2+	1999 09 09	148	0.5+	0.7+	1999 09 28	120	0.9-	0.2+
1998 05 22	704	(2.1-	3.0-)	1999 09 10	148	0.0	1.7+	1999 09 28	120	0.9+	0.7+
1998 05 24	704	0.1-	0.3-	1999 09 10	627	0.7-	0.2+	1999 09 29	848	0.6-	0.0
1998 05 24	704	0.3-	0.4+	1999 09 10	627	0.5-	0.1-	1999 09 29	848	0.2-	0.2-
1998 05 24	704	1.1+	0.5+	1999 09 10	627	0.5-	0.3+	1999 09 29	143	1.7-	0.5-
1998 05 24	704	0.5-	0.9-	1999 09 11	699	0.5+	0.1+	1999 09 29	143	0.8-	1.0-
1999 09 07	704	0.0	0.3+	1999 09 11	699	0.0	0.2+	1999 09 29	143	0.1+	0.4+
1999 09 07	704	0.1-	0.4+	1999 09 11	699	0.5+	0.4+	1999 09 29	143	0.6-	0.5-
1999 09 07	704	0.7+	0.0	1999 09 13	148	1.6-	0.9-	1999 10 02	704	0.3-	0.7-
1999 09 07	704	0.0	0.2-	1999 09 13	148	(2.1-	0.3-)	1999 10 02	704	0.6+	1.3-
1999 09 07	704	0.1+	0.3+	1999 09 13	148	1.7-	0.6-	1999 10 02	704	1.7+	0.8-
1999 09 08	148	1.6+	0.3-	1999 09 14	704	0.5+	0.1-	1999 10 02	704	0.6+	0.8-
1999 09 09	148	1.2-	0.4+	1999 09 14	704	0.6+	0.4-	1999 10 02	704	1.3+	0.4-
1999 09 09	148	0.9-	0.1-	1999 09 14	704	0.2+	1.1-	1999 10 07	704	(2.2-	1.8+)
1999 09 09	704	0.0	0.6-	1999 09 14	704	0.6+	0.1-	1999 10 07	704	1.6-	0.0
1999 09 09	704	0.4+	0.2+	1999 09 28	848	0.4+	0.6-	1999 10 07	704	(2.4-	0.5-)

1999 RL₃₂ = 1978 VF₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	348.71620		(2000.0)	P	Q	Williams					
<i>n</i>	0.18333205	ω	25.23779	+0.99239976	-0.12263768						
<i>a</i>	3.0688603	Ω	341.79798	+0.10668308	+0.89848448						
<i>e</i>	0.1861489	<i>i</i>	1.85926	+0.06133052	+0.42152775						
<i>P</i>	5.38	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4				

Residuals in seconds of arc

1978 11 05	675	0.5-	0.4-	1999 09 09	120	1.4-	1.3-	1999 10 02	704	0.2+	0.1-
1978 11 06	675	1.0+	0.4-	1999 09 09	120	1.1+	0.1+	1999 10 02	704	0.1-	0.2-
1978 11 07	675	2.3-	0.1+	1999 09 09	120	0.1+	0.6+	1999 10 06	704	0.3+	0.4+
1978 11 08	675	1.7+	0.5+	1999 09 10	120	0.3+	0.5+	1999 10 06	704	0.1+	0.3+
1999 09 07	704	0.8+	0.2+	1999 09 10	120	0.2-	0.6+	1999 10 06	704	0.0	0.2+
1999 09 07	704	0.5-	0.5+	1999 09 11	120	0.2-	0.7+	1999 10 06	704	0.4+	0.2-
1999 09 07	704	0.1+	0.4-	1999 09 11	120	0.3+	1.1-	1999 10 06	704	0.2-	0.0
1999 09 07	704	0.3-	0.2+	1999 09 29	703	1.3-	0.4+	1999 10 07	704	0.2-	0.0
1999 09 07	704	0.1+	1.4-	1999 09 29	703	0.7-	0.3+	1999 10 07	704	0.6+	0.4-
1999 09 09	704	0.4-	0.4+	1999 09 29	703	0.0	0.1+	1999 10 07	704	0.0	0.2-
1999 09 09	704	0.3+	0.6-	1999 09 29	703	0.3-	0.3+	1999 10 07	704	0.1+	0.1+
1999 09 09	704	0.1-	0.3-	1999 10 02	704	0.9+	0.8+	1999 10 07	704	1.2-	0.9-
1999 09 09	704	0.5+	0.1-	1999 10 02	704	0.3+	0.3+				
1999 09 09	704	0.8+	0.6+	1999 10 02	704	0.1+	0.3-				

1999 RT₃₂ = 1998 HX₁₂₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	139.41722		(2000.0)	P	Q	Williams					
<i>n</i>	0.25438164	ω	106.78890	-0.94121195	+0.30380894						
<i>a</i>	2.4668659	Ω	91.08832	-0.33772784	-0.85626291						
<i>e</i>	0.0804898	<i>i</i>	8.49617	+0.00774440	-0.41774867						
<i>P</i>	3.87	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1986 03 04	675	0.0	0.1-	1998 05 22	704	0.5+	0.1+	1999 09 09	557	0.8-	0.8+
1998 04 23	704	0.1+	1.1-	1998 05 24	704	1.3+	1.2-	1999 09 10	557	0.5+	0.1+
1998 04 23	704	1.9-	1.0+	1998 05 24	704	1.7-	0.1-	1999 09 10	557	0.5+	0.1-
1998 04 23	704	1.0+	0.1-	1998 05 24	704	1.3+	1.4+	1999 09 12	557	0.3+	0.5-
1998 04 23	704	0.4-	0.6+	1998 05 24	704	0.6+	0.5-	1999 09 12	557	0.6+	0.4+
1998 04 24	704	0.3-	0.3+	1998 05 24	704	0.0	0.5-	1999 09 12	557	0.3+	0.1-
1998 04 24	704	0.5-	0.3+	1998 05 27	699	0.3-	0.7-	1999 09 13	557	0.1-	0.6-
1998 04 24	704	0.7+	0.6-	1998 05 27	699	0.6-	0.8+	1999 09 13	557	0.1+	0.3-
1998 05 22	704	0.4+	0.4-	1998 05 27	699	0.6+	1.5+	1999 09 13	557	0.2-	0.0
1998 05 22	704	0.8-	0.2-	1999 09 09	557	0.0	0.2+	1999 09 13	557	0.4+	0.7-
1998 05 22	704	0.6+	0.1-	1999 09 09	557	0.3-	0.2-				
1998 05 22	704	0.7-	0.6-	1999 09 09	557	1.2-	0.9+				

1999 RV₃₂ = 1995 WC₂₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	246.50513		(2000.0)	P	Q	Williams					
<i>n</i>	0.21622810	ω	98.07369	-0.29120708	-0.95656857						
<i>a</i>	2.7491259	Ω	8.89018	+0.84055534	-0.26244312						
<i>e</i>	0.0747486	<i>i</i>	4.91050	+0.45679881	-0.12688644						
<i>P</i>	4.56	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3				

Residuals in seconds of arc

1995 11 18	691	0.0	0.1-	1999 09 07	704	0.3+	1.1-	1999 09 11	113	1.2+	0.7+
1995 11 18	691	0.1+	0.0	1999 09 07	704	0.7+	0.5+	1999 09 11	113	1.6+	0.3+
1995 11 18	691	0.3+	0.2-	1999 09 09	704	0.5-	0.3+	1999 09 11	113	0.8+	0.2-
1995 11 24	691	0.2-	0.0	1999 09 09	704	1.7-	1.0-	1999 09 11	113	1.0+	1.0+
1995 11 24	691	0.1-	0.1+	1999 09 09	704	0.3-	1.0-	1999 09 12	113	0.5-	0.4-
1995 11 24	691	0.0	0.2+	1999 09 09	113	1.2-	0.8-	1999 09 12	113	0.2-	0.4-
1997 02 07	691	0.1-	0.1+	1999 09 09	113	1.6+	0.4+	1999 09 13	113	0.6+	1.3+
1997 02 07	691	0.0	0.3-	1999 09 09	113	0.0	0.8+	1999 09 13	113	0.4-	0.2-
1997 02 07	691	0.1+	0.2+	1999 09 10	113	0.2+	0.1+	1999 09 13	113	0.6+	1.7+
1999 09 07	704	0.9-	0.1-	1999 09 10	113	0.8-	0.2-	1999 09 14	113	1.6-	0.5-
1999 09 07	704	1.1-	0.2+	1999 09 10	113	(0.5-	3.1-)	1999 09 14	113	0.9-	0.3-
1999 09 07	704	0.6+	0.5-	1999 09 10	113	0.6+	0.7-				

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1999 RB₃₃ = 1998 HF₅₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	327.18011		(2000.0)	P		Q	
<i>n</i>	0.29126081	ω	227.37359	+0.93572043	−0.34938951		
<i>a</i>	2.2539694	Ω	152.96886	+0.34675481	+0.88585658		
<i>e</i>	0.1950184	<i>i</i>	6.12869	+0.06471769	+0.30526234		
<i>P</i>	3.38	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 02 16	691	0.2−	0.2+	1999 09 07	704	0.4−	0.4−	1999 09 13	704	0.7+	0.2−
1994 02 16	691	0.0	0.0	1999 09 07	704	0.3−	0.7−	1999 09 13	704	0.0	0.1+
1994 02 16	691	0.2+	0.3−	1999 09 07	704	0.0	0.5−	1999 09 13	704	0.3+	0.6−
1998 04 21	704	0.1−	1.5+	1999 09 08	703	0.2−	0.1−	1999 09 13	704	0.1+	0.0
1998 04 21	704	0.3+	0.9−	1999 09 08	703	0.0	0.3+	1999 09 30	704	0.3−	0.1+
1998 04 21	704	0.9+	0.3+	1999 09 08	703	0.1+	0.5+	1999 09 30	704	0.5−	0.3−
1998 04 21	704	0.7−	0.7−	1999 09 08	703	0.6+	0.8+	1999 09 30	704	0.6−	0.3−
1998 04 22	704	1.8+	0.8+	1999 09 09	704	0.2+	0.4−	1999 09 30	704	0.8−	0.1−
1998 04 22	704	(0.5+	2.7+)	1999 09 09	704	0.2+	0.3−	1999 10 04	703	0.6+	0.2+
1998 04 22	704	0.9−	0.4+	1999 09 09	704	0.2+	0.0	1999 10 04	703	0.0	0.6+
1998 04 22	704	0.9−	0.2−	1999 09 09	704	0.2+	0.2+	1999 10 04	703	0.3+	0.1+
1999 07 16	704	0.4−	0.1−	1999 09 09	704	0.8+	0.2−	1999 10 04	703	0.5+	0.3+
1999 07 16	704	0.2−	0.2−	1999 09 09	164	0.2+	0.5+	1999 10 07	704	0.2−	0.3+
1999 07 16	704	0.4−	0.2−	1999 09 09	164	0.4+	0.4−	1999 10 07	704	0.6−	0.4−
1999 07 16	704	0.1+	1.0−	1999 09 09	164	0.1+	0.8+	1999 10 07	704	0.1+	1.4+
1999 08 12	691	0.5−	0.3+	1999 09 10	164	0.6+	0.1+	1999 10 07	704	0.5+	0.3+
1999 08 12	691	0.5−	0.1+	1999 09 10	164	0.4+	0.7+	1999 10 07	704	1.4−	0.1−
1999 08 12	691	0.4−	0.1+	1999 09 10	164	0.9−	0.4+				
1999 09 07	704	0.0	0.5−	1999 09 13	704	0.5+	0.7−				

1999 RC₃₃ = 1998 HL₁₀₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	100.58733		(2000.0)	P		Q	
<i>n</i>	0.23354434	ω	69.70626	−0.72016025	+0.68836738		
<i>a</i>	2.6114988	Ω	153.56161	−0.68675957	−0.68948472		
<i>e</i>	0.1401028	<i>i</i>	11.23090	−0.09864338	−0.22530240		
<i>P</i>	4.22	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 01	691	1.0−	0.3+	1999 08 12	699	0.4−	0.7+	1999 09 10	164	0.1+	1.3+
1998 03 01	691	0.8−	0.3+	1999 08 12	699	0.5−	0.5+	1999 09 10	164	0.1−	0.2+
1998 03 01	691	0.9−	0.3+	1999 09 07	699	0.1−	0.1+	1999 09 10	164	0.8+	0.2+
1998 03 24	704	0.4+	0.8−	1999 09 07	704	0.1+	0.0	1999 09 13	704	0.0	0.5−
1998 03 24	704	(0.8+	2.2−)	1999 09 07	699	0.3+	0.0	1999 09 13	704	0.3+	0.4−
1998 03 24	704	(3.0−	3.6−)	1999 09 07	704	0.1+	0.3−	1999 09 13	704	0.3+	1.0−
1998 03 24	704	(3.2−	1.3−)	1999 09 07	704	0.1−	0.1+	1999 09 13	704	0.3+	0.9−
1998 03 24	704	0.8−	0.2−	1999 09 07	699	0.2+	0.5+	1999 09 13	704	0.4−	0.3−
1998 04 23	704	0.3−	0.4−	1999 09 07	704	0.2−	0.2+	1999 09 28	143	0.4−	0.8−
1998 04 23	704	1.8+	0.2−	1999 09 07	704	0.1−	0.2−	1999 09 28	143	0.2−	0.5−
1998 04 23	704	(3.9+	1.5+)	1999 09 08	703	0.2+	0.2−	1999 09 28	143	0.2+	0.9−
1998 04 24	704	0.0	0.2+	1999 09 08	703	0.1+	0.3−	1999 09 30	704	0.6−	0.7−
1998 04 24	704	0.9+	0.1−	1999 09 08	703	0.1+	0.2−	1999 09 30	704	0.1−	0.2+
1998 04 24	704	0.4+	0.3−	1999 09 08	703	0.4+	0.5−	1999 09 30	704	0.3+	0.6+
1998 04 24	704	0.1+	0.0	1999 09 09	704	0.1+	0.4−	1999 09 30	704	0.0	0.7+
1998 04 24	704	0.3+	1.0+	1999 09 09	704	0.2−	0.2+	1999 09 30	704	0.2−	0.7+
1998 06 17	704	0.6−	1.3+	1999 09 09	704	0.8+	0.2+	1999 10 07	704	0.4−	0.3+
1998 06 17	704	(1.2+	2.3+)	1999 09 09	704	1.7+	1.5+	1999 10 07	704	1.1+	0.9−
1998 06 17	704	1.1−	0.9−	1999 09 09	704	(3.4+	2.8+)	1999 10 07	704	0.6−	0.6−
1998 06 17	704	0.2−	0.3−	1999 09 09	164	0.6−	0.3+	1999 10 07	704	0.4−	0.0
1998 06 17	704	0.6+	0.7−	1999 09 09	164	0.0	0.1+	1999 10 07	704	1.0−	0.2−
1999 08 12	699	1.0−	0.6+	1999 09 09	164	0.0	0.5+				

1999 RL₃₃ = 1977 EZ₄ = 1979 YP₉ = 1989 VL₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	266.44834		(2000.0)	P		Q	
<i>n</i>	0.28678039	ω	109.56227	+0.18817137	−0.98105272		
<i>a</i>	2.2773848	Ω	329.47627	+0.86363016	+0.18764566		
<i>e</i>	0.1244708	<i>i</i>	5.21003	+0.46769058	+0.04821476		
<i>P</i>	3.44	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1977 03 12	381	1.3−	0.6+	1999 09 13	848	0.6−	0.5−	1999 09 30	704	0.4−	0.4−
1977 03 12	381	2.1+	0.8+	1999 09 13	848	0.8−	0.6+	1999 09 30	704	0.0	0.6−
1979 12 25	095	0.1−	2.2+	1999 09 13	848	1.2−	0.4−	1999 09 30	704	0.4−	0.3−
1989 11 04	095	0.5−	0.6−	1999 09 13	848	0.1−	0.7+	1999 10 01	704	(2.3−	0.0)
1989 11 04	095	2.2+	1.7−	1999 09 13	848	1.1−	0.4+	1999 10 01	704	1.3+	0.9+
1999 09 07	704	0.3+	0.0	1999 09 14	704	1.0+	0.3−	1999 10 01	704	0.8−	0.2+
1999 09 07	704	0.4+	0.3+	1999 09 14	704	0.2−	0.4+	1999 10 01	704	0.3−	0.2+
1999 09 07	704	0.3+	0.3+	1999 09 14	704	0.4+	0.1+	1999 10 01	704	1.1−	0.3−
1999 09 07	704	0.3+	0.1−	1999 09 14	704	0.1−	0.2−	1999 10 01	704	1.2−	1.6+
1999 09 07	704	0.3+	0.0	1999 09 14	704	0.2−	0.1+	1999 10 01	704	(2.2−	0.6−)
1999 09 09	678	(2.8+	0.1+)	1999 09 18	678	(2.4−	1.7−)	1999 10 01	704	1.8−	0.1−
1999 09 09	678	0.1−	0.3−	1999 09 18	678	0.8+	0.5+	1999 10 06	704	0.8+	0.6+
1999 09 09	704	0.5+	0.0	1999 09 18	678	0.3−	1.7−	1999 10 06	704	0.1−	0.5+
1999 09 09	704	0.7+	0.1−	1999 09 29	704	0.3−	0.0	1999 10 06	704	0.2−	0.0
1999 09 09	704	1.3+	0.2+	1999 09 29	704	0.6−	1.0−	1999 10 06	704	0.2−	0.0
1999 09 09	704	1.2+	1.1+	1999 09 29	704	0.4+	0.4+	1999 10 06	704	1.0−	0.4+
1999 09 09	704	0.4+	0.7+	1999 09 29	704	0.3+	0.5+	1999 10 07	704	0.7+	0.2−
1999 09 11	678	0.5+	0.0	1999 09 29	704	0.6+	0.5−	1999 10 07	704	0.1−	1.0+
1999 09 11	678	0.6−	0.4−	1999 09 30	704	0.2−	0.4−	1999 10 07	704	0.1+	0.6+
1999 09 11	678	0.0	0.1−	1999 09 30	704	0.4−	0.1−	1999 10 07	704	0.9−	0.5−

1999 RM₃₃ = 1978 WG₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	350.80265		(2000.0)	P		Q	
<i>n</i>	0.18386087	ω	309.63174	+0.98769412	+0.15356522		
<i>a</i>	3.0629730	Ω	41.55915	−0.12629424	+0.89488936		
<i>e</i>	0.2454206	<i>i</i>	2.56010	−0.09225016	+0.41903551		
<i>P</i>	5.36	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1978 11 30	675	0.1+	0.2+	1999 07 16	704	0.6−	0.1+	1999 09 09	704	0.3+	0.0
1978 12 01	675	0.1−	1.1+	1999 07 16	704	1.1+	0.4+	1999 09 10	164	0.2+	0.2−
1994 11 29	691	0.2−	0.5−	1999 08 12	699	0.3+	0.8+	1999 09 10	164	0.2−	0.4−
1994 11 29	691	0.6−	0.3−	1999 08 12	699	0.7−	0.9+	1999 09 10	164	0.2−	0.5−
1994 11 29	691	0.1−	0.5−	1999 08 12	699	0.3−	0.9+	1999 09 10	164	0.6−	0.8−
1995 11 23	691	0.3−	0.0	1999 09 07	704	0.0	0.2−	1999 09 13	704	0.2+	0.1+
1995 11 23	691	0.3−	0.2−	1999 09 07	704	0.0	0.2+	1999 09 13	704	0.1+	0.1−
1995 11 23	691	0.0	0.0	1999 09 07	704	0.2−	0.0	1999 09 13	704	0.2−	0.0
1996 01 26	691	0.1−	0.1+	1999 09 07	704	0.6+	0.6+	1999 09 13	704	0.1+	0.5−
1996 01 26	691	0.5−	0.1+	1999 09 07	704	0.2−	0.9+	1999 09 13	704	0.3−	0.3−
1996 01 26	691	0.3−	0.2+	1999 09 08	703	0.0	0.0	1999 09 30	704	0.4+	0.5+
1996 02 16	691	0.6+	0.8−	1999 09 08	703	0.3+	0.6+	1999 09 30	704	0.2+	0.1+
1996 02 16	691	0.7+	0.1+	1999 09 08	703	0.1+	0.2−	1999 09 30	704	0.1−	0.0
1996 02 16	691	0.8+	0.2+	1999 09 08	703	0.1−	0.2−	1999 09 30	704	0.3+	1.1+
1998 05 22	704	1.7−	0.5+	1999 09 08	164	0.3+	0.1−	1999 09 30	704	0.2+	0.3+
1998 05 22	704	(0.3+	2.4−)	1999 09 08	164	0.0	0.1+	1999 10 07	704	0.4+	0.7−
1998 05 22	704	0.2+	0.9−	1999 09 09	164	0.2+	1.1+	1999 10 07	704	0.5−	0.6−
1998 05 22	704	0.9+	0.6+	1999 09 09	704	0.5−	1.5−	1999 10 07	704	0.2+	0.2−
1999 07 16	704	0.6−	0.5−	1999 09 09	704	0.8+	0.7−	1999 10 07	704	0.0	0.2−
1999 07 16	704	0.4+	0.1−	1999 09 09	704	0.1+	0.3−	1999 10 07	704	0.7−	0.0

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	270.86803		(2000.0)	P	Q
<i>n</i>	0.26045406	ω	75.67269	-0.06314996	-0.99754182
<i>a</i>	2.4283724	Ω	18.03103	+0.87367157	-0.06996665
<i>e</i>	0.1290550	<i>i</i>	5.63085	+0.48240031	-0.00386993
<i>P</i>	3.78	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1988 11 03	054	0.8+	0.2-	1999 09 07	704	0.1+	0.5+	1999 09 14	691	0.0	0.1-
1988 11 03	054	0.8+	0.1-	1999 09 07	704	0.9-	0.6-	1999 09 18	643	0.4+	0.5+
1988 11 04	054	1.5-	0.0	1999 09 07	704	0.2-	0.1+	1999 09 18	643	0.4-	0.7+
1997 02 06	327	0.3+	0.3+	1999 09 07	704	1.2-	0.8-	1999 10 02	704	0.3+	0.5-
1997 02 06	327	0.5-	0.3+	1999 09 08	643	0.2-	0.7+	1999 10 02	704	0.3+	0.2-
1997 02 06	327	0.4+	0.0	1999 09 08	643	0.3-	1.2+	1999 10 02	704	0.9+	0.5-
1999 08 22	703	1.0-	0.6-	1999 09 14	704	0.7+	0.4+	1999 10 02	704	1.5+	1.6-
1999 08 22	703	0.2-	0.2-	1999 09 14	704	0.0	0.5-	1999 10 07	703	0.1+	1.3+
1999 08 22	703	0.6+	0.2-	1999 09 14	704	0.2-	0.2+	1999 10 07	703	0.4+	1.1+
1999 08 22	703	0.2+	0.3-	1999 09 14	704	0.1-	0.7+	1999 10 07	703	0.5+	0.8+
1999 09 04	643	0.8-	0.2-	1999 09 14	704	0.6-	0.4-	1999 10 07	703	0.4+	0.5-
1999 09 04	643	1.0-	0.3-	1999 09 14	691	0.6+	0.1-				
1999 09 07	704	0.0	0.1-	1999 09 14	691	0.1-	0.1-				

1999 RS₃₃ = 1989 SD₂ = 1996 VG₃₉

Id. S. Nakano, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	1.62439		(2000.0)	P	Q
<i>n</i>	0.29106364	ω	282.54182	+0.80800408	+0.58641672
<i>a</i>	2.2549872	Ω	41.59265	-0.50174958	+0.73556041
<i>e</i>	0.2007523	<i>i</i>	4.92262	-0.30883128	+0.33921427
<i>P</i>	3.39	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1989 09 26	809	0.1+	0.6+	1996 12 08	327	0.6-	0.2-	1999 09 09	734	0.5-	1.5-
1989 09 26	809	0.3-	0.1-	1998 03 25	704	0.2+	0.6+	1999 09 09	734	0.7+	1.2-
1989 09 26	809	1.0-	0.6-	1998 03 25	704	0.4+	0.7-	1999 09 09	734	0.7+	1.2-
1989 09 28	809	0.5+	1.1+	1998 03 25	704	0.9+	1.3+	1999 09 13	704	0.2+	1.0+
1989 09 28	809	0.4-	0.5+	1998 03 25	704	0.8-	0.4+	1999 09 13	704	0.1-	1.2+
1989 09 28	809	0.4+	0.1-	1999 09 02	734	0.2-	0.4-	1999 09 13	704	0.2+	0.6+
1996 11 09	327	0.4+	0.2+	1999 09 02	734	0.1-	0.7-	1999 09 13	704	0.1+	1.1+
1996 11 09	327	0.2-	0.1+	1999 09 02	734	0.4+	0.6+	1999 09 13	704	0.1+	1.1+
1996 11 09	327	0.6-	0.4-	1999 09 02	734	0.1+	0.3-	1999 09 16	734	0.1+	0.5-
1996 11 13	327	0.9+	0.3-	1999 09 07	734	0.5-	0.0	1999 09 16	734	0.2+	0.1-
1996 11 13	327	0.2+	0.3-	1999 09 07	734	0.3-	0.0	1999 09 16	734	0.0	0.2+
1996 11 13	327	0.6+	0.1+	1999 09 07	734	0.2-	0.4-	1999 09 16	734	0.0	0.5+
1996 12 08	327	0.3-	0.1-	1999 09 07	734	0.3-	0.4+				
1996 12 08	327	0.1-	0.1-	1999 09 07	734	0.5-	0.1-				

1999 RU₃₃ = 1997 EP₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	151.90577		(2000.0)	P	Q
<i>n</i>	0.19562598	ω	198.99971	-0.97059721	+0.23981172
<i>a</i>	2.9389015	Ω	354.74266	-0.18085703	-0.78347895
<i>e</i>	0.0684060	<i>i</i>	13.10134	-0.15884518	-0.57328097
<i>P</i>	5.04	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 03 07	684	0.9+	0.2+	1999 09 09	734	0.7+	0.8+	1999 10 02	691	0.1-	0.4-
1997 03 07	684	0.7+	0.2+	1999 09 09	734	1.1-	0.2+	1999 10 02	691	0.1-	0.5-
1997 03 08	684	0.8-	0.0	1999 09 09	734	1.1+	0.0	1999 10 02	691	0.1+	0.3-
1997 03 08	684	0.2-	0.2-	1999 09 09	734	0.0	0.2+	1999 10 09	691	0.4-	0.2-
1997 03 08	684	0.6-	0.1-	1999 09 14	704	0.2-	0.9+	1999 10 09	691	0.3-	0.2-
1999 09 06	734	1.4+	0.4-	1999 09 14	704	0.1-	0.6+	1999 10 09	691	0.3-	0.2-
1999 09 06	734	0.8-	0.5-	1999 09 14	704	1.1-	0.1+	1999 10 18	012	0.3+	0.5+
1999 09 06	734	1.9+	0.5-	1999 09 14	704	1.3-	0.4-	1999 10 18	012	0.2+	0.6-

1999 09 06	734	0.2-	0.7-	1999 09 16	734	0.2+	0.0	1999 10 18	012	0.1+	0.3+
1999 09 06	734	0.2+	0.5-	1999 09 16	734	0.5-	1.3+	1999 10 18	012	0.4+	0.4+
1999 09 06	734	0.6-	0.8-	1999 09 16	734	0.5-	0.6+	1999 10 18	012	0.4+	0.2-
1999 09 09	734	0.3+	1.0+	1999 09 16	734	0.5+	0.5-				

1999 RW₃₃ = 1988 CE₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	295.20530		(2000.0)	P	Q
<i>n</i>	0.22901985	ω	262.85551	+0.19890643	-0.97990157
<i>a</i>	2.6457814	Ω	175.58428	+0.95875450	+0.19136728
<i>e</i>	0.1639613	<i>i</i>	11.33878	+0.20304198	+0.05631585
<i>P</i>	4.30	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1988 02 13	809	(1.9-	5.7+)	1999 09 09	704	1.4+	0.2-	1999 10 02	704	0.6+	0.4-
1988 02 15	809	1.5-	2.0+	1999 09 09	704	0.4-	0.2+	1999 10 05	703	0.2-	0.0
1988 02 16	809	0.7+	0.6-	1999 09 10	611	0.4-	1.2+	1999 10 05	703	0.0	1.1-
1988 02 16	809	0.2+	0.5-	1999 09 10	611	0.3-	0.3+	1999 10 05	703	(0.2-	2.2-)
1988 02 16	809	0.6+	0.9-	1999 09 10	611	0.8+	0.7+	1999 10 05	703	(2.5+	0.9+)
1999 09 07	704	0.0	0.8-	1999 09 11	611	1.0+	0.5-	1999 10 07	703	0.8+	0.3-
1999 09 07	704	0.3-	0.6-	1999 09 11	611	0.4+	0.5+	1999 10 07	703	0.1-	0.1+
1999 09 07	704	0.7-	1.4+	1999 09 12	611	(2.6-	2.3+)	1999 10 07	703	0.5-	0.1+
1999 09 08	691	0.6-	0.3-	1999 09 12	611	0.2-	0.4-	1999 10 07	703	0.2+	0.4-
1999 09 08	691	0.7-	0.4-	1999 09 14	611	0.1+	0.3-	1999 10 07	704	(2.6-	0.6+)
1999 09 08	691	0.6-	0.2-	1999 10 02	704	0.1+	0.9+	1999 10 07	704	0.1+	0.0
1999 09 09	704	(0.5+	2.2-)	1999 10 02	704	0.5-	0.4+	1999 10 07	704	0.7-	0.3+
1999 09 09	704	0.2+	0.2-	1999 10 02	704	0.1+	0.1-	1999 10 07	704	0.5+	0.0
1999 09 09	704	0.4+	0.7-	1999 10 02	704	0.4-	0.7+				

1999 RE₃₄ = 1992 RQ₄ = 1998 KT₁₇Id. G. V. Williams (*MPC* 36037), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	168.80817		(2000.0)	P	Q
<i>n</i>	0.29020146	ω	193.77796	-0.99589493	+0.09000215
<i>a</i>	2.2594513	Ω	351.36846	-0.07576881	-0.88715204
<i>e</i>	0.0932897	<i>i</i>	3.68241	-0.04952156	-0.45261560
<i>P</i>	3.40	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1992 09 02	809	1.2-	1.1+	1998 05 24	704	1.0-	0.2+	1999 10 06	704	1.6+	0.9+
1992 09 02	809	0.9-	0.7+	1998 05 24	704	0.5-	1.9+	1999 10 06	704	0.8+	0.5+
1992 09 02	809	0.9-	0.3-	1998 05 24	704	0.3-	0.3+	1999 10 06	704	1.1+	0.0
1992 09 03	809	0.7-	1.0+	1998 05 24	704	0.4-	1.4-	1999 10 06	704	1.1+	0.1+
1992 09 23	809	1.9+	0.7-	1999 09 07	704	0.9-	0.7-	1999 10 06	704	1.2+	0.3+
1992 09 23	809	1.2+	0.7-	1999 09 07	704	0.3+	1.2-	1999 10 07	703	0.1-	0.6+
1992 09 23	809	0.9+	1.3-	1999 09 07	704	0.1-	0.6-	1999 10 07	703	0.4-	0.8-
1993 11 10	691	0.1-	0.0	1999 09 07	704	0.6-	1.8-	1999 10 07	703	0.4-	0.3-
1993 11 10	691	0.1-	0.1+	1999 09 07	704	0.9-	0.4-	1999 10 07	703	0.2-	0.3+
1993 11 10	691	0.0	0.1-	1999 09 08	120	0.6-	0.7+	1999 10 07	704	0.9-	0.1+
1998 04 22	704	0.9+	0.4+	1999 09 08	120	0.9-	0.4-	1999 10 07	704	0.4-	0.9+
1998 04 22	704	0.2+	1.1-	1999 09 11	120	1.0+	1.3-	1999 10 07	704	0.1-	0.1-
1998 04 22	704	0.7-	0.6-	1999 09 11	120	(4.0-	0.6+)	1999 10 07	704	1.3+	0.1-
1998 04 22	704	0.5-	0.3-	1999 09 12	120	0.2+	0.3-	1999 10 07	704	0.6+	0.1-
1998 05 01	704	0.3-	0.6-	1999 09 12	120	0.7-	0.2+	1999 10 09	704	0.2-	0.7+
1998 05 01	704	1.4+	1.1-	1999 09 13	120	1.7-	0.0	1999 10 09	704	0.1-	0.1+
1998 05 01	704	1.2+	0.7-	1999 09 13	120	0.4-	0.8-	1999 10 09	704	0.5-	0.5+
1998 05 01	704	(0.8+	2.2-)	1999 09 29	120	0.6-	0.6+	1999 10 09	704	0.2+	0.5+
1998 05 01	704	(5.3-	1.1+)	1999 09 29	120	1.9+	0.1+	1999 10 09	704	0.2-	0.4+
1998 05 22	704	1.4+	0.4+	1999 10 04	704	0.1+	0.5+	1999 10 15	704	0.4-	0.0
1998 05 22	704	1.4-	1.3+	1999 10 04	704	0.6+	1.1-	1999 10 15	704	0.6-	0.9-
1998 05 22	704	0.1+	1.5+	1999 10 04	704	0.2+	0.6+	1999 10 15	704	0.2-	0.7+
1998 05 22	704	0.7+	1.0-	1999 10 04	704	0.9-	0.2-				
1998 05 24	704	1.1-	0.6+	1999 10 04	704	0.7+	1.1+				

1999 RK₃₄ = 1995 QD₉ = 1995 YG₂ = 1998 HM₉₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	355.29531		(2000.0)		P		Q
<i>n</i>	0.26244878	ω	170.58185	+0.99725912	+0.07311572		
<i>a</i>	2.4160524	Ω	185.26497	-0.07333926	+0.95662384		
<i>e</i>	0.1315026	<i>i</i>	7.09159	-0.00977738	+0.28200165		
<i>P</i>	3.76	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1995 08 28	691	0.3+	0.1-	1998 05 22	704	1.9-	0.4+	1999 10 01	327	0.5+	0.1+
1995 08 28	691	0.2-	0.2-	1998 05 22	704	(2.6-	0.1-)	1999 10 01	327	0.4+	0.3-
1995 08 28	691	0.2+	0.0	1998 05 22	704	0.3-	1.2+	1999 10 01	327	0.9-	0.4+
1995 09 02	691	0.1+	0.1-	1998 05 22	704	(4.0-	0.9+)	1999 10 02	704	0.0	0.2+
1995 09 02	691	0.0	0.3-	1999 07 23	704	0.1-	0.2+	1999 10 02	704	0.1-	0.1+
1995 09 02	691	0.2+	0.0	1999 07 23	704	0.2+	0.7-	1999 10 02	704	0.3-	0.1+
1995 12 20	608	0.2-	0.4-	1999 07 23	704	1.0-	0.1+	1999 10 02	704	0.4-	0.3+
1995 12 20	608	0.4+	0.6-	1999 07 23	704	0.1+	0.6+	1999 10 02	704	0.6-	0.6-
1995 12 20	608	0.7+	1.6-	1999 09 07	704	0.4+	0.0	1999 10 05	739	0.9+	0.1+
1995 12 21	608	0.3+	1.1+	1999 09 07	704	0.0	0.2+	1999 10 05	739	0.5+	0.1-
1995 12 21	608	0.4-	0.7-	1999 09 07	704	0.4-	0.2-	1999 10 05	739	0.1+	0.3+
1995 12 21	608	0.5-	0.6-	1999 09 07	704	0.5-	0.2+	1999 10 06	739	0.8+	0.3+
1995 12 21	608	0.2-	1.4-	1999 09 07	704	0.5-	0.7-	1999 10 06	739	1.1-	0.2-
1998 04 21	704	1.2+	1.2+	1999 09 10	120	0.6+	0.3+	1999 10 06	739	0.1-	0.8-
1998 04 21	704	0.3-	0.3+	1999 09 10	120	1.2+	0.8-	1999 10 07	703	0.1-	0.1+
1998 04 21	704	(2.7+	2.0+)	1999 09 11	120	0.4-	0.2+	1999 10 07	703	0.1+	0.4+
1998 04 21	704	1.3+	0.5+	1999 09 11	120	0.8-	0.3+	1999 10 07	703	0.3-	0.6+
1998 04 21	704	0.0	1.3+	1999 09 12	120	0.1+	0.6+	1999 10 07	704	0.1-	0.2+
1998 04 22	704	1.2+	0.6-	1999 09 12	120	1.2-	0.2+	1999 10 07	704	0.3+	0.6+
1998 04 22	704	1.3-	0.5+	1999 09 12	120	0.3+	1.1+	1999 10 07	704	0.0	0.1-
1998 04 22	704	0.3+	1.2-	1999 09 29	327	0.8+	0.4-	1999 10 07	704	0.0	0.4+
1998 04 22	704	0.4+	1.8-	1999 09 29	327	0.8+	0.5-	1999 10 07	704	1.1-	0.6+
1998 04 22	704	0.6-	0.7-	1999 09 29	327	0.6+	0.1-				

1999 RM₃₄ = 1998 HZ₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.80988		(2000.0)		P		Q
<i>n</i>	0.29400233	ω	353.21743	+0.99988844	+0.00539656		
<i>a</i>	2.2399356	Ω	6.52214	+0.00240249	+0.86220835		
<i>e</i>	0.1367382	<i>i</i>	7.04328	-0.01474241	+0.50652506		
<i>P</i>	3.35	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 25	704	0.6-	0.3+	1998 04 22	704	0.2+	0.2-	1999 10 04	704	0.3+	0.4+
1998 03 25	704	0.3-	1.4+	1999 09 05	699	0.2-	0.3+	1999 10 04	704	0.2-	0.2+
1998 03 25	704	(0.7+	2.3+)	1999 09 05	699	0.2-	0.9+	1999 10 04	704	0.1+	0.1-
1998 03 25	704	(3.7-	1.2-)	1999 09 05	699	0.0	0.2-	1999 10 04	704	0.6+	0.3+
1998 03 29	704	1.7+	0.9-	1999 09 10	120	0.2+	0.8-	1999 10 06	704	0.0	0.2-
1998 03 29	704	1.0+	1.4+	1999 09 11	120	1.5+	0.3-	1999 10 06	704	0.1-	0.1-
1998 03 29	704	1.3-	0.6-	1999 09 11	120	0.9-	0.2-	1999 10 06	704	0.3-	0.2-
1998 03 29	704	1.5+	1.7+	1999 09 11	120	1.1-	0.5-	1999 10 06	704	0.1-	0.2-
1998 03 29	704	1.4-	0.5+	1999 09 11	120	0.1-	0.1+	1999 10 06	704	0.3-	0.3-
1998 04 21	704	0.1-	0.3+	1999 09 12	120	0.3+	0.1+	1999 10 07	704	0.1+	0.5+
1998 04 21	704	0.5+	0.0	1999 09 12	120	1.2+	0.0	1999 10 07	704	0.0	0.2+
1998 04 21	704	0.1-	0.9+	1999 10 01	703	0.8-	0.1+	1999 10 07	704	0.3-	0.5+
1998 04 21	704	0.8+	0.3-	1999 10 01	703	0.5-	0.0	1999 10 07	704	0.2-	0.3+
1998 04 22	704	0.8+	0.4-	1999 10 01	703	0.2-	0.0	1999 10 07	704	0.3-	0.2+
1998 04 22	704	1.8-	1.4-	1999 10 01	703	0.1-	0.2+				
1998 04 22	704	0.2+	0.8-	1999 10 04	704	0.8+	0.1+				

1999 RO₃₄ = 1986 ER₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	204.68134		(2000.0)		P		Q
<i>n</i>	0.18405678	ω	338.50964	-0.91115198	-0.41198440		
<i>a</i>	3.0607991	Ω	177.11922	+0.39826811	-0.88569440		
<i>e</i>	0.0334770	<i>i</i>	9.64708	+0.10575722	-0.21404273		
<i>P</i>	5.35	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1986 03 08	809	0.2+	0.3-	1999 09 07	704	0.0	0.3+	1999 10 02	704	0.3-	0.6+
1986 03 08	809	0.0	0.4+	1999 09 08	691	0.4-	0.3-	1999 10 02	704	0.2-	1.1+
1986 03 09	809	0.1+	0.1+	1999 09 08	691	0.5-	0.0	1999 10 02	704	0.2+	0.2+
1986 03 09	809	0.1-	0.5+	1999 09 08	691	0.3-	0.1-	1999 10 02	704	0.7-	0.6+
1998 06 19	704	0.1-	0.2+	1999 09 11	120	0.2+	0.9-	1999 10 02	704	0.7-	0.3+
1998 06 19	704	0.9-	0.4-	1999 09 11	120	0.7+	0.5-	1999 10 05	739	0.5+	0.1+
1998 06 19	704	0.0	1.2-	1999 09 11	120	1.0-	0.1-	1999 10 05	739	0.8-	0.1+
1998 06 19	704	1.1+	0.9+	1999 09 11	120	0.7+	0.3+	1999 10 05	739	0.9+	0.1-
1998 06 19	704	0.5+	0.0	1999 09 11	120	0.1-	0.1-	1999 10 07	703	0.1-	0.2-
1998 06 25	704	0.2+	0.2-	1999 09 12	120	0.7-	0.2+	1999 10 07	703	0.2+	0.5-
1998 06 25	704	(0.0	2.6-)	1999 09 12	120	0.7-	0.7+	1999 10 07	703	0.1+	1.1-
1998 06 25	704	(2.0+	1.5-)	1999 09 12	120	0.3-	0.1+	1999 10 07	703	0.1-	0.4-
1998 06 25	704	(2.3-	0.3-)	1999 09 13	120	1.2+	0.2-	1999 10 07	704	0.5+	0.0
1998 06 25	704	0.7-	0.8+	1999 09 13	120	0.1-	0.4-	1999 10 07	704	0.2+	0.3+
1999 09 07	704	0.2+	0.3-	1999 09 30	703	0.2+	0.1+	1999 10 07	704	0.2-	0.0
1999 09 07	704	0.3+	0.5+	1999 09 30	703	0.2+	0.4-	1999 10 07	704	0.4-	0.1-
1999 09 07	704	0.4+	0.1+	1999 09 30	703	0.1+	0.6+	1999 10 07	704	0.1-	0.5-
1999 09 07	704	0.1+	0.2+	1999 09 30	703	0.4+	0.3+				

1999 RQ₃₄ = 1998 MX₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	287.88472		(2000.0)		P		Q
<i>n</i>	0.28632766	ω	270.22184	+0.21995459	-0.97531603		
<i>a</i>	2.2797848	Ω	167.02218	+0.92594093	+0.20245883		
<i>e</i>	0.1220741	<i>i</i>	4.97064	+0.30700713	+0.08814230		
<i>P</i>	3.44	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 24	704	0.0	1.0-	1999 09 12	120	0.5-	0.5-	1999 10 02	704	0.8-	0.0
1998 05 24	704	0.2+	0.2-	1999 09 12	120	(2.2-	1.6+)	1999 10 02	704	0.1+	0.6+
1998 05 24	704	0.5+	0.5+	1999 09 12	120	0.8+	0.8-	1999 10 02	704	0.4-	0.3+
1998 05 24	704	(0.9+	5.7+)	1999 09 13	120	0.6-	0.7+	1999 10 05	739	(5.5-	3.5-)
1998 06 23	691	0.2-	0.3+	1999 09 13	120	0.9-	0.3-	1999 10 05	739	(3.3-	3.2+)
1998 06 23	691	0.0	0.2+	1999 09 14	704	0.6-	0.3+	1999 10 05	739	0.3+	0.4-
1998 06 23	691	0.1-	0.0	1999 09 14	704	0.2-	0.9-	1999 10 07	703	0.1+	0.2-
1998 06 30	691	0.4-	0.1-	1999 09 14	704	(2.5+	1.0-)	1999 10 07	703	0.0	0.3-
1998 06 30	691	0.0	0.5+	1999 09 14	704	0.7+	0.4-	1999 10 07	703	0.2+	0.8-
1998 06 30	691	0.0	0.1+	1999 09 14	120	(2.7+	0.6-)	1999 10 07	703	0.1-	0.6-
1999 09 11	120	(2.1-	0.4+)	1999 09 14	120	0.4-	0.4-	1999 10 07	704	0.1+	0.5-
1999 09 11	120	0.8+	1.0+	1999 10 01	120	0.3-	0.2+	1999 10 07	704	0.0	0.0
1999 09 11	120	1.0+	0.1-	1999 10 01	120	0.8+	0.4+	1999 10 07	704	0.3+	0.5+
1999 09 11	120	(2.9+	1.2+)	1999 10 02	704	0.1-	0.2+	1999 10 07	704	0.6+	0.8+
1999 09 11	120	(2.2+	1.0-)	1999 10 02	704	0.8-	0.6+	1999 10 07	704	0.1-	0.4+

1999 RT₃₄ = 1998 FG₁₂₈

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	56.45669		(2000.0)		P		Q
<i>n</i>	0.27731220	ω	198.97579	+0.22725686	+0.97201498		
<i>a</i>	2.3289316	Ω	84.19392	-0.88556106	+0.23169264		
<i>e</i>	0.2067642	<i>i</i>	3.42918	-0.40513692	+0.03879946		
<i>P</i>	3.55	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 25	704	0.4+	0.7+	1999 09 11	557	0.1-	0.2-	1999 09 14	557	0.9-	0.1-
1998 03 25	704	0.7-	0.2-	1999 09 12	557	0.4-	0.0	1999 09 15	557	1.0-	0.1-

1998 03 25	704	0.9−	0.1−	1999 09 12	557	0.1+	0.3−	1999 10 02	557	0.8+	0.4+
1998 03 25	704	0.0	0.1−	1999 09 13	557	0.1−	0.6−	1999 10 02	557	0.5+	1.0+
1998 03 26	704	1.2+	1.1−	1999 09 13	557	0.8−	0.8+	1999 10 18	557	0.4+	1.0−
1998 03 26	704	0.0	1.3+	1999 09 13	557	0.3+	0.5+	1999 10 18	557	0.4+	0.5+
1998 03 26	704	(2.4−	0.6−)	1999 09 13	557	0.4+	0.4−	1999 10 19	557	0.1+	0.1−
1999 09 10	557	0.3+	0.0	1999 09 14	557	0.5−	0.1−	1999 10 19	557	0.2+	0.0

**1999 RY₃₄ = 1950 FG = 1962 WM₁ = 1982 US₁ = 1985 QT₅ = 1989 XG₂
= 1998 ME₂₇**

Id. A. Doppler, G. V. Williams; 1982 US₁ = 1998 EJ₁₂ (*MPC* 31524) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>	261.34688	(2000.0)	P	<i>Q</i>			
<i>n</i>	0.29161747	<i>ω</i>	61.67065	−0.67102530	−0.74013957		
<i>a</i>	2.2521312	<i>Ω</i>	70.54487	+0.66295285	−0.62540065		
<i>e</i>	0.1160499	<i>i</i>	2.66249	+0.33199181	−0.24711828		
<i>P</i>	3.38	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1950 03 19	012	1.1+	1.5+	1998 06 26	704	1.4−	0.1−	1999 09 22	120	0.1−	0.8+
1962 11 30	760	0.4+	1.6+	1998 06 26	704	1.2+	0.8+	1999 09 22	120	0.1−	0.5+
1962 11 30	760	(1.2−	4.0+)	1998 06 26	704	1.7−	0.6−	1999 10 07	704	1.9+	1.4+
1982 10 16	046	(1.4−	4.6−)	1998 07 21	704	0.6−	0.6−	1999 10 07	704	0.3−	0.7+
1982 10 16	046	1.2+	2.3−	1998 07 21	704	0.0	0.4+	1999 10 07	704	0.2−	0.8+
1982 10 21	046	0.7−	1.0−	1998 07 21	704	2.0+	0.9+	1999 10 08	703	0.3+	0.5+
1982 10 21	046	1.3+	0.6−	1998 07 21	704	0.2−	0.7−	1999 10 08	703	0.4+	0.3+
1985 08 24	095	1.7−	0.4+	1998 07 21	704	1.5+	0.2+	1999 10 08	703	0.2+	0.4+
1989 12 01	071	0.9−	0.2+	1999 09 11	120	0.1−	0.1+	1999 10 08	703	0.0	0.4+
1989 12 01	071	2.7−	0.2+	1999 09 11	120	0.4−	0.2−	1999 10 10	120	0.3+	0.3+
1989 12 01	071	(17.9−	2.2−)	1999 09 11	120	0.4+	0.0	1999 10 10	120	0.1+	0.1+
1998 06 24	704	0.4−	0.0	1999 09 12	120	0.4+	0.1+	1999 10 10	120	0.7+	0.5+
1998 06 24	704	0.4+	0.8+	1999 09 12	120	0.2+	0.4−	1999 10 16	611	1.3−	1.5−
1998 06 24	704	(2.3+	0.7+)	1999 09 12	120	0.1+	0.2+	1999 10 16	611	0.0	0.1+
1998 06 24	704	0.4−	1.4+	1999 09 13	120	0.2+	0.2+				
1998 06 26	704	0.4−	0.3+	1999 09 13	120	0.2+	0.3+				

1999 RJ₃₅ = 1966 PT = 1982 JC₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>	48.98855	(2000.0)	P	<i>Q</i>			
<i>n</i>	0.24115079	<i>ω</i>	316.81153	+0.14411420	+0.97678472		
<i>a</i>	2.5562908	<i>Ω</i>	320.67704	−0.82612289	+0.03058373		
<i>e</i>	0.2470974	<i>i</i>	14.48486	−0.54474954	+0.21202888		
<i>P</i>	4.09	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1966 08 07	074	0.9−	0.9+	1999 09 11	611	0.1+	0.2+	1999 09 18	704	0.3+	0.3−
1966 08 07	074	1.8−	0.8+	1999 09 12	611	0.3+	0.3−	1999 10 03	704	0.3−	0.6+
1966 08 08	074	2.1+	0.6−	1999 09 12	611	1.0+	0.4+	1999 10 03	704	0.2+	0.1−
1966 08 08	074	1.4−	0.4−	1999 09 12	611	0.3−	0.2−	1999 10 03	704	0.1+	0.6+
1966 08 09	074	1.6+	0.2−	1999 09 12	611	0.5−	0.4−	1999 10 03	704	0.0	0.2+
1982 05 01	413	0.8+	0.3−	1999 09 12	611	1.4+	1.0−	1999 10 03	704	0.2+	0.4−
1982 05 01	413	1.0−	0.0	1999 09 12	611	1.6−	0.7−	1999 10 04	704	0.4−	0.3+
1982 05 01	413	(9.2+	0.4−)	1999 09 12	611	0.8−	0.6+	1999 10 04	704	0.1−	1.1+
1999 09 08	704	0.3+	0.2−	1999 09 13	611	0.0	0.1−	1999 10 04	704	1.3+	0.6+
1999 09 08	704	0.4+	0.3−	1999 09 13	611	0.6−	0.2+	1999 10 04	704	1.3−	1.6+
1999 09 08	704	0.5−	0.2−	1999 09 18	704	0.0	0.3−	1999 10 04	704	0.1−	0.6−
1999 09 08	704	0.1−	0.6−	1999 09 18	704	0.1−	0.4−	1999 10 04	704	0.7+	0.8+
1999 09 08	704	0.6+	0.0	1999 09 18	704	0.4+	0.6−	1999 10 04	704	0.3−	1.2−
1999 09 11	611	0.0	0.1+	1999 09 18	704	0.0	0.1−				

1999 RT₃₅ = 1998 FY₁₄₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>	12.03973	(2000.0)	P	<i>Q</i>			
<i>n</i>	0.27039802	<i>ω</i>	325.57461	+0.88541439	+0.46449288		
<i>a</i>	2.3684654	<i>Ω</i>	6.81302	−0.38779536	+0.75834747		
<i>e</i>	0.1386522	<i>i</i>	8.22065	−0.25623449	+0.45733518		
<i>P</i>	3.65	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 02 13	809	(2.9+	0.0)	1999 09 07	704	0.1+	0.0	1999 09 30	703	0.5+	0.4+
1994 02 13	809	1.6+	1.1+	1999 09 07	704	0.1−	0.5−	1999 09 30	703	0.1−	0.6+
1994 02 13	809	0.4−	0.9+	1999 09 07	704	0.0	0.5−	1999 09 30	703	0.2+	0.4+
1998 03 29	704	(1.1+	2.6+)	1999 09 07	704	0.4−	0.3+	1999 10 02	704	0.1−	0.1−
1998 03 29	704	1.1+	0.4+	1999 09 07	704	0.2−	0.6+	1999 10 02	704	0.2−	0.1−
1998 03 29	704	(0.1+	2.7+)	1999 09 12	120	0.1−	0.7−	1999 10 02	704	0.4−	0.4−
1998 03 29	704	0.2−	0.4+	1999 09 12	120	0.1+	0.6−	1999 10 02	704	0.2−	0.5−
1998 04 01	704	0.3−	0.6+	1999 09 12	120	0.1+	0.7−	1999 10 02	704	0.7−	0.5−
1998 04 01	704	(0.8+	2.0+)	1999 09 12	120	1.5+	0.2+	1999 10 07	703	0.2−	0.6+
1998 04 01	704	0.0	0.7+	1999 09 12	120	0.2+	0.2−	1999 10 07	703	0.4−	0.3+
1998 04 01	704	1.0+	1.5+	1999 09 14	120	0.6−	0.1+	1999 10 07	703	0.2+	0.7+
1998 04 22	704	(1.3+	2.7+)	1999 09 14	120	0.6−	0.1−	1999 10 07	703	0.2−	0.5+
1998 04 22	704	0.2+	0.6−	1999 09 19	848	0.4−	0.7+	1999 10 07	704	0.2−	0.4+
1998 04 22	704	1.2−	1.4+	1999 09 19	848	0.3+	0.1+	1999 10 07	704	0.3−	0.0
1998 04 22	704	(2.7+	2.4−)	1999 09 19	848	0.6+	0.5+	1999 10 07	704	0.2−	0.9+
1998 04 22	704	1.4+	1.1−	1999 09 20	848	0.4+	0.1−	1999 10 07	704	0.0	0.4−
1999 08 22	699	0.4−	0.2−	1999 09 20	848	0.4+	0.4+	1999 10 07	704	0.4+	0.0
1999 08 22	699	1.0−	1.0+	1999 09 20	848	0.3+	0.5+				
1999 08 22	699	0.7−	0.4+	1999 09 30	703	0.6−	0.4+				

1999 RC₃₆ = 1993 TT₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>	38.98412	(2000.0)	P	<i>Q</i>			
<i>n</i>	0.17109726	<i>ω</i>	328.10112	+0.91361959	+0.40573642		
<i>a</i>	3.2134682	<i>Ω</i>	8.09069	−0.32322372	+0.76366626		
<i>e</i>	0.1061646	<i>i</i>	10.65543	−0.24662861	+0.50218702		
<i>P</i>	5.76	<i>H</i>	12.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 10 10	809	0.9−	0.0	1999 09 13	113	0.3−	0.6+	1999 10 03	704	0.8+	0.4−
1993 10 10	809	0.4−	0.5+	1999 09 13	113	0.3−	0.8+	1999 10 03	704	0.5+	0.1−
1993 10 10	809	(2.1−	0.9−)	1999 09 14	113	0.3−	0.0	1999 10 03	704	0.3+	0.1−
1993 10 22	809	(2.1+	0.9+)	1999 09 14	113	0.3−	0.2+	1999 10 03	704	1.2+	0.2−
1993 10 22	809	0.3+	0.2−	1999 09 14	113	0.3−	0.2+	1999 10 03	704	0.1−	0.6+
1993 10 22	809	1.1+	0.3−	1999 09 14	681	0.2+	0.4−	1999 10 07	704	1.0+	0.1+
1999 09 12	113	0.0	0.4+	1999 09 14	681	0.4+	0.2−	1999 10 07	704	0.4+	0.1+
1999 09 12	113	0.3+	0.5+	1999 09 14	681	0.5−	0.1−	1999 10 07	704	0.2+	0.3+
1999 09 12	681	0.4+	0.2−	1999 09 15	113	0.0	0.5+	1999 10 18	113	1.0−	0.5+
1999 09 12	681	0.1+	0.9−	1999 09 15	113	0.1−	0.2−	1999 10 18	113	0.8−	0.3−
1999 09 12	681	0.3+	0.2−	1999 09 20	848	0.1−	0.3−	1999 10 19	113	0.7−	0.5−
1999 09 12	681	0.5+	0.3−	1999 09 20	848	1.0−	0.5+	1999 10 19	113	0.1−	0.1+
1999 09 12	681	0.2+	0.3−	1999 09 20	848	1.0−	0.8−				

1999 RF₃₆ = 1977 UX₄ = 1988 VU₁₁ = 1998 KP₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
<i>M</i>	27.87078	(2000.0)	P	<i>Q</i>			
<i>n</i>	0.26978205	<i>ω</i>	299.12575	+0.93094921	+0.35568745		
<i>a</i>	2.3720692	<i>Ω</i>	40.19689	−0.27447438	+0.83080439		
<i>e</i>	0.1374982	<i>i</i>	7.35135	−0.24082646	+0.42807768		
<i>P</i>	3.65	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

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1988 11 03	327	0.2−	0.9−	1998 05 24	704	0.6+	0.3−	1999 10 02	120	0.1−	0.2+
1988 11 04	327	2.1+	0.3+	1998 05 24	704	(0.5−	2.9−)	1999 10 02	703	0.1−	0.3−
1994 04 10	691	0.0	0.2−	1998 05 24	704	1.5−	0.1+	1999 10 02	703	0.1−	0.0
1994 04 10	691	0.0	0.0	1998 05 24	704	1.3−	0.3+	1999 10 02	703	0.0	0.5+
1994 04 10	691	0.1+	0.7−	1998 05 24	704	0.3+	0.6+	1999 10 02	703	0.3−	0.1+
1997 03 03	327	0.3−	0.4−	1999 09 12	120	0.6−	0.7−	1999 10 03	704	0.1+	0.7−
1997 03 03	327	0.4−	0.3−	1999 09 12	120	0.8+	0.0	1999 10 03	704	0.3+	0.7+
1997 03 03	327	0.1−	0.3−	1999 09 12	120	1.0−	0.3−	1999 10 03	704	0.6−	1.1−
1998 04 22	704	0.6+	0.8−	1999 09 13	120	0.6+	0.7−	1999 10 03	704	0.1+	1.3+
1998 04 22	704	0.2−	0.6+	1999 09 13	120	0.0	0.8−	1999 10 03	704	1.0−	0.7+
1998 04 22	704	0.2−	0.9−	1999 09 16	120	1.1−	0.1+	1999 10 07	704	1.1+	0.8−
1998 04 22	704	0.6+	1.1−	1999 09 16	120	0.2+	0.2−	1999 10 07	704	0.1+	0.0
1998 04 22	704	1.2−	0.9−	1999 09 16	120	1.0+	0.7−	1999 10 07	704	0.2−	1.1−
1998 04 25	699	0.7+	0.5−	1999 09 17	120	0.8+	1.6−	1999 10 12	106	0.3−	0.4+
1998 04 25	699	1.0+	0.3+	1999 09 17	120	0.3−	0.2−	1999 10 12	106	0.3+	0.2+
1998 04 25	699	0.3+	0.7−	1999 09 18	703	0.6−	0.5+	1999 10 12	106	0.2−	0.0
1998 05 22	704	0.8−	0.2+	1999 09 18	703	0.7+	0.7+				

1999 RH₃₆ = 1976 JN₄ = 1997 JW₁₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	15.36142		(2000.0)		P		Q
<i>n</i>	0.18632911	ω	322.66219	+0.98559351			−0.09358597
<i>a</i>	3.0358635	Ω	43.37636	+0.15460670			+0.83624185
<i>e</i>	0.1536121	<i>i</i>	11.83702	−0.06857261			+0.54031587
<i>P</i>	5.29	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1976 05 03	809	0.2+	0.3+	1999 09 12	120	0.4+	0.3−	1999 10 02	120	1.3−	0.2−
1997 05 08	691	0.2−	0.1+	1999 09 13	120	0.6+	0.0	1999 10 02	120	0.2+	0.8−
1997 05 08	691	0.1+	0.2−	1999 09 13	120	0.9−	0.3+	1999 10 03	704	1.1+	0.6−
1997 05 08	691	0.1+	0.0	1999 09 13	120	1.6+	0.4+	1999 10 03	704	0.3+	0.3−
1997 05 14	691	0.0	0.1−	1999 09 14	120	1.5−	0.1+	1999 10 03	704	0.3−	0.1+
1997 05 14	691	0.0	0.2−	1999 09 14	120	0.6−	0.0	1999 10 12	106	0.7−	0.8+
1997 05 14	691	0.1−	0.0	1999 09 23	120	0.7+	0.1−	1999 10 12	106	0.2−	0.4+
1999 09 12	120	0.1+	0.2−	1999 09 23	120	0.3+	0.0	1999 10 12	106	0.3+	0.4+

1999 RM₃₆ = 1998 HO₁₂₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	0.02974		(2000.0)		P		Q
<i>n</i>	0.23521242	ω	183.30343	+0.98421085			+0.16196787
<i>a</i>	2.5991373	Ω	166.71579	−0.15444110			+0.98285629
<i>e</i>	0.2091226	<i>i</i>	18.09856	−0.08646939			+0.08809043
<i>P</i>	4.19	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 23	704	0.1−	1.3+	1998 05 23	704	0.5−	0.1+	1999 09 12	106	0.2+	0.3+
1998 04 23	704	0.2+	0.4+	1998 05 23	704	0.2+	0.4−	1999 09 12	106	0.4+	0.4+
1998 04 23	704	0.3−	0.2−	1998 05 23	704	1.0+	0.3+	1999 09 13	106	0.3+	0.4+
1998 04 23	704	0.9+	1.4−	1998 05 23	704	0.6−	0.6+	1999 09 14	704	0.5−	0.3−
1998 04 23	704	(4.4−	0.1+)	1999 08 22	699	0.6+	0.3+	1999 09 14	704	0.4−	0.1−
1998 04 24	704	0.2+	0.4+	1999 08 22	699	0.0	0.4+	1999 09 14	704	0.4−	0.2−
1998 04 24	704	0.8+	0.1−	1999 08 22	699	0.2+	0.3+	1999 09 14	704	0.3−	0.2−
1998 04 24	704	0.8−	0.7−	1999 09 12	106	1.8−	1.1−	1999 09 14	704	0.3−	0.3−
1998 04 24	704	1.1−	0.6−	1999 09 12	106	0.4+	0.1+				
1998 05 23	704	0.3+	0.0	1999 09 12	106	1.6+	0.2−				

1999 RN₃₆ = 1998 KO₅₄

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	5.08684		(2000.0)		P		Q
<i>n</i>	0.23884694	ω	152.89844	+0.97780103			−0.16085597
<i>a</i>	2.5727027	Ω	217.14045	+0.12797498			+0.96588113
<i>e</i>	0.1885409	<i>i</i>	12.84994	+0.16591429			+0.20297537
<i>P</i>	4.13	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	0.3−	1.5+	1998 06 19	704	0.2+	0.1−	1999 09 15	106	0.3−	0.2+
1998 05 23	704	0.2+	0.0	1998 06 19	704	0.3+	0.3−	1999 09 15	106	0.4−	0.0
1998 05 23	704	0.1−	0.8+	1998 06 19	704	1.1−	0.2−	1999 09 15	106	0.2−	0.2−
1998 05 23	704	1.2+	1.0+	1998 06 19	704	0.6+	0.2+	1999 10 03	704	0.3+	1.1+
1998 05 26	704	0.7−	0.4−	1999 09 12	106	0.2−	0.1+	1999 10 03	704	0.2−	0.6−
1998 05 26	704	0.7−	0.5−	1999 09 12	106	0.1+	0.2−	1999 10 03	704	0.4+	0.6−
1998 05 26	704	0.1+	0.6+	1999 09 12	106	0.1+	0.1−	1999 10 03	704	1.5+	0.8−
1998 05 26	704	0.5−	0.7−	1999 09 13	106	0.0	0.0	1999 10 03	704	(1.1+	2.4−)
1998 05 26	704	0.5−	0.9−	1999 09 13	106	0.2+	0.1−	1999 10 16	611	1.2−	1.7+
1998 06 19	704	0.0	0.6−	1999 09 13	106	0.1−	0.2−	1999 10 16	611	(2.9−	0.5+)

1999 RA₃₇ = 1996 XO₁₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.52623		(2000.0)		P		Q
<i>n</i>	0.26044276	ω	1.52390	+0.97928866			+0.20233891
<i>a</i>	2.4284427	Ω	346.79559	−0.18609627			+0.88539601
<i>e</i>	0.1835596	<i>i</i>	1.82099	−0.07976153			+0.41848878
<i>P</i>	3.78	<i>H</i>	16.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 12 09	691	0.0	0.0	1999 09 07	704	0.2+	1.5+	1999 09 11	552	0.3+	0.6−
1996 12 09	691	0.1−	0.5−	1999 09 09	704	0.3+	0.2+	1999 09 11	552	0.4−	0.2+
1996 12 09	691	0.3−	0.8+	1999 09 09	704	0.0	0.1−	1999 09 12	552	0.3−	1.4−
1996 12 11	691	0.2+	0.3+	1999 09 09	704	0.2+	0.8−	1999 09 12	552	0.6−	0.2+
1996 12 11	691	0.0	0.4−	1999 09 09	704	(0.7+	2.1−)	1999 09 13	552	0.2+	0.8−
1996 12 11	691	0.1−	0.1−	1999 09 09	704	0.3−	0.9−	1999 09 13	552	0.5+	0.5+
1996 12 14	691	0.3−	0.3+	1999 09 11	704	0.1−	0.1−	1999 09 14	704	0.7+	0.1−
1996 12 14	691	0.1+	0.3−	1999 09 11	704	0.5+	0.0	1999 09 14	704	0.4+	0.5+
1996 12 14	691	0.7+	0.3+	1999 09 11	704	0.6+	0.3+	1999 09 14	704	0.4+	0.1+
1999 09 04	691	0.6−	0.1+	1999 09 11	704	0.4−	0.3−	1999 09 14	704	0.0	0.3+
1999 09 04	691	0.6−	0.1−	1999 09 11	704	0.5+	0.2+	1999 09 14	704	0.0	0.1−
1999 09 04	691	0.6−	0.0	1999 09 11	704	0.1+	0.3−	1999 09 18	691	0.2+	0.2−
1999 09 07	704	0.5−	1.3+	1999 09 11	704	0.3+	0.2−	1999 09 18	691	0.2+	0.2−
1999 09 07	704	0.8−	0.9+	1999 09 11	704	0.2−	0.4−	1999 09 18	691	0.2+	0.3−
1999 09 07	704	0.4−	0.5+	1999 09 11	704	0.2−	0.4−				
1999 09 07	704	0.4+	0.7+	1999 09 11	704	0.3−	0.2−				

1999 RB₃₇ = 1990 TJ₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	339.45594		(2000.0)		P		Q
<i>n</i>	0.21290961	ω	18.89472	+0.99467732			−0.10048955
<i>a</i>	2.7776181	Ω	346.81054	+0.07690330			+0.87114436
<i>e</i>	0.0765598	<i>i</i>	5.72946	+0.06857770			+0.48063432
<i>P</i>	4.63	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 10 10	033	0.3−	1.0+	1999 09 09	704	0.7−	0.2+	1999 09 14	691	0.4−	0.1−
1990 10 11	033	0.4−	0.4−	1999 09 11	699	0.3+	1.0+	1999 09 18	691	0.2+	0.7−
1990 10 11	033	0.3+	0.2+	1999 09 11	699	0.3−	1.0+	1999 09 18	691	0.1+	0.2−
1990 10 12	033	0.1+	0.0	1999 09 11	699	0.0	1.0+	1999 09 18	691	0.0	0.1−
1990 10 13	033	0.5+	0.2−	1999 09 11	552	0.5+	0.8−	1999 09 30	699	0.3+	0.9+
1990 10 14	033	0.4−	0.2−	1999 09 11	552	0.3+	0.5−	1999 09 30	699	1.4+	0.6−
1999 08 12	699	0.2+	0.0	1999 09 12	552	0.0	1.1−	1999 09 30	699	0.6+	0.9+
1999 08 12	699	1.2−	0.1+	1999 09 12	552	0.6−	0.4+	1999 10 02	704	0.1−	0.8+
1999 08 12	699	0.5−	0.5+	1999 09 13	552	0.1−	0.6+	1999 10 02	704	0.2−	0.4−
1999 09 07	704	0.2−	0.5−	1999 09 13	552	0.1−	0.3+	1999 10 02	704	0.5−	0.4−

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1999 09 07	704	0.0	0.5−	1999 09 13	552	0.0	0.1−	1999 10 02	704	0.0	0.2+
1999 09 07	704	0.4−	0.1+	1999 09 14	704	0.0	0.4+	1999 10 02	704	0.8+	0.0
1999 09 07	704	0.0	0.0	1999 09 14	704	0.8+	0.0	1999 10 07	704	1.2+	0.3+
1999 09 07	704	0.6−	0.5−	1999 09 14	704	0.1−	0.1+	1999 10 07	704	0.1+	0.1+
1999 09 09	704	0.2+	0.1−	1999 09 14	704	0.4+	0.4−	1999 10 07	704	0.1−	0.5−
1999 09 09	704	0.2−	0.1+	1999 09 14	704	0.3+	0.5−	1999 10 07	704	0.1+	0.3−
1999 09 09	704	0.1−	0.0	1999 09 14	691	0.4−	0.1−	1999 10 07	704	0.7−	0.2−
1999 09 09	704	0.0	0.5−	1999 09 14	691	0.3−	0.1−				

1999 RC₃₇ = 1995 UM₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
15.27573				(2000.0)			
				P		Q	
<i>n</i>	0.24201458	<i>ω</i>	310.10921	+0.69103307		+0.72280776	
<i>a</i>	2.5502046	<i>Ω</i>	3.61344	−0.63833080		+0.61330480	
<i>e</i>	0.2446134	<i>i</i>	4.29132	−0.33912695		+0.31844335	
<i>P</i>	4.07	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1995 10 22	691	0.8−	0.0	1999 09 09	704	0.5−	0.7−	1999 09 14	704	0.3−	0.2−
1995 10 22	691	0.7+	0.2−	1999 09 09	704	0.7−	0.2−	1999 09 14	704	0.4+	0.2−
1995 10 22	691	0.1−	0.6+	1999 09 09	704	0.3−	0.1−	1999 09 14	704	0.0	0.2−
1995 10 27	691	0.4−	0.5+	1999 09 09	704	1.0−	0.8−	1999 09 30	699	0.7+	0.2+
1995 10 27	691	0.0	0.4+	1999 09 09	704	0.8−	1.1−	1999 09 30	699	1.1+	1.2+
1999 08 12	699	0.7+	0.9+	1999 09 11	699	0.2−	0.6+	1999 09 30	691	0.2+	0.2+
1999 08 12	699	0.1−	0.7+	1999 09 11	699	0.1−	0.9+	1999 09 30	691	0.1+	0.1+
1999 08 12	699	0.9+	1.4+	1999 09 11	699	0.5+	1.2+	1999 09 30	699	0.4+	0.3+
1999 08 22	703	0.2−	0.4−	1999 09 11	552	0.7+	1.1−	1999 09 30	691	0.3+	0.2+
1999 08 22	703	0.5−	0.0	1999 09 11	552	0.0	1.2−	1999 10 01	560	0.5+	0.8+
1999 08 22	703	0.0	0.8+	1999 09 11	552	0.7−	0.9−	1999 10 01	560	0.7+	0.6+
1999 08 22	703	0.8+	1.3+	1999 09 12	552	0.6−	0.6−	1999 10 01	560	1.0+	0.4+
1999 09 07	704	0.6−	0.4−	1999 09 12	552	0.7−	0.6−	1999 10 02	704	0.3+	0.4−
1999 09 07	704	0.5−	0.3+	1999 09 13	552	0.6−	0.1−	1999 10 02	704	0.4+	0.3−
1999 09 07	704	0.3−	0.8−	1999 09 13	552	0.4−	1.1−	1999 10 02	704	1.0+	0.1+
1999 09 07	704	0.1−	0.3−	1999 09 14	704	0.2+	0.3−	1999 10 02	704	0.6−	0.3+
1999 09 07	704	0.1−	0.1−	1999 09 14	704	0.2+	0.3−				

1999 RE₃₇ = 1996 XX₃₂

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
325.96043				(2000.0)			
				P		Q	
<i>n</i>	0.30227917	<i>ω</i>	310.88327	+0.86987046		−0.49199414	
<i>a</i>	2.1988582	<i>Ω</i>	78.61632	+0.46279448		+0.78900707	
<i>e</i>	0.1923536	<i>i</i>	2.08094	+0.17072391		+0.36798044	
<i>P</i>	3.26	<i>H</i>	16.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1996 12 04	098	0.7+	0.8−	1999 09 09	365	0.9−	0.5+	1999 10 07	704	0.1+	0.3−
1996 12 04	098	0.5+	0.6−	1999 09 12	365	0.8+	0.9−	1999 10 07	704	0.1+	0.1−
1996 12 06	098	(2.4−	0.1+)	1999 09 12	365	0.7+	0.4−	1999 10 07	704	0.3+	0.4−
1996 12 06	098	0.0	0.7+	1999 09 30	365	1.1−	1.2+	1999 10 09	365	0.4−	0.4+
1996 12 08	098	1.8−	0.0	1999 09 30	365	0.6+	0.6−	1999 10 09	365	0.0	0.8+
1996 12 08	098	0.6+	0.7+	1999 10 07	704	0.1+	0.7−				
1999 09 09	365	0.6−	0.9+	1999 10 07	704	0.1+	0.5−				

1999 RT₃₇ = 1998 HY₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
18.80761				(2000.0)			
				P		Q	
<i>n</i>	0.26251984	<i>ω</i>	319.32607	+0.80964611		+0.58683672	
<i>a</i>	2.4156164	<i>Ω</i>	4.77209	−0.50336096		+0.70286120	
<i>e</i>	0.1265221	<i>i</i>	6.75815	−0.30182929		+0.40200597	
<i>P</i>	3.75	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.5+	0.5−	1999 09 09	704	0.2−	0.4−	1999 09 15	120	1.3−	0.4−
1998 04 21	704	0.3+	1.3−	1999 09 09	704	0.1−	0.2−	1999 09 15	120	0.5+	1.1−

1998 04 21	704	0.4+	0.6−	1999 09 09	704	0.2−	0.5−	1999 09 29	703	0.2−	0.2+
1998 04 21	704	0.1+	0.0	1999 09 09	704	0.4+	0.4−	1999 09 29	703	0.4−	0.0
1998 04 21	704	0.3+	0.7+	1999 09 09	704	0.4+	0.1−	1999 09 29	703	0.5−	0.6+
1998 04 22	704	0.7−	0.8−	1999 09 12	120	0.6−	0.1−	1999 09 29	703	0.6−	0.5+
1998 04 22	704	0.1−	0.2+	1999 09 12	120	0.8+	0.2−	1999 10 02	704	0.5+	0.0
1998 04 22	704	0.3+	1.1+	1999 09 13	120	(2.7+	0.3−)	1999 10 02	704	0.3−	0.3−
1998 04 22	704	1.0−	1.1+	1999 09 13	120	(2.4−	1.4−)	1999 10 02	704	0.3−	0.3+
1999 08 22	699	0.3−	0.9+	1999 09 13	120	0.1+	0.4−	1999 10 02	704	0.7+	0.2+
1999 08 22	699	0.2−	0.2+	1999 09 14	704	0.4−	0.6+	1999 10 07	704	0.2−	0.4+
1999 08 22	699	0.3−	0.4+	1999 09 14	704	0.0	0.4−	1999 10 07	704	0.0	0.1−
1999 09 07	704	0.2+	0.2+	1999 09 14	704	0.4+	0.3+	1999 10 07	704	0.3−	0.2−
1999 09 07	704	0.2−	0.2+	1999 09 14	704	0.6+	0.1−	1999 10 07	704	0.0	0.4+
1999 09 07	704	0.8+	0.4+	1999 09 14	704	0.6+	0.7−	1999 10 07	704	0.9+	0.5+
1999 09 07	704	0.5−	1.1+	1999 09 14	120	0.6+	1.9−				
1999 09 07	704	0.6+	0.5+	1999 09 14	120	1.2−	0.3−				

1999 RV₃₇ = 1998 HL₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
30.58340				(2000.0)			
				P		Q	
<i>n</i>	0.25495071	<i>ω</i>	124.88391	+0.69975374		+0.71427247	
<i>a</i>	2.4631937	<i>Ω</i>	189.55501	−0.67775699		+0.65818417	
<i>e</i>	0.1211624	<i>i</i>	4.36399	−0.22581003		+0.23792527	
<i>P</i>	3.87	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.3−	1.2+	1999 09 12	120	0.4+	0.7−	1999 10 04	704	0.3+	0.3−
1998 04 21	704	1.3−	1.1+	1999 09 13	120	0.9−	0.2−	1999 10 04	704	0.7+	0.1+
1998 04 21	704	1.9+	1.4−	1999 09 13	120	0.1−	1.0−	1999 10 04	704	0.6−	1.1+
1998 04 21	704	0.6+	0.2−	1999 09 13	120	0.5+	0.4−	1999 10 04	704	0.4+	1.4−
1998 04 21	704	1.5−	0.3+	1999 09 14	120	0.8+	1.1+	1999 10 04	704	1.1+	0.1−
1998 04 22	704	0.7+	0.6+	1999 09 14	120	1.4+	0.8−	1999 10 07	703	0.2−	0.6+
1998 04 22	704	0.9−	1.2−	1999 09 29	120	1.1−	0.7+	1999 10 07	703	0.2−	0.4−
1998 04 22	704	0.5+	0.9−	1999 09 29	120	0.9−	1.1+	1999 10 07	703	0.7−	1.0−
1998 04 22	704	0.3+	0.6+	1999 09 30	703	0.5+	0.0	1999 10 07	703	1.0+	0.3+
1998 04 22	704	(0.9−	2.5−)	1999 09 30	703	0.9−	0.3+	1999 10 07	704	0.5+	0.8−
1999 09 07	704	0.1−	0.5+	1999 09 30	703	1.0−	0.3+	1999 10 07	704	0.6−	0.1+
1999 09 07	704	0.2+	0.6+	1999 09 30	703	0.2+	0.2+	1999 10 07	704	0.5−	0.4−
1999 09 07	704	0.7−	0.5+	1999 09 30	120	(2.1−	0.5+)	1999 10 07	704	0.2−	0.1−
1999 09 07	704	1.1−	0.3−	1999 09 30	120	0.8+	0.6+				
1999 09 12	120	0.6+	1.1−	1999 09 30	120	0.6+	1.1+				

1999 RY₃₇ = 1994 CJ₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M		(2000.0)		P		Q	
n	0.29311307	ω	36.53612	+0.68841421		−0.72517216	
a	2.2444637	Ω	9.98785	+0.64404676		+0.60193954	
e	0.1431520	i	4.80676	+0.33360104		+0.33435628	
P	3.36	H	15.5	G	0.15	U	4

1999 OCT. 26

M.P.C. 36405

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	306.27369		(2000.0)	P			Q				
<i>n</i>	0.24082117	ω	249.85429	+0.27822923			−0.96049174				
<i>a</i>	2.5586228	Ω	184.00887	+0.91292837			+0.26658844				
<i>e</i>	0.2142691	<i>i</i>	5.45205	+0.29858044			+0.07991389				
<i>P</i>	4.09	<i>H</i>	15.6	<i>G</i>	0.15		<i>U</i>	5			
Residuals in seconds of arc											
1997 04 03	704	0.8+	0.3+	1999 09 13	120	0.2+	0.1−	1999 10 01	703	0.3−	0.2−
1997 04 03	704	0.3+	0.5+	1999 09 13	120	0.2+	0.8−	1999 10 01	120	0.6−	0.0
1997 04 06	704	0.1−	0.3−	1999 09 14	120	0.2+	0.1+	1999 10 01	120	1.0+	0.4−
1997 04 06	704	0.6−	1.4−	1999 09 14	120	0.8−	0.1−	1999 10 07	704	0.2+	0.4+
1997 04 07	704	0.1−	0.4+	1999 09 14	120	0.1+	1.2+	1999 10 07	704	0.3+	0.3+
1997 04 07	704	0.0	1.0+	1999 10 01	703	0.6−	0.8+	1999 10 07	704	0.2+	0.1−
1999 09 12	120	0.3+	0.3−	1999 10 01	703	0.1−	0.7+	1999 10 07	704	0.2+	0.6−
1999 09 13	120	0.3−	0.3−	1999 10 01	703	0.4−	0.3+	1999 10 07	704	0.1+	0.4−

1999 RC₃₈ = 1933 FW₁ = 1965 UM₁ = 1982 ST₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	256.34604		(2000.0)		P		Q				
<i>n</i>	0.23123891	ω	289.16880		-0.48767813		-0.87203526				
<i>a</i>	2.6288276	Ω	190.32217		+0.86247122		-0.47386474				
<i>e</i>	0.1205052	<i>i</i>	13.40078		+0.13532711		-0.12250188				
<i>P</i>	4.26	<i>H</i>	12.2	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1933 03 28	024	0.2+	1.2+	1999 09 13	120	1.1-	0.3+	1999 10 04	704	0.3-	0.4-
1965 10 18	330	0.3+	2.4-	1999 09 13	120	0.1-	0.3+	1999 10 04	704	1.3-	1.2-
1965 10 23	330	0.1+	0.5-	1999 09 14	120	0.4+	0.4+	1999 10 04	704	0.1+	0.7+
1982 09 26	095	(2.7-	4.0+)	1999 09 14	120	0.3+	0.1+	1999 10 07	704	0.5-	0.6+
1999 09 07	704	1.7+	1.3+	1999 09 14	120	0.2+	0.0	1999 10 07	704	0.4-	0.6+
1999 09 07	704	1.5+	0.5-	1999 09 15	120	0.0	0.2+	1999 10 07	704	0.6-	0.5+
1999 09 07	704	0.8+	1.6-	1999 09 15	120	0.2-	0.1-	1999 10 07	704	0.5-	0.9+
1999 09 13	120	0.3+	0.3+	1999 10 04	704	0.2+	0.4+	1999 10 07	704	0.6-	0.6+
1999 09 13	120	0.1-	0.2+	1999 10 04	704	0.1+	0.6+				

1999 RM₃₈ = 1994 TV₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	53.31975		(2000.0)			P		Q			
<i>n</i>	0.17435737	ω	110.11692			+0.58312645		+0.81123032			
<i>a</i>	3.1732857	Ω	195.78313			−0.79202520		+0.55587122			
<i>e</i>	0.0587442	<i>i</i>	9.14531			−0.18071971		+0.18141818			
<i>P</i>	5.65	<i>H</i>	13.2		<i>G</i>	0.15		<i>U</i>	3		
Residuals in seconds of arc											
1994 10 05	033	0.4−	0.5−	1999 09 13	120	0.6+	0.5−	1999 10 04	704	0.2+	0.1−
1994 10 05	033	0.2−	0.3−	1999 09 13	120	0.6−	0.3−	1999 10 04	704	0.2+	1.2−
1994 10 06	033	0.6+	0.5−	1999 09 14	120	0.9+	0.9−	1999 10 06	120	0.5−	1.1−
1998 06 19	704	0.8+	1.0+	1999 09 14	120	0.2+	0.6−	1999 10 06	120	0.3−	0.5+
1998 06 19	704	0.0	0.1+	1999 09 15	120	0.9+	0.8−	1999 10 06	120	0.5+	0.2+
1998 06 19	704	1.0−	0.7−	1999 09 15	120	0.8+	1.1−	1999 10 07	704	0.3+	0.1−
1998 06 19	704	0.3+	1.1−	1999 09 18	703	0.1+	0.9+	1999 10 07	704	0.1−	0.1+
1998 06 19	704	(2.9−	0.5+)	1999 09 18	703	0.3−	0.9+	1999 10 07	704	0.2−	0.2+
1999 07 23	704	0.3+	0.5+	1999 09 18	703	0.1+	0.2+	1999 10 07	704	0.1+	0.5−
1999 07 23	704	0.5−	0.0	1999 09 18	703	0.8−	0.4+	1999 10 07	704	0.2+	0.2+
1999 07 23	704	0.3−	0.8+	1999 10 01	703	0.1−	0.1−	1999 10 09	120	0.1+	0.3+
1999 07 23	704	0.3+	0.1−	1999 10 01	703	0.3+	0.2+	1999 10 09	120	0.3+	0.1−
1999 09 05	699	0.3−	0.5+	1999 10 01	703	0.1−	0.3+	1999 10 16	164	1.1−	1.5+
1999 09 05	699	0.2+	0.4+	1999 10 01	703	0.4+	0.4+	1999 10 16	164	1.9−	0.3+
1999 09 05	699	0.9−	0.3+	1999 10 04	704	0.2+	0.0	1999 10 16	164	0.5−	0.9+
1999 09 13	120	0.3+	1.0−	1999 10 04	704	0.0	0.0				
1999 09 13	120	0.8+	0.4−	1999 10 04	704	0.1−	0.1+				

1999 RN₃₈ = 1998 HG₄₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	5.23722		(2000.0)	P		Q					
n	0.28154514	ω	222.80441	+0.96937151		+0.24458111					
a	2.3055296	Ω	123.02561	-0.21751869		+0.89721149					
e	0.1362628	i	1.52665	-0.11403725		+0.36768415					
P	3.50	H	14.3	G	0.15	U	4				
Residuals in seconds of arc											
1998 04 20	704	0.1+	0.6-	1999 09 05	699	0.0	0.6+	1999 10 01	703	0.4-	0.0
1998 04 20	704	(3.5+	1.3+)	1999 09 05	699	0.2-	0.5+	1999 10 01	703	0.2-	0.2+
1998 04 20	704	0.9+	1.8+	1999 09 12	120	0.5+	0.2+	1999 10 01	703	0.2+	0.1+
1998 04 20	704	0.3+	0.0	1999 09 13	120	0.3+	0.1-	1999 10 04	704	0.1+	1.7+
1998 04 21	704	1.6-	0.5-	1999 09 13	120	0.0	0.1+	1999 10 04	704	1.8-	0.8+
1998 04 21	704	1.6-	0.3+	1999 09 13	120	0.2+	0.3-	1999 10 04	704	0.2-	0.7-
1998 04 21	704	0.4+	0.2-	1999 09 14	120	0.1+	0.4-	1999 10 04	704	0.0	1.1-
1998 04 21	704	0.5-	0.7-	1999 09 14	120	0.1+	0.2-	1999 10 07	704	0.0	0.5-
1998 04 21	704	0.8+	0.5+	1999 09 15	120	0.2+	0.3-	1999 10 07	704	0.0	0.3-
1998 04 22	704	0.4+	0.5-	1999 09 21	120	0.6-	0.2-	1999 10 07	704	0.0	0.1-
1998 04 22	704	1.3+	0.3+	1999 09 21	120	0.3-	0.1+	1999 10 07	704	0.1+	0.3-
1998 04 22	704	0.5+	0.1+	1999 09 29	120	0.3+	0.0	1999 10 07	704	0.2-	0.4-
1998 04 22	704	0.3-	0.6-	1999 09 29	120	0.1-	0.4+	1999 10 11	691	0.5+	0.2-
1998 04 22	704	0.9-	0.7-	1999 09 29	120	0.9+	0.3-	1999 10 11	691	0.5+	0.2-
1999 09 05	699	0.2-	0.2+	1999 10 01	703	0.3-	0.1+	1999 10 11	691	0.5+	0.2-

1999 RO₃₈ = 1975 TK₁ = 1992 SL₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	315.75587		(2000.0)		P		Q				
<i>n</i>	0.28782026	ω	232.35309		+0.52397241		-0.85166400				
<i>a</i>	2.2718962	Ω	186.07841		+0.81055343		+0.50256923				
<i>e</i>	0.2273192	<i>i</i>	5.97119		+0.26164107		+0.14863578				
<i>P</i>	3.42	<i>H</i>	15.2		<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1975 10 03	095	0.0	0.1-	1999 09 13	120	0.2+	0.2+	1999 10 04	704	0.3+	0.0
1992 09 22	809	0.0	0.4-	1999 09 13	120	1.4+	0.1+	1999 10 04	704	0.3+	0.0
1992 09 22	809	0.5-	0.5-	1999 09 13	120	1.3+	0.2-	1999 10 04	704	0.1-	0.1-
1992 09 22	809	1.1-	0.2+	1999 09 14	120	0.2-	0.3-	1999 10 07	704	0.2-	0.0
1992 09 23	809	0.5+	0.5+	1999 09 14	120	1.5-	1.3+	1999 10 07	704	0.2-	0.1+
1992 09 23	809	1.0+	0.1+	1999 09 14	120	0.0	0.4-	1999 10 07	704	0.1-	0.0
1992 09 23	809	0.1+	0.2+	1999 09 15	120	0.6+	0.4-	1999 10 07	704	0.4-	0.2+
1999 08 13	699	0.6-	0.5+	1999 09 15	120	1.6+	0.4-	1999 10 07	704	0.0	0.2-
1999 08 13	699	0.1+	0.2-	1999 10 02	703	0.3-	0.1-	1999 10 07	704	0.4-	0.1+
1999 08 13	699	0.2+	0.1-	1999 10 02	703	0.0	0.4-	1999 10 07	704	0.3+	0.2-
1999 09 05	699	0.9-	0.1-	1999 10 02	703	0.1+	0.0	1999 10 07	704	0.1-	0.3+
1999 09 05	699	0.5-	0.2-	1999 10 02	703	1.0-	0.1+	1999 10 07	704	0.3-	0.0
1999 09 05	699	0.2-	0.1-	1999 10 04	704	0.6+	0.0	1999 10 07	704	0.1-	0.3+
1999 09 13	120	0.3-	0.3+	1999 10 04	704	0.3+	0.2-				

1999 RP₃₈ = 1998 HR₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	353.24887		(2000.0)			P		Q			
n	0.27652079	ω	118.63826			+0.99686105		+0.03706501			
a	2.3333731	Ω	239.31590			-0.05979104		+0.93166222			
e	0.1606434	i	4.66606			+0.05189494		+0.36143007			
P	3.56	H	15.6			G	0.15	U	3		
Residuals in seconds of arc											
1994 03 18	691	0.3-	0.4-	1998 04 25	691	0.2+	0.8+	1999 09 13	557	0.0	0.1+
1994 03 18	691	0.3-	0.5-	1999 07 23	704	0.0	0.9-	1999 09 15	557	0.0	0.1-
1994 03 18	691	0.2+	0.3-	1999 07 23	704	0.7+	0.3-	1999 09 15	557	0.0	0.1-
1998 04 20	691	0.5+	0.3+	1999 07 23	704	0.5+	0.7-	1999 09 15	557	0.0	0.1-
1998 04 20	691	0.3+	0.2+	1999 09 08	704	0.4+	0.0	1999 09 15	557	0.1+	0.1-
1998 04 20	691	0.1+	0.3+	1999 09 08	704	0.0	0.1-	1999 09 18	557	0.1-	0.0
1998 04 21	704	1.3-	0.0	1999 09 08	704	0.3+	0.3-	1999 09 18	557	0.4-	0.1+

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1998 04 21	704	(2.2− 0.9+)	1999 09 08	704	0.3+ 0.1−	1999 09 18	557	0.4− 0.2+
1998 04 21	704	(1.4+ 2.8−)	1999 09 08	704	0.4− 0.7−	1999 09 30	703	0.7− 0.1+
1998 04 21	704	0.2− 0.1−	1999 09 09	704	0.3+ 0.3−	1999 09 30	703	0.0 0.4+
1998 04 21	704	(5.0− 0.7+)	1999 09 09	704	0.0 0.8−	1999 09 30	703	0.2− 0.2+
1998 04 21	691	0.3+ 0.1+	1999 09 09	704	0.2+ 0.4−	1999 09 30	703	0.5− 0.6+
1998 04 21	691	0.3+ 0.2+	1999 09 09	704	0.2+ 0.4−	1999 10 04	704	0.4+ 1.6+
1998 04 21	691	0.2+ 0.1+	1999 09 09	704	0.1− 0.5+	1999 10 04	704	0.1− 1.7+
1998 04 23	046	0.1+ 0.1+	1999 09 12	557	0.1− 0.2−	1999 10 04	704	1.1+ 0.0
1998 04 23	046	0.4+ 0.1+	1999 09 12	557	0.3− 0.1−	1999 10 09	703	0.3− 0.2+
1998 04 23	046	0.4+ 0.2+	1999 09 12	557	0.0 0.1−	1999 10 09	703	0.2− 0.2+
1998 04 23	046	0.2− 0.3+	1999 09 13	557	0.1− 0.0	1999 10 09	703	0.3− 0.1+
1998 04 25	691	0.2+ 0.1+	1999 09 13	557	0.0 0.1−	1999 10 09	703	0.6− 0.3+
1998 04 25	691	0.4− 0.4+	1999 09 13	557	0.0 0.0			

1999 RT₃₈ = 1994 CP₁₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.89933	(2000.0)	P	Q
<i>n</i>	0.30013222	ω	342.27294	+0.80037297 −0.59676546
<i>a</i>	2.2093320	Ω	54.50271	+0.55819447 +0.70700621
<i>e</i>	0.1596981	<i>i</i>	4.03019	+0.21868251 +0.37949072
<i>P</i>	3.28	<i>H</i>	14.9	<i>G</i> 0.15 <i>U</i> 3

Residuals in seconds of arc

1994 02 08	809	(2.8+ 2.5+)	1996 12 02	691	0.0 0.5−	1999 09 14	120	0.1+ 0.4+
1994 02 08	809	2.0+ 1.4+	1996 12 02	691	0.1− 0.5−	1999 09 15	120	0.3− 0.5−
1994 02 08	809	(2.5+ 1.7+)	1996 12 02	691	0.1+ 0.6−	1999 09 15	120	0.3+ 0.4+
1994 02 10	809	0.1+ 1.0+	1998 05 25	699	0.4+ 0.9−	1999 09 16	120	0.4− 0.4−
1994 02 10	809	0.2− 0.8+	1998 05 25	699	0.6+ 0.3−	1999 09 16	120	0.0 0.2+
1994 02 10	809	0.4+ 0.1+	1998 05 25	699	1.2− 0.5+	1999 09 16	120	0.1− 0.9−
1994 02 13	809	0.7− 1.4−	1999 09 13	120	1.3+ 0.1+	1999 09 22	120	0.2− 0.4+
1994 02 13	809	0.3− 0.2+	1999 09 13	120	0.1− 0.0	1999 09 22	120	0.8− 1.6−
1994 02 13	809	0.9− 0.9−	1999 09 14	120	1.3+ 1.1+	1999 09 22	120	1.4− 1.5+

1999 RU₃₈ = 1962 XK = 1997 EF₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	291.60196	(2000.0)	P	Q
<i>n</i>	0.23623887	ω	254.36082	+0.52760187 −0.84827845
<i>a</i>	2.5916030	Ω	163.55743	+0.82783064 +0.50142594
<i>e</i>	0.1802455	<i>i</i>	9.22697	+0.19061137 +0.17028126
<i>P</i>	4.17	<i>H</i>	13.8	<i>G</i> 0.15 <i>U</i> 2

Residuals in seconds of arc

1962 12 01	760	0.5− 0.3+	1999 09 07	704	0.1− 0.2−	1999 09 16	132	0.6− 0.4−
1962 12 01	760	0.5+ 0.1−	1999 09 07	704	0.3+ 0.3−	1999 09 16	132	0.2− 0.0
1997 03 03	691	0.1+ 0.1−	1999 09 09	704	0.6+ 0.1+	1999 09 16	132	0.1− 0.7−
1997 03 03	691	0.2− 0.2−	1999 09 09	704	0.4− 0.2−	1999 09 16	132	0.4− 0.3−
1997 03 03	691	0.0 0.3−	1999 09 09	704	0.2+ 0.1−	1999 09 16	132	0.5− 0.1−
1997 03 11	691	0.0 0.1+	1999 09 09	704	0.3+ 0.1−	1999 09 29	704	0.0 0.3+
1997 03 11	691	0.0 0.3+	1999 09 11	164	1.9− 0.9+	1999 09 29	704	0.2− 0.3−
1999 08 22	703	0.1− 0.4+	1999 09 11	164	0.0 0.4+	1999 09 29	704	1.5− 0.6−
1999 08 22	703	0.2− 0.2+	1999 09 11	164	0.3+ 1.0+	1999 09 29	704	0.2+ 0.2+
1999 08 22	703	0.4+ 0.0	1999 09 13	704	0.6+ 0.3+	1999 09 29	704	0.2− 0.1−
1999 08 22	703	0.1− 0.4+	1999 09 13	704	0.0 0.4+	1999 09 29	704	0.1+ 0.0
1999 08 22	703	0.2+ 0.6+	1999 09 13	704	0.1+ 0.4−	1999 09 29	704	0.0 0.5−
1999 08 22	703	0.9+ 0.1+	1999 09 13	704	0.6+ 0.2+	1999 09 29	704	0.2− 1.0+
1999 08 22	703	0.2− 0.4−	1999 09 13	704	0.7+ 0.1+	1999 09 30	704	0.1− 0.4−
1999 08 22	703	0.4+ 0.3+	1999 09 13	138	0.9+ 0.1−	1999 09 30	704	0.0 0.2−
1999 09 07	704	0.5+ 0.3−	1999 09 13	138	0.5+ 0.1+	1999 09 30	704	0.0 0.2+
1999 09 07	704	0.4+ 0.0	1999 09 13	138	0.7− 0.4−	1999 09 30	704	0.1− 0.4−
1999 09 07	704	0.4− 0.3−	1999 09 13	138	(2.1+ 1.0+)	1999 09 30	704	0.2− 0.4−

1999 RW₃₈ = 1998 FK₈₆

Id. A. Doppler

1999 OCT. 26

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	51.01484	(2000.0)	P	Q
<i>n</i>	0.29444240	ω	178.41582	+0.12456422 +0.98572196
<i>a</i>	2.2377032	Ω	98.72937	−0.91159215 +0.15878007
<i>e</i>	0.0704123	<i>i</i>	6.58192	−0.39176972 −0.05604563
<i>P</i>	3.35	<i>H</i>	15.5	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1998 03 24	704	0.5+ 0.8+	1999 09 08	703	0.9− 0.7−	1999 09 13	428	0.1+ 0.7+
1998 03 24	704	0.1+ 0.3+	1999 09 08	703	0.7+ 0.3+	1999 09 14	428	0.6+ 0.2+
1998 03 24	704	0.2+ 1.3−	1999 09 08	703	(2.7+ 1.0+)	1999 09 14	428	0.6+ 0.9+
1998 03 24	704	0.0 1.7−	1999 09 12	428	0.3+ 0.9+	1999 09 19	428	0.6+ 0.5+
1998 03 25	704	0.7− 0.4+	1999 09 12	428	0.9− 1.2+	1999 09 30	704	0.2+ 1.1−
1998 03 25	704	0.2+ 0.9+	1999 09 13	704	0.1+ 0.1−	1999 09 30	704	0.1− 1.1−
1998 03 25	704	0.5− 0.1+	1999 09 13	704	0.0 1.2−	1999 09 30	704	0.4+ 0.6+
1998 03 25	704	0.9+ 0.7+	1999 09 13	704	0.2− 0.5−	1999 10 10	428	0.5− 0.7+
1998 03 25	704	0.9− 0.3−	1999 09 13	704	0.9− 0.1−			
1999 09 08	703	0.8+ 0.9−	1999 09 13	428	1.0− 0.1−			

1999 RZ₃₈ = 1993 FK₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	290.67682	(2000.0)	P	Q
<i>n</i>	0.24314687	ω	344.62888	+0.23973321 −0.96319115
<i>a</i>	2.5422813	Ω	91.38414	+0.90306265 +0.17525564
<i>e</i>	0.2562517	<i>i</i>	6.98751	+0.35637879 +0.20383392
<i>P</i>	4.05	<i>H</i>	14.6	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1993 03 17	809	0.1− 0.5+	1999 09 13	704	0.2− 0.4+	1999 09 16	428	1.0− 0.8+
1993 03 18	809	0.4− 0.4+	1999 09 13	704	0.1− 0.3+	1999 09 16	428	0.3− 0.9+
1993 04 16	413	0.5+ 1.1−	1999 09 13	704	0.2− 0.1−	1999 09 19	428	0.0 0.4+
1999 08 12	699	0.8+ 0.4−	1999 09 13	704	0.1− 0.0	1999 09 19	428	0.3+ 0.3−
1999 08 12	699	0.1− 0.2+	1999 09 13	428	0.4− 0.3+	1999 09 30	704	1.3+ 0.6+
1999 08 12	699	0.0 0.3+	1999 09 13	428	0.7− 0.1−	1999 09 30	704	0.0 0.1−
1999 09 07	699	0.2+ 0.6−	1999 09 14	428	0.1+ 0.3+	1999 09 30	704	0.2+ 0.0
1999 09 07	699	0.0 0.1+	1999 09 14	428	1.2+ 0.3−	1999 09 30	704	0.2+ 1.5−
1999 09 07	699	0.5+ 0.1−	1999 09 15	428	0.4− 0.3−	1999 09 30	704	0.7− 1.3−
1999 09 13	704	0.1+ 0.5+	1999 09 15	428	0.5− 0.2−			

1999 RA₃₉ = 1990 DP₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	266.70876	(2000.0)	P	Q
<i>n</i>	0.27552880	ω	317.94335	−0.32736537 −0.92032492
<i>a</i>	2.3389703	Ω	149.26684	+0.93943781 −0.34133153
<i>e</i>	0.2465422	<i>i</i>	24.76687	+0.10143229 +0.19103618
<i>P</i>	3.58	<i>H</i>	14.4	<i>G</i> 0.15 <i>U</i> 4

Residuals in seconds of arc

1990 02 20	675	0.5+ 0.5+	1999 09 13	428	0.1+ 0.6−	1999 09 30	704	0.5− 0.3−
1990 02 20	675	0.3+ 0.2+	1999 09 13	428	0.2− 0.5−	1999 09 30	704	0.5− 0.5−
1990 02 22	675	0.8− 0.8−	1999 09 14	428	0.0 1.1−	1999 09 30	704	0.8− 0.2+
1999 09 13	704	0.6+ 0.3+	1999 09 14	428	0.7+ 0.6−	1999 09 30	704	0.2− 0.3−
1999 09 13	704	0.3− 0.6+	1999 09 15	428	0.2+ 0.5−	1999 09 30	704	0.6− 0.2+
1999 09 13	704	0.4− 0.7+	1999 09 19	428	0.5+ 0.9+	1999 10 07	428	0.7+ 0.3+
1999 09 13	704	0.4+ 0.3+	1999 09 19	428	0.3+ 0.8+			

1999 RO₃₉ = 1989 TH₁₈

Id. A. Doppler

1999 OCT. 26

M.P.C. 36407

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	345.10772		(2000.0)	P	Q
<i>n</i>	0.29656738	ω	337.11324	+0.99790937	-0.04093071
<i>a</i>	2.2270012	Ω	25.38724	+0.06027578	+0.86864335
<i>e</i>	0.1712329	<i>i</i>	6.69932	-0.02331778	+0.49374427
<i>P</i>	3.32	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1989 10 01	675	0.2+	0.3-	1998 04 22	704	(2.1+	0.3-)	1999 09 17	727	0.2+	0.2-
1989 10 01	675	0.3-	1.8-	1998 04 22	704	0.7+	0.9-	1999 09 17	727	0.4+	0.4-
1989 10 04	675	1.4+	1.1-	1998 04 22	704	0.7+	0.3+	1999 09 22	727	0.1-	0.1+
1989 10 04	675	0.5-	1.6+	1998 04 22	704	1.9+	1.4+	1999 09 22	727	0.0	0.0
1998 03 20	704	0.5-	0.4-	1999 07 16	704	1.3+	1.8-	1999 09 22	727	0.0	0.1+
1998 03 20	704	1.6+	0.6-	1999 07 16	704	0.2+	0.4-	1999 09 30	727	0.1-	0.3+
1998 03 20	704	0.2+	0.5+	1999 07 16	704	1.0-	0.7-	1999 09 30	727	0.0	0.2+
1998 03 20	704	1.3-	1.4-	1999 09 05	699	0.0	1.5+	1999 09 30	727	0.0	0.0
1998 03 25	704	1.0+	0.3+	1999 09 05	699	0.1-	1.3+	1999 10 02	704	0.2+	0.1+
1998 03 25	704	0.7+	0.3+	1999 09 05	699	0.0	0.9+	1999 10 02	704	0.7+	0.4+
1998 03 25	704	0.6+	0.0	1999 09 09	704	0.4-	0.1-	1999 10 02	704	0.0	0.6+
1998 03 25	704	0.5+	0.7-	1999 09 09	704	0.2+	0.4-	1999 10 02	704	0.3+	0.3+
1998 03 25	704	(4.2-	0.4+)	1999 09 09	704	0.0	0.2+	1999 10 07	704	0.2-	0.2+
1998 03 28	704	0.3+	0.7-	1999 09 09	704	0.0	0.5-	1999 10 07	704	0.3-	0.3+
1998 03 28	704	(3.2+	0.5-)	1999 09 13	727	0.5-	0.1+	1999 10 07	704	0.3-	0.2+
1998 03 28	704	(2.2+	0.5-)	1999 09 13	727	0.1+	1.4+	1999 10 07	704	0.6-	0.1+
1998 03 28	704	(2.3-	1.9+)	1999 09 14	727	0.1-	0.1-	1999 10 07	704	0.4-	0.1+
1998 03 28	704	(5.4-	1.1+)	1999 09 14	727	0.0	0.1+	1999 10 15	704	0.5-	0.0
1998 04 20	704	(2.9+	4.3+)	1999 09 14	727	0.2+	0.1+	1999 10 15	704	0.3-	0.4-
1998 04 20	704	1.6-	0.6+	1999 09 14	704	0.0	0.2-	1999 10 15	704	0.4-	0.3-
1998 04 20	704	1.5-	0.8+	1999 09 14	704	0.2+	0.2-	1999 10 15	704	0.4-	0.3-
1998 04 20	704	1.3-	1.9+	1999 09 14	704	0.2-	0.1+	1999 10 15	704	0.4-	0.4-
1998 04 20	704	1.5-	0.5-	1999 09 14	704	0.2-	0.0				
1998 04 22	704	0.8+	1.4+	1999 09 14	704	0.6+	0.6-				

1999 RT₃₉ = 1998 KQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	47.32454		(2000.0)	P	Q
<i>n</i>	0.18937933	ω	35.19284	+0.13066903	+0.98093256
<i>a</i>	3.0031775	Ω	242.70602	-0.94269173	+0.07799519
<i>e</i>	0.0602687	<i>i</i>	9.31650	-0.30701452	+0.17801141
<i>P</i>	5.20	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1998 05 22	699	0.7-	0.2+	1999 09 07	703	0.1-	0.0	1999 09 14	704	0.0	0.3-
1998 05 22	699	0.3+	0.5-	1999 09 07	703	0.5+	0.6+	1999 09 14	704	0.3-	0.4+
1998 05 22	699	0.3+	0.8-	1999 09 07	703	(2.6+	0.7+)	1999 09 14	703	0.1+	0.2+
1998 05 24	704	0.1+	0.7-	1999 09 08	704	0.6+	0.2-	1999 09 14	704	0.6-	0.3-
1998 05 24	704	0.6+	0.2+	1999 09 08	704	0.2+	0.3-	1999 09 14	703	0.5-	0.6-
1998 05 24	704	0.6+	1.3+	1999 09 08	704	0.4+	0.7-	1999 09 14	704	0.2-	0.2+
1998 05 24	704	0.5-	0.3-	1999 09 08	704	0.1+	0.3-	1999 09 14	703	0.7-	0.3+
1998 05 24	704	0.3-	0.2+	1999 09 09	704	0.0	0.1+	1999 09 14	703	0.1-	0.4+
1998 05 25	699	0.4-	0.2+	1999 09 09	704	0.0	0.9-	1999 09 14	704	0.8-	0.8-
1998 05 25	699	0.0	0.4+	1999 09 09	704	0.1+	0.7-	1999 09 30	703	0.3+	0.1+
1998 05 25	699	0.0	0.2-	1999 09 09	704	0.4+	0.2+	1999 09 30	703	1.3+	0.1-
1998 06 29	699	1.0-	0.3+	1999 09 09	704	0.3+	0.5-	1999 09 30	703	0.2-	0.2+
1998 06 29	699	0.0	0.1+	1999 09 10	704	0.1+	0.3+	1999 09 30	703	0.4-	0.6+
1998 06 29	699	0.8+	0.3-	1999 09 10	704	0.7-	0.2+				
1999 09 07	703	0.5+	0.4+	1999 09 10	704	0.1-	1.4+				

1999 RK₄₀ = 1998 HM₁₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	126.49753		(2000.0)	P	Q
<i>n</i>	0.25959426	ω	48.32224	-0.81203553	+0.58184526
<i>a</i>	2.4337315	Ω	167.04166	-0.57727636	-0.78939042
<i>e</i>	0.0259516	<i>i</i>	11.66137	-0.08573394	-0.19575205
<i>P</i>	3.80	<i>H</i>	14.5	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 23	704	0.1-	0.2-	1999 09 09	704	0.2-	0.1+	1999 09 14	704	0.2-	0.1+
1998 04 23	704	0.5-	0.2-	1999 09 09	704	0.4-	0.5+	1999 09 14	113	0.2-	0.2+
1998 04 23	704	0.7-	0.1+	1999 09 09	704	0.5-	0.2-	1999 09 14	113	0.2-	0.6+
1998 04 23	704	0.1+	0.6+	1999 09 09	704	0.2+	0.3+	1999 09 14	113	0.9-	0.1-
1998 04 23	704	0.7+	0.4-	1999 09 09	704	0.3-	0.2-	1999 09 30	699	0.1+	1.3+
1998 04 24	704	0.4-	0.3+	1999 09 11	699	0.1+	1.0+	1999 09 30	699	0.4+	0.0
1998 04 24	704	0.7+	0.6-	1999 09 11	699	0.1+	0.2+	1999 09 30	699	0.7+	1.2-
1998 04 24	704	0.2+	0.3+	1999 09 11	699	0.0	0.4+	1999 10 02	704	1.3+	0.5-
1999 08 12	699	0.6+	0.7+	1999 09 13	113	(3.6-	0.4-)	1999 10 02	704	0.3+	0.1-
1999 08 12	699	1.0+	0.6+	1999 09 13	113	(2.4-	0.7+)	1999 10 02	704	0.3+	0.7+
1999 08 12	699	1.3+	0.1+	1999 09 13	113	(2.6-	0.1+)	1999 10 02	704	0.4+	1.5+
1999 09 07	704	0.2-	0.5-	1999 09 13	113	(0.9-	2.9-)	1999 10 07	704	0.7+	0.5-
1999 09 07	704	0.4-	0.4-	1999 09 13	113	(0.6-	2.6-)	1999 10 07	704	0.1-	0.7-
1999 09 07	704	0.2-	1.0-	1999 09 14	704	0.0	0.4+	1999 10 07	704	0.2-	1.0-
1999 09 07	704	0.6-	0.5-	1999 09 14	704	0.7-	0.8-	1999 10 07	704	0.2-	0.8+
1999 09 07	704	0.7-	0.8-	1999 09 14	704	0.1-	0.3-	1999 10 07	704	0.7-	0.8-

1999 RH₄₁ = 1994 PX₃₉ = 1998 KU₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	25.20565		(2000.0)	P	Q
<i>n</i>	0.21161803	ω	161.53306	+0.74528031	+0.64549442
<i>a</i>	2.7889085	Ω	155.69514	-0.65138572	+0.75835888
<i>e</i>	0.1262957	<i>i</i>	23.94001	-0.14231621	-0.09071256
<i>P</i>	4.66	<i>H</i>	12.7	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1994 08 09	675	0.7+	0.9+	1998 06 04	704	1.1-	1.5-	1999 09 11	699	0.5-	1.0+
1994 08 09	675	0.4+	0.6+	1998 06 04	704	(2.1+	0.3-)	1999 09 13	704	0.3-	0.6-
1994 08 11	675	0.2+	1.1-	1998 06 04	704	0.1+	0.3+	1999 09 13	704	0.7-	0.1-
1994 08 11	675	1.6+	0.8-	1998 06 04	704	0.1-	0.1+	1999 09 13	704	0.2-	0.6-
1994 09 03	675	1.7-	0.2+	1998 06 23	699	0.2-	0.3-	1999 09 13	704	0.2-	0.4-
1994 09 03	675	1.3-	0.9+	1998 06 23	699	0.1+	0.1+	1999 09 14	704	0.0	0.7-
1998 04 28	704	0.9+	0.3+	1998 06 23	699	0.3-	0.2-	1999 09 14	704	0.4+	0.7-
1998 04 28	704	0.8+	0.6-	1998 07 14	699	0.5-	0.0	1999 09 14	704	0.2+	0.6-
1998 04 28	704	1.1+	0.3+	1998 07 14	699	0.1-	0.1+	1999 09 14	704	0.2+	0.5-
1998 04 28	704	0.3+	0.9+	1998 07 14	699	0.4-	0.0	1999 09 14	704	0.3+	0.3-
1998 04 28	704	0.5+	0.8+	1999 09 08	703	0.3-	0.3-	1999 09 30	704	0.4+	0.8+
1998 05 27	704	0.8+	0.2-	1999 09 08	703	0.6-	0.0	1999 09 30	704	0.6+	0.7+
1998 05 27	704	1.3-	0.4-	1999 09 08	703	0.1-	0.8-	1999 09 30	704	0.5+	0.8+
1998 05 27	704	0.0	0.1-	1999 09 08	703	0.2+	1.2-	1999 09 30	704	0.6+	0.8+
1998 05 27	704	0.4-	0.4-	1999 09 11	699	0.6-	1.1+	1999 09 30	704	0.5+	0.1+
1998 05 27	704	0.5-	0.9+	1999 09 11	699	0.3-	1.2+				

1999 RH₄₂ = 1998 TR₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	324.10302		(2000.0)	P	Q
<i>n</i>	0.18916970	ω	112.42458	-0.44174317	-0.89707178
<i>a</i>	3.0053957	Ω	3.84607	+0.74952438	-0.37588341
<i>e</i>	0.0697577	<i>i</i>	9.60265	+0.49302756	-0.23232282
<i>P</i>	5.21	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1998 10 11	699	0.1+	0.3+	1999 09 14	557	0.3+	0.4-	1999 09 22	557	0.0	0.7+
1998 10 11	699	0.2+	0.1-	1999 09 14	557	0.2-	0.0	1999 09 22	557	0.1+	0.1-
1998 10 11	699	0.2+	0.8-	1999 09 15	557	1.0+	0.6+	1999 09 22	557	0.3+	0.5-
1998 10 14	699	0.1-	0.2+	1999 09 15	557	0.0	0.1+	1999 10 14	557	0.5-	0.1-

1999 RJ₄₂ = 1962 XD

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.25314	(2000.0)	P		Q	
<i>n</i>	0.21264259	ω	145.47003	+0.88675532	-0.44428726	
<i>a</i>	2.7799429	Ω	241.39967	+0.38454881	+0.86220225	
<i>e</i>	0.1662343	<i>i</i>	8.35455	+0.25649017	+0.24334361	
<i>P</i>	4.64	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1962 12 01	760	0.2+	1.4+	1999 09 14	678	0.5+	0.1-	1999 09 30	678	0.3-	0.2-
1962 12 01	760	1.4-	1.3-	1999 09 18	678	0.2-	0.6-	1999 09 30	678	0.7-	0.2-
1962 12 02	760	0.1-	1.9-	1999 09 18	678	0.5-	0.3-	1999 09 30	678	0.3-	0.1+
1962 12 02	760	1.3+	1.9+	1999 09 18	678	0.3+	0.5-	1999 10 03	704	1.3+	1.2+
1999 09 04	703	0.6+	0.5+	1999 09 20	848	0.3-	0.2+	1999 10 03	704	0.3-	0.1-
1999 09 04	703	0.0	0.0	1999 09 20	848	0.1-	0.2+	1999 10 03	704	1.2+	0.8-
1999 09 04	703	0.0	0.0	1999 09 22	848	0.1+	0.0	1999 10 03	704	0.3+	0.0
1999 09 04	703	0.7-	0.2-	1999 09 22	848	0.1+	0.0	1999 10 03	704	0.7-	1.2-
1999 09 13	678	0.6-	0.9+	1999 09 22	848	0.2+	0.0	1999 10 13	611	0.0	0.0
1999 09 13	678	0.6+	0.1+	1999 09 27	848	0.3-	0.2-	1999 10 13	611	0.2-	0.4+
1999 09 14	678	0.5-	0.1+	1999 09 27	848	0.0	0.0				
1999 09 14	678	0.5+	0.0	1999 09 27	848	0.1-	0.8+				

1999 RM₄₂ = 1997 FX₁

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	265.08292	(2000.0)	P		Q	
<i>n</i>	0.23964053	ω	74.02212	-0.48830009	-0.85334410	
<i>a</i>	2.5670197	Ω	46.68844	+0.67343634	-0.50159476	
<i>e</i>	0.1420209	<i>i</i>	14.53912	+0.55501938	-0.14214974	
<i>P</i>	4.11	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1997 03 28	327	0.3+	0.0	1997 04 17	327	0.0	0.0	1999 09 16	120	0.9-	0.3+
1997 03 28	327	0.0	0.2-	1999 09 14	120	1.6-	0.1+	1999 09 16	120	1.6+	0.4-
1997 03 28	327	0.3-	0.2-	1999 09 14	120	0.6+	1.7+	1999 09 29	120	1.6+	1.5-
1997 04 02	327	0.1-	0.3+	1999 09 14	120	1.2-	0.2+	1999 09 29	120	0.7+	0.5-
1997 04 02	327	0.4-	0.3+	1999 09 15	120	0.6+	0.2-	1999 10 04	703	0.4-	0.3+
1997 04 02	327	0.3+	0.0	1999 09 15	120	0.5+	0.3-	1999 10 04	703	0.4+	0.8+
1997 04 17	327	0.2+	0.1-	1999 09 15	120	1.2-	1.1-	1999 10 04	703	0.2-	0.9+
1997 04 17	327	0.3+	0.1+	1999 09 15	120	0.7-	0.6-	1999 10 04	703	0.2-	0.6+

1999 RX₄₂ = 1980 TB₁₁ = 1998 FK₅₂

Id. A. Doppler, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	7.35030	(2000.0)	P		Q	
<i>n</i>	0.25789155	ω	148.21789	+0.84796914	+0.53004481	
<i>a</i>	2.4444321	Ω	179.76767	-0.52110520	+0.83397941	
<i>e</i>	0.2612693	<i>i</i>	12.98458	-0.09694173	+0.15339766	
<i>P</i>	3.82	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1980 10 08	095	0.3+	1.5-	1999 07 23	704	0.2-	0.2+	1999 09 16	106	0.1-	0.3+
1998 03 20	704	0.3-	0.4-	1999 09 07	704	0.4+	0.1+	1999 09 16	106	0.2+	0.2+
1998 03 20	704	1.1+	0.3-	1999 09 07	704	0.6+	0.1+	1999 10 02	704	1.0+	0.9-
1998 03 20	704	0.3+	1.1-	1999 09 07	704	0.4+	0.5-	1999 10 02	704	0.3-	1.0-
1998 03 20	704	1.2+	1.0-	1999 09 07	704	0.3+	0.6-	1999 10 02	704	0.4+	1.6-
1998 03 20	704	0.6-	1.3-	1999 09 07	704	0.4+	0.9-	1999 10 02	704	0.5+	1.2-
1998 03 22	704	0.3-	1.3-	1999 09 09	704	0.0	0.1-	1999 10 02	704	0.7+	1.0-
1998 03 22	704	0.4-	1.3-	1999 09 09	704	0.1+	0.5-	1999 10 07	704	0.3-	0.3-
1998 03 22	704	(0.2-	2.1-)	1999 09 09	704	0.2+	0.2-	1999 10 07	704	0.4-	0.0
1998 03 22	704	0.4-	0.1-	1999 09 09	704	0.2-	0.6-	1999 10 07	704	0.2-	0.3-
1998 03 22	704	1.7-	1.8-	1999 09 09	704	0.3-	0.5-	1999 10 07	704	0.8-	0.2-
1998 03 24	566	0.5-	1.6-	1999 09 13	106	0.4-	0.0	1999 10 07	704	0.3-	0.5-
1998 03 24	566	0.2-	1.6-	1999 09 13	106	0.2+	0.4-	1999 10 08	106	1.5+	0.7-
1998 03 24	566	0.6-	1.4-	1999 09 13	106	0.4-	0.2-	1999 10 08	106	0.4+	0.2+

1999 07 23	704	0.1-	0.0	1999 09 14	106	0.2-	0.5+	1999 10 08	106	0.3-	0.8+
1999 07 23	704	0.0	0.2-	1999 09 14	106	0.3-	0.3+	1999 10 16	611	1.0-	0.4+
1999 07 23	704	0.2+	0.1+	1999 09 14	106	0.2+	0.4+	1999 10 16	611	0.6-	0.1+
1999 07 23	704	0.1+	0.1+	1999 09 16	106	0.0	0.3+				

1999 RG₄₃ = 1998 FJ₃₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	61.93263	(2000.0)	P		Q	
<i>n</i>	0.27032223	ω	106.61681	-0.04427816	+0.99792748	
<i>a</i>	2.3689081	Ω	160.66355	-0.96190944	-0.02996636	
<i>e</i>	0.1364348	<i>i</i>	8.10664	-0.26975854	-0.05694522	
<i>P</i>	3.65	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 24	566	0.5+	0.1-	1998 03 22	704	0.9+	0.5+	1999 09 07	704	0.1-	1.1-
1998 02 24	566	0.2-	0.3-	1998 03 29	704	0.7-	0.1-	1999 09 07	704	0.2+	0.4-
1998 02 24	566	0.1+	0.0	1998 03 29	704	0.7+	0.9-	1999 09 08	643	1.3+	0.7+
1998 03 01	809	0.7-	0.8-	1998 03 29	704	0.9-	0.6-	1999 09 08	643	1.4+	1.0+
1998 03 01	809	0.8-	1.4-	1998 03 29	704	0.1+	0.1-	1999 09 09	704	0.2+	0.4+
1998 03 01	809	1.1-	0.3-	1998 03 29	704	0.2-	0.2+	1999 09 09	704	0.2+	0.9-
1998 03 20	704	0.1+	0.5+	1998 08 22	703	1.0+	1.3+	1999 09 09	704	1.0-	1.5-
1998 03 20	704	0.4+	0.5+	1998 08 22	703	0.4-	0.0	1999 09 09	704	0.7-	1.1-
1998 03 20	704	0.8+	0.7+	1998 08 22	703	1.2+	0.1-	1999 09 14	704	0.7-	0.4-
1998 03 20	704	0.3+	0.2-	1998 08 22	703	0.1+	0.2-	1999 09 14	704	0.7-	0.0
1998 03 20	704	0.5+	1.0-	1999 09 04	643	0.1-	0.2-	1999 09 14	704	0.8-	0.1+
1998 03 22	704	0.5-	0.4+	1999 09 04	643	0.2-	0.0	1999 09 14	704	0.5-	0.3+
1998 03 22	704	0.4+	1.9-	1999 09 07	704	0.5+	0.6-	1999 09 14	704	0.6-	0.1+
1998 03 22	704	0.3+	0.2-	1999 09 07	704	0.3+	0.2-	1999 09 18	643	(0.9+	2.4+)
1998 03 22	704	0.9-	1.5+	1999 09 07	704	0.6+	0.6-	1999 09 18	643	(1.4+	2.6+)

1999 RH₄₃ = 1991 GX₉ = 1998 FV₁₄₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	18.80195	(2000.0)	P		Q	
<i>n</i>	0.27241020	ω	313.00857	+0.65985554	+0.75138601	
<i>a</i>	2.3567878	Ω	358.27127	-0.65580945	+0.57388529	
<i>e</i>	0.1367086	<i>i</i>	5.93562	-0.36674873	+0.32569116	
<i>P</i>	3.62	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1991 04 10	809	(3.1+	1.0-)	1999 09 07	704	0.5-	0.1-	1999 09 14	704	0.1+	0.6-
1991 04 10	809	1.0-	1.0-	1999 09 07	704	0.6-	0.0	1999 09 14	704	0.1-	0.3+
1991 04 10	809	1.3-	1.0-	1999 09 07	704	0.8-	0.2-	1999 09 14	704	0.6+	0.0
1991 04 19	809	0.0	0.1+	1999 09 07	704	0.3-	0.3+	1999 09 14	704	1.2-	0.0
1991 04 19	809	0.7+	0.2-	1999 09 09	704	0.7+	1.1+	1999 09 14	704	0.2-	0.0
1991 04 19	809	0.4+	0.2-	1999 09 09	704	0.4-	0.1-	1999 09 14	704	0.2-	0.5-
1998 03 29	704	0.6-	1.2+	1999 09 09	704	0.6-	1.1+	1999 09 14	120	1.5-	0.2-
1998 03 29	704	0.3-	1.7-	1999 09 09	704	0.3+	0.2+	1999 09 14	120	0.5-	0.1+
1998 03 29	704	(2.1-	2.5+)	1999 09 11	699	0.0	0.4+	1999 09 15	120	0.5-	0.2+
1998 03 29	704	0.7-	0.8+	1999 09 11	699	0.2+	0.8+	1999 09 15	120	0.5-	0.4+
1998 04 01	704	1.6+	1.9+	1999 09 11	699	0.2+	0.2+	1999 09 28	120	0.4+	0.7-
1998 04 01	704	0.1-	0.6+	1999 09 14	704	1.2+	0.4-	1999 09 28	120	0.9+	0.0
1998 04 01	704	(1.2+	2.3+)	1999 09 14	704	0.7+	1.4-	1999 10 02	704	1.6+	0.8+
1998 04 01	704	0.7+	0.4-	1999 09 14	704	1.2+	0.9-	1999 10 02	704	0.1-	0.1+
1998 04 01	704	0.5+	0.4-	1999 09 14	704	1.0+	1.6-	1999 10 02	704	1.2+	0.7-
1999 08 12	699	0.8-	0.0	1999 09 14	704	0.1+	0.1-	1999 10 02	704	0.9+	0.1+
1999 08 12	699	0.6-	0.7+	1999 09 14	704	0.4-	0.2+	1999 10 02	704	0.3+	0.2-
1999 08 12	699	1.0-	0.8+	1999 09 14	704	0.3+	0.4+				
1999 09 07	704	1.2-	0.4-	1999 09 14	704	0.1+	0.0				

1999 RM₄₃ = 1994 NC₂

Id. A. Doppler

1999 OCT. 26

M.P.C. 36409

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	127.21788		(2000.0)	P	Q
<i>n</i>	0.23573482	ω	26.85455	-0.70791532	+0.70604350
<i>a</i>	2.5952959	Ω	198.10105	-0.65847292	-0.66944073
<i>e</i>	0.2059622	<i>i</i>	3.49379	-0.25547862	-0.23097986
<i>P</i>	4.18	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1994 07 05	010	0.9-	0.1+	1999 09 15	557	0.2+	0.7+	1999 09 23	557	0.7-	0.2-
1994 07 05	010	1.1-	1.4+	1999 09 15	557	0.2-	0.1-	1999 09 23	557	0.0	0.3-
1994 07 05	010	0.9+	0.7+	1999 09 15	557	0.1+	0.1+	1999 09 24	557	1.1+	0.7-
1994 07 08	010	0.6+	0.2-	1999 09 20	557	0.5+	0.6-	1999 10 02	703	0.3-	0.2+
1994 07 08	010	0.2+	0.9-	1999 09 20	557	0.1+	0.2+	1999 10 02	703	0.4+	0.2+
1994 07 08	010	0.3+	1.1-	1999 09 21	557	0.8-	0.2-	1999 10 02	703	0.1+	0.3+
1999 09 14	557	0.0	0.0	1999 09 21	557	0.0	0.0	1999 10 02	703	0.7-	0.8-
1999 09 14	557	0.4-	0.1-	1999 09 21	557	0.0	0.3-	1999 10 19	557	0.1+	0.2+
1999 09 14	557	0.3-	0.4+	1999 09 21	557	0.4+	0.0	1999 10 19	557	1.2+	0.9+
1999 09 14	557	0.4+	0.4+	1999 09 23	557	1.3-	0.4-				

1999 RQ₄₃ = 1998 DK

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	13.14218		(2000.0)	P	Q
<i>n</i>	0.31479053	ω	134.07754	+0.75302723	+0.65796109
<i>a</i>	2.1402029	Ω	184.78971	-0.62264433	+0.70954926
<i>e</i>	0.3005301	<i>i</i>	4.18896	-0.21275346	+0.25224404
<i>P</i>	3.13	<i>H</i>	15.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 02 18	118	1.2+	0.8-	1999 08 13	699	0.9+	0.1+	1999 09 23	848	0.2-	0.0
1998 02 18	118	0.2-	0.4-	1999 08 13	699	(3.0+ 0.2-)		1999 09 30	678	0.6-	0.1-
1998 02 18	118	0.1-	1.0+	1999 08 13	699	0.6+	0.9+	1999 09 30	678	0.0	0.8+
1998 02 18	118	0.5-	0.3+	1999 09 13	678	0.8-	0.3-	1999 10 04	704	0.8+	0.4-
1998 02 18	118	0.2-	0.3+	1999 09 13	678	0.1+	0.6-	1999 10 04	704	1.1+	0.4-
1998 02 18	118	0.0	0.1+	1999 09 13	678	(2.0- 0.5-)		1999 10 04	704	0.5+	0.2+
1998 02 19	118	0.5+	0.8+	1999 09 14	678	1.0-	0.4-	1999 10 04	704	0.5+	0.2+
1998 02 19	118	0.2+	0.2+	1999 09 14	678	0.6-	0.8-	1999 10 04	704	0.7+	0.4-
1998 02 19	118	0.0	0.2+	1999 09 18	678	1.0-	0.1-	1999 10 07	704	0.3+	0.1-
1998 02 20	118	0.1-	0.3-	1999 09 18	678	0.5-	0.2+	1999 10 07	704	0.5+	0.1+
1998 02 20	118	0.5-	0.5-	1999 09 19	848	1.6-	0.3+	1999 10 07	704	0.5+	0.1-
1998 02 21	118	0.0	0.0	1999 09 19	848	0.0	0.5+	1999 10 07	704	0.4+	0.1+
1998 02 21	118	0.2-	0.7-	1999 09 19	848	0.6+	0.5+	1999 10 07	704	0.4+	0.0
1999 07 23	704	0.2+	0.1+	1999 09 20	848	0.1-	0.2-	1999 10 08	106	0.5-	0.1+
1999 07 23	704	0.1-	0.4-	1999 09 20	848	0.2-	0.7-	1999 10 08	106	0.6-	0.5+
1999 07 23	704	0.5-	0.4-	1999 09 20	848	0.2+	0.2-	1999 10 08	106	0.1-	0.1+
1999 07 23	704	0.0	0.1-	1999 09 23	848	0.4-	0.3+				
1999 07 23	704	0.2+	0.6+	1999 09 23	848	0.3+	0.2+				

1999 RS₄₃ = 1998 HX₈₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	6.38782		(2000.0)	P	Q
<i>n</i>	0.30691512	ω	180.86053	+0.99861722	-0.05249141
<i>a</i>	2.1766597	Ω	182.15473	+0.04867865	+0.94399445
<i>e</i>	0.1641438	<i>i</i>	4.39487	+0.01985040	+0.32575931
<i>P</i>	3.21	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 21	704	1.2+	0.2-	1999 09 12	120	(2.4+ 0.6-)		1999 09 18	703	0.0	0.1-
1998 04 21	704	0.2+	1.1-	1999 09 15	120	0.1+	0.2+	1999 09 18	703	0.1+	0.2-
1998 04 21	704	1.9+	0.3+	1999 09 15	120	0.2-	0.6-	1999 09 22	120	0.9+	0.1+
1998 04 21	704	0.2-	1.1+	1999 09 16	120	0.5+	0.7+	1999 09 22	120	1.1-	0.8+
1998 04 21	704	0.1+	1.5+	1999 09 16	120	0.2-	0.3-	1999 09 22	120	0.1-	0.1+
1998 04 22	704	0.7+	0.2-	1999 09 16	120	0.5+	0.5-	1999 10 02	691	0.1-	0.2-
1998 04 22	704	1.0-	1.4-	1999 09 17	120	0.0	0.5-	1999 10 02	691	0.1+	0.2-
1998 04 22	704	1.2-	0.6-	1999 09 17	120	1.5-	0.0	1999 10 02	691	0.0	0.2-

1998 04 22	704	1.8-	0.5+	1999 09 18	703	1.1+	0.4+
1999 09 12	120	(0.1+ 2.1+)		1999 09 18	703	0.0	0.3+

1999 RE₄₄ = 1997 EJ₁₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	14.17817		(2000.0)	P	Q
<i>n</i>	0.21270742	ω	31.22939	+0.90257462	+0.42904822
<i>a</i>	2.7793780	Ω	303.32198	-0.40330139	+0.81352078
<i>e</i>	0.1809565	<i>i</i>	2.45076	-0.15068859	+0.39255772
<i>P</i>	4.63	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1997 03 03	691	0.0	0.2-	1999 09 18	703	0.8-	0.0	1999 09 30	703	0.3-	0.1-
1997 03 03	691	0.0	0.1-	1999 09 18	703	0.2+	0.7+	1999 09 30	703	0.6-	0.4+
1997 03 03	691	0.2+	0.0	1999 09 18	703	0.2-	0.2-	1999 09 30	703	0.1+	0.7+
1997 03 11	691	0.1-	0.1+	1999 09 19	681	0.9-	0.1-	1999 10 04	704	0.5+	0.0
1997 03 11	691	0.2+	0.3+	1999 09 19	681	0.3-	0.4+	1999 10 04	704	0.1-	0.7-
1997 03 11	691	0.2-	0.0	1999 09 19	681	0.2-	0.5+	1999 10 04	704	0.4+	0.1-
1999 09 15	681	0.2+	0.5-	1999 09 19	681	0.5-	0.1-	1999 10 04	704	0.1+	0.1+
1999 09 15	681	0.0	0.8-	1999 09 20	681	0.1+	0.7+	1999 10 04	704	0.2-	1.2-
1999 09 15	681	0.3+	0.5-	1999 09 20	681	0.0	0.3+	1999 10 07	704	(0.6- 2.1+)	
1999 09 15	681	0.7+	0.4-	1999 09 28	681	0.5+	0.4+	1999 10 07	704	0.1-	0.6+
1999 09 16	681	1.0+	0.3-	1999 09 28	681	0.2+	0.2-	1999 10 07	704	0.1+	1.4-
1999 09 16	681	1.1+	0.3+	1999 09 28	681	0.5-	0.6+				
1999 09 18	703	1.3-	0.5+	1999 09 30	703	0.8+	0.4+				

1999 RH₄₄ = 1982 BE₇ = 1998 HK₆₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	348.67444		(2000.0)	P	Q
<i>n</i>	0.25973437	ω	324.90149	+0.99268170	+0.10398148
<i>a</i>	2.4328562	Ω	29.31223	-0.06017759	+0.86681648
<i>e</i>	0.1453182	<i>i</i>	7.20570	-0.10469809	+0.48766488
<i>P</i>	3.79	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1982 01 26	381	0.8-	0.6+	1998 04 24	699	1.3-	1.1+	1999 09 18	428	0.4+	0.3-
1982 01 26	381	1.2+	0.4+	1998 04 24	699	1.2+	0.8+	1999 09 19	428	0.2+	0.7-
1998 03 29	704	1.7+	0.2-	1999 09 09	704	0.4+	0.3+	1999 09 19	428	0.4+	0.4-
1998 03 29	704	(0.3- 2.2+)		1999 09 09	704	0.2+	0.3-	1999 09 30	704	0.1-	0.5+
1998 03 29	704	0.4+	0.3-	1999 09 09	704	0.7+	0.4-	1999 09 30	704	0.1+	0.6+
1998 03 29	704	0.1-	1.1-	1999 09 09	704	0.5+	0.3-	1999 09 30	704	0.2+	0.4+
1998 03 29	704	0.3+	0.1-	1999 09 09	704	0.6-	0.0	1999 09 30	704	0.0	0.8+
1998 04 21	704	0.1-	0.4-	1999 09 13	704	0.1-	0.1+	1999 09 30	704	0.1+	0.6+
1998 04 21	704	0.3-	0.0	1999 09 13	704	0.3-	0.6+	1999 10 07	704	0.7+	0.8+
1998 04 21	704	0.4-	0.0	1999 09 13	704	0.1+	0.6+	1999 10 07	704	0.0	0.4+
1998 04 21	704	0.3-	0.4+	1999 09 13	704	0.0	0.6+	1999 10 07	704	0.1-	0.4+
1998 04 21	704	0.3-	1.2+	1999 09 15	428	0.3+	0.4-	1999 10 07	704	0.5-	0.3-
1998 04 22	704	0.6-	0.5+	1999 09 15	428	0.0	0.2-	1999 10 07	704	1.0-	0.7-
1998 04 22	704	1.0+	0.5+	1999 09 16	428	0.2-	0.5-	1999 10 10	428	0.5-	0.4+
1998 04 22	704	0.3-	0.3+	1999 09 16	428	0.5-	0.1-	1999 10 10	428	0.8-	0.5+
1998 04 22	704	0.3+	0.5-	1999 09 16	428	0.5-	0.4-				
1998 04 24	699	0.3+	0.6-	1999 09 18	428	0.1+	0.5-				

1999 RM₄₄ = 1998 HK₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	356.26390		(2000.0)	P	Q
<i>n</i>	0.23578442	ω	150.31440	+0.96550112	+0.24605020
<i>a</i>	2.5949320	Ω	196.12895	-0.25445527	+0.96102068
<i>e</i>	0.2312933	<i>i</i>	17.87015	+0.05531811	+0.12608948
<i>P</i>	4.18	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1998 04 21	704	0.9−	0.1−	1999 09 07	703	0.2−	0.6+	1999 09 29	703	(3.3−	0.5+)
1998 04 21	704	0.3−	0.0	1999 09 08	704	0.3−	0.1−	1999 10 04	704	0.1−	0.3+
1998 04 21	704	1.4−	0.4−	1999 09 08	704	0.2−	0.0	1999 10 04	704	0.1−	0.0
1998 04 21	704	0.6−	0.4−	1999 09 08	704	0.0	0.0	1999 10 04	704	0.2+	0.2+
1998 04 21	704	0.1−	0.6+	1999 09 08	704	0.1+	0.1−	1999 10 04	704	0.1+	0.3+
1998 04 21	910	1.3+	0.2−	1999 09 08	704	0.3+	0.3+	1999 10 04	704	0.6+	0.2−
1998 04 22	910	0.7+	0.1+	1999 09 16	704	0.1+	0.0	1999 10 07	704	0.3−	0.1+
1998 04 22	910	1.1+	0.3−	1999 09 16	704	0.2+	0.4−	1999 10 07	704	0.5−	0.2−
1998 04 22	704	1.0−	0.9−	1999 09 16	704	0.2+	0.0	1999 10 07	704	0.2−	0.0
1998 04 22	704	1.2−	0.7+	1999 09 16	704	0.0	0.0	1999 10 07	704	0.3+	0.4−
1998 04 22	704	0.2+	1.5+	1999 09 18	704	0.3+	0.2+	1999 10 07	704	0.0	0.5−
1998 04 22	704	0.3−	0.4−	1999 09 18	704	0.2+	0.4+	1999 10 08	106	1.4−	1.0+
1998 04 24	910	0.7+	0.0	1999 09 18	704	0.2+	0.2−	1999 10 08	106	0.4−	0.8−
1998 04 24	910	1.0+	0.0	1999 09 18	704	0.3+	0.0	1999 10 09	704	0.2+	0.0
1998 04 24	910	0.9+	0.1−	1999 09 18	704	0.4+	0.0	1999 10 09	704	0.2+	0.1+
1999 09 07	703	0.5−	0.6−	1999 09 29	703	(3.3−	0.0)	1999 10 09	704	0.2+	0.1−
1999 09 07	703	0.5−	0.2−	1999 09 29	703	(2.8−	0.1+)	1999 10 09	704	0.1+	0.1+
1999 09 07	703	0.2−	0.1+	1999 09 29	703	(3.8−	0.1+)	1999 10 09	704	0.3+	0.1−

1999 RR₄₄ = 1977 RW₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	32.00398		(2000.0)	P	Q
<i>n</i>	0.18093207	ω	138.61821	+0.75871573	+0.65141930
<i>a</i>	3.0959387	Ω	180.74047	−0.62869441	+0.73150663
<i>e</i>	0.1448466	<i>i</i>	8.13854	−0.17056900	+0.20137266
<i>P</i>	5.45	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	5

Residuals in seconds of arc

1977 09 09	675	0.5−	0.0	1999 09 21	120	0.2−	0.9−	1999 10 04	704	1.3−	0.6−
1977 09 10	675	0.5+	0.0	1999 09 21	120	0.4−	1.6+	1999 10 07	704	0.1−	0.8+
1999 09 14	120	0.2+	0.8−	1999 09 29	120	1.5+	0.3−	1999 10 07	704	0.1+	0.3−
1999 09 15	120	0.1−	0.4−	1999 09 29	120	0.2−	1.2−	1999 10 07	704	0.8−	0.0
1999 09 15	120	0.3−	0.8−	1999 09 29	120	1.9+	0.3−	1999 10 07	704	0.4+	0.9−
1999 09 16	120	0.9+	1.6+	1999 10 04	704	0.4+	1.1+	1999 10 11	691	0.1+	0.0
1999 09 16	120	0.6+	0.2−	1999 10 04	704	0.4−	0.0	1999 10 11	691	0.1+	0.0
1999 09 17	120	1.6−	0.4+	1999 10 04	704	1.1−	1.1+	1999 10 11	691	0.1+	0.1−

1999 RS₄₄ = 1991 VQ = 1995 YJ₂₅

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	348.05508		(2000.0)	P	Q
<i>n</i>	0.24423598	ω	321.98921	+0.94228680	−0.32386527
<i>a</i>	2.5347178	Ω	57.11304	+0.32658576	+0.83326741
<i>e</i>	0.2715696	<i>i</i>	5.80219	+0.07373820	+0.44808115
<i>P</i>	4.04	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1991 11 02	400	0.4−	0.2−	1999 09 15	120	0.6+	0.3−	1999 10 04	392	0.1−	0.3+
1991 11 02	400	1.8+	0.5−	1999 09 15	120	0.6+	0.7−	1999 10 04	392	1.8−	1.3+
1991 11 04	400	1.1−	0.7+	1999 09 16	120	0.5−	0.1+	1999 10 05	739	0.9+	0.5−
1991 11 04	400	0.1+	1.2−	1999 09 16	120	0.2+	0.1−	1999 10 05	739	0.6+	0.5−
1995 12 19	691	0.5−	0.2−	1999 09 17	120	0.1+	0.1+	1999 10 05	739	0.1+	0.4−
1995 12 19	691	0.3−	0.1−	1999 09 17	120	0.0	0.0	1999 10 05	392	1.8−	0.8+
1995 12 19	691	0.3−	0.3−	1999 09 17	120	0.9+	0.4−	1999 10 05	392	1.8−	0.5+
1995 12 25	566	0.4+	0.5+	1999 09 29	120	0.4+	0.3−	1999 10 07	704	0.9+	0.1−
1995 12 25	566	0.3+	0.3+	1999 09 29	120	0.5+	0.0	1999 10 07	704	0.4+	0.2+
1995 12 25	566	0.3+	0.6+	1999 09 30	703	0.5−	0.1+	1999 10 07	704	0.1+	0.4+
1999 09 15	120	0.5+	0.5+	1999 09 30	703	0.1+	0.2+	1999 10 07	704	0.3+	0.0
1999 09 15	120	0.4−	0.2+	1999 09 30	703	0.2−	0.5−	1999 10 07	704	0.2−	0.1−
1999 09 15	120	0.3−	0.0	1999 09 30	703	0.1+	0.3−				

1999 RY₄₄ = 1998 FH₁₀₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	37.17167		(2000.0)	P	Q
<i>n</i>	0.27490405	ω	333.42637	+0.50384919	+0.86164362
<i>a</i>	2.3425127	Ω	326.72813	−0.77145710	+0.41716671
<i>e</i>	0.1252746	<i>i</i>	6.37120	−0.38857424	+0.28903670
<i>P</i>	3.59	<i>H</i>	14.8	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 03 31	704	0.7+	0.9+	1999 09 13	148	(1.2−	3.7−)	1999 10 05	635	0.9−	0.1−
1998 03 31	704	1.5+	0.3−	1999 09 13	148	1.2+	1.8−	1999 10 05	615	1.0−	0.1−
1998 03 31	704	1.0−	0.7−	1999 09 16	132	0.9−	0.7+	1999 10 05	615	0.1+	0.3−
1998 03 31	704	1.2−	1.6−	1999 09 16	132	0.4+	0.1−	1999 10 06	504	0.9+	0.9−
1998 04 01	704	0.0	1.4+	1999 09 16	132	0.5+	0.0	1999 10 06	504	0.3−	0.8−
1998 04 01	704	(2.9+	0.7+)	1999 10 04	704	1.0+	0.0	1999 10 06	504	0.2+	0.4−
1998 04 01	704	0.6+	0.3+	1999 10 04	704	0.2−	0.3+	1999 10 06	615	(2.9+	4.1−)
1998 04 01	704	0.7−	0.2−	1999 10 04	704	0.3−	0.2−	1999 10 06	615	(1.4+	3.5−)
1999 09 07	704	0.2−	0.1+	1999 10 04	704	0.0	0.7+	1999 10 07	704	0.1−	0.3+
1999 09 07	704	0.3+	0.2+	1999 10 04	704	0.4−	0.3+	1999 10 07	704	0.0	0.5+
1999 09 07	704	0.5−	0.2+	1999 10 05	635	1.6−	0.5+	1999 10 07	704	0.1+	0.2+
1999 09 07	704	0.3−	0.0	1999 10 05	635	0.2−	0.7+	1999 10 07	704	0.1−	0.9+
1999 09 07	704	0.1−	0.4+	1999 10 05	635	0.3−	0.5+	1999 10 07	504	1.8+	0.7−
1999 09 13	148	(3.9+	0.5−)	1999 10 05	635	(2.3−	0.7+)	1999 10 07	504	0.9+	1.1−

1999 RG₄₅ = 1981 JU₁ = 1997 EJ₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	23.36674		(2000.0)	P	Q
<i>n</i>	0.17311008	ω	330.74132	+0.49924502	+0.86452508
<i>a</i>	3.1885102	Ω	329.10301	−0.77143719	+0.41308205
<i>e</i>	0.1650655	<i>i</i>	6.47267	−0.39451119	+0.28628588
<i>P</i>	5.69	<i>H</i>	12.9	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1981 05 09	808	0.1−	0.6−	1999 09 14	704	0.9+	0.3+	1999 09 29	848	0.9−	0.7+
1981 05 09	808	0.2+	1.3+	1999 09 14	704	0.9+	0.4+	1999 09 29	848	0.6−	0.6+
1997 03 01	358	1.9+	0.7+	1999 09 14	678	0.9+	0.2+	1999 09 29	848	0.9−	0.5+
1997 03 01	358	(2.1+	2.5+)	1999 09 14	704	0.8+	0.6+	1999 09 30	678	0.5−	0.0
1997 03 03	358	1.0−	1.1+	1999 09 14	678	0.9+	0.2+	1999 09 30	678	0.8−	0.4−
1997 03 03	358	0.3−	0.3+	1999 09 14	704	1.1+	0.2+	1999 10 02	703	0.6−	0.0
1997 03 05	691	0.3+	0.3+	1999 09 14	704	0.9+	0.2−	1999 10 02	703	0.0	0.1−
1997 03 05	691	0.3+	0.3+	1999 09 17	848	0.1+	0.4+	1999 10 02	703	0.7+	0.3+
1997 03 05	691	0.3+	0.1+	1999 09 17	848	0.2+	0.7+	1999 10 02	703	0.6−	0.7+
1999 08 22	699	1.0−	0.4+	1999 09 17	848	0.5−	0.4+	1999 10 02	704	0.4+	0.9−
1999 08 22	699	0.8−	0.6+	1999 09 18	678	0.3−	0.4−	1999 10 02	704	0.1−	0.6+
1999 08 22	699	0.9−	0.3+	1999 09 18	678	0.0	0.7−	1999 10 02	704	0.3−	0.1−
1999 09 07	704	0.5+	0.3−	1999 09 18	848	0.4−	0.4+	1999 10 02	704	0.1+	0.9−
1999 09 07	704	0.3+	0.4−	1999 09 18	678	0.5−	0.5−	1999 10 02	704	0.7−	0.5+
1999 09 07	704	0.4+	0.7−	1999 09 18	848	0.5−	0.1+	1999 10 06	704	(2.1+	0.5−)
1999 09 07	704	1.0+	0.4−	1999 09 18	848	0.2+	0.0	1999 10 06	704	1.7+	0.9−
1999 09 07	704	0.0	1.6−	1999 09 28	848	0.5−	0.4+	1999 10 06	704	0.2−	0.8−
1999 09 09	704	0.4+	0.1−	1999 09 28	848	1.2−	0.4+	1999 10 06	704	0.9−	0.6+
1999 09 09	704	0.9+	0.4−	1999 09 28	848	1.0−	0.9+	1999 10 06	704	1.5−	0.3+
1999 09 09	704	1.0+	0.1+	1999 09 29	704	0.1−	0.6−	1999 10 10	106	0.6−	0.1+
1999 09 09	704	0.8+	0.3+	1999 09 29	704	0.2−	0.8−	1999 10 10	106	0.2−	1.1+
1999 09 09	704	0.8+	0.3+	1999 09 29	704	0.0	0.2−	1999 10 10	106	0.6−	1.0+
1999 09 14	678	0.3+	0.7+	1999 09 29	704	0.0	0.4−				
1999 09 14	678	0.9+	0.1+	1999 09 29	704	1.6−	0.5−				

1999 OCT. 26

M.P.C. 36411

1999 RZ₄₅ = 1996 VC₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28594875	ω	68.88402	−0.14448623	+0.98933235		
<i>a</i>	2.2817983	Ω	192.85045	−0.93603483	−0.14274347		
<i>e</i>	0.1486672	<i>i</i>	4.79227	−0.32087773	−0.02908285		
<i>P</i>	3.45	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1996 11 07	327	0.6+	0.2+	1999 07 23	704	0.8−	0.0
1996 11 07	327	1.1−	0.9−	1999 07 23	704	0.3−	0.6−
1996 11 07	327	0.8+	0.0	1999 07 23	704	0.8−	0.2−
1996 11 16	327	0.5−	0.2−	1999 07 23	704	0.4−	0.6−
1996 11 16	327	0.4−	0.9+	1999 09 05	699	0.3−	0.1−
1996 11 16	327	0.6+	0.1−	1999 09 05	699	0.2+	0.6+
1998 01 28	691	0.0	0.0	1999 09 05	699	0.3−	0.1+
1998 01 28	691	(2.2−	0.2+)	1999 09 07	704	1.5−	1.2−
1998 01 28	691	(0.7+	9.8−)	1999 09 07	704	0.4−	0.4−
1999 07 13	704	0.7+	0.1+	1999 09 07	704	0.1−	0.1−
1999 07 13	704	0.1−	0.1+	1999 09 07	704	0.6+	0.2−
1999 07 13	704	0.6+	0.6+	1999 09 07	704	1.0−	0.2−
1999 07 13	704	0.6+	0.3+	1999 09 07	704	1.1+	0.3−
1999 07 13	704	0.0	0.5−	1999 09 07	704	(0.7−	2.2−)
				1999 09 30	704	0.3+	0.3+

1999 RF₄₆ = 1992 OL

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27811287	ω	293.43842	−0.21103619	+0.94803700		
<i>a</i>	2.3244595	Ω	321.80123	−0.69568865	−0.31678199		
<i>e</i>	0.3008501	<i>i</i>	22.64525	−0.68664477	+0.02958082		
<i>P</i>	3.54	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1992 07 27	675	0.1+	0.3−	1999 09 03	699	0.4+	0.4+
1992 07 27	675	0.3+	0.8−	1999 09 03	699	0.8+	1.0+
1992 07 29	675	1.1−	0.9−	1999 09 03	699	0.2+	0.5+
1992 07 29	675	1.7+	1.0+	1999 09 07	704	0.1−	0.0
1999 07 22	704	0.2−	0.3+	1999 09 07	704	0.6+	0.1−
1999 07 22	704	0.1+	0.1+	1999 09 07	704	0.3−	0.7+
1999 07 22	704	0.1+	0.3+	1999 09 07	704	0.3−	0.4−
1999 07 22	704	0.0	0.5−	1999 09 07	704	0.8−	0.6−
1999 07 22	704	0.2+	0.1−	1999 09 13	704	0.1−	0.2+

1999 RF₄₇ = 1992 YJ₁ = 1998 HE₃₉ = 3162 T-1

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25760955	ω	347.91641	+0.97855242	−0.20516585		
<i>a</i>	2.4462157	Ω	23.94693	+0.19259133	+0.87930812		
<i>e</i>	0.2085809	<i>i</i>	2.61191	+0.07310086	+0.42979554		
<i>P</i>	3.83	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1971 03 25	675	0.4−	0.6−	1992 12 19	010	0.2−	1.7−
1971 03 26	675	(2.3−	2.5+)	1992 12 20	010	0.3−	1.2−
1971 03 26	675	(1.2−	2.1−)	1998 04 20	704	0.0	1.0−
1971 03 26	675	0.5−	0.3+	1998 04 20	704	1.3+	1.8−
1971 03 26	675	(1.2−	4.0−)	1998 04 20	704	1.3−	0.0
1971 03 27	675	0.2+	1.0−	1998 04 20	704	1.2+	0.8+
1992 12 18	010	0.7−	0.3+	1998 04 21	704	(0.1−	2.4−)
1992 12 19	010	0.3−	0.6+	1998 04 21	704	1.3−	0.8−
1992 12 19	010	0.3−	0.4−	1998 04 21	704	0.0	0.5+
1992 12 19	010	1.7+	1.2−	1998 04 21	704	0.9−	0.2−

1999 RN₄₇ = 1998 HK₇₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25315738	ω	144.66359	+0.94940312	−0.31006177		
<i>a</i>	2.4748126	Ω	233.47578	+0.27194870	+0.89119496		
<i>e</i>	0.2142760	<i>i</i>	3.56395	+0.15709113	+0.33110910		
<i>P</i>	3.89	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1998 04 21	704	0.6−	1.1−	1999 08 13	699	0.0	0.2+
1998 04 21	704	0.8−	0.1−	1999 08 13	699	0.0	0.7+
1998 04 21	704	0.2+	0.4−	1999 08 13	699	0.2−	0.5+
1998 04 21	704	0.7−	0.3+	1999 09 07	704	0.7−	0.2+
1998 04 22	704	0.9−	1.4+	1999 09 07	704	0.2−	0.1−
1998 04 22	704	0.9+	0.5−	1999 09 07	704	0.5+	0.2−
1998 04 22	704	1.2+	0.0	1999 09 07	704	0.3−	0.4−
1998 04 22	704	0.7+	0.0	1999 09 09	704	0.5+	0.0

1999 RP₄₉ = 1983 RQ₈ = 1994 UM₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18365688	ω	17.88917	+0.97992711	−0.19920998		
<i>a</i>	3.0652407	Ω	353.58707	+0.17354070	+0.87124729		
<i>e</i>	0.3099962	<i>i</i>	3.91780	+0.09811464	+0.44860177		
<i>P</i>	5.37	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1983 09 11	095	0.5−	0.9+	1999 07 14	704	0.0	0.1−
1994 10 28	691	0.2+	0.1−	1999 07 14	704	0.6+	0.7−
1994 10 28	691	0.3+	0.0	1999 09 07	691	0.2−	0.2−
1994 10 28	691	0.4+	0.3−	1999 09 07	691	0.3−	0.1+
1994 11 05	691	0.3+	0.2−	1999 09 07	704	0.2−	0.1−
1994 11 05	691	0.7−	0.0	1999 09 07	704	0.2+	0.0
1994 11 05	691	0.2−	0.1−	1999 09 07	704	0.1−	0.8+
1999 07 14	704	0.1+	0.4−	1999 09 07	704	0.2−	1.0+
1999 07 14	704	0.1−	0.1−	1999 09 07	704	0.2−	0.9+
1999 07 14	704	0.4+	0.1−	1999 09 11	704	0.8+	0.4+
				1999 09 30	704	0.4−	0.7−

1999 RU₄₉ = 2215 T-2

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>	0.26359633	ω	169.68488	+0.90916229	+0.41630615		
<i>a</i>	2.4090352	Ω	165.69932	−0.38507948	+0.85014210		
<i>e</i>	0.2242097	<i>i</i>	2.46783	−0.15854880	+0.32240906		
<i>P</i>	3.74	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1973 09 19	675	1.6−	0.3−	1973 10 05	675	0.7+	1.1−
1973 09 19	675	(2.6−	1.6+)	1973 10 05	675	(3.5−	2.0+)
1973 09 20	675	1.9−	0.8−	1973 10 05	675	1.5+	0.9−
1973 09 24	675	0.9−	0.5+	1973 10 05	675	(3.1−	1.3+)
1973 09 24	675	0.9−	1.3+	1998 03 29	704	1.3−	1.8−
1973 09 25	675	0.2+	2.0−	1998 03 29	704	0.4−	0.7−
1973 09 25	675	0.7+	1.8−	1998 03 29	704	0.5+	1.1−
1973 09 29	675	2.1−	0.1−	1998 03 29	704	0.4−	0.2−
1973 09 29	675	1.5+	1.0−	1999 09 04	703	1.8+	0.3+
1973 09 29	675	1.3−	0.3+	1999 09 04	703	0.8−	1.0−
1973 09 29	675	0.6+	0.4−	1999 09 04	703	0.1−	0.8+
1973 09 30	675	1.4+	1.6−	1999 09 04	703	0.8−	0.9+
1973 09 30	675	1.1+	1.4+	1999 09 05	691	0.2−	0.3−
1973 09 30	675	0.1+	1.1−	1999 09 05	691	0.3−	0.5−
				1999 10 03	691	0.2−	0.2+
				1999 10 03	691	0.4−	0.2+
				1999 10 03	691	0.6−	0.3+

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1973 09 30	675	1.6+	2.0+	1999 09 05	691	0.5−	0.3−	1999 10 15	691	0.2−	0.9+
1973 10 04	675	1.3+	0.6−	1999 09 07	704	0.7+	0.1+	1999 10 15	691	0.2−	1.0+
1973 10 04	675	(1.8−	2.9+)	1999 09 07	704	0.1−	0.1−	1999 10 15	691	0.3−	0.9+
1973 10 04	675	0.9+	0.2+	1999 09 07	704	0.3+	0.9−				
1973 10 04	675	1.6−	2.5+	1999 09 07	704	0.1+	1.3−				

1999 RH₅₂ = 1998 HR₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	325.45133		(2000.0)	P		Q	
<i>n</i>	0.26545888	ω	291.03104	+0.98245221		−0.17736917	
<i>a</i>	2.3977535	Ω	79.22094	+0.18537047		+0.89434489	
<i>e</i>	0.1906674	<i>i</i>	3.36655	+0.02062644		+0.41071571	
<i>P</i>	3.71	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 25	704	0.7−	1.7+	1998 04 20	704	(2.2+ 0.2+)	1999 09 03	699	0.0	0.4−
1998 03 25	704	0.1+	0.8+	1998 04 20	704	(0.7− 2.4+)	1999 09 07	704	0.2−	0.7+
1998 03 25	704	1.0+	0.4−	1998 04 21	704	0.5+ 1.6+	1999 09 07	704	0.2−	0.4+
1998 03 25	704	1.7+	1.3−	1998 04 21	704	0.4− 0.7+	1999 09 07	704	0.1−	0.3+
1998 03 25	704	(2.1− 2.4−)		1998 04 21	704	1.2− 0.3−	1999 09 07	704	0.1−	0.4−
1998 03 29	704	0.3−	0.3−	1998 04 21	704	0.7− 1.2−	1999 09 07	704	0.3−	0.2−
1998 03 29	704	1.1+	0.5+	1998 04 21	704	(1.6− 2.2+)	1999 09 11	704	0.5+	0.0
1998 03 29	704	1.3+	0.7−	1999 07 16	704	0.0 0.1−	1999 09 11	704	0.2+	0.1−
1998 03 29	704	0.3−	0.3+	1999 07 16	704	0.2− 0.9−	1999 09 11	704	0.2+	0.9+
1998 03 29	704	0.4−	0.4−	1999 07 16	704	0.4− 0.9−	1999 09 11	704	0.1−	0.8+
1998 04 20	704	0.1+	1.3−	1999 09 03	699	1.0+ 0.4−	1999 09 11	704	0.1+	0.7+
1998 04 20	704	1.4−	1.2+	1999 09 03	699	0.4− 0.1+				

1999 RH₅₃ = 1998 HY₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	294.92228		(2000.0)	P		Q	
<i>n</i>	0.25982489	ω	227.85554	+0.71421397		−0.69989321	
<i>a</i>	2.4322911	Ω	176.54147	+0.67124554		+0.68211173	
<i>e</i>	0.1407177	<i>i</i>	6.58734	+0.19831245		+0.21183265	
<i>P</i>	3.79	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.0	1.4−	1999 08 12	699	0.0	0.3+	1999 09 13	704	(0.6+ 2.6−)
1998 04 21	704	0.1−	0.1+	1999 08 12	699	0.3−	0.8+	1999 09 13	704	0.4− 0.0
1998 04 21	704	0.5−	0.8−	1999 09 07	704	0.2+	0.5−	1999 09 13	704	0.0 0.0
1998 04 21	704	0.8−	0.2+	1999 09 07	704	0.1+	0.2−	1999 09 30	704	0.5+ 0.6+
1998 04 22	704	1.2−	0.6−	1999 09 07	704	0.7+	0.2−	1999 09 30	704	0.3− 0.1+
1998 04 22	704	0.2−	1.2−	1999 09 07	704	0.5+	0.5−	1999 09 30	704	0.1+ 0.3+
1998 04 22	704	1.7+	0.6+	1999 09 09	704	0.1−	0.8−	1999 09 30	704	0.4− 0.0
1998 05 01	704	0.5+	0.1+	1999 09 09	704	0.2+	0.5+	1999 09 30	704	0.5− 0.1+
1998 05 01	704	0.1−	0.8+	1999 09 09	704	0.5−	0.4−	1999 10 06	704	0.6− 1.3+
1998 05 01	704	0.0	0.6−	1999 09 09	704	0.3+	0.6+	1999 10 06	704	0.8+ 0.5−
1998 05 01	704	0.2+	1.0+	1999 09 09	704	0.2+	0.5−	1999 10 06	704	0.0 1.2−
1998 05 01	704	0.5+	1.8+	1999 09 09	704	0.2+	0.1+			
1999 08 12	699	0.4−	0.1+	1999 09 13	704	0.3−	0.2−			

1999 RK₅₃ = 1998 HB₇₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	287.72355		(2000.0)	P		Q	
<i>n</i>	0.27433055	ω	225.21830	+0.66109512		−0.75026761	
<i>a</i>	2.3457763	Ω	183.42184	+0.71792967		+0.63532856	
<i>e</i>	0.1048643	<i>i</i>	6.92270	+0.21801428		+0.18291017	
<i>P</i>	3.59	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.5+	0.1−	1999 09 06	699	0.3+	0.5+	1999 09 28	143	0.0	0.3−
1998 04 21	704	0.4−	0.4−	1999 09 07	704	0.1+	0.4+	1999 09 29	704	0.5+	0.3+
1998 04 21	704	1.1−	0.2−	1999 09 07	704	0.3+	0.1−	1999 09 29	704	1.4−	0.7+
1998 04 21	704	0.7−	0.4−	1999 09 07	704	0.1+	0.5+	1999 09 29	704	0.1−	0.3−

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1998 04 21	704	0.3−	0.7+	1999 09 07	704	0.2+	0.1−	1999 09 29	143	1.8+	0.3−
1998 04 22	704	0.5+	1.9+	1999 09 07	704	0.4+	0.6−	1999 09 29	143	0.7−	0.8−
1998 04 22	704	0.5−	0.8−	1999 09 09	704	0.2−	0.1−	1999 09 29	143	0.4−	0.4−
1998 04 22	704	0.3−	0.3−	1999 09 09	704	0.2−	0.8−	1999 09 30	704	0.8+	0.3+
1998 04 22	704	1.7+	0.2−	1999 09 09	704	0.1−	0.3+	1999 09 30	704	0.9+	0.4−
1998 04 22	704	0.7+	0.1−	1999 09 09	704	0.2−	0.2−	1999 09 30	704	0.8−	0.3+
1999 09 06	699	0.3+	0.6+	1999 09 28	143	0.1−	0.5+				
1999 09 06	699	1.0−	0.6−	1999 09 28	143	0.4−	0.5+				

1999 RQ₅₃ = 1998 KO₆₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	325.12943		(2000.0)	P		Q	
<i>n</i>	0.19079668	ω	166.26048	+0.99910489		−0.03516715	
<i>a</i>	2.9882861	Ω	195.81145	+0.02580124		+0.94702304	
<i>e</i>	0.0298970	<i>i</i>	4.94970	+0.03352177		+0.31923445	
<i>P</i>	5.17	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22	704	1.1+	0.1−	1999 07 13	704	0.2+	0.9+	1999 09 07	704	0.1+	0.0
1998 05 22	704	1.4−	0.5+	1999 07 13	704	0.3+	0.6−	1999 09 07	704	0.2−	0.3+
1998 05 22	704	0.1+	1.0−	1999 08 12	699	0.4−	0.5+	1999 09 09	704	1.6−	1.2−
1998 05 24	704	1.6+	0.7+	1999 08 12	699	0.0	0.9+	1999 09 09	704	0.5+	0.5−
1998 05 24	704	0.7−	0.5+	1999 08 12	699	0.8−	0.4+	1999 09 09	704	0.7+	0.0
1998 05 24	704	0.7−	0.3+	1999 09 06	699	0.5−	0.8+	1999 09 09	704	0.4+	0.1−
1998 05 24	704	0.0	0.1−	1999 09 06	699	0.4−	0.3+	1999 09 09	704	0.3+	0.1+
1998 05 24	704	0.2−	0.7−	1999 09 06	699	0.5−	0.1+	1999 09 13	704	0.8+	0.1−
1999 07 13	704	0.7+	0.1+	1999 09 07	704	0.8+	0.7−	1999 09 13	704	1.0−	0.1+
1999 07 13	704	0.5−	0.3−	1999 09 07	704	0.2+	0.4−	1999 09 13	704	0.8+	0.2+
1999 07 13	704	0.0	1.1−	1999 09 07	704	0.2+	0.2+				

1999 RT₅₄ = 1977 RA₁₆ = 1991 GK₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Doppler			
<i>M</i>	32.85931		(2000.0)	P		Q	
<i>n</i>	0.26692170	ω	88.70162	+0.13347373		+0.99104982	
<i>a</i>	2.3889852	Ω	188.96969	−0.91489550		+0.12234705	
<i>e</i>	0.1747373	<i>i</i>	0.82392	−0.38098686		+0.05339907	
<i>P</i>	3.69	<i>H</i>	16.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 09 09	675	0.6+	1.4−	1999 08 07	699	0.2+	0.5+	1999 09 07	704	0.2−	0.3−
1977 09 10	675	(1.1− 2.7−)		1999 08 08	699	0.3+	0.7+	1999 09 07	704	0.2−	0.7−
1991 04 10	809	0.3+	0.9+	1999 08 08	699	0.9+	0.3−	1999 09 07	704	0.1−	0.2−
1991 04 10	809	0.2−	0.4+	1999 08 08	691	0.3−	0.3+	1999 09 07	704	0.2−	0.4−
1991 04 10	809	0.1−	0.7−	1999 08 08	699	1.3−	0.1+	1999 09 07	704	0.3−	1.1−
1991 04 19	809	0.4−	1.6−	1999 08 08	691	0.2−	0.3+	1999 09 09	704	0.3−	0.1−
1991 04 19	809	(3.4− 0.3+)		1999 08 08	691	0.3−	0.3+	1999 09 09	704	0.7+	0.1+
1991 04 19	809	0.4−	0.8−	1999 09 06	699	0.0	1.0−	1999 09 09	704	0.6+	0.1−
1999 08 07	699	0.1+	1.6+	1999 09 06	699	0.5+	0.1−	1999 09 09	704	0.4+	0.3−
1999 08 07	699	0.6−	1.0+	1999 09 06	699	0.3+	0.3−				

1999 RE₅₅ = 1998 FG₁₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Doppler			
<i>M</i>	30.13940		(2000.0)	P		Q	
<i>n</i>	0.24074706	ω	25.87148	+0.34136993		+0.93832561	
<i>a</i>	2.5591479	Ω	264.12918	−0.87166069		+0.29419082	
<i>e</i>	0.1031044	<i>i</i>	3.16248	−0.35167345		+0.18165027	
<i>P</i>	4.09	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 03 28	704	0.1−	0.7+	1998 03 29	704	0.8−	1.8−	1999 09 14	704	0.3−	0.1+
1998 03 28	704	1.8−	0.1−	1998 03 29	704	0.4+	0.3+	1999 09 14	704	0.6−	0.3+
1998 03 28	704	1.7+	2.0+	1999 09 07	704	0.0	1.0+	1999 09 14	704	0.2+	0.4−
1998 03 28	704	0.5+	0.7−	1999 09 07	704	0.3−	0.4−	1999 09 14	704	0.3+	0.5−
1998 03 29	704	1.1+	0.6+	1999 09 07	704	0.2+	0.0	1999 09 14	704	0.5+	0.5+

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1998 03 29 704 0.4+ 1.7- 1999 09 07 704 0.1+ 0.1-
 1998 03 29 704 1.3- 0.6+ 1999 09 07 704 0.0 0.4-

1999 RP₅₅ = 1998 HU₁₁₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 232.13266		(2000.0)		P		Q	
<i>n</i>	0.29216287	ω	331.94360	-0.24974080	-0.96593595		
<i>a</i>	2.2493275	Ω	132.43174	+0.90471159	-0.25772324		
<i>e</i>	0.1340871	<i>i</i>	5.27086	+0.34514702	-0.02337673		
<i>P</i>	3.37	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24 704 0.8+ 0.1+	1998 04 23 704 0.5+ 0.8-	1999 09 06 699 (0.1+ 2.5+)
1998 03 24 704 0.1+ 0.5+	1998 04 23 704 0.9- 0.9-	1999 09 06 699 1.0- 1.2+
1998 03 24 704 1.1- 0.9-	1998 04 24 704 0.0 0.3+	1999 09 06 699 0.5+ 0.6-
1998 03 24 704 (1.1- 2.2+)	1998 04 24 704 0.2+ 0.7+	1999 09 07 704 0.4+ 0.6-
1998 03 24 704 0.4- 1.0+	1998 04 24 704 0.5+ 0.2-	1999 09 07 704 0.2- 0.4-
1998 04 21 704 0.1- 0.1+	1998 04 24 704 0.3+ 1.4-	1999 09 07 704 0.4- 0.1-
1998 04 21 704 0.2- 0.4+	1998 04 24 704 0.9- 0.3-	1999 09 07 704 0.1- 0.2-
1998 04 21 704 1.5+ 0.3+	1998 05 25 699 0.8- 0.4+	1999 09 07 704 0.5+ 0.4+
1998 04 21 704 0.6- 0.5+	1998 05 25 699 0.3- 1.1-	1999 09 13 704 0.1- 0.3+
1998 04 21 704 0.5+ 1.4+	1998 05 25 699 1.0- 0.1+	1999 09 13 704 0.5+ 0.5-
1998 04 23 704 0.4+ 0.0	1999 07 16 704 0.0 0.2-	1999 09 13 704 0.1+ 0.9+
1998 04 23 704 0.3+ 0.6+	1999 07 16 704 0.4+ 0.0	1999 09 13 704 0.1+ 0.1+
1998 04 23 704 0.8+ 0.3-	1999 07 16 704 0.6- 0.2-	1999 09 13 704 0.2- 0.3+

1999 RT₅₅ = 1996 XM₂₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 357.32999		(2000.0)		P		Q	
<i>n</i>	0.23551028	ω	187.62740	+0.84913441	+0.52446264		
<i>a</i>	2.5969453	Ω	140.53467	-0.47925080	+0.81482049		
<i>e</i>	0.2704203	<i>i</i>	5.64554	-0.22201222	+0.24699496		
<i>P</i>	4.18	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 12 07 691 0.1+ 0.1+	1999 07 21 699 0.1- 0.2-	1999 09 07 704 0.5- 0.2-
1996 12 07 691 0.3- 0.2+	1999 08 03 691 0.2- 0.5+	1999 09 07 704 1.0- 0.4-
1996 12 07 691 0.3- 0.3+	1999 08 03 691 0.1- 0.4+	1999 09 07 704 0.8- 0.7-
1996 12 13 691 0.1+ 0.5+	1999 08 03 691 0.2- 0.4+	1999 09 07 704 0.5- 1.4-
1996 12 13 691 0.1- 0.3+	1999 08 07 699 0.3+ 1.5+	1999 09 13 704 0.2- 0.4+
1996 12 13 691 0.1+ 0.4+	1999 08 07 699 0.5+ 0.7+	1999 09 13 704 0.1- 0.3-
1996 12 17 691 0.6+ 0.1+	1999 08 07 699 0.3+ 0.7+	1999 09 13 704 0.2- 0.1-
1996 12 17 691 0.5+ 0.7+	1999 09 06 699 0.4+ 0.3-	1999 09 13 704 0.5+ 0.5-
1996 12 17 691 0.2- 0.7+	1999 09 06 699 0.1- 0.3-	1999 09 13 704 0.4- 0.9-
1999 07 21 699 0.8+ 0.9+	1999 09 06 699 1.2+ 1.1+	
1999 07 21 699 0.1- 0.4+	1999 09 07 704 0.0 0.0	

1999 RY₅₅ = 1994 TG₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 279.53340		(2000.0)		P		Q	
<i>n</i>	0.17851877	ω	60.01358	+0.55990156	-0.82845325		
<i>a</i>	3.1237777	Ω	355.86393	+0.68277340	+0.47038419		
<i>e</i>	0.0974229	<i>i</i>	10.58254	+0.46939400	+0.30398013		
<i>P</i>	5.52	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 10 12 595 0.3+ 0.1+	1999 09 11 704 0.2+ 0.9-	1999 09 30 704 0.4- 0.8+
1994 10 12 595 0.5- 0.2+	1999 09 11 704 0.5+ 0.4-	1999 10 03 747 0.2+ 0.1+
1994 10 12 595 0.5+ 0.4-	1999 09 11 704 0.6+ 0.8-	1999 10 03 747 0.1+ 0.2-
1994 10 14 595 0.1- 0.3+	1999 09 11 704 0.4+ 0.3-	1999 10 03 747 0.4+ 0.5-
1994 10 14 595 0.2- 0.2-	1999 09 13 699 0.7- 0.8+	1999 10 03 747 0.0 0.3+
1999 09 07 704 0.5+ 0.3+	1999 09 13 699 0.7- 0.8+	1999 10 03 747 1.4- 0.7+
1999 09 07 704 1.0- 0.2-	1999 09 13 699 0.9+ 0.5-	1999 10 04 735 0.6+ 0.6-

1999 09 07 704 0.5+ 0.4+ 1999 09 30 704 0.6+ 0.5- 1999 10 04 735 0.1- 0.0
 1999 09 07 704 0.2+ 0.6+ 1999 09 30 704 0.5+ 0.1+ 1999 10 04 735 0.2- 0.1-
 1999 09 07 704 0.8- 0.3+ 1999 09 30 704 0.2+ 0.2+
 1999 09 11 704 0.5- 0.3- 1999 09 30 704 0.3- 0.2+

1999 RQ₅₇ = 1998 FF₁₀₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 23.39556		(2000.0)		P		Q	
<i>n</i>	0.23485783	ω	310.35521	+0.45197459	+0.88988010		
<i>a</i>	2.6017527	Ω	346.11826	-0.72007644	+0.32300736		
<i>e</i>	0.1128204	<i>i</i>	14.95318	-0.52650630	+0.32214849		
<i>P</i>	4.20	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 31 704 0.3- 0.3+	1998 04 19 704 0.3+ 0.8+	1999 09 13 704 0.4+ 0.6+
1998 03 31 704 0.1- 0.8+	1998 04 19 704 0.1+ 0.2-	1999 09 13 704 0.5+ 0.3+
1998 03 31 704 0.3+ 0.9+	1999 08 13 699 0.1- 0.2-	1999 09 13 704 0.4+ 0.2-
1998 03 31 704 1.0- 0.7+	1999 08 13 699 0.3- 0.1-	1999 09 13 704 0.1+ 0.2-
1998 03 31 704 0.1+ 0.4+	1999 08 13 699 0.1- 0.2+	1999 09 29 704 0.5- 0.2-
1998 04 01 704 0.5+ 0.0	1999 09 07 699 0.4- 0.5+	1999 09 29 704 0.4+ 0.6-
1998 04 01 704 1.2- 0.4+	1999 09 07 699 0.5- 0.4-	1999 09 29 704 0.4- 0.4-
1998 04 01 704 0.5+ 0.5-	1999 09 07 704 0.4+ 0.2-	1999 09 29 704 0.3- 0.6-
1998 04 01 704 (1.3- 4.7-)	1999 09 07 699 0.4- 0.3+	1999 09 29 704 0.1- 0.2+
1998 04 01 704 (2.3- 1.9-)	1999 09 07 704 0.5+ 0.3-	1999 09 30 704 0.5+ 0.2+
1998 04 18 704 0.4+ 0.0	1999 09 07 704 0.3+ 0.2+	1999 09 30 704 0.2- 0.8+
1998 04 18 704 0.3+ 0.0	1999 09 07 704 0.7+ 0.2+	1999 09 30 704 0.3- 0.2+
1998 04 18 704 0.2- 0.7-	1999 09 07 704 0.6+ 0.6+	1999 09 30 704 0.3+ 0.2+
1998 04 18 704 0.3+ 1.3-	1999 09 08 703 0.5- 0.7-	1999 09 30 704 0.3- 0.5+
1998 04 18 704 0.8- 1.3-	1999 09 08 703 0.1- 0.3-	1999 10 10 106 0.1+ 0.1+
1998 04 19 704 0.3+ 0.4-	1999 09 08 703 0.1+ 0.6-	1999 10 10 106 1.3- 0.1+
1998 04 19 704 0.1+ 0.2-	1999 09 08 703 0.3- 0.0	
1998 04 19 704 0.6+ 0.7+	1999 09 13 704 0.4+ 0.1-	

1999 RF₅₈ = 1998 FO₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 37.91194		(2000.0)		P		Q	
<i>n</i>	0.21731040	ω	111.67638	+0.13899735	+0.99018564		
<i>a</i>	2.7399904	Ω	166.28937	-0.92977864	+0.13555191		
<i>e</i>	0.1528944	<i>i</i>	3.52300	-0.34086862	+0.03403046		
<i>P</i>	4.54	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20 704 0.7- 0.6+	1998 04 22 704 (2.4+ 1.6+)	1999 09 07 704 0.1+ 0.4+
1998 03 20 704 0.3+ 1.2+	1998 04 22 704 0.3+ 0.3+	1999 09 07 704 1.0- 0.3+
1998 03 20 704 0.0 1.6-	1998 04 24 691 0.0 1.6-	1999 09 07 704 0.6+ 0.7+
1998 03 20 704 0.2+ 0.8-	1998 04 24 691 0.1+ 1.0-	1999 09 13 704 0.0 0.3+
1998 03 22 704 (2.2- 1.1+)	1998 04 24 691 0.2- 0.6-	1999 09 13 704 0.3- 0.4+
1998 03 22 704 0.2- 0.8+	1999 08 22 703 0.4+ 0.5+	1999 09 13 704 0.2+ 0.5-
1998 03 22 704 1.0- 0.8+	1999 08 22 703 0.4+ 0.3-	1999 09 30 704 0.2- 0.8+
1998 03 22 704 1.2+ 1.1+	1999 08 22 703 0.3+ 0.5+	1999 09 30 704 0.7+ 1.2-
1998 03 22 704 (3.9- 0.3+)	1999 08 22 703 0.1- 0.5-	1999 09 30 704 0.6- 0.0
1998 04 22 704 0.1- 0.3-	1999 09 07 704 0.3- 0.1-	1999 09 30 704 0.0 0.8-
1998 04 22 704 0.1+ 1.2+	1999 09 07 704 0.2- 0.2-	

1999 RK₅₉ = 1998 HP₁₁₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 121.85688		(2000.0)		P		Q	
<i>n</i>	0.23387164	ω	49.67186	-0.90105497	+0.43098304		
<i>a</i>	2.6090617	Ω	155.74006	-0.42505717	-0.85532060		
<i>e</i>	0.0288581	<i>i</i>	6.78090	-0.08617619	-0.28754180		
<i>P</i>	4.21	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1998 04 23 704 0.4- 0.4-	1998 04 24 704 0.7+ 0.1+	1999 09 07 704 0.1- 0.2+
1998 04 23 704 0.1+ 0.7+	1998 04 24 704 0.7+ 0.1-	1999 09 07 704 0.2+ 0.2-

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1998 04 23	704	0.7−	0.5+	1998 04 24	704	0.6+	0.6+	1999 09 09	704	1.3−	1.1−
1998 04 23	704	0.4−	0.7+	1999 09 07	704	0.6+	0.1−	1999 09 09	704	0.3−	0.4+
1998 04 23	704	1.1−	1.5−	1999 09 07	704	0.7+	0.9+	1999 09 09	704	0.5+	0.1+
1998 04 24	704	0.5+	0.6−	1999 09 07	704	0.4−	0.1−				

1999 RF₆₂ = 1975 EV₅ = 1986 CZ = 1990 FF₅ = 1998 KA₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	209.59848		(2000.0)		P		Q
<i>n</i>	0.26056911	ω	111.55969		−0.57288053		−0.81920403
<i>a</i>	2.4276576	Ω	13.49134		+0.70330669		−0.50803594
<i>e</i>	0.1177759	<i>i</i>	6.57054		+0.42091281		−0.26609066
<i>P</i>	3.78	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1975 03 15	095	1.0+	2.0+	1998 05 24	704	0.4+	1.1−	1999 09 13	704	0.3+	0.4−
1986 02 05	054	1.9+	1.1+	1998 05 24	704	0.3+	0.5−	1999 09 13	704	0.1−	0.4+
1986 02 07	054	1.1+	0.1−	1998 05 24	704	0.3+	0.5−	1999 09 29	704	(2.3−	0.5−)
1986 02 09	801	1.8−	0.7+	1998 05 24	704	0.7+	1.3−	1999 09 29	704	0.2−	0.3−
1990 03 17	095	(4.0−	1.6−)	1999 09 07	704	0.5−	0.5+	1999 09 29	704	0.4+	0.0
1990 03 17	095	2.0−	1.5−	1999 09 07	704	0.8−	1.5+	1999 09 29	704	0.8+	0.1+
1998 05 22	704	0.0	0.0	1999 09 07	704	0.8−	0.4+	1999 09 30	704	0.5+	0.4−
1998 05 22	704	(3.3+	0.9+)	1999 09 07	704	0.5−	0.1+	1999 09 30	704	0.1+	0.6+
1998 05 22	704	0.9−	1.1+	1999 09 07	704	1.1−	0.3+	1999 09 30	704	0.4+	0.1−
1998 05 22	704	0.4+	1.2+	1999 09 13	704	0.1−	0.1−	1999 09 30	704	0.6+	0.1+
1998 05 22	704	0.4−	1.2+	1999 09 13	704	0.4−	0.6−	1999 09 30	704	0.5+	0.2−
1998 05 24	704	0.1−	0.1−	1999 09 13	704	0.2+	0.4−				

1999 RF₆₄ = 1981 EZ₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	339.54568		(2000.0)		P		Q
<i>n</i>	0.18392392	ω	3.83943		+0.99805083		+0.05865749
<i>a</i>	3.0622730	Ω	352.69488		−0.06078641		+0.83647457
<i>e</i>	0.1028656	<i>i</i>	9.64496		−0.01412639		+0.54485740
<i>P</i>	5.36	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 03 06	413	2.0−	0.5−	1999 09 07	704	1.2−	0.5+	1999 09 09	704	0.2−	0.3+
1981 03 11	413	0.5−	0.7+	1999 09 07	704	0.2+	0.8+	1999 09 30	704	0.2−	0.4+
1981 03 15	413	2.2+	0.2−	1999 09 07	704	0.2+	0.2−	1999 09 30	704	0.4+	0.2+
1981 05 01	413	0.7+	0.5−	1999 09 09	704	0.4+	0.5−	1999 09 30	704	0.8−	0.9−
1981 05 03	413	0.6−	0.4+	1999 09 09	704	0.7+	0.4−	1999 09 30	704	0.1+	0.0
1999 09 07	704	0.4+	0.5−	1999 09 09	704	0.2−	0.6+	1999 09 30	704	0.5+	0.1−
1999 09 07	704	0.5−	0.6−	1999 09 09	704	0.2+	0.3+				

1999 RN₆₄ = 1997 CN₂₄ = 1998 HK₁₄₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	345.61578		(2000.0)		P		Q
<i>n</i>	0.24189440	ω	220.75740		+0.98092612		+0.17181734
<i>a</i>	2.5510493	Ω	129.11363		−0.13353074		+0.93546296
<i>e</i>	0.1827897	<i>i</i>	6.72790		−0.14125681		+0.30884923
<i>P</i>	4.07	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1995 08 30	809	0.7+	0.5−	1998 04 21	704	0.2+	1.0+	1999 09 07	704	0.2−	0.3+
1995 08 31	809	0.9+	0.5−	1998 04 21	704	1.7−	0.4−	1999 09 07	704	0.4−	0.0
1995 08 31	809	0.3+	0.4−	1998 04 23	704	1.1−	0.9+	1999 09 07	704	0.4−	0.6+
1995 09 01	809	0.8−	1.6−	1998 04 23	704	1.1+	0.1−	1999 09 13	704	0.1+	0.4−
1996 11 12	691	0.3−	0.3+	1998 04 23	704	1.6+	1.2−	1999 09 13	704	0.2+	0.3−
1996 11 12	691	0.1−	0.4+	1998 04 23	704	0.5−	1.1+	1999 09 13	704	0.2+	0.2+
1996 11 12	691	0.4−	0.3+	1998 04 23	704	0.6+	0.7+	1999 09 13	704	0.2−	0.1+
1997 02 09	691	0.4+	0.1−	1999 08 08	699	0.1+	1.1+	1999 09 13	704	0.2+	0.6−
1997 02 09	691	0.4+	0.3−	1999 08 08	699	0.6−	0.1+	1999 09 30	704	1.3+	0.2−
1997 02 09	691	0.2+	0.2−	1999 08 08	699	0.0	0.0	1999 09 30	704	0.2+	0.6−

1997 02 14	691	0.3−	0.1+	1999 09 07	699	0.3−	0.5+	1999 09 30	704	0.6−	1.1+
1997 02 14	691	0.4+	0.4−	1999 09 07	699	0.4−	0.7+	1999 09 30	704	0.5+	0.8+
1997 02 14	691	0.5−	1.0+	1999 09 07	699	0.1+	0.2+	1999 09 30	704	0.3+	0.9−
1998 04 21	704	0.8−	0.5−	1999 09 07	704	0.2−	0.2+				
1998 04 21	704	0.5+	1.9−	1999 09 07	704	0.4−	0.4+				

1999 RZ₆₄ = 1998 FT₂₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	52.40080		(2000.0)		P		Q
<i>n</i>	0.26108139	ω	281.92815		−0.07698169		+0.99684149
<i>a</i>	2.4244809	Ω	343.61874		−0.88571722		−0.07736129
<i>e</i>	0.1394404	<i>i</i>	3.96789		−0.45779781		−0.01795185
<i>P</i>	3.78	<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−	1.0+	1998 03 22	704	1.5−	0.1−	1999 09 07	704	0.7+	0.4+
1998 03 20	704	0.4−	1.1−	1998 03 26	704	1.2−	0.9+	1999 09 13	704	0.1+	0.4−
1998 03 20	704	1.1+	0.4−	1998 03 26	704	0.6+	1.5+	1999 09 13	704	0.2−	0.4−
1998 03 20	704	0.4+	1.0−	1998 03 26	704	1.1+	0.2+	1999 09 13	704	0.1−	0.3−
1998 03 22	704	0.5−	0.3−	1999 09 07	704	0.6−	0.7−	1999 09 13	704	0.3+	0.5−
1998 03 22	704	0.0	1.0−	1999 09 07	704	0.3−	0.3+	1999 09 13	704	0.3+	0.7+
1998 03 22	704	0.1−	0.4+	1999 09 07	704	0.1−	0.3−				
1998 03 22	704	0.2+	0.5−	1999 09 07	704	0.0	0.7+				

1999 RA₇₁ = 1995 SM₄₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	330.05221		(2000.0)		P		Q
<i>n</i>	0.24485665	ω	54.72765		+0.94795721		−0.31830348
<i>a</i>	2.5304326	Ω	323.83093		+0.28769580		+0.86671977
<i>e</i>	0.1782297	<i>i</i>	0.75212		+0.13641205		+0.38403091
<i>P</i>	4.03	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1995 08 19	809	1.7−	0.5+	1999 08 17	691	0.6+	0.1+	1999 09 09	704	0.1+	0.5+
1995 08 20	809	1.5−	0.3−	1999 08 17	691	0.6+	0.0	1999 09 09	704	0.2+	0.4+
1995 08 22	809	0.3−	0.2+	1999 08 17	691	0.9+	0.0	1999 09 09	704	0.3+	0.8+
1995 08 24	809	1.5+	0.8+	1999 09 03	691	0.2−	0.2−	1999 09 09	704	0.3−	0.5+
1995 08 25	809	0.9+	0.2+	1999 09 03	691	0.2−	0.2−	1999 09 09	704	0.1−	0.2+
1995 09 01	809	0.4−	0.0	1999 09 03	691	1.0+	0.9−	1999 09 09	704	1.7−	0.3+
1995 09 17	809	0.0	0.1−	1999 09 07	704	0.0	0.2−	1999 09 10	704	0.5+	0.0
1995 09 18	809	0.5+	0.3−	1999 09 07	704	0.3−	0.4−	1999 09 10	704	0.3+	0.3+
1995 09 18	809	0.1+	0.7−	1999 09 07	704	0.3−	0.3−	1999 09 10	704	0.1−	0.1−
1995 09 19	809	0.3−	0.6−	1999 09 07	704	0.7−	0.7−	1999 09 10	704	0.2−	0.6−
1995 09 20	809	0.5+	0.1+	1999 09 07	704	0.4−	0.5−	1999 09 10	704	0.3+	0.3+
1995 09 22	809	0.7+	0.0	1999 09 09	704	0.6−	0.5−	1999 09 10	704	0.0	0.4+
1995 09 22	809	(3.4+	1.8−)	1999 09 09	704	0.2−	0.3+	1999 09 10	704	0.3+	0.5+
1995 09 22	691	0.8−	0.2+	1999 09 09	704	1.6+	0.2+	1999 09 10	704	0.1+	0.9+
1995 09 22	691	0.5−	0.3+	1999 09 09	704	0.6−	0.2−	1999 09 10	704	0.1+	0.2−
1995 09 22	691	0.5−	0.4+	1999 09 09	704	0.7−	0.2+	1999 09 14	704	0.3+	0.0
1995 09 23	809	(2.9+	1.2−)	1999 09 09	704	0.0	0.3−	1999 09 14	704	0.6+	0.4−
1995 09 27	691	0.4+	0.1−	1999 09 09	704	0.4−	0.0	1999 09 14	704	0.1−	0.4−
1995 09 27	691	0.1−	0.3+	1999 09 09	704	0.1−	0.3−	1999 09 14	704	0.1−	0.4−
1995 09 27	691	0.6+	0.3+	1999 09 09	704	0.2−	0.0	1999 09 14	704	0.4+	0.1−

1999 RG₇₁ = 1997 EA₅₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	247.49333		(2000.0)		P		Q
n	0.19110532	ω	104.35880		−0.13889271		−0.99014286
a	2.9850678	Ω	353.54323		+0.83544861		−0.10736550
e	0.0532739	i	9.23844		+0.53172778		−0.08994316
P	5.16	H	13.2	G	0.15	U	4

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Residuals in seconds of arc

1997 03 05	809	0.1−	0.3+	1999 09 09	704	0.6−	1.2−	1999 09 14	704	0.4−	0.3−
1997 03 05	809	0.5+	0.0	1999 09 09	704	0.4−	0.8−	1999 09 14	704	0.4−	0.9−
1997 03 05	809	0.6+	0.2−	1999 09 09	704	0.7−	0.8−	1999 09 14	704	0.4−	0.2−
1997 03 06	809	0.0	0.7+	1999 09 11	704	0.0	0.5+	1999 09 14	704	0.3−	0.0
1997 03 06	809	0.3−	0.4−	1999 09 11	704	0.1+	0.4+	1999 10 02	704	0.6+	0.0
1997 03 06	809	0.5−	0.3−	1999 09 11	704	0.2+	0.2+	1999 10 02	704	0.4+	1.0+
1999 08 12	699	0.7+	0.5+	1999 09 11	704	0.1−	0.2+	1999 10 02	704	0.2−	0.4+
1999 08 12	699	0.5+	0.5+	1999 09 11	704	0.4−	0.3+	1999 10 02	704	0.9+	0.1+
1999 08 12	699	0.6+	1.0+	1999 09 11	704	0.0	0.2+	1999 10 02	704	1.0+	0.8+
1999 09 07	704	0.2−	0.7−	1999 09 11	704	0.6+	0.4+	1999 10 07	704	0.9−	0.8+
1999 09 07	704	0.1+	0.6−	1999 09 11	704	0.1+	0.7+	1999 10 07	704	0.2+	0.1+
1999 09 07	704	0.3−	0.3−	1999 09 11	704	0.2+	0.0	1999 10 07	704	0.7−	0.5−
1999 09 07	704	0.1+	0.1−	1999 09 11	704	0.6−	0.5+	1999 10 07	704	0.0	0.2−
1999 09 07	704	0.2−	0.2−	1999 09 11	704	0.3−	0.2+	1999 10 07	704	0.6+	0.1−
1999 09 09	704	0.1−	0.0	1999 09 11	704	0.1−	0.0				
1999 09 09	704	0.3+	0.7−	1999 09 14	704	0.4+	1.3−				

1999 RN₇₁ = 1998 HC₁₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28355829	ω	314.95103	−0.30716005	−0.94947114		
<i>a</i>	2.2946044	Ω	152.74289	+0.90796284	−0.31267763		
<i>e</i>	0.0526731	<i>i</i>	8.09321	+0.28505470	−0.02715246		
<i>P</i>	3.48	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 24	704	0.8+	0.1−	1998 05 28	704	1.1+	1.1+	1999 09 10	704	0.6−	1.2+
1998 03 24	704	(1.7+ 2.4+)		1998 05 28	704	0.3−	1.1+	1999 09 10	704	0.9−	0.9−
1998 03 24	704	1.4+	0.5−	1999 09 07	699	0.7+	0.1−	1999 09 10	704	1.5−	0.6+
1998 03 24	704	0.5−	0.4−	1999 09 07	704	0.1+	0.3−	1999 09 10	704	0.4−	0.4+
1998 03 24	704	0.4+	0.5−	1999 09 07	699	0.2+	0.5+	1999 09 10	704	0.6−	0.4+
1998 04 21	704	0.4−	0.2−	1999 09 07	704	0.1+	0.0	1999 09 13	704	0.0	0.4−
1998 04 21	704	0.8−	0.7−	1999 09 07	704	0.1+	0.3−	1999 09 13	704	0.8+	0.9−
1998 04 21	704	0.2−	0.8−	1999 09 07	699	0.0	0.8+	1999 09 13	704	0.3+	0.0
1998 04 21	704	0.7−	0.1−	1999 09 07	704	0.1−	0.0	1999 09 13	704	0.3−	0.8−
1998 04 21	704	1.7−	0.2+	1999 09 07	704	0.3−	0.3+	1999 09 30	704	0.0	0.2+
1998 04 23	704	0.6+	0.5−	1999 09 08	703	0.0	0.1+	1999 09 30	704	0.6+	0.3+
1998 04 23	704	0.7−	0.4−	1999 09 08	703	0.2+	0.2+	1999 09 30	704	0.2−	0.4+
1998 04 23	704	0.2−	0.0	1999 09 08	703	0.1−	0.0	1999 09 30	704	0.8+	0.0
1998 04 23	704	0.5+	0.4+	1999 09 08	703	0.4+	0.2−	1999 09 30	704	0.0	0.2+
1998 04 23	704	0.2−	0.6−	1999 09 09	704	0.5+	0.1−	1999 10 04	703	0.5+	0.4+
1998 05 24	699	0.1−	1.7+	1999 09 09	704	0.4+	0.5−	1999 10 04	703	0.2−	0.1−
1998 05 24	699	0.6+	0.9+	1999 09 09	704	0.4+	0.7−	1999 10 04	703	1.3+	0.8+
1998 05 24	699	0.0	0.1−	1999 09 09	704	0.2−	1.5−	1999 10 04	703	0.8+	0.1+
1998 05 28	704	0.3−	0.3+	1999 09 09	704	0.8−	1.1−	1999 10 07	704	1.3−	0.3−
1998 05 28	704	0.8+	0.9−	1999 09 10	704	1.1+	1.1+	1999 10 07	704	0.3−	0.4+
1998 05 28	704	0.1+	0.2−	1999 09 10	704	0.0	0.4−	1999 10 07	704	1.1−	0.4−

1999 RN₇₂ = 1998 QR₇₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.08179778	ω	160.71916	+0.75799277	+0.63965084		
<i>a</i>	5.2558347	Ω	157.92458	−0.63413792	+0.76849394		
<i>e</i>	0.0684697	<i>i</i>	19.85514	−0.15269597	−0.01624424		
<i>P</i>	12.05	<i>H</i>	11.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 08 24	704	0.4−	0.7−	1999 09 07	704	0.3−	0.6−	1999 09 14	704	1.2−	1.4+
1998 08 24	704	1.0+	1.2−	1999 09 08	703	0.1−	0.5−	1999 09 14	704	0.8+	0.6−
1998 08 24	704	(2.3+ 3.2−)		1999 09 08	703	0.2+	0.4+	1999 09 14	704	(1.5− 2.2+)	
1998 08 24	704	(5.2− 0.4+)		1999 09 08	703	0.6+	0.2+	1999 09 14	704	0.3−	0.4−
1998 08 27	704	0.4+	0.8−	1999 09 08	703	0.4+	1.2+	1999 09 14	704	0.4+	0.3+
1998 08 27	704	0.1+	0.2−	1999 09 09	704	0.2+	0.2+	1999 09 14	704	0.4+	0.5+
1998 08 27	704	0.9−	0.5+	1999 09 09	704	0.0	0.0	1999 09 14	704	0.1−	0.3+

1998 08 27	704	0.4+	0.8+	1999 09 09	704	0.2−	0.4+	1999 09 14	704	0.7−	0.6+
1998 08 27	704	0.7−	1.6+	1999 09 09	704	0.5−	0.3+	1999 09 14	704	0.2−	0.7−
1999 09 07	699	0.1+	0.3−	1999 09 09	704	1.1+	0.0	1999 09 14	704	0.8−	0.7−
1999 09 07	704	0.5+	0.9−	1999 09 13	704	1.3−	0.3−	1999 09 14	704	0.2−	1.5−
1999 09 07	699	0.7−	0.6+	1999 09 13	704	0.8−	0.6+	1999 09 14	704	0.2−	0.1−
1999 09 07	704	0.1+	0.2−	1999 09 13	704	0.3−	0.0	1999 09 30	704	0.2+	0.1−
1999 09 07	704	0.5+	0.3−	1999 09 13	704	0.1−	0.2−	1999 09 30	704	0.1+	0.3+
1999 09 07	699	1.1+	0.3+	1999 09 14	704	0.4+	0.1+	1999 09 30	704	0.4+	0.4−
1999 09 07	704	0.3−	1.1−	1999 09 14	704	0.7+	0.8+	1999 09 30	704	0.0	0.3+

1999 RO₇₂ = 1977 DK₆ = 1998 KX₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19715093	ω	173.91828	+0.28768414	+0.95639081		
<i>a</i>	2.9237270	Ω	112.79229	−0.88099006	+0.28496315		
<i>e</i>	0.0796091	<i>i</i>	3.14267	−0.37562528	+0.06412978		
<i>P</i>	5.00	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 02 19	381	0.9+	0.1+	1999 08 12	699	0.1−	0.6+	1999 09 13	704	0.1+	0.1+
1977 02 19	381	0.6−	0.6+	1999 08 12	699	1.0+	0.6+	1999 09 13	704	0.5−	0.2−
1997 02 08	566	0.1−	0.2−	1999 09 07	704	1.0+	0.4−	1999 09 13	704	0.2+	1.2−
1997 02 08	566	0.1−	0.4−	1999 09 07	704	0.1−	0.4−	1999 09 13	704	0.1+	0.3+
1997 02 08	566	0.0	0.2−	1999 09 07	704	0.2−	0.7−	1999 09 13	704	0.8−	0.3+
1998 05 22	704	0.6+	0.2−	1999 09 07	704	0.5+	0.2+	1999 09 14	704	0.0	0.3−
1998 05 22	704	1.5−	0.8−	1999 09 07	704	0.2+	0.5−	1999 09 14	704	0.1+	0.0
1998 05 22	704	0.0	0.4−	1999 09 08	703	0.3−	0.2+	1999 09 14	704	0.1+	0.3−
1998 05 22	704	1.4−	2.0−	1999 09 08	703	0.1−	0.8+	1999 09 14	704	0.4−	0.1+
1998 05 22	704	1.0−	0.3−	1999 09 08	703	0.1+	0.9+	1999 09 14	704	0.2−	0.2+
1998 05 22	699	0.1+	0.6−	1999 09 08	703	0.1−	0.5+	1999 09 14	704	0.1+	0.9+
1998 05 22	699	1.6+	0.3−	1999 09 09	704	0.5−	0.6+	1999 09 14	704	0.6−	0.7+
1998 05 22	699	0.1−	0.4−	1999 09 09	704	0.2−	0.5−	1999 09 14	704	0.3−	0.1+
1998 05 23	699	0.3+	0.2−	1999 09 09	704	0.4+	0.6−	1999 09 14	704	0.6−	0.0
1998 05 23	699	0.2−	1.1+	1999 09 09	704	0.8+	0.3+	1999 09 14	704	0.3−	0.3−
1998 05 23	699	0.2+	1.7+	1999 09 09	704	0.2−	0.5−	1999 09 14	704	0.5−	0.1−
1998 05 24	704	0.6−	0.1−	1999 09 13	704	0.2+	0.5+	1999 09 14	704	0.0	0.2−
1998 05 24	704	0.8+	0.2+	1999 09 13	704	0.0	0.0	1999 09 14	704	0.3−	0.1−
1998 05 24	699	1.1−	1.5+	1999 09 13	704	0.0	0.3+	1999 09 14	704	0.5−	0.2−
1998 05 24	704	1.1+	0.3+	1999 09 13	704	0.2−	0.5+	1999 09 14	704	0.0	0.3−
1998 05 24	699	0.3+	1.3+	1999 09 13	704	0.1+	0.1−	1999 09 30	704	0.2−	0.2−
1998 05 24	699	(2.5− 0.5−)		1999 09 13	704	0.7+	1.0−	1999 09 30	704	0.3−	0.8−
1998 05 24	704	0.8+	1.0−	1999 09 13	704	0.0	0.8+	1999 09 30	704	0.0	0.4−
1998 05 24	704	(6.0− 0.9−)		1999 09 13	704	0.4−	0.4+	1999 09 30	704	0.9+	0.6−
1999 08 12	699	1.3+	0.3−	1999 09 13	704	0.2−	0.4+	1999 09 30	704	0.5+	0.2−

1999 RA₇₃ = 1979 QH₃ = 1998 HN₇₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	216.93991		(2000.0)	P	Q
n	0.29775973	ω	196.70613	−0.61104540	−0.79120150
a	2.2210521	Ω	290.96596	+0.72929861	−0.55040945
e	0.0845303	i	1.53254	+0.30781010	−0.26655134
P	3.31	H	15.5	G 0.15	U 4

1998 04 22	704	0.1−	0.2−	1999 09 13	704	0.4−	0.2+	1999 09 14	703	0.1−	0.3+
1998 04 22	704	0.2+	0.2+	1999 09 13	704	1.1−	0.1−	1999 09 14	704	(0.2−	2.6+)
1998 04 22	704	0.4+	0.1−	1999 09 13	704	0.1−	0.5−	1999 09 14	704	0.1−	1.3−
1998 04 22	704	0.6+	0.9−	1999 09 13	704	1.0+	0.5−	1999 09 14	704	0.6−	0.6−
1999 09 07	704	0.1+	0.2−	1999 09 14	704	0.1+	0.1−	1999 09 14	691	0.6−	0.3+
1999 09 07	704	0.1−	0.3+	1999 09 14	704	0.3+	0.7−	1999 09 14	691	0.4−	0.1+
1999 09 07	704	0.1−	0.2−	1999 09 14	704	0.1−	0.5+	1999 10 06	704	0.6−	0.9+
1999 09 07	704	0.2+	0.5−	1999 09 14	704	0.2−	0.1+	1999 10 06	704	0.9−	1.0+
1999 09 07	704	0.3+	0.7−	1999 09 14	704	0.3−	0.7+	1999 10 06	704	0.9−	0.8+
1999 09 09	704	0.6−	0.5−	1999 09 14	704	1.9+	0.5−	1999 10 06	704	0.9−	0.2+
1999 09 09	704	0.1+	0.8+	1999 09 14	704	0.3−	0.5−	1999 10 06	704	0.7−	0.5−
1999 09 09	704	0.3+	0.5+	1999 09 14	704	0.1−	0.1−				
1999 09 09	704	0.5−	0.5+	1999 09 14	704	0.0	0.3+				

1999 RT₇₃ = 1998 FM₆₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	61.11355		(2000.0)	P	Q		
<i>n</i>	0.22558230	ω	84.07250	−0.13911000	+0.99026608		
<i>a</i>	2.6725922	Ω	177.91409	−0.95148906	−0.13236238		
<i>e</i>	0.1590819	<i>i</i>	7.31755	−0.27443938	−0.04304979		
<i>P</i>	4.37	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.1−	0.1+	1998 04 22	704	0.2−	0.1+	1999 09 14	704	0.3−	0.2+
1998 03 20	704	1.1−	1.1+	1998 04 22	704	0.1−	1.2+	1999 09 14	704	0.1+	0.3−
1998 03 20	704	0.6−	0.2−	1998 04 22	704	1.1+	1.5−	1999 09 14	703	0.4+	1.2+
1998 03 20	704	(2.5−	1.3−)	1998 04 22	704	(2.4+	1.1−)	1999 09 14	703	1.2−	0.3+
1998 03 22	704	0.7−	0.5−	1998 04 22	704	0.7−	0.0	1999 09 14	703	0.0	0.3−
1998 03 22	704	1.5+	1.6+	1999 09 07	704	0.1+	0.3−	1999 09 14	691	0.1−	0.2−
1998 03 22	704	0.4+	0.5+	1999 09 07	704	0.2+	0.3+	1999 09 14	703	1.5+	0.4−
1998 03 22	704	0.9+	0.9−	1999 09 07	704	0.9+	0.7+	1999 09 14	691	0.1−	0.3−
1998 03 25	704	0.5−	1.0−	1999 09 07	704	0.1−	0.4−	1999 09 14	691	0.0	0.1−
1998 03 25	704	1.0−	0.6+	1999 09 07	704	0.6+	0.5+	1999 09 18	691	0.3−	0.2+
1998 03 25	704	(0.9+	2.2−)	1999 09 14	704	0.6−	0.4−	1999 09 18	691	0.2−	0.0
1998 03 25	704	1.1+	1.0−	1999 09 14	704	0.4−	0.5−	1999 09 18	691	0.2−	0.2+
1998 03 25	704	(5.7−	1.2−)	1999 09 14	704	0.0	0.3−				

1999 RE₇₄ = 1997 GV₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	94.98622		(2000.0)	P	Q		
<i>n</i>	0.17362144	ω	170.80741	−0.54891206	+0.83465275		
<i>a</i>	3.1822464	Ω	65.88788	−0.77002302	−0.48384612		
<i>e</i>	0.0959677	<i>i</i>	2.84357	−0.32520779	−0.26314962		
<i>P</i>	5.68	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 04 09	327	0.1−	0.4+	1999 09 07	704	0.4−	0.7+	1999 09 13	704	0.1+	1.2−
1997 04 09	327	0.6+	0.4+	1999 09 07	704	0.5−	0.3+	1999 09 13	704	0.2−	0.6−
1997 04 09	327	0.3+	0.4+	1999 09 07	704	0.7+	0.1+	1999 09 30	704	0.1+	0.2+
1997 04 11	327	0.9−	0.1+	1999 09 09	704	1.3+	0.5−	1999 09 30	704	0.2+	0.3−
1997 04 11	327	0.3+	0.3−	1999 09 09	704	0.4+	0.4+	1999 09 30	704	0.7+	0.2+
1997 04 11	327	0.1−	1.0−	1999 09 09	704	(1.4+	3.1+)	1999 09 30	704	0.6−	0.4+
1999 09 07	704	0.3−	0.2+	1999 09 09	704	(1.7+	6.2+)				
1999 09 07	704	0.2+	0.4+	1999 09 13	704	1.7−	0.3−				

1999 RV₇₄ = 1998 HZ₁₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	150.49644		(2000.0)	P	Q		
<i>n</i>	0.29192129	ω	78.21732	−0.99594521	+0.04985953		
<i>a</i>	2.2505683	Ω	104.60662	−0.07465466	−0.92251168		
<i>e</i>	0.1156311	<i>i</i>	4.43809	+0.05019771	−0.38273519		
<i>P</i>	3.38	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 04	699	0.5+	0.7−	1999 09 08	703	0.7−	0.4+	1999 09 14	704	0.4+	0.6+
1998 04 04	699	1.2−	0.0	1999 09 08	703	0.1−	0.3−	1999 09 14	704	0.3−	0.3+
1998 04 04	699	0.1+	0.2−	1999 09 08	703	0.7−	0.0	1999 09 14	704	0.4−	0.3−
1998 04 19	704	0.1+	0.3−	1999 09 08	703	1.1−	0.7−	1999 09 14	704	0.0	1.1−
1998 04 19	704	0.1+	0.3+	1999 09 09	704	0.2−	1.0−	1999 09 14	704	0.3−	0.3+
1998 04 19	704	0.8+	0.6+	1999 09 09	704	0.7+	0.6+	1999 09 14	704	0.2−	0.4+
1998 04 19	704	0.5−	0.3−	1999 09 09	704	0.5−	0.6−	1999 09 14	704	0.4+	0.1+
1998 04 20	704	0.7−	0.4+	1999 09 09	704	0.4+	1.3+	1999 09 14	704	0.1+	0.1−
1998 04 20	704	0.6−	0.7−	1999 09 09	704	1.3+	1.3+	1999 09 14	704	0.1+	0.3−
1998 04 20	704	0.0	0.4+	1999 09 13	704	0.9−	0.5+	1999 09 14	704	1.1+	0.7+
1998 04 20	704	(3.0−	0.5+)	1999 09 13	704	0.4−	0.1+	1999 09 14	704	0.1−	0.0
1998 04 20	704	0.6−	0.3−	1999 09 13	704	0.2−	0.4−	1999 09 14	704	1.1−	0.5+
1998 05 16	704	0.7−	0.5−	1999 09 13	704	0.4+	0.2+	1999 09 14	704	0.3−	0.3−
1998 05 16	704	1.4+	0.2−	1999 09 13	704	0.7+	0.7−	1999 09 14	704	0.1−	0.7+
1998 05 16	704	0.6+	0.8+	1999 09 13	704	0.0	0.1+	1999 09 30	704	0.6+	0.5−
1998 05 16	704	0.6−	1.3+	1999 09 13	704	0.6+	0.1+	1999 09 30	704	0.7+	0.0
1998 05 16	704	1.1+	1.9−	1999 09 13	704	0.1−	0.0	1999 09 30	704	0.3+	1.0−
1999 08 12	699	0.5+	0.5−	1999 09 13	704	0.4−	0.4−	1999 10 07	704	0.6+	0.4+
1999 08 12	699	0.5+	1.0+	1999 09 13	704	0.9−	1.2+	1999 10 07	704	0.0	1.4−
1999 08 12	699	0.0	0.0	1999 09 13	704	0.2−	0.5−	1999 10 07	704	0.7+	0.8−
1999 09 07	704	0.5−	0.8+	1999 09 13	704	0.6−	0.1+	1999 10 07	704	0.4+	0.1−
1999 09 07	704	0.5−	0.4+	1999 09 13	704	0.5+	0.0	1999 10 07	704	0.9+	2.0−
1999 09 07	704	0.5−	0.3−	1999 09 13	704	0.1+	0.5−				
1999 09 07	704	0.2−	0.2+	1999 09 14	704	0.2+	0.0				

1999 RK₇₆ = 1998 HG₆

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	100.08819		(2000.0)	P	Q		
<i>n</i>	0.24086424	ω	50.68814	−0.67581924	+0.73704900		
<i>a</i>	2.5583178	Ω	176.77951	−0.70156346	−0.64108338		
<i>e</i>	0.1465411	<i>i</i>	5.31821	−0.22600233	−0.21394126		
<i>P</i>	4.09	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 29	704	0.4+	0.4−	1998 04 21	910	0.7+	0.6−	1999 09 14	704	0.2−	1.3−
1998 03 29	704	1.0−	0.5−	1998 04 22	910	0.5+	0.6−	1999 09 14	704	0.2+	0.4+
1998 03 29	704	0.6+	0.9+	1998 04 22	910	0.6+	0.6−	1999 09 14	704	0.4−	0.7+
1998 03 29	704	0.3+	1.7+	1998 04 24	910	0.4+	0.3−	1999 09 14	704	0.3−	0.6−
1998 03 29	704	0.8−	0.6−	1998 04 24	910	0.4+	0.3−	1999 09 14	704	0.0	0.2+
1998 04 21	704	0.6−	0.5+	1998 04 24	910	0.2+	0.5−	1999 09 18	691	0.6−	0.4−
1998 04 21	704	0.3+	0.4−	1999 09 07	704	0.1+	0.7+	1999 09 18	691	0.7−	0.4−
1998 04 21	704	0.3−	0.7+	1999 09 07	704	0.8+	0.6+	1999 09 18	691	0.4−	0.4−
1998 04 21	704	1.0−	0.3+	1999 09 07	704	0.7+	0.2+				
1998 04 21	704	0.5−	0.6+	1999 09 07	704	0.8+	0.6+				

1999 RL₇₆ = 1991 FE₅ = 1998 HE₇₂

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	169.13278		(2000.0)	P	Q		
<i>n</i>	0.28648799	ω	356.18057	−0.98916697	−0.14659443		
<i>a</i>	2.2789341	Ω	175.36873	+0.13707231	−0.94108269		
<i>e</i>	0.0962970	<i>i</i>	5.44833	+0.05253457	−0.30475146		
<i>P</i>	3.44	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 03 19	808	0.7−	1.3+	1999 09 09	704	0.6+	0.1+	1999 09 14	704	0.1−	0.1−
1991 03 19	808	0.5+	1.8−	1999 09 09	704	0.0	0.0	1999 09 14	704	0.2−	0.2+
1998 04 21	704	0.0	0.2+	1999 09 09	704	1.3+	0.6+	1999 09 14	704	0.5−	0.0
1998 04 21	704	0.6−	0.3+	1999 09 11	704	0.1−	0.0	1999 09 14	704	0.1+	0.2−
1998 04 21	704	0.1−	0.3−	1999 09 11	704	0.5−	0.1−	1999 09 14	691	0.0	0.3−
1998 04 21	704	0.2+	0.3+	1999 09 11	699	1.0+	1.2+	1999 09 14	691	0.1−	0.4−
1998 04 21	704	0.1+	0.2−	1999 09 11	704	0.1−	0.3+	1999 09 14	691	0.0	0.1−
1998 04 22	704	0.5−	0.4+	1999 09 11	704	0.4−	0.6−	1999 09 18	691	0.0	0.2−
1998 04 22	704	0.4+	0.3+	1999 09 11	704	0.4−	0.3+	1999 09 18	691	0.1+	0.8−

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1998 04 22	704	0.1−	0.1+	1999 09 11	704	0.3+	0.6−	1999 09 18	691	0.2+	0.7−
1998 04 22	704	0.8+	0.8−	1999 09 11	699	(0.3+	2.5+)	1999 10 07	704	0.2−	0.2−
1998 04 22	704	0.2−	0.3−	1999 09 11	704	0.3+	0.2−	1999 10 07	704	0.1−	0.6−
1999 09 07	704	0.0	0.1+	1999 09 11	704	0.1−	0.2−	1999 10 07	704	1.1−	0.2+
1999 09 07	704	0.0	0.2+	1999 09 11	704	0.4−	0.9+	1999 10 07	704	(2.6−	0.9+)
1999 09 07	704	0.3+	0.0	1999 09 11	704	0.2−	0.1+	1999 10 07	704	1.0−	0.6−
1999 09 07	704	0.3+	0.2−	1999 09 11	699	0.3+	1.2+				
1999 09 07	704	0.4+	0.0	1999 09 14	704	0.1+	0.0				

1999 RA₇₇ = 1995 GT₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	316.01802	(2000.0)	
<i>n</i>	0.12624024	ω	309.38729
<i>a</i>	3.9355386	Ω	106.89474
<i>e</i>	0.2666099	<i>i</i>	4.83100
<i>P</i>	7.81	<i>H</i>	13.6
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1995 04 02	691	0.3−	0.0	1999 09 07	704	0.2−	0.5+	1999 09 13	704	0.1−	0.7−
1995 04 02	691	0.0	0.1+	1999 09 07	704	0.3−	0.2−	1999 09 13	704	0.1+	0.3−
1995 04 02	691	0.0	0.2−	1999 09 09	704	1.0+	0.9+	1999 09 13	704	0.5−	0.1+
1995 04 08	691	0.4+	0.1+	1999 09 09	704	0.3−	1.8+	1999 09 13	704	0.7−	0.4−
1995 04 08	691	0.1−	0.0	1999 09 09	704	0.0	0.4−	1999 09 30	704	1.0+	0.7+
1995 04 08	691	0.1+	0.1+	1999 09 09	704	1.1+	0.3+	1999 09 30	704	0.3−	0.2+
1999 09 07	704	1.0−	0.2−	1999 09 10	704	0.7+	0.0	1999 09 30	704	0.5−	0.3+
1999 09 07	704	0.2+	0.4−	1999 09 10	704	0.4+	0.2−	1999 09 30	704	0.3−	0.9−
1999 09 07	704	0.1+	0.8−	1999 09 10	704	0.4−	0.4−				

1999 RH₇₈ = 1995 OV₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	312.14968	(2000.0)	
<i>n</i>	0.25784277	ω	217.53404
<i>a</i>	2.4447403	Ω	192.36722
<i>e</i>	0.2611841	<i>i</i>	6.01682
<i>P</i>	3.82	<i>H</i>	16.5
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1995 07 30	691	0.9−	1.0−	1998 06 22	691	0.1−	0.6−	1999 09 08	699	0.0	0.9−
1995 07 30	691	1.5−	0.9−	1998 06 22	691	(2.2+	0.3−)	1999 09 09	704	0.3+	0.5+
1995 07 30	691	1.2−	1.4−	1999 09 07	704	1.1+	0.5−	1999 09 09	704	0.0	1.2+
1995 08 03	691	0.9+	1.6+	1999 09 07	704	0.4+	1.4−	1999 09 09	704	0.0	0.8+
1995 08 03	691	1.2+	1.0+	1999 09 07	704	0.2−	1.3−	1999 09 09	704	0.4−	0.2+
1995 08 03	691	1.1+	1.6+	1999 09 08	699	0.2−	0.6+	1999 09 09	704	0.4−	0.4+
1998 06 22	691	(3.2−	2.8+)	1999 09 08	699	0.3−	0.3−				

1999 RE₈₁ = 1997 CS₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	337.37411	(2000.0)	
<i>n</i>	0.23766392	ω	222.53013
<i>a</i>	2.5812330	Ω	149.82132
<i>e</i>	0.1670795	<i>i</i>	5.93127
<i>P</i>	4.15	<i>H</i>	15.7
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1997 02 03	691	0.4+	0.3−	1999 09 07	704	0.4−	1.3−	1999 09 11	699	1.1−	0.2−
1997 02 03	691	0.2−	0.3+	1999 09 07	704	0.3−	0.4−	1999 09 14	704	0.3−	0.3+
1997 02 03	691	0.1−	0.3−	1999 09 09	704	0.1+	1.3+	1999 09 14	704	0.1+	0.0
1997 02 06	684	0.2+	0.4+	1999 09 09	704	0.0	0.6+	1999 09 14	704	0.2−	0.3−
1997 02 06	684	0.2+	0.1+	1999 09 09	704	0.1+	0.4+	1999 09 14	704	0.5+	0.2−
1997 02 06	684	0.1+	0.3+	1999 09 09	704	0.5+	0.2+	1999 09 14	704	0.2+	0.0
1997 02 07	684	0.3−	0.3−	1999 09 09	704	0.0	0.2+	1999 09 30	704	0.0	0.5+
1997 02 07	684	0.3+	0.1−	1999 09 10	704	1.2+	0.5−	1999 09 30	704	0.4+	0.3−
1997 02 07	684	0.5−	0.2−	1999 09 10	704	0.6−	0.7−	1999 09 30	704	0.6−	0.1+
1999 09 07	704	0.2−	0.0	1999 09 10	704	0.0	0.5+	1999 09 30	704	0.2+	0.5−

1999 09 07	704	0.1+	0.4−	1999 09 11	699	0.3+	0.4+
1999 09 07	704	0.2−	1.0−	1999 09 11	699	0.2+	1.2+

1999 RF₈₁ = 1984 BC₇ = 1998 DZ₂₉

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	49.61799	(2000.0)	
<i>n</i>	0.28641277	ω	147.85863
<i>a</i>	2.2793331	Ω	127.33907
<i>e</i>	0.1589552	<i>i</i>	2.96939
<i>P</i>	3.44	<i>H</i>	15.3
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1984 01 25	675	0.2−	0.6+	1999 07 16	704	0.4+	1.7−	1999 09 10	704	0.5−	0.0
1984 01 26	675	0.2+	0.6−	1999 07 16	704	1.0+	1.6−	1999 09 11	699	0.1+	0.2+
1998 02 22	691	0.2+	0.2−	1999 08 12	699	0.5+	0.8+	1999 09 11	699	0.2+	0.8+
1998 02 22	691	0.3+	0.1−	1999 08 12	699	0.2+	1.1+	1999 09 11	699	0.5−	0.9+
1998 02 22	691	0.3+	0.2−	1999 08 12	699	0.8+	0.4+	1999 09 14	704	0.3−	0.2+
1998 03 03	704	0.1−	1.4−	1999 09 07	704	0.5−	0.1+	1999 09 14	704	0.4+	0.5−
1998 03 03	704	0.5−	0.6+	1999 09 07	704	0.5−	0.3+	1999 09 14	704	0.2+	0.3−
1998 03 03	704	(2.9+	0.7+)	1999 09 07	704	0.1−	0.4−	1999 09 14	704	0.3−	0.2−
1998 03 03	704	1.0−	1.1+	1999 09 07	704	0.9−	0.3−	1999 09 14	704	0.2+	0.3−
1998 03 04	691	1.1+	0.1−	1999 09 07	704	0.6−	0.9−	1999 10 02	704	0.1−	1.2−
1998 03 04	704	1.3−	0.3+	1999 09 09	704	0.4−	0.0	1999 10 02	704	0.3+	0.3−
1998 03 04	691	1.4+	0.1−	1999 09 09	704	0.5−	0.2+	1999 10 02	704	1.1+	0.0
1998 03 04	704	1.0−	0.4−	1999 09 09	704	0.8−	0.1+	1999 10 02	704	0.5+	0.6−
1998 03 04	704	1.2−	1.6−	1999 09 09	704	0.7−	0.1+	1999 10 07	704	0.1−	0.8+
1998 03 04	691	1.1+	0.1−	1999 09 09	704	0.1+	0.2+	1999 10 07	704	0.6+	0.0
1998 03 04	704	(2.5−	0.8−)	1999 09 10	704	0.3−	0.3+	1999 10 07	704	1.1+	0.2−
1999 07 16	704	0.6+	0.8−	1999 09 10	704	1.0−	0.1+	1999 10 07	704	1.6+	0.3−

1999 RO₈₁ = 1978 WF₁₇ = 1991 CE₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	188.29215	(2000.0)	
<i>n</i>	0.17958266	ω	226.75560
<i>a</i>	3.1114282	Ω	293.20689
<i>e</i>	0.0924630	<i>i</i>	1.34977
<i>P</i>	5.49	<i>H</i>	13.1
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1978 11 30	675	0.3+	0.4+	1999 09 11	704	0.3+	0.3+	1999 10 01	691	0.2+	0.4−
1978 12 01	675	0.4−	0.2−	1999 09 11	704	0.3−	0.2−	1999 10 01	691	0.3+	0.5−
1991 02 15	511	0.6+	0.6+	1999 09 11	699	1.2−	0.4+	1999 10 01	691	0.2+	0.3−
1991 02 16	511	1.8−	0.5+	1999 09 11	704	0.2−	0.3+	1999 10 06	704	0.1−	0.2−
1991 02 20	511	0.7+	1.0−	1999 09 11	704	0.1−	0.0	1999 10 06	704	0.4+	0.2−
1991 02 20	511	0.5+	0.3−	1999 09 11	704	0.5+	0.7+	1999 10 06	704	0.1+	0.1−
1999 09 07	704	0.1+	0.8−	1999 09 11	704	0.0	0.6+	1999 10 06	704	0.3−	0.3−
1999 09 07	704	0.0	0.5−	1999 09 11	699	0.3−	0.1−	1999 10 06	704	0.0	0.5−
1999 09 07	704	0.9+	0.9−	1999 09 11	704	0.1+	0.3+	1999 10 07	704	0.1+	0.3−
1999 09 07	704	0.4+	1.6+	1999 09 11	704	0.3−	0.5+	1999 10 07	704	0.7−	0.2−
1999 09 07	704	0.0	1.1+	1999 09 14	704	0.0	0.6−	1999 10 07	704	0.2−	0.3+
1999 09 09	704	1.9+	0.7+	1999 09 14	704	0.2+	0.3−	1999 10 07	704	0.2−	0.5+
1999 09 09	704	0.0	0.0	1999 09 14	704	0.7−	0.3−	1999 10 07	704	1.3+	0.6−
1999 09 09	704	0.1+	1.5−	1999 09 14	704	0.8−	0.2−	1999 10 08	691	0.1+	0.2−
1999 09 09	704	0.2−	1.1−	1999 09 14	704	0.4−	0.1−	1999 10 08	691	0.1+	0.2−
1999 09 11	699	0.3−	1.0+	1999 09 30	699	0.8+	0.7+	1999 10 08	691	0.1+	0.1−
1999 09 11	704	0.0	0.2+	1999 09 30	699	0.3−	0.9+				
1999 09 11	704	0.1−	0.2−	1999 09 30	699	1.3−	0.5+				

1999 RQ₈₁ = 1949 WV

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	351.57462	(2000.0)	P		Q	
<i>n</i>	0.21535252	ω	144.66649	+0.99346050	+0.11024366	
<i>a</i>	2.7565725	Ω	209.04693	-0.11367256	+0.93059456	
<i>e</i>	0.1785198	<i>i</i>	3.50797	-0.01071361	+0.34905600	
<i>P</i>	4.58	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1949 11 19	675	0.3+	0.2+	1999 07 23	704	0.8+	0.4+	1999 09 14	704	0.4-	0.2-
1949 11 19	675	1.4+	0.4-	1999 09 07	704	0.2+	0.2+	1999 09 14	704	0.6-	0.1-
1949 11 21	675	0.6-	0.4-	1999 09 07	704	0.3+	0.1+	1999 10 02	704	0.4+	0.0
1949 11 21	675	0.8-	0.9-	1999 09 07	704	0.1+	0.5+	1999 10 02	704	0.5+	0.5-
1993 03 22	809	1.6-	0.5+	1999 09 07	704	0.0	0.2+	1999 10 02	704	0.1+	0.5-
1993 03 26	809	1.7+	1.4-	1999 09 07	704	0.2-	0.2-	1999 10 02	704	0.4+	0.2-
1993 03 27	809	0.3+	0.7+	1999 09 09	704	0.1-	0.3+	1999 10 02	704	0.7+	0.8-
1993 04 16	413	0.0	0.3+	1999 09 09	704	0.1+	0.4-	1999 10 03	691	0.2-	0.1-
1997 04 09	691	0.5-	1.6-	1999 09 09	704	0.2+	0.3-	1999 10 03	691	0.3-	0.2-
1997 04 09	691	0.5-	1.0-	1999 09 09	704	0.2-	0.7-	1999 10 03	691	0.0	0.2-
1997 04 09	691	(4.3-	1.1-)	1999 09 09	704	0.1-	1.0-	1999 10 06	704	0.2+	0.4-
1998 04 22	704	0.1+	1.0-	1999 09 10	704	0.1-	0.4-	1999 10 06	704	0.4+	0.3-
1998 04 22	704	0.3+	0.2-	1999 09 10	704	0.1+	0.1-	1999 10 06	704	0.1-	0.2-
1998 04 22	704	1.5-	0.4-	1999 09 10	704	0.3-	0.7-	1999 10 06	704	0.2+	0.2-
1998 04 22	704	1.1+	1.6-	1999 09 10	704	0.2+	0.5-	1999 10 06	704	0.1+	0.1-
1998 05 01	704	0.0	0.1-	1999 09 10	704	0.4-	0.5-	1999 10 07	704	0.1-	0.1+
1998 05 01	704	0.5-	0.2-	1999 09 10	704	0.1-	0.5-	1999 10 07	704	0.3+	0.3-
1998 05 01	704	0.1-	0.1+	1999 09 11	699	0.5-	1.7+	1999 10 07	704	0.3+	0.1-
1998 05 01	704	0.3-	0.2-	1999 09 11	699	0.1-	1.2+	1999 10 07	704	0.3+	0.1+
1999 07 23	704	0.2-	0.0	1999 09 11	699	0.8-	1.8+	1999 10 07	704	0.5+	0.3+
1999 07 23	704	0.1+	0.3+	1999 09 14	704	0.4-	0.2+	1999 10 13	691	0.2+	0.3-
1999 07 23	704	0.0	0.4+	1999 09 14	704	0.4-	0.0	1999 10 13	691	0.3+	0.2-
1999 07 23	704	0.4+	0.4+	1999 09 14	704	0.6-	0.2-	1999 10 13	691	0.3+	0.3-

1999 RU₈₁ = 1997 GS₁₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	321.89473	(2000.0)	P		Q	
<i>n</i>	0.21190081	ω	213.75809	+0.75846377	-0.65149792	
<i>a</i>	2.7864268	Ω	186.97020	+0.62439354	+0.73382242	
<i>e</i>	0.2278659	<i>i</i>	7.97063	+0.18672282	+0.19249705	
<i>P</i>	4.65	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1997 04 03	704	0.7+	0.9-	1999 09 09	704	0.2-	0.2+	1999 10 06	704	0.4+	0.5-
1997 04 03	704	0.7-	0.0	1999 09 09	704	0.5+	0.3+	1999 10 06	704	0.2+	0.4-
1997 04 07	704	0.3+	0.5+	1999 09 10	704	0.3-	0.1-	1999 10 07	704	0.5+	0.3+
1997 04 07	704	0.3-	0.3+	1999 09 10	704	0.3+	0.5+	1999 10 07	704	0.1-	0.2+
1999 09 07	704	0.3+	0.4-	1999 09 10	704	0.2-	0.1+	1999 10 07	704	0.5-	0.5-
1999 09 07	704	0.8+	0.2-	1999 09 14	704	0.2+	0.6-	1999 10 07	704	0.9-	0.9+
1999 09 07	704	0.6-	0.0	1999 09 14	704	0.1+	0.1+	1999 10 07	704	0.2-	0.4+
1999 09 07	704	0.1+	0.3+	1999 09 14	704	0.5+	0.5-	1999 10 09	691	0.1-	0.2+
1999 09 07	704	0.3-	0.5+	1999 09 14	704	0.3-	0.2-	1999 10 09	691	0.0	0.2+
1999 09 09	704	0.5-	0.0	1999 10 06	704	0.6+	0.2-	1999 10 09	691	0.2-	0.2+
1999 09 09	704	0.1+	0.4-	1999 10 06	704	0.0	0.3-				
1999 09 09	704	0.6-	0.3+	1999 10 06	704	0.3+	0.5-				

1999 RO₈₂ = 1987 DU₂ = 1998 JNId. G. V. Williams (*MPC* 36042, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	167.83505	(2000.0)	P		Q	
<i>n</i>	0.28048828	ω	212.06929	-0.99552109	-0.06120543	
<i>a</i>	2.3113173	Ω	324.20496	+0.08864606	-0.86921420	
<i>e</i>	0.0537651	<i>i</i>	7.07633	-0.03285782	-0.49063283	
<i>P</i>	3.51	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1987 02 23	010	1.8+	0.3-	1998 05 02	566	0.9+	0.2-	1999 10 04	704	0.5-	0.8-
1987 02 23	010	1.4-	0.0	1998 05 02	566	0.2-	0.0	1999 10 04	704	0.4-	0.7+
1987 02 23	010	0.4-	0.1+	1999 09 07	704	0.4+	0.0	1999 10 04	704	1.1+	0.5+
1994 01 12	691	0.9+	0.4+	1999 09 07	704	0.6+	0.5-	1999 10 04	704	0.4+	0.3-
1994 01 12	691	0.4-	0.2+	1999 09 07	704	0.6+	1.1-	1999 10 07	704	0.2-	0.2-
1994 01 12	691	0.1-	0.6+	1999 09 07	704	0.2+	0.0	1999 10 07	704	0.6-	0.4+
1998 04 01	704	1.5-	0.2-	1999 09 07	704	0.1+	0.1+	1999 10 07	704	0.5-	0.1+
1998 04 01	704	0.0	0.1+	1999 09 09	704	0.3-	0.4-	1999 10 07	704	0.0	0.2+
1998 04 01	704	1.9-	1.8+	1999 09 09	704	0.0	1.0-	1999 10 07	704	0.0	0.4+
1998 04 01	704	1.3+	0.1-	1999 09 09	704	0.2-	0.2-	1999 10 09	704	0.1-	0.4+
1998 04 01	704	(4.1-	1.2+)	1999 09 09	704	0.1+	0.3+	1999 10 09	704	0.2+	0.3+
1998 05 01	566	0.3+	0.0	1999 09 09	704	0.4-	0.5+	1999 10 09	704	0.1+	0.3+
1998 05 01	566	0.5+	0.2-	1999 09 16	704	0.4+	0.6+	1999 10 09	704	0.1-	0.1+
1998 05 01	566	0.3+	0.2+	1999 09 16	704	0.6-	0.7+	1999 10 09	704	0.2-	0.4+
1998 05 02	566	0.8+	0.2+	1999 09 16	704	0.9-	0.4+				

1999 RA₈₃ = 1998 FT₁₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	15.23993	(2000.0)	P		Q	
<i>n</i>	0.26345299	ω	350.82869	+0.72811564	+0.68525689	
<i>a</i>	2.4099089	Ω	325.89675	-0.62701729	+0.65615366	
<i>e</i>	0.1947297	<i>i</i>	1.68125	-0.27694211	+0.31604647	
<i>P</i>	3.74	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 28	704	(1.3+	3.0+)	1999 09 07	704	0.1+	0.3-	1999 09 14	704	0.2-	0.8-
1998 03 28	704	0.8-	0.5+	1999 09 07	704	0.5+	0.1-	1999 09 14	704	0.1-	0.6-
1998 03 28	704	1.7+	0.4+	1999 09 09	704	0.0	0.1-	1999 09 30	699	0.2-	1.6+
1998 03 28	704	0.8+	0.2+	1999 09 09	704	0.3+	0.1+	1999 09 30	699	0.1+	0.9-
1998 03 29	704	1.7-	1.2-	1999 09 09	704	0.2-	0.0	1999 09 30	699	0.6+	1.9+
1998 03 29	704	0.0	1.0+	1999 09 09	704	0.4+	0.1-	1999 10 06	704	0.2+	0.0
1998 03 29	704	0.2+	0.3-	1999 09 09	704	0.1-	0.2+	1999 10 06	704	0.2-	0.2-
1998 03 29	704	(2.5-	0.9+)	1999 09 10	704	0.2+	0.2-	1999 10 06	704	0.1-	0.4-
1999 08 22	699	0.2+	0.5+	1999 09 10	704	0.1+	0.5-	1999 10 06	704	0.8-	0.8-
1999 08 22	699	0.4-	1.1+	1999 09 10	704	0.0	0.0	1999 10 07	704	1.5+	0.5-
1999 08 22	699	0.2-	0.0	1999 09 10	704	0.4-	0.0	1999 10 07	704	0.2-	0.4+
1999 09 07	704	0.1-	0.2+	1999 09 14	704	0.1-	0.1-	1999 10 07	704	1.1-	1.2+
1999 09 07	704	0.3+	0.1-	1999 09 14	704	0.0	0.4-				
1999 09 07	704	0.1+	0.4-	1999 09 14	704	0.4-	0.4-				

1999 RT₈₃ = 1998 HO₁₁₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	192.10594	(2000.0)	P		Q	
<i>n</i>	0.30035795	ω	25.57048	-0.89509371	-0.43814293	
<i>a</i>	2.2082249	Ω	128.19298	+0.38889339	-0.85787268	
<i>e</i>	0.0840774	<i>i</i>	6.03958	+0.21810360	-0.26848694	
<i>P</i>	3.28	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 24	704	0.3-	0.2+	1998 04 23	704	(2.2+ 0.2-)	1999 09 05	699	0.2-	0.1-	
1998 03 24	704	0.3-	0.2+	1998 04 23	704	0.2+ 0.1-	1999 09 05	699	0.2+	0.4+	
1998 03 24	704	0.5+	0.3+	1998 04 23	704	0.9+ 0.9-	1999 09 05	699	0.9+	0.4+	
1998 03 24	704	0.6+	0.3+	1998 04 23	704	0.1- 0.3-	1999 09 07	704	0.4+	0.2-	
1998 03 24	704	0.6-	1.0+	1998 04 24	704	0.2-	0.0	1999 09 07	704	0.1+ 0.7+	
1998 04 04	699	0.6-	0.4-	1998 04 24	704	0.4-	0.1+	1999 09 07	704	0.2-	0.0
1998 04 04	699	1.1+	0.6-	1998 04 24	704	0.5-	0.4+	1999 09 07	704	0.6-	0.5+
1998 04 04	699	1.4-	0.6+	1998 04 24	704	0.3+	0.7-	1999 09 07	704	0.1+	0.5+
1998 04 21	704	0.2+	0.3-	1998 04 24	704	0.5-	0.6-	1999 09 13	704	0.0	1.5-
1998 04 21	704	0.6+	0.5-	1998 05 16	704	0.0	0.1-	1999 09 13	704	0.5-	0.7-
1998 04 21	704	0.9+	0.3-	1998 05 16	704	1.9-	0.1+	1999 09 13	704	0.0	1.1-
1998 04 21	704	0.1-	0.4+	1998 05 16	704	0.4+	0.2+	1999 09 13	704	0.3-	1.5+
1998 04 21	704	0.2+	1.2+	1998 05 16	704	(0.0 2.7-)					
1998 04 23	704	0.7+	0.2+	1998 05 16	704	(5.6- 1.1-)					

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1999 RC₈₄ = 1995 UR₂₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	337.20219		(2000.0)	P		Q	
<i>n</i>	0.24027008	ω	237.81874	+0.97399524		−0.22553665	
<i>a</i>	2.5625337	Ω	135.20532	+0.21682546		+0.90021172	
<i>e</i>	0.1412086	<i>i</i>	1.75667	+0.06572662		+0.37249440	
<i>P</i>	4.10	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1995 10 20	691	0.5−	0.2−	1999 09 07	704	0.1+	0.9−	1999 09 14	704	0.1−	0.3−
1995 10 20	691	0.1+	0.4+	1999 09 07	704	0.2+	0.9−	1999 09 14	704	0.4+	0.1+
1995 10 20	691	0.3−	0.3−	1999 09 07	704	0.1+	1.4−	1999 09 14	704	0.3+	0.2−
1995 10 26	691	0.5+	0.4−	1999 09 09	704	1.8−	1.1−	1999 09 14	704	0.4+	0.5+
1995 10 26	691	0.3+	0.3−	1999 09 09	704	0.0	0.6−	1999 10 02	704	0.3−	0.7+
1995 10 26	691	0.1+	0.3+	1999 09 09	704	0.1−	0.9−	1999 10 02	704	0.2−	1.4+
1999 08 22	703	0.5−	0.2+	1999 09 09	704	0.0	1.0−	1999 10 02	704	0.4+	0.1+
1999 08 22	703	0.3+	0.2+	1999 09 09	704	0.0	1.0−	1999 10 02	704	0.9+	1.6+
1999 08 22	703	0.2−	0.2+	1999 09 10	704	0.1+	0.2−	1999 10 02	704	0.5−	0.4+
1999 08 22	703	0.1−	0.8+	1999 09 10	704	0.0	0.0	1999 10 07	704	0.4−	0.0
1999 09 05	699	0.7+	0.4+	1999 09 10	704	0.1+	0.4+	1999 10 07	704	0.2−	0.5+
1999 09 05	699	0.1+	1.4+	1999 09 11	699	0.4+	0.8+	1999 10 07	704	0.2+	0.3+
1999 09 05	699	(2.6+	0.1−)	1999 09 11	699	0.7+	1.1+	1999 10 07	704	0.0	0.5−
1999 09 07	704	0.4−	0.4−	1999 09 11	699	0.6−	0.8+	1999 10 07	704	0.9−	0.0
1999 09 07	704	1.1+	1.6−	1999 09 14	704	0.4−	0.3+				

1999 RP₈₄ = 1991 NX₃ = 1998 KL₆₄

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	169.97525		(2000.0)	P		Q	
<i>n</i>	0.26893431	ω	264.59355	−0.99702984		−0.04515740	
<i>a</i>	2.3770514	Ω	272.80770	+0.06642301		−0.91418918	
<i>e</i>	0.1702661	<i>i</i>	3.58121	−0.03898044		−0.40276415	
<i>P</i>	3.66	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 07 07	809	0.4+	0.1+	1998 05 22	704	0.6−	0.8+	1999 09 09	704	0.2+	0.1+
1991 07 07	809	0.1−	0.2+	1998 05 24	704	0.1+	0.3−	1999 09 09	704	0.6+	0.4−
1991 07 08	809	(3.3−	0.2+)	1998 05 24	704	0.0	1.1−	1999 09 09	704	0.1+	0.7−
1991 07 08	809	(3.1−	0.3+)	1998 05 24	704	0.2−	0.1−	1999 10 04	704	0.9−	1.6+
1991 07 08	809	(3.0−	0.1+)	1998 05 24	704	0.4+	1.5−	1999 10 04	704	0.3−	0.7+
1991 07 08	809	0.5−	0.2−	1998 05 24	704	0.3+	1.0−	1999 10 04	704	0.1−	0.7−
1991 07 08	809	0.1−	0.0	1999 09 07	704	0.0	0.1+	1999 10 04	704	0.2+	0.8−
1991 07 08	809	0.3+	0.0	1999 09 07	704	0.7+	0.7+	1999 10 04	704	0.2−	0.2+
1991 07 10	809	(2.5+	0.4+)	1999 09 07	704	0.2−	0.4−	1999 10 07	704	0.2−	0.0
1991 07 10	809	(3.0+	0.5+)	1999 09 07	704	0.4+	0.6−	1999 10 07	704	0.7+	0.3+
1998 05 22	704	0.2+	0.4+	1999 09 07	704	0.1+	0.6+	1999 10 07	704	0.6+	0.4−
1998 05 22	704	0.2+	1.4+	1999 09 09	704	0.9−	0.7+	1999 10 07	704	0.2−	0.6−
1998 05 22	704	0.5−	1.2+	1999 09 09	704	0.3−	0.4−				

1999 RD₈₅ = 1992 JU = 1997 EX₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	256.04080		(2000.0)	P		Q	
<i>n</i>	0.19152662	ω	147.04827	−0.11963352		−0.99280855	
<i>a</i>	2.9806887	Ω	309.82229	+0.90966031		−0.10785288	
<i>e</i>	0.0342695	<i>i</i>	0.32522	+0.39775110		−0.05195131	
<i>P</i>	5.15	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 05 01	691	1.0+	0.0	1997 03 10	809	0.6−	1.7−	1999 09 09	704	0.0	0.9−
1992 05 01	691	0.2+	0.5−	1997 03 11	809	0.2−	1.4−	1999 09 09	704	1.0−	0.3−
1992 05 01	691	0.1−	0.1−	1997 03 11	809	0.8−	0.9−	1999 09 09	704	1.2−	1.0−
1992 05 03	691	0.2+	1.3+	1997 03 11	809	1.0−	1.4−	1999 10 18	012	0.6+	0.6+
1992 05 03	691	0.1+	0.9+	1999 09 07	704	1.2+	1.2−	1999 10 18	012	0.0	0.4−
1992 05 03	691	0.3−	1.3+	1999 09 07	704	0.6−	1.3−	1999 10 18	012	1.2+	0.0

1997 03 10	809	0.5−	1.9−	1999 09 07	704	0.0	0.0	1999 10 18	012	0.6+	1.4+
1997 03 10	809	(0.5−	3.1−)	1999 09 09	704	0.1+	1.1−	1999 10 18	012	1.4+	0.3−

1999 RM₈₅ = 1992 ED₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	332.59524		(2000.0)	P		Q	
<i>n</i>	0.20400453	ω	317.44130	+0.95029072		−0.30871175	
<i>a</i>	2.8578724	Ω	60.58222	+0.29673169		+0.85845990	
<i>e</i>	0.0727809	<i>i</i>	2.66847	+0.09432845		+0.40956520	
<i>P</i>	4.83	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 03 06	809	0.4+	1.2−	1999 09 07	704	0.0	0.6−	1999 09 14	704	0.4−	0.6−
1992 03 08	809	0.1−	0.6+	1999 09 07	704	0.1+	0.1+	1999 09 14	704	0.3−	0.6−
1992 03 09	809	0.2−	0.7+	1999 09 07	704	0.2+	0.1−	1999 09 14	704	0.0	0.1−
1999 08 12	699	0.1−	0.4+	1999 09 07	704	0.1−	0.5−	1999 10 02	704	1.3−	0.3+
1999 08 12	699	0.1−	0.3−	1999 09 07	704	0.5+	0.8−	1999 10 02	704	1.1−	0.8+
1999 08 12	699	0.1+	1.0+	1999 09 07	704	0.2+	0.6−	1999 10 02	704	0.3+	0.6+
1999 08 22	703	0.4−	0.1−	1999 09 07	704	0.7+	0.6+	1999 10 02	704	0.7−	0.6+
1999 08 22	703	0.3−	0.3+	1999 09 07	704	0.2+	0.1−	1999 10 07	704	(2.5+	1.9−)
1999 08 22	703	0.1−	0.4+	1999 09 07	704	0.7+	0.2+	1999 10 07	704	1.2+	0.7−
1999 08 22	703	0.0	0.3+	1999 09 14	704	0.3−	0.0	1999 10 07	704	1.7+	0.1−
1999 09 07	704	0.2+	0.0	1999 09 14	704	0.3+	0.7−	1999 10 07	704	0.9−	0.5+

1999 RA₈₆ = 1993 FF₈ = 1996 BP₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	350.48933		(2000.0)	P		Q	
<i>n</i>	0.22382308	ω	251.95145	+0.99700723		+0.05476763	
<i>a</i>	2.6865781	Ω	104.88162	−0.02969177		+0.92292217	
<i>e</i>	0.0968017	<i>i</i>	3.23643	−0.07137915		+0.38107109	
<i>P</i>	4.40	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 03 17	809	0.8+	0.1−	1998 05 24	704	0.6−	1.8−	1999 09 14	704	0.1+	0.3−
1993 03 18	809	0.3−	0.2−	1998 05 24	704	(2.6−	0.1+)	1999 09 14	704	0.5+	0.3−
1993 03 23	809	0.1−	0.2+	1998 08 12	699	0.1+	0.6+	1999 09 14	704	0.7+	0.3−
1995 10 25	691	0.1−	0.4−	1998 08 12	699	0.4+	0.2+	1999 09 14	704	0.2+	0.6−
1995 10 25	691	0.0	0.5−	1998 08 12	699	0.9+	0.0	1999 09 14	704	0.3+	0.2−
1995 10 25	691	0.0	0.5−	1998 08 22	703	0.6−	0.2+	1999 10 02	704	0.2−	0.4−
1996 01 20	327	0.4+	0.3−	1998 08 22	703	0.2−	0.6+	1999 10 02	704	0.7−	0.3+
1996 01 20	327	0.2−	0.2−	1998 08 22	703	0.2+	0.1+	1999 10 02	704	0.8−	0.5+
1996 01 20	327	0.0	0.1−	1998 08 22	703	0.3+	0.4+	1999 10 02	704	0.5−	0.3+
1996 01 21	327	0.6−	0.8−	1999 09 07	704	0.4+	0.6+	1999 10 07	704	(1.8+	2.7−)
1996 01 21	327	0.2−	0.3+	1999 09 07	704	0.1+	0.4+	1999 10 07	704	0.3−	1.1−
1996 01 21	327	0.9+	0.5+	1999 09 07	704	0.1+	0.6−	1999 10 07	704	1.2−	0.6−
1998 05 24	704	0.8+	1.2+	1999 09 07	704	0.7+	0.5+				
1998 05 24	704	1.2−	1.3−	1999 09 07	704	0.1−	0.2+				

1999 RD₈₆ = 1998 FY₂₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	27.33388		(2000.0)	P		Q	
<i>n</i>	0.23441370	ω	135.45882	+0.37399014		+0.92306283	
<i>a</i>	2.6050380	Ω	156.06644	−0.90070680		+0.38461057	
<i>e</i>	0.3008138	<i>i</i>	12.80683	−0.22103990		−0.00545130	
<i>P</i>	4.20	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.8+	0.3+	1999 08 12	699	0.5−	0.7+	1999 09 14	704	0.1−	0.7−
1998 03 20	704	0.5−	0.7−	1999 08 12	699	0.2+	0.5+	1999 09 14	704	0.2+	0.6−
1998 03 20	704	0.8+	0.2+	1999 08 12	699	0.3−	0.9+	1999 09 14	704	0.1−	0.6−
1998 03 20	704	(2.2+	1.0−)	1999 08 22	703	0.9−	0.6−	1999 09 14	704	0.1−	1.1−
1998 03 20	704	0.7−	0.1+	1999 08 22	703	0.0	0.3−	1999 09 14	704	0.1+	0.8−
1998 03 22	704	1.7+	0.1−	1999 08 22	703	0.3−	0.1−	1999 09 30	704	0.5−	0.1+
1998 03 22	704	0.5−	0.7+	1999 08 22	703	0.2+	0.0	1999 09 30	704	0.1−	0.2+

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1998 03 22	704	1.0−	0.8+	1999 09 05	699	0.3+	0.4+	1999 09 30	704	0.3−	0.1+
1998 03 22	704	0.6−	1.7−	1999 09 05	699	0.5+	0.1+	1999 09 30	704	0.1−	0.1+
1998 03 22	704	(3.4−	1.0−)	1999 09 05	699	0.3+	0.9+	1999 09 30	704	0.1−	0.7+
1999 07 16	704	0.5+	0.2+	1999 09 07	704	0.3+	0.3−	1999 10 01	704	0.2−	0.3−
1999 07 16	704	0.6+	0.7−	1999 09 07	704	0.3+	0.3+	1999 10 01	704	0.3−	0.5+
1999 07 16	704	0.1−	0.0	1999 09 07	704	0.5+	0.2−	1999 10 01	704	0.1+	0.3+
1999 07 16	704	0.2+	0.1−	1999 09 07	704	0.7+	0.2+	1999 10 01	704	0.0	0.0
1999 07 16	704	1.0−	0.1+	1999 09 07	704	0.3+	0.1−	1999 10 01	704	0.5−	0.4+

1999 RT₈₆ = 1998 LM

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20373162	<i>ω</i>	247.52481	+0.99799283	−0.03453642		
<i>a</i>	2.8604241	<i>Ω</i>	114.42044	+0.05197480	+0.92557141		
<i>e</i>	0.1052493	<i>i</i>	3.34200	−0.03617903	+0.37699443		
<i>P</i>	4.84	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 03 06	809	0.6+	0.1−	1999 08 22	703	0.7−	0.6+	1999 09 14	704	0.9+	1.0−
1992 03 08	809	1.3+	0.7+	1999 08 22	703	1.3−	0.1−	1999 09 14	704	0.1−	0.1−
1992 04 06	809	1.3−	1.8+	1999 08 22	703	(3.0+	1.5−)	1999 09 14	703	0.1−	0.6+
1998 05 24	704	1.7+	1.5+	1999 09 05	699	0.1−	0.1+	1999 09 14	703	0.6−	0.9+
1998 05 24	704	1.6−	0.3+	1999 09 05	699	0.0	0.8+	1999 09 14	703	1.0−	0.7+
1998 05 24	704	0.1−	0.4+	1999 09 05	699	1.1−	0.8+	1999 09 14	703	0.7−	1.5+
1998 05 24	704	0.9+	0.3−	1999 09 07	704	0.3+	0.7−	1999 10 02	704	0.2+	0.1+
1998 05 24	704	(4.6−	0.7+)	1999 09 07	704	0.1+	0.3−	1999 10 02	704	0.7−	0.1−
1998 06 01	809	0.8−	1.8−	1999 09 07	704	0.7+	0.1−	1999 10 02	704	(2.2−	0.2+)
1998 06 01	809	(0.1+	2.7−)	1999 09 07	704	0.6+	0.5−	1999 10 02	704	0.3−	0.4−
1998 06 01	809	(0.6−	2.1−)	1999 09 07	704	0.8+	0.4−	1999 10 02	704	0.2−	0.8+
1998 06 02	809	(3.9+	2.5+)	1999 09 14	704	0.7+	0.8−	1999 10 07	704	0.7−	0.1+
1998 06 02	809	(3.1+	2.0+)	1999 09 14	704	0.7+	0.5+	1999 10 07	704	0.5−	0.4−
1998 06 02	809	(3.4+	2.5+)	1999 09 14	704	0.6+	0.0	1999 10 07	704	0.6−	0.3+
1999 08 12	699	0.5+	0.8+	1999 09 14	704	1.2+	0.7−	1999 10 07	704	0.1−	0.9−
1999 08 12	699	0.5−	0.4+	1999 09 14	704	0.3+	0.2−	1999 10 07	704	0.1−	0.0
1999 08 12	699	0.2−	0.6+	1999 09 14	704	1.6+	0.5−				
1999 08 22	703	0.5−	0.3+	1999 09 14	704	0.0	0.3−				

1999 RU₈₆ = 1998 HY₁₃₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25640157	<i>ω</i>	257.32844	+0.47522639	+0.87867243		
<i>a</i>	2.4538929	<i>Ω</i>	41.14695	−0.77786052	+0.44387451		
<i>e</i>	0.1279583	<i>i</i>	3.98848	−0.41120905	+0.17581293		
<i>P</i>	3.84	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 03 10	691	0.4+	0.3+	1998 04 19	704	0.1+	0.1−	1999 09 05	699	0.2−	0.4+
1994 03 10	691	0.4−	0.3−	1998 04 19	704	0.4−	1.0−	1999 09 07	704	0.1+	0.8−
1998 03 25	704	0.5+	1.0−	1998 04 19	704	0.5+	0.3+	1999 09 07	704	0.2−	0.2+
1998 03 25	704	0.7−	1.3−	1998 04 20	704	1.8−	0.5−	1999 09 07	704	0.4+	0.4−
1998 03 25	704	1.3−	0.5+	1998 04 20	704	0.9+	0.1+	1999 09 07	704	1.0+	0.0
1998 03 25	704	0.8+	0.4+	1998 04 20	704	0.9−	0.8+	1999 09 07	704	0.2+	0.5+
1998 03 25	704	(4.9−	1.1−)	1998 04 20	704	1.6+	1.1+	1999 09 14	704	0.5−	0.0
1998 03 28	704	0.9+	0.7+	1998 08 22	703	0.3−	0.5+	1999 09 14	704	0.3+	0.3−
1998 03 28	704	0.5+	0.2−	1999 08 22	703	1.0−	0.2−	1999 09 14	704	0.0	0.4−
1998 03 28	704	0.9+	1.1−	1999 08 22	703	1.0−	0.6−	1999 09 14	704	0.4+	0.2+
1998 03 28	704	0.8+	1.5+	1999 08 22	703	1.5+	0.5−	1999 09 14	704	0.5−	0.6+
1998 03 28	704	0.9−	1.5+	1999 09 05	699	0.9−	1.3+				
1998 04 19	704	1.5−	1.4−	1999 09 05	699	0.4+	0.2−				

1999 RW₈₆ = 1997 EQ₅₇

Id. B. G. Marsden

1999 OCT. 26

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17355644	<i>ω</i>	328.62370	+0.98689948	+0.15557028		
<i>a</i>	3.1830410	<i>Ω</i>	22.54479	−0.11501896	+0.86422989		
<i>e</i>	0.1648100	<i>i</i>	6.40139	−0.11313735	+0.47843974		
<i>P</i>	5.68	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 03 10	809	1.1+	0.2+	1999 09 07	704	0.5−	0.5−	1999 10 02	704	0.2+	0.0
1997 03 10	809	0.4+	0.6+	1999 09 14	704	0.1−	0.1−	1999 10 02	704	0.1+	0.1+
1997 03 10	809	0.1−	0.8+	1999 09 14	704	0.1−	0.0	1999 10 02	704	0.2+	0.1+
1997 03 11	809	0.5−	0.2−	1999 09 14	704	0.2−	0.3+	1999 10 07	704	0.0	0.3+
1997 03 11	809	0.7−	0.1−	1999 09 14	704	0.4−	0.3+	1999 10 07	704	0.0	0.3+
1997 03 11	809	0.1−	1.0−	1999 09 14	704	0.0	0.4+	1999 10 07	704	0.0	0.0
1999 09 07	704	0.5+	0.3−	1999 10 01	684	0.3−	0.4−	1999 10 07	704	0.3+	0.2−
1999 09 07	704	0.3+	0.5+	1999 10 01	684	0.2−	0.4−	1999 10 07	704	0.2−	0.0
1999 09 07	704	0.1−	0.5+	1999 10 01	684	0.4−	0.2−				
1999 09 07	704	0.4+	1.0−	1999 10 02	704	0.3+	0.5+				

1999 RD₈₇ = 1992 DZ₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20132293	<i>ω</i>	330.07115	+0.99009814	+0.13958931		
<i>a</i>	2.8831942	<i>Ω</i>	21.91959	−0.11960539	+0.89423614		
<i>e</i>	0.0638183	<i>i</i>	2.27969	−0.07348620	+0.42527233		
<i>P</i>	4.90	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 02 29	809	0.7+	0.0	1999 09 14	704	0.5+	0.4+	1999 10 02	704	0.5−	0.1+
1992 03 03	809	0.6−	0.1+	1999 09 14	704	0.3−	0.3−	1999 10 02	704	0.1−	0.3+
1999 09 07	704	0.2+	0.2+	1999 09 14	704	0.1−	0.8−	1999 10 07	704	0.2+	0.7−
1999 09 07	704	0.3−	0.7+	1999 09 14	704	0.2+	0.1−	1999 10 07	704	0.2−	0.4−
1999 09 07	704	0.1+	1.1−	1999 09 14	703	0.0	0.4+	1999 10 07	704	0.1−	0.9−
1999 09 07	704	0.1−	0.0	1999 09 14	703	0.2+	1.6+	1999 10 14	691	0.4+	0.1+
1999 09 14	704	0.2−	1.2−	1999 09 14	703	0.5−	1.6+	1999 10 14	691	0.5+	0.2+
1999 09 14	704	0.3−	0.0	1999 09 14	703	(0.6−	2.8+)	1999 10 14	691	0.5+	0.2+
1999 09 14	704	1.4+	0.6−	1999 10 02	704	1.0−	0.3−				
1999 09 14	704	0.1−	0.4−	1999 10 02	704	0.3−	1.0+				

1999 RJ₈₇ = 1980 FT₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18151286	<i>ω</i>	264.81305	+0.05864190	−0.99826566		
<i>a</i>	3.0893310	<i>Ω</i>	181.84898	+0.96765236	+0.05811662		
<i>e</i>	0.1425855	<i>i</i>	9.23230	+0.24537733	+0.00938762		
<i>P</i>	5.43	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1980 03 16	809	0.2−	0.5+	1999 09 07	704	0.1−	0.4+	1999 09 14	703	0.1+	0.8−
1980 03 16	809	0.9+	0.7+	1999 09 07	704	0.6+	0.7−	1999 09 14	703	0.0	0.5−
1980 03 16	809	0.4+	0.2+	1999 09 07	704	0.4+	0.2+	1999 09 14	703	0.1−	0.1+
1980 03 16	809	0.2−	0.5+	1999 09 07	704	0.2−	0.5+	1999 09 14	703	0.3−	0.6+
1980 03 17	809	0.5−	0.4−	1999 09 14	704	0.2+	0.1−	1999 10 02	704	0.5−	0.1−
1980 03 17	809	0.4−	0.7−	1999 09 14	704	0.3−	0.4−	1999 10 02	704	0.2+	0.4+
1980 03 17	809	0.1−	0.9−	1999 09 14	704	0.0	0.2+	1999 10 02	704	0.8+	0.1+
1980 03 17	809	0.1+	0.1+	1999 09 14	704	0.4−	0.4+	1999 10 02	704	0.4−	0.5−

1999 RY₈₇ = 1998 FE₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

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Residuals in seconds of arc

1998 03 20	691	0.5+	0.1+	1999 08 22	703	0.7−	0.1+	1999 09 14	703	0.1−	0.2+
1998 03 20	691	0.4+	0.4+	1999 08 22	703	0.0	0.6+	1999 09 14	703	0.2+	0.6+
1998 03 20	691	0.4+	0.0	1999 08 22	703	1.4−	0.8+	1999 09 14	703	0.1+	0.0
1998 03 25	691	0.3+	0.1−	1999 09 07	704	0.5+	0.2−	1999 09 29	120	1.0−	0.1−
1998 03 25	691	0.1+	0.1−	1999 09 07	704	0.6+	0.8−	1999 09 29	120	0.5−	0.2+
1998 03 25	691	0.2+	0.0	1999 09 07	704	0.1+	0.2+	1999 09 30	120	0.3+	0.1−
1998 04 03	691	0.3−	0.1−	1999 09 07	704	1.1+	0.2+	1999 09 30	120	(2.9−	0.3+)
1998 04 03	691	0.2−	0.1−	1999 09 07	704	0.9+	0.5+	1999 10 07	704	1.8−	0.5−
1998 04 03	691	0.2−	0.3+	1999 09 14	704	1.1+	0.8−	1999 10 07	704	0.3−	0.2−
1998 05 02	691	1.1−	0.1+	1999 09 14	704	0.5+	0.9−	1999 10 07	704	0.0	0.3+
1998 05 02	691	0.0	0.2+	1999 09 14	704	(2.0+	0.2−)	1999 10 09	691	0.0	0.1+
1998 05 02	691	0.0	0.3+	1999 09 14	704	0.7+	1.2−	1999 10 09	691	0.0	0.2+
1999 08 22	703	0.8−	0.7+	1999 09 14	703	0.2−	0.8+	1999 10 09	691	0.1−	0.2+

1999 RP₈₈ = 1997 ES₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.22853318	<i>ω</i>	92.28621			+0.98425754			−0.17443523		
<i>a</i>	2.6495363	<i>Ω</i>	277.76054			+0.14859250			+0.90387084		
<i>e</i>	0.1007476	<i>i</i>	1.64541			+0.09569414			+0.39062752		
<i>P</i>	4.31	<i>H</i>	15.0			<i>G</i>	0.15		<i>U</i>	5	

Residuals in seconds of arc

1997 03 11	704	0.8−	0.1+	1999 09 07	704	0.3+	0.5−	1999 10 02	704	0.6+	0.2+
1997 03 11	704	0.1+	1.8+	1999 09 09	704	0.3−	0.6+	1999 10 02	704	0.2+	0.6+
1997 03 12	704	0.3−	1.1−	1999 09 09	704	0.2+	0.1−	1999 10 07	704	0.4+	0.9+
1997 03 12	704	0.9+	0.8−	1999 09 09	704	0.1−	0.1−	1999 10 07	704	1.0−	0.3−
1999 09 07	704	0.3−	0.6−	1999 09 09	704	0.5−	0.4+	1999 10 07	704	0.1−	0.4+
1999 09 07	704	0.3+	0.1−	1999 09 09	704	0.5+	0.6+	1999 10 07	704	0.8−	1.4−
1999 09 07	704	0.3−	0.5−	1999 10 02	704	1.3+	0.6−				
1999 09 07	704	0.1−	0.3+	1999 10 02	704	0.1−	0.0				

1999 RX₈₈ = 1997 AK₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.26866053	<i>ω</i>	161.57345			+0.07115868			−0.99714706		
<i>a</i>	2.3786660	<i>Ω</i>	284.34007			+0.91185705			+0.07526386		
<i>e</i>	0.1738723	<i>i</i>	1.48945			+0.40429342			+0.00575272		
<i>P</i>	3.67	<i>H</i>	14.9			<i>G</i>	0.15		<i>U</i>	5	

Residuals in seconds of arc

1997 01 02	691	0.0	0.1+	1999 09 07	704	0.5−	0.1−	1999 10 06	704	0.1−	0.0
1997 01 02	691	0.0	0.2−	1999 09 07	704	0.8+	0.3+	1999 10 06	704	0.1−	0.2−
1997 01 02	691	0.1−	0.0	1999 09 09	704	0.7+	0.8+	1999 10 06	704	0.1−	0.1−
1997 01 10	691	0.1+	0.1+	1999 09 09	704	0.7−	0.3+	1999 10 06	704	0.3−	0.0
1997 01 10	691	0.1−	0.0	1999 09 09	704	0.7−	0.8−	1999 10 06	704	0.2+	0.3+
1997 01 10	691	0.1+	0.2+	1999 09 09	704	0.0	0.3−	1999 10 07	704	1.3+	0.3−
1999 09 07	704	0.3+	0.1−	1999 09 16	704	1.0−	0.0	1999 10 07	704	0.5−	0.6+
1999 09 07	704	0.5−	0.1−	1999 09 16	704	0.4+	0.9+	1999 10 07	704	0.3+	0.4−
1999 09 07	704	0.1−	0.1−	1999 09 16	704	1.0+	0.1−	1999 10 07	704	0.6−	0.6−

1999 RZ₈₈ = 1998 FS₂₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.29416575	<i>ω</i>	288.15528			−0.11507005			+0.99303629		
<i>a</i>	2.2391060	<i>Ω</i>	335.19535			−0.88712165			−0.11416999		
<i>e</i>	0.1272297	<i>i</i>	3.45123			−0.44696092			−0.02905413		
<i>P</i>	3.35	<i>H</i>	14.8			<i>G</i>	0.15		<i>U</i>	4	

Residuals in seconds of arc

1998 03 20	704	0.0	0.0	1999 08 22	699	0.7−	1.3+	1999 10 06	704	0.5−	0.1+
1998 03 20	704	0.5−	0.3+	1999 08 22	699	0.1−	0.9+	1999 10 06	704	0.5−	0.1+

1998 03 20	704	0.1+	0.9−	1999 09 07	704	0.3−	0.0	1999 10 06	704	0.3−	0.3+
1998 03 20	704	0.8+	0.0	1999 09 07	704	0.2−	0.1+	1999 10 06	704	0.4−	0.2+
1998 03 20	704	0.1−	0.5+	1999 09 07	704	0.2−	0.2−	1999 10 07	704	1.2+	0.5−
1998 03 22	704	1.0+	0.7+	1999 09 07	704	0.3−	0.5+	1999 10 07	704	0.2+	0.1−
1998 03 22	704	0.8+	0.1+	1999 09 07	704	0.1+	0.1+	1999 10 07	704	0.1+	1.3−
1998 03 22	704	(1.3+	2.6+)	1999 09 09	704	0.3+	0.2−	1999 10 07	704	1.0+	1.1−
1998 03 22	704	0.0	0.1−	1999 09 09	704	0.4+	0.1−	1999 10 07	106	0.6−	0.7−
1998 03 26	704	0.3+	0.8+	1999 09 09	704	0.3+	0.0	1999 10 07	106	0.7−	1.0+
1998 03 26	704	1.1−	1.2+	1999 09 09	704	0.6+	0.3+	1999 10 07	106	0.9−	0.4+
1998 03 26	704	(2.2−	2.3+)	1999 09 09	704	0.2+	1.0+				
1999 08 22	699	0.2+	0.3+	1999 10 06	704	0.2−	0.2+				

1999 RE₈₉ = 1997 EW₄₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.21041433	<i>ω</i>	113.37919			+0.74891386			+0.66242577		
<i>a</i>	2.7995346	<i>Ω</i>	205.14711			−0.62232370			+0.69378607		
<i>e</i>	0.1031892	<i>i</i>	2.41312			−0.22768672			+0.28258272		
<i>P</i>	4.68	<i>H</i>	14.3			<i>G</i>	0.15		<i>U</i>	4	

Residuals in seconds of arc

1997 03 11	704	0.4−	0.6+	1999 09 07	704	0.8+	0.7+	1999 10 02	704	0.5−	0.0
1997 03 11	704	0.6+	1.0+	1999 09 09	704	0.1+	0.4+	1999 10 02	704	0.1−	0.1−
1997 03 12	704	0.1−	0.1−	1999 09 09	704	0.7−	0.0	1999 10 02	704	0.3+	0.9−
1997 03 12	704	0.0	1.4−	1999 09 09	704	0.2−	0.4−	1999 10 06	704	0.1+	0.1+
1999 09 07	704	0.7+	0.1+	1999 09 09	704	0.1+	0.3−	1999 10 06	704	0.2−	0.1−
1999 09 07	704	0.3+	0.7+	1999 09 09	704	1.0−	0.3−	1999 10 06	704	0.2−	0.2−
1999 09 07	704	0.6+	0.7−	1999 10 02	704	1.2+	1.1+	1999 10 06	704	0.1−	0.0
1999 09 07	704	1.0−	0.2−	1999 10 02	704	0.2−	0.1−	1999 10 06	704	0.2−	0.1+

1999 RG₈₉ = 1998 FS₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.25991510	<i>ω</i>	99.18734			+0.17538595			+0.98449824		
<i>a</i>	2.4317283	<i>Ω</i>	180.91914			−0.94026653			+0.16698561		
<i>e</i>	0.1544578	<i>i</i>	6.18219			−0.29178525			+0.05365652		
<i>P</i>	3.79	<i>H</i>	15.8			<i>G</i>	0.15		<i>U</i>	4	

Residuals in seconds of arc

1998 03 20	704	(2.3−	0.9−)	1998 03 24	566	0.0	0.1−	1999 09 09	704	0.4−	0.6+
1998 03 20	704	0.1−	1.7−	1999 09 07	704	0.0	0.2+	1999 09 14	703	0.6−	0.0
1998 03 20	704	1.2+	1.0+	1999 09 07	704	0.1+	0.4+	1999 09 14	703	0.4−	0.6+
1998 03 20	704	0.1−	0.3+	1999 09 07	704	0.0	0.3−	1999 09 14	703	0.6+	0.0
1998 03 22	704	1.0−	1.0+	1999 09 07	704	0.3+	0.6+	1999 09 14	703	0.1−	0.5−
1998 03 22	704	(2.3−	0.6−)	1999 09 07	704	0.1−	0.9−	1999 09 29	703	0.2−	0.5−
1998 03 22	704	0.5+	0.0	1999 09 09	704	0.2−	0.1−	1999 09 29	703	0.5+	0.7+
1998 03 22	704	(2.3+	0.2+)	1999 09 09	704	0.7+	0.3−	1999 09 29	703	0.3−	0.0
1998 03 24	566	0.0	0.1+	1999 09 09	704	0.1−	0.2−	1999 09 29	703	0.2+	0.1+
1998 03 24	566	0.5−	0.3−	1999 09 09	704	0.1−	0.0				

1999 RY₈₉ = 1992 DZ₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>			(2000.0)			P			Q		
<i>n</i>	0.20562399	<i>ω</i>	311.02747			+0.81031551			−0.58311648		
<i>a</i>	2.8428473	<i>Ω</i>	84.72088			+0.55360390			+0.72931725		
<i>e</i>	0.0868763	<i>i</i>	3.33918			+0.19212366			+0.35787081		
<i>P</i>	4.79	<i>H</i>	13.9			<i>G</i>	0.15		<i>U</i>	5	

1999 08 22	703	1.1+	1.9+	1999 09 14	704	0.3+	0.5-	1999 10 07	704	0.2-	0.3+
1999 09 07	704	0.3+	0.7-	1999 09 14	704	0.5+	0.9-	1999 10 07	704	0.4-	0.2-
1999 09 07	704	0.4-	0.5-	1999 10 02	704	0.1+	0.5+	1999 10 07	704	0.0	0.7+

1999 RQ₉₀ = 1998 FF₈₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28153569	ω	159.63107	+0.47838091	+0.87546346		
<i>a</i>	2.3055811	Ω	138.86705	-0.81945222	+0.47314644		
<i>e</i>	0.1709430	<i>i</i>	5.99206	-0.31567351	+0.09846917		
<i>P</i>	3.50	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 26	566	0.7+	0.1-	1998 03 25	704	1.0-	0.4+	1999 09 07	704	0.2-	0.3-
1998 02 26	566	0.9+	0.7-	1998 03 26	704	0.4-	0.1+	1999 09 07	704	0.3-	0.1-
1998 02 26	566	0.1-	0.5-	1998 03 26	704	0.3-	0.7-	1999 09 07	704	0.3-	0.0
1998 03 24	704	0.1-	1.3+	1998 03 26	704	0.8-	0.4-	1999 09 07	704	0.4-	0.1-
1998 03 24	704	0.1+	0.3-	1999 07 16	704	0.2+	0.0	1999 09 07	704	1.0-	0.3-
1998 03 24	704	0.6+	0.9-	1999 07 16	704	0.2+	0.5-	1999 09 14	704	0.2+	0.0
1998 03 24	704	0.3-	1.6-	1999 07 16	704	0.2-	0.4-	1999 09 14	704	0.2+	0.4-
1998 03 25	704	0.1+	0.0	1999 07 16	704	0.6+	0.2+	1999 09 14	704	0.1+	0.4-
1998 03 25	704	0.1-	0.2+	1999 09 05	699	0.2+	0.1+	1999 09 14	704	0.1+	0.5-
1998 03 25	704	0.1+	0.6+	1999 09 05	699	0.6+	0.7+	1999 09 14	704	0.3+	0.7-
1998 03 25	704	0.1-	0.5+	1999 09 05	699	0.5+	0.6+				

1999 RE₉₁ = 1981 UL₁₇ = 1997 ET₃₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27212990	ω	281.76121	+0.81283843	-0.58052369		
<i>a</i>	2.3584058	Ω	113.74410	+0.55270084	+0.74275477		
<i>e</i>	0.2192635	<i>i</i>	2.99408	+0.18388981	+0.33362794		
<i>P</i>	3.62	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1981 10 24	095	1.8+	0.6-	1999 08 22	699	0.3+	0.4+	1999 09 14	704	0.5-	0.0
1981 10 28	095	1.4-	0.8-	1999 08 22	699	0.5+	0.7-	1999 09 14	704	0.5-	0.2+
1997 02 03	566	(2.7-	0.6+)	1999 09 05	699	0.4+	0.6+	1999 09 14	704	0.7-	0.6+
1997 02 03	566	0.1+	0.7+	1999 09 05	699	0.3+	0.1+	1999 09 14	704	0.6-	0.4+
1997 02 03	566	0.3-	0.7+	1999 09 05	699	0.6+	0.0	1999 09 14	704	0.5-	0.3+
1997 03 04	704	0.0	0.2-	1999 09 07	704	0.3+	0.8+	1999 10 07	704	0.8+	0.2-
1997 03 04	704	0.4+	0.2+	1999 09 07	704	0.7-	0.5+	1999 10 07	704	0.1+	0.5+
1997 03 06	704	0.6+	0.4+	1999 09 07	704	0.7-	0.3-	1999 10 07	704	0.6+	0.1-
1997 03 06	704	0.3-	0.3+	1999 09 07	704	1.2-	0.1+	1999 10 07	704	0.6+	0.2+
1999 08 22	699	0.3+	0.1+	1999 09 07	704	1.2-	0.8-	1999 10 07	704	0.8+	0.5-

1999 RF₉₁ = 1976 UZ₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21243823	ω	240.39254	+0.79133529	-0.61049112		
<i>a</i>	2.7817255	Ω	157.18223	+0.58623989	+0.74236607		
<i>e</i>	0.0789218	<i>i</i>	4.88160	+0.17352592	+0.27603118		
<i>P</i>	4.64	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1976 10 22	381	0.8+	0.4+	1999 09 07	704	0.3+	0.8+	1999 10 02	704	1.2-	0.6-
1976 10 22	381	0.3+	0.0	1999 09 07	704	1.3+	0.4+	1999 10 02	704	0.4-	0.6-
1976 10 24	381	1.3-	0.2+	1999 09 07	704	0.0	0.6+	1999 10 02	704	0.5+	0.3-
1999 08 22	703	0.4+	0.4+	1999 09 14	704	0.1+	0.4+	1999 10 02	704	0.6-	0.7-
1999 08 22	703	0.8-	0.2-	1999 09 14	704	0.2-	1.1+	1999 10 07	704	1.6+	1.4-
1999 08 22	703	0.2-	1.3-	1999 09 14	704	0.2+	0.6+	1999 10 07	704	0.2-	0.8-
1999 08 22	703	1.6+	0.5-	1999 09 14	704	0.3-	0.6+	1999 10 07	704	0.9-	0.3-
1999 09 07	704	0.3-	0.5+	1999 09 14	704	0.2-	0.5+	1999 10 07	704	1.2-	0.5-
1999 09 07	704	0.0	0.8+	1999 10 02	704	0.7+	0.1-				

1999 RV₉₁ = 1972 TQ₂ = 1990 RS₅ = 1990 SU₂₇ = 1993 FJ₅₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21846187	ω	324.31722	+0.79141322	+0.61125591		
<i>a</i>	2.7303540	Ω	357.97616	-0.51761980	+0.66525296		
<i>e</i>	0.1110181	<i>i</i>	9.11853	-0.32516896	+0.42872451		
<i>P</i>	4.51	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1972 10 05	095	1.0+	0.5-	1999 09 07	704	0.4+	0.1+	1999 10 04	704	0.1-	0.9+
1990 09 15	675	2.8+	3.7+	1999 09 07	704	0.0	0.0	1999 10 04	704	0.1+	0.7+
1990 09 17	675	0.5-	3.1-	1999 09 07	704	0.2-	0.1-	1999 10 04	704	0.3-	0.5+
1990 09 17	675	0.8-	2.0-	1999 09 09	704	0.2-	0.1+	1999 10 04	704	0.2+	0.4+
1990 09 23	095	1.9-	1.0-	1999 09 09	704	0.3+	0.5-	1999 10 06	704	0.4-	0.4+
1993 03 19	809	0.3+	1.6+	1999 09 09	704	0.1+	0.2+	1999 10 06	704	0.7-	0.2+
1993 03 20	809	1.2+	0.8+	1999 09 09	704	0.1+	0.3+	1999 10 06	704	0.4-	0.3+
1999 09 07	704	0.2+	0.5-	1999 09 09	704	0.3+	0.3+	1999 10 06	704	0.6-	0.3+
1999 09 07	704	0.0	0.2+	1999 10 04	704	0.0	0.6+	1999 10 06	704	0.6-	0.5+

1999 RE₉₂ = 1990 UU₆ = 1993 FY₄₂ = 1998 KT₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22033020	ω	160.35243	+0.97731933	+0.21119528		
<i>a</i>	2.7148971	Ω	187.50678	-0.20674482	+0.93557276		
<i>e</i>	0.1298654	<i>i</i>	6.85966	-0.04586398	+0.28301973		
<i>P</i>	4.47	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1990 10 22	675	0.3-	1.1-	1999 09 07	704	0.0	0.3+	1999 09 29	703	0.4-	0.0
1990 10 22	675	0.8+	0.7-	1999 09 07	704	0.2-	0.5+	1999 09 29	703	0.2-	0.7+
1993 03 19	809	0.5-	0.8+	1999 09 07	704	0.2-	0.5+	1999 09 29	703	0.3-	0.0
1993 03 20	809	0.3-	1.1+	1999 09 07	704	0.4+	0.2-	1999 10 02	704	0.4+	0.6+
1993 03 24	809	1.3+	0.4+	1999 09 07	704	0.6-	0.4+	1999 10 02	704	0.4+	0.1-
1998 05 22	704	1.4+	0.1+	1999 09 08	699	0.1-	0.4-	1999 10 02	704	0.2+	0.1+
1998 05 22	704	1.0-	0.7+	1999 09 08	699	0.3-	0.2+	1999 10 02	704	0.5+	0.2+
1998 05 22	704	0.5+	0.3-	1999 09 08	699	0.4-	0.1-	1999 10 02	704	0.0	0.0
1998 05 22	704	0.6-	0.2+	1999 09 09	704	0.1+	0.1+	1999 10 07	704	0.4-	0.1+
1998 05 24	704	0.2-	1.4-	1999 09 09	704	0.4+	0.2+	1999 10 07	704	0.1+	0.4-
1998 05 24	704	0.1+	1.7+	1999 09 09	704	0.2+	0.3+	1999 10 07	704	0.4-	0.2-
1998 05 24	704	(2.7+	0.1+)	1999 09 09	704	0.1+	0.2-	1999 10 07	704	0.4-	0.1+
1998 05 24	704	0.4+	1.4-	1999 09 09	704	0.7+	0.3+	1999 10 07	704	0.6-	0.1+
1998 05 24	704	0.5-	0.3-	1999 09 29	703	0.2-	0.4+				

1999 RF₉₂ = 1997 JK₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18679377	ω	225.57993	+0.66205338	-0.74937149		
<i>a</i>	3.0308268	Ω	183.03009	+0.73392621	+0.65131398		
<i>e</i>	0.1974340	<i>i</i>	12.34352	+0.15178155	+0.11929991		
<i>P</i>	5.28	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 05 01	691	0.0	0.5+	1999 09 07	704	0.1+	0.2+	1999 09 30	703	0.3-	0.0
1997 05 01	691	0.5+	0.5+	1999 09 07	704	0.1-	0.3-	1999 10 02	704	0.0	0.1-
1997 05 01	691	0.4+	0.1+	1999 09 09	704	1.1-	0.1+	1999 10 02	704	0.4-	0.5-
1997 05 10	691	0.3-	0.0	1999 09 09	704	0.4-	0.2+	1999 10 02	704	0.1-	0.4+
1997 05 10	691	0.3-	0.2-	1999 09 09	704	0.3-	0.3+	1999 10 02	704	0.5-	0.2-
1997 05 10	691	0.2-	0.1-	1999 09 09	704	0.7+	0.6-	1999 10 02	704	0.6-	0.2+
1999 07 23	704	0.7-	0.2-	1999 09 09	704	0.4-	0.4-	1999 10 07	703	0.6-	0.3+
1999 07 23	704	0.2+	0.4-	1999 09 16	691	0.1-	0.1-	1999 10 07	703	0.1-	0.6+
1999 07 23	704	0.4+	0.7+	1999 09 16	691	0.1-	0.2-	1999 10 07	703	0.0	0.8+
1999 07 23	704	1.4-	1.3-	1999 09 16	691	0.1-	0.3-	1999 10 07	703	0.4-	0.4+
1999 09 05	699	0.0	0.6+	1999 09 18	691	0.4+	0.5-	1999 10 07	704	0.1+	0.5+
1999 09 05	699	0.8+	0.3+	1999 09 18	691	0.4+	0.5-	1999 10 07	704	0.1+	0.5+
1999 09 05	699	1.4+	0.2-	1999 09 18	691	0.6+	0.6-	1999 10 07	704	0.3+	0.1+

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1999 09 07	704	0.5+	0.6+	1999 09 30	703	0.1-	0.2+	1999 10 07	704	0.4+	0.2-
1999 09 07	704	0.1+	0.2-	1999 09 30	703	0.0	0.0	1999 10 07	704	0.3+	0.1-
1999 09 07	704	0.1+	0.1+	1999 09 30	703	0.4+	0.0				

1999 RK₉₂ = 1974 HF₂ = 1984 GG₁ = 1994 AA₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	216.66243		(2000.0)	P	Q
n	0.29013331	ω	144.21691	-0.78173268	-0.62359207
a	2.2598051	Ω	357.18779	+0.54472373	-0.67876393
e	0.0914494	i	6.07339	+0.30359526	-0.38783044
P	3.40	H	14.0	G 0.15	U 4

Residuals in seconds of arc

1974 04 24	805	0.5+	1.1+	1999 09 07	704	0.1+	0.2+	1999 10 04	704	0.2-	0.2+
1984 04 03	095	0.8+	0.9+	1999 09 07	704	0.2-	0.2-	1999 10 04	704	0.3-	0.1+
1994 01 08	402	1.4+	0.5+	1999 09 07	704	0.4-	0.0	1999 10 04	704	0.4+	0.0
1994 01 08	402	0.9+	1.0-	1999 09 09	704	0.6-	0.1+	1999 10 06	704	0.3+	0.0
1994 01 09	402	1.5-	0.3+	1999 09 09	704	0.1+	0.1+	1999 10 06	704	0.1+	0.1+
1994 01 09	402	1.5+	2.5+	1999 09 09	704	0.3-	0.5+	1999 10 06	704	0.1+	0.1+
1994 01 15	402	1.5-	1.5-	1999 09 09	704	0.1-	0.4+	1999 10 06	704	0.1+	0.2+
1994 01 15	402	0.6-	0.2-	1999 09 09	704	0.6-	0.5+	1999 10 06	704	0.0	0.4+
1999 09 07	704	0.1-	0.1+	1999 10 04	704	0.1+	0.1-				
1999 09 07	704	0.1+	0.2+	1999 10 04	704	0.1-	0.4-				

1999 RL₉₂ = 1997 EO₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	357.30149		(2000.0)	P	Q
<i>n</i>	0.19502140	ω	170.36213	+0.99833969	+0.05749867
<i>a</i>	2.9449723	Ω	186.34463	−0.05469915	+0.92770487
<i>e</i>	0.1179462	<i>i</i>	1.77849	−0.01805167	+0.36885984
<i>P</i>	5.05	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1997 03 05	691	0.0	0.1+	1999 09 09	704	0.5+	0.0	1999 09 29	703	0.0	0.0
1997 03 05	691	0.1-	0.1+	1999 09 09	704	0.6+	0.4+	1999 09 29	703	0.4+	0.5+
1997 03 05	691	0.4+	0.4-	1999 09 09	704	0.3-	0.3-	1999 10 02	704	0.6+	0.0
1997 03 10	691	0.0	0.1+	1999 09 09	704	0.2-	0.0	1999 10 02	704	0.5+	0.6+
1997 03 10	691	0.2-	0.0	1999 09 09	704	0.5+	0.4-	1999 10 02	704	0.2-	0.8+
1997 03 10	691	0.1-	0.1-	1999 09 16	691	0.3-	0.1-	1999 10 02	704	0.8-	0.3-
1999 09 07	691	0.3-	0.1-	1999 09 16	691	0.3-	0.4-	1999 10 07	704	0.2+	0.5+
1999 09 07	704	0.3-	0.1+	1999 09 16	691	0.4-	0.2-	1999 10 07	704	0.7-	0.1+
1999 09 07	691	0.3-	0.2-	1999 09 18	691	0.4+	0.3-	1999 10 07	704	0.5+	0.4-
1999 09 07	704	0.2+	0.6+	1999 09 18	691	0.4+	0.3-	1999 10 07	704	0.4+	0.7-
1999 09 07	691	0.0	0.2-	1999 09 18	691	0.5+	0.4-	1999 10 07	704	0.5-	0.2+
1999 09 07	704	0.2+	0.3-	1999 09 29	703	0.2-	0.3-				
1999 09 07	704	0.7-	1.1+	1999 09 29	703	0.1-	0.1-				

1999 RO₉₂ = 1996 DK₄ = 1997 GB₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	299.93861		(2000.0)	P	Q
n	0.18429804	ω	271.47655	+0.39882600	-0.91656592
a	3.0581274	Ω	154.95624	+0.86629776	+0.36617872
e	0.1081541	i	3.93702	+0.30077567	+0.16068624
P	5.35	H	13.7	G 0.15	U 4

Residuals in seconds of arc

1996 02 16	010	0.3-	1.0+	1997 04 08	704	0.2+	0.6+	1999 10 02	704	0.6-	0.0
1996 02 16	010	0.0	0.1+	1997 04 08	704	0.7-	0.7+	1999 10 02	704	0.5+	0.0
1996 02 16	010	0.5+	0.1+	1997 04 08	704	0.3-	0.3+	1999 10 02	704	0.4+	0.1-
1996 02 17	010	0.1+	1.3-	1999 09 07	704	0.3+	0.3+	1999 10 07	703	0.9-	1.2+
1996 02 17	010	0.2+	0.9-	1999 09 07	704	0.4-	0.6+	1999 10 07	703	0.9-	0.7+
1996 02 17	010	0.5+	0.4-	1999 09 07	704	0.6-	0.1-	1999 10 07	703	0.6-	0.6+
1996 03 15	566	0.3-	0.9+	1999 09 07	704	0.2-	0.3+	1999 10 07	703	0.6-	0.8+
1996 03 15	566	0.1-	1.3+	1999 09 07	704	0.7+	0.6-	1999 10 07	704	0.4+	0.4-
1996 03 15	566	0.4-	0.9+	1999 09 14	704	0.0	0.2+	1999 10 07	704	0.6+	0.4-

1997 04 02	704	1.2+	0.3-	1999 09 14	704	0.2-	0.1-	1999 10 07	704	0.2-	0.3-
1997 04 02	704	0.3+	0.1+	1999 09 14	704	0.1+	0.2+	1999 10 07	704	0.4+	0.5-
1997 04 06	704	0.6-	0.7-	1999 09 14	704	0.4+	0.2+	1999 10 07	704	0.3+	0.2-
1997 04 06	704	0.1+	0.2-	1999 09 14	704	0.3-	0.4+				
1997 04 08	704	0.3+	1.1+	1999 10 02	704	0.5+	0.5-				

1999 RB₉₃ = 1978 VF₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	341.24059		(2000.0)	P	Q
n	0.18376091	ω	323.99733	+0.94737259	-0.31742556
a	3.0640837	Ω	54.56179	+0.30434961	+0.85279915
e	0.1948735	i	2.92305	+0.09927985	+0.41469823
P	5.36	H	14.2	G 0.15	U 4

Residuals in seconds of arc

1978 11 05	675	0.4+	0.4+	1999 09 07	704	0.1+	0.7+	1999 10 02	704	0.4+	0.3-
1978 11 06	675	0.4+	0.1-	1999 09 07	704	0.1-	1.0+	1999 10 02	704	0.6+	0.6-
1978 11 07	675	0.2+	0.5+	1999 09 07	704	0.3+	0.2+	1999 10 07	703	0.8-	0.4+
1978 11 08	675	0.8-	0.5+	1999 09 14	704	0.3+	0.0	1999 10 07	703	0.1+	0.6+
1978 11 29	675	0.0	0.0	1999 09 14	704	0.1-	0.3+	1999 10 07	703	0.0	0.7+
1978 11 30	675	0.3-	0.8-	1999 09 14	704	0.1+	0.1-	1999 10 07	703	0.4-	0.1+
1999 08 22	699	0.1+	0.6+	1999 09 14	704	0.0	0.0	1999 10 07	704	0.7-	0.0
1999 08 22	699	1.2-	0.5-	1999 09 14	704	0.1+	0.1+	1999 10 07	704	0.2-	1.3-
1999 08 22	699	0.2-	0.0	1999 10 02	704	0.2-	0.3-	1999 10 07	704	0.0	0.2-
1999 09 07	704	0.2-	0.1+	1999 10 02	704	0.7+	0.4-	1999 10 07	704	0.5+	1.3-
1999 09 07	704	0.5+	0.3+	1999 10 02	704	0.1+	0.1+				

1999 RH₉₃ = 1995 WD₁₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	356.58908		(2000.0)	P	Q
n	0.23773021	ω	327.18125	+0.98613342	+0.16316504
a	2.5807531	Ω	23.48439	-0.13109941	+0.87786920
e	0.2391423	i	4.36061	-0.10175374	+0.45024754
P	4.15	H	16.0	G 0.15	U 4

Residuals in seconds of arc

1995 11 16	691	0.9+	0.5+	1999 09 04	699	0.4-	0.2-	1999 10 02	704	1.0-	0.5+
1995 11 16	691	0.7+	0.6+	1999 09 07	704	0.8-	0.4+	1999 10 02	704	1.1+	0.2+
1995 11 16	691	0.4+	0.3+	1999 09 07	704	0.1-	1.2+	1999 10 02	704	1.0+	0.1+
1995 11 21	691	0.7-	0.1+	1999 09 07	704	0.5+	0.4-	1999 10 02	704	0.5+	0.4-
1995 11 21	691	0.7-	0.1+	1999 09 07	704	0.2-	1.1-	1999 10 02	704	0.2-	0.3-
1995 11 21	691	0.7-	0.1+	1999 09 07	704	0.0	0.3-	1999 10 07	704	0.2+	0.5-
1995 11 28	691	0.3-	0.4-	1999 09 14	704	0.2-	0.0	1999 10 07	704	0.5-	0.2-
1995 11 28	691	0.1-	0.6-	1999 09 14	704	0.4-	0.0	1999 10 07	704	0.2+	0.4-
1995 11 28	691	0.2+	0.5-	1999 09 14	704	0.3-	0.2-	1999 10 07	704	0.1+	0.7+
1999 09 04	699	0.4+	0.2+	1999 09 14	704	0.2-	0.0	1999 10 07	704	0.4+	0.0
1999 09 04	699	0.1-	0.8+	1999 09 14	704	0.2+	0.2-				

1999 RM₉₃ = 1998 HY₆₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

M	45.20515		(2000.0)	P	Q		
n	0.23515025	ω	277.36383	+0.37394942	+0.92651268		
a	2.5995954	Ω	14.80525	-0.77355856	+0.33636909		
e	0.1349574	i	9.38430	-0.51163364	+0.16861224		
P	4.19	H	15.4	G	0.15	U	4

Residuals in seconds of arc

1998 04 21	704	1.8+	0.3+	1998 04 22	704	0.2-	0.1-	1999 09 14	704	0.3-	0.2+
1998 04 21	704	2.0-	2.0-	1998 04 22	704	0.9+	0.1-	1999 09 14	704	1.2+	0.2+
1998 04 21	704	1.7+	0.4+	1999 09 07	704	0.3-	0.1+	1999 09 14	704	0.6-	0.6-
1998 04 21	704	2.3-	0.9-	1999 09 07	704	0.1-	0.2-	1999 10 07	703	0.9+	0.2-
1998 04 22	704	0.8+	1.1+	1999 09 07	704	0.9+	0.0	1999 10 07	703	0.1-	0.5+

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1998 04 22	704	0.2−	0.6+	1999 09 07	704	0.8−	0.4+	1999 10 07	703	1.9−	0.9−
1998 04 22	704	0.4−	0.5+	1999 09 14	704	0.2+	0.2−	1999 10 07	703	1.1+	0.4+

1999 RN₉₃ = 1990 RB₈ = 1992 AX₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	299.84976		(2000.0)	P	Q						
<i>n</i>	0.22345753	ω	355.00967	+0.58112020	−0.81227738						
<i>a</i>	2.6895073	Ω	59.45205	+0.74865960	+0.50946975						
<i>e</i>	0.0222815	<i>i</i>	3.33155	+0.31907383	+0.28398246						
<i>P</i>	4.41	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>				4	

Residuals in seconds of arc

1990 09 14	809	1.1−	0.8+	1999 08 22	703	0.4−	0.3+	1999 09 14	704	0.3−	0.3−
1990 09 14	809	0.5−	0.7+	1999 08 22	703	1.1+	0.5−	1999 09 14	704	0.3−	0.3+
1990 09 14	809	0.2−	0.7+	1999 08 22	699	0.8+	0.8−	1999 09 14	704	0.1−	0.4+
1990 09 15	809	0.5+	1.1−	1999 08 22	703	0.1+	0.9−	1999 09 14	704	0.4−	0.3+
1990 09 15	809	0.8+	1.3−	1999 08 22	699	0.0	0.1+	1999 09 14	704	0.7−	0.2+
1990 09 15	809	1.0+	1.3−	1999 09 07	704	0.8−	0.8+	1999 10 07	704	0.9+	0.5−
1992 01 02	033	0.3−	0.3−	1999 09 07	704	0.5−	0.6+	1999 10 07	704	1.2+	0.6−
1992 01 03	033	0.3+	0.0	1999 09 07	704	0.3−	0.3+	1999 10 07	704	0.1−	0.2+
1999 08 22	699	0.1−	0.8+	1999 09 07	704	0.5−	0.3+	1999 10 07	704	0.4+	0.3−
1999 08 22	703	0.0	0.1+	1999 09 07	704	0.5−	0.6+				

1999 RQ₉₃ = 3071 T-3

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	348.76289		(2000.0)	P	Q						
<i>n</i>	0.26803587	ω	307.89621	+0.99905129	−0.01770687						
<i>a</i>	2.3823603	Ω	53.15320	+0.03294684	+0.90476262						
<i>e</i>	0.2263809	<i>i</i>	2.84983	−0.02847857	+0.42554797						
<i>P</i>	3.68	<i>H</i>	16.5	<i>G</i>	0.15	<i>U</i>				4	

Residuals in seconds of arc

1977 10 16	675	0.6+	1.2−	1999 09 07	704	0.3−	0.9−	1999 10 01	684	0.1−	0.1−
1977 10 16	675	0.1−	0.1−	1999 09 07	704	0.2−	0.5+	1999 10 02	704	0.1+	0.0
1977 10 17	675	0.7−	1.3+	1999 09 14	704	0.5−	0.1+	1999 10 02	704	0.4−	0.0
1977 10 17	675	1.2−	1.2+	1999 09 14	704	0.1+	0.2−	1999 10 02	704	0.6+	0.3−
1977 10 21	675	1.1+	0.5+	1999 09 14	704	0.1+	0.4+	1999 10 02	704	0.2+	1.0−
1977 10 21	675	1.3+	0.9+	1999 09 14	704	0.3−	0.1+	1999 10 02	704	0.7+	0.4−
1977 10 22	675	0.2+	0.5−	1999 09 14	704	0.2+	0.4−	1999 10 07	704	0.5+	0.6−
1977 10 22	675	1.7−	1.1−	1999 09 30	684	0.9−	0.3+	1999 10 07	704	0.2+	0.2+
1999 09 07	704	0.0	1.0+	1999 09 30	684	0.7−	0.1+	1999 10 07	704	0.7+	0.3−
1999 09 07	704	0.4+	0.1−	1999 09 30	684	0.7−	0.0	1999 10 07	704	0.7+	0.2−
1999 09 07	704	0.1−	0.8+	1999 10 01	684	0.1+	0.3−	1999 10 07	704	0.0	0.0

1999 RT₉₃ = 1998 HP₃₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.48424		(2000.0)	P	Q						
<i>n</i>	0.19038417	ω	218.07531	+0.54698105	+0.83493720						
<i>a</i>	2.9926011	Ω	85.16313	−0.75233244	+0.52210104						
<i>e</i>	0.3083059	<i>i</i>	3.49582	−0.36716159	+0.17404128						
<i>P</i>	5.18	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>				4	

Residuals in seconds of arc

1998 03 22	704	0.3−	1.3−	1998 04 22	704	0.9+	0.3−	1999 09 07	704	0.7+	0.2+
1998 03 22	704	0.2+	1.6+	1998 04 22	704	1.0+	0.1−	1999 09 07	704	0.2−	0.5−
1998 03 22	704	0.1−	0.6+	1998 04 22	704	(2.7− 2.3+)		1999 09 07	704	0.1−	0.7+
1998 03 22	704	(5.3− 0.0)		1998 04 30	699	0.5−	0.8+	1999 09 14	704	0.8−	0.3−
1998 03 29	704	0.6−	1.7−	1998 04 30	699	0.2−	0.1−	1999 09 14	704	0.7−	0.1+
1998 03 29	704	0.0	1.7+	1998 04 30	699	0.7−	0.1−	1999 09 14	704	0.5−	0.5−
1998 03 29	704	0.8+	0.5+	1999 08 22	703	0.8+	0.4+	1999 09 14	704	0.3−	0.4−
1998 03 29	704	(2.6− 1.7−)		1999 08 22	703	0.8+	0.7+	1999 09 14	704	0.4−	0.2−

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1998 04 20	704	0.3−	0.6+	1999 08 22	703	0.7−	0.0	1999 10 07	704	0.2+	0.6+
1998 04 20	704	0.9−	0.2+	1999 08 22	703	1.3−	0.4−	1999 10 07	704	0.6+	0.4−
1998 04 20	704	0.0	0.5−	1999 09 05	699	0.5+	0.3+	1999 10 07	704	0.1+	1.0−
1998 04 20	704	1.5+	0.5−	1999 09 05	699	0.8+	0.1−	1999 10 07	704	0.0	0.0
1998 04 20	704	1.3−	0.8−	1999 09 05	699	1.1+	0.8+	1999 10 07	704	0.1−	0.2−
1998 04 22	704	0.2+	0.6−	1999 09 07	704	0.1−	0.1+				
1998 04 22	704	0.1+	0.5−	1999 09 07	704	0.2−	0.2−				

1999 RC₉₄ = 1992 SP₂₃ = 1998 HM₁₁₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	343.64673		(2000.0)	P	Q						
<i>n</i>	0.27847765	ω	222.97443	+0.98770597	−0.13985979						
<i>a</i>	2.3224292	Ω	144.88523	+0.15459650	+0.94013303						
<i>e</i>	0.1346206	<i>i</i>	6.97274	−0.02316992	+0.31078791						
<i>P</i>	3.54	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>				2	

Residuals in seconds of arc

1992 09 30	675	0.6+	1.3−	1998 04 23	704	0.0	1.3−	1999 08 22	703	0.5+	0.1−
1992 09 30	675	0.6+	1.0−	1998 04 24	704	0.4+	0.8−	1999 08 22	699	0.2+	1.0+
1992 10 03	675	0.0	1.3−	1998 04 24	704	0.1−	0.7−	1999 08 22	703	0.5+	0.6−
1992 10 03	675	0.1+	0.7−	1998 04 24	704	0.8+	0.6−	1999 08 22	699	0.7+	0.9+
1994 03 05	691	0.1+	0.1−	1998 04 24	704	0.4+	1.0−	1999 09 05	699	0.5−	0.2+
1994 03 05	691	0.1+	0.2−	1998 04 24	704	0.6−	0.7−	1999 09 05	699	0.0	0.5+
1994 03 05	691	0.1+	0.2−	1998 05 16	704	0.7+	0.2−	1999 09 05	699	0.4−	0.4+
1998 03 24	704	0.0	0.6+	1998 05 16	704	1.4−	0.9+	1999 09 07	704	0.3−	0.2−
1998 03 24	704	0.2−	1.3+	1998 05 16	704	0.4−	1.2−	1999 09 07	704	0.3−	0.3−
1998 03 24	704	1.2−	1.5+	1998 05 16	704	(0.8− 2.5−)		1999 09 07	704	0.5−	0.6−
1998 03 24	704	(2.3− 1.4−)		1998 05 24	699	0.0	0.2+	1999 09 07	704	0.1−	0.4−
1998 04 21	704	0.4−	0.5+	1998 05 24	699	0.2−	1.5+	1999 09 07	704	0.6−	0.9−
1998 04 21	704	0.4−	0.1−	1998 05 24	699	(1.5− 2.1+)		1999 09 14	704	0.4+	0.7−
1998 04 21	704	0.1+	0.2+	1999 07 16	704	0.8+	0.7+	1999 09 14	704	0.2−	0.7−
1998 04 21	704	0.2+	0.1−	1999 07 16	704	0.2+	0.1−	1999 09 14	704	0.1−	0.9−
1998 04 21	704	0.2+	1.0+	1999 07 16	704	0.4+	0.2+	1999 09 14	704	0.3−	0.6−
1998 04 23	704	0.5+	0.0	1999 07 16	704	0.5+	0.5+	1999 09 14	704	0.0	0.4−
1998 04 23	704	0.5−	0.8−	1999 08 22	699	0.7+	0.6+	1999 10 08	106	0.2−	0.9+
1998 04 23	704	0.1+	0.6−	1999 08 22	703	0.6+	0.6+	1999 10 08	106	0.1−	1.1+
1998 04 23	704	0.7+	1.0−	1999 08 22	703	0.5+	0.3+	1999 10 08	106	1.8−	1.9+

1999 RD₉₄ = 1994 EG₃ = 1998 HJ₁₃₆

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	60.79834		(2000.0)	P	Q						
<i>n</i>	0.24376534	ω	120.19429	+0.03203191	+0.99671823						
<i>a</i>	2.5379793	Ω	151.35400	−0.96204403	+0.05091447						
<i>e</i>	0.1738971	<i>i</i>	8.92109	−0.27100781	−0.06293239						
<i>P</i>	4.04	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>				2	

Residuals in seconds of arc

1994 03 12	098	0.9−	0.8+	1998 04 24	704	0.3−	0.4+	1999 09 07	704	0.1+	0.4−
1994 03 13	098	1.1−	0.4+	1998 04 29	566	0.6−	0.9−	1999 09 07	704	0.6−	0.3−
1994 03 14	098	0.8+	1.2−	1998 04 29	566	0.6−	1.2−	1999 09 14	704	0.1−	0.1−
1994 03 14	098	1.0+	1.1−	1998 04 29	566	0.2−	1.0−	1999 09 14	704	0.3−	0.1−
1998 04 20	704	0.1−	0.4+	1998 06 22	699	1.0+	0.5−	1999 09 14	704	0.4−	0.1+
1998 04 20	704	0.2−	0.4+	1998 06 22	699	0.1+	0.5+	1999 09 14	704	0.1−	0.4−
1998 04 20	704	0.3+	0.1−	1998 06 22	699	0.3+	0.6+	1999 09 14	704	0.1−	0.3−
1998 04 20	704	0.2−	0.6+	1999 09 05	699	0.1+	1.0+	1999 10 02	704	0.4+	0.4−
1998 04 20	704	0.1+	0.1−	1999 09 05	699	0.3+	0.8+	1999 10 02	704	0.9+	0.5−
1998 04 24	704	1.0+	0.3−	1999 09 05	699	0.4+	0.7+	1999 10 02	704	0.4+	0.3−
1998 04 24	704	0.2+	0.0	1999 09 07	704	0.3−	0.2−	1999 10 02	704	0.0	0.4−
1998 04 24	704	0.9−	0.1+	1999 09 07	704	0.3−	0.0	1999 10 02	704	0.1−	0.5−
1998 04 24	704	0.3+	1.0+	1999 09 07	704	0.1+	0.3−				

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1999 RK₉₄ = 2294 T-1

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	324.30445		(2000.0)	P		Q	
<i>n</i>	0.19204370	ω	25.48687	+0.78245740	−0.61959419		
<i>a</i>	2.9753359	Ω	13.36290	+0.51533399	+0.58827462		
<i>e</i>	0.1308346	<i>i</i>	15.60116	+0.34955873	+0.51964989		
<i>P</i>	5.13	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1971 03 24	675	(3.9+ 5.5−)	1999 09 07	704	0.4+ 0.0	1999 10 06	106	0.2+ 0.1−
1971 03 24	675	0.5+ 1.0−	1999 09 07	704	0.2+ 1.6−	1999 10 06	106	0.7− 0.1−
1971 03 25	675	0.3− 0.8+	1999 09 14	704	0.2− 0.1−	1999 10 07	703	0.4− 0.1−
1971 03 25	675	1.6− 0.7+	1999 09 14	704	0.5− 0.2+	1999 10 07	703	0.8− 0.3+
1971 03 26	675	0.6+ 1.2−	1999 09 14	704	0.4− 0.1+	1999 10 07	703	0.1− 0.3+
1971 03 27	675	1.0− 0.5−	1999 09 14	704	0.3− 0.5+	1999 10 07	703	0.5− 0.6+
1971 04 02	675	0.3+ 0.8−	1999 09 14	704	0.4− 0.2+	1999 10 07	704	0.2− 0.6−
1999 08 22	699	0.6+ 0.2−	1999 10 02	704	0.1+ 0.0	1999 10 07	704	0.0 0.0
1999 08 22	699	0.4+ 0.6+	1999 10 02	704	0.7+ 0.9−	1999 10 07	704	0.6+ 0.2+
1999 08 22	699	0.4− 0.4+	1999 10 02	704	0.3+ 0.1−	1999 10 07	704	0.1− 1.1−
1999 09 04	699	0.6+ 0.9+	1999 10 02	704	0.9+ 0.1+	1999 10 07	704	0.4+ 0.5−
1999 09 04	699	0.6+ 0.1−	1999 10 02	704	0.6+ 0.4−	1999 10 07	106	0.0 0.1−
1999 09 04	699	0.0 0.6+	1999 10 06	106	0.5− 0.1−	1999 10 07	106	0.0 0.2+
1999 09 07	704	0.6+ 0.8+	1999 10 06	106	0.3− 0.4−	1999 10 07	106	0.0 0.1+
1999 09 07	704	1.6+ 0.7−	1999 10 06	106	0.2− 0.2−			
1999 09 07	704	(2.6+ 1.1−)	1999 10 06	106	1.4− 0.3−			

1999 RY₉₄ = 1992 OR₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	358.43861		(2000.0)	P		Q	
<i>n</i>	0.28936859	ω	356.55361	+0.97534692	+0.22065112		
<i>a</i>	2.2637847	Ω	350.69703	−0.20196319	+0.88634767		
<i>e</i>	0.1756928	<i>i</i>	1.20002	−0.08893395	+0.40706375		
<i>P</i>	3.41	<i>H</i>	16.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1992 07 26	809	0.6− 0.4−	1999 09 07	704	0.6− 1.4+	1999 10 04	704	1.1+ 0.8−
1992 07 26	809	0.7+ 0.6−	1999 09 07	704	0.8− 1.0+	1999 10 04	704	0.6+ 0.5−
1992 07 26	809	0.9+ 0.4+	1999 09 07	704	0.1− 0.1+	1999 10 04	704	0.0 1.4−
1992 07 30	809	0.4+ 0.1−	1999 09 09	704	0.8− 0.7+	1999 10 06	704	0.1+ 0.3−
1992 07 30	809	0.4− 0.5−	1999 09 09	704	0.1+ 0.5+	1999 10 06	704	0.4+ 0.3−
1992 07 30	809	0.4− 0.3−	1999 09 09	704	0.5− 1.5+	1999 10 06	704	0.3+ 0.1−
1999 09 07	704	0.3− 0.6+	1999 10 04	704	0.6+ 0.2−	1999 10 06	704	0.1+ 0.5−
1999 09 07	704	0.6− 0.1+	1999 10 04	704	0.3− 0.3−	1999 10 06	704	0.2+ 0.4−

1999 RZ₉₄ = 1998 FU₁₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.50590		(2000.0)	P		Q	
<i>n</i>	0.27740917	ω	100.00928	+0.09969148	+0.99500186		
<i>a</i>	2.3283888	Ω	175.69966	−0.94026151	+0.09609015		
<i>e</i>	0.1568817	<i>i</i>	4.38804	−0.32553018	+0.02716596		
<i>P</i>	3.55	<i>H</i>	15.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 05	327	0.3− 0.5+	1998 03 24	327	0.2− 0.7+	1999 09 09	704	0.1− 0.6+
1998 03 05	327	0.3+ 0.5+	1998 03 29	704	0.3− 0.9−	1999 09 09	704	0.7− 0.3+
1998 03 05	327	0.4+ 0.5+	1998 03 29	704	1.8+ 0.9−	1999 09 09	704	0.3− 0.3+
1998 03 20	704	1.0+ 1.3+	1998 03 29	704	(0.1+ 2.7+)	1999 09 09	704	0.8+ 0.0
1998 03 20	704	0.1+ 0.7+	1998 03 29	704	0.8+ 1.5−	1999 09 09	704	0.4− 0.4+
1998 03 20	704	1.0− 0.2−	1998 04 19	704	0.9+ 1.7+	1999 09 30	703	0.2+ 0.1−
1998 03 20	704	1.6− 0.9−	1998 04 19	704	1.6− 1.5+	1999 09 30	703	0.7+ 0.5−
1998 03 22	704	0.2− 1.1−	1998 04 19	704	1.1+ 0.7+	1999 09 30	703	0.4− 0.1−
1998 03 22	704	0.9− 1.2−	1998 04 19	704	0.5− 0.4−	1999 09 30	703	0.2+ 0.4+
1998 03 22	704	(3.8− 1.9+)	1998 04 19	704	(7.5− 0.5−)	1999 10 02	704	0.7− 1.7−
1998 03 22	704	0.5+ 1.5−	1999 09 07	691	0.5− 0.2−	1999 10 02	704	0.5+ 0.4−

1998 03 22	704	(7.0− 0.1+)	1999 09 07	704	0.3− 0.1−	1999 10 02	704	0.8− 0.7+
1998 03 22	327	0.3+ 0.3+	1999 09 07	691	0.5− 0.2−	1999 10 02	704	1.0− 0.6−
1998 03 22	327	0.1+ 0.4+	1999 09 07	704	0.8+ 0.3+	1999 10 07	703	1.4+ 0.5+
1998 03 22	327	0.0 0.4+	1999 09 07	704	0.3− 0.6+	1999 10 07	703	0.4+ 0.1+
1998 03 24	327	0.3+ 0.7+	1999 09 07	691	0.5− 0.2−	1999 10 07	703	0.6+ 1.0+
1998 03 24	327	0.1+ 0.5+	1999 09 07	704	(2.2+ 0.2−)	1999 10 07	703	0.6− 0.8+
1998 03 24	327	0.3− 1.4+	1999 09 07	704	0.6+ 0.7+			

1999 RD₉₅ = 1976 SV₈ = 1990 UC₆ = 1995 YK₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	22.65602		(2000.0)	P		Q	
<i>n</i>	0.21445776	ω	346.86635	+0.83010063	+0.55720340		
<i>a</i>	2.7642344	Ω	339.22766	−0.50599611	+0.73659035		
<i>e</i>	0.0979297	<i>i</i>	3.45688	−0.23430937	+0.38335235		
<i>P</i>	4.60	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1976 09 28	095	0.9+ 0.9−	1998 06 16	704	1.4− 1.5+	1999 09 29	703	0.0 0.2+
1990 10 24	046	(3.0− 1.2−)	1999 09 05	699	0.5− 0.3+	1999 10 04	704	0.2− 0.0
1990 10 24	046	1.2− 0.3−	1999 09 05	699	0.1− 0.0	1999 10 04	704	0.8− 0.4+
1992 01 30	691	0.4− 0.1+	1999 09 05	699	0.4− 0.1−	1999 10 04	704	0.0 0.1−
1992 01 30	691	0.1+ 0.5+	1999 09 07	704	0.9+ 0.2−	1999 10 04	704	0.4+ 0.2−
1992 01 30	691	0.2+ 0.3+	1999 09 07	704	0.4+ 0.5−	1999 10 04	704	0.1− 0.1−
1995 12 17	327	0.4+ 0.2−	1999 09 07	704	0.0 0.1−	1999 10 06	704	0.2+ 0.2+
1995 12 17	327	0.3+ 0.2+	1999 09 07	704	0.3+ 0.6−	1999 10 06	704	0.3− 0.2−
1995 12 18	327	0.1− 0.0	1999 09 07	704	0.7− 1.1−	1999 10 06	704	0.2+ 0.1−
1995 12 18	327	0.5+ 0.0	1999 09 08	699	0.2+ 0.4+	1999 10 06	704	0.1− 0.2−
1995 12 18	327	0.1− 0.4−	1999 09 08	699	0.1+ 1.2+	1999 10 06	704	0.1+ 0.2+
1998 05 24	704	0.4+ 0.4+	1999 09 08	699	0.1− 1.5+	1999 10 07	703	0.1+ 0.2−
1998 05 24	704	0.1+ 0.3+	1999 09 09	704	0.0 0.1+	1999 10 07	703	0.1− 0.2−
1998 05 24	704	0.1− 0.6+	1999 09 09	704	0.2− 0.1−	1999 10 07	703	0.1− 0.2+
1998 05 24	704	0.5+ 0.4−	1999 09 09	704	0.0 0.0	1999 10 07	703	0.0 0.1+
1998 05 24	704	0.7− 0.2−	1999 09 09	704	0.3− 0.2−	1999 10 07	704	0.1+ 0.1−
1998 06 16	704	1.0+ 0.4−	1999 09 09	704	0.2− 0.1+	1999 10 07	704	0.1+ 0.2+
1998 06 16	704	0.4+ 0.9−	1999 09 29	703	0.2− 0.5+	1999 10 07	704	0.4+ 0.2−
1998 06 16	704	0.2+ 0.3+	1999 09 29	703	0.2− 0.0	1999 10 07	704	0.4+ 0.3+
1998 06 16	704	0.3− 0.9−	1999 09 29	703	0.1+ 0.0	1999 10 07	704	0.2+ 0.2+

1999 RE₉₅ = 1994 JL₉ = 1998 ME₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	149.48296		(2000.0)	P		Q	
<i>n</i>	0.25388814	ω	6.51956	−0.94392972	+0.32719440		
<i>a</i>	2.4700615	Ω	192.84477	−0.31114871	−0.92626736		
<i>e</i>	0.1728624	<i>i</i>	11.42888	−0.11037736	−0.18700964		
<i>P</i>	3.88	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 05 15	675	0.3+ 0.2+	1998 06 25	704	0.8+ 0.9+	1999 10 04	704	1.6− 0.4+
1994 05 15	675	0.3− 0.1−	1998 06 25	704	0.2+ 0.8+	1999 10 04	704	0.2− 0.2+
1994 05 16	675	0.4− 0.7−	1999 09 07	704	0.0 0.1−	1999 10 04	704	0.6− 0.4+
1994 05 16	675	0.4+ 0.3+	1999 09 07	704	0.1− 0.5−	1999 10 04	704	0.5− 0.1+
1998 06 19	704	0.2+ 0.3+	1999 09 07	704	0.6+ 1.4−	1999 10 04	704	0.0 1.4+
1998 06 19	704	0.0 0.6+	1999 09 07	704	0.9+ 0.0	1999 10 06	704	0.6+ 0.2−
1998 06 19	704	0.4+ 0.9−	1999 09 07	704	0.8− 0.1+	1999 10 06	704	0.8+ 0.4−
1998 06 19	704	0.1− 0.7−	1999 09 09	704	1.4− 0.8+	1999 10 06	704	0.9+ 0.3−
1998 06 19	704	1.0− 0.1−	1999 09 09	704	0.2+ 0.1+	1999 10 06	704	0.5+ 0.4−
1998 06 25	704	0.8− 0.2−	1999 09 09	704	1.1− 0.8+	1999 10 06	704	0.7+ 0.9−
1998 06 25	704	0.3+ 0.4−	1999 09 09	704	1.1+ 0.3−			

1999 RG₉₅ = 1992 DM₁₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	350.82774		(2000.0)		P		Q				
<i>n</i>	0.21057218	ω	11.14689		+0.99610593		−0.08653264				
<i>a</i>	2.7981353	Ω	353.74303		+0.06416558		+0.84287832				
<i>e</i>	0.1678244	<i>i</i>	8.91218		+0.06046289		+0.53110097				
<i>P</i>	4.68	<i>H</i>	14.2		<i>G</i>	0.15	<i>U</i>		4		
Residuals in seconds of arc											
1992 02 27	691	0.4+	0.1−	1999 09 09	704	0.0	0.3−	1999 10 04	704	0.4+	0.2−
1992 02 27	691	0.1−	0.2+	1999 09 09	704	0.6+	0.1−	1999 10 04	120	0.2−	0.7−
1992 02 27	691	0.4−	0.4−	1999 09 29	703	0.6−	0.3+	1999 10 04	120	0.2+	0.3−
1992 03 04	809	0.2+	0.5+	1999 09 29	703	(3.9−	0.1+)	1999 10 07	704	0.1−	0.2+
1999 09 07	704	0.4−	0.2+	1999 09 29	703	0.2+	0.5+	1999 10 07	704	0.1−	0.1+
1999 09 07	704	0.2−	0.1−	1999 09 29	703	0.4−	0.6+	1999 10 07	704	0.3−	0.0
1999 09 07	704	0.2−	0.0	1999 10 02	120	0.4−	0.2+	1999 10 07	704	0.3−	0.1+
1999 09 07	704	0.4−	0.1+	1999 10 02	120	0.6+	0.1+	1999 10 07	704	0.4−	0.1+
1999 09 07	704	0.8−	0.2+	1999 10 04	704	0.8+	0.1−	1999 10 14	120	0.2−	0.2−
1999 09 09	704	0.4−	0.2+	1999 10 04	704	1.5+	0.1−	1999 10 14	120	0.4+	0.1+
1999 09 09	704	0.1−	0.1−	1999 10 04	704	0.1+	0.1−				
1999 09 09	704	0.4+	0.4−	1999 10 04	704	0.2+	0.1+				

1999 RA₉₆ = 1998 HB₁₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	90.19119		(2000.0)		P		Q				
<i>n</i>	0.24558564	ω	124.39971		-0.30007861		+0.95146217				
<i>a</i>	2.5254226	Ω	127.99072		-0.90120019		-0.25927577				
<i>e</i>	0.1058110	<i>i</i>	4.97576		-0.31271560		-0.16581864				
<i>P</i>	4.01	<i>H</i>	14.7		<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1998 04 23	704	0.3+	0.0	1998 05 24	704	(0.2+	2.5-)	1999 09 14	704	0.6-	0.2+
1998 04 23	704	0.1-	0.8-	1998 05 27	699	0.2+	0.1-	1999 10 02	704	0.1+	0.7-
1998 04 23	704	0.5+	1.2-	1998 05 27	699	0.0	0.2-	1999 10 02	704	0.7+	0.1-
1998 04 23	704	0.4+	0.5+	1998 05 27	699	0.5+	0.1+	1999 10 02	704	0.0	0.3-
1998 04 23	704	1.4-	0.3-	1999 09 07	704	0.0	0.1+	1999 10 02	704	1.0+	0.2-
1998 04 24	704	0.0	0.2-	1999 09 07	704	0.7+	0.1-	1999 10 02	704	0.3-	0.5-
1998 04 24	704	0.6-	0.8+	1999 09 07	704	0.2-	0.2-	1999 10 07	704	0.5-	0.2-
1998 04 24	704	0.1+	1.0+	1999 09 07	704	0.1+	0.1-	1999 10 07	704	0.2-	0.2-
1998 05 24	704	0.3+	0.3+	1999 09 14	704	0.1-	0.4+	1999 10 07	704	0.2+	0.5+
1998 05 24	704	0.4+	0.3-	1999 09 14	704	0.3+	0.1+	1999 10 07	704	0.7-	0.0
1998 05 24	704	0.1+	0.6+	1999 09 14	704	0.2-	0.8+				
1998 05 24	704	0.6-	0.4-	1999 09 14	704	0.2-	0.4+				

1999 RW₉₇ = 1996 VT₂₉ = 1998 FN₂₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	69.42755		(2000.0)	P			Q				
<i>n</i>	0.28643931	ω	115.60120	−0.12391262			+0.99034202				
<i>a</i>	2.2791923	Ω	147.09479	−0.94653935			−0.09915335				
<i>e</i>	0.1610242	<i>i</i>	6.57413	−0.29784042			−0.09690869				
<i>P</i>	3.44	<i>H</i>	15.6	<i>G</i>	0.15		<i>U</i>	3			
Residuals in seconds of arc											
1996 11 14	691	0.5−	0.1−	1998 03 22	704	0.8−	0.7−	1999 09 14	704	1.0−	0.1−
1996 11 14	691	0.5−	0.0	1998 03 22	704	(3.7−	3.0−)	1999 09 14	704	0.8−	0.7+
1996 11 14	691	0.1−	0.5+	1998 03 22	704	0.2−	0.6+	1999 09 14	704	1.8−	0.5+
1996 11 18	691	0.4+	0.0	1998 03 22	704	0.4−	0.8+	1999 09 14	704	1.2−	0.0
1996 11 18	691	0.3+	0.1+	1998 03 26	704	0.3−	0.2+	1999 09 14	704	1.2−	0.1+
1996 11 18	691	0.3+	0.2+	1998 03 26	704	0.1−	0.6+	1999 10 02	704	0.1−	0.0
1998 02 27	566	0.0	0.5−	1998 03 26	704	1.6+	0.7+	1999 10 02	704	0.2+	0.4−
1998 02 27	566	0.3−	0.7−	1999 09 04	699	0.2+	0.2+	1999 10 02	704	0.5+	0.9−
1998 02 27	566	0.2+	0.2−	1999 09 04	699	0.3+	1.5+	1999 10 02	704	0.2−	0.1−
1998 03 20	704	0.3−	0.8+	1999 09 04	699	1.8+	0.1+	1999 10 02	704	0.5−	0.9+
1998 03 20	704	0.6+	0.3−	1999 09 07	704	1.3+	1.1−	1999 10 07	704	0.2+	1.8−
1998 03 20	704	1.7−	0.6−	1999 09 07	704	0.6+	0.6−	1999 10 07	704	0.7+	0.8−

1998 03 20	704	(4.8-	1.4-)	1999 09 07	704	0.3-	0.5+	1999 10 07	704	1.5+	0.4+
1998 03 22	704	1.7+	0.7-	1999 09 07	704	0.1+	0.3+				

1999 RR₉₈ = 4038 T-1 = 1980 RU₁ = 1998 HO₁₂₂

Id. G. V. Williams (MPC 36043), M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	347.15120		(2000.0)		P		Q				
<i>n</i>	0.25986790	ω	198.00149		+0.98638942		-0.16085085				
<i>a</i>	2.4320227	Ω	171.04606		+0.16440666		+0.96801159				
<i>e</i>	0.1910618	<i>i</i>	12.65648		-0.00252371		+0.19256313				
<i>P</i>	3.79	<i>H</i>	14.4	<i>G</i>	0.15		<i>U</i>	2			
Residuals in seconds of arc											
1971 03 24	675	0.2+	0.8-	1998 04 24	704	0.5-	0.6+	1999 09 08	699	0.2-	0.2+
1971 03 26	675	(4.6+	1.5-)	1998 05 01	699	0.2-	0.4-	1999 09 08	699	0.2+	0.1-
1971 03 26	675	0.3-	0.3+	1998 05 01	699	0.4-	0.5-	1999 09 14	704	0.7+	0.3+
1971 03 26	675	0.5-	0.9+	1998 05 01	699	1.4+	0.0	1999 09 14	704	0.6+	0.1-
1971 03 27	675	0.2+	2.0-	1998 05 23	704	0.7+	0.3-	1999 09 14	704	0.9+	0.3+
1971 03 27	675	0.3-	2.1-	1998 05 23	704	(4.7-	0.5+)	1999 09 14	704	0.7+	0.5+
1971 04 02	675	0.1-	0.2-	1998 05 23	704	(2.4-	0.9+)	1999 09 14	704	0.6+	0.5+
1980 09 15	511	0.3+	1.6+	1998 05 23	704	(2.7-	1.8+)	1999 10 02	704	0.9-	0.9-
1980 09 15	511	0.1-	0.4+	1998 05 23	704	(3.7-	0.9+)	1999 10 02	704	1.4-	0.8-
1980 09 15	511	0.4-	0.4-	1999 08 13	699	(2.7+	1.2+)	1999 10 02	704	0.1-	1.1-
1998 04 23	704	0.9-	0.2-	1999 08 13	699	0.5+	0.3+	1999 10 02	704	1.0-	0.6-
1998 04 23	704	0.1-	0.6-	1999 08 13	699	0.4+	0.4+	1999 10 02	704	1.1-	1.0-
1998 04 23	704	0.4+	0.4-	1999 09 07	704	0.3+	0.2-	1999 10 05	703	0.1+	0.4-
1998 04 23	704	(0.8+	2.5+)	1999 09 07	704	0.3+	0.6-	1999 10 05	703	0.3+	0.3-
1998 04 24	704	0.8-	0.0	1999 09 07	704	0.4+	1.3-	1999 10 05	703	0.2+	0.3-
1998 04 24	704	0.4+	0.3+	1999 09 08	699	0.1+	0.1+	1999 10 05	703	0.2+	0.2-

1999 RZ₉₈ = 1982 VR₉ = 1991 GL₆ = 1993 SQ₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	33.25661		(2000.0)		P		Q				
<i>n</i>	0.17007093	ω	310.04441		+0.85635446		+0.49855919				
<i>a</i>	3.2263835	Ω	21.15106		−0.28131208		+0.66886148				
<i>e</i>	0.0206815	<i>i</i>	21.88906		−0.43303643		+0.55141913				
<i>P</i>	5.80	<i>H</i>	12.5		<i>G</i>	0.15	<i>U</i>	1			
Residuals in seconds of arc											
1982 11 11	095	0.3+	0.3−	1999 09 09	704	0.2−	0.3−	1999 10 07	704	0.9−	0.8+
1991 04 08	809	0.3+	0.0	1999 09 09	704	0.3−	0.8−	1999 10 07	704	0.0	0.3+
1991 04 08	809	0.4+	0.4+	1999 09 09	704	0.8−	0.9−	1999 10 07	704	0.5−	1.0+
1991 04 08	809	0.6+	0.2−	1999 09 09	704	0.2+	0.1−	1999 10 07	704	0.3+	0.2+
1991 04 10	809	0.5+	0.1+	1999 09 09	704	0.5−	0.4−	1999 10 07	704	0.2−	0.2+
1991 04 10	809	0.4−	0.2+	1999 10 02	703	0.5−	0.2+	1999 10 07	704	0.3+	0.5+
1991 04 10	809	0.9−	0.0	1999 10 02	703	0.2−	0.0	1999 10 07	704	0.4−	0.3+
1993 09 19	675	0.3−	0.7−	1999 10 02	703	0.8−	0.1+	1999 10 07	704	0.8+	0.3+
1993 09 19	675	0.7+	0.5+	1999 10 02	703	0.7−	0.1+	1999 10 07	704	0.8+	1.2+
1993 09 23	675	0.3+	0.6−	1999 10 04	704	0.2+	0.3−	1999 10 07	704	0.4+	0.3+
1993 09 23	675	0.1+	0.0	1999 10 04	704	0.3+	0.2−	1999 10 07	704	0.7+	0.0
1999 09 07	704	0.3+	0.6−	1999 10 04	704	0.1+	0.2−	1999 10 07	704	0.3+	0.1−
1999 09 07	704	0.3−	0.8−	1999 10 04	704	0.3−	0.4−	1999 10 07	704	0.1+	0.5+
1999 09 07	704	0.1−	0.4−	1999 10 04	704	0.3+	0.1+	1999 10 07	704	0.7+	0.2−
1999 09 08	699	0.1−	1.2+	1999 10 07	704	0.4+	0.0	1999 10 07	704	0.2+	0.5−
1999 09 08	699	0.1−	1.0+	1999 10 07	704	0.8−	0.2+	1999 10 07	704	0.4+	0.4−
1999 09 08	699	0.7−	0.0	1999 10 07	704	0.1−	0.5+	1999 10 07	704	0.1−	0.7−

Residuals in seconds of arc

1998 03 24	704	0.7+	0.8-	1999 09 07	704	0.8+	0.5+	1999 10 02	704	0.2+	0.5+
1998 03 24	704	0.1-	0.5+	1999 09 07	704	0.2-	0.1+	1999 10 02	704	1.6+	0.4+
1998 03 24	704	0.3+	0.9-	1999 09 07	704	0.5-	1.5-	1999 10 02	704	0.0	0.2+
1998 03 24	704	2.5-	2.3-	1999 09 14	704	0.5-	0.1+	1999 10 02	704	0.3+	0.6-
1998 03 25	704	1.6+	0.2+	1999 09 14	704	0.2-	0.5+	1999 10 07	704	0.7+	0.2-
1998 03 25	704	0.5+	1.0+	1999 09 14	704	0.0	0.2+	1999 10 07	704	0.2+	0.2-
1998 03 25	704	0.5-	1.5+	1999 09 14	704	0.2-	0.1+	1999 10 07	704	0.6+	0.3-
1998 03 25	704	1.6-	0.5-	1999 09 14	704	0.3-	0.0	1999 10 07	704	2.4-	0.6+
1998 03 25	704	1.7+	1.3+	1999 10 02	704	0.0	0.2-				

1999 RD₁₀₀ = 1998 HW₈₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	86.16511		(2000.0)	P	Q
<i>n</i>	0.20219871	ω	358.57641	-0.69461417	+0.71023725
<i>a</i>	2.8748628	Ω	227.40943	-0.65847618	-0.69172822
<i>e</i>	0.0524912	<i>i</i>	8.93493	-0.28968995	-0.13067179
<i>P</i>	4.87	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	6

Residuals in seconds of arc

1998 04 21	704	0.4-	0.7-	1998 04 22	704	0.0	1.0+	1999 09 08	704	0.3-	0.5-
1998 04 21	704	2.4+	0.2-	1998 04 22	704	0.4-	2.1+	1999 09 08	704	0.0	0.3+
1998 04 21	704	0.9+	0.3+	1999 09 06	699	0.8-	1.7+	1999 09 08	704	0.1-	0.7-
1998 04 21	704	1.4+	0.3-	1999 09 06	699	1.0+	0.0	1999 09 09	704	0.8+	0.1+
1998 04 21	704	4.4-	1.2-	1999 09 06	699	1.3-	0.2-	1999 09 09	704	0.5+	0.9-
1998 04 22	704	0.5+	1.0-	1999 09 08	704	0.2+	0.3+	1999 09 09	704	0.1+	0.1-

1999 RJ₁₀₂ = 1990 VV₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	115.21855		(2000.0)	P	Q
<i>n</i>	0.19317449	ω	1.16668	-0.87881649	+0.46612203
<i>a</i>	2.9637134	Ω	207.36142	-0.43956414	-0.87404669
<i>e</i>	0.0819200	<i>i</i>	12.82739	-0.18564736	-0.13701326
<i>P</i>	5.10	<i>H</i>	13.7	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1990 11 15	809	1.3-	0.6-	1998 05 23	704	0.8-	1.1-	1999 09 07	703	1.4-	1.4-
1990 11 15	809	0.2+	0.9+	1998 05 25	699	0.3+	0.2+	1999 09 07	703	1.3-	0.7-
1990 11 15	809	(0.1+	2.7-)	1998 05 25	699	1.4+	0.4+	1999 09 08	704	0.4+	0.5-
1990 11 17	809	(2.4+	1.2+)	1998 05 25	699	0.0	1.7+	1999 09 08	704	0.1+	0.1-
1990 11 17	809	(3.0+	0.7-)	1998 06 17	691	1.1-	0.0	1999 09 08	704	0.2+	1.0-
1990 11 17	809	(1.0-	2.9-)	1998 06 17	691	0.7-	0.1+	1999 09 09	704	0.4+	0.9-
1990 11 21	809	(3.4+	1.6+)	1998 06 17	691	0.7-	0.2+	1999 09 09	704	0.4+	0.6+
1990 11 21	809	(2.9+	0.2+)	1998 06 19	704	1.0+	0.3+	1999 09 09	704	0.9+	0.5-
1990 11 21	809	0.5+	0.9+	1998 06 19	704	0.2+	0.3-	1999 09 16	704	0.9+	0.6+
1990 11 23	809	1.5+	0.1-	1998 06 19	704	0.3+	0.4+	1999 09 16	704	0.3+	0.4+
1990 11 23	809	0.4-	1.0-	1998 06 19	704	0.3-	0.4+	1999 09 16	704	0.2+	1.0+
1990 11 23	809	0.6-	0.3-	1998 06 26	699	0.4-	0.1-	1999 09 16	704	1.5+	0.4+
1998 05 23	704	0.1-	0.7-	1998 06 26	699	1.1-	0.4-	1999 09 30	703	0.8-	0.5-
1998 05 23	704	0.5+	0.1+	1998 06 26	699	0.7+	0.7-	1999 09 30	703	0.5+	0.6+
1998 05 23	704	0.3+	0.9-	1999 09 07	703	1.0-	0.9+	1999 09 30	703	0.5-	0.3+
1998 05 23	704	0.2+	0.4+	1999 09 07	703	0.2-	0.3+	1999 09 30	703	0.6-	0.7+

1999 RK₁₀₂ = 1997 AR₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	0.93442		(2000.0)	P	Q
<i>n</i>	0.22011560	ω	30.55166	+0.84402159	+0.50467611
<i>a</i>	2.7166613	Ω	298.05460	-0.52419552	+0.70479072
<i>e</i>	0.1643739	<i>i</i>	11.86616	-0.11334294	+0.49857001
<i>P</i>	4.48	<i>H</i>	14.7	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1997 01 03	691	0.2+	0.0	1999 09 08	699	0.4-	0.5-	1999 09 10	704	1.0+	0.3-
1997 01 03	691	0.2+	0.1+	1999 09 08	699	0.1-	0.0	1999 09 14	704	0.2+	0.6-
1997 01 03	691	0.4-	0.3-	1999 09 08	704	0.4+	0.3-	1999 09 14	704	0.3-	0.1+

1997 01 11	691	0.0	0.1+	1999 09 08	704	0.6+	0.3+	1999 09 14	704	0.3+	0.7+
1997 01 11	691	0.0	0.1+	1999 09 08	699	0.8-	0.0	1999 09 14	704	0.6-	1.2+
1997 01 11	691	0.0	0.1+	1999 09 08	704	0.4+	0.6+	1999 09 14	704	0.1-	0.3-
1999 07 23	704	1.2-	0.4-	1999 09 09	704	0.5-	0.4-	1999 09 19	699	0.2+	0.6-
1999 07 23	704	0.3-	0.6+	1999 09 09	704	0.9+	0.0	1999 09 19	699	0.3-	0.4+
1999 07 23	704	0.2-	0.2+	1999 09 09	704	0.1+	1.6+	1999 09 19	699	1.0-	0.8+
1999 07 23	703	0.1+	0.0	1999 09 09	704	0.6-	1.2-	1999 09 30	703	0.0	0.0
1999 09 07	703	0.3-	0.2-	1999 09 09	704	0.5+	0.4-	1999 09 30	703	0.4-	0.2+
1999 09 07	703	0.1-	0.4-	1999 09 10	704	0.3+	0.2-	1999 09 30	703	0.3-	0.4+
1999 09 07	703	2.0+	0.7-	1999 09 10	704	0.2+	0.5-	1999 09 30	703	0.2-	0.1+

1999 RM₁₀₂ = 1996 VF₁₆

Id. G. V. Williams, A. Doppler

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Williams

<i>M</i>	63.09870		(2000.0)	P	Q
<i>n</i>	0.25914127	ω	16.98039	-0.50291461	+0.85930307
<i>a</i>	2.4365668	Ω	222.95034	-0.80804644	-0.50567673
<i>e</i>	0.2482021	<i>i</i>	7.85676	-0.30681891	-0.07674162
<i>P</i>	3.80	<i>H</i>	15.0	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1996 11 05	691	0.3+	0.0	1999 09 08	699	0.8-	0.0	1999 09 14	704	0.2-	0.1+
1996 11 05	691	0.1-	0.3-	1999 09 08	704	0.5+	0.3-	1999 09 14	704	0.1+	0.1+
1996 11 05	691	0.2+	0.3+	1999 09 08	699	0.1-	0.1+	1999 09 14	704	0.3-	0.1-
1996 11 11	691	0.1+	0.2-	1999 09 08	704	0.6+	0.1+	1999 09 14	704	0.1+	0.1-
1996 11 11	691	0.1+	0.1-	1999 09 08	704	0.0	1.2-	1999 09 14	704	0.1+	0.1+
1996 11 11	691	0.4+	0.1-	1999 09 09	704	0.3+	0.2-	1999 10 02	703	0.8-	0.3+
1996 11 18	691	0.3-	0.2-	1999 09 09	704	0.5+	0.3-	1999 10 02	703	0.5-	1.1+
1996 11 18	691	0.6-	0.3-	1999 09 09	704	0.1-	0.1-	1999 10 02	703	0.2+	1.0+
1996 11 18	691	(3.6+	2.7+)	1999 09 09	704	0.8+	0.9-	1999 10 02	703	0.3+	0.4-
1998 01 28	566	0.1+	0.3+	1999 09 09	704	0.0	1.0-	1999 10 07	703	0.1-	0.2-
1998 01 28	566	0.2+	0.4+	1999 09 10	704	0.0	0.2-	1999 10 07	703	0.5-	0.5+
1998 01 28	566	0.1-	0.2+	1999 09 10	704	0.2-	0.1+	1999 10 07	703	0.4-	0.6+
1999 09 08	699	0.0	1.2+	1999 09 10	704	0.2+	1.1+	1999 10 07	703	0.0	0.1-

1999 RY₁₀₂ = 1998 HX₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	1.43374		(2000.0)	P	Q
<i>n</i>	0.21863059	ω	142.44487	+0.86309954	+0.50419710
<i>a</i>	2.7289491	Ω	187.45039	-0.50042476	+0.84604971
<i>e</i>	0.2013716	<i>i</i>	12.95047	-0.06807525	+0.17316228
<i>P</i>	4.51	<i>H</i>	14.3	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1998 04 17	691	0.3-	0.3-	1999 09 08	699	0.1+	0.5-	1999 09 14	704	0.0	0.4+
1998 04 17	691	0.1-	0.1-	1999 09 08	699	0.5-	0.1-	1999 09 14	704	0.3-	0.5+
1998 04 17	691	0.0	0.2+	1999 09 08	704	0.1+	0.6+	1999 09 14	704	0.3+	0.1+
1998 04 21	704	0.1-	0.6+	1999 09 08	704	0.8-	0.2+	1999 09 30	699	0.4-	0.6+
1998 04 21	704	(2.2-	1.3-)	1999 09 08	699	0.8-	0.6-	1999 09 30	699	0.1+	0.2-
1998 04 21	704	0.7-	0.0	1999 09 08	704	0.3+	0.4+	1999 09 30	699	0.3-	0.1-
1998 04 21	704	0.4+	0.8-	1999 09 08	704	0.3+	0.1+	1999 10 02	703	0.4+	0.8-
1998 04 21	704	0.0	1.4-	1999 09 09	704	0.7+	0.4+	1999 10 02	703	0.7-	0.3-
1998 04 22	704	1.0+	0.0	1999 09 09	704	0.0	0.7-	1999 10 02	703	0.2-	0.0
1998 04 22	704	0.0	0.1+	1999 09 09	704	0.6-	0.4+	1999 10 02	703	0.4-	0.2-
1998 04 22	704	0.3+	0.1+	1999 09 09	704	0.2-	0.2-	1999 10 02	704	0.7+	0.5-
1998 04 23	691	0.3-	0.5+	1999 09 09	704	0.1-	0.1-	1999 10 02	704	0.4+	0.1-
1998 04 23	691	0.1-	0.5+	1999 09 10	704	0.5-	0.7-	1999 10 02	704	0.9+	0.3-
1998 04 23	691	0.2-	0.4+	1999 09 10	704	0.2+	0.3+	1999 10 02	704	1.6+	0.2-
1999 07 12	704	0.3-	0.3-	1999 09 10	704	0.5-	0.4-	1999 10 07	106	0.5-	0.2+
1999 07 12	704	0.2+	0.4+	1999 09 10	704	0.2+	0.2+	1999 10 07	106	0.1-	0.5+
1999 07 12	704	0.1+	0.2-	1999 09 14	704	0.2-	0.2+	1999 10 07	106	0.3+	0.3+
1999 07 12	704	0.9+	0.6+	1999 09 14	704	0.1+	0.3+				

1999 RA₁₀₃ = 1982 UZ₇ = 1998 MY₁₉
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	348.35452		(2000.0)	P		Q	
<i>n</i>	0.16937524	ω	99.10784	+0.98040659	+0.16211099		
<i>a</i>	3.2352122	Ω	251.62356	-0.19209398	+0.91260894		
<i>e</i>	0.1115729	<i>i</i>	6.77203	+0.04362145	+0.37531980		
<i>P</i>	5.82	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1982 10 21	095	0.6+	2.0-	1999 09 08	699	0.5-	0.1+	1999 09 10	704	0.1+	0.6-
1998 06 01	809	0.1-	1.3+	1999 09 08	699	0.5-	0.5+	1999 09 14	704	0.2+	0.1-
1998 06 01	809	1.2-	1.1+	1999 09 08	704	0.4+	0.6-	1999 09 14	704	0.4+	0.1+
1998 06 01	809	1.2-	1.0+	1999 09 08	704	0.8+	0.5-	1999 09 14	704	0.8+	0.4+
1998 06 24	704	1.5+	0.8-	1999 09 08	699	0.2-	0.2+	1999 09 14	704	0.1-	0.8+
1998 06 24	704	(2.5+	4.0-)	1999 09 08	704	0.4+	0.3-	1999 09 14	704	0.2-	0.2+
1998 06 24	704	1.3+	1.2+	1999 09 08	704	0.7+	0.4-	1999 09 30	703	0.1-	0.8+
1998 06 24	704	0.9-	1.3-	1999 09 08	704	0.4+	0.5-	1999 09 30	703	0.0	0.8+
1998 06 24	704	0.6+	1.3-	1999 09 09	704	0.3+	0.5-	1999 09 30	703	0.3-	0.7+
1998 06 26	704	1.5-	0.3-	1999 09 09	704	0.9+	0.3-	1999 09 30	703	0.6-	0.6+
1998 06 26	704	0.4-	1.4-	1999 09 09	704	0.7+	0.3-	1999 10 02	704	1.2-	0.8+
1998 06 26	704	1.7+	0.7-	1999 09 09	704	0.5+	0.4-	1999 10 02	704	1.1-	0.3+
1999 09 05	703	0.2-	0.3-	1999 09 09	704	0.0	0.3-	1999 10 02	704	0.2-	0.6+
1999 09 05	703	0.6-	0.0	1999 09 10	704	0.1-	0.4-	1999 10 02	704	0.8-	1.0+
1999 09 05	703	0.4-	0.0	1999 09 10	704	0.5+	0.3-	1999 10 02	704	0.9-	0.4+
1999 09 05	703	0.6-	0.4-	1999 09 10	704	0.5+	0.3-				

1999 RQ₁₀₃ = 1998 HF₁₃₀
Id. G. V. Williams, A. Doppler
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.54543		(2000.0)	P		Q	
<i>n</i>	0.27906762	ω	57.65796	+0.99295602	+0.07370100		
<i>a</i>	2.3191548	Ω	297.96528	-0.10732758	+0.89118161		
<i>e</i>	0.1342064	<i>i</i>	6.02925	+0.05019106	+0.44761981		
<i>P</i>	3.53	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 01	704	(2.7-	0.5-)	1999 09 05	703	0.3+	0.9-	1999 09 10	704	0.8-	0.1+
1998 04 01	704	1.7+	0.3+	1999 09 05	703	0.1-	0.0	1999 09 14	704	0.6+	0.0
1998 04 01	704	1.1-	0.6-	1999 09 05	703	0.1+	0.4+	1999 09 14	704	0.2+	0.5-
1998 04 01	704	0.1+	0.9-	1999 09 05	703	0.5-	1.5+	1999 09 14	704	1.0+	0.4+
1998 04 19	704	0.1+	0.2-	1999 09 08	704	0.4+	0.6-	1999 09 14	704	0.8+	0.1+
1998 04 19	704	(2.7+	0.5+)	1999 09 08	704	0.0	0.2+	1999 09 14	704	0.7+	0.0
1998 04 19	704	0.7-	1.8+	1999 09 08	704	0.1+	0.2-	1999 10 02	703	0.1-	0.1+
1998 04 19	704	1.5-	0.7+	1999 09 08	704	0.2+	0.2+	1999 10 02	703	0.4-	0.2-
1998 04 20	704	0.1+	0.9+	1999 09 09	704	0.2+	0.1+	1999 10 02	703	0.4+	0.3-
1998 04 20	704	1.7+	1.7-	1999 09 09	704	1.3+	0.3+	1999 10 02	703	0.2+	0.6+
1998 04 20	704	1.0-	0.2-	1999 09 09	704	0.3-	0.7-	1999 10 02	704	0.3-	0.6+
1998 04 20	704	0.6+	0.1+	1999 09 09	704	0.2-	0.3-	1999 10 02	704	0.2-	1.1+
1999 08 22	699	0.9-	1.1+	1999 09 09	704	0.9-	1.4-	1999 10 02	704	0.3-	0.3+
1999 08 22	699	0.5-	0.2+	1999 09 10	704	0.4+	1.4-	1999 10 02	704	0.0	0.1-
1999 08 22	699	0.5-	0.1-	1999 09 10	704	0.1-	0.3-	1999 10 02	704	0.7-	0.1-

1999 RZ₁₀₃ = 1984 WW₂ = 1998 KW₃₈
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	355.62387		(2000.0)	P		Q	
<i>n</i>	0.18745279	ω	75.35520	+0.95713998	+0.24584316		
<i>a</i>	3.0237190	Ω	270.23684	-0.28726263	+0.87321601		
<i>e</i>	0.1122582	<i>i</i>	8.80756	+0.03692202	+0.42077897		
<i>P</i>	5.26	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1984 11 27	010	1.4-	1.4+	1999 09 05	703	0.3-	0.1+	1999 09 16	704	0.1+	0.6-
1984 11 28	010	1.4+	1.3-	1999 09 05	703	0.2-	1.0+	1999 09 16	704	0.2+	0.2+
1998 05 22	704	0.4-	0.5-	1999 09 05	703	0.0	0.8+	1999 10 01	703	0.5-	0.1-
1998 05 22	704	0.2+	0.3+	1999 09 08	704	1.5+	0.1-	1999 10 01	703	0.1-	0.1-

1998 05 22	704	0.2+	0.0	1999 09 08	704	0.0	0.1+	1999 10 01	703	0.1-	0.2-
1998 05 22	704	0.7+	0.5+	1999 09 08	704	0.2-	0.3-	1999 10 01	703	0.3+	0.3-
1998 05 22	704	(3.6-	0.3-)	1999 09 09	704	0.3-	0.1-	1999 10 04	704	0.5+	0.0
1998 05 24	704	1.1+	0.4-	1999 09 09	704	0.2-	0.7-	1999 10 04	704	1.7+	0.3+
1998 05 24	704	0.8-	0.1+	1999 09 09	704	0.1+	0.0	1999 10 04	704	0.4-	0.0
1998 05 24	704	0.4+	0.4+	1999 09 09	704	0.9-	0.3-	1999 10 04	704	1.5-	0.2+
1998 05 24	704	0.1-	0.2+	1999 09 09	704	0.1+	0.1+	1999 10 04	704	0.5+	0.2-
1998 05 24	704	1.2-	0.6-	1999 09 16	704	0.1-	0.2-				
1999 09 05	703	0.2-	0.2+	1999 09 16	704	0.1-	0.0				

1999 RK₁₀₄ = 1982 UO₁₁ = 1990 HM₂

<i>M</i>	15.61270		(2000.0)	P		Q	
<i>n</i>	0.22480321	ω	31.29582	+0.66571892	+0.71730366		
<i>a</i>	2.6787635	Ω	281.31755	-0.72062791	+0.54646909		
<i>e</i>	0.1711966	<i>i</i>	12.10670	-0.19368463	+0.43225802		
<i>P</i>	4.38	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1982 10 16	095	0.0	0.8+	1999 09 10	704	0.3+	0.2+	1999 09 29	703	0.6-	0.0
1990 04 27	413	0.1-	0.1+	1999 09 12	699	0.2-	0.7+	1999 09 29	703	0.4-	0.0
1990 04 27	413	1.0-	0.4-	1999 09 12	699	0.2-	0.3+	1999 10 04	704	1.0+	0.5+
1990 04 30	413	1.6+	0.6+	1999 09 12	699	0.2-	1.0+	1999 10 04	704	1.6+	1.4-
1990 04 30	413	0.6-	0.0	1999 09 16	704	0.5-	0.4+	1999 10 04	704	0.1-	1.0-
1999 09 08	704	0.2+	0.2+	1999 09 16	704	0.5-	0.1+	1999 10 04	704	1.4+	1.6-
1999 09 08	704	0.2+	0.0	1999 09 16	704	0.7-	0.2-	1999 10 04	704	(0.9-	2.6-)
1999 09 08	704	0.5+	0.2-	1999 09 16	704	0.7-	0.2+	1999 10 15	611	0.1+	0.3-
1999 09 08	704	0.3+	0.2-	1999 09 16	704	1.0-	0.1-	1999 10 15	611	0.1-	0.2-
1999 09 10	704	0.5+	0.2+	1999 09 29	703	0.4-	0.0				
1999 09 10	704	0.5+	0.4+	1999 09 29	703	0.5-	0.2+				

1999 RQ₁₀₄ = 1998 MS₈

<i>M</i>	344.90683		(2000.0)	P		Q	
<i>n</i>	0.17916194	ω	150.24187	+0.99403171	+0.07699214		
<i>a</i>	3.1162972	Ω	205.68885	-0.09373237	+0.96523663		
<i>e</i>	0.0557613	<i>i</i>	10.27024	+0.05581408	+0.24978081		
<i>P</i>	5.50	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 10 10	691	0.1+	0.3-	1999 09 05	703	0.4-	0.4+	1999 09 09	704	0.8+	0.6-
1994 10 10	691	0.0	0.4-	1999 09 05	703	0.9-	1.5+	1999 09 09	704	0.0	0.3+
1994 10 10	691	0.0	0.2-	1999 09 05	703	1.0-	1.4+	1999 09 16	704	0.0	0.6-
1998 06 19	704	1.2+	0.1+	1999 09 08	699	0.5-	0.0	1999 09 16	704	0.6+	0.3-
1998 06 19	704	0.3+	0.3+	1999 09 08	699	0.4-	0.3+	1999 09 16	704	0.1+	0.2-
1998 06 19	704	0.4+	0.7+	1999 09 08	704	0.2+	1.3-	1999 10 01	703	1.0-	0.2+
1998 06 19	704	0.5-	0.1-	1999 09 08	699	0.0	0.9+	1999 10 01	703	0.5-	0.5+
1998 06 19	704	0.7-	0.8-	1999 09 08	704	0.2-	0.7-	1999 10 01	703	0.1-	0.3+
1998 06 25	704	0.5-	0.6-	1999 09 08	704	0.0	1.3-	1999 10 01	703	0.1-	0.8+
1998 06 25	704	0.1-	0.2-	1999 09 08	704	0.0	0.7-	1999 10 02	704	0.4+	0.8-
1998 06 25	704	0.1-	0.1+	1999 09 09	704	0.4+	0.1+	1999 10 02	704	1.2+	0.7+
1998 06 25	704	(3.0-	1.7+)	1999 09 09	704	0.3+	0.2-	1999 10 02	704	0.1+	0.4-
1999 09 05	703	0.2+	0.1-	1999 09 09	704	0.0	0.3-	1999 10 02	704	0.7+	1.1+

1999 RZ₁₀₄ = 1998 HH₅₃

<i>M</i>	16.44378		(2000.0)	P		Q	
<i>n</i>	0.26045098	ω	88.22064	+0.86453857	+0.50187440		
<i>a</i>	2.4283916	Ω	241.65446	-0.47218722	+0.79319693		
<i>e</i>	0.1758720	<i>i</i>	1.71669	-0.17208221	+0.34490682		
<i>P</i>	3.78	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 29	704	0.2-	1.3-	1999 09 05	699	0.5-	0.2-	1999 10 04	704	0.0	0.2+
1998 03 29	704	1.1+	0.2+	1999 09 05	699	0.5-	0.2-	1999 10 04	704	0.2+	0.3+

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1998 03 29	704	0.5−	0.7+	1999 09 05	699	0.2−	0.8+	1999 10 04	704	0.1−	0.5−
1998 03 29	704	0.3−	0.1+	1999 09 08	704	0.6+	0.5−	1999 10 06	704	0.0	0.2+
1998 03 29	704	1.0+	0.9−	1999 09 08	704	0.2+	0.3−	1999 10 06	704	0.1−	0.2+
1998 04 01	704	0.7+	1.0−	1999 09 08	704	0.2−	0.1−	1999 10 06	704	0.2−	0.1−
1998 04 01	704	0.9−	1.8+	1999 09 08	704	0.2+	0.2−	1999 10 06	704	0.3+	0.0
1998 04 01	704	1.5−	1.2−	1999 09 08	704	0.4−	0.4−	1999 10 06	704	0.3+	0.0
1998 04 01	704	(6.3−	1.0−)	1999 09 09	704	0.1+	0.2+	1999 10 07	704	0.2+	0.1−
1998 04 21	704	(2.4+	0.0)	1999 09 09	704	0.3+	0.3+	1999 10 07	704	0.3−	0.2−
1998 04 21	704	0.7+	1.3+	1999 09 09	704	0.2+	0.2+	1999 10 07	704	0.5+	0.2−
1998 04 21	704	0.4−	0.8+	1999 09 09	704	0.3+	0.3+	1999 10 07	704	0.7+	0.2−
1998 04 21	704	0.3−	0.6+	1999 09 09	704	0.3−	0.1−	1999 10 07	704	0.1−	0.0
1998 04 21	704	1.8−	1.3+	1999 10 01	703	0.5−	0.4+	1999 10 08	468	0.4+	0.3−
1998 04 22	704	0.5+	0.7−	1999 10 01	703	0.6−	0.7+	1999 10 08	468	0.1+	0.3−
1998 04 22	704	(0.7+	2.7−)	1999 10 01	703	0.1−	0.1−	1999 10 14	468	0.1+	0.1−
1998 04 22	704	0.6+	1.9−	1999 10 01	703	0.8−	0.1+	1999 10 14	468	0.4−	0.4−
1998 04 22	704	(1.5+	2.7−)	1999 10 04	704	0.6+	0.2−				
1998 04 22	704	1.1+	0.9−	1999 10 04	704	0.2+	0.1−				

1999 RY₁₀₅ = 1995 YY₁₁ = 1998 MH₃₀

Id. A. Doppler, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	183.52832		(2000.0)		P		Q				
<i>n</i>	0.17523495	ω	242.15070		−0.96084222		−0.14795283				
<i>a</i>	3.1626823	Ω	288.54434		+0.24326346		−0.85526142				
<i>e</i>	0.0372926	<i>i</i>	14.30727		−0.13268428		−0.49662648				
<i>P</i>	5.62	<i>H</i>	12.7	<i>G</i>	0.15	<i>U</i>	3				
Residuals in seconds of arc											
1995 12 18	691	0.2+	0.0	1998 07 21	704	0.6−	1.3+	1999 09 10	704	0.7+	0.5+
1995 12 18	691	0.3−	0.5+	1998 07 21	704	(2.9+	1.6−)	1999 09 18	704	0.5+	0.0
1995 12 30	691	0.4+	0.5−	1999 07 22	704	0.7−	0.7+	1999 09 18	704	0.1+	0.1−
1995 12 30	691	0.0	0.0	1999 07 22	704	0.8+	0.1+	1999 09 18	704	0.2+	0.1−
1995 12 30	691	0.3−	0.0	1999 07 22	704	0.5−	0.1−	1999 09 18	704	0.2−	0.5+
1998 06 24	704	1.4+	0.1−	1999 07 22	704	0.0	0.3+	1999 09 18	704	0.5−	0.9−
1998 06 24	704	0.4+	0.7+	1999 09 08	704	0.1+	0.1−	1999 10 03	704	0.2+	0.1+
1998 06 24	704	1.1−	1.1−	1999 09 08	704	0.1+	0.7−	1999 10 03	704	0.6−	0.2−
1998 06 26	704	0.5+	0.0	1999 09 08	704	0.2+	0.0	1999 10 03	704	0.5−	0.3+
1998 06 26	704	0.7+	1.0−	1999 09 08	704	0.0	0.6−	1999 10 03	704	0.2−	0.1+
1998 06 26	704	1.5−	1.3+	1999 09 08	704	0.4+	0.3+	1999 10 03	704	0.2−	0.0
1998 07 21	704	1.8+	0.7−	1999 09 10	704	0.1−	0.3−				
1998 07 21	704	1.6−	0.4−	1999 09 10	704	0.3+	0.3+				

1999 RM₁₀₈ = 1994 RB₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	69.23710		(2000.0)		P		Q				
<i>n</i>	0.19121324	ω	350.84527	+0.07844901		+0.98568525					
<i>a</i>	2.9839445	Ω	283.54880	−0.90466518		+0.00749579					
<i>e</i>	0.0360551	<i>i</i>	8.83007	−0.41883967		+0.16842924					
<i>P</i>	5.15	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1994 09 12	327	0.5+	0.0	1994 09 15	327	0.4+	0.5+	1999 09 18	704	0.5+	0.9−
1994 09 12	327	0.5−	0.2−	1994 09 15	327	1.3−	0.1−	1999 09 18	704	0.7−	0.1+
1994 09 12	327	0.1−	0.9−	1994 09 15	327	1.9+	1.0+	1999 09 18	704	0.0	0.3−
1994 09 12	327	0.4+	0.8−	1999 09 07	703	0.4−	0.2−	1999 09 18	704	0.4+	0.3−
1994 09 12	327	0.2+	0.0	1999 09 07	703	0.0	0.6−	1999 09 18	704	0.4+	0.2+
1994 09 12	327	0.9−	0.4−	1999 09 07	703	0.0	0.0	1999 10 01	703	0.2−	0.0
1994 09 12	327	0.2+	0.5+	1999 09 07	703	0.2−	0.3+	1999 10 01	703	0.8−	0.1−
1994 09 12	327	0.2+	0.2−	1999 09 08	704	0.1+	0.8+	1999 10 01	703	0.9−	0.5−
1994 09 12	327	0.1+	0.5+	1999 09 08	704	0.4+	0.1−	1999 10 01	703	0.4−	0.5−
1994 09 12	327	0.4−	0.1−	1999 09 08	704	0.5−	0.3+	1999 10 04	704	0.1−	0.8+
1994 09 14	327	0.3+	0.5+	1999 09 08	704	0.2+	0.2−	1999 10 04	704	0.7+	0.3+
1994 09 14	327	0.6−	0.2+	1999 09 10	704	1.3+	1.0+	1999 10 04	704	0.3−	0.1−
1994 09 14	327	0.3+	0.0	1999 09 10	704	0.1+	0.5+	1999 10 04	704	0.9+	0.4+
1994 09 14	327	0.6−	0.2−	1999 09 10	704	0.8−	0.3−	1999 10 04	704	0.5+	0.2−

1999 RL₁₀₉ = 1997 KK

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	238.35511		(2000.0)		P		Q
<i>n</i>	0.18545632	ω	274.20909		−0.64850492		−0.75312427
<i>a</i>	3.0453809	Ω	216.99472		+0.75077595		−0.60883341
<i>e</i>	0.1558451	<i>i</i>	10.59679		+0.12560591		−0.24925030
<i>P</i>	5.31	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1997 05 30	691	0.3−	1.2−	1997 06 08	809	0.1−	0.4+
1997 05 30	691	0.5−	0.8−	1999 09 08	704	0.2−	0.2−
1997 05 30	691	0.4−	0.6−	1999 09 08	704	0.2+	1.2+
1997 05 31	691	0.6−	1.4−	1999 09 08	704	0.2−	0.3−
1997 05 31	691	1.1−	1.0−	1999 09 08	704	0.1+	0.4+
1997 05 31	691	1.3−	0.8−	1999 09 08	704	0.5−	0.5+
1997 06 07	809	1.2+	1.1+	1999 09 09	704	0.2−	0.5+
1997 06 07	809	1.0+	1.3+	1999 09 09	704	0.4+	0.2−
1997 06 07	809	1.8+	1.5+	1999 09 09	704	0.6+	0.6+
1997 06 08	809	0.4+	0.6+	1999 09 09	704	0.3+	0.2+
1997 06 08	809	0.2+	1.0+	1999 09 09	704	0.0	0.3−

1999 RM₁₀₉ = 1987 KT₂ = 1998 FP₁₁₄

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	104.11400		(2000.0)		P		Q				
n	0.26524503	ω	325.73547		−0.53974872		+0.83653801				
a	2.3990421	Ω	271.42734		−0.74971959		−0.52857229				
e	0.0961147	i	5.40752		−0.38287316		−0.14427577				
P	3.72	H	14.6	G	0.15	U	3				
Residuals in seconds of arc											
1987 05 30	413	0.2+	0.0	1998 04 01	704	0.2+	0.5+	1999 09 09	704	0.6+	1.4−
1987 05 30	413	0.3−	0.3−	1998 04 01	704	0.6+	0.2−	1999 09 18	703	1.1−	0.3−
1998 03 31	704	0.7+	1.3−	1999 09 08	704	1.0−	0.1−	1999 09 18	703	0.6−	0.2−
1998 03 31	704	0.0	0.0	1999 09 08	704	0.0	0.9+	1999 09 18	703	0.7−	0.3−
1998 03 31	704	0.4−	0.5+	1999 09 08	704	1.0+	0.9+	1999 09 18	703	0.0	0.4+
1998 03 31	704	0.4+	0.7+	1999 09 08	704	0.4−	0.5+	1999 10 04	704	0.2−	0.1+
1998 04 01	704	0.4+	0.3+	1999 09 08	704	0.2−	0.5+	1999 10 04	704	0.5+	0.1−
1998 04 01	704	1.2−	0.5+	1999 09 09	704	0.9+	0.6+	1999 10 04	704	0.3+	0.8−
1998 04 01	704	0.7−	0.8−	1999 09 09	704	0.8+	0.2+	1999 10 04	704	0.2+	0.9−

1999 RO₁₀₉ = 1997 CR₂₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	16.66280		(2000.0)		P		Q				
n	0.23087634	ω	355.44949		+0.83649505		+0.53753916				
a	2.6315791	Ω	331.22366		−0.49552172		+0.65909599				
e	0.1666339	i	12.77314		−0.23395353		+0.52596970				
P	4.27	H	14.5	G	0.15	U	4				
Residuals in seconds of arc											
1997 02 03	691	0.2−	0.0	1999 09 08	704	0.2+	0.1+	1999 09 18	703	0.4−	0.2−
1997 02 03	691	0.2−	0.1−	1999 09 08	704	0.6+	0.0	1999 09 18	704	0.2−	0.0
1997 02 03	691	0.1−	0.1−	1999 09 08	704	0.7+	0.2−	1999 09 18	703	0.5−	0.2−
1997 02 13	691	0.2+	0.0	1999 09 08	704	0.7+	0.2−	1999 09 18	704	0.2+	0.5+
1997 02 13	691	0.0	0.0	1999 09 09	704	0.3+	0.4+	1999 09 18	703	0.5−	0.3+
1997 02 13	691	0.0	0.1−	1999 09 09	704	0.5+	0.3−	1999 10 03	704	0.4−	0.1+
1999 07 23	704	0.1+	0.6+	1999 09 09	704	0.6+	0.0	1999 10 03	704	0.5−	0.2+
1999 07 23	704	0.2+	0.2+	1999 09 09	704	0.6+	0.7−	1999 10 03	704	0.5−	0.2+
1999 07 23	704	0.7+	0.3−	1999 09 18	704	0.1+	0.2−	1999 10 03	704	0.2−	0.0
1999 07 23	704	0.7−	0.3−	1999 09 18	704	0.3−	0.7−	1999 10 03	704	0.3−	0.3+
1999 07 23	704	0.2+	0.0	1999 09 18	703	0.7−	0.1−				
1999 09 08	704	0.0	0.2+	1999 09 18	704	0.2−	0.0				

1999 RH₁₁₀ = 1989 WN₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18908915	ω	170.86764	+0.39941755	−0.90445232		
<i>a</i>	3.0062491	Ω	255.47491	+0.83104961	+0.42618295		
<i>e</i>	0.0863724	<i>i</i>	8.90038	+0.38706868	+0.01827829		
<i>P</i>	5.21	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1989 11 28	033	1.9−	1.3+	1999 09 08	704	0.6−	0.8−	1999 09 18	704	0.2−	0.5+
1989 11 28	033	2.0+	1.5+	1999 09 08	704	0.6−	0.4−	1999 09 18	704	0.2−	0.1−
1989 11 29	033	0.3+	0.9−	1999 09 08	704	0.8−	0.6+	1999 09 18	704	0.2+	0.2+
1989 11 29	033	0.4−	1.0−	1999 09 08	704	0.9−	0.8−	1999 09 18	704	0.5+	0.3−
1998 06 24	704	0.7−	0.5+	1999 09 09	704	1.1+	0.7+	1999 10 03	704	0.7+	0.1+
1998 06 24	704	0.9+	0.6−	1999 09 09	704	0.8+	0.8−	1999 10 03	704	0.2+	0.6+
1998 06 24	704	0.5−	0.9+	1999 09 09	704	0.3+	0.1−	1999 10 03	704	0.3+	0.2−
1998 06 24	704	(6.3−	2.3+)	1999 09 09	704	0.4+	0.4−	1999 10 03	704	0.5−	0.7+
1999 09 08	704	0.2−	0.0	1999 09 09	704	0.4−	0.6−	1999 10 03	704	0.1+	0.1+

1999 RR₁₁₀ = 1997 AJ₁₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27740473	ω	68.81021	+0.99272584	−0.06116635		
<i>a</i>	2.3284137	Ω	294.57348	+0.00953975	+0.89858785		
<i>e</i>	0.1362207	<i>i</i>	6.54766	+0.12001833	+0.43450956		
<i>P</i>	3.55	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 01 14	817	0.5+	0.3−	1999 09 08	704	0.3+	0.1+	1999 09 18	704	0.7+	0.2−
1997 01 14	817	0.5−	0.3+	1999 09 08	704	0.5+	0.5+	1999 09 18	704	1.3+	0.1+
1997 01 15	817	0.2−	0.2−	1999 09 08	704	0.4+	0.3+	1999 09 18	704	(2.2+	0.3+)
1997 01 15	817	0.3+	0.3+	1999 09 08	704	0.5+	0.1+	1999 10 03	704	0.3+	0.1−
1999 09 05	703	0.3−	0.3+	1999 09 09	704	0.1+	0.1−	1999 10 03	704	0.1+	0.2−
1999 09 05	703	0.3+	0.4+	1999 09 09	704	0.3−	0.9−	1999 10 03	704	0.7−	0.2−
1999 09 05	703	0.4−	1.2+	1999 09 09	704	0.2+	0.0	1999 10 03	704	0.5−	0.0
1999 09 05	703	0.7−	0.5+	1999 09 09	704	1.1−	0.4−	1999 10 03	704	0.1+	0.5+
1999 09 08	704	0.5−	1.0−	1999 09 09	704	0.4−	0.8−				

1999 RX₁₁₀ = 1989 BG₂ = 1998 KB₆₄

Id. A. Doppler, S. Nakano, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24609457	ω	7.37235	+0.53691955	+0.83866722		
<i>a</i>	2.5219397	Ω	295.14216	−0.77908096	+0.45135140		
<i>e</i>	0.0703079	<i>i</i>	5.79505	−0.32365145	+0.30482652		
<i>P</i>	4.00	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 01 31	046	0.0	1.2−	1998 05 24	704	0.4−	0.1−	1999 09 09	704	0.0	0.2−
1989 01 31	046	0.4−	0.1−	1999 07 23	704	0.1−	0.8−	1999 09 09	704	0.1+	0.8−
1993 01 28	809	(10.3−	0.8−)	1999 07 23	704	1.3−	0.5−	1999 09 09	704	0.1−	0.5−
1993 01 28	809	(2.1+	2.2−)	1999 07 23	704	1.1−	0.0	1999 09 09	704	0.0	0.8−
1993 01 28	809	(1.9+	2.2−)	1999 09 05	703	1.0−	0.7+	1999 09 09	704	0.0	0.1−
1997 02 15	691	0.0	0.6+	1999 09 05	703	0.1+	0.6+	1999 09 09	704	0.7−	0.2−
1997 02 15	691	0.2+	0.4+	1999 09 05	703	0.4+	0.7+	1999 09 18	704	0.4+	0.7+
1997 02 15	691	0.0	0.5+	1999 09 05	703	0.3+	1.0+	1999 09 18	704	0.4+	0.5−
1998 05 22	704	1.0+	0.0	1999 09 08	704	0.7+	0.1−	1999 09 18	704	0.0	0.1+
1998 05 22	704	0.1+	0.0	1999 09 08	704	0.4+	0.0	1999 09 18	704	0.2+	0.2+
1998 05 22	704	(2.8+	0.0)	1999 09 08	704	0.8+	0.1+	1999 09 18	704	0.2−	0.1−
1998 05 22	704	0.5−	0.1−	1999 09 08	704	0.2+	0.1−	1999 10 03	704	0.4+	0.5+
1998 05 24	704	0.7+	0.5+	1999 09 08	704	0.8−	0.3−	1999 10 03	704	0.4−	0.1+
1998 05 24	704	0.1+	0.3+	1999 09 09	704	0.6+	0.2−	1999 10 03	704	0.2+	0.1−
1998 05 24	704	0.9+	0.1−	1999 09 09	704	0.3−	0.3−	1999 10 03	704	0.1+	0.2+
1998 05 24	704	1.6−	0.3−	1999 09 09	704	0.3+	0.1−	1999 10 03	704	0.2−	0.2+

1999 RZ₁₁₀ = 1997 EH₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23184095	ω	24.36714	+0.99736891	+0.03330698		
<i>a</i>	2.6242747	Ω	333.48043	−0.06166585	+0.85676606		
<i>e</i>	0.1337984	<i>i</i>	8.29132	+0.03811266	+0.51462856		
<i>P</i>	4.25	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 03 09	691	0.3−	0.1−	1999 09 08	704	0.6+	0.8+	1999 09 18	704	0.4−	0.8−
1997 03 09	691	0.3−	0.1+	1999 09 08	704	0.0	0.1−	1999 09 18	704	0.0	1.0−
1997 03 09	691	0.2−	0.1+	1999 09 08	704	0.8+	0.4+	1999 09 18	704	0.2+	0.3−
1997 03 15	691	0.5+	0.2−	1999 09 08	704	0.2−	0.1+	1999 09 18	704	0.8−	0.7−
1997 03 15	691	0.2+	0.0	1999 09 08	704	0.6−	1.2−	1999 10 03	704	0.3+	0.3−
1997 03 15	691	0.1+	0.0	1999 09 09	704	0.2+	1.7−	1999 10 03	704	0.2−	0.3+
1999 09 05	703	0.1−	0.2+	1999 09 09	704	0.6+	0.1−	1999 10 03	704	0.1+	0.6+
1999 09 05	703	0.2−	0.5+	1999 09 09	704	0.4−	0.4+	1999 10 03	704	0.1−	0.7+
1999 09 05	703	0.7−	0.1+	1999 09 09	704	0.3+	0.6+	1999 10 03	704	0.2−	0.5+
1999 09 05	703	0.0	1.3+	1999 09 18	704	0.8+	0.4−				

1999 RQ₁₁₃ = 1991 EH₄ = 1998 FS₁₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28219134	ω	269.07549	−0.82536693	+0.56319525		
<i>a</i>	2.3020085	Ω	305.20049	−0.49673053	−0.75782471		
<i>e</i>	0.1062048	<i>i</i>	2.78870	−0.26838072	−0.32941285		
<i>P</i>	3.49	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 03 12	809	0.6−	0.3−	1999 08 07	699	0.0	1.0+	1999 09 09	704	0.7+	0.7+
1991 03 12	809	0.3−	0.4−	1999 08 07	699	0.6+	1.8−	1999 09 09	704	0.3+	0.6−
1991 03 12	809	0.5+	0.2−	1999 08 07	699	0.5−	0.6+	1999 09 09	704	0.6+	0.1+
1991 03 14	809	(0.4+	2.9−)	1999 08 22	699	1.2−	0.4+	1999 09 09	704	0.2+	0.0
1991 03 14	809	(0.2+	2.9−)	1999 08 22	703	0.5−	0.7+	1999 09 09	704	0.2−	0.2−
1991 03 14	809	(0.4+	2.8−)	1999 08 22	703	0.4−	0.6+	1999 09 09	704	0.2−	0.4+
1994 04 05	691	(7.9+	0.3+)	1999 08 22	703	0.9−	0.4−	1999 09 09	704	0.3+	0.2−
1994 04 05	691	(8.6+	0.1+)	1999 08 22	699	0.5−	0.8+	1999 09 09	704	0.4−	0.6+
1994 04 05	691	(16.5+	5.0+)	1999 08 22	703	0.8−	0.9−	1999 09 09	704	0.4+	0.3+
1998 03 20	704	0.4+	0.1−	1999 08 22	699	0.1−	0.1−	1999 09 13	704	0.1−	0.2+
1998 03 20	704	0.6+	0.7+	1999 09 07	704	0.8+	1.1−	1999 09 13	704	0.0	0.8−
1998 03 20	704	0.0	0.2+	1999 09 07	704	0.3+	0.0	1999 09 13	704	0.1+	0.1−
1998 03 20	704	0.4+	0.7+	1999 09 07	704	0.9−	0.9−	1999 09 13	704	0.1+	0.1−
1998 03 20	704	0.3−	0.6+	1999 09 07	704	0.7+	0.6−	1999 09 13	704	0.2−	0.0
1998 03 22	704	0.3−	0.8−	1999 09 07	704	0.6+	0.4−	1999 09 30	704	0.3+	0.6+
1998 03 22	704	0.5+	1.9−	1999 09 07	704	0.1+	0.5−	1999 09 30	704	0.3+	0.3+
1998 03 22	704	0.5−	0.1−	1999 09 07	704	0.2−	0.3−	1999 09 30	704	0.8+	0.3+
1998 03 22	704	0.3−	0.4−	1999 09 07	704	(0.0	2.4−)	1999 09 30	704	0.5+	0.0
1998 03 22	704	0.7−	1.0+	1999 09 07	704	0.2+	0.1+				

1999 RW₁₁₃ = 1998 HD₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	10.73376		(2000.0)		P		Q			
n	0.24305944	ω	108.19816		+0.77205303		+0.62529202			
a	2.5428909	Ω	213.37043		−0.63270579		+0.73923262			
e	0.1109558	i	11.93717		−0.06014571		+0.25009003			
P	4.06	H	15.1		G	0.15	U	4		

Residuals in seconds of arc

1998 04 21	704	0.4−	2.3+	1998 04 22	704	1.0−	2.9−	1999 09 10	704	0.4−	0.6+
1998 04 21	704	0.7+	0.0	1998 04 22	704	0.8−	0.4−	1999 09 10	704	1.3−	1.1−
1998 04 21	704	2.3+	1.8+	1999 09 09	704	0.4+	0.4−	1999 09 10	704	0.9−	0.5−
1998 04 21	704	0.9−	0.8−	1999 09 09	704	1.4+	0.2+	1999 10 04	704	1.2+	0.3+
1998 04 21	704	0.1+	1.1+	1999 09 09	704	0.0	0.6+	1999 10 04	704	0.3+	0.4−

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1998 04 22	704	1.1−	0.3+	1999 09 09	704	0.6+	0.3+	1999 10 04	704	0.3−	0.2−
1998 04 22	704	1.2+	1.4−	1999 09 09	704	0.3+	0.1+	1999 10 04	704	1.3−	0.5+

1999 RN₁₁₄ = 1998 HZ₁₀₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	39.81587		(2000.0)	P	Q
<i>n</i>	0.17198248	ω	230.33312	+0.24201258	+0.96979029
<i>a</i>	3.2024320	Ω	53.69866	−0.87817585	+0.23234546
<i>e</i>	0.1413410	<i>i</i>	2.17640	−0.41259798	+0.07431272
<i>P</i>	5.73	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 25	809	(0.8+ 2.4+)	1999 09 07	704	1.1−	0.9−	1999 09 09	704	0.9−	0.4+
1998 04 25	809	0.5+ 1.8+	1999 09 07	704	0.2+	0.8−	1999 09 13	704	0.4−	0.8+
1998 04 25	809	(2.1+ 2.3+)	1999 09 09	704	0.2+	0.3−	1999 09 13	704	1.6−	0.4+
1998 04 28	809	0.2+ 0.9+	1999 09 09	704	0.1+	0.0	1999 09 13	704	0.6+	0.6+
1998 04 28	809	0.8+ 0.4−	1999 09 09	704	0.0	0.1−	1999 09 13	704	0.9−	1.5+
1998 04 28	809	0.6+ 0.3−	1999 09 09	704	0.7+	0.8+	1999 09 13	704	0.6+	0.7+
1998 05 22	704	(1.8− 2.9−)	1999 09 09	704	0.2−	0.7−	1999 10 01	704	1.1+	0.2−
1998 05 22	704	1.3− 0.7−	1999 09 09	704	0.2+	0.1−	1999 10 01	704	1.0+	0.6−
1998 05 22	704	(1.1− 3.0−)	1999 09 09	704	1.5+	0.3+	1999 10 01	704	0.2+	0.3+
1998 05 22	704	0.7− 1.0−	1999 09 09	704	0.1−	0.3−	1999 10 01	704	0.4+	0.3+
1999 09 07	704	1.2− 0.3−	1999 09 09	704	1.3+	0.8−	1999 10 01	704	0.7−	0.3+
1999 09 07	704	1.4− 1.2−	1999 09 09	704	0.5+	0.4+	1999 10 01	704	0.2−	0.2−

1999 RR₁₁₄ = 1985 BW₁ = 1998 ER₁₉

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	13.90356		(2000.0)	P	Q
<i>n</i>	0.30877065	ω	333.60183	+0.68048180	+0.73260479
<i>a</i>	2.1679306	Ω	339.26795	−0.66441247	+0.60805340
<i>e</i>	0.1522952	<i>i</i>	2.48058	−0.30903169	+0.30587790
<i>P</i>	3.19	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1985 01 20	691	0.5−	1.0−	1998 03 04	809	0.9+	0.1+	1999 09 14	704	0.2+	0.3−
1985 01 20	691	0.4−	1.3−	1998 03 04	809	0.7+	0.2−	1999 09 27	699	1.4+	0.1+
1985 01 20	691	0.2−	0.8−	1999 09 07	704	0.2+	0.3−	1999 09 27	699	1.0+	0.7+
1996 10 05	691	0.0	0.4+	1999 09 07	704	0.3−	0.1−	1999 09 27	699	0.4−	1.7+
1996 10 05	691	0.1−	0.3+	1999 09 07	704	0.1−	0.4−	1999 09 30	699	0.0	1.0+
1996 10 18	566	0.4−	0.2+	1999 09 07	704	0.1+	0.5−	1999 09 30	699	0.1−	0.6+
1996 10 18	566	0.1+	0.2+	1999 09 07	704	0.0	0.2−	1999 09 30	699	0.5−	0.5+
1996 10 18	566	0.2−	0.3+	1999 09 09	704	0.2+	0.2−	1999 10 02	678	0.0	0.2−
1997 12 07	910	0.9−	1.2+	1999 09 09	704	0.4−	0.6−	1999 10 02	678	0.6−	0.3−
1997 12 07	910	0.1−	0.9+	1999 09 09	704	0.0	0.7−	1999 10 02	678	0.1−	0.2−
1997 12 07	910	0.3−	0.8+	1999 09 09	704	0.4+	0.6−	1999 10 02	704	0.6−	0.6−
1998 02 07	809	(2.1+	4.4+)	1999 09 09	704	0.1+	0.8−	1999 10 02	704	1.3+	0.5−
1998 02 07	809	(1.9+	4.4+)	1999 09 09	704	0.0	0.3−	1999 10 02	704	0.3+	0.4−
1998 02 07	809	(1.5+	4.5+)	1999 09 09	704	0.1+	0.1+	1999 10 02	704	0.2−	0.9+
1998 02 23	566	0.0	1.0+	1999 09 09	704	0.6−	0.4−	1999 10 03	678	1.0−	0.3+
1998 02 23	566	0.0	0.6+	1999 09 09	704	0.3+	0.1+	1999 10 03	678	0.2+	0.2+
1998 02 23	566	0.0	0.6+	1999 09 09	704	0.3+	0.3−	1999 10 07	704	(2.9+	1.0−)
1998 03 03	809	0.9−	1.6−	1999 09 14	704	0.4−	0.0	1999 10 07	704	1.9+	0.7−
1998 03 03	809	0.6−	1.0−	1999 09 14	704	0.1−	0.0	1999 10 07	704	(0.7−	3.2+)
1998 03 03	809	0.5−	1.0−	1999 09 14	704	0.3−	0.1−				
1998 03 04	809	1.1+	0.4−	1999 09 14	704	0.3−	0.3−				

1999 RF₁₁₅ = 1990 QG₈ = 1990 QS₁₅

Id. A. Doppler, G. V. Williams (d)

M.P.C. 36431

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	320.55292		(2000.0)	P	Q
<i>n</i>	0.21874367	ω	238.87781	+0.85946301	−0.50392861
<i>a</i>	2.7280085	Ω	151.11878	+0.50829271	+0.82453624
<i>e</i>	0.2380963	<i>i</i>	10.24480	+0.05442291	+0.25728573
<i>P</i>	4.51	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1990 08 16	809	1.5− 1.3+	1999 09 07	704	0.3−	0.4−	1999 09 09	704	0.3−	0.8+
1990 08 16	809	1.7− 0.1−	1999 09 07	704	0.1+	0.2−	1999 09 09	704	0.1−	0.5+
1990 08 16	809	0.5− 0.0	1999 09 07	704	0.3−	0.2+	1999 09 13	704	0.5−	0.1+
1990 08 24	809	1.1+ 1.8−	1999 09 09	704	0.7+	0.2+	1999 09 13	704	0.2+	0.8−
1990 08 24	809	0.3+ 1.9−	1999 09 09	704	0.8+	1.1+	1999 09 13	704	0.2−	0.5−
1990 08 24	809	0.2+ 1.6−	1999 09 09	704	0.1−	0.3+	1999 09 13	704	0.2−	0.1−
1990 08 26	809	0.2− 1.4+	1999 09 09	704	1.1+	1.1−	1999 09 13	704	0.1−	0.2−
1990 08 26	809	0.9+ 1.2+	1999 09 09	704	0.8+	1.0−	1999 09 30	704	0.6−	0.0
1990 08 26	809	1.4+ 0.5+	1999 09 09	704	0.4−	0.8+	1999 09 30	704	0.6+	0.1−
1999 09 07	704	0.2− 0.3+	1999 09 09	704	0.6−	0.4+	1999 09 30	704	0.1+	0.6+
1999 09 07	704	0.2− 0.1−	1999 09 09	704	0.1+	0.2+	1999 09 30	704	0.6−	0.0

1999 RY₁₁₅ = 1998 KN₄₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	319.50005		(2000.0)	P	Q
<i>n</i>	0.18492334	ω	218.91363	+0.96814816	−0.23321645
<i>a</i>	3.0512296	Ω	154.13239	+0.24784832	+0.94426846
<i>e</i>	0.1474420	<i>i</i>	12.05232	−0.03550143	+0.23230834
<i>P</i>	5.33	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1998 05 23	704	0.1− 0.1+	1999 07 13	704	0.4+	0.1+	1999 09 07	704	0.8−	1.1−
1998 05 23	704	0.0 0.4+	1999 07 13	704	0.2+	0.6−	1999 09 09	704	0.8+	0.0
1998 05 23	704	0.1+ 0.4−	1999 07 13	704	0.3+	1.1−	1999 09 09	704	0.5+	0.1−
1998 05 23	704	0.4+ 1.0−	1999 07 23	704	0.1−	0.3+	1999 09 09	704	0.2+	0.8−
1998 05 23	704	0.7− 0.9−	1999 07 23	704	0.5+	0.5+	1999 09 09	704	0.2+	0.1−
1998 05 23	699	0.9+ 0.3−	1999 07 23	704	0.2−	0.1−	1999 09 09	704	0.2−	0.4−
1998 05 23	699	0.4+ 0.2+	1999 08 12	699	0.7−	0.5+	1999 09 13	704	0.9+	0.7+
1998 05 23	699	0.5+ 0.7+	1999 08 12	699	0.7−	0.6+	1999 09 13	704	0.7+	0.3+
1998 05 26	704	0.1+ 0.5+	1999 08 12	699	0.5−	0.4+	1999 09 13	704	0.4+	0.3+
1998 05 26	704	0.3− 0.5+	1999 09 06	699	0.1−	0.7+	1999 09 13	704	0.7+	0.4+
1998 05 26	704	0.4+ 0.0	1999 09 06	699	0.9−	0.3+	1999 09 13	704	0.2+	0.1+
1998 05 26	704	0.7− 0.9−	1999 09 06	699	0.7−	0.7−	1999 10 13	691	0.1−	0.1−
1998 05 26	704	1.1− 1.2+	1999 09 07	704	0.0	0.6+	1999 10 13	691	0.1+	0.1−
1999 07 13	704	0.1+ 0.4+	1999 09 07	704	0.1+	0.1−	1999 10 13	691	0.4−	0.7−
1999 07 13	704	0.1+ 0.3−	1999 09 07	704	0.7−	0.3−				

1999 RM₁₁₆ = 1998 FA₁₀₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	13.21927		(2000.0)	P	Q
<i>n</i>	0.20956638	ω	32.56564	+0.50485324	+0.84706633
<i>a</i>	2.8070812	Ω	268.25400	−0.82329818	+0.41466656
<i>e</i>	0.1659752	<i>i</i>	9.56784	−0.25942883	+0.33246094
<i>P</i>	4.70	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 31	704	1.9+ 0.8+	1998 04 01	704	1.7−	1.2+	1999 09 09	704	0.8+	0.5−
1998 03 31	704	0.7− 1.1+	1998 08 22	703	1.2+	0.2−	1999 09 09	704	0.1−	0.4−
1998 03 31	704	1.2+ 1.4−	1998 08 22	703	1.2−	0.3+	1999 09 09	704	0.3−	0.6−
1998 03 31	704	0.6− 1.1−	1998 08 22	703	0.4+	0.1−	1999 09 09	704	0.0	0.5−
1998 03 31	704	0.3+ 0.7−	1998 08 22	703	0.2−	0.4+	1999 09 14	704	0.5+	0.3+
1998 04 01	704	0.0 0.9+	1999 09 06	699	0.4−	0.6+	1999 09 14	704	0.1+	0.3+
1998 04 01	704	0.5− 1.2−	1999 09 06	699	0.0	0.7+	1999 09 14	704	0.3−	0.5+
1998 04 01	704	0.4− 1.2+	1999 09 06	699	0.9−	0.8−	1999 09 14	704	0.3+	0.5−
1998 04 01	704	0.4+ 0.8−	1999 09 09	704	0.0	0.2−	1999 09 14	704	0.0	0.6+

1999 RT₁₁₆ = 1930 KP = 1970 EK₂ = 1974 FT = 1995 QA₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	84.29798		(2000.0)	P	Q
<i>n</i>	0.24448694	ω	313.57530	-0.84601673	+0.52771649
<i>a</i>	2.5329830	Ω	258.41326	-0.46409070	-0.79904622
<i>e</i>	0.1978148	<i>i</i>	4.44760	-0.26244145	-0.28816738
<i>P</i>	4.03	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 1

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

1930 05 25	690	(1.5- 4.5-)	1998 02 26	566	0.0	0.1-	1999 09 07	704	0.0	0.2+
1930 05 27	690	(2.2+ 7.0-)	1999 07 13	704	0.1+	0.1+	1999 09 07	704	0.1-	1.0-
1930 05 29	690	0.4- 1.7-	1999 07 13	704	0.6-	0.1+	1999 09 08	703	0.5+	0.1-
1930 05 31	690	(0.14- 0.00-)X	1999 07 13	704	0.5-	0.1+	1999 09 08	703	0.6+	0.3+
1970 03 04	805	1.0+ 0.3+	1999 07 13	704	0.3-	0.1+	1999 09 08	703	0.7-	0.8+
1970 03 04	805	0.5+ 0.6+	1999 07 13	704	0.9-	0.0	1999 09 08	703	0.7-	0.3+
1970 03 04	805	0.9- 0.6+	1999 07 23	704	0.3+	0.7+	1999 09 09	704	0.4+	0.3-
1974 03 20	095	0.6+ 1.1+	1999 07 23	704	0.3+	0.2+	1999 09 09	704	0.2-	0.7+
1995 08 22	691	0.9- 0.2+	1999 07 23	704	0.6+	0.5+	1999 09 09	704	0.3+	0.7+
1995 08 22	691	0.6- 0.1-	1999 07 23	704	0.2-	0.2+	1999 09 09	704	0.5+	0.6+
1995 08 22	691	0.6- 0.0	1999 09 05	699	0.5-	0.1-	1999 09 09	704	0.2+	0.3+
1995 08 27	691	0.2- 0.2-	1999 09 05	699	0.3-	0.1+	1999 09 13	704	0.1+	0.2-
1995 08 27	691	1.2+ 0.5+	1999 09 05	699	0.2-	0.2+	1999 09 13	704	1.0+	0.5-
1995 08 27	691	0.3- 0.3-	1999 09 07	704	0.3+	0.0	1999 09 13	704	(1.0+ 2.2-)	
1998 02 26	566	0.1- 0.1-	1999 09 07	704	0.1-	0.2-	1999 09 13	704	0.4+	0.2-
1998 02 26	566	0.3- 0.1-	1999 09 07	704	0.7+	0.1-	1999 09 13	704	0.4-	1.0-

1999 RO₁₁₇ = 1995 SP₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	119.01757		(2000.0)	P	Q
<i>n</i>	0.24121003	ω	288.48599	-0.96594911	+0.19334948
<i>a</i>	2.5558723	Ω	262.94031	-0.11802221	-0.92060688
<i>e</i>	0.1320107	<i>i</i>	9.97617	-0.23024569	-0.33926237
<i>P</i>	4.09	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1995 09 21	691	0.4+	0.2+	1999 07 13	704	0.1-	0.3+	1999 09 09	704	0.5-	0.5-
1995 09 21	691	0.2-	0.3+	1999 07 13	704	0.1-	0.3-	1999 09 09	704	0.4+	0.3-
1995 09 21	691	0.7-	0.1-	1999 07 13	704	0.4-	0.2+	1999 09 09	704	0.4-	0.5-
1995 09 25	691	0.0	0.1-	1999 09 06	699	0.9+	1.0+	1999 09 14	704	0.7+	0.3-
1995 09 25	691	0.2+	0.0	1999 09 06	699	0.7-	0.3+	1999 09 14	704	0.2+	0.9-
1995 09 25	691	0.3+	0.0	1999 09 06	699	0.1+	0.8+	1999 09 14	704	0.7-	0.1+
1999 07 13	704	0.2+	0.5-	1999 09 09	704	0.4+	0.8+	1999 09 14	704	0.3+	0.2+
1999 07 13	704	0.4+	0.3+	1999 09 09	704	0.3-	0.3-	1999 09 14	704	0.4-	0.6-

1999 RF₁₁₈ = 1998 FQ₁₂₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	37.91198		(2000.0)	P	Q
<i>n</i>	0.22083189	ω	115.82587	+0.05738189	+0.99409038
<i>a</i>	2.7107836	Ω	156.89693	-0.97928788	+0.07399789
<i>e</i>	0.1258515	<i>i</i>	13.58250	-0.19417151	-0.07942692
<i>P</i>	4.46	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1998 03 24	566	0.3-	0.4-	1999 08 12	699	0.9+	0.3-	1999 09 13	704	0.6+	0.5-
1998 03 24	566	0.4-	0.7-	1999 08 12	699	0.2-	0.3+	1999 09 13	704	1.2+	0.6+
1998 03 24	566	0.2-	0.6-	1999 08 12	699	1.1+	0.8-	1999 09 13	704	0.1-	0.7+
1998 03 29	120	0.1-	0.7+	1999 08 12	699	0.5-	0.8+	1999 09 13	704	0.4+	0.3-
1998 03 29	120	0.4-	0.1+	1999 09 06	699	1.0-	0.8+	1999 09 29	704	0.3-	1.3+
1998 03 29	120	0.6+	0.1+	1999 09 06	699	0.3-	0.9+	1999 09 29	704	0.0	0.1-
1998 03 30	120	0.3+	0.5+	1999 09 06	699	1.7-	0.4+	1999 09 29	704	0.5+	0.2+
1998 03 30	120	0.1-	0.2+	1999 09 07	704	(0.0	2.1-)	1999 09 29	704	0.8+	0.8-

1998 03 30	120	0.6+	0.3+	1999 09 07	704	0.9-	0.4-	1999 10 04	691	0.5+	0.2-
1999 07 13	704	0.3+	0.0	1999 09 07	704	1.2-	1.3-	1999 10 04	691	0.2+	0.2+
1999 07 13	704	0.1+	0.5-	1999 09 09	704	0.1-	0.2-	1999 10 04	691	0.0	0.1-
1999 07 13	704	0.1+	0.5-	1999 09 09	704	1.2+	0.1-	1999 10 14	691	0.0	0.1+
1999 07 13	704	0.1-	0.7+	1999 09 09	704	0.6-	0.2-	1999 10 14	691	0.1-	0.1+
1999 07 13	704	0.4-	0.3-	1999 09 09	704	0.3-	0.2-	1999 10 14	691	0.0	0.0
1999 08 12	699	0.6+	0.0	1999 09 09	704	0.0	0.4-				
1999 08 12	699	0.6-	0.4+	1999 09 13	704	0.1-	0.1-				

1999 RT₁₁₈ = 1998 FQ₁₃₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	8.56778		(2000.0)	P	Q
<i>n</i>	0.22377325	ω	133.61366	+0.63253754	+0.77435045
<i>a</i>	2.6869769	Ω	175.52754	-0.75783463	+0.62320245
<i>e</i>	0.1727418	<i>i</i>	12.33771	-0.15994664	+0.10954490
<i>P</i>	4.40	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	0.2+	1.0-	1998 03 29	704	(1.3- 2.5-)	1999 09 06	699	0.4-	1.0+	
1998 03 20	704	0.3+	1.8+	1998 03 29	704	0.6-	0.1+	1999 09 09	704	0.3-	0.3-
1998 03 20	704	0.5+	0.2+	1998 03 29	704	0.2-	1.7-	1999 09 09	704	0.4-	0.2-
1998 03 20	704	0.6+	1.2-	1998 03 29	704	0.9+	0.5+	1999 09 09	704	0.2+	0.5-
1998 03 25	691	0.5-	1.2+	1998 03 29	704	0.7-	0.6+	1999 09 09	704	0.1+	0.2-
1998 03 25	691	0.4-	0.2+	1998 04 30	704	0.1-	0.7+	1999 09 09	704	0.2+	0.4-
1998 03 25	691	0.1+	0.2+	1998 04 30	704	0.5+	0.5-	1999 09 14	704	0.4+	0.8-
1998 03 28	704	1.0-	0.3+	1998 04 30	704	1.1+	0.5+	1999 09 14	704	0.2+	0.1-
1998 03 28	704	0.5-	0.2+	1998 04 30	704	(4.3- 1.6+)	1999 09 14	704	0.3+	0.1+	
1998 03 28	704	0.5-	1.1-	1999 09 06	699	0.1-	1.4-	1999 09 14	704	0.4-	0.7-
1998 03 28	704	0.4+	1.2-	1999 09 06	699	0.2+	0.3+				

1999 RX₁₁₈ = 1955 TM = 1986 RX₁₀ = 1998 KB₄₉

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	310.97678		(2000.0)	P	Q
<i>n</i>	0.22306696	ω	201.87133	+0.78983306	-0.61055504
<i>a</i>	2.6926457	Ω	196.17216	+0.58912190	+0.78163499
<i>e</i>	0.2509274	<i>i</i>	12.05958	+0.17058464	+0.12755112
<i>P</i>	4.42	<i>H</i>	13.4	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1955 10 11	760	1.3+	0.5+	1998 05 26	704	0.4+	0.6-	1999 09 09	704	0.1-	0.1-
1955 10 11	760	0.6+	1.2+	1998 05 26	704	0.1+	0.4-	1999 09 09	704	0.3-	0.2-
1955 10 20	760	0.5-	0.7-	1999 07 22	704	0.3+	0.4+	1999 09 09	704	0.5-	0.5-
1955 10 20	760	1.3-	1.4-	1999 07 22	704	0.7+	0.6+	1999 09 14	704	0.3+	0.1+
1986 09 09	095	0.3-	0.9+	1999 07 22	704	0.0	0.2+	1999 09 14	704	0.3-	0.2-
1998 05 23	704	0.1-	1.2+	1999 07 22	704	0.4+	0.5+	1999 09 14	704	0.1+	0.5-
1998 05 23	704	0.2-	0.6+	1999 07 22	704	0.1-	0.9+	1999 09 14	704	0.0	0.5-
1998 05 23	704	1.0+	0.0	1999 09 07	699	0.1-	0.0	1999 09 14	704	0.6-	1.3-
1998 05 23	704	1.6-	0.6-	1999 09 07	699	0.1-	0.1-	1999 10 09	106	0.1-	0.0
1998 05 23	704	0.9-	1.2-	1999 09 07	699	0.2+	0.2-	1999 10 09	106	0.4+	0.3+
1998 05 26	704	0.8+	1.0-	1999 09 09	704	0.2-	0.3-	1999 10 09	106	0.9+	0.2+
1998 05 26	704	0.5+	1.6+	1999 09 09	704	0.1-	0.3+				

1999 RQ₁₁₉ = 1978 RT₁₀ = 1998 DU₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	31.02296		(2000.0)	P	Q
<i>n</i>	0.28078203	ω	109.67439	+0.24293220	+0.96995634
<i>a</i>	2.3097050	Ω	174.33754	-0.93200088	+0.23709643
<i>e</i>	0.1161196	<i>i</i>	7.56287	-0.26899499	+0.05449748
<i>P</i>	3.51	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1978 09 06	809	1.2+	0.8-	1999 08 12	699	0.6-	0.9+	1999 09 13	704	0.1-	0.2-
1978 09 10	809	1.7-	1.1+	1999 08 12	699	0.2-	0.7+	1999 09 29	704	0.4+	0.4-

1978 09 10	809	0.3+	0.6−	1999 09 07	704	0.1+	0.0	1999 09 29	704	0.6+	0.0
1978 09 10	809	0.3−	1.8+	1999 09 07	704	0.7−	0.4+	1999 09 29	704	0.1+	1.1−
1978 09 10	809	0.2+	0.1−	1999 09 07	704	0.3−	0.4−	1999 09 30	704	0.4+	0.5+
1998 02 22	566	0.3−	0.0	1999 09 07	704	0.1+	0.3+	1999 09 30	704	0.5−	0.3+
1998 02 22	566	0.3−	0.2−	1999 09 07	704	0.7+	0.6+	1999 09 30	704	0.5−	0.3−
1998 02 22	566	0.3−	0.4−	1999 09 09	704	0.0	0.4−	1999 09 30	704	1.7−	0.7−
1998 02 23	566	0.2+	0.4−	1999 09 09	704	0.5+	0.0	1999 09 30	704	0.5−	0.5−
1998 02 23	566	0.3+	0.2−	1999 09 09	704	0.5+	0.7−	1999 10 04	703	0.4−	0.0
1998 02 23	566	0.0	0.4−	1999 09 09	704	0.2−	0.6−	1999 10 04	703	0.0	0.4+
1999 07 23	704	0.4+	0.2−	1999 09 09	704	0.2−	0.7−	1999 10 04	703	1.0+	1.6+
1999 07 23	704	0.2−	0.0	1999 09 13	704	1.2+	1.5−	1999 10 04	703	(2.1+	2.2+)
1999 07 23	704	0.1−	0.2−	1999 09 13	704	1.5+	0.9−				
1999 08 12	699	0.2−	0.3+	1999 09 13	704	0.5−	0.5−				

1999 RT₁₁₉ = 1995 SZ₄₆ = 1997 ER₁₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	345.02536		(2000.0)	P	Q
<i>n</i>	0.23489237	ω	170.93883	+0.96814439	+0.25023899
<i>a</i>	2.6014977	Ω	174.54583	−0.23512282	+0.92058826
<i>e</i>	0.2125762	<i>i</i>	5.29318	−0.08610284	+0.29982946
<i>P</i>	4.20	<i>H</i>	15.8	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1995 09 26	691	0.1+	0.1+	1997 03 10	691	0.1−	0.2+	1999 09 09	704	0.7+	0.7−
1995 09 26	691	0.0	0.0	1997 03 10	691	0.6−	0.2+	1999 09 09	704	0.1−	0.0
1995 09 26	691	0.0	0.0	1999 09 06	699	0.3−	1.1+	1999 09 09	704	0.8+	0.1+
1995 09 30	691	0.0	0.1−	1999 09 06	699	0.5−	0.2+	1999 09 09	704	0.8−	0.6+
1995 09 30	691	0.2+	0.2−	1999 09 06	699	1.3+	1.1+	1999 09 13	704	0.3−	0.2+
1995 09 30	691	0.2−	0.1+	1999 09 07	704	0.1−	0.3−	1999 09 13	704	0.5−	0.2−
1997 03 04	691	0.5+	0.1+	1999 09 07	704	0.1+	1.1−	1999 09 13	704	0.0	0.1−
1997 03 04	691	0.3+	0.1+	1999 09 07	704	0.2−	0.4+	1999 09 13	704	0.1+	0.5−
1997 03 04	691	0.1−	0.0	1999 09 07	704	0.6+	0.1−	1999 09 13	704	0.3−	0.3−
1997 03 10	691	0.1−	0.1−	1999 09 07	704	0.4−	0.3−				

1999 RW₁₁₉ = 1998 FR₉₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	22.20099		(2000.0)	P	Q
<i>n</i>	0.22586987	ω	320.50808	+0.31409236	+0.94255675
<i>a</i>	2.6703233	Ω	327.33354	−0.80903075	+0.20304707
<i>e</i>	0.1818849	<i>i</i>	12.16310	−0.49680502	+0.26525206
<i>P</i>	4.36	<i>H</i>	13.9	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1997 01 02	327	0.2+	0.3−	1999 07 14	704	0.5−	0.1−	1999 09 09	704	0.4−	0.0
1997 01 02	327	0.0	0.0	1999 07 14	704	0.5−	0.4−	1999 09 09	704	0.0	0.2−
1997 01 02	327	0.4−	0.1−	1999 07 14	704	0.4−	0.2+	1999 09 13	704	1.5+	0.7−
1998 02 22	566	0.5+	0.5−	1999 09 04	703	0.4+	0.7+	1999 09 13	704	0.3+	0.2−
1998 02 22	566	0.5+	0.3−	1999 09 04	703	0.7−	0.4+	1999 09 13	704	1.1+	0.2−
1998 02 22	566	0.2+	0.2−	1999 09 04	703	0.7−	0.2+	1999 09 13	704	1.2−	0.7−
1998 03 31	704	0.5−	0.8−	1999 09 04	703	1.3−	0.6+	1999 09 13	704	0.5−	0.0
1998 03 31	704	0.9+	0.2+	1999 09 05	691	0.4−	0.3+	1999 09 29	704	1.7+	1.5−
1998 03 31	704	(2.2+	2.5+)	1999 09 05	691	0.4−	0.0	1999 09 29	704	1.5+	0.3+
1998 03 31	704	0.4−	0.3−	1999 09 05	691	0.2−	0.3+	1999 09 29	704	1.1+	0.4−
1998 04 01	704	0.5−	0.5−	1999 09 06	699	1.0−	0.3+	1999 09 29	704	0.1−	1.1+
1998 04 01	704	0.1−	0.3−	1999 09 06	699	0.6−	0.2+	1999 09 30	704	0.5+	0.7−
1998 04 01	704	0.4+	0.3+	1999 09 06	699	0.9−	0.0	1999 09 30	704	1.3+	0.6+
1998 04 01	704	0.0	0.6+	1999 09 07	704	0.3−	0.2−	1999 09 30	704	1.1+	0.2−
1998 04 01	704	0.1−	0.2+	1999 09 07	704	0.0	0.2−	1999 09 30	704	0.2+	0.0
1998 04 18	704	0.0	0.0	1999 09 07	704	0.0	0.1−	1999 09 30	704	1.0+	0.7+
1998 04 18	704	0.3−	0.5−	1999 09 07	704	0.3−	0.2+	1999 10 06	704	0.0	1.4−
1998 04 18	704	0.2−	0.2−	1999 09 07	704	0.2−	0.3−	1999 10 06	704	(2.2+	1.4−)
1998 04 18	704	2.0−	0.1−	1999 09 09	704	0.2+	0.7−	1999 10 06	704	(2.2+	1.1−)
1999 07 14	704	0.0	0.4−	1999 09 09	704	0.2−	0.2−	1999 10 06	704	1.2+	1.0−
1999 07 14	704	0.0	0.2−	1999 09 09	704	0.5−	0.5+	1999 10 06	704	1.0+	0.7+

1999 RK₁₂₀ = 1998 EJ₁₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	37.33624		(2000.0)	P	Q
<i>n</i>	0.26585696	ω	101.40825	+0.07957328	+0.99677994
<i>a</i>	2.3953594	Ω	173.13269	−0.94379827	+0.07852980
<i>e</i>	0.1462049	<i>i</i>	4.74534	−0.32080045	+0.01621181
<i>P</i>	3.71	<i>H</i>	15.1	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 02 23	566	0.1+	0.1−	1999 06 20	703	0.4+	0.0	1999 09 09	704	0.7+	0.2−
1998 02 23	566	0.3−	0.1−	1999 09 06	699	0.6−	0.7+	1999 09 09	704	0.0	0.9−
1998 02 23	566	0.0	0.3−	1999 09 06	699	0.7−	0.3+	1999 09 09	143	0.4+	0.7−
1998 03 03	809	0.6−	0.6+	1999 09 06	699	0.1−	0.5−	1999 09 09	143	0.2+	0.9−
1998 03 03	809	0.4+	0.1−	1999 09 07	704	0.0	0.0	1999 09 09	143(14.9+	1.1−)	
1998 03 03	809	0.3+	0.0	1999 09 07	704	0.5−	0.6+	1999 09 13	704	0.2+	0.9−
1998 03 04	809	0.1+	1.2−	1999 09 07	704	0.2−	0.0	1999 09 13	704	0.6+	0.5−
1998 03 04	809	0.4−	0.2−	1999 09 07	704	0.5−	0.6+	1999 09 13	704	0.3+	0.6+
1998 03 04	809	0.3−	0.6−	1999 09 07	704	0.1−	0.1+	1999 09 13	704	0.8+	0.3−
1999 06 20	703	0.1−	0.5−	1999 09 09	704	0.1+	0.3−	1999 09 13	704	0.4+	0.1+
1999 06 20	703	0.0	0.5+	1999 09 09	704	0.2−	0.1+				
1999 06 20	703	0.3−	0.2+	1999 09 09	704	0.3−	0.2−				

1999 RV₁₂₀ = 1988 RC₄ = 1998 FB₄₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	353.05340		(2000.0)	P	Q
<i>n</i>	0.26449639	ω	161.22540	+0.89412230	+0.44663816
<i>a</i>	2.4035669	Ω	172.01175	−0.43499372	+0.88348460
<i>e</i>	0.2044380	<i>i</i>	13.54692	−0.10642263	+0.14131284
<i>P</i>	3.73	<i>H</i>	13.8	<i>G</i>	0.15
				<i>U</i>	2

Residuals in seconds of arc

1988 09 09	033	0.3−	1.3−	1999 05 20	704	0.8−	0.1+	1999 09 29	704	0.7+	0.5−
1988 09 09	033	0.2−	0.1−	1999 05 20	704	(2.9−	0.9−)	1999 09 29	704	0.4+	0.8−
1988 09 10	033	0.6+	1.3+	1999 05 20	704	0.6−	1.9−	1999 09 30	704	0.3+	0.2−
1988 09 12	071	0.2+	0.1+	1999 07 22	704	1.3+	0.7+	1999 09 30	704	0.4+	0.5−
1988 09 12	071	0.3−	0.0	1999 07 22	704	1.3+	0.1+	1999 09 30	704	0.4+	0.5−
1998 02 26	566	0.1+	1.8−	1999 07 22	704	1.1+	0.2+	1999 09 30	704	0.1+	0.6−
1998 02 26	566	(0.4+	2.1−)	1999 07 22	704	0.1+	0.4+	1999 09 30	704	0.3+	0.6−
1998 02 26	566	0.1−	1.9−	1999 07 22	704	0.4−	1.1−	1999 10 06	704	0.1−	0.1+
1998 03 20	704	0.3−	0.3−	1999 09 06	699	0.5−	0.3+	1999 10 06	704	0.2−	0.1−
1998 03 20	704	0.0	0.0	1999 09 06	699	0.2−	0.5+	1999 10 06	704	0.1+	0.0
1998 03 20	704	0.7−	0.3+	1999 09 06	699	0.0	0.3+	1999 10 06	704	0.0	0.1+
1998 03 20	704	0.4−	0.0	1999 09 08	704	0.1+	0.2+	1999 10 06	704	0.2+	0.0
1998 03 20	704	0.7−	0.3−	1999 09 08	704	0.3+	0.2+	1999 10 07	704	0.5−	0.1+
1998 03 22	704	0.3+	0.1+	1999 09 08	704	0.1−	0.2+	1999 10 07	704	0.4−	0.7+
1998 03 22	704	0.2+	0.4−	1999 09 09	704	0.1+	0.2+	1999 10 07	704	0.1−	0.2−
1998 03 22	704	0.4−	0.3−	1999 09 09	704	0.1−	0.3+	1999 10 07	704	0.5−	0.2−
1998 03 22	704	0.0	0.0	1999 09 09	704	0.1−	0.0	1999 10 10	106	0.1−	0.3+
1998 03 22	704	0.6−	1.4+	1999 09 09	704	0.1−	0.7+	1999 10 10	106	0.2+	0.3+
1998 03 26	566	0.4+	0.4+	1999 09 09	704	0.1+	0.5+	1999 10 15	704	1.7−	0.8+
1998 03 26	566	0.2+	0.6+	1999 09 14	704	0.2−	0.1−	1999 10 15	704	0.1−	0.3−
1998 03 26	566	0.1+	0.5+	1999 09 14	704	0.2−	0.2+	1999 10 15	704	0.2−	0.0
1998 04 19	704	0.0	0.2−	1999 09 14	704	0.5−	0.2+	1999 10 16	704	0.6−	0.2−
1998 04 19	704	0.9+	0.1−	1999 09 14	704	0.0	0.8+	1999 10 16	704	1.0+	0.5−
1998 04 19	704	0.2−	0.1+	1999 09 14	704	1.1−	1.2−	1999 10 16	704	0.1−	0.3−
1998 04 19	704	0.6+	0.1+	1999 09 29	704	0.4+	0.2−	1999 10 16	704	0.0	0.0
1998 04 19	704	0.5+	0.0	1999 09 29	704	0.1+	0.4−	1999 10 16	704	0.0	0.2−
1999 05 20	704	0.2−	0.9+	1999 09 29	704	0.0	0.7−				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	58.54652	(2000.0)	P		Q	
<i>n</i>	0.28289608	ω	28.30359	-0.22362513	+0.97063405	
<i>a</i>	2.2981838	Ω	228.92017	-0.91496618	-0.24040543	
<i>e</i>	0.0882797	<i>i</i>	6.75499	-0.33589982	+0.00864743	
<i>P</i>	3.48	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1998 02 22	566	0.2+	0.4-	1999 09 06	699	0.8-	1.0+	1999 09 14	704	0.8-	1.7+
1998 02 22	566	0.2+	0.1-	1999 09 06	699	0.5+	0.6-	1999 09 14	704	0.0	0.3+
1998 02 22	566	0.4+	0.4-	1999 09 09	704	0.3-	0.2+	1999 09 14	704	0.9+	0.1+
1998 02 23	566	0.2-	0.3+	1999 09 09	704	0.5+	0.1-	1999 09 14	704	0.2-	1.0-
1998 02 23	566	0.5-	0.4+	1999 09 09	704	0.2+	0.3-	1999 09 14	704	0.1-	0.2-
1998 02 23	566	0.0	0.2+	1999 09 09	704	0.0	0.8-				
1999 09 06	699	0.2-	0.6+	1999 09 09	704	0.4+	0.7-				

1999 RC₁₂₁ = 1997 HE₄ = 1998 KK₄₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	202.80893	(2000.0)	P		Q	
<i>n</i>	0.19099289	ω	282.09249	-0.57612754	-0.81482397	
<i>a</i>	2.9862391	Ω	203.44581	+0.79864023	-0.54443734	
<i>e</i>	0.0585843	<i>i</i>	9.30519	+0.17392768	-0.19912278	
<i>P</i>	5.16	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1997 04 28	704	0.8-	0.2+	1998 05 24	704	0.4+	0.5+	1999 07 23	704	0.8-	0.7+
1997 04 28	704	0.8-	0.9-	1998 05 24	704	0.2-	0.5+	1999 09 06	699	0.3+	1.3+
1997 04 28	704	1.3-	0.2+	1998 05 24	704	0.8+	1.3+	1999 09 06	699	0.6+	0.3+
1997 04 28	704	1.7-	0.5+	1998 05 24	704	0.5+	0.8+	1999 09 06	699	0.1-	0.9+
1997 04 29	704	1.0+	0.6+	1998 06 26	704	(1.9-	2.2-)	1999 09 09	704	0.5+	1.4-
1997 04 29	704	1.1+	0.5-	1998 06 26	704	1.1-	1.0-	1999 09 09	704	1.1+	0.2-
1997 04 29	704	1.2+	0.3-	1998 06 26	704	1.8-	0.3-	1999 09 09	704	0.6+	0.5-
1997 04 29	704	0.8+	0.7-	1998 06 26	704	(2.5-	0.9-)	1999 09 09	704	1.2+	0.1-
1997 04 29	704	0.3+	0.4-	1998 06 26	704	(3.0-	0.4+)	1999 09 09	704	0.2-	0.2-
1998 05 22	704	0.7+	0.2-	1999 07 12	704	0.5+	1.0-	1999 09 14	704	0.3-	0.2+
1998 05 22	704	0.7-	0.6+	1999 07 12	704	0.0	1.2-	1999 09 14	704	1.8-	0.8+
1998 05 22	704	0.9+	0.2-	1999 07 12	704	0.1-	0.2-	1999 09 14	704	0.3-	0.2+
1998 05 22	704	0.0	1.9-	1999 07 12	704	1.0-	0.1+	1999 09 14	704	0.8-	0.9+
1998 05 22	704	0.9+	0.1+	1999 07 23	704	1.2+	1.6-				
1998 05 24	704	0.5-	0.7+	1999 07 23	704	0.3-	0.1-				

1999 RT₁₂₂ = 1978 WE₁ = 1998 HT₇₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	23.32568	(2000.0)	P		Q	
<i>n</i>	0.22697477	ω	248.23679	+0.60554821	+0.79336175	
<i>a</i>	2.6616503	Ω	59.18324	-0.70069031	+0.56867997	
<i>e</i>	0.0906361	<i>i</i>	4.16388	-0.37728563	+0.21721009	
<i>P</i>	4.34	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1978 11 29	675	0.8-	1.7+	1998 05 01	704	0.1+	1.3+	1999 09 09	704	0.1+	0.4-
1978 11 30	675	0.2+	0.6+	1998 05 16	704	(0.7+	2.3+)	1999 09 09	704	0.7+	0.2-
1998 04 21	704	0.6+	0.3+	1998 05 16	704	1.1-	0.8+	1999 09 09	704	0.3+	0.0
1998 04 21	704	0.9+	0.9-	1998 05 16	704	1.0+	1.2+	1999 09 09	704	0.4+	0.4-
1998 04 21	704	1.0+	1.0-	1998 05 16	704	(0.3-	3.6+)	1999 09 09	704	1.0+	1.0-
1998 04 21	704	0.8+	1.4-	1998 05 31	557	(0.3-	10.2+)	1999 09 09	704	0.4+	0.1-
1998 04 21	704	0.1-	0.1+	1998 05 31	557	0.1+	0.7+	1999 09 09	704	0.1-	0.6+
1998 04 22	704	1.8-	0.7-	1999 08 12	699	0.7+	0.4+	1999 09 09	704	0.2-	0.3-
1998 04 22	704	0.2-	0.3-	1999 08 12	699	0.1-	0.6+	1999 09 13	704	0.1-	0.3-
1998 04 22	704	0.3-	0.2-	1999 08 12	699	0.6-	0.4+	1999 09 13	704	0.4+	0.3-
1998 04 22	704	0.5-	0.3-	1999 09 07	699	0.3-	0.1-	1999 09 13	704	0.3+	0.0
1998 04 22	704	0.0	0.0	1999 09 07	699	0.8-	0.1+	1999 09 13	704	0.0	0.0
1998 05 01	704	0.6-	0.2+	1999 09 07	699	0.6-	0.4+	1999 09 13	704	0.3+	0.2-
1998 05 01	699	1.5+	0.9+	1999 09 08	703	0.9-	0.2-	1999 09 30	704	0.5-	0.6-

1998 05 01	704	0.3-	0.2-	1999 09 08	703	0.5-	0.2-	1999 09 30	704	0.2-	0.1-
1998 05 01	699	0.2+	0.8+	1999 09 08	703	0.7-	0.5+	1999 09 30	704	0.0	0.3+
1998 05 01	704	0.0	0.4+	1999 09 08	703	0.5-	0.9+	1999 09 30	704	0.0	1.4+
1998 05 01	699	0.4-	0.1+	1999 09 09	704	0.3+	0.2-				
1998 05 01	704	0.1+	0.7+	1999 09 09	704	0.6+	0.0				

1999 RU₁₂₂ = 1997 CY₁₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	344.93498	(2000.0)	P		Q	
<i>n</i>	0.23053150	ω	209.72750	+0.99180565	+0.01018505	
<i>a</i>	2.6342027	Ω	148.89558	+0.01455599	+0.98131703	
<i>e</i>	0.2588050	<i>i</i>	14.27135	-0.12692389	+0.19212796	
<i>P</i>	4.28	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1997 02 06	691	0.0	0.1+	1999 09 09	704	0.5+	0.1-	1999 09 13	704	0.4+	0.3+
1997 02 06	691	0.3-	0.2+	1999 09 09	704	0.1+	0.9-	1999 09 13	704	0.5+	0.6+
1997 02 06	691	0.4-	0.3+	1999 09 09	704	1.5+	0.9-	1999 09 13	704	0.2-	0.7-
1997 02 10	691	0.4+	0.4+	1999 09 10	704	0.9+	1.2+	1999 09 13	704	1.0+	0.2+
1997 02 10	691	0.1+	0.1+	1999 09 10	704	0.0	0.0	1999 09 13	704	0.3+	0.8+
1997 02 13	691	0.0	0.7-	1999 09 10	704	1.0+	0.7+	1999 09 13	704	0.2+	0.9-
1997 02 13	691	0.2+	0.2-	1999 09 10	704	0.5-	0.3+	1999 09 13	704	0.7+	0.2-
1999 09 07	699	1.5-	1.2+	1999 09 10	704	0.3-	0.2-	1999 09 13	704	0.3+	0.5-
1999 09 07	699	0.8-	0.5+	1999 09 10	704	0.3+	0.3-	1999 09 13	704	0.0	0.3+
1999 09 07	699	1.2-	0.3+	1999 09 11	704	0.2-	0.1+	1999 09 13	704	0.1-	0.4-
1999 09 08	703	1.0-	0.2-	1999 09 11	704	0.1+	0.0	1999 09 13	704	0.2+	0.1+
1999 09 08	703	0.7-	0.3+	1999 09 11	704	0.3+	0.4-	1999 09 13	704	0.2+	0.5+
1999 09 08	703	1.6-	0.1+	1999 09 11	704	0.4-	0.2+	1999 09 13	704	1.0-	0.6+
1999 09 08	703	1.3-	0.0	1999 09 11	704	0.3+	0.0	1999 09 30	704	0.2+	0.0
1999 09 09	704	0.4+	0.5-	1999 09 11	704	0.3+	0.2-	1999 09 30	704	0.7-	0.4+
1999 09 09	704	0.8+	0.3+	1999 09 11	704	0.3+	0.2+	1999 09 30	704	0.0	0.1+
1999 09 09	704	0.5+	0.6-	1999 09 11	704	0.2+	0.0	1999 09 30	704	0.9-	0.9-
1999 09 09	704	0.0	0.3-	1999 09 11	704	0.0	0.0				
1999 09 09	704	0.7+	0.4-	1999 09 11	704	0.2+	0.6-				

1999 RV₁₂₂ = 1998 KK₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	24.12053	(2000.0)	P		Q	
<i>n</i>	0.18517577	ω	187.72183	+0.59417460	+0.79858614	
<i>a</i>	3.0484560	Ω	118.78248	-0.73198600	+0.58633669	
<i>e</i>	0.1166076	<i>i</i>	6.28860	-0.33339623	+0.13590241	
<i>P</i>	5.32	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 05 22	704	0.2+	1.6-	1999 09 07	699	1.5-	0.3+	1999 09 09	704	0.9+	0.1-
1998 05 22	704	0.5-	0.3+	1999 09 07	704	0.2+	1.3+	1999 09 09	704	0.2+	1.8-
1998 05 22	704	0.0	0.1+	1999 09 07	704	0.5+	0.1-	1999 09 09	704	0.2+	1.0-
1998 05 22	704	0.8+	0.9+	1999 09 07	704	1.0+	0.7+	1999 09 13	704	0.8+	0.2-
1998 05 24	704	0.0	1.1+	1999 09 07	699	0.9-	0.9+	1999 09 13	704	0.4+	0.7-
1998 05 24	704	1.0+	0.0	1999 09 07	704	0.8+	0.5+	1999 09 13	704	0.4+	0.5-
1998 05 24	704	1.1+	1.2-	1999 09 08	703	1.1-	0.3+	1999 09 13	704	0.1-	0.1-
1998 05 24	699	0.9-	0.0	1999 09 08	703	1.5-	0.5-	1999 09 13	704	0.3+	0.3-
1998 05 24	704	0.8-	0.1-	1999 09 08	703	0.4-	1.0+	1999 09 30	704	0.3-	0.4+
1998 05 24	699	0.2-	0.4-	1999 09 08	703	0.1+	1.8+	1999 09 30	704	0.9+	0.4+
1998 05 24	699	0.7-	0.9+	1999 09 09	704	1.2+	0.8+	1999 09 30	704	0.6-	0.1+
1999 08 12	699	0.4+	0.9-	1999 09 09	704	0.3+	0.3-	1999 09 30	704	0.6-	0.7-
1999 08 12	699	0.3-	0.2+	1999 09 09	704	0.6+	0.5-	1999 10 04	703	1.3-	0.2-
1999 08 12	699	0.9-	0.2-	1999 09 09	704	0.4+	0.5-	1999 10 04	703	0.3+	0.2-
1999 09 07	699	1.9-	0.1-	1999 09 09	704	0.6+	0.1+	1999 10 04	703	0.2-	0.4+
1999 09 07	704	0.0	0.3+	1999 09 09	704	0.7+	0.8-	1999 10 04	703	0.3+	0.1-

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M.P.C. 36435

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	303.69684		(2000.0)	P	Q	Williams			
<i>n</i>	0.28432730	ω	168.07094	+0.66806198	-0.73829998				
<i>a</i>	2.2904651	Ω	239.93198	+0.67358714	+0.65300814				
<i>e</i>	0.1167110	<i>i</i>	6.15367	+0.31618595	+0.16880021				
<i>P</i>	3.47	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1982 12 13	381	0.5+	0.1+	1999 09 09	704	0.1-	0.2-	1999 09 16	704	0.1+	0.1-
1982 12 14	381	0.0	0.4-	1999 09 09	704	0.2-	0.4-	1999 09 16	704	0.9+	0.2-
1982 12 14	381	0.5-	0.4+	1999 09 09	704	0.0	0.6+	1999 10 01	703	1.1-	0.0
1985 08 17	675	3.9-	1.0-	1999 09 10	704	0.1-	0.2-	1999 10 01	703	0.0	0.6-
1985 08 17	675	3.8+	1.3+	1999 09 10	704	0.2+	0.0	1999 10 01	703	1.1-	0.2+
1999 09 08	704	0.6-	0.3+	1999 09 10	704	0.9+	0.9-	1999 10 01	703	0.1-	0.9+
1999 09 08	704	0.2-	0.1-	1999 09 12	699	0.7-	0.6+	1999 10 04	704	0.1+	0.2-
1999 09 08	704	0.3+	0.3-	1999 09 12	699	0.2-	0.2-	1999 10 04	704	0.0	1.0-
1999 09 08	704	0.2+	0.3-	1999 09 12	699	0.2+	0.5+	1999 10 04	704	0.3+	0.2+
1999 09 09	704	0.2+	0.4-	1999 09 16	704	0.1+	0.4+	1999 10 04	704	0.8+	0.1-
1999 09 09	704	0.4-	0.8+	1999 09 16	704	0.3+	0.0	1999 10 04	704	0.1+	0.4+

1999 RU₁₂₃ = 1998 HC₅₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	49.40155		(2000.0)	P	Q	Williams			
<i>n</i>	0.20952875	ω	83.70885	+0.08705579	+0.99589081				
<i>a</i>	2.8074173	Ω	191.37602	-0.95671055	+0.07659484				
<i>e</i>	0.1880159	<i>i</i>	7.26854	-0.27771607	+0.04831902				
<i>P</i>	4.70	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3		

Residuals in seconds of arc

1998 03 25	704	0.6+	0.0	1998 05 16	704	0.6+	0.7+	1999 09 10	704	0.2-	0.1-
1998 03 25	704	0.7-	0.2+	1998 05 16	704	1.3-	0.2+	1999 09 10	704	0.1+	0.2-
1998 03 25	704	0.8-	1.2+	1998 05 16	704	0.8-	0.0	1999 09 10	704	0.7-	0.9-
1998 03 25	704	0.1+	1.1+	1999 09 07	704	0.6-	0.0	1999 09 11	699	1.1+	0.8-
1998 03 25	704	0.6-	0.8-	1999 09 07	704	0.4+	0.0	1999 09 11	699	0.3+	0.6+
1998 03 29	704	0.7-	0.8-	1999 09 07	704	0.2-	0.2+	1999 09 11	699	1.2-	0.6+
1998 03 29	704	0.3+	0.1-	1999 09 07	704	0.8+	0.2+	1999 09 14	704	0.5-	0.4+
1998 03 29	704	0.9+	0.6+	1999 09 09	704	0.1+	0.6+	1999 09 14	704	0.8+	0.2-
1998 03 29	704	1.1-	0.8+	1999 09 09	704	0.2+	0.4+	1999 09 14	704	0.1+	0.5+
1998 03 29	704	(4.7-	0.2+)	1999 09 09	704	0.6+	0.1-	1999 09 14	704	0.9+	0.1+
1998 04 21	704	0.7+	0.8-	1999 09 09	704	0.1-	0.5-	1999 09 14	704	0.1+	0.0
1998 04 21	704	0.0	0.4-	1999 09 09	704	0.2+	1.2-	1999 10 02	691	0.2-	0.4+
1998 04 21	704	1.0+	1.3-	1999 09 09	704	0.5+	0.3+	1999 10 02	691	0.3-	0.3+
1998 04 21	704	1.1+	0.7-	1999 09 09	704	0.0	0.7+	1999 10 02	691	0.5-	0.3+
1998 04 22	704	0.0	0.7-	1999 09 09	704	0.1-	0.5-	1999 10 06	704	0.6-	0.4-
1998 04 22	704	0.1-	0.3-	1999 09 09	704	0.1+	0.2-	1999 10 06	704	0.3-	0.3-
1998 04 22	704	0.2+	0.4-	1999 09 09	704	0.3-	0.7+	1999 10 06	704	0.2-	0.4-
1998 04 22	704	1.0+	0.1+	1999 09 10	704	0.0	0.2-	1999 10 06	704	0.3+	0.2-
1998 04 22	704	0.5-	0.5+	1999 09 10	704	0.2-	0.2+	1999 10 06	704	0.5-	0.1-
1998 05 16	704	0.0	1.1+	1999 09 10	704	0.4-	0.3-				

1999 RA₁₂₄ = 1994 NP₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	358.31524		(2000.0)	P	Q	Williams			
<i>n</i>	0.21317810	ω	65.09721	+0.96014101	+0.25868737				
<i>a</i>	2.7752855	Ω	279.76809	-0.27912375	+0.86728455				
<i>e</i>	0.2256969	<i>i</i>	6.16749	-0.01480441	+0.42532146				
<i>P</i>	4.62	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1994 07 08	809	0.6-	1.5-	1999 09 08	704	0.0	0.3-	1999 09 16	704	0.9-	0.3+
1994 07 08	809	(2.6-	1.7-)	1999 09 08	704	0.2+	0.2+	1999 09 16	704	0.2-	0.5+
1994 07 08	809	(1.5-	2.5-)	1999 09 08	704	0.1-	0.2-	1999 09 16	704	0.5-	0.2+
1994 07 09	809	0.2+	0.4+	1999 09 08	704	0.0	0.1-	1999 09 29	703	0.0	0.3+
1994 07 09	809	0.3+	0.2-	1999 09 09	704	0.0	0.3-	1999 09 29	703	0.6-	0.1+

1994 07 09	809	0.1-	0.3-	1999 09 09	704	0.4+	0.2-	1999 09 29	703	0.6-	0.3+
1994 07 11	809	0.5-	1.1+	1999 09 09	704	0.4+	0.2-	1999 09 29	703	0.3-	0.3+
1994 07 11	809	0.2+	0.8+	1999 09 09	704	0.0	0.3+	1999 10 04	704	0.3+	0.5+
1994 07 11	809	0.5+	0.0	1999 09 09	704	0.3+	0.1+	1999 10 04	704	0.1+	0.4-
1994 07 12	809	(2.5+	3.2+)	1999 09 10	704	0.1+	0.4-	1999 10 04	704	0.2+	0.7-
1994 07 12	809	(4.0+	2.4+)	1999 09 10	704	0.3+	0.0	1999 10 04	704	0.2+	0.1+
1994 07 12	809	(4.3+	2.6+)	1999 09 10	704	0.1+	0.4-	1999 10 04	704	0.2+	0.1+
1999 09 08	704	0.3+	0.6-	1999 09 16	704	0.3+	0.4+				

1999 RD₁₂₄ = 1991 NF₇ = 1998 FY₁₃₈

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	39.69479		(2000.0)	P	Q	Williams			
<i>n</i>	0.25607254	ω	110.00956	+0.30965107	+0.95084941				
<i>a</i>	2.4559944	Ω	178.02732	-0.88558678	+0.28888318				
<i>e</i>	0.1614127	<i>i</i>	2.11251	-0.34619687	+0.11149845				
<i>P</i>	3.85	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4		

Residuals in seconds of arc

1991 07 12	809	0.7+	1.3-	1998 03 29	704	0.2-	1.4+	1999 09 09	704	0.8+	0.6+
1991 07 12	809	1.2+	1.2-	1998 03 29	704	1.6-	0.7+	1999 09 09	704	1.2+	1.4-
1991 07 12	809	1.6+	1.0-	1998 03 29	704	1.3+	0.7-	1999 09 09	704	0.4+	1.1-
1991 07 14	809	1.1-	0.8+	1998 03 29	704	0.7-	0.3+	1999 09 09	704	0.4-	0.1+
1991 07 14	809	0.4-	0.8+	1998 03 29	704	1.3-	1.5-	1999 09 09	704	0.7+	0.4+
1991 07 14	809	0.0	0.7+	1998 04 19	704	0.8-	1.7+	1999 09 09	704	0.3-	0.1-
1991 07 15	809	(2.3-	0.1+)	1998 04 19	704	0.1+	0.2+	1999 09 09	704	1.1-	0.3-
1991 07 15	809	1.7-	0.3+	1998 04 19	704	1.1+	0.9+	1999 09 09	704	0.4+	0.6-
1991 07 15	809	1.3-	0.4+	1998 04 19	704	(2.1+	0.8+)	1999 09 11	699	0.4+	1.0+
1991 07 16	809	0.1-	0.0	1998 04 19	704	(2.7-	1.0-)	1999 09 11	699	0.4-	0.3-
1991 07 16	809	0.3+	0.0	1999 08 22	699	0.3-	0.3+	1999 09 11	699	0.5+	1.6+
1991 07 16	809	0.9+	0.1-	1999 08 22	699	0.4-	0.2-	1999 09 14	704	0.0	0.4+
1998 03 20	704	0.1+	0.3+	1999 08 22	699	0.3+	0.7+	1999 09 14	704	0.0	0.4+
1998 03 20	704	0.2+	1.0-	1999 09 07	704	1.0-	0.4-	1999 09 14	704	0.0	0.3+
1998 03 20	704	0.0	1.2-	1999 09 07	704	0.2-	0.1-	1999 09 14	704	0.1+	0.5+
1998 03 20	704	0.4+	0.2-	1999 09 07	704	0.1+	0.2+	1999 09 14	704	0.1-	0.3+
1998 03 20	704	0.7+	0.9-	1999 09 07	704	0.2+	0.3+	1999 09 30	691	0.4+	0.0
1998 03 28	704	1.1+	0.0	1999 09 07	704	0.6-	0.3-	1999 09 30	691	0.3+	0.0
1998 03 28	704	0.7+	0.4+	1999 09 09	704	0.8-	0.5-	1999 09 30	691	0.3+	0.1-
1998 03 28	704	0.6-	0.7+	1999 09 09	704	0.9-	0.9-				

1999 RE₁₂₄ = 1995 UP₅ = 1998 HR₁₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	4.49622		(2000.0)	P	Q	Williams			
<i>n</i>	0.23597740	ω	142.56018	+0.92150612	+0.38324839				
<i>a</i>	2.5935171	Ω	195.27855	-0.38822620	+0.90473924				
<i>e</i>	0.1141834	<i>i</i>	13.79326	-0.01033896	+0.18592358				
<i>P</i>	4.18	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	3		

Residuals in seconds of arc

1995 10 22	589	0.0	0.6+	1999 09 08	704	0.2-	0.3-	1999 09 16	704	0.0	0.5+
1995 10 22	589	1.0-	0.4+	1999 09 08	699	0.0	1.1+	1999 09 16	704	0.3+	0.1+
1995 10 22	589	0.3-	0.4+	1999 09 08	704	0.1-	0.2-	1999 09 16	704	0.0	0.4+
1995 10 23	589	0.6+	0.4-	1999 09 08	704	0.1+	0.1-	1999 09 29	703	0.5+	0.1+
1995 10 23	589	0.3+	0.5-	1999 09 08	699	1.1-	0.1+	1999 09 29	703	0.1-	0.4-
1995 10 23	589	0.4+	0.1-	1999 09 08	704	0.1-	0.2-	1999 09 29	703	0.0	0.2-
1998 04 21	704	0.0	0.2-	1999 09 08	704	0.2-	0.0	1999 09 29	703	0.0	0.7+
1998 04 21	704	0.3-	0.3+	1999 09 09	704	0.1-	0.1+	1999 10 04	704	(2.1+	0.2+)
1998 04 21	704	(1.1-	2.4+)	1999 09 09	704	0.1-	0.0	1999 10 04	704	1.2+	0.0
1998 04 21	704	0.7-	0.7+	1999 09 09	704	0.2-	0.5-	1999 10 04	704	0.3-	0.2-
1998 04 23	704	(2.8+	2.8-)	1999 09 09	704	0.2+	0.2-	1999 10 04	704	1.6-	1.2+
1998 04 23	704	1.0+	0.3+	1999 09 09	704	0.0	0.6-	1999 10 04	704	0.1+	0.3-
1998 04 23	704	0.5-	1.0-	1999 09 10	704	0.1+	0.1-	1999 10 07	704	0.0	0.4-
1998 04 23	704	0.5+	0.3+	1999 09 10	704	0.1-	0.5-	1999 10 07	704	0.1+	0.3-
1999 09 08	699	0.4-	0.5+	1999 09 10	704	0.2+	0.6-	1999 10 07	704	1.5+	0.1+

1999 RN₁₂₅ = 1980 PN₄ = 1998 KV₂₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20962290	ω	107.15004	+0.49995365	+0.86583373		
<i>a</i>	2.8065766	Ω	192.90057	−0.82402101	+0.46865852		
<i>e</i>	0.0391958	<i>i</i>	4.99784	−0.26652526	+0.17518889		
<i>P</i>	4.70	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1980 08 04	675	0.4−	0.0	1998 05 23	699	0.4−	0.6−	1999 09 09	704	0.6+	0.0
1980 08 05	675	0.3+	0.7+	1998 05 23	699	1.0+	0.3+	1999 09 14	704	0.7+	0.3−
1995 10 20	691	0.1−	0.2+	1998 05 23	699	1.3+	1.8+	1999 09 14	704	1.0+	0.9−
1995 10 20	691	0.1+	0.2−	1998 05 24	704	0.7+	0.9−	1999 09 14	704	0.1+	0.1−
1995 10 20	691	0.1+	0.1−	1998 05 24	704	0.8−	1.2−	1999 09 14	704	0.4+	0.7−
1998 04 22	704	(1.0+	2.1−)	1998 05 24	704	0.7+	0.9+	1999 09 14	704	0.8+	0.3−
1998 04 22	704	1.3−	0.9+	1998 05 24	704	0.2−	1.6+	1999 10 02	703	1.0−	0.9+
1998 04 22	704	0.4+	0.2−	1999 08 08	699	0.1−	0.3+	1999 10 02	703	0.6−	0.7+
1998 04 22	704	1.3−	0.1−	1999 08 08	699	0.7−	1.2+	1999 10 02	703	0.3−	0.3+
1998 04 22	704	0.1+	0.8−	1999 08 08	699	1.2−	0.6−	1999 10 02	703	0.1−	0.6+
1998 05 01	704	0.5−	0.4−	1999 08 22	699	0.8−	0.0	1999 10 02	704	0.0	0.2−
1998 05 01	704	0.3−	0.8−	1999 08 22	699	1.5−	0.5+	1999 10 02	704	0.4+	0.1+
1998 05 01	704	0.6−	0.9−	1999 08 22	699	0.4−	0.0	1999 10 02	704	0.1−	0.7−
1998 05 01	704	0.6−	0.6+	1999 09 07	704	0.2+	0.2+	1999 10 02	704	0.4−	0.3+
1998 05 05	699	0.9+	0.6−	1999 09 07	704	0.7+	0.3+	1999 10 02	704	0.8−	1.4−
1998 05 05	699	0.7−	0.1+	1999 09 07	704	0.6+	0.8+	1999 10 06	704	0.2+	0.1+
1998 05 05	699	0.6+	0.9−	1999 09 07	704	0.5+	0.1−	1999 10 06	704	0.2−	0.3−
1998 05 22	704	0.2+	0.1−	1999 09 07	704	0.6+	0.4−	1999 10 06	704	0.2+	0.6−
1998 05 22	704	0.7+	0.2−	1999 09 09	704	0.4+	0.3−	1999 10 06	704	0.2−	0.7−
1998 05 22	704	0.6+	0.3−	1999 09 09	704	0.5+	0.5+	1999 10 06	704	0.6−	0.6−
1998 05 22	704	0.8−	0.3+	1999 09 09	704	1.0+	0.1−				
1998 05 22	704	0.2+	0.5+	1999 09 09	704	0.3+	0.0				

1999 RV₁₂₅ = 1994 CP₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.26667516	ω	310.68619	+0.02415272	+0.99609969		
<i>a</i>	2.3904574	Ω	320.45092	−0.87231375	−0.02046914		
<i>e</i>	0.1152539	<i>i</i>	7.65921	−0.48834964	+0.08582790		
<i>P</i>	3.70	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1994 01 12	691	0.6−	0.4−	1998 03 26	704	1.4−	0.1−	1999 09 09	704	0.7+	0.1+
1994 01 12	691	0.6+	0.6−	1998 04 18	704	0.5+	0.2+	1999 09 09	704	0.4+	0.2−
1994 01 12	691	0.1+	0.3−	1998 04 18	704	0.3+	0.2−	1999 09 09	704	0.7+	0.1−
1994 02 08	303	1.0+	0.4+	1998 04 18	704	0.0	0.6−	1999 09 14	704	0.0	0.3−
1994 02 08	303	0.3+	0.1−	1998 04 18	704	(3.1−	0.3−)	1999 09 14	704	0.1−	0.0
1994 02 08	303	0.6−	0.2−	1999 08 22	699	0.9−	0.2+	1999 09 14	704	0.2−	0.7−
1994 02 09	303	0.9−	0.8+	1999 08 22	699	0.6−	0.3+	1999 09 14	704	0.3−	0.5−
1994 02 10	303	(3.4+	0.4−)	1999 08 22	699	0.3−	0.0	1999 09 14	704	0.3+	0.7−
1998 02 28	809	(9.1+	4.3−)	1999 09 07	704	0.7+	0.5+	1999 09 29	704	0.8−	0.2+
1998 03 02	809	(1.5−	2.8+)	1999 09 07	704	0.4+	0.1−	1999 09 29	704	0.7−	0.6+
1998 03 25	566	0.3−	0.6−	1999 09 07	704	0.5+	0.0	1999 09 29	704	0.6−	0.3+
1998 03 25	566	0.2+	0.3−	1999 09 07	704	1.0+	0.1−	1999 09 29	704	1.4−	0.0
1998 03 25	566	0.2+	0.2−	1999 09 07	704	0.4+	0.1−	1999 09 29	704	0.9−	1.2+
1998 03 26	704	0.6+	0.5+	1999 09 09	704	0.6+	0.3−				
1998 03 26	704	0.2+	1.8+	1999 09 09	704	0.4+	0.2+				

1999 RF₁₂₆ = 1991 PP₁₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Id. A. Doppler

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24343111	ω	15.63129	+0.92423558	+0.35487361		
<i>a</i>	2.5403019	Ω	322.60183	−0.37045397	+0.74404649		
<i>e</i>	0.0982361	<i>i</i>	13.41451	−0.09247947	+0.56609146		
<i>P</i>	4.05	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 08 07	675	1.2+	1.3−	1999 09 07	704	0.4+	0.1+	1999 09 29	704	0.1+	0.1−
1991 08 08	675	0.3+	0.2−	1999 09 07	704	0.5−	0.1+	1999 09 29	704	0.0	0.8−
1991 09 10	675	0.0	0.6−	1999 09 07	704	0.3−	0.5−	1999 09 29	704	0.1+	0.3−
1991 09 10	675	0.1−	0.1+	1999 09 09	704	0.2−	0.4+	1999 09 29	704	0.1−	0.3−
1999 07 16	704	0.4+	1.0−	1999 09 09	704	0.0	0.2−	1999 09 29	699	0.0	0.3+
1999 07 16	704	0.6+	0.1−	1999 09 09	704	0.0	0.1−	1999 09 29	704	1.2−	0.5−
1999 07 16	704	0.1+	0.2−	1999 09 09	704	0.3+	0.1−	1999 09 29	699	0.3−	0.2+
1999 07 16	704	0.3+	0.8+	1999 09 09	704	0.0	0.1−	1999 09 29	699	0.0	0.0
1999 08 22	699	0.2−	0.7+	1999 09 14	704	0.9+	0.3+	1999 10 02	703	0.3+	0.1+
1999 08 22	703	0.4−	0.1+	1999 09 14	704	0.8+	0.3−	1999 10 02	703	0.1+	0.5+
1999 08 22	703	0.1−	0.3+	1999 09 14	703	0.1−	0.5+	1999 10 02	703	0.3+	0.9−
1999 08 22	699	0.2−	0.4+	1999 09 14	704	0.7+	0.1+	1999 10 02	703	0.2+	0.4+
1999 08 22	703	0.3−	0.6+	1999 09 14	703	0.2−	0.2+	1999 10 02	704	0.5+	0.8−
1999 08 22	703	0.5−	0.2+	1999 09 14	704	0.2+	0.4−	1999 10 02	704	0.9−	0.7+
1999 08 22	699	0.2+	0.6+	1999 09 14	703	0.2−	0.3+	1999 10 02	704	0.1−	0.6+
1999 09 07	704	0.0	0.0	1999 09 14	704	0.5+	0.4−	1999 10 02	704	0.9−	0.2−
1999 09 07	704	0.2−	0.4−	1999 09 14	703	0.3−	0.7+	1999 10 02	704	1.5−	0.4+

1999 RG₁₂₆ = 1997 ED₃₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21892134	ω	204.29506	+0.88783660	−0.46010166		
<i>a</i>	2.7265324	Ω	183.12711	+0.44095822	+0.85519184		
<i>e</i>	0.3128254	<i>i</i>	7.64287	+0.13153714	+0.23864909		
<i>P</i>	4.50	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 11	691	0.9+	0.0	1999 08 22	699	1.3−	1.4+	1999 09 14	704	0.3+	0.0
1997 03 11	691	0.1+	0.2+	1999 09 07	704	0.2−	0.3−	1999 09 14	704	0.6+	0.1+
1997 03 11	691	0.4−	0.6+	1999 09 07	704	0.3+	0.5+	1999 09 14	704	0.2+	0.0
1997 03 15	691	0.0	0.2−	1999 09 07	704	0.6+	0.2−	1999 09 14	704	0.4+	0.5−
1997 03 15	691	0.1+	0.5−	1999 09 07	704	0.1+	0.1−	1999 09 14	704	0.1−	0.5−
1997 03 15	691	0.2+	0.1−	1999 09 07	704	0.3+	0.6+	1999 10 06	704	0.1−	0.6+
1997 04 07	691	0.6−	0.3−	1999 09 09	704	0.1−	0.4−	1999 10 06	704	0.2+	0.4+
1997 04 07	691	0.4−	0.0	1999 09 09	704	0.7−	0.6−	1999 10 06	704	0.2−	0.2+
1997 04 07	691	(2.7+	4.8−)	1999 09 09	704	0.2+	0.4−	1999 10 06	704	0.0	0.6+
1999 08 22	699	(1.3−	2.7+)	1999 09 09	704	0.1−	1.4−	1999 10 06	704	0.4−	0.0
1999 08 22	699	0.5+	1.3+	1999 09 09	704	0.4−	1.0−				

1999 RK₁₂₆ = 1983 VM₁ = 1991 TE₆

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24024271	ω	162.68427	+0.41895744	−0.90565016		
<i>a</i>	2.5627283	Ω	262.50643	+0.82507924	+0.40976219		
<i>e</i>	0.2281905	<i>i</i>	3.78008	+0.37910276	+0.10905380		
<i>P</i>	4.10	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1983 11 06	046	1.1+	1.3−	1991 10 07	033	0.6−	1.1+	1999 09 07	704	1.1+	1.7+
1983 11 06	046	1.7+	2.5+	1991 10 07	033	0.7−	1.1+	1999 09 07	704	0.6−	1.1+
1983 11 07	046	0.6−	1.3−	1991 10 08	033	1.0+	0.1−	1999 09 09	704	0.1−	0.4−
1983 11 07	046	1.4+	1.3+	1991 10 08	033	2.0+	1.2−	1999 09 09	704	0.1−	0.2−
1983 11 08	046	1.4−	3.3−	1991 10 09	033	1.0+	1.3−	1999 09 09	704	0.2+	0.1−
1983 11 08	046	4.6−	3.0+	1999 09 05	699	0.3+	0.6+	1999 09 09	704	0.3−	0.2−
1983 11 09	046	0.2+	0.9+	1999 09 05	699	0.1+	0.4+	1999 09 14	704	1.1−	1.1+

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1983 11 09	046	1.9+	0.9-	1999 09 05	699	0.1+	0.2+	1999 09 14	704	0.5-	0.8-
1991 10 02	033	0.7-	0.0	1999 09 07	704	0.2+	1.0-	1999 09 14	704	0.1+	1.3-
1991 10 02	033	0.6-	0.5-	1999 09 07	704	0.2-	0.2+	1999 09 14	704	0.2+	0.5-
1991 10 03	033	0.6-	0.9-	1999 09 07	704	0.4+	0.4+				

1999 RN₁₂₆ = 1993 FS₇₅ = 1995 UY₁₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	301.67723		(2000.0)	P	Q		
<i>n</i>	0.23360403	ω	200.18508	+0.59633377	-0.80136606		
<i>a</i>	2.6110539	Ω	213.25659	+0.74773425	+0.57577440		
<i>e</i>	0.2481559	<i>i</i>	4.90484	+0.29202657	+0.16216128		
<i>P</i>	4.22	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 11 29	691	0.9+	0.6+	1995 10 23	691	0.3+	0.1+	1999 09 07	704	0.1+	0.2+
1991 11 29	691	0.2-	0.2-	1995 10 23	691	0.4+	0.2-	1999 09 09	704	0.3+	0.0
1991 11 29	691	0.2+	0.3+	1995 10 23	691	0.4+	0.1-	1999 09 09	704	0.3+	0.1-
1991 12 03	691	0.6-	0.0	1999 08 22	699	0.2+	1.2+	1999 09 09	704	1.0+	1.5+
1991 12 03	691(23.9-	0.6-)		1999 08 22	699	0.4+	0.5-	1999 09 09	704	0.2-	1.6-
1991 12 03	691	0.5-	0.2+	1999 08 22	699	1.1-	1.5+	1999 09 09	704	0.4+	0.2-
1993 03 21	809	0.1-	1.0-	1999 09 05	699	0.4+	0.6+	1999 09 14	704	0.4-	1.8-
1993 03 22	809	0.3-	0.4-	1999 09 05	699	0.2-	1.4+	1999 09 14	704	0.7-	1.4-
1993 04 16	413 (2.6+	2.6+)		1999 09 05	699	1.7+	0.6+	1999 09 14	704	0.9-	0.1-
1995 10 18	691	0.9-	1.6-	1999 09 07	704	0.1-	0.1-	1999 09 14	704	0.6-	0.1-
1995 10 18	691	0.1+	0.0	1999 09 07	704	0.5-	0.3-				
1995 10 18	691	0.3+	0.2-	1999 09 07	704	0.5-	0.2-				

1999 RB₁₂₈ = 1994 PB₁₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	8.62115		(2000.0)	P	Q		
<i>n</i>	0.19288217	ω	161.85748	+0.70463002	+0.70387256		
<i>a</i>	2.9667071	Ω	152.71938	-0.67287358	+0.70297858		
<i>e</i>	0.0836104	<i>i</i>	11.29561	-0.22525028	+0.10190454		
<i>P</i>	5.11	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 03 02	809	0.9-	0.7+	1998 05 23	704	0.2+	0.8-	1999 09 07	704	0.1+	1.4-
1992 03 07	809	0.6+	1.7-	1998 05 23	704 (0.8-	2.8-)		1999 09 09	704	0.8-	0.3-
1993 06 14	691	0.5+	0.0	1998 05 23	704 (2.9+	0.5-)		1999 09 09	704	0.8+	0.5+
1993 06 14	691	0.5-	0.2+	1998 05 23	704	0.7-	1.2-	1999 09 09	704	0.6-	0.4+
1993 06 14	691	0.1-	0.5+	1998 05 23	704	1.6+	0.3-	1999 09 09	704	0.1+	0.4-
1994 08 10	809	0.5+	1.3-	1999 08 08	699	1.2+	0.5+	1999 09 13	699	0.9-	0.1+
1994 08 10	809	1.1+	0.3-	1999 08 08	699	0.7-	1.9+	1999 09 13	699	0.4-	0.1+
1994 08 10	809 (0.7-	2.1-)		1999 08 08	699	0.9+	1.5+	1999 09 13	704	0.5-	0.1-
1994 08 11	809	0.3+	1.1-	1999 09 06	699	0.6+	0.3+	1999 09 13	704	0.2-	0.2+
1994 08 11	809	0.5-	1.7-	1999 09 06	699	0.5+	0.6+	1999 09 13	699	0.0	0.8+
1994 08 11	809	0.2+	1.3-	1999 09 06	699	0.1+	0.5+	1999 09 13	704	0.9-	0.6-
1998 04 19	691	0.3-	0.2+	1999 09 07	704	0.1+	0.4-	1999 09 13	704	0.0	0.8+
1998 04 19	691	0.4-	0.2+	1999 09 07	704	0.1-	0.1+	1999 09 13	704	0.5-	0.1-
1998 04 19	691	0.5-	0.3+	1999 09 07	704	0.2+	0.6-				

1999 RF₁₂₈ = 1997 ER₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Doppler			
<i>M</i>	238.86034		(2000.0)	P	Q		
<i>n</i>	0.18472385	ω	281.86757	-0.13249217	-0.99116429		
<i>a</i>	3.0534260	Ω	175.73115	+0.93898597	-0.12753447		
<i>e</i>	0.1034008	<i>i</i>	4.82332	+0.31741324	-0.03644595		
<i>P</i>	5.34	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1997 03 08	809	1.1-	0.1-	1999 09 09	704	0.0	0.1-	1999 09 13	704	0.2-	0.6+
1997 03 08	809	0.7-	1.0-	1999 09 09	704	0.5-	0.1+	1999 09 13	704	0.5-	0.5-
1997 03 08	809	0.3-	0.0	1999 09 09	704	0.7-	0.1-	1999 09 13	704	0.5-	0.3-

1997 03 09	809	0.6+	0.4+	1999 09 09	704	0.2+	0.1+	1999 09 13	704	0.6+	0.4-
1997 03 09	809	1.5+	0.4+	1999 09 09	704	0.9+	0.6+				
1997 03 09	809	0.0	0.3+	1999 09 13	704	0.6+	0.1-				

1999 RM₁₂₈ = 1998 HT₇₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	222.15423		(2000.0)	P	Q		
<i>n</i>	0.27065901	ω	285.13437	-0.33778641	-0.94117962		
<i>a</i>	2.3669426	Ω	184.63733	+0.90070533	-0.32045071		
<i>e</i>	0.0695040	<i>i</i>	6.40206	+0.27318537	-0.10720200		
<i>P</i>	3.64	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.0	0.2-	1998 05 25	699	0.1+	0.5+	1999 09 14	704	0.4-	0.1+
1998 04 21	704	0.7-	0.2+	1998 05 25	699	0.6-	0.3-	1999 09 14	704	0.7+	0.5-
1998 04 21	704	0.0	0.6+	1999 09 06	699	0.6-	1.3+	1999 09 14	704 (1.6+	2.2-)	
1998 04 21	704	1.0+	0.2-	1999 09 06	699	0.3-	0.9+	1999 09 14	704	0.1+	1.5-
1998 04 21	704	0.8-	0.2+	1999 09 06	699	0.6+	1.9+	1999 09 30	704	0.4-	0.2-
1998 04 22	704 (1.1+	2.2-)		1999 09 07	704	0.9+	0.3-	1999 09 30	704	0.0	0.2+
1998 04 22	704	0.4-	0.1+	1999 09 07	704	0.6+	0.1-	1999 09 30	704	0.5+	0.5+
1998 04 22	704	0.4-	0.3+	1999 09 07	704	0.1-	0.5-	1999 09 30	704	0.1+	0.8+
1998 04 22	704	0.0	0.6+	1999 09 07	704	0.2-	0.1+	1999 09 30	704	0.8-	0.0
1998 04 22	704	0.6+	0.3+	1999 09 07	704	0.2+	0.5-	1999 10 06	704	0.0	0.1-
1998 05 16	704	0.5+	0.9-	1999 09 09	704	0.3+	0.2-	1999 10 06	704	0.9+	0.3+
1998 05 16	704	1.4+	1.4-	1999 09 09	704	0.3-	0.7+	1999 10 06	704	0.3+	0.8-
1998 05 16	704	0.6-	0.9+	1999 09 09	704	0.3-	0.1+	1999 10 06	704	0.7-	0.4+
1998 05 16	704 (0.8+	2.2-)		1999 09 09	704	0.3+	0.6-	1999 10 06	704	1.0-	0.3-
1998 05 16	704 (3.8-	0.4-)		1999 09 09	704	0.6-	0.3-				
1998 05 25	699	0.1-	0.7-	1999 09 14	704	0.1-	1.1-				

1999 RX₁₂₈ = 1995 KV₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	52.81536		(2000.0)	P	Q		
<i>n</i>	0.27394754	ω	73.76926	-0.21945763	+0.97561083		
<i>a</i>	2.3479623	Ω	183.56349	-0.92138572	-0.20883063		
<i>e</i>	0.1547944	<i>i</i>	4.31344	-0.32075958	-0.06762598		
<i>P</i>	3.60	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1995 05 22	010	0.8+	0.7-	1999 06 20	703	0.2+	1.0-	1999 09 09	704	0.3-	0.7-
1995 05 22	010	0.4+	0.2-	1999 09 04	699	0.0	0.3+	1999 09 09	704	0.5+	0.4+
1995 05 22	010	1.2+	0.7-	1999 09 04	699	1.0-	0.6+	1999 09 09	704	0.1+	0.1-
1995 05 23	010	1.9-	0.1+	1999 09 04	699	1.3-	0.6+	1999 09 09	704	0.2+	0.4+
1995 05 23	010	0.2+	0.9+	1999 09 07	704	0.0	0.3-	1999 09 09	704	1.3+	0.5+
1995 05 23	010	0.6-	1.2+	1999 09 07	704	0.7-	0.1-	1999 09 13	704	0.1+	0.6-
1999 06 20	703	0.2-	0.2+	1999 09 07	704	0.5-	0.2-	1999 09 13	704	0.6+	0.0
1999 06 20	703	0.1+	0.2-	1999 09 07	704	0.3+	0.4+	1999 09 13	704	0.5+	0.3+
1999 06 20	703	0.5+	1.1-	1999 09 07	704	0.2-	0.2-				

1999 RA₁₂₉ = 1990 RU₁₁ = 1993 FK₄₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	332.41409		(2000.0)	P	Q		
<i>n</i>	0.21625817	ω	178.59037	+0.99891793	-0.04639545		
<i>a</i>	2.7488711	Ω	184.07306	+0.04221283	+0.93361905		
<i>e</i>	0.1347736	<i>i</i>	2.60500	+0.01952015	+0.35525052		
<i>P</i>	4.56	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1990 09 14	675	1.4-	0.6-	1999 09 04	699	1.4-	0.0	1999 09 09	704	1.8+	0.9+
1990 09 14	675	0.7+	0.5-	1999 09 04	699	0.5-	1.1+	1999 09 09	704	0.6-	0.8+
1990 09 14	675	1.5+	1.4-	1999 09 07	704	0.1+	0.0	1999 09 09	704	0.0	0.3+

1990 09 14	675	0.3+	0.4-	1999 09 07	704	0.4+	0.1-	1999 09 09	704	0.4+	0.6+
1993 03 19	809	0.9-	0.6+	1999 09 07	704	0.1-	0.3-	1999 09 13	704	0.2-	0.6-
1993 03 20	809	0.4-	0.6-	1999 09 07	704	0.6+	0.1-	1999 09 13	704	0.6+	0.5+
1993 03 24	809	0.7+	1.7-	1999 09 07	704	0.1-	0.0	1999 09 13	704	0.3-	0.8-
1999 09 04	699	0.2-	0.2+	1999 09 09	704	0.1-	0.6-	1999 09 13	704	0.8-	0.0

1999 RK₁₂₉ = 1969 TG₇ = 1996 XO₄ = 1998 HL₁₂₇

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	311.38053		(2000.0)	P	Q		
<i>n</i>	0.29410293	ω	51.49812	+0.87881182	-0.47597138		
<i>a</i>	2.2394248	Ω	336.86551	+0.40665559	+0.78410343		
<i>e</i>	0.1446006	<i>i</i>	4.93213	+0.24964176	+0.39828766		
<i>P</i>	3.35	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1969 10 08	033	0.6+	0.1-	1998 04 18	704	1.4-	0.7-	1999 09 09	704	0.2-	0.1+
1969 10 08	033	0.4-	0.3-	1998 04 18	704	1.1-	2.3-	1999 09 09	704	0.3-	0.1+
1996 12 06	691	0.1+	0.2-	1998 04 22	704	1.2+	0.3+	1999 09 13	704	0.2+	0.7-
1996 12 06	691	0.0	0.0	1998 04 22	704	0.1-	0.2-	1999 09 13	704	0.6+	0.6+
1996 12 06	691	0.2+	0.1-	1998 04 22	704	0.6-	1.7+	1999 09 13	704	0.4-	0.4-
1996 12 07	691	0.0	0.8-	1998 04 22	704	0.6-	0.8+	1999 09 13	704	0.2-	0.7-
1996 12 07	691	0.1+	0.1+	1999 09 09	704	0.6+	0.3+	1999 09 13	704	0.0	0.5-
1996 12 07	691	0.0	0.1+	1999 09 09	704	0.3+	0.1+				
1998 04 18	704	1.6+	1.7-	1999 09 09	704	0.2-	0.2+				

1999 RN₁₂₉ = 1998 HY₇₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	308.81019		(2000.0)	P	Q		
<i>n</i>	0.27844438	ω	247.31166	+0.83864992	-0.54284148		
<i>a</i>	2.3226142	Ω	145.51932	+0.52416975	+0.78211725		
<i>e</i>	0.1677169	<i>i</i>	4.51880	+0.14802833	+0.30596687		
<i>P</i>	3.54	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1994 03 06	691	0.4+	0.6+	1999 08 07	699	0.4-	0.5+	1999 09 09	704	0.4-	0.3+
1994 03 06	691	0.3+	0.8+	1999 08 07	699	0.9+	0.4+	1999 09 09	704	0.1-	0.4+
1994 03 06	691	0.0	0.7+	1999 08 07	699	0.0	0.8+	1999 09 09	704	0.3+	0.3+
1998 04 21	704	0.1+	1.6+	1999 08 22	703	0.1+	0.5-	1999 09 09	704	0.1+	0.0
1998 04 21	704	1.3-	0.8-	1999 08 22	703	0.1-	0.3-	1999 09 09	704	0.2+	1.2+
1998 04 21	704	0.6-	1.0-	1999 08 22	703	0.6-	0.1-	1999 09 13	704	0.2+	0.7+
1998 04 21	704	0.9-	1.5+	1999 08 22	703	0.8-	0.3+	1999 09 13	704	0.0	0.3-
1998 04 21	704	1.5-	1.1+	1999 09 06	699	0.2-	0.2+	1999 09 13	704	0.4+	0.6-
1998 04 21	910	1.0+	0.6-	1999 09 06	699	0.1-	0.8-	1999 09 13	704	0.5+	1.8-
1998 04 22	910	1.0+	0.2-	1999 09 06	699	0.3-	1.3+	1999 09 13	704	0.1-	0.2+
1998 04 22	910	0.9+	0.4-	1999 09 07	704	0.2+	0.3+	1999 09 30	704	0.1+	0.6+
1998 04 22	704	(1.3-	2.5-)	1999 09 07	704	0.2+	0.0	1999 09 30	704	0.4+	1.0-
1998 04 22	704	0.3+	0.0	1999 09 07	704	0.2+	0.7-	1999 09 30	704	1.5-	0.2-
1998 04 22	704	0.5+	1.7-	1999 09 07	704	0.2+	0.0	1999 09 30	704	(1.2-	2.7-)
1998 04 22	704	0.1+	0.3-	1999 09 07	704	0.0	0.2+				

1999 RQ₁₂₉ = 1998 HK₁₁₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	225.25583		(2000.0)	P	Q		
<i>n</i>	0.27803413	ω	324.14379	-0.31271881	-0.94687203		
<i>a</i>	2.3248984	Ω	143.90959	+0.89847477	-0.32053010		
<i>e</i>	0.1098549	<i>i</i>	7.32482	+0.30813962	-0.02634030		
<i>P</i>	3.54	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 02 11	675	0.3-	0.5-	1998 04 24	704	0.5-	0.2+	1999 09 07	704	0.1+	0.6-
1994 02 11	675	0.1+	0.2-	1998 04 24	704	0.3+	0.3+	1999 09 07	704	0.6-	1.0-

1998 03 24	704	0.5+	0.6+	1998 04 24	704	0.5-	0.1-	1999 09 09	704	0.4-	0.1-
1998 03 24	704	0.4+	1.3-	1998 04 24	704	0.3-	0.2-	1999 09 09	704	0.3+	0.3-
1998 03 24	704	0.1-	0.2-	1998 04 24	704	0.1-	0.5-	1999 09 09	704	0.8+	0.1+
1998 03 24	704	1.9+	0.9+	1998 05 24	699	0.3+	0.1+	1999 09 09	704	0.0	0.4-
1998 03 24	704	0.3-	1.1+	1998 05 24	699	0.4+	1.5+	1999 09 09	704	0.0	1.0-
1998 04 21	704	0.7-	0.1+	1998 05 24	699	0.1-	1.0+	1999 09 13	704	0.2-	0.9+
1998 04 21	704	0.6-	0.6-	1998 05 28	704	0.5+	0.8+	1999 09 13	704	1.1+	1.4+
1998 04 21	704	0.8-	0.7-	1998 05 28	704	(2.2+	0.7+)	1999 09 13	704	0.1+	0.1+
1998 04 21	704	0.6-	0.7-	1998 05 28	704	1.2+	1.9+	1999 09 13	704	0.3-	0.3+
1998 04 21	704	1.0-	0.7-	1998 05 28	704	0.0	0.6-	1999 09 13	704	1.1+	0.1-
1998 04 23	704	0.3-	0.1+	1998 05 28	704	1.3+	0.2+	1999 09 16	691	0.7-	0.1-
1998 04 23	704	0.4+	0.6-	1999 08 03	691	0.4-	0.5-	1999 09 16	691	0.2-	0.1+
1998 04 23	704	0.7-	0.6-	1999 08 03	691	0.4-	0.3-	1999 09 16	691	0.4-	0.2+
1998 04 23	704	0.3+	0.5-	1999 08 03	691	0.5-	0.6-				
1998 04 23	704	0.3-	1.0-	1999 09 07	704	1.1+	0.5+				

1999 RS₁₂₉ = 1977 DP₅ = 1992 PU₆ = 1998 FZ₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	5.83349		(2000.0)	P	Q		
<i>n</i>	0.28381476	ω	328.79969	+0.70703072	+0.70655324		
<i>a</i>	2.2932218	Ω	346.11606	-0.62051086	+0.59958832		
<i>e</i>	0.1891981	<i>i</i>	7.14220	-0.33922534	+0.37586749		
<i>P</i>	3.47	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1977 02 19	381	(6.1+	1.6-)	1998 03 22	704	0.3+	0.5-	1999 09 13	704	0.2-	0.2-
1977 02 19	381	0.4+	0.0	1998 03 22	704	(3.9-	1.4+)	1999 09 13	704	0.4-	0.4-
1992 08 04	303	0.2-	0.4-	1999 09 06	699	0.1-	0.2-	1999 09 29	704	0.2+	0.2-
1992 08 07	303	(3.1+	0.8-)	1999 09 06	699	0.3+	0.3+	1999 09 29	704	0.9+	0.2+
1996 12 07	327	1.2-	1.2-	1999 09 06	699	0.2-	0.1-	1999 09 29	704	0.4+	0.5+
1996 12 07	327	0.7+	0.0	1999 09 07	704	0.2-	0.3-	1999 09 29	704	1.4+	0.0
1996 12 07	327	0.3+	0.8+	1999 09 07	704	0.3-	0.2+	1999 09 29	704	0.6+	0.4+
1998 02 26	566	0.5-	0.1-	1999 09 07	704	0.2-	0.2-	1999 09 30	704	0.0	0.7-
1998 02 26	566	0.6-	0.4-	1999 09 07	704	0.1-	0.1-	1999 09 30	704	0.7+	0.7-
1998 02 26	566	0.2+	0.4-	1999 09 07	704	0.2+	0.2-	1999 09 30	704	0.4+	0.6-
1998 03 20	704	1.5+	0.0	1999 09 09	704	0.1-	0.2+	1999 09 30	704	0.5+	0.3+
1998 03 20	704	0.0	0.4+	1999 09 09	704	0.4+	0.1-	1999 09 30	704	0.4-	1.3+
1998 03 20	704	0.2-	0.4-	1999 09 09	704	0.2-	0.1+	1999 10 04	703	0.6-	0.9+
1998 03 20	704	0.4+	0.3+	1999 09 09	704	0.2+	0.4+	1999 10 04	703	0.4-	0.5+
1998 03 20	704	1.0+	0.6+	1999 09 09	704	0.1+	0.3+	1999 10 04	703	0.5-	0.2-
1998 03 22	704	1.6-	0.1-	1999 09 13	704	0.1+	0.2-	1999 10 04	703	0.0	0.1-
1998 03 22	704	1.5-	0.2-	1999 09 13	704	0.4-	0.2-	1999 10 10	106	0.1+	0.8-
1998 03 22	704	0.3+	0.2+	1999 09 13	704	0.3-	0.2-	1999 10 10	106	1.5-	0.3+

1999 RE₁₃₀ = 1996 FV₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	291.61005		(2000.0)	P	Q		
<i>n</i>	0.18550624	ω	87.00567	+0.39406388	-0.91759567		
<i>a</i>	3.0448346	Ω	339.54184	+0.77263526	+0.36153526		
<i>e</i>	0.2578858	<i>i</i>	8.60016	+0.49774332	+0.16525872		
<i>P</i>	5.31	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 03 19	566	0.4+	0.3-	1999 09 04	699	0.2-	0.4+	1999 09 09	704	0.8+	0.2-
1996 03 19	566	0.1+	0.4-	1999 09 04	699	0.1-	0.1-	1999 09 13	704	0.4+	0.2+
1996 03 19	566	0.1-	0.3-	1999 09 04	699	0.6+	0.5+	1999 09 13	704	0.8+	0.4-
1996 03 24	566	0.1-	0.3+	1999 09 07	704	0.1-	0.6-	1999 09 13	704	0.0	0.5+
1996 03 24	566	0.3-	0.2-	1999 09 07	704	0.4-	0.2-	1999 09 13	704	0.1-	0.4+
1996 03 24	566	0.3-	0.4+	1999 09 07	704	0.2+	0.6-	1999 09 13	704	0.7+	0.6+
1999 07 16	704	0.6+	0.7+	1999 09 07	704	0.2+	0.8-	1999 09 30	704	0.2-	0.6+
1999 07 16	704	0.8-	0.2-	1999 09 07	704	0.2-	0.7-	1999 09 30	704	0.5-	0.1-
1999 07 16	704	1.2-	0.7-	1999 09 09	704	0.1-	0.1+	1999 09 30	704	0.6-	0.1-
1999 08 08	699	0.0	0.7+	1999 09 09	704	0.4-	0.3-	1999 09 30	704	0.2+	0.3+
1999 08 08	699	0.5+	0.3+	1999 09 09	704	0.5+	1.1-	1999 09 30	704	0.3-	0.4+
1999 08 08	699	(2.6+	0.4-)	1999 09 09	704	0.0	0.2-				

1999 RS₁₃₀ = 1995 UE₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 348.24419 (2000.0)			Williams			
			P		Q	
<i>n</i>	0.23306540	ω	151.54909	+0.96708670	+0.25390535	
<i>a</i>	2.6150752	Ω	193.77234	-0.24466339	+0.91001079	
<i>e</i>	0.2297108	<i>i</i>	3.99711	-0.06987941	+0.32773836	
<i>P</i>	4.23	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1995 10 16	114	0.3+	0.7-	1999 09 07	704	0.4-	0.0	1999 09 30	704	0.1+	0.6-
1995 10 16	114	1.2+	0.6+	1999 09 07	704	0.0	0.5-	1999 10 08	704	0.5-	1.0+
1995 10 17	114	1.0-	1.7-	1999 09 07	704	0.2+	0.7-	1999 10 08	704	0.3+	0.1+
1995 10 18	114	(2.1- 0.9-)		1999 09 07	704	0.5-	0.7-	1999 10 08	704	0.4+	0.3+
1995 10 19	114	0.2-	0.6+	1999 09 09	704	0.2-	0.3-	1999 10 08	704	0.4+	0.2-
1995 10 19	114	(3.2+ 0.5+)		1999 09 09	704	0.3-	0.3-	1999 10 08	704	0.9+	0.6-
1999 06 20	703	0.4-	1.3-	1999 09 09	704	0.1+	0.4+	1999 10 15	704	0.1+	0.0
1999 06 20	703	1.9+	0.2+	1999 09 09	704	0.3+	0.3+	1999 10 15	704	0.0	0.3+
1999 06 20	703	0.0	0.3-	1999 09 09	704	0.1-	0.1-	1999 10 15	704	0.4-	0.3+
1999 06 20	703	0.1-	0.7-	1999 09 14	704	0.4+	0.0	1999 10 15	704	0.1+	0.4+
1999 08 22	699	0.3+	1.0+	1999 09 14	704	0.1-	0.1-	1999 10 15	704	0.3+	0.4+
1999 08 22	699	0.0	0.9+	1999 09 14	704	0.4+	0.2-	1999 10 16	704	0.1-	0.2+
1999 08 22	699	0.1-	0.6+	1999 09 14	704	0.1-	0.3+	1999 10 16	704	0.3-	0.2+
1999 09 05	699	0.5-	0.3+	1999 09 30	704	0.3-	0.2+	1999 10 16	704	0.2+	0.2+
1999 09 05	699	0.2-	0.1+	1999 09 30	704	0.9-	0.1-	1999 10 16	704	0.2-	0.0
1999 09 05	699	0.3-	0.2+	1999 09 30	704	0.5+	0.5-	1999 10 16	704	0.2+	0.1-
1999 09 07	704	0.3-	0.0	1999 09 30	704	0.2+	0.2-				

1999 RA₁₃₂ = 1985 ST₄ = 1991 HZ₃ = 1998 HB₁₉

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 332.40075 (2000.0)			Williams			
			P		Q	
<i>n</i>	0.27755379	ω	150.88476	+0.99731973	-0.05025792	
<i>a</i>	2.3275800	Ω	212.12959	+0.03079000	+0.94755669	
<i>e</i>	0.1261273	<i>i</i>	5.73815	+0.06637261	+0.31561125	
<i>P</i>	3.55	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 2	

Residuals in seconds of arc

1985 09 20	095	0.3+	0.5+	1998 04 18	704	0.6+	0.7-	1999 09 14	703	0.3-	0.4+
1991 04 19	809	0.9+	0.4+	1998 04 18	704	1.8-	0.9-	1999 09 14	704	0.7+	0.2+
1991 04 19	809	0.4+	0.5+	1998 04 19	704	1.0+	0.7-	1999 09 14	703	0.5-	0.7+
1991 04 19	809	1.0-	0.4+	1998 04 19	704	0.6-	0.5+	1999 09 14	704	0.3+	0.2+
1992 09 07	033	0.4-	0.4-	1998 04 19	704	0.0	1.8+	1999 09 14	703	0.0	0.5+
1992 09 07	033	0.0	0.9-	1998 04 19	704	0.0	0.7-	1999 09 14	704	0.6+	0.7+
1998 03 25	704	1.0+	0.9-	1998 04 20	704	0.2+	0.8+	1999 09 14	703	0.5-	0.2+
1998 03 25	704	0.7+	0.0	1998 04 20	704	1.1-	1.1-	1999 09 29	704	0.2-	0.3+
1998 03 25	704	0.6-	1.0-	1998 04 20	704	0.3+	1.3-	1999 09 29	704	0.3-	0.2-
1998 03 25	704	0.9+	0.7-	1998 04 20	704	0.2+	1.8-	1999 09 29	704	0.3-	0.9-
1998 03 25	704	(1.5- 2.0-)		1998 04 22	704	0.6-	0.1-	1999 09 29	704	1.3-	0.2+
1998 03 25	566	0.5-	0.4-	1998 04 22	704	0.2-	1.0-	1999 09 29	699	0.5-	0.3+
1998 03 25	566	0.5-	0.7+	1998 04 22	704	1.0-	0.1-	1999 09 29	704	0.5-	0.2-
1998 03 25	566	0.5-	0.2+	1998 04 22	704	0.9+	0.8+	1999 09 29	699	0.0	0.4+
1998 03 29	704	0.4+	1.2+	1998 04 22	704	(4.9- 1.7+)		1999 09 29	699	0.7-	0.0
1998 03 29	704	0.3+	1.1+	1999 09 08	704	0.1-	0.7-	1999 10 02	703	0.7-	0.6+
1998 03 29	704	0.2-	0.5+	1999 09 08	704	0.2-	0.7-	1999 10 02	703	0.4-	0.8+
1998 03 29	704	0.7-	1.7+	1999 09 08	704	0.9-	0.7-	1999 10 02	703	0.1+	0.7+
1998 03 29	704	1.8+	0.1+	1999 09 08	704	0.3+	1.4-	1999 10 02	703	0.3+	0.0
1998 04 01	704	0.4-	1.1+	1999 09 09	704	0.8+	0.6+	1999 10 02	704	0.1-	0.2+
1998 04 01	704	0.0	0.3-	1999 09 09	704	0.7+	0.5-	1999 10 02	704	0.9+	0.9-
1998 04 01	704	1.6+	0.3-	1999 09 09	704	0.2-	0.2-	1999 10 02	704	0.6+	0.4+
1998 04 01	704	(5.3- 1.1+)		1999 09 09	704	0.7+	0.6-	1999 10 02	704	0.6+	0.1-
1998 04 18	704	0.3+	0.6+	1999 09 09	704	0.7+	0.3+	1999 10 02	704	0.5-	0.1-
1998 04 18	704	0.6-	0.6+	1999 09 14	704	0.6+	0.6+				
1998 04 18	704	1.5-	0.2-	1999 09 14	704	0.1+	0.5+				

1999 RB₁₃₂ = 1989 SX₁₁ = 1997 GH₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 288.16115 (2000.0)			Williams			
			P		Q	
<i>n</i>	0.19192755	ω	224.17460	+0.60489382	-0.79589305	
<i>a</i>	2.9765362	Ω	188.71375	+0.76945908	+0.59248917	
<i>e</i>	0.1052430	<i>i</i>	9.74614	+0.20502727	+0.12454253	
<i>P</i>	5.14	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1989 09 30	809	0.2-	0.4-	1997 04 09	691	0.2+	0.8+	1999 09 14	704	0.1-	0.2-
1989 09 30	809	0.1+	0.6-	1997 04 09	691	0.3-	0.2-	1999 09 14	704	0.3+	0.2-
1989 09 30	809	0.4+	0.4-	1997 04 15	691	0.1+	0.2-	1999 09 14	704	0.3-	0.1+
1989 10 01	809	0.4-	0.4+	1997 04 15	691	0.6+	0.6-	1999 09 14	704	0.2+	0.4-
1989 10 01	809	0.0	0.1+	1997 04 15	691	0.3+	0.6-	1999 09 14	704	0.5-	0.6+
1989 10 01	809	0.3+	0.1+	1999 09 09	704	1.2+	0.3+	1999 10 02	703	0.2-	0.1+
1997 04 08	691	0.2-	0.2-	1999 09 09	704	0.5+	0.5-	1999 10 02	703	0.4-	0.8-
1997 04 08	691	0.3-	0.2-	1999 09 09	704	0.1+	0.1+	1999 10 02	703	0.3-	0.7-
1997 04 08	691	0.2-	0.1-	1999 09 09	704	0.0	0.9+	1999 10 02	703	0.5-	0.7+
1997 04 09	691	0.4-	0.6+	1999 09 09	704	0.1-	0.1+				

1999 RE₁₃₂ = 1998 KK₃₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 243.78948 (2000.0)			Williams			
			P		Q	
<i>n</i>	0.21468797	ω	210.51258	-0.04795701	-0.99648030	
<i>a</i>	2.7622581	Ω	242.31407	+0.93139352	-0.01974571	
<i>e</i>	0.0654460	<i>i</i>	4.45315	+0.36084100	-0.08146856	
<i>P</i>	4.59	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1998 05 22	704	0.2-	0.2-	1999 09 05	699	0.1+	0.5+	1999 09 14	704	0.7+	0.2-
1998 05 22	704	1.2+	0.7+	1999 09 05	699	0.8-	1.0+	1999 09 14	703	1.4-	0.2+
1998 05 22	704	0.8+	0.9-	1999 09 05	699	0.9-	0.7+	1999 09 14	704	0.6+	0.5-
1998 05 22	704	(0.2+ 2.6-)		1999 09 07	704	0.4+	0.3+	1999 09 14	703	0.2+	0.8+
1998 05 22	704	(2.5- 2.4+)		1999 09 07	704	0.9+	0.5-	1999 09 14	704	0.4+	0.3-
1998 05 24	704	1.4-	1.0-	1999 09 07	704	0.3+	0.5-	1999 09 14	703	1.4-	0.4-
1998 05 24	704	0.0	0.2-	1999 09 07	704	0.4+	0.2+	1999 09 14	704	0.7+	0.4-
1998 05 24	704	0.1+	0.3+	1999 09 09	704	0.2-	0.3-	1999 09 14	703	0.4-	0.2+
1998 05 24	704	1.2-	0.3+	1999 09 09	704	0.1-	0.3+	1999 10 02	703	0.3+	0.1-
1998 05 24	704	0.6+	0.7+	1999 09 09	704	0.1+	0.5-	1999 10 02	703	0.3+	0.4+
1999 08 22	699	0.5-	0.7+	1999 09 09	704	0.0	1.0-	1999 10 02	703	0.5-	0.4-
1999 08 22	699	0.4-	0.5+	1999 09 09	704	0.2+	0.8-	1999 10 02	703	0.2+	0.3-
1999 08 22	699	0.1+	0.5+	1999 09 14	704	0.6+	0.2-				

1999 RG₁₃₂ = 1992 PG₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 33.77043 (2000.0)			Williams			
			P		Q	
<i>n</i>	0.28400756	ω	356.84307	+0.28691617	+0.95230353	
<i>a</i>	2.2921839	Ω	289.81139	-0.87647003	+0.21718389	
<i>e</i>	0.1130299	<i>i</i>	6.34103	-0.38662566	+0.21435752	
<i>P</i>	3.47	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1992 08 06	675	0.6+	0.7-	1999 09 08	704	0.3-	0.1+	1999 09 14	703	0.7-	0.0
1992 08 06	675	0.3-	0.1-	1999 09 08	704	0.0	0.4-	1999 09 14	704	0.7+	0.8-
1992 08 07	675	0.0	0.2+	1999 09 09	704	0.2+	0.5+	1999 09 14	703	1.0-	0.7+</

1999 RP₁₃₂ = 1984 BN₁ = 1990 BU₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17481399	ω	100.05897	+0.58949855	−0.79089381		
<i>a</i>	3.1677575	Ω	312.51427	+0.62597666	+0.57580114		
<i>e</i>	0.2329376	<i>i</i>	12.87540	+0.51053371	+0.20721977		
<i>P</i>	5.64	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1984 01 24	381	0.7−	0.3−	1999 09 08	704	0.5−	0.2+	1999 09 14	703	0.1−	0.3+
1984 01 24	381	0.5+	0.4−	1999 09 09	704	0.3−	0.4+	1999 09 14	704	0.1+	0.0
1990 01 29	046	0.7+	1.3+	1999 09 09	704	0.0	0.3−	1999 09 14	703	0.1−	0.3+
1990 01 29	046	0.5+	1.2+	1999 09 09	704	0.0	0.8−	1999 10 02	703	1.2+	0.3+
1990 01 30	046	0.2+	0.3+	1999 09 09	704	0.5−	0.4−	1999 10 02	703	1.9+	0.4+
1990 01 30	046	0.3−	0.9−	1999 09 09	704	0.7−	0.6−	1999 10 02	703	0.5−	0.1−
1999 08 22	699	0.6−	0.9+	1999 09 14	704	0.0	0.2+	1999 10 02	703	0.4−	0.3+
1999 08 22	699	0.2−	0.4+	1999 09 14	704	0.2+	0.0	1999 10 02	704	0.8+	0.1−
1999 08 22	699	0.0	0.9+	1999 09 14	703	0.2−	0.5+	1999 10 02	704	0.4+	0.0
1999 09 08	704	0.4−	0.1−	1999 09 14	704	0.3+	0.0	1999 10 02	704	0.5−	0.7−
1999 09 08	704	0.1+	0.2+	1999 09 14	703	0.0	0.3+	1999 10 02	704	0.1−	0.1+
1999 09 08	704	0.2−	0.5−	1999 09 14	704	0.2+	0.0	1999 10 02	704	0.6−	0.8−

1999 RA₁₃₃ = 1985 RK₁ = 1998 FN₉₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.20937386	ω	343.70857	+0.25369328	+0.95609739		
<i>a</i>	2.8088016	Ω	300.77809	−0.86732613	+0.15770771		
<i>e</i>	0.2403220	<i>i</i>	9.83059	−0.42823487	+0.24699404		
<i>P</i>	4.71	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1985 09 09	046	(3.7−	3.7+)	1998 03 31	704	0.3−	0.1+	1999 09 09	704	0.2−	0.0
1985 09 09	046	2.5−	1.3−	1998 03 31	704	0.3+	0.0	1999 09 09	704	0.2+	0.3−
1985 09 10	046	1.1−	1.9+	1998 04 01	704	0.1+	0.3−	1999 09 09	704	0.4+	0.2+
1985 09 10	046	0.8−	1.3+	1998 04 01	704	0.5+	0.2+	1999 09 09	704	0.4+	0.2+
1985 09 11	046	1.8+	1.8+	1998 04 01	704	(2.7−	1.6−)	1999 09 14	704	0.2+	0.3−
1985 09 11	046	0.8+	0.6−	1998 04 01	704	1.0−	0.6−	1999 09 14	704	0.2+	0.5−
1997 01 12	566	0.1−	0.2−	1998 04 01	704	0.4−	1.2+	1999 09 14	703	0.1+	0.1−
1997 01 12	566	0.4−	0.0	1999 09 08	699	0.4+	0.1+	1999 09 14	704	0.3+	0.6−
1997 01 12	566	0.2+	0.4−	1999 09 08	704	0.2−	0.4−	1999 09 14	703	0.2+	0.0
1998 02 25	566	0.6+	0.0	1999 09 08	699	0.4+	0.1+	1999 09 14	704	0.1+	0.2−
1998 02 25	566	0.6+	0.0	1999 09 08	704	0.3+	0.0	1999 09 14	703	0.0	0.1+
1998 02 25	566	0.6+	0.2−	1999 09 08	704	0.2+	0.1−	1999 09 14	704	0.4−	0.4−
1998 03 31	704	0.5+	0.6+	1999 09 08	699	0.1+	0.3+	1999 09 14	703	0.0	0.0
1998 03 31	704	0.3−	0.0	1999 09 08	704	1.5−	0.2−				
1998 03 31	704	0.3−	0.3+	1999 09 09	704	0.1+	0.1−				

1999 RT₁₃₃ = 1959 SO = 1970 SM = 1992 WE = 1998 FJ₉₉

Id. A. Doppler, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27014346	ω	61.31865	+0.71416712	+0.69424984		
<i>a</i>	2.3699531	Ω	254.55512	−0.67021305	+0.64138481		
<i>e</i>	0.1253258	<i>i</i>	5.31850	−0.20194009	+0.32656191		
<i>P</i>	3.65	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1959 09 30	024	0.4−	0.3−	1999 07 12	704	0.3−	0.7−	1999 09 14	704	0.2−	0.2−
1970 09 27	095	1.2+	0.8−	1999 07 12	704	0.4+	1.8−	1999 09 14	704	0.2+	0.5−
1992 11 16	399	0.7−	1.4−	1999 07 12	704	0.2−	0.3−	1999 09 14	704	0.6−	0.5−
1992 11 16	399	0.7+	0.9−	1999 09 04	703	0.3+	0.2+	1999 09 14	704	0.4−	0.1−
1992 11 18	399	(1.2+	2.3+)	1999 09 04	703	0.1−	0.3+	1999 09 14	704	0.2−	0.1−

1992 11 18	399	(3.1+	1.8+)	1999 09 04	703	0.3−	0.5+	1999 10 02	703	0.2+	0.3+
1998 02 26	566	0.6+	0.6+	1999 09 04	703	1.0−	0.9+	1999 10 02	703	0.0	0.3+
1998 02 26	566	0.8+	0.5+	1999 09 08	699	0.1+	0.8+	1999 10 02	703	0.1−	0.5+
1998 02 26	566	0.6+	0.7+	1999 09 08	704	0.1+	0.1−	1999 10 02	703	0.4−	0.5+
1998 03 26	566	0.3+	0.5−	1999 09 08	699	0.0	0.4+	1999 10 02	704	0.0	0.9+
1998 03 26	566	0.3+	0.5−	1999 09 08	704	0.3+	0.4−	1999 10 02	704	0.2+	0.1+
1998 03 26	566	0.2+	0.6−	1999 09 08	704	0.4+	0.9−	1999 10 02	704	0.2−	0.4+
1998 03 31	704	0.1−	0.9−	1999 09 08	699	0.1+	0.8+	1999 10 02	704	0.4+	0.2−
1998 03 31	704	0.3−	0.5−	1999 09 09	704	0.1+	0.0	1999 10 02	704	0.6−	1.2−
1998 03 31	704	0.1+	0.7+	1999 09 09	704	0.3+	0.3+	1999 10 07	703	0.6+	0.8+
1998 03 31	704	0.5−	0.1+	1999 09 09	704	0.0	0.2−	1999 10 07	703	0.6+	0.1+
1998 03 31	704	0.2−	0.3−	1999 09 09	704	0.4+	0.3−	1999 10 07	703	0.1−	0.5+
1998 04 01	704	0.4+	1.4−	1999 09 09	704	0.1−	0.3−	1999 10 07	703	0.1−	0.7+
1998 04 01	704	0.3−	0.7+	1999 09 10	704	0.6−	0.4+	1999 10 11	106	0.6−	1.0+
1998 04 01	704	0.2−	0.3+	1999 09 10	704	0.2+	0.0	1999 10 11	106	0.0	1.0+
1998 04 01	704	0.4−	0.5+	1999 09 10	704	0.0	0.2−	1999 10 11	106	0.6+	0.5+
1998 04 01	704	1.1−	0.3+	1999 09 10	704	0.0	0.3−				
1999 07 12	704	0.1−	1.9−	1999 09 10	704	0.1+	0.5−				

1999 RU₁₃₃ = 1977 UH₄ = 1997 GU₂₅ = 1998 KR₄₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.21903620	ω	245.12555	−0.07489287	−0.99458408		
<i>a</i>	2.7255790	Ω	209.44641	+0.95963396	−0.05223650		
<i>e</i>	0.0596900	<i>i</i>	8.42952	+0.27109724	−0.08985461		
<i>P</i>	4.50	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1977 10 18	675	0.9−	0.7−	1997 04 11	327	1.2+	0.4+	1999 09 04	703	0.7−	0.1+
1977 10 19	675	0.9+	0.5+	1998 05 22	704	0.6+	0.4−	1999 09 08	699	0.2+	1.7+
1993 04 16	413	(3.1+	3.3+)	1998 05 22	704	0.2+	0.9−	1999 09 08	699	0.2−	0.5−
1995 11 14	691	0.0	0.4+	1998 05 22	704	(0.5−	3.0+)	1999 09 08	699	0.1−	0.5+
1995 11 14	691	0.2+	0.5+	1998 05 22	704	1.4+	0.3+	1999 09 09	704	0.9+	0.8+
1995 11 14	691	0.1−	0.2+	1998 05 22	704	1.2−	1.5+	1999 09 09	704	1.6+	0.9−
1997 04 08	327	0.6−	0.4+	1998 05 24	704	0.1+	1.3−	1999 09 09	704	0.4−	0.1+
1997 04 08	327	0.1−	0.7+	1998 05 24	704	(4.3+	1.9−)	1999 09 09	704	0.9+	0.7−
1997 04 08	327	0.3+	0.0	1998 05 24	704	0.5−	0.7+	1999 09 14	704	0.4−	0.6−
1997 04 09	327	0.7−	0.1+	1998 05 24	704	(1.9+	3.0−)	1999 09 14	704	0.7−	0.3−
1997 04 09	327	0.1−	0.1−	1998 05 24	704	0.3−	0.7+	1999 09 14	704	0.2−	0.7−
1997 04 09	327	0.0	0.2+	1999 09 04	703	0.1−	0.2−	1999 09 14	704	0.2+	0.4−
1997 04 11	327	0.2−	0.5−	1999 09 04	703	1.1+	1.4+	1999 09 14	704	1.0−	0.4+
1997 04 11	327	0.5+	0.3+	1999 09 04	703	1.6−	0.2+				

1999 RB₁₃₄ = 1998 KP₂₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27039756	ω	227.58410	−0.36832816	−0.92529088		
<i>a</i>	2.3684681	Ω	244.23553	+0.87974151	−0.31544321		
<i>e</i>	0.1100476	<i>i</i>	5.76063	+0.30064803	−0.21055253		
<i>P</i>	3.65	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 22	704	0.6+	0.5−	1998 05 24	704	0.1+	1.2+	1999 09 14	704	1.0−	0.1−
1998 05 22	704	0.7−	0.3−	1998 05 24	704	0.5−	0.2+	1999 09 14	704	0.7−	0.2+
1998 05 22	704	0.9+	0.6−	1999 09 08	699	0.7−	0.0	1999 10 02	703	0.2−	0.0
1998 05 22	704	0.8+	0.1+	1999 09 08	699	0.5+	0.1−	1999 10 02	703	1.5+	0.3+
1998 05 22	704	1.4−	1.8−	1999 09 08	699	0.5+	0.2+	1999 10 02	703	0.2+	0.0
1998 05 23	704	0.6−	1.2+	1999 09 09	704	0.1+	0.7−	1999 10 02	703	0.8−	0.8−
1998 05 23	704	0.9+	0.5−	1999 09 09	704	0.8+	0.3+	1999 10 02	704	0.3+	0.1−
1998 05 23	704	0.0	0.1−	1999 09 09	704	0.1−	0.2−	1999 10 02	704	0.8−	0.3+
1998 05 23	704	0.3+	0.7+	1999 09 09	704	1.0+	0.5−	1999 10 02	704	0.1+	0.1+
1998 05 23	704	0.5−	1.2+	1999 09 09	704	0.4−	0.1+	1999 10 02	704	0.3+	0.3−
1998 05 24	704	0.1+	0.6−	1999 09 14	704	0.4+	0.5+	1999 10 02	704	0.1−	0.7+

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1998 05 24 704 0.7− 0.3+ 1999 09 14 704 0.3− 0.1−
 1998 05 24 704 0.6+ 0.3− 1999 09 14 704 0.7− 0.3+

1999 RD₁₃₄ = 1990 SS₁₉ = 1991 YP₁ = 1997 EA₂₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	10.91824		(2000.0)	P	Q
<i>n</i>	0.21532018	ω	31.96937	+0.73808568	+0.66551214
<i>a</i>	2.7568485	Ω	285.88904	−0.64079560	+0.63993087
<i>e</i>	0.1098164	<i>i</i>	6.62781	−0.21121206	+0.38416412
<i>P</i>	4.58	<i>H</i>	13.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1990 09 18	675	(0.0 2.6−)	1998 03 31	704	0.2+	0.1−	1999 09 14	704	0.2−	0.1−	
1990 09 18	675	1.0+	1.7−	1998 03 31	704	0.3+	1.2−	1999 09 14	704	0.4−	0.3−
1991 12 28	033	0.3+	0.5+	1998 03 31	704	1.8−	0.9−	1999 09 14	704	0.3−	0.2−
1992 01 02	033	0.3+	0.6+	1999 09 08	704	0.3−	0.2−	1999 10 02	703	0.3+	0.1−
1992 01 03	033	1.0−	0.5−	1999 09 08	704	0.0	0.2+	1999 10 02	703	0.0	0.3−
1997 01 11	691	0.2−	0.0	1999 09 08	704	0.8−	0.1−	1999 10 02	703	0.3+	0.3+
1997 01 11	691	0.2−	0.1−	1999 09 08	699	0.2+	0.1+	1999 10 02	703	0.2−	0.0
1997 01 11	691	0.2−	0.3−	1999 09 08	699	0.1+	0.1−	1999 10 02	704	1.2+	0.2+
1997 03 05	691	0.1+	0.3−	1999 09 08	699	0.1−	0.5+	1999 10 02	704	0.8+	0.4+
1997 03 05	691	0.0	0.5−	1999 09 09	704	0.4−	0.3−	1999 10 02	704	0.8+	0.1−
1997 03 05	691	0.1+	0.4−	1999 09 09	704	0.3−	0.3−	1999 10 02	704	0.8+	0.5−
1997 03 13	691	0.6−	0.4−	1999 09 09	704	0.2−	0.1+	1999 10 02	704	(0.5+ 2.2−)	
1997 03 13	691	0.4+	0.6−	1999 09 09	704	0.2−	0.1+	1999 10 11	106	0.6+	0.3−
1997 03 13	691	0.1+	0.5−	1999 09 09	704	0.0	0.2+	1999 10 11	106	0.1−	0.1+
1998 03 31	704	0.6+	0.1+	1999 09 14	704	0.2−	0.4−	1999 10 11	106	0.0	0.1+
1998 03 31	704	0.2−	0.2+	1999 09 14	704	0.3−	0.3−				

1999 RT₁₃₄ = 1994 TZ₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	311.99877		(2000.0)	P	Q
<i>n</i>	0.18244633	ω	199.14272	+0.74089483	−0.67108301
<i>a</i>	3.0787845	Ω	203.07539	+0.62479998	+0.70337298
<i>e</i>	0.2380229	<i>i</i>	3.93227	+0.24637336	+0.23433747
<i>P</i>	5.40	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1994 10 08	691	0.2+	0.0	1999 08 22	699	0.3−	0.1−	1999 09 14	704	0.4+	0.1+
1994 10 08	691	0.1+	0.2+	1999 09 07	704	0.4−	0.1+	1999 09 14	704	0.2−	0.4+
1994 10 08	691	0.1+	0.1−	1999 09 07	704	0.2−	0.3−	1999 09 14	704	0.1−	0.7+
1994 10 10	691	0.1−	0.2+	1999 09 07	704	0.4−	0.1−	1999 09 14	704	0.1−	0.6+
1994 10 10	691	0.1−	0.1−	1999 09 07	704	0.2−	0.1−	1999 09 14	704	0.1+	0.9+
1994 10 10	691	0.2−	0.1+	1999 09 07	704	0.4−	0.2−	1999 10 06	704	(0.9+ 2.4+)	
1999 07 23	704	0.1+	0.7+	1999 09 09	704	0.1+	0.1+	1999 10 06	704	1.1+	0.1−
1999 07 23	704	1.8+	0.1+	1999 09 09	704	0.3−	0.4−	1999 10 06	704	1.6+	0.8−
1999 07 23	704	0.2+	0.3+	1999 09 09	704	0.2+	0.7−	1999 10 06	704	1.1−	1.1−
1999 08 22	699	0.3+	0.3−	1999 09 09	704	0.3−	0.0				
1999 08 22	699	1.0−	0.1−	1999 09 09	704	0.6−	0.0				

1999 RA₁₃₅ = 1998 DA₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	77.84681		(2000.0)	P	Q
<i>n</i>	0.29407465	ω	50.67482	−0.51649435	+0.85627452
<i>a</i>	2.2395684	Ω	188.23276	−0.79647656	−0.48265705
<i>e</i>	0.1012518	<i>i</i>	2.10008	−0.31441800	−0.18394598
<i>P</i>	3.35	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1993 12 15	691	0.2+	0.7+	1999 08 22	703	1.6−	0.4−	1999 09 13	704	0.3−	0.2+
1993 12 15	691	0.3−	0.3+	1999 08 22	703	0.3+	0.0	1999 09 13	704	0.8+	0.0
1993 12 15	691	0.1−	0.0	1999 08 22	703	0.4−	0.3+	1999 09 13	704	0.1+	0.0
1998 02 22	566	0.7−	0.0	1999 08 22	703	0.7+	0.0	1999 09 13	704	0.2+	0.4−

1998 02 22	566	0.2−	0.0	1999 08 22	699	0.1+	0.4+	1999 09 13	704	0.3+	0.1+
1998 02 22	566	0.2−	0.0	1999 09 07	704	0.4−	0.3+	1999 09 29	704	(2.2+ 1.8−)	
1998 02 24	566	0.1+	0.6−	1999 09 07	704	0.3+	0.5−	1999 09 29	704	0.6+	1.2−
1998 02 24	566	0.1+	0.4−	1999 09 07	704	0.8+	0.2+	1999 09 29	704	0.4−	0.0
1998 02 24	566	0.4+	0.7−	1999 09 07	704	0.1+	0.2−	1999 09 29	704	0.2+	0.1+
1999 08 22	699	0.1+	0.4+	1999 09 07	704	0.3−	0.3−	1999 09 30	704	0.2−	0.9−
1999 08 22	703	0.4−	0.0	1999 09 09	704	0.0	0.1+	1999 09 30	704	0.6+	0.4−
1999 08 22	703	0.3+	0.8+	1999 09 09	704	0.1+	0.3−	1999 09 30	704	0.2−	0.5−
1999 08 22	703	0.1−	0.0	1999 09 09	704	0.0	0.3+	1999 09 30	704	0.3+	0.1−
1999 08 22	703	0.4+	0.5+	1999 09 09	704	0.4−	0.0	1999 09 30	704	0.3−	1.0−
1999 08 22	699	0.4−	0.5+	1999 09 09	704	0.4−	0.1−				

1999 RE₁₃₅ = 1998 KF₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	159.52949		(2000.0)	P	Q
<i>n</i>	0.22110547	ω	7.70649	−0.98307204	−0.18134569
<i>a</i>	2.7085471	Ω	161.78217	+0.16332618	−0.93201674
<i>e</i>	0.0349446	<i>i</i>	4.79561	+0.08302970	−0.31378104
<i>P</i>	4.46	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 22	704	0.5+	0.1+	1998 05 24	704	0.2−	0.3−	1999 09 09	704	0.4+	0.6−
1998 04 22	704	0.2−	0.4+	1998 05 24	704	0.2+	0.1−	1999 09 13	704	0.2−	0.1+
1998 04 22	704	0.7+	0.2+	1998 06 16	704	0.7+	0.5−	1999 09 13	704	0.4−	0.4+
1998 04 22	704	0.7−	0.1+	1998 06 16	704	1.2+	0.6+	1999 09 13	704	0.1−	0.3−
1998 04 22	704	0.6−	0.5−	1998 06 16	704	0.0	1.4+	1999 09 13	704	0.3+	0.1−
1998 05 01	704	0.6+	0.2−	1998 06 16	704	(1.9+ 2.5−)		1999 09 13	704	0.3−	0.0
1998 05 01	704	0.5+	0.4−	1998 06 16	704	1.1−	1.9+	1999 09 29	704	0.1+	0.7+
1998 05 01	704	0.3+	0.3−	1998 06 18	704	(1.2+ 2.7+)		1999 09 29	704	0.1+	0.2−
1998 05 01	704	0.5+	0.2−	1998 06 18	704	0.3+	0.6+	1999 09 29	704	0.4−	0.4+
1998 05 05	699	0.2+	0.7−	1998 06 18	704	0.5−	0.7+	1999 09 30	704	0.2−	0.2−
1998 05 05	699	0.2+	0.3−	1998 06 18	704	(4.5− 1.2−)		1999 09 30	704	0.3+	0.1−
1998 05 05	699	0.5+	0.1−	1999 09 07	704	0.2−	0.1−	1999 09 30	704	0.3+	0.2+
1998 05 22	704	0.5−	0.4+	1999 09 07	704	0.4−	1.3−	1999 09 30	704	0.5+	1.5+
1998 05 22	704	0.7+	0.4+	1999 09 07	704	0.8+	0.9−	1999 09 30	704	0.1+	0.9+
1998 05 22	704	0.8−	1.1+	1999 09 07	704	0.4+	0.9−	1999 10 04	703	0.0	0.8+
1998 05 22	704	0.5−	1.0−	1999 09 07	704	0.3+	0.5−	1999 10 04	703	0.2−	0.1−
1998 05 22	704	1.1−	0.2+	1999 09 09	704	0.7+	0.7+	1999 10 04	703	0.5+	0.2+
1998 05 24	704	0.1−	0.3−	1999 09 09	704	0.8−	0.2+	1999 10 04	703	0.1−	0.0
1998 05 24	704	0.5−	1.5−	1999 09 09	704	0.8−	0.3−				
1998 05 24	704	0.0	0.9−	1999 09 09	704	0.3−	0.7−				

1999 RY₁₃₅ = 1990 BG₄ = 1992 RJ₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	298.52758		(2000.0)	P	Q
<i>n</i>	0.27762393	ω	271.72276	+0.62631687	−0.77510736
<i>a</i>	2.3271879	Ω	139.10651	+0.75624138	+0.57816037
<i>e</i>	0.1784977	<i>i</i>	7.30862	+0.18927798	+0.25483165
<i>P</i>	3.55	<i>H</i>	15.0	<i>G</i> 0.15	<i>U</i> 2

Residuals in seconds of arc

1990 01 24	033	0.5+	0.0	1999 09 07	704	0.1+	0.4+	1999 09 13	704	0.0	1.0−
1990 01 25	033	0.6−	1.6−	1999 09 07	704	0.3+	0.5+	1999 09 13	704	0.1+	0.3−
1992 09 02	809	0.1−	0.0	1999 09 07	704	0.9+	0.3+	1999 09 29	704	0.5+ 0.2+	
1992 09 02	809	0.7+	0.6−	1999 09 09	704	0.3+	0.5−	1999 09 29	704	0.5− 1.7+	
1992 09 02	809	0.1+	0.2+	1999 09 09	704	1.4+	0.7−	1999 09 29	704	0.8− 1.4+	
1992 09 03	809	0.7−	0.2+	1999 09 09	704	1.2+	1.0−	1999 09 30	704	0.4− 0.3+	
1998 04 03	691	0.1−	0.2−	1999 09 09	704	0.2+	1.2−	1999 09 30	704	0.2− 0.9+	
1998 04 03	691	0.2−	0.2−	1999 09 09	704	1.2−	1.3−	1999 09 30	704	0.4− 0.7+	
1998 04 03	691	0.0	0.2−	1999 09 13	704	0.5+	0.0	1999 09 30	704	1.0− 0.8+	
1999 09 07	704	0.2−	0.8−	1999 09							

1999 RH₁₃₆ = 1993 FJ = 1997 EP₁₅ = 1998 KK₆₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	230.62176			(2000.0)			P			Q					
<i>n</i>	0.22672818			ω	314.16885			−0.27731764			−0.95240660				
<i>a</i>	2.6635798			Ω	151.20864			+0.93934234			−0.29643738				
<i>e</i>	0.0578076			<i>i</i>	15.23461			+0.20181897			+0.07103905				
<i>P</i>	4.35 <th><i>H</i></th> <td colspan="3">14.6</td> <th><i>G</i></th> <td colspan="3">0.15</td> <th><i>U</i></th> <td colspan="3">1</td>			<i>H</i>	14.6			<i>G</i>	0.15			<i>U</i>	1		
Residuals in seconds of arc															
1993 03 16	372	0.1+	1.4−	1998 05 23	704	1.5−	0.4+	1999 09 09	704	0.4+	0.2+				
1993 03 16	372	1.1−	0.3−	1998 05 23	704	0.3+	0.5−	1999 09 09	704	0.6+	0.9−				
1993 03 17	372	0.9+	1.1+	1998 05 23	704	1.5−	0.8−	1999 09 09	704	0.6+	0.3+				
1997 03 05	691	0.1−	0.7−	1998 05 26	704	0.4+	0.7+	1999 09 13	704	0.9−	0.1+				
1997 03 05	691	0.1+	0.7−	1998 05 26	704	0.3+	0.6−	1999 09 13	704	0.0	0.6−				
1997 03 05	691	0.3+	0.7−	1998 05 26	704	1.2+	0.4+	1999 09 13	704	0.5−	0.1+				
1997 03 10	691	0.1−	0.4−	1998 05 26	704	0.1−	0.5+	1999 09 13	704	0.0	0.7−				
1997 03 10	691	0.2−	0.1+	1998 05 26	704	0.6+	0.4+	1999 09 13	704	0.3+	0.7−				
1997 03 10	691	0.2−	0.0	1999 09 09	704	0.4−	0.6−								
1998 05 23	704	0.3+	1.2−	1999 09 09	704	0.2+	0.1−								

1999 RK₁₃₆ = 1992 SO₁₉ = 1998 ER₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	10.72957		(2000.0)	P		Q					
<i>n</i>	0.28077575	ω	314.67598		+0.61804825		+0.78609434				
<i>a</i>	2.3097394	Ω	353.48131		-0.69847024		+0.54413696				
<i>e</i>	0.2473525	<i>i</i>	4.28775		-0.36077095		+0.29320754				
<i>P</i>	3.51	<i>H</i>	16.4	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1992 09 22	809	(0.9+	2.8-)	1998 03 04	691	0.5+	0.3+	1999 09 09	704	0.0	0.0
1992 09 22	809	0.2-	1.4-	1998 03 04	691	0.4+	0.3+	1999 09 09	704	0.5+	0.1-
1992 09 22	809	0.1+	0.7-	1999 09 07	704	0.5+	0.6-	1999 09 13	704	0.2+	0.7+
1992 09 23	809	1.1+	0.4-	1999 09 07	704	0.4-	0.1+	1999 09 13	704	0.2-	1.0+
1992 09 23	809	0.1+	0.3-	1999 09 07	704	0.1+	0.3-	1999 09 13	704	0.5+	0.6+
1992 09 23	809	0.4+	0.5-	1999 09 07	704	0.3-	0.8-	1999 09 13	704	0.2-	0.8+
1998 03 02	691	0.1-	0.3+	1999 09 07	704	0.8-	0.5-	1999 09 13	704	0.2-	0.7+
1998 03 02	691	0.6-	0.1+	1999 09 09	704	0.5-	0.0	1999 09 30	704	0.8-	0.9+
1998 03 02	691	0.3-	0.1+	1999 09 09	704	0.5+	0.0	1999 09 30	704	1.0-	1.3+
1998 03 04	691	0.5+	0.3-	1999 09 09	704	0.2+	0.1+	1999 09 30	704	(1.3-	2.9+)

1999 RL₁₃₆ = 1998 FK₁₃₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	6.54319		(2000.0)	P		Q					
<i>n</i>	0.26961217	ω	170.58385	+0.75829725	+0.64867314						
<i>a</i>	2.3730655	Ω	148.67208	-0.60594126	+0.73803455						
<i>e</i>	0.1575273	<i>i</i>	7.16748	-0.24045885	+0.18581755						
<i>P</i>	3.66	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4				
Residuals in seconds of arc											
1998 03 22	704	0.4-	1.7+	1999 09 07	704	0.1+	0.3-	1999 09 13	704	0.2+	0.5-
1998 03 22	704	0.7+	0.6-	1999 09 07	704	0.6-	0.4-	1999 09 13	704	0.8+	0.3+
1998 03 22	704	1.1-	0.2+	1999 09 07	704	0.9-	0.8-	1999 09 13	704	0.5+	0.2-
1998 03 22	704	0.1-	0.4-	1999 09 09	704	0.3-	0.6-	1999 09 13	704	0.6+	0.2+
1998 03 25	704	0.3-	1.1+	1999 09 09	704	0.3+	0.9+	1999 09 30	704	0.2-	0.4-
1998 03 25	704	(2.9+	3.0-)	1999 09 09	704	0.3+	0.6+	1999 09 30	704	0.6-	0.2-
1998 03 25	704	1.3+	0.9-	1999 09 09	704	0.0	0.5+	1999 09 30	704	0.3+	0.3+
1998 03 25	704	0.3-	1.1-	1999 09 09	704	0.1-	0.4+	1999 09 30	704	0.3-	0.4+
1999 09 07	704	0.5-	0.1-	1999 09 13	704	0.1+	0.1+	1999 09 30	704	0.1+	0.6-

1999 RQ₁₃₆ = 1981 US₂₄ = 1998 FU₃₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	37.91410		(2000.0)	P		Q					
<i>n</i>	0.26555603	ω	126.58391	+0.26000416	+0.96527660						
<i>a</i>	2.3971688	Ω	158.44492	-0.90645190	+0.25301358						
<i>e</i>	0.0887821	<i>i</i>	3.94510	-0.33278038	+0.06500171						
<i>P</i>	3.71 <th><i>H</i></th> <td>14.6<th><i>G</i></th><td>0.15<th><i>U</i></th><td>1</td><td colspan="3"></td></td></td>	<i>H</i>	14.6 <th><i>G</i></th> <td>0.15<th><i>U</i></th><td>1</td><td colspan="3"></td></td>	<i>G</i>	0.15 <th><i>U</i></th> <td>1</td> <td colspan="3"></td>	<i>U</i>	1				
Residuals in seconds of arc											
1981 10 24	675	1.3+	0.1-	1998 03 22	704	0.6-	0.0	1999 09 13	704	0.1-	0.1+
1981 10 25	675	1.1-	0.7-	1998 04 19	704	0.5+	0.3+	1999 09 13	704	0.1+	0.1+
1997 01 10	691	0.1+	0.4-	1998 04 19	704	0.1+	0.1+	1999 09 13	704	0.5-	0.3-
1997 01 10	691	0.0	0.0	1998 04 19	704	1.6+	0.5-	1999 09 29	704	0.8-	0.1+
1997 01 10	691	0.1+	0.1-	1998 04 19	704	(2.9+	1.5-)	1999 09 29	704	0.4-	0.1+
1998 02 25	566	0.1+	0.7-	1999 09 07	704	0.5+	1.6-	1999 09 29	704	0.7-	0.4+
1998 02 25	566	0.0	1.0-	1999 09 07	704	0.4+	0.0	1999 09 29	704	(2.3-	1.4+)
1998 02 25	566	0.1-	0.7-	1999 09 07	704	0.7+	0.1+	1999 09 30	704	0.7-	0.0
1998 03 20	704	0.3-	0.2+	1999 09 07	704	0.5+	0.4-	1999 09 30	704	0.3-	0.1+
1998 03 20	704	0.3-	0.4+	1999 09 07	704	0.6+	0.6+	1999 09 30	704	0.4-	0.3-
1998 03 20	704	0.2+	0.1-	1999 09 09	704	(2.1+	0.3-)	1999 09 30	704	0.8-	0.1+
1998 03 20	704	0.6+	0.0	1999 09 09	704	0.3+	0.1+	1999 09 30	704	0.9-	0.2-
1998 03 20	704	0.2+	0.6-	1999 09 09	704	0.5+	1.2-	1999 10 04	703	0.6-	0.7+
1998 03 22	704	0.3-	0.7-	1999 09 09	704	0.7+	0.6-	1999 10 04	703	0.5+	0.2+
1998 03 22	704	0.8-	0.7+	1999 09 09	704	0.6+	0.9-	1999 10 04	703	0.4+	0.7+
1998 03 22	704	0.9-	0.2-	1999 09 13	704	0.3+	0.3-	1999 10 04	703	0.2+	0.1+
1998 03 22	704	1.0-	0.4-	1999 09 13	704	0.3+	0.1+				

1999 RZ₁₃₆ = 1996 VD₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	340.78987		(2000.0)	P		Q					
<i>n</i>	0.29250912	ω	180.15513	+0.99249927	+0.12132360						
<i>a</i>	2.2475522	Ω	172.82401	-0.11203273	+0.95184014						
<i>e</i>	0.1276494	<i>i</i>	6.90864	-0.04892711	+0.28156869						
<i>P</i>	3.37	<i>H</i>	16.2	<i>G</i>	0.15	<i>U</i>	5				
Residuals in seconds of arc											
1996 11 03	691	0.6-	0.1+	1999 08 22	699	0.3-	1.1+	1999 09 09	704	0.2-	0.2-
1996 11 03	691	0.7-	0.1+	1999 09 07	704	0.3+	0.7-	1999 09 14	704	1.6+	0.7-
1996 11 03	691	1.2-	1.1-	1999 09 07	704	0.3-	0.1-	1999 09 14	704	0.2-	1.7-
1996 11 13	691	0.7+	0.3+	1999 09 07	704	0.7+	0.3+	1999 09 14	704	1.2-	1.0-
1996 11 13	691	0.8+	0.4+	1999 09 07	704	0.9+	0.3+	1999 09 30	704	0.0	0.0
1996 11 13	691	0.9+	0.2+	1999 09 07	704	0.3-	0.2+	1999 09 30	704	0.1+	1.3+
1999 08 22	699	0.9-	1.2+	1999 09 09	704	0.5+	0.3+	1999 09 30	704	0.9-	1.0+
1999 08 22	699	0.3+	0.5+	1999 09 09	704	0.0	1.7-				

1999 RE₁₃₇ = 1996 VO₃ = 1998 HB₁₂₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	36.94147		(2000.0)			P		Q			
n	0.27320433	ω	333.78386			+0.37529245		+0.92479136			
a	2.3522185	Ω	318.17818			-0.83307706		+0.30693175			
e	0.0243274	i	5.38525			-0.40637197		+0.22484182			
P	3.61	H	15.1		G	0.15		U	3		
Residuals in seconds of arc											
1996 11 01	327	0.1+	0.5+	1998 04 01	704	0.1-	1.4+	1999 09 07	704	0.2-	0.3-
1996 11 01	327	0.5-	0.6+	1998 04 01	704	0.2-	1.3+	1999 09 07	704	0.8+	0.5+
1996 11 01	327	0.1-	0.4+	1998 04 19	704	0.1+	0.1+	1999 09 07	704	0.2-	0.0
1996 11 01	327	0.4-	0.2-	1998 04 19	704	0.6+	1.0-	1999 09 09	704	0.2-	0.8-
1996 11 09	327	0.2-	0.7+	1998 04 19	704	0.2-	0.2+	1999 09 09	704	0.1+	1.6-
1996 11 09	327	0.2+	0.7-	1998 04 19	704	1.2-	0.1-	1999 09 09	704	0.3-	0.4-
1996 11 09	327	0.2+	0.1+	1998 04 19	704	1.1-	1.8-	1999 09 09	704	0.3-	0.1-
1996 12 02	327	0.2+	0.5-	1998 04 20	704	0.6+	0.4-	1999 09 09	704	0.1-	0.1-
1996 12 02	327	0.3+	0.3-	1998 04 20	704	0.6-	1.0+	1999 09 14	704	0.2-	0.5-
1996 12 02	327	0.5+	0.7-	1998 04 20	704	0.1-	0.1-	1999 09 14	704	0.4+	0.2+

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1998 03 31	704	1.6+	1.5−	1998 04 20	704	0.4−	0.0	1999 09 14	704	0.3−	1.3−
1998 03 31	704	(1.9+	2.5+)	1998 04 20	704	(0.9−	2.4−)	1999 09 14	704	(1.3−	2.0−)
1998 03 31	704	0.4+	0.9−	1999 08 22	699	(0.2+	2.1+)	1999 10 02	703	0.3−	1.4+
1998 03 31	704	0.0	0.9+	1999 08 22	699	0.4−	1.2+	1999 10 02	703	1.0+	0.8+
1998 03 31	704	0.2+	0.3+	1999 08 22	699	0.4−	0.7+	1999 10 02	703	1.1+	0.2+
1998 04 01	704	(0.2+	4.5−)	1999 09 07	704	0.4+	0.3−	1999 10 02	703	1.1−	0.6+
1998 04 01	704	0.2+	0.4+	1999 09 07	704	0.5+	0.3−				

1999 RG₁₃₈ = 1998 BX₂₂

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	33.72662	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.30074857	ω 289.14854	+0.29734009	+0.95476903	
<i>a</i>	2.2063124	Ω 358.14503	−0.84809411	+0.26304565	
<i>e</i>	0.1123747	<i>i</i> 3.94598	−0.43854903	+0.13864731	
<i>P</i>	3.28	<i>H</i> 15.4	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1995 04 06	691	0.2−	0.4−	1998 01 29	691	0.1−	0.3−	1999 09 09	704	0.3+	0.0
1995 04 06	691	0.2−	0.2−	1998 02 25	566	0.1−	0.8+	1999 09 09	704	0.4−	0.5+
1995 04 06	691	0.0	0.1−	1998 02 25	566	0.4+	0.3+	1999 09 09	704	0.1−	0.1−
1996 10 11	566	0.2+	0.0	1998 02 25	566	0.3+	0.5+	1999 09 13	704	0.4+	0.1+
1996 10 11	566	0.0	0.0	1999 08 08	699	0.6−	0.7+	1999 09 13	704	0.9+	0.9−
1996 10 11	566	0.1−	0.0	1999 08 08	699	0.1+	0.9+	1999 09 13	704	0.4+	1.0−
1998 01 23	691	0.1−	0.1+	1999 08 08	699	0.4−	0.6+	1999 09 13	704	0.2+	0.5−
1998 01 23	691	0.1−	0.0	1999 09 07	704	0.1+	0.4−	1999 09 13	704	0.3+	0.6−
1998 01 23	691	0.2−	0.0	1999 09 07	704	0.1−	0.1+	1999 10 04	703	2.0−	0.4−
1998 01 25	691	0.0	0.2+	1999 09 07	704	0.1−	0.2−	1999 10 04	703	1.0+	0.4+
1998 01 25	691	0.1+	0.0	1999 09 07	704	0.2−	0.0	1999 10 04	703	0.0	0.6−
1998 01 25	691	0.1+	0.0	1999 09 07	704	0.2−	0.3+	1999 10 04	703	0.1−	0.4+
1998 01 29	691	0.1+	0.3−	1999 09 09	704	0.1−	0.1+				
1998 01 29	691	0.0	0.2−	1999 09 09	704	0.0	0.4+				

1999 RL₁₃₉ = 1998 FG₁₁₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	312.96056	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.27235978	ω 43.82304	+0.93662382	−0.34691343	
<i>a</i>	2.3570786	Ω 336.34408	+0.27844378	+0.82177679	
<i>e</i>	0.0722593	<i>i</i> 6.99374	+0.21261438	+0.45203317	
<i>P</i>	3.62	<i>H</i> 14.7	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 03 25	704	0.4+	0.3+	1998 04 20	704	(3.0−	3.2−)	1999 09 09	704	0.3+	0.4+
1998 03 25	704	0.3+	0.7+	1998 05 16	704	0.7−	1.5−	1999 09 09	704	0.0	0.1−
1998 03 25	704	0.2+	0.6+	1998 05 16	704	0.8+	0.5−	1999 09 09	704	0.2−	0.2−
1998 03 25	704	1.1−	0.7+	1998 05 16	704	(2.1+	0.4+)	1999 09 09	704	0.0	0.4−
1998 03 25	704	1.7+	0.7+	1998 05 16	704	(4.1−	0.8−)	1999 09 13	704	0.3+	0.3+
1998 03 31	704	0.8−	0.1+	1999 08 22	703	0.2−	0.7−	1999 09 13	704	0.0	0.2−
1998 03 31	704	0.0	0.0	1999 08 22	703	0.1−	0.5−	1999 09 13	704	0.1+	0.2−
1998 03 31	704	0.4+	0.8+	1999 08 22	703	0.1+	0.0	1999 09 13	704	0.3+	0.3−
1998 03 31	704	(5.9−	1.7+)	1999 08 22	703	1.1−	0.1−	1999 09 13	704	0.3−	0.0
1998 04 01	704	0.2−	0.8−	1999 09 04	699	0.8+	0.1−	1999 09 29	699	0.3−	0.3−
1998 04 01	704	1.0+	0.4+	1999 09 04	699	0.9+	0.2+	1999 09 29	699	0.2+	1.0+
1998 04 01	704	0.5+	0.0	1999 09 04	699	0.4−	0.8+	1999 09 29	699	0.2+	1.7+
1998 04 01	704	1.2+	0.4+	1999 09 07	704	0.1+	0.2−	1999 09 30	704	0.3+	0.6−
1998 04 01	704	1.2−	1.2+	1999 09 07	704	0.1−	0.6−	1999 09 30	704	1.3−	0.8−
1998 04 20	704	1.1−	0.8−	1999 09 07	704	0.0	0.6+	1999 09 30	704	0.2−	0.6+
1998 04 20	704	1.0−	1.7−	1999 09 07	704	0.2−	0.3+				
1998 04 20	704	(0.6+	2.5−)	1999 09 07	704	0.5+	0.6+				

1999 RS₁₄₀ = 1997 EC₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	345.84436	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.21829494	ω 187.52450	+0.97691655	+0.21269158	
<i>a</i>	2.7317457	Ω 160.16139	−0.19281126	+0.91803384	
<i>e</i>	0.0957119	<i>i</i> 3.36304	−0.09196668	+0.33462839	
<i>P</i>	4.52	<i>H</i> 14.8	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1997 01 31	691	0.3−	0.2−	1998 05 22	704	1.0+	0.6+	1999 09 13	704	1.0+	0.8−
1997 01 31	691	0.1−	0.3−	1998 05 22	704	(0.6+	2.9−)	1999 09 13	704	0.0	0.7+
1997 01 31	691	0.3−	0.4−	1999 09 07	704	0.7+	0.1−	1999 09 29	704	0.5−	0.4−
1997 03 05	704	0.3−	0.2+	1999 09 07	704	0.3+	0.4−	1999 09 29	704	1.2−	0.1−
1997 03 05	704	0.9+	1.0+	1999 09 07	704	0.7+	0.0	1999 09 29	704	0.3−	0.0
1997 03 06	704	(2.5+	0.8−)	1999 09 07	704	0.9+	0.7+	1999 09 29	704	1.3−	0.2−
1997 03 06	704	0.4+	0.1+	1999 09 07	704	0.7+	1.1+	1999 09 30	704	1.0−	0.8−
1998 05 01	704	2.0−	0.2−	1999 09 09	704	(2.2+	2.0−)	1999 09 30	704	1.1−	0.2−
1998 05 01	704	0.3−	0.2−	1999 09 09	704	(2.4+	0.7−)	1999 09 30	704	1.1−	0.4+
1998 05 01	704	0.9+	1.3+	1999 09 09	704	(2.3+	0.4+)	1999 09 30	704	0.2−	1.0+
1998 05 01	704	(2.8−	0.9+)	1999 09 13	704	1.0+	0.5−	1999 09 30	704	0.2−	0.3+
1998 05 22	704	1.2−	1.1−	1999 09 13	704	0.2+	0.1−				
1998 05 22	704	1.5+	0.3−	1999 09 13	704	0.7+	0.1−				

1999 RY₁₄₁ = 1998 HZ₇₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	314.80022	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.29953896	ω 194.32549	+0.78512511	−0.61914443	
<i>a</i>	2.2122481	Ω 203.94899	+0.57191142	+0.73435293	
<i>e</i>	0.1154476	<i>i</i> 2.18145	+0.23768864	+0.27818330	
<i>P</i>	3.29	<i>H</i> 15.8	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1998 04 21	704	0.2+	0.0	1999 09 09	704	0.6+	0.3−	1999 09 14	704	0.6−	1.2+
1998 04 21	704	0.4−	1.3−	1999 09 09	704	0.0	0.3−	1999 09 14	704	1.0+	0.8−
1998 04 21	704	0.6+	0.1+	1999 09 09	704	0.7−	0.2+	1999 09 14	704	0.0	0.5−
1998 04 21	704	1.1+	1.6+	1999 09 09	704	0.3−	0.8−	1999 09 14	704	0.9−	0.3+
1998 04 22	704	0.5+	1.2+	1999 09 09	704	0.2−	0.3+	1999 10 02	704	0.5−	0.1+
1998 04 22	704	0.4+	1.2−	1999 09 09	704	0.8−	0.4+	1999 10 02	704	0.7−	0.2+
1998 04 22	704	0.2−	0.8+	1999 09 09	704	0.2+	0.0	1999 10 02	704	0.4+	0.0
1998 04 22	704	0.6−	1.6−	1999 09 09	704	0.1+	0.5+	1999 10 02	704	0.4−	0.4−
1998 04 22	704	1.5−	0.3+	1999 09 09	704	0.4−	0.1+	1999 10 02	704	0.3−	0.5−
1999 09 09	704	0.3+	0.3+	1999 09 09	704	0.6+	0.5+	1999 10 06	704	0.8+	0.1−
1999 09 09	704	0.1−	0.5−	1999 09 09	704	0.9+	0.4−	1999 10 06	704	0.5−	0.2−
1999 09 09	704	0.3−	0.3−	1999 09 09	704	0.1−	0.4−	1999 10 06	704	0.4+	0.2+
1999 09 09	704	0.1−	0.2+	1999 09 09	704	0.4+	0.1−	1999 10 06	704	0.2+	0.1+
1999 09 09	704	0.4+	0.0	1999 09 09	704	0.4+	0.1−	1999 10 06	704	0.3+	0.3+
1999 09 09	704	0.5−	0.2−	1999 09 14	704	0.3+	1.0+				

1999 RL₁₄₂ = 1970 AL = 1990 HN₄ = 1994 JP₈ = 1998 KD₃₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

		Williams			
<i>M</i>	188.62019	(2000.0)	<i>P</i>	<i>Q</i>	
<i>n</i>	0.25533222	ω 133.79858	−0.95012742	−0.30723977	
<i>a</i>	2.4607394	Ω 28.43403	+0.24403010	−0.83925511	
<i>e</i>	0.0773993	<i>i</i> 6.45068	+0.19418343	−0.44861408	
<i>P</i>	3.86	<i>H</i> 13.8	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1970 01 04	095	0.0	0.2+	1999 08 22	703	0.6+	0.8+	1999 09 14	704	0.7+	0.8−
1990 04 22	675	1.5+	0.5−	1999 08 22	703	0.1+	0.2+	1999 09 14	704	0.3+	0.1−
1990 04 22	675	0.8−	0.8−	1999 08 22	703	0.6+	1.7+	1999 09 14	704	0.2+	0.5−
1994 05 03	474	0.6−	0.6−	1999 08 22	703	1.0+	1.2+	1999 09 14	704	0.5+	0.5−
1994 05 03	474	1.0−	1.5+	1999 09 05	699	0.3+	0.4+	1999 09 14	704	0.5+	0.5−
1994 05 04	474	0.5−	0.9+	1999 09 05	699	0.1+	0.9+	1999 09 14	703	0.2+	0.2+
1994 05 04	474	0.3+	0.8+	1999 09 05	699	0.6+	0.0	1999 09 14	703	0.4+	0.5+

1998 05 22	704	0.5+	0.1+	1999 09 07	704	0.0	0.5-	1999 09 14	703	0.2+	0.9+
1998 05 22	704	0.7+	0.7+	1999 09 07	704	0.2+	0.9-	1999 09 14	703	0.1-	0.5+
1998 05 22	704	0.5+	0.3+	1999 09 07	704	0.1+	0.4-	1999 10 02	704	0.8-	0.1+
1998 05 22	704	0.1+	0.3-	1999 09 07	704	0.2-	0.0	1999 10 02	704	0.6-	0.3-
1998 05 22	704	0.0	0.0	1999 09 07	704	0.4+	0.9-	1999 10 02	704	0.3-	0.2+
1998 05 24	704	0.2+	0.2+	1999 09 09	704	0.1-	0.3-	1999 10 02	704	1.0-	0.5+
1998 05 24	704	0.2-	0.1-	1999 09 09	704	0.2-	0.7-	1999 10 07	704	0.0	1.1-
1998 05 24	704	0.4+	0.2-	1999 09 09	704	0.4-	0.2+	1999 10 07	704	1.0-	0.6-
1998 05 24	704	0.5-	0.7-	1999 09 09	704	0.2+	0.6+	1999 10 07	704	1.4-	0.9-
1998 05 24	704	0.5-	1.1-	1999 09 09	704	0.4+	0.5+	1999 10 07	704	1.7-	0.5-

1999 RW₁₄₂ = 1997 GF₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	284.02580		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.22506888	ω	81.40230	+0.15260831	-0.98828672		
<i>a</i>	2.6766551	Ω	359.81894	+0.87031754	+0.13451967		
<i>e</i>	0.1174592	<i>i</i>	4.83960	+0.46825001	+0.07206822		
<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 04 02	691	0.2+	0.2-	1999 09 09	704	0.0	0.5-	1999 09 14	703	1.0+	0.5+
1997 04 02	691	1.0+	0.1+	1999 09 09	704	0.4-	0.0	1999 09 14	703	0.1+	0.8-
1997 04 02	691	1.9-	0.1-	1999 09 09	704	0.3-	0.2+	1999 09 29	703	0.3-	0.2+
1997 04 07	691	0.1+	0.1+	1999 09 09	704	0.3-	0.2-	1999 09 29	703	0.3-	0.2+
1997 04 07	691	0.6-	0.1-	1999 09 09	704	0.0	0.2+	1999 09 29	703	0.5-	0.3+
1997 04 07	691	0.2+	0.1-	1999 09 09	704	0.5+	0.8-	1999 09 29	703	0.1-	0.2+
1997 04 08	691	0.1+	0.2+	1999 09 09	704	0.0	0.5+	1999 10 02	704	0.1+	0.8+
1997 04 08	691	0.3+	0.2-	1999 09 09	704	0.1+	0.8-	1999 10 02	704	0.5-	0.1+
1997 04 08	691	0.4+	0.0	1999 09 14	704	0.0	0.1+	1999 10 02	704	0.1+	0.1-
1999 09 07	704	0.2-	0.0	1999 09 14	704	0.4-	1.1+	1999 10 02	704	0.2+	0.4+
1999 09 07	704	0.2-	0.3-	1999 09 14	704	0.1+	0.3+	1999 10 07	704	0.2-	0.3-
1999 09 07	704	0.4-	0.1-	1999 09 14	704	0.8+	0.3-	1999 10 07	704	0.3+	0.6-
1999 09 07	704	0.0	0.3-	1999 09 14	704	0.1+	0.1-	1999 10 07	704	0.1+	0.0
1999 09 07	704	0.5-	0.4+	1999 09 14	703	0.6+	0.7+	1999 10 07	704	0.2+	1.0-
1999 09 09	704	0.1-	0.3-	1999 09 14	703	0.1+	0.3+	1999 10 07	704	0.2+	0.3-

1999 RB₁₄₃ = 1991 BE₄ = 1998 HA₈₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	315.11727		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.31200981	ω	299.35271	+0.73531350	-0.67481760		
<i>a</i>	2.1529001	Ω	103.16430	+0.64200113	+0.66390557		
<i>e</i>	0.1210452	<i>i</i>	3.69382	+0.21713729	+0.32225860		
<i>P</i>	3.16	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 01 18	801	0.1+	0.2+	1999 08 22	699	0.2+	0.2-	1999 09 14	704	0.4-	0.8-
1991 01 18	801	0.1-	0.0	1999 08 22	699	1.0+	0.4+	1999 09 14	704	1.2-	0.6+
1998 04 21	704	0.1+	0.9-	1999 09 05	699	0.5+	0.6-	1999 09 14	704	1.4+	0.7-
1998 04 21	704	0.8-	1.2+	1999 09 05	699	0.7+	0.8+	1999 09 14	704	1.1+	0.4-
1998 04 21	704	0.5+	0.2-	1999 09 05	699	(0.2+	2.7+)	1999 10 02	704	0.4-	0.9-
1998 04 21	704	0.5+	1.4-	1999 09 07	704	0.4-	0.4+	1999 10 02	704	0.0	0.0
1998 04 22	704	0.7+	1.2+	1999 09 07	704	0.4+	0.2+	1999 10 02	704	0.2-	0.0
1998 04 22	704	0.0	0.3+	1999 09 07	704	0.2-	0.9+	1999 10 02	704	0.1-	0.3-
1998 04 22	704	0.7+	0.8-	1999 09 07	704	0.1+	0.2+	1999 10 02	704	0.2+	0.0
1998 04 22	704	0.8-	1.6-	1999 09 07	704	0.1+	0.1+	1999 10 07	704	0.6+	0.6-
1998 05 01	704	0.8-	0.5+	1999 09 09	704	0.0	0.5+	1999 10 07	704	0.0	0.5-
1998 05 01	704	0.4-	0.4+	1999 09 09	704	0.7-	0.4+	1999 10 07	704	0.2+	0.1-
1998 05 01	704	(2.1+	0.2+)	1999 09 09	704	0.4-	0.1-	1999 10 07	704	0.1-	1.3-
1998 05 01	704	0.2-	0.1+	1999 09 09	704	0.9-	0.5+	1999 10 07	704	0.1-	1.2-
1998 05 01	704	(4.1-	1.5+)	1999 09 09	704	0.9-	1.8+				
1999 08 22	699	0.1-	0.2-	1999 09 14	704	0.3+	0.2+				

1999 RL₁₄₃ = 1998 JB₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	76.08613		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.23411726	ω	91.65796	-0.03008228	+0.99950805		
<i>a</i>	2.6072365	Ω	176.58018	-0.96600152	-0.02679141		
<i>e</i>	0.0811837	<i>i</i>	8.55300	-0.25678030	-0.01630552		
<i>P</i>	4.21	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 24	704	0.4+	0.3+	1999 09 07	704	0.4+	0.3+	1999 09 29	703	0.5-	1.2+
1998 04 24	704	0.3+	0.2-	1999 09 07	704	0.4-	0.5-	1999 10 02	704	0.0	0.0
1998 04 24	704	0.6+	0.7+	1999 09 09	704	1.7+	0.1+	1999 10 02	704	0.1-	0.4+
1998 05 01	699	0.5-	0.5+	1999 09 09	704	0.4-	0.3-	1999 10 02	704	0.3+	0.5-
1998 05 01	699	0.1+	0.0	1999 09 09	704	0.7-	0.7-	1999 10 02	704	0.3+	1.0+
1998 05 01	699	0.1+	0.7+	1999 09 09	704	0.1+	1.0-	1999 10 02	704	0.7+	0.3-
1998 05 05	699	1.1-	0.1-	1999 09 09	704	0.1+	1.4-	1999 10 07	703	0.1+	0.7+
1998 05 05	699	0.2-	0.6-	1999 09 14	704	0.1+	0.5+	1999 10 07	703	0.8-	0.4+
1998 05 05	699	0.4-	0.2+	1999 09 14	704	0.9+	0.3-	1999 10 07	703	0.2-	0.5+
1998 05 23	704	0.5+	0.4+	1999 09 14	704	0.1-	0.4+	1999 10 07	703	0.2-	0.8+
1998 05 23	704	0.2+	1.0-	1999 09 14	704	0.6-	1.0+	1999 10 07	704	0.3-	0.6-
1998 05 23	704	0.3-	0.4-	1999 09 14	704	0.3-	0.5+	1999 10 07	704	0.6-	0.2-
1998 05 23	704	0.2-	0.1+	1999 09 29	703	0.1+	0.3-	1999 10 07	704	0.6-	0.6-
1998 05 23	704	0.6+	0.3-	1999 09 29	703	0.2+	1.4-	1999 10 07	704	0.1+	0.5-
1999 09 07	704	0.4-	1.7+	1999 09 29	703	0.2+	0.4-	1999 10 07	704	0.8+	0.4-

1999 RN₁₄₃ = 1997 EY₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	337.92686		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.26442823	ω	206.93487	+0.92197263	-0.38709891		
<i>a</i>	2.4039800	Ω	175.79333	+0.37680479	+0.89017928		
<i>e</i>	0.3113281	<i>i</i>	8.62111	+0.08935672	+0.24028166		
<i>P</i>	3.73	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 03 11	704	0.4+	1.5+	1999 08 12	699	0.3+	1.2+	1999 09 14	704	0.6-	0.0
1997 03 11	704	0.4+	1.1+	1999 09 04	699	0.1+	0.4+	1999 09 14	704	0.7-	0.0
1997 03 12	704	0.1+	1.0+	1999 09 04	699	0.1-	0.5+	1999 09 14	704	0.4-	0.1-
1997 03 12	704	(0.4-	2.7+)	1999 09 04	699	0.0	0.8+	1999 09 14	704	0.3-	0.0
1999 07 23	704	0.2+	0.2-	1999 09 07	704	0.1-	0.2-	1999 10 02	704	0.0	0.0
1999 07 23	704	0.3-	1.2-	1999 09 07	704	0.3+	0.4+	1999 10 02	704	0.0	0.3+
1999 07 23	704	0.1+	1.0-	1999 09 07	704	0.4+	0.4-	1999 10 02	704	0.2+	0.4+
1999 07 23	704	0.6+	0.1+	1999 09 07	704	0.3+	0.2-	1999 10 02	704	0.3+	0.0
1999 07 23	704	0.2-	1.0+	1999 09 07	704	0.4+	0.3-	1999 10 02	704	0.8+	0.3+
1999 07 23	704	0.1+	0.3-	1999 09 09	704	0.1-	0.0	1999 10 07	704	0.1+	0.1+
1999 07 23	704	0.1-	0.8+	1999 09 09	704	0.3+	0.0	1999 10 07	704	0.1-	0.4-
1999 07 23	704	0.2+	0.2-	1999 09 09	704	0.4+	0.1-	1999 10 07	704	0.5-	0.3-
1999 07 23	704	0.1+	1.0+	1999 09 09	704	0.1+	0.4+	1999 10 07	704	0.2-	0.4-
1999 08 12	699	0.4-	1.3+	1999 09 09	704	0.0	0.2-	1999 10 07	704	0.8-	1.0-
1999 08 12	699	0.4-	0.3+	1999 09 14	704	0.2-	0.2-				

1999 RT₁₄₃ = 1998 HY₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	334.79761		(2000.0)	Williams		<i>P</i>	<i>Q</i>
<i>n</i>	0.27298151	ω	186.70527	+0.96534868	-0.26043288		
<i>a</i>	2.3534983	Ω	188.44617	+0.24438128	+0.92452761		
<i>e</i>	0.1248939	<i>i</i>	6.50216	+0.09154085	+0.27825061		
<i>P</i>	3.61	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 03 16	691	0.4-	1.2-	1999 09 07	704	0.2-	0.2-	1999 10 03	691	0.0	0.2-
1994 03 16	691	0.3-	0.8-	1999 09 07	704	0.2-	0.2-	1999 10 07	704	(2.5+	1.8-)
1994 03 16	691	0.1-	0.6-	1999 09 07	704	0.1+	0.4-	1999 10 07	704	0.1+	1.2-
1998 04 21	704	(1.4-	3.1+)	1999 09 07	704	0.0	0.0	1999 10 07	704	0.3+	0.4-
1998 04 21	704	1.4+	0.9-	1999 09 07	704	0.1+	0.2+	1999 10 07	704	0.5-	0.8-

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1998 04 21	704	0.3+	0.4−	1999 09 09	704	0.3−	0.2−	1999 10 07	704	0.3−	0.8−
1998 04 21	704	0.2+	0.1+	1999 09 09	704	0.1−	0.3−	1999 10 09	691	0.2−	0.1−
1998 04 22	704	0.6−	0.0	1999 09 09	704	0.6+	0.4−	1999 10 09	691	0.2−	0.1−
1998 04 22	704	1.0−	1.3−	1999 09 09	704	0.7−	0.4−	1999 10 09	691	0.1−	0.1−
1998 04 22	704	(3.0−	0.2−)	1999 09 14	704	0.0	0.0	1999 10 13	012	0.3+	0.1+
1998 04 22	704	0.7−	0.3+	1999 09 14	704	0.3+	0.1+	1999 10 13	012	0.2+	0.1+
1998 04 22	704	(3.2−	2.3−)	1999 09 14	704	0.6+	0.1+	1999 10 13	012	0.4+	0.1−
1999 07 23	704	0.4+	0.9+	1999 09 14	704	0.8+	0.4+	1999 10 13	012	0.3+	0.3+
1999 07 23	704	0.0	0.1+	1999 10 02	704	0.3+	0.9−	1999 10 13	012	0.2+	0.1+
1999 07 23	704	0.2+	0.3+	1999 10 02	704	0.8−	0.1−	1999 10 18	012	0.3+	0.0
1999 07 23	704	0.1−	0.7+	1999 10 02	704	0.2−	0.1−	1999 10 18	012	0.3+	0.2+
1999 07 23	704	0.2−	0.7+	1999 10 02	704	0.5−	0.1+	1999 10 18	012	0.3+	0.2−
1999 08 12	699	0.4+	1.0+	1999 10 02	704	0.0	0.2−	1999 10 18	012	0.3+	0.1−
1999 08 12	699	0.3−	0.1+	1999 10 03	691	0.1−	0.3−	1999 10 18	012	0.0	0.2+
1999 08 12	699	0.1+	0.5−	1999 10 03	691	0.3−	0.3−				

1999 RA₁₄₅ = 1998 HU₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	349.10105		(2000.0)		P		Q
<i>n</i>	0.23087956	ω	162.76237	+0.97798686			+0.20766701
<i>a</i>	2.6315546	Ω	185.37763	−0.20772866			+0.95967056
<i>e</i>	0.2594037	<i>i</i>	12.57144	−0.01976097			+0.18949098
<i>P</i>	4.27	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 22	691	0.0	0.3−	1999 09 04	703	0.4−	0.0	1999 09 14	704	0.4+	0.0
1998 03 22	691	0.0	0.3+	1999 09 09	704	0.0	0.4+	1999 09 14	704	0.0	0.4−
1998 03 22	691	0.4−	0.0	1999 09 09	704	0.4+	0.1+	1999 09 14	704	0.2−	0.3−
1998 04 19	691	0.2+	0.1+	1999 09 09	704	0.0	0.1−	1999 09 29	704	0.6−	0.5−
1998 04 19	691	0.0	0.4+	1999 09 09	704	0.5−	0.2+	1999 09 29	704	1.0−	0.4−
1998 04 19	691	0.2+	0.3+	1999 09 09	704	1.0+	0.5+	1999 09 29	704	0.6+	0.2−
1998 04 25	691	0.1−	0.5−	1999 09 10	704	0.1+	0.6+	1999 09 29	704	0.6+	0.5−
1998 04 25	691	0.0	0.1+	1999 09 10	704	0.1−	0.1+	1999 10 02	703	0.0	0.4+
1998 04 25	691	0.1+	0.4−	1999 09 10	704	0.1+	0.1−	1999 10 02	703	0.1−	0.1+
1999 09 04	703	0.2+	0.3−	1999 09 10	704	1.2−	0.5−	1999 10 02	703	0.3+	0.4+
1999 09 04	703	0.4+	0.2+	1999 09 14	704	0.8+	0.0	1999 10 02	703	0.1−	0.4+
1999 09 04	703	0.1−	0.0	1999 09 14	704	0.7−	0.2−				

1999 RB₁₄₅ = 1988 QS

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	289.18279		(2000.0)		P		Q
<i>n</i>	0.17988159	ω	107.70859	+0.28453291			−0.93469603
<i>a</i>	3.1079802	Ω	323.50014	+0.68625809			+0.35375681
<i>e</i>	0.2138414	<i>i</i>	20.98672	+0.66939589			+0.03463317
<i>P</i>	5.48	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1988 08 19	413	0.2−	0.2−	1999 09 09	704	0.4−	0.0	1999 09 30	703	0.3+	0.2+
1988 08 20	413	0.8+	0.5−	1999 09 09	704	0.0	0.4+	1999 09 30	703	0.2−	0.0
1996 03 13	691	0.2+	0.2−	1999 09 09	704	0.2+	0.3−	1999 09 30	703	0.2−	0.1−
1996 03 13	691	0.0	0.4+	1999 09 09	704	0.2−	0.7+	1999 09 30	703	0.4−	0.2+
1996 03 13	691	0.0	0.0	1999 09 10	704	0.2+	0.1−	1999 10 02	704	0.4−	0.8−
1999 08 08	699	0.6−	0.2+	1999 09 10	704	0.1+	0.3+	1999 10 02	704	0.8−	1.3−
1999 08 08	699	0.1+	0.3−	1999 09 10	704	0.0	0.2+	1999 10 02	704	0.3−	0.5+
1999 08 08	699	0.3−	0.0	1999 09 14	704	0.1−	0.1−	1999 10 02	704	0.7+	0.1+
1999 09 08	699	0.4−	0.4+	1999 09 14	704	0.5+	0.3+	1999 10 07	703	0.3+	0.3+
1999 09 08	699	0.5−	0.7+	1999 09 14	704	0.1+	0.1−	1999 10 07	703	0.2+	0.1−
1999 09 08	699	0.3−	0.3+	1999 09 14	704	0.5+	0.1−	1999 10 07	703	0.3+	0.2+
1999 09 09	704	0.5+	0.1+	1999 09 14	704	0.4+	0.7−	1999 10 07	703	0.3−	0.4−

M.P.C. 36445

1999 RH₁₄₅ = 1978 WA₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	1.52527		(2000.0)		P		Q
<i>n</i>	0.27986158	ω	92.89418	+0.82908642			+0.55623706
<i>a</i>	2.3147665	Ω	233.31684	−0.53696719			+0.76386254
<i>e</i>	0.2180517	<i>i</i>	4.05507	−0.15582668			+0.32728328
<i>P</i>	3.52	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1978 11 28	675	1.3−	0.1+	1999 09 09	704	0.1−	0.2+	1999 09 29	704	0.3−	0.0
1978 11 29	675	1.2+	0.2+	1999 09 09	704	0.1+	0.0	1999 09 29	704	0.1+	0.8−
1999 07 23	704	0.3−	0.4−	1999 09 09	704	0.3−	0.6−	1999 10 02	703	0.6−	0.0
1999 07 23	704	0.1−	1.1−	1999 09 09	704	0.2+	0.1−	1999 10 02	703	0.5−	0.2+
1999 07 23	704	0.0	1.1+	1999 09 14	704	0.4−	0.5+	1999 10 02	703	0.1−	0.1−
1999 08 08	699	0.6+	0.7+	1999 09 14	704	0.2+	0.1−	1999 10 02	703	0.1−	0.1+
1999 08 08	699	0.5−	0.0	1999 09 14	704	0.2+	0.1+	1999 10 02	704	0.1−	0.9+
1999 08 08	699	0.0	0.4+	1999 09 14	704	0.2+	0.2+	1999 10 02	704	0.3+	0.0
1999 09 08	704	0.1−	0.2+	1999 09 14	704	0.2+	0.3+	1999 10 02	704	0.9+	0.5−
1999 09 08	704	0.0	0.4−	1999 09 29	704	0.3−	0.2+	1999 10 02	704	0.0	0.2−
1999 09 08	704	0.2+	0.5−	1999 09 29	704	0.5−	0.1+	1999 10 02	704	1.0+	0.8−
1999 09 09	704	0.3+	0.4+	1999 09 29	704	0.3−	0.2−				

1999 RP₁₄₅ = 1991 CK₁

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	22.14393		(2000.0)		P		Q
<i>n</i>	0.17109382	ω	343.01500	+0.58638356			+0.79727914
<i>a</i>	3.2135113	Ω	322.53344	−0.71315839			+0.42430498
<i>e</i>	0.1206162	<i>i</i>	13.61383	−0.38413467			+0.42931487
<i>P</i>	5.76	<i>H</i>	12.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1989 11 02	675	0.6−	0.4−	1999 08 22	699	0.5−	0.5+	1999 09 29	704	0.1+	0.6+
1989 11 02	675	0.2+	0.6−	1999 09 05	699	0.5−	0.1+	1999 09 29	704	0.1−	0.2−
1991 01 24	675	0.4+	0.7+	1999 09 05	699	0.5−	0.0	1999 09 29	704	0.5−	0.3−
1991 01 24	675	1.6+	0.4−	1999 09 05	699	0.5−	0.2+	1999 09 29	704	1.3−	0.1−
1991 02 07	675	0.1+	0.4−	1999 09 07	704	1.1+	0.0	1999 09 29	704	0.9−	0.3+
1991 02 07	675	0.2+	0.2−	1999 09 07	704	0.8+	0.1−	1999 10 02	703	0.3−	0.5+
1991 02 07	372	(5.0−	0.6+)−	1999 09 07	704	0.6+	0.2−	1999 10 02	703	0.3−	0.1+
1991 02 07	372	(3.2−	1.5−)	1999 09 07	704	0.9+	0.0	1999 10 02	703	0.5−	0.0
1991 02 12	372	(3.3−	0.8−)	1999 09 07	704	0.5+	0.0	1999 10 02	703	0.1−	0.1−
1991 02 12	372	1.5−	1.2+	1999 09 09	704	0.6+	0.2−	1999 10 02	704	0.1+	0.1−
1992 03 14	413	0.5−	0.9−	1999 09 09	704	0.6+	0.4−	1999 10 02	704	0.2−	0.2−
1992 03 14	413	0.3+	0.6+	1999 09 09	704	0.5+	0.4−	1999 10 02	704	0.1−	0.0
1993 09 07	413	0.5−	0.1+	1999 09 09	704	1.0+	0.2−	1999 10 02	704	0.7−	0.4−
1993 09 07	413	0.6+	0.3−	1999 09 09	704	0.6+	0.2+	1999 10 02	704	0.3−	0.6−
1999 07 16	704	0.2+	1.6−	1999 09 14	704	0.5+	0.4+	1999 10 11	106	1.1−	0.2+
1999 07 16	704	0.4+	0.7+	1999 09 14	704	0.1+	0.0	1999 10 11	106	0.5−	0.4+
1999 07 16	704	0.3+	1.5+	1999 09 14	704	0.4−	0.2−	1999 10 11	106	0.1−	0.3+
1999 08 22	699	0.3−	0.2+	1999 09 14	704	0.2+	0.2−				
1999 08 22	699	0.5−	0.5+	1999 09 14	704	0.0	0.2−				

1999 RU₁₄₅ = 1990 SD₂₀ = 1995 YK₂₁ = 1998 HT₇₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	354.40364		(2000.0)		P		Q
<i>n</i>	0.21557180	ω	100.63437	+0.92705089			+0.37092106
<i>a</i>	2.7547028	Ω	237.61340	−0.36433054			+0.85671890
<i>e</i>	0.1831346	<i>i</i>	3.71528	−0.08854318			+0.35839963
<i>P</i>	4.57	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1990 09 19	675	0.0	0.3−	1998 04 21	704	0.9+	0.1−	1999 09 09	704	0.4+	0.2+
1990 09 19	675	0.5+	1.1−	1998 04 21	704	0.5−	1.5−	1999 09 09	704	1.0+	0.9+
1995 12 19	566	0.4−	0.5+	1998 04 22	704	1.7−	1.1+	1999 09 14	704	0.0	0.1−

1995 12 19	566	0.8–	0.3+	1998 04 22	704	1.6–	0.3–	1999 09 14	704	0.2–	0.3–
1995 12 19	566	0.6–	0.3+	1998 04 22	704	0.5+	0.5+	1999 09 14	704	0.5–	0.1–
1995 12 20	566	0.7+	0.9–	1998 04 22	704	0.6–	1.8–	1999 09 14	704	0.1–	0.0
1995 12 20	566	0.7+	0.6–	1998 04 22	704	0.0	0.4–	1999 09 14	704	0.4–	0.3–
1995 12 20	566	0.6+	0.4–	1999 09 07	704	0.3+	0.1–	1999 09 29	704	0.2+	1.4+
1998 04 01	704	(1.5+ 2.5–)		1999 09 07	704	0.7+	0.2+	1999 09 29	704	0.2–	0.7–
1998 04 01	704	(2.8– 0.9–)		1999 09 07	704	0.4+	0.0	1999 09 29	704	0.5–	0.7+
1998 04 01	704	1.8+	0.1–	1999 09 07	704	0.8+	0.1+	1999 09 29	704	1.3+	1.0–
1998 04 01	704	(3.9– 1.2+)		1999 09 07	704	0.6+	0.2+	1999 10 02	703	(2.3– 0.3+)	
1998 04 21	704	0.4+	0.4+	1999 09 09	704	0.1–	0.0	1999 10 02	703	1.9–	0.1+
1998 04 21	704	0.4+	1.4+	1999 09 09	704	0.1–	0.1–	1999 10 02	703	1.4–	0.0
1998 04 21	704	0.1+	0.6–	1999 09 09	704	0.5+	0.3–	1999 10 02	703	1.6–	0.5–

1999 RZ₁₄₅ = 1992 SE₁₉ = 1998 FG₃₇

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	39.13383		(2000.0)	P	Q		
<i>n</i>	0.28032537	ω	92.02862	+0.21734224	+0.97593146		
<i>a</i>	2.3122127	Ω	190.57565	–0.92983193	+0.20142981		
<i>e</i>	0.1056861	<i>i</i>	5.59451	–0.29694264	+0.08356922		
<i>P</i>	3.52	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 22	809	0.1–	0.2+	1998 03 22	704	0.5+	1.1–	1999 09 14	704	1.3+	1.2–
1992 09 22	809	0.5+	0.3+	1998 03 22	704	(0.0 2.6+)		1999 09 14	704	(2.8+ 0.2–)	
1992 09 22	809	0.6–	0.5+	1998 03 22	704	(2.8– 2.1+)		1999 10 01	684	0.5–	0.0
1992 09 23	809	0.1+	1.0+	1998 03 22	704	0.1+	1.7+	1999 10 01	684	0.9–	0.6–
1992 09 23	809	0.2+	2.0+	1999 09 09	704	0.1+	0.4+	1999 10 06	704	0.5+	0.4–
1992 09 23	809	1.4–	0.5+	1999 09 09	704	0.1+	0.4+	1999 10 06	704	0.3–	0.4–
1998 03 20	704	1.2–	0.6+	1999 09 09	704	0.4+	0.7+	1999 10 06	704	0.2+	0.5–
1998 03 20	704	0.1+	0.1+	1999 09 09	704	0.2+	0.5+	1999 10 06	704	0.4+	1.4–
1998 03 20	704	1.4+	0.2–	1999 09 09	704	0.6+	0.2–	1999 10 06	704	0.0	1.1–
1998 03 20	704	(2.9– 0.2+)		1999 09 14	704	0.6–	0.6–				
1998 03 22	704	0.8–	0.6–	1999 09 14	704	0.4–	0.0				

1999 RF₁₄₆ = 1998 HZ₃₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	289.80044		(2000.0)	P	Q		
<i>n</i>	0.30381986	ω	141.54837	+0.58620624	–0.80836632		
<i>a</i>	2.1914183	Ω	272.49934	+0.72932367	+0.5551897		
<i>e</i>	0.1083114	<i>i</i>	3.09318	+0.35277362	+0.19478849		
<i>P</i>	3.24	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 15	566	0.4–	0.5+	1998 04 21	704	0.3–	0.2–	1999 09 09	704	0.5+	0.1+
1997 01 15	566	0.1+	0.3+	1998 04 21	704	0.3–	0.3+	1999 09 09	704	0.3+	0.6–
1997 01 15	566	0.1–	0.5+	1998 04 21	704	0.5–	0.4+	1999 09 09	704	0.1–	0.2–
1998 03 25	704	0.4–	0.2–	1998 04 21	704	0.6+	0.5–	1999 09 09	704	0.5–	1.2–
1998 03 25	699	0.8–	0.9+	1998 04 22	704	0.3–	0.7+	1999 09 14	704	0.2+	0.3–
1998 03 25	699	0.7+	0.3+	1998 04 22	704	0.3+	0.0	1999 09 14	704	0.3+	0.2–
1998 03 25	704	0.3+	0.5–	1998 04 22	704	0.5–	0.0	1999 09 14	704	0.4+	0.2–
1998 03 25	699	0.8+	0.9+	1998 04 22	704	0.5–	0.4+	1999 09 14	704	0.4+	0.2–
1998 03 25	704	0.4+	0.4–	1998 04 22	704	1.3–	0.3+	1999 09 14	704	0.7+	0.2–
1998 03 25	704	(1.3+ 2.5–)		1998 04 25	699	0.6–	0.3–	1999 09 29	704	0.9–	0.5+
1998 03 25	704	(0.7+ 2.7+)		1998 04 25	699	0.4–	0.1+	1999 09 29	704	0.5+	0.4–
1998 03 29	704	0.1+	0.1–	1998 04 25	699	0.0	0.5+	1999 09 29	704	0.3+	0.4–
1998 03 29	704	0.7+	0.1–	1998 05 16	704	0.5–	0.0	1999 09 29	704	0.1+	0.8–
1998 03 29	704	0.2+	0.8+	1998 05 16	704	0.5+	1.4–	1999 09 29	704	0.9+	0.1+
1998 03 29	704	0.0	0.1–	1998 05 16	704	0.7+	0.0	1999 10 02	703	0.8–	0.6+
1998 03 29	704	0.6+	0.0	1998 05 16	704	1.7+	0.7–	1999 10 02	703	0.8–	0.5+
1998 04 01	704	0.1+	0.5+	1999 08 08	699	1.0–	0.8+	1999 10 02	703	0.7–	0.7+
1998 04 01	704	0.0	0.5+	1999 08 08	699	0.0	0.5+	1999 10 02	703	1.1–	1.1+
1998 04 01	704	0.3–	0.4–	1999 08 08	699	0.5–	0.6+	1999 10 02	704	0.3–	1.0+
1998 04 01	704	(3.8– 1.6+)		1999 09 07	704	0.2+	0.2–	1999 10 02	704	0.4+	0.2+
1998 04 20	704	0.1+	0.9+	1999 09 07	704	0.2+	0.1+	1999 10 02	704	0.2+	1.4–

1998 04 20	704	0.7+	0.4–	1999 09 07	704	0.3+	0.1+	1999 10 02	704	0.0	0.4+
1998 04 20	704	1.8–	0.3–	1999 09 07	704	0.2+	0.1–	1999 10 02	704	0.8–	0.1–
1998 04 20	704	0.7+	0.6–	1999 09 07	704	0.2+	0.6+				
1998 04 20	704	(2.3– 0.9–)		1999 09 09	704	0.5+	0.1+				

1999 RW₁₄₆ = 1998 FF₁₀₁

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	69.92915		(2000.0)	P	Q		
<i>n</i>	0.25767492	ω	357.87752	–0.29177052	+0.95195041		
<i>a</i>	2.4458019	Ω	255.14853	–0.87613645	–0.30502578		
<i>e</i>	0.0939287	<i>i</i>	5.52485	–0.38373804	–0.02738031		
<i>P</i>	3.83	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1992 11 24	691	0.1+	0.3+	1998 04 01	704	0.2+	0.1+	1999 09 09	704	0.2+	0.6–
1992 11 24	691	0.4+	0.2–	1998 04 01	704	0.6–	1.4+	1999 09 09	704	0.5+	0.7+
1992 11 24	691	0.2–	0.1–	1998 04 19	704	1.1–	0.4–	1999 09 09	704	0.2+	0.1–
1995 07 30	691	0.2–	0.3–	1998 04 19	704	0.6–	1.9+	1999 09 14	704	0.3+	0.3+
1995 07 30	691	0.2–	0.2–	1998 04 19	704	0.0	0.4–	1999 09 14	704	0.2–	0.3–
1995 07 30	691	0.4+	0.0	1998 04 19	704	0.3+	0.2–	1999 09 14	704	0.4–	0.6+
1996 12 10	327	0.0	0.3+	1998 04 19	704	1.2–	0.6+	1999 09 14	704	0.2–	0.5+
1996 12 10	327	0.3–	0.1+	1999 09 05	703	0.6+	0.3+	1999 09 14	704	0.6–	0.4+
1996 12 10	327	0.3–	0.4+	1999 09 05	703	0.4–	0.4–	1999 10 02	703	0.3–	0.8+
1998 03 31	704	0.0	0.3+	1999 09 05	703	2.0–	0.4+	1999 10 02	703	0.5–	0.1+
1998 03 31	704	0.3+	0.5–	1999 09 05	703	(0.1– 2.4–)		1999 10 02	703	0.8–	0.4–
1998 03 31	704	1.2+	0.3–	1999 09 08	699	0.1–	0.8+	1999 10 02	703	0.9+	0.6–
1998 03 31	704	0.8+	0.6–	1999 09 08	699	0.4+	0.7+	1999 10 02	704	0.2–	0.5+
1998 03 31	704	1.0+	0.2–	1999 09 08	699	1.5+	0.3–	1999 10 02	704	0.2+	0.5+
1998 04 01	704	(2.6+ 2.4+)		1999 09 09	704	0.0	0.2–	1999 10 02	704	0.2+	0.1+
1998 04 01	704	0.6+	0.7+	1999 09 09	704	0.2–	0.8–	1999 10 02	704	0.1–	0.0

1999 RY₁₄₆ = 1998 HW₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	13.31404		(2000.0)	P	Q		
<i>n</i>	0.24473339	ω	65.42986	+0.70929340	+0.69966468		
<i>a</i>	2.5312822	Ω	250.03884	–0.67528458	+0.63947860		
<i>e</i>	0.1236936	<i>i</i>	5.24124	–0.20222169	+0.31864786		
<i>P</i>	4.03	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 25	704	0.3+	0.1+	1998 04 22	704	0.8+	1.8–	1999 09 09	704	0.8+	1.0–
1998 03 25	704	0.1+	1.4–	1998 04 22	704	0.1–	0.6+	1999 09 14	704	0.5+	0.1–
1998 03 25	704	0.9–	1.6+	1999 09 05	703	0.3+	0.5–	1999 09 14	704	1.1+	0.1–
1998 03 25	704	0.8+	0.1–	1999 09 05	703	0.1+	0.4+	1999 09 14	704	0.1+	1.1+
1998 04 20	704	0.7–	1.7+	1999 09 05	703	1.0–	0.9+	1999 10 02	703	0.9–	0.2–
1998 04 20	704	0.0	2.0+	1999 09 05	703	0.5–	0.2–	1999 10 02	703	0.3+	0.0
1998 04 20	704	1.0–	1.4–	1999 09 09	704	0.1–	0.4–	1999 10 02	703	0.1–	0.3–
1998 04 20	704	0.4+	1.0–	1999 09 09	704	0.4–	0.4+	1999 10 02	703	0.0	0.3+
1998 04 22	704	0.3+	0.4–	1999 09 09	704	0.4–	0.0				
1998 04 22	704	(2.7– 1.2+)		1999 09 09	704	0.2+	0.4–				

1999 RA₁₄₈ = 1996 DL₅

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1996 02 17	010	0.9−	0.4−	1999 09 07	704	0.3−	0.4+
1996 02 17	010	0.3+	0.3+	1999 09 07	704	0.1+	0.1−
1996 02 17	010	0.2+	0.6−	1999 09 09	704	0.1+	0.6−
1999 08 22	699	0.7+	1.6+	1999 09 09	704	0.5+	0.4−
1999 08 22	699	0.2+	0.2+	1999 09 09	704	0.5−	0.5−
1999 08 22	699	0.4+	1.2+	1999 09 09	704	0.5+	0.1−
1999 09 07	704	0.3−	0.0	1999 09 09	704	0.4−	1.1−
1999 09 07	704	0.1+	0.1−	1999 09 14	704	0.2+	0.1+
1999 09 07	704	0.3−	0.1−	1999 09 14	704	0.2+	0.5−
1999 09 07	704	0.4−	0.7−	1999 09 14	704	0.0	0.0
1999 09 07	704	0.6−	0.2+	1999 09 14	704	0.5+	0.0

1999 RF₁₄₈ = 1989 SH₁₀

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	11.79931		(2000.0)	P		Q	
<i>n</i>	0.29407192	ω	92.82658	+0.67955514		+0.73301395	
<i>a</i>	2.2395822	Ω	220.03665	−0.69021660		+0.62499267	
<i>e</i>	0.1712285	<i>i</i>	2.66612	−0.24860782		+0.26846734	
<i>P</i>	3.35	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1989 09 28	809	1.9−	1.0−	1999 08 08	699	0.1−	0.2+	1999 09 14	704	0.7+	0.3−
1989 09 28	809	1.3−	1.0−	1999 08 08	699	0.8−	0.9+	1999 09 14	704	0.3+	0.2+
1989 09 28	809	0.8−	0.8−	1999 08 08	699	0.2−	0.1+	1999 09 29	704	0.9+	0.3+
1989 09 29	809	0.5−	1.1−	1999 09 07	704	0.2−	0.2+	1999 09 29	704	0.6+	0.6−
1989 09 29	809	0.3−	1.1−	1999 09 07	704	0.1−	0.4−	1999 09 29	704	0.2+	0.7−
1989 09 29	809	0.2+	1.1−	1999 09 07	704	0.1+	0.2−	1999 09 29	704	0.6+	1.4−
1989 09 29	675	1.0+	0.6−	1999 09 07	704	0.1−	0.3−	1999 09 29	704	0.5−	0.4−
1989 09 30	809	0.0	1.8+	1999 09 07	704	0.5−	0.1+	1999 10 02	703	0.9−	0.0
1989 09 30	809	0.2+	1.9+	1999 09 09	704	0.0	0.4+	1999 10 02	703	1.0−	0.1+
1989 09 30	809	0.8+	1.8+	1999 09 09	704	0.6+	0.1−	1999 10 02	703	0.6−	1.1+
1989 10 01	809	0.6+	1.2+	1999 09 09	704	0.0	0.3−	1999 10 02	703	0.7−	0.8+
1989 10 01	809	0.5+	1.2+	1999 09 09	704	0.2−	0.2−	1999 10 02	704	0.4+	0.4+
1989 10 01	809	0.7+	1.3+	1999 09 09	704	(0.2+	2.1−)	1999 10 02	704	0.1+	0.4−
1996 11 18	691	0.0	0.1+	1999 09 14	704	0.2+	0.2+	1999 10 02	704	1.0+	1.0−
1996 11 18	691	0.0	0.1−	1999 09 14	704	1.1+	0.5−	1999 10 02	704	0.6−	0.7−
1996 11 18	691	0.0	0.1−	1999 09 14	704	0.3+	0.1+				

1999 RH₁₄₈ = 1998 FH₁₁₂

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	40.55370		(2000.0)	P		Q	
<i>n</i>	0.23267193	ω	315.69468	+0.23262810		+0.96788072	
<i>a</i>	2.6180226	Ω	327.40742	−0.83589239		+0.14885925	
<i>e</i>	0.1162012	<i>i</i>	10.19550	−0.49716002		+0.20260264	
<i>P</i>	4.24	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 31	704	(0.5−	2.7+)	1999 08 22	699	0.2−	0.6+	1999 09 14	704	1.1+	0.7−
1998 03 31	704	0.2+	1.5−	1999 09 07	704	0.3+	0.3−	1999 09 29	704	0.2+	1.0−
1998 03 31	704	0.6−	0.7+	1999 09 07	704	0.0	0.3−	1999 09 29	704	0.1+	0.2+
1998 03 31	704	1.3+	0.2−	1999 09 07	704	0.3−	0.2−	1999 09 29	704	0.8−	0.0
1998 03 31	704	(3.4+	1.8+)	1999 09 07	704	0.2−	0.5+	1999 09 29	704	0.1+	0.7+
1998 04 01	704	0.1−	1.6+	1999 09 07	704	0.6−	0.0	1999 10 02	703	0.0	0.1+
1998 04 01	704	0.6−	0.2−	1999 09 09	704	0.1+	0.0	1999 10 02	703	0.0	0.4+
1998 04 01	704	0.0	0.2−	1999 09 09	704	0.1+	0.2+	1999 10 02	703	0.1−	0.5+
1998 04 01	704	0.0	0.1−	1999 09 09	704	0.0	0.3+	1999 10 02	703	0.4−	0.1−
1998 04 01	704	0.2−	0.1−	1999 09 09	704	0.4+	0.2−	1999 10 02	704	0.4−	0.4+
1999 08 08	699	0.2+	0.8+	1999 09 09	704	0.4+	0.4+	1999 10 02	704	0.2−	0.5+
1999 08 08	699	0.4−	0.4+	1999 09 14	704	0.8+	0.6−	1999 10 02	704	0.2−	0.0
1999 08 08	699	0.5−	0.9−	1999 09 14	704	0.8+	1.2−	1999 10 02	704	0.8−	0.2−
1999 08 22	699	1.1−	0.2+	1999 09 14	704	0.4+	0.0	1999 10 02	704	0.1+	0.5+
1999 08 22	699	0.5+	0.4−	1999 09 14	704	0.4+	0.5−				

1999 RM₁₄₈ = 1997 EA₄₂ = 1998 KC₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	268.79580		(2000.0)	P		Q	
<i>n</i>	0.21299597	ω	245.46315	+0.34815115		−0.93742080	
<i>a</i>	2.7768673	Ω	184.17520	+0.88611865		+0.33108609	
<i>e</i>	0.0519184	<i>i</i>	4.52727	+0.30591586		+0.10781581	
<i>P</i>	4.63	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 07 08	010	(2.0+	2.6−)	1999 08 08	699	0.5−	0.3+	1999 09 14	704	0.6+	0.3+
1994 07 08	010	0.1+	1.2−	1999 08 08	699	1.0−	1.1+	1999 09 29	704	1.3−	0.4+
1994 07 08	010	0.3+	1.1−	1999 09 07	704	0.3+	0.9+	1999 09 29	704	0.5−	0.3+
1997 03 10	704	0.3+	1.2+	1999 09 07	704	0.6+	0.4+	1999 09 29	704	0.1−	0.1−
1997 03 10	704	1.0+	1.2+	1999 09 07	704	0.4+	0.6+	1999 09 29	704	0.7−	0.3+
1997 03 11	704	0.3+	1.9+	1999 09 07	704	0.2+	0.4+	1999 09 29	704	1.2−	0.7−
1997 03 11	704	0.3+	1.8+	1999 09 07	704	0.4+	0.6+	1999 09 30	704	0.9−	0.2−
1998 05 22	704	0.3+	0.1−	1999 09 09	704	0.5+	0.8+	1999 09 30	704	1.0−	0.0
1998 05 22	704	0.7−	1.0+	1999 09 09	704	0.5+	0.6+	1999 09 30	704	1.1−	0.2+
1998 05 22	704	1.1−	0.8+	1999 09 09	704	0.7+	1.0+	1999 09 30	704	0.9−	0.0
1998 05 22	704	0.5+	0.5−	1999 09 09	704	0.7+	1.1+	1999 09 30	704	0.9−	0.1+
1998 05 22	704	0.2+	0.4−	1999 09 09	704	1.1+	0.7+	1999 10 06	704	0.5+	1.3+
1998 05 24	704	0.0	0.6+	1999 09 14	704	0.3+	0.1+	1999 10 06	704	0.1+	0.1−
1998 05 24	704	0.1+	0.4+	1999 09 14	704	0.6+	0.6−	1999 10 06	704	0.8+	1.2−
1998 05 24	704	1.0+	0.2−	1999 09 14	704	0.0	0.4−	1999 10 06	704	0.6+	0.3−
1999 08 08	699	1.0−	0.6+	1999 09 14	704	0.1+	0.3−	1999 10 06	704	1.1−	0.6−

1999 RX₁₄₈ = 1994 CL₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	3.57846		(2000.0)	P		Q	
<i>n</i>	0.27321301	ω	157.05129	+0.80911858		+0.58732631	
<i>a</i>	2.3521687	Ω	166.92706	−0.55156073		+0.77039046	
<i>e</i>	0.1806278	<i>i</i>	4.91082	−0.20275080		+0.24808537	
<i>P</i>	3.61	<i>H</i>	16.4	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 02 11	691	0.2−	0.0	1999 09 07	704	0.0	0.2+	1999 09 09	704	0.4+	0.1+
1994 02 11	691	0.4−	0.2+	1999 09 07	704	0.7−	0.2+	1999 09 09	704	(2.3+	0.4+)
1994 02 11	691	0.5−	0.4+	1999 09 07	704	0.6+	0.1−	1999 09 13	704	0.6+	0.8−
1994 02 16	691	0.7+	0.1−	1999 09 07	704	0.5+	0.9+	1999 09 13	704	0.0	0.6+
1994 02 16	691	0.2+	0.1−	1999 09 09	704	0.4+	0.1+	1999 09 13	704	0.9−	0.3−
1994 02 16	691	0.2+	0.3−	1999 09 09	704	0.1−	0.6+	1999 09 13	704	0.3+	0.0
1999 09 07	704	0.1−	0.4−	1999 09 09	704	0.4−	0.0	1999 09 13	704	0.6−	1.0−

1999 RD₁₄₉ = 1989 US₉ = 1992 PE₆ = 1998 FJ₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	353.10611		(2000.0)	P		Q	
<i>n</i>	0.28704649	ω	0.14110	+0.92945067		+0.36835822	
<i>a</i>	2.2759771	Ω	338.20847	−0.33855665		+0.82910005	
<i>e</i>	0.1719390	<i>i</i>	3.21582	−0.14663170		+0.42060114	
<i>P</i>	3.43	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1989 10 25	400	(42.2−	3.2−)	1998 03 25	566	0.7+	1.0−	1999 09 07	704	0.4−	0.3−
1989 10 25	400	(42.7−	1.3−)	1998 03 25	566	0.3+	1.1−	1999 09 09	704	0.7+	0.2−
1989 10 25	400	(44.7−	6.3−)	1998 03 25	566	0.1+	1.5−	1999 09 09	704	0.5+	0.5−
1992 08 01	809	0.2−	0.6+	1998 03 29	704	0.4−	1.1+	1999 09 09	704	0.3−	0.3−
1992 08 01	809	0.7+	0.7+	1998 03 29	704	0.9−	0.1−	1999 09 09	704	0.5+	0.2−
1992 08 01	809	1.4+	0.8+	1998 03 29	704	1.5−	0.3+	1999 09 09	704	0.8+	1.2−
1992 08 03	809	1.8−	0.5+	1998 03 29	704	(0.6+	3.3−)	1999 09 13	704	0.7+	1.0−
1992 08 03	809	0.8−	0.3+	1998 03 29	704	(5.0−	0.4−)	1999 09 13	704	1.0+	0.6−
1992 08 03	809	0.4−	0.2+	1998 04 01	704	1.3−	1.1−	1999 09 13	704	0.8+	0.1+
1992 08 04	809	0.1−	0.0	1998 04 01	704	(2.2+	0.1−)	1999 09 13	704	1.0+	0.8−
1992 08 04	809	0.0	0.0	1998 04 01	704	0.8−	0.8+	1999 09 13	704	0.8+	0.9−
1992 08 04	809	0.3+	0.1+	1998 04 01	704	1.3−	0.2−	1999 09 26	699	0.7−	0.2+

1994 01 19	691	0.6+	0.3+	1998 04 01	704	0.9−	1.5+	1999 09 26	699	0.8−	1.1+
1994 01 19	691	0.0	0.7+	1998 04 19	704	0.5−	0.5+	1999 09 26	699	0.3−	0.1+
1994 01 19	691	0.1+	0.4+	1998 04 19	704	(0.9+	2.3−)	1999 09 29	704	0.7+	0.2−
1998 03 20	704	1.2+	0.0	1998 04 19	704	(2.2−	0.1−)	1999 09 29	704	0.8+	1.4−
1998 03 20	704	0.9+	0.5−	1998 04 19	704	0.9−	0.9+	1999 09 29	704	0.2−	0.2+
1998 03 20	704	1.2−	1.9−	1998 04 19	704	(1.8−	2.0+)	1999 09 29	704	0.5−	0.8−
1998 03 20	704	0.5+	1.2−	1999 08 07	699	0.3−	0.4+	1999 09 30	704	0.4+	0.0
1998 03 20	704	0.9+	1.3−	1999 08 07	699	0.7−	1.2+	1999 09 30	704	0.2−	0.6−
1998 03 22	704	0.7−	0.8−	1999 08 07	699	0.9−	0.8+	1999 09 30	704	0.2+	0.7−
1998 03 22	704	0.1−	0.1−	1999 09 07	704	0.4+	0.7−	1999 09 30	704	0.1−	0.7−
1998 03 22	704	0.4+	1.9−	1999 09 07	704	0.0	0.2−	1999 09 30	704	1.2−	0.0
1998 03 22	704	1.6+	0.7+	1999 09 07	704	0.0	0.4−	1999 10 10	106	0.4+	1.3+
1998 03 22	704	(2.4−	0.8−)	1999 09 07	704	0.2−	0.6−	1999 10 10	106	0.1+	0.5+

1999 RH₁₄₉ = 1989 TK₇ = 1998 KT₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	64.26225		(2000.0)	P	Q
n	0.18839934	ω	108.89295	-0.04861850	$+0.99660753$
a	3.0135828	Ω	157.99831	-0.97009646	-0.03128735
e	0.0182281	i	10.20985	-0.23780056	-0.07612183
P	5.23	H	14.9	G	0.15
				U	3

Residuals in seconds of arc

1989 10 07	809	0.6+	0.1+	1998 05 23	704	0.7+	0.6−	1999 09 09	704	1.2+	0.8+
1989 10 07	809	0.7−	0.1+	1998 05 23	704	(2.9−	1.8−)	1999 09 09	704	0.1−	1.1+
1989 10 07	809	0.8−	0.3+	1998 05 26	704	1.3−	0.2+	1999 09 13	704	0.4−	0.8−
1989 10 08	809	(4.4+	3.2+)	1998 05 26	704	0.3+	0.4+	1999 09 13	704	0.1+	0.3−
1989 10 08	809	(4.2+	1.7+)	1998 05 26	704	0.5−	0.0	1999 09 13	704	0.2−	0.3−
1989 10 08	809	1.0+	0.4−	1998 05 26	704	0.6+	0.3+	1999 09 13	704	1.0+	0.2−
1998 05 23	704	0.2−	0.7+	1999 09 09	704	1.0−	0.3−	1999 09 13	704	0.2−	0.4−
1998 05 23	704	0.4+	0.9−	1999 09 09	704	0.6−	0.2+				

1999 RS₁₄₉ = 1998 KE₃₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	236.15353		(2000.0)	P	Q
n	0.21336782	ω	288.72685	-0.18263730	-0.98313466
a	2.7736400	Ω	171.77920	+0.92518441	-0.17511844
e	0.0272858	i	3.80133	+0.33268217	-0.05272364
P	4.62	H	14.3	G 0.15	U 5

Residuals in seconds of arc

1998 05 22	704	0.9+	0.6+	1998 05 24	704	0.5+	0.3−	1999 09 09	704	0.3−	0.4−
1998 05 22	704	0.7−	0.1+	1999 09 07	704	0.2−	0.3+	1999 09 09	704	0.6−	0.4−
1998 05 22	704	1.3+	0.1+	1999 09 07	704	0.1−	0.4−	1999 09 09	704	0.4−	0.2−
1998 05 22	704	1.1−	1.6−	1999 09 07	704	0.5−	0.2−	1999 09 14	704	0.3+	0.0
1998 05 24	704	0.9+	1.1+	1999 09 07	704	0.4+	0.5+	1999 09 14	704	1.4−	1.0+
1998 05 24	704	0.8−	0.5−	1999 09 07	704	0.7+	0.5+	1999 09 14	704	0.4+	0.3−
1998 05 24	704	0.2−	0.5+	1999 09 09	704	0.5+	0.4+	1999 09 14	704	0.5+	0.6−
1998 05 24	704	0.8−	0.1−	1999 09 09	704	0.1−	0.4−	1999 09 14	704	0.6+	0.0

1999 RW₁₄₉ = 1998 FH₃₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	11.75328		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.27876893	ω	355.22547	+0.66836137	+0.74331868
a	2.3208112	Ω	316.71165	−0.68110958	+0.59657474
e	0.1872032	i	2.32000	−0.29896959	+0.30261514
P	3.54	H	14.3	G	0.15
				U	3

Residuals in seconds of arc

1992 08 30	095	1.2−	1.5−	1999 09 07	704	0.3−	0.0	1999 09 30	678	0.6+	0.4−
1992 08 30	095	0.6−	0.7−	1999 09 07	704	0.1−	0.4+	1999 09 30	704	1.1+	0.2−
1992 09 03	095	0.7+	0.4−	1999 09 07	704	0.1−	0.4+	1999 09 30	704	0.2+	0.2−
1992 09 03	095	1.1+	0.1+	1999 09 07	704	0.1−	0.2+	1999 09 30	704	0.0	0.5−

1992 09 29	095	1.0−	1.8+	1999 09 09	704	0.2−	0.3+	1999 09 30	704	0.5+	0.3−
1992 09 29	095	1.0+	1.1+	1999 09 09	704	0.2+	0.4+	1999 09 30	704	0.3+	0.5−
1992 10 01	691	0.1−	0.1+	1999 09 09	704	0.9−	0.3+	1999 09 30	704	0.2−	0.5−
1992 10 01	691	0.2+	0.1+	1999 09 09	704	0.6−	0.6+	1999 09 30	704	0.6+	0.2+
1992 10 01	691	0.3−	0.5−	1999 09 09	704	0.2−	1.3+	1999 09 30	704	(0.6+	2.0−)
1998 03 20	704	0.2+	0.0	1999 09 14	704	0.6+	0.0	1999 09 30	704	0.4−	0.8−
1998 03 20	704	1.0−	0.0	1999 09 14	704	0.6+	0.4+	1999 09 30	704	1.2−	0.6−
1998 03 20	704	0.9−	0.1−	1999 09 14	704	0.1+	0.2+	1999 10 01	678	0.1+	1.1−
1998 03 20	704	0.3+	0.2+	1999 09 14	704	0.2+	0.0	1999 10 01	678	0.2+	1.1−
1998 03 22	704	0.6+	0.0	1999 09 14	704	0.2−	0.1−	1999 10 02	703	1.1−	1.2+
1998 03 22	704	0.8+	0.3+	1999 09 29	704	1.2+	0.7−	1999 10 02	703	1.0−	0.6+
1998 03 22	704	(4.3+	1.1−)	1999 09 29	704	1.3+	0.0	1999 10 02	703	0.8−	1.0+
1998 03 22	704	0.0	0.2−	1999 09 29	704	0.6+	0.3+	1999 10 02	703	0.8−	1.1+
1998 03 26	704	(3.2+	0.3+)	1999 09 29	704	1.0+	1.2−	1999 10 11	106	0.7−	0.7+
1998 03 26	704	(0.8−	2.5+)	1999 09 29	704	0.1−	1.0−	1999 10 11	106	0.5−	0.6+
1998 03 26	704	0.4+	1.0+	1999 09 30	678	0.8−	0.4−	1999 10 11	106	0.4−	0.8+
1999 09 07	704	0.1+	0.1+	1999 09 30	678	0.7+	0.8−				

1999 RX₁₄₉ = 1991 RT₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	241.44113		(2000.0)	P	Q
n	0.23517221	ω	298.42091	-0.25551769	-0.96511638
a	2.5994335	Ω	166.02664	+0.94898949	-0.26165824
e	0.1296850	i	13.67958	+0.18474216	+0.00923780
P	4.19	H	13.4	G 0.15	U 3

Residuals in seconds of arc

1991 09 12	675	0.1+	0.8−	1999 09 07	704	0.2−	0.5−	1999 09 29	704	0.1−	1.4+
1991 09 12	675	0.3+	0.6−	1999 09 07	704	0.2−	0.2−	1999 09 29	704	0.5+	0.2−
1991 09 13	675	0.5−	0.5+	1999 09 07	704	0.1+	0.4−	1999 09 29	704	0.0	0.4−
1991 09 13	675	1.5+	0.3−	1999 09 07	704	0.9−	0.6−	1999 09 29	704	0.5+	0.2+
1991 09 15	675	0.3+	0.5−	1999 09 07	704	0.0	0.4−	1999 09 30	704	0.3+	0.8−
1991 09 15	675	0.2−	0.2+	1999 09 09	704	0.5+	0.1+	1999 09 30	704	0.0	0.3+
1991 09 16	675	0.5−	0.7−	1999 09 09	704	0.2+	0.2+	1999 09 30	704	0.5−	0.1+
1991 09 16	675	0.4−	1.1−	1999 09 09	704	0.1+	0.3+	1999 09 30	704	0.6−	0.0
1998 05 26	704	(2.8+	0.1−)	1999 09 09	704	0.5+	0.6+	1999 09 30	704	0.4−	0.0
1998 05 26	704	0.3+	1.2+	1999 09 09	704	0.2−	0.4+	1999 10 07	704	0.6+	0.4−
1998 05 26	704	1.3+	1.3−	1999 09 14	704	0.1+	0.6+	1999 10 07	704	0.8−	0.1−
1998 05 26	704	0.6−	0.6+	1999 09 14	704	0.3+	0.2+	1999 10 07	704	1.3−	1.0+
1998 06 19	704	0.1+	0.2−	1999 09 14	704	0.5+	0.1+	1999 10 07	704	0.5−	0.1+
1998 06 19	704	0.9−	1.1−	1999 09 14	704	0.2+	0.2+	1999 10 08	106	0.1+	0.4+
1998 06 19	704	0.8−	0.4−	1999 09 14	704	0.5+	0.1+	1999 10 08	106	0.3+	0.7+
1998 06 19	704	0.4+	0.3−	1999 09 29	704	0.1+	0.1+				

1999 RY₁₄₉ = 1982 UX₈ = 1992 OK₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	345.13766		(2000.0)	P	Q
n	0.28630980	ω	19.90075	+0.98912919	+0.13811557
a	2.2798795	Ω	332.01234	−0.14522955	+0.86371164
e	0.2078620	i	6.17434	−0.02306143	+0.48469195
P	3.44	H	15.9	G 0.15	U 2

Residuals in seconds of arc

1982 10 21	095	0.1+	0.1−	1999 09 07	704	0.3−	0.1−	1999 09 14	704	0.6+	0.3−
1992 07 27	809	1.2−	0.2−	1999 09 07	704	0.2+	0.3+	1999 09 29	704	1.0+	0.3+
1992 07 27	809	0.6−	0.2+	1999 09 07	704	0.1−	0.7+	1999 09 29	704	0.6−	0.7−
1992 07 27	809	0.0	0.5+	1999 09 09	704	0.4−	0.1+	1999 09 29	704	0.6+	0.5−
1992 07 28	809	0.3−	0.1+	1999 09 09	704	0.1+	0.5−	1999 09 29	704	0.7+	0.2+
1992 07 28	809	0.7+	0.1+	1999 09 09	704	0.6−	0.3+	1999 09 29	704	0.5+	0.2−
1992 07 28	809	1.1+	0.2+	1999 09 09	704	0.2−	1.5−	1999 10 02	703	0.8−	1.0+
1994 01 10	691	0.7+	0.3+	1999 09 09	704	0.0	0.1+	1999 10 02	703	0.8−	0.6+
1994 01 10	691	0.1+	0.5+	1999 09 14	704	0.5+	0.1−	1999 10 02	703	0.6−	0.4+
1994 01 10	691	0.3−	0.2+	1999 09 14	704	0.6+	0.7−	1999 10 02	703	1.2−	0.7+
1999 09 07	704	0.3−	0.1+	1999 09 14	704	0.0	0.1+				
1999 09 07	704	0.1−	0.3−	1999 09 14	704	1.0+	0.1+				

1999 RB₁₅₀ = 1998 KJ₁₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	87.81078	(2000.0)	P		Q	
<i>n</i>	0.22879132	ω	291.09109	-0.45353104	+0.89078285	
<i>a</i>	2.6475430	Ω	311.90557	-0.80279678	-0.42223053	
<i>e</i>	0.0269786	<i>i</i>	2.19900	-0.38707483	-0.16800981	
<i>P</i>	4.31	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1991 11 09	691	0.4-	0.7+	1998 05 22	704	0.6+	0.4-	1999 09 29	704	0.1+	0.1+
1991 11 09	691	0.1-	0.6+	1998 05 22	704	0.1+	1.5-	1999 09 29	704	0.9+	0.2+
1991 11 09	691	0.1-	0.6+	1998 05 24	704	0.2-	0.6+	1999 09 29	704	0.6+	0.3+
1998 04 22	704	0.6-	0.8+	1998 05 24	704	0.7-	1.5-	1999 09 30	704	0.1+	1.2-
1998 04 22	704	0.4-	0.1-	1998 05 24	704	1.8+	0.7+	1999 09 30	704	0.6-	0.0
1998 04 22	704	0.7+	0.1-	1998 05 24	704	0.2-	0.8-	1999 09 30	704	0.1-	0.7-
1998 04 22	704	(3.3-	1.0+)	1999 09 07	704	0.3-	0.3+	1999 09 30	704	0.7+	0.9-
1998 04 22	704	(2.9-	0.4-)	1999 09 07	704	0.8-	0.3+	1999 09 30	704	0.4+	1.7-
1998 04 25	699	0.6-	0.5+	1999 09 07	704	0.2-	0.4+	1999 10 02	703	0.2+	0.6+
1998 04 25	699	0.7-	0.3-	1999 09 07	704	0.0	0.4+	1999 10 02	703	0.9-	0.8+
1998 04 25	699	0.5+	0.6+	1999 09 07	704	0.9-	0.2+	1999 10 02	703	0.6-	0.8+
1998 05 01	704	0.5-	0.7+	1999 09 09	704	0.4-	0.6+	1999 10 02	703	1.1-	1.1+
1998 05 01	704	0.2-	0.3+	1999 09 09	704	0.4+	1.3+	1999 10 02	704	0.7+	0.6-
1998 05 01	704	0.2+	1.2+	1999 09 09	704	0.3-	0.9+	1999 10 02	704	0.0	1.2-
1998 05 01	704	(1.0-	2.3-)	1999 09 09	704	0.9+	1.2+	1999 10 02	704	0.2+	0.3+
1998 05 03	566	0.4-	0.5+	1999 09 09	704	0.7-	1.0+	1999 10 02	704	0.3+	0.5-
1998 05 03	566	0.4-	0.6+	1999 09 14	704	1.2-	0.6-	1999 10 02	704	0.8+	0.6-
1998 05 03	566	0.3-	0.3+	1999 09 14	704	0.7+	0.9-	1999 10 07	704	0.6-	0.3-
1998 05 22	704	0.5+	0.1-	1999 09 14	704	0.8+	1.1-	1999 10 07	704	0.5+	0.4+
1998 05 22	704	0.2+	0.4-	1999 09 14	704	0.5-	0.8-	1999 10 07	704	0.1+	0.2+
1998 05 22	704	1.2+	0.5-	1999 09 14	704	0.9+	0.5-				

1999 RE₁₅₀ = 1989 ST₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	341.89485	(2000.0)	P		Q	
<i>n</i>	0.29149317	ω	15.09662	+0.99731613	+0.06655865	
<i>a</i>	2.2527714	Ω	341.00760	-0.07304071	+0.87567744	
<i>e</i>	0.1859142	<i>i</i>	5.37826	-0.00505954	+0.47828753	
<i>P</i>	3.38	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1989 09 27	675	0.6-	0.3-	1999 08 08	699	0.1+	1.0-	1999 09 14	704	0.1-	0.3+
1989 09 28	675	0.6+	0.8-	1999 08 08	699	0.8-	1.7+	1999 09 14	704	0.3-	0.0
1989 09 28	675	0.3+	0.7-	1999 08 08	699	0.4-	1.1+	1999 09 14	704	0.2-	0.1-
1989 09 29	675	1.0+	0.4-	1999 09 05	859	0.2-	0.1+	1999 10 02	703	0.0	1.3+
1989 09 29	675	0.1-	0.0	1999 09 05	859	0.2-	0.1-	1999 10 02	703	1.0-	0.4+
1994 01 08	691	0.6+	0.9+	1999 09 05	859	0.3-	0.1-	1999 10 02	703	0.2+	0.7+
1994 01 08	691	0.2+	1.3+	1999 09 07	704	0.6-	0.3-	1999 10 02	703	0.2-	0.8+
1994 01 08	691	0.1-	1.1+	1999 09 07	704	0.6-	0.7-	1999 10 02	704	0.1+	0.3+
1998 03 23	691	0.2+	0.3+	1999 09 07	704	0.0	0.0	1999 10 02	704	0.9+	0.4-
1998 03 23	691	0.1+	0.4+	1999 09 07	704	0.4-	0.3+	1999 10 02	704	0.8+	0.0
1998 03 23	691	0.3+	0.1+	1999 09 07	704	0.3-	0.2-	1999 10 02	704	0.2-	0.7+
1998 03 29	704	0.1-	0.0	1999 09 09	704	0.7-	0.5-	1999 10 06	704	1.4+	0.3-
1998 03 29	704	0.8+	1.0-	1999 09 09	704	0.1+	0.7-	1999 10 06	704	0.8+	0.2+
1998 03 29	704	0.7+	0.7-	1999 09 09	704	0.1-	0.9-	1999 10 06	704	(2.3+	0.8+)
1998 03 29	704	1.1-	1.3+	1999 09 09	704	0.3+	0.4+	1999 10 06	704	1.3+	0.6+
1999 08 07	699	1.5-	0.2+	1999 09 09	704	1.8+	1.0+	1999 10 06	704	0.2+	0.8+
1999 08 07	699	0.5-	1.0-	1999 09 14	704	0.2-	0.4-				
1999 08 07	699	0.6-	0.1-	1999 09 14	704	0.4-	0.5+				

1999 RM₁₅₀ = 1997 BP₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	347.62321	(2000.0)	P		Q	
<i>n</i>	0.25575713	ω	349.37428	+0.98428147	+0.17660681	
<i>a</i>	2.4580132	Ω	0.45361	-0.16072234	+0.89607745	
<i>e</i>	0.2546298	<i>i</i>	1.00322	-0.07320050	+0.40725329	
<i>P</i>	3.85	<i>H</i>	17.6	<i>G</i>	0.15	<i>U</i> 6

Residuals in seconds of arc

1997 01 31	691	0.3+	0.4-	1997 02 01	691	0.3+	0.2+	1999 09 13	704	0.1-	0.4-
1997 01 31	691	0.0	0.1+	1999 09 09	704	0.6-	0.6-	1999 09 13	704	0.4+	0.2-
1997 01 31	691	0.2+	0.1+	1999 09 09	704	0.2+	0.4+	1999 09 13	704	0.1-	0.9-
1997 02 01	691	0.8-	0.3+	1999 09 09	704	0.2-	0.8+	1999 09 13	704	0.2+	0.5+
1997 02 01	691	0.1+	0.2-	1999 09 09	704	0.1+	0.2+				

1999 RQ₁₅₀ = 1993 FF₅₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	352.46832	(2000.0)	P		Q	
<i>n</i>	0.21516123	ω	344.02876	+0.94487236	+0.32738628	
<i>a</i>	2.7582060	Ω	356.84274	-0.28754873	+0.82105611	
<i>e</i>	0.1037647	<i>i</i>	6.11736	-0.15662679	+0.46763777	
<i>P</i>	4.58	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1993 03 19	809	0.7-	0.1+	1999 09 09	704	0.1-	0.2-	1999 09 13	704	0.4+	0.5-
1993 03 20	809	0.1-	0.3+	1999 09 09	704	0.2-	0.2+	1999 09 13	704	0.6-	0.1+
1993 03 24	809	0.8+	0.5-	1999 09 09	704	1.2+	0.1+	1999 09 13	704	0.5+	0.4+
1999 09 09	704	0.1-	0.2+	1999 09 13	704	0.9-	0.6+				
1999 09 09	704	0.2-	0.1-	1999 09 13	704	0.1-	0.7-				

1999 RR₁₅₀ = 1997 CO₁₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	325.92877	(2000.0)	P		Q	
<i>n</i>	0.21759445	ω	235.00575	+0.91722178	-0.38795195	
<i>a</i>	2.7376054	Ω	147.54737	+0.39777989	+0.87944202	
<i>e</i>	0.2164149	<i>i</i>	9.71390	+0.02180294	+0.27581701	
<i>P</i>	4.53	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1997 02 02	691	0.3+	0.3+	1999 09 07	704	0.2+	0.1-	1999 09 13	704	0.7-	0.2-
1997 02 02	691	0.1+	0.2+	1999 09 07	704	0.0	0.0	1999 09 13	704	0.6-	1.0-
1997 02 02	691	0.1+	0.1-	1999 09 07	704	0.4-	0.3+	1999 09 13	704	0.1-	0.2-
1997 02 07	691	0.0	0.2+	1999 09 07	704	0.1+	0.4-	1999 09 13	704	0.3-	0.1-
1997 02 07	691	0.0	0.2-	1999 09 09	704	0.0	0.4-	1999 09 30	704	0.2-	0.3-
1997 02 07	691	0.5-	0.2-	1999 09 09	704	0.1-	0.3+	1999 09 30	704	0.1-	1.0-
1999 09 04	699	0.4+	0.4+	1999 09 09	704	0.6+	0.1-	1999 09 30	704	0.9-	0.5+
1999 09 04	699	0.7+	0.6+	1999 09 09	704	0.0	0.5+	1999 09 30	704	0.9+	0.2+
1999 09 04	699	0.2+	1.2+	1999 09 09	704	(2.1+	0.7+)	1999 09 30	704	0.7+	1.5+
1999 09 07	704	0.1-	0.9-	1999 09 13	704	0.1-	0.5-				

1999 RN₁₅₁ = 1997 EM₅₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	318.25397	(2000.0)	P		Q	
<i>n</i>	0.23248274	ω	39.25684	+0.75533620	-0.65533190	
<i>a</i>	2.6194427	Ω	1.69527	+0.57588460	+0.66178299	
<i>e</i>	0.2833631	<i>i</i>	5.24852	+0.31276853	+0.36411999	
<i>P</i>	4.24	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1997 03 02	691	0.1+	0.1+	1999 09 04	699	0.2+	0.6+	1999 09 13	704	0.4-	0.4+
1997 03 02	691	0.3+	0.1-	1999 09 07	704	0.8+	1.5+	1999 09 13	704	0.3-	0.4-
1997 03 02	691	0.0	0.3-	1999 09 07	704	0.3-	0.1+	1999 09 13	704	0.0	0.3-

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1997 03 09	691	0.3−	0.0	1999 09 07	704	0.2−	0.5−	1999 09 13	704	0.6−	0.0
1997 03 09	691	0.4−	0.0	1999 09 07	704	0.0	0.7−	1999 09 13	704	0.2+	0.4−
1997 03 09	691	0.3−	0.0	1999 09 07	704	0.8−	0.5−	1999 09 30	704	0.4+	0.7+
1997 03 14	691	0.1+	0.2+	1999 09 09	704	0.2+	0.5−	1999 09 30	704	0.1−	0.1−
1997 03 14	691	0.2+	0.1+	1999 09 09	704	0.4−	0.7−	1999 09 30	704	0.3−	0.5−
1997 03 14	691	0.2+	0.2−	1999 09 09	704	0.4−	0.3+	1999 09 30	704	0.5+	0.0
1999 09 04	699	0.4+	0.5+	1999 09 09	704	0.1+	0.5+				
1999 09 04	699	0.4+	0.3−	1999 09 09	704	0.9+	0.3+				

1999 RR₁₅₁ = 1996 XU₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	40.85024	(2000.0)	P	Q	
<i>n</i>	0.27035224	ω	154.82999	+0.04030261	+0.99800839
<i>a</i>	2.3687328	Ω	117.44742	−0.92573940	+0.05557252
<i>e</i>	0.2008085	<i>i</i>	3.13468	−0.37600833	−0.02984862
<i>P</i>	3.65	<i>H</i>	15.9	<i>G</i>	0.15 <i>U</i> 5

Residuals in seconds of arc

1994 01 11	691	(1.1−	4.1+)	1996 12 08	691	0.4−	0.1+	1999 09 09	704	0.1−	0.7+
1994 01 11	691	0.0	1.4+	1999 09 07	704	0.2+	1.4−	1999 09 09	704	0.2+	1.1−
1994 01 11	691	0.1+	0.3−	1999 09 07	704	0.4+	0.0	1999 09 13	704	0.6−	1.1+
1996 12 01	691	0.0	0.1−	1999 09 07	704	0.6+	0.3−	1999 09 13	704	1.1−	1.2+
1996 12 01	691	0.0	0.1+	1999 09 07	704	0.1−	0.4+	1999 09 13	704	0.9−	0.3−
1996 12 01	691	0.1−	0.3+	1999 09 09	704	0.3+	0.3−	1999 09 13	704	0.5−	0.1−
1996 12 08	691	0.6+	0.8−	1999 09 09	704	0.1+	0.4−	1999 09 13	704	0.0	1.0+
1996 12 08	691	0.3+	0.6−	1999 09 09	704	1.2+	0.2+				

1999 RV₁₅₁ = 1982 BY₁₂ = 1998 HC₁₀₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Doppler		
<i>M</i>	289.85456	(2000.0)	P	Q	
<i>n</i>	0.26188275	ω	341.66868	+0.49497820	−0.86855049
<i>a</i>	2.4195325	Ω	78.65649	+0.80034010	+0.44460634
<i>e</i>	0.1527819	<i>i</i>	1.45126	+0.33830800	+0.21896402
<i>P</i>	3.76	<i>H</i>	15.6	<i>G</i>	0.15 <i>U</i> 4

Residuals in seconds of arc

1982 01 30	675	0.9−	0.3−	1998 04 28	809	0.1+	1.0+	1999 09 09	704	0.4−	0.7+
1982 01 31	675	1.0+	0.2+	1998 04 28	809	0.5+	0.8−	1999 09 13	704	0.3+	0.1+
1998 04 25	809	0.4−	0.4−	1999 09 09	704	0.4+	0.4−	1999 09 13	704	0.1+	0.2−
1998 04 25	809	0.7−	0.0	1999 09 09	704	0.3+	0.2+	1999 09 13	704	0.3−	0.1−
1998 04 25	809	0.5+	0.6+	1999 09 09	704	0.2+	0.1−	1999 09 13	704	0.4−	0.1+
1998 04 28	809	0.0	0.4−	1999 09 09	704	0.1−	0.2−	1999 09 13	704	0.1−	0.2−

1999 RX₁₅₁ = 1982 JW = 1992 GF₆ = 1992 GJ₆ = 1998 MQ₄₅

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

			Williams		
<i>M</i>	195.85949	(2000.0)	P	Q	
<i>n</i>	0.18968424	ω	13.29400	−0.78192851	−0.62033376
<i>a</i>	2.9999583	Ω	128.19434	+0.56454164	−0.74648268
<i>e</i>	0.0647348	<i>i</i>	4.48312	+0.26434929	−0.24072731
<i>P</i>	5.20	<i>H</i>	13.1	<i>G</i>	0.15 <i>U</i> 2

Residuals in seconds of arc

1982 05 15	675	0.8+	0.3+	1998 06 26	704	0.4+	1.7−	1999 09 09	704	0.4+	0.6−
1982 05 16	675	0.9−	0.6−	1998 06 26	704	0.1−	0.8−	1999 09 09	704	0.5−	0.3−
1982 05 16	675	2.1−	0.6+	1998 06 26	704	0.8−	0.1+	1999 09 13	704	0.5−	0.1−
1982 05 17	675	0.2+	0.8−	1998 06 26	704	1.1−	1.3+	1999 09 13	704	0.0	0.1−
1982 05 18	675	2.3+	1.4+	1999 09 07	704	0.1−	0.3+	1999 09 13	704	0.2−	0.2−
1992 04 05	372	(3.6−	1.0+)	1999 09 07	704	0.1−	0.2−	1999 09 13	704	0.2+	0.4+
1992 04 05	372	0.0	0.0	1999 09 07	704	0.4+	0.3+	1999 09 13	704	0.3−	1.7+
1992 04 10	372	(1.0−	3.0−)	1999 09 07	704	0.1−	0.1−	1999 09 30	704	0.5+	0.1+
1992 04 10	372	(0.7+	2.4+)	1999 09 07	704	0.1−	0.2+	1999 09 30	704	0.5+	0.5+
1998 06 24	704	2.0+	0.9−	1999 09 09	704	0.1−	0.0	1999 09 30	704	0.3+	0.2−

1998 06 24	704	0.5+	0.8−	1999 09 09	704	0.1+	0.1+	1999 09 30	704	0.8+	0.8−
1998 06 24	704	1.1−	1.6+	1999 09 09	704	1.4−	0.6−	1999 09 30	704	0.1+	0.1+

1999 RZ₁₅₁ = 1977 RO₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

			(2000.0)			P	Q
<i>M</i>	72.96950						
<i>n</i>	0.17758161	ω	257.83076	−0.28438657	+0.95865013		
<i>a</i>	3.1347583	Ω	355.60332	−0.81646128	−0.24801858		
<i>e</i>	0.0769568	<i>i</i>	8.01347	−0.50250896	−0.13955901		
<i>P</i>	5.55	<i>H</i>	14.0	<i>G</i>	0.15 <i>U</i> 4		

Residuals in seconds of arc

1977 09 09	675	0.0	0.8−	1999 09 09	704	0.0	0.9−	1999 10 01	704	0.3−	0.2+
1977 09 10	675	0.8+	0.7−	1999 09 13	704	0.6−	0.2−	1999 10 01	704	0.3−	0.2+
1994 10 27	691	0.3−	0.4+	1999 09 13	704	0.6−	0.1−	1999 10 01	704	0.3−	0.6+
1994 10 27	691	0.1+	0.1+	1999 09 13	704	0.3−	0.7+	1999 10 01	704	0.8+	0.8−
1994 10 27	691	0.2−	0.1+	1999 09 13	704	0.0	0.2−	1999 10 01	704	0.1+	0.2+
1999 09 07	704	0.5+	1.0+	1999 09 13	704	0.0	0.5−	1999 10 01	704	1.0−	0.2−
1999 09 07	704	0.1+	0.1+	1999 09 30	704	0.6−	0.1−	1999 10 04	703	1.2+	0.3+
1999 09 07	704	0.3+	0.3+	1999 09 30	704	0.1−	0.3+	1999 10 04	703	0.1+	0.3−
1999 09 07	704	0.3−	0.4+	1999 09 30	704	0.9−	1.0−	1999 10 04	703	1.4+	1.3+
1999 09 09	704	0.2+	0.2−	1999 09 30	704	0.4−	0.2−	1999 10 04	703	0.1+	0.2+
1999 09 09	704	1.3−	0.2+	1999 10 01	704	0.7+	0.0				
1999 09 09	704	0.0	0.4+	1999 10 01	704	0.9+	0.7−				

1999 RG₁₅₂ = 1996 XO₂₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

			(2000.0)			P	Q
<i>M</i>	357.68740						
<i>n</i>	0.28741268	ω	33.48438	+0.90509199	+0.42487906		
<i>a</i>	2.2740435	Ω	301.36376	−0.39434752	+0.82383844		
<i>e</i>	0.0939148	<i>i</i>	1.13540	−0.15905512	+0.37519064		
<i>P</i>	3.43	<i>H</i>	16.0	<i>G</i>	0.15 <i>U</i> 2		

Residuals in seconds of arc

1994 01 07	691	0.5+	0.2+	1999 08 07	691	0.2−	0.4−	1999 09 14	704	0.4+	0.6−
1994 01 07	691	0.3−	0.2+	1999 09 05	699	0.3+	0.5+	1999 09 14	704	0.3+	0.8+
1996 12 12	691	0.0	0.0	1999 09 05	699	0.8+	0.8+	1999 09 14	704	0.2−	0.6+
1996 12 12	691	0.4+	0.1−	1999 09 05	699	(0.1−	2.3+)	1999 09 14	704	0.4+	0.6−
1996 12 12	691	0.3+	0.0	1999 09 07	704	0.6−	0.4−	1999 10 02	703	0.2−	0.2+
1996 12 15	691	0.0	0.5+	1999 09 07	704	0.5−	1.0−	1999 10 02	703	0.6−	0.0
1996 12 15	691	0.3−	0.3−	1999 09 07	704	0.3−	0.3−	1999 10 02	703	0.7+	0.6+
1996 12 15	691	0.7−	0.3+	1999 09 07	704	0.7−	0.3+	1999 10 02	703	0.2−	0.6+
1998 03 29	704	1.3+	1.0+	1999 09 07	704	0.8−	0.3−	1999 10 06	704	1.5+	0.1−
1998 03 29	704	0.2−	0.6−	1999 09 09	704	1.1−	0.5−	1999 10 06	704	1.0+	0.7−
1998 03 29	704	0.4+	0.4+	1999 09 09	704	0.5−	0.5−	1999 10 06	704	0.4+	0.1−
1998 03 29	704	0.5+	0.2+	1999 09 09	704	0.5−	0.5+	1999 10 06	704	(2.3+	1.8−)
1998 03 29	704	1.6−	0.3−	1999 09 09	704	0.0	0.3+	1999 10 06	704	1.0+	1.0−
1999 08 07	691	0.3−	0.6+	1999 09 09	704	0.2−	1.1+				
1999 08 07	691	0.5−	0.3+	1999 09 14	704	0.7+	0.1−				

1999 RV₁₅₂ = 1989 TS₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

			(2000.0)			P	Q
<i>M</i>	348.37259						
<i>n</i>	0.19161250	ω	165.98412	+0.98727745	+0.15829795		
<i>a</i>	2.9797980	Ω	184.98125	−0.15738774	+0.95943699		
<i>e</i>	0.1535388	<i>i</i>	9.94771	−0.02263475	+0.23328613		
<i>P</i>	5.14	<i>H</i>	15.0	<i>G</i>	0.15 <i>U</i> 4		

Residuals in seconds of arc

1989 10 07	809	0.6+	0.1−	1999 09 07	704	0.0	0.3+	1999 09 14	704	0.5−	0.4+
1989 10 07	809	0.3−	1.0−	1999 09 07	704	0.2−	0.6−	1999 09 14	704	0.3+	0.6+
1989 10 07	809	0.1+	0.1−	1999 09 08	699	0.6+	0.3−	1999 09 14	704	0.3+	0.3+

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1989 10 08	809	0.1−	1.0+	1999 09 09	704	0.3−	1.0−	1999 09 30	699	0.8−	0.0
1999 09 07	704	0.4+	0.0	1999 09 09	704	0.4−	0.6−	1999 09 30	699	0.2+	0.4−
1999 09 07	704	0.2−	0.5+	1999 09 09	704	0.0	0.2+	1999 09 30	699	0.9+	0.1+
1999 09 07	704	0.2−	0.3+	1999 09 09	704	1.7+	0.4−				

1999 RX₁₅₂ = 1976 UR₁₇ = 1990 UK₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	330.54890		(2000.0)	P	Q
n	0.21237316	ω	198.36616	+0.93691873	−0.34948827
a	2.7822936	Ω	182.12242	+0.33849529	+0.91172561
e	0.2330595	i	9.98608	+0.08720225	+0.21590362
P	4.64	H	15.0	G 0.15	U 3

Residuals in seconds of arc

1976 10 22	381	1.0−	0.5+	1999 09 07	704	0.5+	0.4−	1999 10 01	704	1.1+	0.1−
1976 10 22	381	0.1−	0.1+	1999 09 07	704	0.3+	0.5−	1999 10 01	704	1.2+	0.1−
1976 10 24	381	0.4+	0.2+	1999 09 07	704	0.2+	0.4−	1999 10 01	704	0.4+	0.2+
1976 10 24	381	0.2+	1.1+	1999 09 09	704	0.2+	0.5−	1999 10 01	704	0.6+	0.3−
1990 10 16	809	(4.4+ 0.6+)		1999 09 09	704	0.1−	0.4−	1999 10 01	704	0.4+	0.3−
1990 10 16	809	(4.0+ 0.3+)		1999 09 09	704	0.5−	0.2−	1999 10 01	704	0.6−	0.2−
1990 10 16	809	(3.2+ 0.6+)		1999 09 09	704	0.5−	0.5−	1999 10 02	704	0.7−	0.7+
1990 10 19	809	1.5+ 0.9		1999 09 09	704	0.1−	0.7−	1999 10 02	704	0.1−	0.4+
1990 10 19	809	0.1+ 0.9−		1999 09 14	704	0.2−	0.4−	1999 10 02	704	0.1+	0.7+
1990 10 19	809	0.8+ 0.7+		1999 09 14	704	0.2−	0.3−	1999 10 02	704	0.1−	1.6+
1990 10 24	809	0.3−	0.7−	1999 09 14	704	1.3−	0.2−	1999 10 06	704	0.2−	0.5+
1990 10 24	809	0.3−	1.3−	1999 09 14	704	0.7−	0.6+	1999 10 06	704	0.2−	0.5+
1990 10 24	809	1.3−	1.3−	1999 09 14	704	0.7−	0.1−	1999 10 06	704	0.3−	0.4+
1999 09 07	704	0.5+	0.4−	1999 10 01	704	0.8+	0.7+	1999 10 06	704	0.2−	0.2+
1999 09 07	704	0.3+	0.3−	1999 10 01	704	0.7+	0.2−	1999 10 06	704	0.5−	0.3+

1999 RT₁₅₄ = 1977 LR₁ = 1980 FC₇ = 1992 XY = 1998 FF₂₇

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	13.94356		(2000.0)	P	Q
n	0.27272126	ω	14.74350	+0.66793918	+0.74312696
a	2.3549954	Ω	297.18256	−0.68730273	+0.59521677
e	0.1925595	i	2.59297	−0.28543336	+0.30574387
P	3.61	H	14.8	G 0.15	U 2

Residuals in seconds of arc

1977 06 13	675	0.0	0.1+	1998 03 22	704	0.5−	0.9+	1999 09 07	704	0.4−	0.3−
1977 06 14	675	0.1−	0.1+	1998 03 26	704	0.8−	1.0+	1999 09 07	704	0.2−	0.3+
1980 03 23	809	0.0	0.5−	1998 03 26	704	0.1+	1.0+	1999 09 07	704	0.4−	0.2−
1992 12 13	010	0.6−	0.8−	1998 03 26	704	0.1−	0.6−	1999 09 09	704	0.2−	0.1−
1992 12 14	010	0.5+	1.3+	1998 03 29	704	0.3+	0.2+	1999 09 09	704	0.2−	0.1+
1998 02 26	566	0.2+	0.2−	1998 03 29	704	0.8+	0.2+	1999 09 09	704	0.3−	0.4+
1998 02 26	566	0.5+	0.2−	1998 03 29	704	0.9−	1.2−	1999 09 09	704	0.1−	0.0
1998 02 26	566	0.5+	0.2−	1998 03 29	704	0.6+	1.4+	1999 09 09	704	0.1−	0.1+
1998 02 28	809	(3.4+ 0.6−)		1998 03 29	704	0.9+	0.1+	1999 09 14	704	0.4−	0.1+
1998 03 02	809	(0.7− 3.3−)		1999 07 16	704	0.5+	0.3−	1999 09 14	704	0.1+	0.2−
1998 03 20	704	1.2+	1.7−	1999 07 16	704	0.8+	0.8−	1999 09 14	704	0.4−	0.1−
1998 03 20	704	0.7+	0.8+	1999 07 16	704	0.8+	0.9−	1999 09 14	704	0.5−	0.2+
1998 03 20	704	0.1−	1.1−	1999 07 16	704	0.8+	0.4+	1999 09 14	704	0.2−	0.0
1998 03 20	704	0.6−	1.4+	1999 08 22	699	0.2−	1.5+	1999 10 02	704	0.3+	0.1+
1998 03 20	704	1.2−	0.6−	1999 08 22	699	0.4+	1.1+	1999 10 02	704	0.1+	0.8−
1998 03 22	704	0.2−	0.1+	1999 08 22	699	0.2−	1.1+	1999 10 02	704	0.5+	0.0
1998 03 22	704	1.6−	0.5+	1999 09 07	704	0.5−	0.4−	1999 10 02	704	0.5+	0.5−
1998 03 22	704	1.0+	0.5+	1999 09 07	704	0.2−	0.2−				

M.P.C. 36451

1999 RE₁₅₅ = 1998 HE₆₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	19.05729		(2000.0)	P	Q
n	0.23428468	ω	95.17836	+0.68376535	+0.72831249
a	2.6059943	Ω	218.08893	−0.69506514	+0.63129060
e	0.0945935	i	4.18417	−0.22214725	+0.26652033
P	4.21	H	15.8	G 0.15	U 6

Residuals in seconds of arc

1998 04 21	704	(0.8− 5.4+)	1999 09 07	704	0.7−	0.4+	1999 09 09	704	0.2+	0.5−	
1998 04 21	704	0.1−	0.2−	1999 09 07	704	0.4−	0.0	1999 09 09	704	0.5−	0.2−
1998 04 21	704	0.4−	0.0	1999 09 07	704	0.2−	0.2−	1999 09 09	704	0.7−	0.4+
1998 04 21	704	0.8−	1.3+	1999 09 07	704	0.8−	1.2−	1999 09 09	704	0.9+	0.2+
1998 04 22	704	0.4−	0.2−	1999 09 07	704	0.5−	0.4+	1999 09 14	704	0.6−	0.4−
1998 04 22	704	0.2+	0.2−	1999 09 08	699	0.6+	0.6+	1999 09 14	704	0.4−	0.1+
1998 04 22	704	1.5+	0.8−	1999 09 08	699	1.2+	1.8+	1999 09 14	704	0.6+	0.2+
1998 04 22	704	1.0+	1.1+	1999 09 08	699	0.9+	0.6−	1999 09 14	704	0.2−	0.4−
1998 04 22	704	0.9−	1.1−	1999 09 09	704	0.6+	0.7−	1999 09 14	704	0.0	0.2+

1999 RW₁₅₅ = 1998 KM₅₁

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

$\dot{M}$	33.88144		(2000.0)	P	Q
n	0.18905152	ω	112.40105	+0.50012581	+0.86550771
a	3.0066481	Ω	187.78333	−0.85061951	+0.48501193
e	0.0734926	i	11.82808	−0.16223634	+0.12513924
P	5.21	H	14.4	G 0.15	U 1

Residuals in seconds of arc

1992 04 07	691	1.0+	0.1+	1998 05 26	704	1.1−	0.2−	1999 09 08	699	0.1−	0.8+
1992 04 07	691	0.3+	0.3+	1998 05 26	704	1.0−	0.2−	1999 09 08	699	0.5+	0.8+
1992 04 07	691	0.2+	0.1−	1998 05 26	704	0.4+	0.1+	1999 09 08	699	0.2+	0.0
1994 09 28	691	0.4−	0.2−	1998 05 26	704	0.5−	0.2+	1999 09 09	704	0.3−	0.0
1994 09 28	691	0.4−	0.2−	1999 09 05	703	0.2+	0.4+	1999 09 09	704	0.2+	0.7+
1994 09 28	691	0.4−	0.0	1999 09 05	703	0.2−	0.1−	1999 09 09	704	0.0	0.5+
1997 03 16	691	0.1−	0.1−	1999 09 05	703	0.5+	0.0	1999 09 09	704	0.1+	0.1+
1997 03 16	691	0.4−	0.1−	1999 09 05	703	0.1−	0.2−	1999 09 09	704	0.4+	0.2−
1997 03 16	691	0.4−	0.0	1999 09 07	704	0.3−	0.4−	1999 09 14	704	0.0	0.4−
1998 05 23	704	0.5−	1.2−	1999 09 07	704	0.0	0.3−	1999 09 14	704	0.3−	0.2−
1998 05 23	704	(2.0− 2.2−)		1999 09 07	704	0.2−	0.3−	1999 09 14	704	0.3−	0.2+
1998 05 23	704	0.4+	0.8+	1999 09 07	704	0.3+	0.1−	1999 09 14	704	0.9+	0.4−
1998 05 23	704	1.7+	0.2+	1999 09 07	704	0.3−	0.3+	1999 09 14	704	0.1+	0.6−

1999 RY₁₅₅ = 1994 AZ₅

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	344.01031		(2000.0)	P	Q
n	0.29747199	ω	50.32971	+0.99668382	+0.05518070
a	2.2224841	Ω	306.42553	−0.07584726	+0.89617629
e	0.1979499	i	4.26239	+0.02947121	+0.44025351
P	3.31	H	16.1	G 0.15	U 4

Residuals in seconds of arc

1994 01 06	691	0.4+	1.2−	1999 09 07	704	0.1+	0.2−	1999 09 14	704	0.4+	0.6−
1994 01 06	691	0.5+	0.1+	1999 09 07	704	0.1+	0.3−	1999 10 02	704	0.1+	1.1+
1994 01 06	691	0.2−	0.2−	1999 09 07	704	0.0	0.4−	1999 10 02	704	0.4−	0.1−
1994 01 17	691	0.6−	0.4+	1999 09 08	699	0.4−	0.2−	1999 10 02	704	0.7−	0.0
1994 01 17	691	0.2−	0.5+	1999 09 08	699	0.1+	0.3−	1999 10 02	704	0.5−	0.3−
1994 01 17	691	0.1+	0.4+	1999 09 08	699	0.2+	0.2+	1999 10 07	703	0.7+	0.7+
1999 08 22	699	0.6−	0.9+	1999 09 09	704	0.3−	0.0	1999 10 07	703	0.4+	0.1+
1999 08 22	699	0.5+	0.9+	1999 09 09	704	0.5+	0.2−	1999 10 07	703	0.8+	0.3+
1999 08 22	699	0.4−	0.7+	1999 09 09	704	0.1+	0.3+	1999 10 07	703	0.7+	0.7+
1999 09 05	703	0.8+	0.2+	1999 09 09	704	0.4−	0.2+	1999 10 07	704	0.3+	0.6+
1999 09 05	703	0.2−	0.2+	1999 09 09	704	0.0	0.5+	1999 10 07	704	1.0−	0.1−
1999 09 05	703	0.2+	0.4−	1999 09 14	704	0.0	0.1−	1999 10 07	704	0.7+	0.1−

1999 09 05	703	1.0−	0.3−	1999 09 14	704	0.0	0.8−	1999 10 07	704	1.7−	0.4−
1999 09 07	704	0.3+	0.2−	1999 09 14	704	0.0	0.8−				
1999 09 07	704	0.3+	0.3−	1999 09 14	704	0.4+	1.1−				

1999 RK₁₅₇ = 1995 OP₁₀ = 1998 CJ₃

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	58.64372		(2000.0)	P		Q	
<i>n</i>	0.26054877	<i>ω</i>	119.04838	−0.24402363		+0.96687362	
<i>a</i>	2.4277839	<i>Ω</i>	136.61591	−0.92334998		−0.20804455	
<i>e</i>	0.1750668	<i>i</i>	6.25895	−0.29644101		−0.14789481	
<i>P</i>	3.78	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 07 21	033	0.3+	1.0+	1999 09 07	704	0.3−	0.0	1999 09 13	704	0.5+	0.1+
1995 07 23	033	0.0	0.8−	1999 09 07	704	0.5−	0.1−	1999 09 13	704	0.4+	0.2−
1995 07 23	033	0.3−	0.0	1999 09 07	704	0.6−	0.1−	1999 09 13	704	0.9+	0.5−
1998 02 06	809	1.0+	1.3+	1999 09 07	704	0.9−	0.5−	1999 09 30	704	0.8+	0.2+
1998 02 06	809	0.7+	1.4+	1999 09 07	704	0.4−	0.0	1999 09 30	704	0.8−	0.3+
1998 02 06	809	0.9+	1.2+	1999 09 09	704	0.3+	0.7+	1999 09 30	704	0.2+	0.3−
1998 02 07	809	0.5−	0.5−	1999 09 09	704	0.2−	0.2+	1999 09 30	704	0.0	1.7−
1998 02 07	809	0.9−	0.1−	1999 09 09	704	0.2−	0.9+	1999 09 30	470	(0.9+	3.4+)
1998 02 07	809	0.4−	0.4−	1999 09 09	704	0.1−	0.5+	1999 09 30	470	(1.3+	2.2+)
1999 08 12	699	0.2+	0.6+	1999 09 09	704	0.3−	0.3+	1999 09 30	470	(0.5+	3.1+)
1999 08 12	699	0.2−	0.5+	1999 09 13	704	0.3+	0.4+	1999 10 01	468	0.3+	0.7+
1999 08 12	699	0.1−	0.7+	1999 09 13	704	0.2−	0.2+	1999 10 01	468	0.3+	0.5−

1999 RR₁₅₇ = 1990 TM₁₆ = 1990 VZ₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	343.34843		(2000.0)	P		Q	
<i>n</i>	0.21125501	<i>ω</i>	347.74883	+0.99895036		+0.03806389	
<i>a</i>	2.7921026	<i>Ω</i>	10.17327	−0.01908411		+0.85156631	
<i>e</i>	0.2312379	<i>i</i>	8.29498	−0.04164100		+0.52286323	
<i>P</i>	4.67	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1990 10 15	675	(1.3+	4.4+)	1999 09 07	699	0.0	0.0	1999 09 13	704	0.0	0.9−
1990 10 15	675	(0.1−	3.5+)	1999 09 09	704	0.4−	0.3−	1999 09 30	704	0.3−	0.2−
1990 10 17	675	(0.2−	6.3−)	1999 09 09	704	0.8−	1.0+	1999 09 30	704	0.1−	0.2−
1990 10 17	675	(0.1−	8.8−)	1999 09 09	704	0.0	0.6+	1999 09 30	704	0.4−	0.9−
1990 11 11	675	0.7−	0.8−	1999 09 09	704	0.6+	0.5+	1999 09 30	704	0.6−	0.1+
1990 11 11	675	1.5+	0.4+	1999 09 09	704	0.8+	1.9+	1999 09 30	704	0.8−	0.0
1990 11 13	675	0.5−	0.2+	1999 09 13	704	0.2+	0.0	1999 10 07	704	1.3+	0.2−
1990 11 13	675	0.3−	0.4+	1999 09 13	704	0.1−	1.0−	1999 10 07	704	0.4+	0.4−
1999 09 07	699	0.0	0.2−	1999 09 13	704	0.3+	0.5−	1999 10 07	704	0.3−	0.4+
1999 09 07	699	0.5−	0.3−	1999 09 13	704	0.1−	0.2−	1999 10 07	704	1.0+	0.9+

1999 RZ₁₅₇ = 1992 RS₆ = 1998 HF₇₃

Id. G. V. Williams, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	321.51371		(2000.0)	P		Q	
<i>n</i>	0.27897017	<i>ω</i>	332.22107	+0.91330821		−0.40455729	
<i>a</i>	2.3196949	<i>Ω</i>	51.72014	+0.38386793		+0.81660928	
<i>e</i>	0.1552990	<i>i</i>	3.42670	+0.13606445		+0.41168273	
<i>P</i>	3.53	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1992 09 02	809	2.3+	2.5−	1999 08 12	699	1.0+	1.0+	1999 09 09	704	0.9−	1.0−
1992 09 02	809	1.3+	1.7−	1999 08 12	699	(2.4+	0.8+)	1999 09 09	704	0.1−	0.0
1992 09 02	809	1.1+	2.4−	1999 09 07	699	0.1−	1.0+	1999 09 13	704	0.3−	0.5−
1992 09 03	809	0.3−	2.4−	1999 09 07	704	0.1−	0.1+	1999 09 13	704	0.0	0.3+
1998 04 21	704	0.0	0.5−	1999 09 07	699	0.4−	0.7+	1999 09 13	704	0.1−	0.3−
1998 04 21	704	1.7+	0.7−	1999 09 07	704	0.2−	0.0	1999 09 13	704	0.2−	0.2−
1998 04 21	704	1.1−	1.3−	1999 09 07	704	0.4−	0.5+	1999 09 13	704	0.1−	0.1+
1998 04 21	704	(4.9−	0.4+)	1999 09 07	704	0.2+	0.1+	1999 09 30	704	1.2−	1.8+

1998 04 22	704	0.3+	0.4+	1999 09 07	699	0.3+	1.4+	1999 09 30	704	1.3−	0.9+
1998 04 22	704	0.3−	0.5+	1999 09 07	704	0.3−	0.9+	1999 09 30	704	0.7−	0.8+
1998 04 22	704	1.0−	0.4+	1999 09 09	704	0.4−	0.3+	1999 09 30	704	0.3−	0.5+
1998 04 22	704	0.1−	0.2+	1999 09 09	704	0.3+	0.3+				
1999 08 12	699	0.5+	0.2+	1999 09 09	704	1.4+	0.2−				

1999 RB₁₅₈ = 1997 HB₆

Id. G. V. Williams, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	32.17634		(2000.0)	P		Q	
<i>n</i>	0.17442899	<i>ω</i>	302.48599	+0.46999413		+0.88236896	
<i>a</i>	3.1724170	<i>Ω</i>	355.36455	−0.68358531		+0.34735547	
<i>e</i>	0.0876206	<i>i</i>	16.55944	−0.55840544		+0.31744163	
<i>P</i>	5.65	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 04 28	704	0.5−	0.3−	1999 09 07	704	0.1+	0.5−	1999 09 13	704	0.2−	0.2−
1997 04 28	704	1.0−	0.2+	1999 09 07	699	0.3−	0.4+	1999 09 30	704	0.0	0.5−
1997 04 28	704	(1.0−	2.9+)	1999 09 07	704	0.0	0.2−	1999 09 30	704	0.2−	0.3−
1997 04 28	704	1.0−	0.8−	1999 09 07	704	0.1−	0.5−	1999 09 30	704	0.1+	0.2−
1997 04 28	704	(3.8−	1.2−)	1999 09 07	704	0.1−	0.1−	1999 09 30	704	0.3−	0.4−
1997 04 29	704	0.8+	0.5+	1999 09 07	699	0.5−	0.7+	1999 09 30	704	0.1+	0.0
1997 04 29	704	0.2+	0.2−	1999 09 07	704	0.3+	0.1−	1999 10 04	703	0.3+	0.3+
1997 04 29	704	0.9+	0.4+	1999 09 09	704	0.1−	0.4−	1999 10 04	703	0.4+	0.5+
1997 04 29	704	0.5+	0.0	1999 09 09	704	0.6−	0.3−	1999 10 04	703	0.6+	0.1+
1999 08 12	699	0.4+	0.8+	1999 09 09	704	0.9−	0.8−	1999 10 04	703	1.2+	0.8+
1999 08 12	699	0.3−	0.2−	1999 09 09	704	0.8−	0.7−	1999 10 07	704	0.7+	0.3−
1999 08 12	699	0.1−	0.7+	1999 09 09	704	0.7−	1.0−	1999 10 07	704	0.4+	0.4+
1999 08 12	699	0.1−	0.1−	1999 09 13	704	0.1−	0.4−	1999 10 07	704	0.4+	0.2+
1999 08 12	699	0.8+	1.0+	1999 09 13	704	0.1+	0.4−	1999 10 07	704	1.0−	1.4+
1999 08 12	699	1.4+	0.2+	1999 09 13	704	0.0	0.2−				
1999 09 07	699	0.0	0.4+	1999 09 13	704	0.2−	0.2−				

1999 RF₁₅₈ = 1992 EP₁₉

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	332.05520		(2000.0)	P		Q	
<i>n</i>	0.20276062	<i>ω</i>	266.08258	+0.98582090		−0.15897121	
<i>a</i>	2.8695490	<i>Ω</i>	103.05873	+0.16732832		+0.90730654	
<i>e</i>	0.0871346	<i>i</i>	3.16096	+0.01258559		+0.38925954	
<i>P</i>	4.86	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1992 03 01	809	0.8−	0.4+	1999 09 07	699	1.3+	0.8+	1999 09 13	704	0.3+	0.7−
1992 03 04	809	0.9+	0.2−	1999 09 07	704	0.4−	1.1+	1999 09 13	704	0.2−	0.6−
1999 09 07	699	(0.5+	2.6+)	1999 09 09	704	0.4+	0.1+	1999 09 13	704	0.5−	0.6−
1999 09 07	704	0.0	0.7+	1999 09 09	704	1.1−	0.2−	1999 09 13	704	0.1−	0.7−
1999 09 07	699	(0.1+	2.4+)	1999 09 09	704	0.0	0.1−	1999 10 04	703	0.5+	0.3+
1999 09 07	704	0.4−	0.5+	1999 09 09	704	0.1−	0.8−	1999 10 04	703	0.3−	0.8+
1999 09 07	704	0.6−	0.3−	1999 09 09	704	0.6+	0.5−	1999 10 04	703	0.2+	0.2−
1999 09 07	704	0.1+	1.0+	1999 09 13	704	0.5+	0.4−	1999 10 04	703	0.4−	0.3−

1999 RK₁₅₈ = 1997 ED₃₅

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	55.26665		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.20228178	ω	163.51519	+0.09943850	+0.99376800
a	2.8740758	Ω	112.16925	−0.91896424	+0.11113089
e	0.0603491	i	3.11791	−0.38159757	−0.00866493
P	4.87	H	14.8	G 0.15	U 1

1999 OCT. 26

1992 02 09	691	0.2+	0.5−	1999 09 07	699	0.1+	1.5+	1999 09 13	704	0.5−	0.2+
1997 03 04	704	0.8−	0.4−	1999 09 07	704	0.2+	1.0−	1999 09 13	704	0.3+	0.0
1997 03 04	704	1.2+	1.3+	1999 09 07	699	0.2+	0.1−	1999 09 13	704	0.5−	0.1−
1997 03 06	704	0.1+	0.3+	1999 09 07	704	0.2+	1.7−	1999 09 13	704	0.1+	0.6+
1997 03 06	704	0.2−	0.2−	1999 09 07	704	0.0	0.7−	1999 10 04	703	0.1+	0.3+
1998 04 24	327	0.0	0.8+	1999 09 07	704	0.2−	0.4−	1999 10 04	703	0.1−	0.9+
1998 04 24	327	0.2−	0.1+	1999 09 07	699	0.3+	0.1+	1999 10 04	703	0.5+	0.8+
1998 04 24	327	0.6+	0.6+	1999 09 07	704	0.4−	0.8−	1999 10 04	703	0.0	0.0
1998 05 24	704	0.3+	0.1−	1999 09 09	704	0.5−	1.0+				
1998 05 24	704	0.3−	0.4+	1999 09 09	704	0.1+	0.1−				

1999 RL₁₅₈ = 1987 GR = 1992 EO₂₉ = 1994 PD₂₃

Id. G. V. Williams, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	155.38546	(2000.0)		P	Q		
<i>n</i>	0.19635547	ω	45.65735	−0.99899985	+0.02974716		
<i>a</i>	2.9316180	Ω	136.01512	−0.03990663	−0.92992233		
<i>e</i>	0.0141127	<i>i</i>	2.75523	+0.02016818	−0.36655091		
<i>P</i>	5.02	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 04 01	675	(3.9+ 2.1+)	1998 06 03	704	1.2+	1.1+	1999 09 07	704	0.5+	0.2+
1987 04 01	675	(7.4+ 0.2+)	1998 06 03	704	0.1+	0.3−	1999 09 09	704	0.1+	0.5−
1987 04 03	675	0.6+ 1.4+	1998 06 03	704	0.5+	0.0	1999 09 09	704	0.1+	0.0
1987 04 03	675	1.7+ 0.3+	1998 06 03	704	0.9−	0.7−	1999 09 09	704	0.5−	0.2+
1992 03 03	809	0.1− 0.9−	1998 06 26	704	0.8−	0.3−	1999 09 09	704	0.3+	0.4+
1992 03 07	809	1.7− 0.2+	1998 06 26	704	1.0+	0.4−	1999 09 09	704	0.5+	0.5+
1992 04 06	809	(2.3− 0.6+)	1998 06 26	704	1.5−	1.6+	1999 09 13	704	0.4−	0.5+
1994 08 12	809	(2.6+ 0.3+)	1998 06 26	704	0.3+	1.0−	1999 09 13	704	0.9+	0.1+
1994 08 12	809	1.8+ 0.2−	1998 06 26	704	(2.3− 1.0−)		1999 09 13	704	0.8−	0.7−
1994 08 12	809	1.2+ 0.6+	1999 09 07	699	0.0	0.7+	1999 09 13	704	0.4+	0.1+
1994 08 13	809	0.3+ 1.5−	1999 09 07	704	0.9+	0.0	1999 09 13	704	0.9−	0.2+
1994 08 13	809	0.0 1.8−	1999 09 07	699	0.2−	0.4+	1999 09 30	704	0.4−	0.8−
1994 08 13	809	0.4− 1.7−	1999 09 07	704	0.9+	0.3−	1999 09 30	704	0.0	0.4−
1994 09 06	809	1.8− 1.1+	1999 09 07	704	0.6+	0.7+	1999 09 30	704	0.8−	0.3+
1994 09 06	809	1.7− 0.6+	1999 09 07	704	0.0	0.7+	1999 09 30	704	0.4−	0.1−
1994 09 06	809	(2.1− 0.3+)	1999 09 07	699	0.3−	1.2+				

1999 RR₁₅₈ = 1998 FP₁₁₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	23.75635	(2000.0)		P	Q		
<i>n</i>	0.17376023	ω	308.09166	+0.44785928	+0.89263280		
<i>a</i>	3.1805517	Ω	348.18620	−0.72174450	+0.32708222		
<i>e</i>	0.2498037	<i>i</i>	14.50308	−0.52773758	+0.31019979		
<i>P</i>	5.67	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1997 01 10	691	0.1+ 0.3−	1999 08 12	699	0.1−	0.4+	1999 09 09	704	0.1+	0.4+
1997 01 10	691	0.1− 0.2−	1999 09 07	699	0.6−	1.1+	1999 09 14	704	0.1+	0.1−
1997 01 10	691	0.5− 0.1−	1999 09 07	704	0.2+	0.3−	1999 09 14	704	0.3+	0.6−
1998 03 31	704	1.3− 0.6−	1999 09 07	699	0.5−	1.3+	1999 09 14	704	0.9+	0.6−
1998 03 31	704	0.1− 1.3+	1999 09 07	704	0.3+	0.6−	1999 09 14	704	0.2+	0.4−
1998 03 31	704	1.1+ 0.9+	1999 09 07	704	0.1+	0.9−	1999 09 14	704	0.5+	0.6−
1998 03 31	704	(2.4− 0.7+)	1999 09 07	704	0.3+	0.4−	1999 10 07	704	0.0	0.3+
1998 04 01	704	0.8+ 1.2−	1999 09 07	699	0.5−	0.3−	1999 10 07	704	0.7−	0.8+
1998 04 01	704	0.7+ 0.4+	1999 09 07	704	0.2+	0.8−	1999 10 07	704	0.5+	0.5+
1998 04 01	704	0.9− 0.6−	1999 09 09	704	0.6−	0.3+	1999 10 07	106	0.4−	0.4+
1998 04 01	704	0.5− 0.5−	1999 09 09	704	0.1−	0.0	1999 10 07	106	0.3+	0.2+
1999 08 12	699	0.4− 0.0	1999 09 09	704	0.2+	0.5−				
1999 08 12	699	0.2− 0.4+	1999 09 09	704	0.0	0.4−				

1999 RU₁₅₈ = 1998 KL₆₁

Id. A. Doppler

M.P.C. 36453

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	342.27709	(2000.0)		P	Q		
<i>n</i>	0.18452382	ω	200.44373	+0.99764745	+0.00162005		
<i>a</i>	3.0556323	Ω	159.10658	+0.01391889	+0.97411070		
<i>e</i>	0.0866935	<i>i</i>	11.07954	−0.06712551	+0.22606573		
<i>P</i>	5.34	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 23	704	0.6+ 0.1−	1999 09 07	704	0.1−	0.1+	1999 09 30	704	0.4+	0.0
1998 05 23	704	0.9− 0.8+	1999 09 07	704	0.3−	0.0	1999 09 30	704	0.1+	0.7+
1998 05 23	704	1.0+ 1.4−	1999 09 09	704	0.2−	0.1−	1999 09 30	704	0.5+	0.2+
1998 05 26	704	0.9− 0.0	1999 09 09	704	0.2−	0.3+	1999 09 30	704	0.5−	0.6−
1998 05 26	704	0.6+ 0.9+	1999 09 09	704	0.4+	0.0	1999 10 07	704	0.0	0.6+
1998 05 26	704	0.3+ 1.0+	1999 09 09	704	0.2−	0.5+	1999 10 07	704	0.5+	0.3+
1998 05 26	704	0.8− 1.3−	1999 09 09	704	0.5−	0.0	1999 10 07	704	0.3−	0.0
1998 05 26	704	(2.6− 0.7+)	1999 09 14	704	0.8+	0.2−	1999 10 07	704	0.6−	0.1−
1999 09 07	704	0.4− 0.1+	1999 09 14	704	0.0	0.3−	1999 10 07	704	0.4−	0.6−
1999 09 07	704	0.1− 0.1−	1999 09 14	704	0.8+	0.6−				
1999 09 07	704	0.0 0.1+	1999 09 30	704	0.4+	0.1−				

1999 RC₁₅₉ = 1988 BF₄ = 1998 KL₅₄

Id. G. V. Williams, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	163.22314	(2000.0)		P	Q		
<i>n</i>	0.21758210	ω	20.41364	−0.99120991	−0.10918063		
<i>a</i>	2.7377089	Ω	152.98394	+0.08655316	−0.96228319		
<i>e</i>	0.0747456	<i>i</i>	9.46738	+0.10005732	−0.24917995		
<i>P</i>	4.53	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1988 01 20	809	0.2− 0.2+	1998 05 26	704	0.3+	0.0	1999 09 08	703	0.5+	0.2+
1988 01 20	809	0.1− 0.1−	1998 05 26	704	0.9+	0.4−	1999 09 08	703	0.4+	0.7+
1988 01 20	809	0.2+ 0.4−	1998 05 26	704	1.2+	1.7+	1999 09 09	704	0.4−	0.3+
1988 01 20	809	0.4+ 0.6−	1998 06 19	704	1.0−	1.8−	1999 09 09	704	0.1−	0.1−
1988 01 20	809	0.7+ 0.3−	1998 06 19	704	0.1+	0.1−	1999 09 09	704	0.4−	0.3−
1988 01 21	809	0.9− 0.6−	1998 06 19	704	1.4+	1.7+	1999 09 09	704	0.7+	0.1+
1988 01 21	809	0.8− 0.6−	1998 06 19	704	0.3+	0.2−	1999 09 09	704	1.0−	0.5−
1993 04 16	413	0.5+ 0.8−	1998 06 19	704	1.5−	0.8+	1999 09 13	704	0.7+	0.4+
1997 03 02	691	0.0 0.6+	1999 09 07	699	0.3−	0.7−	1999 09 13	704	0.2+	0.0
1997 03 02	691	0.2− 0.9+	1999 09 07	704	0.3+	0.6−	1999 09 13	704	0.7−	0.0
1997 03 02	691	0.3+ 0.5+	1999 09 07	699	0.3−	0.5+	1999 09 13	704	0.9+	0.0
1998 05 23	704	1.3− 1.8−	1999 09 07	704	0.1−	1.6−	1999 09 30	704	0.1+	0.9−
1998 05 23	704	0.5+ 0.0	1999 09 07	704	0.8−	0.4−	1999 09 30	704	0.9−	0.5+
1998 05 23	704	0.8+ 0.7+	1999 09 07	704	0.3+	1.2−	1999 09 30	704	0.6−	0.3+
1998 05 23	704	0.1− 0.9−	1999 09 07	699	0.5−	1.2+	1999 10 04	703	0.5+	0.8+
1998 05 23	704	1.0− 0.7+	1999 09 07	704	0.1+	1.2−	1999 10 04	703	1.7+	1.4+
1998 05 26	704	0.9− 1.4−	1999 09 08	703	0.1+	0.2−	1999 10 04	703	0.1−	0.4−
1998 05 26	704	0.4− 1.2+	1999 09 08	703	0.6+	0.5+	1999 10 04	703	0.2−	0.5+

1999 RP₁₅₉ = 1998 KA₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	356.65363	(2000.0)		P	Q		
<i>n</i>	0.19738255	ω	237.46251	+0.94080707	+0.33481567		
<i>a</i>	2.9214394	Ω	102.92947	−0.29000245	+0.87569095		
<i>e</i>	0.0995740	<i>i</i>	3.10136	−0.17544414	+0.34794227		
<i>P</i>	4.99	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	2

Residuals

M.P.C. 36454

1998 05 24	704	(2.2− 2.8−)	1999 09 07	704	0.1− 0.2−	1999 09 13	704	0.4− 0.4+
1998 05 24	704	1.3− 1.6+	1999 09 07	704	0.2− 0.4+	1999 09 30	704	0.1− 0.1−
1998 05 24	704	0.8+ 0.8−	1999 09 07	704	0.4− 0.4+	1999 09 30	704	0.6− 1.0+
1998 05 24	704	(2.6+ 1.3+)	1999 09 07	699	0.9+ 0.4+	1999 09 30	704	0.0 0.7+
1998 05 24	704	0.4− 0.1+	1999 09 07	704	0.1+ 0.2−	1999 10 04	703	0.6+ 0.4+
1999 08 12	699	1.2− 1.3+	1999 09 07	704	0.5− 0.3+	1999 10 04	703	0.4− 0.2+
1999 08 12	699	0.4+ 0.5+	1999 09 09	704	0.3− 0.0	1999 10 04	703	0.3− 0.1+
1999 08 12	699	0.0 0.1+	1999 09 09	704	0.1− 0.2+	1999 10 04	703	0.7+ 0.2−

1999 RS₁₅₉ = 1998 BU₁₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	40.83294		(2000.0)	P		Q	
<i>n</i>	0.26918247	ω	142.34359	+0.26836677		+0.95988464	
<i>a</i>	2.3755902	Ω	143.02331	−0.91340154		+0.28035075	
<i>e</i>	0.1085619	<i>i</i>	7.76284	−0.30606684		+0.00499346	
<i>P</i>	3.66	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 23	691	0.3+ 0.2+	1998 04 19	704	0.3+ 1.1−	1999 09 09	704	0.0 0.5−
1998 01 23	691	0.1+ 0.0	1999 09 07	699	(0.2− 2.6+)	1999 09 09	704	0.8+ 1.1−
1998 01 23	691	0.3+ 0.1+	1999 09 07	704	0.1+ 0.3+	1999 09 09	704	0.1+ 1.2−
1998 01 28	691	0.3− 0.2+	1999 09 07	699	0.6+ 1.5+	1999 09 13	704	0.1− 0.8+
1998 01 28	691	0.0 0.1−	1999 09 07	704	0.1+ 0.8+	1999 09 13	704	0.3− 0.5+
1998 01 28	691	0.2+ 0.1+	1999 09 07	704	0.3+ 0.3+	1999 09 13	704	0.8+ 0.9+
1998 03 24	704	0.6− 1.8+	1999 09 07	704	0.2+ 0.2−	1999 09 13	704	0.3− 0.0
1998 03 24	704	0.3− 0.5+	1999 09 07	699	(1.9+ 2.1+)	1999 09 13	704	0.0 0.2+
1998 03 24	704	1.0+ 0.3−	1999 09 07	704	0.0 0.6+	1999 10 04	703	0.0 0.7−
1998 03 24	704	0.6− 0.4−	1999 09 08	703	0.2+ 0.8+	1999 10 04	703	0.2+ 0.0
1998 04 19	704	1.2− 0.2+	1999 09 08	703	0.1− 1.3−	1999 10 04	703	0.5− 0.2+
1998 04 19	704	1.2+ 0.4−	1999 09 08	703	1.0− 1.0−	1999 10 04	703	0.1+ 0.2−
1998 04 19	704	(0.9+ 2.3−)	1999 09 08	703	1.3− 0.0			

1999 RD₁₆₀ = 1998 EY₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	29.63119		(2000.0)	P		Q	
<i>n</i>	0.28273263	ω	267.82611	+0.33959438		+0.93928260	
<i>a</i>	2.2990695	Ω	22.22207	−0.80292075		+0.31676058	
<i>e</i>	0.1827743	<i>i</i>	7.47982	−0.48989175		+0.13195048	
<i>P</i>	3.49	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 01	327	0.3+ 0.7+	1999 09 07	699	0.3− 0.0	1999 09 13	704	0.5+ 0.2+
1998 03 01	327	1.1+ 0.1+	1999 09 07	699	0.6− 0.0	1999 09 13	704	0.7+ 0.1+
1998 03 01	327	0.6+ 0.7+	1999 09 07	699	0.3− 0.1+	1999 09 13	704	0.8+ 0.5+
1998 03 02	327	0.5+ 0.1+	1999 09 08	703	0.5− 0.1−	1999 09 13	704	0.1+ 0.0
1998 03 02	327	0.0 0.0	1999 09 08	703	0.4− 0.3−	1999 09 30	704	0.4− 0.0
1998 03 02	327	0.3+ 0.1+	1999 09 08	703	0.8− 0.3−	1999 09 30	704	0.0 0.1+
1998 03 04	704	1.3− 0.6−	1999 09 08	703	0.4− 0.4−	1999 09 30	704	0.1+ 0.3+
1998 03 04	704	1.9− 0.1−	1999 09 09	704	0.4+ 0.1−	1999 09 30	704	0.2− 0.3−
1998 03 04	704	(3.5− 0.5+)	1999 09 09	704	0.7− 0.2−	1999 09 30	704	0.1− 0.4−
1998 03 04	704	(7.7− 1.7−)	1999 09 09	704	0.2− 0.4−	1999 10 07	704	0.0 0.9−
1998 03 08	327	0.1+ 0.0	1999 09 09	704	0.7+ 0.6+	1999 10 07	704	0.5− 0.4−
1998 03 08	327	0.1+ 1.1−	1999 09 09	704	1.1+ 0.4+	1999 10 07	704	0.9+ 0.6+
1998 03 08	327	0.0 0.1−	1999 09 13	704	0.3+ 0.4+	1999 10 07	704	0.3− 0.6+

1999 RF₁₆₀ = 1993 FM₁₃

Id. G. V. Williams, A. Gnädig

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	338.64042		(2000.0)	P		Q	
<i>n</i>	0.22422181	ω	312.28075	+0.98720513		−0.14272816	
<i>a</i>	2.6833922	Ω	56.04390	+0.15945543		+0.88360848	
<i>e</i>	0.2355819	<i>i</i>	4.91706	+0.00001300		+0.44594252	
<i>P</i>	4.40	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1993 03 17	809	0.3− 0.1−	1999 09 08	703	1.2+ 0.2+	1999 09 13	704	0.2+ 0.1−
1993 03 18	809	0.2+ 0.1−	1999 09 08	703	0.1+ 0.3−	1999 09 13	704	0.4+ 0.2−
1993 03 23	809	0.3+ 0.7+	1999 09 08	703	0.0 0.3−	1999 09 13	704	0.2+ 0.3+
1999 07 16	704	0.4− 0.4+	1999 09 08	703	0.8− 0.8−	1999 09 13	704	0.8+ 0.8+
1999 07 16	704	0.1− 0.0	1999 09 08	703	0.6+ 0.1+	1999 09 30	704	0.1− 0.2+
1999 07 16	704	0.8+ 0.4+	1999 09 08	703	0.2+ 0.6−	1999 09 30	704	0.1+ 0.5+
1999 08 12	699	0.2− 0.3+	1999 09 08	703	0.7+ 0.0	1999 09 30	704	0.3− 0.4+
1999 08 12	699	0.8− 0.3+	1999 09 09	704	0.0 0.2+	1999 09 30	704	0.0 0.5+
1999 08 12	699	0.6− 0.1+	1999 09 09	704	0.0 0.8−	1999 09 30	704	0.3− 1.0+
1999 09 07	699	0.3− 0.0	1999 09 09	704	0.6− 0.4−	1999 10 04	703	0.3− 0.1+
1999 09 07	699	0.3− 0.3−	1999 09 09	704	0.1− 0.5−	1999 10 04	703	0.1− 0.1+
1999 09 07	699	0.1+ 0.7−	1999 09 09	704	0.0 0.6−	1999 10 04	703	0.6− 0.4+
1999 09 08	703	0.5− 0.1−	1999 09 13	704	0.7+ 0.1+	1999 10 04	703	0.3− 0.1+

1999 RG₁₆₀ = 1994 AN₁₃

Id. G. V. Williams, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	135.62263		(2000.0)	P		Q	
<i>n</i>	0.29831881	ω	92.63509	−0.94961700		+0.29687504	
<i>a</i>	2.2182762	Ω	104.64935	−0.31260599		−0.87420869	
<i>e</i>	0.0429715	<i>i</i>	5.96025	−0.02247339		−0.38421917	
<i>P</i>	3.30	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1994 01 12	691	0.9− 0.2−	1998 04 28	566	0.0 0.1+	1999 09 13	704	0.4+ 0.3−
1994 01 12	691	0.3+ 0.3−	1998 05 14	704	0.2+ 0.2−	1999 09 13	704	0.0 0.6−
1994 01 12	691	0.6− 0.3−	1998 05 14	704	0.9+ 0.3+	1999 09 13	704	0.2− 0.2+
1994 01 18	691	1.2+ 0.2+	1998 05 14	704	(2.2− 1.6−)	1999 09 13	704	1.0+ 0.1−
1994 01 18	691	0.4+ 0.2+	1998 05 14	704	1.0− 0.1−	1999 09 13	704	0.0 0.3+
1994 01 18	691	0.0 0.5+	1998 08 12	699	0.8− 0.3+	1999 09 30	704	0.6+ 0.6+
1996 10 17	691	0.4+ 0.0	1998 08 12	699	0.2− 0.7+	1999 09 30	704	0.1+ 0.7+
1996 10 17	691	0.2+ 0.3−	1998 08 12	699	0.3+ 0.1+	1999 09 30	704	0.3− 0.8−
1996 10 17	691	1.0− 0.1+	1999 09 07	699	0.2+ 0.0	1999 09 30	704	0.3− 0.0
1998 04 19	704	0.1+ 1.0−	1999 09 07	699	0.1+ 0.1+	1999 09 30	704	(2.1− 1.0+)
1998 04 19	704	0.3− 0.8+	1999 09 07	699	0.4+ 0.4−	1999 10 04	703	(1.2+ 2.7+)
1998 04 19	704	0.2+ 0.3+	1999 09 09	704	0.4+ 0.2+	1999 10 04	703	0.1− 1.3+
1998 04 19	704	0.6+ 0.2−	1999 09 09	704	0.6+ 0.4−	1999 10 04	703	(2.1+ 1.7+)
1998 04 19	704	1.0− 0.3−	1999 09 09	704	0.3− 0.7−	1999 10 04	703	0.5− 0.6−
1998 04 28	566	0.0 0.0	1999 09 09	704	0.7− 0.7+			
1998 04 28	566	0.2+ 0.0	1999 09 09	704	0.4− 1.4−			

1999 RN₁₆₀ = 1990 TS₁₅

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	299.96886		(2000.0)	P		Q	
<i>n</i>	0.20988393	ω	40.63059	+0.58913390		−0.80715731	
<i>a</i>	2.8042491	Ω	13.41579	+0.69294330		+0.48069807	
<i>e</i>	0.1563878	<i>i</i>	9.34153	+0.41563306		+0.34267540	
<i>P</i>	4.70	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1990 10 13	095	(1.9+ 2.9−)	1999 09 07	699	0.3− 0.5+	1999 09 13	704	0.5+ 0.0
1990 10 13	095	0.7+ 1.3−	1999 09 07	699	0.1− 0.4+	1999 09 13	704	1.3+ 0.3+
1990 10 17	095	1.0+ 1.7−	1999 09 08	703	(3.6+ 0.2−)	1999 09 30	704	0.7− 0.1−
1990 10 17	095	(5.7+ 0.3−)	1999 09 08	703	0.0 0.4+	1999 09 30	704	0.2− 0.0
1992 03 01	809	0.2+ 0.7+	1999 09 08	703	0.0 0.3+	1999 09 30	704	0.3− 0.2−
1992 03 09	809	0.1− 0.2+	1999 09 08	703	0.4− 0.3−	1999 09 30	704	0.6− 0.2−

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1997 04 15	691	0.6−	0.7−	1999 09 09	704	0.5+	0.2+	1999 09 30	704	0.5−	0.1−
1997 04 15	691	0.7−	1.2−	1999 09 09	704	1.0+	1.0−	1999 10 07	704	0.1−	0.0
1997 04 15	691	0.7−	0.8−	1999 09 09	704	0.7+	0.9−	1999 10 07	704	0.2−	1.1+
1997 05 02	910	0.3−	0.8−	1999 09 09	704	0.2+	1.4−	1999 10 07	704	0.3−	0.4+
1997 05 02	910	0.3−	0.8−	1999 09 09	704	0.1+	1.3−	1999 10 07	704	0.2−	0.8+
1997 05 02	910	0.3−	0.8−	1999 09 13	704	0.5+	0.4−	1999 10 07	704	0.5−	0.2−
1999 09 07	699	0.5−	0.3+	1999 09 13	704	0.6+	0.0				

1999 RO₁₆₀ = 1989 TV₁₁

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.19149067	ω	237.80010	−0.31977023	+0.94660135		
<i>a</i>	2.9810617	Ω	13.73459	−0.80050468	−0.24667624		
<i>e</i>	0.0531384	<i>i</i>	9.97948	−0.50689176	−0.20759748		
<i>P</i>	5.15	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1989 10 01	807	0.4+	0.1+	1989 10 07	809	0.2+	0.0	1999 09 13	704	0.3+	0.3+
1989 10 03	807	0.7+	0.1−	1989 10 07	809	0.4+	0.3+	1999 09 13	704	0.2+	0.6+
1989 10 04	809	1.1−	0.1+	1999 09 07	699	0.5−	0.7+	1999 09 13	704	0.0	0.4+
1989 10 04	809	1.1−	0.1+	1999 09 07	699	0.2−	1.2+	1999 09 30	704	0.0	0.4+
1989 10 04	809	0.9−	0.1+	1999 09 07	699	0.3−	0.3+	1999 09 30	704	0.2+	0.6−
1989 10 06	809	0.2+	0.2−	1999 09 09	704	0.4+	0.1−	1999 09 30	704	0.4−	0.1−
1989 10 06	809	0.4+	0.1−	1999 09 09	704	0.6+	1.7−	1999 09 30	704	0.2+	0.2+
1989 10 06	809	0.8+	0.1−	1999 09 09	704	0.5+	0.5−	1999 09 30	704	0.5−	0.1+
1989 10 07	809	0.1+	0.1−	1999 09 09	704	0.5−	1.0−				

1999 RT₁₆₀ = 1996 VV₉ = 1998 HF₁₁₃

Id. G. V. Williams, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28317526	ω	346.05096	−0.48657736	−0.87001249		
<i>a</i>	2.2966731	Ω	132.99642	+0.81160915	−0.48383287		
<i>e</i>	0.0458261	<i>i</i>	6.24041	+0.32331572	−0.09478411		
<i>P</i>	3.48	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1994 01 10	691	0.1−	0.4+	1998 04 23	704	0.3+	0.1−	1999 09 07	704	0.3−	0.1−
1994 01 10	691	0.1+	0.3+	1998 04 23	704	0.2−	0.3−	1999 09 07	704	0.4−	0.3+
1994 01 10	691	0.2+	0.5+	1998 04 23	704	0.7+	0.5+	1999 09 07	699	0.0	1.0+
1996 11 03	691	0.3−	0.2+	1998 04 24	704	1.1+	0.0	1999 09 08	703	0.1−	0.8+
1996 11 03	691	0.2−	0.1−	1998 04 24	704	0.4+	1.8+	1999 09 08	703	1.4−	0.1+
1996 11 03	691	0.3−	0.0	1998 04 24	704	1.1+	0.3−	1999 09 08	703	1.0+	0.0
1996 11 04	691	0.2−	0.2−	1998 04 24	704	0.3−	1.0−	1999 09 08	703	0.5+	0.2−
1996 11 04	691	0.3−	0.2−	1998 04 24	704	0.3+	0.9−	1999 09 08	703	0.3−	0.4+
1996 11 04	691	0.4−	0.1+	1998 05 16	704	0.5−	0.0	1999 09 08	703	0.7−	0.0
1996 11 07	691	1.7+	0.2−	1998 05 16	704	0.4−	0.5+	1999 09 08	703	0.7+	1.0−
1996 11 07	691	0.0	0.2+	1998 05 16	704	0.1−	1.6+	1999 09 08	703	1.0−	0.8−
1996 11 07	691	0.1+	0.2+	1998 05 16	704	1.8−	0.4+	1999 09 09	704	0.4+	0.5−
1998 03 24	704	0.9−	0.2−	1998 05 16	704	0.8+	1.4+	1999 09 09	704	0.5+	0.2−
1998 03 24	704	0.3−	0.6+	1998 05 23	699	0.4+	0.6−	1999 09 09	704	0.2−	0.1−
1998 03 24	704	0.6−	0.6−	1998 05 23	699	0.1+	0.3+	1999 09 09	704	0.3−	0.9−
1998 03 24	704	0.3+	0.0	1998 05 23	699	0.2+	1.0+	1999 09 09	704	0.0	0.6+
1998 03 24	704	1.4−	0.2−	1999 08 12	699	0.3+	0.1−	1999 09 13	704	0.4−	1.0+
1998 04 21	704	1.2−	0.3+	1999 08 12	699	0.2−	0.4+	1999 09 13	704	0.1+	0.1+
1998 04 21	704	0.5−	0.7−	1999 08 12	699	0.6+	0.8−	1999 09 13	704	0.5+	0.6+
1998 04 21	704	0.5−	0.3−	1999 09 07	699	0.5−	0.2+	1999 09 13	704	0.4+	0.8+
1998 04 21	704	0.8+	0.7−	1999 09 07	704	0.2−	0.2−	1999 09 30	704	0.3+	0.2−
1998 04 21	704	1.5+	0.6−	1999 09 07	704	0.1−	0.1+	1999 09 30	704	0.5−	0.1+
1998 04 23	704	0.0	0.9−	1999 09 07	704	0.4−	0.1−	1999 09 30	704	0.7+	0.4−
1998 04 23	704	0.4+	0.5−	1999 09 07	699	0.4+	0.2+	1999 09 30	704	0.5+	0.3−

1999 RG₁₆₁ = 1998 FR₄₂

Id. A. Doppler

M.P.C. 36455

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.24405069	ω	82.52988	+0.43355465	+0.90055858		
<i>a</i>	2.5360006	Ω	213.22249	−0.84810025	+0.39577906		
<i>e</i>	0.1572064	<i>i</i>	3.34931	−0.30455924	+0.17986990		
<i>P</i>	4.04	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	0.1−	0.3−	1998 04 19	704	1.6+	0.9+	1999 09 07	704	0.2+	0.1−
1998 03 20	704	0.3−	0.2+	1998 04 19	704	1.6−	0.5−	1999 09 07	704	0.3+	0.6−
1998 03 20	704	1.1+	1.8+	1998 04 19	704	0.5−	1.0+	1999 09 07	704	0.1+	0.4−
1998 03 20	704	1.1+	0.4+	1999 08 08	699	(0.2−	2.1+)	1999 09 07	704	0.2−	0.7−
1998 03 22	704	0.9−	0.2+	1999 08 08	699	0.2+	1.2+	1999 09 09	704	0.7+	1.2−
1998 03 22	704	1.2+	1.1+	1999 08 08	699	(0.6+	3.4+)	1999 09 09	704	1.0+	0.2+
1998 03 22	704	0.4+	1.6−	1999 08 22	699	0.8−	0.9−	1999 09 09	704	0.8+	0.6+
1998 03 22	704	1.7−	1.0−	1999 08 22	699	0.1+	1.1+	1999 09 09	704	0.3−	1.1+
1998 03 29	704	(1.8−	3.1−)	1999 08 22	699	0.9−	0.2−	1999 09 14	704	0.2+	0.5−
1998 03 29	704	0.6+	1.5−	1999 09 05	699	0.3−	0.1−	1999 09 14	704	0.2+	0.0
1998 03 29	704	1.2−	1.5−	1999 09 05	699	0.1−	0.2+	1999 09 14	704	0.1−	0.2+
1998 03 29	704	(4.8−	2.0−)	1999 09 05	699	0.9−	0.2+	1999 09 14	704	0.1−	0.2−
1998 04 19	704	(5.3−	0.0)	1999 09 07	704	0.3+	0.4+	1999 09 14	704	0.1−	1.1−

1999 RM₁₆₁ = 1997 EZ₂₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23416286	ω	73.72913	+0.73405100	−0.66675284		
<i>a</i>	2.6068980	Ω	327.74845	+0.49340470	+0.65403987		
<i>e</i>	0.1200913	<i>i</i>	13.97570	+0.46660575	+0.35731288		
<i>P</i>	4.21	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 09	691	0.8+	0.2+	1999 09 05	699	0.3+	0.1+	1999 10 02	703	0.9+	0.4−
1997 01 09	691	0.8+	0.1−	1999 09 07	704	0.7−	0.0	1999 10 02	703	0.9−	0.1+
1997 01 09	691	0.9+	0.2+	1999 09 07	704	0.4−	0.3−	1999 10 02	703	0.2−	0.4+
1997 01 31	691	0.0	0.4−	1999 09 07	704	0.4−	0.3+	1999 10 02	703	0.4+	0.3−
1997 01 31	691	0.4−	0.2−	1999 09 07	704	0.5−	0.1+	1999 10 02	704	1.2+	0.1+
1997 01 31	691	0.2−	0.2−	1999 09 07	704	0.4−	0.2+	1999 10 02	704	0.2+	1.0+
1997 03 11	684	0.4−	0.5+	1999 09 09	704	0.4+	1.0−	1999 10 02	704	0.1−	0.7−
1997 03 11	684	0.4−	0.6+	1999 09 09	704	1.1−	1.0−	1999 10 02	704	1.4+	0.3−
1997 03 11	684	0.2−	0.3+	1999 09 09	704	0.1−	0.6+	1999 10 02	704	1.1+	0.5+
1997 03 13	684	0.1−	0.3−	1999 09 09	704	0.4−	0.8−	1999 10 07	703	(1.0+	5.7+)
1997 03 13	684	0.2−	0.2−	1999 09 14	704	0.3+	0.1+	1999 10 07	703	0.0	0.1−
1997 03 13	684	0.1−	0.1−	1999 09 14	704	0.2−	0.0	1999 10 07	703	0.2−	0.2+
1999 09 05	699	0.7−	0.8+	1999 09 14	704	0.4+	0.0	1999 10 07	703	0.0	0.3−
1999 09 05	699	0.2−	0.7+	1999 09 14	704	0.1+	0.4+				

1999 RO₁₆₁ = 1998 KM₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17809863	ω	184.02544	+0.75232276	+0.65839624		
<i>a</i>	3.1286886	Ω	134.76880	−0.60352767	+0.70273511		
<i>e</i>	0.1641368	<i>i</i>	1.84922	−0.26413030	+0.26958811		
<i>P</i>	5.53	<i>H</i>	13.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 22	704	0.2−	0.7−	1998 05 24	704	0.6−	0.4+	1999 09 13	704	0.1−	0.3+
1998 04 22	704	0.1−	0.4−	1998 05 24	704	0.1+	0.4+	1999 09 29	704	1.0+	0.6−
1998 04 22	704	0.7−	0.5−	1998 05 24	704	0.1−	0.7−	1999 09 29	704	0.2−	0.5−
1998 04 22	704	0.4−	0.7+	1998 05 28	699	0.5+	0.5+	1999 09 29	704	1.1+	1.7−
1998 04 25	699	0.2−	0.3+	1998 05 28	699	0.3+	0.0	1999 09 29	704	0.7+	1.6−
1998 04 25	699	0.2+	1.4+	1998 05 28	699	0.6−	0.1−	1999 09 30	704	0.0	0.4−
1998 04 25	699	0.1+	0.8+	1999 09 07	704	0.4+	0.6+	1999 09 30	704	0.1−	0.8−
1998 05 01	704	0.1−	0.1+	1999 09 07	704	0.1−	1.0+	1999 09 30	704	0.3+	0.7−
1998 05 01	704	0.0	0.7−	1999 09 07	704	0.2+	0.4+	1999 09 30	704	0.1+	0.8−

1998 05 01	704	0.4−	0.4−	1999 09 07	704	0.3−	0.9+	1999 09 30	704	0.1−	1.6−
1998 05 01	704	0.4+	0.4−	1999 09 07	704	0.2+	0.7+	1999 10 04	703	0.5−	0.4+
1998 05 01	704	0.2+	0.3−	1999 09 09	704	1.2−	0.3−	1999 10 04	703	0.2−	0.2+
1998 05 22	704	0.2+	0.1−	1999 09 09	704	0.1−	0.5+	1999 10 04	703	0.1+	0.5+
1998 05 22	704	0.3−	0.3+	1999 09 09	704	0.2+	0.4+	1999 10 04	703	0.2−	0.1+
1998 05 22	704	1.1+	0.2−	1999 09 09	704	0.0	0.8+	1999 10 08	106	0.1−	0.7+
1998 05 22	704	0.6+	0.3+	1999 09 13	704	0.2+	0.2+	1999 10 08	106	0.1−	0.1+
1998 05 22	704	0.4+	0.8−	1999 09 13	704	0.4+	0.1−	1999 10 08	106	0.6−	0.7+
1998 05 24	704	0.1+	0.0	1999 09 13	704	0.6−	0.1−				
1998 05 24	704	0.4−	0.4−	1999 09 13	704	0.1−	0.3+				

1999 RN₁₆₂ = 1991 BG₃ = 1997 GB₃₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	334.26649		(2000.0)		P	Williams	Q
<i>n</i>	0.20306560	ω	4.78883	+0.84661345	−0.52047810		
<i>a</i>	2.8666751	Ω	27.48776	+0.47994828	+0.65642369		
<i>e</i>	0.1317621	<i>i</i>	13.93109	+0.22998981	+0.54608652		
<i>P</i>	4.85	<i>H</i>	13.3	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 01 18	033	0.9+	0.3+	1999 09 09	704	0.5+	0.4−	1999 10 02	703	0.3−	0.5+
1991 01 18	033	0.9−	0.4−	1999 09 09	704	0.3+	0.4+	1999 10 02	703	0.2−	0.4+
1991 01 19	033	(3.1+	0.2−)	1999 09 09	704	0.2+	0.0	1999 10 02	703	0.3−	0.5+
1997 04 03	704	0.0	0.3−	1999 09 09	704	0.2+	0.4−	1999 10 02	703	0.0	0.9+
1997 04 03	704	0.9+	0.5+	1999 09 09	704	0.1+	0.0	1999 10 02	704	0.0	0.2−
1997 04 11	704	0.2+	0.7+	1999 09 09	704	0.5+	0.4−	1999 10 02	704	0.2−	0.1−
1997 04 11	704	0.0	0.4+	1999 09 09	704	0.1+	0.0	1999 10 02	704	0.2+	0.1−
1999 09 07	704	0.5+	0.6−	1999 09 09	704	0.5−	0.4−	1999 10 02	704	0.1+	0.2−
1999 09 07	704	0.2+	0.4−	1999 09 09	704	0.3−	0.5−	1999 10 02	704	0.5−	0.2−
1999 09 07	704	0.6−	1.5+	1999 09 14	704	0.1+	0.0	1999 10 07	704	0.3+	0.3−
1999 09 08	699	(2.9−	1.1+)	1999 09 14	704	0.1−	0.5−	1999 10 07	704	0.0	0.2−
1999 09 08	699	(2.8−	0.8−)	1999 09 14	704	0.3−	0.4−	1999 10 07	704	0.2+	1.2+
1999 09 08	699	(2.0+	1.0−)	1999 09 14	704	0.2−	0.0	1999 10 07	704	0.5−	0.4+
1999 09 09	704	0.5+	0.4+	1999 09 14	704	0.2−	0.1−	1999 10 07	704	0.3−	0.2+

1999 RS₁₆₂ = 1998 FB₁₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	26.12699		(2000.0)		P	Williams	Q
<i>n</i>	0.21261585	ω	339.12832	+0.51233369	+0.85306978		
<i>a</i>	2.7801760	Ω	321.50322	−0.76368446	+0.39987622		
<i>e</i>	0.2210954	<i>i</i>	9.14440	−0.39281069	+0.33521779		
<i>P</i>	4.64	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 31	704	0.5−	0.7+	1999 09 04	703	0.0	0.2−	1999 09 10	704	0.5+	0.3+
1998 03 31	704	0.8−	1.8+	1999 09 04	703	0.1+	0.4+	1999 09 16	704	0.8+	0.8−
1998 03 31	704	0.8+	1.3−	1999 09 07	704	0.3+	0.3+	1999 09 16	704	0.4+	1.0−
1998 03 31	704	(4.9−	1.0−)	1999 09 07	704	0.1+	0.5−	1999 09 16	704	0.7+	0.2+
1998 04 01	704	0.7+	1.1−	1999 09 07	704	0.3−	0.6+	1999 10 01	703	0.9−	0.5+
1998 04 01	704	0.8−	0.3+	1999 09 07	704	0.5+	0.2−	1999 10 01	703	0.1−	0.6+
1998 04 01	704	0.7−	0.2−	1999 09 07	704	0.0	0.9−	1999 10 01	703	0.1−	0.1−
1998 04 01	704	0.9+	0.1−	1999 09 09	704	0.1+	0.2−	1999 10 01	703	0.4−	0.1+
1998 04 01	704	0.4+	0.0	1999 09 09	704	0.1−	0.5−	1999 10 04	704	0.0	0.5+
1999 08 22	699	0.5−	1.2+	1999 09 09	704	0.3−	0.1−	1999 10 04	704	0.2+	0.4+
1999 08 22	699	0.1+	1.3+	1999 09 09	704	0.4−	1.0−	1999 10 04	704	0.4−	0.1+
1999 08 22	699	0.1−	0.1+	1999 09 09	704	0.2+	1.3−	1999 10 04	704	0.5+	0.1+
1999 09 04	703	0.4−	0.6−	1999 09 10	704	0.0	0.1+	1999 10 04	704	0.4−	0.7+
1999 09 04	703	0.6−	0.1+	1999 09 10	704	0.1+	0.0				

1999 RO₁₆₃ = 1998 FE₁₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	45.33707		(2000.0)		P	Williams	Q
<i>n</i>	0.23640280	ω	25.46323	+0.04336954	+0.99789173		
<i>a</i>	2.5904048	Ω	247.05368	−0.92535208	+0.02190459		
<i>e</i>	0.2096783	<i>i</i>	3.00546	−0.37661999	+0.06109248		
<i>P</i>	4.17	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 29	704	1.6+	0.0	1999 09 07	704	0.2−	1.2−	1999 09 14	704	0.4−	0.2+
1998 03 29	704	0.3−	0.1+	1999 09 07	704	0.3−	0.2+	1999 09 14	704	0.1−	0.2+
1998 03 29	704	1.0+	0.8−	1999 09 07	704	0.0	0.9−	1999 09 14	704	0.2−	0.3+
1998 03 29	704	1.1−	0.3−	1999 09 07	704	0.7−	0.8−	1999 09 14	704	0.1+	0.0
1998 03 29	704	1.1+	1.1−	1999 09 07	704	0.5−	0.8−	1999 09 30	699	1.3+	0.6−
1998 04 01	704	1.6−	1.0+	1999 09 08	699	0.5−	0.5+	1999 09 30	699	0.6+	1.0+
1998 04 01	704	1.0−	0.5−	1999 09 08	699	0.7−	1.3+	1999 09 30	699	0.8+	0.3−
1998 04 01	704	1.3+	0.9+	1999 09 08	699	0.4+	0.0	1999 10 07	704	0.6−	0.9+
1998 04 01	704	0.2−	0.1+	1999 09 09	704	1.4+	0.3+	1999 10 07	704	1.0−	0.6+
1998 04 01	704	0.7−	0.8+	1999 09 09	704	0.1−	0.1+	1999 10 07	704	0.6−	0.4+
1999 09 05	703	1.5+	0.9+	1999 09 09	704	0.6+	0.4−	1999 10 07	704	0.6+	1.2−
1999 09 05	703	0.3−	0.2−	1999 09 09	704	0.3+	0.9−	1999 10 07	704	0.5−	0.2−
1999 09 05	703	0.5−	1.0+	1999 09 09	704	0.8−	0.5−				
1999 09 05	703	0.4+	0.8+	1999 09 14	704	0.3−	0.5−				

1999 RU₁₆₃ = 1998 HP₉₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	3.83384		(2000.0)		P	Williams	Q
<i>n</i>	0.21380967	ω	8.96832	+0.88745024	+0.45875349		
<i>a</i>	2.7698175	Ω	323.61861	−0.42738337	+0.78294983		
<i>e</i>	0.1619132	<i>i</i>	4.29930	−0.17255588	+0.42016044		
<i>P</i>	4.61	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1993 03 22	809	0.3+	0.4+	1999 08 22	699	0.4−	0.4+	1999 09 14	704	0.2−	0.1−
1993 03 26	809	0.0	0.1+	1999 08 22	699	0.1+	0.9+	1999 09 14	704	0.4+	0.2+
1998 04 21	704	0.8−	0.3+	1999 08 22	699	0.2−	0.2+	1999 09 14	704	1.5+	1.0−
1998 04 21	704	0.5+	0.4−	1999 09 07	704	0.1−	0.0	1999 09 14	704	0.7+	0.8−
1998 04 21	704	1.2−	1.8+	1999 09 07	704	0.5−	0.1+	1999 09 14	704	0.9+	0.2+
1998 04 21	704	(1.2−	2.5+)	1999 09 07	704	0.1−	0.3+	1999 09 14	704	1.4+	1.7−
1998 04 22	704	1.0+	0.7+	1999 09 07	704	0.1+	0.5+	1999 09 14	704	0.3−	1.4−
1998 04 22	704	0.3+	1.1−	1999 09 07	704	0.2+	0.1+	1999 09 14	704	0.9−	0.6−
1998 04 22	704	0.2−	1.9+	1999 09 09	704	0.4−	0.4+	1999 09 14	704	0.4−	0.7−
1998 04 22	704	1.0−	0.3+	1999 09 09	704	0.7+	0.0	1999 09 14	704	0.4+	0.0
1998 05 01	704	(0.6−	2.7+)	1999 09 09	704	0.2+	0.3−	1999 09 14	704	0.2+	0.4−
1998 05 01	704	0.8+	1.7−	1999 09 09	704	0.7−	0.3−	1999 09 14	704	0.2+	0.4+
1998 05 01	704	(2.2−	1.6−)	1999 09 09	704	0.6−	0.4+	1999 09 14	704	0.1+	0.3−
1998 05 01	704	0.7−	1.6−	1999 09 14	704	0.1−	0.4+	1999 10 07	704	0.8+	0.4+
1998 05 01	704	0.5+	1.9−	1999 09 14	704	0.1−	0.1−	1999 10 07	704	0.5−	0.5+
1998 05 22	704	1.6−	0.3−	1999 09 14	704	0.1−	0.6+	1999 10 07	704	0.5−	0.1−
1998 05 22	704	0.7+	0.3+	1999 09 14	704	0.4−	0.0	1999 10 07	704	1.3−	1.6+
1998 05 22	704	1.5+	1.7+	1999 09 14	704	0.6−	0.0				
1998 05 22	704	(5.7−	2.8+)	1999 09 14	704	0.3+	0.9+				

1999 RV₁₆₄ = 1978 NZ = 1991 EY₈ = 1992 OJ₃

Id. A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	208.01990		(2000.0)		P	Williams	Q
<i>n</i>	0.29288992	ω	188.04119	−0.74849060	−0.65954500		
<i>a</i>	2.2456036	Ω	310.45652	+0.61335913	−0.64897865		
<i>e</i>	0.1026811	<i>i</i>	5.20352	+0.25209600	−0.37924543		
<i>P</i>	3.37	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3

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Residuals in seconds of arc

1978 07 09	809	0.7−	0.2−	1999 09 04	703	0.2+	1.0+	1999 09 14	704	0.3+	0.3−
1978 07 10	809	0.1+	0.5−	1999 09 04	703	0.8−	0.2−	1999 09 14	703	0.3−	0.3−
1978 07 11	809	0.4+	1.5−	1999 09 07	704	0.3−	0.5+	1999 09 14	703	0.2−	0.1+
1991 03 13	675	0.2−	0.2+	1999 09 07	704	0.1+	0.0	1999 09 14	703	0.3−	0.0
1991 03 13	675	0.5+	0.4+	1999 09 07	704	0.8+	0.9+	1999 09 14	703	0.4−	0.2+
1992 07 26	809	1.2−	0.5−	1999 09 07	704	0.2+	0.4+	1999 10 02	704	1.2+	0.4+
1992 07 26	809	(2.4−	1.1−)	1999 09 07	704	0.4−	0.1−	1999 10 02	704	1.7+	0.6−
1992 07 26	809	0.8−	0.6−	1999 09 09	704	0.3−	0.1−	1999 10 02	704	0.3+	0.4+
1992 07 26	809	1.1+	1.2+	1999 09 09	704	0.4−	0.1−	1999 10 02	704	1.0−	1.2+
1992 07 26	809	0.9+	1.0+	1999 09 09	704	0.6+	0.2−	1999 10 02	704	0.6−	1.1−
1992 07 26	809	0.0	1.3+	1999 09 09	704	0.7+	0.9+	1999 10 07	703	(4.4−	3.9+)
1992 07 30	809	0.4+	0.3+	1999 09 09	704	0.3+	0.7−	1999 10 07	703	0.1+	0.3−
1992 07 30	809	0.1−	0.1−	1999 09 11	699	1.1+	0.4+	1999 10 07	703	0.0	0.2−
1992 07 30	809	1.8−	0.2−	1999 09 11	699	0.4+	0.1−	1999 10 07	703	1.1−	0.9−
1992 07 30	809	(10.4−	3.0−)	1999 09 11	699	(3.3+	0.5+)	1999 10 07	704	0.3+	0.4−
1992 07 30	809	(9.9−	3.7−)	1999 09 14	704	0.1+	0.0	1999 10 07	704	0.5−	0.5−
1992 07 30	809	(8.4−	4.9−)	1999 09 14	704	0.2−	0.1−	1999 10 07	704	0.3−	0.4−
1999 09 04	703	0.2+	0.4+	1999 09 14	704	0.6+	0.3−	1999 10 07	704	0.0	0.3−
1999 09 04	703	0.4−	0.3−	1999 09 14	704	0.0	0.0	1999 10 07	704	0.7−	1.3−

1999 RW₁₆₄ = 1998 FQ₁₀₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	48.31574	(2000.0)		P		Q	
<i>n</i>	0.26679016	ω	323.30121	+0.20649676		+0.97584370	
<i>a</i>	2.3897704	Ω	318.48126	−0.87018611		+0.14982764	
<i>e</i>	0.1050786	<i>i</i>	6.17759	−0.44736474		+0.15899919	
<i>P</i>	3.69	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 03 31	704	0.6+	1.4+	1999 08 22	699	1.2−	0.7−	1999 09 14	704	0.0	0.2−
1998 03 31	704	0.4+	0.5+	1999 08 22	699	0.1−	0.2−	1999 09 14	704	0.2+	0.3+
1998 03 31	704	0.1−	0.4−	1999 09 04	703	0.1−	0.3+	1999 09 14	704	0.1+	0.0
1998 03 31	704	0.2−	0.1+	1999 09 04	703	0.3−	0.2−	1999 09 14	704	0.2+	0.1+
1998 03 31	704	0.2+	0.2+	1999 09 04	703	0.2−	0.9+	1999 09 14	703	0.0	0.1−
1998 04 01	704	0.7+	0.4−	1999 09 04	703	0.3+	0.1+	1999 09 14	703	0.3−	0.4+
1998 04 01	704	0.2+	0.3−	1999 09 07	704	0.4−	0.2+	1999 09 14	703	0.4−	0.1+
1998 04 01	704	1.0+	0.2−	1999 09 07	704	0.1−	0.2−	1999 09 14	703	0.1−	0.3+
1998 04 01	704	1.3+	0.6+	1999 09 07	704	0.0	0.0	1999 10 01	703	0.1+	0.0
1998 04 01	704	0.7+	0.7+	1999 09 07	704	0.2−	0.2+	1999 10 01	703	0.4+	0.2+
1998 04 19	704	1.5−	0.1−	1999 09 07	704	0.2+	0.2+	1999 10 01	703	0.1−	0.0
1998 04 19	704	0.4−	0.5−	1999 09 09	704	0.2−	0.1−	1999 10 01	703	0.2+	0.1+
1998 04 19	704	0.7−	0.4+	1999 09 09	704	0.1+	0.0	1999 10 02	704	0.2−	0.2−
1998 04 19	704	0.7−	0.1−	1999 09 09	704	0.1+	0.2−	1999 10 02	704	0.4−	0.2+
1998 04 19	704	1.2−	0.6−	1999 09 09	704	0.3−	0.3−	1999 10 02	704	0.4+	0.2−
1999 07 16	704	0.4+	0.1+	1999 09 09	704	0.5+	0.4+	1999 10 02	704	0.7+	0.9−
1999 07 16	704	0.9+	0.4−	1999 09 11	699	0.3−	0.4+	1999 10 07	703	0.0	0.4−
1999 07 16	704	0.4+	0.3−	1999 09 11	699	0.4+	1.8+	1999 10 07	703	1.2−	1.0−
1999 07 16	704	0.5+	0.1+	1999 09 11	699	1.3−	0.8+	1999 10 07	703	0.5+	0.2−
1999 08 22	699	0.1+	0.6−	1999 09 14	704	0.5+	0.3−	1999 10 07	703	0.3+	0.0

1999 RF₁₆₅ = 1998 KT

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	310.46354	(2000.0)		P		Q	
<i>n</i>	0.29328793	ω	186.29814	+0.76592546		−0.64201121	
<i>a</i>	2.2435716	Ω	213.72286	+0.59254307		+0.72562425	
<i>e</i>	0.1282653	<i>i</i>	3.54709	+0.24950129		+0.24757030	
<i>P</i>	3.36	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 22	704	0.6+	0.9+	1999 08 22	699	0.2−	0.1+	1999 09 09	704	0.0	0.3−
1998 04 22	704	0.6+	1.0−	1999 09 04	703	0.3−	0.4+	1999 09 09	704	0.1+	0.1−
1998 04 22	704	0.0	0.1−	1999 09 04	703	0.9−	0.1−	1999 09 14	704	0.0	0.1+
1998 04 22	704	1.1−	0.0	1999 09 04	703	0.4−	0.0	1999 09 14	704	0.5+	1.1−
1998 04 22	704	0.5+	1.4−	1999 09 04	703	0.3−	0.1−	1999 09 14	704	0.1+	0.2−

1998 05 20	691	0.5−	0.1+	1999 09 07	704	0.3+	0.4+	1999 09 14	704	0.1+	0.7−
1998 05 20	691	0.7−	0.2+	1999 09 07	704	0.1+	0.2+	1999 09 14	704	0.3+	0.6−
1998 05 20	691	0.8−	0.4+	1999 09 07	704	0.2+	0.8−	1999 10 07	703	0.3−	0.1+
1998 05 22	691	0.1−	0.2+	1999 09 07	704	0.3+	0.8+	1999 10 07	703	1.6−	0.1+
1998 05 22	691	0.7+	0.3+	1999 09 07	704	0.6+	0.7−	1999 10 07	703	0.7+	0.3+
1998 05 22	691	0.9+	0.2+	1999 09 09	704	0.0	0.1+	1999 10 07	703	1.3+	0.5+
1999 08 22	699	0.4+	0.8+	1999 09 09	704	0.0	0.4+				
1999 08 22	699	0.6−	0.1+	1999 09 09	704	0.5−	0.3+				

1999 RJ₁₆₇ = 1998 DQ₁₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	33.89007	(2000.0)		P		Q	
<i>n</i>	0.29295442	ω	256.77998	+0.28745368		+0.95663636	
<i>a</i>	2.2452740	Ω	30.05483	−0.83832992		+0.27507235	
<i>e</i>	0.1814340	<i>i</i>	5.39490	−0.46322060		+0.09582316	
<i>P</i>	3.36	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 01 28	566	0.1−	0.2+	1999 08 12	699	0.2−	0.4+	1999 09 13	704	0.0	0.5+
1998 01 28	566	0.6+	0.2−	1999 08 12	699	0.1+	0.6+	1999 09 13	704	0.3−	0.5+
1998 01 28	566	0.1−	0.0	1999 08 12	699	0.1−	0.3+	1999 09 13	704	0.3−	0.2+
1998 02 24	566	0.1−	0.2+	1999 09 07	704	0.3−	0.2+	1999 09 13	704	0.5−	0.2+
1998 02 24	566	0.8−	0.4−	1999 09 07	704	0.0	0.3+	1999 09 30	704	0.2+	0.3−
1998 02 24	566	0.2−	0.2+	1999 09 07	704	0.2−	0.2−	1999 09 30	704	0.4+	0.3+
1998 02 25	566	0.2−	0.3+	1999 09 07	704	0.3−	0.1+	1999 09 30	704	0.3+	0.2−
1998 02 25	566	0.1−	0.3+	1999 09 08	703	0.1+	0.6−	1999 09 30	704	0.8+	0.6+
1998 02 25	566	0.1−	0.4+	1999 09 08	703	0.1+	0.0	1999 09 30	704	0.3+	0.6−
1998 03 24	566	0.7+	0.2+	1999 09 08	703	0.4+	0.1−	1999 10 07	704	0.2+	0.5−
1998 03 24	566	0.7+	0.1+	1999 09 08	703	0.9+	0.9−	1999 10 07	704	0.0	0.4+
1998 03 24	566	0.5+	0.4+	1999 09 09	704	0.6+	0.3+	1999 10 07	704	0.1−	0.3+
1999 07 16	704	0.1−	0.1+	1999 09 09	704	0.0	0.1−	1999 10 07	704	0.3+	1.0+
1999 07 16	704	0.1−	0.1+	1999 09 09	704	0.0	0.8−	1999 10 07	704	0.2−	0.8+
1999 07 16	704	0.7−	0.2+	1999 09 09	704	0.6−	0.5−				
1999 07 16	704	0.1+	0.4+	1999 09 09	704	1.6−	1.5−				

1999 RO₁₆₇ = 1997 FF₄

Id. G. V. Williams, M. E. Sansaturio, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>	298.96701	(2000.0)		P		Q	
<i>n</i>	0.19163498	ω	36.42105	+0.61084574		−0.79032667	
<i>a</i>	2.9795650	Ω	16.10371	+0.68001757		+0.49300682	
<i>e</i>	0.1085437	<i>i</i>	9.84924	+0.40551644		+0.36376918	
<i>P</i>	5.14	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 31	704	1.4+	0.6−	1999 08 12	699	0.4+	0.4+	1999 09 13	704	0.4−	0.7−
1997 03 31	704	0.1−	0.2−	1999 09 07	699	0.5+	0.8+	1999 09 30	704	0.5+	0.7−
1997 04 03	704	0.5−	0.7+	1999 09 07	699	0.0	0.3+	1999 09 30	704	0.1+	0.7−
1997 04 03	704	1.8−	1.8−	1999 09 07	699	0.2+	0.3+	1999 09 30	704	0.8+	0.2+
1997 04 05	704	0.5+	0.2+	1999 09 09	704	0.1−	0.0	1999 09 30	704	0.3+	0.4−
1997 04 05	704	0.1+	0.6+	1999 09 09	704	0.2+	0.3+	1999 10 07	704	0.4−	0.5+
1997 04 06	704	0.4+	0.1−	1999 09 09	704	0.2−	0.4+	1999 10 07	704	0.0	0.2−
1997 04 06	704	0.2+	0.5+	1999 09 09	704	0.4−	0.4−	1999 10 07	704	0.3−	0.0
1997 04 07	704	0.2+	0.2+	1999 09 09	704	0.8−	0.6−	1999 10 07	704	0.4+	0.4+
1997 04 07	704	0.3−	0.3+	1999 09 13	704	0.3−	0.1−	1999 10 07	704	0.3+	0.9+
1999 08 12	699	1.0+	0.0	1999 09 13	704	1.0−	0.0				
1999 08 12	699	0.1−	0.5−	1999 09 13	704	0.6−	0.2−				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	57.73279		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17441760	ω	111.78449	+0.04256859	+0.99697303
a	3.1725551	Ω	160.31750	-0.97310586	+0.05612888
e	0.1186396	i	11.13750	-0.22639102	-0.05379898
P	5.65	H	13.9	G 0.15	U 3

Residuals in seconds of arc

1998 05 23	704	0.5+	0.2+	1999 08 12	699	0.8+	0.5-	1999 09 09	704	1.8-	0.5+
1998 05 23	704	0.5+	0.2+	1999 08 12	699	1.2+	0.4+	1999 09 09	704	0.4-	0.3+
1998 05 23	704	0.0	0.4-	1999 08 12	699	0.7-	0.4-	1999 09 14	704	(2.9-	0.9+)
1998 05 23	704	0.8-	0.2+	1999 09 07	704	0.8+	0.0	1999 09 14	704	0.1-	1.0-
1998 05 26	704	0.7+	0.9-	1999 09 07	704	0.5-	0.1+	1999 09 14	704	1.6+	1.0-
1998 05 26	704	0.1+	0.2-	1999 09 07	704	0.7-	0.0	1999 09 30	704	0.0	0.2+
1998 05 26	704	0.8-	0.6-	1999 09 07	704	0.5+	0.2-	1999 09 30	704	0.7+	0.4+
1998 05 26	704	0.6-	0.9-	1999 09 07	704	0.3+	0.3-	1999 09 30	704	0.3-	0.0
1998 06 26	699	0.2-	0.5+	1999 09 09	704	0.4-	1.1+	1999 09 30	704	0.5-	0.2-
1998 06 26	699	0.4+	0.9+	1999 09 09	704	0.2-	0.3+				
1998 06 26	699	0.2+	1.0+	1999 09 09	704	0.2-	0.0				

1999 RF₁₆₈ = 1998 FF₂₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	65.70358		(2000.0)	P	Q
n	0.26161189	ω	112.39655	-0.27042895	+0.96241091
a	2.4212022	Ω	141.88541	-0.89761506	-0.24259807
e	0.1748931	i	2.33688	-0.34807382	-0.12211229
P	3.77	H	15.1	G 0.15	U 2

Residuals in seconds of arc

1992 11 18	691	0.2+	0.7+	1998 03 22	704	0.1-	1.5+	1999 09 09	704	0.5+	0.8-
1992 11 18	691	0.1+	0.2-	1998 03 22	704	0.2-	0.5+	1999 09 09	704	0.2+	1.2+
1992 11 18	691	0.4-	0.2-	1998 04 03	691	0.6+	0.3+	1999 09 09	704	0.1-	0.2+
1998 02 27	566	0.0	0.6-	1998 04 03	691	0.4+	0.4+	1999 09 09	704	0.8+	0.6-
1998 02 27	566	0.0	0.5-	1998 04 03	691	0.5+	0.3+	1999 09 11	699	0.0	1.6+
1998 02 27	566	0.0	0.5-	1998 05 02	691	0.5-	0.1+	1999 09 11	699	0.0	1.3+
1998 03 20	704	0.4+	0.4+	1998 05 02	691	0.6-	0.3+	1999 09 11	699	0.7-	0.2+
1998 03 20	704	0.0	0.7-	1998 05 02	691	0.4-	0.4+	1999 09 14	704	0.2-	0.2+
1998 03 20	704	0.8+	1.0+	1999 09 07	704	0.4-	0.3+	1999 09 14	704	0.3-	0.7-
1998 03 20	704	0.7-	0.2-	1999 09 07	704	0.1+	0.2-	1999 09 14	704	0.3+	0.1+
1998 03 20	704	0.5-	1.4+	1999 09 07	704	0.7-	0.3+	1999 09 14	704	0.3-	0.8+
1998 03 22	704	0.4+	1.1+	1999 09 07	704	0.5-	0.4+	1999 09 14	704	0.4-	0.1+
1998 03 22	704	0.3+	1.6-	1999 09 07	704	0.2-	0.3-				
1998 03 22	704	0.8+	0.6+	1999 09 09	704	0.4+	0.6-				

1999 RK₁₆₈ = 1998 KA₁₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	352.38865		(2000.0)	P	Q
n	0.22190912	ω	344.46985	+0.98365134	+0.17994040
a	2.7020037	Ω	5.17988	-0.15560102	+0.86930722
e	0.1736562	i	4.55858	-0.09065517	+0.46035465
P	4.44	H	14.4	G 0.15	U 3

Residuals in seconds of arc

1998 05 22	704	0.2+	1.1-	1999 09 07	704	0.6+	0.3+	1999 09 14	704	0.1+	0.1+
1998 05 22	704	0.1+	0.8-	1999 09 07	704	0.1+	0.0	1999 09 30	699	0.4+	0.6+
1998 05 22	704	0.1-	0.1-	1999 09 07	704	0.1+	0.3+	1999 09 30	699	0.5-	0.2+
1998 05 22	704	0.9-	0.3-	1999 09 07	704	0.5+	0.2+	1999 09 30	699	0.3+	0.1-
1998 05 24	704	0.8+	0.8-	1999 09 09	704	0.3+	0.1+	1999 10 02	704	0.3+	0.6+
1998 05 24	704	0.7+	0.1-	1999 09 09	704	0.3+	0.2+	1999 10 02	704	0.1+	0.5-
1998 05 24	704	0.2-	0.6+	1999 09 09	704	0.4-	1.0-	1999 10 02	704	0.6-	0.0
1998 05 24	704	1.1-	1.3+	1999 09 09	704	0.2+	0.1-	1999 10 02	704	0.6-	0.5-
1999 07 16	704	0.1-	0.2-	1999 09 09	704	0.9-	0.4-	1999 10 02	704	0.9-	0.6-
1999 07 16	704	0.6-	0.1-	1999 09 11	699	0.5-	0.6+	1999 10 07	704	0.1+	1.1-
1999 07 16	704	0.4-	0.0	1999 09 11	699	0.0	0.4+	1999 10 07	704	0.4+	0.4-

1999 07 16	704	0.6-	0.4+	1999 09 11	699	0.1-	0.3+	1999 10 07	704	0.2+	0.4-
1999 08 12	699	0.1-	0.4+	1999 09 14	704	0.5+	0.1-	1999 10 07	704	0.3+	1.0-
1999 08 12	699	0.7-	0.7+	1999 09 14	704	0.0	0.3+	1999 10 07	704	0.7+	0.1-
1999 08 12	699	0.0	0.8+	1999 09 14	704	0.7+	0.1+				
1999 09 07	704	0.3+	0.0	1999 09 14	704	0.0	0.6-				

1999 RM₁₆₈ = 1988 QH = 1992 EZ₃₂

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	36.90789		(2000.0)	P	Q
n	0.18212083	ω	114.84417	+0.25194252	+0.96750987
a	3.0824518	Ω	169.68067	-0.92512748	+0.24722087
e	0.2261728	i	6.79812	-0.28401430	+0.05297638
P	5.41	H	14.8	G 0.15	U 1

Residuals in seconds of arc

1988 08 19	413	0.0	0.0	1999 09 05	691	0.1-	0.1-	1999 09 09	704	0.3-	0.3-
1988 08 20	413	(4.7-	3.5-)	1999 09 05	691	0.1-	0.1+	1999 09 09	704	0.1+	0.8+
1992 03 02	809	0.7-	1.1+	1999 09 07	704	0.7+	0.2+	1999 09 14	704	0.2-	0.7+
1992 03 05	809	0.9+	0.3-	1999 09 07	704	0.0	0.6+	1999 09 14	704	0.4+	0.4-
1998 04 21	704	0.3+	0.0	1999 09 07	704	0.5+	0.1+	1999 09 14	704	1.2-	0.0
1998 04 21	704	0.1-	0.7+	1999 09 07	704	0.1-	0.4-	1999 09 14	704	0.1-	0.7-
1998 04 21	704	0.3+	1.5-	1999 09 07	704	0.3-	0.5-	1999 09 17	691	0.5-	0.3+
1998 04 21	704	0.5-	0.1-	1999 09 09	704	0.9+	0.8-	1999 09 17	691	0.3-	0.2+
1998 04 21	704	0.1+	1.2+	1999 09 09	704	0.0	0.0	1999 09 17	691	0.4-	0.4+
1999 09 05	691	0.2-	0.1+	1999 09 09	704	1.0+	0.2+				

1999 RN₁₆₈ = 1982 DA₄ = 1994 RE₂₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	290.01843		(2000.0)	P	Q
n	0.20365563	ω	80.09827	+0.36635223	-0.92903672
a	2.8611355	Ω	348.01319	+0.72585242	+0.32013413
e	0.1417182	i	14.42519	+0.58217207	+0.18548560
P	4.84	H	14.3	G 0.15	U 3

Residuals in seconds of arc

1982 02 20	033	0.2+	0.3-	1999 09 04	691	0.3-	0.0	1999 09 14	704	0.1-	0.9+
1982 02 20	033	0.2-	0.1-	1999 09 09	704	0.1+	0.7-	1999 09 14	704	0.6+	0.3+
1982 02 20	033	0.1+	0.3-	1999 09 09	704	0.6+	0.7+	1999 09 14	704	0.2-	0.2-
1982 02 21	033	0.8-	0.3-	1999 09 09	704	0.4-	0.2+	1999 09 14	704	0.9+	1.0-
1982 02 21	033	0.3-	0.4-	1999 09 09	704	0.5-	1.0+	1999 09 18	691	0.1-	0.4-
1994 09 05	809	0.1+	0.8-	1999 09 09	704	0.1+	0.0	1999 09 18	691	0.1-	0.5-
1994 09 05	809	0.2+	1.3-	1999 09 11	699	0.6-	1.9+	1999 09 18	691	0.0	0.4-
1994 09 05	809	0.0	0.1-	1999 09 11	699	0.2+	0.3+	1999 10 06	704	0.5+	0.2-
1994 09 06	809	0.0	0.3+	1999 09 11	699	0.1+	0.4+	1999 10 06	704	0.0	0.2-
1994 09 06	809	0.2+	0.1-	1999 09 13	691	0.5-	0.3-	1999 10 06	704	0.1+	0.2-
1994 09 06	809	0.9+	0.1-	1999 09 13	691	0.2-	0.1-	1999 10 06	704	0.3+	0.5-
1999 09 04	691	0.1-	0.0	1999 09 13	691	0.3-	0.1-	1999 10 06	704	0.0	0.6-
1999 09 04	691	0.2-	0.2+	1999 09 14	704	0.3-	0.3+				

1999 RO₁₆₈ = 1992 EF₈ = 1994 PJ₁₈ = 1994 RW₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	344.72780		(2000.0)	P	Q		
n	0.20069656	ω	7.72152	+0.99942762	+0.03341169		
a	2.8891899	Ω	350.35901	-0.03248289	+0.90404567		
e	0.0099154	i	1.81331	-0.00944917	+0.42612802		
P	4.91	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1992 02 24	691	0.5+	0.3-	1994 09 06	809	(0.6+	2.3+)	1999 09 11	699	0.3+	0.5+
1992 02 24	691	0.1+	0.0	1994 09 06	809	(0.1+	2.6+)	1999 09 11	699	0.2-	1.0+
1992 02 24	691	(3.0+	0.2-)	1994 09 06	809	0.5-	1.9+	1999 09 14	704	0.4+	0.3+
1992 02 25	675	0.4+	1.0-	1999 09 04	691	0.2+	0.0	1999 09 14	704	0.0	0.4-
1992 02 25	675	(0.4+	2.5-)	1999 09 04	691	0.0	0.1+	1999 09 14	704	0.2-	0.3+

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1992 03 02	809	0.8−	0.5+	1999 09 04	691	0.1+	0.2+	1999 09 14	704	0.5−	0.6+
1992 03 04	809	0.1−	0.7+	1999 09 07	704	0.3+	0.0	1999 09 14	704	0.3−	0.5+
1992 03 07	809	0.2+	0.6+	1999 09 07	704	0.4−	0.6−	1999 09 17	691	0.7−	0.1+
1994 08 12	809	0.8+	1.1+	1999 09 07	704	0.3+	0.2+	1999 09 17	691	0.3−	0.2+
1994 08 12	809	0.0	0.7+	1999 09 07	704	0.0	0.4−	1999 09 17	691	0.4−	0.2+
1994 08 12	809	0.5+	1.4+	1999 09 07	704	0.4+	0.3−	1999 10 07	704	0.6+	0.3−
1994 08 13	809	1.3+	1.1−	1999 09 09	704	0.0	0.1+	1999 10 07	704	0.7+	0.3−
1994 08 13	809	0.1+	1.6−	1999 09 09	704	0.0	0.5−	1999 10 07	704	0.3+	0.9−
1994 08 13	809	0.3−	1.1−	1999 09 09	704	0.1−	0.2+	1999 10 07	704	0.4−	0.9+
1994 09 05	809	0.2−	0.4−	1999 09 09	704	0.0	1.1−	1999 10 07	704	0.4+	0.5−
1994 09 05	809	0.7−	0.4+	1999 09 09	704	0.8−	1.4−				
1994 09 05	809	1.2−	0.4−	1999 09 11	699	0.6+	0.9+				

1999 RQ₁₆₈ = 1998 HQ₇₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	108.15234		(2000.0)		P		Q
<i>n</i>	0.23754188	ω	224.46226	−0.77618548		+0.63048219	
<i>a</i>	2.5821171	Ω	354.61549	−0.56153060		−0.69508776	
<i>e</i>	0.1509718	<i>i</i>	3.25036	−0.28673941		−0.34546376	
<i>P</i>	4.15	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1991 10 09	691	0.6+	0.8−	1998 04 22	704	0.0	0.4+	1999 09 07	704	0.1+	0.4−
1991 10 09	691	0.3+	0.6−	1998 04 25	699	0.0	0.8+	1999 09 07	704	0.4+	0.7+
1991 10 09	691	0.1+	0.6−	1998 04 25	699	0.1−	1.0+	1999 09 07	704	0.1−	0.7+
1998 04 01	704	0.3−	0.4−	1998 04 25	699	0.6−	0.1+	1999 09 07	704	0.7+	1.0−
1998 04 01	704	0.2+	0.1−	1998 04 30	566	0.3−	1.3−	1999 09 09	704	0.6+	0.2−
1998 04 01	704	(1.2−	2.2−)	1998 04 30	566	0.4−	1.1−	1999 09 09	704	0.4+	0.7−
1998 04 01	704	(1.1−	2.2−)	1998 04 30	566	0.0	1.3−	1999 09 09	704	0.8−	0.9+
1998 04 01	704	1.2−	1.9−	1998 05 16	704	0.2+	0.0	1999 09 09	704	1.5−	0.3−
1998 04 21	704	0.9+	0.1−	1998 05 16	704	1.2+	0.1−	1999 09 14	704	0.6+	0.3+
1998 04 21	704	1.1+	0.5+	1998 05 16	704	0.7−	1.1+	1999 09 14	704	0.1−	0.2+
1998 04 21	704	0.4+	0.1+	1998 05 16	704	0.1+	2.0−	1999 09 14	704	0.8+	0.0
1998 04 21	704	0.4+	0.4−	1998 05 16	704	1.5−	0.2+	1999 09 14	704	0.2−	0.2−
1998 04 21	704	0.0	1.1+	1998 05 23	691	0.3−	0.2−	1999 09 14	704	0.3−	0.1+
1998 04 22	704	0.3+	0.2+	1998 05 23	691	0.3−	0.5+	1999 09 17	691	0.4−	0.2+
1998 04 22	704	0.6−	0.2+	1998 05 24	691	(1.1+	2.5+)	1999 09 17	691	0.2−	0.2+
1998 04 22	704	0.7+	0.7+	1998 05 24	691	(3.6+	1.1+)	1999 09 17	691	0.4−	0.1+
1998 04 22	704	0.2−	1.1+	1999 09 07	704	0.0	0.1+				

1999 RT₁₆₈ = 1998 FT₁₃₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	88.19223		(2000.0)		P		Q
<i>n</i>	0.25819072	ω	68.71960	−0.52223874		+0.85276752	
<i>a</i>	2.4425434	Ω	169.78827	−0.79702124		−0.48499066	
<i>e</i>	0.1307556	<i>i</i>	2.38119	−0.30335431		−0.19383401	
<i>P</i>	3.82	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	704	0.1−	0.7+	1998 03 24	704	0.7−	0.1−	1999 09 07	704	0.4−	0.1+
1998 03 22	704	0.2+	0.7−	1998 03 25	566	0.3+	0.0	1999 09 09	704	0.5+	1.2+
1998 03 22	704	1.2+	1.8−	1998 03 25	566	0.5−	0.4−	1999 09 09	704	0.9−	1.0+
1998 03 22	704	0.6−	0.0	1998 03 25	566	0.1+	1.2−	1999 09 09	704	0.2−	0.1+
1998 03 22	704	0.1−	0.1−	1998 04 19	704	0.2+	0.1−	1999 09 09	704	1.3+	1.5+
1998 03 24	704	0.1+	0.7+	1998 04 19	704	0.6−	0.7+	1999 09 14	704	0.5−	0.8−
1998 03 24	704	0.2−	0.3+	1998 04 19	704	1.4+	0.2+	1999 09 14	704	1.3+	0.4−
1998 03 24	704	0.2−	0.3+	1998 04 19	704	0.8−	0.4−	1999 09 14	704	0.0	0.1−
1998 03 24	704	0.1+	0.8+	1999 09 05	691	0.2−	0.3−	1999 09 14	704	0.2+	0.6−
1998 03 24	704	0.1+	0.2−	1999 09 05	691	0.4−	0.2−	1999 09 14	704	0.5+	0.4−
1998 03 24	704	0.6−	0.9+	1999 09 05	691	0.3−	0.1−	1999 09 17	691	0.1−	0.2+
1998 03 24	704	0.9+	0.6−	1999 09 07	704	0.4−	1.1−	1999 09 17	691	0.3−	0.1+
1998 03 24	704	0.3−	0.7+	1999 09 07	704	0.2+	0.5−	1999 09 17	691	0.4−	0.2+
1998 03 24	704	0.2+	0.2+	1999 09 07	704	0.2+	0.4−				

1999 RU₁₆₈ = 1998 FF₂₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	16.57552		(2000.0)		P		Q
<i>n</i>	0.29296957	ω	146.08138	+0.71728114		+0.69672574	
<i>a</i>	2.2451966	Ω	169.73864	−0.64997801		+0.67369699	
<i>e</i>	0.1299955	<i>i</i>	2.89611	−0.25107041		+0.24638509	
<i>P</i>	3.36	<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−	0.0	1998 03 22	704	0.6−	0.4+	1999 09 14	704	0.0	0.1+
1998 03 20	704	0.0	0.0	1999 09 09	704	0.0	0.4−	1999 09 14	704	0.4+	0.4+
1998 03 20	704	0.3+	0.7−	1999 09 09	704	0.1+	0.3−	1999 10 07	704	0.2+	0.1+
1998 03 20	704	0.6+	0.7−	1999 09 09	704	0.1+	0.4−	1999 10 07	704	0.4−	0.6−
1998 03 20	704	0.3+	0.2−	1999 09 09	704	0.3−	0.5−	1999 10 07	704	0.2+	0.1+
1998 03 22	704	0.7−	0.2+	1999 09 09	704	0.4−	0.1−	1999 10 07	704	0.1−	0.0
1998 03 22	704	0.6−	1.1+	1999 09 14	704	0.1−	0.4+	1999 10 07	704	0.1+	0.2+
1998 03 22	704	1.2+	0.3+	1999 09 14	704	0.5+	0.3+				
1998 03 22	704	0.2−	0.1−	1999 09 14	704	0.2−	0.9+				

1999 RX₁₆₈ = 1996 AN₃ = 1997 EF₃₆

Id. A. Doppler, G. V. Williams

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	241.91449		(2000.0)		P		Q
<i>n</i>	0.23359759	ω	132.28252	−0.30331155		−0.95234597	
<i>a</i>	2.6111018	Ω	335.31866	+0.84996905		−0.25510226	
<i>e</i>	0.0668830	<i>i</i>	4.42776	+0.43076062		−0.16721238	
<i>P</i>	4.22	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1996 01 12	608	1.5+	0.5−	1999 09 07	704	0.3−	0.3+	1999 09 11	699	0.1−	1.7+
1996 01 12	608	1.0+	0.6−	1999 09 07	704	1.3+	0.1+	1999 09 14	704	0.5+	0.4−
1996 01 13	608	0.3−	1.8−	1999 09 07	704	0.6−	0.2−	1999 09 14	704	1.4+	0.6+
1996 01 13	608	1.1−	0.6+	1999 09 09	704	0.0	0.8+	1999 09 14	704	0.6+	1.1+
1997 03 04	704	0.8+	0.1+	1999 09 09	704	1.0−	0.1−	1999 09 14	704	0.6−	0.9+
1997 03 04	704	0.9−	1.1+	1999 09 09	704	0.8−	0.3+	1999 09 14	704	0.9+	0.4−
1997 03 05	704	0.4−	0.2+	1999 09 09	704	0.5−	0.4−	1999 10 06	704	0.1+	0.0
1997 03 05	704	0.3+	0.9+	1999 09 09	704	0.7−	0.1−	1999 10 06	704	0.3−	0.6−
1997 03 06	704	1.3+	0.2+	1999 09 11	699	1.8−	0.1−	1999 10 06	704	0.4+	0.9−
1997 03 06	704	0.1+	0.6+	1999 09 11	699	0.1+	1.3+	1999 10 06	704	0.3−	0.2−

1999 RZ₁₆₈ = 1998 FM₁₄₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	343.15527		(2000.0)		P		Q
<i>n</i>	0.28480284	ω	26.41048	+0.99983546		−0.00311549	
<i>a</i>	2.2879147	Ω	333.74949	−0.00488591		+0.90248240	
<i>e</i>	0.1514029	<i>i</i>	2.31559	+0.01746960		+0.43071546	
<i>P</i>	3.46	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 29	704	0.1+	0.0	1999 09 07	704	0.0	0.4+	1999 09 14	704	0.3+	0.5−
1998 03 29	704	1.1+	0.9−	1999 09 07	704	0.0	0.2+	1999 09 14	704	0.3+	0.2−
1998 03 29	704	0.8+	0.5−	1999 09 07	704	0.1+	0.4+	1999 09 14	704	0.3+	0.1−
1998 03 29	704	0.1+	0.6+	1999 09 09	704	0.2−	0.3−	1999 10 02	704	0.5+	0.3−
1998 03 29	704	1.2−	0.8+	1999 09 09	704	0.2+	0.4−	1999 10 02	704	0.1+	0.1−
1998 04 01	704	0.2−	0.0	1999 09 09	704	0.2−	0.1−	1999 10 02	704	0.3+	0.6+
1998 04 01	704	0.6−	0.1+	1999 09 09	704	0.5−	0.3−	1999 10 02	704	0.4+	0.3+
1998 04 01	704	(0.7−	2.7+)	1999 09 09	704	0.2−	0.7−	1999 10 02	704	0.5+	0.2−
1999 08 22	699	0.5+	0.4+	1999 09 11	699	0.4−	1.1+	1999 10 07	704	1.3+	0.8−
1999 08 22	699	0.2−	0.6−	1999 09 11	699	0.0	1.1+	1999 10 07	704	0.8−	0.6−
1999 08 22	699	0.2+	0.4−	1999 09 11	699	0.2−	0.8+	1999 10 07	704	0.2+	0.4−
1999 09 07	704	0.1−	0.2−	1999 09 14	704	0.1−	0.2+	1999 10 07	704	2.0−	1.5+
1999 09 07	704	0.5−	0.1+	1999 09 14	704	0.2−	0.6−				

1999 RH₁₆₉ = 1998 FU₂₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 30.49498 (2000.0)			P		Q	
<i>n</i>	0.28559844	ω	107.66778	+0.47814808	+0.87811067	
<i>a</i>	2.2836638	Ω	190.94531	-0.83624874	+0.44919066	
<i>e</i>	0.1361574	<i>i</i>	5.19940	-0.26844450	+0.16477077	
<i>P</i>	3.45	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 02 28	809	(1.1- 7.0+)	1999 08 22	699	0.3+	0.1-	1999 09 14	704	0.1+	0.0	
1998 03 02	809	(1.8- 8.9+)	1999 08 22	699	0.7+	0.1-	1999 09 14	704	0.0	0.3-	
1998 03 20	704	0.3- 1.3+	1999 08 22	699	0.1-	0.1+	1999 09 14	704	0.2+	0.3-	
1998 03 20	704	0.7- 1.1+	1999 09 04	703	0.1+	0.0	1999 09 14	704	0.4-	0.2-	
1998 03 20	704	0.6- 0.3+	1999 09 04	703	0.5+	0.4+	1999 09 14	704	0.1-	0.1-	
1998 03 20	704	0.3+	0.3-	1999 09 04	703	0.1-	0.7+	1999 10 02	704	0.1-	0.1+
1998 03 20	704	0.0	0.5+	1999 09 04	703	0.1-	0.8+	1999 10 02	704	0.0	0.1-
1998 03 22	704	0.2- 0.5-	1999 09 07	704	0.0	0.4+	1999 10 02	704	0.1-	0.7+	
1998 03 22	704	0.6+	0.1+	1999 09 07	704	0.2-	0.3-	1999 10 02	704	0.2+	0.1-
1998 03 22	704	1.6- 1.1-	1999 09 07	704	0.1+	0.3-	1999 10 02	704	0.2+	0.1-	
1998 03 22	704	(3.0- 1.9+)	1999 09 07	704	0.1+	0.4-	1999 10 06	704	0.2-	0.1-	
1998 03 22	704	0.6- 0.4-	1999 09 07	704	0.2-	0.6-	1999 10 06	704	0.2-	0.1+	
1998 03 26	704	0.6+	0.1-	1999 09 09	704	0.0	0.3-	1999 10 06	704	0.5-	0.0
1998 03 26	704	1.2+	0.4-	1999 09 09	704	0.6-	0.0	1999 10 06	704	0.5-	0.0
1998 03 26	704	0.9+	0.4-	1999 09 09	704	0.2-	0.6+	1999 10 06	704	0.8-	0.1-
1998 03 29	704	0.6+	0.1-	1999 09 09	704	0.1-	1.1-	1999 10 07	704	(0.1+ 2.2+)	
1998 03 29	704	0.8+	0.6-	1999 09 09	704	0.1+	0.3+	1999 10 07	704	0.2+	0.2+
1998 03 29	704	0.4+	0.3+	1999 09 11	699	0.2+	0.2+	1999 10 07	704	0.5+	0.7+
1998 03 29	704	0.6-	0.5+	1999 09 11	699	0.1+	0.3+	1999 10 07	704	0.5+	0.5-
1998 03 29	704	0.4-	0.6+	1999 09 11	699	0.5-	0.7+	1999 10 07	704	0.8+	0.5-

1999 RX₁₆₉ = 1998 BA₄₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 92.82411 (2000.0)			P		Q	
<i>n</i>	0.31281590	ω	255.07090	-0.59607905	+0.80213926	
<i>a</i>	2.1492000	Ω	338.22185	-0.69495461	-0.53758105	
<i>e</i>	0.1315131	<i>i</i>	5.49532	-0.40215402	-0.25996004	
<i>P</i>	3.15	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 01 24	566	0.5-	0.5+	1999 09 07	704	0.1-	0.7-	1999 09 14	704	0.4+	0.4-
1998 01 24	566	0.5-	0.8+	1999 09 07	704	0.0	0.2-	1999 09 14	704	0.1-	0.3-
1998 01 24	566	0.5-	0.5+	1999 09 07	704	0.1+	0.0	1999 09 14	704	0.1+	0.0
1998 01 29	566	0.4+	0.8-	1999 09 09	704	0.2+	0.2-	1999 09 14	704	0.0	0.4+
1998 01 29	566	0.4+	0.3-	1999 09 09	704	0.4-	0.7+	1999 09 14	704	0.2-	0.1-
1998 01 29	566	0.6+	0.7-	1999 09 09	704	1.0+	0.6+	1999 10 06	704	0.3+	0.1-
1999 08 22	699	0.1+	1.4-	1999 09 09	704	0.1-	1.3+	1999 10 06	704	0.5+	0.1-
1999 08 22	699	0.2-	0.3+	1999 09 09	704	0.3+	1.4+	1999 10 06	704	0.5-	0.5-
1999 08 22	699	0.7-	1.1-	1999 09 11	699	0.2+	0.3+	1999 10 06	704	0.4-	0.3-
1999 09 07	704	0.5+	0.8-	1999 09 11	699	1.2-	0.9+	1999 10 06	704	0.1+	0.3-
1999 09 07	704	0.2+	0.3-	1999 09 11	699	0.1-	0.5+				

1999 RH₁₇₀ = 1989 QB₁ = 1998 AW₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 28.29245 (2000.0)			P		Q	
<i>n</i>	0.29661703	ω	319.67604	+0.44826887	+0.89358574	
<i>a</i>	2.2267527	Ω	336.92700	-0.80381615	+0.39137643	
<i>e</i>	0.1868787	<i>i</i>	3.46041	-0.39106856	+0.21983863	
<i>P</i>	3.32	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1989 08 28	888	0.5+	1.4-	1999 08 22	699	0.4-	0.9+	1999 09 14	704	0.1+	0.6+
1989 08 28	888	0.9+	1.4-	1999 09 07	704	0.2-	0.3+	1999 10 01	691	0.1+	0.1+
1998 01 08	910	0.1+	0.1+	1999 09 07	704	0.1-	0.4+	1999 10 01	691	0.2+	0.0
1998 01 08	910	0.2+	0.1+	1999 09 07	704	0.1+	0.7-	1999 10 01	691	0.2+	0.1+
1998 01 08	910	0.3+	0.1+	1999 09 07	704	0.3-	0.4-	1999 10 02	704	0.6+	0.8-
1998 01 09	910	0.1-	0.1-	1999 09 07	704	0.0	1.2-	1999 10 02	704	0.4+	0.8+
1998 01 09	910	0.4+	0.4+	1999 09 09	704	0.5+	0.1+	1999 10 02	704	0.0	0.3+
1998 01 09	910	0.0	0.3+	1999 09 09	704	0.3-	0.6+	1999 10 02	704	0.5+	0.3+
1998 02 26	566	0.1-	0.5-	1999 09 09	704	0.3+	0.4-	1999 10 02	704	0.2-	0.0
1998 02 26	566	0.3-	0.2-	1999 09 09	704	0.3-	0.6-	1999 10 06	704	0.4+	0.4+
1998 02 26	566	0.3-	0.3-	1999 09 09	704	0.2-	0.0	1999 10 06	704	0.2+	0.1+
1999 07 16	704	0.3+	0.4+	1999 09 11	699	0.0	0.9+	1999 10 06	704	0.2-	0.2-
1999 07 16	704	0.0	0.2-	1999 09 11	699	0.2+	0.9+	1999 10 06	704	0.2-	0.3-
1999 07 16	704	0.7-	0.1+	1999 09 11	699	0.1-	0.8+	1999 10 06	704	0.7-	0.3-
1999 07 16	704	0.0	0.2-	1999 09 14	704	0.3-	0.4+	1999 10 07	704	0.4+	0.1+
1999 07 16	704	0.2+	0.4+	1999 09 14	704	0.2-	0.1+	1999 10 07	704	0.0	0.7-
1999 08 22	699	0.5-	0.4+	1999 09 14	704	0.1+	0.5+	1999 10 07	704	0.4-	1.0-
1999 08 22	699	0.7-	0.4+	1999 09 14	704	0.2-	0.2-				

1999 RJ₁₇₀ = 1981 UQ₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 338.40945 (2000.0)			P		Q	
<i>n</i>	0.27163576	ω	26.81600	+0.98735628	-0.15804413	
<i>a</i>	2.3612651	Ω	342.26467	+0.13727786	+0.89109945	
<i>e</i>	0.1803869	<i>i</i>	2.30131	+0.07926132	+0.42539844	
<i>P</i>	3.63	<i>H</i>	16.1	<i>G</i> 0.15	<i>U</i> 3	

Residuals in seconds of arc

1981 10 24	675	0.9+	1.0+	1999 09 09	704	0.1-	0.2+	1999 09 30	691	0.5+	0.4-
1981 10 25	675	0.0	0.5-	1999 09 09	704	0.7+	0.1-	1999 10 06	704	0.2+	0.5-
1981 10 26	675	0.8-	0.7-	1999 09 09	704	0.7-	1.0+	1999 10 06	704	0.3+	0.6-
1992 11 25	691	0.2+	0.6+	1999 09 11	699	0.9-	1.6+	1999 10 06	704	0.1-	0.5-
1992 11 25	691	0.4-	0.3+	1999 09 11	699	1.2-	0.2-	1999 10 06	704	0.0	0.7-
1992 11 25	691	0.2-	0.3+	1999 09 11	699	0.2-	0.5+	1999 10 06	704	0.0	0.2-
1999 09 07	704	0.2+	0.6-	1999 09 14	704	0.1+	0.0	1999 10 07	704	0.1-	0.3-
1999 09 07	704	0.3+	0.3-	1999 09 14	704	0.3-	0.2+	1999 10 07	704	0.9+	0.4+
1999 09 07	704	0.5+	0.1-	1999 09 14	704	0.1-	0.4+	1999 10 07	704	0.3-	1.3+
1999 09 07	704	0.6-	0.2+	1999 09 14	704	0.5-	0.2+	1999 10 08	691	0.7+	1.1-
1999 09 07	704	0.0	0.0	1999 09 14	704	0.3-	0.4+	1999 10 08	691	0.7+	0.9-
1999 09 09	704	0.1-	0.5+	1999 09 30	691	0.5+	0.4-	1999 10 08	691	0.5+	0.7-
1999 09 09	704	0.6-	0.6+	1999 09 30	691	0.5+	0.5-				

1999 RQ₁₇₁ = 1998 EQ₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 1.26332 (2000.0)			P		Q	
<i>n</i>	0.22942039	ω	174.92482	+0.91424256	+0.39860343	
<i>a</i>	2.6427011	Ω	161.07074	-0.37916815	+0.90490002	
<i>e</i>	0.2078224	<i>i</i>	12.93852	-0.14280076	+0.14923558	
<i>P</i>	4.30	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1998 03 01	691	0.2-	0.4+	1999 09 07	704	0.0	0.1+	1999 09 14	704	0.6+	0.2+
1998 03 01	691	0.6+	0.4+	1999 09 09	704	0.1+	0.0	1999 09 14	704	0.2+	0.3+
1998 03 04	691	0.5-	0.4-	1999 09 09	704	0.8-	0.5+	1999 09 14	704	0.7+	0.1-
1998 03 04	691	0.1+	0.1-	1999 09 09	704	0.1-	0.1+	1999 09 14	704	0.6+	0.2+
1998 03 04	691	0.2-	0.2-	1999 09 09	704	1.1-	1.2-	1999 09 14	704	0.7+	0.2-
1999 09 07	704	0.3+	0.3-	1999 09 09	704	0.9-	0.1+	1999 09 30	704	0.1+	0.2-
1999 09 07	704	0.2-	0.3-	1999 09 11	699	0.1+	0.7+	1999 09 30	704	0.3-	0.5+
1999 09 07	704	0.0	0.7-	1999 09 11	699	0.0	0.1+	1999 09 30	704	0.4-	0.2-
1999 09 07	704	0.1+	0.0	1999 09 11	699	0.3+	0.6+	1999 09 30	704	0.1-	0.5-

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1999 RX₁₇₁ = 1998 FN₃₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	354.26787	ω	315.49828	+0.95719636	+0.28862834		
<i>a</i>	2.1940632	Ω	27.74736	−0.25089929	+0.86471373		
<i>e</i>	0.1337333	<i>i</i>	2.66557	−0.14430758	+0.41105212		
<i>P</i>	3.25	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 03 20	704	0.5−	1.1−	1999 07 16	704	0.0	1.1−
1998 03 20	704	0.2+	0.7−	1999 07 16	704	0.4+	0.7−
1998 03 20	704	1.3+	0.8+	1999 07 16	704	0.8−	0.2−
1998 03 20	704	0.6−	0.3−	1999 07 16	704	0.7+	0.4−
1998 03 20	704	0.1+	0.1−	1999 09 07	704	0.1+	0.4+
1998 03 22	704	(1.6+	2.4+)	1999 09 07	704	0.0	0.1−
1998 03 22	704	(1.1+	3.4+)	1999 09 07	704	0.0	0.0
1998 03 22	704	0.9+	0.9+	1999 09 07	704	0.0	0.1+
1998 03 22	704	1.9−	0.6+	1999 09 07	704	0.0	0.1−
1998 04 19	704	1.1−	0.6+	1999 09 09	704	0.1+	0.1+
1998 04 19	704	0.8+	0.3+	1999 09 09	704	0.5+	0.6−
1998 04 19	704	1.7+	0.0	1999 09 09	704	0.4+	0.5+
1998 04 19	704	0.2+	1.0+	1999 09 09	704	0.5−	0.2+
1998 04 19	704	(2.5−	0.4−)	1999 09 09	704	1.2−	0.6−

1999 RY₁₇₂ = 1998 KW₆₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	170.69653	ω	18.66271	−0.97380715	−0.13638235		
<i>a</i>	2.6499499	Ω	151.51731	+0.12743634	−0.99002765		
<i>e</i>	0.0092713	<i>i</i>	22.42636	+0.18830725	−0.03528602		
<i>P</i>	4.31	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 05 27	704	0.5−	0.0	1998 07 14	699	0.9−	0.0
1998 05 27	704	0.4−	0.7+	1998 07 14	699	0.3−	0.1+
1998 05 27	704	0.8+	1.0+	1998 08 12	699	0.3−	0.6+
1998 05 27	704	0.3−	0.3−	1998 08 12	699	0.4−	0.1−
1998 06 04	704	0.1+	0.5−	1998 08 12	699	0.8−	0.6−
1998 06 04	704	0.1+	0.9−	1999 09 07	699	0.3−	0.2+
1998 06 04	704	0.5+	0.3−	1999 09 07	699	0.3−	0.0
1998 06 04	704	1.0+	0.1+	1999 09 07	699	0.4−	0.4+
1998 06 04	704	0.7−	0.3+	1999 09 09	704	0.6+	1.4−
1998 07 14	699	0.5+	0.2−	1999 09 09	704	1.0+	0.4+

1999 RA₁₇₃ = 1998 ME₁₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	43.27847	ω	154.83308	+0.43602642	+0.88136156		
<i>a</i>	3.1015583	Ω	140.30368	−0.86633415	+0.46579569		
<i>e</i>	0.0388542	<i>i</i>	16.54499	−0.24361057	−0.07896945		
<i>P</i>	5.46	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1998 06 03	704	0.6+	0.7+	1998 06 25	704	0.8+	0.0
1998 06 03	704	0.5−	0.9+	1998 06 25	704	(2.5−	0.5−)
1998 06 03	704	1.8+	1.1+	1998 08 12	699	0.5−	0.1−
1998 06 03	704	1.2−	1.2+	1998 08 12	699	0.8−	0.1+
1998 06 19	704	1.0−	0.1−	1998 08 12	699	0.2−	0.3+
1998 06 19	704	0.5+	0.3+	1999 09 07	699	1.0−	0.4+
1998 06 19	704	0.7−	0.7−	1999 09 07	699	0.7−	0.6+
1998 06 19	704	0.4+	1.4−	1999 09 07	699	0.5−	0.8+
1998 06 25	704	0.2−	1.2−	1999 09 09	704	0.7−	0.6−
1998 06 25	704	0.5−	0.8−	1999 09 09	704	1.4+	0.2+

1999 RC₁₇₃ = 1976 UB₁₈ = 1998 HQ₁₃₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	35.00953	ω	242.91139	+0.40165225	+0.91058636		
<i>a</i>	2.4698725	Ω	51.11212	−0.78960464	+0.39827468		
<i>e</i>	0.1164570	<i>i</i>	7.19646	−0.46389652	+0.11049777		
<i>P</i>	3.88	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1976 10 22	381	0.3−	0.8+	1998 04 20	704	1.1−	0.1−
1976 10 22	381	1.6−	0.2+	1999 09 07	699	0.5+	0.1−
1976 10 24	381	1.7+	0.5−	1999 09 07	699	0.1+	0.3+
1998 04 19	704	0.1+	1.1−	1999 09 07	699	0.2+	0.0
1998 04 19	704	0.5−	0.5+	1999 09 09	704	0.0	0.2−
1998 04 19	704	1.4+	0.1+	1999 09 09	704	0.1+	0.9−
1998 04 19	704	(0.8+	2.8+)	1999 09 09	704	0.4−	1.1−
1998 04 20	704	0.0	0.5+	1999 09 09	704	0.6−	1.2−
1998 04 20	704	1.0+	1.6+	1999 09 09	704	(1.6−	2.2−)
1998 04 20	704	0.1+	0.2+	1999 09 13	704	0.2−	0.8−

1999 RQ₁₇₃ = 1998 KL₂₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	67.81400	ω	185.68504	−0.18047157	+0.97975619		
<i>a</i>	2.9733353	Ω	73.94032	−0.89882708	−0.12850513		
<i>e</i>	0.1342985	<i>i</i>	5.17319	−0.39942445	−0.15350648		
<i>P</i>	5.13	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 05 05	699	0.8−	0.2+	1998 05 24	704	0.1−	0.5−
1998 05 05	699	1.2+	0.1+	1998 05 24	704	0.4+	0.1−
1998 05 05	699	1.3−	0.7−	1999 09 07	699	0.2+	0.9+
1998 05 22	704	0.6−	0.1+	1999 09 07	699	0.4+	1.6+
1998 05 22	704	0.6+	0.7+	1999 09 07	699	0.9−	0.8−
1998 05 22	704	1.1−	0.3+	1999 09 09	704	0.7+	0.2−
1998 05 22	704	(3.7−	1.6+)	1999 09 09	704	0.4+	0.2+
1998 05 24	704	0.2+	0.8−	1999 09 09	704	0.2−	0.0
1998 05 24	704	0.4−	0.8−	1999 09 09	704	0.5−	1.2−
1998 05 24	704	1.9+	1.4+	1999 09 09	704	0.9+	1.1−

1999 RP₁₇₄ = 1989 UY₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	107.58324	ω	137.88348	−0.70482464	+0.70771918		
<i>a</i>	0.18629918	Ω	87.23720	−0.66312068	−0.63301319		
<i>e</i>	3.0361886	<i>i</i>	2.78527	−0.25197856	−0.31373217		
<i>P</i>	5.29	<i>H</i>	13.5	<i>G</i>	0.15	<i>U</i>	6
Residuals in seconds of arc							
1989 10 30	807	0.5−	0.0	1999 09 09	704	0.5−	1.0−
1989 11 01	807	0.6−	0.3−	1999 09 09	704	0.2+	0.3+
1989 11 01	807	0.9+	0.7+	1999 09 09	704	0.5+	0.1+
1999 09 07	704	0.1−	0.3+	1999 09 09	704	1.1−	0.3−
1999 09 07	704	0.0	0.3+	1999 09 11	699	0.2−	1.4+
1999 09 07	704	0.1+	0.3+	1999 09 11	699	0.6+	0.4+
1999 09 07	704	0.0	0.3+	1999 09 11	699	0.5+	0.9+
1999 09 07	704	0.5+	0.5+	1999 09 14	704	0.7−	1.1+
1999 09 09	704	0.5−	0.8−	1999 09 14	704	0.1+	0.3−

1999 RX₁₇₄ = 1998 HY₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	25.46717		(2000.0)	P		Q	
<i>n</i>	0.24682543	ω	171.59435	+0.63543800	+0.77117245		
<i>a</i>	2.5169588	Ω	137.84590	-0.71176145	+0.60451797		
<i>e</i>	0.1117148	<i>i</i>	3.32107	-0.29935629	+0.19962734		
<i>P</i>	3.99	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 20	704	0.8-	1.4-	1999 09 07	704	0.6-	0.6+	1999 09 14	704	1.0+	1.4-
1998 04 20	704	0.0	1.2+	1999 09 07	704	0.2+	0.8+	1999 09 14	704	0.4+	0.7-
1998 04 20	704	(0.3+	3.2+)	1999 09 07	704	0.6+	0.8+	1999 09 30	699	0.5+	0.2-
1998 04 20	704	(3.3-	1.9+)	1999 09 09	704	0.5+	0.1-	1999 09 30	699	0.6-	1.6+
1998 04 21	704	(2.3+	0.7+)	1999 09 09	704	0.1+	0.2-	1999 09 30	699	0.6+	1.2+
1998 04 21	704	0.5+	0.5+	1999 09 09	704	0.6-	0.1+	1999 10 07	704	1.1-	0.5-
1998 04 21	704	0.1-	0.7-	1999 09 09	704	1.3-	0.5-	1999 10 07	704	0.3+	0.0
1998 04 21	704	0.3+	0.3+	1999 09 09	704	0.5-	1.4-	1999 10 07	704	0.1+	1.3-
1999 09 07	704	0.3-	0.2-	1999 09 14	704	0.9+	0.2+	1999 10 07	704	(1.0+	2.7-)
1999 09 07	704	0.3+	0.3+	1999 09 14	704	0.7-	0.8+				

1999 RQ₁₇₅ = 1998 HE₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	61.87708		(2000.0)	P		Q	
<i>n</i>	0.24283480	ω	91.33734	+0.00162829	+0.99999496		
<i>a</i>	2.5444589	Ω	178.74620	-0.95985972	+0.00232708		
<i>e</i>	0.1080245	<i>i</i>	7.15262	-0.28047577	-0.00215844		
<i>P</i>	4.06	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1991 10 04	691	(1.0-	2.6+)	1998 04 20	704	0.8+	1.4-	1999 09 09	704	0.1-	0.3-
1991 10 04	691	0.0	1.0+	1998 04 20	704	0.1-	1.9+	1999 09 09	704	0.1+	0.5+
1991 10 04	691	0.6-	0.9+	1998 04 20	704	(2.9+	2.7-)	1999 09 09	704	0.7-	0.1-
1998 03 25	704	0.0	1.3+	1998 04 20	704	0.3+	1.5+	1999 09 09	704	0.0	1.7-
1998 03 25	704	0.6+	0.2+	1998 04 21	704	0.0	0.5-	1999 09 09	704	0.4-	1.4-
1998 03 25	704	0.3+	0.5+	1998 04 21	704	0.7+	0.1-	1999 09 11	699	0.0	0.3+
1998 03 25	704	1.4+	0.1-	1998 04 21	704	0.3+	0.1-	1999 09 11	699	0.0	0.7+
1998 03 25	704	1.6-	1.0+	1998 04 21	704	0.8+	0.9-	1999 09 11	699	0.1+	0.1+
1998 03 25	691	0.4-	0.0	1998 04 22	704	0.9+	1.2+	1999 09 14	704	0.4-	1.0+
1998 03 25	691	0.4-	0.1+	1998 04 22	704	0.0	0.2-	1999 09 14	704	0.1+	0.3-
1998 03 25	691	0.3-	0.2+	1998 04 22	704	0.0	0.4-	1999 09 14	704	0.1+	0.3-
1998 03 29	704	0.2-	0.4+	1998 04 22	704	0.6-	0.9-	1999 09 14	704	0.2+	0.0
1998 03 29	704	0.8-	1.2+	1998 04 22	704	0.0	0.7-	1999 09 14	704	0.9+	0.3+
1998 03 29	704	0.2+	0.8+	1998 05 16	704	0.6-	0.4-	1999 09 30	691	0.1-	0.7+
1998 03 29	704	0.6+	0.4+	1998 05 16	704	0.7+	1.3-	1999 09 30	691	0.3+	0.7+
1998 03 29	704	0.1-	0.4-	1998 05 16	704	1.4-	0.5-	1999 09 30	691	0.3-	0.8+
1998 04 20	704	(1.1-	2.7+)	1998 05 16	704	(3.5-	0.3+)				

1999 RV₁₇₅ = 1982 JL₂ = 1986 HX

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	19.34483		(2000.0)	P		Q	
<i>n</i>	0.23819762	ω	113.36473	+0.53450927	+0.84506880		
<i>a</i>	2.5773759	Ω	188.97758	-0.80190324	+0.50238875		
<i>e</i>	0.2932832	<i>i</i>	4.62841	-0.26692889	+0.18293241		
<i>P</i>	4.14	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1982 05 15	675	0.6+	0.1+	1999 07 23	704	0.6+	0.4+	1999 09 14	704	0.1-	1.0-
1982 05 16	675	0.4+	1.4-	1999 08 22	699	0.8-	0.7+	1999 09 14	704	0.3-	1.3-
1982 05 17	675	0.6-	0.7+	1999 08 22	699	0.5-	0.1-	1999 10 02	704	0.8+	0.3+
1982 05 18	675	0.2-	1.3+	1999 08 22	699	0.4-	0.4+	1999 10 02	704	0.4-	0.0
1986 04 29	675(10.4-	0.5+)		1999 09 07	704	0.8-	0.3+	1999 10 02	704	0.2-	0.7+
1986 04 29	675(17.3-	4.4+)		1999 09 07	704	0.3+	0.2-	1999 10 02	704	0.6-	0.1+
1991 11 02	691	0.2-	0.7+	1999 09 07	704	0.0	0.1+	1999 10 02	704	0.8-	0.2-
1991 11 02	691	0.2+	0.4+	1999 09 07	704	0.2+	0.2-	1999 10 07	704	0.0	0.2+
1991 11 02	691	0.3-	0.6+	1999 09 07	704	0.3-	0.2-	1999 10 07	704	0.3+	0.0

1995 09 19	691	0.1+	0.3-	1999 09 09	704	0.1+	0.5-	1999 10 07	704	0.5+	0.3-
1995 09 19	691	0.2-	0.2-	1999 09 09	704	0.0	0.4-	1999 10 07	704	0.4+	0.5+
1995 09 19	691	(2.5-	2.6-)	1999 09 09	704	0.0	0.6-	1999 10 07	704	0.4+	0.3-
1998 03 29	704	0.5+	0.8+	1999 09 09	704	0.0	0.3-	1999 10 08	691	0.4+	0.0
1998 03 29	704	(3.6-	0.2-)	1999 09 09	704	0.0	0.3+	1999 10 08	691	0.2+	0.0
1998 03 29	704	0.3-	1.6+	1999 09 11	699	0.1+	1.0+	1999 10 08	691	0.4+	0.1+
1998 03 29	704	0.3+	1.4-	1999 09 11	699	0.1+	1.1+	1999 10 14	691	0.2+	0.2+
1999 07 23	704	0.1-	0.4+	1999 09 11	699	0.1-	1.1+	1999 10 14	691	0.3+	0.2+
1999 07 23	704	0.4+	0.0	1999 09 14	704	0.3+	0.3-	1999 10 14	691	0.2+	0.2+
1999 07 23	704	0.3+	0.1+	1999 09 14	704	0.6-	0.7-				
1999 07 23	704	0.4+	0.2+	1999 09 14	704	0.3-	0.7-				

1999 RZ₁₇₅ = 1998 MO₃₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	331.42820		(2000.0)	P		Q	
<i>n</i>	0.18422716	ω	201.40253	+0.91440871	-0.40468629		
<i>a</i>	3.0589117	Ω	182.52631	+0.39516065	+0.89737777		
<i>e</i>	0.1690676	<i>i</i>	12.12547	+0.08777688	+0.17590378		
<i>P</i>	5.35	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 06 21	910	0.6+	0.3-	1999 09 09	704	0.3+	0.3+	1999 10 02	678	0.1+	0.6+
1998 06 21	910	0.1+	0.3-	1999 09 09	704	0.6-	0.1-	1999 10 02	691	0.2+	0.2-
1998 06 21	910	0.1-	0.2-	1999 09 09	704	0.3+	0.3+	1999 10 02	691	0.1+	0.2-
1998 06 25	910	0.4-	0.4+	1999 09 09	704	0.1+	0.6+	1999 10 02	691	0.1+	0.2-
1998 06 25	910	0.1+	0.2+	1999 09 09	704	0.0	0.3+	1999 10 03	678	0.2-	0.4-
1998 06 25	910	0.3-	0.3+	1999 09 14	704	0.2-	0.3-	1999 10 03	678	0.0	0.5-
1999 07 23	704	0.4-	0.1-	1999 09 14	704	1.1+	0.6-	1999 10 07	704	0.3+	0.3-
1999 07 23	704	0.2-	0.5-	1999 09 14	704	0.9-	0.1+	1999 10 07	704	0.4-	1.0-
1999 07 23	704	0.9+	0.2+	1999 09 14	704	0.3-	0.8-	1999 10 07	704	0.2+	0.7+
1999 09 07	704	0.1+	0.7+	1999 09 14	704	0.8+	0.6-	1999 10 07	704	0.1-	0.4-
1999 09 07	704	0.2+	0.0	1999 09 30	699	0.5+	1.2+	1999 10 14	691	0.1-	0.2-
1999 09 07	704	0.1+	0.2-	1999 09 30	699	0.6-	0.3+	1999 10 14	691	0.2-	0.1-
1999 09 07	704	1.7-	0.2-	1999 09 30	699	0.8+	1.1+	1999 10 14	691	0.2-	0.1-
1999 09 07	704	0.0	0.4+	1999 10 02	678	0.1+	0.5+				

1999 RF₁₇₆ = 1998 KA₆₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	39.16553		(2000.0)	P		Q	
<i>n</i>	0.23457210	ω	120.62408	+0.57757987	+0.81616122		
<i>a</i>	2.6038651	Ω	184.76031	-0.80102192	+0.56265773		
<i>e</i>	0.0078068	<i>i</i>	11.68230	-0.15737021	+0.13151862		
<i>P</i>	4.20	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1998 05 03	566	0.9-	0.6-	1998 06 23	691	0.2-	0.2+	1999 09 14	704	0.2-	0.2+
1998 05 03	566	0.9-	0.8-	1998 06 23	691	0.2+	0.2+	1999 09 14	704	1.0-	0.9-
1998 05 03	566	1.4-	0.2-	1998 06 28	699	0.1+	0.1+	1999 09 14	704	0.3-	0.2+
1998 05 23	704	0.1-	0.2-	1998 06 28	699	0.8+	0.0	1999 09 14	704	0.3-	0.2+
1998 05 23	704	1.8+	0.2-	1998 06 28	699	0.5+	0.5+	1999 09 14	704	0.1+	0.2+
1998 05 23	704	0.4-	1.6-	1999 09 07	704	0.9+	0.3+	1999 10 02	704	0.9-	0.1+
1998 05 23	704	1.3+	1.0-	1999 09 07	704	0.1+	0.6+	1999 10 02	691	0.1+	0.8-
1998 05 23	704	(4.2-	1.1+)	1999 09 07	704	1.1+	0.5-	1999 10 02	704	0.5+	0.3+
1998 05 24	699	0.4-	0.8-	1999 09 07	704	0.2-	0.6-	1999 10 02	704	0.6+	0.9-
1998 05 24	699	0.8-	0.7+	1999 09 07	704	0.3-	0.2+	1999 10 02	704	0.9-	0.6-
1998 05 24	699	0.3-	0.8+	1999 09 09	704	1.8+	1.1-	1999 10 02	691	0.1+	0.3-
1998 05 26	704	0.1-	0.1+	1999 09 09	704	0.9+	0.1+	1999 10 02	704	1.0-	0.5-
1998 05 26	704	1.2+	0.8+	1999 09 09	704	0.4+	0.6+	1999 10 02	691	0.1-	0.2-
1998 05 26	704	0.8-	0.7+	1999 09 09	704	0.9+	0.0	1999 10 06	704	0.2+	0.1-
1998 05 26	704	0.2-	0.5+	1999 09 09	704	1.1-	0.1-	1999 10 06	704	0.3+	0.1+
1998 06 04	699	0.6+	0.4-	1999 09 12	699	0.8-	0.5+	1999 10 06	704	0.0	0.1-
1998 06 04	699	0.3-	0.9+	1999 09 12	699	1.0-	1.6+	1999 10 06	704	0.0	0.1-
1998 06 04	699	0.2+	0.2-	1999 09 12	699	0.6+	1.5+	1999 10 06	704	0.1-	0.4-

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1999 RO₁₇₆ = 1998 HE₁₃₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	28.44928		(2000.0)	P		Q	
<i>n</i>	0.23367309	ω	121.47310	+0.51681950	+0.85609315		
<i>a</i>	2.6105394	Ω	179.63639	−0.84248795	+0.50890659		
<i>e</i>	0.1911879	<i>i</i>	13.26107	−0.15202520	+0.09010324		
<i>P</i>	4.22	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 20	704	(3.0+ 2.0−)	1998 04 20	704	0.3+ 0.1+	1999 09 11	699	0.5+ 1.0+
1998 03 20	704	1.4− 0.7−	1998 04 20	704	(2.2+ 1.5−)	1999 09 11	699	0.3+ 0.1+
1998 03 20	704	0.9+ 0.3−	1999 07 23	704	0.6− 0.4+	1999 09 11	699	0.5− 1.7+
1998 03 20	704	(0.8− 2.1+)	1999 07 23	704	0.1+ 0.0	1999 09 14	704	0.1+ 0.6−
1998 03 29	704	0.3+ 0.1−	1999 07 23	704	0.1+ 0.3+	1999 09 14	704	0.1+ 0.5−
1998 03 29	704	0.4− 1.1+	1999 07 23	704	0.7+ 0.2+	1999 09 14	704	0.3− 0.1+
1998 03 29	704	0.2− 0.1−	1999 09 07	704	(3.3+ 0.9−)	1999 09 14	704	0.2− 0.5−
1998 03 29	704	1.2+ 0.4+	1999 09 07	704	0.1+ 0.7−	1999 09 14	704	0.2− 0.0
1998 03 29	704	(2.3− 0.3−)	1999 09 07	704	0.2+ 0.0	1999 10 01	691	0.0 0.0
1998 04 19	704	1.3+ 0.8−	1999 09 07	704	0.2− 0.1−	1999 10 01	691	0.1+ 0.7−
1998 04 19	704	1.3− 1.5+	1999 09 09	704	0.1+ 0.0	1999 10 01	691	0.1+ 0.4−
1998 04 19	704	0.9+ 0.5−	1999 09 09	704	0.6+ 0.3−	1999 10 07	704	0.5+ 0.6−
1998 04 19	704	0.9− 0.4−	1999 09 09	704	0.6− 0.3+	1999 10 07	704	0.6− 1.4+
1998 04 20	704	0.1+ 2.0−	1999 09 09	704	0.2+ 0.8−	1999 10 07	704	0.5− 0.0
1998 04 20	704	0.9− 1.1+	1999 09 09	704	0.0 0.4−			

1999 RC₁₇₇ = 1996 XV₂₁

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	78.40778		(2000.0)	P		Q	
<i>n</i>	0.23476727	ω	279.89402	−0.16672041	+0.98578311		
<i>a</i>	2.6024218	Ω	340.47142	−0.87840140	−0.15811227		
<i>e</i>	0.0551904	<i>i</i>	3.58114	−0.44790098	−0.05685214		
<i>P</i>	4.20	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1996 12 08	691	0.9− 0.5−	1998 05 22	704	1.3− 0.7+	1999 09 14	704	0.8− 0.2+
1996 12 08	691	0.1− 0.3−	1998 05 22	704	0.9− 0.6+	1999 09 14	704	0.6− 0.2+
1996 12 08	691	0.2− 0.4+	1998 05 22	704	0.1+ 1.7+	1999 09 14	704	1.0− 0.5−
1996 12 13	691	0.2+ 0.5+	1998 05 22	704	(0.3− 2.2+)	1999 09 14	704	0.6− 0.1+
1996 12 13	691	0.1+ 0.3−	1998 05 24	704	0.5− 0.8+	1999 10 02	691	0.2+ 0.0
1996 12 13	691	0.7+ 0.5−	1998 05 24	704	0.4− 0.9+	1999 10 02	691	0.2+ 0.2−
1998 04 22	704	(0.9+ 2.2−)	1998 05 24	704	0.7− 1.0+	1999 10 02	691	0.1+ 0.0
1998 04 22	704	0.9+ 1.0−	1998 05 24	704	0.0 1.7−	1999 10 06	704	0.4+ 1.0−
1998 04 22	704	0.8+ 0.2−	1998 05 24	704	(0.2+ 3.5−)	1999 10 06	704	0.6+ 0.3−
1998 04 22	704	(5.9− 1.7−)	1999 09 09	704	0.3− 0.1−	1999 10 06	704	0.8+ 0.6−
1998 05 01	704	0.3+ 0.9−	1999 09 09	704	0.8− 0.8+	1999 10 06	704	0.7+ 0.7−
1998 05 01	704	0.5+ 0.8−	1999 09 09	704	0.9+ 1.3+	1999 10 06	704	0.4+ 1.1−
1998 05 01	704	(1.2+ 2.5−)	1999 09 09	704	0.3+ 0.0	1999 10 09	691	0.4+ 0.0
1998 05 01	704	0.8+ 1.3−	1999 09 09	704	0.4− 0.5+	1999 10 09	691	0.2+ 0.2−
1998 05 01	704	0.0 1.0−	1999 09 14	704	0.1− 0.5+	1999 10 09	691	0.2+ 0.1−

1999 RF₁₇₇ = 1998 FQ₁₂₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	51.43386		(2000.0)	P		Q	
<i>n</i>	0.26542337	ω	94.48295	+0.04609420	+0.99893362		
<i>a</i>	2.3979674	Ω	178.15281	−0.94587926	+0.04449435		
<i>e</i>	0.1795374	<i>i</i>	4.69077	−0.32122850	+0.01232380		
<i>P</i>	3.71	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 03 22	704	0.3+ 1.8−	1999 09 07	704	0.6− 0.1−	1999 09 14	704	0.9− 0.2−
1998 03 22	704	0.9− 0.7+	1999 09 07	704	0.4− 0.2−	1999 09 14	704	0.9+ 0.1−
1998 03 22	704	1.0+ 1.0+	1999 09 07	704	0.9− 0.3−	1999 09 14	704	(0.8+ 2.1−)
1998 03 22	704	(3.5− 1.0−)	1999 09 09	704	0.5− 0.2+	1999 09 14	704	0.8− 0.4−
1998 03 26	704	0.7− 0.7−	1999 09 09	704	0.6− 0.0	1999 09 30	699	0.6+ 0.3+

1998 03 26	704	0.8+ 1.1+	1999 09 09	704	0.8+ 0.4−	1999 09 30	699	0.2+ 0.6+
1998 03 26	704	0.1− 0.9+	1999 09 09	704	0.7− 0.2−	1999 09 30	699	0.5+ 0.2−
1999 08 22	699	0.1+ 0.4−	1999 09 09	704	0.1− 0.3+	1999 09 30	691	0.2+ 0.4−
1999 08 22	699	1.0+ 0.4−	1999 09 11	699	0.0 0.0	1999 09 30	691	0.1− 0.0
1999 08 22	699	0.6+ 1.2+	1999 09 11	699	1.2+ 0.6+	1999 09 30	691	0.0 0.1−
1999 09 07	704	0.3− 0.7+	1999 09 11	699	0.5+ 0.4+			
1999 09 07	704	0.0 0.7+	1999 09 14	704	0.8− 0.6−			

1999 RG₁₇₇ = 1997 AL₁₀ = 1998 KW₆₂Id. G. V. Williams; 1997 AL₁₀ = 1995 OB₄ (*MPC* 32955) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	6.15655		(2000.0)	P		Q	
<i>n</i>	0.24340164	ω	63.51925	+0.92771045	+0.37315774		
<i>a</i>	2.5405070	Ω	274.56878	−0.34607921	+0.84936250		
<i>e</i>	0.0247273	<i>i</i>	0.59354	−0.13993751	+0.37327823		
<i>P</i>	4.05	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 01 09	691	0.5− 0.4−	1999 08 12	699	0.3+ 0.4+	1999 09 30	699	0.5+ 0.9+
1997 01 09	691	0.3− 0.2−	1999 08 12	699	0.9+ 0.6+	1999 09 30	699	0.0 0.2+
1997 01 09	691	0.4− 0.2−	1999 09 07	704	0.3+ 0.3+	1999 10 01	691	0.0 0.2−
1997 01 10	691	0.1+ 0.3−	1999 09 07	704	1.0+ 0.1−	1999 10 01	691	0.0 0.3−
1997 01 10	691	0.1+ 0.2−	1999 09 07	704	0.5+ 0.2−	1999 10 01	691	0.2+ 0.3−
1997 01 10	691	0.1+ 0.0	1999 09 07	704	0.1− 0.2+	1999 10 02	704	0.3+ 0.6−
1997 01 11	691	0.3+ 0.1+	1999 09 07	704	0.8− 0.1−	1999 10 02	704	0.9− 0.8+
1997 01 11	691	0.2+ 0.1+	1999 09 09	704	0.5+ 0.2−	1999 10 02	704	0.7− 0.3+
1997 01 11	691	0.2+ 0.0	1999 09 09	704	0.1− 1.2+	1999 10 02	704	0.5− 0.3−
1998 05 22	704	1.4+ 0.6+	1999 09 09	704	0.0 0.5−	1999 10 02	704	0.6− 0.9−
1998 05 22	704	0.9− 0.3+	1999 09 09	704	0.1+ 0.3−	1999 10 07	704	0.6+ 0.1+
1998 05 22	704	0.9+ 1.3−	1999 09 09	704	0.9− 1.1+	1999 10 07	704	0.2+ 1.3−
1998 05 24	704	0.1+ 0.0	1999 09 14	704	0.4− 0.4−	1999 10 07	704	0.1− 0.4+
1998 05 24	704	1.3− 0.3+	1999 09 14	704	0.1+ 0.3−	1999 10 07	704	(0.1− 2.6−)
1998 05 24	704	0.9− 0.8−	1999 09 14	704	0.0 0.1−	1999 10 08	691	0.2+ 1.0−
1998 05 24	704	0.4+ 0.4−	1999 09 14	704	0.0 0.1−	1999 10 08	691	0.6+ 0.9−
1998 05 24	704	(2.6− 0.9+)	1999 09 14	704	0.2+ 0.3−	1999 10 08	691	0.1+ 0.3−
1999 08 12	699	0.8− 0.1−	1999 09 30	699	0.6+ 0.9+			

1999 RM₁₇₇ = 1951 EN₁ = 1953 SP = 1987 QC₂ = 1991 EJ₆= 1998 MN₂₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	129.12884		(2000.0)	P		Q	
<i>n</i>	0.17105188	ω	69.63322	−0.88599745	+0.46297732		
<i>a</i>	3.2140365	Ω	137.93509	−0.43845093	−0.81844698		
<i>e</i>	0.1480434	<i>i</i>	2.19843	−0.15089499	−0.34028891		
<i>P</i>	5.76	<i>H</i>	12.2	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1951 03 10	760	0.1+ 0.4+	1998 06 24	704	0.2+ 0.8+	1999 09 14	704	0.2+ 0.2−
1951 03 10	760	0.3+ 1.0+	1998 06 24	704	1.7− 0.1+	1999 09 14	704	0.2− 0.4−
1953 09 06	675	0.0 0.6−	1998 06 24	704	1.6+ 0.5+	1999 09 14	704	0.2+ 0.0
1953 09 06	675	0.3+ 1.1−	1998 06 26	704	0.2− 0.6−	1999 09 14	704	0.3− 0.1−
1953 09 17	675	1.2+ 0.3−	1998 06 26	704	0.3− 0.3−	1999 09 14	704	0.2− 0.1+
1953 09 17	675	0.7+ 1.4−	1998 06 26	704	0.0 0.2−	1999 09 30	699	0.6− 0.3+
1987 08 21	809	1.6− 1.0−	1998 06 26	704	0.4− 0.3+	1999 09 30	699	0.1+ 0.5−
1987 08 21	809	0.7+ 0.5−	1998 06 26	704	0.9+ 0.5+	1999 09 30	699	0.3− 0.3+
1987 08 21	809	0.2+ 0.5−	1999 09 07	704	0.2− 0.5−	1999 10 02	704	0.7+ 1.6+
1987 08 26	809	2.3− 1.1−	1999 09 07	704	0.3− 0.0	1999 10 02	704	0.0 0.7+
1987 08 26	809	0.8− 0.2−	1999 09 07	704	0.4− 0.1+	1999 10 02	704	0.0 0.2+
1987 08 26	809	1.0− 0.6−	1999 09 07	704	0.3− 0.1−	1999 10 02	704	0.3+ 0.4+
1987 08 28	809	0.3+ 1.1+	1999 09 07	704	0.2− 0.1−	1999 10 07	704	0.1− 0.4−
1987 08 28	809	0.9+ 2.1+	1999 09 09	704	0.1+ 0.1+	1999 10 07	704	0.1+ 0.1+
1987 08 28	809	1.3+ 1.8+	1999 09 09	704	0.3+ 0.4−	1999 10 07	704	0.3+ 1.5+
1991 03 05	071	0.1− 0.8+	1999 09 09	704	0.0 0.1+	1999 10 07	704	0.7− 1.0+
1991 03 05	071	0.4+ 0.5+	1999 09 09	704	0.3+ 0.2+			
1998 06 24	704	0.5+ 0.1−	1999 09 09	704	0.2+ 1.0+			

1999 RO₁₇₇ = 1998 HJ₈₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	337.77708		(2000.0)	P		Q	
<i>n</i>	0.26560343	ω	206.48016	+0.98143299	−0.19060495		
<i>a</i>	2.3968835	Ω	164.46309	+0.18709584	+0.92674238		
<i>e</i>	0.1652075	<i>i</i>	4.58786	+0.04224267	+0.32375657		
<i>P</i>	3.71	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 04 21	704	0.1+	0.6+	1999 09 07	704	0.1+	1.6−
1998 04 21	704	1.1+	0.2+	1999 09 07	704	0.1+	1.6−
1998 04 21	704	1.0+	0.6−	1999 09 09	704	0.2+	0.5+
1998 04 21	704	(2.5+ 0.5−)		1999 09 09	704	0.2−	0.2−
1998 04 22	704	0.9+	0.8+	1999 09 09	704	0.5−	0.3−
1998 04 22	704	1.4−	1.3−	1999 09 09	704	0.2−	0.2+
1998 04 22	704	1.7−	0.4+	1999 09 09	704	0.5−	0.1−
1999 09 06	691	0.3−	0.6+	1999 09 11	699	0.9−	1.8+
1999 09 06	691	0.3−	0.5+	1999 09 11	699	0.1+	0.7+
1999 09 06	691	0.3−	0.6+	1999 09 11	699	0.1+	1.3+
1999 09 07	704	1.0+	0.9−	1999 09 14	704	0.2−	0.3+
1999 09 07	704	0.2−	0.1−	1999 09 14	704	0.9+	0.5+
1999 09 07	704	0.0	0.4−	1999 09 14	704	0.5+	0.1+

1999 RR₁₇₇ = 1995 SE₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	19.11862		(2000.0)	P		Q	
<i>n</i>	0.24062191	ω	183.06127	+0.68146339	+0.73141616		
<i>a</i>	2.5600352	Ω	129.89858	−0.67075991	+0.63801041		
<i>e</i>	0.1719366	<i>i</i>	1.88682	−0.29272648	+0.24077608		
<i>P</i>	4.10	<i>H</i>	16.4	<i>G</i>	0.15	<i>U</i>	6
Residuals in seconds of arc							
1995 09 25	691	0.1+	0.0	1999 09 07	704	0.3+	0.7−
1995 09 25	691	0.0	0.0	1999 09 07	704	0.5+	0.4+
1995 09 25	691	0.1+	0.0	1999 09 07	704	0.3−	0.5−
1995 09 30	691	0.3−	0.0	1999 09 09	704	0.5−	0.9−
1995 09 30	691	0.2+	0.3+	1999 09 09	704	0.3−	0.1−
1995 09 30	691	0.1−	0.3−	1999 09 09	704	0.4+	0.6+
1999 09 07	704	0.6−	0.1−	1999 09 09	704	0.8+	0.8−
1999 09 07	704	0.6−	0.6−	1999 09 09	704	0.6+	2.0+
1999 09 14	704	0.0	0.1−	1999 09 14	704	0.0	0.1−

1999 RT₁₇₇ = 1992 SB₆ = 1994 CB₁₃ = 1998 KK₂₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	256.11589		(2000.0)	P		Q	
<i>n</i>	0.28387026	ω	87.03198	−0.13689147	−0.99051800		
<i>a</i>	2.2929229	Ω	10.85672	+0.88259987	−0.12728209		
<i>e</i>	0.1046999	<i>i</i>	3.53426	+0.44975348	−0.05170455		
<i>P</i>	3.47	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1
Residuals in seconds of arc							
1992 09 26	691	0.5−	0.4+	1994 02 13	809	(2.8+ 1.4+)	
1992 09 26	691	0.1+	0.2−	1994 02 13	809	2.0+	1.7+
1992 09 26	691	0.1−	0.2−	1994 02 13	809	1.5+	0.7+
1992 09 27	691	0.0	0.5−	1998 05 22	704	0.7+	0.1+
1992 09 27	691	1.4+	0.2+	1998 05 22	704	0.5+	0.1−
1992 09 27	691	0.3−	0.3−	1998 05 22	704	1.2+	0.2+
1992 09 29	691	0.0	0.1+	1998 05 22	704	0.4+	0.4−
1992 09 29	691	0.5−	0.2+	1998 05 24	704	0.8−	0.2−
1994 02 07	809	0.2+	0.0	1998 05 24	704	0.7+	0.4−
1994 02 07	809	0.2+	0.5+	1998 05 24	704	1.1−	0.7+
1994 02 07	809	1.7−	0.6+	1998 05 24	704	1.3−	1.6+
1994 02 08	809	(5.7+ 3.2+)		1998 05 24	704	(0.1+ 2.4+)	
1994 02 08	809	(5.2+ 3.4+)		1999 09 07	704	0.2−	0.0
1994 02 08	809	(4.9+ 3.0+)		1999 09 07	704	0.4−	0.4+
1994 02 09	809	0.4−	0.5−	1999 09 07	704	0.2+	0.1−

1994 02 09	809	1.0−	0.8−	1999 09 07	704	0.3+	0.4+	1999 10 07	704	0.1−	0.4+
1994 02 09	809	0.8−	1.7−	1999 09 07	704	(2.5+ 0.1+)		1999 10 07	704	0.9−	0.4+
1994 02 10	809	0.9+	1.3+	1999 09 09	704	0.4−	0.4+	1999 10 07	704	0.1−	0.2+
1994 02 10	809	0.5+	0.3+	1999 09 09	704	0.4−	0.1+				
1994 02 10	809	0.0	0.7+	1999 09 09	704	0.6−	0.5−				

1999 RA₁₇₈ = 1998 HJ₁₃₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	22.36652		(2000.0)	P		Q	
<i>n</i>	0.24385713	ω	144.36784	+0.59677521	+0.80013094		
<i>a</i>	2.5373424	Ω	162.02347	−0.77408483	+0.59390340		
<i>e</i>	0.2021768	<i>i</i>	11.28854	−0.21131027	+0.08407873		
<i>P</i>	4.04	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 04 19	704	0.9−	0.6+	1999 09 07	704	0.8+	0.6+
1998 04 19	704	0.6−	0.2−	1999 09 09	704	0.3−	0.3+
1998 04 19	704	0.2−	1.2−	1999 09 09	704	0.2−	1.0+
1998 04 19	704	1.1+	0.3+	1999 09 09	704	0.3−	0.2+
1998 04 20	704	1.4+	0.2+	1999 09 09	704	0.3−	0.5−
1998 04 20	704	0.3−	0.1−	1999 09 09	704	0.7−	0.1−
1998 04 20	704	(2.3+ 1.9+)		1999 09 11	699	0.2+	0.4+
1998 04 20	704	0.7+	0.8−	1999 09 11	699	(2.5+ 0.0)	
1998 04 20	704	1.2−	1.3+	1999 09 11	699	0.2+	0.0
1999 09 07	704	0.1+	0.3−	1999 09 14	704	0.2+	0.0
1999 09 07	704	0.1−	0.8−	1999 09 14	704	0.1+	0.0
1999 09 07	704	0.1−	0.5+	1999 09 14	704	0.1+	0.5−
1999 09 07	704	0.3+	0.0	1999 09 14	704	0.0	0.1−

1999 RH₁₇₈ = 1998 EJ₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	49.54693		(2000.0)	P		Q	
<i>n</i>	0.28149450	ω	123.23765	+0.07309211	+0.99597487		
<i>a</i>	2.3058061	Ω	150.82095	−0.94678076	+0.08564425		
<i>e</i>	0.1656930	<i>i</i>	6.10858	−0.31347046	−0.02644083		
<i>P</i>	3.50	<i>H</i>	16.0	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1992 09 22	809	1.2+	0.9+	1998 03 05	691	0.1−	0.0
1992 09 22	809	0.0	0.8−	1999 09 07	704	0.6−	0.6+
1992 09 22	809	0.8−	1.2−	1999 09 07	704	0.3+	0.4+
1998 03 03	809	(3.4− 1.4−)		1999 09 07	704	0.2−	0.1−
1998 03 03	809	(2.9− 2.0−)		1999 09 09	704	0.4+	0.7+
1998 03 03	809	(2.6− 2.7−)		1999 09 09	704	0.8−	0.8−
1998 03 04	809	(0.3− 2.6+)		1999 09 09	704	0.2−	0.3+
1998 03 04	809	(0.4+ 3.4+)		1999 09 09	704	0.6−	0.9+
1998 03 04	809	0.6+	1.3+	1999 09 09	704	0.4−	0.0
1998 03 05	691	0.3−	0.3−	1999 09 11	699	1.0−	0.6−
1998 03 05	691	0.1−	0.5−	1999 09 11	699	1.8+	0.6+

1999 RO₁₇₈ = 1988 VA₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	343.02238		(2000.0)	P		Q	
<i>n</i>	0.26286488	ω	315.78844	+0.99882109	−0.02591191		
<i>a</i>	2.4135021	Ω	45.74474	+0.04117850	+0.90005889		
<i>e</i>	0.1817727	<i>i</i>	3.28552	−0.02570525	+0.43499721		
<i>P</i>	3.75	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1988 11 05	046	(0.8+ 7.5+)		1998 04 22	704	0.8+	1.1+
1988 11 05	046	(0.6− 6.3+)		1998 04 22	704	1.3+	0.9+
1988 11 11	046	0.1−	0.2+	1998 04 22	704	0.0	0.4+
1988 11 11	046	0.2+	1.1−	1998 04 22	704	0.5−	0.5+
1988 11 14	399	0.2−	0.3−	1998 04 22	704	0.4−	0.2+
1999 09 13	704	0.1+	0.1+	1999 09 13	704	0.2−	0.0
1999 09 13	704	0.2−	0.6−	1999 09 13	704	0.4−	0.3−
1999 09 13	704	0.2−	0.2−	1999 09 13	704	0.2−	0.2−

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1988 11 14	399	1.9+	1.4+	1999 07 16	704	0.3-	0.1+	1999 09 30	704	0.4-	0.7+
1988 11 14	399	1.9-	0.1+	1999 07 16	704	0.4+	1.1-	1999 09 30	704	0.5-	0.2+
1994 04 02	691	0.2-	0.8-	1999 07 16	704	0.5+	0.3-	1999 09 30	704	0.3-	0.6+
1994 04 02	691	0.0	0.6-	1999 09 07	699	0.9+	0.6-	1999 09 30	704	0.3-	0.2-
1994 04 02	691	0.2+	0.1-	1999 09 07	699	0.6+	0.1+	1999 09 30	704	0.5-	0.2+
1996 12 09	691	0.3+	0.1+	1999 09 07	704	0.3+	0.2-	1999 10 02	704	0.7-	0.0
1996 12 09	691	0.2+	0.1+	1999 09 07	704	0.4+	0.2-	1999 10 02	704	1.0-	0.3+
1996 12 09	691	0.5+	0.1+	1999 09 07	704	0.2+	0.1+	1999 10 02	704	0.9-	0.9+
1997 01 15	566	0.1+	0.1+	1999 09 07	699	1.6+	0.3-	1999 10 02	704	0.4-	0.4+
1997 01 15	566	0.2-	0.2+	1999 09 07	704	0.6+	0.6-	1999 10 02	704	1.3-	0.1+
1997 01 15	566	0.5-	0.1+	1999 09 07	704	0.1+	0.6-	1999 10 07	704	0.1-	0.4+
1998 03 29	704	1.0+	0.3+	1999 09 09	704	0.3+	0.0	1999 10 07	704	0.4-	0.3+
1998 03 29	704	0.7-	1.0+	1999 09 09	704	0.4+	0.1+	1999 10 07	704	0.7-	0.2+
1998 03 29	704	1.2-	0.1+	1999 09 09	704	0.7+	0.4+	1999 10 07	704	0.3+	0.6+
1998 03 29	704	(0.9-	2.2+)	1999 09 09	704	1.1+	0.7+	1999 10 07	704	0.8-	1.4+
1998 03 29	704	1.4+	1.4+	1999 09 09	704	(2.4+	2.0+)				

1999 RM₁₇₉ = 1998 HN₇₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	320.33976		(2000.0)	P	Q
n	0.28458999	ω	341.70539	+0.87922708	-0.47182617
a	2.2890554	Ω	46.63222	+0.44762638	+0.77085078
e	0.1309654	i	5.19927	+0.16306550	+0.42798263
P	3.46	H	16.0	G 0.15	U 4

Residuals in seconds of arc

1998 04 21	704	1.0+	0.2-	1999 09 07	699	0.3+	1.1-	1999 09 13	704	0.0	0.3+
1998 04 21	704	0.8+	0.2+	1999 09 07	699	0.4-	0.2-	1999 09 13	704	0.4-	0.4+
1998 04 21	704	0.4-	0.8+	1999 09 09	704	0.1+	0.2-	1999 09 13	704	0.1+	0.3-
1998 04 22	704	0.8+	0.3+	1999 09 09	704	0.6-	0.1+	1999 09 13	704	0.0	0.0
1998 04 22	704	1.0-	0.4-	1999 09 09	704	0.5-	0.0	1999 09 30	704	0.0	0.5-
1998 04 22	704	(0.3+	2.7-)	1999 09 09	704	0.4+	0.1-	1999 09 30	704	0.0	0.6-
1998 05 23	691	0.2-	0.2-	1999 09 09	704	0.3+	0.2+	1999 09 30	704	0.1-	0.1-
1998 05 23	691	0.7-	0.2-	1999 09 10	704	0.1-	0.0	1999 09 30	704	0.9+	0.5-
1998 05 23	691	0.3-	0.2-	1999 09 10	704	0.4-	0.6+	1999 09 30	704	0.3+	1.3+
1999 09 07	699	0.1+	0.4-	1999 09 10	704	0.1-	0.9+				

1999 RJ₁₈₀ = 1997 AC₁₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	266.81535		(2000.0)	P	Q
n	0.25607908	ω	328.38894	+0.09280978	-0.98744033
a	2.4559526	Ω	116.01000	+0.94061874	+0.04483841
e	0.0825594	i	8.17913	+0.32653135	+0.15149623
P	3.85	H	14.8	G 0.15	U 4

Residuals in seconds of arc

1997 01 08	358	0.8+	0.5-	1998 05 23	704	1.4-	0.5-	1999 09 13	704	0.0	0.5-
1997 01 08	358	0.4-	1.1-	1998 05 23	704	0.2+	0.6+	1999 09 13	704	0.7-	1.0-
1997 01 13	358	0.1-	0.4+	1998 05 23	704	(6.4-	1.4+)	1999 09 13	704	0.2+	1.3-
1997 01 13	358	1.5+	0.3+	1999 09 09	704	0.0	0.4+	1999 09 30	704	0.1-	0.3+
1997 01 16	358	0.7-	0.6+	1999 09 09	704	0.6-	0.4-	1999 09 30	704	0.9+	0.0
1997 01 16	358	1.1-	0.3-	1999 09 09	704	0.2-	0.5-	1999 09 30	704	1.3+	0.3+
1998 05 23	704	1.1+	0.7-	1999 09 09	704	1.7-	0.5+	1999 09 30	704	1.0+	1.4+
1998 05 23	704	(0.1-	2.8+)	1999 09 09	704	0.2+	0.4+				

1999 RM₁₈₀ = 1989 YZ₇ = 1998 HB₁₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	129.98230		(2000.0)	P	Q
n	0.26863188	ω	85.75862	-0.88686783	+0.44979787
a	2.3788351	Ω	120.94116	-0.45749252	-0.82300996
e	0.0731256	i	7.07095	-0.06454498	-0.34689549
P	3.67	H	15.6	G 0.15	U 3

Residuals in seconds of arc

1989 12 26	033	0.5-	0.3+	1998 04 24	704	0.1-	0.1-	1999 09 09	704	0.4+	0.6-
1989 12 26	033	0.2-	0.1-	1998 04 24	704	0.9+	0.1+	1999 09 09	704	0.4+	0.9+
1989 12 26	033	0.7+	0.2-	1998 04 24	704	0.2+	0.1+	1999 09 13	704	0.2+	0.2-
1998 04 23	704	0.2+	0.1+	1998 04 24	704	0.7-	0.2+	1999 09 13	704	0.2-	0.2+
1998 04 23	704	0.5-	0.1-	1998 04 24	704	0.5-	0.2+	1999 09 13	704	0.0	0.4+
1998 04 23	704	0.5+	0.2+	1999 09 09	704	0.8-	0.8-	1999 09 13	704	0.1+	0.3-
1998 04 23	704	0.3-	0.0	1999 09 09	704	0.3+	0.1+				
1998 04 23	704	0.3+	0.6-	1999 09 09	704	0.4-	0.3+				

1999 RM₁₈₁ = 1998 EF₁₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	64.25738		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.29702725	ω	123.73631	-0.17113940	+0.98503259
a	2.2247020	Ω	136.39482	-0.91351453	-0.15083377
e	0.1607317	i	1.70704	-0.36905625	-0.08342645
P	3.32	H	15.3	G 0.15	U 5

Residuals in seconds of arc

1998 03 03	704	0.4+	1.7+	1999 08 22	699	0.1-	0.5+	1999 09 11	699	0.6+	0.7+
1998 03 03	704	0.2-	0.1-	1999 09 05	699	0.5-	1.4+	1999 09 11	699	0.2+	0.1+
1998 03 03	704	0.3+	1.2-	1999 09 05	699	0.2+	0.2+	1999 09 11	699	0.7+	0.2-
1998 03 03	704	0.1+	0.6+	1999 09 05	699	0.7-	0.5+	1999 09 14	704	0.0	0.0
1998 03 03	704	(4.6-	1.2+)	1999 09 07	704	0.5-	0.4-	1999 09 14	704	0.6+	0.2+
1998 03 04	704	0.5-	0.9-	1999 09 07	704	0.3-	0.3-	1999 09 14	704	0.1+	0.0
1998 03 04	704	0.5-	0.1+	1999 09 07	704	0.2+	0.5-	1999 09 14	704	0.2+	0.2+
1998 03 04	704	0.6+	0.6+	1999 09 07	704	0.8-	0.3-	1999 09 14	704	0.3+	0.1+
1999 08 22	703	0.5-	0.1-	1999 09 07	704	0.3-	0.5-	1999 09 14	704	0.4+	0.4+
1999 08 22	703	0.2+	0.2+	1999 09 09	704	0.5-	0.7-	1999 09 14	704	0.1+	0.2-
1999 08 22	703	0.5+	0.3+	1999 09 09	704	0.5-	1.1-	1999 09 14	704	0.8+	0.0
1999 08 22	703	0.0	0.2+	1999 09 09	704	0.2-	1.0-	1999 09 14	704	0.0	0.3-
1999 08 22	699	0.4-	0.7+	1999 09 09	704	0.2+	0.3-	1999 09 14	704	0.0	0.2+
1999 08 22	699	0.1+	0.7+	1999 09 09	704	0.3-	0.2-				

1999 RT₁₈₁ = 1998 KJ₂₉

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	13.32017		(2000.0)	P	Q
<i>n</i>	0.21283645	ω	175.21368	+0.85845094	+0.51152422
<i>a</i>	2.7782546	Ω	153.91451	−0.47335661	+0.81829163
<i>e</i>	0.0977969	<i>i</i>	4.89003	−0.19747277	+0.26218653
<i>P</i>	4.63	<i>H</i>	14.5	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1995 12 20	691	0.9-	0.0	1998 05 24	704	0.9+	0.7-	1999 09 09	704	0.7-	1.0-
1995 12 20	691	0.1+	0.2+	1998 05 24	704	1.1+	0.7+	1999 09 14	704	0.5-	0.2+
1995 12 20	691	0.2+	0.1-	1998 05 24	704	0.2-	0.4-	1999 09 14	704	0.7-	0.0
1995 12 26	691	0.2+	0.2-	1998 05 24	704	0.5-	1.2+	1999 09 14	704	1.0-	0.1+
1995 12 26	691	0.3+	0.1-	1999 09 05	699	0.2+	1.0+	1999 09 14	704	0.7-	0.4-
1995 12 26	691	0.1+	0.2-	1999 09 05	699	0.1+	0.8+	1999 09 14	704	1.1-	0.3+
1997 02 06	691	0.2+	0.8-	1999 09 05	699	1.2+	1.0+	1999 10 02	704	1.9+	0.7+
1997 02 06	691	0.3-	0.2-	1999 09 07	704	0.1+	0.9-	1999 10 02	704	1.0+	0.5+
1997 02 06	691	0.2-	0.3-	1999 09 07	704	0.7+	0.3-	1999 10 02	704	(2.5+	1.6+)
1998 05 22	704	0.5-	1.1+	1999 09 07	704	0.1+	0.7-	1999 10 02	704	(2.1+	0.8+)
1998 05 22	704	1.1+	1.0-	1999 09 07	704	0.3-	1.0-	1999 10 07	704	0.5+	0.1+
1998 05 22	704	1.5-	0.1+	1999 09 09	704	0.0	0.1+	1999 10 07	704	0.6+	0.1+
1998 05 22	704	0.0	0.3-	1999 09 09	704	0.5+	0.7-	1999 10 07	704	0.1+	0.5-
1998 05 22	704	(1.2+	2.2+)	1999 09 09	704	0.8-	0.1-	1999 10 07	704	0.9+	0.1-
1998 05 24	704	0.6-	1.9-	1999 09 09	704	1.2-	0.6-	1999 10 07	704	0.3-	0.1+

1999 RF₁₈₂ = 1994 EE₄ = 1998 FH₄₉
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 20.31321 (2000.0)			P			Q		
<i>n</i>	0.25785206	ω	320.98487	+0.66201502	+0.74937747			
<i>a</i>	2.4446816	Ω	350.44425	-0.66651024	+0.58068554			
<i>e</i>	0.1859184	<i>i</i>	4.49843	-0.34278306	+0.31817874			
<i>P</i>	3.82	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1994 03 04	691	0.1+	0.4+	1999 08 22	703	0.5-	0.3+	1999 09 14	704	0.3-	0.1-
1994 03 04	691	0.4+	0.6+	1999 08 22	699	(0.2-	2.6+)	1999 09 14	704	0.5-	1.0-
1994 03 04	691	0.1-	0.2+	1999 08 22	699	0.5-	0.0	1999 09 30	699	0.1-	0.6+
1994 03 18	691	0.3-	0.3-	1999 08 22	699	0.4+	1.0+	1999 09 30	699	1.6+	0.8+
1994 03 18	691	0.0	0.3+	1999 09 07	704	0.1+	0.7-	1999 09 30	699	0.1-	0.9+
1994 03 18	691	0.2+	0.3-	1999 09 07	704	0.5-	0.7-	1999 10 02	691	0.2-	0.2-
1998 03 20	704	0.6+	1.0-	1999 09 07	704	0.4-	1.0-	1999 10 02	691	0.2-	0.2-
1998 03 20	704	0.6+	0.8+	1999 09 09	704	0.4-	0.5-	1999 10 02	691	0.2-	0.2-
1998 03 20	704	0.8+	1.0+	1999 09 09	704	0.4-	0.1+	1999 10 06	704	0.3+	0.2+
1998 03 20	704	(0.2+	2.8+)	1999 09 09	704	0.4-	0.2-	1999 10 06	704	0.0	0.1+
1998 03 22	704	1.0+	1.7-	1999 09 09	704	0.1+	0.3-	1999 10 06	704	0.0	0.4+
1998 03 22	704	0.4+	0.9+	1999 09 09	704	0.3-	0.5-	1999 10 06	704	0.2-	0.1-
1998 03 22	704	(4.4-	0.0)	1999 09 11	699	0.3+	1.5+	1999 10 06	704	0.1+	0.2+
1998 03 22	704	2.0-	0.2+	1999 09 11	699	0.3+	0.2+	1999 10 07	704	0.3+	0.0
1998 03 22	704	1.3-	0.2+	1999 09 11	699	0.6+	0.8+	1999 10 07	704	0.5+	0.2-
1999 08 22	703	1.0+	0.0	1999 09 14	704	0.1-	0.1+	1999 10 07	704	0.3-	0.1+
1999 08 22	703	0.2+	0.6+	1999 09 14	704	0.7-	0.2-	1999 10 07	704	0.3+	0.6-
1999 08 22	703	0.3+	0.2+	1999 09 14	704	0.2-	0.5-	1999 10 07	704	0.2-	0.2+

1999 RG₁₈₂ = 1998 HJ₁₃₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 8.69652 (2000.0)			P			Q		
<i>n</i>	0.26216156	ω	151.60342	+0.84698782	+0.53160375			
<i>a</i>	2.4178167	Ω	176.27853	-0.49610788	+0.79244506			
<i>e</i>	0.1788805	<i>i</i>	2.66147	-0.19101991	+0.29904561			
<i>P</i>	3.76	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1994 03 07	691	0.4-	0.1+	1999 08 22	703	0.5+	0.5+	1999 09 09	704	0.3-	0.4-
1994 03 07	691	0.1+	0.1+	1999 08 22	703	0.2-	1.2+	1999 09 14	704	0.8-	0.1-
1994 03 07	691	0.2+	0.4-	1999 08 22	699	0.8-	0.5+	1999 09 14	704	(3.1-	1.6-)
1998 03 29	704	0.0	1.4+	1999 08 22	699	0.0	0.6+	1999 09 14	704	0.5-	0.3-
1998 03 29	704	1.2-	1.9-	1999 08 22	699	0.2+	1.4+	1999 09 14	704	0.0	0.6-
1998 03 29	704	0.3-	1.1-	1999 09 04	699	0.5+	0.6+	1999 09 14	704	0.3-	0.8-
1998 03 29	704	(5.7-	2.4-)	1999 09 04	699	0.6+	0.1+	1999 10 02	704	0.0	0.1-
1998 04 19	704	0.7+	0.0	1999 09 04	699	0.2+	0.1+	1999 10 02	704	0.4+	1.2-
1998 04 19	704	1.1-	1.3+	1999 09 07	704	0.1-	0.5-	1999 10 02	704	0.2+	0.2+
1998 04 19	704	1.0+	0.5-	1999 09 07	704	0.2+	0.5-	1999 10 02	704	1.0+	0.6+
1998 04 19	704	1.0-	0.5+	1999 09 07	704	0.0	1.2-	1999 10 02	704	0.3+	0.1+
1998 04 22	704	0.4-	1.0-	1999 09 07	704	0.0	0.5-	1999 10 07	704	0.4+	0.7-
1998 04 22	704	1.0+	0.1-	1999 09 07	704	0.3-	0.1+	1999 10 07	704	0.2-	0.8+
1998 04 22	704	1.3+	0.7+	1999 09 09	704	0.3-	0.6-	1999 10 07	704	0.0	1.1+
1998 04 22	704	0.0	0.4+	1999 09 09	704	0.3-	0.3-	1999 10 07	704	0.4-	1.8+
1999 08 22	703	0.5+	0.2-	1999 09 09	704	0.1-	0.0				
1999 08 22	703	0.1-	0.9-	1999 09 09	704	0.0	0.7-				

1999 RH₁₈₂ = 1989 TY₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 345.72787 (2000.0)			P			Q		
<i>n</i>	0.19295248	ω	190.22084	+0.99754591	-0.06645772			
<i>a</i>	2.9659863	Ω	173.46798	+0.06963691	+0.97441749			
<i>e</i>	0.1024828	<i>i</i>	11.16856	-0.00726985	+0.21469494			
<i>P</i>	5.11	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	3	

Residuals in seconds of arc

1989 10 07	809	0.1+	0.2-	1999 08 12	699	0.4+	0.4+	1999 09 11	699	0.9+	0.8+
1989 10 07	809	0.2-	0.2-	1999 08 22	703	0.5+	0.6+	1999 09 11	699	0.7-	0.4+
1989 10 07	809	0.9+	0.3+	1999 08 22	703	0.7+	0.3+	1999 09 11	699	0.8+	0.6-
1989 10 08	809	2.0-	1.1-	1999 08 22	703	(2.1+	0.5-)	1999 09 14	704	1.2+	0.2-
1989 10 08	809	2.2-	0.6-	1999 08 22	703	1.3+	1.8+	1999 09 14	704	0.1+	0.3-
1989 10 08	809	(1.8-	2.8-)	1999 09 07	704	0.3+	1.2-	1999 09 14	704	0.3-	0.1+
1989 10 08	809	2.0+	1.2+	1999 09 07	704	0.6-	0.3-	1999 09 14	704	0.4-	0.3-
1989 10 08	809	1.4+	0.1-	1999 09 07	704	0.1+	1.4-	1999 09 14	704	1.2-	0.8+
1989 10 08	809	0.3+	1.0-	1999 09 07	704	0.1-	0.1-	1999 10 02	704	0.2-	0.6+
1998 06 25	704	0.1-	1.3-	1999 09 07	704	0.7-	0.5-	1999 10 02	704	1.4-	0.3+
1998 06 25	704	0.0	0.4-	1999 09 09	704	0.2-	0.1+	1999 10 02	704	0.5-	0.8+
1998 06 25	704	0.0	0.5+	1999 09 09	704	0.8+	0.6-	1999 10 02	704	0.5-	0.9+
1998 06 25	704	0.0	0.5+	1999 09 09	704	0.2+	0.3-	1999 10 02	704	0.6-	0.3+
1999 08 12	699	1.3-	0.1+	1999 09 09	704	0.3+	0.4-				
1999 08 12	699	0.4+	0.1+	1999 09 09	704	0.6+	0.6-				

1999 RV₁₈₂ = 1998 KM₂₅

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 158.54858 (2000.0)			P			Q		
<i>n</i>	0.26524102	ω	209.80228	-0.99631547	+0.08451502			
<i>a</i>	2.3990663	Ω	335.03328	-0.07026272	-0.90185937			
<i>e</i>	0.1299518	<i>i</i>	1.98006	-0.04917958	-0.42368253			
<i>P</i>	3.72	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1998 05 01	704	0.0	1.1+	1998 05 24	704	(2.5-	1.3+)	1999 09 09	704	0.9+	0.1-
1998 05 01	704	0.8+	0.7-	1998 05 24	704	0.2+	0.5+	1999 09 14	704	0.4+	0.3+
1998 05 01	704	0.9-	1.1+	1999 09 04	691	1.1-	0.6+	1999 09 14	704	1.1+	1.3-
1998 05 01	704	0.2+	0.2+	1999 09 04	691	0.3-	0.4-	1999 09 14	704	0.7-	0.4+
1998 05 22	704	1.2-	0.1+	1999 09 04	691	(3.4-	0.8-)	1999 09 14	704	1.0+	0.1+
1998 05 22	704	0.1+	1.2-	1999 09 08	012	0.0	0.7+	1999 09 14	704	0.4-	0.3-
1998 05 22	704	0.3-	1.1-	1999 09 08	012	0.6-	0.3+	1999 10 02	691	0.3-	0.1-
1998 05 22	704	1.4+	1.0-	1999 09 09	012	0.2-	0.1-	1999 10 02	691	0.2-	0.0
1998 05 24	704	0.1-	0.5+	1999 09 09	704	0.0	0.4+	1999 10 02	691	0.3-	0.1+
1998 05 24	704	0.1-	0.8+	1999 09 09	704	0.5+	0.4-				

1999 RH₁₈₃ = 1994 RE₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 281.74887 (2000.0)			P			Q		
<i>n</i>	0.20235089	ω	275.32327	+0.13464823	-0.98993317			
<i>a</i>	2.8734213	Ω	166.69822	+0.96755977	+0.12185455			
<i>e</i>	0.1363950	<i>i</i>	10.92710	+0.21377078	+0.07199853			
<i>P</i>	4.87	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	5	

Residuals in seconds of arc

1994 08 13	809	(2.3- 2.8-)	1999 09 07	704	0.4+ 0.3+	1999 09 11	699	1.2+ 1.7+
1994 08 13	809	(3.0- 4.4-)	1999 09 07	704	0.3+ 0.4-	1999 09 14	704	0.4+ 0.1-
1994 08 13	809	(2.9- 2.5-)	1999 09 07	704	0.8- 0.8+	1999 09 14	704	0.3- 0.2-
1994 09 05	809	0.2+ 0.6-	1999 09 07	704	0.2- 0.2+	1999 09 14	704	0.4- 0.3-
1994 09 05	809	0.4+ 0.4-	1999 09 07	704	0.4- 0.9-	1999 09 14	704	0.1- 0.4-
1994 09 05	809	0.4- 0.6-	1999 09 07	704	0.1+ 1.2+	1999 09 14	704	0.1- 0.8-
1994 09 06	809	0.1+ 0.5+	1999 09 07	704	0.5+ 1.2-	1999 10 02	704	0.5- 0.3+
1994 09 06	809	0.1+ 0.5+	1999 09 07	704	0.5+ 0.6+	1999 10 02	704	0.5+ 0.0
1994 09 06	809	0.4- 0.6+	1999 09 09	704	0.0 0.5-	1999 10 02	704	0.7- 0.1+
1999 08 22	703	0.8- 0.7+	1999 09 09	704	0.7+ 0.9-	1999 10 02	704	0.1+ 0.6+
1999 08 22	703	0.5- 0.1+	1999 09 09	704	0.0 1.3-	1999 10 07	704	(0.3- 4.0+)
1999 08 22	703	0.2- 0.1+	1999 09 09	704	0.3- 1.0-	1999 10 07	704	(0.0 4.0+)
1999 08 22	703	0.4+ 0.1+	1999 09 09	704	0.5+ 0.8-	1999 10 07	704	(0.4- 3.9+)
1999 09 07	704	0.3+ 0.1+	1999 09 11	699	0.3+ 1.1+			
1999 09 07	704	0.4+ 0.4-	1999 09 11	699	1.1- 1.1+			

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
M	87.76176		(2000.0)		P		Q				
n	0.17293984		ω 94.36169		−0.19247929		+0.97907515				
a	3.1906023		Ω 164.07070		−0.96844912		−0.17866853				
e	0.0198327		i 13.92722		−0.15829727		−0.09741359				
P	5.70		H 13.2	G	0.15	U	2				
Residuals in seconds of arc											
1993 08 15	010	0.1+	0.1+	1999 09 07	704	0.1−	0.4−	1999 09 14	704	0.7+	0.4+
1993 08 15	010	0.4−	0.7−	1999 09 07	704	0.1−	1.0−	1999 09 14	704	0.4+	0.5−
1993 08 16	010	0.5+	0.7+	1999 09 07	704	0.2+	0.8−	1999 09 14	704	0.2−	0.6+
1993 08 16	010	0.3−	0.7+	1999 09 07	704	0.4−	0.4−	1999 09 14	704	0.0	0.1+
1993 08 16	010	0.1+	0.8−	1999 09 09	704	0.4+	0.1−	1999 09 14	704	0.1−	0.0
1997 05 08	327	0.0	0.1−	1999 09 09	704	0.4−	0.7−	1999 10 07	704	0.1+	0.4−
1997 05 08	327	0.2+	0.1−	1999 09 09	704	0.1+	0.3−	1999 10 07	704	1.1+	0.1+
1997 05 08	327	0.2+	0.3+	1999 09 09	704	0.3−	1.0+	1999 10 07	704	1.0+	0.3−
1997 05 09	327	0.1+	0.1−	1999 09 09	704	0.0	0.3+	1999 10 07	704	0.6+	0.3+
1997 05 09	327	0.4−	0.1−	1999 09 11	699	0.4−	0.8+	1999 10 07	704	0.7−	0.0
1997 05 09	327	0.1−	0.2+	1999 09 11	699	0.1−	1.4+				
1999 09 07	704	0.3+	0.7−	1999 09 11	699	1.8−	0.5+				

1999 RS₁₈₃ = 1998 KY₆₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	168.65556		(2000.0)		P		Q				
<i>n</i>	0.24102802	ω	88.64172		−0.99746268		−0.05575007				
<i>a</i>	2.5571588	Ω	88.16105		+0.03352705		−0.91647232				
<i>e</i>	0.0760615	<i>i</i>	2.53882		+0.06280243		−0.39619493				
<i>P</i>	4.09	<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−	1999 08 22	703	0.4+	1.2+	1999 09 09	704	0.5−	1.0−
1998 05 22	704	0.9−	0.7−	1999 08 22	703	0.5+	0.2+	1999 09 14	704	0.6−	0.5−
1998 05 22	704	0.0	0.7−	1999 09 07	704	0.1−	0.2−	1999 09 14	704	0.3−	0.6−
1998 05 22	704	0.2+	0.9+	1999 09 07	704	0.1+	0.0	1999 09 14	704	0.1+	0.5−
1998 05 22	704	1.1−	0.8−	1999 09 07	704	0.7+	0.6+	1999 09 14	704	0.7−	0.3−
1998 05 24	704	0.1−	0.5+	1999 09 07	704	0.2+	0.8+	1999 09 14	704	0.2+	0.7−
1998 05 24	704	0.7+	0.8+	1999 09 07	704	1.2+	0.3+	1999 10 07	704	0.1−	0.2+
1998 05 24	704	0.2+	0.6+	1999 09 09	704	0.1−	0.6−	1999 10 07	704	0.1−	0.5+
1998 05 24	704	0.5+	0.4−	1999 09 09	704	0.1−	0.3−	1999 10 07	704	0.1+	0.2−
1999 08 22	703	0.3−	0.9+	1999 09 09	704	0.2+	0.7−	1999 10 07	704	0.2+	0.0
1999 08 22	703	0.8−	0.5+	1999 09 09	704	0.6−	0.2+	1999 10 07	704	0.6+	0.2+

1999 RT₁₈₃ = 1992 RT₆ = 1996 VQ₃ = 1998 FR₃₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5				Williams							
<i>M</i>	60.61570		(2000.0)	P		Q					
<i>n</i>	0.28110809	ω	262.42267	+0.04085444		+0.99891576					
<i>a</i>	2.3079186	Ω	10.00065	−0.85855193		+0.04652333					
<i>e</i>	0.0965800	<i>i</i>	7.38476	−0.51109637		+0.00169724					
<i>P</i>	3.51	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1992 09 02	809	0.8+	0.8−	1998 03 22	704	0.8+	0.5+	1999 09 07	704	0.3+	0.3+
1992 09 02	809	0.5−	0.0	1998 03 22	704	0.9+	0.9+	1999 09 07	704	0.7+	0.3+
1992 09 02	809	0.2−	0.5−	1998 03 22	704	0.3+	0.7+	1999 09 09	704	0.4−	0.1−
1992 09 03	809	0.6+	0.1+	1998 03 26	566	1.4−	0.6+	1999 09 09	704	0.2−	0.2+
1996 11 01	327	0.5−	0.0	1998 03 26	566	1.6−	0.7+	1999 09 09	704	0.6−	0.1−
1996 11 01	327	0.9−	0.2−	1998 03 26	566	1.6−	0.6+	1999 09 09	704	1.1−	0.5−
1996 11 01	327	0.2+	0.2+	1998 04 19	704	0.6+	0.3+	1999 09 09	704	0.2−	0.3−
1996 11 01	327	0.8−	0.3−	1998 04 19	704	0.9+	1.0+	1999 09 11	699	0.4−	0.7+
1996 11 09	327	0.9+	0.8+	1998 04 19	704	1.0+	1.0+	1999 09 11	699	1.1−	1.3+
1996 11 09	327	0.4+	0.3+	1998 04 19	704	0.5+	0.2+	1999 09 11	699	0.8−	0.4+
1996 11 09	327	0.3+	0.4+	1998 04 19	704	1.2+	0.4−	1999 09 14	704	0.4−	0.4−
1998 02 26	566	0.8−	0.5−	1999 07 16	704	0.6+	1.7−	1999 09 14	704	0.3−	0.6−

1998 02 26	566	0.8−	0.5−	1999 07 16	704	0.6+	0.4+	1999 09 14	704	0.3+	0.1−
1998 02 26	566	0.8−	0.2−	1999 07 16	704	0.1+	0.1−	1999 09 14	704	0.3−	0.1+
1998 03 20	704	0.5−	0.6+	1999 08 22	703	0.0	0.2+	1999 09 14	704	0.3−	0.1+
1998 03 20	704	1.0+	0.1−	1999 08 22	703	0.1−	1.0+	1999 10 07	704	0.2−	0.4+
1998 03 20	704	1.3+	0.4−	1999 08 22	703	0.1−	0.8+	1999 10 07	704	0.5+	0.0
1998 03 20	704	1.6+	1.7−	1999 08 22	703	0.1+	1.1+	1999 10 07	704	0.0	0.7+
1998 03 20	704	(2.1+	0.8−)	1999 09 07	704	0.1+	0.2−	1999 10 07	704	0.2−	0.7+
1998 03 22	704	0.5+	0.7+	1999 09 07	704	0.1+	0.2+	1999 10 07	704	0.2−	0.7+
1998 03 22	704	0.2+	1.0+	1999 09 07	704	0.6+	0.1+				

1999 RE₁₈₄ = 1998 HU₁₃₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	357.29624		(2000.0)			P			Q		
<i>n</i>	0.28850867		<i>ω</i>	190.43445			+0.95941167		+0.27456107		
<i>a</i>	2.2682807		<i>Ω</i>	153.35723			−0.24729239		+0.92882711		
<i>e</i>	0.1177440		<i>i</i>	8.25508			−0.13555706		+0.24878990		
<i>P</i>	3.42		<i>H</i>	15.8		<i>G</i>	0.15		<i>U</i>	4	
Residuals in seconds of arc											
1998 04 19	704	0.1+	1.5−	1999 09 05	699	0.4+	1.3+	1999 09 14	704	0.0	0.1+
1998 04 19	704	1.0−	0.1−	1999 09 07	704	0.1−	0.5−	1999 09 14	704	0.5−	0.1+
1998 04 19	704	1.3+	1.2+	1999 09 07	704	0.4+	0.2−	1999 09 14	704	0.8−	0.1−
1998 04 19	704	(1.1+ 2.2+)		1999 09 07	704	0.1+	0.6−	1999 09 30	704	0.1−	0.1+
1998 04 20	704	0.3+	0.5−	1999 09 07	704	0.2−	0.1+	1999 09 30	704	0.5+	0.2+
1998 04 20	704	0.8−	0.7−	1999 09 07	704	1.3−	0.4−	1999 09 30	704	0.5−	0.1−
1998 04 20	704	(2.6+ 1.0−)		1999 09 09	704	0.1+	1.2+	1999 09 30	704	1.1+	1.2−
1998 04 20	704	0.2−	0.8+	1999 09 09	704	0.3−	0.2−	1999 09 30	704	1.0+	0.7+
1999 08 12	699	0.4+	1.0+	1999 09 09	704	0.7−	0.7−	1999 10 07	704	0.8−	0.4−
1999 08 12	699	0.6−	0.5+	1999 09 09	704	0.3+	1.5−	1999 10 07	704	0.8+	0.2+
1999 08 12	699	1.7+	0.4+	1999 09 09	704	0.7−	1.3−	1999 10 07	704	1.1−	0.8+
1999 09 05	699	0.3+	0.5−	1999 09 14	704	0.2−	0.1−	1999 10 07	704	0.0	0.2−
1999 09 05	699	1.3+	1.6+	1999 09 14	704	0.4−	0.5−	1999 10 07	704	0.4+	0.1+

1999 RF₁₈₄ = 1981 TD₄ = 1981 VH₂ = 1992 WQ = 1998 MB₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5						Williams					
<i>M</i>	305.65246		(2000.0)		P		Q				
<i>n</i>	0.27155237	ω	354.01848		+0.54748086		−0.83532388				
<i>a</i>	2.3617485	Ω	62.77713		+0.77007702		+0.47953942				
<i>e</i>	0.1972642	<i>i</i>	3.22252		+0.32748448		+0.26884190				
<i>P</i>	3.63	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	1				
Residuals in seconds of arc											
1981 10 07	095	2.2+	1.1+	1998 06 19	691	0.3−	0.4+	1999 09 11	699	0.5+	0.4+
1981 11 03	033	1.0−	0.4−	1998 06 25	691	0.7−	0.1+	1999 09 11	699	0.5+	0.4+
1981 11 03	033	0.9−	0.4−	1998 06 25	691	0.4−	0.3+	1999 09 14	704	0.2−	0.4+
1992 11 16	400	0.1+	0.1+	1998 06 25	691	0.4−	0.6+	1999 09 14	704	0.0	0.0
1992 11 16	400	0.3−	1.2−	1999 07 16	704	0.4+	0.9−	1999 09 14	704	0.4−	0.3+
1992 11 17	400	0.1−	0.6−	1999 07 16	704	0.6+	0.2−	1999 09 14	704	0.1−	0.2+
1992 11 17	400	0.5−	0.5+	1999 07 16	704	0.6−	0.2+	1999 09 14	704	0.1+	0.3+
1992 11 23	372	(3.8−	22.8+)	1999 09 07	704	0.4−	0.0	1999 09 30	704	0.6+	0.2+
1992 11 23	372	(3.6−	22.3+)	1999 09 07	704	0.3−	0.1−	1999 09 30	704	0.8+	0.4−
1996 12 12	327	0.9+	0.6+	1999 09 07	704	0.5−	0.4−	1999 09 30	704	0.4+	0.3−
1996 12 12	327	0.7+	0.5+	1999 09 07	704	0.1−	0.6+	1999 09 30	704	0.9+	0.3−
1996 12 12	327	0.2+	0.9+	1999 09 07	704	0.1+	0.3+	1999 09 30	704	0.2+	0.0
1998 05 22	704	0.9+	1.4−	1999 09 09	704	0.6−	0.2−	1999 10 07	704	0.5−	0.4+
1998 05 22	704	(2.7−	0.8+)	1999 09 09	704	0.5−	0.3+	1999 10 07	704	0.2−	0.3−
1998 05 22	704	0.9+	0.1+	1999 09 09	704	0.5−	0.4−	1999 10 07	704	0.2+	0.8+
1998 05 22	704	0.4−	0.5+	1999 09 09	704	0.6−	0.6−	1999 10 07	704	0.1−	0.2+
1998 06 19	691	0.1+	0.7+	1999 09 09	704	0.9−	0.5−	1999 10 07	704	0.1−	0.2+
1998 06 19	691	0.1−	0.3+	1999 09 11	699	1.3+	1.0+				

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	35.12695		(2000.0)	P	Q
<i>n</i>	0.30021003	ω	157.86195	+0.41933708	+0.90486063
<i>a</i>	2.2089502	Ω	136.83697	−0.84817027	+0.41931364
<i>e</i>	0.1332465	<i>i</i>	6.15734	−0.32367206	+0.07350727
<i>P</i>	3.28	<i>H</i>	15.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 20	704	1.0+	0.9+	1999 07 16	704	0.9+	0.7−	1999 09 09	704	0.1+	0.9−
1998 03 20	704	0.0	1.1−	1999 07 16	704	0.3+	0.4−	1999 09 09	704	0.3−	0.8−
1998 03 20	704	0.7−	0.8−	1999 07 16	704	0.7−	0.4−	1999 09 09	704	0.3−	1.3−
1998 03 20	704	(2.2+	0.6+)	1999 08 12	699	0.3+	1.0+	1999 09 13	704	0.1+	0.1−
1998 03 20	704	0.1+	0.7−	1999 08 12	699	0.2+	0.8+	1999 09 13	704	0.4−	0.1−
1998 03 25	704	0.6−	0.2−	1999 08 12	699	0.6−	1.8+	1999 09 13	704	0.0	0.1+
1998 03 25	704	0.8+	0.1+	1999 09 07	704	0.4−	0.0	1999 09 13	704	0.1−	0.6−
1998 03 25	704	0.7−	0.6+	1999 09 07	704	0.2−	0.4+	1999 09 30	704	0.1+	0.6−
1998 03 25	704	0.0	0.7+	1999 09 07	704	0.4−	0.3+	1999 09 30	704	0.7+	1.0−
1998 03 25	566	0.0	0.1+	1999 09 07	704	0.1−	0.7+	1999 09 30	704	0.6−	1.1+
1998 03 25	566	0.3+	0.2+	1999 09 07	704	0.0	0.7+	1999 09 30	704	0.6+	1.2+
1998 03 25	566	0.1−	0.3+	1999 09 09	704	0.5+	0.2−	1999 09 30	704	0.3+	0.3+
1999 07 16	704	0.1−	0.5−	1999 09 09	704	0.3+	0.7−				

1999 RZ₁₈₄ = 1998 LU₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Doppler

<i>M</i>	313.99090		(2000.0)	P	Q
<i>n</i>	0.19104059	ω	261.20979	+0.73875812	−0.66269931
<i>a</i>	2.9857420	Ω	140.15767	+0.66876773	+0.69820970
<i>e</i>	0.1133306	<i>i</i>	11.04528	+0.08358327	+0.27080037
<i>P</i>	5.16	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 06 01	809	0.9+	0.5−	1998 06 02	809	0.3−	0.8−	1999 09 09	704	0.2+	1.1+
1998 06 01	809	0.0	0.2+	1999 09 09	704	0.4−	0.7−	1999 09 13	704	0.4−	0.0
1998 06 01	809	0.2−	0.0	1999 09 09	704	0.0	0.1−	1999 09 13	704	0.2−	0.1+
1998 06 02	809	0.1+	0.1+	1999 09 09	704	0.3+	0.3−	1999 09 13	704	0.3+	0.0
1998 06 02	809	0.7−	1.0+	1999 09 09	704	0.3−	0.1−	1999 09 13	704	0.4+	0.0

1999 RE₁₈₅ = 1998 HL₁₀₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	162.94329		(2000.0)	P	Q
<i>n</i>	0.29436521	ω	51.58585	−0.99357076	−0.03403593
<i>a</i>	2.2380944	Ω	126.20514	−0.00252316	−0.94684473
<i>e</i>	0.0777286	<i>i</i>	7.69005	+0.11318475	−0.31988532
<i>P</i>	3.35	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 24	704	0.4−	0.6+	1998 04 24	704	0.5+	0.1−	1999 09 09	704	0.1+	0.3+
1998 03 24	704	0.3−	0.4+	1998 04 24	704	1.0+	0.1−	1999 09 09	704	0.1+	0.0
1998 03 24	704	0.5−	0.6+	1998 05 16	704	0.6+	1.2−	1999 09 09	704	0.4+	1.4+
1998 03 24	704	1.0−	0.8+	1998 05 16	704	(1.1−	2.1+)	1999 09 13	704	0.5+	0.5+
1998 03 24	704	0.5−	0.8+	1998 05 16	704	0.6−	0.9+	1999 09 13	704	0.2−	0.4+
1998 04 23	704	0.6+	0.6−	1998 05 16	704	0.8+	0.4−	1999 09 13	704	0.2−	0.5+
1998 04 23	704	1.0+	0.2−	1998 05 16	704	1.4−	0.8−	1999 09 13	704	0.2−	1.0+
1998 04 23	704	0.4+	0.2−	1998 05 29	704	0.1+	0.8+	1999 09 30	704	0.8−	1.2−
1998 04 23	704	0.1−	0.0	1998 05 29	704	1.2−	1.4−	1999 09 30	704	0.4−	1.2−
1998 04 23	704	0.3+	0.1+	1998 05 29	704	(2.2−	1.5−)	1999 09 30	704	0.1+	0.3−
1998 04 24	704	0.4+	0.2+	1998 05 29	704	1.6−	0.6+	1999 09 30	704	0.2+	1.1−
1998 04 24	704	0.2+	0.1+	1999 09 09	704	0.5+	0.3+	1999 09 30	704	0.4−	0.1−
1998 04 24	704	1.2+	0.2−	1999 09 09	704	0.0	0.6+				

1999 RJ₁₈₇ = 1993 FJ₁₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	15.27683		(2000.0)	P	Q
<i>n</i>	0.21416055	ω	213.21006	+0.78079714	+0.61398348
<i>a</i>	2.7667913	Ω	108.48058	−0.54337152	+0.75869866
<i>e</i>	0.0984584	<i>i</i>	7.00534	−0.30838811	+0.21771688
<i>P</i>	4.60	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1993 03 17	809	0.5+	0.6+	1998 05 24	704	(2.8+	2.1−)	1999 09 13	704	0.3−	0.4+
1993 03 18	809	0.1−	0.9−	1999 09 07	699	0.7+	0.2+	1999 09 13	704	0.1+	0.2−
1993 03 23	809	0.4−	0.4+	1999 09 07	699	0.0	0.5+	1999 09 30	704	1.2+	0.3−
1998 04 23	704	0.6−	1.2−	1999 09 07	699	0.1+	0.8+	1999 09 30	704	0.1−	0.9+
1998 04 23	704	1.1−	0.5−	1999 09 09	704	0.3−	0.5−	1999 09 30	704	0.2−	0.0
1998 04 23	704	0.8+	0.3+	1999 09 09	704	1.0−	1.3−	1999 09 30	704	0.2+	0.8+
1998 04 23	704	0.2+	1.0+	1999 09 09	704	0.0	1.1−	1999 10 04	703	0.4+	0.3−
1998 05 24	704	0.4+	0.6+	1999 09 09	704	(1.1−	2.8−)	1999 10 04	703	0.2+	0.4+
1998 05 24	704	1.1+	0.4−	1999 09 13	704	0.4−	0.3−	1999 10 04	703	0.1−	0.5−
1998 05 24	704	0.8−	0.2+	1999 09 13	704	0.4−	0.4+	1999 10 04	703	0.0	0.0

1999 RR₁₈₇ = 1992 DK₁₁

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	359.71317		(2000.0)	P	Q
<i>n</i>	0.19844907	ω	290.21819	+0.95581294	+0.29192618
<i>a</i>	2.9109629	Ω	52.82411	−0.25087276	+0.87143052
<i>e</i>	0.0899837	<i>i</i>	2.49253	−0.15324646	+0.39419278
<i>P</i>	4.97	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1992 02 29	809	0.3+	0.0	1999 09 07	704	0.3−	0.6−	1999 09 11	699	0.0	0.5+
1992 03 03	809	0.3−	0.0	1999 09 09	704	0.0	0.4+	1999 09 14	704	0.3+	0.1+
1999 09 07	704	0.2+	0.2+	1999 09 09	704	0.2+	0.4−	1999 09 14	704	0.2+	0.1+
1999 09 07	704	0.2−	0.2−	1999 09 09	704	(3.1+	0.1+)	1999 09 14	704	0.3−	0.4−
1999 09 07	704	0.5+	0.4−	1999 09 11	699	0.2−	0.0	1999 09 14	704	0.0	0.8−
1999 09 07	704	0.4−	0.5+	1999 09 11	699	0.0	0.1+	1999 09 14	704	0.1+	0.6+

1999 RX₁₈₇ = 1994 PO₃₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	212.22819		(2000.0)	P	Q
<i>n</i>	0.21068930	ω	216.22024	−0.79904415	−0.60100369
<i>a</i>	2.7970983	Ω	286.82818	+0.55597591	−0.72713693
<i>e</i>	0.1294743	<i>i</i>	1.07586	+0.22895247	−0.33176262
<i>P</i>	4.68	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1994 08 10	809	0.5+	0.3+	1994 09 08	691	1.0−	0.6+	1999 09 14	704	0.1−	0.2−
1994 08 10	809	0.2−	0.2+	1999 09 07	704	0.2−	0.4+	1999 09 14	704	0.3−	0.5+
1994 08 10	809	0.4−	0.6−	1999 09 07	704	1.1+	0.3−	1999 09 14	704	0.1+	0.3+
1994 08 11	809	0.7+	0.2−	1999 09 07	704	0.3+	0.0	1999 09 14	704	1.4−	0.0
1994 08 11	809	0.9−	1.2−	1999 09 09	704	0.2−	0.4+	1999 09 14	704	0.3+	0.8+
1994 08 11	809	0.3+	1.2−	1999 09 09	704	0.3+	0.8+	1999 10 06	704	0.2+	0.5−
1994 09 04	809	(2.9+	1.5+)	1999 09 09	704	0.9−	0.4−	1999 10 06	704	0.8+	0.5−
1994 09 04	809	1.2+	0.1−	1999 09 09	704	0.4−	0.2+	1999 10 06	704	0.2−	0.9−
1994 09 04	809	1.8+	0.8+	1999 09 10	704	1.6−	0.7+	1999 10 06	704	0.3+	0.5−
1994 09 08	691	0.8−	0.7+	1999 09 10	704	0.3+	0.5−	1999 10 06	704	0.4+	0.7−
1994 09 08	691	0.6−	0.6+	1999 09 10	704	1.3+	0.4+				

1999 RD₁₈₈ = 1992 EN₂₈

Id. A. Doppler, M. E. Sansaturio

1999 OCT. 26

M.P.C. 36469

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5					Williams						
<i>M</i>	320.70329		(2000.0)		P		Q				
<i>n</i>	0.20299870		ω 269.00751		+0.88768002		−0.45772951				
<i>a</i>	2.8673049		Ω 118.23159		+0.44184077		+0.81611663				
<i>e</i>	0.0594531		<i>i</i> 3.25846		+0.12961832		+0.35275677				
<i>P</i>	4.86		<i>H</i> 14.7		<i>G</i> 0.15		<i>U</i> 5				
Residuals in seconds of arc											
1992 02 29	691	0.3−	0.0	1999 09 07	704	0.0	0.6+	1999 09 14	704	0.2+	1.0−
1992 02 29	691	0.3−	0.4−	1999 09 09	704	0.6−	0.2−	1999 09 14	704	0.2−	0.0
1992 02 29	691	0.6−	0.1−	1999 09 09	704	0.8+	0.2+	1999 09 14	704	0.2−	0.2+
1992 03 08	809	0.4+	0.2−	1999 09 09	704	0.8+	0.1−	1999 09 14	704	0.6−	1.0+
1992 03 09	809	0.8+	0.6+	1999 09 09	704	1.1+	0.1+	1999 09 30	704	0.2+	0.0
1999 09 07	704	0.0	0.5−	1999 09 11	699	0.7−	0.9+	1999 09 30	704	0.8−	0.1−
1999 09 07	704	0.0	0.2−	1999 09 11	699	0.4−	0.3−	1999 09 30	704	0.2+	0.3+
1999 09 07	704	0.2+	0.3−	1999 09 11	699	0.4+	0.1+				
1999 09 07	704	0.5−	0.1−	1999 09 14	704	0.0	0.5−				

1999 RQ ₁₈₉ = 1989 VF ₃ = 1993 OY ₁₀											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
Williams											
<i>M</i>	273.65483		(2000.0)		P		Q				
<i>n</i>	0.18691545		ω	325.76311	+0.13184279		−0.98860261				
<i>a</i>	3.0295113		Ω	116.56460	+0.92669052		+0.09689016				
<i>e</i>	0.0812689		<i>i</i>	4.66089	+0.35194056		+0.11522664				
<i>P</i>	5.27		<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2			
Residuals in seconds of arc											
1989 11 03	809	1.4+	0.8+	1993 07 20	809	1.4+	0.0	1999 09 14	704	0.4−	0.0
1989 11 03	809	0.0	0.3−	1993 07 20	809	1.3+	0.3−	1999 09 14	704	0.1+	0.1+
1989 11 03	809	1.4−	0.3−	1993 07 20	809	0.7+	0.6−	1999 09 14	704	0.4+	0.3−
1992 04 30	691	0.7+	0.7+	1993 07 24	809	0.4+	1.1−	1999 09 14	704	0.1−	0.1+
1992 04 30	691	0.3+	1.1+	1999 09 07	704	0.0	0.1−	1999 09 14	704	0.1+	0.6+
1992 04 30	691	0.2+	1.7+	1999 09 07	704	0.4−	0.3−	1999 09 30	704	0.0	0.5+
1993 07 13	809	0.2+	0.1−	1999 09 07	704	1.0−	0.5+	1999 09 30	704	0.5−	0.2−
1993 07 13	809	0.9−	1.2−	1999 09 07	704	0.8−	0.3−	1999 09 30	704	0.2+	0.7+
1993 07 13	809	1.0−	0.7−	1999 09 07	704	0.6+	0.8−	1999 09 30	704	1.3+	0.2−
1993 07 13	809	1.9−	0.6+	1999 09 09	704	0.8−	1.1+	1999 09 30	704	0.4+	1.0+
1993 07 13	809	(3.1−	1.0+)	1999 09 09	704	0.9−	1.1+				
1993 07 13	809	(3.0−	0.9+)	1999 09 09	704	0.5+	0.0				

1999 RB ₁₉₀ = 1997 BA ₈											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
Williams											
<i>M</i>	340.39824		(2000.0)		P		Q				
<i>n</i>	0.23468257	ω	30.12705		+0.98123835		−0.18895254				
<i>a</i>	2.6030479	Ω	340.65243		+0.14558874		+0.85647594				
<i>e</i>	0.1548744	<i>i</i>	6.64165		+0.12639313		+0.48036019				
<i>P</i>	4.20	<i>H</i>	16.1		<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1997 01 31	691	0.8−	0.3+	1999 09 07	704	0.5−	0.1+	1999 09 14	704	1.9+	0.5+
1997 01 31	691	0.5+	0.2−	1999 09 07	704	0.0	0.8+	1999 09 14	704	0.5−	0.0
1997 01 31	691	0.6−	0.0	1999 09 07	704	0.0	0.3−	1999 09 14	704	0.7+	0.5+
1997 02 06	691	0.3+	0.2+	1999 09 07	704	0.4+	0.5−	1999 09 29	703	1.0−	1.5+
1997 02 06	691	0.4+	0.2−	1999 09 07	704	0.6+	0.5−	1999 09 29	703	0.3−	0.0
1997 02 06	691	0.3+	0.1+	1999 09 09	704	0.2+	0.5−	1999 09 29	703	0.3−	0.1−
1999 08 22	703	0.5−	0.3−	1999 09 09	704	0.1−	1.7−	1999 09 29	703	0.6−	1.1−
1999 08 22	703	1.7−	0.8+	1999 09 09	704	(2.5−	0.6−)	1999 10 07	704	0.8−	0.9+
1999 08 22	703	0.8−	0.4+	1999 09 14	704	1.1+	0.1−	1999 10 07	704	1.2+	0.1+
1999 08 22	703	0.7+	0.7+	1999 09 14	704	0.1−	0.1−	1999 10 07	704	0.3+	0.8−

1999 RE ₁₉₀ = 1987 QV ₄ = 1987 SH ₂₄											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
<i>M</i>		260.78039	(2000.0)		P		Q		Williams		
<i>n</i>		0.24400856	ω	232.46272		−0.29736695		−0.94928547			
<i>a</i>		2.5362925	Ω	235.14066		+0.91054319		−0.24979099			
<i>e</i>		0.2055423	<i>i</i>	7.14963		+0.28720029		−0.19094910			
<i>P</i>		4.04	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4			
Residuals in seconds of arc											
1987 08 31	010	0.0	1.3−	1999 09 11	704	0.5+	0.0	1999 09 29	703	0.1−	0.3+
1987 08 31	010	0.3−	0.6−	1999 09 11	704	0.0	0.3+	1999 09 29	703	0.4−	0.1−
1987 09 23	095	0.6+	0.4+	1999 09 11	704	0.2+	0.1+	1999 09 29	703	0.1−	0.4+
1999 09 08	704	0.0	0.2−	1999 09 16	704	0.6−	0.9−	1999 10 04	704	0.2+	0.3+
1999 09 08	704	0.1−	0.3−	1999 09 16	704	0.1+	0.6+	1999 10 04	704	0.1+	0.2+
1999 09 08	704	0.2−	0.5+	1999 09 16	704	0.6+	1.5+	1999 10 04	704	0.2+	0.9−
1999 09 08	704	0.1+	0.1−	1999 09 16	704	0.5+	0.6+	1999 10 04	704	0.1−	0.4−
1999 09 10	704	0.1−	0.8−	1999 09 27	848	0.3−	0.0	1999 10 04	704	0.1−	0.8−
1999 09 10	704	0.0	0.5−	1999 09 27	848	0.0	0.3+	1999 10 07	703	0.6+	0.1+
1999 09 10	704	0.2+	0.2−	1999 09 28	848	0.3−	0.2−	1999 10 07	703	0.0	0.2+
1999 09 10	704	0.1−	0.3−	1999 09 28	848	0.3−	0.2−	1999 10 07	703	0.5+	0.0
1999 09 11	704	0.3+	0.0	1999 09 28	848	0.6−	0.8+	1999 10 07	703	0.4−	1.4+
1999 09 11	704	0.0	0.2−	1999 09 29	703	0.6−	0.3−				

1999 RP ₁₉₀ = 1978 VU ₂ = 1995 UV ₄₄ = 1996 AA ₃											
Id. A. Doppler, G. V. Williams (d)											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
						Williams					
<i>M</i>	306.24509		(2000.0)		P				Q		
<i>n</i>	0.23036970		ω	25.73099		+0.61489969		−0.78784364			
<i>a</i>	2.6354361		Ω	26.36707		+0.70938910		+0.53340367			
<i>e</i>	0.1928923		<i>i</i>	4.47503		+0.34447856		+0.30786836			
<i>P</i>	4.28		<i>H</i>	15.2		<i>G</i>	0.15		<i>U</i>	3	
Residuals in seconds of arc											
1978 11 01	010	1.1+	1.0−	1999 09 09	704	1.1−	1.0−	1999 09 13	704	1.1−	0.4+
1978 11 01	010	0.7−	0.4−	1999 09 09	704	1.4−	1.3−	1999 09 13	704	0.2−	0.0
1995 09 29	691	0.6+	0.3−	1999 09 10	704	0.8+	0.6+	1999 09 13	704	0.3−	0.6+
1995 09 29	691	0.4+	0.3−	1999 09 10	704	0.1+	0.3+	1999 09 13	704	0.5+	0.3−
1995 09 29	691	0.6+	0.3−	1999 09 10	704	0.5+	1.3+	1999 09 14	704	0.2−	1.3+
1995 10 27	399	1.2+	0.1−	1999 09 11	704	0.3+	0.1+	1999 09 14	704	0.1−	0.2+
1995 10 27	399	0.5−	0.3−	1999 09 11	704	0.3+	0.6+	1999 09 14	704	1.2+	0.7+
1995 10 28	399	1.0−	0.5+	1999 09 11	704	0.1+	0.2−	1999 09 14	704	0.1+	0.2+
1995 10 28	399	0.4−	0.1+	1999 09 11	704	0.4−	0.1−	1999 09 14	704	0.1−	0.3−
1996 01 11	327	0.4−	0.1+	1999 09 11	704	0.3−	0.3+	1999 09 14	704	0.4+	0.4+
1996 01 11	327	0.2−	0.0	1999 09 13	704	0.3+	0.3+	1999 09 14	704	0.4+	0.2−
1996 01 12	327	0.4+	0.6+	1999 09 13	704	0.3−	0.7+	1999 09 14	704	0.0	0.2−
1996 01 12	327	0.9−	0.8+	1999 09 13	704	0.2−	0.1−	1999 09 14	704	0.2−	0.4−
1996 01 12	327	0.5−	0.8+	1999 09 13	704	0.8+	0.5−	1999 09 14	704	0.2−	0.4−
1999 09 08	703	0.2+	0.8+	1999 09 13	704	0.2−	0.4+	1999 09 14	704	0.2−	0.1−
1999 09 08	703	0.7−	0.5−	1999 09 13	704	0.4−	0.5−	1999 09 14	704	0.5+	0.6−
1999 09 08	703	0.3−	0.3+	1999 09 13	704	0.4−	0.1−	1999 09 14	704	0.2−	0.2−
1999 09 08	703	0.4+	0.4+	1999 09 13	704	0.2+	0.0	1999 09 14	704	0.0	0.4+
1999 09 09	704	0.3+	1.8−	1999 09 13	704	0.3−	1.0−	1999 09 14	704	0.1−	0.1−
1999 09 09	704	1.0+	1.1−	1999 09 13	704	0.1+	1.4+				

1999 RZ ₁₉₀ = 1998 DL ₃₁											
Epoch 1999 Aug. 10.0 TT = JDT 2451400.5											
				Doppler							
<i>M</i>	5.17040	(2000.0)		P				Q			
<i>n</i>	0.23069185	<i>ω</i>	250.13030	+0.75157404				+0.65774287			
<i>a</i>	2.6329820	<i>Ω</i>	68.70688	−0.58331578				+0.69815378			
<i>e</i>	0.3265413	<i>i</i>	3.08279	−0.30802463				+0.28276424			
<i>P</i>	4.27	<i>H</i>	16.6	<i>G</i>	0.15			<i>U</i>	5		
Residuals in seconds of arc											
1998 02 28	691 0.0	0.5+	1999 09 10 704	0.0	0.2−	1999 09 13 704	0.4+	0.3−			
1998 02 28	691 0.1−	0.0	1999 09 10 704	0.3+	0.2−	1999 09 13 704	0.1−	0.4−			

1998 02 28	691	0.0	0.2−	1999 09 10	704	0.2+	0.1+	1999 09 13	704	0.1−	0.1+
1998 03 04	691	0.3+	0.0	1999 09 10	704	0.0	0.3−	1999 09 13	704	0.1+	0.0
1998 03 04	691	0.1−	0.1−	1999 09 10	704	0.2−	1.2+	1999 09 13	704	0.4−	0.1−
1998 03 04	691	0.0	0.3−	1999 09 10	704	0.1−	0.0				

1999 RC₁₉₁ = 1982 RX = 1982 UB₁₂ = 1998 FQ₁₀₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	342.89859		(2000.0)	P	Q		
<i>n</i>	0.22604090	ω	359.25439	+0.86984208	+0.48212398		
<i>a</i>	2.6689761	Ω	331.16857	−0.45149200	+0.69257711		
<i>e</i>	0.1723896	<i>i</i>	12.52165	−0.19882082	+0.53655700		
<i>P</i>	4.36	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1982 09 15	688	0.3−	2.0+	1998 04 01	704	0.8−	0.6+	1999 09 11	704	0.3−	0.3+
1982 09 15	688	0.3+	2.0−	1998 04 01	704	0.1−	0.3+	1999 09 11	704	0.4−	1.1+
1982 10 24	095	0.5+	0.8−	1998 04 01	704	(2.3−	0.1+)	1999 09 14	704	0.2+	0.2−
1998 03 25	566	0.5−	0.8−	1998 04 01	704	0.3−	0.4+	1999 09 14	704	0.9+	0.5+
1998 03 25	566	0.5−	0.9−	1999 07 14	704	0.7−	0.3+	1999 09 14	704	0.8+	0.3+
1998 03 25	566	0.9−	0.9−	1999 07 14	704	0.7−	0.1−	1999 09 14	704	0.6+	0.0
1998 03 31	704	0.3+	0.4−	1999 07 14	704	0.8−	0.4−	1999 09 14	704	0.5+	0.2+
1998 03 31	704	(2.5+	1.6−)	1999 07 14	704	0.8−	0.4−	1999 09 29	704	0.4+	0.3−
1998 03 31	704	0.5+	0.6−	1999 07 14	704	0.8−	0.2−	1999 09 29	704	0.3+	0.2−
1998 03 31	704	0.7+	0.4+	1999 09 11	704	0.3+	0.3−	1999 09 29	704	0.1+	0.3−
1998 03 31	704	0.5+	0.2+	1999 09 11	704	0.5+	0.1−	1999 09 29	704	0.2+	0.6−
1998 04 01	704	0.3+	0.1−	1999 09 11	704	0.6+	0.3+	1999 09 29	704	0.4+	1.2−

1999 RA₁₉₂ = 1990 JE

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	81.93496		(2000.0)	P	Q		
<i>n</i>	0.23577204	ω	296.35957	−0.01148642	+0.99464716		
<i>a</i>	2.5950228	Ω	332.39078	−0.82017973	−0.06811680		
<i>e</i>	0.1504912	<i>i</i>	12.80192	−0.57199063	+0.07769897		
<i>P</i>	4.18	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 05 03	413	0.0	0.2+	1999 09 13	704	0.1−	0.1+	1999 09 27	848	0.2−	0.2+
1990 05 04	413	0.0	0.2−	1999 09 13	704	1.1+	0.6−	1999 09 27	848	0.0	0.6−
1999 09 11	704	0.5−	0.5−	1999 09 13	704	0.8−	0.2+	1999 09 27	848	0.5+	0.1+
1999 09 11	704	0.1−	0.1+	1999 09 18	704	0.2−	0.0	1999 10 03	704	0.3−	0.0
1999 09 11	704	0.1−	0.1+	1999 09 18	704	0.3−	0.0	1999 10 03	704	0.1−	0.3+
1999 09 11	704	0.4−	0.1−	1999 09 18	704	0.4−	0.1−	1999 10 03	704	0.4−	0.3−
1999 09 11	704	0.2−	0.5+	1999 09 18	704	0.1+	0.4−	1999 10 03	704	0.1+	0.1−
1999 09 13	704	2.0+	0.3+	1999 09 18	704	0.1−	0.6+	1999 10 03	704	0.6+	0.4+

1999 RB₁₉₂ = 1999 NG₂₈ = 1989 GU₂ = 1996 RH₂₂

Id. G. V. Williams, A. Doppler (d)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	15.87047		(2000.0)	P	Q		
<i>n</i>	0.30847253	ω	286.18109	+0.28390423	+0.95885257		
<i>a</i>	2.1693271	Ω	0.31303	−0.85101383	+0.25215713		
<i>e</i>	0.1171463	<i>i</i>	3.98940	−0.44178486	+0.13045511		
<i>P</i>	3.20	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1989 04 03	809	0.2+	0.5+	1996 09 08	691	0.2−	0.3+	1999 07 16	704	0.0	0.4−
1989 04 03	809	0.6+	0.8+	1996 09 17	691	0.1−	0.7+	1999 07 16	704	0.7+	0.1+
1989 04 03	809	0.1+	0.9+	1996 09 17	691	0.2+	0.6+	1999 07 16	704	0.8+	1.0−
1989 04 05	809	0.7−	0.9+	1996 09 17	691	0.2+	0.5+	1999 07 16	704	0.8+	0.3−
1989 04 05	809	1.3−	0.8+	1999 07 14	704	0.2+	0.3−	1999 09 13	704	0.7−	0.1+
1989 04 05	809	1.3−	1.2+	1999 07 14	704	0.4+	0.5−	1999 09 13	704	1.0−	0.9−
1989 04 08	809	1.7+	0.9+	1999 07 14	704	0.1+	1.1+	1999 09 13	704	1.2−	0.6+
1989 04 08	809	0.5+	0.6+	1999 07 14	704	0.7+	1.2−	1999 09 14	704	1.2−	0.0
1989 04 08	809	0.7+	0.7+	1999 07 14	704	0.1+	0.2+	1999 09 14	704	0.5−	1.4+
1989 04 10	809	0.0	1.0−	1999 07 16	704	0.0	0.3−	1999 09 14	704	1.3+	0.4+

1989 04 10	809	0.1−	1.7−	1999 07 16	704	0.3−	0.0	1999 10 15	704	0.3−	0.7+
1989 04 10	809	0.6+	1.5−	1999 07 16	704	0.0	0.1−	1999 10 15	704	1.0−	0.4+
1996 09 08	691	0.2−	0.1+	1999 07 16	704	0.5+	0.3+	1999 10 15	704	0.8−	0.5−
1996 09 08	691	0.4−	0.1+	1999 07 16	704	0.2−	0.2−	1999 10 15	704	0.4−	0.4+

1999 RD₁₉₂ = 1998 HX₁₃₁

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	54.66770		(2000.0)	P	Q		
<i>n</i>	0.23290548	ω	180.15526	−0.07488177	+0.99295243		
<i>a</i>	2.6162721	Ω	85.55097	−0.91480682	−0.03173943		
<i>e</i>	0.1421126	<i>i</i>	5.28657	−0.39688942	−0.11418440		
<i>P</i>	4.23	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 04	699	0.7+	0.1−	1999 09 08	703	0.2−	0.6−	1999 09 13	704	0.0	0.0
1998 04 04	699	0.4+	0.2+	1999 09 08	703	0.1−	0.6−	1999 09 13	704	0.0	0.2+
1998 04 04	699	0.1+	0.1+	1999 09 08	703	0.7−	0.3−	1999 09 13	704	0.1+	0.1−
1998 04 19	704	0.1−	0.5−	1999 09 08	703	0.0	0.4+	1999 09 13	704	0.3+	0.5−
1998 04 19	704	0.4+	0.2−	1999 09 09	704	0.5+	0.0	1999 09 13	704	0.4+	0.2−
1998 04 19	704	0.2−	1.2+	1999 09 09	704	0.9+	0.2−	1999 09 13	704	0.1−	0.2−
1998 04 20	704	0.8+	0.6−	1999 09 09	704	0.5+	0.4−	1999 09 13	704	0.1−	0.6−
1998 04 20	704	0.2−	0.8+	1999 09 09	704	0.6+	0.9+	1999 09 14	704	0.2−	0.4−
1998 04 20	704	0.7−	0.3−	1999 09 09	704	1.1+	0.8+	1999 09 14	704	0.8−	0.5+
1998 04 20	704	0.5−	0.2+	1999 09 13	704	0.3+	0.3−	1999 09 14	704	0.9−	1.1+
1998 04 20	704	0.8−	0.5−	1999 09 13	704	0.1+	0.7−	1999 09 14	704	0.6−	1.1+
1998 05 22	566	(4.9+	1.3+)	1999 09 13	704	0.3+	0.3+	1999 09 14	704	(2.2−	1.1+)
1998 05 22	566	(3.6+	1.7+)	1999 09 13	704	0.0	0.4−	1999 09 30	704	0.0	0.2+
1998 05 22	566	(3.5+	1.9+)	1999 09 13	704	0.0	0.7+	1999 09 30	704	0.2+	0.0
1999 08 12	699	0.3−	0.3−	1999 09 13	704	0.2−	0.2+	1999 09 30	704	0.1−	0.3−
1999 08 12	699	0.1−	0.3−	1999 09 13	704	0.4+	0.1+	1999 09 30	704	0.2−	0.2+
1999 08 12	699	0.6−	0.0	1999 09 13	704	0.4−	0.2−	1999 09 30	704	0.3−	0.1−

1999 RG₁₉₃ = 1998 MT₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	245.95639		(2000.0)	P	Q		
<i>n</i>	0.18156242	ω	9.89828	−0.43661413	−0.88130304		
<i>a</i>	3.0887689	Ω	106.17782	+0.81200845	−0.47254331		
<i>e</i>	0.0629189	<i>i</i>	10.84832	+0.38731173	−0.00278897		
<i>P</i>	5.43	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 06 24	704	0.1−	0.5−	1998 06 27	809	1.3−	0.5+	1999 09 14	704	0.1−	0.1−
1998 06 24	704	0.7+	0.5−	1999 09 11	699	1.7+	0.3+	1999 09 14	704	0.1−	0.4−
1998 06 24	704	1.4+	2.1−	1999 09 11	699	0.1−	0.2+	1999 09 14	704	0.1+	0.7−
1998 06 24	704	0.0	0.9−	1999 09 11	699	0.4+	1.5+	1999 09 14	704	0.5−	0.2−
1998 06 24	704	1.5+	1.4−	1999 09 13	704	0.3−	0.2−	1999 09 30	704	0.3−	0.1+
1998 06 26	809	0.1+	1.1+	1999 09 13	704	0.5−	0.4−	1999 09 30	704	0.8+	0.3+
1998 06 26	809	0.6−	1.2+	1999 09 13	704	0.5+	0.1+	1999 09 30	704	0.1+	0.0
1998 06 26	809	0.2−	0.5+	1999 09 13	704	0.0	0.9−	1999 09 30	704	0.4−	0.5+
1998 06 27	809	0.7−	1.4+	1999 09 13	704	0.5−	0.9−	1999 09 30	704	0.1−	0.4+
1998 06 27	809	0.8−	0.8+	1999 09 14	704	0.5−	0.4+				

1999 RK₁₉₃ = 1998 KO₅₂

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	17.90833		(2000.0)	P	Q		
<i>n</i>	0.19249512	ω	233.19251	+0.82110607	+0.51689970		
<i>a</i>	2.9706825	Ω	94.47882	−0.41503143	+0.83185001		
<i>e</i>	0.1534069	<i>i</i>	14.05274	−0.39183381	+0.20208971		
<i>P</i>	5.12	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1999 OCT. 26

1998 05 23	704	0.7−	0.3+	1999 09 11	699	0.7+	0.6+	1999 09 14	704	0.4−	0.6+
1998 05 23	704	1.2−	0.2+	1999 09 11	699	0.4+	0.4−	1999 09 14	704	1.3−	0.8+
1998 05 23	704	(0.9−	2.7−)	1999 09 13	704	0.2+	2.0−	1999 09 30	704	0.6+	0.1−
1998 05 26	704	0.1+	0.2−	1999 09 13	704	0.1−	0.0	1999 09 30	704	0.0	0.5+
1998 05 26	704	0.2+	0.8−	1999 09 13	704	1.2−	0.3−	1999 09 30	704	0.0	1.0−
1998 05 26	704	0.4+	0.0	1999 09 13	704	1.1−	0.5+				
1998 05 26	704	1.6+	0.4−	1999 09 14	704	0.8+	0.4+				

1999 RL₁₉₃ = 1977 RH₁₈

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18028883	<i>ω</i>	155.41840	+0.91310239	+0.40772612		
<i>a</i>	3.1032982	<i>Ω</i>	180.53022	−0.39933136	+0.89336605		
<i>e</i>	0.0898090	<i>i</i>	11.55234	−0.08233157	+0.18882932		
<i>P</i>	5.47	<i>H</i>	15.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1977 09 09	675	1.1−	1.3−	1999 09 14	734	(1.3+	2.4−)	1999 10 06	734	0.2+	0.7+
1977 09 10	675	1.1+	1.3+	1999 09 14	734	0.9+	0.8−	1999 10 06	734	0.8−	0.4−
1999 09 07	691	0.3−	0.6+	1999 09 14	734	(3.5+	0.1+)	1999 10 06	734	0.1−	0.5+
1999 09 07	691	0.4−	0.2+	1999 09 14	734	1.4+	0.4−	1999 10 06	734	0.2+	0.1−
1999 09 07	691	0.2−	0.5+	1999 09 18	691	0.5−	0.5−	1999 10 06	734	0.7+	0.5+
1999 09 13	734	0.7−	0.8+	1999 09 18	691	0.3−	0.5−	1999 10 14	734	(0.4−	2.5−)
1999 09 13	734	0.4+	0.8−	1999 09 18	691	0.4−	0.4−	1999 10 14	734	0.6+	0.6−
1999 09 13	734	0.5−	0.2+	1999 09 30	703	0.7−	0.1−	1999 10 14	734	0.4−	0.4−
1999 09 13	734	1.0−	0.3+	1999 09 30	703	0.4−	0.2+	1999 10 14	734	0.1+	0.0
1999 09 13	734	0.7+	0.0	1999 09 30	703	(2.3−	0.7−)				
1999 09 13	734	1.3+	0.5−	1999 09 30	703	0.4+	0.8+				

1999 RU₁₉₃ = 3026 P-L

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>	0.17713134	<i>ω</i>	12.19124	+0.96719031	+0.23336021		
<i>a</i>	3.1400684	<i>Ω</i>	333.64988	−0.24793577	+0.78079596		
<i>e</i>	0.1480141	<i>i</i>	13.07724	−0.05541440	+0.57956939		
<i>P</i>	5.56	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1960 09 24	675	0.7−	0.0	1960 09 28	675	0.3+	0.2+	1999 09 27	848	0.1−	0.5+
1960 09 24	675	0.9+	0.6−	1960 09 29	675	1.7−	0.3+	1999 09 27	848	0.3−	0.3+
1960 09 24	675	0.5−	0.6−	1960 09 29	675	1.8+	0.7+	1999 09 27	848	0.2−	0.6+
1960 09 25	675	0.2+	0.4+	1999 09 07	704	0.3+	0.1−	1999 09 27	848	0.2+	0.9+
1960 09 25	675	0.5+	0.2−	1999 09 07	704	0.0	0.1+	1999 09 27	848	0.2−	0.1−
1960 09 25	675	0.1+	0.8−	1999 09 07	704	0.8+	0.0	1999 09 28	848	0.1+	0.4−
1960 09 26	675	0.4−	0.1+	1999 09 07	704	0.2−	0.4−	1999 09 28	848	0.8−	0.6−
1960 09 26	675	0.6−	0.0	1999 09 07	704	0.0	0.1+	1999 09 28	848	0.0	0.3−
1960 09 26	675	0.5+	0.4−	1999 09 16	704	0.1−	1.0+	1999 09 28	848	0.6+	0.8−
1960 09 27	675	0.1+	0.1+	1999 09 16	704	0.5+	0.1+	1999 09 28	848	0.0	1.0−
1960 09 28	675	0.7−	1.1+	1999 09 16	704	0.5−	0.3+	1999 09 28	848	0.2−	0.4−
1960 09 28	675	0.2+	0.2−	1999 09 16	704	0.1−	0.2+				

1999 RA₁₉₄ = 1996 FN₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18249471	<i>ω</i>	132.34754	+0.81323595	−0.57824222		
<i>a</i>	3.0782404	<i>Ω</i>	263.08170	+0.51265787	+0.76509705		
<i>e</i>	0.1758037	<i>i</i>	3.78005	+0.27537102	+0.28330625		
<i>P</i>	5.40	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	4

M.P.C. 36471

Residuals in seconds of arc

1996 03 24	608	0.4−	0.3+	1999 09 08	699	1.1−	0.2−	1999 10 04	704	0.3+	0.6+
1996 03 24	608	0.9−	1.2+	1999 09 08	699	0.4+	0.7+	1999 10 04	704	0.3−	0.4−
1996 03 25	608	0.7+	0.8−	1999 09 08	699	0.7−	0.3+	1999 10 07	704	0.1−	0.6−
1996 03 25	608	0.7+	0.7−	1999 09 16	704	0.7+	0.3−	1999 10 07	704	0.1+	0.4−
1999 09 07	704	0.1−	0.2−	1999 09 16	704	0.9+	0.7−	1999 10 07	704	0.4+	0.4+
1999 09 07	704	0.4+	0.1−	1999 09 16	704	0.6−	0.2+	1999 10 07	704	0.3−	0.1+
1999 09 07	704	0.2+	0.3+	1999 10 04	704	0.4−	0.6+	1999 10 07	704	0.5+	0.2+
1999 09 07	704	0.1−	0.1−	1999 10 04	704	0.2−	0.4+				
1999 09 07	704	0.3+	0.0	1999 10 04	704	0.3−	0.6−				

1999 RC₁₉₄ = 1991 LK₃ = 1998 HK₇₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.27232611	<i>ω</i>	17.21629	−0.59943591	+0.79808957		
<i>a</i>	2.3572729	<i>Ω</i>	216.02154	−0.74605806	−0.58473273		
<i>e</i>	0.0317416	<i>i</i>	5.96068	−0.28995510	−0.14539832		
<i>P</i>	3.62	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1991 06 06	809	0.3+	0.7+	1998 04 21	704	0.2+	0.5−	1999 09 07	704	0.5+	0.4+
1991 06 06	809	0.5−	0.2−	1998 04 22	704	0.6+	0.0	1999 09 08	699	0.3−	0.3+
1991 06 06	809	0.7−	0.8−	1998 04 22	704	0.4+	0.1+	1999 09 08	699	0.5−	0.5+
1991 06 08	809	0.7+	1.1−	1998 04 22	704	0.1+	0.1+	1999 09 08	699	0.1+	0.8+
1991 06 08	809	0.2+	0.3−	1998 04 22	704	0.2+	0.0	1999 09 16	704	0.3+	0.6−
1991 06 08	809	0.2−	0.3−	1998 04 22	704	0.0	0.1+	1999 09 16	704	0.5−	0.0
1992 10 23	691	0.9−	0.6+	1998 05 01	699	0.5+	0.1−	1999 09 16	704	0.1+	0.1−
1992 10 23	691	0.5−	0.3−	1998 05 01	699	0.0	0.2+	1999 09 29	703	0.6+	0.1+
1992 10 23	691	0.9+	0.2+	1998 05 01	699	0.1−	0.7−	1999 09 29	703	0.4+	0.5+
1992 11 16	691	0.2−	0.1+	1998 05 16	704	0.4+	0.6+	1999 09 29	703	0.7−	0.1−
1992 11 16	691	0.1−	0.1+	1998 05 16	704	0.8+	1.1+	1999 09 29	703	0.2−	0.2+
1992 11 16	691	0.4+	0.2+	1998 05 16	704	0.0	0.9+	1999 10 04	704	0.7−	0.2−
1998 04 01	704	0.6−	0.3+	1998 05 16	704	1.5−	1.1+	1999 10 04	704	0.4−	0.1−
1998 04 01	704	0.8−	0.2+	1998 05 16	704	(2.4−	1.0−)	1999 10 04	704	0.0	0.1+
1998 04 01	704	0.0	0.0	1998 05 23	691	0.0	0.5+	1999 10 04	704	1.1−	0.8−
1998 04 01	704	0.4−	0.2+	1998 05 23	691	0.7−	0.8+	1999 10 07	704	0.7−	0.2−
1998 04 01	704	0.9−	0.5+	1998 05 23	691	0.1−	0.6+	1999 10 07	704	0.3−	0.1−
1998 04 21	704	0.3+	0.3−	1999 09 07	704	0.5+	0.2−	1999 10 07	704	0.5−	0.2−
1998 04 21	704	0.7+	0.3−	1999 09 07	704	1.0+	0.0	1999 10 07	704	0.2+	0.4+
1998 04 21	704	0.6+	1.4−	1999 09 07	704	0.9+	0.2+	1999 10 07	704	0.5−	0.1−
1998 04 21	704	0.8+	0.5−	1999 09 07	704	1.4+	0.3+				

1999 RD₁₉₄ = 1995 KC₂ = 1998 FQ₉₇

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29797484	<i>ω</i>	4.38100	−0.75465546	+0.65360506		
<i>a</i>	2.2199830	<i>Ω</i>	216.64218	−0.60486450	−0.72693522		
<i>e</i>	0.1069479	<i>i</i>	5.51974	−0.25423230	−0.21063145		
<i>P</i>	3.31	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1995 05 27	905	0.1+	0.1+	1998 03 31	704	0.6−	1.3−	1999 09 08	699	0.2+	0.5−
1995 05 27	905	0.2+	0.8+	1998 04 01	704	0.1+	0.2+	1999 09 08	699	0.2+	0.5−
1995 06 01	905	(1.2−	2.3−)	1998 04 01	704	0.3+	0.6−	1999 09 08	699	0.8−	0.4+
1995 06 01	905	0.4+	0.1−	1998 04 01	704	1.2+	0.7−	1999 09 16	704	0.1−	0.1+
1995 06 16	905	0.5−	0.5−	1998 04 01	704	1.1+	0.1−	1999 09 16	704	0.3−	0.5−
1995 06 16	905	0.2−	0.5+	1998 04 01	704	0.4+	1.1−	1999 09 16	704	0.3−	1.4−
1998 03 26	704	0.1+	0.0	1998 04 18	704	0.2−	0.0	1999 10 04	704	0.5+	0.9−
1998 03 26	704	0.3+	0.1−	1998 04 18	704	1.7−	1.1−	1999 10 04	704	0.2+	0.3−
1998 03 26	704	0.4−	0.3+	1998 04 18	704	0.2−	0.0	1999 10 04	704	0.3−	0.7−
1998 03 29	704	0.4+	0.2−	1998 04 18	704	1.1−	0.7+	1999 10 04	704	0.5−	0.6−
1998 03 29	704	0.4−	0.2+	1998 04 30	566	1.4−	0.3−	1999 10 04	704	0.5+	0.7−
1998 03 29	704	0.3+	0.0	1998 04 30	566	1.2−	0.4−	1999 10 07	704	0.3−	0.0
1998 03 29	704	0.3−	0.5+	1998 04 30	566	1.2−	0.0	1999 10 07	704	0.0	0.4−
1998 03 29	704	0.6+	0.0	1999 09 07	704	1.1+	0.5−	1999 10 07	704	0.1+	0.6−

1998 03 31	704	0.3+	0.6−	1999 09 07	704	0.3+	0.4+	1999 10 07	704	0.1−	0.0
1998 03 31	704	0.1−	1.0−	1999 09 07	704	0.9+	0.0	1999 10 07	704	0.2+	0.9−
1998 03 31	704	0.3+	0.4−	1999 09 07	704	0.5+	0.4+				
1998 03 31	704	0.1−	1.2−	1999 09 07	704	0.6+	0.2−				

1999 RE₁₉₄ = 1975 VF₆ = 1975 XC₃ = 1977 FY₁ = 1982 FS₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	233.14031		(2000.0)	P	Q
n	0.19872761	ω	184.28950	−0.58766877	−0.80520425
a	2.9082422	Ω	301.72188	+0.74508301	−0.50034508
e	0.0977690	i	5.35059	+0.31543100	−0.31827805
P	4.96	H	12.9	G 0.15	U 3

Residuals in seconds of arc

1975 11 06	095	1.1−	1.1−	1999 09 07	704	0.2+	1.1−	1999 10 04	704	(0.5−	2.9+)
1975 12 02	095	1.0+	0.7+	1999 09 07	704	0.1+	1.3−	1999 10 04	704	0.7−	0.5+
1977 03 26	095	(0.8+	3.5+)	1999 09 08	699	0.2−	1.4+	1999 10 04	704	0.1−	0.7+
1982 03 26	046	0.9−	1.1−	1999 09 08	699	0.5−	1.3+	1999 10 04	704	0.0	0.7+
1982 03 27	046	0.2−	0.2−	1999 09 08	699	0.3+	1.6+	1999 10 04	704	0.7−	0.7+
1982 03 27	046	0.2+	0.4+	1999 09 16	704	1.2+	0.1−	1999 10 07	704	1.2−	0.0
1982 03 27	046	0.7+	0.5+	1999 09 16	704	0.1−	1.0−	1999 10 07	704	0.4−	0.5+
1982 03 28	046	(5.1+	2.8−)	1999 09 16	704	0.8+	0.9−	1999 10 07	704	0.7−	0.2−
1982 03 28	046	(3.6+	1.4−)	1999 09 29	703	0.3−	0.3−	1999 10 07	704	1.0−	0.2+
1999 09 07	704	0.1+	1.1−	1999 09 29	703	1.4+	0.3−	1999 10 07	704	0.2−	0.1−
1999 09 07	704	0.1+	0.5−	1999 09 29	703	1.4+	0.1+				
1999 09 07	704	0.1+	0.7−	1999 09 29	703	0.4+	0.5−				

1999 RG₁₉₄ = 1993 FY₆₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	13.16929		(2000.0)	P	Q		
n	0.20273446	ω	114.02117	+0.72253510	+0.68990840		
a	2.8697958	Ω	202.43931	−0.66900075	+0.68156720		
e	0.3102500	i	6.67652	−0.17430156	+0.24391095		
P	4.86	H	14.7	G	0.15	U	5

Residuals in seconds of arc

1993 03 21	809	(2.7−	3.6+)	1999 09 07	704	0.0	0.4−	1999 10 07	704	0.5−	0.4−
1993 03 22	809	0.0	0.1+	1999 09 07	704	0.3+	0.2−	1999 10 07	704	1.0−	0.0
1999 07 23	704	0.1−	0.4+	1999 09 07	704	0.1+	0.1−	1999 10 07	704	0.2−	0.9−
1999 07 23	704	0.3−	0.4+	1999 09 16	704	0.6+	0.4−	1999 10 07	106	0.1−	0.1−
1999 07 23	704	0.1−	0.2+	1999 09 16	704	0.6+	0.5+	1999 10 07	106	0.1+	0.1−
1999 07 23	704	0.5−	0.1+	1999 09 16	704	0.2−	0.1−	1999 10 07	106	0.1+	0.9+
1999 07 23	704	0.2+	0.4−	1999 09 16	704	0.6+	0.1−	1999 10 08	106	0.1+	0.0
1999 09 07	704	0.0	0.4−	1999 10 07	704	0.1+	0.3+	1999 10 08	106	0.0	0.6+
1999 09 07	704	0.4+	0.2−	1999 10 07	704	0.1+	0.3−	1999 10 08	106	0.5−	0.9+

1999 RN₁₉₄ = 1990 EO₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	294.09500		(2000.0)	P	Q
<i>n</i>	0.27354461	ω	184.16550	+0.25039744	−0.96646064
<i>a</i>	2.3502674	Ω	251.34086	+0.88998478	+0.25297907
<i>e</i>	0.1982380	<i>i</i>	3.45228	+0.38108819	+0.04422008
<i>P</i>	3.60	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1990 03 02	809	0.3+	0.4−	1999 07 23	704	0.2−	1.8−	1999 09 16	704	(0.6−	2.3+)
1990 03 02	809	0.1+	0.5−	1999 09 07	704	0.1+	0.3+	1999 10 04	704	0.5−	0.4−
1990 03 02	809	(1.3+	2.3−)	1999 09 07	704	0.2−	0.6+	1999 10 04	704	0.5+	0.4−
1990 03 04	809	0.5−	0.9−	1999 09 07	704	0.2+	0.1−	1999 10 04	704	0.3+	0.7−
1990 03 04	809	0.2−	0.6−	1999 09 07	704	0.1−	0.4+	1999 10 07	704	1.2+	1.3+
1990 03 04	809	1.0−	1.2−	1999 09 07	704	0.5−	0.4−	1999 10 07	704	0.4+	1.4+
1992 10 31	033	0.3+	1.3−	1999 09 08	699	0.8−	0.1−	1999 10 07	704	0.2−	0.0
1999 07 23	704	0.4+	0.9−	1999 09 08	699	(0.3−	2.5+)	1999 10 07	704	0.3−	0.9+
1999 07 23	704	0.8+	1.7−	1999 09 08	699	0.6−	1.1+	1999 10 07	704	0.1+	0.6−

1999 07 23	704	0.3+	1.2−	1999 09 16	704	0.2−	0.2−
1999 07 23	704	0.8+	1.6−	1999 09 16	704	0.1−	0.2−

1999 RO₁₉₄ = 1998 KH₆₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	2.63945		(2000.0)	P	Q
n	0.21029152	ω	131.89332	+0.97075521	+0.23781452
a	2.8006245	Ω	214.38674	−0.23386967	+0.90589317
e	0.1089114	i	3.33364	−0.05421537	+0.35043091
P	4.69	H	13.7	G 0.15	U 3

Residuals in seconds of arc

1994 09 01	691	0.1−	0.2−	1999 07 23	704	0.1+	0.0	1999 10 04	704	0.2−	0.4+
1994 09 01	691	0.1−	0.3+	1999 07 23	704	0.2+	0.1−	1999 10 04	704	0.1−	0.2−
1994 09 01	691	0.2+	0.1+	1999 09 07	704	0.3+	0.1+	1999 10 04	704	0.2+	0.6−
1998 05 22	704	0.1−	0.2−	1999 09 07	704	0.0	0.3+	1999 10 06	704	0.0	0.2+
1998 05 22	704	0.1+	0.5+	1999 09 07	704	0.2−	0.2−	1999 10 06	704	0.0	0.3+
1998 05 22	704	0.6−	1.2+	1999 09 07	704	0.3−	0.6+	1999 10 06	704	0.2+	0.3+
1998 05 24	704	0.5−	0.9+	1999 09 07	704	0.4−	0.5+	1999 10 06	704	0.4−	0.1+
1998 05 24	704	0.5+	0.9−	1999 09 08	699	0.1−	0.1−	1999 10 06	704	0.2−	0.2−
1998 05 24	704	0.1−	0.7−	1999 09 08	699	0.6−	0.0	1999 10 07	704	0.4+	0.2−
1998 05 24	704	0.6+	0.8−	1999 09 08	699	0.1−	0.6+	1999 10 07	704	0.0	0.1−
1998 05 24	704	0.1+	0.5−	1999 09 16	704	0.3+	0.2−	1999 10 07	704	0.7+	0.9−
1999 07 23	704	0.4+	0.3−	1999 09 16	704	0.4+	0.6−	1999 10 07	704	0.0	0.5−
1999 07 23	704	0.4−	0.1−	1999 09 16	704	0.2+	0.2+	1999 10 07	704	0.1−	0.4−
1999 07 23	704	0.2−	0.7+	1999 10 04	704	0.0	0.2+				

1999 RS₁₉₄ = 9075 P-L

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	330.50769		(2000.0)	P	Q
n	0.17750382	ω	157.66891	+0.87148439	−0.48526827
a	3.1356740	Ω	231.55636	+0.43516041	+0.83184253
e	0.1513289	i	5.19522	+0.22616450	+0.26935610
P	5.55	H	13.2	G 0.15	U 4

Residuals in seconds of arc

1960 10 22	675	0.5−	0.5+	1999 09 08	699	0.1−	0.2+	1999 10 04	704	0.1+	0.3−
1960 10 24	675	0.4+	0.1−	1999 09 08	699	0.4−	0.6+	1999 10 04	704	0.0	0.4+
1960 10 26	675	0.2+	0.4−	1999 09 16	704	0.1−	0.3+	1999 10 07	704	0.3−	0.3+
1999 09 07	704	0.4+	0.2−	1999 09 16	704	0.6−	0.4−	1999 10 07	704	0.1+	0.2−
1999 09 07	704	0.3+	0.1−	1999 09 16	704	0.1−	0.1−	1999 10 07	704	0.1−	0.3−
1999 09 07	704	0.2+	0.5−	1999 10 04	704	0.4+	0.2+	1999 10 07	704	0.2−	0.1+
1999 09 07	704	0.0	0.5+	1999 10 04	704	0.0	0.5+	1999 10 07	704	0.4−	0.0
1999 09 08	699	0.2+	0.3−	1999 10 04	704	0.7+	0.5−				

1999 RW₁₉₄ = 1991 VU₃ = 1998 MC₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	241.58584		(2000.0)	P	Q
n	0.22458347	ω	225.68690	−0.21971706	−0.95878012
a	2.6805106	Ω	237.82215	+0.94467473	−0.16299197
e	0.1577194	i	12.29113	+0.24354480	−0.23275371
P	4.39	H	13.8	G 0.15	U 4

Residuals in seconds of arc

1991 11 11	399	(2.1+	2.6+)	1998 06 26	704	1.2+	1.6−	1999 10 01	703	1.0+	1.2+
1991 11 11	399	1.0−	0.1+	1998 06 26	704	1.7−	0.6−	1999 10 01	703	0.7−	0.1−
1991 11 13	399	1.6+	0.2−	1999 09 08	704	0.6+	1.5+	1999 10 01	703	0.2+	0.9+
1991 11 13	399	0.6−	1.0−	1999 09 08	704	0.1−	0.3+	1999 10 04	704	0.4+	0.5+
1998 06 24	704	0.1+	0.4+	1999 09 08	704	0.2−	0.7−	1999 10 04	704	0.5+	0.0
1998 06 24	704	(2.2+	2.1−)	1999 09 08	704	0.7−	1.0−	1999 10 04	704	0.0	0.2+
1998 06 24	704	1.6+	0.4+	1999 09 16	704	0.6−	0.3−	1999 10 04	704	0.9−	1.2+
1998 06 24	704	(2.9−	0.1−)	1999 09 16	704	0.2+	1.3−	1999 10 04	704	0.0	0.3−
1998 06 26	704	0.5−	0.6−	1999 09 16	704	0.6+	1.5−				
1998 06 26	704	0.7−	0.8+	1999 10 01	703	0.3−	0.1+				

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1999 RT₁₉₅ = 1997 CV₁₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.23323287	ω	22.46434	+0.84251056	+0.50640446		
<i>a</i>	2.6138232	Ω	305.80846	−0.52223184	+0.68423961		
<i>e</i>	0.1543662	<i>i</i>	13.08908	−0.13209790	+0.52475773		
<i>P</i>	4.23	<i>H</i>	15.7	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1991 09 16	691	0.3+	0.6−	1997 02 07	691	0.1−	0.1−
1991 09 16	691	0.2−	0.4+	1999 09 04	703	1.6−	0.6+
1991 09 16	691	0.1−	0.5+	1999 09 04	703	0.1−	0.2+
1997 02 03	691	0.1+	0.3−	1999 09 04	703	0.0	0.5−
1997 02 03	691	0.4−	0.3+	1999 09 04	703	0.4+	0.5−
1997 02 03	691	0.2+	0.0	1999 09 08	704	1.2+	0.4−
1997 02 07	691	0.1−	0.5−	1999 09 08	704	0.1+	0.5−
1997 02 07	691	0.1+	0.3+	1999 09 08	704	0.3−	0.9−
1999 09 16	704	0.0	0.2+	1999 09 16	704	0.2+	0.2−
1999 09 16	704	0.4+	0.4−	1999 09 16	704	0.3+	1.2+
1999 09 16	704	0.4+	0.1−	1999 09 18	704	0.4+	0.1−
1999 09 18	704	0.1+	0.3+	1999 09 18	704	0.4−	0.4−
1999 09 18	704	0.3−	1.4+	1999 09 18	704	0.3−	1.4+

1999 RZ₁₉₅ = 1998 HS₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.28593919	ω	115.05882	+0.99346536	+0.07229537		
<i>a</i>	2.2818491	Ω	240.90421	−0.09894106	+0.93126635		
<i>e</i>	0.1509650	<i>i</i>	5.80090	+0.05689684	+0.35709434		
<i>P</i>	3.45	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	4
Residuals in seconds of arc							
1998 04 01	704	0.2+	0.3+	1998 04 22	704	0.2−	1.2−
1998 04 01	704	(3.5−	0.5+)	1998 04 22	704	1.4+	0.4−
1998 04 01	704	(2.8−	0.2+)	1998 04 22	704	(5.6−	1.7+)
1998 04 01	704	(2.2−	3.1+)	1999 09 05	703	0.6+	0.0
1998 04 01	704	(3.5−	2.9+)	1999 09 05	703	0.2−	0.4−
1998 04 19	704	0.5−	0.5+	1999 09 05	703	0.5−	0.2+
1998 04 19	704	0.1−	1.1−	1999 09 05	703	0.5−	0.2−
1998 04 19	704	0.3+	0.7+	1999 09 08	704	0.2−	0.1+
1998 04 19	704	0.3−	0.5+	1999 09 08	704	0.0	0.2+
1998 04 20	704	1.3+	1.6+	1999 09 08	704	0.1+	0.2+
1998 04 20	704	0.7−	0.1+	1999 09 08	704	0.4+	0.2+
1998 04 20	704	(0.7+	2.2−)	1999 09 16	704	0.2−	0.4−
1998 04 20	704	1.7−	0.9+	1999 09 16	704	0.5+	0.0
1998 04 22	704	0.2+	1.8−	1999 09 16	704	0.5+	0.5+

1999 RJ₁₉₆ = 1993 QC₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.16917969	ω	251.40450	−0.64155850	+0.75721907		
<i>a</i>	3.2377047	Ω	337.26031	−0.52797568	−0.55182011		
<i>e</i>	0.1023306	<i>i</i>	18.48619	−0.55645698	−0.34944792		
<i>P</i>	5.83	<i>H</i>	12.6	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1993 08 16	010	0.3−	0.4+	1999 09 16	704	0.0	0.3+
1993 08 16	010	0.3−	0.4+	1999 09 16	704	0.4+	0.8+
1993 08 16	010	0.4+	0.3−	1999 09 16	704	0.6−	0.5+
1993 08 17	010	0.3+	0.5−	1999 09 16	704	0.4−	0.1+
1999 09 08	704	0.0	0.6−	1999 09 29	703	0.6−	0.5+
1999 09 08	704	0.0	0.3−	1999 09 29	703	0.1−	0.8+
1999 09 08	704	0.4+	0.9−	1999 09 29	703	0.5−	1.1+

1999 RG₁₉₇ = 1998 HU₇₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.25484330	ω	137.37942	+0.90783692	+0.41382590		
<i>a</i>	2.4638857	Ω	198.51265	−0.41862545	+0.88513510		
<i>e</i>	0.0950246	<i>i</i>	12.30692	−0.02418392	+0.21280032		
<i>P</i>	3.87	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	3
Residuals in seconds of arc							
1998 04 21	704	0.5−	0.6+	1999 09 08	704	0.4+	0.7−
1998 04 21	704	0.6+	0.2+	1999 09 08	699	0.1−	0.4−
1998 04 21	704	0.4−	0.2+	1999 09 08	704	0.0	0.6−
1998 04 21	704	0.3+	1.1−	1999 09 08	704	0.1+	0.6−
1998 04 21	704	0.1+	1.1+	1999 09 08	704	0.9+	0.6−
1998 04 22	704	0.1+	1.0+	1999 09 08	699	0.0	0.8+
1998 04 22	704	0.3+	0.0	1999 09 08	704	0.6+	0.3−
1998 04 22	704	0.2−	0.1+	1999 09 16	704	0.6+	0.4+
1998 04 22	704	0.7−	0.1+	1999 09 16	704	0.3−	0.6−
1998 04 22	704	0.3+	1.9−	1999 09 16	704	0.2−	0.0
1999 07 23	704	0.6−	0.1+	1999 09 18	704	0.4+	0.3−
1999 07 23	704	0.2+	0.2+	1999 09 18	704	0.5+	0.2−
1999 07 23	704	0.8−	0.5+	1999 09 18	704	0.5+	0.2−
1999 07 23	704	0.0	0.1−	1999 09 18	704	0.1+	0.0
1999 09 08	699	0.3−	0.1+	1999 09 18	704	0.1+	0.2+

1999 RP₁₉₇ = 1978 WO₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18068795	ω	112.45227	+0.98513707	+0.11298068		
<i>a</i>	3.0987265	Ω	241.27189	−0.15007556	+0.93255503		
<i>e</i>	0.0660583	<i>i</i>	8.48472	+0.08356004	+0.34289428		
<i>P</i>	5.45	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	5
Residuals in seconds of arc							
1978 11 29	675	1.0−	0.2−	1999 09 16	704	1.2+	1.7−
1978 11 30	675	1.0+	0.3+	1999 09 16	704	0.1−	0.5−
1999 09 08	704	0.5+	0.0	1999 09 16	704	0.1+	0.8+
1999 09 08	704	0.8−	0.8+	1999 10 01	703	0.5−	0.4−
1999 09 08	704	0.1−	0.5+	1999 10 01	703	0.9−	0.2−
1999 09 08	704	0.0	0.0	1999 10 01	703	(2.4−	0.3−)

1999 RB₁₉₈ = 1992 OB₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.29006321	ω	13.13693	+0.88619050	+0.45727389		
<i>a</i>	2.2601692	Ω	319.38227	−0.43477789	+0.76509324		
<i>e</i>	0.0982245	<i>i</i>	6.58113	−0.16010803	+0.45335739		
<i>P</i>	3.40	<i>H</i>	15.4	<i>G</i>	0.15	<i>U</i>	2
Residuals in seconds of arc							
1992 07 26	809	0.8−	0.0	1998 04 19	704	1.2+	1.5−
1992 07 26	809	0.9−	1.0+	1998 04 19	704	1.8−	0.4+
1992 07 26	809	(3.2−	0.7+)	1998 04 19	704	(0.5+	2.7−)
1992 07 30	809	1.2+	0.1+	1998 04 20	704	0.9+	0.2−
1992 07 30	809	1.1+	0.0	1998 04 20	704	0.1+	1.7−
1992 07 30	809	0.9−	0.7−	1998 04 20	704	0.9+	1.0+
1994 01 08	691	0.5−	0.1+	1998 04 20	704	0.8−	0.9−
1994 01 08	691	1.1+	0.1+	1998 04 20	704	(0.0	2.6−)
1994 01 08	691	0.3−	0.2+	1999 09 08	699	0.8−	1.4+
1998 03 31	704	(4.8−	0.5+)	1999 09 08	699	0.0	0.5+
1998 03 31	704	1.4−	0.6+	1999 09 08	699	1.0−	1.2+
1998 03 31	704	0.8−	1.5+	1999 09 08	704	0.9+	0.5−
1998 03 31	704	(2.6−	2.9+)	1999 09 08	704	0.5+	0.2−

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1998 04 19 704 (1.6+ 2.1-) 1999 09 08 704 1.2+ 0.5-
 1998 04 19 704 0.9+ 0.5- 1999 09 08 704 0.1- 0.4-

1999 RR₁₉₈ = 1999 RZ₁₉ = 1998 HF₈₁
 Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 342.56173 (2000.0)			P		Q	
<i>n</i>	0.26009126	ω	164.76841	+0.99263894	-0.11658143	
<i>a</i>	2.4306301	Ω	202.00657	+0.09994282	+0.94153179	
<i>e</i>	0.2125905	<i>i</i>	5.02377	+0.06840594	+0.31611178	
<i>P</i>	3.79	<i>H</i>	14.4	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.3+	0.6+	1999 09 08	704	0.2+	0.0	1999 10 02	704	0.3-	0.0
1998 04 21	704	0.2+	0.8-	1999 09 09	704	0.2+	0.2-	1999 10 02	704	0.3-	0.3-
1998 04 21	704	0.6+	0.9-	1999 09 09	704	0.4-	0.0	1999 10 02	704	0.0	0.4-
1998 04 21	704	0.7-	0.7+	1999 09 09	704	0.0	0.5-	1999 10 02	704	0.1-	0.3-
1998 04 21	704	0.6-	2.0+	1999 09 09	704	0.5-	0.4-	1999 10 05	691	0.1+	0.1-
1998 04 22	704	0.2-	0.2-	1999 09 09	704	0.1+	1.1-	1999 10 05	691	0.3+	0.1-
1998 04 22	704	0.2-	0.8+	1999 09 12	699	0.4-	0.7+	1999 10 05	691	0.2+	0.1+
1998 04 22	704	0.5+	0.9-	1999 09 12	699	0.2-	0.2+	1999 10 07	691	0.0	0.1+
1998 04 22	704	1.0+	0.2+	1999 09 12	699	0.2-	0.4+	1999 10 07	691	0.1-	0.1+
1998 04 22	704	0.9-	1.4-	1999 09 16	704	0.1-	0.4+	1999 10 07	691	0.1-	0.1-
1999 09 07	704	0.2+	0.2-	1999 09 16	704	0.0	0.4+	1999 10 07	704	0.3+	0.8+
1999 09 07	704	0.4+	0.1-	1999 09 16	704	0.2-	0.3-	1999 10 07	704	0.1-	0.2-
1999 09 07	704	0.5+	0.2-	1999 09 16	704	0.2-	0.4+	1999 10 07	704	0.5+	0.3-
1999 09 07	704	0.5+	0.0	1999 09 29	703	0.2-	0.6+	1999 10 07	704	0.2+	0.0
1999 09 07	704	0.2+	0.3+	1999 09 29	703	0.1+	1.0+	1999 10 07	704	0.0	0.7-
1999 09 08	704	0.2+	0.1-	1999 09 29	703	0.4-	0.5+	1999 10 11	691	0.2+	0.1-
1999 09 08	704	0.0	0.0	1999 09 29	703	0.4-	0.4-	1999 10 11	691	0.2+	0.0
1999 09 08	704	0.0	0.1+	1999 10 02	704	0.2-	0.1-	1999 10 11	691	0.1+	0.0

1999 RN₁₉₉ = 1992 UD₉

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 337.65385 (2000.0)			P		Q	
<i>n</i>	0.27618623	ω	112.62895	+0.92811052	-0.36540617	
<i>a</i>	2.3352571	Ω	268.86400	+0.30999854	+0.86458546	
<i>e</i>	0.1650331	<i>i</i>	4.09168	+0.20618382	+0.34492073	
<i>P</i>	3.57	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1992 10 31	033	0.6+	0.2-	1999 09 18	704	0.1-	0.0	1999 10 04	704	0.8-	0.2+
1992 10 31	033	0.4-	0.0	1999 09 18	704	0.6+	0.0	1999 10 04	704	0.2-	0.1+
1992 11 01	033	0.1-	0.0	1999 09 18	704	0.1+	0.4-	1999 10 04	704	0.9+	0.3-
1999 09 08	704	0.1+	0.3-	1999 09 18	704	0.3-	0.3-	1999 10 04	704	0.1+	0.3-
1999 09 08	704	0.1+	0.2+	1999 09 18	703	0.1-	0.5+	1999 10 09	703	0.3-	0.0
1999 09 08	704	0.1+	0.5-	1999 09 18	703	0.1-	0.1+	1999 10 09	703	0.0	0.1-
1999 09 08	704	0.2+	0.1+	1999 09 18	703	0.7-	0.0	1999 10 09	703	0.3-	0.6+
1999 09 08	704	0.1-	0.5-	1999 09 18	703	0.5-	0.2+	1999 10 09	703	0.3+	0.3+
1999 09 18	704	0.8+	0.7+	1999 10 04	704	0.2+	0.3-				

1999 RP₁₉₉ = 1997 EL₈ = 1998 MW

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 66.60667 (2000.0)			P		Q	
<i>n</i>	0.21869137	ω	340.98954	+0.08132326	+0.99023554	
<i>a</i>	2.7284434	Ω	293.54366	-0.89769479	+0.02341321	
<i>e</i>	0.1331158	<i>i</i>	7.09455	-0.43304802	+0.13742416	
<i>P</i>	4.51	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i>	3

Residuals in seconds of arc

1997 03 02	691	0.0	0.2+	1999 07 23	704	1.2+	0.2-	1999 09 18	704	0.2-	0.2+
1997 03 02	691	0.1+	0.2+	1999 07 23	704	1.0+	0.9-	1999 09 29	703	0.3-	0.3+
1997 03 02	691	0.1+	0.5+	1999 07 23	704	0.8+	0.4-	1999 09 29	703	0.2-	0.4+
1997 03 09	691	0.1+	0.1+	1999 09 08	704	0.9-	0.7-	1999 09 29	703	0.5-	0.4+
1997 03 09	691	0.2+	0.4+	1999 09 08	704	0.1-	0.0	1999 09 29	703	0.6-	0.4+

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1997 03 09	691	0.2+	0.2+	1999 09 08	704	0.0	0.6-	1999 10 04	704	0.3+	0.2+
1998 06 16	704	0.4-	1.1-	1999 09 08	704	0.1-	0.6-	1999 10 04	704	0.9+	0.0
1998 06 16	704	0.2+	1.5+	1999 09 08	704	0.5-	0.5-	1999 10 04	704	0.2+	0.2+
1998 06 16	704	0.2+	1.9+	1999 09 18	704	0.2+	0.2+	1999 10 04	704	0.5+	0.0
1998 06 16	704	(2.0+	2.8+)	1999 09 18	703	0.2-	0.4+	1999 10 04	704	0.0	0.0
1998 06 18	704	0.4+	0.1-	1999 09 18	704	0.1-	0.3+	1999 10 09	703	0.3-	0.3+
1998 06 18	704	0.3-	1.0-	1999 09 18	703	0.5-	0.4+	1999 10 09	703	0.2-	0.5+
1998 06 18	704	0.5+	1.2+	1999 09 18	704	0.1+	0.1+	1999 10 09	703	0.6-	0.2+
1998 06 18	704	(1.8+	3.5+)	1999 09 18	703	0.3-	0.4+	1999 10 09	703	0.5-	0.2+
1999 07 23	704	0.7+	0.1+	1999 09 18	704	0.0	0.3+				
1999 07 23	704	0.8+	0.4-	1999 09 18	703	0.4-	0.4+				

1999 RL₂₀₀ = 1998 MJ₂₄

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 325.17090 (2000.0)			P		Q	
<i>n</i>	0.23585729	ω	143.42277	+0.85256205	-0.48058153	
<i>a</i>	2.5943975	Ω	246.52978	+0.41053828	+0.85901439	
<i>e</i>	0.1244696	<i>i</i>	12.93820	+0.32341346	+0.17645301	
<i>P</i>	4.18	<i>H</i>	14.6	<i>G</i> 0.15	<i>U</i>	5

Residuals in seconds of arc

1998 06 26	691	0.4+	0.1+	1999 09 08	704	0.3-	0.1+	1999 09 18	704	0.6+	0.7-
1998 06 26	691	0.8+	0.2-	1999 09 08	704	0.2+	0.0	1999 09 18	704	0.1-	0.0
1998 06 26	691	0.6+	0.5-	1999 09 08	704	0.7-	0.1-	1999 10 03	704	0.1-	0.2+
1998 07 01	691	0.5-	0.1-	1999 09 08	704	0.4+	0.2-	1999 10 03	704	0.0	0.4+
1998 07 01	691	0.5-	0.6+	1999 09 18	704	0.4+	0.1-	1999 10 03	704	0.1-	0.3+
1998 07 01	691	0.7-	0.2+	1999 09 18	704	0.2-	0.1+	1999 10 03	704	0.3-	0.3+
1999 09 08	704	0.1-	0.8-	1999 09 18	704	0.3+	0.0	1999 10 03	704	0.1-	0.4+

1999 RF₂₀₂ = 1998 MY₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 37.93750 (2000.0)			P		Q	
<i>n</i>	0.18995410	ω	50.12786	+0.61297029	+0.77387119	
<i>a</i>	2.9971163	Ω	258.40646	-0.76546072	+0.53167019	
<i>e</i>	0.1075399	<i>i</i>	9.36153	-0.19579918	+0.34416593	
<i>P</i>	5.19	<i>H</i>	13.7	<i>G</i> 0.15	<i>U</i>	4

Residuals in seconds of arc

1998 05 24	704	0.7+	0.4+	1998 06 26	704	1.2+	0.2-	1999 09 29	703	0.0	0.3-
1998 05 24	704	0.4+	0.0	1999 09 08	704	0.1-	0.2+	1999 09 29	703	0.9+	0.1+
1998 05 24	704	0.2+	0.3-	1999 09 08	704	0.3-	0.2+	1999 09 29	703	0.6-	0.2+
1998 05 24	704	0.1+	0.6-	1999 09 08	704	0.4-	0.6+	1999 09 29	703	0.5-	0.2+
1998 06 24	704	1.1-	1.4-	1999 09 08	704	0.7-	0.9+	1999 10 03	704	0.9+	0.3-
1998 06 24	704	1.8-	1.5-	1999 09 08	704	0.3-	0.4+	1999 10 03	704	0.4+	0.7-
1998 06 24	704	0.7+	1.2+	1999 09 18	704	0.2-	0.3+	1999 10 03	704	0.4+	0.2-
1998 06 24	704	1.3-	1.8+	1999 09 18	704	0.0	0.1-	1999 10 03	704	0.5+	0.4-
1998 06 26	704	0.3+	0.9-	1999 09 18	704	0.3-	0.4-	1999 10 03	704	0.8+	0.7-
1998 06 26	704	0.5+	1.0+	1999 09 18	704	0.1-	0.1-				
1998 06 26	704	0.1+	0.3+	1999 09 18	704	0.3-	0.0				

1999 RS₂₀₂ = 1998 MQ₂₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 37.70289 (2000.0)			P		Q	
<i>n</i>	0.18715030	ω	70.44345	+0.61406448	+0.77853994	
<i>a</i>	3.0269764	Ω	238.12438	-0.76921459	+0.55357262	
<i>e</i>	0.1135761	<i>i</i>	8.77960	-0.17673064	+0.29569059	
<i>P</i>	5.27	<i>H</i>	13.6	<i>G</i> 0.15	<i>U</i>	3

Residuals in seconds of arc

1998 06 24	704	0.2+	1.2+	1999 09 08	704	0.4+	0.2+	1999 09 29	703	0.5+	0.5+
1998 06 24	704	1.6-	1.0+	1999 09 08	704	0.3-	0.6+	1999 09 29	703	0.2-	0.1-
1998 06 24	704	0.7+	1.7-	1999 09 08	704	0.1+	0.7+	1999 09 29	703	0.5-	0.2+
1998 06 24	704	0.9-	0.0	1999 09 18	704	0.2+	0.2-	1999 10 04	704	0.7+	0.7-
1998 06 24	704	0.7+	0.0	1999 09 18							

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1998 06 26	704	(0.7+ 2.4+)	1999 09 18	703	0.3- 0.2+	1999 10 04	704	0.2+ 0.4-
1998 06 26	704	(2.7+ 0.9-)	1999 09 18	704	0.3+ 0.1-	1999 10 04	704	0.6- 0.2-
1998 06 26	704	0.9+ 0.4-	1999 09 18	703	0.4- 0.3+	1999 10 09	703	0.3+ 0.1+
1999 07 23	704	0.2+ 0.2-	1999 09 18	703	0.7- 0.0	1999 10 09	703	0.4+ 0.6+
1999 07 23	704	0.7+ 0.4-	1999 09 18	704	0.1+ 0.2-	1999 10 09	703	0.2- 0.4+
1999 07 23	704	0.3- 0.7-	1999 09 18	703	0.1- 0.1-	1999 10 09	703	0.0 0.2+
1999 07 23	704	0.2- 0.2+	1999 09 18	704	0.2+ 0.5-			
1999 09 08	704	0.2+ 0.2+	1999 09 29	703	0.2- 0.1+			

1999 RQ₂₀₄ = 1978 UL₃ = 1984 YN₅ = 1984 YW₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	300.05360		(2000.0)	P	Q			
<i>n</i>	0.18390859	ω	146.70029	+0.43054250	-0.88734512			
<i>a</i>	3.0624431	Ω	277.31459	+0.78748996	+0.45867946			
<i>e</i>	0.0567912	<i>i</i>	9.58064	+0.44101329	+0.04724192			
<i>P</i>	5.36	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 2			

Residuals in seconds of arc

1978 10 26	675	0.3- 0.3+	1999 09 08	704	0.5+ 0.5+	1999 10 03	704	0.2- 0.2+
1978 10 27	675	0.3+ 0.0	1999 09 08	704	0.2+ 0.3-	1999 10 03	704	0.1- 0.1-
1984 12 28	095	0.9- 0.7+	1999 09 08	704	0.1+ 0.4-	1999 10 03	704	0.3- 0.4+
1984 12 28	010	0.7+ 1.4-	1999 09 18	704	0.3+ 0.6-	1999 10 03	704	0.2- 0.1+
1999 07 23	704	0.7+ 0.7-	1999 09 18	704	0.2- 0.2-	1999 10 03	704	0.1+ 0.0
1999 07 23	704	0.7+ 0.9-	1999 09 18	704	0.5+ 0.6-	1999 10 09	703	0.1+ 0.3+
1999 07 23	704	0.2+ 0.0	1999 09 18	704	0.4- 0.4-	1999 10 09	703	0.3- 0.5+
1999 07 23	704	0.3- 0.4-	1999 09 29	703	0.1- 0.1+	1999 10 09	703	0.1- 0.2+
1999 07 23	704	0.7+ 0.1-	1999 09 29	703	0.0 0.2-	1999 10 09	703	0.1- 0.2+
1999 09 08	704	0.8+ 0.4+	1999 09 29	703	0.8- 0.0			
1999 09 08	704	0.4- 1.0+	1999 09 29	703	0.6- 0.1+			

1999 RU₂₀₅ = 1995 WH₂₇

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	341.20746		(2000.0)	P	Q			
<i>n</i>	0.18291135	ω	84.69019	+0.92974714	-0.34037603			
<i>a</i>	3.0735641	Ω	295.14783	+0.24522565	+0.85688841			
<i>e</i>	0.0892618	<i>i</i>	8.92319	+0.27465368	+0.38715166			
<i>P</i>	5.39	<i>H</i>	14.2	<i>G</i> 0.15	<i>U</i> 4			

Residuals in seconds of arc

1995 11 18	691	0.1- 0.2-	1999 09 08	704	0.3- 0.2+	1999 09 18	704	0.0 0.0
1995 11 18	691	0.2- 0.2+	1999 09 08	704	0.9- 0.9-	1999 10 03	704	0.9+ 0.4-
1995 11 29	691	0.0 0.3+	1999 09 08	704	0.6- 0.3+	1999 10 03	704	0.0 0.4-
1995 11 29	691	0.3+ 0.1-	1999 09 18	704	0.5+ 0.3-	1999 10 03	704	0.2+ 0.3-
1995 11 29	691	0.0 0.2-	1999 09 18	704	0.1+ 0.2+	1999 10 03	704	0.1- 0.5+
1999 09 08	704	0.4- 0.6-	1999 09 18	704	1.3+ 0.1+	1999 10 03	704	0.2- 0.7+
1999 09 08	704	0.1- 0.0	1999 09 18	704	0.3- 0.8+			

1999 RS₂₀₈ = 1995 VD₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	16.45988		(2000.0)	P	Q			
<i>n</i>	0.22925661	ω	95.32646	+0.83362221	+0.54335554			
<i>a</i>	2.6439596	Ω	231.80099	-0.54345557	+0.77481433			
<i>e</i>	0.2216131	<i>i</i>	7.25109	-0.09864101	+0.32315245			
<i>P</i>	4.30	<i>H</i>	15.4	<i>G</i> 0.15	<i>U</i> 3			

Residuals in seconds of arc

1995 11 14	691	0.1- 0.0	1998 04 21	704	(3.0+ 0.5+)	1999 09 18	704	0.4- 0.7-
1995 11 14	691	0.0 0.0	1998 04 21	704	(4.0- 2.4+)	1999 09 18	704	0.2+ 0.5-
1995 11 14	691	0.1+ 0.0	1998 04 24	691	0.7+ 0.8+	1999 09 18	704	0.6+ 1.0-
1995 11 19	691	0.2+ 0.1-	1998 04 24	691	0.4+ 1.0+	1999 09 30	703	0.4- 0.3+
1995 11 19	691	0.2+ 0.3+	1998 04 24	691	0.4+ 0.6+	1999 09 30	703	0.2- 0.9+
1995 11 19	691	0.0 0.2+	1999 09 06	703	0.3+ 0.3+	1999 09 30	703	0.8- 0.3+
1995 12 16	691	(1.3- 3.2-)	1999 09 06	703	0.2+ 0.8+	1999 09 30	703	0.0 0.3+
1995 12 16	691	0.2- 0.0	1999 09 06	703	0.1+ 0.1+	1999 10 03	704	1.3+ 0.4-

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1995 12 16	691	0.4- 0.0	1999 09 06	703	(0.6+ 2.3-)	1999 10 03	704	0.1- 0.1-
1995 12 22	691	0.3+ 0.1-	1999 09 08	704	0.9+ 0.4-	1999 10 03	704	0.5+ 1.1+
1995 12 22	691	0.1- 0.3+	1999 09 08	704	0.1+ 0.4+	1999 10 09	703	0.2- 0.3-
1998 04 04	699	(7.6- 16.7+)	1999 09 08	704	0.1+ 0.4-	1999 10 09	703	0.9- 0.3-
1998 04 04	699	(2.0- 8.9+)	1999 09 08	704	0.1- 0.1+	1999 10 09	703	0.7- 0.8+
1998 04 04	699	(0.9+ 3.7-)	1999 09 08	704	0.2- 0.6+	1999 10 09	703	0.6- 0.8+
1998 04 21	704	0.9- 0.9-	1999 09 18	704	0.2- 0.7-			
1998 04 21	704	0.1+ 0.7+	1999 09 18	704	0.2+ 0.6-			

1999 RQ₂₀₉ = 1993 OL₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	341.61845		(2000.0)	P	Q			
<i>n</i>	0.19203500	ω	108.56218	+0.88155888	-0.44349990			
<i>a</i>	2.9754257	Ω	278.03619	+0.34755770	+0.84161491			
<i>e</i>	0.1132243	<i>i</i>	9.40140	+0.31946452	+0.30820802			
<i>P</i>	5.13	<i>H</i>	13.2	<i>G</i> 0.15	<i>U</i> 4			

Residuals in seconds of arc

1993 07 12	809	1.8+ 1.0+	1999 07 23	704	0.2+ 0.1-	1999 09 18	704	0.2+ 0.1-
1993 07 12	809	1.7+ 0.7+	1999 09 06	703	0.1- 0.2+	1999 09 18	704	0.0 0.1+
1993 07 12	809	1.2+ 0.4+	1999 09 06	703	0.1+ 0.2-	1999 09 18	704	0.1- 0.4-
1993 07 19	809	1.4- 0.3+	1999 09 06	703	0.1+ 0.2-	1999 09 18	704	0.1- 0.0
1993 07 19	809	1.4- 1.4-	1999 09 06	703	(2.8+ 3.3-)	1999 09 18	704	0.1- 0.6-
1993 07 19	809	1.8- 1.2-	1999 09 08	704	0.4+ 0.3+	1999 10 03	704	0.0 0.0
1999 07 23	704	0.1+ 0.5+	1999 09 08	704	0.1+ 0.7+	1999 10 03	704	0.6+ 0.2+
1999 07 23	704	0.2- 0.2-	1999 09 08	704	0.1+ 1.0+	1999 10 03	704	0.3+ 0.7-
1999 07 23	704	0.2- 0.2-	1999 09 08	704	0.2- 0.5+	1999 10 03	704	0.3- 0.6-
1999 07 23	704	0.0 0.2-	1999 09 08	704	0.8- 0.3+	1999 10 03	704	0.1- 0.1-

1999 RX₂₁₀ = 1994 TA₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	60.18188		(2000.0)	P	Q			
<i>n</i>	0.20045830	ω	331.56170	+0.53354086	+0.83953880			
<i>a</i>	2.8914789	Ω	330.33769	-0.73144863	+0.39716541			
<i>e</i>	0.0550879	<i>i</i>	11.95495	-0.42463756	+0.37072124			
<i>P</i>	4.92	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 4			

Residuals in seconds of arc

1994 10 04	327	0.3- 0.2+	1999 07 23	704	0.1+ 0.2+	1999 09 08	704	0.5+ 0.2-
1994 10 04	327	0.3+ 0.7+	1999 07 23	704	0.6- 0.2+	1999 09 18	704	0.5- 0.0
1994 10 04	327	(4.8- 1.1-)	1999 07 23	704	0.5+ 0.0	1999 09 18	704	0.0 0.1-
1994 10 04	327	(4.8+ 1.2+)	1999 07 23	704	0.7- 0.2+	1999 09 18	704	0.5- 0.2+
1994 10 05	327	1.1- 0.2+	1999 09 05	703	0.1+ 0.4+	1999 09 18	704	0.0 0.1+
1994 10 05	327	(2.6+ 0.7+)	1999 09 05	703	0.4- 0.0	1999 09 18	704	0.2- 0.3+
1994 10 05	327	0.6- 0.1-	1999 09 05	703	0.1+ 0.4-	1999 10 03	704	0.8+ 0.0
1994 10 05	327	0.7+ 0.2+	1999 09 05	703	0.2- 1.3-	1999 10 03	704	0.3+ 0.3+
1994 10 06	327	0.6+ 0.1+	1999 09 08	704	0.3+ 0.4-	1999 10 03	704	0.3- 0.0
1994 10 06	327	1.7- 0.5-	1999 09 08	704	0.0 0.5-	1999 10 03	704	0.1+ 0.3+
1994 10 06	327	1.4+ 0.5+	1999 09 08	704	0.2- 0.1-	1999 10 03	704	0.3+ 0.0
1999 07 23	704	1.2+ 0.3-	1999 09 08	704	0.0 0.3-			

1999 RB₂₁₁ = 1998 FU₉₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	71.35483		(2000.0)	P	Q			
<i>n</i>	0.26522995	ω	24.35362	-0.08184969	+0.98967346			
<i>a</i>	2.3991331	Ω	241.13973	-0.93502884	-0.11712298			
<i>e</i>	0.2238370	<i>i</i>	7.72169	-0.34499522	+0.08263564			
<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 03 31	704	1.3+ 0.2+	1998 04 18	704	0.6- 0.7+	1999 09 18	704	0.5+ 0.4+
1998 03 31	704	0.6+ 0.2-	1998 04 18	704	0.7- 0.4+	1999 09 18	704	0.2- 0.5-
1998 03 31	704	0.7- 0.4-	1998 04 18	704	0.1- 0.2+	1999 09 18	704	0.1+ 0.2+
1998 03 31	704	0.9- 0.4-	1999 09 05	703	(2.1+ 2.2+)	1999 09 18	704	1.3+ 0.2-
1998 03 31	704	0.2- 0.2-	1999 09 05	703	0.0 0.2-	1999 09 18	704	0.2- 0.9-

1998 04 01	704	0.0	0.2−	1999 09 05	703	0.3+	0.4−	1999 10 01	703	0.5−	0.4+
1998 04 01	704	1.3+	0.1−	1999 09 05	703	0.2+	0.5+	1999 10 01	703	0.5−	0.4+
1998 04 01	704	0.5−	0.2−	1999 09 08	704	1.3−	0.3−	1999 10 01	703	1.7+	1.3+
1998 04 01	704	0.9+	0.3+	1999 09 08	704	0.5−	0.0	1999 10 01	703	0.4−	0.4+
1998 04 01	704	0.4−	0.6−	1999 09 08	704	0.5+	0.6+	1999 10 03	704	0.3+	1.1−
1998 04 18	704	0.1−	0.5−	1999 09 08	704	0.5−	0.3−	1999 10 03	704	0.6−	0.1+
1998 04 18	704	0.3−	1.0+	1999 09 08	704	0.6−	1.0−	1999 10 03	704	0.3+	0.3+

1999 RJ₂₁₁ = 1228 T-3

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	221.75024						
<i>n</i>	0.22326506	<i>ω</i>	164.28317	−0.89657523	−0.44093266		
<i>a</i>	2.6910527	<i>Ω</i>	349.26387	+0.37846849	−0.71397623		
<i>e</i>	0.1019778	<i>i</i>	12.90626	+0.23003142	−0.54389000		
<i>P</i>	4.41	<i>H</i>	13.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1977 10 16	675	0.5−	0.4−	1999 09 08	704	0.0	1.0−	1999 09 18	704	0.2+	0.0
1977 10 16	675	0.2−	0.3+	1999 09 08	704	0.3−	1.4+	1999 09 18	704	0.2−	0.3−
1977 10 17	675	1.1+	0.9+	1999 09 08	704	0.6−	0.5+	1999 10 03	704	0.4+	0.1−
1977 10 17	675	0.8−	0.9+	1999 09 08	704	0.3+	0.0	1999 10 03	704	1.2−	0.3−
1977 10 22	675	0.1+	0.2+	1999 09 18	704	0.0	0.2+	1999 10 03	704	0.4−	0.7+
1977 10 22	675	0.2+	1.8−	1999 09 18	704	1.3+	0.7−	1999 10 03	704	0.3−	0.6+
1999 09 08	704	0.4−	0.1+	1999 09 18	704	0.5+	0.7−	1999 10 03	704	0.7+	0.4−

1999 RP₂₁₂ = 1990 QF₁₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	357.39218						
<i>n</i>	0.22345096	<i>ω</i>	18.27527	+0.99627006	+0.02507818		
<i>a</i>	2.6895599	<i>Ω</i>	339.74399	−0.06924619	+0.80327474		
<i>e</i>	0.2670635	<i>i</i>	13.79685	+0.05148729	+0.59508048		
<i>P</i>	4.41	<i>H</i>	16.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 08 24	809	0.1+	0.9+	1999 09 08	704	0.8−	0.4−	1999 10 03	704	0.5−	0.4+
1990 08 24	809	1.2+	1.1−	1999 09 08	704	0.7−	0.2−	1999 10 03	703	0.8−	0.7+
1990 08 24	809	0.1+	0.7+	1999 09 18	704	1.4+	0.2+	1999 10 03	704	0.2−	0.6−
1990 08 26	809	2.0−	1.2−	1999 09 18	704	1.7+	0.5−	1999 10 03	703	0.9−	0.1−
1990 08 26	809	0.1−	0.6+	1999 09 18	704	0.0	0.6−	1999 10 03	704	0.8+	0.4−
1990 08 26	809	0.6+	0.3+	1999 10 03	704	0.0	0.2−	1999 10 03	703	0.1+	0.3+
1999 09 08	704	0.3+	0.0	1999 10 03	704	0.0	0.1−				
1999 09 08	704	0.1+	0.8+	1999 10 03	703	0.5−	0.3+				

1999 RC₂₁₃ = 1997 EW₂₂

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	354.45908						
<i>n</i>	0.23117009	<i>ω</i>	54.54340	+0.98783987	−0.09927591		
<i>a</i>	2.6293493	<i>Ω</i>	310.83614	+0.02862466	+0.87256942		
<i>e</i>	0.1177117	<i>i</i>	9.09944	+0.15281693	+0.47829583		
<i>P</i>	4.26	<i>H</i>	15.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 03 10	691	0.1+	0.2+	1999 09 09	704	0.1+	0.4−	1999 10 03	704	0.2+	0.5+
1997 03 10	691	0.3+	0.3+	1999 09 09	704	0.2−	0.1+	1999 10 03	703	0.6+	0.6−
1997 03 10	691	0.4+	0.2−	1999 09 18	704	0.3+	0.3−	1999 10 03	704	1.1+	0.1−
1997 03 11	691	0.2−	0.2+	1999 09 18	704	0.0	0.3−	1999 10 03	703	0.4+	1.1−
1997 03 11	691	0.3−	0.2−	1999 09 18	704	0.8−	0.3+	1999 10 03	704	0.8−	0.4−
1997 03 11	691	0.3−	0.3−	1999 10 03	704	0.3−	0.0	1999 10 03	703	0.0	0.8+
1999 09 09	704	0.3+	0.4+	1999 10 03	703	0.1−	0.6+	1999 10 03	704	0.7−	0.3+

1999 RD₂₁₄ = 1994 PN₄

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	355.64093						
<i>n</i>	0.20498988	<i>ω</i>	146.15693	+0.99036169	+0.13807061		
<i>a</i>	2.8487069	<i>Ω</i>	205.91347	−0.13198631	+0.91678336		
<i>e</i>	0.0977989	<i>i</i>	1.43780	−0.04199222	+0.37475962		
<i>P</i>	4.81	<i>H</i>	16.1	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1994 08 10	809	0.2+	0.1+	1999 09 08	012	0.1−	0.3−	1999 09 21	012	0.6+	0.6+
1994 08 10	809	0.1−	0.5+	1999 09 08	012	0.1−	0.6−	1999 09 21	012	0.3+	0.4+
1994 08 10	809	0.4−	0.3+	1999 09 09	012	0.1−	0.1+	1999 09 21	012	0.2+	0.5+
1994 08 11	809	1.1+	0.6−	1999 09 14	704	0.4−	0.2−	1999 10 03	691	0.1+	0.6+
1994 08 11	809	0.2+	0.3+	1999 09 14	704	0.5−	1.9−	1999 10 03	691	0.1+	0.2+
1994 08 11	809	1.1−	0.1−	1999 09 14	704	0.2+	1.2−	1999 10 03	691	0.2+	0.1+
1999 09 04	691	0.2−	0.1−	1999 09 16	012	1.1−	0.5+	1999 10 09	691	0.1−	0.1+
1999 09 04	691	0.1+	0.2−	1999 09 16	012	0.3+	0.4+	1999 10 09	691	0.1−	0.3+
1999 09 04	691	(2.9−	0.4−)	1999 09 16	012	(0.1+	2.1+)	1999 10 09	691	0.2−	0.2+
1999 09 08	012	1.1+	0.4−	1999 09 16	012	0.5+	0.1+				
1999 09 08	012	0.6−	0.1+	1999 09 16	012	0.1−	0.3+				

1999 RM₂₁₄ = 1992 GL₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	27.04353						
<i>n</i>	0.18240557	<i>ω</i>	298.84500	+0.84869620	+0.52330995		
<i>a</i>	3.0792431	<i>Ω</i>	29.79274	−0.41548430	+0.74927488		
<i>e</i>	0.1235808	<i>i</i>	8.86383	−0.32724235	+0.40587418		
<i>P</i>	5.40	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1992 04 04	809	1.6+	1.5+	1999 09 08	699	0.4+	0.6+	1999 10 04	704	0.0	0.2−
1992 04 04	809	1.3+	1.0+	1999 09 08	699	0.3+	1.1+	1999 10 04	704	0.8+	0.1−
1992 04 04	809	0.4+	0.7+	1999 09 08	699	0.2−	1.0+	1999 10 04	704	0.0	0.0
1992 04 06	809	0.6−	1.0−	1999 09 09	704	0.1−	1.0−	1999 10 04	704	0.0	0.1+
1992 04 06	809	1.2−	1.7−	1999 09 09	704	0.5−	0.6−	1999 10 04	704	0.9+	0.8−
1992 04 06	809	1.7−	1.2−	1999 09 09	704	0.8−	0.3−	1999 10 07	704	0.1−	0.4−
1997 04 04	566	0.2−	0.1−	1999 09 09	704	0.7−	0.2−	1999 10 07	704	0.1−	0.3−
1997 04 04	566	0.1−	0.3−	1999 09 09	704	0.6−	1.2−	1999 10 07	704	0.2+	0.5+
1997 04 04	566	0.0	0.2−	1999 10 02	703	0.0	0.2−	1999 10 07	704	0.1−	0.0
1999 09 05	699	0.5+	0.9+	1999 10 02	703	0.3+	0.2+	1999 10 07	704	0.3+	0.3−
1999 09 05	699	0.7+	0.5+	1999 10 02	703	0.0	0.3−				
1999 09 05	699	0.6−	0.1+	1999 10 02	703	0.1−	0.2−				

1999 RN₂₁₄ = 1981 UP₁₇ = 1988 GC₁ = 1990 TM

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Williams				Williams			
(2000.0)				(2000.0)			
P				Q			
<i>M</i>	315.88550						
<i>n</i>	0.21675684	<i>ω</i>	246.81258	+0.64505208	−0.76361773		
<i>a</i>	2.7446534	<i>Ω</i>	162.92416	+0.73151329	+0.60641834		
<i>e</i>	0.0598346	<i>i</i>	5.51286	+0.22089844	+0.22168615		
<i>P</i>	4.55	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1981 10 24	095	0.5+	1.5−	1999 09 08	699	0.1+	0.5+	1999 10 02	704	0.5+	0.4−
1988 04 09	054	0.1+	0.3−	1999 09 08	699	0.6+	0.7+	1999 10 02	704	0.2+	0.2+
1988 04 15	054	0.2−	0.3−	1999 09 09	704	0.4+	0.8−	1999 10 02	704	0.2+	0.0
1990 10 12	413	(5.3−	2.1−)	1999 09 09	704	0.1−	0.5−	1999 10 02	704	0.1+	0.3−
1990 10 12	413	(4.1−	0.7−)	1999 09 09	704	0.3+	0.5−	1999 10 02	704	0.2+	0.1−
1990 10 13	413	1.9−	1.0+	1999 09 09	704	0.1−	0.7−	1999 10 07	704	0.0	0.1+
1990 10 16	413	1.0+	1.5+	1999 09 09	704	0.5−	1.1−	1999 10 07	704	0.0	0.3+
1999 09 05	699	0.5+	0.1+	1999 10 01	703	0.7−	0.4−	1999 10 07	704	0.1+	0.5+
1999 09 05	699	0.2+	1.0+	1999 10 01	703	0.1−	0.5−	1999 10 07	704	0.1−	0.2−
1999 09 05	699	0.6−	0.3−	1999 10 01	703	0.2−	0.1−	1999 10 07	704	0.0	0.1−
1999 09 08	699	0.4−	0.9+	1999 10 01	703	0.2−	0.1+				

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Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	37.62271	(2000.0)	P	Q
<i>n</i>	0.27440467	ω 130.25286	+0.49859536	+0.86680721
<i>a</i>	2.3453539	Ω 169.64753	−0.80654359	+0.46682816
<i>e</i>	0.2102113	<i>i</i> 2.20791	−0.31763202	+0.17526189
<i>P</i>	3.59	<i>H</i> 15.4	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 20	704	0.3+	0.9−	1998 04 19	704	(2.4+	2.2−)	1999 10 02	120	0.8−	0.0
1998 03 20	704	0.3+	0.4−	1998 04 19	704	0.0	1.3−	1999 10 02	120	0.2−	0.1+
1998 03 20	704	0.0	0.6+	1998 04 19	704	0.8−	1.5+	1999 10 07	704	1.3+	0.3+
1998 03 20	704	0.2−	1.3−	1998 04 19	704	(0.3+	2.4+)	1999 10 07	704	0.5−	0.1+
1998 03 20	704	(4.6−	3.1−)	1998 04 19	704	(2.6−	0.9−)	1999 10 07	704	0.4+	0.1−
1998 03 22	704	0.2−	0.2+	1999 09 16	120	0.2+	0.0	1999 10 07	704	0.5−	0.6+
1998 03 22	704	1.1+	0.2+	1999 09 16	120	0.3−	0.2−	1999 10 07	704	0.3−	0.2−
1998 03 22	704	0.0	0.1−	1999 09 17	120	0.0	1.6+	1999 10 07	704	0.3−	0.2+
1998 03 24	704	0.9+	0.7+	1999 09 18	120	0.2−	0.4−	1999 10 07	704	0.3+	0.1−
1998 03 24	704	1.0+	0.5−	1999 09 18	120	0.7−	1.1−	1999 10 07	704	0.0	0.1+
1998 03 24	704	0.3−	1.6−	1999 09 21	120	1.0+	1.2−	1999 10 07	704	0.2+	0.9+
1998 03 24	704	1.6−	1.8+	1999 09 21	120	0.5−	0.0	1999 10 07	704	0.1−	0.4+
1998 03 24	704	0.1+	0.6+	1999 09 21	120	1.6+	0.2−	1999 10 07	704	0.2−	0.1+
1998 03 24	566	0.2−	0.1−	1999 09 21	120	0.1−	0.7−	1999 10 07	704	0.1+	0.1+
1998 03 24	566	0.2−	0.2−	1999 10 01	120	0.3−	0.6−				
1998 03 24	566	0.7−	0.0	1999 10 01	120	0.0	0.4−				

1999 SK = 1991 VH₁₀ = 1998 KM₂₇

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	23.99310	(2000.0)	P	Q
<i>n</i>	0.24088644	ω 170.80782	+0.87127801	+0.49064487
<i>a</i>	2.5581606	Ω 159.79584	−0.45245668	+0.81240448
<i>e</i>	0.1055776	<i>i</i> 1.97893	−0.19015147	+0.31506598
<i>P</i>	4.09	<i>H</i> 15.1	<i>G</i> 0.15	<i>U</i> 1

Residuals in seconds of arc

1991 11 04	691	0.7−	0.1−	1998 05 22	704	0.7+	0.5−	1999 10 04	470	0.9−	2.0−
1991 11 04	691	(0.6+	5.5−)	1998 05 22	704	(5.4−	0.0)	1999 10 04	470	0.1+	1.1−
1991 11 04	691	0.3−	0.2+	1998 05 24	704	(2.4−	1.9+)	1999 10 07	704	0.3+	1.2−
1991 11 05	691	0.2−	0.2+	1998 05 24	699	0.1+	0.3+	1999 10 07	704	0.7+	0.3+
1991 11 05	691	0.2−	0.1+	1998 05 24	704	0.1+	1.1+	1999 10 07	704	0.0	1.5+
1991 11 05	691	0.2−	0.2+	1998 05 24	699	0.3+	0.1+	1999 10 07	704	0.0	0.3+
1991 11 06	691	0.1−	0.1+	1998 05 24	704	0.0	1.4−	1999 10 08	106	0.4−	0.2−
1991 11 06	691	0.2−	0.4+	1998 05 24	699	1.7−	0.7−	1999 10 08	106	0.8−	0.1−
1991 11 06	691	0.3+	0.8+	1999 09 16	120	1.3−	1.0+	1999 10 08	106	0.0	0.3−
1993 02 23	691	1.0+	0.2+	1999 09 17	120	1.0−	0.1−	1999 10 09	740	0.9+	0.3−
1993 02 23	691	0.8+	0.2+	1999 09 17	120	0.0	0.4+	1999 10 09	740	0.1+	0.1+
1993 02 23	691	0.7+	0.2+	1999 09 17	120	0.3−	0.3−	1999 10 09	740	0.4−	0.6−
1995 10 25	327	0.6+	0.5−	1999 09 18	120	0.9−	0.8+	1999 10 09	740	0.2−	0.1+
1995 10 25	327	0.4+	1.0−	1999 09 18	120	1.0−	0.1+	1999 10 09	740	0.2+	0.0
1995 10 25	327	0.4+	0.8−	1999 09 21	120	0.4−	0.1+	1999 10 10	740	0.0	0.3+
1997 01 17	691	0.1+	0.0	1999 09 21	120	0.3+	0.2+	1999 10 10	740	0.1−	0.4+
1997 01 17	691	0.3+	0.3−	1999 09 21	120	0.0	0.8−	1999 10 10	740	2.0+	0.9+
1997 01 17	691	0.1−	0.1+	1999 10 01	120	0.6+	0.0	1999 10 10	715	1.4−	0.6−
1997 02 07	566	1.5−	0.7−	1999 10 01	120	1.3+	0.2+	1999 10 11	843	1.4+	0.1+
1997 02 07	566	0.6−	0.7−	1999 10 02	703	0.3−	0.3+	1999 10 11	843	0.5+	0.1−
1997 02 07	566	0.7−	0.6−	1999 10 02	703	0.5−	0.0	1999 10 12	843	1.1+	0.2+
1998 05 22	704	0.5−	0.0	1999 10 02	703	0.4−	0.0	1999 10 12	843	0.3−	0.5+
1998 05 22	704	0.2+	0.8−	1999 10 02	703	0.7−	0.2−	1999 10 12	843	1.3+	0.5+
1998 05 22	704	(1.7−	2.8−)	1999 10 04	470	1.3+	1.3−				

1999 SO₁ = 1990 RM₁₆ = 1997 EH₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	299.20644	(2000.0)	P	Q
<i>n</i>	0.22069013	ω 44.32580	+0.30483834	−0.95094125
<i>a</i>	2.7119444	Ω 28.05056	+0.83965994	+0.24219113
<i>e</i>	0.0881895	<i>i</i> 6.44270	+0.44949390	+0.19249465
<i>P</i>	4.47	<i>H</i> 13.5	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1990 09 15	809	0.4+	0.9−	1999 10 01	120	0.4+	0.2−	1999 10 07	704	0.1−	0.2+
1990 09 15	809	0.0	0.6−	1999 10 01	120	0.0	0.2−	1999 10 07	704	0.0	0.5−
1990 09 15	809	0.7+	0.4−	1999 10 02	703	0.3−	0.1+	1999 10 07	704	0.0	0.1+
1997 03 10	809	0.5+	0.7+	1999 10 02	703	0.3−	0.3+	1999 10 07	704	0.0	0.4−
1997 03 10	809	0.6+	0.5+	1999 10 02	703	0.7−	0.0	1999 10 07	704	0.1−	0.0
1997 03 10	809	0.1+	0.6+	1999 10 02	703	0.3−	0.5+	1999 10 07	704	0.3+	0.0
1997 03 11	809	1.5−	0.5−	1999 10 04	704	0.4+	0.3+	1999 10 07	704	0.1+	0.5−
1997 03 11	809	0.8−	0.7−	1999 10 04	704	0.1+	0.7−	1999 10 07	704	0.2+	0.2−
1997 03 11	809	0.4−	0.6−	1999 10 04	704	0.3+	0.1+	1999 10 07	704	0.3+	0.2+
1997 05 02	910	0.1+	1.1−	1999 10 04	704	0.3+	0.4−	1999 10 07	704	0.2+	0.2−
1997 05 02	910	0.0	1.0−	1999 10 04	704	0.2+	0.0	1999 10 07	704	0.7−	0.1−
1997 05 02	910	0.0	0.7−	1999 10 07	704	0.0	0.3+	1999 10 07	704	0.2−	0.1−
1999 09 05	699	0.0	0.4+	1999 10 07	704	0.8+	0.0	1999 10 07	704	0.2−	0.5−
1999 09 05	699	0.3−	0.3+	1999 10 07	704	0.1+	0.1+	1999 10 07	704	0.0	0.1−
1999 09 05	699	0.7−	0.1+	1999 10 07	704	0.1−	0.2−	1999 10 07	704	0.2−	0.6−
1999 09 17	120	0.2+	0.8+	1999 10 07	704	0.2−	0.1−	1999 10 07	704	0.1+	0.2−
1999 09 18	120	0.4−	0.6+	1999 10 07	704	0.1+	0.0	1999 10 17	120	0.5+	0.0
1999 09 18	120	0.5−	0.5+	1999 10 07	704	0.0	0.2−	1999 10 17	120	0.1+	0.1−
1999 09 21	120	0.5+	0.1+	1999 10 07	704	0.0	0.2+				
1999 09 21	120	0.1+	0.1+	1999 10 07	704	0.1+	0.2−				

1999 ST₁ = 1980 BM₄ = 1985 SW₃ = 1987 BO₂

Id. G. V. Williams, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	197.11285	(2000.0)	P	Q
<i>n</i>	0.28350165	ω 189.53063	−0.92502172	−0.37730240
<i>a</i>	2.2949100	Ω 328.18798	+0.35388521	−0.81314000
<i>e</i>	0.0987257	<i>i</i> 4.83949	+0.13820301	−0.44322256
<i>P</i>	3.48	<i>H</i> 13.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1980 01 22	095	0.2+	0.6+	1999 09 07	704	0.5−	0.4−	1999 09 29	703	0.6−	0.0
1980 01 23	095	(4.9+	0.4+)	1999 09 08	699	0.3−	0.5+	1999 10 04	704	0.4+	0.0
1985 09 20	095	(2.5+	6.1+)	1999 09 08	699	0.3−	0.7+	1999 10 04	704	0.1+	0.5−
1987 01 31	046	0.8−	0.3+	1999 09 08	699	0.2+	0.2−	1999 10 04	704	0.6+	0.3−
1987 01 31	046	0.1−	0.1−	1999 09 21	681	0.2+	0.4−	1999 10 04	704	0.0	0.3−
1987 02 01	046	1.0−	0.7+	1999 09 21	681	0.5+	0.6−	1999 10 04	704	0.6+	0.5−
1987 02 01	046	0.7−	0.6+	1999 09 22	681	0.6+	0.5+	1999 10 07	704	0.7−	0.1−
1987 02 02	046	1.7+	1.5−	1999 09 22	681	0.7+	0.1+	1999 10 07	704	0.8−	0.3+
1987 02 02	046	0.6+	0.7−	1999 09 28	681	0.1+	0.5+	1999 10 07	704	0.5−	0.6+
1999 09 07	704	0.1−	0.5−	1999 09 28	681	0.0	0.5+	1999 10 07	704	0.5−	0.6+
1999 09 07	704	0.2−	0.2−	1999 09 29	703	0.1−	0.1−	1999 10 07	704	0.1−	0.0
1999 09 07	704	0.4+	0.3−	1999 09 29	703	0.0	0.2+				
1999 09 07	704	0.3−	0.4−	1999 09 29	703	0.2+	0.1+				

1999 SW₁ = 1977 XM = 1994 WW₃

Id. G. V. Williams, S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	303.47596	(2000.0)	P	Q
<i>n</i>	0.17292566	ω 156.71042	+0.59173214	−0.75697356
<i>a</i>	3.1907767	Ω 255.86392	+0.68734992	+0.65343913
<i>e</i>	0.1283404	<i>i</i> 16.61051	+0.42119255	−0.00288643
<i>P</i>	5.70	<i>H</i> 12.4	<i>G</i> 0.15	<i>U</i> 3

Residuals in seconds of arc

1977 12 07	675	0.1−	0.1+	1999 08 11	704	0.2+	0.6−	1999 09 22	704	0.4−	0.2−
1977 12 08	675	0.2+	0.5+	1999 08 11	704	0.0	1.1−	1999 09 29	703	0.6−	0.1+
1994 11 26	408	0.5−	0.5+	1999 08 11	704	0.1+	0.4−	1999 09 29	703	0.4−	0.3+
1994 11 26	408	1.5+	0.2+	1999 08 11	704	0.1−	0.6−	1999 09 29	703	0.3−	0.1−
1994 11 27	408	1.2−	1.3−	1999 09 18	704	0.0	0.5+	1999 09 29	703	0.2−	0.1+
1994 11 27	408	0.1+	0.6−	1999 09 18	704	0.2−	0.5+	1999 10 03	704	0.1+	0.3+
1999 07 22	704	1.1+	1.4−	1999 09 18	704	0.2−	0.6+	1999 10 03	704	0.1+	0.5−
1999 07 22	704	0.4+	0.2+	1999 09 18	704	0.2−	0.6+	1999 10 03	704	0.1+	0.4−
1999 07 22	704	(2.2+ 1.0−)		1999 09 18	704	0.3−	1.0+	1999 10 03	704	0.1+	0.1−
1999 07 22	704	1.1+	0.1+	1999 09 22	704	0.2−	0.8+	1999 10 03	704	0.4−	0.5−
1999 07 22	704	0.6+	0.3+	1999 09 22	704	0.3−	0.4+				

1999 SF₂ = 1991 PW₃ = 1993 BF₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	332.19866	(2000.0)	
<i>n</i>	0.26040108	<i>ω</i>	270.55874
<i>a</i>	2.4287018	<i>Ω</i>	133.65376
<i>e</i>	0.1832673	<i>i</i>	3.35986
<i>P</i>	3.78	<i>H</i>	15.2
		<i>G</i>	0.15
		<i>U</i>	4

Residuals in seconds of arc

1991 08 03	809	2.4+	1.5+	1993 01 28	010	1.3+	0.8−	1999 09 30	120	0.2+	0.2+
1991 08 03	809	1.3+	0.6+	1993 01 28	010	2.3+	1.2−	1999 09 30	120	0.9−	0.8−
1991 08 03	809	0.9+	0.9+	1999 09 22	120	0.5−	0.6−	1999 10 02	120	0.4−	0.0
1991 08 05	809	0.8−	1.1−	1999 09 22	120	0.1+	0.2+	1999 10 02	120	0.0	0.2−
1991 08 05	809	2.5−	0.3−	1999 09 22	120	0.1−	0.2−	1999 10 07	704	1.1+	0.8+
1991 08 05	809	1.1−	1.5−	1999 09 23	120	0.0	0.3−	1999 10 07	704	0.4+	0.2−
1993 01 27	010	1.8−	2.0+	1999 09 23	120	0.2+	0.2+	1999 10 07	704	0.5+	0.2−
1993 01 27	010	2.1−	0.1+	1999 09 29	120	0.4+	0.3−	1999 10 07	704	0.7−	1.1+
1993 01 27	010	1.3−	0.6+	1999 09 29	120	0.0	0.2+	1999 10 07	704	0.3+	0.3−
1993 01 28	010	1.6+	0.7−	1999 09 29	120	0.7−	0.1+				

1999 SU₂ = 1993 PT₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	355.20398	(2000.0)	
<i>n</i>	0.17479714	<i>ω</i>	174.81020
<i>a</i>	3.1679610	<i>Ω</i>	195.58756
<i>e</i>	0.1727462	<i>i</i>	4.89804
<i>P</i>	5.64	<i>H</i>	14.7
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1993 08 15	010	0.2+	0.5+	1999 09 23	557	0.0	0.1+	1999 10 02	703	0.8−	0.3−
1993 08 15	010	(0.2+ 2.3+)		1999 09 23	557	0.0	0.0	1999 10 04	704	0.3+	0.1−
1993 08 16	010	0.6−	0.7−	1999 09 23	557	0.2+	0.2+	1999 10 04	704	1.2+	0.4+
1993 08 16	010	0.2−	0.9−	1999 09 24	557	0.0	0.1−	1999 10 04	704	0.3+	0.3−
1993 08 16	010	0.6+	0.6−	1999 09 25	557	0.2+	0.5−	1999 10 04	704	0.1−	1.4−
1993 08 19	010	0.4+	0.3+	1999 09 25	557	0.3−	0.4+	1999 10 04	704	0.3−	0.6−
1993 08 19	010	0.2+	0.7+	1999 09 25	557	0.0	0.9+	1999 10 07	704	0.0	0.3+
1993 08 20	010	0.5−	0.8+	1999 10 02	557	0.1+	0.2+	1999 10 07	704	0.1−	0.5+
1999 09 21	557	0.1+	0.2+	1999 10 02	557	0.1+	0.2+	1999 10 07	704	0.3−	0.3−
1999 09 21	557	0.2+	0.3+	1999 10 02	703	0.7−	1.0−	1999 10 07	704	0.3+	0.6+
1999 09 21	557	0.2−	0.3−	1999 10 02	703	0.8−	0.2−	1999 10 07	704	0.3+	0.4+
1999 09 21	557	0.1+	0.0	1999 10 02	703	0.1+	0.5+				

1999 SW₂ = 1976 DG₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	205.70781	(2000.0)	
<i>n</i>	0.19455085	<i>ω</i>	153.07423
<i>a</i>	2.9497189	<i>Ω</i>	14.06416
<i>e</i>	0.0884703	<i>i</i>	1.40616
<i>P</i>	5.07	<i>H</i>	13.8
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1976 02 27	033	0.1−	0.0	1999 10 01	557	0.5+	0.2+	1999 10 12	557	0.1+	0.2+
1976 03 01	033	0.7+	0.1+	1999 10 02	557	0.4+	0.5+	1999 10 12	557	0.0	0.2+
1976 03 02	033	0.3−	0.5−	1999 10 04	704	0.6+	0.5−	1999 10 13	557	0.0	0.0
1976 03 03	033	1.5−	0.9+	1999 10 04	704	0.7−	0.8−	1999 10 13	557	0.0	0.2+
1976 03 03	033	1.2+	0.7−	1999 10 04	704	0.5+	0.2−	1999 10 18	557	0.1−	0.3+
1994 10 29	691	0.3−	0.3−	1999 10 04	704	0.4−	0.9−	1999 10 18	557	0.1−	0.6+
1994 10 29	691	0.5+	0.2−	1999 10 04	557	0.3−	0.7−	1999 10 18	557	0.0	0.6+
1994 10 29	691	0.1+	0.2−	1999 10 04	557	0.1−	0.3−	1999 10 19	557	0.1−	0.6+
1999 09 23	557	0.1−	0.2−	1999 10 04	557	0.0	0.2−	1999 10 19	557	0.0	0.2+
1999 09 23	557	0.1−	0.0	1999 10 04	557	0.1−	0.4−	1999 10 19	557	0.2−	0.0
1999 09 24	557	0.1−	0.0	1999 10 05	557	0.5−	0.2+	1999 10 19	557	0.1+	0.5+
1999 09 25	557	0.1−	0.1+	1999 10 05	557	0.0	0.2+	1999 10 19	557	0.1+	0.1+
1999 09 25	557	0.1−	0.3−	1999 10 05	557	0.6+	0.3−	1999 10 19	557	0.0	0.8+

1999 SZ₂ = 1976 SU₃ = 1998 EB

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	346.09661	(2000.0)	
<i>n</i>	0.29744862	<i>ω</i>	331.27290
<i>a</i>	2.2226005	<i>Ω</i>	356.81698
<i>e</i>	0.2679428	<i>i</i>	4.94867
<i>P</i>	3.31	<i>H</i>	15.3
		<i>G</i>	0.15
		<i>U</i>	3

Residuals in seconds of arc

1976 09 24	095	0.6−	0.2−	1999 09 11	704	0.1−	0.5+	1999 09 30	704	0.1−	0.2−
1976 09 29	095	0.5+	0.4+	1999 09 29	699	0.9−	1.1−	1999 09 30	704	1.3−	0.1−
1998 03 01	684	0.4−	0.1+	1999 09 29	699	0.3−	0.6+	1999 09 30	704	0.5−	0.0
1998 03 01	684	0.6−	0.4+	1999 09 29	704	0.3+	1.1−	1999 09 30	704	1.0+	0.5−
1998 03 02	684	0.7+	0.3+	1999 09 29	704	0.5−	0.2+	1999 09 30	704	0.7+	0.4+
1998 03 02	684	0.5+	0.2+	1999 09 29	699	0.1−	0.6+	1999 10 15	704	0.0	0.2−
1998 03 02	684	0.4+	0.4+	1999 09 29	704	0.2+	0.3+	1999 10 15	704	0.5+	0.5+
1999 09 11	704	0.2+	0.2−	1999 09 29	704	0.1+	0.7+	1999 10 15	704	0.2+	0.0
1999 09 11	704	0.3+	0.3+	1999 09 30	704	0.4−	0.6+	1999 10 15	704	0.5+	0.5−
1999 09 11	704	0.2+	0.2−	1999 09 30	704	0.1+	0.5+	1999 10 15	704	0.2−	0.1−

1999 SX₃ = 1998 HM₇₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	2.80942	(2000.0)	
<i>n</i>	0.29072236	<i>ω</i>	137.34170
<i>a</i>	2.2567516	<i>Ω</i>	211.99143
<i>e</i>	0.0242679	<i>i</i>	1.77880
<i>P</i>	3.39	<i>H</i>	15.5
		<i>G</i>	0.15
		<i>U</i>	6

Residuals in seconds of arc

1998 04 21	704	0.5−	0.0	1999 09 29	120	0.2+	0.5−	1999 10 06	704	0.3+	0.1+
1998 04 21	704	0.3+	0.5−	1999 09 29	120	0.1+	0.0	1999 10 06	704	0.0	0.1−
1998 04 21	704	0.4+	0.2−	1999 09 30	120	1.5−	3.0+	1999 10 06	704	0.1+	0.3−
1998 04 21	704	0.3−	0.5+	1999 09 30	120	0.5+	0.3−	1999 10 07	703	0.0	0.5+
1998 04 21	704	1.0−	0.3+	1999 09 30	120	0.7+	0.5+	1999 10 07	703	0.5+	0.1+
1998 04 22	704	0.2−	0.5+	1999 10 04	704	0.3−	0.3−	1999 10 07	703	0.1−	0.1−
1998 04 22	704	0.4+	0.6−	1999 10 04	704	0.7−	0.1+	1999 10 07	703	0.3+	0.3+
1998 04 22	704	0.1−	0.2−	1999 10 04	704	0.3+	0.6−	1999 10 07	704	0.4−	0.9+
1998 04 22	704	0.4+	0.6+	1999 10 04	704	0.5+	1.1−	1999 10 07	704	0.3+	0.4−
1998 04 22	704	0.5+	0.4−	1999 10 04	704	0.3−	0.4+	1999 10 07	704	0.1−	0.2−
1999 09 29	120	0.3+	0.4−	1999 10 06	704	0.3−	0.7+	1999 10 07	704	0.3+	1.3−
1999 09 29	120	0.3−	0.7−	1999 10 06	704	0.0	0.1+	1999 10 07	704	0.3−	0.2−

1999 SY₃ = 1997 EF₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams			
<i>M</i>	65.13559	(2000.0)	
<i>n</i>	0.16863476	<i>ω</i>	291.84815
<i>a</i>	3.2446759	<i>Ω</i>	351.74170
<i>e</i>	0.1052540	<i>i</i>	0.51498
<i>P</i>	5.84	<i>H</i>	13.8
		<i>G</i>	0.15
		<i>U</i>	5

Residuals in seconds of arc

1997 03 09	809	1.4-	1.2+	1999 09 07	704	0.3-	0.3-	1999 10 04	704	0.1+	0.2+
1997 03 09	809	1.6-	1.8+	1999 09 29	120	0.9+	0.1-	1999 10 04	704	1.4+	1.2-
1997 03 09	809	1.1-	0.9+	1999 09 29	120	0.1-	0.2+	1999 10 04	704	1.1+	0.3+
1997 03 10	809	1.6+	0.2-	1999 09 29	120	1.1-	0.6+	1999 10 07	704	0.7-	0.4-
1997 03 10	809	1.1+	0.5-	1999 09 29	120	0.4-	0.7+	1999 10 07	704	0.4+	0.3+
1997 03 10	809	1.0+	1.2-	1999 09 30	703	0.5-	0.3+	1999 10 07	704	0.0	0.0
1997 03 11	809	1.1+	0.7+	1999 09 30	703	0.5-	0.5+	1999 10 07	704	0.1+	0.6+
1997 03 11	809	0.4+	0.0	1999 09 30	703	0.8-	0.3+	1999 10 07	704	0.3-	1.0+
1997 03 11	809	0.2+	0.0	1999 09 30	703	0.1-	0.6+	1999 10 16	120	1.4-	1.5-
1999 09 07	704	0.4+	0.3-	1999 09 30	120	(0.7+	2.5+)	1999 10 16	120	1.8+	0.6-
1999 09 07	704	0.1-	0.3+	1999 09 30	120	0.3-	1.7+	1999 10 16	120	0.3-	0.4-
1999 09 07	704	0.0	0.0	1999 10 04	704	0.4-	0.2-				

1999 SZ₃ = 1997 EB₅₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	171.14625		(2000.0)	P	Q
n	0.19725776	ω	212.23787	-0.98851975	+0.15088643
a	2.9226714	Ω	336.43663	-0.13410900	-0.90022208
e	0.0478017	i	1.12860	-0.06959517	-0.40845257
P	5.00	H	13.5	G 0.15	U 6

Residuals in seconds of arc

1997 03 08	809	0.9-	0.3-	1999 09 30	120	0.2-	1.2-	1999 10 06	704	0.2+	0.1+
1997 03 08	809	1.2-	1.5-	1999 09 30	120	0.6+	1.0+	1999 10 06	704	(0.1-	2.2+)
1997 03 08	809	1.4-	0.8-	1999 10 02	120	0.5+	0.5-	1999 10 07	703	0.1-	0.1-
1997 03 09	809	1.2+	1.0+	1999 10 02	120	0.1-	0.5-	1999 10 07	703	0.2-	0.2+
1997 03 09	809	1.3+	1.0+	1999 10 04	704	0.2+	0.2+	1999 10 07	703	0.3+	0.4+
1997 03 09	809	0.9+	0.5+	1999 10 04	704	0.6-	1.4+	1999 10 07	703	0.3-	0.5+
1999 09 29	120	0.2+	0.5+	1999 10 04	704	0.4-	0.6-	1999 10 07	704	0.0	0.3-
1999 09 29	120	0.2+	0.2-	1999 10 04	704	0.8-	0.8+	1999 10 07	704	0.1+	0.0
1999 09 29	120	0.0	0.1-	1999 10 04	704	0.5-	1.6-	1999 10 07	704	0.5+	0.0
1999 09 29	120	0.8+	0.4-	1999 10 06	704	0.4+	0.3+	1999 10 07	704	0.5+	0.2+
1999 09 30	120	0.4-	0.2-	1999 10 06	704	0.1+	0.0	1999 10 07	704	0.8-	0.1-

1999 SK₄ = 1998 HR₇₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	6.61847		(2000.0)	P	Q
n	0.26831674	ω	154.85158	+0.95530494	+0.29517457
a	2.3806974	Ω	188.03195	-0.28707879	+0.91316329
e	0.1158379	i	6.68344	-0.07055666	+0.28107787
P	3.67	H	14.9	G 0.15	U 3

Residuals in seconds of arc

1998 03 03	910	0.5-	0.4-	1999 07 23	704	0.4-	0.5+	1999 10 04	704	0.5-	0.1-
1998 03 03	910	0.5-	0.5-	1999 07 23	704	0.1-	0.1-	1999 10 04	691	0.0	0.4-
1998 03 03	910	0.3-	0.8-	1999 09 05	699	0.6-	0.4-	1999 10 04	704	0.3+	1.0-
1998 04 21	704	0.8+	0.4+	1999 09 05	699	0.4+	0.1-	1999 10 04	704	0.2+	0.2-
1998 04 21	704	0.2+	0.1-	1999 09 05	699	0.7-	0.1+	1999 10 04	120	0.1-	1.2-
1998 04 21	704	0.1+	0.6-	1999 09 07	704	0.5+	0.1+	1999 10 05	120	0.2+	0.6-
1998 04 21	704	0.1+	1.4-	1999 09 07	704	0.2+	0.2+	1999 10 07	703	0.0	0.2-
1998 04 21	704	0.8-	0.4+	1999 09 07	704	0.1+	0.2-	1999 10 07	703	0.5-	0.3+
1998 04 22	704	0.8-	0.2+	1999 09 07	704	0.1-	0.0	1999 10 07	703	0.0	0.3+
1998 04 22	704	0.1-	0.4+	1999 09 07	704	0.6+	0.6+	1999 10 07	703	0.1+	0.1+
1998 04 22	704	0.3-	0.6+	1999 09 29	120	0.5+	1.2+	1999 10 07	704	0.2-	0.2-
1998 04 22	704	0.9+	0.9+	1999 09 29	120	0.5+	0.4+	1999 10 07	704	0.2+	0.2-
1998 04 22	704	0.1-	0.0	1999 09 30	120	1.1-	0.7+	1999 10 07	704	0.3-	0.2-
1998 05 16	704	0.9+	0.7+	1999 09 30	120	0.1+	0.1+	1999 10 07	704	0.4-	0.2-
1998 05 16	704	0.3-	1.5-	1999 09 30	120	0.7+	0.2+	1999 10 07	704	0.1-	0.5-
1998 05 16	704	0.2+	0.2+	1999 10 04	691	0.1+	0.5-	1999 10 16	120	0.7+	0.8+
1998 05 16	704	(7.2-	0.1+)	1999 10 04	704	0.2-	0.1+	1999 10 16	120	0.1+	0.4+
1999 07 23	704	0.5+	0.2-	1999 10 04	704	0.0	0.0				
1999 07 23	704	0.4-	0.1+	1999 10 04	691	0.1+	0.5-				

1999 SQ₄ = 1986 HU = 1997 GX₄₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	38.69492		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.18037114	ω	129.50507	+0.86162463	+0.49825677
a	3.1023539	Ω	201.16277	-0.50752018	+0.84773477
e	0.0064185	i	15.53000	+0.00512492	+0.18189544
P	5.46	H	13.2	G 0.15	U 4

Residuals in seconds of arc

1986 04 29	675	0.1+	1.3+	1999 09 29	120	1.1-	1.1+	1999 10 07	704	0.3-	0.9-
1986 04 29	675	0.2+	1.7+	1999 09 29	120	0.0	1.6+	1999 10 07	704	0.6+	0.8-
1997 04 11	809	0.9-	1.0-	1999 09 30	120	(2.3+	1.4+)	1999 10 07	704	0.5+	1.0-
1997 04 11	809	0.6-	1.1-	1999 09 30	120	0.7-	0.5+	1999 10 07	704	1.0+	1.4-
1997 04 11	809	0.5-	0.9-	1999 10 04	704	0.2-	0.1+	1999 10 07	704	0.2+	1.1-
1997 04 12	809	0.3+	0.1-	1999 10 04	704	1.2-	0.9+	1999 10 16	120	0.3+	0.8-
1997 04 12	809	0.7+	0.1-	1999 10 04	704	0.0	0.5+	1999 10 16	120	0.6+	0.5-
1997 04 12	809	0.8+	0.1+	1999 10 04	704	0.0	0.1+				
1999 09 29	120	0.7+	1.4+	1999 10 04	704	0.4-	0.3+				

1999 SR₄ = 1985 UV₆ = 1990 WU₁₅ = 1994 SM₁₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	150.22736		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.20984609	ω	17.12948	-0.81384834	+0.57899258
a	2.8045862	Ω	198.50803	-0.54963216	-0.79450829
e	0.0855794	i	8.91227	-0.18856133	-0.18309609
P	4.70	H	12.5	G 0.15	U 2

Residuals in seconds of arc

1985 10 18	095	0.4-	1.7-	1998 06 25	704	0.6-	0.2-	1999 10 07	704	0.3-	0.3+
1990 11 23	095	(4.7-	1.7-)	1998 06 25	704	0.1+	0.7+	1999 10 07	704	0.6-	0.3+
1990 11 23	095	0.7+	0.4+	1999 09 29	120	0.2-	0.4-	1999 10 07	704	0.6-	0.6+
1994 06 12	691	0.1+	0.1+	1999 09 29	120	1.6+	1.4-	1999 10 07	704	0.6-	0.8+
1994 06 12	691	0.0	0.0	1999 09 30	120	0.6+	0.6-	1999 10 07	704	0.2-	0.8+
1994 06 12	691	0.0	0.0	1999 09 30	120	0.2+	0.9-	1999 10 14	739	0.6-	0.2+
1994 09 29	691	1.0+	0.3-	1999 10 02	703	0.5-	0.1+	1999 10 14	739	0.4-	0.5+
1994 09 29	691	0.9+	0.7-	1999 10 02	703	0.5-	0.1-	1999 10 16	120	0.2+	0.3+
1994 09 29	691	0.7+	0.4-	1999 10 02	703	0.7-	0.3-	1999 10 16	120	0.0	0.7+
1994 10 10	691	0.4-	0.2-	1999 10 02	703	0.3-	0.1-	1999 10 17	120	0.0	0.1-
1994 10 10	691	0.6-	0.3-	1999 10 04	704	1.2+	0.2-	1999 10 17	120	1.3-	1.2+
1994 10 10	691	0.4-	0.3-	1999 10 04	704	1.1+	0.5-	1999 10 17	120	0.7-	0.8+
1998 06 25	704	0.6-	0.1-	1999 10 04	704	0.5+	0.0	1999 10 18	327	0.5-	0.4+
1998 06 25	704	0.9+	0.2+	1999 10 04	704	1.1+	0.1-	1999 10 18	327	0.6-	0.6+
1998 06 25	704	0.1-	0.4+	1999 10 04	704	1.1+	0.3-	1999 10 18	327	0.6-	0.6+

1999 SU₅ = 1986 TF₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	7.69847		(2000.0)	P	Q
n	0.37597897	ω	307.48976	+0.89355957	+0.41010752
a	1.9011965	Ω	29.62924	-0.19535191	+0.72150255
e	0.0706582	i	21.68232	-0.40421396	+0.55789416
P	2.62	H	15.9	G 0.15	U 6

Residuals in seconds of arc

1986 10 07	675	0.5+	1.2+	1999 10 01	704	0.1+	0.0	1999 10 05	704	0.5+	0.2-
1986 10 07	675	1.5+	1.1-	1999 10 01	704	0.3+	0.1+	1999 10 05	704	0.3+	0.5-
1986 10 08	675	(5.4-	4.0+)	1999 10 01	704	0.2-	0.6+	1999 10 05	704	0.3+	0.1+
1986 10 08	675	1.9-	0.1-	1999 10 05	704	0.4-	0.3+	1999 10 05	704	0.5+	0.0
1999 09 30	704	0.1+	0.3+	1999 10 05	704	1.0-	0.0	1999 10 05	704	0.5+	0.1-
1999 09 30	704	0.0	0.6-	1999 10 05	704	0.2+	0.2-	1999 10 05	704	0.6+	0.3+
1999 09 30	704	0.9-	0.1+	1999 10 05	704	0.3+	0.6+	1999 10 08	704	0.2+	0.1-
1999 09 30	704	0.2+	0.4-	1999 10 05	704	0.2+	0.3-	1999 10 08	704	0.2-	0.0
1999 09 30	704	0.2-	0.3+	1999 10 05	704	0.2+	0.2-	1999 10 08	704	0.8-	0.2+
1999 10 01	704	0.2-	0.3-	1999 10 05	704	0.1+	0.3-	1999 10 08	704	0.7-	0.3+

1999 SZ₅ = 1989 EQ₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	339.07386	(2000.0)	P		Q	
<i>n</i>	0.26030661	ω	239.46817	+0.73422284	-0.66781533	
<i>a</i>	2.4292894	Ω	161.48101	+0.67545057	+0.73669497	
<i>e</i>	0.3179881	<i>i</i>	22.63279	-0.06843494	+0.10631657	
<i>P</i>	3.79	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1989 03 02	809	0.7-	0.9+	1989 03 03	809	0.1-	0.4-	1999 10 01	704	0.4-	0.0
1989 03 02	809	1.2-	1.7+	1989 03 03	809	0.1-	0.2-	1999 10 01	704	0.1+	0.2-
1989 03 02	809	1.5-	1.8+	1999 09 30	704	0.3-	0.2+	1999 10 15	413	0.1-	0.4-
1989 03 02	809	0.8+	0.6-	1999 09 30	704	0.2-	0.4-	1999 10 15	413	0.1-	0.6+
1989 03 02	809	0.0	1.1-	1999 09 30	704	0.0	0.1+	1999 10 16	413	0.2+	0.0
1989 03 02	809	0.3-	1.4-	1999 09 30	704	0.2+	0.1+	1999 10 16	413	0.1+	0.1+
1989 03 03	809	0.8+	0.1+	1999 09 30	704	0.2+	0.2+	1999 10 17	413	0.1-	0.1+
1989 03 03	809	1.2+	0.3-	1999 10 01	704	0.1+	0.4-	1999 10 17	413	0.2-	0.1+
1989 03 03	809	1.0+	0.8-	1999 10 01	704	0.1-	0.1-	1999 10 17	413	0.4+	0.0
1989 03 03	809	0.1+	0.2+	1999 10 01	704	0.0	0.1-				

1999 SV₆ = 1998 HL₁₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	16.79223	(2000.0)	P		Q	
<i>n</i>	0.29120596	ω	71.62957	+0.84551955	+0.53017015	
<i>a</i>	2.2542524	Ω	256.30941	-0.51120482	+0.76951922	
<i>e</i>	0.2084164	<i>i</i>	3.73992	-0.15416333	+0.35603339	
<i>P</i>	3.38	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1998 04 01	704	1.5+	0.7+	1999 07 23	704	0.1+	0.2-	1999 10 03	704	0.5+	0.3+
1998 04 01	704	0.0	1.6+	1999 09 08	704	(2.1+	0.6+)	1999 10 03	704	0.5+	0.3+
1998 04 01	704	1.3+	1.6-	1999 09 08	704	0.2+	0.1+	1999 10 03	704	0.5+	0.4+
1998 04 01	704	1.4+	1.3-	1999 09 08	704	0.7-	0.4+	1999 10 03	704	0.5+	0.5+
1998 04 01	704	0.7+	0.4-	1999 09 30	678	0.1-	0.2-	1999 10 03	704	0.7+	0.1+
1998 04 18	704	0.3-	0.7-	1999 09 30	678	0.7-	0.3-	1999 10 07	704	0.0	0.3+
1998 04 18	704	0.8-	0.1-	1999 09 30	678	0.1+	0.4+	1999 10 07	704	0.0	0.1-
1998 04 18	704	1.8-	0.9+	1999 10 01	678	1.6-	0.6+	1999 10 07	704	0.0	0.4-
1998 04 18	704	1.3+	0.2-	1999 10 01	678	0.1-	0.6+	1999 10 07	704	0.0	0.5-
1998 04 19	704	0.1-	0.7+	1999 10 01	678	0.7-	0.5+	1999 10 07	704	0.4+	0.2-
1998 04 19	704	0.4-	0.1-	1999 10 01	703	0.4-	0.2+	1999 10 10	678	0.4-	0.1-
1998 04 19	704	0.4-	1.7+	1999 10 01	703	0.1-	0.5+	1999 10 10	678	0.7-	0.4-
1998 04 19	704	0.9-	0.6-	1999 10 01	703	0.2+	0.3+	1999 10 10	678	0.0	0.4-
1998 04 19	704	1.0-	1.4+	1999 10 01	703	0.0	0.2+	1999 10 14	678	0.0	0.6-
1999 07 23	704	0.5+	0.5+	1999 10 01	703	0.0	0.1+	1999 10 14	678	0.6+	0.4-
1999 07 23	704	0.4+	0.2-	1999 10 01	703	0.3-	0.0	1999 10 14	678	0.6+	0.9-
1999 07 23	704	0.1+	0.5-	1999 10 01	703	0.1-	0.2+				
1999 07 23	704	0.3-	0.4+	1999 10 01	703	0.1-	0.1+				

1999 SL₈ = 1975 VZ₇ = 1998 HB₈₂

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	321.82518	(2000.0)	P		Q	
<i>n</i>	0.28501308	ω	342.64492	+0.87003889	-0.47263122	
<i>a</i>	2.2867895	Ω	46.41361	+0.47215505	+0.71709797	
<i>e</i>	0.2471194	<i>i</i>	11.15928	+0.14178131	+0.51224040	
<i>P</i>	3.46	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i> 4

Residuals in seconds of arc

1975 11 06	095	0.0	0.1-	1998 04 22	704	0.5-	0.2+	1999 09 30	704	0.0	1.5+
1998 04 21	704	1.4+	0.1-	1999 09 29	704	1.1-	0.4-	1999 09 30	704	0.3-	1.2+
1998 04 21	704	0.8+	0.7-	1999 09 29	704	0.4-	0.5-	1999 10 02	385	0.3+	0.0
1998 04 21	704	0.3+	1.1+	1999 09 29	704	0.3+	0.1+	1999 10 02	385	0.8-	0.4-
1998 04 21	704	0.7-	1.5-	1999 09 29	704	1.1+	1.2-	1999 10 02	385	0.8+	0.2-
1998 04 22	704	0.5-	1.0+	1999 09 29	704	0.2+	0.6-	1999 10 03	888	0.4-	0.1+
1998 04 22	704	0.2-	0.7-	1999 09 30	704	0.6+	0.2+	1999 10 03	888	0.3+	0.3-

1998 04 22	704	0.8-	0.7+	1999 09 30	704	0.1-	0.3+	1999 10 03	888	0.1-	0.2-
1998 04 22	704	(0.7+	2.4+)	1999 09 30	704	0.1-	1.0+	1999 10 03	385	0.3-	0.3-

1999 SN₉ = 1988 UE = 1993 BZ₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	313.79947	(2000.0)	P		Q	
<i>n</i>	0.26814880	ω	81.59464	+0.51574399	-0.85665297	
<i>a</i>	2.3816913	Ω	337.34494	+0.77283162	+0.47143067	
<i>e</i>	0.1921966	<i>i</i>	1.84526	+0.36978295	+0.20952045	
<i>P</i>	3.68	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i> 2

Residuals in seconds of arc

1988 10 16	399	0.5-	1.9-	1999 09 18	703	0.4+	0.4+	1999 10 04	704	0.6-	0.8-
1988 10 16	399	(1.1-	3.3-)	1999 09 29	468	0.4-	0.1+	1999 10 06	704	0.2+	0.8+
1988 10 19	399	1.9+	1.4-	1999 09 29	468	(0.3-	3.2-)	1999 10 06	704	0.0	0.1+
1988 10 19	399	(3.2+	2.4-)	1999 10 01	703	0.0	0.4+	1999 10 06	704	0.0	0.1-
1988 10 19	399	(4.2+	2.2-)	1999 10 01	703	0.6-	0.1+	1999 10 06	704	0.2+	0.1-
1993 01 16	010	0.3+	0.2+	1999 10 01	703	0.0	0.1+	1999 10 06	704	0.1+	0.0
1993 01 16	010	0.4-	0.6+	1999 10 01	703	0.3-	0.7+	1999 10 07	704	0.0	0.1-
1993 01 16	010	0.8-	0.4+	1999 10 01	468	0.2+	0.4-	1999 10 07	704	0.3+	0.2+
1993 01 17	010	0.2+	0.6-	1999 10 01	468	0.3+	1.1+	1999 10 07	704	0.2+	0.1-
1993 01 17	010	0.1+	0.0	1999 10 02	470	1.3-	0.4+	1999 10 07	704	0.6+	0.2+
1993 01 17	010	0.7+	0.2+	1999 10 02	470	0.5-	0.2+	1999 10 07	704	0.4+	0.2+
1999 09 05	699	0.3-	0.0	1999 10 03	470	(0.9+	2.9+)	1999 10 08	468	0.4+	0.2-
1999 09 05	699	0.0	0.2+	1999 10 03	470	(0.8+	2.1+)	1999 10 08	468	0.1+	0.3+
1999 09 05	699	0.0	0.3+	1999 10 04	704	0.4+	0.1-	1999 10 14	468	0.2-	0.6+
1999 09 18	703	0.5-	0.2-	1999 10 04	704	0.1-	0.3-	1999 10 14	468	0.3-	0.1-
1999 09 18	703	0.1-	0.1-	1999 10 04	704	0.0	0.1-				
1999 09 18	703	0.1-	0.1-	1999 10 04	704	0.0	0.4-				

1999 SP₉ = 1998 KK₂₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	72.25318	(2000.0)	P		Q	
<i>n</i>	0.22665401	ω	50.73541	-0.03121166	+0.99080048	
<i>a</i>	2.6641609	Ω	218.10669	-0.97013672	-0.06173633	
<i>e</i>	0.1294084	<i>i</i>	12.32046	-0.24054225	+0.12042853	
<i>P</i>	4.35	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1995 11 17	327	0.2+	0.0	1998 05 24	704	0.1+	0.7+	1999 10 04	704	0.2-	0.4+
1995 11 17	327	0.3-	0.4+	1998 05 24	704	0.0	0.1+	1999 10 04	704	0.2+	1.1+
1995 11 17	327	0.0	0.4+	1998 05 24	704	1.0-	0.8+	1999 10 04	704	1.5+	0.0
1998 04 22	704	0.3-	0.2-	1999 09 08	704	0.5+	0.6-	1999 10 04	589	0.1+	0.3+
1998 04 22	704	1.3-	0.4-	1999 09 08	704	0.3-	1.1-	1999 10 04	589	0.0	0.9+
1998 04 22	704	0.0	0.5+	1999 09 08	704	0.7+	0.3+	1999 10 04	589	0.1-	0.3-
1998 04 22	704	0.9-	0.8+	1999 09 08	704	0.1-	0.2-	1999 10 09	703	0.2+	0.5+
1998 04 22	704	0.0	0.3+	1999 09 08	704	1.2+	0.3+	1999 10 09	703	(1.6-	2.4-)
1998 05 01	704	0.7+	0.9-	1999 09 29	703	0.4+	0.9-	1999 10 09	703	0.6-	0.1+
1998 05 01	704	0.8+	0.7+	1999 09 29	703	0.5-	0.5-	1999 10 09	703	1.8-	0.2+
1998 05 01	704	0.3+	0.3+	1999 09 29	703	0.4-	0.3+	1999 10 11	589	0.3+	1.2-
1998 05 01	704	0.4+	0.7+	1999 09 29	703	0.0	0.1+	1999 10 11	589	1.5-	0.4+
1998 05 22	704	0.4+	1.0+	1999 09 30	589	0.6+	0.1-	1999 10 11	589	0.2+	1.5-
1998 05 22	704	0.2-	0.2-	1999 09 30	589	0.5-	0.7+	1999 10 11	589	0.5-	0.5-
1998 05 22	704	0.1+	1.3-	1999 09 30	589	0.5-	0.5+	1999 10 11	589	0.3+	0.7-
1998 05 22	704	0.2-	0.1+	1999 09 30	589	0.0	1.6+	1999 10 11	589	0.3+	0.7-
1998 05 22	704	0.5-	1.6-	1999 10 01	589	0.9-	1.0+	1999 10 11	589	0.4+	1.1-
1998 05 24	704	0.8+	0.2-	1999 10 01	589	0.5+	0.9+				
1998 05 24	704	0.6+	0.2-	1999 10 01	589	1.0+	0.0				

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1999 SR₉ = 1998 FG₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	35.48325	(2000.0)	P		Q		Williams		
<i>n</i>	0.29509291	ω	138.99927	+0.62584283	+0.77973538				
<i>a</i>	2.2344134	Ω	169.69976	-0.73959684	+0.60073440				
<i>e</i>	0.2256708	<i>i</i>	5.86189	-0.24762323	+0.17643957				
<i>P</i>	3.34	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	6		

Residuals in seconds of arc

1998 03 20	704	(2.4+ 0.1-)	1999 09 29	120	0.3+ 0.3+	1999 10 07	704	0.1- 0.2-
1998 03 20	704	0.1+ 1.1-	1999 09 29	120	0.8+ 0.5+	1999 10 07	704	0.1+ 0.7-
1998 03 20	704	1.6- 0.6+	1999 10 02	120	0.1- 0.1+	1999 10 07	704	0.6+ 0.1+
1998 03 20	704	0.1+ 1.7+	1999 10 02	120	0.4+ 0.2+	1999 10 16	164	0.3+ 0.0
1998 03 22	704	0.7+ 0.0	1999 10 04	703	1.9- 0.1-	1999 10 16	164	0.6+ 0.4+
1998 03 22	704	0.4+ 1.1+	1999 10 04	703	0.7- 1.1+	1999 10 17	164	1.1- 1.3+
1998 03 22	704	0.1- 0.8-	1999 10 04	703	0.3- 0.3-	1999 10 19	704	0.0 0.6-
1998 03 22	704	0.5+ 1.3-	1999 10 04	703	0.1- 0.0	1999 10 19	704	0.4- 0.1+
1999 09 14	703	0.4+ 0.1+	1999 10 07	120	0.9+ 0.3+	1999 10 19	704	0.2- 0.6-
1999 09 14	703	0.4- 0.3-	1999 10 07	120	0.2+ 0.0	1999 10 19	704	1.4+ 0.1-
1999 09 14	703	0.2+ 0.1+	1999 10 07	704	0.4- 0.1+	1999 10 19	704	0.8- 1.4-
1999 09 14	703	0.0 0.1-	1999 10 07	704	0.3+ 0.1-			

1999 SV₉ = 1993 FM₂₆ = 1998 KG₅₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	32.76961	(2000.0)	P		Q		Williams		
<i>n</i>	0.22507073	ω	125.46575	+0.83116337	+0.54864323				
<i>a</i>	2.6766404	Ω	201.70446	-0.55550863	+0.81233633				
<i>e</i>	0.0744614	<i>i</i>	14.13650	-0.02403340	+0.19773794				
<i>P</i>	4.38	<i>H</i>	14.0	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1993 03 21	809	0.4+ 0.3+	1999 09 30	104	1.0- 0.6-	1999 10 06	108	1.5+ 0.7-
1993 03 22	809	0.4+ 0.7+	1999 09 30	104	0.2+ 0.3+	1999 10 06	108	1.6+ 0.4+
1993 03 26	809	0.5- 1.4+	1999 10 01	104	1.7+ 0.1+	1999 10 07	704	0.0 0.3+
1998 05 23	704	0.6- 0.1+	1999 10 01	104	0.6- 0.0	1999 10 07	704	0.2- 0.1+
1998 05 23	704	(2.9- 0.6+)	1999 10 02	104	1.2- 0.3+	1999 10 07	704	0.1- 0.1+
1998 05 23	704	0.2+ 0.3-	1999 10 04	704	1.0+ 0.5-	1999 10 07	704	0.1- 0.2-
1998 05 23	704	(3.0- 0.5+)	1999 10 04	704	0.4- 0.1-	1999 10 07	704	0.3+ 0.3-
1998 05 26	704	0.2- 0.8+	1999 10 04	704	0.6- 0.5+	1999 10 16	104	0.0 0.2+
1998 05 26	704	0.1+ 0.0	1999 10 04	704	0.9- 0.5+	1999 10 16	104	0.2+ 0.3+
1998 05 26	704	0.3+ 0.4+	1999 10 04	704	0.6- 0.1+	1999 10 16	104	0.1+ 0.3+
1998 05 26	704	0.4+ 1.3-	1999 10 06	704	0.1- 0.3+	1999 10 16	104	0.0 0.2-
1998 05 26	704	0.2- 0.9+	1999 10 06	704	0.1+ 0.1+	1999 10 17	120	0.5- 1.4+
1999 09 05	703	0.4- 0.6+	1999 10 06	704	0.0 0.0	1999 10 17	120	0.1- 0.7+
1999 09 05	703	1.0+ 0.5+	1999 10 06	704	0.2- 0.0	1999 10 19	120	0.1- 0.2+
1999 09 05	703	0.1- 1.0-	1999 10 06	704	0.3- 0.3+	1999 10 19	120	0.2+ 0.1-
1999 09 05	703	0.1- 0.5+	1999 10 06	108	0.7- 1.8-			

1999 SS₁₁ = 1998 KG₁₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	14.34969	(2000.0)	P		Q		Williams		
<i>n</i>	0.23384933	ω	248.28225	+0.95138738	+0.29815644				
<i>a</i>	2.6092276	Ω	94.30430	-0.24614106	+0.88675744				
<i>e</i>	0.2249297	<i>i</i>	4.44203	-0.18513948	+0.35321945				
<i>P</i>	4.21	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	6		

Residuals in seconds of arc

1998 05 22	704	1.5- 0.8-	1998 05 24	704	0.1+ 0.6+	1999 10 04	703	0.4- 0.0
1998 05 22	704	0.4+ 1.1+	1998 05 24	704	1.2+ 0.2-	1999 10 04	703	0.1- 0.0
1998 05 22	704	0.7- 0.4-	1999 09 30	703	0.1+ 0.7+	1999 10 07	704	0.2+ 0.2-
1998 05 22	704	0.6- 0.6+	1999 09 30	703	0.2- 0.3+	1999 10 07	704	0.3- 0.0
1998 05 22	704	0.9+ 1.2-	1999 09 30	703	1.0+ 0.3+	1999 10 07	704	0.3- 0.2-
1998 05 24	704	0.9+ 0.8+	1999 09 30	703	0.2- 0.0	1999 10 07	704	0.0 0.5-
1998 05 24	704	0.3- 1.4-	1999 10 04	703	0.2- 0.0	1999 10 07	704	0.6+ 0.3-
1998 05 24	704	0.5- 0.8+	1999 10 04	703	0.3- 0.2-			

1999 TM = 1978 UH₄ = 1992 SP₁₂ = 1998 KX₃₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	314.09086	(2000.0)	P		Q		Williams		
<i>n</i>	0.27986152	ω	204.03364	+0.54866448	-0.83460975				
<i>a</i>	2.3147669	Ω	212.75277	+0.78096030	+0.53252826				
<i>e</i>	0.1282854	<i>i</i>	5.18866	+0.29844312	+0.14085529				
<i>P</i>	3.52	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	3		

Residuals in seconds of arc

1978 10 28	675	0.2+ 0.7+	1999 09 18	704	0.1- 0.4-	1999 10 04	704	0.2+ 0.3+
1978 10 29	675	0.2- 0.2+	1999 09 30	104	0.6- 0.3+	1999 10 04	704	0.1+ 0.2+
1992 09 26	372	0.0 1.0+	1999 09 30	104	1.2+ 0.3+	1999 10 06	727	0.1- 0.3-
1992 09 26	372	1.1- 0.9+	1999 10 01	727	0.6+ 0.1+	1999 10 06	727	0.1- 0.0
1998 05 22	704	1.3+ 0.4-	1999 10 01	727	0.6+ 0.3-	1999 10 06	727	0.1- 0.1-
1998 05 22	704	0.9+ 0.8-	1999 10 01	727	0.9+ 0.3+	1999 10 06	704	0.2- 0.1+
1998 05 22	704	0.2+ 1.3-	1999 10 01	703	0.4- 0.2+	1999 10 06	704	0.3- 0.0
1998 05 24	704	0.4- 1.2+	1999 10 01	703	0.4- 0.2+	1999 10 06	704	0.4+ 0.4+
1998 05 24	704	0.2- 0.9+	1999 10 01	703	0.2- 0.2+	1999 10 06	704	0.9- 0.2-
1998 05 24	704	0.8- 0.5+	1999 10 01	703	0.2- 0.0	1999 10 07	704	0.1- 0.5-
1998 05 24	704	0.9- 0.6+	1999 10 01	104	0.2+ 0.3+	1999 10 07	704	0.2- 0.6-
1999 07 23	704	0.7+ 0.0	1999 10 01	104	0.1+ 0.2+	1999 10 07	704	0.5- 0.7-
1999 07 23	704	0.5- 0.1-	1999 10 02	104	0.0 0.1-	1999 10 07	704	0.1- 0.1-
1999 07 23	704	1.0- 0.1+	1999 10 02	727	0.3- 0.0	1999 10 07	704	0.7- 0.8-
1999 07 23	704	0.3+ 0.4+	1999 10 02	727	0.7+ 0.3-	1999 10 12	727	0.2- 0.5-
1999 09 18	704	0.2+ 0.3-	1999 10 02	727	0.7+ 0.1+	1999 10 12	727	0.0 0.1-
1999 09 18	704	0.5+ 0.1+	1999 10 04	704	0.1+ 0.2+	1999 10 12	727	0.2- 0.4-
1999 09 18	704	0.4+ 0.1+	1999 10 04	704	0.2+ 0.1+			
1999 09 18	704	0.2+ 0.5-	1999 10 04	704	0.0 0.1-			

1999 TP = 1997 GE₂₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	4.52816	(2000.0)	P		Q		Williams		
<i>n</i>	0.18257120	ω	156.62689	+0.99037359	+0.10436112				
<i>a</i>	3.0773805	Ω	198.10175	-0.11532787	+0.98541432				
<i>e</i>	0.1292462	<i>i</i>	17.01776	+0.07654827	+0.13441496				
<i>P</i>	5.40	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	2		

Residuals in seconds of arc

1997 03 11	809	1.2+ 0.9-	1998 06 19	704	0.2+ 0.5-	1999 10 04	704	0.0 0.4-
1997 03 11	809	0.8+ 0.1-	1998 06 25	704	1.1- 0.6-	1999 10 04	704	0.3- 0.1-
1997 03 11	809	0.3+ 0.4+	1998 06 25	704	0.1+ 0.4-	1999 10 04	704	0.1- 0.5-
1997 03 13	809	0.2+ 1.7-	1998 06 25	704	0.2- 0.4+	1999 10 04	704	0.4- 0.4-
1997 03 13	809	(0.6- 2.1-)	1998 06 25	704	(5.0- 0.6+)	1999 10 04	704	0.1- 0.5-
1997 03 13	809	(0.5- 2.3-)	1999 07 23	704	0.7+ 0.5-	1999 10 06	704	0.1- 0.0
1997 04 03	704	0.6- 0.2+	1999 07 23	704	0.1+ 0.3-	1999 10 06	704	0.1+ 0.1+
1997 04 03	704	0.4- 1.0+	1999 07 23	704	0.1+ 0.1-	1999 10 06	704	0.0 0.1+
1997 04 03	704	0.7- 0.3-	1999 07 23	704	0.5+ 1.5-	1999 10 06	704	0.1+ 0.8-
1997 04 03	704	0.1+ 0.6+	1999 07 23	704	0.4- 0.9-	1999 10 06	704	0.1- 0.0
1997 04 05	704	0.5- 0.3+	1999 09 18	703	0.4- 0.2+	1999 10 07	683	0.3+ 0.1-
1997 04 05	704	0.4- 0.6+	1999 09 18	703	0.1- 0.2+	1999 10 07	683	0.3+ 0.1+
1997 04 05	704	0.3- 1.6+	1999 09 18	703	0.4- 0.9+	1999 10 07	683	0.6+ 0.1-
1997 04 05	704	0.5+ 0.5-	1999 09 18	703	0.1- 0.5+	1999 10 07	704	0.2- 0.2+
1997 04 06	704	1.3+ 0.2+	1999 10 01	703	0.4- 0.1+	1999 10 07	704	0.1+ 0.2+
1997 04 06	704	1.0+ 0.3-	1999 10 01	703	1.1- 0.6+	1999 10 07	704	0.0 0.2+
1997 04 07	704	0.7- 0.5+	1999 10 01	703	0.3- 0.2+	1999 10 07	704	1.0+ 0.5+
1997 04 07	704	0.0 0.5-	1999 10 01	703	0.3- 0.8+	1999 10 08	683	0.4+ 0.3+
1997 04 07	566	1.3- 0.3+	1999 10 01	468	0.5+ 0.1-	1999 10 08	683	0.3+ 0.2+
1997 04 07	566	(2.2- 0.3+)	1999 10 01	468	0.3+ 0.3+	1999 10 08	683	0.4+ 0.4+
1997 04 07	566	(2.3- 0.5+)	1999 10 02	470	0.1+ 0.5+	1999 10 08	468	0.0 0.0
1998 06 19	704	0.4+ 0.6+	1999 10 02	470	0.1- 0.2+	1999 10 08	468	0.4- 0.1-
1998 06 19	704	0.4+ 0.1+	1999 10 03	470	0.2- 0.5+	1999 10 14	468	0.3- 0.1+
1998 06 19	704	0.0 0.9+	1999 10 03	470	0.1+ 0.2-	1999 10 14	468	0.3- 0.1-

1999 TU = 1998 HS₈₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	38.05190		(2000.0)	P		Q	
<i>n</i>	0.23886337	ω	278.44260	+0.60723384	+0.79431104		
<i>a</i>	2.5725847	Ω	28.97198	-0.71323603	+0.55514388		
<i>e</i>	0.1685419	<i>i</i>	2.17208	-0.35008773	+0.24674936		
<i>P</i>	4.13	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 04 21	704	0.4+	0.7-	1999 09 05	699	1.4+	0.3-	1999 10 06	120	0.5+	0.0
1998 04 21	704	1.3+	0.4-	1999 09 05	699	0.4-	0.2-	1999 10 06	120	0.8-	0.9+
1998 04 21	704	0.1+	0.4-	1999 10 01	120	0.1-	0.2-	1999 10 07	704	0.2-	0.1-
1998 04 21	704	0.3-	0.3+	1999 10 01	120	0.3-	0.2+	1999 10 07	704	0.3-	0.0
1998 04 21	704	0.5-	0.6+	1999 10 02	120	0.5-	0.3+	1999 10 07	704	0.3-	0.7+
1998 04 22	704	0.4+	0.5+	1999 10 02	120	1.5+	0.3-	1999 10 07	704	0.0	0.1+
1998 04 22	704	0.3+	0.0	1999 10 04	704	0.1-	0.5-	1999 10 15	734	0.4-	0.1-
1998 04 22	704	0.8-	0.5+	1999 10 04	704	0.3-	0.1-	1999 10 15	734	0.4-	0.1+
1998 04 22	704	0.5-	0.1-	1999 10 04	704	0.3-	0.1+	1999 10 15	734	1.3+	0.3+
1998 04 22	704	0.1-	0.2+	1999 10 04	704	0.1-	0.3+				
1999 09 05	699	0.3-	0.3-	1999 10 04	704	0.1-	0.5-				

1999 TW = 1998 FS₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	24.61845		(2000.0)	P		Q	
<i>n</i>	0.30523625	ω	101.86433	+0.72357476	+0.68944137		
<i>a</i>	2.1846338	Ω	214.56569	-0.65395075	+0.66928081		
<i>e</i>	0.2190041	<i>i</i>	3.36679	-0.22088002	+0.27700867		
<i>P</i>	3.23	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1998 02 28	809	(4.4+	1.6+)	1999 09 18	704	0.5-	0.3-	1999 10 07	704	0.0	0.1+
1998 03 02	809	(7.0-	5.6+)	1999 09 18	704	0.5-	0.5-	1999 10 07	704	0.3+	0.1+
1998 03 20	704	0.9-	0.8+	1999 09 18	704	0.4-	0.9-	1999 10 07	704	0.3-	0.2-
1998 03 20	704	0.4+	0.1+	1999 10 01	120	0.4-	0.0	1999 10 07	704	0.2+	0.3-
1998 03 20	704	0.5+	0.4-	1999 10 01	120	0.5-	0.1-	1999 10 09	120	0.5+	0.4-
1998 03 20	704	0.1-	0.2-	1999 10 02	703	0.3-	0.2+	1999 10 09	120	0.3+	0.2-
1998 03 20	704	0.8+	0.7-	1999 10 02	703	0.4-	0.0	1999 10 10	106	(2.8+	0.6-)
1998 03 22	704	0.1-	0.4+	1999 10 02	703	0.2-	0.3+	1999 10 10	106	0.3-	0.2+
1998 03 22	704	0.4-	0.7+	1999 10 02	703	0.1+	0.2+	1999 10 10	106	1.0-	0.3-
1998 03 22	704	0.3+	0.8-	1999 10 02	120	1.4+	0.8+	1999 10 11	106	0.0	0.0
1998 03 22	704	0.4-	0.5-	1999 10 02	120	0.5+	0.1+	1999 10 11	106	0.4-	0.0
1998 03 22	704	1.0-	0.3+	1999 10 04	704	0.1-	0.2+	1999 10 11	106	0.1+	0.4+
1998 03 26	704	0.1+	1.3+	1999 10 04	704	0.6+	0.1-	1999 10 14	327	0.1-	0.4+
1998 03 26	704	(0.0	2.8+)	1999 10 04	704	0.4+	0.0	1999 10 14	327	0.0	0.4+
1998 03 26	704	0.9+	0.6-	1999 10 04	704	0.6+	0.4-	1999 10 14	327	0.5-	0.4+
1999 07 23	704	0.5-	0.3+	1999 10 04	704	0.5-	0.2+	1999 10 15	327	0.1-	0.2+
1999 07 23	704	0.2-	0.5+	1999 10 06	704	0.3+	0.3+	1999 10 15	327	0.0	0.0
1999 07 23	704	0.5+	0.2+	1999 10 06	704	0.0	0.3+	1999 10 15	327	0.0	0.3-
1999 07 23	704	0.0	0.1+	1999 10 06	704	0.1+	0.2+	1999 10 16	120	0.3-	0.2+
1999 07 23	704	0.0	0.1-	1999 10 06	704	0.1-	0.2+	1999 10 16	120	0.4-	0.2+
1999 09 18	704	0.1-	0.2-	1999 10 06	704	0.3+	0.2+	1999 10 19	120	0.5+	0.2-
1999 09 18	704	0.1-	0.6-	1999 10 07	704	0.6+	1.1-	1999 10 19	120	0.4+	0.1-

1999 TM₁ = 1989 TQ₁₇ = 1998 KX₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	300.31715		(2000.0)	P		Q	
<i>n</i>	0.29669544	ω	46.64775	+0.38445083	-0.92166353		
<i>a</i>	2.2263604	Ω	20.91623	+0.79895197	+0.30382089		
<i>e</i>	0.0569218	<i>i</i>	8.42183	+0.46246438	+0.24130727		
<i>P</i>	3.32	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1989 10 09	809	0.4-	0.2+	1998 05 24	704	0.5-	0.2+	1999 10 07	704	0.3-	0.2+
1989 10 09	809	0.2+	0.3+	1998 05 24	704	1.4-	0.3+	1999 10 10	327	0.2+	0.5+
1989 10 09	809	0.5+	0.3+	1999 10 01	120	0.2-	0.4-	1999 10 10	327	0.5+	0.4+

1989 10 10	809	0.2-	0.6-	1999 10 01	120	0.4-	1.0+	1999 10 10	327	0.5+	1.1+
1989 10 10	809	0.1+	0.6-	1999 10 03	120	1.0+	0.1-	1999 10 13	327	0.3+	0.0
1989 10 10	809	0.4+	0.6-	1999 10 03	120	1.0-	0.0	1999 10 13	327	1.1-	0.1-
1998 05 22	704	0.7+	1.1-	1999 10 04	704	0.1-	0.4+	1999 10 13	327	0.1-	0.0
1998 05 22	704	(0.1-	2.1+)	1999 10 04	704	0.2-	0.4+	1999 10 14	327	0.4-	0.1+
1998 05 22	704	1.3-	0.7+	1999 10 04	704	0.2+	0.2-	1999 10 14	327	0.4-	0.0
1998 05 22	704	0.8+	0.6-	1999 10 04	704	0.4+	0.6-	1999 10 14	327	0.4-	0.3+
1998 05 22	704	0.1+	0.7+	1999 10 04	704	0.1+	0.7-	1999 10 19	120	0.2+	0.2-
1998 05 24	704	0.9+	0.8-	1999 10 07	704	0.4+	0.3-	1999 10 19	120	0.0	0.3-
1998 05 24	704	(2.4+	2.4-)	1999 10 07	704	0.5+	0.3-				
1998 05 24	704	0.9+	0.6+	1999 10 07	704	0.2-	0.0				

1999 TR₁ = 1994 GD₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	306.08765		(2000.0)	P		Q	
<i>n</i>	0.27562724	ω	225.95630	+0.41221216	-0.91034290		
<i>a</i>	2.3384134	Ω	199.79064	+0.86392943	+0.40339551		
<i>e</i>	0.0852206	<i>i</i>	6.24594	+0.28932173	+0.09245472		
<i>P</i>	3.58	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1994 04 11	691	0.1-	0.1-	1999 10 02	703	0.5-	0.2-	1999 10 04	704	1.0+	0.0
1994 04 11	691	0.1+	0.1-	1999 10 02	703	0.3+	0.5+	1999 10 07	704	0.1+	0.2-
1994 04 11	691	0.2-	0.2-	1999 10 02	703	0.6-	0.1+	1999 10 07	704	0.4+	0.5-
1994 04 16	691	0.4+	0.8+	1999 10 02	120	0.7-	0.2+	1999 10 07	704	0.1-	0.7-
1994 04 16	691	0.2+	0.9+	1999 10 03	120	0.1-	0.3-	1999 10 07	704	0.3+	0.1-
1994 04 16	691	0.2+	0.8+	1999 10 04	704	0.4+	0.3-	1999 10 16	120	0.8-	0.0
1999 10 01	120	0.2-	0.2-	1999 10 04	704	0.3-	0.3-	1999 10 16	120	0.1-	0.4+
1999 10 01	120	0.5+	0.1-	1999 10 04	704	0.6-	0.2+	1999 10 19	120	0.3-	0.4+
1999 10 02	703	0.9+	0.8+	1999 10 04	704	1.8-	1.1+	1999 10 19	120	1.7+	1.0+

1999 TS₁ = 1998 HS₁₂₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	38.50370		(2000.0)	P		Q	
<i>n</i>	0.28410260	ω	112.99308	+0.67121646	+0.74116918		
<i>a</i>	2.2916726	Ω	199.18275	-0.69245974	+0.62131954		
<i>e</i>	0.1362218	<i>i</i>	2.03927	-0.26451459	+0.25422486		
<i>P</i>	3.47	<i>H</i>	15.3	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 04 18	704	1.0+	0.5-	1999 10 01	120	0.6+	0.3+	1999 10 04	704	0.4+	0.1-
1998 04 18	704	0.2+	0.5+	1999 10 01	120	0.3-	1.8-	1999 10 04	704	0.1+	0.2-
1998 04 18	704	0.4+	0.4-	1999 10 02	703	0.9-	0.3+	1999 10 07	704	0.1+	0.4-
1998 04 18	704	0.3-	0.7+	1999 10 02	703	1.5-	0.5+	1999 10 07	704	0.5+	0.3-
1998 04 18	704	1.2-	0.2-	1999 10 02	703	0.1+	0.3+	1999 10 07	704	0.4+	0.3-
1998 04 22	704	0.2-	0.3-	1999 10 02	703	0.7-	0.1+	1999 10 07	704	1.6+	0.4-
1998 04 22	704	0.2-	0.5+	1999 10 02	120	0.5-	0.3+	1999 10 16	120	0.6-	0.6-
1998 04 22	704	0.7+	1.7-	1999 10 03	120	1.7+	0.1-	1999 10 16	120	0.6-	0.2+
1998 04 22	704	0.0	0.3+	1999 10 04	704	0.0	0.4+	1999 10 19	120	0.0	0.1-
1998 04 22	704	0.8-	0.1-	1999 10 04	704	0.1-	0.5+	1999 10 19	120	0.0	0.4+

1999 TD₂ = 1998 GG

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	288.68718		(2000.0)	P		Q	
<i>n</i>	0.36754918	ω	31.95787	+0.32814679	-0.91390256		
<i>a</i>	1.9301560	Ω	40.34708	+0.77023037	+0.11241273		
<i>e</i>	0.0919023	<i>i</i>	21.65998	+0.54686823	+0.39005831		
<i>P</i>	2.68	<i>H</i>	15.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 04 02	704	0.2+	0.2-	1999 09 30	704	0.7+	0.3-	1999 10 10	678	0.2+	0.9+
1998 04 02	704	0.5-	0.5+	1999 09 30	699	0.8-	0.7+	1999 10 10	678	0.6-	0.6-
1998 04 02	704	0.2-	0.6-	1999 09 30	704	0.3+	0.1-	1999 10 14	678	0.7-	0.0
1998 04 03	704	0.3+	0.7-	1999 09 30	699	0.0	0.1+	1999 10 14	678	0.4-	0.1+
1998 04 03	704	0.3+	0.6+	1999 10 02	678	0.6-	1.5-	1999 10 14	678	0.9-	1.0+

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1998 04 03	704	0.5−	0.7+	1999 10 02	678	0.1+	0.4−	1999 10 14	678	0.8−	0.8+
1998 04 03	704	0.4+	0.4−	1999 10 03	678	0.3−	0.9+	1999 10 16	678	1.1−	0.9−
1998 04 03	704	0.0	0.1+	1999 10 03	678	1.4−	0.4−	1999 10 16	678	0.4+	0.5−
1999 09 13	704	0.2+	0.2−	1999 10 04	678	1.0+	0.0	1999 10 16	704	0.1+	0.1−
1999 09 13	704	0.0	0.3−	1999 10 04	678	1.0+	0.0	1999 10 16	678	0.5+	0.2−
1999 09 13	704	0.3−	0.4+	1999 10 04	678	0.0	0.7−	1999 10 16	704	0.2+	0.4−
1999 09 30	704	0.3+	0.7−	1999 10 04	678	0.4+	0.1+	1999 10 16	704	0.3+	0.4−
1999 09 30	704	0.3−	0.1+	1999 10 08	678	0.1−	0.2+	1999 10 16	704	0.5+	0.1+
1999 09 30	699	0.5−	0.5+	1999 10 08	678	0.8+	0.5+	1999 10 16	704	0.3+	0.2−
1999 09 30	704	0.2+	0.4+	1999 10 08	678	1.1+	1.0+				

1999 TE₂ = 1998 HZ₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	22.63778		(2000.0)	P	Q
<i>n</i>	0.28126084	ω	291.41532	+0.89947403	+0.43321209
<i>a</i>	2.3070829	Ω	42.96892	−0.36336658	+0.81424895
<i>e</i>	0.1596635	<i>i</i>	4.81534	−0.24271631	+0.38642715
<i>P</i>	3.50	<i>H</i>	15.1	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1998 04 21	704	0.4−	0.3−	1999 10 01	703	0.8−	0.1+	1999 10 15	678	0.7+	1.8+
1998 04 21	704	2.1+	0.2−	1999 10 01	703	0.0	0.3−	1999 10 15	678	0.1−	0.5−
1998 04 21	704	0.7+	0.0	1999 10 01	703	0.8−	0.5+	1999 10 15	678	1.1−	0.1+
1998 04 21	704	0.2+	1.2−	1999 10 01	703	0.1−	0.6+	1999 10 16	120	0.4+	0.0
1998 04 21	704	0.9+	0.2+	1999 10 02	678	0.5+	1.8−	1999 10 16	120	0.0	0.2+
1998 04 22	704	0.6−	0.3−	1999 10 02	678	0.3+	1.1−	1999 10 20	120	2.3+	1.2−
1998 04 22	704	0.7−	1.3+	1999 10 03	678	1.4−	1.0+	1999 10 20	120	1.5−	0.6+
1998 04 22	704	0.9−	0.9−	1999 10 03	678	1.3+	0.4+				
1998 04 22	704	0.9−	2.1+	1999 10 03	678	0.1+	0.1+				

1999 TG₂ = 1997 EJ₅₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	188.03897		(2000.0)	P	Q
<i>n</i>	0.21113921	ω	182.36376	−0.99963469	+0.02693298
<i>a</i>	2.7931234	Ω	359.16943	−0.02152922	−0.84401805
<i>e</i>	0.0827977	<i>i</i>	8.96551	−0.01633956	−0.53563807
<i>P</i>	4.67	<i>H</i>	12.5	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1997 03 08	809	0.4+	0.4−	1999 10 02	678	0.6−	0.0	1999 10 04	704	0.7+	0.2−
1997 03 08	809	0.1+	0.7−	1999 10 02	678	0.2−	0.4+	1999 10 07	704	0.3+	0.3−
1997 03 08	809	0.1−	0.4−	1999 10 02	678	0.4−	0.2−	1999 10 07	704	0.3+	0.2−
1997 03 09	809	0.1−	0.9+	1999 10 03	678	0.1+	0.1−	1999 10 07	704	0.4+	1.9−
1997 03 09	809	0.1−	0.2+	1999 10 03	678	0.3+	0.0	1999 10 07	704	1.1−	0.3−
1997 03 09	809	0.2−	0.5+	1999 10 03	678	0.2+	0.3+	1999 10 10	678	0.1−	0.0
1999 10 01	703	0.0	0.6+	1999 10 04	704	0.2+	0.0	1999 10 10	678	0.3+	0.2+
1999 10 01	703	0.5−	0.2+	1999 10 04	704	0.0	0.4−	1999 10 14	678	0.3−	0.3+
1999 10 01	703	0.1−	0.4+	1999 10 04	704	0.2+	0.0	1999 10 14	678	0.0	0.5+
1999 10 01	703	0.3+	0.4+	1999 10 04	704	0.0	0.0				

1999 TH₂ = 1993 FB₇₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	0.14712		(2000.0)	P	Q
<i>n</i>	0.22581777	ω	115.71145	+0.99827248	+0.03082380
<i>a</i>	2.6707340	Ω	242.55728	−0.04731289	+0.92649809
<i>e</i>	0.1786786	<i>i</i>	3.23101	+0.03483609	+0.37503491
<i>P</i>	4.36	<i>H</i>	14.9	<i>G</i> 0.15	<i>U</i> 6

Residuals in seconds of arc

1993 03 21	809	0.4−	0.2−	1999 10 03	678	(3.3+	6.9−)	1999 10 14	678	0.7+	0.4−
1993 03 22	809	0.4+	0.0	1999 10 04	704	0.6−	1.6+	1999 10 16	678	0.6−	0.4+
1999 10 01	703	0.9−	2.7+	1999 10 04	704	0.5+	1.0+	1999 10 16	678	1.1−	0.7−
1999 10 01	703	1.6−	2.6+	1999 10 04	704	0.4−	1.7+	1999 10 16	678	0.4+	0.2+
1999 10 01	703	0.6−	2.1+	1999 10 04	704	0.4+	1.8+	1999 10 19	678	0.1+	0.7+
1999 10 01	703	1.1−	2.2+	1999 10 04	704	0.5+	1.9+	1999 10 19	678	1.1+	0.3−

1999 10 02	678	0.0	2.9−	1999 10 06	678	0.5+	1.6+	1999 10 19	678	1.0+	0.3−
1999 10 02	678	1.6−	0.9−	1999 10 06	678	1.4−	0.6+				
1999 10 03	678	(3.7+	9.9−)	1999 10 14	678	2.3−	1.0+				

1999 TN₂ = 1994 NC₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	333.53556		(2000.0)	P	Q
<i>n</i>	0.22731670	ω	286.15513	+0.81101292	−0.53773674
<i>a</i>	2.6589805	Ω	106.90868	+0.58502630	+0.74443823
<i>e</i>	0.1956461	<i>i</i>	13.93612	+0.00150459	+0.39579151
<i>P</i>	4.34	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1994 07 08	809	0.8−	0.2+	1999 09 30	704	0.3+	0.5+	1999 10 03	678	0.5+	0.2+
1994 07 08	809	0.2−	0.4+	1999 09 30	699	0.1+	0.3+	1999 10 03	678	0.3+	0.4−
1994 07 08	809	0.3+	0.2+	1999 09 30	704	0.1+	0.3−	1999 10 10	678	1.1+	1.9−
1994 07 09	809	0.3−	0.2−	1999 09 30	704	0.3−	0.1−	1999 10 10	678	0.3+	0.4−
1994 07 09	809	0.2+	0.2−	1999 09 30	704	0.3+	1.1−	1999 10 14	678	0.2−	0.3+
1994 07 09	809	0.9+	0.3−	1999 09 30	704	0.1+	0.2+	1999 10 14	678	0.6−	1.2+
1999 09 30	699	0.3+	0.3+	1999 10 02	678	2.4−	0.7+				
1999 09 30	699	0.8+	0.3+	1999 10 02	678	0.8−	0.3+				

1999 TP₂ = 1998 GG₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	50.82705		(2000.0)	P	Q
<i>n</i>	0.27289170	ω	207.64277	+0.35278190	+0.91020206
<i>a</i>	2.3540146	Ω	83.69734	−0.81316335	+0.41294698
<i>e</i>	0.1605779	<i>i</i>	12.60874	−0.46293660	−0.03173337
<i>P</i>	3.61	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 02	704	0.2−	0.5+	1999 09 30	704	0.1−	0.1−	1999 10 03	678	0.4+	0.1−
1998 04 02	704	2.0+	1.4+	1999 09 30	699	0.6−	0.7+	1999 10 03	678	0.0	1.0−
1998 04 02	704	3.5−	1.2−	1999 09 30	704	0.9+	0.4−	1999 10 03	678	0.2−	0.2−
1998 04 03	704	0.6−	0.4+	1999 09 30	704	0.2+	0.2−	1999 10 10	678	0.9+	0.5−
1998 04 03	704	0.3+	0.3−	1999 09 30	699	0.4+	0.1+	1999 10 10	678	0.7−	0.5−
1998 04 03	704	0.6+	0.1+	1999 09 30	704	0.8+	0.3+	1999 10 14	678	0.1+	0.6+
1998 04 03	704	1.5+	0.6+	1999 09 30	699	0.1−	0.4+	1999 10 14	678	0.2−	0.1+
1998 04 03	704	0.1−	1.4−	1999 10 02	678	1.2−	1.7+				
1999 09 30	704	0.2−	0.8−	1999 10 02	678	0.4−	0.2−				

1999 TO₃ = 1998 HE₆₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	16.29931		(2000.0)	P	Q
<i>n</i>	0.26223235	ω	58.79898	+0.91514929	+0.40276910
<i>a</i>	2.4173816	Ω	277.44506	−0.37534430	+0.83626455
<i>e</i>	0.1726177	<i>i</i>	0.96490	−0.14703206	+0.37207346
<i>P</i>	3.76	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 21	704	1.2+	1.0+	1999 10 03	426	0.1+	1.0−	1999 10 06	704	0.3+	0.7+
1998 04 21	704	1.3−	0.6−	1999 10 04	704	1.1−	0.8+	1999 10 06	704	0.1−	0.6+
1998 04 21	704	1.8−	0.4−	1999 10 04	704	0.1+	0.3+	1999 10 07	704	1.9+	0.2−
1998 04 21	704	2.4+	0.4+	1999 10 04	704	1.1−	0.1+	1999 10 07	704	0.2+	0.3−
1998 04 21	704	1.8+	3.2+	1999 10 04	704	1.8−	0.8+	1999 10 07	704	0.0	1.0+
1998 04 22	704	0.8+	0.6−	1999 10 04	704	0.7−	0.7+	1999 10 07	704	0.4+	1.1−
1998 04 22	704	2.1−	0.5−	1999 10 04	426	0.2+	0.2+	1999 10 07	704	0.6+	0.4−
1998 04 22	704	2.1−	0.3−	1999 10 04	426	0.1−	0.1+	1999 10 18	849	0.4−	0.0
1998 04 22	704	1.1+	0.5−	1999 10 04	426	0.7−	0.1+	1999 10 18	849	0.6+	0.2−
1998 04 22	704	0.2−	2.1−	1999 10 06	704	0.6+	0.7+	1999 10 18	849	0.0	0.1+
1999 10 03	426	0.0	1.5−	1999 10 06	704	0.4+	0.6+	1999 10 18	849	0.2−	1.4−
1999 10 03	426	0.9+	2.2−	1999 10 06	704	0.1+	0.9+				

1999 TW₃ = 1992 WO₉Id. G. V. Williams; 1999 GZ₁₈ = 1992 WO₉ (*MPC* 35351) is invalid

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	298.82900		(2000.0)	P	Q
<i>n</i>	0.26614582	ω	6.52706	+0.30599050	-0.94820065
<i>a</i>	2.3936259	Ω	65.68258	+0.86918486	+0.24165682
<i>e</i>	0.0931401	<i>i</i>	5.37445	+0.38844239	+0.20619774
<i>P</i>	3.70	<i>H</i>	14.3	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1992 11 28	675	0.2-	0.1-	1999 09 09	704	0.4+	0.4+	1999 10 02	704	0.1-	0.3-
1992 11 28	675	0.7+	0.3-	1999 09 09	704	0.4+	0.6-	1999 10 03	703	0.1-	0.5+
1992 12 01	675	0.8-	0.2+	1999 09 09	704	0.4+	0.3+	1999 10 03	703	0.1-	0.5+
1992 12 01	675	0.1+	0.7-	1999 09 09	704	0.1-	0.5+	1999 10 03	703	0.2-	0.2+
1994 05 14	691	0.5-	0.3-	1999 09 09	704	0.5+	0.2-	1999 10 03	703	0.3-	0.7+
1994 05 14	691	0.4+	0.4-	1999 09 09	704	0.2+	0.9-	1999 10 04	557	1.3-	0.5-
1994 05 14	691	0.2+	0.6-	1999 09 09	704	0.3+	0.3-	1999 10 04	557	0.9-	0.0
1998 06 24	704	0.9+	0.0	1999 09 09	704	1.1-	1.6-	1999 10 04	557	0.9-	0.1-
1998 06 24	704	1.7+	0.0	1999 09 09	704	0.8-	0.8-	1999 10 07	704	0.8+	0.6-
1998 06 24	704	0.2+	0.0	1999 10 02	557	0.0	0.3+	1999 10 07	704	0.2+	0.2-
1998 06 24	704	3.5-	0.0	1999 10 02	557	0.0	0.4+	1999 10 07	704	0.5+	0.3-
1999 09 08	699	0.1+	1.1+	1999 10 02	704	0.2-	0.2+	1999 10 07	704	0.1+	0.3+
1999 09 08	699	0.4+	1.1+	1999 10 02	704	0.3+	0.2+	1999 10 07	704	0.1+	0.7-
1999 09 08	699	0.5+	0.4-	1999 10 02	704	0.2+	0.4-	1999 10 14	557	0.3+	0.2+
1999 09 09	704	1.0+	0.4+	1999 10 02	704	0.0	0.1+	1999 10 14	557	0.3+	0.3+

1999 TO₄ = 1998 FG₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	290.19344		(2000.0)	P	Q
<i>n</i>	0.37345997	ω	56.22741	+0.41722668	-0.90676775
<i>a</i>	1.9097360	Ω	9.70572	+0.66796458	+0.26062403
<i>e</i>	0.0865638	<i>i</i>	21.13219	+0.61623471	+0.33143229
<i>P</i>	2.64	<i>H</i>	16.4	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 24	704	0.0	0.3-	1999 10 02	704	0.9+	0.4+	1999 10 07	704	0.5-	0.2+
1998 03 24	704	1.2+	0.7-	1999 10 02	704	0.5+	0.1-	1999 10 07	704	0.5+	0.9+
1998 03 24	704	1.3+	0.7-	1999 10 02	704	0.1+	0.3+	1999 10 07	704	0.1-	0.8+
1998 03 24	704	0.5+	1.0-	1999 10 02	704	0.6+	0.3+	1999 10 07	704	0.3-	0.8+
1998 03 25	704	1.8-	0.3-	1999 10 02	704	0.3+	0.1+	1999 10 07	704	0.7+	0.4+
1998 03 25	704	0.7+	1.0-	1999 10 05	704	0.2-	0.1+	1999 10 09	704	0.1-	0.4+
1998 03 25	704	0.6-	1.9+	1999 10 05	704	0.0	0.2-	1999 10 09	704	0.0	0.6-
1998 03 25	704	1.7-	1.0+	1999 10 05	704	0.0	0.4-	1999 10 09	704	0.1-	0.6-
1998 03 25	704	0.5+	1.2+	1999 10 05	704	0.1+	0.2-	1999 10 09	704	0.2-	0.2-
1999 09 14	704	0.3-	0.1+	1999 10 05	704	0.0	0.3-	1999 10 09	704	0.4-	0.3-
1999 09 14	704	0.2-	0.6-	1999 10 07	703	0.1-	0.3+	1999 10 15	704	0.1-	0.2-
1999 09 14	704	0.0	0.1+	1999 10 07	703	0.2+	0.4+	1999 10 15	704	0.1-	1.1-
1999 09 14	704	0.7-	0.1-	1999 10 07	703	0.1+	0.4+	1999 10 15	704	0.3-	0.9-
1999 09 14	704	0.2+	0.5-	1999 10 07	703	0.5-	0.3+				

1999 TJ₅ = 1998 HC₃₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	7.43677		(2000.0)	P	Q
<i>n</i>	0.30379084	ω	6.59740	+0.99444014	+0.10427184
<i>a</i>	2.1915578	Ω	347.38902	-0.09943050	+0.88380378
<i>e</i>	0.1721101	<i>i</i>	3.86142	-0.03467527	+0.45609019
<i>P</i>	3.24	<i>H</i>	15.2	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1998 03 25	704	0.1+	0.0	1998 04 21	704	1.7-	0.8+	1999 10 04	557	0.0	0.0
1998 03 25	704	0.3+	1.4+	1998 04 21	704	1.0+	0.7+	1999 10 04	557	0.0	0.1-
1998 03 25	704	1.2+	1.6-	1998 04 21	704	0.4+	0.1+	1999 10 04	557	0.3-	0.0
1998 03 25	704	0.8-	0.2-	1998 04 21	704	0.3-	0.3+	1999 10 07	557	0.3-	0.2+
1998 03 25	704	(4.3-	3.1-)	1998 04 21	704	(3.4-	1.3-)	1999 10 07	557	0.1-	0.4+
1998 03 29	704	1.0-	1.0+	1998 04 22	704	0.8-	0.4+	1999 10 07	704	0.0	0.0
1998 03 29	704	0.1+	0.7-	1998 04 22	704	(2.9-	0.5-)	1999 10 07	704	0.0	0.2+
1998 03 29	704	0.0	0.1+	1998 04 22	704	1.0+	1.9-	1999 10 07	704	0.5-	0.1-

1998 03 29	704	1.0+	0.9+	1998 04 22	704	0.9+	1.0+	1999 10 13	557	0.1-	0.4-
1998 03 29	704	0.1+	0.8-	1998 04 22	704	(6.3-	1.9-)	1999 10 13	557	0.0	0.2-
1998 04 20	704	0.9-	0.8-	1999 10 03	704	1.5+	1.0+	1999 10 13	557	0.1-	0.1-
1998 04 20	704	(1.3-	3.4+)	1999 10 03	704	0.0	0.8+	1999 10 13	557	0.1-	0.2-
1998 04 20	704	(0.2-	2.5+)	1999 10 03	704	0.1-	0.2-	1999 10 18	557	0.1+	0.3-
1998 04 20	704	(3.3-	1.3+)	1999 10 03	704	0.2-	0.1+				

1999 TK₅ = 1998 HF₆₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	37.75092		(2000.0)	P	Q
<i>n</i>	0.24151669	ω	97.99996	+0.63967333	+0.76026877
<i>a</i>	2.5537083	Ω	212.65924	-0.76160221	+0.60701287
<i>e</i>	0.2110427	<i>i</i>	12.10649	-0.10382723	+0.23135853
<i>P</i>	4.08	<i>H</i>	14.1	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 21	704	0.5+	0.3+	1999 09 18	699	0.6+	0.2-	1999 10 07	683	0.6+	0.1+
1998 04 21	704	0.5+	0.2-	1999 10 02	757	0.2+	0.7+	1999 10 07	704	0.0	0.1-
1998 04 21	704	0.5+	0.1-	1999 10 02	757	0.0	0.9+	1999 10 07	683	0.2+	0.3+
1998 04 21	704	0.1-	0.1+	1999 10 02	703	0.0	0.2-	1999 10 07	704	0.2-	0.3-
1998 04 21	704	0.0	0.3+	1999 10 02	703	0.1-	0.3-	1999 10 07	704	0.7-	0.0
1998 04 22	704	0.0	0.0	1999 10 02	703	0.3-	0.0	1999 10 07	683	0.5+	0.1+
1998 04 22	704	0.0	0.3+	1999 10 02	703	0.3+	0.0	1999 10 07	704	0.1-	0.1-
1998 04 22	704	1.1-	0.7+	1999 10 03	704	0.1-	0.3+	1999 10 07	704	0.4-	0.1+
1998 04 22	704	0.4-	1.5-	1999 10 03	704	0.9-	0.1+	1999 10 09	703	0.3-	0.1-
1998 04 22	704	(8.4-	0.3+)	1999 10 03	704	0.5-	0.0	1999 10 09	703	0.1-	0.6-
1999 09 12	703	0.3+	0.7+	1999 10 03	704	0.7-	0.2+	1999 10 09	703	0.3+	0.3-
1999 09 12	703	0.1-	0.3-	1999 10 03	704	0.2-	0.0	1999 10 09	703	0.2-	0.3-
1999 09 12	703	0.3-	0.4-	1999 10 06	757	0.2-	0.2+	1999 10 14	691	0.4+	0.4-
1999 09 12	703	0.4+	0.7-	1999 10 06	757	0.6-	0.2+	1999 10 14	691	0.4+	0.4-
1999 09 18	699	0.1-	0.2-	1999 10 07	757	0.4+	0.5+	1999 10 14	691	0.3+	0.4-
1999 09 18	699	0.0	0.2+	1999 10 07	757	1.3+	0.7+				

1999 TV₅ = 1974 SD₄ = 1998 KK₄₀

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	14.95325		(2000.0)	P	Q
<i>n</i>	0.23837308	ω	137.00356	+0.99112416	+0.02722595
<i>a</i>	2.5761111	Ω	221.97205	-0.06029257	+0.96440737
<i>e</i>	0.2080036	<i>i</i>	11.21956	+0.11848085	+0.26301552
<i>P</i>	4.13	<i>H</i>	13.8	<i>G</i> 0.15	<i>U</i> 4

Residuals in seconds of arc

1974 09 22	095	(1.7+	3.4-)	1998 05 24	704	0.5-	0.3-	1999 10 07	757	0.5-	0.9+
1974 09 25	095	0.1+	0.8-	1998 06 03	704	0.0	0.3-	1999 10 07	704	(3.2+	0.7+)
1998 05 22	704	0.8+	0.1-	1998 06 03	704	0.3-	0.8+	1999 10 07	704	(3.3+	0.1-)
1998 05 22	704	(1.1+	2.3+)	1998 06 03	704	0.3+	1.2+	1999 10 07	704	0.7+	1.5-
1998 05 22	704	0.1+	0.5+	1998 06 03	704	0.9-	0.2+	1999 10 11	327	0.3+	0.2+
1998 05 22	704	0.4+	0.8-	1999 10 03	704	0.6-	1.5+	1999 10 11	327	0.6+	0.1-
1998 05 22	704	(0.4-	2.5-)	1999 10 03	704	1.3+	0.2-	1999 10 11	327	0.2-	0.1+
1998 05 24	704	1.1+	0.8+	1999 10 03	704	0.4-	1.6-	1999 10 11	327	0.0	0.1-
1998 05 24	704	0.5-	0.3-	1999 10 06	757	0.4-	0.4+	1999 10 15	327	0.1+	0.1-
1998 05 24	704	0.1-	0.2-	1999 10 06	757	0.7-	0.9+	1999 10 15	327	0.0	0.0
1998 05 24	704	0.5-	0.6-	1999 10 07	757	0.0	1.5+	1999 10 15	327	0.2-	0.1-

1999 TZ₅ = 1998 FE₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	61.56715		(2000.0)	P	Q
<i>n</i>	0.30281676	ω	258.71686	+0.17359712	+0.98407885
<i>a</i>	2.1962551	Ω	21.39412	-0.85788647	+0.17011620
<i>e</i>	0.1912012	<i>i</i>	5.99783	-0.48362676	+0.05147122
<i>P</i>	3.25	<i>H</i>	15.5	<i>G</i> 0.15	<i>U</i> 5

Residuals in seconds of arc

1998 03 24	704	0.6+	1.2+</

1999 OCT. 26

1998 03 24	704	0.4−	1.8−	1999 10 02	703	0.3−	0.3+	1999 10 06	108	0.6+	1.4−
1998 03 24	704	0.9−	0.5+	1999 10 02	703	0.9−	0.4−	1999 10 06	108	0.8+	0.1+
1998 03 25	704	0.5−	1.2−	1999 10 02	703	0.2−	0.4+	1999 10 07	104	0.2+	0.2+
1998 03 25	704	0.5−	0.8+	1999 10 02	703	0.5+	0.4+	1999 10 07	104	0.3−	0.2−
1998 03 25	704	0.8+	0.0	1999 10 04	704	0.4−	0.1−	1999 10 07	104	0.0	0.3−
1998 03 25	704	1.4−	1.2−	1999 10 04	704	0.6+	0.1+	1999 10 16	120	0.5−	0.1−
1998 03 25	704	1.5+	1.1+	1999 10 04	704	0.8+	0.1+	1999 10 16	120	0.7−	0.1+
1998 03 26	704	(1.9+	2.4−)	1999 10 04	704	1.7+	1.0−	1999 10 19	120	0.7−	0.4−
1998 03 26	704	0.4+	0.5+	1999 10 06	108	(0.2+	3.0−)	1999 10 19	120	1.2+	0.6+
1998 03 26	704	(3.9−	0.9−)	1999 10 06	104	0.3−	1.0+				

1999 TC₆ = 1998 HR₁₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	53.21562		(2000.0)	P	Q
n	0.26330061	ω	161.63054	+0.42935497	+0.89846833
a	2.4108386	Ω	133.67945	−0.84369418	+0.43525055
e	0.1163711	i	7.28446	−0.32223353	+0.05754671
P	3.74	H	14.9	G 0.15	U 4

Residuals in seconds of arc

1998 04 23	704	0.0	0.3+	1999 09 14	704	0.2+	0.1+	1999 10 10	734	0.1−	0.4+
1998 04 23	704	0.7−	1.6−	1999 10 06	734	0.0	0.3+	1999 10 10	734	0.6−	0.7+
1998 04 23	704	0.9+	0.7+	1999 10 06	734	0.1+	0.0	1999 10 10	734	0.4−	0.6+
1998 04 23	704	0.7−	0.7−	1999 10 06	734	0.1+	0.0	1999 10 10	734	0.3−	0.7+
1998 04 23	704	(2.9−	0.7+)	1999 10 06	734	1.1+	0.2−	1999 10 12	734	0.4+	0.1−
1998 04 24	704	0.8−	0.0	1999 10 06	734	0.8+	0.4+	1999 10 12	734	0.1−	0.1−
1998 04 24	704	0.4+	1.1−	1999 10 06	734	0.9+	0.3−	1999 10 12	734	0.7−	1.0+
1998 04 24	704	0.0	1.3+	1999 10 07	734	0.1−	0.3−	1999 10 17	734	0.0	0.5−
1998 04 24	704	1.1+	1.1+	1999 10 07	734	1.0+	0.9−	1999 10 17	734	0.2−	0.6−
1999 09 14	704	0.2+	0.4−	1999 10 07	734	0.2−	0.1−	1999 10 17	734	0.1−	0.2+
1999 09 14	704	0.5−	0.1−	1999 10 07	734	0.1−	0.0	1999 10 17	734	0.0	0.4−
1999 09 14	704	0.7−	0.1+	1999 10 07	734	0.8−	0.5−				

1999 TE₆ = 1998 LM₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	282.96175		(2000.0)	P	Q
n	0.23640159	ω	254.80660	+0.15072359	−0.98842511
a	2.5904136	Ω	186.59753	+0.95488035	+0.15008569
e	0.0185951	i	8.64416	+0.25590217	+0.02213780
P	4.17	H	14.5	G 0.15	U 3

Residuals in seconds of arc

1997 01 15	910	0.1−	0.1−	1999 10 04	704	0.3−	0.0	1999 10 07	704	1.2+	0.1−
1997 01 15	910	0.1−	0.2−	1999 10 04	704	0.7+	0.0	1999 10 07	704	0.4+	0.2−
1997 01 15	910	0.1+	0.0	1999 10 04	704	0.3+	0.9−	1999 10 07	118	0.5−	0.1−
1998 06 01	809	0.2+	0.8+	1999 10 06	118	0.2−	0.4+	1999 10 07	118	0.1−	0.4+
1998 06 01	809	0.3−	0.8+	1999 10 06	118	0.1+	0.2+	1999 10 07	118	0.9−	0.2+
1998 06 01	809	0.1−	0.5+	1999 10 06	118	0.3+	0.1−	1999 10 08	118	0.1+	0.4+
1998 06 02	809	0.8−	0.9+	1999 10 07	704	0.1−	0.1+	1999 10 08	118	0.3+	0.3+
1998 06 02	809	0.5+	0.2−	1999 10 07	704	0.7+	0.1+	1999 10 12	118	0.4−	0.4−
1998 06 02	809	0.2−	0.1−	1999 10 07	704	0.2−	0.2−	1999 10 12	118	0.3−	0.4−
1998 06 19	704	1.4+	0.3+	1999 10 07	704	0.0	0.3+	1999 10 13	118	0.6−	0.3+
1998 06 19	704	0.3+	0.5−	1999 10 07	704	0.4+	0.3+	1999 10 13	118	0.1−	0.0
1998 06 19	704	0.3−	1.2−	1999 10 07	704	0.5+	0.1+	1999 10 13	118	0.7−	0.3−
1998 06 19	704	0.8−	1.3−	1999 10 07	704	0.7+	0.6+	1999 10 15	118	0.8−	0.1+
1999 10 02	703	0.5−	1.0−	1999 10 07	704	0.9+	0.5−	1999 10 15	118	0.4−	0.2+
1999 10 02	703	0.9−	0.1+	1999 10 07	704	1.9+	0.1−	1999 10 15	118	1.3−	0.6+
1999 10 02	703	0.4−	0.1+	1999 10 07	704	0.1+	0.4−	1999 10 17	118	0.3−	0.3+
1999 10 02	703	0.7−	0.5−	1999 10 07	704	0.4+	0.2−	1999 10 17	118	0.9−	0.6−
1999 10 04	704	0.5+	0.2+	1999 10 07	704	0.4+	0.4+	1999 10 19	118	0.1−	0.8+
1999 10 04	704	0.2−	0.1−	1999 10 07	704	0.9+	0.7−	1999 10 19	118	0.0	0.3+

M.P.C. 36485

1999 TH₆ = 1998 HS₈₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	149.72904		(2000.0)	P	Q
n	0.29669460	ω	165.40503	-0.92476101	$+0.37450368$
a	2.2263646	Ω	36.81724	-0.35947198	-0.80140740
e	0.1042354	i	6.47298	-0.12488785	-0.46636163
P	3.32	H	15.3	G 0.15	U 4

Residuals in seconds of arc

1998 04 21	704	0.3+	0.1−	1998 05 01	704	0.5−	1.2+	1999 10 07	159	0.7−	0.4+
1998 04 21	704	1.0+	0.3−	1998 05 16	704	1.0+	0.2+	1999 10 07	159	0.1+	0.1+
1998 04 21	704	0.1−	0.3+	1998 05 16	704	0.6+	0.3+	1999 10 07	159	0.1+	0.6+
1998 04 21	704	0.6−	0.4+	1998 05 16	704	0.2+	0.4−	1999 10 07	159	0.1+	0.1−
1998 04 21	704	0.4−	1.1+	1998 05 16	704	0.9+	1.1−	1999 10 07	159	0.2+	0.0
1998 04 22	704	0.2−	0.1+	1998 05 16	704	1.1−	0.7−	1999 10 07	159	0.9+	0.2+
1998 04 22	704	0.4+	0.7+	1998 05 25	699	0.5+	0.4+	1999 10 07	159	0.0	0.1+
1998 04 22	704	0.3−	0.4+	1998 05 25	699	1.2−	0.3+	1999 10 07	159	0.5−	0.2+
1998 04 22	704	0.7−	1.7+	1998 05 25	699	0.5−	1.0+	1999 10 07	159	0.3−	0.3+
1998 04 22	704	0.4−	0.0	1999 09 14	704	0.2−	1.1−	1999 10 07	159	0.1−	0.0
1998 04 30	699	0.5+	0.2−	1999 09 14	704	0.4−	0.7−	1999 10 07	704	0.6−	0.0
1998 04 30	699	(2.4−	0.7−)	1999 09 14	704	1.0+	0.1−	1999 10 07	704	1.3−	0.1−
1998 04 30	699	0.2−	0.0	1999 09 14	704	0.5−	0.6−	1999 10 07	704	0.7+	0.5−
1998 04 30	566	0.1+	1.3−	1999 10 02	159	0.6+	0.5+	1999 10 07	704	1.0−	0.2−
1998 04 30	566	0.4−	1.4−	1999 10 02	159	0.4+	0.4+	1999 10 07	704	0.2−	0.8−
1998 04 30	566	0.0	1.4−	1999 10 02	159	1.1+	0.1−	1999 10 10	159	0.8−	0.4+
1998 05 01	704	0.1+	0.1+	1999 10 02	159	0.1+	0.2+	1999 10 10	159	1.3+	0.4+
1998 05 01	704	0.0	0.4+	1999 10 02	159	1.7+	0.6+	1999 10 10	159	0.9−	0.1+
1998 05 01	699	0.6−	0.6−	1999 10 02	704	0.7−	0.0	1999 10 10	159	0.7−	0.4−
1998 05 01	704	0.3+	0.2+	1999 10 02	704	0.7−	0.1−	1999 10 10	159	0.1−	0.5+
1998 05 01	699	0.8+	0.5−	1999 10 02	704	1.0+	1.0−	1999 10 10	159	0.4−	0.7+
1998 05 01	704	0.4+	0.2+	1999 10 02	704	0.9+	0.1−	1999 10 10	159	0.5−	0.4+
1998 05 01	699	0.3+	0.3−	1999 10 02	704	0.4−	0.0	1999 10 10	159	0.2+	0.5+

1999 TJ₆ = 1961 CY = 1982 VC₈ = 1990 FY₄ = 1996 FS₁₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	291.43189		(2000.0)	P	Q
n	0.17117862	ω	57.00133	-0.28952264	-0.95697129
a	3.2124500	Ω	49.84062	$+0.86942837$	-0.27147448
e	0.1580344	i	1.46655	$+0.40033855$	-0.10250633
P	5.76	H	13.3	G 0.15	U 2

Residuals in seconds of arc

1961 02 15	033	2.0+	0.1−	1996 03 24	809	0.9−	0.1−	1999 10 03	704	0.4+	0.1−
1961 02 15	033	0.0	0.3+	1996 03 26	809	0.0	0.5+	1999 10 03	704	0.3−	0.5−
1961 02 17	033	4.4−	1.4+	1996 03 26	809	0.6−	0.3+	1999 10 08	120	1.2+	0.4+
1961 02 17	033	2.5+	0.4+	1996 03 26	809	0.7+	0.3+	1999 10 08	120	0.3+	0.1+
1982 11 09	095	0.8+	1.0−	1999 10 02	120	0.3−	0.7+	1999 10 17	120	0.6−	0.2−
1990 03 27	675	0.7−	2.3−	1999 10 02	120	0.4−	0.1−	1999 10 17	120	0.1+	0.0
1990 03 27	675	0.1+	2.2−	1999 10 03	704	0.2−	0.1+	1999 10 20	120	1.1−	0.1−
1996 03 24	809	1.8+	0.7+	1999 10 03	704	0.2−	0.4−	1999 10 20	120	1.0+	0.1+
1996 03 24	809	1.5−	0.0	1999 10 03	704	0.2+	0.9−				

1999 TV₆ = 1977 RG₆ = 1988 TM₂ = 1992 WX₈ = 1998 MT₄₅

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	307.04181		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.27011667	ω	232.43955	+0.32554697	-0.94531743
a	2.3701098	Ω	198.59145	+0.88595498	+0.31230412
e	0.1462182	i	3.57008	+0.33030734	+0.09402708
P	3.65	H	13.8	G 0.15	U 2

Residuals in seconds of arc

1977 09 09	095	0.2+	1.2−	1998 06 26	704	0.6−	1.4−	1999 10 07	704	0.1+	0.3+
1988 10 04	046	(4.2+	0.5−)	1998 06 26	704	(2.9−	1.5−)	1999 10 07	704	0.0	0.5+
1988 10 04	046	(1.4+	2.6−)	1998 06 26	704	0.9−	1.1−	1999 10 07	704	0.3+	0.9+
1988 10 07	675	0.2+	1.2−	1999 10 02	703	0.1−	0.1+	1999 10 07	704	0.1+	0.4+

1988 10 07	675	0.9+	0.6−	1999 10 02	703	0.3+	0.2+	1999 10 07	120	0.1+	0.1−
1988 10 11	046	(5.1−	1.0+)	1999 10 02	703	0.2−	0.5+	1999 10 07	120	0.0	0.1−
1988 10 11	046	(2.6−	0.0)	1999 10 02	703	0.1−	0.4+	1999 10 08	120	0.2−	0.1−
1988 10 14	046	(7.0+	2.4+)	1999 10 04	704	0.0	0.1+	1999 10 08	120	0.2−	0.3+
1988 10 14	046	(7.3+	2.3+)	1999 10 04	704	0.4−	0.2+	1999 10 09	703	0.0	0.0
1992 11 26	675	0.5−	0.3−	1999 10 04	704	0.5−	0.3−	1999 10 09	703	0.1+	0.2+
1992 11 26	675	0.7+	1.6−	1999 10 04	704	0.3−	0.2−	1999 10 09	703	0.1−	0.3+
1992 11 28	675	0.3+	0.6−	1999 10 04	704	0.9−	0.5−	1999 10 09	703	0.1+	0.2+
1992 11 28	675	0.7−	0.5−	1999 10 06	120	0.1+	0.1−	1999 10 11	595	0.3−	0.2−
1998 06 24	704	0.3+	1.7−	1999 10 06	120	0.5+	0.2+	1999 10 11	595	0.2−	0.3−
1998 06 24	704	1.1+	1.7+	1999 10 07	704	0.3+	0.3+	1999 10 11	595	0.2+	0.2+

1999 TX₆ = 1997 GO₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	309.75755		(2000.0)	P	Q
<i>n</i>	0.22695692	ω	49.55335	+0.28500553	−0.95358273
<i>a</i>	2.6617899	Ω	24.41427	+0.79275823	+0.17748741
<i>e</i>	0.1706461	<i>i</i>	13.60413	+0.53880074	+0.24326571
<i>P</i>	4.34	<i>H</i>	14.2	<i>G</i>	0.15
				<i>U</i>	6

Residuals in seconds of arc

1997 04 07	684	0.2+	0.5−	1999 10 04	704	0.0	1.1−	1999 10 07	120	0.8+	0.6+
1997 04 07	684	0.2+	0.2−	1999 10 06	120	0.3+	0.0	1999 10 08	120	1.1−	0.0
1997 04 08	684	0.1+	0.2+	1999 10 06	120	0.5−	0.2+	1999 10 08	120	1.0+	1.4−
1997 04 08	684	0.1+	0.6+	1999 10 07	704	0.4−	0.4+	1999 10 09	703	0.6+	0.3+
1997 04 08	684	0.1−	0.4+	1999 10 07	704	0.6−	0.4+	1999 10 09	703	0.1+	0.1+
1999 10 04	704	0.6+	0.9+	1999 10 07	704	0.6−	0.0	1999 10 09	703	0.2−	0.8+
1999 10 04	704	0.3+	0.8−	1999 10 07	704	0.5−	0.6+	1999 10 09	703	0.1−	0.1+
1999 10 04	704	0.2+	0.6−	1999 10 07	704	0.2−	0.1−	1999 10 17	120	0.5+	0.4+
1999 10 04	704	0.2+	0.1+	1999 10 07	120	0.7−	0.3−	1999 10 17	120	0.1+	0.1+

1999 TQ₇ = 2099 T-1

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	359.06665		(2000.0)	P	Q
<i>n</i>	0.36068120	ω	146.67786	+0.83754770	+0.54636228
<i>a</i>	1.9545812	Ω	180.22059	−0.54625435	+0.83732302
<i>e</i>	0.0775782	<i>i</i>	22.16286	−0.01095612	+0.01945288
<i>P</i>	2.73	<i>H</i>	15.6	<i>G</i>	0.15
				<i>U</i>	3

Residuals in seconds of arc

1971 03 25	675	1.5+	1.2−	1999 09 16	704	0.2−	0.2−	1999 10 08	704	0.1+	0.5−
1971 03 25	675	0.6−	0.6+	1999 09 16	704	0.2+	0.3−	1999 10 08	704	0.2−	0.8−
1971 03 26	675	0.1−	0.5−	1999 09 16	704	0.8−	0.4+	1999 10 08	704	0.3+	0.2−
1971 03 27	675	0.8−	1.0+	1999 10 02	703	0.4+	0.1+	1999 10 08	704	0.1+	0.6−
1999 08 11	704	0.4−	0.2−	1999 10 02	703	0.5−	1.0+	1999 10 08	704	0.8+	0.0
1999 08 11	704	0.7+	0.7+	1999 10 02	703	0.1+	0.5+	1999 10 13	704	0.1−	0.3−
1999 08 11	704	0.5−	0.0	1999 10 02	703	0.1−	0.3+	1999 10 13	704	0.2−	0.0
1999 08 11	704	0.6+	0.1−	1999 10 02	704	0.5−	0.8+	1999 10 13	704	0.1−	0.0
1999 08 11	704	0.3−	0.2−	1999 10 02	704	0.6−	0.5−	1999 10 13	704	0.1−	0.1−
1999 09 08	699	0.5+	0.2+	1999 10 02	704	0.0	0.0	1999 10 13	704	0.0	0.1+
1999 09 08	699	1.0+	0.3−	1999 10 02	704	1.4−	0.1+	1999 10 15	704	0.0	0.1−
1999 09 08	699	0.3−	0.4+	1999 10 07	683	0.3−	1.0+	1999 10 15	704	0.8+	0.1+
1999 09 16	704	0.2+	0.2−	1999 10 07	683	1.3+	0.2−	1999 10 15	704	0.7+	0.7+
1999 09 16	704	0.0	0.8−	1999 10 07	683	1.0−	0.7−				

1999 TZ₇ = 1998 HT₈₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	144.08245		(2000.0)	P	Q
<i>n</i>	0.29457624	ω	110.89987	−0.88180637	+0.46690304
<i>a</i>	2.2370254	Ω	96.98511	−0.45375816	−0.80153744
<i>e</i>	0.0484094	<i>i</i>	3.84016	−0.12853426	−0.37354958
<i>P</i>	3.35	<i>H</i>	15.2	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 21	704	0.4−	0.4−	1998 05 16	704	0.0	0.2+	1999 10 05	703	0.3+	0.7−
1998 04 21	704	0.2−	0.1+	1998 05 16	704	0.7−	1.1−	1999 10 06	106	1.2−	1.8+
1998 04 21	704	1.0−	0.2−	1998 05 16	704	1.2−	1.3+	1999 10 06	106	0.5−	0.5+
1998 04 21	704	1.4−	0.2+	1998 05 16	704	0.9−	0.4+	1999 10 06	106	0.6−	0.3−
1998 04 21	704	0.1+	1.2+	1998 05 25	699	0.9+	0.8+	1999 10 07	703	0.2+	0.6−
1998 04 22	704	0.8+	0.2−	1998 05 25	699	1.8+	0.4−	1999 10 07	703	0.1−	0.2+
1998 04 22	704	(2.6+	1.9−)	1998 05 25	699	0.9+	0.1+	1999 10 07	703	0.7−	0.2−
1998 04 22	704	0.7+	0.5−	1999 10 02	704	0.5+	0.2−	1999 10 07	703	0.1−	0.1−
1998 04 22	704	0.2+	0.4−	1999 10 02	704	0.9−	0.6+	1999 10 07	704	1.0+	0.1+
1998 04 22	704	0.2+	0.8−	1999 10 02	704	0.7+	0.6−	1999 10 07	704	1.0+	1.2−
1998 05 01	704	0.2−	0.5−	1999 10 02	704	1.7+	0.3+	1999 10 07	704	0.7−	0.1+
1998 05 01	704	0.3+	0.1+	1999 10 02	704	0.4−	0.3+	1999 10 07	106	0.0	0.4−
1998 05 01	704	0.8+	0.2−	1999 10 05	703	0.2−	0.4−	1999 10 07	106	0.7−	0.6−
1998 05 01	704	0.5−	0.1−	1999 10 05	703	(3.4−	0.9−)	1999 10 11	106	0.0	0.3+
1998 05 01	704	0.2−	0.1−	1999 10 05	703	1.8+	1.4+	1999 10 11	106	0.8−	0.6−

1999 TP₈ = 1998 KA₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	32.26851		(2000.0)	P	Q
<i>n</i>	0.27015520	ω	259.40497	+0.85377012	+0.51894998
<i>a</i>	2.3698844	Ω	69.32153	−0.45839501	+0.78751782
<i>e</i>	0.0623538	<i>i</i>	2.57555	−0.24688175	+0.33242533
<i>P</i>	3.65	<i>H</i>	15.4	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1998 04 22	704	1.0+	0.1−	1998 05 24	704	0.2−	0.4−	1999 10 07	704	0.7−	1.0+
1998 04 22	704	0.2−	0.5+	1998 05 24	704	0.0	1.5−	1999 10 07	704	0.4−	0.7+
1998 04 22	704	0.3−	0.2+	1998 05 24	704	1.2−	0.2+	1999 10 07	120	0.4+	0.3−
1998 04 22	704	(1.4−	3.4−)	1999 10 04	703	0.3−	0.7+	1999 10 07	120	1.4+	0.1+
1998 05 22	704	1.1−	0.8+	1999 10 04	703	0.4+	0.3−	1999 10 08	120	0.2−	1.3−
1998 05 22	704	0.3+	0.2−	1999 10 04	703	1.1−	0.4−	1999 10 08	120	0.2+	0.0
1998 05 22	704	0.4+	1.4+	1999 10 04	703	0.7−	0.1+	1999 10 16	120	0.0	0.6−
1998 05 22	704	(0.6−	3.1+)	1999 10 07	120	0.5−	0.0	1999 10 16	120	1.2+	0.6+
1998 05 24	704	0.6−	0.2+	1999 10 07	120	(2.3−	1.7+)				
1998 05 24	704	1.9+	0.9−	1999 10 07	704	0.0	0.1−				

1999 TS₈ = 1977 DG₁₀ = 1998 HQ₇₉

Id. T. Urata

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	20.07261		(2000.0)	P	Q
<i>n</i>	0.24116730	ω	333.81444	+0.87366458	+0.48651526
<i>a</i>	2.5561741	Ω	357.06622	−0.43305247	+0.77422525
<i>e</i>	0.2098599	<i>i</i>	4.05424	−0.22175606	+0.40481867
<i>P</i>	4.09	<i>H</i>	14.9	<i>G</i>	0.15
				<i>U</i>	4

Residuals in seconds of arc

1977 02 19	381	1.1+	1.7+	1999 10 07	704	0.5−	0.0	1999 10 10	106	1.2+	0.3+
1977 02 19	381	0.7−	0.9−	1999 10 08	106	0.7+	0.1−	1999 10 10	106	0.8+	0.0
1998 04 21	704	1.2−	0.1+	1999 10 08	106	0.1−	0.3−	1999 10 10	106	0.6+	0.7+
1998 04 21	704	0.5+	0.2+	1999 10 08	106	1.6−	0.9+	1999 10 14	691	0.6+	0.3−
1998 04 21	704	0.5+	0.8−	1999 10 08	691	0.3−	0.2−	1999 10 14	691	0.6+	0.3−
1998 04 21	704	(3.6−	1.6+)	1999 10 08	691	0.4−	0.1−	1999 10 14	691	0.3+	0.4−
1998 04 22	704	0.5+	0.4+	1999 10 08	691	0.3−	0.2−	1999 10 15	628	1.3+	0.3−
1998 04 22	704	0.7−	1.0+	1999 10 08	888	0.3−	0.2+	1999 10 15	628	1.7+	0.3+
1998 04 22	704	0.6+	0.5−	1999 10 08	888	0.5−	0.7+	1999 10 15	628	(2.4+	0.2−)
1998 04 22	704	(0.7−	2.2−)	1999 10 08	888	0.0	0.3+	1999 10 15	628	0.9+	0.5−
1999 10 05	888	0.4−	0.6−	1999 10 08	106	0.1+	0.6+	1999 10 15	628	(2.2+	0.2+)
1999 10 05	888	0.8−	0.4+	1999 10 08	106	0.2−	0.2+	1999 10 18	113	1.5−	1.1−
1999 10 07	704	0.2−	0.3−	1999 10 08	106	0.7−	0.9+	1999 10 18	113	0.1+	1.0+
1999 10 07	704	0.4−	0.4+	1999 10 09	888	1.2−	0.1−	1999 10 18	113	1.6+	0.4−
1999 10 07	704	1.5−	0.5+	1999 10 09	888	0.3+	1.0+	1999 10 19	113	0.9−	2.0−
1999 10 07	704	0.6−	0.4+	1999 10 09	888	0.2−	0.1−	1999 10 19	113	1.3+	0.5−

1999 OCT. 26

M.P.C. 36487

1999 TU₈ = 1982 XX

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	275.16291		(2000.0)		P		Q				
<i>n</i>	0.16980816	ω	23.29767		−0.38356775		−0.92226332				
<i>a</i>	3.2297111	Ω	89.28550		+0.83957146		−0.36989338				
<i>e</i>	0.1075381	<i>i</i>	2.75275		+0.38470188		−0.11229095				
<i>P</i>	5.80	<i>H</i>	12.4		<i>G</i>	0.15	<i>U</i>	6			
Residuals in seconds of arc											
1982 12 13	381	0.6+	0.3−	1999 10 08	830	0.5+	0.5−	1999 10 20	678	0.7−	0.3−
1982 12 13	381	0.2+	0.8+	1999 10 08	830	1.0+	1.9+	1999 10 20	713	0.3+	0.1+
1982 12 14	381	0.0	0.3−	1999 10 12	830	0.1+	0.6+	1999 10 20	678	0.6−	0.8−
1982 12 14	381	0.8−	0.3−	1999 10 12	830	0.6−	0.6+	1999 10 20	713	0.3−	0.5+
1999 10 04	704	1.3+	1.3−	1999 10 12	830	0.2+	0.2−	1999 10 20	678	0.5−	0.1+
1999 10 04	704	0.3−	0.3−	1999 10 20	734	0.3−	0.0	1999 10 21	713	1.1+	0.3+
1999 10 04	704	0.4−	0.4+	1999 10 20	713	0.4+	0.6+	1999 10 21	713	0.2+	0.6+
1999 10 07	830	0.8−	0.2−	1999 10 20	734	0.0	0.3−	1999 10 21	713	0.6−	0.0
1999 10 07	830	0.2−	1.5−	1999 10 20	734	0.2+	0.4−				

1999 TW₉ = 1528 T-2

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	4.27108		(2000.0) <th></th> <th>$\mathbf{P}$</th> <th></th> <th>$\mathbf{Q}$</th> <th></th> <th></th>		$\mathbf{P}$		$\mathbf{Q}$				
n	0.26654575	ω	23.98679		+0.99507511		+0.09776335				
a	2.3912310	Ω	330.38856		−0.09545740		+0.90062738				
e	0.2134010	i	1.89811		−0.02670976		+0.42345325				
P	3.70	H	16.0		G	0.15	U	5			
Residuals in seconds of arc											
1973 09 19	675	0.9−	1.5+	1999 09 14	703	0.5−	1.4+	1999 10 07	704	0.6−	0.0
1973 09 19	675	0.8−	0.7+	1999 09 14	703	0.8−	1.9+	1999 10 07	704	0.6−	0.3−
1973 09 20	675	1.0−	0.0	1999 09 14	703	0.0	1.6+	1999 10 07	704	0.3−	0.2+
1973 09 24	675	0.6+	0.5+	1999 09 14	703	(0.9+	2.3+)	1999 10 08	104	0.6−	0.7+
1973 09 24	675	0.7+	0.1−	1999 10 02	703	0.5−	0.2+	1999 10 08	104	0.5+	0.3+
1973 09 25	675	0.1+	1.2−	1999 10 02	703	0.3−	0.2−	1999 10 08	108	0.6+	1.1−
1973 09 25	675	1.3−	0.9+	1999 10 02	703	0.8−	0.2+	1999 10 08	108	0.3−	0.5−
1973 09 29	675	0.8−	0.5−	1999 10 02	703	0.2−	0.3+	1999 10 08	108	0.2+	1.6−
1973 09 29	675	0.7+	0.4−	1999 10 03	704	0.9−	1.0+	1999 10 11	104	0.8+	0.4+
1973 09 30	675	1.4−	0.1−	1999 10 03	704	0.3+	0.5+	1999 10 11	104	1.2+	0.5+
1973 09 30	675	1.7−	0.6+	1999 10 03	704	0.6−	1.4+	1999 10 16	104	0.5−	0.7−
1973 10 04	675	2.1+	2.3−	1999 10 03	704	0.1+	0.6+	1999 10 16	104	0.5+	0.6−
1973 10 04	675	1.9+	1.1−	1999 10 03	704	0.1−	0.6−	1999 10 16	104	0.5+	0.5−
1973 10 05	675	2.2+	1.2−	1999 10 07	704	0.2+	0.5+				
1973 10 05	675	1.4+	1.0−	1999 10 07	704	1.1+	1.0−				

1999 TG₁₀ = 1997 EX₃₅

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	226.73034		(2000.0)		P		Q		
<i>n</i>	0.25566585	ω	159.16919		−0.86473039		−0.50219533		
<i>a</i>	2.4585983	Ω	350.67758		+0.45500584		−0.77793547		
<i>e</i>	0.1359138	<i>i</i>	2.27114		+0.21262890		−0.37764567		
<i>P</i>	3.86	<i>H</i>	14.2		<i>G</i>	0.15	<i>U</i>	6	
Residuals in seconds of arc									
1997 03 04	704	0.3+	0.4+	1999 10 06	704	0.0	0.3−	1999 10 09	684 0.6− 0.1−
1997 03 04	704	1.2−	0.9−	1999 10 06	704	0.2−	0.9+	1999 10 09	684 0.6− 0.1−
1997 03 05	704	0.6+	0.2−	1999 10 07	704	0.4+	0.1−	1999 10 12	684 0.4− 0.1−
1997 03 05	704	0.2+	0.7+	1999 10 07	704	0.0	0.0	1999 10 12	684 0.2− 0.0
1997 03 06	704	0.2+	0.4−	1999 10 07	704	0.9+	0.1−	1999 10 12	071 0.7+ 0.1−
1997 03 06	704	0.0	0.3+	1999 10 07	704	0.4+	0.0	1999 10 12	071 0.4+ 0.1+
1999 10 06	704	0.0	0.1+	1999 10 07	704	0.2+	0.1−	1999 10 12	071 0.6+ 0.1+
1999 10 06	704	0.0	0.3−	1999 10 08	684	0.3−	0.1−	1999 10 13	684 0.3− 0.3+
1999 10 06	704	0.0	0.2−	1999 10 08	684	0.5−	0.3−	1999 10 13	684 0.3− 0.3+

1999 TK₁₁ = 1984 UJ₅ = 1997 BS

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	272.41138	(2000.0)		P		Q					
n	0.25920468	ω	105.49120	−0.21627277		−0.97631549					
a	2.4361694	Ω	356.98062	+0.84785474		−0.18484167					
e	0.0848626	i	6.36956	+0.48411614		−0.11243494					
P	3.80	H	13.6	G	0.15	U	4				
Residuals in seconds of arc											
1984 10 30	010	0.1+	0.3−	1999 10 07	704	0.1−	0.2−	1999 10 10	946	0.8+	0.4−
1997 01 20	327	0.6−	0.1−	1999 10 07	704	0.3−	0.1−	1999 10 10	946	0.1+	0.6−
1997 01 20	327	0.7+	0.2+	1999 10 07	704	0.2−	0.2−	1999 10 10	946	0.2+	0.0
1997 01 20	327	0.2−	0.2+	1999 10 07	704	0.9−	0.2−	1999 10 15	946	0.1−	0.5+
1997 01 22	327	0.1+	0.0	1999 10 09	946	0.1−	0.0	1999 10 15	946	0.1−	0.2+
1997 01 22	327	0.5−	0.1+	1999 10 10	946	0.2+	0.5+	1999 10 15	946	0.0	0.2+
1997 01 22	327	0.5+	0.3−	1999 10 10	946	0.6+	0.5+	1999 10 15	946	0.6−	0.1+
1999 10 07	704	0.2+	0.3−	1999 10 10	946	0.3+	0.3+				

1999 TL₁₁ = 1994 LN₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	328.20629		(2000.0)		P		Q				
n	0.25823644	ω	202.71726		+0.63490803		−0.76436495				
a	2.4422551	Ω	208.25633		+0.74030211		+0.64352564				
e	0.1339730	i	13.73684		+0.22100809		+0.04026121				
P	3.82	H	14.6		G	0.15	U	4			
Residuals in seconds of arc											
1994 06 10	691	0.4+	0.3+	1999 10 03	704	0.4+	0.4+	1999 10 10	946	1.0+	0.6−
1994 06 10	691	0.2+	0.2+	1999 10 03	704	0.2+	0.4+	1999 10 10	946	1.1+	0.7−
1994 06 10	691	0.2+	0.1−	1999 10 03	704	0.9+	0.1+	1999 10 10	946	0.6+	0.1−
1994 06 14	691	0.3−	0.1−	1999 10 03	704	0.6+	0.6+	1999 10 10	946	0.0	0.2+
1994 06 14	691	0.5−	0.3−	1999 10 03	704	0.2+	0.3+	1999 10 10	946	0.6+	0.1+
1999 09 18	699	0.1+	0.2+	1999 10 07	106	1.5−	1.8+	1999 10 10	946	0.3−	0.3+
1999 09 18	699	0.2+	0.4−	1999 10 07	106	0.7−	0.6−	1999 10 10	946	0.0	0.1+
1999 09 18	699	0.1+	0.1+	1999 10 07	704	0.0	0.7−	1999 10 10	946	0.9−	0.1+
1999 10 01	703	0.7−	0.2+	1999 10 07	704	0.5+	0.5−	1999 10 15	946	0.2−	0.7+
1999 10 01	703	0.4−	0.3+	1999 10 07	704	0.1−	0.3−	1999 10 15	946	0.0	0.2−
1999 10 01	703	0.8−	0.3+	1999 10 07	704	0.2+	1.1−	1999 10 15	946	0.2−	0.4+
1999 10 01	703	0.5−	0.3−	1999 10 07	704	0.3−	0.9−				

1999 TM₁₁ = 1998 HL₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	86.36958		(2000.0)		P		Q				
n	0.28379009		ω	136.28619	−0.35532757		+0.84913518				
	2.2933547		Ω	109.26692	−0.93025193		−0.28030797				
e	0.2167837		i	24.45443	−0.09150778		−0.44765712				
P	3.47 <th>H</th> <td>14.6</td> <th>G</th> <td>0.15<th>U</th><td>4<td colspan="2"></td></td></td>		H	14.6	G	0.15 <th>U</th> <td>4<td colspan="2"></td></td>	U	4 <td colspan="2"></td>			
Residuals in seconds of arc											
1998 04 22	566	0.1+	0.3−	1998 04 24	566	0.0	0.3−	1999 10 06	413	1.5−	0.2−
1998 04 22	566	0.3−	0.5−	1998 04 24	566	0.0	0.2+	1999 10 07	413	0.3−	1.0+
1998 04 22	566	0.2+	0.8−	1998 04 28	566	0.3+	0.2+	1999 10 07	413	0.4−	1.0+
1998 04 23	566	0.3−	0.3−	1998 04 28	566	0.2+	0.3+	1999 10 09	428	0.6−	0.7−
1998 04 23	699	0.1−	0.8+	1998 04 28	566	0.3+	0.7+	1999 10 09	428	1.3+	0.1+
1998 04 23	699	0.2−	0.1−	1999 09 30	704	0.1−	0.3−	1999 10 10	428	1.0+	0.2−
1998 04 23	566	0.1−	0.4−	1999 09 30	704	0.0	0.5−	1999 10 15	413	0.4−	0.1+
1998 04 23	699	0.3+	1.1+	1999 09 30	704	0.3+	0.3−	1999 10 15	413	0.5−	0.0
1998 04 23	566	0.3−	0.4−	1999 09 30	704	1.7+	0.1−	1999 10 17	413	0.2−	0.1−
1998 04 24	566	0.1−	0.0	1999 10 06	413	0.4−	0.5+	1999 10 17	413	0.1+	0.1−

1999 TQ₁₁ = 1997 JV₁₆ = 1997 LF₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	353.41704		(2000.0)	P		Q	
<i>n</i>	0.17272016	ω	294.35212	+0.84967546		−0.51550760	
<i>a</i>	3.1933072	Ω	96.85079	+0.51518165		+0.76671548	
<i>e</i>	0.1534279	<i>i</i>	6.41441	+0.11242547		+0.38262160	
<i>P</i>	5.71	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1997 05 03	809	0.6+	1.9+	1997 06 08	809	0.6−	1.0−	1999 10 13	046	0.4+	0.2−
1997 05 03	809	0.2−	1.7+	1997 06 08	809	0.5−	0.1+	1999 10 13	046	0.3+	0.0
1997 05 03	809	(0.4−	2.4+)	1999 10 08	046	0.3−	0.2+	1999 10 16	046	0.5+	0.0
1997 05 04	809	0.2−	1.3−	1999 10 08	046	0.4−	0.2+	1999 10 16	046	0.3+	0.0
1997 05 04	809	0.4+	0.8−	1999 10 08	046	0.6−	0.0	1999 10 16	046	0.1+	0.2+
1997 05 04	809	0.6−	1.0−	1999 10 08	046	0.3−	0.0	1999 10 19	046	0.3−	0.0
1997 06 07	809	0.7+	0.7+	1999 10 08	046	0.5−	0.2+	1999 10 19	046	0.2−	0.1−
1997 06 07	809	0.6+	0.4+	1999 10 13	046	0.4+	0.1−	1999 10 19	046	0.2−	0.1−
1997 06 07	809	0.4+	0.0	1999 10 13	046	0.4+	0.0				
1997 06 08	809	0.6−	0.6−	1999 10 13	046	0.3+	0.2−				

1999 TS₁₁ = 1990 OG₂

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	10.27391		(2000.0)	P		Q	
<i>n</i>	0.22912775	ω	23.49877	+0.98006853		+0.15833323	
<i>a</i>	2.6449508	Ω	326.68441	−0.19846052		+0.80737775	
<i>e</i>	0.1910042	<i>i</i>	12.61809	+0.00889382		+0.56839402	
<i>P</i>	4.30	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1990 07 26	675	1.0+	0.7+	1999 10 10	849	0.4−	0.2+	1999 10 13	739	0.4−	0.8−
1990 07 26	675	0.7−	0.2+	1999 10 10	849	0.2−	0.0	1999 10 13	739	0.2−	0.1−
1990 07 29	675	0.7−	0.4+	1999 10 10	849	0.0	0.1+	1999 10 13	739	0.6−	0.1+
1990 07 29	675	0.1−	0.3−	1999 10 10	849	0.1+	0.1−	1999 10 14	739	0.1+	0.8+
1990 07 30	675	0.3+	0.2−	1999 10 10	849	0.2−	0.2+	1999 10 14	739	0.8+	0.0
1990 07 30	675	0.1+	0.7−	1999 10 10	849	0.0	0.0	1999 10 14	849	0.3+	0.0
1999 07 23	704	0.2+	0.0	1999 10 10	849	0.3−	0.3+	1999 10 14	849	0.3+	0.3−
1999 07 23	704	0.0	0.5−	1999 10 10	849	0.4−	1.1+	1999 10 14	849	0.3−	0.1−
1999 07 23	704	0.3+	0.3+	1999 10 10	849	0.1−	0.4+	1999 10 14	849	0.2−	0.4+
1999 07 23	704	0.2+	0.1−	1999 10 10	849	0.2+	0.0	1999 10 15	849	1.4+	0.8−
1999 07 23	704	0.1−	0.1−	1999 10 10	849	0.1−	0.7+	1999 10 15	849	0.3−	0.7−
1999 09 21	699	0.1+	0.3+	1999 10 10	849	0.5−	0.4+	1999 10 15	849	0.1−	0.4−
1999 09 21	699	0.1−	0.2+	1999 10 10	849	1.4−	0.5+	1999 10 18	739	0.0	0.1−
1999 09 21	699	0.3+	0.1−	1999 10 11	849	0.2−	0.2+	1999 10 18	739	0.1−	0.3−
1999 10 05	704	0.1−	0.4+	1999 10 11	849	0.3−	0.8−	1999 10 19	739	0.1−	0.1+
1999 10 05	704	0.2+	0.4−	1999 10 11	849	0.5+	0.7−	1999 10 19	739	0.1+	0.0
1999 10 05	704	0.5+	0.3−	1999 10 12	849	0.2−	0.3−	1999 10 21	649	0.7+	0.6+
1999 10 05	704	0.5+	0.0	1999 10 12	849	0.2−	0.1−	1999 10 21	649	0.8+	0.4+
1999 10 05	704	0.5+	0.2−	1999 10 12	849	0.4−	0.2−	1999 10 21	649	1.0+	0.3+
1999 10 10	849	0.3−	0.2+	1999 10 12	849	0.2−	0.5−				
1999 10 10	849	0.6−	0.2+	1999 10 12	849	0.3−	0.4−				

1999 TU₁₁ = 1997 EL₄₈

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	49.88680		(2000.0)	P		Q	
<i>n</i>	0.17374894	ω	106.85089	+0.70653010		+0.69833524	
<i>a</i>	3.1806895	Ω	209.17196	−0.70510458		+0.68084127	
<i>e</i>	0.2254852	<i>i</i>	13.60333	−0.06035511		+0.22086889	
<i>P</i>	5.67	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1997 03 11	809	0.1+	0.6+	1999 10 03	704	0.3+	0.3−	1999 10 10	120	1.1−	0.3−
1997 03 11	809	0.3+	0.3−	1999 10 03	704	0.4+	0.3−	1999 10 11	120	0.1−	0.4+
1997 03 11	809	0.4−	0.4−	1999 10 07	704	0.2+	0.1+	1999 10 11	120	0.4+	0.2−
1997 03 12	809	(3.1+	4.5+)	1999 10 07	704	0.5−	0.2−	1999 10 13	120	0.4+	0.1−

1997 03 12	809	(2.8+	4.2+)	1999 10 07	704	0.4−	0.3+	1999 10 13	120	0.3+	0.3+
1997 03 12	809	(3.2+	4.0+)	1999 10 07	704	0.9−	0.5−	1999 10 15	120	0.3+	0.9+
1999 10 03	704	0.6+	0.3+	1999 10 10	120	0.1+	0.3−	1999 10 15	120	0.4+	0.6−
1999 10 03	704	0.4−	0.7+	1999 10 10	120	0.1−	0.0				

1999 TB₁₂ = 1987 YF₄ = 1992 AN₆ = 1997 GF₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	253.90762		(2000.0)	P		Q	
<i>n</i>	0.23974544	ω	87.84171	−0.70595872		−0.68369515	
<i>a</i>	2.5662708	Ω	48.95714	+0.51226398		−0.67316749	
<i>e</i>	0.1020408	<i>i</i>	14.18994	+0.48908885		−0.28179154	
<i>P</i>	4.11	<i>H</i>	13.1	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1987 12 23	010	0.9−	0.8+	1999 10 02	703	0.5−	0.1+	1999 10 10	143	1.4+	0.2+
1987 12 23	010	1.4+	0.6−	1999 10 02	703	1.1−	0.1−	1999 10 10	143	0.7+	0.0
1987 12 23	010	0.3−	0.4−	1999 10 02	703	0.2+	0.6−	1999 10 12	143	0.7−	0.0
1992 01 07	033	0.3−	0.5+	1999 10 02	703	0.5−	0.1−	1999 10 12	143	0.1−	0.1+
1992 01 07	033	0.2−	0.3−	1999 10 07	704	0.5−	0.4+	1999 10 12	143	0.4−	0.2+
1997 04 15	327	0.1+	0.1+	1999 10 07	704	0.1−	0.4+	1999 10 12	143	0.9+	0.1−
1997 04 15	327	0.1−	0.2+	1999 10 07	704	0.2−	0.1+	1999 10 13	143	0.8+	0.6+
1997 04 15	327	0.0	0.2+	1999 10 07	704	0.5−	0.1−	1999 10 13	143	0.5+	0.3+
1997 04 17	327	0.0	0.2−	1999 10 09	143	0.5−	0.3−	1999 10 13	143	0.9+	0.2−
1997 04 17	327	0.1+	0.2−	1999 10 09	143	1.1−	0.1−	1999 10 13	143	0.9+	0.5−
1997 04 17	327	0.1−	0.1−	1999 10 09	143	1.2−	0.0	1999 10 13	143	1.0+	0.2−

1999 TH₁₂ = 1983 RJ₆ = 1983 RN₈ = 1998 EB₆

Id. B. G. Marsden, N. S. Chernykh (d)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Marsden

<i>M</i>	355.00799		(2000.0)	P		Q	
<i>n</i>	0.30905745	ω	205.81869	+0.97803815		+0.19801250	
<i>a</i>	2.1665892	Ω	142.57673	−0.16783458		+0.93329172	
<i>e</i>	0.2143198	<i>i</i>	6.14558	−0.12358372		+0.29959574	
<i>P</i>	3.19	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1983 09 04	095	1.6+	1.1+	1999 10 12	046	0.2−	0.5−	1999 10 14	046	0.2+	0.1−
1983 09 06	095	(0.7+	5.8−)	1999 10 12	046	0.3−	0.5−	1999 10 16	046	0.4+	0.6+
1983 09 11	095	1.6−	1.0−	1999 10 12	046	0.2−	0.5−	1999 10 16	046	0.5+	0.3+
1998 03 03	691	0.2−	0.3+	1999 10 13	046	0.2+	0.0	1999 10 16	046	0.2+	0.4+
1998 03 03	691	0.4−	0.1−	1999 10 13	046	0.3+	0.0	1999 10 18	046	0.4−	0.5+
1998 03 03	691	0.5−	0.0	1999 10 13	046	0.4+	0.1−	1999 10 18	046	0.3−	0.4+
1998 03 04	691	(2.4+	0.3−)	1999 10 13	046	0.3+	0.1−	1999 10 18	046	0.1−	0.3+
1998 03 04	691	0.5+	0.3−	1999 10 13	046	0.3+	0.2−	1999 10 19	046	0.3−	0.5+
1998 03 04	691	0.5+	0.3−	1999 10 13	046	0.2+	0.1−	1999 10 19	046	0.5−	0.4+
1999 10 12	046	0.4−	0.5−	1999 10 13	046	0.3+	0.1−	1999 10 19	046	0.4−	0.4+
1999 10 12	046	0.3−	0.7−	1999 10 14	046	0.4+	0.1−				
1999 10 12	046	0.4−	0.5−	1999 10 14	046	0.4+	0.1−				

1999 TP₁₂ = 1998 KG₁₃

Id. B. G. Marsden

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

Williams

<i>M</i>	15.41313		(2000.0)	P		Q	
<i>n</i>	0.23378282	ω	303.50933	+0.91385670		+0.38475422	
<i>a</i>	2.6097224	Ω	34.37886	−0.25226517		+0.78836612	
<i>e</i>	0.1951205	<i>i</i>	13.28233	−0.31816383		+0.48004484	
<i>P</i>	4.22	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.5+	0.2+	1999 10 04	704	0.2−	0.0	1999 10 10	678	1.0+	0.2+
1998 05 22	704	1.5−	1.2+	1999 10 04	704	0.1+	0.2−	1999 10 11	678	0.0	0.0
1998 05 22	704	1.1+	1.4+	1999 10 04	704	0.0	0.3−	1999 10 11	678	0.5+	0.1+
1998 05 22	704	0.8−	0.1−	1999 10 04	704	0.4−	0.8−	1999 10 11	678	0.4+	0.4+
1998 05 22	704	0.9+	0.7−	1999 10 04	704	0.9−	0.7−	1999 10 12	684	0.1+	0.1+
1998 05 24	704	0.5+	0.4−	1999 10 07	704	1.2+	0.5−	1999 10 12	684	0.1−	0.0

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1998 05 24	704	0.8−	0.7−	1999 10 07	704	1.2−	0.3−	1999 10 12	684	0.0	0.0
1998 05 24	704	0.1+	1.0−	1999 10 07	704	0.4+	0.5+	1999 10 13	684	0.3−	0.0
1999 10 03	703	0.2+	0.1−	1999 10 07	704	0.1+	0.1−	1999 10 13	684	0.3−	0.0
1999 10 03	703	0.0	0.6+	1999 10 07	704	0.0	0.8−	1999 10 14	684	0.3−	0.0
1999 10 03	703	0.1+	0.8+	1999 10 10	678	0.0	0.2+	1999 10 14	684	0.3−	0.1−
1999 10 03	703	0.1−	0.7+	1999 10 10	678	0.1−	0.0				

1999 TX₁₂ = 1997 JV₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
307.47533				(2000.0)			
				<i>P</i>	<i>Q</i>		
<i>n</i>	0.18927459	<i>ω</i>	2.06748	+0.34603082	−0.93379798		
<i>a</i>	3.0042853	<i>Ω</i>	67.69768	+0.85938502	+0.27653464		
<i>e</i>	0.0748628	<i>i</i>	5.64564	+0.37645724	+0.22704610		
<i>P</i>	5.21	<i>H</i>	12.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 04 11	704	0.6−	0.3−	1997 05 07	704	0.1+	0.5−	1999 10 07	704	0.4+	0.3+
1997 04 11	704	0.5+	0.3+	1999 10 03	703	0.0	0.6+	1999 10 07	704	0.1+	0.3+
1997 05 03	809	1.4−	1.7+	1999 10 03	703	0.7−	0.3+	1999 10 07	704	0.1+	0.4−
1997 05 03	809	(1.3−	2.4+)	1999 10 03	703	0.5+	0.1+	1999 10 10	678	0.2−	0.0
1997 05 03	809	(2.7−	1.6+)	1999 10 03	703	0.0	0.4+	1999 10 10	678	0.2+	0.0
1997 05 04	809	(1.5+	3.1+)	1999 10 04	704	0.2+	0.4−	1999 10 11	678	0.6−	0.4+
1997 05 04	809	(1.9+	2.8+)	1999 10 04	704	0.5+	1.4−	1999 10 11	678	0.4−	0.5+
1997 05 04	809	(1.2+	4.0+)	1999 10 04	704	0.1+	1.1−	1999 10 11	678	0.3−	0.1−
1997 05 07	704	0.5+	0.3−	1999 10 04	704	1.4+	0.9+	1999 10 16	678	0.1+	0.4−
1997 05 07	704	0.2+	0.2−	1999 10 04	704	1.1−	0.5−	1999 10 16	678	0.9+	0.9+
1997 05 07	704	0.4+	0.2−	1999 10 07	704	0.2+	0.1+	1999 10 19	678	0.7−	0.1−
1997 05 07	704	0.3+	0.5−	1999 10 07	704	0.1+	0.5−	1999 10 19	678	0.8−	0.4+

1999 TR₁₃ = 1997 EH₄₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
283.22426				(2000.0)			
				<i>P</i>	<i>Q</i>		
<i>n</i>	0.23530752	<i>ω</i>	87.67206	−0.19631805	−0.97878961		
<i>a</i>	2.5984369	<i>Ω</i>	14.06809	+0.77632887	−0.19164110		
<i>e</i>	0.1370377	<i>i</i>	13.94221	+0.59897638	−0.07241946		
<i>P</i>	4.19	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1997 03 12	809	1.6+	0.4−	1999 10 03	704	0.6−	0.4+	1999 10 11	106	0.0	0.3+
1997 03 12	809	0.9+	0.1−	1999 10 03	704	0.2+	0.2−	1999 10 11	106	0.2−	0.0
1997 03 12	809	0.7+	0.3+	1999 10 03	704	0.0	0.1−	1999 10 11	691	0.0	0.6−
1997 03 13	809	1.2−	0.1+	1999 10 04	691	0.1+	0.5−	1999 10 11	691	0.1−	0.3−
1997 03 13	809	0.1−	0.0	1999 10 04	691	0.2+	0.6−	1999 10 11	691	0.1+	0.3−
1997 03 13	809	2.0−	0.2+	1999 10 04	691	0.1+	0.6−	1999 10 11	106	0.0	0.6+
1999 10 02	703	0.2+	0.3+	1999 10 07	704	0.6−	0.0	1999 10 11	106	0.4−	0.1+
1999 10 02	703	0.2+	0.0	1999 10 07	704	0.6−	0.3+	1999 10 11	106	0.2−	0.2+
1999 10 02	703	0.1+	0.0	1999 10 07	704	0.2−	0.0	1999 10 17	106	0.8−	0.1+
1999 10 02	703	0.1−	0.2+	1999 10 07	704	0.8−	1.2+	1999 10 17	106	1.2+	0.5−
1999 10 03	704	0.6+	0.4−	1999 10 07	704	0.2+	0.7+				
1999 10 03	704	0.0	0.4−	1999 10 11	106	1.2+	0.0				

1999 TU₁₃ = 1998 HF₆₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
9.91865				(2000.0)			
				<i>P</i>	<i>Q</i>		
<i>n</i>	0.28767343	<i>ω</i>	312.82414	+0.97935102	+0.19041869		
<i>a</i>	2.2726692	<i>Ω</i>	36.35345	−0.13527667	+0.86687721		
<i>e</i>	0.1447686	<i>i</i>	6.57892	−0.15023918	+0.46072185		
<i>P</i>	3.43	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1998 04 21	704	0.9−	0.4+	1998 04 22	704	0.8−	0.6−	1999 10 11	106	0.1+	0.4−
1998 04 21	704	0.6+	1.3−	1999 10 07	704	0.1+	0.4−	1999 10 11	106	0.6+	0.1+
1998 04 21	704	1.4+	2.7+	1999 10 07	704	0.2−	0.4−	1999 10 11	106	0.1−	0.2+
1998 04 21	704	0.7−	0.1+	1999 10 07	704	0.3−	0.7−	1999 10 11	106	0.5−	0.4+
1998 04 22	704	0.8−	1.1−	1999 10 07	704	0.6−	0.3+	1999 10 17	106	0.5−	0.2−

1998 04 22	704	0.4+	0.2+	1999 10 07	704	0.3−	0.3+	1999 10 17	106	0.1+	0.3+
1998 04 22	704	0.2+	1.5+	1999 10 11	106	0.2+	0.5+	1999 10 17	106	0.2+	0.3−
1998 04 22	704	0.6+	1.8−	1999 10 11	106	1.2+	0.4+				

1999 TF₁₄ = 1998 KH₂₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
350.57709				(2000.0)			
				<i>P</i>	<i>Q</i>		
<i>n</i>	0.26154793	<i>ω</i>	322.71662	+0.96949231	−0.24061976		
<i>a</i>	2.4215970	<i>Ω</i>	51.27240	+0.23685719	+0.87047888		
<i>e</i>	0.1794190	<i>i</i>	3.43653	+0.06311361	+0.42938171		
<i>P</i>	3.77	<i>H</i>	14.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.4+	1.0+	1998 05 24	704	0.8+	0.2+	1999 10 07	704	0.6−	0.3+
1998 05 22	704	2.1−	0.3+	1998 05 24	704	0.9+	0.7+	1999 10 10	120	0.9+	0.0
1998 05 22	704	1.4+	0.5−	1998 05 24	704	0.5−	1.1−	1999 10 11	120	0.9+	0.1+
1998 05 22	704	0.3+	0.9+	1999 10 07	704	0.6+	0.1+	1999 10 13	120	0.3−	0.6+
1998 05 22	704	0.7−	0.7−	1999 10 07	704	0.3−	0.3−	1999 10 13	120	0.1+	0.2+
1998 05 24	704	0.4+	1.1−	1999 10 07	704	0.2−	0.4−	1999 10 19	120	0.3−	0.2−
1998 05 24	704	0.9−	0.2+	1999 10 07	704	0.6−	0.3−	1999 10 19	120	0.2−	0.1−

1999 TG₁₄ = 1998 KY₅₆

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
10.63597				(2000.0)			
				<i>P</i>	<i>Q</i>		
<i>n</i>	0.26741890	<i>ω</i>	306.12734	+0.97525141	+0.20384336		
<i>a</i>	2.3860231	<i>Ω</i>	42.29954	−0.13872972	+0.86573782		
<i>e</i>	0.1325401	<i>i</i>	7.30988	−0.17215910	+0.45710602		
<i>P</i>	3.69	<i>H</i>	14.5	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 23	704	0.7+	1.0+	1998 05 24	704	0.4+	0.4−	1999 10 10	120	0.2−	0.2+
1998 05 23	704	1.0+	0.3−	1998 05 24	704	1.7−	2.0−	1999 10 11	120	0.1−	0.2+
1998 05 23	704	1.3+	1.8+	1999 10 07	704	0.3+	0.4−	1999 10 13	120	0.2+	0.0
1998 05 23	704	1.4−	0.3+	1999 10 07	704	0.2+	0.4−	1999 10 13	120	1.1−	0.1+
1998 05 24	704	0.2+	0.7+	1999 10 07	704	0.3−	0.4+	1999 10 19	120	0.5−	0.2+
1998 05 24	704	0.9−	1.5−	1999 10 07	704	0.3+	0.1−	1999 10 19	120	0.8+	0.1−
1998 05 24	704	0.4+	0.4+	1999 10 07	704	0.2+	0.0				

1999 TZ₁₄ = 1998 FH₅₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>				Williams			
10.05001				(2000.0)			
				<i>P</i>	<i>Q</i>		
<i>n</i>	0.29299390	<i>ω</i>	156.62801	+0.93459958	+0.35565110		
<i>a</i>	2.2450723	<i>Ω</i>	182.56135	−0.34384036	+0.89899162		
<i>e</i>	0.2318778	<i>i</i>	7.70670	−0.09109020	+0.25559023		
<i>P</i>	3.36	<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 29	704	(2.6−	0.4−)	1999 10 07	704	0.1−	0.3+
1998 03 20	704	0.7−	1.2−	1998 04 20	704	1.2−	0.7+	1999 10 12	678	0.4−	0.2−
1998 03 20	704	0.8+	0.1−	1998 04 20	704	0.9−	0.6−	1999 10 12	678	0.8+	0.3−
1998 03 20	704	0.5−	0.4+	1998 04 20	704	0.3−	1.8−	1999 10 13	678	0.3−	0.2+
1998 03 20	704	(2.5−	0.2+)	1998 04 20	704	0.3−	1.1−	1999 10 13	678	0.7+	0.0
1998 03 22	704	1.1+	0.0	1999 07 23	704	0.1+	0.1−	1999 10 13	678	0.2+	0.6−
1998 03 22	704	0.2−	0.1−	1999 07 23	704	0.7+	0.9−	1999 10 16	678	0.3−	0.2−
1998 03 22	704	0.7−	0.1+	1999 07 23	704	0.0	0.1−	1999 10 16	678	0.1+	0.4−
1998 03 22	704	0.3−	1.2+	1999 07 23	704	0.2+	0.6−	1999 10 16	678	0.7−	0.3−
1998 03 22	704	(3.3−	0.2+)	1999 07 23	704	0.4−	0.7−	1999 10 19	678	0.6+	0.2−
1998 03 29	704	0.7−	0.6−	1999 10 07	704	0.4+	0.5−	1999 10 19	678	0.5+	0.1−
1998 03 29	704	0.4+	0.2−	1999 10 07	704	0.1+	0.0	1999 10 19	678	0.4−	0.2−
1998 03 29	704	1.2+	1.6−	1999 10 07	704	0.1−	0.0				
1998 03 29	704	0.6+	0.4+	1999 10 07	704	0.4−	0.2+				

1999 TE₁₅ = 1997 EF₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	300.78476	(2000.0)	P		Q	
<i>n</i>	0.22597182	ω	242.73094	+0.31376022	-0.94903327	
<i>a</i>	2.6695201	Ω	189.13477	+0.92401537	+0.31241971	
<i>e</i>	0.1063496	<i>i</i>	10.83342	+0.21851803	+0.04159050	
<i>P</i>	4.36	<i>H</i>	15.1	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1997 03 08	809	0.3+	0.5+	1999 10 07	704	0.1+	0.6+	1999 10 13	118	0.4-	0.3-
1997 03 08	809	0.2-	1.3-	1999 10 07	704	0.1+	0.2-	1999 10 13	118	0.4-	0.0
1997 03 08	809	0.2-	2.0-	1999 10 07	704	0.0	0.4-	1999 10 15	118	0.0	0.1-
1997 03 09	809	0.4+	1.3+	1999 10 07	704	0.5-	0.3-	1999 10 15	118	0.4-	0.5+
1997 03 09	809	0.7-	0.6+	1999 10 07	704	0.5+	0.3-	1999 10 15	118	0.6+	0.3+
1997 03 09	809	0.4+	0.9+	1999 10 07	704	1.2+	1.8-	1999 10 17	118	0.3+	0.3+
1999 10 02	703	1.0-	0.6+	1999 10 07	704	0.8+	0.6-	1999 10 17	118	0.6-	0.5-
1999 10 02	703	0.9+	0.7+	1999 10 12	118	0.1-	0.3-	1999 10 20	118	0.4+	0.8+
1999 10 02	703	0.5-	0.3+	1999 10 12	118	0.1-	0.3-	1999 10 20	118	0.1+	0.3+
1999 10 02	703	0.9-	0.9+	1999 10 12	118	0.1-	0.5-				
1999 10 07	704	0.6+	0.1+	1999 10 13	118	0.5-	0.3+				

1999 TO₁₆ = 1997 EM₅₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	102.97247	(2000.0)	P		Q	
<i>n</i>	0.17969475	ω	143.35294	-0.29006295	+0.95697747	
<i>a</i>	3.1101341	Ω	109.78425	-0.87994121	-0.26357823	
<i>e</i>	0.1195717	<i>i</i>	0.46214	-0.37625383	-0.12132864	
<i>P</i>	5.48	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i> 6

Residuals in seconds of arc

1997 03 08	809	0.5+	0.8-	1997 03 09	809	0.3-	0.2-	1999 10 15	557	0.2-	0.1+
1997 03 08	809	0.4+	0.5-	1999 10 13	557	0.1+	0.1-	1999 10 19	557	0.6+	0.2-
1997 03 08	809	1.0-	0.2-	1999 10 13	557	0.2-	0.1-	1999 10 19	557	0.2-	0.1+
1997 03 09	809	0.3+	0.6+	1999 10 15	557	0.0	0.0	1999 10 20	557	0.2-	0.2+
1997 03 09	809	0.1+	1.1+	1999 10 15	557	0.2+	0.0	1999 10 20	557	0.1-	0.0

1999 TQ₁₈ = 1998 HL₇₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	29.28320	(2000.0)	P		Q	
<i>n</i>	0.23574157	ω	300.65523	+0.73772414	+0.67475632	
<i>a</i>	2.5952464	Ω	16.94130	-0.59124490	+0.66120851	
<i>e</i>	0.2170270	<i>i</i>	4.25308	-0.32587199	+0.32788294	
<i>P</i>	4.18	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1998 04 21	704	0.6+	2.2-	1999 10 06	704	0.3-	0.4-	1999 10 14	327	1.7+	0.7+
1998 04 21	704	0.1+	0.3-	1999 10 06	704	0.2-	0.2-	1999 10 14	327	0.6+	0.3+
1998 04 21	704	0.3-	0.9-	1999 10 06	704	0.1-	0.0	1999 10 15	327	0.5-	0.5-
1998 04 21	704	0.9-	0.4+	1999 10 06	704	0.3-	0.5-	1999 10 15	327	0.1-	0.4-
1998 04 22	704	0.4+	0.7+	1999 10 07	704	0.4+	0.4-	1999 10 15	327	0.0	0.5-
1998 04 22	704	0.2+	1.7+	1999 10 07	704	0.4+	0.1+	1999 10 18	327	0.4-	0.3+
1998 04 22	704	0.1+	0.1-	1999 10 07	704	0.4-	0.2+	1999 10 18	327	0.3-	0.5-
1998 04 22	704	0.3-	0.4+	1999 10 07	704	0.3-	1.1+	1999 10 18	327	0.6-	0.2+
1999 10 06	704	0.1-	0.1+	1999 10 14	327	0.7+	0.0				

1999 TU₁₈ = 1988 VY₇ = 1998 HU₁₃₇

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	2.90746	(2000.0)	P		Q	
<i>n</i>	0.26653776	ω	326.80251	+0.95773296	+0.24414176	
<i>a</i>	2.3912788	Ω	20.75669	-0.05868848	+0.68355713	
<i>e</i>	0.2452680	<i>i</i>	25.41996	-0.28160832	+0.68785497	
<i>P</i>	3.70	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1988 11 03	033	2.8-	0.7+	1999 10 04	704	0.2-	0.4-	1999 10 14	159	0.1-	0.1-
1988 11 03	033	2.4+	0.6-	1999 10 04	704	0.1+	0.6-	1999 10 17	159	0.3-	0.1-
1988 11 03	033	0.9-	0.2+	1999 10 04	704	0.1-	0.6-	1999 10 17	159	0.0	0.0
1988 11 03	033	1.5+	0.5-	1999 10 04	704	0.4-	0.2-	1999 10 17	159	0.0	0.1-
1998 04 20	704	0.4+	1.1-	1999 10 07	704	0.1+	0.1+	1999 10 17	159	0.2+	0.2-
1998 04 20	704	2.7-	0.7-	1999 10 07	704	0.0	0.0	1999 10 17	159	0.1+	0.1-
1998 04 20	704	0.5-	0.1+	1999 10 07	704	0.0	0.1+	1999 10 17	159	0.3-	0.1-
1998 04 20	704	0.6-	0.9+	1999 10 07	704	0.2-	0.1-	1999 10 20	704	0.6+	0.3+
1998 04 20	704	0.1-	0.0	1999 10 07	704	0.5-	0.3+	1999 10 20	704	0.6+	0.1+
1998 04 22	704	0.5+	1.2+	1999 10 14	159	0.2+	0.0	1999 10 20	704	0.6+	0.4+
1998 04 22	704	0.1+	2.1-	1999 10 14	159	0.1+	0.0	1999 10 20	704	0.8+	0.1+
1998 04 22	704	0.2-	1.1-	1999 10 14	159	0.0	0.2+	1999 10 20	704	0.7+	0.0
1998 04 22	704	0.1-	0.1-	1999 10 14	159	0.1-	0.1-				
1999 10 04	704	0.2+	0.5-	1999 10 14	159	0.2-	0.2-				

1999 TG₁₉ = 1995 WH₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	71.11691	(2000.0)	P		Q	
<i>n</i>	0.22262002	ω	354.52886	+0.42710559	+0.90253231	
<i>a</i>	2.6962484	Ω	300.74454	-0.82714655	+0.36545114	
<i>e</i>	0.0137675	<i>i</i>	3.66377	-0.36525251	+0.22777378	
<i>P</i>	4.43	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i> 7

Residuals in seconds of arc

1995 11 16	358	1.0+	3.0-	1995 11 21	358	0.6-	0.9-	1999 10 07	704	0.7-	0.4-
1995 11 16	358	0.7+	0.6-	1999 10 07	704	0.3+	0.4-	1999 10 15	757	0.7-	0.5+
1995 11 17	358	0.0	1.7+	1999 10 07	704	0.1-	0.5+	1999 10 15	757	0.0	0.5+
1995 11 17	358	1.4-	2.7+	1999 10 07	704	0.4-	0.4-	1999 10 20	757	0.8+	0.5-
1995 11 21	358	0.4+	0.0	1999 10 07	704	0.8+	0.4-	1999 10 18	757	0.1+	0.7+

1999 TG₂₀ = 1997 JU₁₁

Id. S. Nakano

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	334.79021	(2000.0)	P		Q	
<i>n</i>	0.19482433	ω	348.96943	+0.63183049	-0.77372874	
<i>a</i>	2.9469579	Ω	61.82814	+0.71507525	+0.55886159	
<i>e</i>	0.0314167	<i>i</i>	3.00390	+0.29909468	+0.29835811	
<i>P</i>	5.06	<i>H</i>	13.6	<i>G</i>	0.15	<i>U</i> 5

Residuals in seconds of arc

1997 05 03	809	1.4+	0.4-	1997 05 07	704	0.1+	0.0	1999 10 20	417	0.5-	0.2+
1997 05 03	809	1.4-	1.1-	1997 05 07	704	0.3+	0.4-	1999 10 20	417	0.8-	0.2+
1997 05 03	809	(2.1-	2.5-)	1997 05 07	704	0.1+	0.1+	1999 10 21	417	0.3+	0.1-
1997 05 04	809	0.3-	1.2+	1999 10 09	417	0.4+	0.1+	1999 10 21	417	0.3+	0.5-
1997 05 04	809	0.7-	0.7+	1999 10 09	417	0.1-	0.3+	1999 10 22	417	0.4-	0.3-
1997 05 04	809	(0.8-	2.8+)	1999 10 18	417	0.0	0.1-	1999 10 22	417	0.1+	0.1-
1997 05 07	704	0.4+	0.4-	1999 10 18	417	0.8+	0.1+				

1999 UD = 1982 SP₁ = 1998 FG₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	32.26954	(2000.0)	P		Q	
<i>n</i>	0.29098221	ω	104.62281	+0.54096501	+0.84012986	
<i>a</i>	2.2554079	Ω	198.28894	-0.81173423	+0.50933837	
<i>e</i>	0.1985816	<i>i</i>	7.18073	-0.22010088	+0.18643028	
<i>P</i>	3.39	<i>H</i>	14.7	<i>G</i>	0.15	<i>U</i> 3

Residuals in seconds of arc

1982 09 19	046	0.1-	1.3-	1999 09 18	703	0.6-	0.3+	1999 10 04	704	0.1-	0.2+
1982 09 19	046	0.9+	1.7-	1999 09 18	703	0.3-	0.3+	1999 10 07	704	0.1+	0.2+
1998 03 20	704	0.2-	0.4-	1999 09 18	703	0.3-	0.4+	1999 10 07	704	0.2+	0.2+
1998 03 20	704	0.7+	0.5+	1999 09 18	703	0.3-	0.2+	1999 10 07	704	0.0	0.3-
1998 03 20	704	0.3+	1.0-	1999 09 30	703	0.5-	0.0	1999 10 07	704	0.2+	0.0
1998 03 20	704	0.4+	0.9-	1999 09 30	703	0.1-	0.0	1999 10 07	704	0.5+	0.1-
1998 03 20	704	0.5+	0.3-	1999 09 30	703	0.2-	0.2-	1999 10 16	120	0.4+	0.2-

1999 OCT. 26

1998 03 22	704	0.7−	0.4−	1999 09 30	703	0.4−	0.1+	1999 10 16	120	0.7+	0.4−
1998 03 22	704	1.2−	1.0−	1999 10 04	704	0.1+	0.3+	1999 10 17	120	0.9+	0.5+
1998 03 22	704	0.4+	0.8+	1999 10 04	704	0.5−	0.5+	1999 10 17	120	1.0+	0.2−
1998 03 22	704	0.5−	0.2+	1999 10 04	704	0.4−	0.4+	1999 10 19	120	0.2−	0.0
1998 03 22	704	0.1−	0.8+	1999 10 04	704	0.3−	0.2−	1999 10 19	120	0.5−	0.4−

1999 UY₁ = 1998 KF₂₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P	Q		
<i>n</i>	0.28616278	ω	121.61125	+0.93341599	+0.34943169		
<i>a</i>	2.2806604	Ω	218.10907	−0.35732681	+0.88481251		
<i>e</i>	0.1088138	<i>i</i>	7.58260	−0.03243672	+0.30822770		
<i>P</i>	3.44	<i>H</i>	13.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1998 05 22	704	0.1+	0.1−	1998 05 24	704	0.1−	0.1+	1999 10 16	678	0.2−	0.4+
1998 05 22	704	1.1+	0.0	1998 05 24	704	0.4−	0.5+	1999 10 19	678	1.7−	0.1−
1998 05 22	704	0.1−	0.4−	1998 05 24	704	0.0	0.6+	1999 10 19	678	0.3−	0.3−
1998 05 22	704	0.5−	0.6+	1999 10 07	704	0.3+	0.5+	1999 10 21	678	1.4+	0.1−
1998 05 22	704	0.6+	1.2−	1999 10 07	704	0.3−	0.8−	1999 10 21	678	0.1+	0.3−
1998 05 24	704	0.3−	0.6+	1999 10 07	704	0.2+	0.1+	1999 10 21	678	0.1+	0.2+
1998 05 24	704	0.5−	0.8−	1999 10 16	678	0.2+	0.3+				

2588 P-L = 1999 TC₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P	Q		
<i>n</i>	0.27858459	ω	93.81689	−0.37146066	−0.92784537		
<i>a</i>	2.3218348	Ω	18.10019	+0.80335555	−0.33927327		
<i>e</i>	0.1726244	<i>i</i>	6.18377	+0.46544263	−0.15490844		
<i>P</i>	3.54	<i>H</i>	14.9	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1960 09 24	675	0.0	0.2+	1960 10 25	675	0.2−	0.3+	1999 10 10	327	0.1+	0.5+
1960 09 26	675	0.5+	0.4−	1960 10 26	675	0.4+	0.3+	1999 10 10	327	0.2+	0.1+
1960 09 28	675	0.6−	0.4+	1960 10 26	675	0.3−	0.2+	1999 10 14	327	0.1−	0.0
1960 09 29	675	0.0	0.5−	1999 10 01	120	0.3+	0.2−	1999 10 14	327	0.1−	0.1+
1960 10 17	675	0.1+	0.6+	1999 10 01	120	1.0−	0.3+	1999 10 14	327	0.2−	0.1+
1960 10 22	675	0.5+	0.3−	1999 10 02	120	(2.5+ 0.8+)		1999 10 19	120	0.1−	0.6−
1960 10 22	675	0.3−	0.5−	1999 10 02	120	1.3+	0.3−	1999 10 19	120	0.0	0.4−
1960 10 24	675	0.2−	0.1−	1999 10 10	327	0.2−	0.3+				

2601 P-L = 1999 KW₉

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P	Q		
<i>n</i>	0.16922953	ω	226.85019	+0.19642437	+0.97968472		
<i>a</i>	3.2370689	Ω	54.52058	−0.88458275	+0.19484726		
<i>e</i>	0.0499729	<i>i</i>	2.84646	−0.42300216	+0.04745940		
<i>P</i>	5.82	<i>H</i>	13.7	<i>G</i>	0.15	<i>U</i>	6

Residuals in seconds of arc

1960 09 24	675	0.5−	0.6+	1960 10 25	675	0.7+	0.4+	1999 05 18	704	3.0−	0.8+
1960 09 26	675	0.2+	0.5−	1960 10 26	675	0.3+	0.4−	1999 05 19	704	1.3+	1.9−
1960 09 28	675	0.3+	0.0	1999 05 18	704	0.4+	2.2+	1999 05 19	704	0.7+	1.1−
1960 09 29	675	0.3+	0.0	1999 05 18	704	1.5−	0.2+	1999 05 19	704	1.5+	1.2−
1960 10 17	675	1.3−	0.0	1999 05 18	704	0.6+	1.0+				

3013 P-L = 1991 OO₁ = 1998 XQ₂₉

Id. M. E. Sansaturio, G. V. Williams

M.P.C. 36491

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P	Q		
<i>n</i>	0.18636834	ω	277.20368	−0.71457355	+0.67727125		
<i>a</i>	3.0354374	Ω	305.61388	−0.52609061	−0.68531520		
<i>e</i>	0.1063414	<i>i</i>	12.44399	−0.46110012	−0.26766905		
<i>P</i>	5.29	<i>H</i>	13.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1960 09 24	675	0.3+	0.7−	1991 07 18	809	0.1−	0.0	1998 12 14	704	(2.2− 0.2−)
1960 09 24	675	0.4+	1.6+	1991 07 18	809	0.9+	0.0	1998 12 14	704	1.0− 1.4+
1960 09 25	675	0.1−	0.3−	1991 07 21	809	(5.0+ 0.5−)		1998 12 14	704	0.6− 0.1−
1960 09 26	675	0.1−	0.6+	1991 07 21	809	(4.9+ 0.4−)		1998 12 14	704	1.3+ 0.8−
1960 09 26	675	0.1−	0.7−	1991 07 21	809	(4.9+ 0.3−)		1998 12 17	704	1.2+ 0.5+
1960 09 27	675	0.1−	0.5−	1998 11 16	704	0.7+	1.3+	1998 12 17	704	0.9− 0.4+
1960 09 28	675	0.1−	0.6−	1998 11 16	704	0.3+	1.0−	1998 12 17	704	0.4+ 0.4−
1960 09 29	675	0.1−	0.3+	1998 11 16	704	1.2−	0.8−	1998 12 17	704	(0.7− 2.2+)
1991 07 18	809	0.9−	0.3+	1998 11 16	704	0.4−	0.2−			

3093 P-L = 1999 RN₁₀₄

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P	Q		
<i>n</i>	0.20090840	ω	305.22858	−0.39016098	+0.90231445		
<i>a</i>	2.8871587	Ω	300.79726	−0.76014932	−0.42800426		
<i>e</i>	0.0840393	<i>i</i>	12.32195	−0.51956465	−0.05139061		
<i>P</i>	4.91	<i>H</i>	13.4	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1960 09 24	675	0.0	0.4−	1999 09 05	703	0.9−	0.2+	1999 09 16	704	0.3−	1.3−
1960 09 25	675	1.1+	0.4−	1999 09 05	703	0.4−	0.1+	1999 09 16	704	0.1+	0.3+
1960 09 26	675	0.7−	0.6−	1999 09 05	703	1.0−	1.1+	1999 09 16	704	0.1−	0.2−
1960 09 27	675	0.2+	1.1+	1999 09 08	704	0.6+	0.0	1999 10 04	704	0.5+	0.4+
1960 09 29	675	0.7−	0.4+	1999 09 08	704	0.6+	1.2−	1999 10 04	704	0.2+	0.2+
1997 02 13	327	0.1−	0.0	1999 09 08	704	0.7−	0.3+	1999 10 04	704	0.9+	0.1+
1997 02 13	327	0.2+	0.0	1999 09 08	704	0.7−	0.4−	1999 10 04	704	0.2−	0.1−
1997 02 13	327	0.5+	0.0	1999 09 10	704	0.2+	0.4+	1999 10 04	704	0.3+	0.1+
1997 02 13	327	0.5−	0.1+	1999 09 10	704	0.4+	0.0				
1999 09 05	703	0.2+	0.2+	1999 09 10	704	0.4+	0.1−				

3504 P-L = 1999 RC₁₆₃

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

				Williams			
<i>M</i>		(2000.0)		P	Q		
<i>n</i>	0.22677068	ω	40.29235	+0.97393072	−0.20543779		
<i>a</i>	2.6632470	Ω	331.13082	+0.12003852	+0.82656672		
<i>e</i>	0.1979276	<i>i</i>	11.49297	+0.19248298	+0.52400646		
<i>P</i>	4.35	<i>H</i>	15.0	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1960 09 26	675	0.6+	0.3−	1999 09 05	703	0.0	0.9+	1999 09 14	704	0.3− 0.4−
1960 09 28	675	0.4+	0.4+	1999 09 07	704	0.2−	0.4−	1999 09 14	704	0.4− 0.6−
1960 10 17	675	0.3+	0.6+	1999 09 07	704	0.1+	0.7−	1999 09 14	704	0.0 0.0
1960 10 17	675	0.2+	0.9−	1999 09 07	704	0.2+	0.4−	1999 10 01	703	0.5− 0.1+
1960 10 17	675	0.3−	0.3−	1999 09 07	704	0.1+	0.3−	1999 10 01	703	0.2− 0.2+
1960 10 22	675	0.1−	0.1−	1999 09 07	704	0.4+	0.3−	1999 10 01	703	0.2+ 0.3+
1960 10 22	675	0.9−	1.1−	1999 09 08	699	0.0	0.3−	1999 10 01	703	0.3− 0.4+
1960 10 24	675	0.6−	1.3+	1999 09 08	699	0.1−	0.0	1999 10 02	704	1.0+ 0.1−
1960 10 25	675	0.2+	0.4−	1999 09 08	699	0.5−	0.0	1999 10 02	704	0.2− 0.1+
1960 10 26	675	0.3+	0.8+	1999 09 09	704	0.2+	0.4−	1999 10 02	704	0.8− 0.5−
1999 08 22	699	0.2+	0.0	1999 09 09	704	0.1+	0.3−	1999 10 02	704	0.1− 0.3−
1999 08 22	699	0.5−	0.2+	1999 09 09	704	0.4+	0.3+	1999 10 02	704	0.3+ 0.5−
1999 08 22	699	0.1−	0.1−	1999 09 09	704	1.1+	1.0+	1999 10 07	703	0.2− 0.1+
1999 09 05	703	1.4+	0.4+	1999 09 09	704	(1.9+ 2.4+)		1999 10 07	703	0.6+ 0.3−
1999 09 05	703	0.5−	0.3+	1999 09 14	704	0.4−	0.3−	1999 10 07	703	0.3+ 0.7+
1999 09 05	703	1.4−	1.2+	1999 09 14	704	0.0	0.5−	1999 10 07	703	0.1+ 0.5+

3563 P-L = 1999 RE₁₁₁

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 314.18513 (2000.0)			P		Q	
<i>n</i>	0.17673227	ω	87.77406	+0.31813197	-0.94454116	
<i>a</i>	3.1447936	Ω	342.97650	+0.72099731	-0.29683333	
<i>e</i>	0.2083208	<i>i</i>	16.15336	+0.61559315	+0.14047056	
<i>P</i>	5.58	<i>H</i>	14.0	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1960 10 17	675	0.6-	0.5-	1999 09 09	704	0.2-	0.1+	1999 09 18	704	0.3+	0.1+
1960 10 22	675	0.6-	0.9+	1999 09 09	704	0.2+	0.3+	1999 10 03	704	0.2+	0.2-
1960 10 25	675	0.6+	0.5-	1999 09 09	704	0.1-	0.0	1999 10 03	704	0.7+	0.0
1960 10 25	675	0.4+	0.4+	1999 09 09	704	0.2-	0.4-	1999 10 03	704	0.2-	0.3-
1999 09 08	704	0.3-	0.2+	1999 09 18	704	0.7+	0.1+	1999 10 03	704	0.2+	0.2-
1999 09 08	704	0.0	0.0	1999 09 18	704	0.1-	0.6+	1999 10 03	704	0.8-	0.1-
1999 09 08	704	0.6+	0.5-	1999 09 18	704	0.3-	0.2+				
1999 09 09	704	0.1+	0.1+	1999 09 18	704	0.7-	0.2-				

4104 P-L = 1999 TL₃₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 343.73422 (2000.0)			P		Q	
<i>n</i>	0.27856887	ω	172.06597	+0.93115410	-0.36091659	
<i>a</i>	2.3219222	Ω	209.25862	+0.32843966	+0.89200529	
<i>e</i>	0.1231911	<i>i</i>	6.09299	+0.15836486	+0.27215028	
<i>P</i>	3.54	<i>H</i>	15.6	<i>G</i> 0.15	<i>U</i> 4	

Residuals in seconds of arc

1960 09 24	675	0.3-	0.6-	1960 10 26	675	0.2+	0.8+	1999 10 06	704	0.1+	0.2+
1960 09 25	675	0.1-	0.6+	1999 10 04	704	1.0+	0.5-	1999 10 06	704	0.0	0.3+
1960 09 26	675	0.6+	0.2+	1999 10 04	704	0.9-	0.5-	1999 10 06	704	0.0	0.4+
1960 09 28	675	0.1+	0.2+	1999 10 04	704	0.1-	0.5+	1999 10 06	704	0.2+	0.3+
1960 10 17	675	0.4-	0.9-	1999 10 04	704	0.1-	1.0-	1999 10 06	704	0.1-	0.4+
1960 10 22	675	0.0	0.4-	1999 10 04	704	0.2-	0.2-				

6020 P-L = 1994 NL₁₁ = 1996 TT₆₈ = 1998 UV₃₁Id. G. V. Williams (*MPC* 26415), M. E. Sansaturio (*MPC* 36051, unpublished)

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 156.99635 (2000.0)			P		Q	
<i>n</i>	0.08200222	ω	92.68348	+0.21048028	+0.97759019	
<i>a</i>	5.2470957	Ω	189.46977	-0.90616342	+0.19358827	
<i>e</i>	0.0972477	<i>i</i>	1.37038	-0.36683225	+0.08271040	
<i>P</i>	12.02	<i>H</i>	11.3	<i>G</i> 0.15	<i>U</i> 1	

Residuals in seconds of arc

1960 09 24	675	0.4-	0.3+	1994 07 08	809	1.2-	0.6-	1996 10 30	809	0.9-	0.2+
1960 09 25	675	0.0	0.4+	1994 07 08	809	0.9-	0.7-	1996 10 30	809	0.2+	0.8+
1960 09 26	675	0.2-	0.0	1994 07 08	809	1.2-	0.1+	1998 10 23	327	0.1+	0.5-
1960 09 28	675	0.0	0.1-	1994 07 09	809	1.6+	0.2-	1998 10 23	327	0.3+	1.0+
1960 10 17	675	0.0	0.4-	1994 07 09	809	1.6+	0.1-	1998 10 23	327	0.2+	0.2-
1960 10 22	675	0.3+	0.5+	1994 07 09	809	0.2+	0.4-	1998 11 09	327	0.3-	0.7-
1993 05 14	809	(0.2+	2.7+)	1996 10 08	809	1.2-	0.7-	1998 11 09	327	0.1-	0.8-
1993 05 14	809	(0.4-	2.7+)	1996 10 10	809	1.5+	0.5+	1998 11 09	327	0.2+	1.1-
1993 05 14	809	(0.4+	2.5+)	1996 10 11	809	(3.2+	0.7+)				

6056 P-L = 1999 TH₂₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 325.32903 (2000.0)			P		Q	
<i>n</i>	0.25308173	ω	198.01980	+0.79914719	-0.59918393	
<i>a</i>	2.4753058	Ω	199.03778	+0.56817839	+0.77917423	
<i>e</i>	0.1395558	<i>i</i>	8.53268	+0.19630867	+0.18402754	
<i>P</i>	3.89	<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-	0.0	1960 10 24	675	0.2+	0.4-	1999 10 04	704	0.2+	0.1+
1960 09 25	675	0.9+	0.3+	1960 10 26	675	0.2-	1.2+	1999 10 06	704	0.4+	0.7+
1960 09 26	675	0.4-	0.3+	1999 10 04	704	0.3+	0.5-	1999 10 06	704	1.2-	0.1-
1960 09 28	675	0.4-	0.1-	1999 10 04	704	0.0	0.1-	1999 10 06	704	0.1+	0.1-
1960 10 17	675	0.7+	1.1-	1999 10 04	704	0.5-	0.2+	1999 10 06	704	0.0	0.0
1960 10 22	675	0.5-	0.2-	1999 10 04	704	0.5+	0.1+	1999 10 06	704	0.3+	0.2-

6617 P-L = 1999 TE₉

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 275.73873 (2000.0)			P		Q	
<i>n</i>	0.25404345	ω	87.50176	-0.27738418	-0.96007472	
<i>a</i>	2.4690547	Ω	18.72480	+0.83049643	-0.25857831	
<i>e</i>	0.1078306	<i>i</i>	6.48489	+0.48304627	-0.10674170	
<i>P</i>	3.88	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1960 09 24	675	0.1-	0.2+	1999 10 06	704	0.2+	0.1-	1999 10 09	703	0.0	0.4+
1960 09 26	675	0.0	0.2+	1999 10 06	704	0.4-	0.2-	1999 10 09	703	0.5-	0.6+
1960 09 27	675	0.8+	0.3-	1999 10 07	704	1.1-	0.4+	1999 10 09	703	0.7+	0.1+
1960 09 28	675	0.0	0.3-	1999 10 07	704	0.5-	0.6+	1999 10 09	703	0.1+	0.1-
1960 10 17	675	0.1-	0.4-	1999 10 07	704	0.2+	1.6+	1999 10 13	691	0.0	0.4-
1960 10 22	675	1.6-	0.3+	1999 10 07	704	0.1+	0.1-	1999 10 13	691	0.1+	0.4-
1960 10 24	675	0.6+	0.3+	1999 10 07	704	0.4+	0.0	1999 10 13	691	0.1+	0.4-
1960 10 26	675	0.5+	0.0	1999 10 07	120	0.9+	0.6-	1999 10 14	120	0.0	0.0
1999 10 06	704	0.2-	0.2-	1999 10 07	120	0.4+	0.3+	1999 10 14	120	0.6+	0.8-
1999 10 06	704	0.3-	0.5-	1999 10 08	120	0.4+	0.1+				
1999 10 06	704	0.3-	0.1-	1999 10 08	120	0.8-	0.2-				

6622 P-L = 1999 TT₁₁

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 213.59817 (2000.0)			P		Q	
<i>n</i>	0.27931281	ω	0.25779	-0.94146497	-0.33662312	
<i>a</i>	2.3177974	Ω	160.04163	+0.30919803	-0.88368653	
<i>e</i>	0.1098958	<i>i</i>	3.04420	+0.13431418	-0.32524297	
<i>P</i>	3.53	<i>H</i>	14.7	<i>G</i> 0.15	<i>U</i> 5	

Residuals in seconds of arc

1960 09 24	675	0.1+	0.1-	1999 10 03	703	0.2-	0.7-	1999 10 07	704	0.4+	0.2+
1960 09 26	675	0.4-	0.0	1999 10 03	703	0.3-	0.2-	1999 10 07	704	0.0	0.5+
1960 09 27	675	0.3+	0.3-	1999 10 03	703	0.7-	0.1-	1999 10 07	704	0.1+	0.2+
1960 09 28	675	0.6+	0.0	1999 10 04	704	0.0	0.6-	1999 10 07	704	0.0	0.7-
1960 10 17	675	0.7-	0.0	1999 10 04	704	0.6+	0.3-	1999 10 08	120	0.1-	0.6+
1960 10 22	675	1.9-	0.5-	1999 10 04	704	0.7+	0.1+	1999 10 08	120	0.2+	0.2+
1960 10 24	675	1.6+	0.5+	1999 10 04	704	0.8-	1.0+	1999 10 10	120	0.3+	0.4-
1960 10 26	675	0.3+	0.7+	1999 10 04	704	0.8-	0.3-	1999 10 10	120	(3.8-	1.0-)
1999 10 03	703	0.0	0.1+	1999 10 07	704	0.6+	0.3+				

6685 P-L = 1993 FC₆₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i> 335.25182 (2000.0)			P		Q	
<i>n</i>	0.19899500	ω	163.64740	+0.81379793	+0.58097761	
<i>a</i>	2.9056365	Ω	160.81291	-0.53787240	+0.76214440	
<i>e</i>	0.0387270	<i>i</i>	2.45350	-0.22005956	+0.28565876	
<i>P</i>	4.95	<i>H</i>	14.8	<i>G</i> 0.15	<i>U</i> 6	

Residuals in seconds of arc

1960 09 24	675	0.1+	0.8-	1960 09 27	675	0.6+	0.3+	1993 04 18	413	1.1-	1.7-
1960 09 24	675	0.1+	0.3-	1960 09 28	675	0.5-	0.2+	1998 03 29	704	0.7-	0.4+
1960 09 26	675	0.1+	0.2+	1960 09 28	675	0.2-	1.7+	1998 03 29	704	0.1-	0.3-
1960 09 26	675	0.2-	0.0	1993 03 19	809	0.1+	0.2+	1998 03 29	704	0.2+	1.7+
1960 09 27	675	0.2-	0.7-	1993 03 20	809	0.9+	1.3+	1998 03 29	704	1.0+	1.0-

1999 OCT. 26

M.P.C. 36493

6847 P-L = 1999 RX₃₅

Id. M. E. Sansaturio, A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.12729741	ω	214.72533	+0.96162370	-0.26691700		
<i>a</i>	3.9137193	Ω	160.45834	+0.27436976	+0.93460843		
<i>e</i>	0.2197820	<i>i</i>	10.94746	+0.00104397	+0.23507956		
<i>P</i>	7.74	<i>H</i>	14.8	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1960 09 24	675	0.5-	0.0	1960 09 28	675	0.5-	0.3+	1999 09 13	557	0.8-	0.1-
1960 09 24	675	0.3-	0.2-	1960 09 28	675	0.4+	0.3-	1999 09 13	557	0.5-	0.4-
1960 09 26	675	0.4-	0.1+	1999 09 12	557	0.0	0.0	1999 09 15	557	0.1+	0.3+
1960 09 26	675	0.3+	1.2-	1999 09 12	557	0.2+	0.3+	1999 09 15	557	0.4+	0.2+
1960 09 27	675	0.4+	0.9+	1999 09 12	557	0.1+	0.7+	1999 09 22	557	0.4+	0.1-
1960 09 27	675	0.7+	0.4+	1999 09 12	557	0.3+	1.1-	1999 09 22	557	0.2-	0.2+

1116 T-1 = 1995 WL₂₂ = 1997 CG₅ = 1998 KV₂₁ = 1999 RP₁₃₀

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22394641	ω	126.37964	+0.89996224	-0.43503772		
<i>a</i>	2.6855916	Ω	259.42361	+0.39014755	+0.83279327		
<i>e</i>	0.1082794	<i>i</i>	1.65923	+0.19455809	+0.34234129		
<i>P</i>	4.40	<i>H</i>	14.4	<i>G</i>	0.15	<i>U</i>	1

Residuals in seconds of arc

1971 03 24	675	0.5-	0.2+	1998 05 22	704	0.2-	1.5-	1999 08 22	703	0.7-	0.0
1971 03 25	675	0.7+	0.3+	1998 05 22	704	0.7+	1.7-	1999 09 04	699	0.9-	0.6+
1971 03 25	675	0.4+	0.9+	1998 05 22	704	1.0+	0.5+	1999 09 04	699	0.3+	1.0+
1971 03 26	675	(3.4+	0.8-)	1998 05 22	704	1.9-	0.3+	1999 09 04	699	0.5+	0.1-
1971 03 27	675	0.3-	0.2-	1998 05 23	704	1.0-	1.1+	1999 09 07	704	0.6+	0.4-
1971 04 02	675	0.6+	1.0-	1998 05 23	704	0.5-	1.4-	1999 09 07	704	0.4+	0.3-
1995 11 18	691	0.4-	0.2-	1998 05 23	704	0.6+	0.8+	1999 09 07	704	0.8+	0.6-
1995 11 18	691	0.3-	0.2-	1998 05 23	704	(6.8-	0.6+)	1999 09 07	704	1.0+	0.3-
1995 11 18	691	0.4-	0.1+	1998 05 24	704	0.4+	0.2+	1999 09 07	704	0.7+	0.5-
1995 11 23	691	0.7-	0.1+	1998 05 24	704	0.8-	1.1+	1999 09 09	704	0.1+	0.8-
1995 11 23	691	1.2-	0.1-	1998 05 24	704	1.5-	0.2+	1999 09 09	704	0.3+	0.7-
1995 11 23	691	0.9-	0.3-	1998 05 24	704	1.5-	0.3+	1999 09 09	704	0.6+	0.3-
1997 02 06	566	(2.1+	0.4-)	1999 08 22	703	0.7-	1.1+	1999 09 09	704	0.6+	0.4+
1997 02 06	566	0.9+	0.1-	1999 08 22	703	0.4-	0.1-	1999 09 09	704	0.8+	0.8-
1997 02 06	566	1.0+	0.2-	1999 08 22	703	0.8-	0.0	1999 09 13	704	0.8+	0.2+
1997 02 07	566	0.1-	1.2-	1999 08 22	703	0.1+	0.1-	1999 09 13	704	1.0+	0.6+
1997 02 07	566	0.0	1.2-	1999 08 22	703	0.5-	0.4-	1999 09 13	704	0.3+	0.1-
1997 02 07	566	0.6-	1.2-	1999 08 22	703	0.8-	0.4-	1999 09 13	704	0.5+	0.1+
1998 05 22	704	0.9+	0.8+	1999 08 22	703	0.2-	0.2+	1999 09 13	704	0.6+	0.3+

1066 T-2 = 1999 RJ₄₈

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.18702223	ω	142.57111	+0.95127148	+0.30752272		
<i>a</i>	3.0283581	Ω	199.55552	-0.29673423	+0.89299111		
<i>e</i>	0.1154488	<i>i</i>	3.87753	-0.08385324	+0.32862844		
<i>P</i>	5.27	<i>H</i>	14.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	0.4-	0.6-	1998 05 01	704	1.0+	0.2-	1999 09 05	699	0.6-	0.1-
1973 09 19	675	1.5-	0.8+	1998 05 01	704	0.5-	1.1+	1999 09 07	704	0.8+	0.6-
1973 09 20	675	0.1+	0.8-	1998 05 01	704	0.7+	0.5+	1999 09 07	704	0.0	0.3-
1973 09 24	675	0.5+	1.1-	1998 05 01	704	0.2-	0.0	1999 09 07	704	0.3+	0.2-
1973 09 24	675	0.9+	1.8-	1998 05 01	704	0.1+	0.5-	1999 09 07	704	0.2-	0.1-
1973 09 25	675	0.9-	2.0+	1999 07 13	704	0.8-	0.2+	1999 09 07	704	0.2-	0.9-
1973 09 29	675	1.4+	0.3+	1999 07 13	704	0.2-	0.0	1999 09 09	704	0.7+	0.1-

1973 09 29	675	0.9+	0.1+	1999 07 13	704	0.2-	0.3+	1999 09 09	704	0.3+	0.0
1973 09 30	675	1.2-	0.5+	1999 07 13	704	0.5-	0.1-	1999 09 09	704	0.2+	1.0-
1973 09 30	675	1.0-	0.7-	1999 07 13	704	0.0	0.1-	1999 09 09	704	0.2+	0.4-
1973 10 04	675	1.3+	0.4+	1999 07 21	699	0.4-	0.9+	1999 09 09	704	0.6-	0.5-
1973 10 04	675	0.1-	0.8-	1999 07 21	699	0.3+	0.6+	1999 10 06	704	1.0-	0.7-
1973 10 05	675	0.3+	0.9+	1999 07 21	699	0.6-	1.1+	1999 10 06	704	0.3-	0.0
1973 10 05	675	0.5-	1.4+	1999 08 13	699	0.6+	0.3+	1999 10 06	704	0.5-	1.0-
1998 04 21	704	0.2+	0.1-	1999 08 13	699	0.7+	0.9+	1999 10 06	704	0.5-	0.6-
1998 04 21	704	0.4+	1.3-	1999 08 13	699	0.4+	0.5+	1999 10 06	704	1.0+	0.0
1998 04 21	704	0.5-	0.3-	1999 09 05	699	0.3+	0.8+				
1998 04 21	704	1.3-	0.2+	1999 09 05	699	0.4+	0.0				

1213 T-2 = 1999 QF

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30197358	ω	335.26567	+0.93304460	+0.35975551		
<i>a</i>	2.2003415	Ω	3.65079	-0.32480691	+0.84469317		
<i>e</i>	0.1587433	<i>i</i>	1.74242	-0.15468759	+0.39631985		
<i>P</i>	3.26	<i>H</i>	16.6	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1973 09 19	675	1.1-	0.2+	1999 08 17	104	(2.3+	2.7-)	1999 09 07	704	0.4-	1.2-
1973 09 19	675	2.0-	1.0+	1999 08 17	104	0.7-	0.8-	1999 09 07	704	0.3-	0.9-
1973 09 20	675	0.9+	0.9+	1999 08 17	104	0.3+	0.2+	1999 09 07	704	0.5-	0.6-
1973 09 24	675	1.6+	1.9-	1999 08 17	104	0.1+	0.3+	1999 09 09	704	1.2-	0.4+
1973 09 24	675	1.3+	1.7-	1999 08 17	104	0.6-	1.1-	1999 09 09	704	1.0-	0.2+
1973 09 25	675	0.4+	0.5-	1999 08 18	104	(0.5+	2.2-)	1999 09 09	704	0.1-	0.1+
1973 09 25	675	0.8-	1.4+	1999 08 18	104	1.1+	0.6-	1999 09 09	704	0.4-	0.1-
1973 09 29	675	1.1+	0.7-	1999 08 18	104	0.5+	0.2-	1999 09 09	704	0.1+	0.0
1973 09 29	675	0.5+	0.1+	1999 08 18	104	1.4+	0.1-	1999 09 28	104	1.1+	0.9+
1973 09 30	675	1.4-	0.1+	1999 08 21	104	0.1+	2.0+	1999 09 28	104	0.2+	0.7+
1973 09 30	675	1.3-	0.6-	1999 08 21	104	(0.9+	2.4+)	1999 09 28	104	0.0	0.5+
1973 10 04	675	0.3+	0.8+	1999 08 21	104	1.6+	1.8+	1999 09 28	104	0.5+	0.3+
1973 10 04	675	0.7-	1.1+	1999 08 21	104	(3.1+	1.6+)	1999 09 29	104	0.1-	1.5-
1973 10 05	675	1.5+	0.6-	1999 09 07	704	0.9-	0.2-	1999 09 29	104	0.5+	0.0
1973 10 05	675	0.2-	0.0	1999 09 07	704	0.5-	0.4-	1999 09 29	104	0.7-	1.0+

2284 T-2 = 1996 VW₃₈ = 1999 RD₁₆₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.30152239	ω	78.20362	-0.09330109	+0.99562045		
<i>a</i>	2.2025359	Ω	186.45157	-0.93271288	-0.08947676		
<i>e</i>	0.1531119	<i>i</i>	3.01081	-0.34834119	-0.02708939		
<i>P</i>	3.27	<i>H</i>	16.6	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1973 09 29	675	1.0+	0.5+	1996 11 02	327	0.7-	0.4-	1999 09 09	704	0.4+	0.8-
1973 09 29	675	0.8-	0.1+	1996 11 02	327	0.3+	0.9+	1999 09 09	704	1.3-	1.0-
1973 09 30	675	0.6+	0.7-	1996 11 02	327	0.7+	0.5+	1999 09 09	704	0.6-	0.6+
1973 10 04	675	0.0	0.6+	1996 11 07	327	0.1-	0.7-	1999 09 14	704	0.1+	0.4+
1973 10 04	675	1.0-	0.6+	1996 11 07	327	0.0	0.8-	1999 09 14	704	0.1+	1.0+
1973 10 05	675	0.0	0.7-	1996 11 07	327	0.5-	0.5-	1999 09 14	704	0.1+	0.2+
1973 10 05	675	0.6+	0.6-	1999 09 09	704	0.7+	0.3-	1999 09 14	704	0.0	0.0
1996 11 02	327	0.2+	1.2+	1999 09 09	704	0.2-	0.1-	1999 09 14	704	0.6+	0.3+

3133 T-2 = 1999 RN₄₀

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	9.44277		(2000.0)	P	Q
n	0.22693922	ω	150.46393	+0.81634635	+0.57684541
a	2.6619282	Ω	174.05776	-0.56927912	+0.81204657
e	0.2016957	i	16.13791	-0.09746751	+0.08848580
P	4.34	H	15.3	G 0.15	U 3

Residuals in seconds of arc

1973 09 19	675	0.1-	0.6-	1998 04 24	704	0.1-	0.6-	1999 09 09	704	0.1+	0.3+
1973 09 19	675	0.7-	0.0	1998 04 24	704	(0.2-	3.0-)	1999 09 09	704	1.2+	1.2+
1973 09 20	675	1.6+	0.8-	1998 04 24	704	0.2-	0.7-	1999 09 11	699	0.1-	0.2+
1973 09 24	675	1.6-	1.8-	1998 04 24	704	(4.3-	0.0)	1999 09 11	699	0.2+	0.8+
1973 09 24	675	0.0	1.6-	1999 09 04	703	0.0	0.5+	1999 09 11	699	0.5+	1.6+
1973 09 25	675	0.7+	2.0-	1999 09 04	703	0.0	0.4+	1999 09 14	704	0.1+	0.3+
1973 09 25	675	(1.2-	3.5-)	1999 09 04	703	0.1-	0.0	1999 09 14	704	0.1+	0.1+
1973 09 29	675	1.8+	1.2-	1999 09 04	703	0.9-	0.2-	1999 09 14	704	0.6+	0.0
1973 09 29	675	0.7+	1.1-	1999 09 07	704	0.0	0.3-	1999 09 18	691	0.2+	0.0
1973 09 30	675	0.2+	1.5-	1999 09 07	704	0.3-	1.0-	1999 09 18	691	0.2+	0.1+
1973 09 30	675	0.6-	1.2-	1999 09 07	704	0.6-	0.8-	1999 09 18	691	0.3+	0.0
1973 10 04	675	1.3-	1.7+	1999 09 07	704	0.3-	0.2-	1999 10 02	704	(2.8-	0.9+)
1973 10 04	675	1.5-	0.9+	1999 09 07	704	0.4-	0.7-	1999 10 02	704	0.9-	1.1+
1973 10 05	675	0.8+	0.7+	1999 09 09	704	0.6-	0.6-	1999 10 02	704	1.0-	1.1+
1973 10 05	675	0.7+	1.8+	1999 09 09	704	0.4+	0.4+	1999 10 02	704	0.6-	0.7+
1998 04 24	704	0.1+	0.5-	1999 09 09	704	0.9+	0.8+				

4091 T-2 = 1999 TV₁₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22852001	ω	205.47995	+0.70502706	+0.70692816		
<i>a</i>	2.6496381	Ω	109.41063	-0.63998445	+0.66852530		
<i>e</i>	0.1956760	<i>i</i>	3.43283	-0.30554335	+0.23092529		
<i>P</i>	4.31	<i>H</i>	14.1	<i>G</i>	0.15	<i>U</i>	3

Residuals in seconds of arc

1973 09 19	675	0.4+	1.0-	1998 04 21	704	(0.6-	2.3-)	1999 10 07	704	0.1+	0.3-
1973 09 19	675	0.4-	0.5-	1998 04 21	704	0.4+	0.7+	1999 10 07	704	0.1+	0.6-
1973 09 20	675	1.4-	0.2-	1998 04 21	704	0.2-	1.0-	1999 10 07	704	0.3-	0.6-
1973 09 24	675	0.3+	1.9+	1998 04 21	704	0.7+	1.1-	1999 10 07	704	1.1-	0.4+
1973 09 24	675	0.2-	1.7+	1998 04 21	704	0.2+	0.1+	1999 10 10	678	0.4+	0.8+
1973 09 25	675	0.5+	0.8-	1998 05 01	704	0.3-	0.6-	1999 10 10	678	0.8+	0.6+
1973 09 25	675	1.1-	0.0	1998 05 01	704	0.5-	0.5-	1999 10 11	678	0.4+	0.5+
1973 09 29	675	2.2+	1.7-	1998 05 01	704	0.8+	0.6-	1999 10 11	678	0.5+	0.6-
1973 09 29	675	1.3+	2.2-	1998 05 01	704	0.2+	0.2-	1999 10 11	678	0.1-	0.4+
1973 09 30	675	0.5-	0.3+	1998 05 22	704	0.1-	0.2-	1999 10 16	678	0.4-	1.0+
1973 09 30	675	1.0-	0.7+	1998 05 22	704	0.1+	1.8+	1999 10 16	678	0.3-	0.3+
1973 10 04	675	0.5+	0.8-	1998 05 22	704	1.2-	0.5-	1999 10 19	678	0.2-	0.6+
1973 10 04	675	0.4+	1.2-	1998 05 22	704	0.0	1.2+	1999 10 19	678	0.8-	0.0
1973 10 05	675	0.1+	2.1+	1998 05 22	704	0.1+	1.8+				
1973 10 05	675	0.5-	0.4+	1999 10 07	704	0.1+	0.4-				

5175 T-2 = 1998 FC₁₁₃ = 1999 RX₁₂₅

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.22596884	ω	8.72169	+0.85902466	+0.50251355		
<i>a</i>	2.6695436	Ω	320.61436	-0.47849377	+0.72025129		
<i>e</i>	0.2251017	<i>i</i>	8.86246	-0.18198995	+0.47824492		
<i>P</i>	4.36	<i>H</i>	14.3	<i>G</i>	0.15	<i>U</i>	2

Residuals in seconds of arc

1973 09 24	675	0.4+	0.7-	1998 03 31	704	0.6-	0.6-	1999 09 05	699	0.1+	0.5+
1973 09 24	675	0.6+	0.4-	1998 03 31	704	(1.6-	2.4-)	1999 09 07	704	0.3+	0.5-
1973 09 25	675	0.6+	0.8-	1998 03 31	704	(5.0-	0.4+)	1999 09 07	704	0.3+	0.5-
1973 09 25	675	0.3+	0.8-	1998 04 01	704	0.3+	0.6-	1999 09 07	704	0.2+	0.6-
1973 09 29	675	1.2-	1.3+	1998 04 01	704	1.1+	0.1-	1999 09 07	704	0.1-	0.2-
1973 09 29	675	0.9-	0.0	1998 04 01	704	1.3-	0.0	1999 09 07	704	0.1+	0.3-
1973 09 30	675	1.1-	0.2-	1998 04 01	704	(0.2-	2.5-)	1999 09 09	704	0.2-	0.4-
1973 09 30	675	0.3+	0.3+	1999 07 16	704	0.8+	1.6-	1999 09 09	704	0.1-	0.2+
1973 10 04	675	0.3+	0.0	1999 07 16	704	0.3+	0.5-	1999 09 09	704	0.0	0.1-
1973 10 04	675	0.4-	0.1+	1999 07 16	704	1.0+	0.2-	1999 09 09	704	0.2-	0.1+
1973 10 05	675	0.5+	0.4-	1999 07 16	704	0.3-	0.6+	1999 09 09	704	0.3-	0.3+
1973 10 05	675	0.9+	0.8+	1999 08 07	699	0.4-	0.5+	1999 09 14	704	0.4-	0.2-
1997 01 12	566	0.3-	0.4+	1999 08 07	699	0.4-	0.4+	1999 09 14	704	0.3+	0.3+

1997 01 12	566	0.4+	0.2+	1999 08 07	699	0.0	0.5+	1999 09 14	704	0.2+	0.2-
1997 01 12	566	0.5-	0.1+	1999 08 22	699	0.6-	0.2+	1999 09 14	704	0.0	0.1-
1997 02 04	566	0.0	0.3-	1999 08 22	699	0.4-	0.6+	1999 09 14	704	0.0	0.2+
1997 02 04	566	0.2+	0.3-	1999 08 22	699	0.2-	0.3+	1999 09 29	704	0.1-	1.4-
1997 02 04	566	0.1+	0.2-	1999 09 05	699	0.1-	0.4+	1999 09 29	704	0.1+	0.4+
1998 03 31	704	0.3+	1.0+	1999 09 05	699	0.2-	0.2+	1999 09 29	704	0.6+	1.2+

2428 T-3 = 1999 RD₁₇₅

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.17831682	ω	353.53179	+0.99997369	-0.00094469		
<i>a</i>	3.1261358	Ω	6.53529	+0.00411116	+0.89069366		
<i>e</i>	0.2239423	<i>i</i>	3.62321	-0.00597690	+0.45460303		
<i>P</i>	5.53	<i>H</i>	15.2	<i>G</i>	0.15	<i>U</i>	4

Residuals in seconds of arc

1977 10 16	675	0.1-	2.3-	1977 10 22	675	0.4-	0.1+	1999 09 09	704	0.9-	1.4-
1977 10 16	675	1.3-	0.7+	1977 10 22	675	0.6+	1.0-	1999 09 10	704	0.6-	1.1+
1977 10 16	675	1.0+	2.0-	1977 10 22	675	0.4+	0.9+	1999 09 10	704	0.1+	0.3+
1977 10 16	675	0.0	0.3-	1996 02 15	691	0.1+	0.2+	1999 09 10	704	0.3+	0.8+
1977 10 17	675	0.9+	0.7-	1996 02 15	691	0.2+	0.1+	1999 09 11	699	1.1+	1.3+
1977 10 17	675	0.1+	2.2+	1996 02 15	691	0.1-	0.2+	1999 09 11	699	0.5-	0.5+
1977 10 17	675	0.3+	0.1-	1999 09 07	704	0.4-	0.5-	1999 09 11	699	0.3+	0.1+
1977 10 17	675	2.0-	1.0+	1999 09 07	704	0.4+	0.7-	1999 09 14	704	0.3+	0.2-
1977 10 21	675	1.3-	1.2+	1999 09 07	704	0.1-	0.6-	1999 09 14	704	0.2+	0.6+
1977 10 21	675	0.0	2.2-	1999 09 09	704	0.6+	0.8-	1999 09 14	704	0.2+	0.5-
1977 10 21	675	1.0-	2.2+	1999 09 09	704	0.0	0.1+	1999 09 14	704	0.1+	0.8+
1977 10 21	675	1.8+	1.0-	1999 09 09	704	0.8-	1.0-	1999 09 14	704	0.1+	0.4+
1977 10 22	675	1.3+	0.8+	1999 09 09	704	0.7-	0.5+				

3084 T-3 = 1999 RO₃₃

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>		(2000.0)		P		Q	
<i>n</i>	0.31186123	ω	299.23943	+0.91114694	+0.41195533		
<i>a</i>	2.1535839	Ω	36.43554	-0.37186589	+0.83264079		
<i>e</i>	0.1633850	<i>i</i>	0.98412	-0.17755848	+0.37013798		
<i>P</i>	3.16	<i>H</i>	16.9	<i>G</i>	0.15	<i>U</i>	5

Residuals in seconds of arc

1977 10 16	675	0.1-	1.2-	1999 09 03	691	0.6-	0.7-	1999 09 09	704	1.3-	0.1-
1977 10 16	675	0.4+	1.5-	1999 09 03	691	0.6-	0.7-	1999 09 09	704	0.3-	0.4+
1977 10 17	675	0.7-	2.0+	1999 09 04	643	0.9-	0.2-	1999 09 14	704	(2.1-	0.3-)
1977 10 17	675	0.2+	0.2+	1999 09 04	643	0.4-	0.2+	1999 09 14	704	0.6-	0.8-
1977 10 21	675	0.2+	0.5+	1999 09 07	704	0.1+	0.2+	1999 09 14	704	1.2+	0.3-
1977 10 21	675	0.1-	0.9+	1999 09 07	704	1.5+	0.8+	1999 09 14	704	0.6+	0.8-
1977 10 22	675	0.1+	1.8-	1999 09 07	704	0.3-	1.2+	1999 09 18	643	0.1-	0.4+
1977 10 22	675	0.9+	0.9-	1999 09 07	704	0.9-	0.3-	1999 09 18	643	0.6+	0.6+
1996 10 16	566	0.7-	0.4+	1999 09 08	643	1.8+	0.8+	1999 09 28	120	0.0	0.4+
1996 10 16	566	0.6-	0.3+	1999 09 08	643	1.8+	1.1+	1999 09 28	120	0.8-	0.2+
1996 10 16	566	0.6+	0.8+	1999 09 09	704	0.6-	0.6-				
1999 09 03	691	0.5-	0.8-	1999 09 09	704	0.1+	0.5-				

4070 T-3 = 1999 RC₁₀₂

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

<i>M</i>	212.63534		(2000.0)	P	Q
<i>n</i>	0.17424744	ω	300.16974	-0.61275167	-0.78821887
<i>a</i>	3.1746202	Ω	188.35231	+0.78980773	-0.61327557
<i>e</i>	0.1051973	<i>i</i>	23.09422	-0.02718697	-0.05103029
<i>P</i>	5.66	<i>H</i>	13.1	<i>G</i> 0.15	<i>U</i> 4

1977 10 11	675	0.3+	0.8−	1999 09 04	703	0.1+	1.8+	1999 09 09	704	0.0	0.1+
1977 10 12	675	0.1−	0.2+	1999 09 04	703	0.3−	0.5−	1999 09 16	704	0.1+	0.1−
1977 10 12	675	0.7−	1.0−	1999 09 04	703	0.2−	0.9−	1999 09 16	704	0.2+	0.2−
1977 10 16	675	0.6+	1.2+	1999 09 08	704	0.2+	0.2+	1999 09 16	704	0.3+	0.1−
1977 10 16	675	0.3−	1.4+	1999 09 08	704	0.3−	0.0	1999 09 16	704	0.5+	1.5−
1977 10 17	675	0.4−	0.2−	1999 09 08	704	0.0	0.4+	1999 09 30	703	1.3−	0.9+
1977 10 17	675	1.9−	0.9+	1999 09 08	704	0.8+	0.7+	1999 09 30	703	0.4−	0.6−
1977 10 21	675	1.7+	0.1−	1999 09 09	704	0.8+	0.0	1999 09 30	703	0.7−	0.3+
1977 10 21	675	0.4+	0.5−	1999 09 09	704	0.3+	0.2+	1999 09 30	703	1.3−	0.6−

4141 T-3 = 1999 RS₁₆₆

Id. A. Doppler

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	323.95230		(2000.0)	P	Q
n	0.17740585	ω	270.75372	+0.86314845	−0.49655233
a	3.1368284	Ω	119.02264	+0.49489623	+0.79583087
e	0.1891534	i	6.02019	+0.10026207	+0.34653861
P	5.56	H	14.5	G 0.15	U 2

Residuals in seconds of arc

1977 10 07	675	1.8+	1.5+	1977 10 21	675	0.3+	0.9−	1999 09 09	704	0.0	0.7+
1977 10 11	675	0.5+	1.3−	1977 10 22	675	0.5+	1.9−	1999 09 09	704	(0.8−	3.2+)
1977 10 11	675	0.5−	0.6−	1977 10 22	675	0.6+	1.2−	1999 09 13	704	0.1+	0.0
1977 10 12	675	1.1+	1.2−	1993 07 20	809	0.7+	1.6−	1999 09 13	704	0.1−	0.4+
1977 10 12	675	0.2−	2.3+	1993 07 20	809	0.8+	1.5−	1999 09 13	704	0.1−	0.8−
1977 10 12	675	0.7−	1.5−	1993 07 20	809	1.2−	0.1+	1999 09 13	704	1.5+	0.6+
1977 10 12	675	0.1+	0.8+	1994 11 29	691	0.3−	0.4+	1999 10 04	703	0.5−	0.0
1977 10 16	675	1.5−	1.0+	1994 11 29	691	0.0	0.1+	1999 10 04	703	0.4−	0.3−
1977 10 16	675	0.4+	0.7+	1994 11 29	691	0.1−	0.4+	1999 10 04	703	0.6−	0.8+
1977 10 17	675	0.7−	1.5−	1999 09 09	704	0.8−	0.9+	1999 10 04	703	0.6−	0.9+
1977 10 17	675	0.6−	0.7−	1999 09 09	704	0.2+	1.2+				
1977 10 21	675	0.8+	0.3−	1999 09 09	704	0.7−	1.3+				

4375 T-3 = 1998 FQ₈₂

Id. M. E. Sansaturio

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	302.42607		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.21252945	ω	237.68864	+0.86867310	+0.47952465
a	2.7809294	Ω	93.38528	−0.40224721	+0.82928126
e	0.0146311	i	7.15583	−0.28914397	+0.28696462
P	4.64	H	14.6	G 0.15	U 7

Residuals in seconds of arc

1977 10 16	675	0.4−	0.2−	1977 10 21	675	1.7+	0.1−	1998 03 25	704	0.0	2.5+
1977 10 16	675	0.9−	0.5−	1998 03 24	704	2.7+	1.5+	1998 03 25	704	1.5−	0.5−
1977 10 17	675	0.4+	0.3+	1998 03 24	704	0.4+	1.4−	1998 03 25	704	0.9+	0.2+

1977 10 17	675	0.3−	0.2−	1998 03 24	704	0.1+	0.1−	1998 03 25	704	0.1−	1.7−
1977 10 21	675	0.5−	0.7+	1998 03 24	704	2.5−	0.4−				

4432 T-3 = 1999 RM₁₅₉

Id. M. E. Sansaturio, A. Gnädig

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	332.70162		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.26730409	ω	237.55406	+0.96103029	−0.26976634
a	2.3867063	Ω	138.00913	+0.27411321	+0.90161289
e	0.2368985	i	5.17896	+0.03581531	+0.33811287
P	3.69	H	15.9	G 0.15	U 4

Residuals in seconds of arc

1977 10 07	675	1.0+	0.4+	1977 10 21	675	1.2+	0.7−	1999 09 09	704	0.1+	0.1−
1977 10 11	675	1.0−	0.5−	1977 10 21	675	0.2−	2.5−	1999 09 09	704	0.0	0.5−
1977 10 11	675	0.7−	2.2+	1977 10 22	675	0.7−	0.3+	1999 09 09	704	0.2+	0.4+
1977 10 11	675	0.3−	0.9−	1977 10 22	675	1.6+	0.2−	1999 09 09	704	0.6+	0.1+
1977 10 11	675	0.6−	2.3+	1999 08 12	699	0.5+	0.1+	1999 09 09	704	0.0	0.2+
1977 10 12	675	0.1+	0.8−	1999 08 12	699	0.2+	0.5+	1999 09 13	704	0.0	0.6+
1977 10 12	675	0.5−	0.9+	1999 08 12	699	0.7+	0.5+	1999 09 13	704	0.0	0.8−
1977 10 12	675	0.7−	1.1−	1999 09 07	699	0.3−	0.2+	1999 09 13	704	0.1−	0.2−
1977 10 12	675	0.6−	1.3+	1999 09 07	704	0.1−	0.3−	1999 09 13	704	0.4−	0.9−
1977 10 16	675	0.3+	0.7−	1999 09 07	699	1.4−	1.0+	1999 09 13	704	0.6−	1.1−
1977 10 16	675	0.9+	0.3+	1999 09 07	704	0.1+	0.2−	1999 09 30	704	0.1+	0.1−
1977 10 17	675	0.7−	0.2−	1999 09 07	704	0.0	0.7−	1999 09 30	704	0.3+	0.9+
1977 10 17	675	0.5−	0.4+	1999 09 07	704	0.2−	0.7−	1999 09 30	704	0.0	0.6+
1977 10 21	675	1.5+	0.9+	1999 09 07	699	(3.6−	0.5+)	1999 09 30	704	0.7+	0.4+
1977 10 21	675	0.3−	1.2−	1999 09 07	704	0.1−	0.4−				

5188 T-3 = 1999 RG₉₄

Epoch 1999 Aug. 10.0 TT = JDT 2451400.5

M	332.69451		(2000.0)	$\mathbf{P}$	$\mathbf{Q}$
n	0.17827186	ω	227.75341	+0.81966207	−0.56871282
a	3.1266614	Ω	166.42701	+0.57271928	+0.81102845
e	0.2187131	i	17.02196	+0.01211232	+0.13710795
P	5.53	H	14.5	G 0.15	U 5

Residuals in seconds of arc

1977 10 16	675	0.6−	0.1+	1999 09 07	704	0.2+	0.7−	1999 10 12	046	0.3−	0.2−
1977 10 16	675	0.2+	0.9−	1999 09 07	704	0.3−	0.1+	1999 10 12	046	0.6−	0.5−
1977 10 17	675	0.9−	0.6+	1999 09 07	704	0.2+	0.2+	1999 10 12	046	0.6−	0.5−
1977 10 17	675	0.2+	0.9+	1999 09 07	704	0.4+	0.7+	1999 10 12	046	0.0	0.1+
1977 10 21	675	1.5+	0.1+	1999 09 14	704	0.2+	1.4−	1999 10 12	046	0.4−	0.2+
1977 10 21	675	0.5+	1.2−	1999 09 14	704	0.1−	0.3+	1999 10 13	046	0.3+	0.1−
1977 10 22	675	0.9−	0.2+	1999 09 14	704	0.4−	0.4+	1999 10 13	046	0.8+	0.2+
1977 10 22	675	(4.1+	1.6−)	1999 09 14	704	0.1+	0.3−	1999 10 13	046	0.5+	0.1+
1999 09 07	704	0.7−	0.3+	1999 10 12	046	0.2−	0.2+	1999 10 13	046	0.7+	0.5+

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	
(164)	8.89	0.15	19990810	229.64549	283.62660	77.24282	24.48474	0.3433975	2.6349617	215	38	1876–1999	0.55	M-v 0	Goffin	14159	(164)
(186)	8.91	0.15	19990810	31.95484	315.38571	14.91511	13.17876	0.1509501	2.3624316	175	35	1878–1999	0.55	M-v 0	Goffin	35673	(186)
(219)	9.32	0.15	19990810	346.58938	142.32859	201.00169	10.84295	0.2241515	2.3536588	376	41	1880–1999	0.53	M-v 0	Goffin	15528	(219)
(235)	8.82	0.15	19990810	11.23194	207.38813	66.37650	9.04705	0.0597369	2.8810013	162	39	1883–1999	0.55	M-v 0	Goffin	13442	(235)
(240)	9.00	0.15	19990810	95.80021	300.40588	115.25878	2.10440	0.2048138	2.6658041	321	51	1884–1999	0.55	M-v 0	Goffin	16004	(240)
(244)	12.2	0.15	19990810	300.52402	166.07741	209.15999	2.84059	0.1372078	2.1741645	177	31	1884–1999	0.54	M-v 0	Goffin	16004	(244)
(258)	8.50	0.23	19990810	153.98389	154.15152	207.87857	14.26381	0.2037697	2.6159421	256	35	1903–1999	0.81	M-v 1	Sumzina	19473	(258)
(265)	11.2	0.15	19990810	260.95594	252.01355	335.65615	25.62884	0.2681279	2.4192682	87	17	1887–1999	0.56	M-v 0	Goffin	16004	(265)
(294)	9.6	0.15	19990810	199.00889	184.81424	136.30156	6.30277	0.2471542	3.1380907	134	30	1890–1999	0.55	M-v 0	Goffin	16004	(294)
(361)	8.22	0.15	19990810	272.02509	69.77752	19.21132	12.65958	0.2130885	3.9514199	120	36	1893–1999	0.55	M-v 0	Goffin	16004	(361)
(388)	8.57	0.07	19990810	283.55726	327.94536	354.80851	6.44807	0.0582503	3.0066280	206	45	1894–1999	0.56	M-v 0	Goffin	16004	(388)

(413)	10.18	0.15	19990810	51.82627	252.17925	104.22968	18.72797	0.3461777	2.5810045	99	19	1917-1998	0.88	M-v	1	Sumzina	16386	(413)
(420)	8.31	0.15	19990810	345.09712	222.06632	243.82077	6.66095	0.0436357	3.4100325	220	51	1896-1999	0.55	M-v	0	Goffin	16005	(420)
(429)	9.82	0.15	19990810	78.29247	167.56042	220.16423	9.51286	0.1226602	2.6067755	182	33	1897-1999	0.54	M-v	0	Goffin	15529	(429)
(466)	8.30	0.15	19990810	290.77177	245.06909	291.24274	19.16284	0.0808899	3.3576604	112	30	1901-1999	0.55	M-v	0	Goffin	12305	(466)
(484)	9.86	0.15	19990810	23.63143	190.13722	127.55489	12.48650	0.0559090	2.6679582	69	27	1902-1999	0.96	M-v	1	Sumzina	16386	(484)
(508)	8.24	0.15	19990810	29.90391	182.89319	44.75613	13.36213	0.0184049	3.1605388	88	28	1908-1999	0.94	M-v	1	Sumzina	19475	(508)
(510)	9.73	0.15	19990810	261.38428	89.96841	203.16751	9.51163	0.1941561	2.6088401	138	28	1904-1999	0.97	M-v	1	Sumzina	16387	(510)
(527)	10.1	0.15	19990810	327.63547	202.81423	120.77562	9.65738	0.1491172	2.7255050	83	26	1904-1999	0.93	M-v	1	Sumzina	16387	(527)
(549)	11.01	0.15	19990810	180.55131	157.11015	291.66587	3.96580	0.2611417	2.6820789	122	18	1904-1999	0.83	M-v	1	Sumzina	16387	(549)
(562)	9.95	0.15	19990810	235.04423	258.60859	71.10584	11.12330	0.0971201	3.0208462	105	25	1905-1999	0.55	M-v	0	Goffin	16005	(562)
(600)	10.18	0.15	19990810	180.62763	112.63582	139.59260	10.20113	0.0551287	2.6590887	117	24	1920-1999	0.88	M-v	1	Sumzina	16389	(600)
(613)	9.67	0.15	19990810	184.88491	67.34045	355.06027	7.67312	0.0587152	2.9204536	84	25	1901-1999	0.89	M-v	1	Sumzina	19476	(613)
(617)	8.19	0.15	19990810	328.73785	307.20325	44.42160	22.05173	0.1392795	5.2265151	130	41	1906-1999	0.55	M-v	0	Goffin	22666	(617)
(643)	9.72	0.15	19990810	244.51147	236.06973	252.58991	13.71253	0.0714152	3.3601899	69	22	1908-1999	0.95	M-v	1	Sumzina	19476	(643)
(670)	9.8	0.15	19990810	113.70544	193.97602	174.92120	7.53838	0.1930809	2.8029164	135	31	1908-1999	0.86	M-v	1	Sumzina	19476	(670)
(706)	10.2	0.15	19990810	263.20738	30.20012	325.66107	14.44672	0.1929832	2.7295697	123	20	1924-1999	1.00	M-v	1	Sumzina	19477	(706)
(707)	12.2	0.15	19990810	257.17672	90.46801	282.15758	4.27109	0.1080333	2.1803480	112	24	1911-1999	0.99	M-v	1	Sumzina	16392	(707)
(728)	12.8	0.15	19990810	311.52090	55.33455	82.73555	4.25868	0.0868640	2.2535472	119	15	1912-1998	0.91	M-v	1	Sumzina	16392	(728)
(734)	9.7	0.15	19990810	150.43992	67.66698	3.43239	5.79788	0.0898321	3.1535971	100	24	1926-1999	0.97	M-v	1	Sumzina	16392	(734)
(736)	11.64	0.15	19990810	256.56504	200.26140	136.06150	4.37233	0.1648040	2.2023675	130	24	1912-1999	0.76	M-v	1	Sumzina	18775	(736)
(742)	9.55	0.15	19990810	332.64211	287.29194	64.44912	11.22327	0.1146568	3.0117832	110	34	1913-1999	0.55	M-v	0	Goffin	15859	(742)
(764)	9.48	0.15	19990810	9.44853	154.70071	259.39851	10.07309	0.1093126	3.1847920	84	21	1908-1998	1.00	M-v	1	Sumzina	19477	(764)
(768)	10.21	0.15	19990810	127.17782	14.70583	39.30877	16.19348	0.2009985	3.1526777	84	15	1930-1999	0.96	M-v	1	Sumzina	19477	(768)
(774)	8.6	0.15	19990810	168.67348	30.03330	250.38042	5.56266	0.1716039	3.0424803	131	29	1908-1999	0.91	M-v	1	Sumzina	19478	(774)
(776)	7.68	0.34	19990810	101.83678	304.97312	80.12677	18.20426	0.1624410	2.9331043	84	30	1914-1999	0.96	M-v	1	Sumzina	19478	(776)
(778)	9.66	0.15	19990810	37.00577	131.37070	322.68388	13.59039	0.2425641	3.2000509	73	20	1923-1999	0.94	M-v	1	Sumzina	14759	(778)
(783)	10.6	0.15	19990810	209.10117	153.79931	142.35049	9.31866	0.2297354	2.3419745	62	20	1911-1999	0.90	M-v	1	Sumzina	19478	(783)
(784)	9.0	0.15	19990810	161.96786	238.97668	15.09810	12.28516	0.2383289	3.1014493	110	21	1921-1999	0.88	M-v	1	Sumzina	16393	(784)
(796)	9.12	0.15	19990810	312.43215	329.82505	33.41539	19.07137	0.3200039	2.6347022	80	23	1920-1999	0.89	M-v	1	Sumzina	19478	(796)
(802)	12.6	0.15	19990810	22.96214	115.98157	7.97876	5.20775	0.0786281	2.1960452	74	13	1915-1999	0.84	M-v	1	Sumzina	19478	(802)
(814)	8.74	0.15	19990810	346.87195	297.43357	88.87820	21.83154	0.3106904	3.1502110	78	21	1916-1998	0.56	M-v	0	Goffin	11726	(814)
(837)	11.8	0.15	19990810	267.45642	173.45583	200.19753	6.73139	0.0406155	2.2979926	77	18	1923-1999	0.73	M-v	1	Sumzina	16395	(837)
(865)	11.9	0.15	19990810	0.36514	300.70417	177.30911	13.30979	0.1935307	2.4174652	125	23	1908-1999	0.54	M-v	0	Goffin	15860	(865)
(884)	8.81	0.15	19990810	48.33300	333.44004	301.73798	8.91931	0.1226564	5.1576021	145	35	1917-1999	0.55	M-v	0	Goffin	22574	(884)
(888)	9.51	0.15	19990810	134.89655	297.85120	124.27935	13.85797	0.1926545	2.7101541	78	18	1918-1999	1.00	M-v	1	Sumzina	14760	(888)
(892)	9.5	0.15	19990810	109.97175	288.44651	176.08055	21.30907	0.0945738	3.2336431	78	23	1918-1999	1.02	M-v	1	Sumzina	15530	(892)
(913)	11.9	0.15	19990810	190.46772	188.29707	95.07954	5.80699	0.1710814	2.1968419	80	18	1909-1999	0.87	M-v	1	Sumzina	19479	(913)
(916)	11.2	0.15	19990810	5.97276	41.14746	329.97766	11.11648	0.2362829	2.3649428	109	15	1924-1999	0.66	M-v	1	Williams	35405	(916)
(919)	11.3	0.15	19990810	192.90811	155.07996	230.21772	8.14941	0.0834783	2.7732238	100	23	1918-1999	0.98	M-v	1	Sumzina	19480	(919)
(920)	11.19	0.15	19990810	198.48545	268.47161	193.15419	11.59110	0.1052219	2.6213740	108	21	1919-1999	0.98	M-v	1	Sumzina	16396	(920)
(921)	10.6	0.15	19990810	88.42264	71.23551	205.32201	16.31707	0.1679955	3.1976505	69	21	1919-1999	0.98	M-v	1	Sumzina	16396	(921)
(926)	10.3	0.15	19990810	88.57472	171.66710	49.57550	16.33388	0.1798579	2.9830231	51	11	1920-1998	0.91	M-v	1	Sumzina	15530	(926)
(941)	11.55	0.15	19990810	347.91848	334.44693	52.60238	6.63989	0.1979907	2.7841275	71	17	1920-1998	0.56	M-v	0	Goffin	36056	(941)
(960)	12.9	0.15	19990810	62.16237	87.53840	249.45541	3.02458	0.1658670	2.2483222	42	15	1921-1998	1.02	M-v	1	Sumzina	19480	(960)
(966)	9.91	0.15	19990810	293.10523	178.24296	72.74317	14.40212	0.1300007	2.7196765	84	23	1933-1999	0.98	M-v	1	Sumzina	15530	(966)
(983)	9.58	0.15	19990810	312.15669	350.77529	251.06905	14.86284	0.0986358	3.1582155	88	26	1922-1999	0.88	M-v	1	Sumzina	19480	(983)
(1014)	12.1	0.15	19990810	24.69468	233.79739	251.97053	2.26402	0.2006210	2.8020633	114	22	1924-1999	0.89	M-v	1	Sumzina	19481	(1014)
(1037)	13.6	0.15	19990810	51.45751	169.21823	200.88273	5.89549	0.1912301	2.2544807	26	10	1924-1998	1.16	M-v	2	Williams	19481	(1037)
(1065)	13.2	0.15	19990810	45.15284	353.15658	330.50538	8.38122	0.2991290	2.3598450	57	15	1926-1998	0.95	M-v	2	Sumzina	19482	(1065)
(1078)	11.80	0.15	19990810	39.21244	43.92746	93.97631	7.36731	0.1380507	2.2698268	90	15	1924-1999	0.77	M-v	1	Sumzina	16846	(1078)
(1088)	11.39	0.15	19990810	9.82538	319.21294	54.66239	7.65163	0.1961111	2.2018572	64	22	1929-1998	0.99	M-v	2	Sumzina	14761	(1088)
(1089)	11.6	0.15	19990810	268.10185	354.35258	71.60925	3.72894	0.1277662	2.2134663	134	22	1904-1999	0.97	M-v	1	Sumzina	14761	(1089)
(1091)	10.6	0.15	19990810	164.39178	10.91396	80.70287	1.15746	0.0528050	3.4239981	172	15	1934-1999	0.91	M-v	0	Sumzina	19482	(1091)

(1096)	10.3	0.15	19990810	315.59202	247.33487	81.55259	9.48880	0.1897743	2.6022663	98	25	1928-1999	1.00	M-v	1	Sumzina	19482	(1096)
(1126)	12.1	0.15	19990810	192.48731	135.49759	1.24899	6.50726	0.1478127	2.2714100	88	18	1926-1999	1.00	M-v	1	Sumzina	19483	(1126)
(1129)	10.20	0.15	19990810	54.51203	132.98825	269.75723	8.59622	0.0823595	3.0212801	107	16	1945-1999	1.01	M-v	1	Sumzina	19483	(1129)
(1132)	10.6	0.15	19990810	343.04777	268.74925	30.44010	7.23739	0.2738935	2.6863496	103	24	1929-1999	0.92	M-v	1	Sumzina	19483	(1132)
(1153)	12.1	0.15	19990810	38.48649	28.58625	280.78051	3.33365	0.1601175	2.1963239	102	18	1930-1999	0.97	M-v	1	Sumzina	19984	(1153)
(1154)	10.51	0.15	19990810	82.54317	182.57599	83.15906	4.55101	0.0676986	3.3897008	107	26	1927-1999	0.97	M-v	1	Sumzina	19984	(1154)
(1174)	12.0	0.15	19990810	69.18767	351.64120	1.29639	10.10356	0.1183055	3.0185511	80	13	1930-1998	0.95	M-v	1	Sumzina	19984	(1174)
(1185)	12.09	0.15	19990810	137.20467	2.07739	72.02921	5.70051	0.1050588	2.2378488	94	19	1930-1999	1.02	M-v	1	Sumzina	19984	(1185)
(1194)	10.2	0.15	19990810	306.90084	245.94051	291.50856	10.87137	0.0924879	2.9118227	56	17	1931-1999	0.99	M-v	1	Sumzina	19984	(1194)
(1199)	10.36	0.15	19990810	179.27320	276.65221	236.18615	8.77792	0.0331888	3.0167066	66	29	1921-1999	0.98	M-v	1	Sumzina	19985	(1199)
(1212)	9.54	0.15	19990810	172.44957	350.03878	149.73640	7.58733	0.1872579	3.9487435	83	24	1932-1999	1.02	M-v	1	Sumzina	19985	(1212)
(1220)	11.72	0.23	19990810	37.95796	330.89409	113.68700	11.35866	0.0669643	3.0045838	53	12	1932-1999	0.97	M-v	1	Sumzina	19985	(1220)
(1238)	11.9	0.15	19990810	171.82492	92.41086	52.13310	12.17820	0.1404492	2.6654407	74	20	1941-1999	0.96	M-v	1	Sumzina	16848	(1238)
(1270)	12.5	0.15	19990810	276.35616	258.67312	97.98301	5.98679	0.2079023	2.2347827	102	13	1930-1999	0.98	M-v	2	Sumzina	19986	(1270)
(1281)	11.6	0.15	19990810	82.34730	72.77152	210.27100	7.44870	0.2033533	2.5614901	93	23	1904-1999	0.86	M-v	1	Sumzina	16849	(1281)
(1305)	10.65	0.15	19990810	280.13319	151.84462	63.09929	2.32018	0.0757947	3.0111341	204	32	1927-1999	0.99	M-v	1	Sumzina	19986	(1305)
(1306)	9.71	0.15	19990810	62.50742	133.24231	274.61773	14.91060	0.0993365	3.1428370	83	21	1930-1999	0.97	M-v	1	Sumzina	14763	(1306)
(1382)	12.2	0.15	19990810	92.52898	246.18601	353.35927	1.56656	0.1313068	2.2201320	103	23	1925-1999	0.99	M-v	1	Sumzina	14763	(1382)
(1394)	12.5	0.15	19990810	187.47262	113.24797	179.05232	2.66532	0.0784951	2.4378015	113	17	1936-1999	0.99	M-v	1	Sumzina	13440	(1394)
(1420)	11.5	0.15	19990810	348.85945	73.18249	261.32930	3.48514	0.0753927	2.7480874	151	21	1931-1999	0.92	M-v	1	Sumzina	17409	(1420)
(1440)	11.8	0.15	19990810	10.49388	350.48235	47.04577	2.28980	0.2023572	3.1450209	74	9	1937-1998	0.98	M-v	1	Sumzina	19987	(1440)
(1471)	10.7	0.15	19990810	175.02552	93.92004	322.18700	13.62062	0.1181588	2.7168540	83	20	1931-1999	0.96	M-v	1	Sumzina	14764	(1471)
(1709)	12.75	0.15	19990810	49.87736	41.67847	300.37456	7.57986	0.2145548	2.3779807	66	12	1925-1999	0.74	M-v	1	Williams	35673	(1709)
(1750)	13.15	0.15	19990810	73.40676	108.73783	273.89858	19.08426	0.1728271	1.9262273	35	10	1950-1998	0.92	M-v	2	Sumzina	14767	(1750)
(1817)	11.8	0.15	19990810	190.90369	140.56902	88.85516	25.72536	0.1910672	2.3715655	36	11	1939-1999	0.92	M-v	2	Williams	16210	(1817)
(1858)	11.5	0.15	19990810	72.27593	16.09844	272.36471	1.65551	0.0765820	2.7008582	82	16	1954-1999	0.99	M-v	1	Sumzina	15532	(1858)
(1881)	11.1	0.15	19990810	200.10237	70.38288	218.23790	9.87232	0.1113051	3.1617975	42	11	1940-1999	0.99	M-v	1	Sumzina	15533	(1881)
(1981)	15.5	0.15	19990810	28.06474	267.70596	357.14145	39.84189	0.6497574	1.7764908	96	10	1973-1999	0.94	M-v	1	Sicoli	22575	(1981)
(1985)	10.8	0.15	19990810	239.83499	232.42480	305.43529	17.12290	0.1446208	3.1338103	71	13	1929-1998	0.94	M-v	1	Sumzina	15534	(1985)
(2077)	14.1	0.15	19990810	347.46267	343.85390	69.62970	28.11698	0.2970257	2.3265922	33	7	1974-1999	0.87	M-v	2	Williams	30248	(2077)
(2255)	11.3	0.15	19990810	355.53193	348.26905	41.35547	14.20626	0.1590372	3.0983487	70	9	1950-1999	0.90	M-v	1	Williams	35408	(2255)
(2427)	12.8	0.15	19990810	36.75909	170.26397	227.81113	4.15034	0.1648245	2.7397757	81	9	1955-1999	0.73	M-v	1	Williams	32507	(2427)
(2595)	12.2	0.15	19990810	330.27683	276.28805	148.82261	9.86301	0.1454141	2.7875286	63	11	1952-1999	0.92	M-v	1	Williams	17182	(2595)
(2598)	12.6	0.15	19990810	337.40888	215.73688	198.17241	7.79512	0.2182121	2.7828191	60	10	1948-1999	0.91	M-v	1	Williams	35674	(2598)
(2786)	12.0	0.15	19990810	331.55313	19.74911	9.49246	13.27539	0.1770532	2.6059256	27	8	1955-1997	0.95	M-v	2	Sumzina	14002	(2786)
(2789)	13.6	0.15	19990810	335.47388	140.75062	242.96141	3.81241	0.1641679	2.2275895	101	10	1906-1999	0.71	M-v	1	Williams	25515	(2789)
(2825)	13.4	0.15	19990810	355.23182	81.23804	329.68270	3.52161	0.1742858	2.2460452	80	10	1938-1999	0.84	M-v	1	Williams	35674	(2825)
(2830)	12.64	0.15	19990810	109.68549	140.29744	49.16281	25.33762	0.2078375	2.3769234	30	8	1969-1998	1.00	M-v	2	Williams	13441	(2830)
(2914)	13.8	0.15	19990810	318.68592	222.64122	166.90834	2.95501	0.1296202	2.2613074	106	11	1977-1999	0.84	M-v	1	Sumzina	13439	(2914)
(3041)	12.5	0.15	19990810	356.15782	350.89279	82.61929	14.61370	0.1455894	2.5863945	39	7	1980-1999	0.99	M-v	2	Williams	35674	(3041)
(3046)	12.2	0.15	19990810	300.21318	263.01268	188.90669	18.34864	0.1547795	3.1386508	66	9	1960-1999	0.79	M-v	1	Williams	22798	(3046)
(3055)	12.5	0.15	19990810	346.76324	62.92768	3.54977	15.01468	0.1074098	2.5617704	39	8	1976-1999	1.07	M-v	1	Williams	36057	(3055)
(3077)	12.7	0.15	19990810	319.99591	117.12204	297.73859	1.47454	0.0558735	2.2413651	101	12	1942-1999	0.93	M-v	1	Williams	35674	(3077)
(3314)	13.1	0.15	19990810	340.62054	45.57886	359.63110	7.41106	0.0455265	2.2189296	67	15	1928-1999	0.80	M-v	1	Williams	28278	(3314)
(3362)	18.3	0.15	19990810	147.77434	54.85955	152.62966	9.91276	0.4686533	0.9895872	154	13	1984-1999	0.70	M-v	4	Williams	28056	(3362)
(3491)	12.4	0.15	19990810	28.92496	246.12058	161.63565	4.00924	0.0948608	2.7926514	89	8	1974-1999	0.71	M-v	1	Williams	35409	(3491)
(3607)	14.6	0.15	19990810	263.44973	126.37013	1.99147	2.84246	0.0687288	2.2475120	26	7	1950-1999	0.66	M-v	1	Williams	35409	(3607)
(3800)	15.4	0.15	19990810	208.79696	115.51723	95.54015	14.84620	0.0756153	1.5779629	274	9	1975-1999	0.68	M-v	3	Williams	26726	(3800)
(3838)	15.5	0.15	19990810	353.84879	49.46495	235.73639	29.27266	0.7016721	1.5048294	95	7	1986-1999	0.74	M-v	3	Williams	28565	(3838)
(3872)	12.8	0.15	19990810	264.73442	65.96542	94.95124	13.02627	0.2057262	2.6612444	25	9	1931-1999	0.69	M-v	1	Williams	35674	(3872)
(4054)	12.6	0.15	19990810	342.72043	25.60123	12.73322	4.87018	0.1821965	3.0433417	91	9	1973-1999	0.96	M-v	1	Williams	35410	(4054)
(4395)	12.3	0.15	19990810	89.78428	106.42366	189.71319	10.05173	0.0859160	2.9997525	65	9	1955-1998	0.88	M-v	1	Sumzina	16011	(4395)
(4430)	12.6	0.15	19990810	334.78380	75.06726	353.17431	12.72424	0.1736936	2.9919272	32	7	1978-1999	0.81	M-v	1	Williams	16215	(4430)

(4464)	13.9	0.15	19990810	64.91082	314.27945	11.88173	20.21045	0.0681485	1.9526735	41	9	1955-1999	0.77	M-v	1	Williams	16404	(4464)
(4494)	13.1	0.15	19990810	246.63528	215.30668	294.64349	2.47475	0.1182757	2.3450737	83	11	1972-1999	0.95	M-v	1	Williams	16415	(4494)
(4561)	13.4	0.15	19990810	343.50688	53.95990	10.36505	9.51713	0.1554984	2.5751752	44	9	1953-1999	0.90	M-v	1	Williams	25041	(4561)
(4615)	12.3	0.15	19990810	49.53224	342.74797	1.88028	14.75051	0.1659208	2.5987400	37	9	1923-1999	1.04	M-v	2	Williams	29891	(4615)
(4694)	12.7	0.15	19990810	52.87104	338.81752	332.79275	5.66354	0.1892443	2.7217593	96	10	1981-1999	0.88	M-v	1	Williams	24889	(4694)
(4698)	13.3	0.15	19990810	78.43530	284.87822	291.51047	2.12077	0.0762125	2.2247889	88	9	1975-1999	0.74	M-v	1	Sicoli	17613	(4698)
(4701)	13.0	0.15	19990810	324.28469	288.02026	104.80787	3.66953	0.1410489	2.7040947	71	13	1954-1999	1.02	M-v	1	Sicoli	17614	(4701)
(4718)	12.6	0.15	19990810	37.21617	219.98025	334.89808	8.05250	0.1614660	2.3594126	76	7	1977-1999	0.96	M-v	2	Sicoli	17620	(4718)
(4720)	13.0	0.15	19990810	260.78595	287.05938	121.47528	5.87136	0.1454030	2.2247815	74	11	1940-1999	1.00	M-v	1	Sicoli	17621	(4720)
(4722)	9.7	0.15	19990810	298.98403	314.22214	65.04435	8.81572	0.1125843	5.2223097	82	8	1977-1999	0.83	M-v	0	Sicoli	27087	(4722)
(4793)	12.8	0.15	19990810	288.25665	62.10146	156.11313	4.36549	0.1551156	2.6684764	51	7	1954-1998	0.82	M-v	1	Williams	18098	(4793)
(4794)	14.0	0.15	19990810	257.84158	353.64049	174.22315	5.39707	0.1149300	2.2725280	55	9	1971-1999	0.87	M-v	2	Williams	32296	(4794)
(4797)	12.5	0.15	19990810	210.50462	77.40364	321.26219	1.81140	0.1840322	2.4125582	58	7	1978-1999	0.92	M-v	1	Sicoli	18099	(4797)
(4833)	9.1	0.15	19990810	56.93619	279.77192	101.76911	34.67332	0.0934914	5.2576109	43	9	1975-1999	0.87	M-v	1	Williams	30891	(4833)
(4835)	9.8	0.15	19990810	329.33444	353.85865	125.54099	19.58471	0.2522772	5.1790893	38	5	1979-1999	0.75	M-v	1	Williams	18274	(4835)
(4970)	12.9	0.15	19990810	315.54160	130.09476	292.44714	7.23741	0.1454481	2.3960231	56	8	1951-1999	0.74	M-v	1	Williams	19005	(4970)
(5060)	13.2	0.15	19990810	300.93837	87.18408	356.02571	1.98075	0.1883836	2.6152928	58	10	1957-1999	0.76	M-v	1	Williams	19667	(5060)
(5125)	13.4	0.15	19990810	283.03408	84.58124	23.59611	3.86801	0.1595550	2.4665072	66	7	1987-1999	0.77	M-v	1	Williams	36058	(5125)
(5264)	9.5	0.15	19990810	323.28416	357.97940	121.89241	33.58112	0.1129550	5.2006651	37	9	1965-1999	0.85	M-v	1	Williams	20494	(5264)
(5473)	13.3	0.15	19990810	342.41633	325.81167	59.85273	7.94745	0.1620060	2.3845486	93	8	1955-1999	0.69	M-v	1	Williams	21773	(5473)
(5921)	13.6	0.15	19990810	148.38082	294.26271	328.58514	3.44773	0.1272530	2.1890777	76	11	1978-1999	0.60	M-v	1	Williams	23334	(5921)
(6012)	13.2	0.15	19990810	32.78439	251.63223	62.91286	18.28347	0.3403718	2.6362226	68	6	1977-1999	0.61	M-v	1	Williams	23663	(6012)
(6060)	13.0	0.15	19990810	74.35517	145.11106	156.02154	9.88663	0.0909279	2.6166851	62	7	1980-1999	0.75	M-v	1	Williams	36059	(6060)
(6078)	13.3	0.15	19990810	6.13762	138.29931	228.90716	8.35488	0.1745528	2.8059414	45	7	1980-1999	0.74	M-v	1	Williams	32040	(6078)
(6152)	12.7	0.15	19990810	142.95635	257.34689	5.81913	5.64879	0.2003211	2.5697785	80	6	1985-1999	0.77	M-v	1	Williams	24224	(6152)
(6444)	14.0	0.15	19990810	1.06628	268.67694	98.28864	6.05944	0.3053791	2.2295461	62	7	1979-1999	0.80	M-v	2	Williams	36059	(6444)
(7547)	14.7	0.15	19990810	158.80599	45.18234	160.82576	2.24857	0.0298504	2.8417638	55	7	1979-1999	0.76	M-v	1	Williams	29588	(7547)
(7548)	13.5	0.15	19990810	69.59986	291.85951	351.15086	0.33310	0.1433250	3.1657542	52	6	1980-1999	0.67	M-v	1	Williams	29588	(7548)
(7555)	14.5	0.15	19990810	337.92082	315.09332	72.93415	2.08320	0.2000313	2.3479703	55	6	1981-1999	0.83	M-v	1	Williams	29590	(7555)
(7606)	14.2	0.15	19990810	310.16746	24.60353	42.97930	2.64301	0.1544336	2.4501174	48	6	1976-1999	0.68	M-v	1	Williams	29602	(7606)
(7636)	12.6	0.15	19990810	294.23866	60.80409	26.64896	9.85962	0.0819703	2.6029974	52	6	1984-1999	0.71	M-v	1	Williams	29895	(7636)
(7782)	13.4	0.15	19990810	17.29255	114.07110	259.81265	14.48144	0.3193205	3.1588556	67	5	1993-1999	0.64	M-v	1	Williams	30265	(7782)
(7796)	13.6	0.15	19990810	285.26359	42.00353	93.99016	12.79582	0.1426388	2.6663592	56	5	1973-1999	0.58	M-v	1	Williams	30269	(7796)
(8176)	17.1	0.15	19990810	352.93582	241.77972	66.72953	39.64743	0.6424784	1.5753573	171	7	1991-1999	0.63	M-v	2	Williams	31081	(8176)
(8412)	15.8	0.15	19990810	256.29342	334.57329	45.12556	2.22343	0.1953251	2.3829385	37	8	1952-1998	0.78	M-v	1	Williams	31368	(8412)
(8442)	14.9	0.15	19990810	266.81890	35.09980	90.68431	4.77161	0.1471065	2.3701563	33	5	1977-1999	0.72	M-v	1	Williams	31374	(8442)
(8476)	14.6	0.15	19990810	38.33658	193.99279	115.30839	2.22214	0.1532901	2.1678032	127	7	1954-1999	0.62	M-v	1	Williams	31490	(8476)
(8486)	13.0	0.15	19990810	185.69585	37.07159	24.74671	23.57003	0.1336796	3.1649711	39	5	1989-1998	0.72	M-v	1	Williams	31493	(8486)
(8563)	11.9	0.15	19990810	325.07604	354.36992	328.02549	21.46854	0.1173954	2.9732145	41	7	1954-1998	0.72	M-v	1	Williams	31510	(8563)
(8734)	13.6	0.15	19990810	259.74431	297.57710	93.05792	3.32313	0.0506246	2.8678860	83	4	1980-1998	0.56	M-v	1	Williams	31695	(8734)
(8760)	13.3	0.15	19990810	28.61571	342.48027	268.95757	1.66546	0.0614927	3.0798002	56	6	1971-1998	0.78	M-v	1	Williams	31701	(8760)
(8771)	14.4	0.15	19990810	258.69914	31.05945	16.95890	7.00147	0.0984978	2.4305804	55	9	1971-1999	0.88	M-v	1	Williams	31704	(8771)
(8773)	12.9	0.15	19990810	176.93652	125.80558	307.73254	8.90362	0.2156318	3.1422869	49	7	1973-1998	0.67	M-v	1	Williams	31704	(8773)
(8897)	14.4	0.15	19990810	20.30034	142.95770	194.62386	5.84045	0.1437845	2.3881572	114	5	1994-1999	0.64	M-v	1	Williams	31922	(8897)
(8935)	14.9	0.15	19990810	334.05399	217.99548	177.78930	4.10883	0.1503348	2.2300427	61	6	1969-1999	0.66	M-v	1	Williams	31931	(8935)
(9056)	12.8	0.15	19990810	255.37360	258.31154	220.62853	2.73546	0.0448441	2.7974938	56	5	1992-1999	0.55	M-v	1	Williams	32186	(9056)
(9064)	13.9	0.15	19990810	166.66955	108.10811	120.52833	8.13471	0.1252038	2.4368540	58	5	1991-1999	0.66	M-v	1	Williams	36060	(9064)
(9098)	12.8	0.15	19990810	308.02637	30.98480	44.97251	3.34650	0.1564676	2.9118152	70	6	1989-1999	0.56	M-v	1	Williams	32196	(9098)
(9115)	13.7	0.15	19990810	136.24540	345.12589	267.53663	5.15881	0.0885068	2.3971555	50	5	1980-1999	0.62	M-v	1	Williams	32200	(9115)
(9116)	15.2	0.15	19990810	353.54033	224.03881	196.70529	3.96717	0.1203126	2.3172188	71	5	1988-1999	0.50	M-v	1	Williams	32200	(9116)
(9117)	12.4	0.15	19990810	260.69511	43.62581	91.11383	10.19210	0.1663698	2.4228013	91	5	1952-1999	0.61	M-v	1	Williams	32200	(9117)
(9126)	14.7	0.15	19990810	221.65322	254.93024	179.46376	1.86562	0.1550178	2.5359026	43	4	1979-1998	0.82	M-v	2	Williams	32203	(9126)
(9237)	14.2	0.15	19990810	282.66576	15.02393	95.78249	1.61079	0.1182898	2.6814100	46	5	1977-1999	0.68	M-v	1	Williams	32432	(9237)

(9242)	15.0	0.15	19990810	213.85399	282.19082	152.75598	5.06484	0.1736487	2.2921653	30	5	1955-1998	0.73	M-v	2	Williams	32433	(9242)
(9270)	13.1	0.15	19990810	255.14422	38.69807	110.23400	2.50853	0.1363935	3.0656157	99	8	1962-1999	0.67	M-v	1	Williams	32598	(9270)
(9317)	13.3	0.15	19990810	346.77763	242.28854	162.09128	11.06856	0.1236417	3.0006003	67	6	1988-1999	0.63	M-v	1	Williams	32609	(9317)
(9326)	13.9	0.15	19990810	112.14104	171.49137	129.06854	5.25086	0.0460819	2.7906376	53	5	1989-1999	0.91	M-v	1	Williams	32612	(9326)
(9337)	13.2	0.15	19990810	3.68574	67.45525	355.97975	1.53370	0.0604862	2.8609124	59	7	1979-1999	0.92	M-v	1	Williams	32614	(9337)
(9343)	14.2	0.15	19990810	122.86911	109.24781	187.09849	6.35903	0.1241331	2.3332119	56	5	1984-1999	0.77	M-v	2	Williams	32616	(9343)
(9368)	13.7	0.15	19990810	299.13719	212.91051	295.53501	6.85002	0.1158239	2.3100306	61	6	1991-1999	0.75	M-v	2	Williams	32622	(9368)
(9377)	13.6	0.15	19990810	74.21589	338.67806	333.23130	2.18514	0.0446915	3.0187727	59	5	1991-1999	0.67	M-v	1	Williams	32624	(9377)
(9384)	13.1	0.15	19990810	202.62142	73.21298	122.13086	3.31014	0.1002386	3.1653988	49	6	1977-1999	0.77	M-v	1	Williams	32626	(9384)
(9394)	13.7	0.15	19990810	103.12125	279.68430	347.07235	3.17603	0.0524785	2.7224423	45	7	1981-1999	0.73	M-v	1	Williams	32628	(9394)
(9403)	13.3	0.15	19990810	118.17084	221.79838	78.70860	4.28973	0.0947191	2.6865813	96	6	1992-1999	0.68	M-v	1	Williams	32630	(9403)
(9462)	14.2	0.15	19990810	34.51003	358.66073	323.43564	1.57751	0.2215300	2.3772028	73	5	1984-1999	0.59	M-v	1	Williams	32644	(9462)
(9466)	14.5	0.15	19990810	24.79625	167.11806	201.37509	5.49042	0.1774876	2.3019788	41	6	1988-1999	0.76	M-v	1	Williams	32645	(9466)
(9467)	13.5	0.15	19990810	41.19897	114.38551	194.55908	5.36489	0.2439648	3.1676968	51	6	1976-1999	0.67	M-v	1	Williams	32645	(9467)
(9497)	13.3	0.15	19990810	335.20212	259.67860	179.40088	2.24945	0.0991132	2.9475800	66	6	1950-1999	0.76	M-v	1	Williams	35414	(9497)
(9503)	13.1	0.15	19990810	142.12010	106.96772	7.14638	8.52939	0.0467506	3.1250003	45	5	1973-1998	0.84	M-v	1	Williams	32654	(9503)
(9504)	13.7	0.15	19990810	44.74379	320.87645	41.86010	2.40099	0.0830382	2.9459847	86	9	1971-1999	0.99	M-v	1	Williams	32654	(9504)
(9644)	12.5	0.15	19990810	53.96202	170.38087	168.51770	8.40516	0.1534626	2.9101829	58	5	1994-1999	0.63	M-v	1	Williams	32899	(9644)
(9670)	12.5	0.15	19990810	297.09920	340.40717	175.41320	10.30491	0.0440903	2.9886812	66	4	1986-1999	0.69	M-v	1	Williams	32906	(9670)
(9816)	13.8	0.15	19990810	227.51001	71.68366	8.62191	21.94661	0.0628126	2.6878433	40	6	1953-1999	0.55	M-v	1	Williams	33215	(9816)
(9857)	10.3	0.15	19990810	151.93693	4.79677	289.38405	19.64153	0.0246677	5.1254697	71	5	1991-1999	0.77	M-v	1	Williams	33459	(9857)
(9875)	13.5	0.15	19990810	155.82287	78.17156	201.64204	4.93565	0.0538616	2.4462555	84	5	1987-1999	0.70	M-v	1	Williams	33463	(9875)
(10414)	13.3	0.15	19990810	153.95916	58.17563	185.02137	9.18925	0.0296825	3.1787062	43	5	1976-1999	0.61	M-v	1	Williams	34163	(10414)
(10637)	12.6	0.15	19990810	304.90302	88.53105	24.89533	13.68592	0.0217550	3.1803538	66	6	1976-1999	0.81	M-v	1	Williams	34472	(10637)
(11375)	12.8	0.15	19990810	78.21225	103.99775	224.45751	9.70774	0.1091225	2.9964323	62	5	1962-1999	0.76	M-v	1	Williams	35584	(11375)
1955 RE ₁	14.2	0.15	19990810	357.43163	22.33846	319.77425	7.25300	0.2546058	2.3778261	68	3	1955-1999	0.60	M-v	2	Williams	36061	1955 RE ₁
1964 VL ₁	13.7	0.15	19990810	349.25157	355.56587	63.19650	5.43853	0.2575458	2.6693272	29	4	1964-1999	0.68	M-v	2	Williams	32297	1964 VL ₁
1970 JB	13.9	0.15	19990810	123.39487	281.32808	289.17508	20.63743	0.2812986	2.3173394	36	4	1970-1999	0.66	M-v	2	Williams	35414	1970 JB
1971 FB	15.1	0.15	19990810	250.37033	314.61029	185.74119	26.06988	0.2394861	2.4060167	21	5	1971-1999	0.97	M-v	2	Williams	22482	1971 FB
1971 UR	12.8	0.15	19990810	299.06905	52.69444	47.00951	5.90328	0.1033954	3.1581094	48	5	1971-1999	0.75	M-v	3	Williams	32737	1971 UR
1973 QO ₁	13.7	0.15	19990810	34.85150	36.02720	317.73576	7.83141	0.2945489	2.6201434	20	5	1956-1999	0.73	M-v	2	Williams	30089	1973 QO ₁
1973 SL	10.8	0.15	19990810	20.15456	324.85725	111.88662	1.77875	0.0585986	5.1119512	49	5	1973-1999	0.86	M-v	1	Williams	35676	1973 SL
1973 UK ₅	14.5	0.15	19990810	257.51676	44.40763	46.89124	3.01684	0.1573554	2.4187487	41	5	1973-1999	0.67	M-v	2	Williams	36061	1973 UK ₅
1973 UR ₅	14.9	0.15	19990810	4.43526	14.77684	30.08734	2.82634	0.1959713	2.3754782	39	5	1973-1999	0.72	M-v	1	Williams	35056	1973 UR ₅
1975 SX	14.3	0.15	19990810	356.68178	158.46790	201.29767	1.51926	0.1442593	3.3133358	51	3	1975-1999	0.70	M-v	5	Williams	36061	1975 SX
1975 SU ₁	13.2	0.15	19990810	231.68718	8.96533	173.30583	1.46282	0.1160099	3.2422954	44	4	1975-1999	0.92	M-v	1	Williams	35676	1975 SU ₁
1975 SZ ₁	15.6	0.15	19990810	313.14737	248.01049	173.48703	2.93712	0.1725357	2.2729687	42	4	1975-1999	0.47	M-v	1	Williams	29131	1975 SZ ₁
1975 SB ₂	15.3	0.15	19990810	20.53677	184.03476	190.31789	7.85521	0.1273055	2.2533139	32	5	1975-1999	0.67	M-v	1	Williams	32738	1975 SB ₂
1975 TE	14.4	0.15	19990810	46.76790	325.61354	24.40543	4.34176	0.2175307	2.2442002	32	4	1975-1999	0.83	M-v	2	Williams	32297	1975 TE
1975 TU ₃	13.1	0.15	19990810	318.72289	10.60431	44.90839	8.81294	0.0508737	2.2706821	46	4	1975-1999	0.52	M-v	2	Williams	36061	1975 TU ₃
1976 QK ₁	14.2	0.15	19990810	18.78616	123.63695	200.18411	2.44496	0.2017909	2.4432248	82	4	1976-1999	0.64	M-v	2	Williams	36061	1976 QK ₁
1976 SL ₅	14.1	0.15	19990810	354.91962	29.07842	14.92885	5.56019	0.0933893	2.7420643	36	4	1976-1999	0.64	M-v	2	Williams	33064	1976 SL ₅
1977 DA ₄	13.5	0.15	19990810	302.86690	342.23286	68.91899	3.24480	0.0578829	2.8867458	53	3	1977-1999	0.55	M-v	3	Williams	35905	1977 DA ₄
1977 DL ₄	14.6	0.15	19990810	124.50966	213.44914	356.39685	4.46437	0.2353672	2.5722341	57	4	1977-1999	0.73	M-v	4	Williams	36061	1977 DL ₄
1977 ER ₅	13.6	0.15	19990810	311.58997	141.25814	266.52037	0.80695	0.0634361	2.9027224	64	4	1977-1999	0.57	M-v	1	Williams	36061	1977 ER ₅
1977 JA	15.7	0.15	19990810	125.26089	0.92924	239.18784	23.78130	0.2007151	2.3093453	19	4	1977-1999	0.95	M-v	4	Williams	31943	1977 JA
1977 PB	13.4	0.15	19990810	99.28816	110.80761	132.62380	13.50924	0.1342984	2.6483232	56	4	1977-1999	0.69	M-v	2	Williams	36061	1977 PB
1977 QN ₁	13.0	0.15	19990810	103.96412	308.94897	343.61415	12.92256	0.1808109	2.6193217	33	3	1977-1999	0.70	M-v	3	Williams	33738	1977 QN ₁
1977 RL ₇	13.8	0.15	19990810	2.83734	194.81213	194.04011	13.33131	0.2431601	2.6625323	45	5	1977-1999	0.89	M-v	2	Williams	32297	1977 RL ₇
1977 TU ₃	12.6	0.15	19990810	40.56402	174.79849	215.23336	14.75667	0.1973245	3.0442941	53	3	1977-1999	0.74	M-v	2	Williams	35676	1977 TU ₃
1977 TQ ₆	13.1	0.15	19990810	17.92345	297.75625	53.46559	13.05482	0.1924631	2.6731084	48	4	1977-1999	0.66	M-v	3	Williams	21926	1977 TQ ₆
1978 CK	12.5	0.15	19990810	324.17547	142.22100	310.01623	20.67092	0.0534403	3.1838960	54	5	1978-1999	0.57	M-v	1	Williams	33539	1978 CK
1978 NF	14.3	0.15	19990810	56.10193	194.11694	111.79327	14.35662	0.1653352	2.5539217	46	3	1978-1999	0.59	M-v	2	Williams	36061	1978 NF

1978 QF ₁	14.7	0.15	19990810	317.48843	199.87174	187.18876	4.97462	0.2144066	2.3102171	59	4	1978–1999	0.59	M-v	2	Williams	36061	1978 QF ₁
1978 RQ ₁	14.5	0.15	19990810	37.54730	144.51424	176.59991	5.67410	0.1502272	2.2912365	55	4	1978–1999	0.63	M-v	2	Williams	32041	1978 RQ ₁
1978 RD ₂	14.4	0.15	19990810	4.42274	328.95167	34.48983	4.76582	0.2309021	2.5869340	45	3	1978–1999	0.72	M-v	3	Williams	36061	1978 RD ₂
1978 RT ₆	15.4	0.15	19990810	75.86970	111.07640	165.65019	5.92596	0.1700897	2.2800873	50	3	1978–1999	0.61	M-v	3	Williams	32041	1978 RT ₆
1978 RL ₇	13.6	0.15	19990810	40.40060	160.82659	219.30315	1.07438	0.0730943	2.9107602	52	6	1978–1999	0.73	M-v	2	Williams	33064	1978 RL ₇
1978 RQ ₉	14.3	0.15	19990810	96.41494	231.94421	350.02458	6.74723	0.0588258	2.3108739	84	5	1978–1999	0.59	M-v	2	Williams	36061	1978 RQ ₉
1978 RA ₁₀	15.3	0.15	19990810	288.24565	75.09485	358.63873	1.55239	0.2126761	2.3016602	71	3	1978–1999	0.65	M-v	4	Williams	36061	1978 RA ₁₀
1978 SE ₅	13.4	0.15	19990810	65.26376	143.89595	204.34832	8.98312	0.0607162	2.5556438	49	6	1978–1999	0.58	M-v	1	Williams	33738	1978 SE ₅
1978 SF ₅	15.1	0.15	19990810	49.54518	307.74081	32.34639	6.49039	0.1986673	2.2767119	20	3	1978–1999	0.77	M-v	2	Williams	32298	1978 SF ₅
1978 ST ₇	13.9	0.15	19990810	278.12781	136.62893	322.16828	5.65226	0.1266390	2.3043145	61	5	1978–1999	0.65	M-v	2	Williams	36061	1978 ST ₇
1978 SB ₈	14.5	0.15	19990810	41.26838	354.04055	14.84474	5.35579	0.1782794	2.2680502	32	5	1977–1999	0.69	M-v	2	Williams	31414	1978 SB ₈
1978 TT ₈	13.7	0.15	19990810	30.01682	275.77588	56.22839	5.08316	0.2726017	2.5988689	58	4	1978–1999	0.70	M-v	1	Williams	32041	1978 TT ₈
1978 UA ₅	16.4	0.15	19990810	322.19925	32.07109	353.17517	2.47925	0.1760035	2.3158982	38	3	1978–1999	0.53	M-v	3	Williams	35905	1978 UA ₅
1978 UF ₇	14.2	0.15	19990810	331.94882	90.34712	217.74021	13.75789	0.2299476	3.1174191	47	3	1978–1999	0.69	M-v	3	Williams	35414	1978 UF ₇
1978 VB ₃	12.7	0.15	19990810	355.33719	295.91752	58.15382	13.19242	0.0832066	3.0923103	20	3	1978–1999	0.58	M-v	4	Williams	27302	1978 VB ₃
1978 VP ₃	13.7	0.15	19990810	342.76435	18.90811	84.32165	4.04341	0.0667291	2.9736200	39	4	1978–1999	0.81	M-v	1	Williams	33065	1978 VP ₃
1978 VX ₄	14.9	0.15	19990810	9.03055	269.70113	66.06006	4.27194	0.1470574	2.3310388	54	4	1978–1999	0.69	M-v	3	Williams	36061	1978 VX ₄
1978 VD ₅	14.1	0.15	19990810	269.62054	282.77609	183.77845	1.24184	0.1277706	3.0873729	48	5	1978–1999	0.60	M-v	1	Williams	27118	1978 VD ₅
1978 VE ₇	14.7	0.15	19990810	339.05488	172.10655	176.47628	0.75574	0.2202806	2.3384598	75	5	1978–1999	0.61	M-v	2	Williams	36061	1978 VE ₇
1978 VP ₉	15.1	0.15	19990810	24.62461	83.77193	237.50214	6.36547	0.1345800	2.3332409	56	3	1978–1999	0.71	M-v	3	Williams	36062	1978 VP ₉
1978 VM ₁₁	14.7	0.15	19990810	290.95528	94.06039	74.36366	5.61406	0.2110867	2.5705264	13	4	1978–1999	0.61	M-v	2	Williams	35906	1978 VM ₁₁
1978 XW	12.8	0.15	19990810	292.57050	1.55689	105.90174	1.85618	0.1854317	3.0492117	36	6	1975–1999	0.65	M-v	1	Williams	32509	1978 XW
1979 DF	13.0	0.15	19990810	255.80877	126.38182	36.12789	14.77619	0.1666822	2.6589401	24	4	1977–1999	0.69	M-v	2	Williams	32738	1979 DF
1979 EL	11.9	0.15	19990810	15.55444	319.32126	91.13205	14.78076	0.1589910	2.6345954	32	4	1979–1999	0.67	M-v	1	Williams	34002	1979 EL
1979 KO ₁	14.0	0.15	19990810	87.57555	5.52224	268.01266	7.26466	0.2264168	2.4410474	36	4	1979–1999	0.79	M-v	2	Williams	32298	1979 KO ₁
1979 MM ₃	14.0	0.15	19990810	343.15391	254.41574	120.05933	17.68967	0.1163802	2.8664758	29	4	1979–1999	0.78	M-v	2	Williams	36062	1979 MM ₃
1979 MM ₄	15.7	0.15	19990810	90.95527	55.43478	202.75780	2.79894	0.1672768	2.1947257	51	4	1979–1999	0.77	M-v	2	Williams	32298	1979 MM ₄
1979 MU ₄	14.9	0.15	19990810	150.22919	107.16976	150.54917	2.25537	0.1496905	2.4179074	26	3	1979–1999	0.88	M-v	4	Williams	32738	1979 MU ₄
1979 MD ₈	13.8	0.15	19990810	303.27621	231.31936	257.55991	7.67283	0.1025229	2.7616313	36	4	1979–1999	0.70	M-v	3	Williams	33539	1979 MD ₈
1979 MM ₈	14.8	0.15	19990810	56.42875	154.56367	178.34993	3.64544	0.1263268	2.4508546	41	6	1978–1999	0.72	M-v	2	Williams	29315	1979 MM ₈
1979 MP ₈	15.3	0.15	19990810	125.16122	313.81928	279.88358	3.86094	0.1342408	2.4599343	20	3	1979–1999	0.51	M-v	4	Williams	35906	1979 MP ₈
1979 MT ₈	13.6	0.15	19990810	228.81240	246.23945	224.98046	4.80866	0.1086494	2.8789069	29	3	1979–1999	0.79	M-v	4	Williams	35906	1979 MT ₈
1979 PA	14.3	0.15	19990810	335.92823	65.55223	227.96867	12.11055	0.2621132	2.5579726	82	4	1979–1999	0.60	M-v	3	Williams	35415	1979 PA
1979 QR ₂	14.0	0.15	19990810	280.82412	88.64125	333.80810	1.06073	0.0925358	2.9122349	61	5	1954–1999	0.64	M-v	3	Williams	36062	1979 QR ₂
1979 QM ₃	16.1	0.15	19990810	315.08707	240.46016	148.68516	5.26832	0.1236342	2.2263506	41	4	1979–1999	0.55	M-v	1	Williams	36062	1979 QM ₃
1979 SG ₂	15.0	0.15	19990810	18.56538	58.89703	301.03019	5.52523	0.2113801	2.2120629	43	5	1979–1999	0.72	M-v	1	Williams	32042	1979 SG ₂
1980 FR ₂	13.8	0.15	19990810	1.14449	238.85072	181.58691	5.33146	0.1933251	2.5577583	41	6	1980–1999	0.66	M-v	1	Williams	32509	1980 FR ₂
1980 FY ₂	13.7	0.15	19990810	335.98558	91.26506	2.54166	0.76199	0.0509683	3.0051522	44	6	1980–1999	0.67	M-v	1	Williams	35677	1980 FY ₂
1980 FZ ₂	13.4	0.15	19990810	79.55276	103.66281	177.80087	16.14190	0.1366087	3.1526732	42	4	1980–1999	0.63	M-v	1	Williams	36062	1980 FZ ₂
1980 FH ₃	13.5	0.15	19990810	22.89474	220.62219	180.27296	8.59755	0.0825512	3.0129879	67	6	1980–1999	0.72	M-v	1	Williams	33065	1980 FH ₃
1980 PJ ₁	15.1	0.15	19990810	331.03983	130.02593	278.89388	4.54745	0.2417313	2.1432122	31	4	1980–1999	0.63	M-v	1	Williams	36062	1980 PJ ₁
1980 TA ₄	13.5	0.15	19990810	300.44993	86.14176	18.11364	6.30780	0.0492216	2.3977324	36	6	1954–1999	0.73	M-v	2	Williams	32509	1980 TA ₄
1980 TK ₆	13.7	0.15	19990810	357.07281	149.10244	224.80329	6.47435	0.1102733	2.4206306	51	4	1980–1999	0.49	M-v	1	Williams	32042	1980 TK ₆
1980 UW ₁	14.9	0.15	19990810	52.93163	39.63153	309.91539	1.66542	0.1952962	2.3970835	14	4	1980–1999	0.44	M-v	2	Williams	21966	1980 UW ₁
1981 DO	14.6	0.15	19990810	124.80725	54.43605	217.40431	12.97737	0.1244908	2.5345510	27	3	1981–1999	0.85	M-v	4	Williams	32738	1981 DO
1981 DU	14.3	0.15	19990810	19.10539	39.13369	257.63220	6.52876	0.1597546	2.2852017	49	2	1981–1999	0.69	M-v	4	Williams	35906	1981 DU
1981 DD ₁	14.9	0.15	19990810	273.32652	126.83271	332.42655	14.54490	0.1214385	2.5337265	35	2	1981–1999	0.79	M-v	4	Williams	35906	1981 DD ₁
1981 DN ₁	13.8	0.15	19990810	5.63856	53.18815	307.41422	9.92235	0.2061941	2.5572500	48	2	1981–1999	0.73	M-v	4	Williams	35906	1981 DN ₁
1981 DU ₁	14.0	0.15	19990810	5.89125	190.29028	235.55145	11.66043	0.1733600	2.8940263	47	5	1949–1999	0.91	M-v	1	Williams	32739	1981 DU ₁
1981 DL ₂	15.6	0.15	19990810	84.89793	293.49470	321.86271	8.32382	0.1173218	2.2643217	52	3	1981–1999	0.92	M-v	2	Williams	36062	1981 DL ₂
1981 DS ₂	13.8	0.15	19990810	22.01608	28.59478	290.87106	10.33575	0.0759125	2.5860362	47	2	1981–1999	0.55	M-v	4	Williams	35907	1981 DS ₂
1981 DX ₂	13.9	0.15	19990810	197.89023	278.71572	267.31296	7.92062	0.0492355	2.9982216	32	5	1981–1999	0.63	M-v	1	Williams	26755	1981 DX ₂
1981 DY ₂	14.5	0.15	19990810	287.52224	97.30432	336.94776	21.85809	0.1325997	2.5452442	54	2	1981–1999	0.69	M-v	4	Williams	35907	1981 DY ₂

1981 DN ₃	15.2	0.15	19990810	28.55736	72.89246	254.60088	5.21929	0.2193464	2.2556462	33	3	1981–1999	0.73	M-v	4	Williams	32209	1981 DN ₃
1981 EO ₂	13.2	0.15	19990810	132.44483	15.61057	237.31299	8.39272	0.0296521	2.9895479	62	3	1981–1999	0.66	M-v	4	Williams	32440	1981 EO ₂
1981 EP ₂	13.0	0.15	19990810	16.75467	125.78224	214.95277	15.27700	0.1175214	3.0302754	57	3	1981–1999	0.77	M-v	2	Williams	36062	1981 EP ₂
1981 EY ₂	13.8	0.15	19990810	345.38536	120.02324	223.22464	9.25295	0.0962267	3.0732563	37	3	1981–1999	0.82	M-v	3	Williams	36062	1981 EY ₂
1981 EA ₃	15.6	0.15	19990810	106.22516	352.64966	275.88765	5.76338	0.0876369	2.2320858	25	4	1981–1999	0.72	M-v	2	Williams	32298	1981 EA ₃
1981 EG ₃	13.4	0.15	19990810	39.40796	32.76202	271.60319	8.77805	0.0482711	3.0565050	31	2	1981–1999	0.66	M-v	4	Williams	35907	1981 EG ₃
1981 EO ₃	14.4	0.15	19990810	30.59809	342.88567	324.77342	15.14988	0.2016413	2.6017679	41	2	1981–1999	0.66	M-v	4	Williams	35907	1981 EO ₃
1981 EO ₄	14.3	0.15	19990810	31.63084	56.39887	293.38857	9.49435	0.1201192	2.9953272	32	4	1981–1999	0.74	M-v	1	Williams	32298	1981 EO ₄
1981 EU ₄	13.0	0.15	19990810	99.31000	31.32439	261.37051	9.00248	0.0737839	2.9879257	52	3	1981–1999	0.70	M-v	4	Williams	35677	1981 EU ₄
1981 ET ₅	14.7	0.15	19990810	341.37025	143.71493	213.26416	10.79752	0.0541030	2.5754999	44	3	1981–1999	0.78	M-v	3	Williams	36062	1981 ET ₅
1981 EW ₅	13.9	0.15	19990810	293.67135	189.36747	223.84763	12.62112	0.1508361	2.5520934	74	3	1981–1999	0.69	M-v	3	Williams	36062	1981 EW ₅
1981 EM ₆	14.1	0.15	19990810	346.69897	131.82690	214.76589	13.08299	0.1278418	2.5906903	56	3	1981–1999	0.75	M-v	3	Williams	36062	1981 EM ₆
1981 EN ₆	15.8	0.15	19990810	26.06482	15.28869	269.60276	6.30851	0.2069615	2.2942943	22	2	1981–1999	0.79	M-v	4	Williams	35908	1981 EN ₆
1981 EU ₆	15.1	0.15	19990810	331.05163	71.34622	246.21355	7.95793	0.2907128	2.3169867	51	3	1981–1999	0.69	M-v	2	Williams	35415	1981 EU ₆
1981 EM ₇	13.3	0.15	19990810	52.96043	73.82933	222.01684	5.80874	0.2065306	2.5883131	111	4	1981–1999	0.57	M-v	2	Williams	32298	1981 EM ₇
1981 EN ₇	13.5	0.15	19990810	21.43524	27.81954	329.07109	9.29315	0.0997394	2.9889564	33	3	1981–1999	0.89	M-v	2	Williams	36062	1981 EN ₇
1981 EU ₉	15.0	0.15	19990810	57.34985	87.92949	214.17733	4.49116	0.1836477	2.2498985	95	3	1981–1999	0.72	M-v	2	Williams	32298	1981 EU ₉
1981 EE ₁₀	15.7	0.15	19990810	73.44738	3.48924	297.17823	2.96603	0.1203133	2.2340319	41	3	1981–1999	0.65	M-v	3	Williams	31946	1981 EE ₁₀
1981 EN ₁₀	14.7	0.15	19990810	26.76372	295.07799	343.12836	14.23249	0.2749244	2.6498427	53	2	1981–1999	0.62	M-v	4	Williams	35908	1981 EN ₁₀
1981 EE ₁₁	15.4	0.15	19990810	104.75410	316.17612	320.16989	2.90512	0.1579062	2.2339359	46	5	1979–1999	0.77	M-v	2	Williams	32298	1981 EE ₁₁
1981 ED ₁₂	14.3	0.15	19990810	225.54349	339.14261	201.27246	11.42001	0.0795860	2.5103414	57	6	1981–1999	0.90	M-v	1	Williams	32509	1981 ED ₁₂
1981 EG ₁₂	14.5	0.15	19990810	126.67751	7.50081	220.51650	7.29939	0.1436117	2.5759625	51	4	1981–1999	0.96	M-v	4	Williams	32298	1981 EG ₁₂
1981 EZ ₁₂	14.9	0.15	19990810	273.16497	133.54562	278.30182	4.52392	0.1215292	2.2545931	49	3	1981–1999	0.69	M-v	3	Williams	36062	1981 EZ ₁₂
1981 EJ ₁₃	14.3	0.15	19990810	327.88476	147.21014	320.12333	7.94374	0.0985323	2.4720096	52	3	1981–1999	0.86	M-v	4	Williams	32739	1981 EJ ₁₃
1981 EM ₁₃	15.4	0.15	19990810	209.59362	311.20423	232.95996	5.00348	0.0809637	2.2135921	33	4	1979–1999	0.98	M-v	2	Williams	25078	1981 EM ₁₃
1981 EO ₁₃	15.0	0.15	19990810	153.89214	228.95946	323.51664	4.92231	0.0627145	2.2487155	44	3	1981–1999	0.73	M-v	3	Williams	36062	1981 EO ₁₃
1981 EV ₁₃	13.3	0.15	19990810	15.33239	70.00419	207.36106	9.97216	0.1675181	3.1771383	81	3	1981–1999	0.66	M-v	2	Williams	35677	1981 EV ₁₃
1981 EY ₁₃	14.0	0.15	19990810	337.99075	150.08624	209.98883	8.37100	0.0969451	3.0613546	53	4	1981–1999	0.63	M-v	2	Williams	36062	1981 EY ₁₃
1981 ED ₁₆	15.5	0.15	19990810	142.24630	290.56647	268.29897	3.58147	0.1443130	2.2565359	42	3	1981–1999	0.64	M-v	3	Williams	32298	1981 ED ₁₆
1981 EF ₁₆	14.7	0.15	19990810	317.05009	217.05874	197.35553	10.85847	0.1995816	2.5277068	46	4	1955–1999	0.70	M-v	3	Williams	36062	1981 EF ₁₆
1981 EO ₁₆	15.5	0.15	19990810	327.81071	140.80455	217.90490	7.96963	0.1959346	2.2630732	41	3	1981–1999	0.70	M-v	2	Williams	36062	1981 EO ₁₆
1981 EL ₁₇	14.9	0.15	19990810	71.73188	43.54130	192.42851	14.09746	0.0771301	2.6204306	46	4	1981–1999	0.75	M-v	2	Williams	36062	1981 EL ₁₇
1981 EA ₁₈	14.0	0.15	19990810	208.75417	319.21043	171.06299	11.47158	0.0607698	3.0407837	25	2	1981–1999	0.73	M-v	4	Williams	35908	1981 EA ₁₈
1981 EB ₁₈	15.3	0.15	19990810	114.93925	56.93722	175.28592	4.02434	0.1490795	2.5798188	32	3	1981–1999	0.83	M-v	4	Williams	31946	1981 EB ₁₈
1981 EL ₁₈	14.6	0.15	19990810	155.85303	25.02253	210.14652	3.34280	0.1452402	2.5347807	35	4	1981–1999	0.93	M-v	3	Williams	26578	1981 EL ₁₈
1981 EA ₁₉	14.7	0.15	19990810	322.83446	44.89323	7.51080	2.60846	0.1587662	2.5192106	52	4	1981–1999	0.63	M-v	4	Williams	26188	1981 EA ₁₉
1981 EO ₁₉	14.2	0.15	19990810	298.07129	255.05182	181.73851	8.76182	0.0750496	2.9840521	53	6	1953–1999	0.72	M-v	1	Williams	29609	1981 EO ₁₉
1981 EK ₂₀	14.6	0.15	19990810	46.79391	265.92540	358.84914	11.30276	0.1657924	2.6237433	64	3	1981–1999	0.82	M-v	3	Williams	36062	1981 EK ₂₀
1981 EV ₂₁	14.4	0.15	19990810	278.78932	79.41495	355.60774	10.60340	0.1176552	3.0068046	57	3	1981–1999	0.80	M-v	3	Williams	35908	1981 EV ₂₁
1981 ET ₂₃	15.3	0.15	19990810	347.43391	356.60996	6.42830	6.23421	0.1980631	2.2393220	68	4	1981–1999	0.65	M-v	3	Williams	36062	1981 ET ₂₃
1981 EK ₂₆	14.8	0.15	19990810	112.36739	106.41099	163.45389	2.88240	0.1176689	2.5482454	26	4	1978–1999	0.87	M-v	1	Williams	32298	1981 EK ₂₆
1981 EZ ₂₆	15.2	0.15	19990810	220.95084	270.13529	260.85662	1.44207	0.0770634	2.5251594	26	4	1978–1999	0.83	M-v	2	Williams	32211	1981 EZ ₂₆
1981 EG ₂₇	14.3	0.15	19990810	164.92841	272.80321	314.40911	2.27482	0.0536231	2.9871616	30	5	1978–1999	0.75	M-v	1	Williams	32299	1981 EG ₂₇
1981 EH ₂₇	14.5	0.15	19990810	194.30730	165.02517	358.36002	13.88510	0.1017026	2.5573878	54	4	1981–1999	0.74	M-v	3	Williams	36062	1981 EH ₂₇
1981 EK ₂₇	14.5	0.15	19990810	296.66515	73.78849	354.26139	5.39863	0.0842966	2.2267809	93	3	1981–1999	0.76	M-v	3	Williams	36063	1981 EK ₂₇
1981 ES ₂₇	16.2	0.15	19990810	160.56831	201.07797	5.45481	7.25081	0.1527650	2.2377984	18	3	1971–1999	0.95	M-v	4	Williams	23132	1981 ES ₂₇
1981 EU ₂₇	15.9	0.15	19990810	86.43971	94.84422	171.46791	6.16045	0.2563117	2.2657724	64	3	1981–1999	0.75	M-v	3	Williams	32299	1981 EU ₂₇
1981 EU ₂₈	14.5	0.15	19990810	67.25042	19.44827	296.92471	4.11081	0.1942135	2.2274109	34	5	1975–1999	0.59	M-v	1	Williams	32299	1981 EU ₂₈
1981 EV ₂₈	14.1	0.15	19990810	60.54068	116.72621	210.77402	10.18309	0.1020042	2.9839838	24	5	1978–1999	0.71	M-v	1	Williams	32509	1981 EV ₂₈
1981 EJ ₂₉	13.8	0.15	19990810	243.83776	277.45027	197.91574	9.68488	0.0480436	3.0179425	48	4	1981–1999	0.69	M-v	3	Williams	32211	1981 EJ ₂₉
1981 EO ₃₀	14.7	0.15	19990810	73.64723	74.15900	174.98944	12.29435	0.1689495	2.6128910	82	3	1981–1999	0.80	M-v	3	Williams	36063	1981 EO ₃₀
1981 EQ ₃₀	13.9	0.15	19990810	30.95787	316.98413	1.70992	12.65939	0.2644110	2.5916439	40	3	1981–1999	0.71	M-v	3	Williams	36063	1981 EQ ₃₀
1981 EH ₃₃	13.8	0.15	19990810	37.18240	98.89423	191.78833	9.76430	0.0439644	3.0777183	49	3	1981–1999	0.74	M-v	2	Williams	36063	1981 EH ₃₃

1981 ES ₃₃	14.4	0.15	19990810	35.14450	14.13083	319.93432	6.50616	0.1639030	2.5544850	12	2	1981–1999	0.79	M-v	5	Williams	22697	1981 ES ₃₃
1981 EC ₃₅	15.8	0.15	19990810	29.97600	117.73361	158.50852	5.66245	0.1551026	2.2882959	40	2	1981–1999	0.58	M-v	4	Williams	35909	1981 EC ₃₅
1981 EM ₃₅	15.7	0.15	19990810	54.78126	267.38800	1.43086	6.06694	0.1529775	2.2755352	39	2	1981–1999	0.68	M-v	5	Williams	35909	1981 EM ₃₅
1981 EO ₃₅	15.4	0.15	19990810	8.11816	72.44524	266.80284	5.14340	0.1347762	2.2499604	48	4	1979–1999	0.64	M-v	3	Williams	36063	1981 EO ₃₅
1981 EF ₃₇	12.6	0.15	19990810	79.03595	297.17816	1.96508	15.19871	0.1221955	2.5490540	35	6	1954–1999	0.88	M-v	1	Williams	29315	1981 EF ₃₇
1981 EL ₃₇	13.9	0.15	19990810	352.95138	111.32954	208.02105	10.87327	0.1472374	3.1156924	25	3	1981–1999	0.84	M-v	3	Williams	35416	1981 EL ₃₇
1981 ET ₃₇	16.0	0.15	19990810	73.47603	60.48700	219.33291	3.59418	0.2442287	2.2628074	30	3	1981–1999	0.97	M-v	4	Williams	32510	1981 ET ₃₇
1981 EO ₃₈	14.1	0.15	19990810	45.67811	132.07516	189.46111	12.32022	0.0936604	2.5592278	36	3	1981–1999	0.79	M-v	2	Williams	32213	1981 EO ₃₈
1981 EU ₃₈	14.7	0.15	19990810	107.95235	43.59311	204.24770	3.17126	0.1338618	2.2521174	86	3	1981–1999	0.68	M-v	3	Williams	32299	1981 EU ₃₈
1981 EE ₃₉	14.6	0.15	19990810	324.71568	210.76649	167.34338	6.91171	0.0738762	3.0347192	26	3	1981–1999	0.67	M-v	4	Williams	35909	1981 EE ₃₉
1981 EY ₃₉	16.4	0.15	19990810	181.19749	345.90829	190.14977	0.96995	0.0952044	2.2369059	30	5	1971–1999	0.88	M-v	2	Williams	32043	1981 EY ₃₉
1981 EA ₄₂	15.4	0.15	19990810	359.17603	218.55745	173.68977	7.59300	0.1077106	2.2084641	41	5	1981–1999	0.97	M-v	2	Williams	23347	1981 EA ₄₂
1981 EC ₄₃	14.7	0.15	19990810	349.38850	132.62849	188.81366	5.09021	0.1907390	2.2885132	51	3	1981–1999	0.72	M-v	3	Williams	36063	1981 EC ₄₃
1981 EF ₄₅	14.9	0.15	19990810	125.15356	174.36045	52.63824	2.08405	0.1481356	3.0622730	27	4	1978–1999	0.80	M-v	2	Williams	21968	1981 EF ₄₅
1981 EE ₄₆	14.4	0.15	19990810	16.58080	7.54930	313.69159	4.76879	0.1461101	3.0676635	53	3	1978–1999	0.67	M-v	3	Williams	36063	1981 EE ₄₆
1981 EP ₄₇	14.2	0.15	19990810	308.41300	200.00334	185.75265	11.62799	0.1317396	3.0544990	30	4	1981–1999	0.75	M-v	2	Williams	36063	1981 EP ₄₇
1981 ER ₄₇	14.2	0.15	19990810	14.03225	343.81609	36.19083	2.48128	0.1758878	2.5152373	35	6	1951–1999	0.71	M-v	3	Williams	29653	1981 ER ₄₇
1981 KJ	12.6	0.15	19990810	66.01791	263.66794	36.03348	15.22310	0.1490938	3.1340695	59	5	1975–1999	0.59	M-v	1	Williams	30893	1981 KJ
1981 QR ₂	14.7	0.15	19990810	23.75983	323.25081	346.48735	3.69896	0.2377209	2.3362615	111	4	1981–1999	0.63	M-v	2	Williams	36063	1981 QR ₂
1981 QN ₃	13.7	0.15	19990810	36.76679	203.70278	138.95038	1.98069	0.1925039	3.2115015	48	5	1981–1999	0.72	M-v	1	Williams	34174	1981 QN ₃
1981 RF ₂	11.9	0.15	19990810	80.50135	32.85679	255.05366	14.27518	0.1428700	3.2267157	83	5	1981–1999	0.74	M-v	1	Williams	36063	1981 RF ₂
1981 US ₂₂	14.4	0.15	19990810	61.82107	288.23214	76.39260	6.54040	0.1538321	2.3000159	29	6	1981–1999	0.44	M-v	1	Williams	32739	1981 US ₂₂
1981 UB ₂₃	13.8	0.15	19990810	358.09800	264.24092	129.73930	3.12055	0.1925995	2.7138067	19	4	1963–1999	0.81	M-v	4	Williams	20498	1981 UB ₂₃
1981 UL ₂₉	14.6	0.15	19990810	5.15000	130.85389	214.43819	14.08614	0.2266472	2.7336296	59	4	1981–1999	0.60	M-v	2	Williams	36063	1981 UL ₂₉
1981 VL	14.3	0.15	19990810	11.25786	4.34623	24.36332	3.76308	0.1567097	2.3266783	28	5	1981–1999	0.91	M-v	2	Williams	29940	1981 VL
1981 WF ₉	14.7	0.15	19990810	31.87838	141.74114	206.41290	6.23210	0.1356605	2.3388709	49	4	1981–1999	0.71	M-v	1	Williams	32299	1981 WF ₉
1982 FN	13.8	0.15	19990810	76.92384	33.09779	177.83349	26.59199	0.2081248	2.5552003	27	5	1982–1999	0.87	M-v	2	Williams	35416	1982 FN
1982 JD ₂	15.1	0.15	19990810	163.76509	94.54650	107.08211	4.08298	0.0682985	2.1745722	74	4	1982–1999	0.54	M-v	2	Williams	36063	1982 JD ₂
1982 RK	13.3	0.15	19990810	12.69283	290.03111	108.36463	4.86383	0.1410523	2.2123443	47	6	1982–1999	0.74	M-v	2	Williams	32299	1982 RK
1982 ST ₇	14.5	0.15	19990810	17.56399	57.20166	332.42163	3.99886	0.2902910	2.5700664	18	4	1982–1999	0.62	M-v	2	Williams	30090	1982 ST ₇
1982 SC ₈	14.3	0.15	19990810	62.51648	323.61825	343.67487	3.30449	0.1752663	2.2329188	39	4	1982–1999	0.69	M-v	1	Williams	32043	1982 SC ₈
1982 UA ₆	15.1	0.15	19990810	344.33364	35.53534	341.10896	3.91712	0.2932681	2.6316517	46	4	1982–1999	0.56	M-v	1	Williams	36063	1982 UA ₆
1982 UD ₆	14.5	0.15	19990810	353.55458	84.02943	309.38103	3.19251	0.1487195	2.2519950	23	4	1982–1999	0.62	M-v	2	Williams	29654	1982 UD ₆
1982 VS ₂	13.8	0.15	19990810	63.18746	214.93143	106.71415	1.98186	0.0850704	2.6193472	28	4	1982–1999	0.63	M-v	1	Williams	35678	1982 VS ₂
1982 VU ₂	12.6	0.15	19990810	108.49228	209.26109	54.99746	14.30574	0.1405417	2.6361048	33	3	1982–1999	0.54	M-v	4	Williams	26418	1982 VU ₂
1982 VY ₃	13.9	0.15	19990810	76.35704	198.04651	67.41911	6.53242	0.1354045	2.2913774	39	3	1982–1999	0.56	M-v	2	Williams	36063	1982 VY ₃
1982 WA	13.7	0.15	19990810	312.98716	209.51030	254.23832	10.75706	0.1821578	2.6208145	48	4	1982–1999	0.82	M-v	2	Williams	32740	1982 WA
1983 AA	13.9	0.15	19990810	260.51417	202.52358	295.61285	24.18682	0.2416566	2.2975897	26	3	1983–1999	0.97	M-v	3	Williams	36063	1983 AA
1983 RL	14.7	0.15	19990810	335.26586	29.01937	339.93532	19.07143	0.1177816	1.9192634	122	4	1983–1999	0.56	M-v	2	Williams	36063	1983 RL
1983 RL ₃	14.9	0.15	19990810	337.59494	67.28706	295.14344	3.06722	0.1426998	2.1698527	103	4	1976–1999	0.71	M-v	3	Williams	36063	1983 RL ₃
1983 TX	13.0	0.15	19990810	325.23667	227.17969	192.36257	10.30019	0.1169062	3.0373055	31	4	1983–1999	0.68	M-v	1	Williams	27931	1983 TX
1983 XE	14.5	0.15	19990810	327.39783	192.52376	237.56103	6.24290	0.1813372	2.5251576	44	6	1951–1999	0.80	M-v	3	Williams	27726	1983 XE
1983 YK	12.7	0.15	19990810	190.51773	355.97964	161.14774	9.92073	0.0331547	3.2369326	50	3	1983–1999	0.61	M-v	3	Williams	36063	1983 YK
1984 CE	14.0	0.15	19990810	352.41832	292.76203	107.33667	13.31218	0.2440154	2.5662643	16	3	1984–1999	0.63	M-v	3	Williams	26738	1984 CE
1984 SE ₆	13.6	0.15	19990810	71.09072	318.05922	6.42832	3.28358	0.2041750	2.3493304	49	6	1984–1999	0.85	M-v	2	Williams	32299	1984 SE ₆
1984 UN ₂	13.4	0.15	19990810	27.51403	140.62093	196.91211	1.60544	0.0532833	2.9146516	71	4	1984–1999	0.62	M-v	1	Williams	30685	1984 UN ₂
1985 DA	15.9	0.15	19990810	190.13379	4.85036	156.08655	23.25190	0.0736186	1.8992370	28	3	1985–1999	0.75	M-v	3	Williams	36063	1985 DA
1985 PC	13.9	0.15	19990810	104.33326	86.86238	184.73228	3.22509	0.1102837	2.2429379	71	3	1985–1999	0.57	M-v	3	Williams	36063	1985 PC
1985 PQ	14.5	0.15	19990810	129.75107	115.90386	153.89436	4.76190	0.1941356	2.2134151	28	6	1985–1999	0.74	M-v	2	Williams	32299	1985 PQ
1985 RP	14.7	0.15	19990810	337.61895	226.03009	166.92804	8.00975	0.2301012	2.2930601	42	5	1978–1999	0.68	M-v	3	Williams	36063	1985 RP
1985 TN	14.8	0.15	19990810	353.16159	4.75024	25.87214	4.98781	0.1612268	2.2852794	42	6	1985–1999	0.86	M-v	2	Williams	32044	1985 TN
1985 TS	14.2	0.15	19990810	4.77665	359.49243	5.41114	3.78920	0.1247903	2.2945710	53	5	1978–1999	0.65	M-v	4	Williams	32044	1985 TS
1985 TO ₃	14.7	0.15	19990810	26.85545	82.63556	276.02460	5.64665	0.1906183	2.2729078	26	4	1985–1999	0.60	M-v	2	Williams	32299	1985 TO ₃

1985 TZ ₃	13.7	0.15	19990810	74.19363	344.23426	306.89787	5.33723	0.1734571	2.2775870	35	6	1971–1999	0.71	M-v	1	Williams	31581	1985 TZ ₃
1985 UJ ₃	14.6	0.15	19990810	4.30542	222.22852	107.86138	1.26899	0.2413409	2.3174505	111	5	1978–1999	0.75	M-v	3	Williams	36063	1985 UJ ₃
1985 UK ₃	13.7	0.15	19990810	95.83930	265.09696	40.06817	4.60499	0.1562088	2.2513807	19	4	1985–1999	0.87	M-v	2	Williams	32740	1985 UK ₃
1985 VE	13.5	0.15	19990810	229.04919	340.75968	164.63687	4.83176	0.1012101	2.3274578	46	7	1985–1999	0.59	M-v	1	Williams	32299	1985 VE
1986 PY	15.0	0.15	19990810	353.52715	195.44643	146.20022	7.97704	0.2470713	2.1886925	97	3	1986–1999	0.65	M-v	2	Williams	36063	1986 PY
1986 QN	13.7	0.15	19990810	14.82094	239.44336	155.45977	4.73226	0.2471366	2.5553040	78	6	1951–1999	0.70	M-v	1	Williams	32300	1986 QN
1986 QQ ₁	14.2	0.15	19990810	16.34902	20.17292	27.88638	2.81802	0.2152727	2.5404538	64	5	1974–1999	0.63	M-v	1	Williams	32511	1986 QQ ₁
1986 QY ₂	13.3	0.15	19990810	352.93150	190.91763	147.92172	15.42814	0.2258158	2.6577557	105	3	1986–1999	0.57	M-v	2	Williams	36063	1986 QY ₂
1986 QZ ₂	13.1	0.15	19990810	115.48232	247.72754	11.12169	9.66226	0.1637724	2.5738834	70	10	1953–1999	0.53	M-v	1	Williams	32300	1986 QZ ₂
1986 QF ₃	14.2	0.15	19990810	34.21095	259.85897	118.47531	4.96040	0.2509709	2.5574893	51	5	1978–1999	0.84	M-v	2	Williams	35679	1986 QF ₃
1986 RP ₂	13.6	0.15	19990810	30.10599	208.62628	144.60364	12.37787	0.2040328	2.5908928	53	6	1980–1999	0.77	M-v	1	Williams	32300	1986 RP ₂
1986 RB ₁₂	11.6	0.15	19990810	89.93928	85.72819	265.19581	14.68188	0.1176093	3.1928825	52	4	1986–1999	0.64	M-v	2	Williams	33740	1986 RB ₁₂
1986 TR	13.7	0.15	19990810	357.64026	89.67819	251.54511	9.76459	0.3055679	2.6712550	99	3	1986–1999	0.52	M-v	2	Williams	36063	1986 TR
1986 TV ₆	13.4	0.15	19990810	106.59081	355.97029	325.85374	7.44337	0.1904719	2.5568728	79	4	1986–1999	0.65	M-v	2	Williams	34004	1986 TV ₆
1986 WZ	13.6	0.15	19990810	346.02756	129.51506	256.16182	2.66040	0.1174543	2.6928252	13	3	1986–1999	0.70	M-v	4	Williams	20924	1986 WZ
1987 BF	14.1	0.15	19990810	139.01758	301.74471	293.41509	5.06855	0.1280196	2.2803126	22	3	1987–1999	0.82	M-v	4	Williams	32658	1987 BF
1987 BA ₂	12.3	0.15	19990810	144.07664	265.48200	258.86687	12.11679	0.0921058	2.9596692	69	5	1980–1999	0.72	M-v	2	Williams	36063	1987 BA ₂
1987 CH	14.4	0.15	19990810	309.06797	351.67383	147.31762	5.43045	0.0747107	2.2030179	48	4	1987–1999	0.82	M-v	2	Williams	33066	1987 CH
1987 DD ₆	14.6	0.15	19990810	167.17997	41.97085	155.18929	4.15165	0.0908484	2.3071075	78	4	1987–1999	0.76	M-v	2	Williams	32300	1987 DD ₆
1987 HE	14.0	0.15	19990810	214.55641	13.94130	170.01400	23.41264	0.1991378	2.2946904	39	4	1987–1999	0.80	M-v	2	Williams	32511	1987 HE
1987 QW	14.0	0.15	19990810	16.62430	80.34460	203.11237	12.42631	0.1896280	2.5376178	19	2	1987–1999	0.55	M-v	4	Williams	35279	1987 QW
1987 RR	13.1	0.15	19990810	48.93728	208.82462	156.61043	12.88200	0.1882876	3.1054449	96	3	1987–1999	0.70	M-v	2	Williams	33740	1987 RR
1987 SL ₃	12.6	0.15	19990810	349.46700	88.10415	317.85710	9.96415	0.0923320	3.1711109	54	4	1982–1999	0.61	M-v	2	Williams	32740	1987 SL ₃
1987 SP ₁₂	13.4	0.15	19990810	50.77925	187.26836	186.43581	2.72358	0.2661946	3.1065355	81	4	1976–1999	0.71	M-v	2	Williams	33541	1987 SP ₁₂
1987 UZ ₁	14.5	0.15	19990810	167.75832	214.00054	224.26351	25.68847	0.1069224	1.8831806	60	3	1987–1999	0.77	M-v	3	Williams	35417	1987 UZ ₁
1987 XC	13.6	0.15	19990810	359.54373	285.18087	55.51569	16.52259	0.2655338	2.5576055	53	6	1987–1999	0.80	M-v	2	Williams	36064	1987 XC
1987 YS ₁	13.0	0.15	19990810	301.50285	304.98665	149.40781	13.02730	0.1219309	2.5572692	32	6	1954–1999	0.64	M-v	1	Williams	36064	1987 YS ₁
1987 YU ₁	10.8	0.15	19990810	35.01739	176.78090	227.57729	21.10667	0.1247659	5.1681265	55	5	1986–1999	0.63	M-v	1	Williams	33542	1987 YU ₁
1988 BM ₂	13.3	0.15	19990810	108.16063	65.68911	44.46753	16.66339	0.2429549	2.9399745	29	2	1988–1999	0.75	M-v	4	Williams	35279	1988 BM ₂
1988 BY ₃	14.2	0.15	19990810	342.45745	297.84381	164.22026	6.98965	0.1095604	2.5156117	59	7	1978–1999	0.72	M-v	3	Williams	33066	1988 BY ₃
1988 BM ₄	14.2	0.15	19990810	294.97206	182.23427	249.46073	4.10023	0.2034598	2.6195416	61	2	1988–1999	0.51	M-v	4	Williams	35910	1988 BM ₄
1988 BH ₅	13.4	0.15	19990810	265.57777	268.38253	264.91507	11.61752	0.1161112	2.5801272	31	7	1984–1999	0.86	M-v	2	Williams	32511	1988 BH ₅
1988 BJ ₅	13.4	0.15	19990810	217.10818	226.37479	281.20266	12.04089	0.0643283	2.7122348	44	2	1988–1999	0.52	M-v	3	Williams	36064	1988 BJ ₅
1988 CF	14.1	0.15	19990810	279.14720	149.62440	356.74282	5.38325	0.2272000	2.5775021	36	4	1988–1999	1.00	M-v	3	Williams	35679	1988 CF
1988 CG ₂	13.7	0.15	19990810	149.64197	61.82499	125.51818	15.21227	0.1483530	2.7305198	49	3	1988–1999	0.76	M-v	3	Williams	36064	1988 CG ₂
1988 CK ₄	13.6	0.15	19990810	109.45977	345.66242	291.27608	12.02413	0.1553145	2.6884392	49	5	1954–1999	0.72	M-v	1	Williams	32511	1988 CK ₄
1988 CN ₄	13.7	0.15	19990810	319.37154	253.40584	219.30277	5.45887	0.1647466	2.5557702	72	7	1988–1999	0.73	M-v	2	Williams	33066	1988 CN ₄
1988 CO ₇	15.2	0.15	19990810	1.82348	288.63459	88.73540	1.06179	0.0672411	2.1212775	39	4	1988–1999	0.75	M-v	3	Williams	32300	1988 CO ₇
1988 DG ₂	15.0	0.15	19990810	281.09699	319.99128	132.42419	9.69746	0.1343724	2.6223060	28	3	1988–1999	0.58	M-v	4	Williams	36064	1988 DG ₂
1988 DE ₃	14.2	0.15	19990810	282.15156	145.57704	296.04760	10.23770	0.1614902	2.6718811	28	2	1988–1999	0.60	M-v	4	Williams	35910	1988 DE ₃
1988 FD ₃	14.3	0.15	19990810	139.58985	269.33997	327.94403	4.22231	0.0989740	2.1924705	41	3	1988–1999	0.68	M-v	3	Williams	32218	1988 FD ₃
1988 FE ₃	13.3	0.15	19990810	151.84988	316.80157	248.73455	1.48546	0.1011602	2.7902235	49	3	1988–1999	0.59	M-v	4	Williams	33221	1988 FE ₃
1988 PE	14.3	0.15	19990810	52.41209	321.53460	338.36933	9.18916	0.2643955	2.3149256	47	3	1988–1999	0.67	M-v	2	Williams	31713	1988 PE
1988 PQ	15.7	0.15	19990810	25.19379	1.38045	299.25731	3.80377	0.1609700	2.3662687	38	3	1988–1999	0.56	M-v	3	Williams	35910	1988 PQ
1988 PR	14.7	0.15	19990810	55.90342	110.87130	170.69262	6.83487	0.0403153	2.3568032	79	3	1988–1999	0.62	M-v	2	Williams	36064	1988 PR
1988 PG ₂	15.1	0.15	19990810	346.61567	255.41597	133.40599	3.03782	0.2201735	2.3483216	51	7	1977–1999	0.63	M-v	1	Williams	35059	1988 PG ₂
1988 PQ ₂	15.4	0.15	19990810	36.15028	244.35410	89.89559	1.69796	0.2314404	2.3285332	29	4	1988–1999	0.93	M-v	2	Williams	35059	1988 PQ ₂
1988 PW ₂	14.0	0.15	19990810	117.75721	80.62878	176.17578	10.59271	0.0302749	2.9927945	24	3	1988–1999	0.69	M-v	3	Williams	33475	1988 PW ₂
1988 PE ₄	15.8	0.15	19990810	358.70869	192.84264	130.67680	2.76471	0.2131354	2.3922344	29	2	1988–1999	0.75	M-v	3	Williams	35910	1988 PE ₄
1988 QZ	15.4	0.15	19990810	349.04832	9.00122	336.06944	12.54637	0.3403470	2.3867977	63	2	1988–1999	0.56	M-v	2	Williams	35911	1988 QZ
1988 RD ₁	12.6	0.15	19990810	31.78619	40.88386	318.68947	9.71879	0.1093944	2.9992056	44	6	1980–1999	0.81	M-v	1	Williams	32741	1988 RD ₁
1988 RO ₂	13.5	0.15	19990810	18.71282	54.42147	318.69614	9.78166	0.1205212	3.0181455	30	4	1988–1999	0.73	M-v	2	Williams	32511	1988 RO ₂
1988 RY ₂	13.5	0.15	19990810	22.75875	167.65408	189.25329	9.00273	0.1075049	3.0784397	40	5	1988–1999	0.60	M-v	1	Williams	35059	1988 RY ₂

1988 RJ ₃	15.0	0.15	19990810	27.92178	292.70785	357.21653	2.33207	0.1559889	2.3994604	108	3	1988–1999	0.66	M-v	3	Williams	36064	1988 RJ ₃
1988 RT ₃	15.8	0.15	19990810	333.13467	11.20469	7.67340	2.46062	0.2304351	2.3836280	49	3	1988–1999	0.66	M-v	3	Williams	35911	1988 RT ₃
1988 RP ₄	13.8	0.15	19990810	285.41809	96.16435	333.91455	5.20556	0.1213723	2.3661736	81	3	1988–1999	0.69	M-v	3	Williams	36064	1988 RP ₄
1988 RY ₅	13.2	0.15	19990810	96.87725	163.34247	185.20796	1.99138	0.0915047	2.8258640	64	5	1979–1999	0.87	M-v	2	Williams	33741	1988 RY ₅
1988 RZ ₅	14.3	0.15	19990810	2.29609	166.15803	170.80278	3.37015	0.1137775	2.3636679	154	4	1988–1999	0.71	M-v	2	Williams	36064	1988 RZ ₅
1988 RJ ₆	15.3	0.15	19990810	318.10165	70.14627	326.49441	4.20278	0.2385935	2.3809530	89	3	1988–1999	0.63	M-v	2	Williams	36064	1988 RJ ₆
1988 RL ₆	14.5	0.15	19990810	347.04510	180.40273	160.01428	7.33161	0.1485583	2.3925113	97	3	1988–1999	0.59	M-v	3	Williams	36064	1988 RL ₆
1988 RO ₆	14.2	0.15	19990810	327.26594	32.52105	350.02266	6.21085	0.1343909	2.3586122	98	2	1988–1999	0.53	M-v	4	Williams	35911	1988 RO ₆
1988 RM ₇	14.2	0.15	19990810	42.41373	6.48663	297.43113	1.35058	0.1937301	3.0487263	58	5	1988–1999	0.72	M-v	1	Williams	32045	1988 RM ₇
1988 RJ ₈	14.0	0.15	19990810	19.62184	186.45701	181.68695	5.98858	0.1166649	2.3170594	53	5	1981–1999	0.77	M-v	2	Williams	35680	1988 RJ ₈
1988 RU ₉	13.2	0.15	19990810	297.60415	244.48522	167.69718	15.62138	0.0881586	3.1112169	67	2	1988–1999	0.53	M-v	4	Williams	35911	1988 RU ₉
1988 RW ₁₀	14.7	0.15	19990810	347.26392	35.00610	335.85429	0.46227	0.1528887	3.0755346	57	3	1988–1999	0.56	M-v	4	Williams	36064	1988 RW ₁₀
1988 RZ ₁₀	14.6	0.15	19990810	23.74263	156.67662	154.13361	4.57879	0.0568066	3.1083939	30	4	1972–1999	0.49	M-v	2	Williams	35912	1988 RZ ₁₀
1988 RO ₁₁	13.6	0.15	19990810	357.86972	0.14874	22.33039	1.28961	0.1874619	3.0336869	39	5	1978–1999	0.61	M-v	1	Williams	29656	1988 RO ₁₁
1988 RX ₁₂	13.0	0.15	19990810	20.93485	167.26952	194.48696	9.81153	0.1106957	3.0156033	46	8	1951–1999	0.79	M-v	1	Williams	32300	1988 RX ₁₂
1988 SB ₂	14.1	0.15	19990810	65.14992	248.80311	111.60497	6.70935	0.1334774	2.2629404	41	3	1988–1999	0.74	M-v	3	Williams	32511	1988 SB ₂
1988 SH ₂	12.6	0.15	19990810	49.07504	225.04223	109.00338	11.34529	0.1175971	2.9985642	46	6	1986–1999	0.77	M-v	1	Williams	32741	1988 SH ₂
1988 TT	13.0	0.15	19990810	59.66877	337.23807	4.28411	10.82684	0.1003654	3.0044009	73	6	1988–1999	0.83	M-v	1	Williams	34005	1988 TT
1988 TO ₁	13.9	0.15	19990810	355.80333	310.99925	103.46260	2.53455	0.2500476	3.0493842	56	6	1983–1999	0.84	M-v	1	Williams	32511	1988 TO ₁
1988 TQ ₁	13.9	0.15	19990810	254.49983	82.82010	346.20827	5.86762	0.1435066	2.4565515	36	3	1988–1999	0.88	M-v	3	Williams	35680	1988 TQ ₁
1988 TS ₁	13.5	0.15	19990810	342.57832	223.45001	174.18184	1.57771	0.2209045	3.1332552	56	4	1949–1999	0.65	M-v	2	Williams	25212	1988 TS ₁
1988 TR ₂	12.8	0.15	19990810	350.29690	38.30280	26.47829	15.61096	0.2706062	3.0456277	39	3	1988–1999	0.92	M-v	3	Williams	29941	1988 TR ₂
1988 UF	12.5	0.15	19990810	49.28590	325.62246	24.70482	11.02347	0.1196221	3.0313090	26	4	1988–1999	1.14	M-v	4	Williams	35680	1988 UF
1988 VA	14.1	0.15	19990810	301.27788	182.33139	219.03230	11.83413	0.1966934	2.4309274	55	3	1988–1999	0.73	M-v	3	Williams	36064	1988 VA
1988 VV	14.5	0.15	19990810	355.80279	177.97551	225.20448	4.17937	0.1469157	2.3477715	37	3	1988–1999	0.90	M-v	3	Williams	26396	1988 VV
1988 VA ₁	15.7	0.15	19990810	322.94637	125.32014	267.02643	10.15352	0.2674302	2.4055405	31	2	1988–1999	0.65	M-v	4	Williams	35912	1988 VA ₁
1988 VG ₁	11.9	0.15	19990810	290.35587	299.99059	219.60274	11.36283	0.1134984	3.0070065	60	5	1980–1999	0.65	M-v	1	Williams	33741	1988 VG ₁
1988 VT ₁	12.9	0.15	19990810	337.57263	242.89683	176.96898	12.32512	0.2392933	3.1098411	39	5	1988–1999	0.79	M-v	1	Williams	32741	1988 VT ₁
1988 VC ₂	13.1	0.15	19990810	343.84064	341.51431	46.56140	6.06332	0.1818239	3.1542668	63	3	1988–1999	0.62	M-v	4	Williams	36064	1988 VC ₂
1988 VF ₂	13.8	0.15	19990810	71.94864	303.15170	33.86010	7.49369	0.1626607	2.3188956	25	6	1981–1999	0.74	M-v	2	Williams	30894	1988 VF ₂
1988 VH ₂	13.9	0.15	19990810	343.90031	289.88444	75.51111	9.55969	0.2157667	2.4161958	42	3	1988–1999	0.79	M-v	3	Williams	36064	1988 VH ₂
1988 VL ₂	13.2	0.15	19990810	268.75568	222.04891	236.29499	10.45068	0.0962837	2.4236168	75	4	1988–1999	0.71	M-v	2	Williams	36064	1988 VL ₂
1988 VX ₂	12.3	0.15	19990810	51.47727	87.59582	223.15114	14.17705	0.0819035	3.1700416	59	4	1988–1999	0.62	M-v	2	Williams	36064	1988 VX ₂
1988 VG ₄	12.2	0.15	19990810	326.79739	144.00570	273.72362	6.21146	0.1641196	3.1653801	40	4	1988–1999	0.44	M-v	1	Williams	35680	1988 VG ₄
1988 XL	13.9	0.15	19990810	334.18261	120.22798	220.68591	3.05735	0.1317341	2.4870656	86	4	1988–1999	0.71	M-v	2	Williams	35680	1988 XL
1988 XJ ₁	12.7	0.15	19990810	1.19539	317.48535	73.62864	13.64880	0.0509020	3.1464967	43	8	1954–1999	0.84	M-v	1	Williams	30686	1988 XJ ₁
1988 XR ₁	13.6	0.15	19990810	332.76893	339.73111	82.15206	7.29007	0.1065776	2.3706193	31	4	1988–1999	0.83	M-v	1	Williams	32301	1988 XR ₁
1988 XY ₄	12.4	0.15	19990810	78.02419	296.04250	65.63049	10.36943	0.0935327	2.9851695	24	3	1988–1999	0.42	M-v	3	Williams	33476	1988 XY ₄
1989 BZ	12.9	0.15	19990810	96.70995	232.27326	330.40884	12.20412	0.0997180	2.6450869	69	4	1987–1999	0.73	M-v	2	Williams	36064	1989 BZ
1989 CR	13.6	0.15	19990810	126.39206	115.69327	111.23726	24.89293	0.2554987	2.5648101	25	4	1989–1999	0.86	M-v	2	Williams	32219	1989 CR
1989 CS ₁	13.2	0.15	19990810	150.62112	170.90037	341.66742	12.87670	0.1117250	2.6729576	30	4	1980–1999	0.61	M-v	3	Williams	35680	1989 CS ₁
1989 CP ₂	14.0	0.15	19990810	114.86036	336.81916	273.66809	8.77712	0.1609530	2.5486960	33	3	1989–1999	0.56	M-v	4	Williams	32219	1989 CP ₂
1989 CQ ₂	13.0	0.15	19990810	271.36888	228.04260	189.83368	10.81142	0.0905102	3.5591585	40	3	1989–1999	0.73	M-v	3	Williams	36064	1989 CQ ₂
1989 CJ ₈	13.8	0.15	19990810	209.23633	66.00686	145.09514	8.65607	0.1942900	2.4670786	96	5	1989–1999	0.78	M-v	2	Williams	33542	1989 CJ ₈
1989 GJ ₄	13.8	0.15	19990810	217.33781	286.21493	237.23802	3.74668	0.1140927	2.5565625	78	4	1989–1999	0.61	M-v	1	Williams	36064	1989 GJ ₄
1989 GL ₄	14.1	0.15	19990810	169.37532	27.71459	204.58265	13.50057	0.1235107	2.5417323	33	5	1989–1999	0.66	M-v	1	Williams	32741	1989 GL ₄
1989 GN ₄	14.2	0.15	19990810	139.04257	345.83031	252.08528	2.80113	0.1390196	2.5955495	40	5	1989–1999	0.68	M-v	1	Williams	32741	1989 GN ₄
1989 HA	13.3	0.15	19990810	139.69838	124.99413	142.97038	15.08082	0.1641169	2.5813103	43	4	1989–1999	0.61	M-v	2	Williams	33334	1989 HA
1989 SD	14.1	0.15	19990810	40.51939	343.44638	30.22928	2.35927	0.1492010	2.1520066	22	4	1989–1999	0.63	M-v	2	Williams	34575	1989 SD
1989 SR	12.8	0.15	19990810	326.31698	130.50514	240.15853	8.88502	0.0984843	2.9874377	80	4	1989–1999	0.80	M-v	3	Williams	36064	1989 SR
1989 SB ₁	14.0	0.15	19990810	251.75682	120.35995	355.40008	6.40029	0.0912819	2.2419117	66	2	1989–1999	0.61	M-v	5	Williams	35912	1989 SB ₁
1989 SZ ₁	14.8	0.15	19990810	108.12259	102.08251	158.89000	4.17479	0.1602492	2.1957799	60	5	1953–1999	0.77	M-v	2	Williams	32301	1989 SZ ₁
1989 SY ₂	13.0	0.15	19990810	5.51175	132.61448	127.44301	5.87127	0.1066751	3.2022139	78	3	1989–1999	0.68	M-v	3	Williams	35418	1989 SY ₂

1989 SK ₃	13.3	0.15	19990810	325.54366	293.58083	179.27980	7.60440	0.1804125	2.7992076	50	5	1975–1999	0.75	M-v	1	Williams	34575	1989 SK ₃
1989 SM ₄	13.6	0.15	19990810	322.75794	249.03272	109.11600	2.51707	0.1316449	3.0448555	36	5	1989–1999	0.81	M-v	2	Williams	36065	1989 SM ₄
1989 SP ₁₁	13.5	0.15	19990810	340.74676	57.49802	306.13288	0.85594	0.1232769	2.9378637	93	6	1979–1999	0.53	M-v	2	Williams	36065	1989 SP ₁₁
1989 TY ₄	15.2	0.15	19990810	65.88060	116.11852	164.04042	5.92617	0.1571056	2.2294456	82	5	1989–1999	0.80	M-v	1	Williams	32045	1989 TY ₄
1989 TN ₁₆	14.6	0.15	19990810	211.12534	325.50115	190.63818	2.28683	0.0812570	2.2228038	68	4	1989–1999	0.58	M-v	1	Williams	32659	1989 TN ₁₆
1989 UL	13.2	0.15	19990810	31.69783	189.25780	217.97831	5.43988	0.1381708	2.7768288	83	5	1980–1999	0.73	M-v	1	Williams	33742	1989 UL
1989 UN	14.0	0.15	19990810	38.51221	6.31949	13.12526	3.48001	0.1241424	2.1634954	34	3	1989–1999	0.84	M-v	4	Williams	30756	1989 UN
1989 UA ₁	14.5	0.15	19990810	9.39133	0.51182	4.44022	5.26786	0.1863471	2.2075618	32	3	1989–1999	0.78	M-v	4	Williams	32741	1989 UA ₁
1989 VA	17.7	0.15	19990810	57.98271	2.78549	225.65173	28.78877	0.5947751	0.7286615	144	6	1989–1999	0.61	M-v	3	Williams	36065	1989 VA
1989 WB ₃	13.3	0.15	19990810	29.70973	279.93442	67.99306	10.45730	0.0564960	2.9925503	42	4	1989–1999	0.72	M-v	3	Williams	36065	1989 WB ₃
1989 XW ₁	13.8	0.15	19990810	296.80555	242.55123	169.43864	9.90641	0.1093712	3.0379648	58	2	1989–1999	0.78	M-v	4	Williams	35912	1989 XW ₁
1989 YA ₄	14.7	0.15	19990810	260.55016	253.46572	259.79616	0.32993	0.1386273	2.2766467	52	5	1989–1999	0.53	M-v	1	Williams	32512	1989 YA ₄
1989 YA ₅	12.6	0.15	19990810	201.88826	234.32920	300.80980	19.63827	0.1399391	3.1296884	37	5	1989–1999	0.69	M-v	1	Williams	32512	1989 YA ₅
1989 YB ₆	12.7	0.15	19990810	199.84927	57.51211	121.89052	14.75878	0.2060392	3.1934178	30	5	1986–1999	0.66	M-v	1	Williams	26757	1989 YB ₆
1989 YC ₆	14.8	0.15	19990810	348.02917	223.24977	160.34762	5.65435	0.1711119	2.2804432	43	4	1989–1999	0.63	M-v	2	Williams	36065	1989 YC ₆
1989 YE ₆	14.7	0.15	19990810	315.38282	193.29797	256.27673	7.36976	0.0778118	2.2563214	24	3	1989–1999	0.66	M-v	3	Williams	25956	1989 YE ₆
1990 BO	11.4	0.15	19990810	329.48545	89.57456	305.17762	15.69730	0.1055687	3.1853415	98	3	1990–1999	0.61	M-v	3	Williams	36065	1990 BO
1990 BA ₂	12.7	0.15	19990810	291.30291	189.92408	302.24088	10.52444	0.1464228	3.0441494	48	3	1990–1999	0.85	M-v	3	Williams	33068	1990 BA ₂
1990 BC ₂	13.9	0.15	19990810	159.87916	313.70527	203.80615	5.98111	0.0693160	2.4280035	108	4	1990–1999	0.61	M-v	2	Williams	36065	1990 BC ₂
1990 CD	13.7	0.15	19990810	170.99142	320.12776	287.28711	5.56575	0.1076447	2.2824888	30	4	1990–1999	0.68	M-v	2	Williams	35681	1990 CD
1990 EJ	12.5	0.15	19990810	236.27785	213.17514	345.77813	8.84892	0.1545042	3.1062361	46	3	1990–1999	0.76	M-v	3	Williams	33335	1990 EJ
1990 EC ₁	15.4	0.15	19990810	136.15991	6.38778	204.63396	9.88181	0.1155867	2.4412566	48	4	1990–1999	0.72	M-v	4	Williams	32301	1990 EC ₁
1990 EZ ₂	12.8	0.15	19990810	232.96400	289.67942	188.46585	6.74665	0.0804333	3.3739246	64	4	1990–1999	0.66	M-v	1	Williams	36065	1990 EZ ₂
1990 ES ₄	14.7	0.15	19990810	121.15779	344.63680	258.67269	1.45632	0.1593224	2.4311566	34	3	1990–1999	0.77	M-v	5	Williams	32221	1990 ES ₄
1990 FG	14.1	0.15	19990810	22.62615	2.36013	357.07551	25.73721	0.0308498	1.9111784	57	4	1990–1999	0.75	M-v	2	Williams	36065	1990 FG
1990 FL	14.0	0.15	19990810	179.29958	46.86980	161.97160	24.17712	0.1878057	2.3885465	48	5	1990–1999	0.70	M-v	2	Williams	36065	1990 FL
1990 FK ₁	12.3	0.15	19990810	196.93068	68.36215	175.24592	11.45632	0.1700303	3.1776549	44	5	1984–1999	0.66	M-v	1	Williams	33543	1990 FK ₁
1990 FJ ₂	13.1	0.15	19990810	91.90976	293.62166	211.10798	11.95857	0.1175654	2.6773695	66	4	1979–1999	0.61	M-v	3	Williams	35418	1990 FJ ₂
1990 FD ₃	12.0	0.15	19990810	155.27305	99.14885	158.50310	15.67718	0.0357382	3.1467531	30	3	1990–1999	0.71	M-v	3	Williams	35681	1990 FD ₃
1990 GD	14.4	0.15	19990810	102.51934	252.95240	351.20827	7.49779	0.1042075	2.4492263	60	3	1990–1999	0.56	M-v	2	Williams	35913	1990 GD
1990 GE	14.3	0.15	19990810	217.44681	192.47957	356.54713	6.51687	0.1680713	2.3349919	38	5	1977–1999	0.67	M-v	2	Williams	32512	1990 GE
1990 GN	15.0	0.15	19990810	230.10985	174.40451	357.57072	1.70874	0.1619125	2.3358172	38	6	1976–1999	0.74	M-v	4	Williams	29913	1990 GN
1990 HE	14.5	0.15	19990810	86.18162	255.89993	35.61342	24.80312	0.1150773	1.9412337	35	3	1990–1999	0.76	M-v	2	Williams	32301	1990 HE
1990 HP	15.0	0.15	19990810	157.40229	188.07479	32.22902	21.55669	0.0504844	1.9410854	68	5	1980–1999	0.64	M-v	2	Williams	36065	1990 HP
1990 KD	14.2	0.15	19990810	79.61796	164.17972	101.66913	13.76474	0.2512544	2.5459563	54	3	1990–1999	0.62	M-v	2	Williams	36065	1990 KD
1990 KR	14.4	0.15	19990810	82.02913	83.51935	182.07215	11.70136	0.2277703	2.5448539	55	3	1990–1999	0.66	M-v	3	Williams	32301	1990 KR
1990 KD ₁	14.0	0.15	19990810	151.41250	346.31017	186.23876	12.40723	0.0946210	2.5460849	65	3	1990–1999	0.63	M-v	3	Williams	36065	1990 KD ₁
1990 KN ₁	15.8	0.15	19990810	255.75010	255.28893	240.22776	19.14768	0.0702758	1.9288500	39	4	1990–1999	0.68	M-v	2	Williams	32046	1990 KN ₁
1990 OZ	14.1	0.15	19990810	43.57731	94.12661	182.22400	12.81909	0.1584648	2.6804318	82	3	1990–1999	0.61	M-v	2	Williams	36065	1990 OZ
1990 OY ₁	13.3	0.15	19990810	80.90109	209.98946	72.94292	5.80548	0.1709709	2.6008375	57	5	1989–1999	0.64	M-v	1	Williams	32301	1990 OY ₁
1990 OB ₄	13.8	0.15	19990810	11.91818	84.96026	271.66005	11.47737	0.2474734	2.6478370	37	4	1990–1999	0.59	M-v	1	Williams	36065	1990 OB ₄
1990 OG ₄	14.1	0.15	19990810	346.85249	84.33998	266.85120	11.05336	0.2850604	2.6965409	86	2	1990–1999	0.61	M-v	3	Williams	36065	1990 OG ₄
1990 OS ₄	13.2	0.15	19990810	236.28882	235.05235	269.45404	14.03693	0.0540272	2.5605486	35	4	1989–1999	0.71	M-v	1	Williams	36065	1990 OS ₄
1990 OB ₅	13.2	0.15	19990810	0.39815	66.96775	259.68992	11.5732	0.1884793	2.6872376	94	3	1990–1999	0.50	M-v	2	Williams	36065	1990 OB ₅
1990 QR	13.3	0.15	19990810	69.95249	123.58794	169.20671	13.55420	0.1717286	2.6216168	74	5	1990–1999	0.74	M-v	2	Williams	32301	1990 QR
1990 QY ₅	13.9	0.15	19990810	358.45691	26.27544	332.80606	12.53902	0.1882995	2.6826376	51	2	1990–1999	0.63	M-v	3	Williams	35913	1990 QY ₅
1990 QA ₆	14.8	0.15	19990810	193.56057	18.58921	350.61451	4.22243	0.1793414	2.2804059	43	4	1990–1999	0.80	M-v	3	Williams	36065	1990 QA ₆
1990 QE ₆	14.2	0.15	19990810	39.47776	319.43919	352.96253	18.93476	0.2220446	2.6665680	22	3	1977–1999	0.43	M-v	3	Williams	36065	1990 QE ₆
1990 QD ₇	15.3	0.15	19990810	3.14889	171.86225	154.59249	5.21022	0.1590141	2.7366944	44	3	1990–1999	0.64	M-v	4	Williams	36065	1990 QD ₇
1990 QE ₇	14.2	0.15	19990810	333.43961	319.38921	142.95788	2.13643	0.1209938	2.5343339	75	5	1990–1999	0.74	M-v	2	Williams	34285	1990 QE ₇
1990 QB ₈	14.1	0.15	19990810	202.48289	331.10130	151.03469	6.54421	0.0545455	2.7572087	30	4	1990–1999	0.79	M-v	2	Williams	35419	1990 QB ₈
1990 QR ₉	14.7	0.15	19990810	28.65711	202.92265	145.89635	3.72379	0.1587276	2.6301402	30	4	1990–1999	0.67	M-v	2	Williams	26757	1990 QR ₉
1990 QW ₉	14.2	0.15	19990810	91.91569	104.28595	171.18536	11.28796	0.2835469	2.5985733	47	4	1990–1999	0.73	M-v	2	Williams	32301	1990 QW ₉

1990 RC ₂	13.8	0.15	19990810	341.58916	166.13727	199.16861	4.30948	0.0516424	2.7279995	69	4	1990–1999	0.62	M-v	1	Williams	36065	1990 RC ₂
1990 RT ₂	13.1	0.15	19990810	352.61325	15.42423	356.85348	12.02713	0.1724208	2.7001425	54	5	1981–1999	0.57	M-v	2	Williams	36065	1990 RT ₂
1990 RN ₈	14.4	0.15	19990810	323.61562	220.71931	168.38584	3.09443	0.0898475	2.7099485	64	3	1990–1999	0.53	M-v	3	Williams	35913	1990 RN ₈
1990 RF ₁₇	13.3	0.15	19990810	12.89275	225.87505	193.21245	13.44719	0.1607139	2.5745406	35	4	1986–1999	0.69	M-v	2	Williams	34285	1990 RF ₁₇
1990 SY	13.3	0.15	19990810	86.78690	337.63341	330.98874	8.41424	0.1861739	2.5935801	41	5	1990–1999	0.92	M-v	2	Williams	33335	1990 SY
1990 SX ₃	13.5	0.15	19990810	49.34784	60.17904	308.31463	12.31871	0.2180983	2.5849562	35	3	1990–1999	0.50	M-v	2	Williams	33068	1990 SX ₃
1990 SZ ₃	13.2	0.15	19990810	356.69409	94.49111	301.74540	11.64892	0.1752954	2.6660177	28	5	1990–1999	0.78	M-v	1	Williams	35682	1990 SZ ₃
1990 SH ₈	14.9	0.15	19990810	152.29458	322.77961	137.41413	6.05491	0.0780480	2.2240902	37	3	1990–1999	0.77	M-v	3	Williams	35419	1990 SH ₈
1990 SN ₈	13.4	0.15	19990810	177.44469	143.07225	59.94341	4.13586	0.0380719	2.6519837	23	3	1990–1999	0.51	M-v	4	Williams	29611	1990 SN ₈
1990 SO ₈	15.1	0.15	19990810	322.45417	275.48022	129.79521	5.09139	0.2382175	2.7241121	37	2	1990–1999	0.69	M-v	5	Williams	35914	1990 SO ₈
1990 SX ₈	12.8	0.15	19990810	256.45711	282.19981	168.51670	17.26185	0.1058847	2.7696083	60	4	1985–1999	0.60	M-v	2	Williams	36065	1990 SX ₈
1990 SV ₁₃	14.4	0.15	19990810	38.01985	18.78127	7.57903	4.42876	0.0593735	2.5385407	68	7	1978–1999	0.73	M-v	2	Williams	33335	1990 SV ₁₃
1990 ST ₁₄	14.7	0.15	19990810	1.74139	342.30433	50.71494	6.82251	0.2393233	2.6652414	18	3	1990–1999	0.48	M-v	3	Williams	33224	1990 ST ₁₄
1990 SU ₁₅	14.1	0.15	19990810	13.29324	142.56300	179.14588	12.52228	0.2194812	2.7031128	104	3	1990–1999	0.67	M-v	2	Williams	36066	1990 SU ₁₅
1990 TZ ₁	13.7	0.15	19990810	350.87082	95.65622	279.28729	2.27813	0.0884156	2.7219755	86	3	1990–1999	0.52	M-v	3	Williams	36066	1990 TZ ₁
1990 TS ₄	12.8	0.15	19990810	17.94863	296.42799	101.41896	9.99821	0.0635678	2.6358204	31	5	1988–1999	0.67	M-v	1	Williams	32742	1990 TS ₄
1990 TD ₁₂	14.5	0.15	19990810	329.81834	172.03690	252.29202	2.89955	0.1998828	2.6846134	29	4	1985–1999	0.52	M-v	1	Williams	35061	1990 TD ₁₂
1990 TJ ₁₅	13.3	0.15	19990810	332.89875	69.93530	307.65776	8.07861	0.1776817	2.7749525	45	2	1990–1999	0.64	M-v	4	Williams	35914	1990 TJ ₁₅
1990 UA ₁	12.5	0.15	19990810	321.07022	220.26241	236.76153	12.07920	0.1276730	2.6735319	45	3	1990–1999	0.71	M-v	3	Williams	33336	1990 UA ₁
1990 UJ ₁	13.6	0.15	19990810	339.29415	196.58916	226.37446	13.07576	0.1614849	2.6797182	32	4	1990–1999	0.64	M-v	2	Williams	29942	1990 UJ ₁
1990 UB ₄	13.7	0.15	19990810	323.02942	240.20163	185.87177	10.14648	0.1298808	2.7313665	34	6	1987–1999	0.90	M-v	1	Williams	34491	1990 UB ₄
1990 UO ₄	14.0	0.15	19990810	24.52098	133.79406	188.79665	12.08771	0.1420565	2.7745014	71	3	1990–1999	0.65	M-v	2	Williams	36066	1990 UO ₄
1990 UG ₅	15.3	0.15	19990810	331.42473	205.62286	184.17839	8.70388	0.1571498	2.7742521	63	4	1990–1999	0.64	M-v	2	Williams	36066	1990 UG ₅
1990 VM ₂	13.9	0.15	19990810	19.26817	285.15540	103.09267	4.65057	0.1979329	2.6707324	36	3	1990–1999	0.71	M-v	3	Williams	32513	1990 VM ₂
1990 VN ₄	13.5	0.15	19990810	245.16330	350.61851	205.83094	12.63238	0.1174857	2.6386576	92	4	1990–1999	0.68	M-v	1	Williams	33544	1990 VN ₄
1990 VQ ₅	13.6	0.15	19990810	249.48433	74.73801	133.36354	8.74008	0.0629763	2.5906016	44	5	1990–1999	0.82	M-v	2	Williams	33336	1990 VQ ₅
1990 VS ₅	12.9	0.15	19990810	330.81531	313.46888	97.95488	10.44262	0.1548566	2.7644129	42	5	1973–1999	0.60	M-v	1	Williams	34286	1990 VS ₅
1990 VF ₈	13.4	0.15	19990810	11.57639	328.22262	25.08209	8.33241	0.1813202	2.7376895	55	4	1990–1999	0.52	M-v	1	Williams	36066	1990 VF ₈
1990 VU ₈	13.4	0.15	19990810	27.99550	188.30006	131.18484	9.85455	0.1442491	2.7919694	59	3	1990–1999	0.57	M-v	2	Williams	36066	1990 VU ₈
1990 WZ	13.8	0.15	19990810	296.22962	244.87940	190.63191	8.91549	0.0579398	2.7934058	53	3	1990–1999	0.46	M-v	3	Williams	36066	1990 WZ
1990 WP ₁	14.2	0.15	19990810	353.63706	255.15653	101.25813	10.19859	0.1700760	2.7982637	30	3	1990–1999	0.77	M-v	3	Williams	32222	1990 WP ₁
1990 WS ₁	13.5	0.15	19990810	253.00378	324.45520	206.18416	12.48801	0.1185222	2.6855822	43	3	1990–1999	0.61	M-v	4	Williams	33544	1990 WS ₁
1990 WU ₁	14.5	0.15	19990810	335.82857	193.74646	183.36704	8.45026	0.2335642	2.7941609	68	4	1985–1999	0.42	M-v	1	Williams	36066	1990 WU ₁
1990 WW ₁	13.9	0.15	19990810	18.28113	229.91223	153.31345	7.02596	0.1456986	2.6860214	38	4	1990–1999	0.62	M-v	1	Williams	32222	1990 WW ₁
1990 WN ₂	13.0	0.15	19990810	352.71060	0.08730	79.03988	14.60950	0.1335105	2.6567248	34	5	1990–1999	0.75	M-v	1	Williams	33545	1990 WN ₂
1990 WQ ₂	13.6	0.15	19990810	350.03132	216.90061	215.45663	6.60562	0.1674072	2.6834606	52	4	1990–1999	0.69	M-v	1	Williams	33068	1990 WQ ₂
1990 WO ₄	15.1	0.15	19990810	324.67253	270.81110	202.15678	4.62421	0.2361864	2.6853358	22	3	1990–1999	0.67	M-v	4	Williams	27934	1990 WO ₄
1990 WP ₄	12.4	0.15	19990810	178.13382	125.54379	88.44080	10.24886	0.0902408	2.7752893	39	6	1979–1999	0.63	M-v	1	Williams	32742	1990 WP ₄
1990 WS ₄	13.4	0.15	19990810	9.77602	222.34036	157.89644	3.04227	0.0858541	2.7458069	46	7	1976–1999	0.75	M-v	1	Williams	32743	1990 WS ₄
1990 WA ₅	13.0	0.15	19990810	136.51834	143.29262	119.27192	6.34476	0.0142709	2.7412408	39	7	1985–1999	0.84	M-v	1	Williams	34577	1990 WA ₅
1991 AG ₂	13.9	0.15	19990810	355.23753	242.88844	153.98551	14.76180	0.3027996	2.7153889	26	4	1981–1999	0.89	M-v	3	Williams	32302	1991 AG ₂
1991 BZ	13.9	0.15	19990810	335.05295	126.79480	289.00204	5.99172	0.2458945	2.8088927	33	3	1980–1999	0.81	M-v	3	Williams	36066	1991 BZ
1991 BV ₁	13.0	0.15	19990810	266.96392	63.85896	154.34033	8.16140	0.2530753	2.7179738	32	6	1991–1999	0.90	M-v	2	Williams	33545	1991 BV ₁
1991 CL	12.3	0.15	19990810	277.22002	50.38233	128.66243	13.92915	0.1573644	2.7648921	34	5	1989–1999	0.76	M-v	2	Williams	33336	1991 CL
1991 CM	12.3	0.15	19990810	108.45420	115.25373	128.17666	16.97486	0.1118012	3.1235640	46	3	1991–1999	0.75	M-v	3	Williams	36066	1991 CM
1991 DG ₁	13.3	0.15	19990810	253.34708	272.03396	174.35946	4.96318	0.1619552	3.0908853	28	3	1962–1999	0.58	M-v	3	Williams	35914	1991 DG ₁
1991 EC	13.1	0.15	19990810	282.03083	128.91638	2.44057	7.48409	0.2446633	2.8916989	40	6	1970–1999	0.73	M-v	1	Williams	35682	1991 EC
1991 EM	13.4	0.15	19990810	53.39054	28.13668	280.79044	20.14975	0.1331694	3.2044761	32	3	1991–1999	0.69	M-v	3	Williams	36066	1991 EM
1991 ED ₂	14.2	0.15	19990810	176.59456	343.07808	162.20849	4.70102	0.0961698	2.2654590	93	3	1991–1999	0.60	M-v	3	Williams	36066	1991 ED ₂
1991 EF ₂	14.2	0.15	19990810	184.39663	17.97403	175.93264	5.42426	0.0559772	2.1977445	61	3	1991–1999	0.55	M-v	3	Williams	32302	1991 EF ₂
1991 EX ₂	14.9	0.15	19990810	242.23021	103.88499	345.73091	8.04386	0.0056526	2.2640290	82	3	1991–1999	0.63	M-v	1	Williams	36066	1991 EX ₂
1991 EK ₄	15.2	0.15	19990810	188.71359	37.68814	185.88972	2.83471	0.0797301	2.1489278	26	3	1991–1999	0.68	M-v	3	Williams	32513	1991 EK ₄
1991 FG	13.7	0.15	19990810	304.56534	325.99919	204.41887	13.58002	0.3427760	2.7504715	38	5	1987–1999	0.82	M-v	2	Williams	33069	1991 FG

1991 FH	12.6	0.15	19990810	180.45575	331.48635	207.28067	19.44681	0.1410309	3.1720857	23	3	1991-1999	0.70	M-v	3	Williams	36066	1991 FH
1991 FP	12.7	0.15	19990810	155.56112	26.53268	188.30591	14.79549	0.1831134	3.2118615	42	4	1991-1999	0.77	M-v	2	Williams	35683	1991 FP
1991 FN ₂	13.5	0.15	19990810	258.72764	330.54153	158.05681	3.80185	0.0975261	3.0063228	60	5	1988-1999	0.61	M-v	1	Williams	32513	1991 FN ₂
1991 FY ₃	12.1	0.15	19990810	80.70445	301.76142	15.22782	17.23182	0.2310275	3.1536868	48	6	1953-1999	0.76	M-v	1	Williams	35683	1991 FY ₃
1991 GW ₁	13.8	0.15	19990810	169.26035	335.13495	219.57623	24.55000	0.1929995	2.2733399	44	4	1987-1999	0.80	M-v	3	Williams	35420	1991 GW ₁
1991 GX ₁	10.3	0.15	19990810	356.47128	160.92942	298.89995	9.52590	0.0373423	5.1910729	40	5	1990-1999	0.88	M-v	1	Williams	35683	1991 GX ₁
1991 GA ₂	13.8	0.15	19990810	18.02998	115.61131	186.18598	22.55524	0.2535769	2.4312620	52	2	1991-1999	0.47	M-v	3	Williams	35914	1991 GA ₂
1991 GE ₂	13.9	0.15	19990810	25.66392	182.45106	101.22003	14.18725	0.1939485	2.4276409	47	4	1991-1999	0.84	M-v	2	Williams	35420	1991 GE ₂
1991 GR ₂	14.2	0.15	19990810	43.77338	295.15262	18.57450	2.21284	0.1881103	2.3012992	106	5	1971-1999	0.62	M-v	2	Williams	36066	1991 GR ₂
1991 GY ₂	15.5	0.15	19990810	130.36912	346.59660	197.02777	5.26977	0.0939524	2.3396719	42	4	1991-1999	0.67	M-v	2	Williams	35420	1991 GY ₂
1991 GV ₃	14.8	0.15	19990810	69.58918	270.29769	32.32933	5.64105	0.1724857	2.2772500	50	3	1991-1999	0.71	M-v	3	Williams	32302	1991 GV ₃
1991 GT ₄	14.8	0.15	19990810	43.12837	135.00407	190.67738	4.97396	0.1968979	2.2867076	33	3	1991-1999	0.66	M-v	3	Williams	32223	1991 GT ₄
1991 GU ₄	13.1	0.15	19990810	255.68404	122.99054	16.52243	9.15861	0.0774287	3.0628716	53	3	1991-1999	0.73	M-v	3	Williams	27934	1991 GU ₄
1991 GY ₄	14.9	0.15	19990810	125.24531	197.48716	59.04229	2.08013	0.0643721	2.2404992	48	5	1991-1999	0.82	M-v	2	Williams	32302	1991 GY ₄
1991 GH ₅	13.9	0.15	19990810	89.10628	74.65411	213.23844	4.36491	0.1218074	3.2128269	47	4	1991-1999	0.79	M-v	1	Williams	32513	1991 GH ₅
1991 GC ₆	14.2	0.15	19990810	316.95368	44.34769	26.44637	7.18948	0.1116689	2.2064452	63	5	1988-1999	0.79	M-v	2	Williams	28614	1991 GC ₆
1991 GL ₇	14.8	0.15	19990810	268.57293	169.23066	251.82975	3.94494	0.0445871	2.3204925	66	3	1991-1999	0.74	M-v	3	Williams	36066	1991 GL ₇
1991 GP ₇	14.1	0.15	19990810	329.62198	81.03657	328.49854	2.39164	0.0938110	2.2325681	59	4	1991-1999	0.65	M-v	1	Williams	34492	1991 GP ₇
1991 GR ₇	14.4	0.15	19990810	209.10498	282.92399	230.98945	5.00857	0.0689456	2.2578133	50	3	1991-1999	0.61	M-v	3	Williams	35683	1991 GR ₇
1991 GY ₇	15.2	0.15	19990810	41.28762	299.11133	319.63770	1.74562	0.1435741	2.4079451	39	4	1991-1999	0.85	M-v	2	Williams	36066	1991 GY ₇
1991 GD ₈	13.6	0.15	19990810	336.80022	208.43514	218.93547	9.29901	0.0457565	3.0573227	36	4	1991-1999	0.53	M-v	1	Williams	34577	1991 GD ₈
1991 GJ ₈	15.5	0.15	19990810	177.56316	154.60834	17.97771	7.90491	0.0354777	2.2879513	54	5	1991-1999	0.67	M-v	2	Williams	36066	1991 GJ ₈
1991 GF ₉	15.0	0.15	19990810	91.40271	89.31175	172.51509	4.43543	0.1215219	2.2936540	59	4	1977-1999	0.67	M-v	3	Williams	32047	1991 GF ₉
1991 GH ₁₁	13.9	0.15	19990810	230.70562	2.80916	144.19397	2.44403	0.2030188	3.0918247	26	4	1980-1999	0.59	M-v	1	Williams	32743	1991 GH ₁₁
1991 HN	11.1	0.15	19990810	84.67219	286.27831	91.02631	8.24818	0.0121648	5.1056617	29	4	1991-1999	0.83	M-v	2	Williams	36066	1991 HN
1991 JC	14.8	0.15	19990810	80.24705	193.14281	70.44236	3.46739	0.1902815	2.3459882	54	3	1991-1999	0.64	M-v	3	Williams	32302	1991 JC
1991 JD	14.5	0.15	19990810	68.01084	239.91491	39.26463	2.93168	0.2067864	2.3512276	83	3	1991-1999	0.46	M-v	3	Williams	36066	1991 JD
1991 LR	14.2	0.15	19990810	47.25515	189.29750	116.22050	14.96079	0.2327416	2.3816201	52	3	1991-1999	0.73	M-v	2	Williams	36066	1991 LR
1991 LZ	14.2	0.15	19990810	68.53375	47.67045	202.81376	10.88052	0.2313367	2.4170548	42	5	1973-1999	0.56	M-v	2	Williams	36066	1991 LZ
1991 LF ₁	14.3	0.15	19990810	53.33139	268.38542	88.22896	4.53695	0.1730737	2.2706650	24	4	1991-1999	0.56	M-v	1	Williams	25974	1991 LF ₁
1991 LJ ₂	12.6	0.15	19990810	87.12636	225.72416	90.32848	7.14714	0.0656577	3.2345458	27	4	1984-1999	0.63	M-v	2	Williams	33743	1991 LJ ₂
1991 LK ₂	13.2	0.15	19990810	223.39553	112.09988	72.01658	6.21105	0.0845401	3.1558223	41	6	1958-1999	0.89	M-v	1	Williams	32743	1991 LK ₂
1991 NB ₁	13.9	0.15	19990810	20.90472	71.50371	238.05098	7.65386	0.2440207	2.4725470	72	3	1991-1999	0.61	M-v	2	Williams	36066	1991 NB ₁
1991 NV ₁	13.9	0.15	19990810	3.04294	135.21557	253.25612	6.17739	0.1217332	2.3829699	45	6	1988-1999	0.69	M-v	1	Williams	32047	1991 NV ₁
1991 NS ₂	13.6	0.15	19990810	15.49165	97.27309	185.59304	7.67137	0.1705683	2.5515226	59	6	1979-1999	0.72	M-v	2	Williams	36066	1991 NS ₂
1991 NU ₃	13.5	0.15	19990810	346.10289	96.03813	286.55443	5.72047	0.1796961	2.4297758	55	4	1991-1999	0.57	M-v	2	Williams	35420	1991 NU ₃
1991 NG ₅	14.7	0.15	19990810	71.63450	359.00495	292.84741	4.34241	0.2259931	2.3827148	31	3	1991-1999	0.67	M-v	3	Williams	32047	1991 NG ₅
1991 PB	13.9	0.15	19990810	75.40484	182.11976	150.21364	2.58243	0.2465801	2.3384392	61	6	1984-1999	0.74	M-v	1	Williams	32303	1991 PB
1991 PG ₁	14.5	0.15	19990810	39.67867	194.51365	127.72949	12.44515	0.2754424	2.4295053	31	3	1991-1999	0.81	M-v	2	Williams	32303	1991 PG ₁
1991 PY ₁	14.9	0.15	19990810	51.84131	175.45755	119.18237	7.40326	0.1280014	2.4347060	51	3	1991-1999	0.78	M-v	2	Williams	36066	1991 PY ₁
1991 PE ₂	15.8	0.15	19990810	23.97270	328.16510	12.78119	2.04983	0.2342906	2.4283827	26	5	1991-1999	0.58	M-v	2	Williams	32303	1991 PE ₂
1991 PL ₂	15.3	0.15	19990810	44.13131	312.95826	338.95920	4.08428	0.1933203	2.4520891	76	4	1991-1999	0.73	M-v	3	Williams	36066	1991 PL ₂
1991 PQ ₂	14.7	0.15	19990810	83.10680	279.59675	14.78105	1.97535	0.1201131	2.3720513	35	5	1984-1999	0.83	M-v	2	Williams	32303	1991 PQ ₂
1991 PE ₃	14.6	0.15	19990810	339.20660	294.56720	110.97888	3.29888	0.2105302	2.4154747	39	5	1980-1999	0.95	M-v	2	Williams	31417	1991 PE ₃
1991 PL ₅	15.0	0.15	19990810	66.55595	348.45816	301.09935	1.22637	0.1873232	2.4147741	53	3	1991-1999	0.64	M-v	3	Williams	32303	1991 PL ₅
1991 PC ₆	14.8	0.15	19990810	357.88751	278.42130	125.83798	7.43561	0.1274083	2.3750892	31	6	1982-1999	0.81	M-v	1	Williams	29942	1991 PC ₆
1991 PG ₇	11.7	0.15	19990810	295.85808	65.85627	345.40306	9.26732	0.2094494	3.9998907	33	2	1991-1999	0.59	M-v	4	Williams	36066	1991 PG ₇
1991 PD ₁₀	13.7	0.15	19990810	321.19109	116.63774	332.17755	7.26912	0.0398274	2.3695932	36	4	1991-1999	0.79	M-v	2	Williams	32513	1991 PD ₁₀
1991 PT ₁₀	15.2	0.15	19990810	342.65687	68.83807	282.18619	3.09334	0.2638408	2.5404189	63	5	1987-1999	0.61	M-v	2	Williams	36066	1991 PT ₁₀
1991 PW ₁₁	13.9	0.15	19990810	65.08142	101.32278	187.72418	7.26700	0.1866302	2.4385046	46	3	1991-1999	0.60	M-v	2	Williams	32743	1991 PW ₁₁
1991 PF ₁₂	14.4	0.15	19990810	61.11732	37.74088	281.55858	6.94866	0.2368236	2.4041176	22	4	1991-1999	0.77	M-v	2	Williams	32303	1991 PF ₁₂
1991 PL ₁₃	14.6	0.15	19990810	40.02591	47.12417	268.03280	1.62703	0.1794578	2.4523694	80	4	1991-1999	0.59	M-v	2	Williams	32303	1991 PL ₁₃
1991 PT ₁₄	14.1	0.15	19990810	192.48554	52.02487	141.80919	2.82546	0.0468620	2.3745643	63	5	1991-1999	0.79	M-v	1	Williams	32303	1991 PT ₁₄

1991 PZ ₁₄	13.4	0.15	19990810	44.70126	70.87285	195.88019	6.55821	0.1575402	2.5253735	82	4	1991–1999	0.67	M-v	2	Williams	36066	1991 PZ ₁₄
1991 PA ₁₅	15.0	0.15	19990810	73.26695	151.77785	192.04977	5.14923	0.1680253	2.3387873	23	5	1991–1999	0.71	M-v	2	Williams	35683	1991 PA ₁₅
1991 PP ₁₆	13.5	0.15	19990810	55.28766	190.01400	151.64201	5.39467	0.1558645	2.3929599	37	5	1990–1999	0.79	M-v	1	Williams	32303	1991 PP ₁₆
1991 PQ ₁₆	13.4	0.15	19990810	20.92183	229.26922	169.89002	7.48119	0.0864913	2.3669403	33	4	1991–1999	0.71	M-v	1	Williams	33069	1991 PQ ₁₆
1991 PL ₁₇	14.3	0.15	19990810	11.45755	68.61738	306.81249	8.20818	0.2395041	2.4238618	24	4	1989–1999	0.52	M-v	2	Williams	27455	1991 PL ₁₇
1991 PV ₁₇	14.0	0.15	19990810	13.98988	317.56460	74.73890	3.02572	0.1934037	2.3984577	24	4	1971–1999	0.67	M-v	2	Williams	31138	1991 PV ₁₇
1991 PH ₁₈	14.4	0.15	19990810	52.29514	150.35350	156.20251	12.35727	0.2138068	2.4426315	37	3	1991–1999	0.68	M-v	1	Williams	32303	1991 PH ₁₈
1991 RP ₁	13.4	0.15	19990810	12.67447	337.68484	349.28194	15.19584	0.1286561	2.5397404	89	5	1987–1999	0.54	M-v	2	Williams	36066	1991 RP ₁
1991 RO ₂	14.8	0.15	19990810	45.73840	131.01143	205.99770	5.59881	0.2822392	2.4271629	54	4	1971–1999	0.70	M-v	2	Williams	32303	1991 RO ₂
1991 RV ₂	14.2	0.15	19990810	16.24332	10.18055	276.57444	3.87321	0.2542745	2.5762244	67	3	1991–1999	0.54	M-v	2	Williams	36066	1991 RV ₂
1991 RA ₄	14.0	0.15	19990810	125.10490	28.10798	214.12204	7.71887	0.1152736	2.4733749	67	4	1991–1999	0.67	M-v	4	Williams	35062	1991 RA ₄
1991 RN ₄	14.2	0.15	19990810	29.90722	226.73110	159.20624	6.27890	0.2320344	2.3808525	30	3	1991–1999	0.74	M-v	4	Williams	29659	1991 RN ₄
1991 RC ₆	13.9	0.15	19990810	337.64382	339.42064	20.79913	13.66211	0.1953506	2.5556095	30	3	1991–1999	0.63	M-v	3	Williams	31954	1991 RC ₆
1991 RL ₇	13.8	0.15	19990810	89.07521	117.11184	214.10411	11.53276	0.0463887	2.4044061	37	4	1983–1999	0.67	M-v	2	Williams	34287	1991 RL ₇
1991 RX ₁₀	14.1	0.15	19990810	47.41875	345.32933	1.39949	12.77247	0.1024917	2.4356148	31	7	1964–1999	0.58	M-v	2	Williams	29943	1991 RX ₁₀
1991 RF ₁₁	14.0	0.15	19990810	3.81126	74.60999	323.75352	4.61622	0.2161716	2.4414714	28	3	1991–1999	0.54	M-v	3	Williams	27120	1991 RF ₁₁
1991 RR ₁₂	15.1	0.15	19990810	14.64783	17.52392	23.95801	3.40902	0.2347113	2.3699473	36	5	1984–1999	0.81	M-v	1	Williams	30470	1991 RR ₁₂
1991 RW ₁₂	13.9	0.15	19990810	95.51011	104.18601	187.99405	3.73099	0.0478292	2.4228686	26	4	1953–1999	0.71	M-v	2	Williams	32744	1991 RW ₁₂
1991 RK ₁₆	14.0	0.15	19990810	329.74004	283.65827	61.67585	2.85351	0.1372833	2.5934793	54	3	1991–1999	0.68	M-v	3	Williams	35421	1991 RK ₁₆
1991 RR ₁₆	12.4	0.15	19990810	134.34495	288.96989	23.77335	8.06339	0.0818060	3.4000183	21	4	1985–1999	0.69	M-v	2	Williams	34495	1991 RR ₁₆
1991 RV ₁₇	14.8	0.15	19990810	37.93145	16.26722	326.45059	2.04122	0.2193484	2.4256970	31	5	1991–1999	0.62	M-v	1	Williams	32744	1991 RV ₁₇
1991 RX ₁₇	14.2	0.15	19990810	104.89691	148.20021	177.73827	4.36076	0.1438281	2.3168526	67	3	1991–1999	0.84	M-v	3	Williams	33546	1991 RX ₁₇
1991 RB ₁₉	14.3	0.15	19990810	318.85890	45.64559	334.91338	10.56787	0.1095800	2.5434615	74	5	1987–1999	0.78	M-v	3	Williams	36066	1991 RB ₁₉
1991 RB ₂₄	14.8	0.15	19990810	86.80993	143.70670	141.99794	4.01940	0.2131716	2.4016432	71	5	1972–1999	0.57	M-v	1	Williams	32303	1991 RB ₂₄
1991 RT ₂₆	13.1	0.15	19990810	323.99013	161.67235	194.70365	13.20338	0.1670534	2.6176400	82	4	1991–1999	0.63	M-v	3	Williams	36067	1991 RT ₂₆
1991 RN ₂₇	12.7	0.15	19990810	190.16757	176.41440	339.02372	14.28772	0.0336847	2.5812009	90	5	1985–1999	0.53	M-v	2	Williams	36067	1991 RN ₂₇
1991 RM ₂₉	13.6	0.15	19990810	281.44553	166.55892	266.60628	12.23439	0.2400623	2.6008908	33	2	1991–1999	0.54	M-v	4	Williams	36067	1991 RM ₂₉
1991 SB	13.7	0.15	19990810	9.60930	179.71180	216.63321	2.48477	0.1331723	2.4214633	30	4	1984–1999	0.66	M-v	2	Williams	30449	1991 SB
1991 SD ₁	14.1	0.15	19990810	91.03124	90.37970	132.63506	13.76773	0.1331436	2.5508260	42	3	1991–1999	0.66	M-v	3	Williams	36067	1991 SD ₁
1991 SR ₁	13.2	0.15	19990810	313.30362	158.38774	208.41571	12.80085	0.1647372	2.6067510	76	4	1949–1999	0.73	M-v	1	Williams	35421	1991 SR ₁
1991 TK	14.2	0.15	19990810	267.91704	46.32280	107.83579	5.12380	0.0629417	2.3924843	50	4	1991–1999	0.75	M-v	3	Williams	33070	1991 TK
1991 TX	13.4	0.15	19990810	43.57883	284.43246	76.97311	24.16915	0.2821119	2.4065039	17	3	1991–1999	0.60	M-v	3	Williams	26399	1991 TX
1991 TE ₁	13.2	0.15	19990810	263.74791	21.94412	89.56385	14.70249	0.1167702	2.5609258	37	4	1979–1999	0.52	M-v	2	Williams	36067	1991 TE ₁
1991 TV ₁	13.8	0.15	19990810	335.84551	329.77158	52.33020	8.40567	0.3094048	2.5425842	58	6	1987–1999	0.70	M-v	2	Williams	36067	1991 TV ₁
1991 TC ₂	14.9	0.15	19990810	277.45259	55.26653	26.93611	24.97684	0.1199927	1.9211361	34	3	1991–1999	0.63	M-v	2	Williams	36067	1991 TC ₂
1991 TQ ₂	15.1	0.15	19990810	349.43596	164.74661	270.63581	2.76148	0.2187654	2.4179107	39	4	1991–1999	0.48	M-v	3	Williams	32303	1991 TQ ₂
1991 TH ₃	15.4	0.15	19990810	317.28166	192.99727	213.14901	7.50509	0.2872688	2.5367028	48	4	1991–1999	0.53	M-v	2	Williams	36067	1991 TH ₃
1991 TB ₆	13.5	0.15	19990810	345.77578	303.27986	37.75065	16.02867	0.1562528	2.5858559	63	4	1987–1999	0.58	M-v	3	Williams	35684	1991 TB ₆
1991 TF ₁₄	14.2	0.15	19990810	279.53283	47.13416	25.70530	5.51976	0.1175801	2.5494907	76	4	1977–1999	0.55	M-v	1	Williams	36067	1991 TF ₁₄
1991 TM ₁₄	14.0	0.15	19990810	174.50339	88.32242	119.97010	3.71086	0.1192847	2.4486068	45	5	1972–1999	0.83	M-v	1	Williams	35684	1991 TM ₁₄
1991 UA	12.6	0.15	19990810	357.94651	28.38171	352.48522	2.35512	0.2527882	4.0016176	59	4	1991–1999	0.65	M-v	1	Williams	32514	1991 UA
1991 UE ₂	13.5	0.15	19990810	271.15207	52.76989	47.25637	3.67262	0.0883085	2.5595360	80	4	1987–1999	0.48	M-v	2	Williams	36067	1991 UE ₂
1991 UQ ₂	15.0	0.15	19990810	342.33760	319.93265	38.06672	13.20611	0.3091387	2.5679306	25	4	1991–1999	0.59	M-v	3	Williams	35684	1991 UQ ₂
1991 UD ₃	14.2	0.15	19990810	303.59309	226.39188	209.48824	7.13594	0.2390831	2.5551542	83	6	1983–1999	0.62	M-v	2	Williams	36067	1991 UD ₃
1991 US ₃	13.1	0.15	19990810	5.54742	273.55366	65.07952	15.56665	0.1624933	2.5789024	62	3	1991–1999	0.54	M-v	3	Williams	36067	1991 US ₃
1991 UY ₃	15.0	0.15	19990810	0.54700	178.67084	212.08632	3.50599	0.2485834	2.4808312	20	4	1987–1999	0.78	M-v	4	Williams	26420	1991 UY ₃
1991 VT	13.4	0.15	19990810	332.06133	301.31960	66.49186	15.58230	0.1930857	2.6000629	46	3	1991–1999	0.68	M-v	3	Williams	31956	1991 VT
1991 VY	13.4	0.15	19990810	351.13322	356.98015	68.48082	5.85313	0.0925247	2.4539906	39	4	1991–1999	0.65	M-v	3	Williams	26420	1991 VY
1991 VD ₁	13.7	0.15	19990810	339.65820	3.60079	32.44942	16.03700	0.0938688	2.5323751	77	5	1987–1999	0.53	M-v	3	Williams	36067	1991 VD ₁
1991 VJ ₁	15.0	0.15	19990810	325.69840	275.49308	107.87398	2.42943	0.3157750	2.5665373	83	4	1991–1999	0.60	M-v	2	Williams	36067	1991 VJ ₁
1991 VV ₁	13.7	0.15	19990810	42.83055	124.87277	229.06993	13.30433	0.2274001	2.4486848	32	4	1991–1999	0.82	M-v	1	Williams	32744	1991 VV ₁
1991 VE ₂	13.0	0.15	19990810	306.64073	210.21948	228.37906	14.70669	0.0997664	2.5510480	52	4	1991–1999	0.61	M-v	3	Williams	36067	1991 VE ₂
1991 VA ₃	13.0	0.15	19990810	337.52545	115.01100	254.41592	11.44985	0.2168043	2.6006745	96	3	1991–1999	0.54	M-v	2	Williams	36067	1991 VA ₃

1991 VE ₃	14.4	0.15	19990810	328.61382	296.88964	118.51972	4.52542	0.2892244	2.5436226	32	3	1991–1999	0.49	M-v	3	Williams	36067	1991 VE ₃
1991 VN ₃	14.7	0.15	19990810	309.69721	358.70103	57.43341	6.81842	0.3232082	2.5877575	26	2	1991–1999	0.65	M-v	3	Williams	35914	1991 VN ₃
1991 VT ₃	13.3	0.15	19990810	0.57153	114.65358	238.09773	12.68727	0.1851116	2.5767342	89	5	1983–1999	0.66	M-v	2	Williams	36067	1991 VT ₃
1991 VB ₅	13.4	0.15	19990810	351.53451	186.90840	194.93349	14.81575	0.1224092	2.5481063	45	4	1991–1999	0.60	M-v	2	Williams	35684	1991 VB ₅
1991 VT ₅	14.7	0.15	19990810	356.49059	205.94746	155.22788	6.79194	0.0708316	2.5843849	52	3	1991–1999	0.83	M-v	3	Williams	36067	1991 VT ₅
1991 VU ₅	14.4	0.15	19990810	335.95133	165.63295	197.06097	11.13245	0.1921097	2.6084643	94	3	1991–1999	0.61	M-v	3	Williams	36067	1991 VU ₅
1991 VX ₅	12.9	0.15	19990810	71.54043	82.02462	87.09822	10.86181	0.0496684	2.9846922	88	3	1991–1999	0.72	M-v	2	Williams	35421	1991 VX ₅
1991 VH ₆	14.6	0.15	19990810	37.19127	187.42535	172.28105	7.80767	0.1573693	2.4761900	32	4	1991–1999	0.74	M-v	1	Williams	32304	1991 VH ₆
1991 VP ₁₂	14.9	0.15	19990810	61.49423	239.31184	73.54552	5.50283	0.1256626	2.5493863	53	3	1991–1999	0.58	M-v	3	Williams	29615	1991 VP ₁₂
1991 XD	14.1	0.15	19990810	308.42567	11.34981	65.45074	22.70781	0.1015286	1.9376265	52	3	1991–1999	0.66	M-v	3	Williams	32304	1991 XD
1991 YC	13.5	0.15	19990810	285.88208	24.57227	109.17270	14.93453	0.2110739	2.5797759	29	5	1988–1999	0.68	M-v	2	Williams	30091	1991 YC
1991 YT	13.8	0.15	19990810	298.24756	140.21807	266.16533	11.68894	0.1785274	2.6990583	45	5	1988–1999	0.64	M-v	2	Williams	36067	1991 YT
1991 YU	13.2	0.15	19990810	225.92544	323.30081	138.41775	6.61613	0.1432679	2.7986301	41	4	1990–1999	0.65	M-v	1	Williams	36067	1991 YU
1992 AL	13.2	0.15	19990810	355.43482	273.31780	143.26271	13.31103	0.2851780	2.5435035	24	4	1978–1999	0.75	M-v	2	Williams	26926	1992 AL
1992 AJ ₁	13.2	0.15	19990810	236.15885	306.34630	272.81457	5.06673	0.1069294	2.5215610	52	4	1992–1999	0.73	M-v	3	Williams	35684	1992 AJ ₁
1992 AV ₁	14.2	0.15	19990810	310.61459	328.96398	110.66212	24.76602	0.0734797	1.9467115	29	3	1992–1999	0.64	M-v	3	Williams	32304	1992 AV ₁
1992 BD	15.3	0.15	19990810	304.48829	21.08386	79.16975	28.98655	0.0652202	1.8968754	41	4	1975–1999	0.54	M-v	2	Williams	32304	1992 BD
1992 BT ₂	12.7	0.15	19990810	293.56480	305.45782	146.73396	13.87644	0.1374188	2.6494195	62	3	1992–1999	0.63	M-v	3	Williams	36067	1992 BT ₂
1992 CH	13.1	0.15	19990810	302.03369	168.52706	311.82371	12.62006	0.1099640	2.6310953	52	5	1992–1999	0.63	M-v	2	Williams	32744	1992 CH
1992 CS ₂	14.0	0.15	19990810	213.39437	331.95845	261.31240	4.55740	0.0666362	2.5192746	47	4	1992–1999	0.74	M-v	3	Williams	33070	1992 CS ₂
1992 CD ₃	14.1	0.15	19990810	79.31058	183.68945	154.15931	10.25186	0.1034654	2.5615908	56	4	1992–1999	0.74	M-v	2	Williams	33070	1992 CD ₃
1992 DT ₂	14.8	0.15	19990810	130.79914	60.86755	141.18787	2.94993	0.0317128	2.9410435	37	4	1992–1999	0.63	M-v	3	Williams	35914	1992 DT ₂
1992 DD ₃	14.2	0.15	19990810	323.22943	107.46215	322.00531	0.72078	0.0311420	2.7209961	39	5	1992–1999	0.50	M-v	1	Williams	35684	1992 DD ₃
1992 DH ₃	14.5	0.15	19990810	160.53594	239.40474	338.92952	6.66201	0.1467580	2.8240023	21	3	1992–1999	0.62	M-v	4	Williams	30471	1992 DH ₃
1992 DM ₇	13.6	0.15	19990810	200.58818	1.67314	131.40150	2.98074	0.0436538	2.9389812	39	3	1992–1999	0.59	M-v	3	Williams	36067	1992 DM ₇
1992 DU ₇	13.7	0.15	19990810	25.55342	270.76716	42.45081	2.43928	0.0885387	2.9517080	45	3	1992–1999	0.54	M-v	3	Williams	36067	1992 DU ₇
1992 DV ₈	14.4	0.15	19990810	327.34609	106.33946	191.76567	5.95907	0.1418087	2.2120019	67	2	1992–1999	0.66	M-v	4	Williams	35421	1992 DV ₈
1992 EO	12.3	0.15	19990810	66.22177	252.13656	10.34781	14.30146	0.2719765	3.0944346	66	3	1976–1999	0.54	M-v	2	Williams	35915	1992 EO
1992 EX	13.9	0.15	19990810	260.01025	25.36929	136.87446	10.23381	0.0890114	2.6594165	29	3	1992–1999	0.78	M-v	4	Williams	35685	1992 EX
1992 EO ₆	14.6	0.15	19990810	344.75982	2.36823	52.46385	5.42876	0.1962438	2.6527648	23	5	1990–1999	0.59	M-v	1	Williams	32514	1992 EO ₆
1992 ES ₆	14.4	0.15	19990810	326.95944	302.94290	113.26610	7.04400	0.2147438	2.6954109	32	4	1992–1999	0.51	M-v	3	Williams	36067	1992 ES ₆
1992 EZ ₇	14.2	0.15	19990810	330.32842	274.24772	163.11980	12.33820	0.1991151	2.6213854	19	4	1988–1999	0.52	M-v	1	Williams	29943	1992 EZ ₇
1992 ED ₈	13.8	0.15	19990810	154.64474	200.54651	342.15294	1.46971	0.0552769	2.9195039	60	3	1992–1999	0.54	M-v	4	Williams	36067	1992 ED ₈
1992 EM ₈	14.0	0.15	19990810	339.34492	284.75485	110.38957	7.03165	0.1284619	2.7449518	41	5	1990–1999	0.55	M-v	1	Williams	36067	1992 EM ₈
1992 EX ₈	12.4	0.15	19990810	342.67963	318.62793	144.00512	15.69080	0.0511567	2.5690687	49	5	1977–1999	0.71	M-v	2	Williams	33070	1992 EX ₈
1992 EW ₉	12.7	0.15	19990810	68.68914	209.39800	154.84759	15.18524	0.1245708	2.5873727	60	5	1971–1999	0.70	M-v	2	Williams	33547	1992 EW ₉
1992 EX ₉	14.3	0.15	19990810	358.33092	240.81197	181.81861	3.71959	0.1905758	2.5844807	28	5	1992–1999	0.74	M-v	1	Williams	32514	1992 EX ₉
1992 EX ₁₀	14.5	0.15	19990810	168.74271	205.96558	356.07548	6.01446	0.0560496	2.8192227	43	5	1983–1999	0.74	M-v	2	Williams	34841	1992 EX ₁₀
1992 EP ₁₁	14.6	0.15	19990810	251.16971	320.52565	142.34800	2.72347	0.0379304	2.8543483	36	3	1992–1999	0.78	M-v	4	Williams	36067	1992 EP ₁₁
1992 EE ₁₄	14.1	0.15	19990810	192.35928	354.77385	200.27481	3.52992	0.0377688	2.7688783	34	4	1992–1999	0.53	M-v	1	Williams	32514	1992 EE ₁₄
1992 EG ₂₂	14.8	0.15	19990810	324.22703	225.53940	96.84348	5.15867	0.1748747	2.1697090	69	5	1974–1999	0.67	M-v	2	Williams	35288	1992 EG ₂₂
1992 EE ₃₂	14.6	0.15	19990810	288.82078	310.99863	193.61261	4.34389	0.1888342	2.6019089	20	5	1982–1999	0.66	M-v	2	Williams	26758	1992 EE ₃₂
1992 EV ₃₂	14.3	0.15	19990810	332.92533	194.45783	209.35316	3.43017	0.1106917	2.7589087	14	3	1992–1999	0.60	M-v	5	Williams	29916	1992 EV ₃₂
1992 FA ₂	12.9	0.15	19990810	349.85039	345.64669	74.04719	6.32210	0.0478449	2.7387906	49	5	1992–1999	0.82	M-v	1	Williams	34579	1992 FA ₂
1992 GA	13.9	0.15	19990810	260.77386	248.06921	309.95430	11.66766	0.1196196	2.6346757	44	5	1992–1999	0.75	M-v	2	Williams	33070	1992 GA
1992 GM ₂	14.9	0.15	19990810	60.16997	343.61317	301.52888	0.98396	0.0933790	2.1302740	82	3	1992–1999	0.55	M-v	3	Williams	36067	1992 GM ₂
1992 HG	12.2	0.15	19990810	40.58501	93.97876	216.30363	7.97263	0.1153268	3.0984056	74	4	1950–1999	0.62	M-v	1	Williams	36067	1992 HG
1992 HH ₁	13.3	0.15	19990810	3.47543	200.05318	214.13918	3.77682	0.0616688	2.7909616	59	5	1991–1999	0.78	M-v	1	Williams	32745	1992 HH ₁
1992 HD ₇	13.3	0.15	19990810	154.12730	69.18527	138.21876	12.24813	0.2078588	3.0046306	35	4	1983–1999	0.75	M-v	2	Williams	36067	1992 HD ₇
1992 JG	17.1	0.15	19990810	12.62544	239.34431	58.95588	5.56703	0.4248591	2.2655062	59	2	1992–1999	0.51	M-v	2	Williams	36067	1992 JG
1992 JU ₂	14.6	0.15	19990810	7.90659	125.64570	211.71539	5.19176	0.2300371	2.1858179	81	3	1992–1999	0.68	M-v	3	Williams	36067	1992 JU ₂
1992 KC	14.5	0.15	19990810	54.42170	64.04906	180.64977	3.71219	0.1294897	2.2327920	39	2	1992–1999	0.71	M-v	4	Williams	35288	1992 KC
1992 ME	14.1	0.15	19990810	14.54796	134.10232	120.57251	24.20478	0.2519624	2.2994539	92	3	1992–1999	0.64	M-v	2	Williams	35422	1992 ME

1992 OF ₁	12.3	0.15	19990810	68.76811	230.98086	125.12169	9.69680	0.2292277	3.1064668	53	6	1970–1999	0.62	M-v	1	Williams	33547	1992 OF ₁
1992 OJ ₁	13.6	0.15	19990810	50.47667	305.50487	320.44597	23.56088	0.1801295	2.2812430	95	3	1992–1999	0.58	M-v	2	Williams	36068	1992 OJ ₁
1992 OF ₂	15.5	0.15	19990810	355.66686	16.81313	313.86821	5.49013	0.1351391	2.2911316	42	3	1992–1999	0.69	M-v	3	Williams	35915	1992 OF ₂
1992 OB ₃	15.2	0.15	19990810	69.06464	323.63305	305.63712	5.82675	0.1051388	2.2450381	46	4	1992–1999	0.58	M-v	1	Williams	36068	1992 OB ₃
1992 OM ₆	15.3	0.15	19990810	54.82713	136.92626	160.89115	3.63546	0.1349514	2.2300973	43	3	1992–1999	0.69	M-v	3	Williams	34498	1992 OM ₆
1992 PC	15.0	0.15	19990810	25.29206	158.17031	196.81746	4.77546	0.2165481	2.2000218	47	6	1989–1999	0.85	M-v	2	Williams	34498	1992 PC
1992 PF	15.0	0.15	19990810	38.38345	135.77940	181.35082	2.34564	0.2044230	2.2277519	72	3	1992–1999	0.64	M-v	4	Williams	32745	1992 PF
1992 PB ₁	13.0	0.15	19990810	50.34303	220.84408	149.49611	8.02209	0.1162323	3.1462866	59	4	1992–1999	0.73	M-v	2	Williams	35685	1992 PB ₁
1992 PH ₁	15.4	0.15	19990810	110.89474	321.29411	305.57114	4.16419	0.1011014	2.1720222	36	4	1991–1999	0.72	M-v	1	Williams	32049	1992 PH ₁
1992 PQ ₁	15.6	0.15	19990810	24.34334	335.42810	307.79082	4.85045	0.1579077	2.3093995	37	2	1992–1999	0.80	M-v	4	Williams	36068	1992 PQ ₁
1992 PZ ₁	15.1	0.15	19990810	40.03826	144.09544	172.06762	4.89214	0.2163538	2.2254265	64	4	1992–1999	0.62	M-v	1	Williams	36068	1992 PZ ₁
1992 PA ₂	15.1	0.15	19990810	0.49669	42.19825	307.23018	5.67734	0.2170567	2.2614868	49	3	1992–1999	0.59	M-v	3	Williams	36068	1992 PA ₂
1992 PH ₂	12.9	0.15	19990810	101.41711	69.32177	271.45005	9.44224	0.1398985	3.0390436	54	5	1987–1999	0.63	M-v	1	Williams	34009	1992 PH ₂
1992 PK ₂	13.1	0.15	19990810	161.65223	6.05513	235.94614	5.88165	0.1455878	3.1149510	51	3	1992–1999	0.72	M-v	4	Williams	33547	1992 PK ₂
1992 PL ₂	12.2	0.15	19990810	200.88679	264.92775	295.98267	20.41047	0.0564610	3.1927519	47	5	1981–1999	0.65	M-v	1	Williams	33547	1992 PL ₂
1992 PM ₂	15.4	0.15	19990810	14.02237	72.47883	244.12656	4.70553	0.1870513	2.2816309	42	3	1992–1999	0.59	M-v	3	Williams	35915	1992 PM ₂
1992 PO ₂	14.4	0.15	19990810	341.45401	149.19049	209.00248	6.10369	0.1429753	2.2932877	110	3	1992–1999	0.55	M-v	3	Williams	36068	1992 PO ₂
1992 PC ₃	12.2	0.15	19990810	108.40872	61.50529	273.48631	11.60759	0.1613606	3.0482459	47	3	1992–1999	0.71	M-v	3	Williams	35686	1992 PC ₃
1992 PE ₃	14.6	0.15	19990810	8.63154	112.57080	238.93663	5.51927	0.1960399	2.2504634	59	3	1992–1999	0.60	M-v	3	Williams	36068	1992 PE ₃
1992 QW	15.0	0.15	19990810	13.18222	339.60534	5.65675	5.94072	0.2045131	2.2471608	35	4	1982–1999	0.71	M-v	2	Williams	35686	1992 QW
1992 QB ₁	7.2	0.15	19990810	5.03459	4.38486	359.39818	2.18166	0.0776848	44.3425073	74	7	1992–1999	0.67	M-v	4	Marsden	30782	1992 QB ₁
1992 RN	13.5	0.15	19990810	24.72252	299.27171	338.20104	8.15475	0.2311717	2.3421031	62	4	1980–1999	0.62	M-v	2	Williams	35916	1992 RN
1992 RU	15.5	0.15	19990810	330.33447	226.93257	150.86819	3.93030	0.2562265	2.3221728	60	3	1953–1999	0.66	M-v	2	Williams	35916	1992 RU
1992 RX	13.9	0.15	19990810	146.13151	216.27752	22.69866	4.19476	0.1530905	2.2012383	66	10	1953–1999	0.62	M-v	1	Williams	35064	1992 RX
1992 RF ₂	15.2	0.15	19990810	295.24294	213.29580	193.83918	4.30452	0.1341714	2.3183711	39	3	1992–1999	0.74	M-v	4	Williams	36068	1992 RF ₂
1992 RK ₂	15.3	0.15	19990810	264.84879	164.36936	285.53527	1.62638	0.1556290	2.3006099	49	4	1978–1999	0.72	M-v	4	Williams	36068	1992 RK ₂
1992 RW ₂	15.0	0.15	19990810	17.20729	0.12314	328.68166	6.06606	0.1409148	2.2759937	60	3	1992–1999	0.61	M-v	3	Williams	36068	1992 RW ₂
1992 RL ₃	16.4	0.15	19990810	50.63994	140.39385	169.48582	5.07352	0.2005779	2.2313969	37	3	1992–1999	0.70	M-v	3	Williams	35686	1992 RL ₃
1992 RS ₃	15.0	0.15	19990810	39.97322	103.89576	205.16174	2.34164	0.1408974	2.2611505	80	4	1992–1999	0.62	M-v	1	Williams	32305	1992 RS ₃
1992 RS ₅	15.6	0.15	19990810	278.43887	42.21920	26.62226	4.42482	0.1140758	2.3237846	40	4	1992–1999	0.65	M-v	1	Williams	36068	1992 RS ₅
1992 RT ₅	15.8	0.15	19990810	36.55229	272.27942	9.10114	7.73084	0.2031055	2.3149810	48	3	1992–1999	0.53	M-v	4	Williams	35916	1992 RT ₅
1992 RH ₇	14.3	0.15	19990810	271.54990	75.67883	35.31051	4.75874	0.0804506	2.2396922	54	7	1981–1999	0.58	M-v	1	Williams	30290	1992 RH ₇
1992 SF	14.6	0.15	19990810	355.90026	17.03943	3.16189	5.84275	0.1875756	2.2636839	48	6	1975–1999	0.59	M-v	1	Williams	32049	1992 SF
1992 SO	14.4	0.15	19990810	18.80928	79.20324	244.52806	5.75458	0.1645878	2.3198062	76	3	1992–1999	0.57	M-v	2	Williams	36068	1992 SO
1992 SQ	14.5	0.15	19990810	38.43118	108.80403	269.50669	3.09319	0.1310313	2.1961904	27	5	1976–1999	0.77	M-v	2	Williams	32305	1992 SQ
1992 SX ₁	15.4	0.15	19990810	296.76618	5.65018	58.77921	1.22567	0.1117886	2.3028621	53	4	1980–1999	0.64	M-v	2	Williams	36068	1992 SX ₁
1992 ST ₂	14.1	0.15	19990810	299.10787	196.35300	195.08355	24.24652	0.1335470	2.3622716	52	3	1992–1999	0.78	M-v	3	Williams	35686	1992 ST ₂
1992 SA ₄	14.6	0.15	19990810	182.73068	354.76994	154.32227	6.64330	0.0732768	2.3251925	66	3	1992–1999	0.57	M-v	3	Williams	36068	1992 SA ₄
1992 SY ₁₂	14.2	0.15	19990810	326.11925	24.64812	5.17940	9.83429	0.2103487	2.3222557	58	3	1992–1999	0.44	M-v	3	Williams	35916	1992 SY ₁₂
1992 SB ₁₃	13.7	0.15	19990810	250.76802	84.64551	47.09664	3.57589	0.0942361	2.2858193	45	3	1992–1999	0.87	M-v	5	Williams	28848	1992 SB ₁₃
1992 SG ₁₃	15.0	0.15	19990810	337.79961	355.57455	18.52355	5.66396	0.2541343	2.3377657	65	3	1992–1999	0.56	M-v	2	Williams	36068	1992 SG ₁₃
1992 SK ₁₃	14.6	0.15	19990810	2.36774	59.59764	308.00828	4.56803	0.1812892	2.2752674	44	5	1954–1999	0.60	M-v	1	Williams	36068	1992 SK ₁₃
1992 SS ₁₆	15.1	0.15	19990810	80.67071	133.63992	207.54592	0.61478	0.0500225	2.1541383	42	5	1992–1999	0.72	M-v	2	Williams	32515	1992 SS ₁₆
1992 SA ₁₇	15.1	0.15	19990810	256.21474	249.93659	223.76919	0.68932	0.0787849	2.2786343	62	2	1992–1999	0.54	M-v	5	Williams	35916	1992 SA ₁₇
1992 SY ₁₇	14.0	0.15	19990810	28.04906	71.51932	239.91610	8.41628	0.2806683	2.2897581	37	4	1985–1999	0.68	M-v	3	Williams	32745	1992 SY ₁₇
1992 SQ ₂₃	14.5	0.15	19990810	21.02566	101.50875	219.98856	7.82363	0.3102960	2.3073163	75	4	1981–1999	0.52	M-v	2	Williams	36068	1992 SQ ₂₃
1992 US ₁	14.5	0.15	19990810	6.69923	317.54863	46.88458	7.81807	0.1346624	2.2857560	69	4	1964–1999	0.69	M-v	3	Williams	36068	1992 US ₁
1992 UW ₁	14.1	0.15	19990810	1.29877	221.65203	81.53207	4.13309	0.1849802	2.4118345	43	4	1969–1999	0.63	M-v	1	Williams	36068	1992 UW ₁
1992 UT ₂	14.1	0.15	19990810	26.99592	260.25238	71.52206	6.92878	0.2106207	2.2767160	60	4	1978–1999	0.57	M-v	3	Williams	32049	1992 UT ₂
1992 UW ₂	14.3	0.15	19990810	23.64821	284.84827	54.05718	5.93465	0.2153520	2.2812041	66	3	1992–1999	0.64	M-v	3	Williams	36068	1992 UW ₂
1992 UX ₂	14.9	0.15	19990810	45.97998	124.63624	211.41203	5.96431	0.2212069	2.2510846	61	5	1978–1999	0.70	M-v	2	Williams	32305	1992 UX ₂
1992 UJ ₅	14.9	0.15	19990810	347.35798	190.01124	234.81603	0.52303	0.1998027	2.2515862	28	4	1992–1999	0.62	M-v	2	Williams	29943	1992 UJ ₅
1992 UU ₅	14.1	0.15	19990810	322.57147	346.79567	71.34132	3.24572	0.2280409	2.3177001	40	3	1985–1999	0.72	M-v	4	Williams	29661	1992 UU ₅

1992 UA ₆	14.2	0.15	19990810	327.84419	102.61928	282.74675	2.76992	0.1103549	2.3672876	65	3	1992–1999	0.65	M-v	3	Williams	36068	1992 UA ₆
1992 UE ₆	13.8	0.15	19990810	356.40780	354.05399	64.12762	8.01709	0.1403275	2.2509993	40	3	1992–1999	0.80	M-v	4	Williams	32745	1992 UE ₆
1992 UH ₆	13.6	0.15	19990810	51.33488	292.23154	64.77580	6.23929	0.1954040	2.2198134	40	5	1992–1999	0.70	M-v	1	Williams	32305	1992 UH ₆
1992 UJ ₆	14.4	0.15	19990810	356.36440	185.21230	205.54916	6.55812	0.1976788	2.2851561	47	4	1992–1999	0.74	M-v	2	Williams	32305	1992 UJ ₆
1992 UU ₆	13.6	0.15	19990810	203.57824	269.62685	158.18881	13.20595	0.1596666	2.5645175	33	3	1992–1999	0.62	M-v	4	Williams	35423	1992 UU ₆
1992 UK ₈	14.5	0.15	19990810	355.55542	133.07469	239.95743	3.84973	0.1638076	2.3014866	50	6	1964–1999	0.58	M-v	2	Williams	32745	1992 UK ₈
1992 WJ	14.3	0.15	19990810	236.96876	86.98705	26.16167	2.56781	0.1540671	2.4228522	44	5	1988–1999	0.70	M-v	1	Williams	36068	1992 WJ
1992 WR	14.6	0.15	19990810	303.41598	33.84429	56.00689	5.65934	0.1365997	2.3109463	38	3	1978–1999	0.37	M-v	3	Williams	36068	1992 WR
1992 WZ	14.2	0.15	19990810	353.06794	352.04612	58.44383	5.84695	0.1318781	2.2726116	35	4	1985–1999	0.71	M-v	3	Williams	35686	1992 WZ
1992 WC ₁	14.0	0.15	19990810	55.34941	81.19381	265.47917	4.71353	0.1911447	2.2381170	46	6	1955–1999	0.68	M-v	1	Williams	32305	1992 WC ₁
1992 WD ₁	15.2	0.15	19990810	309.18708	304.01189	100.36318	3.15050	0.1915106	2.3741278	43	4	1981–1999	0.53	M-v	3	Williams	36068	1992 WD ₁
1992 WV ₁	15.4	0.15	19990810	284.77508	13.92557	58.32016	3.66867	0.1893982	2.3855455	35	2	1992–1999	0.65	M-v	4	Williams	35917	1992 WV ₁
1992 WY ₁	14.3	0.15	19990810	294.23398	95.57176	0.59231	3.28487	0.0868020	2.3113769	42	5	1988–1999	0.55	M-v	1	Williams	36068	1992 WY ₁
1992 WJ ₂	13.9	0.15	19990810	37.76783	273.52144	51.50153	7.12626	0.1487372	2.3281012	75	5	1991–1999	0.68	M-v	1	Williams	32305	1992 WJ ₂
1992 WD ₃	13.7	0.15	19990810	349.28801	278.26179	148.86266	5.43369	0.1391382	2.2655712	43	7	1990–1999	0.80	M-v	2	Williams	35686	1992 WD ₃
1992 WJ ₃	14.0	0.15	19990810	172.64721	44.47390	174.05271	5.74099	0.0695297	2.3146162	42	6	1992–1999	0.82	M-v	1	Williams	32305	1992 WJ ₃
1992 WO ₃	13.7	0.15	19990810	314.58212	237.12076	221.35501	20.86067	0.2617247	2.3106117	37	5	1953–1999	0.68	M-v	2	Williams	27326	1992 WO ₃
1992 WV ₃	13.9	0.15	19990810	324.12099	53.38752	12.63501	5.39090	0.1041167	2.3242882	55	6	1958–1999	0.77	M-v	1	Williams	28887	1992 WV ₃
1992 WC ₉	14.0	0.15	19990810	290.20114	32.14193	56.45110	7.25100	0.0900226	2.3386992	44	3	1992–1999	0.50	M-v	2	Williams	36068	1992 WC ₉
1992 WK ₉	13.5	0.15	19990810	86.47140	322.93216	53.92206	0.86362	0.2249936	3.1448438	27	4	1992–1998	0.70	M-v	1	Williams	36068	1992 WK ₉
1992 XE	13.6	0.15	19990810	329.02373	5.96924	99.87614	6.21048	0.1038727	2.2570952	38	4	1990–1999	0.68	M-v	2	Williams	32745	1992 XE
1992 YW ₁	14.2	0.15	19990810	244.05056	260.98971	302.41670	3.78558	0.1120642	2.2613756	68	4	1990–1999	0.79	M-v	2	Williams	35686	1992 YW ₁
1992 YJ ₂	13.9	0.15	19990810	347.28216	288.96335	90.34298	7.55705	0.1326516	2.3897172	63	4	1992–1999	0.61	M-v	1	Williams	32305	1992 YJ ₂
1992 YN ₂	14.5	0.15	19990810	272.21688	84.00664	76.50271	2.31222	0.1391109	2.3007356	54	4	1992–1999	0.76	M-v	1	Williams	33338	1992 YN ₂
1992 YP ₂	15.0	0.15	19990810	267.32021	358.57247	85.17716	8.86795	0.1214080	2.4597058	31	4	1992–1999	0.55	M-v	2	Williams	36068	1992 YP ₂
1993 BF ₃	14.1	0.15	19990810	218.81341	149.74788	332.86629	4.88618	0.1575481	2.5561542	29	6	1985–1999	0.83	M-v	3	Williams	36068	1993 BF ₃
1993 BP ₃	13.8	0.15	19990810	309.27284	136.04197	327.82457	24.16561	0.1897128	2.3737932	33	5	1951–1999	0.69	M-v	1	Williams	29661	1993 BP ₃
1993 BN ₄	14.7	0.15	19990810	5.33531	267.54522	118.21644	3.18006	0.2219492	2.3754100	35	6	1993–1999	0.65	M-v	1	Williams	32305	1993 BN ₄
1993 BL ₁₂	14.6	0.15	19990810	322.07472	15.59985	74.78471	4.10595	0.1571589	2.3630899	29	4	1988–1999	0.60	M-v	1	Williams	26421	1993 BL ₁₂
1993 CK ₁	13.9	0.15	19990810	177.35707	155.78294	29.27681	8.57575	0.1255198	2.5836642	52	4	1956–1999	0.47	M-v	2	Williams	36069	1993 CK ₁
1993 DM	14.1	0.15	19990810	176.17481	273.04399	277.75583	4.19615	0.0750204	2.5656470	45	3	1993–1999	0.58	M-v	3	Williams	36069	1993 DM
1993 DE ₁	13.3	0.15	19990810	131.05370	266.11140	301.15633	10.40865	0.1410652	2.6719267	44	3	1993–1999	0.75	M-v	3	Williams	36069	1993 DE ₁
1993 DJ ₁	13.2	0.15	19990810	78.42872	127.50022	141.00731	14.38738	0.0452765	2.5824637	46	4	1989–1999	0.74	M-v	2	Williams	36069	1993 DJ ₁
1993 DT ₁	15.0	0.15	19990810	113.65941	55.47235	200.00960	3.19844	0.2415998	2.5986637	30	6	1981–1999	0.38	M-v	1	Williams	32305	1993 DT ₁
1993 EU	13.4	0.15	19990810	242.76711	135.97531	82.94108	3.14609	0.1674526	2.3726792	50	4	1993–1999	0.71	M-v	2	Williams	34580	1993 EU
1993 FN	14.8	0.15	19990810	251.75959	117.91529	6.53470	10.72731	0.2147347	2.5341884	75	5	1991–1999	0.54	M-v	2	Williams	36069	1993 FN
1993 FB ₁	12.9	0.15	19990810	171.60981	161.20349	65.82363	8.63981	0.1464155	2.5714519	53	6	1993–1999	0.60	M-v	1	Williams	33548	1993 FB ₁
1993 FQ ₁	13.4	0.15	19990810	191.73402	123.12745	138.57828	6.84846	0.1010244	2.3934113	24	3	1993–1999	0.66	M-v	2	Williams	35686	1993 FQ ₁
1993 FQ ₂	13.0	0.15	19990810	151.92443	141.63492	25.66580	9.91124	0.1728550	2.7612158	31	5	1991–1999	0.67	M-v	3	Williams	36069	1993 FQ ₂
1993 FO ₄	14.3	0.15	19990810	215.62136	314.71400	172.72581	11.94511	0.1460671	2.6489068	23	4	1980–1999	0.53	M-v	2	Williams	32306	1993 FO ₄
1993 FM ₅	15.0	0.15	19990810	305.66266	296.47882	104.16049	2.19356	0.1142611	2.6564443	48	3	1993–1999	0.64	M-v	3	Williams	36069	1993 FM ₅
1993 FN ₇	13.0	0.15	19990810	253.48607	218.11454	141.83224	6.32021	0.1510457	3.0593440	46	3	1993–1999	0.79	M-v	4	Williams	35423	1993 FN ₇
1993 FO ₇	13.4	0.15	19990810	333.24784	11.51645	77.58866	3.43980	0.1712277	2.3968235	24	4	1956–1999	0.62	M-v	3	Williams	34844	1993 FO ₇
1993 FT ₈	13.7	0.15	19990810	347.01688	313.97170	106.58424	3.35165	0.1608884	2.4490762	26	4	1993–1999	0.67	M-v	2	Williams	32306	1993 FT ₈
1993 FU ₁₁	13.7	0.15	19990810	99.41834	155.05684	123.89924	3.99094	0.0779287	2.6167141	11	3	1990–1999	0.65	M-v	3	Williams	23523	1993 FU ₁₁
1993 FV ₁₁	13.9	0.15	19990810	285.49576	334.77037	100.80866	3.65915	0.1707287	2.5818301	43	4	1958–1999	0.45	M-v	1	Williams	36069	1993 FV ₁₁
1993 FE ₁₂	14.5	0.15	19990810	322.15834	345.14902	101.02295	3.66893	0.1534762	2.4500072	21	4	1991–1999	0.63	M-v	3	Williams	26564	1993 FE ₁₂
1993 FY ₁₂	12.8	0.15	19990810	80.36733	66.88029	164.74081	9.45752	0.0747513	2.8468771	92	4	1990–1999	0.63	M-v	2	Williams	36069	1993 FY ₁₂
1993 FF ₁₉	13.7	0.15	19990810	242.56868	304.52751	147.90508	9.41139	0.0940059	2.7071507	43	4	1993–1999	0.67	M-v	1	Williams	36069	1993 FF ₁₉
1993 FQ ₂₀	14.1	0.15	19990810	283.09283	317.51876	134.75125	4.21303	0.1878197	2.5405946	38	2	1993–1999	0.56	M-v	4	Williams	35917	1993 FQ ₂₀
1993 FO ₂₁	14.7	0.15	19990810	301.41683	30.98970	6.18761	4.93019	0.0571796	2.7287925	45	5	1990–1999	0.56	M-v	1	Williams	36069	1993 FO ₂₁
1993 FQ ₂₁	14.9	0.15	19990810	19.77409	333.53891	355.56698	2.05787	0.0864561	2.7293777	72	3	1993–1999	0.50	M-v	4	Williams	36069	1993 FQ ₂₁
1993 FZ ₂₁	14.5	0.15	19990810	239.60299	143.29525	1.49563	3.06815	0.0992893	2.5636065	46	3	1993–1999	0.52	M-v	4	Williams	36069	1993 FZ ₂₁

1993 FS ₂₂	14.7	0.15	19990810	294.19586	197.45269	242.75884	2.73704	0.1201876	2.5767739	60	4	1993–1999	0.52	M-v	2	Williams	36069	1993 FS ₂₂
1993 FS ₂₄	14.8	0.15	19990810	170.11594	208.83118	353.28557	4.51959	0.0826484	2.6234790	46	4	1993–1999	0.54	M-v	2	Williams	29137	1993 FS ₂₄
1993 FK ₂₅	13.9	0.15	19990810	354.87111	187.21551	225.11777	2.10884	0.1776980	2.4703717	29	6	1991–1999	0.63	M-v	1	Williams	32306	1993 FK ₂₅
1993 FS ₂₆	13.6	0.15	19990810	237.14620	287.99064	285.80427	2.60511	0.0852670	2.3973180	57	4	1993–1999	0.75	M-v	3	Williams	33339	1993 FS ₂₆
1993 FH ₂₇	13.7	0.15	19990810	329.71400	22.82555	339.67043	5.84136	0.1424473	2.7400476	40	3	1993–1999	0.76	M-v	4	Williams	36069	1993 FH ₂₇
1993 FS ₂₇	13.9	0.15	19990810	325.82459	156.16695	211.61690	6.03639	0.0780388	2.7354201	69	4	1993–1999	0.52	M-v	2	Williams	36069	1993 FS ₂₇
1993 FM ₂₈	15.2	0.15	19990810	293.68179	179.68023	293.51921	1.68329	0.1520767	2.4586478	16	3	1993–1999	0.53	M-v	5	Williams	32229	1993 FM ₂₈
1993 FA ₃₇	14.0	0.15	19990810	278.68139	283.50089	142.82580	3.65339	0.1566749	2.6532557	62	4	1993–1999	0.55	M-v	3	Williams	36069	1993 FA ₃₇
1993 FW ₃₇	13.9	0.15	19990810	193.13434	359.93986	184.07865	11.80093	0.1119082	2.6055930	44	4	1993–1999	0.70	M-v	2	Williams	32306	1993 FW ₃₇
1993 FX ₃₇	13.5	0.15	19990810	47.89415	271.55513	43.30705	2.84155	0.0807251	2.6863622	18	3	1981–1999	0.49	M-v	4	Williams	23527	1993 FX ₃₇
1993 FX ₄₀	14.3	0.15	19990810	116.02511	70.38081	182.16753	13.66950	0.0936110	2.6580590	20	5	1977–1999	0.52	M-v	1	Williams	29317	1993 FX ₄₀
1993 FZ ₄₁	14.2	0.15	19990810	229.97639	129.09286	6.97041	14.00160	0.1095497	2.6012577	86	3	1993–1999	0.59	M-v	3	Williams	36069	1993 FZ ₄₁
1993 FQ ₄₃	15.2	0.15	19990810	301.11473	42.99711	14.54585	3.30821	0.2220353	2.5804021	42	3	1991–1999	0.63	M-v	4	Williams	36069	1993 FQ ₄₃
1993 FA ₄₆	14.6	0.15	19990810	315.61024	182.91322	201.83742	2.55613	0.1178284	2.6995505	41	4	1993–1999	0.62	M-v	2	Williams	36069	1993 FA ₄₆
1993 FX ₅₀	14.3	0.15	19990810	72.89843	69.73983	197.64972	4.99211	0.1258299	2.7630816	86	4	1993–1999	0.58	M-v	2	Williams	36069	1993 FX ₅₀
1993 FG ₇₆	14.5	0.15	19990810	43.71323	125.23508	192.99315	8.72247	0.2019277	2.7309821	33	3	1993–1999	0.59	M-v	3	Williams	33685	1993 FG ₇₆
1993 FX ₇₉	14.0	0.15	19990810	122.49221	121.98040	195.52369	1.81976	0.1301662	2.4493864	100	4	1993–1999	0.65	M-v	2	Williams	33746	1993 FX ₇₉
1993 GO	13.4	0.15	19990810	212.08821	144.41485	57.77555	13.57416	0.1854063	2.5392157	67	7	1985–1999	0.70	M-v	1	Williams	33071	1993 GO
1993 HA	20.2	0.15	19990810	245.25715	263.47949	183.44615	7.72428	0.1442052	1.2783033	50	3	1993–1999	0.53	M-v	3	Williams	36069	1993 HA
1993 HE	12.8	0.15	19990810	176.53778	110.31167	93.91386	14.77007	0.1465815	2.6278128	28	5	1949–1999	0.65	M-v	2	Williams	36069	1993 HE
1993 HY ₅	15.0	0.15	19990810	41.31820	128.95840	170.76811	23.93614	0.0354522	1.9325900	37	3	1993–1999	0.48	M-v	3	Williams	35917	1993 HY ₅
1993 HZ ₅	15.0	0.15	19990810	249.66289	67.93424	68.12997	26.22830	0.1015890	1.8524037	38	3	1993–1999	0.69	M-v	2	Williams	36069	1993 HZ ₅
1993 JD	13.3	0.15	19990810	183.03000	0.04889	223.54626	12.49060	0.1110646	2.5993173	55	4	1991–1999	0.71	M-v	1	Williams	34502	1993 JD
1993 KW ₁	15.2	0.15	19990810	98.98288	41.07165	210.87419	20.68588	0.0455997	1.9468334	45	3	1993–1999	0.50	M-v	2	Williams	36069	1993 KW ₁
1993 LR ₁	13.9	0.15	19990810	168.84483	237.31462	297.56624	12.29910	0.1633650	2.7494653	30	3	1993–1999	0.58	M-v	4	Williams	36069	1993 LR ₁
1993 MK	14.0	0.15	19990810	43.32892	236.85875	112.44916	24.49412	0.0922726	1.9441308	28	4	1992–1999	0.63	M-v	2	Williams	32050	1993 MK
1993 MZ	13.7	0.15	19990810	59.90677	352.27833	345.89836	13.00923	0.1913068	2.6932984	16	5	1985–1999	0.81	M-v	2	Williams	29137	1993 MZ
1993 NS ₁	14.3	0.15	19990810	338.71884	271.83595	117.42470	8.68501	0.2749223	3.0849478	20	3	1989–1999	0.83	M-v	4	Williams	24232	1993 NS ₁
1993 NZ ₁	12.8	0.15	19990810	300.58086	118.72221	292.93490	9.19566	0.1310070	3.0749516	66	3	1993–1999	0.54	M-v	3	Williams	36069	1993 NZ ₁
1993 OC ₂	13.9	0.15	19990810	203.55138	224.79334	334.71255	18.40308	0.0539702	1.9345745	37	3	1993–1999	0.67	M-v	3	Williams	36069	1993 OC ₂
1993 OH ₅	13.8	0.15	19990810	69.66821	113.69197	142.71953	0.87010	0.1108124	3.1184143	84	4	1993–1999	0.59	M-v	0	Williams	36069	1993 OH ₅
1993 OR ₉	13.3	0.15	19990810	104.29589	117.98318	149.44714	2.48400	0.0125034	2.9245677	43	4	1993–1999	0.52	M-v	1	Williams	32306	1993 OR ₉
1993 OY ₉	13.3	0.15	19990810	300.11873	126.49841	300.20495	9.24613	0.0953546	2.9868197	41	3	1993–1999	0.40	M-v	3	Williams	35918	1993 OY ₉
1993 OS ₁₀	13.5	0.15	19990810	97.51775	51.31417	274.10420	4.02641	0.0245750	2.7247318	76	4	1989–1999	0.67	M-v	1	Williams	33549	1993 OS ₁₀
1993 OX ₁₁	12.8	0.15	19990810	283.68044	113.80428	297.95357	2.88703	0.1498795	3.1520500	65	3	1993–1999	0.73	M-v	3	Williams	36069	1993 OX ₁₁
1993 PV ₅	12.6	0.15	19990810	14.73069	48.24060	317.72374	9.71093	0.1245854	3.0698910	35	4	1988–1999	0.58	M-v	2	Williams	36069	1993 PV ₅
1993 QD ₃	13.4	0.15	19990810	292.17471	294.47542	162.61603	9.98084	0.0575684	3.0734739	41	5	1993–1999	0.48	M-v	1	Williams	32516	1993 QD ₃
1993 QU ₃	13.5	0.15	19990810	33.37174	216.05005	189.75982	1.70569	0.0686741	2.8408226	59	5	1979–1999	0.74	M-v	1	Williams	34580	1993 QU ₃
1993 QV ₄	13.9	0.15	19990810	354.96479	63.22099	14.33699	1.85699	0.0207651	2.8564969	55	5	1988–1999	0.63	M-v	1	Williams	34580	1993 QV ₄
1993 QH ₈	13.8	0.15	19990810	69.17103	193.91136	82.20582	2.74133	0.1262714	3.2073292	43	4	1992–1999	0.52	M-v	1	Williams	35918	1993 QH ₈
1993 RA ₈	12.6	0.15	19990810	3.80585	155.81148	192.05815	8.07768	0.0256037	3.3489166	119	4	1993–1999	0.53	M-v	1	Williams	36070	1993 RA ₈
1993 RY ₁₁	13.2	0.15	19990810	86.82534	110.63055	221.30615	1.05207	0.0831510	2.9114031	67	5	1992–1999	0.77	M-v	1	Williams	35688	1993 RY ₁₁
1993 RM ₁₄	13.3	0.15	19990810	44.55780	192.55348	192.57326	1.60029	0.1048536	2.9342147	80	5	1991–1999	0.72	M-v	1	Williams	35688	1993 RM ₁₄
1993 SN ₁	15.1	0.15	19990810	282.50036	190.04965	160.93866	5.76561	0.1908202	2.2356543	54	4	1992–1999	0.74	M-v	2	Williams	35424	1993 SN ₁
1993 ST ₁	12.9	0.15	19990810	7.26427	214.26361	173.30944	11.22791	0.0979121	3.1345980	51	4	1993–1999	0.53	M-v	1	Williams	33072	1993 ST ₁
1993 SO ₂	13.6	0.15	19990810	264.34237	338.24673	207.98249	7.59929	0.1119070	2.7907590	91	4	1993–1999	0.72	M-v	1	Williams	33549	1993 SO ₂
1993 SN ₃	12.8	0.15	19990810	353.74396	225.76854	175.23239	0.93900	0.1629417	3.1976632	50	5	1976–1999	0.70	M-v	1	Williams	36070	1993 SN ₃
1993 SQ ₃	13.2	0.15	19990810	4.95288	321.64189	62.94191	2.38373	0.1975772	3.2057955	35	5	1976–1999	0.70	M-v	1	Williams	32746	1993 SQ ₃
1993 ST ₅	15.2	0.15	19990810	20.13956	94.54713	193.97987	1.60757	0.1489136	2.1316300	61	6	1971–1999	0.68	M-v	2	Williams	36070	1993 ST ₅
1993 TB	13.8	0.15	19990810	21.55182	266.21720	101.22617	2.68589	0.1887864	3.1189964	31	5	1993–1999	0.70	M-v	1	Williams	35688	1993 TB
1993 TJ	13.0	0.15	19990810	242.41711	315.52567	205.83827	9.65535	0.0481308	3.0232371	58	3	1993–1999	0.64	M-v	3	Williams	33072	1993 TJ
1993 TS ₁	13.1	0.15	19990810	34.87905	171.31242	196.87053	13.97508	0.1030624	3.1312793	45	4	1987–1999	0.62	M-v	1	Williams	33549	1993 TS ₁
1993 TL ₁₈	12.9	0.15	19990810	252.12433	98.82751	40.97385	4.81301	0.0807795	3.2279261	44	6	1987–1999	0.48	M-v	1	Williams	35689	1993 TL ₁₈

1993 TV ₁₉	12.9	0.15	19990810	145.95246	213.89138	84.10257	3.43907	0.0182946	2.8896559	41	3	1993–1999	0.62	M-v	4	Williams	33550	1993 TV ₁₉
1993 TA ₂₄	13.1	0.15	19990810	146.62740	136.68981	100.17888	2.60424	0.1163904	3.1862897	46	4	1989–1999	0.68	M-v	1	Williams	35689	1993 TA ₂₄
1993 TN ₂₄	12.8	0.15	19990810	179.72974	81.75599	122.19188	1.78783	0.0984652	3.2438211	37	3	1992–1999	0.92	M-v	6	Williams	32935	1993 TN ₂₄
1993 TX ₂₆	13.9	0.15	19990810	69.38164	155.25918	184.24310	9.89078	0.1022865	3.0495058	61	5	1980–1999	0.69	M-v	1	Williams	32746	1993 TX ₂₆
1993 TJ ₃₁	13.9	0.15	19990810	47.04757	250.51730	115.50296	5.19494	0.0527510	3.0673787	28	3	1993–1999	0.64	M-v	5	Williams	33550	1993 TJ ₃₁
1993 TD ₃₇	13.6	0.15	19990810	1.51965	231.91616	163.15265	8.26955	0.0403951	3.1933555	24	3	1993–1999	0.83	M-v	4	Williams	32746	1993 TD ₃₇
1993 TW ₃₈	13.3	0.15	19990810	128.34287	134.65129	168.56515	9.86901	0.0555722	2.9721195	70	4	1993–1999	0.64	M-v	1	Williams	33339	1993 TW ₃₈
1993 UE ₁	13.4	0.15	19990810	32.26419	311.03807	47.67951	14.58826	0.1844460	3.1658042	38	4	1993–1999	0.70	M-v	1	Williams	29944	1993 UE ₁
1993 UQ ₂	13.3	0.15	19990810	66.43271	167.90362	180.39255	9.75381	0.1043794	3.0538246	68	5	1982–1999	0.63	M-v	1	Williams	35689	1993 UQ ₂
1993 UX ₄	12.8	0.15	19990810	154.95710	200.25336	72.09824	11.54835	0.0800894	2.9853332	21	4	1978–1999	0.67	M-v	1	Williams	32936	1993 UX ₄
1993 UD ₇	15.4	0.15	19990810	259.21609	311.89112	110.89925	3.87456	0.1068711	2.1904811	36	4	1993–1999	0.62	M-v	1	Williams	36070	1993 UD ₇
1993 UZ ₇	13.3	0.15	19990810	1.08191	264.45846	144.18070	7.32435	0.1425248	3.1629055	54	3	1993–1999	0.68	M-v	3	Williams	33550	1993 UZ ₇
1993 VA ₃	12.2	0.15	19990810	95.57589	283.28995	54.11920	10.39331	0.1259612	3.0169791	50	4	1993–1999	0.62	M-v	2	Williams	34290	1993 VA ₃
1993 VV ₄	12.7	0.15	19990810	31.68327	339.53714	83.67851	9.72287	0.0459147	3.0369919	65	4	1993–1999	0.75	M-v	1	Williams	33550	1993 VV ₄
1993 XQ ₁	14.6	0.15	19990810	327.53122	200.00397	204.47683	2.15780	0.0517793	2.1663440	66	5	1989–1999	0.63	M-v	1	Williams	32051	1993 XQ ₁
1993 YD	12.6	0.15	19990810	279.91177	74.59031	100.31405	14.79993	0.0206400	3.1732738	66	5	1993–1999	0.64	M-v	1	Williams	33550	1993 YD
1994 AC	14.4	0.15	19990810	302.84206	160.73806	255.34769	3.15341	0.0931664	2.1782592	93	4	1991–1999	0.52	M-v	2	Williams	36070	1994 AC
1994 AT	15.9	0.15	19990810	288.12980	341.31272	91.22607	1.28148	0.1567805	2.1846031	48	2	1994–1999	0.67	M-v	5	Williams	35918	1994 AT
1994 AV ₁	14.1	0.15	19990810	157.89079	207.34246	302.09370	6.01128	0.1802374	2.4036141	59	4	1989–1999	0.59	M-v	2	Williams	35425	1994 AV ₁
1994 AN ₂	14.6	0.15	19990810	125.18250	270.85245	305.70296	6.59481	0.0635938	2.3005296	58	3	1994–1999	0.62	M-v	3	Williams	36070	1994 AN ₂
1994 AX ₆	15.3	0.15	19990810	21.70445	139.54054	145.00443	0.65058	0.2104800	2.3741404	74	3	1994–1999	0.54	M-v	2	Williams	36070	1994 AX ₆
1994 BX	15.2	0.15	19990810	144.59481	122.57917	75.31574	7.54578	0.0966986	2.3346225	56	4	1994–1999	0.53	M-v	2	Williams	36070	1994 BX
1994 BH ₁	14.7	0.15	19990810	164.41812	184.40241	342.81611	7.84201	0.0541481	2.3621377	75	3	1994–1999	0.60	M-v	3	Williams	36070	1994 BH ₁
1994 BG ₄	14.3	0.15	19990810	97.07386	305.76486	271.58200	6.01202	0.0706395	2.3793424	41	3	1994–1999	0.73	M-v	3	Williams	35919	1994 BG ₄
1994 CO ₁	14.9	0.15	19990810	131.37914	54.07447	181.54858	3.57478	0.1110379	2.2885674	40	3	1994–1999	0.52	M-v	3	Williams	32307	1994 CO ₁
1994 CY ₁	13.8	0.15	19990810	112.54586	299.85651	300.83688	7.97344	0.0848937	2.3296394	42	4	1982–1999	0.53	M-v	1	Williams	35919	1994 CY ₁
1994 CD ₈	13.7	0.15	19990810	154.39242	9.57805	220.19894	3.42270	0.1128789	2.2860503	35	5	1978–1999	0.58	M-v	1	Williams	32307	1994 CD ₈
1994 CN ₈	14.5	0.15	19990810	308.93888	271.97809	124.44028	2.30628	0.1417849	2.2493695	50	4	1979–1999	0.55	M-v	2	Williams	36070	1994 CN ₈
1994 CV ₉	15.0	0.15	19990810	99.84590	121.74251	142.07906	6.59749	0.1149886	2.3252373	45	4	1994–1999	0.61	M-v	1	Williams	32307	1994 CV ₉
1994 CK ₁₀	15.2	0.15	19990810	268.13532	354.02317	92.56099	3.67369	0.0976179	2.2837857	48	4	1994–1999	0.78	M-v	2	Williams	36070	1994 CK ₁₀
1994 CU ₁₀	14.9	0.15	19990810	266.64412	323.71276	127.75692	6.31059	0.0300851	2.2957547	46	3	1994–1999	0.62	M-v	3	Williams	36070	1994 CU ₁₀
1994 CM ₁₁	14.3	0.15	19990810	119.50774	204.43897	39.61151	1.98796	0.2039764	2.3566966	61	4	1991–1999	0.68	M-v	1	Williams	36070	1994 CM ₁₁
1994 CG ₁₂	14.6	0.15	19990810	62.18190	215.60849	58.84742	3.28183	0.1528527	2.4168614	60	4	1992–1999	0.65	M-v	2	Williams	36070	1994 CG ₁₂
1994 CX ₁₂	14.3	0.15	19990810	152.47315	145.34302	40.04369	4.02109	0.0650047	2.3745285	84	4	1987–1999	0.73	M-v	2	Williams	36070	1994 CX ₁₂
1994 CJ ₁₆	14.0	0.15	19990810	166.91603	83.38550	121.84861	4.96239	0.0878721	2.2940123	53	4	1991–1999	0.76	M-v	1	Williams	35690	1994 CJ ₁₆
1994 CO ₁₆	14.9	0.15	19990810	244.19312	319.68188	129.49816	6.79625	0.0854222	2.3570170	41	4	1994–1999	0.71	M-v	2	Williams	36070	1994 CO ₁₆
1994 CL ₁₈	15.0	0.15	19990810	295.65041	282.11809	119.33496	7.08813	0.0791831	2.3527194	34	3	1994–1999	0.81	M-v	4	Williams	36070	1994 CL ₁₈
1994 DW	14.6	0.15	19990810	357.15892	147.27207	116.93230	11.39783	0.0799042	2.9624916	28	3	1994–1999	0.80	M-v	4	Williams	35603	1994 DW
1994 EL	15.4	0.15	19990810	145.93268	1.09112	210.27677	2.38102	0.1562478	2.3228210	36	3	1994–1999	0.57	M-v	4	Williams	34853	1994 EL
1994 EP	14.5	0.15	19990810	147.88063	120.86192	64.68624	4.92072	0.0965117	2.4309430	58	4	1992–1999	0.54	M-v	2	Williams	36070	1994 EP
1994 ES	15.3	0.15	19990810	340.18375	210.32193	146.84468	25.25238	0.2233895	2.2848632	55	2	1994–1999	0.65	M-v	3	Williams	36070	1994 ES
1994 EL ₁	14.1	0.15	19990810	339.07623	317.12724	112.79535	4.93091	0.1383989	2.1890944	37	3	1994–1999	0.76	M-v	3	Williams	29662	1994 EL ₁
1994 EQ ₁	13.6	0.15	19990810	272.55028	295.65014	173.86262	3.80918	0.1100663	2.2665589	44	5	1982–1999	0.63	M-v	1	Williams	29662	1994 EQ ₁
1994 EA ₂	15.4	0.15	19990810	245.71479	326.25171	184.01281	7.98713	0.2998545	2.2056408	43	3	1994–1999	0.64	M-v	3	Williams	26174	1994 EA ₂
1994 EB ₂	13.6	0.15	19990810	159.67829	47.36208	133.17462	23.11951	0.2295249	2.3930916	38	3	1994–1999	0.71	M-v	3	Williams	36070	1994 EB ₂
1994 EC ₅	14.5	0.15	19990810	16.31179	328.87875	345.75998	6.14293	0.0602230	2.4145516	97	3	1994–1999	0.65	M-v	3	Williams	36070	1994 EC ₅
1994 EZ ₆	14.8	0.15	19990810	50.23781	222.57886	97.18702	5.96003	0.1521356	2.3112039	44	3	1994–1999	0.63	M-v	2	Williams	32747	1994 EZ ₆
1994 EV ₇	13.9	0.15	19990810	130.80197	63.69913	342.61535	23.42013	0.0632137	1.8936248	23	3	1994–1999	0.77	M-v	2	Williams	36070	1994 EV ₇
1994 FB	14.8	0.15	19990810	293.31560	258.89235	193.59110	2.28037	0.0510002	2.2444524	63	5	1991–1999	0.71	M-v	2	Williams	30291	1994 FB
1994 FF	14.0	0.15	19990810	194.57933	79.66895	129.10668	6.02868	0.1352091	2.2607543	40	4	1994–1999	0.59	M-v	2	Williams	32516	1994 FF
1994 FY	14.0	0.15	19990810	185.53160	136.64941	41.50303	12.04933	0.1076515	2.3654650	23	4	1976–1999	0.59	M-v	2	Williams	36070	1994 FY
1994 GE	14.9	0.15	19990810	168.20366	115.07321	69.33234	7.10138	0.0680596	2.4168318	23	3	1994–1999	0.62	M-v	3	Williams	31964	1994 GE
1994 GF	14.7	0.15	19990810	228.74836	101.65116	107.02455	3.64710	0.0583616	2.1888273	75	5	1992–1999	0.81	M-v	2	Williams	32747	1994 GF

1994 GN	14.2	0.15	19990810	131.29114	203.54942	71.98988	5.54888	0.1404316	2.2689590	34	4	1994–1999	0.62	M-v	3	Williams	33072	1994 GN
1994 GB ₁	13.7	0.15	19990810	146.47506	238.27290	40.38619	5.51999	0.1977221	2.2702830	40	3	1994–1999	0.78	M-v	3	Williams	33550	1994 GB ₁
1994 GM ₁	13.6	0.15	19990810	91.58960	228.73628	90.80911	4.71559	0.1239548	2.3215672	35	6	1988–1999	0.65	M-v	1	Williams	32516	1994 GM ₁
1994 GB ₉	14.1	0.15	19990810	191.46787	25.90879	175.12045	2.41092	0.1277040	2.3029255	48	5	1980–1999	0.75	M-v	2	Williams	32666	1994 GB ₉
1994 GL ₉	14.9	0.15	19990810	201.36240	333.39356	224.86019	3.50892	0.1001485	2.2842204	33	6	1989–1999	0.67	M-v	1	Williams	32516	1994 GL ₉
1994 GU ₉	13.5	0.15	19990810	135.40187	124.37499	125.74260	21.95872	0.1215264	2.3012211	27	4	1990–1999	0.47	M-v	2	Williams	36071	1994 GU ₉
1994 GY ₁₀	13.9	0.15	19990810	83.28567	171.23702	50.17286	8.73260	0.1504988	2.6199219	33	3	1994–1999	0.62	M-v	3	Williams	36071	1994 GY ₁₀
1994 JF	14.7	0.15	19990810	229.53607	18.69588	166.70352	4.20821	0.1023517	2.2781252	41	5	1994–1999	0.63	M-v	1	Williams	32747	1994 JF
1994 JS ₁	14.5	0.15	19990810	115.53632	22.24873	168.82310	19.44672	0.3506470	2.6035105	68	4	1994–1999	0.71	M-v	2	Williams	32051	1994 JS ₁
1994 JQ ₆	15.7	0.15	19990810	353.46939	137.15841	185.24521	2.13682	0.1269824	2.6715176	25	4	1960–1999	0.48	M-v	1	Williams	36071	1994 JQ ₆
1994 JU ₈	13.8	0.15	19990810	60.41421	58.49899	231.28325	15.78310	0.1222880	2.5232452	69	3	1994–1999	0.70	M-v	2	Williams	36071	1994 JU ₈
1994 JE ₉	13.9	0.15	19990810	98.37202	150.12974	118.80463	6.74985	0.1119926	2.4531755	57	4	1994–1999	0.46	M-v	1	Williams	32307	1994 JE ₉
1994 JG ₉	14.0	0.15	19990810	40.39084	202.32141	123.66884	8.98060	0.3073283	2.5522915	52	8	1954–1999	0.65	M-v	1	Williams	32051	1994 JG ₉
1994 LC	14.3	0.15	19990810	114.11761	108.44321	128.92811	9.85874	0.1779928	2.5327977	48	3	1994–1999	0.64	M-v	3	Williams	36071	1994 LC
1994 NB	13.4	0.15	19990810	164.48292	95.12530	126.99074	23.76082	0.2748528	2.3677382	34	3	1994–1999	0.69	M-v	2	Williams	26422	1994 NB
1994 NO ₁	13.9	0.15	19990810	219.06132	337.92008	260.95139	5.00131	0.1781822	2.2600023	42	4	1991–1999	0.76	M-v	2	Williams	34582	1994 NO ₁
1994 NV ₁	15.0	0.15	19990810	350.32391	158.78390	129.06371	6.45335	0.2792867	3.0360485	35	4	1993–1999	0.58	M-v	2	Williams	35426	1994 NV ₁
1994 NW ₁	13.7	0.15	19990810	134.40718	89.22826	132.81583	6.59290	0.2439604	2.5690125	47	5	1989–1999	0.73	M-v	1	Williams	32307	1994 NW ₁
1994 PP	12.6	0.15	19990810	10.54631	53.65827	317.93381	33.38830	0.2970656	2.7646485	73	5	1982–1999	0.73	M-v	1	Williams	32516	1994 PP
1994 PK ₁	14.1	0.15	19990810	32.48725	264.51730	69.87128	16.84571	0.3300716	2.7069233	55	4	1990–1999	0.63	M-v	1	Williams	32307	1994 PK ₁
1994 PK ₃	14.0	0.15	19990810	255.53392	122.53580	321.47944	1.37658	0.0739019	2.9102529	45	3	1994–1999	0.78	M-v	4	Williams	36071	1994 PK ₃
1994 PK ₄	13.9	0.15	19990810	119.71579	252.21231	337.87294	2.64270	0.1371024	2.7440514	53	3	1994–1999	0.57	M-v	4	Williams	30662	1994 PK ₄
1994 PK ₅	13.2	0.15	19990810	283.11263	128.25101	328.21018	9.15558	0.0068057	2.6872182	35	4	1986–1999	0.88	M-v	2	Williams	36071	1994 PK ₅
1994 PN ₅	14.3	0.15	19990810	311.20112	275.71379	150.56049	2.86624	0.0713762	2.7303681	24	3	1994–1999	0.72	M-v	4	Williams	29920	1994 PN ₅
1994 PU ₅	13.7	0.15	19990810	341.06617	192.27652	150.26637	9.85421	0.0682759	2.9661002	25	2	1994–1999	0.70	M-v	4	Williams	36071	1994 PU ₅
1994 PC ₇	13.3	0.15	19990810	161.23801	43.82276	146.90792	9.78710	0.0863862	2.7840852	38	5	1992–1999	0.82	M-v	1	Williams	36071	1994 PC ₇
1994 PQ ₁₀	13.7	0.15	19990810	265.32290	303.76705	138.51421	3.20952	0.0112625	2.8468271	54	3	1992–1999	0.65	M-v	4	Williams	35919	1994 PQ ₁₀
1994 PQ ₁₁	13.8	0.15	19990810	180.29553	240.82435	311.39431	3.41476	0.0718488	2.7075507	63	4	1994–1999	0.67	M-v	1	Williams	32747	1994 PQ ₁₁
1994 PX ₁₁	14.1	0.15	19990810	345.95294	49.25690	302.60641	1.07645	0.0694880	2.9081024	52	5	1979–1999	0.71	M-v	2	Williams	36071	1994 PX ₁₁
1994 PT ₁₃	13.5	0.15	19990810	304.08631	218.11017	163.30288	10.31050	0.0822510	3.0076815	40	3	1994–1999	0.78	M-v	3	Williams	36071	1994 PT ₁₃
1994 PA ₁₄	15.0	0.15	19990810	336.08117	173.96225	201.58011	1.51874	0.0812410	2.8615192	84	3	1992–1999	0.55	M-v	4	Williams	36071	1994 PA ₁₄
1994 PB ₁₄	13.3	0.15	19990810	247.98445	320.20307	171.65244	5.34858	0.0629937	2.7186728	47	5	1979–1999	0.72	M-v	1	Williams	29663	1994 PB ₁₄
1994 PF ₁₄	14.6	0.15	19990810	67.50213	138.70004	173.35618	5.22671	0.0234639	2.6985207	22	3	1994–1999	0.64	M-v	4	Williams	32747	1994 PF ₁₄
1994 PR ₁₄	16.7	0.15	19990810	102.72809	101.19605	181.58751	4.18906	0.0765591	2.6469750	26	3	1994–1999	0.56	M-v	4	Williams	32236	1994 PR ₁₄
1994 PG ₁₈	13.9	0.15	19990810	282.79556	2.69630	157.19394	6.42806	0.0657931	2.4541089	59	3	1994–1999	0.63	M-v	3	Williams	33551	1994 PG ₁₈
1994 PO ₁₈	14.4	0.15	19990810	291.72819	257.71187	156.16170	2.33198	0.0581524	2.9075226	61	4	1992–1999	0.65	M-v	1	Williams	36071	1994 PO ₁₈
1994 PV ₁₈	14.5	0.15	19990810	273.67103	125.77664	309.22043	2.19324	0.0854457	2.9142914	29	2	1994–1999	0.64	M-v	5	Williams	35919	1994 PV ₁₈
1994 PK ₂₀	13.8	0.15	19990810	215.64106	330.40282	169.60894	2.05307	0.0286067	2.8370826	85	3	1994–1999	0.62	M-v	3	Williams	36071	1994 PK ₂₀
1994 PM ₂₀	14.6	0.15	19990810	317.49079	210.39969	173.87918	1.74329	0.1168115	2.9468647	28	2	1994–1999	0.66	M-v	5	Williams	35920	1994 PM ₂₀
1994 PG ₂₂	13.9	0.15	19990810	99.39750	273.45641	341.44814	12.42062	0.1054168	2.7808389	36	2	1994–1999	0.67	M-v	4	Williams	35920	1994 PG ₂₂
1994 PH ₂₂	14.7	0.15	19990810	356.79465	241.24486	165.49448	2.43571	0.2046475	2.6999970	21	4	1981–1999	0.91	M-v	1	Williams	29945	1994 PH ₂₂
1994 PL ₂₂	14.1	0.15	19990810	284.15215	262.88407	162.64788	2.39675	0.0947038	2.9231258	176	3	1994–1999	0.53	M-v	3	Williams	36071	1994 PL ₂₂
1994 PN ₂₂	13.8	0.15	19990810	295.70464	54.11568	358.97261	1.65568	0.0960645	2.9229112	206	4	1992–1999	0.54	M-v	4	Williams	35920	1994 PN ₂₂
1994 PX ₂₂	14.9	0.15	19990810	318.83091	327.04995	135.72183	3.73132	0.2400498	2.6507934	29	4	1994–1999	0.67	M-v	2	Williams	32747	1994 PX ₂₂
1994 PL ₂₃	14.6	0.15	19990810	344.20833	59.41161	36.24444	1.22690	0.1489139	2.5364002	38	5	1988–1999	0.91	M-v	2	Williams	33073	1994 PL ₂₃
1994 PH ₂₆	13.9	0.15	19990810	244.96005	40.08728	52.61201	2.70041	0.0309199	2.8932923	37	2	1994–1999	0.69	M-v	5	Williams	35921	1994 PH ₂₆
1994 PT ₂₈	14.0	0.15	19990810	274.81215	332.03492	87.95454	2.74574	0.0554182	2.9352918	24	2	1994–1999	0.67	M-v	5	Williams	35921	1994 PT ₂₈
1994 PC ₂₉	14.3	0.15	19990810	66.21686	160.64045	134.82579	8.00625	0.0955464	2.7383458	45	4	1993–1999	0.67	M-v	1	Williams	36071	1994 PC ₂₉
1994 PW ₂₉	13.8	0.15	19990810	310.07249	210.93126	184.09475	10.55968	0.1326816	2.9299669	58	3	1994–1999	0.59	M-v	3	Williams	36071	1994 PW ₂₉
1994 PH ₃₀	13.3	0.15	19990810	224.09818	318.14296	185.74436	9.07306	0.1001127	2.7712331	55	4	1981–1999	0.68	M-v	1	Williams	35691	1994 PH ₃₀
1994 PO ₃₀	14.1	0.15	19990810	355.64413	151.87770	204.84774	4.59332	0.1233280	2.8506652	72	3	1994–1999	0.64	M-v	3	Williams	36071	1994 PO ₃₀
1994 PG ₃₅	14.3	0.15	19990810	299.53671	152.13624	253.44331	0.98690	0.0700745	2.8660411	40	3	1992–1999	0.51	M-v	3	Williams	35921	1994 PG ₃₅
1994 PB ₃₈	13.7	0.15	19990810	293.69107	73.05429	323.44260	9.59135	0.1051383	2.9694672	41	2	1994–1999	0.78	M-v	4	Williams	35921	1994 PB ₃₈

1994 QQ	13.3	0.15	19990810	87.28481	265.96431	342.13696	9.94491	0.0956551	2.8754833	75	3	1994–1999	0.61	M-v	2	Williams	36071	1994 QQ
1994 QA ₁	14.6	0.15	19990810	323.77213	304.34277	151.44210	3.71814	0.1817443	2.5956104	38	4	1994–1999	0.73	M-v	2	Williams	32748	1994 QA ₁
1994 RL ₇	14.0	0.15	19990810	273.47838	169.80932	323.02298	1.87571	0.2053384	2.7627941	57	3	1994–1999	0.37	M-v	4	Williams	26744	1994 RL ₇
1994 RN ₇	14.3	0.15	19990810	280.89428	122.79758	343.20920	3.32056	0.0457866	2.7824121	33	3	1992–1999	0.27	M-v	3	Williams	24233	1994 RN ₇
1994 RR ₁₁	14.1	0.15	19990810	359.79637	157.59977	238.79330	7.62564	0.1662426	2.7382624	25	5	1983–1999	0.82	M-v	1	Williams	35067	1994 RR ₁₁
1994 RH ₁₇	14.9	0.15	19990810	338.30199	48.42574	316.06444	1.06562	0.0663224	2.8961795	55	2	1994–1999	0.66	M-v	5	Williams	35921	1994 RH ₁₇
1994 RL ₂₃	15.1	0.15	19990810	167.46854	125.34601	136.45916	7.12126	0.1530828	2.4279155	17	3	1994–1999	0.77	M-v	5	Williams	35921	1994 RL ₂₃
1994 SO ₅	14.6	0.15	19990810	84.61637	165.31519	130.33132	0.99693	0.0427412	2.7887131	34	5	1992–1999	0.59	M-v	1	Williams	30472	1994 SO ₅
1994 SH ₉	13.7	0.15	19990810	92.98728	231.05179	27.63459	2.32302	0.0482414	2.9345670	51	2	1994–1999	0.43	M-v	5	Williams	35922	1994 SH ₉
1994 SZ ₉	16.0	0.15	19990810	85.90960	262.05547	28.26984	2.79418	0.0736298	2.7954017	31	3	1994–1999	0.43	M-v	3	Williams	29621	1994 SZ ₉
1994 TZ	12.8	0.15	19990810	252.77614	281.78643	176.25042	10.02864	0.0688867	3.0602190	49	3	1994–1999	0.51	M-v	3	Williams	35922	1994 TZ
1994 TA ₁	13.5	0.15	19990810	43.94289	329.52805	18.75477	36.68433	0.1858681	2.7375780	28	3	1994–1999	0.79	M-v	3	Williams	30454	1994 TA ₁
1994 TF ₁	13.4	0.15	19990810	342.20501	298.91963	56.29044	8.29458	0.1305677	3.0768858	37	6	1989–1999	0.66	M-v	2	Williams	36071	1994 TF ₁
1994 TF ₂	19.3	0.15	19990810	183.08152	349.61529	175.31152	23.75681	0.2837242	0.9929892	131	6	1994–1999	0.67	M-v	3	Williams	36071	1994 TF ₂
1994 TO ₂	12.9	0.15	19990810	38.88509	319.82330	31.62555	9.64535	0.1633384	2.7578766	19	3	1994–1999	0.99	M-v	4	Williams	29922	1994 TO ₂
1994 TY ₂	14.1	0.15	19990810	59.25663	64.15062	17.90814	10.83667	0.2713410	2.4465694	52	4	1988–1999	0.70	M-v	2	Williams	34291	1994 TY ₂
1994 UO	13.5	0.15	19990810	13.65281	237.67938	146.70808	2.75390	0.0872003	2.8968589	35	5	1989–1999	0.67	M-v	1	Williams	32517	1994 UO
1994 UQ	13.2	0.15	19990810	181.06715	197.34103	61.52975	13.77908	0.1290190	2.6782007	31	3	1994–1999	0.61	M-v	4	Williams	33341	1994 UQ
1994 UZ ₁	12.7	0.15	19990810	313.53981	28.58962	51.32855	13.27899	0.0761213	2.9080336	38	3	1989–1999	0.72	M-v	4	Williams	24750	1994 UZ ₁
1994 UK ₅	13.7	0.15	19990810	341.56343	0.13780	53.61898	3.14333	0.1479929	2.8421638	37	7	1989–1999	0.69	M-v	1	Williams	32308	1994 UK ₅
1994 UT ₁₁	12.7	0.15	19990810	317.81564	232.62946	231.50576	17.00658	0.0621497	2.7376502	55	4	1994–1999	0.62	M-v	2	Williams	33073	1994 UT ₁₁
1994 VJ ₁	13.5	0.15	19990810	67.43953	267.03922	82.55461	6.53588	0.0846513	2.7622685	36	5	1994–1999	0.56	M-v	1	Williams	32748	1994 VJ ₁
1994 VM ₁	13.8	0.15	19990810	315.30084	239.76903	180.70686	4.69307	0.1969518	3.0617237	64	3	1994–1999	0.57	M-v	3	Williams	36071	1994 VM ₁
1994 VS ₁	13.8	0.15	19990810	318.98958	19.18105	39.13180	5.03220	0.1784358	3.0783102	52	2	1994–1999	0.49	M-v	4	Williams	35922	1994 VS ₁
1994 VT ₆	13.6	0.15	19990810	342.16014	328.04216	74.40163	3.06092	0.1222875	2.9302541	48	4	1994–1999	0.70	M-v	1	Williams	35692	1994 VT ₆
1994 VD ₇	12.4	0.15	19990810	39.84232	72.58932	234.96691	20.76794	0.1059520	3.1657749	40	3	1994–1999	0.69	M-v	2	Williams	36071	1994 VD ₇
1994 WU	12.5	0.15	19990810	201.85899	299.13975	254.14803	13.03999	0.1532971	3.1050080	59	4	1983–1999	0.71	M-v	1	Williams	35692	1994 WU
1994 WB ₁	14.7	0.15	19990810	238.35429	88.10618	69.77271	24.80978	0.1515011	1.8555976	78	4	1955–1999	0.64	M-v	1	Williams	32308	1994 WB ₁
1994 WF ₁	14.0	0.15	19990810	38.88033	97.27290	268.16572	0.96402	0.0930616	2.9006856	27	3	1994–1999	0.54	M-v	3	Williams	35692	1994 WF ₁
1994 WE ₂	13.1	0.15	19990810	55.67305	266.03340	97.00329	9.10799	0.2178363	2.7456281	41	5	1982–1999	0.67	M-v	1	Williams	33552	1994 WE ₂
1994 WR ₂	13.0	0.15	19990810	34.77404	318.56081	69.93600	9.00613	0.2317323	2.7786458	30	5	1952–1999	0.80	M-v	1	Williams	32748	1994 WR ₂
1994 WZ ₂	17.6	0.15	19990810	330.55166	324.97725	97.68618	17.97473	0.5541128	2.9556932	38	2	1994–1999	0.63	M-v	2	Williams	35922	1994 WZ ₂
1994 WB ₃	14.2	0.15	19990810	314.90465	305.56164	110.67012	2.38364	0.1933577	3.1067898	46	3	1994–1999	0.65	M-v	4	Williams	35922	1994 WB ₃
1994 WX ₄	14.7	0.15	19990810	48.37992	73.46713	91.63765	8.31325	0.1831248	2.3857798	27	2	1994–1999	0.73	M-v	4	Williams	35922	1994 WX ₄
1994 WU ₇	13.6	0.15	19990810	51.67442	144.27085	147.48786	6.97696	0.0937044	3.2111268	38	2	1994–1999	0.46	M-v	5	Williams	35923	1994 WU ₇
1994 XM	14.2	0.15	19990810	309.72220	21.69518	41.74339	1.23971	0.1810922	3.1270496	60	3	1994–1999	0.50	M-v	4	Williams	36071	1994 XM
1994 XM ₂	12.5	0.15	19990810	12.43412	261.86246	84.77468	8.47237	0.0361006	3.1441978	42	2	1994–1999	0.32	M-v	4	Williams	35923	1994 XM ₂
1994 XY ₄	15.0	0.15	19990810	302.08562	317.11072	85.69705	24.39492	0.1337170	1.8733586	16	6	1953–1999	1.01	M-v	2	Williams	31277	1994 XY ₄
1994 YG	14.4	0.15	19990810	320.65307	34.71567	31.40517	0.98499	0.2485440	3.0518053	52	3	1978–1999	0.57	M-v	4	Williams	24915	1994 YG
1994 YU	13.8	0.15	19990810	69.22866	59.45906	286.95109	9.79939	0.1222147	2.9788671	29	3	1994–1999	0.68	M-v	4	Williams	35692	1994 YU
1994 YC ₁	13.4	0.15	19990810	273.35940	76.35946	68.50436	0.41305	0.1056334	3.0910705	40	6	1993–1999	0.74	M-v	1	Williams	32748	1994 YC ₁
1994 YF ₁	13.6	0.15	19990810	325.92843	162.70592	291.03106	8.93878	0.0273827	2.9929091	34	3	1994–1999	0.73	M-v	4	Williams	35692	1994 YF ₁
1995 BD	12.0	0.15	19990810	98.44531	182.56139	91.91579	10.01856	0.1128573	3.4230918	50	4	1995–1999	0.57	M-v	1	Williams	33552	1995 BD
1995 BJ	13.3	0.15	19990810	2.68325	119.87339	304.41604	9.86012	0.0930491	3.0662248	35	4	1995–1999	0.76	M-v	1	Williams	34292	1995 BJ
1995 BL	14.4	0.15	19990810	244.58893	177.67809	309.68953	17.98552	0.0657097	1.9452604	29	2	1995–1999	0.58	M-v	4	Williams	35294	1995 BL
1995 BP	13.6	0.15	19990810	274.94058	310.02649	315.89025	13.20791	0.2592805	2.6274153	28	4	1992–1999	0.63	M-v	2	Williams	36071	1995 BP
1995 BQ	13.4	0.15	19990810	324.71192	310.26012	128.54783	1.25320	0.2417848	3.1677862	46	5	1982–1999	0.61	M-v	1	Williams	35692	1995 BQ
1995 BX	13.7	0.15	19990810	2.59290	19.30066	34.28737	1.47815	0.1930586	3.0620200	43	3	1995–1999	0.68	M-v	3	Williams	32749	1995 BX
1995 CG	14.7	0.15	19990810	81.75636	163.21912	137.75781	24.48416	0.0752752	1.9611167	27	3	1995–1999	0.49	M-v	2	Williams	32052	1995 CG
1995 CE ₁	14.0	0.15	19990810	301.34475	124.28224	346.89831	5.70315	0.1169425	3.1571771	46	4	1993–1999	0.62	M-v	1	Williams	35692	1995 CE ₁
1995 CD ₂	11.9	0.15	19990810	180.01227	22.21508	232.70433	21.12894	0.0430940	3.2337948	55	5	1995–1999	0.65	M-v	1	Williams	33749	1995 CD ₂
1995 DL ₁	12.6	0.15	19990810	283.27329	77.91100	72.39429	20.12547	0.3008218	3.1641442	31	4	1984–1999	0.57	M-v	1	Williams	27568	1995 DL ₁
1995 DZ ₁	13.2	0.15	19990810	172.32357	202.14794	79.12096	7.32004	0.1251216	3.0953729	74	5	1995–1999	0.69	M-v	1	Williams	33553	1995 DZ ₁

1995 DA ₃	16.0	0.15	19990810	124.85079	42.07544	227.35249	20.44210	0.0403819	1.9463186	28	3	1995–1999	0.74	M-v	3	Williams	31967	1995 DA ₃
1995 EA ₈	14.4	0.15	19990810	7.43110	283.99117	163.18432	0.65065	0.2030637	2.9947376	62	4	1995–1999	0.60	M-v	1	Williams	35693	1995 EA ₈
1995 EF ₈	13.7	0.15	19990810	337.32315	350.74507	111.06519	3.09027	0.1382112	3.1302399	37	5	1982–1999	0.73	M-v	1	Williams	35068	1995 EF ₈
1995 ED ₉	12.9	0.15	19990810	18.73954	263.25412	161.77593	6.55213	0.1322707	3.1409301	51	5	1984–1999	0.64	M-v	1	Williams	35068	1995 ED ₉
1995 FM ₁₁	15.8	0.15	19990810	51.70971	104.56317	184.66508	3.75704	0.1381484	2.1550132	53	4	1992–1999	0.60	M-v	3	Williams	36072	1995 FM ₁₁
1995 FV ₁₄	12.9	0.15	19990810	293.10878	136.06666	35.75322	8.67082	0.1017715	3.1714681	41	6	1978–1999	0.81	M-v	2	Williams	34583	1995 FV ₁₄
1995 GV	14.3	0.15	19990810	70.64625	52.61356	192.78070	3.21888	0.1105012	2.2743624	65	4	1971–1999	0.65	M-v	1	Williams	36072	1995 GV
1995 KF	14.1	0.15	19990810	35.42161	118.96522	127.44624	22.76182	0.2794266	2.4242469	69	4	1991–1999	0.72	M-v	2	Williams	36072	1995 KF
1995 KM ₁	15.3	0.15	19990810	38.62889	182.52605	117.85713	4.00292	0.2212535	2.3043622	76	3	1995–1999	0.62	M-v	3	Williams	31789	1995 KM ₁
1995 KJ ₃	16.0	0.15	19990810	102.76537	171.31824	78.14196	1.05497	0.1285951	2.1632168	54	5	1994–1999	0.71	M-v	2	Williams	35693	1995 KJ ₃
1995 MB	12.5	0.15	19990810	29.91884	11.00034	280.07124	26.26836	0.2207110	2.4128173	86	2	1995–1999	0.55	M-v	2	Williams	36072	1995 MB
1995 NE	15.9	0.15	19990810	63.85046	57.75913	182.46588	5.41819	0.2396513	2.3365792	30	3	1995–1999	0.56	M-v	3	Williams	36072	1995 NE
1995 OB	15.0	0.15	19990810	60.34368	37.89007	260.80649	4.83429	0.1795751	2.2910103	39	3	1995–1999	0.63	M-v	2	Williams	31967	1995 OB
1995 OD	15.0	0.15	19990810	63.16555	341.95820	323.28047	1.29083	0.0529681	2.2956902	124	4	1995–1999	0.63	M-v	1	Williams	32052	1995 OD
1995 OA ₁	14.6	0.15	19990810	40.00605	105.46655	225.08396	5.82956	0.1705098	2.3422177	44	4	1991–1999	0.68	M-v	1	Williams	31967	1995 OA ₁
1995 OS ₁	14.7	0.15	19990810	283.70161	67.37123	338.93405	2.83035	0.0738007	2.4743001	76	4	1994–1999	0.60	M-v	2	Williams	36072	1995 OS ₁
1995 ON ₄	14.4	0.15	19990810	65.88501	104.64477	135.97929	2.77657	0.1113378	2.5648785	65	3	1995–1999	0.58	M-v	2	Williams	36072	1995 ON ₄
1995 OE ₆	17.1	0.15	19990810	274.76664	345.27501	129.38675	3.63502	0.1258338	2.3104613	23	3	1995–1999	0.56	M-v	3	Williams	29623	1995 OE ₆
1995 PG	14.7	0.15	19990810	246.94016	124.08189	332.53929	14.56188	0.1389840	2.5491181	66	4	1991–1999	0.49	M-v	2	Williams	36072	1995 PG
1995 PK	14.5	0.15	19990810	30.92356	234.96308	132.31890	5.20452	0.1296120	2.2280806	54	5	1992–1999	0.72	M-v	1	Williams	32308	1995 PK
1995 QG	15.0	0.15	19990810	288.66103	103.36171	323.51339	13.34046	0.1604890	2.6452542	59	3	1995–1999	0.58	M-v	2	Williams	36072	1995 QG
1995 QK	15.1	0.15	19990810	22.19823	132.71839	231.18436	3.31165	0.1721869	2.3153829	24	5	1988–1999	0.68	M-v	2	Williams	32052	1995 QK
1995 QS	14.7	0.15	19990810	102.69066	213.84402	59.21625	5.18090	0.1584704	2.2508456	69	3	1995–1999	0.60	M-v	3	Williams	32308	1995 QS
1995 QB ₂	15.1	0.15	19990810	34.79694	77.50345	302.74347	3.55560	0.1841112	2.2377383	23	4	1955–1999	0.75	M-v	2	Williams	35693	1995 QB ₂
1995 QN ₂	15.1	0.15	19990810	339.47963	254.03949	150.64804	6.78527	0.1005461	2.3282481	40	3	1995–1999	0.58	M-v	4	Williams	34583	1995 QN ₂
1995 QC ₃	15.1	0.15	19990810	29.75042	345.04877	337.01691	5.66144	0.3702723	2.4145082	31	4	1980–1999	0.70	M-v	2	Williams	31587	1995 QC ₃
1995 QD ₃	14.1	0.15	19990810	326.59228	110.43762	315.84398	1.97307	0.1927271	2.4167555	30	5	1989–1999	0.72	M-v	1	Williams	30472	1995 QD ₃
1995 QT ₃	16.0	0.15	19990810	68.98806	330.00137	327.39525	2.94041	0.2407703	2.2982563	33	3	1995–1999	0.74	M-v	3	Williams	32308	1995 QT ₃
1995 QW ₃	14.6	0.15	19990810	42.84201	88.76165	245.57791	21.00206	0.1528369	2.3148386	41	4	1995–1999	0.58	M-v	1	Williams	32308	1995 QW ₃
1995 QY ₃	14.4	0.15	19990810	70.87959	18.07263	243.26975	4.96349	0.1299199	2.4732486	69	3	1995–1999	0.70	M-v	2	Williams	36072	1995 QY ₃
1995 QC ₁₀	15.5	0.15	19990810	40.43115	80.62576	226.80819	5.64951	0.1351501	2.4333705	43	3	1995–1999	0.61	M-v	3	Williams	36072	1995 QC ₁₀
1995 RA	13.1	0.15	19990810	20.93915	58.25075	303.23018	22.98554	0.2325740	2.3450864	45	3	1995–1999	0.27	M-v	2	Williams	36072	1995 RA
1995 RJ	15.0	0.15	19990810	7.77502	215.85953	103.69393	9.24884	0.2328767	2.5836193	32	3	1978–1999	0.50	M-v	3	Williams	36072	1995 RJ
1995 RK	15.0	0.15	19990810	55.81200	59.26431	248.88676	5.18791	0.1134272	2.3739804	61	4	1995–1999	0.70	M-v	1	Williams	32052	1995 RK
1995 SD	16.1	0.15	19990810	341.05555	303.00624	47.09128	4.18579	0.1707440	2.5783383	48	3	1993–1999	0.55	M-v	3	Williams	35923	1995 SD
1995 SP	14.9	0.15	19990810	8.18997	37.45596	13.38181	9.24860	0.1900663	2.3231675	56	3	1995–1999	0.49	M-v	2	Williams	36072	1995 SP
1995 ST	13.9	0.15	19990810	159.57153	261.52846	339.51118	7.32244	0.0807592	2.2944871	37	4	1995–1999	0.60	M-v	1	Williams	32518	1995 ST
1995 SU	14.3	0.15	19990810	162.84331	273.94999	318.31872	5.05033	0.0834493	2.3202659	47	5	1983–1999	0.69	M-v	1	Williams	32309	1995 SU
1995 SB ₁	14.4	0.15	19990810	352.26907	167.71235	231.79599	24.33298	0.2543247	2.3953088	36	4	1995–1999	0.67	M-v	2	Williams	36072	1995 SB ₁
1995 SJ ₁	15.1	0.15	19990810	322.01479	62.54460	351.86732	4.07367	0.2009158	2.4807205	99	3	1995–1999	0.42	M-v	2	Williams	36072	1995 SJ ₁
1995 SM ₁	15.7	0.15	19990810	343.47671	270.11725	84.75045	1.14385	0.0831967	2.6351077	36	3	1995–1999	0.47	M-v	4	Williams	35923	1995 SM ₁
1995 SQ ₁	13.9	0.15	19990810	331.19724	121.86748	313.79465	23.71416	0.2224806	2.3679882	25	3	1991–1999	0.65	M-v	3	Williams	36072	1995 SQ ₁
1995 SZ ₁	14.9	0.15	19990810	2.69633	120.74188	286.93022	2.69622	0.1482914	2.3269721	60	5	1981–1999	0.45	M-v	1	Williams	35295	1995 SZ ₁
1995 SC ₂	14.3	0.15	19990810	338.91639	223.50815	161.34300	6.73038	0.1261103	2.4043483	83	4	1995–1999	0.54	M-v	1	Marsden	32309	1995 SC ₂
1995 SK ₂	15.1	0.15	19990810	9.22490	355.64305	349.62530	3.12359	0.1953251	2.4324254	89	3	1995–1999	0.66	M-v	3	Williams	36072	1995 SK ₂
1995 SO ₂	15.9	0.15	19990810	6.90493	83.01962	232.97666	4.11421	0.2934179	2.5724229	61	2	1995–1999	0.43	M-v	3	Williams	36072	1995 SO ₂
1995 SP ₂	15.2	0.15	19990810	34.46524	266.45162	81.76784	7.78816	0.1519620	2.3963969	54	4	1995–1999	0.52	M-v	1	Williams	32309	1995 SP ₂
1995 SX ₂	14.2	0.15	19990810	33.22939	280.76882	42.10392	3.50813	0.1922293	2.4251958	68	3	1995–1999	0.60	M-v	2	Williams	32052	1995 SX ₂
1995 SK ₃	14.5	0.15	19990810	74.39046	178.00084	94.66290	3.56732	0.1632366	2.4621822	59	4	1991–1999	0.51	M-v	3	Williams	36072	1995 SK ₃
1995 SL ₃	15.7	0.15	19990810	55.25445	53.02450	248.59504	0.61449	0.1806657	2.4274565	75	4	1995–1999	0.56	M-v	1	Williams	32053	1995 SL ₃
1995 SM ₃	14.4	0.15	19990810	271.93046	139.71120	345.98107	8.13278	0.1652097	2.4279111	36	4	1993–1999	0.67	M-v	1	Williams	29664	1995 SM ₃
1995 SQ ₃	13.8	0.15	19990810	304.08269	184.81996	276.24328	5.71397	0.0789521	2.3263712	34	5	1917–1999	0.65	M-v	1	Williams	35693	1995 SQ ₃
1995 SR ₃	13.7	0.15	19990810	62.82201	17.07526	328.86655	6.24956	0.1781207	2.2566818	31	4	1978–1999	0.53	M-v	2	Williams	36072	1995 SR ₃

1995 SU ₃	13.7	0.15	19990810	109.89243	317.10867	329.87135	6.62650	0.1908551	2.2486692	21	4	1981–1999	0.63	M-v	3	Williams	28858	1995 SU ₃
1995 SZ ₃	14.1	0.15	19990810	26.61558	170.13733	202.65626	6.12197	0.2399742	2.3464760	41	6	1959–1999	0.71	M-v	1	Williams	32309	1995 SZ ₃
1995 ST ₄	13.6	0.15	19990810	19.40680	213.96260	153.25375	6.91417	0.1506443	2.3667179	46	5	1955–1999	0.61	M-v	1	Williams	32309	1995 ST ₄
1995 SO ₅	14.2	0.15	19990810	10.08211	257.05085	54.66199	14.06972	0.1987010	2.5324971	25	4	1987–1999	0.60	M-v	2	Williams	36072	1995 SO ₅
1995 SU ₅	15.6	0.15	19990810	171.43757	28.37256	203.77737	7.38159	0.1587719	2.3707474	24	3	1991–1998	0.68	M-v	5	Williams	35923	1995 SU ₅
1995 SR ₁₃	15.4	0.15	19990810	120.42556	226.86173	355.66550	2.27439	0.1256351	2.4748675	32	3	1995–1999	0.73	M-v	4	Williams	34859	1995 SR ₁₃
1995 SY ₁₄	16.0	0.15	19990810	65.06261	353.20344	282.01349	0.84644	0.0977055	2.4818549	33	6	1979–1999	0.67	M-v	1	Williams	32463	1995 SY ₁₄
1995 SM ₁₅	14.7	0.15	19990810	345.82396	359.65454	349.45290	8.87465	0.0584900	2.5586059	48	2	1995–1999	0.50	M-v	4	Williams	35923	1995 SM ₁₅
1995 SU ₁₅	15.5	0.15	19990810	80.53329	39.65479	213.57337	0.73917	0.1011374	2.5119046	47	4	1994–1999	0.52	M-v	3	Williams	36072	1995 SU ₁₅
1995 SW ₂₅	15.9	0.15	19990810	336.51535	11.95768	358.08928	2.69176	0.2186891	2.5851315	45	2	1995–1999	0.62	M-v	4	Williams	36072	1995 SW ₂₅
1995 SH ₂₆	14.8	0.15	19990810	41.51168	311.13570	354.23016	1.74761	0.1283788	2.5309813	74	4	1991–1999	0.64	M-v	3	Williams	36072	1995 SH ₂₆
1995 SQ ₂₉	14.7	0.15	19990810	38.21796	291.95303	40.35997	3.85601	0.1918610	2.4304674	38	5	1971–1999	0.69	M-v	1	Williams	35693	1995 SQ ₂₉
1995 SR ₂₉	14.7	0.15	19990810	37.80092	267.58731	66.28325	2.26163	0.2015472	2.4240999	34	5	1993–1999	0.73	M-v	1	Williams	32309	1995 SR ₂₉
1995 SB ₃₁	14.8	0.15	19990810	139.05393	253.90156	356.86377	5.52965	0.1093106	2.2480475	27	4	1974–1999	0.39	M-v	2	Williams	28318	1995 SB ₃₁
1995 ST ₃₂	15.7	0.15	19990810	337.45258	185.42970	172.99164	1.96849	0.1966389	2.5429888	31	2	1995–1999	0.61	M-v	5	Williams	35924	1995 ST ₃₂
1995 SB ₃₃	16.0	0.15	19990810	322.06336	210.38930	167.68015	5.05209	0.1514202	2.5431657	28	3	1995–1999	0.52	M-v	3	Williams	35924	1995 SB ₃₃
1995 SL ₃₅	14.8	0.15	19990810	266.07393	65.87655	18.23532	22.30423	0.0518069	2.6239499	30	4	1978–1999	0.77	M-v	1	Williams	36072	1995 SL ₃₅
1995 SD ₄₄	14.9	0.15	19990810	243.93616	245.29054	214.95772	2.23735	0.0558583	2.6510908	28	2	1995–1999	0.64	M-v	5	Williams	35924	1995 SD ₄₄
1995 SS ₅₂	15.5	0.15	19990810	225.17534	120.46301	12.50114	3.54631	0.0257070	2.5689854	30	3	1995–1999	0.40	M-v	4	Williams	36072	1995 SS ₅₂
1995 SW ₅₂	13.9	0.15	19990810	79.28494	73.86512	248.05728	4.70634	0.1657931	2.2823948	28	5	1978–1999	0.71	M-v	1	Williams	32749	1995 SW ₅₂
1995 SM ₅₅	5.2	0.15	19990810	311.59143	65.39792	21.01147	26.96460	0.1006960	42.0756371	24	2	1995–1999	0.54	M-v	5	Marsden	35924	1995 SM ₅₅
1995 TS	14.3	0.15	19990810	25.13343	1.08811	357.15367	0.60615	0.1861698	2.4268070	37	7	1976–1999	0.75	M-v	1	Williams	32053	1995 TS
1995 TX	13.4	0.15	19990810	209.54763	263.93497	304.82494	23.30179	0.1581367	2.3176906	51	4	1995–1999	0.56	M-v	1	Williams	32749	1995 TX
1995 TA ₁	14.9	0.15	19990810	210.50610	4.49344	177.37528	1.84714	0.0678260	2.4222080	21	3	1995–1999	0.55	M-v	5	Williams	32749	1995 TA ₁
1995 TZ ₁	14.5	0.15	19990810	98.49054	199.45578	43.04041	7.68316	0.2400568	2.6302353	55	3	1995–1999	0.63	M-v	3	Williams	35924	1995 TZ ₁
1995 TG ₂	15.4	0.15	19990810	353.66705	112.58184	218.11551	2.54074	0.1979615	2.7396683	46	3	1994–1999	0.50	M-v	2	Williams	36072	1995 TG ₂
1995 TY ₂	16.3	0.15	19990810	351.52589	343.87921	8.47620	10.69361	0.2003447	2.5474014	20	2	1995–1999	0.33	M-v	3	Williams	35925	1995 TY ₂
1995 TB ₈	14.0	0.15	19990810	166.82823	303.16341	257.81758	1.55695	0.0607727	2.5888593	72	4	1989–1999	0.50	M-v	4	Williams	35693	1995 TB ₈
1995 TC ₈	14.3	0.15	19990810	60.29914	234.31823	116.86661	5.43005	0.1617249	2.2747492	26	5	1971–1999	0.75	M-v	1	Williams	32309	1995 TC ₈
1995 TE ₈	14.4	0.15	19990810	53.27395	171.35372	178.99341	7.52904	0.2186114	2.3122806	39	3	1995–1999	0.63	M-v	2	Williams	32749	1995 TE ₈
1995 UG	15.4	0.15	19990810	327.69923	141.80637	242.32114	3.71486	0.3203899	2.6011382	63	3	1995–1999	0.53	M-v	2	Williams	36072	1995 UG
1995 UQ ₁	14.7	0.15	19990810	15.06380	182.50778	214.24176	4.57825	0.2318047	2.3612062	38	3	1995–1999	0.41	M-v	2	Williams	29625	1995 UQ ₁
1995 UJ ₂	14.6	0.15	19990810	24.84947	3.27813	12.22680	3.35665	0.2189606	2.3671579	49	3	1995–1999	0.36	M-v	2	Williams	29665	1995 UJ ₂
1995 UW ₂	15.0	0.15	19990810	357.76187	130.84461	261.02306	1.48799	0.1961440	2.4412517	54	4	1991–1999	0.45	M-v	2	Williams	36072	1995 UW ₂
1995 UX ₂	13.4	0.15	19990810	108.09129	219.71486	30.45442	11.68986	0.1230333	2.9821452	54	4	1992–1999	0.53	M-v	1	Williams	29946	1995 UX ₂
1995 UM ₃	14.5	0.15	19990810	313.03149	20.64468	8.68131	5.87465	0.1127809	2.7316033	34	2	1995–1999	0.73	M-v	4	Williams	35925	1995 UM ₃
1995 UP ₃	13.9	0.15	19990810	65.38008	330.33957	7.98374	4.39634	0.1576507	2.3378578	20	5	1977–1999	0.61	M-v	1	Williams	32309	1995 UP ₃
1995 UU ₃	14.4	0.15	19990810	282.84142	48.19669	29.34443	4.04751	0.2009503	2.6876613	64	3	1995–1999	0.63	M-v	3	Williams	36072	1995 UU ₃
1995 UX ₃	14.0	0.15	19990810	23.12008	356.27054	18.28524	6.65944	0.1292126	2.4079999	16	3	1991–1999	0.60	M-v	4	Williams	26180	1995 UX ₃
1995 UB ₄	16.7	0.15	19990810	138.25123	17.16792	32.77601	9.20290	0.4104746	2.6095752	128	2	1995–1999	0.51	M-v	2	Williams	35606	1995 UB ₄
1995 UP ₄	13.3	0.15	19990810	14.47058	330.37350	63.07572	7.94694	0.1364879	2.4155549	51	7	1976–1999	0.67	M-v	1	Williams	32309	1995 UP ₄
1995 UT ₄	13.3	0.15	19990810	292.35964	52.34055	52.30126	14.20943	0.1405251	2.5568609	42	5	1991–1999	0.43	M-v	2	Williams	32518	1995 UT ₄
1995 UH ₅	14.1	0.15	19990810	37.68072	288.41515	46.06624	5.55319	0.1233865	2.4511877	51	5	1991–1999	0.65	M-v	1	Williams	36072	1995 UH ₅
1995 UO ₅	17.2	0.15	19990810	232.55305	150.95420	38.76538	36.17053	0.6437786	1.5603426	68	4	1995–1999	0.61	M-v	3	Williams	30901	1995 UO ₅
1995 UG ₆	14.7	0.15	19990810	354.61026	14.83531	7.85875	2.72684	0.1681601	2.5207551	37	3	1995–1999	0.59	M-v	4	Williams	30472	1995 UG ₆
1995 UK ₆	14.2	0.15	19990810	26.20494	29.95898	341.66261	1.89748	0.2040376	2.4017492	26	5	1980–1999	0.65	M-v	2	Williams	30093	1995 UK ₆
1995 UL ₇	14.1	0.15	19990810	28.79837	341.48224	25.19514	2.39614	0.2195248	2.4038217	20	3	1991–1999	0.51	M-v	4	Williams	26423	1995 UL ₇
1995 UP ₇	13.4	0.15	19990810	317.05590	250.11656	175.85116	5.49059	0.1150080	2.5616682	39	4	1993–1999	0.61	M-v	3	Williams	31008	1995 UP ₇
1995 UB ₈	14.2	0.15	19990810	336.72456	27.34524	65.54069	4.14725	0.1226645	2.3335983	36	3	1995–1999	0.62	M-v	4	Williams	35694	1995 UB ₈
1995 UE ₈	14.0	0.15	19990810	130.11378	170.47851	35.89335	8.33379	0.0614632	2.8061191	33	5	1988–1999	0.74	M-v	2	Williams	36072	1995 UE ₈
1995 UP ₈	14.6	0.15	19990810	141.92130	290.89961	355.22223	3.36678	0.1391596	2.2598757	69	4	1995–1999	0.72	M-v	2	Williams	32749	1995 UP ₈
1995 UR ₈	16.1	0.15	19990810	16.20324	288.15476	32.73190	4.71447	0.2355147	2.5592693	66	4	1991–1999	0.66	M-v	3	Williams	36072	1995 UR ₈
1995 US ₈	13.0	0.15	19990810	116.61812	213.94318	69.56280	12.08967	0.0863604	2.4021430	25	4	1990–1999	0.81	M-v	2	Williams	29319	1995 US ₈

1995 UB ₁₅	15.1	0.15	19990810	231.32374	142.69179	14.46463	3.92270	0.1641004	2.5619070	29	3	1995–1999	0.38	M-v	3	Williams	32749	1995 UB ₁₅
1995 UQ ₁₆	13.9	0.15	19990810	70.47966	201.07815	85.10389	4.83368	0.1664356	2.5823402	64	4	1995–1999	0.57	M-v	1	Williams	32309	1995 UQ ₁₆
1995 UV ₁₆	14.7	0.15	19990810	60.57851	212.05252	76.38822	5.96836	0.2095027	2.5967235	50	3	1995–1999	0.64	M-v	2	Williams	32309	1995 UV ₁₆
1995 UB ₂₁	14.6	0.15	19990810	96.04261	58.99982	208.60404	7.59726	0.1503875	2.4613198	62	4	1991–1999	0.53	M-v	3	Williams	32309	1995 UB ₂₁
1995 UF ₂₄	15.3	0.15	19990810	21.40877	34.12254	286.60034	2.02809	0.1498533	2.6242519	75	3	1995–1999	0.67	M-v	3	Williams	36072	1995 UF ₂₄
1995 UK ₂₈	14.3	0.15	19990810	31.46177	294.05106	40.50203	5.70434	0.1430338	2.4468160	58	3	1995–1999	0.59	M-v	3	Williams	32309	1995 UK ₂₈
1995 UK ₄₄	13.9	0.15	19990810	49.54593	92.93091	255.08215	5.76767	0.1467176	2.3548204	29	5	1976–1999	0.65	M-v	2	Williams	29665	1995 UK ₄₄
1995 UQ ₄₄	13.7	0.15	19990810	21.52577	303.74301	17.29318	12.98524	0.1690658	2.5781194	73	3	1995–1999	0.67	M-v	3	Williams	36072	1995 UQ ₄₄
1995 UY ₄₄	14.6	0.15	19990810	11.67630	332.55780	34.97115	10.02602	0.2068266	2.4890360	78	4	1991–1999	0.55	M-v	3	Williams	29665	1995 UY ₄₄
1995 UC ₄₇	14.8	0.15	19990810	331.30644	355.98534	30.32078	5.64242	0.3056700	2.5894293	48	3	1993–1999	0.55	M-v	3	Williams	36073	1995 UC ₄₇
1995 VJ	14.7	0.15	19990810	290.12641	52.45090	42.57130	3.07114	0.1331727	2.5771845	37	3	1995–1999	0.56	M-v	3	Williams	30473	1995 VJ
1995 VL	14.2	0.15	19990810	5.64290	285.00303	60.61542	12.60201	0.1721805	2.6379244	47	4	1978–1999	0.66	M-v	1	Williams	32309	1995 VL
1995 VM	13.0	0.15	19990810	139.10789	172.43321	61.29127	14.74226	0.1219656	2.6244266	31	4	1978–1999	0.39	M-v	2	Williams	26423	1995 VM
1995 VO	12.6	0.15	19990810	177.85921	97.18753	46.05354	10.86929	0.0583028	3.0007511	33	3	1995–1999	0.69	M-v	3	Williams	36073	1995 VO
1995 VT	12.2	0.15	19990810	154.04610	283.16990	231.82650	8.76379	0.0445815	3.0533849	58	3	1995–1999	0.66	M-v	3	Williams	36073	1995 VT
1995 VC ₁	13.4	0.15	19990810	307.44445	12.69348	36.19877	12.86828	0.2288273	2.6695461	28	4	1973–1999	0.52	M-v	1	Williams	36073	1995 VC ₁
1995 VK ₁	13.8	0.15	19990810	274.98155	101.99189	335.77343	1.80073	0.0730989	2.7277489	84	3	1991–1999	0.49	M-v	4	Williams	35926	1995 VK ₁
1995 VA ₂	13.8	0.15	19990810	181.40388	139.14433	59.89923	10.09695	0.0576152	2.5557643	45	5	1989–1999	0.53	M-v	2	Williams	31588	1995 VA ₂
1995 VG ₂	13.9	0.15	19990810	88.05422	303.65291	27.57866	7.87853	0.1412130	2.3150662	33	4	1995–1999	0.59	M-v	2	Williams	33342	1995 VG ₂
1995 VH ₂	14.7	0.15	19990810	34.14799	220.04646	149.62686	2.89348	0.2180697	2.3897620	26	4	1980–1999	0.54	M-v	2	Williams	26582	1995 VH ₂
1995 VJ ₂	13.9	0.15	19990810	357.91130	334.21214	67.47530	15.38182	0.1150871	2.4703485	36	3	1995–1999	0.68	M-v	3	Williams	29626	1995 VJ ₂
1995 VL ₂	14.0	0.15	19990810	23.86644	132.36477	264.58434	3.59572	0.0714642	2.3619822	49	6	1951–1999	0.66	M-v	1	Williams	32749	1995 VL ₂
1995 VX ₂	16.4	0.15	19990810	70.48357	103.90328	201.88218	1.80767	0.1816079	2.4028411	27	4	1991–1998	0.37	M-v	1	Williams	35926	1995 VX ₂
1995 VU ₁₁	15.7	0.15	19990810	14.69221	172.84280	151.83133	4.35005	0.1776606	2.6199497	35	2	1995–1999	0.60	M-v	4	Williams	35926	1995 VU ₁₁
1995 WQ	14.8	0.15	19990810	333.53464	27.82895	26.31021	3.26624	0.2286415	2.5611296	40	3	1995–1999	0.61	M-v	3	Williams	29924	1995 WQ
1995 WD ₁	14.0	0.15	19990810	283.42636	216.19739	196.20126	2.46933	0.1404976	2.8476139	38	3	1995–1999	0.58	M-v	3	Williams	35926	1995 WD ₁
1995 WG ₂	13.0	0.15	19990810	244.57642	257.82923	247.67099	10.67091	0.1092707	2.6681478	34	5	1985–1999	0.58	M-v	2	Williams	34860	1995 WG ₂
1995 WF ₃	14.0	0.15	19990810	266.97304	68.84596	57.53009	11.53349	0.2281354	2.6589489	22	4	1992–1999	0.65	M-v	2	Williams	30093	1995 WF ₃
1995 WM ₃	15.1	0.15	19990810	22.54884	273.95951	68.78672	1.50237	0.1238995	2.5837365	64	5	1991–1999	0.55	M-v	1	Williams	32054	1995 WM ₃
1995 WS ₃	15.4	0.15	19990810	347.03366	68.68821	296.73820	2.91447	0.2550650	2.5766601	103	3	1995–1999	0.53	M-v	2	Williams	36073	1995 WS ₃
1995 WV ₃	12.7	0.15	19990810	190.18938	233.89474	286.98783	18.17311	0.2166221	2.9954511	65	3	1995–1999	0.67	M-v	2	Williams	36073	1995 WV ₃
1995 WL ₄	15.0	0.15	19990810	333.10750	305.99660	137.41909	3.30358	0.1508604	2.4660064	27	5	1993–1999	0.76	M-v	2	Williams	32749	1995 WL ₄
1995 WM ₄	14.0	0.15	19990810	34.00252	236.28664	100.24136	4.26632	0.1583712	2.5902011	34	3	1995–1999	0.58	M-v	2	Williams	32310	1995 WM ₄
1995 WZ ₄	14.4	0.15	19990810	309.60075	9.63645	104.89083	3.63515	0.1383336	2.4373183	39	5	1985–1999	0.62	M-v	1	Williams	32518	1995 WZ ₄
1995 WB ₅	14.0	0.15	19990810	12.26958	96.80619	253.78257	12.78417	0.1553436	2.6330177	47	3	1995–1999	0.62	M-v	3	Williams	32518	1995 WB ₅
1995 WF ₅	13.9	0.15	19990810	294.58744	287.39200	149.92639	4.37807	0.1539402	2.6469750	43	4	1991–1999	0.65	M-v	2	Williams	36073	1995 WF ₅
1995 WG ₅	14.3	0.15	19990810	342.30712	242.96645	198.52681	5.74289	0.0803880	2.3799223	21	3	1991–1999	0.46	M-v	4	Williams	29946	1995 WG ₅
1995 WJ ₅	13.0	0.15	19990810	114.34521	16.27290	262.81936	8.53526	0.0815606	2.5827023	63	4	1990–1999	0.70	M-v	2	Williams	36073	1995 WJ ₅
1995 WE ₆	15.0	0.15	19990810	353.59964	15.89552	21.98030	2.25288	0.2086109	2.3968463	54	4	1991–1999	0.60	M-v	2	Williams	36073	1995 WE ₆
1995 WD ₇	14.5	0.15	19990810	329.99205	115.42270	257.69107	7.89778	0.1608347	2.7595108	40	2	1995–1999	0.56	M-v	4	Williams	35927	1995 WD ₇
1995 WH ₇	14.4	0.15	19990810	357.67732	292.92125	140.64450	3.09684	0.1438849	2.4129015	47	6	1989–1999	0.63	M-v	1	Williams	32518	1995 WH ₇
1995 WQ ₇	13.9	0.15	19990810	17.18768	44.51433	1.78389	0.88690	0.1836472	2.3949859	25	5	1980–1999	0.54	M-v	1	Williams	35694	1995 WQ ₇
1995 WV ₇	13.3	0.15	19990810	304.58063	31.28496	73.93361	11.43141	0.1083292	2.5429489	28	3	1991–1999	0.57	M-v	4	Williams	26582	1995 WV ₇
1995 WF ₁₃	17.1	0.15	19990810	323.49792	216.14312	177.80862	4.89146	0.0251603	2.7055649	18	2	1995–1999	0.33	M-v	5	Williams	35927	1995 WF ₁₃
1995 WL ₁₃	13.5	0.15	19990810	352.31790	274.98206	134.92677	4.15829	0.0787494	2.4667628	27	3	1995–1999	0.50	M-v	4	Williams	32749	1995 WL ₁₃
1995 WP ₁₇	15.0	0.15	19990810	5.17948	317.43225	18.06739	3.97747	0.2979831	2.5719769	68	3	1995–1999	0.43	M-v	3	Williams	36073	1995 WP ₁₇
1995 WD ₃₂	14.1	0.15	19990810	255.52705	351.82325	134.88723	3.50959	0.1068068	2.9831040	29	4	1995–1999	0.66	M-v	2	Williams	32750	1995 WD ₃₂
1995 WN ₃₃	14.1	0.15	19990810	256.26669	270.10197	208.00969	12.58564	0.1214071	2.5996255	58	4	1991–1999	0.69	M-v	3	Williams	36073	1995 WN ₃₃
1995 WL ₄₂	14.1	0.15	19990810	221.24186	46.28127	137.33262	1.06664	0.1222373	2.8990320	27	3	1995–1999	0.56	M-v	3	Williams	34013	1995 WL ₄₂
1995 XC	12.6	0.15	19990810	150.47891	283.60911	250.46619	11.73434	0.1603675	3.1675428	61	2	1995–1999	0.54	M-v	4	Williams	36073	1995 XC
1995 XE	13.2	0.15	19990810	222.28280	277.64723	278.45147	13.92479	0.0478185	2.5733684	39	3	1995–1999	0.62	M-v	3	Williams	33342	1995 XE
1995 XJ	14.2	0.15	19990810	294.37893	344.79404	81.69382	10.40439	0.1384965	2.8034762	63	3	1995–1999	0.52	M-v	2	Williams	36073	1995 XJ
1995 XW	13.1	0.15	19990810	122.11553	224.19723	54.78387	15.75848	0.0957887	2.6312301	42	4	1995–1999	0.64	M-v	1	Williams	32750	1995 XW

1995 XD ₁	14.6	0.15	19990810	334.76685	39.12471	64.91144	3.62215	0.1478057	2.4164236	29	4	1995–1999	0.61	M-v	2	Williams	32750	1995 XD ₁
1995 XK ₁	13.9	0.15	19990810	347.54243	116.40182	270.85133	11.59512	0.1882912	2.6365844	37	2	1995–1999	0.65	M-v	3	Williams	35297	1995 XK ₁
1995 XU ₁	14.9	0.15	19990810	24.30919	126.69798	186.78833	1.99738	0.1900248	2.4253683	91	3	1995–1999	0.55	M-v	2	Williams	36073	1995 XU ₁
1995 XB ₂	13.8	0.15	19990810	69.87051	267.12556	46.88035	2.16085	0.0394089	2.3535605	46	5	1990–1999	0.71	M-v	1	Williams	32054	1995 XB ₂
1995 XQ ₄	15.1	0.15	19990810	332.04934	253.84788	118.18688	5.39130	0.0834977	2.7807015	33	3	1995–1999	0.49	M-v	3	Williams	35927	1995 XQ ₄
1995 XC ₅	15.2	0.15	19990810	348.61210	186.04580	180.89082	3.55039	0.1596588	2.6611601	58	3	1993–1999	0.58	M-v	4	Williams	35927	1995 XC ₅
1995 YB	13.8	0.15	19990810	25.41061	239.41486	96.95153	13.05472	0.2367835	2.6510200	54	3	1995–1999	0.56	M-v	2	Williams	36073	1995 YB
1995 YF	14.3	0.15	19990810	85.03685	205.55110	127.81604	3.15380	0.2009558	2.3877896	40	4	1987–1999	0.67	M-v	2	Williams	34583	1995 YF
1995 YH	12.7	0.15	19990810	338.74690	94.63901	252.58936	8.82762	0.1268596	2.9851556	80	3	1995–1999	0.58	M-v	3	Williams	36073	1995 YH
1995 YL	14.2	0.15	19990810	283.53397	178.39084	275.20746	7.18485	0.1897773	2.7932006	44	2	1995–1999	0.64	M-v	4	Williams	35927	1995 YL
1995 YF ₁	13.4	0.15	19990810	128.86614	356.58693	267.92248	8.16131	0.1133818	2.7836195	31	3	1995–1999	0.62	M-v	3	Williams	33075	1995 YF ₁
1995 YJ ₁	13.2	0.15	19990810	357.37725	236.01705	128.96367	2.96047	0.0890118	2.8945946	46	5	1977–1999	0.60	M-v	2	Williams	36073	1995 YJ ₁
1995 YP ₁	13.3	0.15	19990810	110.17129	12.32187	265.34470	5.50628	0.0174458	2.7973109	42	3	1995–1999	0.61	M-v	3	Williams	32750	1995 YP ₁
1995 YJ ₃	14.2	0.15	19990810	277.82186	26.88641	132.01738	5.33670	0.1934621	2.5845075	36	4	1992–1999	0.61	M-v	2	Williams	32750	1995 YJ ₃
1995 YV ₃	14.1	0.15	19990810	328.94145	276.33983	119.25143	29.80037	0.4414008	2.7892733	109	3	1995–1999	0.51	M-v	2	Williams	36073	1995 YV ₃
1995 YY ₁₀	13.7	0.15	19990810	22.31625	284.92834	118.20679	15.65301	0.0843681	2.5548930	35	4	1992–1999	0.66	M-v	2	Williams	32750	1995 YY ₁₀
1995 YV ₂₂	14.4	0.15	19990810	223.37175	343.70945	150.15103	1.59402	0.1263410	3.1013039	32	3	1995–1999	0.72	M-v	4	Williams	36073	1995 YV ₂₂
1996 AP	13.8	0.15	19990810	8.17019	288.61265	109.44121	13.48652	0.1731693	2.5931657	39	3	1996–1999	0.60	M-v	3	Williams	32518	1996 AP
1996 AW	14.7	0.15	19990810	345.49789	341.20586	100.46539	2.55462	0.0829410	2.5551044	32	5	1994–1999	0.72	M-v	1	Williams	35428	1996 AW
1996 AE ₁	12.6	0.15	19990810	172.36587	255.34505	291.83548	15.07809	0.0479098	3.1071497	51	3	1995–1999	0.63	M-v	3	Williams	36073	1996 AE ₁
1996 AF ₁	13.0	0.15	19990810	349.03757	292.93337	126.01591	8.35776	0.2850126	2.5540331	32	7	1951–1999	0.74	M-v	1	Williams	32310	1996 AF ₁
1996 AR ₁	12.9	0.15	19990810	319.19477	104.38483	307.04262	9.36503	0.0472217	3.0519582	50	4	1993–1999	0.51	M-v	1	Williams	36073	1996 AR ₁
1996 AG ₂	12.4	0.15	19990810	280.06922	104.55168	311.78772	12.89188	0.0919186	3.1598310	52	3	1985–1999	0.66	M-v	2	Williams	36073	1996 AG ₂
1996 AY ₃	11.8	0.15	19990810	292.98950	258.45166	138.27084	17.66866	0.2693362	3.1760670	76	4	1996–1999	0.55	M-v	2	Williams	35694	1996 AY ₃
1996 AF ₄	14.9	0.15	19990810	333.54034	220.45287	215.50613	6.06615	0.2406779	2.6243937	26	4	1990–1999	0.79	M-v	1	Williams	30093	1996 AF ₄
1996 BB	12.9	0.15	19990810	65.84967	213.86361	119.64448	10.19759	0.1604157	2.7825115	43	5	1980–1999	0.61	M-v	1	Williams	33750	1996 BB
1996 BM	14.3	0.15	19990810	282.43063	174.13663	313.73334	2.73962	0.1279531	2.7428362	32	8	1953–1999	0.90	M-v	1	Williams	34860	1996 BM
1996 BV	14.2	0.15	19990810	51.76387	241.26892	111.03023	14.10027	0.2373041	2.5811771	24	4	1990–1999	0.73	M-v	2	Williams	32750	1996 BV
1996 BX	13.5	0.15	19990810	187.40840	105.78584	91.20119	3.26378	0.0135490	2.9006563	59	4	1996–1999	0.48	M-v	1	Williams	33075	1996 BX
1996 BB ₁	14.7	0.15	19990810	10.47644	164.39331	236.48147	3.81004	0.1847986	2.5598356	43	3	1996–1999	0.60	M-v	2	Williams	36073	1996 BB ₁
1996 BE ₁	14.0	0.15	19990810	290.77722	5.49754	80.52123	4.96429	0.1327646	2.8510510	36	4	1992–1999	0.61	M-v	2	Williams	36073	1996 BE ₁
1996 BY ₁	12.7	0.15	19990810	30.02841	24.86205	343.59590	8.86908	0.1742227	2.7857520	23	6	1977–1999	0.50	M-v	1	Williams	32519	1996 BY ₁
1996 BH ₂	13.1	0.15	19990810	14.72486	105.79973	320.84075	8.36199	0.0369834	2.5971774	55	3	1996–1999	0.62	M-v	2	Williams	35694	1996 BH ₂
1996 BJ ₂	12.7	0.15	19990810	267.75722	145.71316	301.64566	9.08388	0.0563521	3.0528828	55	3	1996–1999	0.58	M-v	4	Williams	35928	1996 BJ ₂
1996 BM ₃	12.8	0.15	19990810	238.96080	311.12921	150.36575	0.94533	0.1552453	3.1913506	56	3	1994–1999	0.59	M-v	3	Williams	36073	1996 BM ₃
1996 BP ₃	13.4	0.15	19990810	302.76353	84.33929	349.70124	9.65182	0.0996499	3.0052378	51	3	1994–1999	0.54	M-v	3	Williams	35928	1996 BP ₃
1996 BU ₃	12.6	0.15	19990810	230.78043	4.22547	129.64112	21.50911	0.0967609	3.2057531	33	4	1996–1999	0.57	M-v	2	Williams	36073	1996 BU ₃
1996 BN ₆	13.9	0.15	19990810	55.47574	239.77938	73.53096	4.02472	0.1683395	3.0081817	43	6	1993–1999	0.61	M-v	1	Williams	32310	1996 BN ₆
1996 BM ₁₇	14.6	0.15	19990810	345.35341	50.06174	43.76851	4.92825	0.1307717	2.5207242	44	3	1996–1999	0.71	M-v	3	Williams	35694	1996 BM ₁₇
1996 CZ	14.5	0.15	19990810	315.91194	276.42029	207.74283	5.51741	0.2611920	2.6074444	69	5	1990–1999	0.56	M-v	1	Williams	30473	1996 CZ
1996 CK ₁	13.7	0.15	19990810	323.48866	67.67643	25.60241	5.11073	0.1715037	2.7166410	21	3	1992–1999	0.60	M-v	4	Williams	27123	1996 CK ₁
1996 CO ₂	12.8	0.15	19990810	97.45682	164.90346	128.12185	10.84523	0.0661598	2.9981488	44	3	1996–1999	0.64	M-v	3	Williams	35694	1996 CO ₂
1996 CA ₃	12.3	0.15	19990810	183.86932	136.06718	81.09727	2.19079	0.1189385	3.1580853	43	5	1985–1999	0.74	M-v	1	Williams	35695	1996 CA ₃
1996 CF ₃	12.5	0.15	19990810	112.16931	148.99395	125.51403	12.04876	0.0353809	3.0697159	38	4	1996–1999	0.65	M-v	2	Williams	32750	1996 CF ₃
1996 CU ₈	13.7	0.15	19990810	268.30219	155.00301	356.74163	9.02801	0.0899867	2.7824147	49	3	1996–1999	0.72	M-v	4	Williams	33343	1996 CU ₈
1996 DT	13.1	0.15	19990810	173.89674	83.90302	151.75526	10.62439	0.0519100	2.9956876	36	3	1996–1999	0.86	M-v	3	Williams	33554	1996 DT
1996 DV	13.4	0.15	19990810	166.29210	69.17200	154.10759	11.79964	0.0418386	3.1738749	68	4	1996–1999	0.70	M-v	1	Williams	33075	1996 DV
1996 DE ₁	14.3	0.15	19990810	336.50334	281.53904	161.50925	3.03464	0.1426005	2.6791487	22	3	1996–1999	0.86	M-v	5	Williams	32750	1996 DE ₁
1996 DO ₁	12.3	0.15	19990810	150.53098	319.90887	292.36505	10.29831	0.1365886	3.0328638	103	4	1996–1999	0.60	M-v	1	Williams	33554	1996 DO ₁
1996 DQ ₁	13.4	0.15	19990810	252.25647	116.06305	359.41728	6.26932	0.1787647	3.0805454	66	3	1991–1999	0.51	M-v	3	Williams	36074	1996 DQ ₁
1996 EB	13.3	0.15	19990810	6.84449	345.89965	73.47737	14.73386	0.1463287	2.6025962	25	4	1996–1999	0.79	M-v	2	Williams	35695	1996 EB
1996 EG	13.5	0.15	19990810	340.93259	175.24177	205.92171	9.42528	0.1055509	3.1724054	81	2	1996–1999	0.53	M-v	3	Williams	35928	1996 EG
1996 EB ₁	13.9	0.15	19990810	32.34798	40.13950	2.51717	3.77275	0.1009261	2.7622389	80	3	1996–1999	0.76	M-v	3	Williams	35695	1996 EB ₁

1996 EQ ₂	12.2	0.15	19990810	320.53006	206.45639	196.24474	17.51075	0.2131426	3.1078787	58	4	1996–1999	0.51	M-v	2	Williams	36074	1996 EQ ₂
1996 ED ₄	13.5	0.15	19990810	82.76331	325.82166	359.29987	10.11234	0.0720601	3.0326555	42	3	1996–1999	0.51	M-v	3	Williams	34013	1996 ED ₄
1996 EJ ₁₄	14.1	0.15	19990810	40.73749	2.19521	349.16369	15.79404	0.0969045	3.0299059	20	3	1993–1999	0.39	M-v	4	Williams	29666	1996 EJ ₁₄
1996 FM ₁₆	13.4	0.15	19990810	138.20691	85.11350	211.23915	3.83599	0.0183377	3.0604340	50	4	1996–1999	0.68	M-v	1	Williams	35695	1996 FM ₁₆
1996 GE ₁₉	10.1	0.15	19990810	43.75677	64.49914	213.22200	30.80376	0.0715306	5.2652967	72	4	1996–1999	0.70	M-v	2	Williams	35695	1996 GE ₁₉
1996 GT ₁₉	13.4	0.15	19990810	344.04053	248.86349	196.67388	9.06311	0.0637496	3.0645343	50	3	1996–1999	0.90	M-v	3	Williams	32952	1996 GT ₁₉
1996 HE ₁	12.2	0.15	19990810	229.72054	128.06445	57.44768	18.68097	0.1293577	3.2063157	50	3	1996–1999	0.65	M-v	3	Williams	33076	1996 HE ₁
1996 HE ₂	12.7	0.15	19990810	168.18228	200.98344	72.45365	10.10660	0.0303303	3.1094778	45	4	1996–1999	0.70	M-v	1	Williams	33751	1996 HE ₂
1996 HV ₁₉	13.3	0.15	19990810	345.90916	218.84681	217.78327	6.99584	0.1177108	3.1957064	23	4	1976–1999	0.82	M-v	1	Williams	32675	1996 HV ₁₉
1996 HZ ₂₁	14.6	0.15	19990810	289.76021	142.90996	37.82910	14.98647	0.0876254	2.6238961	25	2	1996–1998	0.59	M-v	4	Williams	35928	1996 HZ ₂₁
1996 JO	13.2	0.15	19990810	177.13546	57.61043	215.46251	7.33962	0.0433861	3.1205724	47	5	1981–1999	0.52	M-v	1	Williams	34514	1996 JO
1996 KA	13.2	0.15	19990810	274.05529	265.85044	241.51175	11.75390	0.2342840	3.2019962	62	3	1996–1999	0.50	M-v	3	Williams	32751	1996 KA
1996 NG ₅	15.7	0.15	19990810	353.74184	292.17565	343.69332	1.72154	0.1651847	2.2544299	32	3	1995–1999	0.58	M-v	3	Williams	35608	1996 NG ₅
1996 PA ₄	15.1	0.15	19990810	20.64319	124.87967	102.79810	3.12654	0.1673771	2.3441485	79	4	1995–1999	0.60	M-v	1	Williams	35428	1996 PA ₄
1996 RG ₁	14.4	0.15	19990810	328.11664	18.16477	9.13626	5.75521	0.1654449	2.1810213	105	5	1991–1999	0.51	M-v	2	Williams	36074	1996 RG ₁
1996 SC ₁	15.8	0.15	19990810	48.09412	69.42800	181.12535	1.98862	0.1547559	2.2517103	43	2	1996–1999	0.54	M-v	4	Williams	36074	1996 SC ₁
1996 SH ₆	14.1	0.15	19990810	127.74481	355.26970	195.17932	7.94694	0.0638646	2.2960448	84	3	1996–1999	0.66	M-v	3	Williams	36074	1996 SH ₆
1996 SJ ₇	16.2	0.15	19990810	352.66627	293.54789	39.32190	1.15416	0.1845967	2.1758019	52	4	1992–1999	0.63	M-v	2	Williams	35929	1996 SJ ₇
1996 TF	15.8	0.15	19990810	11.77925	49.25108	272.48942	2.91798	0.1372777	2.1389170	70	3	1996–1999	0.59	M-v	3	Williams	35930	1996 TF
1996 TX ₃	14.9	0.15	19990810	17.08619	241.99930	35.75143	6.07451	0.0981563	2.3268631	35	3	1996–1999	0.40	M-v	3	Williams	35930	1996 TX ₃
1996 TS ₅	13.5	0.15	19990810	182.67625	216.38628	297.63002	23.62122	0.1891700	2.2744374	46	3	1991–1999	0.48	M-v	2	Williams	36074	1996 TS ₅
1996 TG ₆	14.7	0.15	19990810	139.98315	221.31628	350.63233	5.73815	0.1285871	2.2702497	63	4	1994–1999	0.59	M-v	3	Williams	35930	1996 TG ₆
1996 TJ ₆	14.7	0.15	19990810	33.61414	32.56911	244.12613	8.55673	0.1918542	2.3763274	46	3	1996–1999	0.54	M-v	2	Williams	35930	1996 TJ ₆
1996 TX ₇	15.5	0.15	19990810	32.29314	128.40977	147.84331	4.15744	0.1401683	2.2452429	58	3	1996–1999	0.66	M-v	3	Williams	36074	1996 TX ₇
1996 TC ₈	15.2	0.15	19990810	65.42930	32.98051	205.12094	2.08438	0.1413904	2.2793838	56	3	1993–1999	0.54	M-v	3	Williams	36074	1996 TC ₈
1996 TM ₉	15.9	0.15	19990810	340.60116	355.65796	0.49553	0.88239	0.0273997	2.1909692	199	3	1996–1999	0.68	M-v	4	Williams	36074	1996 TM ₉
1996 TJ ₁₀	14.9	0.15	19990810	65.64655	307.86096	12.35222	19.01499	0.0806110	1.9576915	38	3	1996–1999	0.69	M-v	2	Williams	32244	1996 TJ ₁₀
1996 TO ₁₀	14.0	0.15	19990810	291.68746	305.60646	88.89269	6.11538	0.1775068	2.2324347	46	4	1989–1999	0.69	M-v	2	Williams	35429	1996 TO ₁₀
1996 TS ₁₀	14.7	0.15	19990810	300.12952	356.91384	38.83566	5.67314	0.1420464	2.2015933	64	3	1996–1999	0.76	M-v	4	Williams	36074	1996 TS ₁₀
1996 TJ ₁₁	15.8	0.15	19990810	336.18555	33.81862	315.80596	0.85792	0.1585272	2.1984113	50	2	1996–1999	0.54	M-v	4	Williams	35930	1996 TJ ₁₁
1996 TT ₁₄	14.5	0.15	19990810	332.04209	239.01265	121.46444	3.39098	0.1955017	2.1876227	85	3	1996–1999	0.65	M-v	3	Williams	36074	1996 TT ₁₄
1996 TD ₁₅	13.4	0.15	19990810	252.23524	258.86477	200.81882	21.87470	0.2069683	2.3025241	52	3	1996–1999	0.47	M-v	3	Williams	36074	1996 TD ₁₅
1996 TR ₂₉	15.7	0.15	19990810	270.67011	224.82484	213.15583	4.80281	0.1028793	2.2178455	45	3	1996–1999	0.54	M-v	4	Williams	35930	1996 TR ₂₉
1996 UP	13.3	0.15	19990810	132.19293	315.62693	155.96757	9.51573	0.1207734	2.7713620	49	3	1996–1999	0.63	M-v	3	Williams	35429	1996 UP
1996 UW	15.2	0.15	19990810	328.26465	281.69222	39.47534	5.08061	0.3020160	2.3561675	55	2	1996–1999	0.59	M-v	4	Williams	35429	1996 UW
1996 UZ	14.4	0.15	19990810	237.14671	249.73523	219.31203	3.91430	0.1095754	2.2962339	82	3	1996–1999	0.75	M-v	4	Williams	36074	1996 UZ
1996 UB ₁	14.7	0.15	19990810	315.39052	354.64866	45.44675	6.01416	0.1396469	2.1827044	65	3	1996–1999	0.60	M-v	3	Williams	36074	1996 UB ₁
1996 UK ₄	16.4	0.15	19990810	8.35739	281.59141	43.89132	3.21575	0.1187233	2.1576567	58	2	1996–1999	0.52	M-v	4	Williams	35931	1996 UK ₄
1996 VT	16.1	0.15	19990810	34.41680	45.50036	224.43228	2.40538	0.1546161	2.2337323	32	2	1996–1999	0.60	M-v	4	Williams	35931	1996 VT
1996 VW	14.9	0.15	19990810	277.73927	199.86354	220.70737	3.48080	0.1216787	2.2458261	67	3	1996–1999	0.55	M-v	3	Williams	36074	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	36074	1996 VB ₁
1996 VJ ₂	15.0	0.15	19990810	23.87089	83.96836	202.38411	4.88967	0.1508279	2.2448153	138	3	1996–1999	0.48	M-v	2	Williams	36074	1996 VJ ₂
1996 VG ₆	15.7	0.15	19990810	194.85104	88.07689	65.89617	7.30429	0.0460793	2.3432244	24	4	1978–1999	0.69	M-v	1	Williams	35931	1996 VG ₆
1996 VN ₆	14.1	0.15	19990810	23.43836	359.93839	346.94945	15.49444	0.1476253	2.5250532	24	3	1996–1999	0.53	M-v	2	Williams	32245	1996 VN ₆
1996 VZ ₈	15.1	0.15	19990810	320.69470	223.65322	144.17410	1.97975	0.1612473	2.2661052	78	4	1994–1999	0.70	M-v	2	Williams	36074	1996 VZ ₈
1996 VG ₁₁	15.0	0.15	19990810	164.03280	185.90520	339.28501	6.70602	0.1457510	2.3107985	45	3	1996–1999	0.65	M-v	3	Williams	36074	1996 VG ₁₁
1996 VU ₁₇	15.9	0.15	19990810	49.34483	209.73352	87.19692	1.53863	0.0922244	2.1778815	57	3	1996–1999	0.52	M-v	3	Williams	35931	1996 VU ₁₇
1996 VX ₂₉	14.5	0.15	19990810	214.96860	79.85249	60.76621	6.18773	0.0357792	2.1785948	53	3	1996–1999	0.67	M-v	3	Williams	36074	1996 VX ₂₉
1996 VL ₃₀	15.1	0.15	19990810	320.79307	150.86152	240.05274	5.84783	0.1873008	2.1867092	52	3	1996–1999	0.58	M-v	4	Williams	36074	1996 VL ₃₀
1996 VP ₃₀	13.8	0.15	19990810	252.65880	154.84949	233.42272	11.89760	0.2473061	2.5886685	51	3	1996–1999	0.81	M-v	4	Williams	35071	1996 VP ₃₀
1996 WF	16.6	0.15	19990810	303.65841	17.97259	27.53393	1.70622	0.1499018	2.1953823	50	2	1996–1999	0.58	M-v	3	Williams	35931	1996 WF
1996 WX	15.8	0.15	19990810	259.93116	46.90601	46.39499	6.88622	0.1113037	2.2421261	48	3	1996–1999	0.60	M-v	3	Williams	36075	1996 WX
1996 WA ₁	14.4	0.15	19990810	252.55115	188.74495	286.20827	2.48529	0.0856962	2.2667019	66	3	1996–1999	0.61	M-v	3	Williams	36075	1996 WA ₁

1996 WC ₂	14.5	0.15	19990810	135.62219	119.26925	69.90119	8.02602	0.0327328	2.3832457	77	4	1991–1999	0.67	M-v	1	Williams	36075	1996 WC ₂
1996 WE ₃	14.8	0.15	19990810	102.18398	11.96710	238.85535	5.37673	0.0902989	2.2861672	92	3	1996–1999	0.59	M-v	3	Williams	36075	1996 WE ₃
1996 WJ ₃	13.5	0.15	19990810	112.69619	275.12320	206.98476	10.06281	0.1286551	3.0104598	62	3	1995–1999	0.64	M-v	3	Williams	35430	1996 WJ ₃
1996 XU	15.2	0.15	19990810	16.12169	62.03830	250.46226	4.22066	0.1068563	2.3239100	67	3	1996–1999	0.64	M-v	3	Williams	36075	1996 XU
1996 XK ₁	15.4	0.15	19990810	308.87276	103.80795	285.44146	1.44155	0.2073674	2.3591662	36	4	1994–1999	0.69	M-v	2	Williams	35932	1996 XK ₁
1996 XL ₁	14.3	0.15	19990810	294.91707	337.50756	88.01871	7.64848	0.0752976	2.3273130	56	3	1996–1999	0.59	M-v	3	Williams	36075	1996 XL ₁
1996 XO ₁	14.4	0.15	19990810	234.96128	192.31696	284.70483	5.16663	0.0812702	2.4262646	52	2	1996–1999	0.54	M-v	4	Williams	35932	1996 XO ₁
1996 XM ₂	14.4	0.15	19990810	24.37327	248.98852	82.75327	5.00980	0.2404853	2.2124031	81	3	1996–1999	0.50	M-v	2	Williams	36075	1996 XM ₂
1996 XD ₃	15.1	0.15	19990810	174.18828	76.85091	131.15531	2.21667	0.0662887	2.2711639	31	4	1991–1999	0.65	M-v	2	Williams	28871	1996 XD ₃
1996 XG ₅	15.1	0.15	19990810	262.07977	24.30652	61.52908	3.19206	0.1066496	2.3578312	53	3	1996–1999	0.70	M-v	4	Williams	36075	1996 XG ₅
1996 XM ₅	13.7	0.15	19990810	162.01981	291.56266	293.06170	3.89670	0.1091522	2.2646094	27	3	1996–1999	0.41	M-v	4	Williams	32676	1996 XM ₅
1996 XN ₅	15.3	0.15	19990810	265.47838	19.34150	68.65588	3.13496	0.1757635	2.3728284	28	2	1996–1999	0.60	M-v	5	Williams	35932	1996 XN ₅
1996 XP ₅	14.8	0.15	19990810	318.58891	326.92864	46.93914	2.97493	0.2223169	2.3690718	20	2	1996–1999	0.47	M-v	4	Williams	35301	1996 XP ₅
1996 XQ ₅	14.3	0.15	19990810	273.53544	39.24127	75.42489	2.68098	0.1005577	2.2019500	41	3	1991–1999	0.57	M-v	4	Williams	29140	1996 XQ ₅
1996 XB ₆	14.1	0.15	19990810	195.76349	59.43776	84.99744	13.47116	0.0776894	2.5313644	37	3	1996–1999	0.61	M-v	2	Williams	36075	1996 XB ₆
1996 XK ₇	15.1	0.15	19990810	267.31161	282.43680	153.09729	2.42596	0.1883233	2.3168982	28	2	1996–1999	0.36	M-v	4	Williams	35933	1996 XK ₇
1996 XB ₉	14.1	0.15	19990810	287.16706	266.11442	76.29221	15.68532	0.1527656	2.6080706	53	2	1996–1999	0.77	M-v	4	Williams	35430	1996 XB ₉
1996 XA ₁₂	14.3	0.15	19990810	133.90899	192.58043	86.60266	5.40352	0.2086124	2.1637632	36	5	1979–1999	0.69	M-v	2	Williams	33555	1996 XA ₁₂
1996 XY ₁₇	14.8	0.15	19990810	299.12619	164.25040	252.23345	5.71254	0.1004406	2.2142604	71	3	1996–1999	0.51	M-v	3	Williams	35933	1996 XY ₁₇
1996 XV ₁₈	15.1	0.15	19990810	263.30343	222.78255	216.63325	3.61930	0.0384249	2.5408155	37	3	1996–1999	0.53	M-v	4	Williams	36075	1996 XV ₁₈
1996 XW ₁₈	14.4	0.15	19990810	77.46670	192.20845	115.41243	7.77284	0.1315985	2.2965185	83	4	1995–1999	0.50	M-v	1	Williams	32519	1996 XW ₁₈
1996 XY ₁₈	14.3	0.15	19990810	246.18330	210.11850	231.37233	2.89426	0.1670336	2.4451690	50	3	1996–1999	0.69	M-v	3	Williams	36075	1996 XY ₁₈
1996 XD ₁₉	14.0	0.15	19990810	195.68345	296.83482	222.59290	4.23139	0.1273701	2.4517974	54	3	1996–1999	0.64	M-v	3	Williams	36075	1996 XD ₁₉
1996 XG ₁₉	14.3	0.15	19990810	245.88093	345.42133	153.28147	3.31490	0.1073015	2.2488136	34	4	1992–1999	0.47	M-v	2	Williams	28873	1996 XG ₁₉
1996 XH ₁₉	13.5	0.15	19990810	126.12078	111.12945	98.22102	15.81379	0.1509584	2.6295368	56	3	1996–1999	0.50	M-v	3	Williams	36075	1996 XH ₁₉
1996 XT ₁₉	14.7	0.15	19990810	245.83961	260.66158	244.44878	2.04669	0.0549689	2.1985492	27	3	1992–1999	0.61	M-v	5	Williams	28873	1996 XT ₁₉
1996 XU ₁₉	14.8	0.15	19990810	232.11471	238.79333	248.27612	1.18457	0.1593415	2.4170010	39	2	1996–1999	0.46	M-v	4	Williams	35933	1996 XU ₁₉
1996 XU ₂₆	14.6	0.15	19990810	277.58147	75.70923	334.03327	7.23044	0.0880320	2.2301175	72	3	1996–1999	0.55	M-v	3	Williams	36075	1996 XU ₂₆
1996 XY ₂₈	14.6	0.15	19990810	170.28335	91.90073	66.25825	1.77389	0.1139529	2.4538255	66	3	1996–1999	0.62	M-v	3	Williams	36075	1996 XY ₂₈
1996 XZ ₃₀	14.3	0.15	19990810	304.07568	122.21346	269.98246	5.47226	0.1437287	2.4407429	57	3	1996–1999	0.56	M-v	3	Williams	36075	1996 XZ ₃₀
1996 XE ₃₁	14.3	0.15	19990810	156.82424	303.53763	272.14262	10.87893	0.1273499	2.4194976	31	3	1996–1999	0.63	M-v	3	Williams	32751	1996 XE ₃₁
1996 XL ₃₁	13.9	0.15	19990810	169.55883	74.08614	140.41581	3.99150	0.1060450	2.3316637	46	5	1983–1999	0.58	M-v	1	Williams	32312	1996 XL ₃₁
1996 XX ₃₁	13.3	0.15	19990810	68.67136	296.41905	349.67643	12.33566	0.1439513	2.3783963	38	4	1995–1999	0.42	M-v	1	Williams	35698	1996 XX ₃₁
1996 XZ ₃₁	14.7	0.15	19990810	164.11702	137.06612	91.03988	7.11706	0.0899212	2.2215416	19	3	1996–1999	0.72	M-v	4	Williams	32247	1996 XZ ₃₁
1996 YD	13.8	0.15	19990810	256.21876	86.68120	43.71433	2.48408	0.0891834	2.2602226	67	4	1984–1999	0.53	M-v	1	Williams	29947	1996 YD
1996 YF	14.2	0.15	19990810	300.84003	357.64737	77.93657	5.72379	0.1210888	2.2578202	44	6	1980–1999	0.77	M-v	1	Williams	32312	1996 YF
1996 YO	14.9	0.15	19990810	313.49295	192.06552	252.12210	2.08154	0.0901991	2.1728508	22	4	1979–1999	0.68	M-v	2	Williams	29141	1996 YO
1996 YR	15.5	0.15	19990810	333.18980	298.07588	100.29181	7.05139	0.1678153	2.2382449	35	4	1989–1999	0.52	M-v	2	Williams	35698	1996 YR
1996 YX	14.2	0.15	19990810	306.56297	148.09843	276.15149	6.99370	0.0808388	2.3105224	40	2	1996–1999	0.52	M-v	4	Williams	35934	1996 YX
1996 YY	13.1	0.15	19990810	119.98525	318.99685	287.12142	10.21809	0.2592466	2.5528628	47	5	1986–1999	0.60	M-v	1	Williams	32312	1996 YY
1996 YC ₁	14.2	0.15	19990810	166.23484	288.52052	273.36108	6.37800	0.1490312	2.4838711	23	3	1995–1999	0.42	M-v	4	Williams	29141	1996 YC ₁
1996 YG ₁	14.8	0.15	19990810	87.89328	189.38181	77.19443	12.85256	0.1195433	2.4860921	103	3	1996–1999	0.62	M-v	2	Williams	36075	1996 YG ₁
1996 YO ₁	14.4	0.15	19990810	163.36254	299.95702	273.90232	1.53997	0.1190626	2.4237127	43	4	1982–1999	0.42	M-v	1	Williams	32312	1996 YO ₁
1996 YT ₁	13.1	0.15	19990810	301.48404	83.12259	296.21435	14.16158	0.1310613	2.6351208	42	2	1996–1999	0.40	M-v	4	Williams	36075	1996 YT ₁
1996 YL ₂	14.3	0.15	19990810	146.00806	94.71539	97.10254	7.14306	0.0639877	2.4024072	66	3	1996–1999	0.57	M-v	3	Williams	36075	1996 YL ₂
1997 AD	13.5	0.15	19990810	186.51862	236.77575	294.75842	11.87429	0.1563430	2.5288522	52	2	1997–1999	0.45	M-v	4	Williams	35934	1997 AD
1997 AE	13.3	0.15	19990810	7.01083	356.60005	311.79992	7.46060	0.1233011	2.7186521	85	3	1997–1999	0.51	M-v	2	Williams	36075	1997 AE
1997 AG	14.6	0.15	19990810	313.21110	99.23179	315.81703	3.98158	0.0785960	2.3188409	49	3	1989–1999	0.45	M-v	2	Williams	36075	1997 AG
1997 AQ	15.0	0.15	19990810	322.33890	300.27613	118.38189	7.92155	0.1232671	2.2571107	32	3	1996–1999	0.43	M-v	3	Williams	36075	1997 AQ
1997 AR	14.7	0.15	19990810	124.30172	323.83740	292.48428	2.08572	0.1404320	2.4116017	44	6	1987–1999	0.70	M-v	1	Williams	32312	1997 AR
1997 AS	14.4	0.15	19990810	79.28589	174.86131	114.25339	5.68266	0.1923272	2.4486330	63	3	1997–1999	0.63	M-v	3	Williams	32312	1997 AS
1997 AT	13.3	0.15	19990810	335.93919	250.07775	110.06731	8.56161	0.2358930	2.4532784	59	3	1997–1999	0.56	M-v	2	Williams	36075	1997 AT
1997 AV	14.4	0.15	19990810	296.63959	126.64337	319.29583	3.93490	0.1241815	2.2707944	37	2	1997–1999	0.67	M-v	4	Williams	35934	1997 AV

1997 AB ₁	15.4	0.15	19990810	316.08721	311.35222	84.92268	4.09270	0.2565182	2.3027435	35	3	1994–1999	0.58	M-v	4	Williams	35934	1997 AB ₁
1997 AC ₁	14.6	0.15	19990810	55.41574	260.94036	41.32484	2.51918	0.0820271	2.4754908	67	4	1994–1999	0.54	M-v	1	Williams	32312	1997 AC ₁
1997 AE ₁	14.3	0.15	19990810	194.01153	202.03135	301.77402	11.14376	0.1091629	2.6690989	27	2	1997–1999	0.58	M-v	4	Williams	35934	1997 AE ₁
1997 AK ₁	14.0	0.15	19990810	279.77142	14.81439	89.07647	5.40417	0.0800555	2.2765288	46	5	1989–1999	0.68	M-v	1	Williams	32057	1997 AK ₁
1997 AR ₁	14.3	0.15	19990810	130.15210	175.59308	78.60733	3.35893	0.1699613	2.4091343	37	4	1991–1999	0.59	M-v	1	Williams	35698	1997 AR ₁
1997 AA ₂	13.5	0.15	19990810	177.38628	133.13172	28.77772	2.82873	0.1426669	2.6820946	65	4	1984–1999	0.66	M-v	2	Williams	36075	1997 AA ₂
1997 AZ ₂	14.5	0.15	19990810	338.77178	38.97076	330.01539	9.29204	0.2335560	2.3612031	76	2	1997–1999	0.50	M-v	3	Williams	35934	1997 AZ ₂
1997 AC ₃	13.5	0.15	19990810	133.18478	226.87202	327.70683	11.70841	0.0822236	2.7916871	46	2	1997–1999	0.61	M-v	4	Williams	35935	1997 AC ₃
1997 AF ₃	14.9	0.15	19990810	242.34583	102.07212	34.81431	5.15510	0.1294457	2.3681223	41	5	1981–1999	0.55	M-v	1	Williams	34871	1997 AF ₃
1997 AW ₃	14.1	0.15	19990810	275.94250	342.23452	131.56464	5.54065	0.0528366	2.2779627	30	4	1980–1999	0.55	M-v	1	Williams	29120	1997 AW ₃
1997 AZ ₃	13.5	0.15	19990810	193.38837	28.99921	128.35950	15.45281	0.0437743	2.5982324	37	3	1997–1999	0.56	M-v	3	Williams	36075	1997 AZ ₃
1997 AA ₄	15.4	0.15	19990810	298.70591	121.03774	283.83990	2.20984	0.1876973	2.4743883	21	2	1997–1999	0.70	M-v	5	Williams	35935	1997 AA ₄
1997 AB ₄	15.4	0.15	19990810	316.79180	76.90657	321.35831	2.68057	0.2138242	2.3705549	40	2	1997–1999	0.45	M-v	4	Williams	35935	1997 AB ₄
1997 AD ₄	15.0	0.15	19990810	232.97450	150.46034	325.38853	3.54479	0.0838273	2.5745525	44	2	1997–1999	0.54	M-v	4	Williams	35935	1997 AD ₄
1997 AH ₄	16.0	0.15	19990810	295.86547	107.79366	317.64464	1.56996	0.1883144	2.3727133	37	4	1981–1999	0.65	M-v	1	Williams	35935	1997 AH ₄
1997 AJ ₄	14.6	0.15	19990810	190.09958	307.20966	279.69038	5.94650	0.1206766	2.2185133	48	3	1996–1999	0.60	M-v	2	Williams	33076	1997 AJ ₄
1997 AM ₄	13.9	0.15	19990810	73.36114	144.17607	133.01142	13.81488	0.1499273	2.6799505	52	3	1997–1999	0.58	M-v	2	Williams	36075	1997 AM ₄
1997 AP ₄	14.0	0.15	19990810	227.34142	308.62990	198.55525	1.50233	0.1530464	2.4274477	57	4	1988–1999	0.46	M-v	2	Williams	31422	1997 AP ₄
1997 AQ ₄	14.8	0.15	19990810	202.80740	87.08216	111.17522	5.02889	0.0838579	2.2961659	27	5	1989–1999	0.69	M-v	1	Williams	35302	1997 AQ ₄
1997 AV ₄	13.4	0.15	19990810	114.65149	83.62719	132.87096	7.55321	0.0571934	2.7906705	64	3	1997–1999	0.66	M-v	3	Williams	35935	1997 AV ₄
1997 AE ₅	14.2	0.15	19990810	339.67092	54.22913	310.32317	13.20723	0.1468509	2.4605539	30	2	1997–1999	0.61	M-v	4	Williams	35936	1997 AE ₅
1997 AF ₅	14.9	0.15	19990810	47.79072	234.23536	97.09753	7.56406	0.1607759	2.2806423	50	4	1994–1999	0.76	M-v	2	Williams	32312	1997 AF ₅
1997 AM ₅	14.1	0.15	19990810	239.79179	132.02753	18.80916	3.60110	0.1403131	2.3347152	68	5	1983–1999	0.56	M-v	1	Williams	32312	1997 AM ₅
1997 AQ ₅	13.2	0.15	19990810	163.18698	97.39230	63.04671	6.62822	0.0250276	2.8321564	48	3	1997–1999	0.60	M-v	3	Williams	36075	1997 AQ ₅
1997 AZ ₅	15.1	0.15	19990810	271.29597	157.73504	275.35553	5.70338	0.0943910	2.2876932	45	2	1996–1999	0.43	M-v	4	Williams	35936	1997 AZ ₅
1997 AB ₆	14.9	0.15	19990810	237.94983	181.15779	293.07972	3.51059	0.0641692	2.2634597	62	3	1996–1999	0.55	M-v	3	Williams	36075	1997 AB ₆
1997 AQ ₆	14.4	0.15	19990810	3.85883	7.18811	68.27580	24.38304	0.0297114	1.8251506	35	3	1997–1999	0.65	M-v	3	Williams	32312	1997 AQ ₆
1997 AT ₆	15.9	0.15	19990810	318.03238	125.82879	225.99063	6.32438	0.3500618	2.1823198	63	3	1997–1999	0.59	M-v	3	Williams	35698	1997 AT ₆
1997 AW ₆	14.3	0.15	19990810	20.63893	330.38530	355.49313	4.45842	0.0951568	2.5831515	83	3	1997–1999	0.47	M-v	3	Williams	36076	1997 AW ₆
1997 AB ₇	14.9	0.15	19990810	185.43482	94.91246	107.69096	2.77819	0.0963537	2.4094201	29	3	1997–1999	0.96	M-v	4	Williams	32519	1997 AB ₇
1997 AJ ₇	15.1	0.15	19990810	217.27748	264.90144	275.54096	1.30270	0.1486733	2.3580499	29	4	1995–1999	0.72	M-v	2	Williams	32312	1997 AJ ₇
1997 AL ₇	13.8	0.15	19990810	126.49217	109.53916	149.52280	4.24220	0.0842081	2.3860069	45	4	1991–1999	0.57	M-v	1	Williams	32312	1997 AL ₇
1997 AO ₇	14.8	0.15	19990810	144.18673	121.46692	152.37489	4.90105	0.1287727	2.2121116	47	4	1995–1999	0.59	M-v	2	Williams	32751	1997 AO ₇
1997 AS ₇	13.6	0.15	19990810	184.09663	129.77232	116.32733	7.46306	0.0887581	2.3671251	34	4	1979–1999	0.53	M-v	1	Williams	32751	1997 AS ₇
1997 AH ₈	14.3	0.15	19990810	280.59472	336.33327	133.45636	7.35396	0.0586244	2.2963217	33	4	1989–1999	0.66	M-v	2	Williams	34871	1997 AH ₈
1997 AU ₉	14.5	0.15	19990810	175.66356	87.58309	150.33682	3.68517	0.1340849	2.2617392	42	4	1989–1999	0.61	M-v	1	Williams	32751	1997 AU ₉
1997 AD ₁₀	14.9	0.15	19990810	29.42356	191.93111	145.27129	4.13264	0.1996142	2.4081230	50	5	1950–1999	0.61	M-v	1	Williams	32057	1997 AD ₁₀
1997 AU ₁₀	14.7	0.15	19990810	187.08429	233.70231	334.73127	6.70541	0.0697713	2.3138859	25	3	1997–1999	0.59	M-v	2	Williams	32473	1997 AU ₁₀
1997 AS ₁₂	13.7	0.15	19990810	150.07887	127.25002	107.54324	7.95574	0.1754279	2.4433647	58	4	1987–1999	0.62	M-v	1	Williams	32519	1997 AS ₁₂
1997 AB ₁₃	14.9	0.15	19990810	351.26730	340.19374	64.85042	3.19131	0.0165016	2.2495821	32	6	1982–1999	0.63	M-v	1	Williams	29667	1997 AB ₁₃
1997 AC ₁₃	14.6	0.15	19990810	290.73348	147.67044	293.95686	3.03723	0.1228305	2.2881282	53	2	1997–1999	0.48	M-v	3	Williams	36076	1997 AC ₁₃
1997 AD ₁₃	13.0	0.15	19990810	155.18293	124.35743	93.83571	12.09470	0.2489908	2.5986160	31	4	1977–1999	0.78	M-v	2	Williams	36076	1997 AD ₁₃
1997 AG ₁₃	14.6	0.15	19990810	247.17260	66.28305	69.36906	6.50968	0.1210788	2.3503640	44	2	1997–1999	0.56	M-v	4	Williams	35936	1997 AG ₁₃
1997 AJ ₁₃	14.5	0.15	19990810	295.82832	76.87954	349.01014	8.22087	0.0896860	2.4146937	75	4	1969–1999	0.48	M-v	1	Williams	36076	1997 AJ ₁₃
1997 AT ₁₃	15.5	0.15	19990810	323.11462	345.05251	36.60212	2.87285	0.2157135	2.3818782	47	3	1996–1999	0.47	M-v	4	Williams	35936	1997 AT ₁₃
1997 AW ₁₃	13.8	0.15	19990810	108.87772	259.96570	334.46421	12.34352	0.1184725	2.7343500	51	2	1997–1999	0.69	M-v	3	Williams	35937	1997 AW ₁₃
1997 AP ₁₅	15.0	0.15	19990810	158.41010	271.54142	318.42928	7.24422	0.1746634	2.3838058	29	5	1979–1999	0.51	M-v	1	Williams	35698	1997 AP ₁₅
1997 AQ ₁₅	15.5	0.15	19990810	18.12840	286.99843	67.27527	3.99160	0.2107821	2.2364205	41	3	1996–1999	0.71	M-v	4	Williams	36076	1997 AQ ₁₅
1997 AR ₁₆	12.7	0.15	19990810	155.62675	192.27657	359.27820	18.31027	0.1550094	2.9882336	157	3	1997–1999	0.69	M-v	2	Williams	35937	1997 AR ₁₆
1997 AN ₁₇	13.4	0.15	19990810	319.81598	88.05096	285.74728	22.25194	0.2883116	2.3378406	105	3	1985–1999	0.39	M-v	1	Williams	36076	1997 AN ₁₇
1997 AU ₁₇	15.6	0.15	19990810	39.38032	211.27567	109.72501	5.00384	0.1407951	2.3525862	37	4	1995–1999	0.65	M-v	1	Williams	35698	1997 AU ₁₇
1997 AW ₁₇	15.7	0.15	19990810	200.19130	111.60382	78.27976	2.13847	0.1259823	2.3976708	42	3	1997–1999	0.31	M-v	2	Williams	32751	1997 AW ₁₇
1997 AX ₁₇	14.6	0.15	19990810	74.52944	296.15448	54.16385	3.31541	0.0428578	2.1256469	30	5	1977–1999	0.51	M-v	2	Williams	32519	1997 AX ₁₇

1997 AY ₁₇	15.5	0.15	19990810	295.85771	54.23159	21.63859	3.19240	0.2269290	2.3179918	42	2	1997–1999	0.65	M-v	4	Williams	35937	1997 AY ₁₇
1997 AZ ₁₇	13.7	0.15	19990810	264.00868	77.53602	55.49700	2.98736	0.1072253	2.2931898	68	3	1997–1999	0.53	M-v	3	Williams	36076	1997 AZ ₁₇
1997 AB ₁₈	13.9	0.15	19990810	291.44533	93.88711	350.73135	6.59598	0.0758260	2.3927180	41	2	1997–1999	0.50	M-v	4	Williams	35937	1997 AB ₁₈
1997 AE ₁₈	14.8	0.15	19990810	154.63070	311.54954	306.59650	6.21382	0.1341726	2.2181964	68	4	1988–1999	0.47	M-v	2	Williams	33076	1997 AE ₁₈
1997 AW ₁₈	14.6	0.15	19990810	230.42877	198.55722	325.03394	5.69595	0.0878822	2.2853552	43	4	1995–1999	0.69	M-v	1	Williams	35698	1997 AW ₁₈
1997 AT ₂₀	14.5	0.15	19990810	350.83263	58.36414	295.83748	4.30619	0.0962029	2.5928043	56	3	1997–1999	0.57	M-v	3	Williams	35938	1997 AT ₂₀
1997 AZ ₂₁	13.6	0.15	19990810	52.66396	242.80628	19.07108	1.04427	0.1293939	3.1143289	89	3	1997–1999	0.62	M-v	3	Williams	36076	1997 AZ ₂₁
1997 AR ₂₂	14.6	0.15	19990810	342.57361	5.49500	33.28434	5.51698	0.1241986	2.2906955	35	4	1985–1999	0.58	M-v	3	Williams	31794	1997 AR ₂₂
1997 BX	14.9	0.15	19990810	295.09039	303.76507	115.53565	3.47619	0.1549495	2.3931565	69	3	1992–1999	0.61	M-v	2	Williams	36076	1997 BX
1997 BZ	13.6	0.15	19990810	95.20892	307.73100	299.36815	10.46970	0.1603195	2.6642665	42	2	1996–1999	0.44	M-v	3	Williams	35938	1997 BZ
1997 BG ₁	13.9	0.15	19990810	183.44430	33.32683	143.93079	7.56218	0.2284438	2.6407113	30	3	1993–1999	0.74	M-v	3	Williams	30473	1997 BG ₁
1997 BN ₁	14.7	0.15	19990810	209.32496	252.59404	319.19495	5.68052	0.0782684	2.1897556	26	5	1984–1999	0.59	M-v	1	Williams	32519	1997 BN ₁
1997 BP ₁	14.8	0.15	19990810	331.90452	6.54005	30.79099	1.90949	0.2009519	2.3393285	61	4	1981–1999	0.48	M-v	1	Williams	29636	1997 BP ₁
1997 BN ₂	14.3	0.15	19990810	35.26369	293.22571	346.58455	9.62477	0.0707370	3.0659270	23	3	1997–1999	0.67	M-v	3	Williams	35938	1997 BN ₂
1997 BT ₂	14.6	0.15	19990810	247.15302	132.77323	329.49863	12.35291	0.1461577	2.5801345	32	2	1997–1999	0.57	M-v	4	Williams	35938	1997 BT ₂
1997 BX ₂	15.2	0.15	19990810	273.71567	352.84630	116.12049	8.36024	0.0688559	2.3830765	25	3	1994–1999	0.42	M-v	4	Williams	29667	1997 BX ₂
1997 BZ ₂	14.6	0.15	19990810	145.07678	82.94617	148.84935	4.06434	0.1683416	2.5954504	30	5	1982–1999	0.72	M-v	1	Williams	34872	1997 BZ ₂
1997 BA ₃	14.7	0.15	19990810	285.55209	104.36571	336.30417	1.62941	0.1837630	2.4032025	82	3	1973–1999	0.66	M-v	3	Williams	36076	1997 BA ₃
1997 BC ₃	14.3	0.15	19990810	211.05137	189.56920	351.55187	6.45358	0.0440373	2.3662690	30	3	1991–1999	0.68	M-v	4	Williams	34872	1997 BC ₃
1997 BO ₃	13.5	0.15	19990810	240.17881	44.15907	83.14971	3.64170	0.0782443	2.5287189	43	4	1989–1999	0.41	M-v	3	Williams	36076	1997 BO ₃
1997 BP ₃	14.0	0.15	19990810	291.51103	339.18552	138.13587	7.04965	0.0552335	2.2931548	18	4	1976–1999	0.55	M-v	2	Williams	29947	1997 BP ₃
1997 BS ₃	14.3	0.15	19990810	223.90101	15.78574	123.51073	8.08405	0.1310388	2.5750601	27	6	1954–1999	0.75	M-v	1	Williams	36076	1997 BS ₃
1997 BV ₃	14.8	0.15	19990810	231.22871	89.66206	108.54242	4.27700	0.1078131	2.2376236	26	3	1997–1999	0.60	M-v	3	Williams	32751	1997 BV ₃
1997 BU ₄	14.2	0.15	19990810	128.14805	72.93073	142.48158	13.82772	0.1050982	2.7842398	44	3	1997–1999	0.66	M-v	3	Williams	36076	1997 BU ₄
1997 BV ₅	15.0	0.15	19990810	259.43783	326.93287	128.25637	0.07861	0.1314225	2.5627376	62	2	1996–1999	0.49	M-v	4	Williams	35938	1997 BV ₅
1997 BS ₆	14.6	0.15	19990810	295.26413	344.18562	126.82567	7.70879	0.1109747	2.2322151	33	4	1987–1999	0.51	M-v	1	Williams	32313	1997 BS ₆
1997 BM ₈	14.6	0.15	19990810	66.15254	32.31180	306.64308	4.42254	0.1559015	2.2169888	17	3	1995–1999	0.58	M-v	4	Williams	31113	1997 BM ₈
1997 BR ₈	14.2	0.15	19990810	22.82148	178.01471	123.62036	15.07670	0.1487738	2.5855585	33	4	1993–1999	0.61	M-v	2	Williams	36076	1997 BR ₈
1997 BU ₈	14.9	0.15	19990810	0.06781	192.21763	155.73742	1.70743	0.0267598	2.6341105	46	3	1997–1999	0.79	M-v	4	Williams	36076	1997 BU ₈
1997 BC ₉	14.6	0.15	19990810	96.23102	186.88351	140.72805	4.23871	0.2342312	2.2306457	70	6	1978–1999	0.82	M-v	2	Williams	36076	1997 BC ₉
1997 BN ₉	13.9	0.15	19990810	293.83812	215.48504	201.80295	9.67724	0.0820292	2.9730208	70	3	1997–1999	0.54	M-v	3	Williams	36076	1997 BN ₉
1997 CB	14.3	0.15	19990810	55.93134	191.22475	156.58477	11.34225	0.2794679	2.3481172	56	3	1997–1999	0.47	M-v	2	Williams	36076	1997 CB
1997 CS	12.7	0.15	19990810	109.08828	235.95366	349.04394	10.06528	0.0898176	3.0033392	66	3	1992–1999	0.49	M-v	3	Williams	36076	1997 CS
1997 CE ₁	13.6	0.15	19990810	7.35459	3.70722	10.59549	7.11433	0.2389674	2.3321927	36	6	1981–1999	0.59	M-v	1	Williams	32057	1997 CE ₁
1997 CG ₁	14.1	0.15	19990810	303.53137	311.61463	95.83612	6.16815	0.1431813	2.5872997	34	3	1997–1999	0.59	M-v	4	Williams	36076	1997 CG ₁
1997 CH ₁	13.5	0.15	19990810	127.19776	278.10512	306.66287	4.80889	0.0462010	2.7254599	51	2	1997–1999	0.59	M-v	3	Williams	35939	1997 CH ₁
1997 CL ₁	15.0	0.15	19990810	269.16298	22.58663	80.47657	3.54430	0.1601095	2.4517955	24	3	1995–1999	0.59	M-v	4	Williams	35939	1997 CL ₁
1997 CN ₁	15.2	0.15	19990810	252.51714	53.81720	46.70213	4.58645	0.1734028	2.5826895	17	3	1991–1999	0.63	M-v	3	Williams	35939	1997 CN ₁
1997 CP ₁	16.0	0.15	19990810	272.70963	280.40722	150.39283	5.03933	0.1982428	2.4085282	40	3	1997–1999	0.46	M-v	3	Williams	36076	1997 CP ₁
1997 CV ₁	14.9	0.15	19990810	96.40526	197.68433	110.49869	2.62867	0.1586045	2.1314866	82	4	1992–1999	0.59	M-v	2	Williams	32519	1997 CV ₁
1997 CX ₂	14.1	0.15	19990810	314.56013	39.70847	354.10331	5.83994	0.0422616	2.7242374	58	2	1997–1999	0.46	M-v	4	Williams	35939	1997 CX ₂
1997 CT ₅	14.3	0.15	19990810	290.94572	130.74829	325.17751	6.95706	0.0556947	2.2736111	45	2	1997–1999	0.27	M-v	2	Marsden	35939	1997 CT ₅
1997 CG ₆	13.5	0.15	19990810	250.67351	147.01767	55.66987	8.10557	0.1225350	2.2176506	40	4	1954–1999	0.52	M-v	2	Williams	32676	1997 CG ₆
1997 CZ ₆	14.9	0.15	19990810	18.14717	164.58618	180.18377	2.40278	0.2121362	2.4370534	58	6	1976–1999	0.66	M-v	1	Williams	35698	1997 CZ ₆
1997 CE ₈	13.9	0.15	19990810	28.34938	203.26054	153.92263	5.97649	0.1384940	2.3030037	19	4	1981–1999	0.87	M-v	2	Williams	34518	1997 CE ₈
1997 CB ₁₀	16.8	0.15	19990810	317.50880	71.95361	324.09141	0.64440	0.1874147	2.3713015	32	3	1992–1999	0.51	M-v	3	Williams	35939	1997 CB ₁₀
1997 CW ₁₁	16.7	0.15	19990810	22.13226	323.10141	25.62873	3.00266	0.1306760	2.3890195	34	4	1994–1999	0.48	M-v	2	Williams	31423	1997 CW ₁₁
1997 CK ₁₂	16.1	0.15	19990810	287.05682	94.44744	341.61122	1.89783	0.1791152	2.4569433	39	4	1993–1999	0.48	M-v	1	Williams	36076	1997 CK ₁₂
1997 CB ₁₃	14.7	0.15	19990810	86.68345	189.35366	129.12078	4.06141	0.1524488	2.1782943	45	4	1976–1999	0.51	M-v	2	Williams	32519	1997 CB ₁₃
1997 CN ₁₃	14.4	0.15	19990810	92.68831	163.36369	135.43575	7.81326	0.1276070	2.3221987	61	4	1977–1999	0.48	M-v	2	Williams	32520	1997 CN ₁₃
1997 CZ ₁₄	16.2	0.15	19990810	3.14209	335.18278	36.30710	2.72795	0.2331609	2.2747577	25	5	1992–1999	0.34	M-v	1	Williams	32751	1997 CZ ₁₄
1997 CV ₁₅	15.4	0.15	19990810	344.44715	27.68189	330.36250	3.64403	0.1091474	2.7326430	49	3	1993–1999	0.55	M-v	3	Williams	36076	1997 CV ₁₅
1997 CM ₁₉	14.1	0.15	19990810	86.83294	218.01040	81.23279	13.53247	0.1665720	2.6827109	29	4	1990–1999	0.39	M-v	1	Williams	32520	1997 CM ₁₉

1997 CP ₁₉	13.6	0.15	19990810	277.65000	293.04133	139.14494	13.24502	0.1594864	2.5577147	56	3	1997–1999	0.63	M-v	3	Williams	36076	1997 CP ₁₉
1997 CV ₁₉	14.0	0.15	19990810	149.01546	133.71419	126.98241	6.69285	0.0913553	2.3909717	36	3	1997–1999	0.47	M-v	3	Williams	32751	1997 CV ₁₉
1997 CZ ₁₉	13.7	0.15	19990810	35.50680	249.79584	122.01321	3.82321	0.0808137	2.2991155	29	5	1990–1999	0.54	M-v	2	Williams	32313	1997 CZ ₁₉
1997 CC ₂₀	13.9	0.15	19990810	139.19144	103.21458	128.34411	4.07365	0.1227993	2.7187998	43	5	1972–1999	0.64	M-v	1	Williams	32520	1997 CC ₂₀
1997 CF ₂₂	13.9	0.15	19990810	15.60194	173.68124	158.95242	5.70180	0.0304862	2.7911902	113	3	1997–1999	0.57	M-v	3	Williams	36076	1997 CF ₂₂
1997 CK ₂₂	14.2	0.15	19990810	221.68407	335.44626	148.44537	13.68088	0.1141653	2.6941083	77	3	1997–1999	0.54	M-v	3	Williams	36076	1997 CK ₂₂
1997 CC ₂₆	15.4	0.15	19990810	299.39604	30.61454	26.36529	2.97522	0.1776192	2.3887446	76	2	1997–1999	0.49	M-v	4	Williams	35940	1997 CC ₂₆
1997 CS ₂₈	14.7	0.15	19990810	339.09300	292.95115	80.54552	3.67076	0.0722780	2.6107669	47	3	1997–1999	0.62	M-v	4	Williams	36076	1997 CS ₂₈
1997 CF ₂₉	14.1	0.15	19990810	257.48401	15.26515	170.13697	2.29965	0.1319723	2.2972615	32	3	1997–1999	0.54	M-v	4	Williams	32752	1997 CF ₂₉
1997 CK ₂₉	14.8	0.15	19990810	294.40094	123.59808	332.03788	1.17686	0.2069761	2.3034539	52	4	1990–1999	0.71	M-v	2	Williams	29948	1997 CK ₂₉
1997 CV ₂₉	7.4	0.15	19990810	353.02603	27.22450	121.22120	8.02887	0.0435157	42.0878281	35	3	1997–1999	0.46	M-v	5	Marsden	35072	1997 CV ₂₉
1997 DL	15.5	0.15	19990810	279.69178	157.62586	326.87074	4.96728	0.1588216	2.2562844	41	3	1997–1999	0.41	M-v	3	Williams	32251	1997 DL
1997 DR	14.1	0.15	19990810	33.60394	273.59576	31.51617	2.77181	0.0217433	2.7998715	38	4	1995–1999	0.58	M-v	1	Williams	36076	1997 DR
1997 EJ	12.9	0.15	19990810	161.85273	166.33004	8.45078	10.02379	0.0371864	3.0063040	59	2	1997–1999	0.50	M-v	3	Williams	35940	1997 EJ
1997 EK	13.0	0.15	19990810	174.68982	159.24121	9.89979	12.73606	0.0801447	2.9094302	52	4	1992–1999	0.55	M-v	3	Williams	36076	1997 EK
1997 EL	12.2	0.15	19990810	330.34258	215.54682	148.49643	10.95878	0.1209796	3.0019147	115	3	1997–1999	0.56	M-v	3	Williams	36076	1997 EL
1997 EN ₂	13.3	0.15	19990810	166.51023	3.42801	164.90620	10.30060	0.1129504	3.1327256	55	3	1993–1999	0.60	M-v	3	Williams	35940	1997 EN ₂
1997 EQ ₂	14.6	0.15	19990810	12.36747	277.99354	127.41910	5.95263	0.1063062	2.3014555	24	3	1997–1999	0.65	M-v	3	Williams	32474	1997 EQ ₂
1997 ER ₂	13.5	0.15	19990810	350.62462	5.33930	55.96811	4.54985	0.0563742	2.3346761	23	4	1988–1999	0.60	M-v	1	Williams	35699	1997 ER ₂
1997 EU ₂	14.7	0.15	19990810	264.94483	35.51227	102.40154	3.00033	0.1452384	2.3955970	41	5	1982–1999	0.56	M-v	1	Williams	32313	1997 EU ₂
1997 ED ₅	15.7	0.15	19990810	284.46417	261.26525	181.05042	4.42816	0.1935291	2.5709455	33	3	1995–1999	0.57	M-v	3	Williams	36076	1997 ED ₅
1997 EK ₆	13.8	0.15	19990810	347.96730	277.61302	85.47367	15.56443	0.1694449	2.5948642	70	3	1997–1999	0.57	M-v	2	Marsden	36077	1997 EK ₆
1997 EO ₇	13.0	0.15	19990810	28.92389	321.22074	330.21497	9.20805	0.1709731	3.1608952	94	3	1997–1999	0.57	M-v	2	Williams	36077	1997 EO ₇
1997 EX ₇	14.4	0.15	19990810	325.73059	50.65728	352.76094	3.93379	0.1414351	2.5520823	72	2	1997–1999	0.50	M-v	4	Williams	35941	1997 EX ₇
1997 ED ₈	15.3	0.15	19990810	213.76251	157.45242	6.24288	3.59381	0.1634526	2.5900823	41	3	1997–1999	0.54	M-v	3	Williams	32252	1997 ED ₈
1997 EL ₁₁	13.0	0.15	19990810	65.67946	270.81409	55.29743	15.43873	0.1496428	2.6116585	43	3	1986–1999	0.50	M-v	2	Williams	36077	1997 EL ₁₁
1997 EG ₁₆	16.5	0.15	19990810	216.80730	301.17109	188.00870	1.54545	0.0650727	2.9473863	23	3	1994–1999	0.26	M-v	4	Williams	35941	1997 EG ₁₆
1997 EO ₁₇	14.2	0.15	19990810	38.12866	320.25456	63.69909	7.47796	0.1671788	2.2815033	22	3	1997–1999	0.71	M-v	3	Williams	32252	1997 EO ₁₇
1997 EU ₁₇	12.7	0.15	19990810	316.54620	21.84773	334.03063	13.46438	0.0344075	3.2499801	26	2	1997–1999	0.61	M-v	3	Williams	35941	1997 EU ₁₇
1997 EY ₂₀	14.4	0.15	19990810	175.12579	29.09886	196.65189	2.09592	0.1272200	2.4374716	40	4	1995–1999	0.66	M-v	1	Williams	32520	1997 EY ₂₀
1997 EE ₂₃	13.8	0.15	19990810	316.38543	0.40558	99.36227	7.82291	0.0731888	2.3921285	48	3	1997–1999	0.53	M-v	4	Williams	32475	1997 EE ₂₃
1997 EM ₂₅	14.3	0.15	19990810	286.85723	273.10250	140.82033	15.02027	0.0876601	2.6213891	39	3	1997–1999	0.71	M-v	4	Williams	36077	1997 EM ₂₅
1997 EX ₂₅	15.0	0.15	19990810	273.61897	359.89024	135.07943	2.79500	0.1594503	2.3504167	31	4	1995–1999	0.56	M-v	1	Williams	32520	1997 EX ₂₅
1997 ER ₂₆	14.0	0.15	19990810	342.87461	194.41264	167.42712	1.88439	0.2073734	3.0571566	55	4	1994–1999	0.54	M-v	2	Williams	35941	1997 ER ₂₆
1997 EG ₂₇	15.0	0.15	19990810	244.69214	7.31946	178.42019	5.93420	0.0435064	2.2842702	52	4	1995–1999	0.62	M-v	1	Williams	33076	1997 EG ₂₇
1997 EL ₂₈	15.0	0.15	19990810	330.68778	23.45107	4.20992	9.43322	0.1913201	2.7725846	79	2	1997–1999	0.54	M-v	4	Williams	35941	1997 EL ₂₈
1997 EQ ₃₀	13.9	0.15	19990810	154.18093	111.39840	103.11176	11.51334	0.1440633	2.6903729	54	3	1997–1999	0.70	M-v	3	Williams	36077	1997 EQ ₃₀
1997 ER ₃₁	13.9	0.15	19990810	52.70524	271.61139	24.87516	0.96124	0.1526186	3.2243465	55	3	1993–1999	0.55	M-v	4	Williams	35941	1997 ER ₃₁
1997 EN ₃₂	14.8	0.15	19990810	290.08702	68.67920	6.44431	4.04513	0.0916120	2.7217540	61	3	1992–1999	0.54	M-v	4	Williams	35942	1997 EN ₃₂
1997 EK ₃₅	14.8	0.15	19990810	74.80576	189.99843	134.98815	5.88376	0.1904882	2.2696033	34	4	1988–1999	0.68	M-v	2	Williams	32752	1997 EK ₃₅
1997 EA ₃₆	14.8	0.15	19990810	218.75683	28.77050	119.54279	2.26413	0.0929470	2.5228870	44	5	1977–1999	0.64	M-v	4	Williams	30094	1997 EA ₃₆
1997 EQ ₄₁	13.5	0.15	19990810	145.59006	9.03230	171.26946	10.32909	0.0271847	2.9994828	57	4	1992–1999	0.56	M-v	1	Williams	36077	1997 EQ ₄₁
1997 EW ₄₅	14.0	0.15	19990810	205.85806	101.98667	97.80747	7.06494	0.1848958	2.5415624	53	4	1995–1999	0.40	M-v	1	Williams	32752	1997 EW ₄₅
1997 EH ₄₆	14.2	0.15	19990810	352.33817	25.44222	326.40240	12.56364	0.3205263	2.5988155	70	2	1997–1999	0.39	M-v	2	Williams	35942	1997 EH ₄₆
1997 EW ₄₇	13.3	0.15	19990810	134.30539	66.04530	196.23131	9.12429	0.1556178	2.7835851	55	5	1978–1999	0.71	M-v	1	Williams	33555	1997 EW ₄₇
1997 EK ₅₄	13.1	0.15	19990810	69.36845	240.88717	36.30190	1.63322	0.0758360	3.2134979	53	3	1991–1999	0.65	M-v	3	Williams	35942	1997 EK ₅₄
1997 EL ₅₅	12.9	0.15	19990810	309.17769	86.92454	322.92904	1.16916	0.0700246	2.8841440	82	5	1987–1999	0.55	M-v	1	Williams	35942	1997 EL ₅₅
1997 FG ₁	14.2	0.15	19990810	235.82426	28.64156	133.59762	8.63193	0.1609648	2.4183038	66	4	1991–1999	0.60	M-v	1	Williams	32520	1997 FG ₁
1997 FT ₁	14.2	0.15	19990810	0.89375	287.43124	114.67611	12.43884	0.1505878	2.6244203	22	3	1995–1999	0.28	M-v	3	Williams	29647	1997 FT ₁
1997 FW ₁	13.3	0.15	19990810	84.99015	230.23549	38.35809	12.02453	0.1220860	2.9165386	48	4	1955–1999	0.63	M-v	1	Williams	36077	1997 FW ₁
1997 FB ₂	14.2	0.15	19990810	66.12118	229.10043	120.82206	8.85232	0.2026888	2.5371963	35	5	1978–1999	0.72	M-v	2	Williams	32520	1997 FB ₂
1997 FU ₂	12.7	0.15	19990810	20.53944	341.52073	358.85882	10.78020	0.0971507	3.0497254	27	3	1988–1999	0.67	M-v	4	Williams	30766	1997 FU ₂
1997 FO ₃	14.7	0.15	19990810	119.26274	102.54747	166.68471	3.50095	0.1110901	2.7703397	36	4	1994–1999	0.82	M-v	1	Williams	35699	1997 FO ₃

1997 FB ₄	13.7	0.15	19990810	80.22346	268.60889	18.18334	10.16333	0.0779104	2.9904887	59	3	1992-1999	0.64	M-v	2	Williams	36077	1997 FB ₄
1997 GO ₁	14.3	0.15	19990810	34.74651	73.32190	307.43308	1.97055	0.1933816	2.4271718	58	6	1972-1999	0.65	M-v	1	Williams	32314	1997 GO ₁
1997 GR ₄	16.4	0.15	19990810	218.40162	147.37238	25.90934	1.97332	0.1107435	2.5543693	17	3	1993-1999	0.37	M-v	4	Williams	29647	1997 GR ₄
1997 GO ₆	13.7	0.15	19990810	179.13245	129.84089	53.38308	0.11952	0.1131085	3.1117865	68	7	1978-1999	0.61	M-v	1	Williams	32314	1997 GO ₆
1997 GP ₆	14.4	0.15	19990810	246.66919	152.02757	34.47206	4.82764	0.0769773	2.4147053	62	4	1993-1999	0.67	M-v	2	Williams	33076	1997 GP ₆
1997 GW ₆	14.3	0.15	19990810	67.12915	128.44911	218.26377	16.92884	0.1416414	2.7500814	51	3	1997-1999	0.63	M-v	3	Williams	32752	1997 GW ₆
1997 GQ ₇	12.8	0.15	19990810	344.08773	2.53077	46.35253	15.94349	0.1592891	2.7748067	63	4	1985-1999	0.59	M-v	2	Williams	36077	1997 GQ ₇
1997 GX ₇	13.7	0.15	19990810	283.61184	329.20985	100.87519	2.41113	0.1906542	3.1706448	59	3	1996-1999	0.71	M-v	4	Williams	36077	1997 GX ₇
1997 GD ₈	14.8	0.15	19990810	243.49649	174.07064	28.96173	0.29513	0.1608412	2.3247346	48	4	1995-1999	0.62	M-v	2	Williams	33077	1997 GD ₈
1997 GJ ₈	13.3	0.15	19990810	263.66479	237.54277	222.82526	10.13074	0.0958760	3.0774484	64	4	1980-1999	0.63	M-v	1	Williams	36077	1997 GJ ₈
1997 GD ₁₅	14.5	0.15	19990810	41.94180	79.75761	267.15873	1.54669	0.0839361	2.7300287	35	5	1992-1999	0.82	M-v	1	Williams	36077	1997 GD ₁₅
1997 GD ₁₇	15.1	0.15	19990810	339.07913	148.96912	276.18912	1.74028	0.1860177	2.4185902	26	4	1980-1999	0.74	M-v	2	Williams	30767	1997 GD ₁₇
1997 GF ₁₇	14.7	0.15	19990810	230.14299	9.14772	213.86963	5.24254	0.1349910	2.2492127	37	4	1990-1999	0.69	M-v	2	Williams	32961	1997 GF ₁₇
1997 GX ₁₈	15.3	0.15	19990810	271.30109	209.13804	265.24131	1.66207	0.1569017	2.5667449	34	3	1995-1999	0.44	M-v	2	Williams	30094	1997 GX ₁₈
1997 GN ₁₉	13.8	0.15	19990810	322.08670	179.76080	198.36221	22.49452	0.1235047	3.2130031	33	2	1997-1999	0.71	M-v	3	Williams	35943	1997 GN ₁₉
1997 GQ ₂₂	13.2	0.15	19990810	28.69759	131.54472	218.29023	12.91446	0.1470522	3.2114105	48	4	1987-1999	0.50	M-v	2	Williams	31114	1997 GQ ₂₂
1997 GB ₂₃	14.8	0.15	19990810	283.45774	39.79703	67.75576	4.74525	0.2233519	2.5973808	51	3	1995-1999	0.47	M-v	3	Williams	36077	1997 GB ₂₃
1997 GY ₂₆	14.6	0.15	19990810	120.65326	87.23172	139.25106	0.98327	0.1106479	3.1317218	28	3	1994-1999	0.77	M-v	4	Williams	30474	1997 GY ₂₆
1997 GH ₂₇	14.5	0.15	19990810	280.04730	90.07242	20.62092	3.07077	0.1226064	2.4786384	59	5	1989-1999	0.55	M-v	1	Williams	32314	1997 GH ₂₇
1997 GO ₂₇	18.5	0.15	19990810	20.37864	139.25466	188.92593	17.89618	0.0709884	1.4214187	79	2	1997-1999	0.51	M-v	3	Williams	35943	1997 GO ₂₇
1997 GW ₃₀	13.7	0.15	19990810	91.96201	51.32598	200.51155	0.47785	0.1059097	3.2043716	48	4	1981-1999	0.67	M-v	1	Williams	36077	1997 GW ₃₀
1997 GK ₃₃	13.1	0.15	19990810	297.81728	214.02827	199.71535	7.98068	0.0912279	3.0328502	79	3	1997-1999	0.66	M-v	3	Williams	35943	1997 GK ₃₃
1997 GM ₃₃	14.4	0.15	19990810	100.10989	113.48768	197.54789	13.30270	0.1138895	2.5996418	33	3	1997-1999	0.70	M-v	3	Williams	33077	1997 GM ₃₃
1997 GP ₃₃	14.5	0.15	19990810	301.68892	254.33306	185.64140	2.88743	0.0703192	2.6897212	44	3	1994-1999	0.66	M-v	4	Williams	29935	1997 GP ₃₃
1997 GB ₃₅	12.9	0.15	19990810	274.84507	62.43226	7.64047	12.87671	0.0367435	3.1798611	51	3	1975-1999	0.58	M-v	3	Williams	36077	1997 GB ₃₅
1997 GP ₃₅	13.9	0.15	19990810	232.50242	282.63733	203.18170	4.96898	0.1307377	3.0942850	47	5	1993-1999	0.47	M-v	1	Williams	36077	1997 GP ₃₅
1997 GP ₃₆	13.2	0.15	19990810	218.62009	323.33583	215.93585	12.25276	0.2108830	2.6520757	63	3	1997-1999	0.72	M-v	4	Williams	35700	1997 GP ₃₆
1997 GR ₃₆	14.7	0.15	19990810	324.22040	5.90812	73.70978	5.60968	0.1938237	2.5792050	34	5	1974-1999	0.69	M-v	2	Williams	32520	1997 GR ₃₆
1997 GQ ₄₁	14.3	0.15	19990810	308.45306	35.48805	88.60559	2.55276	0.1242810	2.3235321	29	5	1988-1999	0.80	M-v	1	Williams	35700	1997 GQ ₄₁
1997 GD ₄₂	14.6	0.15	19990810	257.99167	357.12009	177.09445	5.77113	0.0768413	2.3960879	33	3	1997-1999	0.78	M-v	4	Williams	35700	1997 GD ₄₂
1997 HQ	14.2	0.15	19990810	353.88112	216.97412	210.86614	5.93299	0.0938706	2.4644669	24	3	1997-1999	0.48	M-v	4	Williams	34586	1997 HQ
1997 HO ₁	15.0	0.15	19990810	310.70271	194.72440	231.54046	1.10430	0.1539417	2.6155367	47	3	1995-1999	0.58	M-v	4	Williams	30672	1997 HO ₁
1997 HX ₆	13.8	0.15	19990810	202.44699	62.52577	97.69751	2.35536	0.1572979	2.9950006	33	2	1997-1999	0.46	M-v	4	Williams	35943	1997 HX ₆
1997 HV ₈	14.7	0.15	19990810	188.59960	109.43649	64.70422	1.82713	0.0986786	3.1013250	45	4	1994-1999	0.51	M-v	1	Williams	36077	1997 HV ₈
1997 JD	13.4	0.15	19990810	225.90830	241.92295	227.21288	8.70549	0.0804155	3.0676602	53	3	1997-1999	0.50	M-v	3	Williams	36077	1997 JD
1997 JE ₁₀	12.4	0.15	19990810	233.66102	75.61831	75.24792	11.51602	0.0523685	2.9938035	47	5	1979-1999	0.65	M-v	1	Williams	30903	1997 JE ₁₀
1997 JA ₁₁	13.2	0.15	19990810	29.74976	233.24291	149.91173	14.97145	0.3091729	3.1382757	52	3	1997-1999	0.65	M-v	2	Williams	34586	1997 JA ₁₁
1997 JM ₁₁	12.7	0.15	19990810	144.27162	77.75669	97.57478	2.71516	0.1103632	3.9394602	15	3	1990-1999	0.83	M-v	4	Williams	30672	1997 JM ₁₁
1997 JB ₁₃	14.2	0.15	19990810	161.38842	55.83972	145.84828	0.94010	0.1214026	3.2072898	32	6	1991-1999	0.80	M-v	1	Williams	32753	1997 JB ₁₃
1997 JD ₁₄	13.7	0.15	19990810	63.88818	163.25462	208.71566	14.04623	0.0160053	2.5452621	41	3	1997-1999	0.61	M-v	3	Williams	33556	1997 JD ₁₄
1997 JE ₁₅	13.7	0.15	19990810	80.28100	175.31070	144.99725	2.80104	0.0515527	2.9003267	56	4	1996-1999	0.86	M-v	1	Williams	33556	1997 JE ₁₅
1997 JT ₁₅	13.1	0.15	19990810	73.25171	208.72200	116.06075	3.09818	0.0351228	2.9179212	41	3	1997-1999	0.63	M-v	3	Williams	34586	1997 JT ₁₅
1997 JP ₁₆	12.9	0.15	19990810	158.61039	129.47862	111.75992	3.54417	0.0419649	2.8703242	60	5	1989-1999	0.70	M-v	1	Williams	33556	1997 JP ₁₆
1997 KC	14.0	0.15	19990810	204.04618	140.50489	97.99006	14.46072	0.2015995	2.4407293	66	3	1997-1999	0.69	M-v	2	Williams	33498	1997 KC
1997 LU ₁	13.3	0.15	19990810	207.51272	344.14422	199.55663	12.78640	0.0515823	3.0042089	47	3	1997-1999	0.48	M-v	3	Williams	32480	1997 LU ₁
1997 MG ₁	13.2	0.15	19990810	7.64249	206.74769	189.86952	10.56396	0.1116947	3.0013412	39	3	1997-1999	0.42	M-v	3	Williams	33077	1997 MG ₁
1997 MC ₃	13.4	0.15	19990810	226.58839	252.69532	337.64141	4.07624	0.0940348	2.5643665	40	5	1992-1999	0.52	M-v	1	Williams	35700	1997 MC ₃
1997 NQ ₂	13.3	0.15	19990810	272.55687	255.44562	281.59779	29.79277	0.1330969	2.7897843	53	4	1991-1999	0.77	M-v	1	Williams	33345	1997 NQ ₂
1997 NG ₃	12.2	0.15	19990810	128.29389	162.03135	158.54111	10.86674	0.0989074	2.9983827	59	5	1987-1999	0.78	M-v	1	Williams	34015	1997 NG ₃
1997 PM ₁	13.4	0.15	19990810	320.44546	7.84845	126.09331	6.67780	0.0906031	3.1620412	69	4	1991-1999	0.47	M-v	1	Williams	33556	1997 PM ₁
1997 PL ₅	12.8	0.15	19990810	40.66975	94.97071	323.56044	6.54601	0.0121545	3.1597737	46	5	1975-1999	0.75	M-v	1	Williams	35701	1997 PL ₅
1997 SH	13.8	0.15	19990810	196.96181	357.06947	274.66825	9.07520	0.0733339	2.9670145	50	4	1977-1999	0.58	M-v	1	Williams	33345	1997 SH
1997 UP ₄	15.4	0.15	19990810	196.09897	226.10283	152.52660	2.89537	0.1664250	2.2250181	19	3	1987-1997	0.68	M-v	4	Williams	35944	1997 UP ₄

1997 UK ₇	14.2	0.15	19990810	135.93706	67.87038	325.77036	2.76625	0.0503856	2.6327907	51	3	1989–1999	0.73	M-v	4	Williams	34298	1997 UK ₇
1997 UF ₉	16.3	0.15	19990810	261.31158	157.82638	37.25556	25.89788	0.6042965	1.4424454	167	3	1997–1999	0.55	M-v	2	Williams	36077	1997 UF ₉
1997 US ₉	17.3	0.15	19990810	60.44493	357.21289	212.29813	20.01915	0.2816845	1.0520764	241	3	1997–1999	0.57	M-v	3	Williams	36077	1997 US ₉
1997 VB ₁	11.6	0.15	19990810	316.40121	165.26445	343.01365	3.85113	0.0748956	5.1985254	57	4	1978–1999	0.58	M-v	1	Williams	33754	1997 VB ₁
1997 VF ₆	13.2	0.15	19990810	72.51585	272.38146	251.56528	11.57373	0.1286253	2.5803995	52	2	1997–1999	0.75	M-v	3	Williams	35432	1997 VF ₆
1997 WB ₆	14.4	0.15	19990810	83.75595	74.25811	79.72950	4.38394	0.0597944	2.3186014	62	2	1997–1999	0.60	M-v	3	Williams	35073	1997 WB ₆
1997 WU ₂₂	15.4	0.15	19990810	188.80625	334.13802	260.90736	15.97977	0.4422649	1.4676152	87	3	1990–1999	0.51	M-v	3	Williams	31591	1997 WU ₂₂
1997 XH	14.5	0.15	19990810	87.12413	272.87965	319.43667	5.62049	0.1424999	2.2278816	61	2	1997–1999	0.62	M-v	4	Williams	35945	1997 XH
1997 XV ₁	14.8	0.15	19990810	134.18953	357.31821	119.01078	7.06593	0.0670918	2.3161227	43	3	1996–1999	0.55	M-v	3	Williams	35073	1997 XV ₁
1997 XS ₃	14.0	0.15	19990810	19.57860	121.29647	102.76587	5.45469	0.1853723	3.1688943	62	3	1995–1999	0.46	M-v	3	Williams	35433	1997 XS ₃
1997 XL ₉	14.2	0.15	19990810	133.60295	15.52337	89.70328	7.28897	0.1031796	2.4610217	67	2	1997–1999	0.64	M-v	4	Williams	35307	1997 XL ₉
1997 YA ₈	13.4	0.15	19990810	75.51857	317.11451	251.51814	11.92104	0.2141549	2.4502315	83	3	1991–1999	0.47	M-v	1	Williams	35704	1997 YA ₈
1997 YT ₁₀	13.4	0.15	19990810	20.30250	136.20298	105.85289	8.56242	0.0486411	2.7785241	70	3	1976–1999	0.55	M-v	3	Williams	35074	1997 YT ₁₀
1997 YP ₁₃	14.1	0.15	19990810	96.99169	297.78845	263.77737	6.47878	0.1959692	2.3376031	48	3	1984–1999	0.52	M-v	2	Williams	35945	1997 YP ₁₃
1997 YC ₁₄	14.0	0.15	19990810	18.25207	329.54801	312.27498	6.23097	0.1713105	2.2663140	64	4	1971–1999	0.50	M-v	2	Williams	36077	1997 YC ₁₄
1998 AK ₃	13.9	0.15	19990810	100.83169	19.75414	125.96700	4.80136	0.0400138	2.8013440	49	2	1998–1999	0.75	M-v	4	Williams	35433	1998 AK ₃
1998 AR ₄	14.8	0.15	19990810	39.62948	309.15219	309.04963	7.23646	0.2165974	2.3010832	52	2	1998–1999	0.55	M-v	4	Williams	36077	1998 AR ₄
1998 AB ₅	15.1	0.15	19990810	356.83789	155.21375	120.95031	7.68599	0.1284006	2.2997881	66	3	1996–1999	0.57	M-v	3	Williams	35434	1998 AB ₅
1998 AK ₈	16.5	0.15	19990810	228.32863	11.57395	126.85423	48.22597	0.1817577	1.7979451	155	3	1977–1999	0.45	M-v	2	Williams	35615	1998 AK ₈
1998 AV ₉	14.9	0.15	19990810	198.92828	209.65114	312.11369	0.50969	0.0650649	2.1729025	78	3	1993–1999	0.45	M-v	2	Williams	35945	1998 AV ₉
1998 AM ₁₀	14.0	0.15	19990810	308.42189	174.42668	145.93977	7.88913	0.0897494	2.4531922	82	2	1997–1999	0.61	M-v	3	Williams	35704	1998 AM ₁₀
1998 BN ₈	15.5	0.15	19990810	115.83802	198.50205	1.20030	4.52589	0.1025197	2.2397841	39	3	1996–1999	0.48	M-v	3	Williams	32059	1998 BN ₈
1998 BP ₈	14.4	0.15	19990810	12.09451	301.29234	2.15894	5.15244	0.1639991	2.2407217	64	4	1979–1999	0.54	M-v	2	Williams	35946	1998 BP ₈
1998 BN ₁₆	11.8	0.15	19990810	98.20758	57.73033	88.18927	14.62984	0.0451671	3.4012358	69	3	1985–1999	0.56	M-v	3	Williams	35704	1998 BN ₁₆
1998 BM ₁₇	15.3	0.15	19990810	23.58112	174.53539	109.30637	2.26392	0.1775768	2.4080025	41	2	1998–1999	0.57	M-v	4	Williams	36078	1998 BM ₁₇
1998 BT ₂₄	14.5	0.15	19990810	53.80760	261.90096	357.95160	5.40724	0.0979362	2.2534537	63	2	1998–1999	0.60	M-v	4	Williams	36078	1998 BT ₂₄
1998 BZ ₂₄	13.8	0.15	19990810	100.59049	354.17492	146.21435	2.72342	0.1532434	3.0907654	31	4	1993–1999	0.67	M-v	1	Williams	35435	1998 BZ ₂₄
1998 BH ₂₆	14.1	0.15	19990810	57.43284	277.13116	356.41716	15.71336	0.1889674	2.5300338	130	3	1991–1999	0.63	M-v	1	Williams	36078	1998 BH ₂₆
1998 BK ₃₃	14.6	0.15	19990810	111.56541	93.30233	91.05702	7.37203	0.0523053	2.3951563	35	2	1998–1999	0.54	M-v	3	Williams	35313	1998 BK ₃₃
1998 BN ₃₃	13.3	0.15	19990810	217.75437	356.54040	43.98056	7.49907	0.2124870	2.5209811	66	2	1998–1999	0.66	M-v	4	Williams	35435	1998 BN ₃₃
1998 BL ₃₉	14.7	0.15	19990810	15.83064	334.71583	313.17040	7.18900	0.1660611	2.2527168	50	2	1998–1999	0.42	M-v	3	Williams	36078	1998 BL ₃₉
1998 BN ₄₈	13.8	0.15	19990810	264.94567	238.65813	133.32341	5.71040	0.1398904	2.2887159	49	4	1988–1999	0.65	M-v	2	Williams	35435	1998 BN ₄₈
1998 CY	14.6	0.15	19990810	78.17048	338.05355	244.38240	4.20000	0.1431788	2.4362496	58	2	1998–1999	0.39	M-v	3	Williams	36078	1998 CY
1998 CK ₁	15.0	0.15	19990810	75.99229	142.58989	94.17046	6.32062	0.2320414	2.3528991	63	2	1998–1999	0.44	M-v	4	Williams	36078	1998 CK ₁
1998 CR ₁	14.6	0.15	19990810	34.06723	115.46805	157.66746	5.40025	0.1750193	2.5260039	111	2	1998–1999	0.60	M-v	3	Williams	36078	1998 CR ₁
1998 CC ₃	14.8	0.15	19990810	344.85180	1.22967	335.37678	3.66555	0.0667701	2.1495084	79	4	1993–1999	0.71	M-v	3	Williams	36078	1998 CC ₃
1998 CK ₃	14.3	0.15	19990810	67.07772	239.24230	1.39303	2.36050	0.1401632	2.4595414	50	3	1990–1999	0.71	M-v	2	Williams	35946	1998 CK ₃
1998 CB ₄	15.5	0.15	19990810	97.66983	185.56730	46.78993	1.96002	0.1303375	2.1777396	47	2	1998–1999	0.66	M-v	4	Williams	35946	1998 CB ₄
1998 DB	15.8	0.15	19990810	83.31215	138.74995	101.01729	2.90065	0.1665903	2.2141180	26	2	1998–1999	0.75	M-v	5	Williams	35946	1998 DB
1998 DX	14.2	0.15	19990810	303.62851	229.42992	89.83741	7.33282	0.1279510	2.3261874	102	2	1997–1999	0.65	M-v	3	Williams	35435	1998 DX
1998 DQ ₄	15.1	0.15	19990810	69.00832	71.67087	161.84305	7.46141	0.0858999	2.3641672	34	3	1992–1999	0.44	M-v	2	Williams	35435	1998 DQ ₄
1998 DR ₅	13.3	0.15	19990810	28.75501	318.77228	310.38469	14.71819	0.1755097	2.6241204	63	3	1995–1999	0.50	M-v	2	Williams	36078	1998 DR ₅
1998 DU ₇	12.8	0.15	19990810	163.20587	347.17423	90.86954	12.23137	0.0856215	2.9970421	94	3	1991–1999	0.61	M-v	3	Williams	35435	1998 DU ₇
1998 DT ₉	15.2	0.15	19990810	10.09695	346.09575	345.03069	2.03528	0.1185531	2.1311195	94	5	1990–1999	0.52	M-v	2	Williams	36078	1998 DT ₉
1998 DY ₉	14.3	0.15	19990810	156.04899	210.86181	303.62285	3.08534	0.0651580	2.1399723	86	4	1993–1999	0.54	M-v	3	Williams	36078	1998 DY ₉
1998 DD ₁₀	14.1	0.15	19990810	224.00363	183.93643	265.51912	5.63757	0.0459972	2.2318478	40	4	1986–1999	0.60	M-v	2	Williams	35435	1998 DD ₁₀
1998 DD ₁₁	14.8	0.15	19990810	66.47189	81.14764	144.96145	9.54125	0.1805655	2.7098383	57	2	1998–1999	0.79	M-v	4	Williams	35705	1998 DD ₁₁
1998 DG ₁₂	15.9	0.15	19990810	340.97820	192.36295	149.33626	7.56395	0.2801551	2.3842578	27	2	1998–1999	0.59	M-v	3	Williams	36078	1998 DG ₁₂
1998 DM ₁₃	13.7	0.15	19990810	5.62693	73.19812	235.14716	12.97488	0.0893387	2.5885433	53	3	1991–1999	0.61	M-v	3	Williams	36078	1998 DM ₁₃
1998 DP ₁₃	14.9	0.15	19990810	56.02634	283.67689	342.57261	28.28276	0.3193763	2.6592120	39	2	1998–1999	0.83	M-v	4	Williams	35947	1998 DP ₁₃
1998 DZ ₁₃	15.3	0.15	19990810	64.24906	183.86297	103.17359	1.59162	0.1852803	2.2852824	58	4	1981–1999	0.62	M-v	2	Williams	32315	1998 DZ ₁₃
1998 DD ₁₄	13.3	0.15	19990810	341.71481	136.33296	196.95395	11.52276	0.2138110	3.1646637	58	3	1997–1999	0.66	M-v	3	Williams	36078	1998 DD ₁₄
1998 DK ₁₄	15.2	0.15	19990810	75.70701	236.04528	357.05834	3.80189	0.1685147	2.3801864	48	3	1991–1999	0.60	M-v	2	Williams	36078	1998 DK ₁₄

1998 DD ₁₈	15.7	0.15	19990810	37.19705	165.92713	141.50389	6.20905	0.1907567	2.2661966	25	3	1995-1999	0.40	M-v	3	Williams	32753	1998 DD ₁₈
1998 DG ₂₀	14.0	0.15	19990810	75.45576	157.74111	95.76610	8.53191	0.0968675	2.4814631	75	2	1998-1999	0.52	M-v	3	Williams	36078	1998 DG ₂₀
1998 DJ ₂₀	15.0	0.15	19990810	47.20481	282.16191	357.04150	5.87498	0.1217922	2.2366568	79	2	1998-1999	0.70	M-v	4	Williams	36078	1998 DJ ₂₀
1998 DO ₂₃	15.8	0.15	19990810	314.70167	52.95120	10.37336	19.84361	0.0861776	1.9133401	45	3	1991-1999	0.60	M-v	3	Williams	35705	1998 DO ₂₃
1998 DV ₂₃	15.1	0.15	19990810	145.12714	166.90850	25.70264	8.44558	0.0765701	2.3675168	39	2	1998-1999	0.57	M-v	3	Williams	35947	1998 DV ₂₃
1998 DB ₂₄	14.7	0.15	19990810	100.58339	298.92381	314.16523	17.21613	0.0554330	1.9626076	60	2	1998-1999	0.48	M-v	3	Williams	36078	1998 DB ₂₄
1998 DC ₃₀	16.2	0.15	19990810	44.01548	92.49868	185.69088	6.96392	0.2577591	2.2084441	56	2	1998-1999	0.45	M-v	5	Williams	35947	1998 DC ₃₀
1998 DW ₃₁	14.8	0.15	19990810	159.86464	195.12611	316.89101	6.64458	0.0596731	2.2913054	52	3	1991-1999	0.70	M-v	3	Williams	35947	1998 DW ₃₁
1998 DB ₃₄	14.6	0.15	19990810	88.56214	103.50791	150.19364	4.76885	0.2937895	2.3659110	68	3	1995-1999	0.67	M-v	2	Williams	36078	1998 DB ₃₄
1998 DC ₃₄	15.6	0.15	19990810	75.39604	241.32799	5.74417	2.58278	0.1238629	2.3813497	38	3	1992-1999	0.61	M-v	3	Williams	35947	1998 DC ₃₄
1998 DT ₃₄	14.9	0.15	19990810	18.26181	302.35986	16.22605	5.36867	0.1833483	2.2215084	61	3	1989-1999	0.54	M-v	3	Williams	36078	1998 DT ₃₄
1998 DB ₃₅	15.2	0.15	19990810	58.95785	239.20070	25.54649	3.34709	0.1655892	2.4437376	48	2	1998-1999	0.65	M-v	4	Williams	35948	1998 DB ₃₅
1998 DC ₃₅	14.4	0.15	19990810	157.21506	359.80355	156.30740	4.83076	0.0731638	2.3248318	66	2	1998-1999	0.57	M-v	3	Williams	36078	1998 DC ₃₅
1998 DB ₃₆	14.1	0.15	19990810	35.56696	288.45974	7.24224	11.47453	0.2168887	2.3395616	84	3	1991-1999	0.60	M-v	3	Williams	36078	1998 DB ₃₆
1998 DE ₃₆	15.6	0.15	19990810	111.44623	193.63063	21.14698	5.43719	0.1162610	2.2523813	49	3	1996-1999	0.62	M-v	3	Williams	35948	1998 DE ₃₆
1998 EC ₂	15.4	0.15	19990810	319.68367	349.18697	25.84621	3.49585	0.1160485	2.3467724	41	2	1998-1999	0.72	M-v	4	Williams	35948	1998 EC ₂
1998 EW ₂	14.5	0.15	19990810	35.94200	278.13688	19.45688	9.90604	0.0881521	2.5575193	55	2	1998-1999	0.57	M-v	3	Williams	35948	1998 EW ₂
1998 EX ₂	15.2	0.15	19990810	56.19760	74.84986	194.48363	11.34638	0.1426401	2.7571374	45	2	1998-1999	0.64	M-v	3	Williams	35948	1998 EX ₂
1998 EZ ₂	13.9	0.15	19990810	14.29543	241.84444	43.96811	6.35838	0.1636449	2.5181298	46	5	1950-1999	0.83	M-v	3	Williams	36078	1998 EZ ₂
1998 EP ₃	13.5	0.15	19990810	16.18284	300.65744	6.83404	9.42112	0.1761829	2.6516564	76	3	1996-1999	0.53	M-v	3	Williams	36078	1998 EP ₃
1998 ER ₃	15.5	0.15	19990810	145.22603	147.83858	25.11535	2.30330	0.1450787	2.4186361	73	4	1977-1999	0.66	M-v	2	Williams	36078	1998 ER ₃
1998 EL ₅	14.8	0.15	19990810	221.26064	337.26131	127.73076	7.15574	0.0680578	2.3748810	48	3	1994-1999	0.83	M-v	3	Williams	36078	1998 EL ₅
1998 EF ₆	14.6	0.15	19990810	90.92071	279.16057	322.72199	20.82367	0.2489309	2.3001474	54	4	1977-1999	0.63	M-v	2	Williams	35436	1998 EF ₆
1998 EB ₈	15.8	0.15	19990810	97.53293	182.84627	65.33842	1.51860	0.1160798	2.1996685	63	3	1996-1999	0.54	M-v	3	Williams	32061	1998 EB ₈
1998 EJ ₈	14.4	0.15	19990810	15.15422	128.04265	171.11294	6.67840	0.1521007	2.5356272	82	2	1998-1999	0.67	M-v	3	Williams	35949	1998 EJ ₈
1998 EK ₈	14.0	0.15	19990810	91.49318	301.00651	276.66385	5.80728	0.0675915	2.3592422	78	2	1998-1999	0.58	M-v	3	Williams	36078	1998 EK ₈
1998 EC ₉	14.4	0.15	19990810	49.96085	176.02192	86.46932	6.30015	0.2564233	2.5500704	48	3	1991-1999	0.53	M-v	2	Williams	35949	1998 EC ₉
1998 EK ₉	12.9	0.15	19990810	191.84559	297.31837	125.56321	25.86460	0.1310196	2.3856766	65	3	1987-1999	0.61	M-v	3	Williams	35436	1998 EK ₉
1998 EB ₁₀	14.8	0.15	19990810	16.55973	16.64025	292.37282	4.35295	0.2265158	2.3082072	56	4	1992-1999	0.48	M-v	2	Williams	35949	1998 EB ₁₀
1998 EE ₁₀	14.0	0.15	19990810	52.20100	269.04706	22.71022	4.51403	0.1511072	2.2639311	86	3	1981-1999	0.52	M-v	3	Williams	32316	1998 EE ₁₀
1998 EM ₁₀	15.4	0.15	19990810	102.40954	217.62582	13.22932	6.47774	0.1620244	2.2684009	48	3	1996-1999	0.65	M-v	3	Williams	35949	1998 EM ₁₀
1998 EJ ₁₁	15.3	0.15	19990810	55.95554	160.15214	110.92467	6.55981	0.0715355	2.2603517	34	3	1995-1999	0.67	M-v	3	Williams	35950	1998 EJ ₁₁
1998 EP ₁₁	14.1	0.15	19990810	89.66643	218.52143	7.55503	13.42120	0.1800320	2.4772963	64	3	1996-1999	0.69	M-v	3	Williams	36078	1998 EP ₁₁
1998 ET ₁₁	14.6	0.15	19990810	21.50624	288.10310	23.87272	7.40177	0.2083962	2.2907503	57	2	1998-1999	0.67	M-v	4	Williams	35950	1998 ET ₁₁
1998 EW ₁₁	12.5	0.15	19990810	280.37792	209.69774	132.58142	8.61585	0.0650308	3.1605495	67	3	1993-1999	0.76	M-v	4	Williams	35436	1998 EW ₁₁
1998 EY ₁₁	14.5	0.15	19990810	46.01960	267.46182	17.90069	8.65633	0.1986515	2.3727077	63	2	1998-1999	0.63	M-v	4	Williams	35950	1998 EY ₁₁
1998 ED ₁₂	15.2	0.15	19990810	56.27800	233.20446	38.44719	6.94709	0.1027676	2.2958325	47	2	1998-1999	0.64	M-v	4	Williams	35950	1998 ED ₁₂
1998 EV ₁₂	15.0	0.15	19990810	82.99502	126.39419	113.81788	3.14933	0.1551444	2.4235881	56	2	1998-1999	0.54	M-v	4	Williams	35950	1998 EV ₁₂
1998 ER ₁₃	13.5	0.15	19990810	263.88937	205.20134	159.86449	10.62970	0.0848254	3.0520957	55	3	1990-1999	0.74	M-v	4	Williams	35436	1998 ER ₁₃
1998 FJ	15.3	0.15	19990810	79.92420	3.28583	277.90519	1.17128	0.1471695	2.1543209	84	5	1988-1999	0.51	M-v	1	Williams	34907	1998 FJ
1998 FK ₁	16.0	0.15	19990810	164.70663	183.11292	345.36058	5.04974	0.0811090	2.2302843	88	2	1998-1999	0.58	M-v	4	Williams	35951	1998 FK ₁
1998 FE ₂	14.5	0.15	19990810	63.79351	172.95374	91.39489	3.98915	0.1302201	2.5107480	102	3	1995-1999	0.54	M-v	2	Williams	36078	1998 FE ₂
1998 FK ₂	14.9	0.15	19990810	1.83125	177.26499	182.46656	22.18426	0.0823750	1.9314732	64	3	1990-1999	0.70	M-v	3	Williams	32062	1998 FK ₂
1998 FO ₂	16.1	0.15	19990810	224.36310	136.82856	4.75632	24.20997	0.1168562	1.8900751	80	3	1960-1999	0.67	M-v	2	Williams	36079	1998 FO ₂
1998 FB ₅	15.8	0.15	19990810	250.17610	275.84742	196.06120	22.37559	0.0942739	1.9568608	77	2	1998-1999	0.60	M-v	4	Williams	35951	1998 FB ₅
1998 FO ₅	14.5	0.15	19990810	104.88380	69.14868	134.08191	4.78696	0.0572120	2.6149755	104	3	1991-1999	0.61	M-v	3	Williams	36079	1998 FO ₅
1998 FQ ₅	14.7	0.15	19990810	67.90826	234.96939	41.21863	11.31538	0.2067746	2.4454793	93	2	1998-1999	0.56	M-v	3	Williams	35951	1998 FQ ₅
1998 FS ₅	15.4	0.15	19990810	46.30069	249.25048	53.53357	3.46272	0.2760220	2.5669784	48	3	1995-1999	0.51	M-v	2	Marsden	35705	1998 FS ₅
1998 FB ₆	15.8	0.15	19990810	80.11573	120.77669	153.46326	3.87286	0.1862881	2.2422169	56	3	1992-1999	0.67	M-v	3	Williams	35705	1998 FB ₆
1998 FV ₈	15.3	0.15	19990810	79.47944	185.10623	81.87311	2.38258	0.1588833	2.4016105	51	5	1991-1999	0.74	M-v	1	Williams	35705	1998 FV ₈
1998 FC ₉	15.1	0.15	19990810	268.06831	267.43747	166.63877	5.43778	0.0857337	2.2038546	67	3	1973-1999	0.71	M-v	3	Williams	36079	1998 FC ₉
1998 FF ₉	14.5	0.15	19990810	36.76858	231.69339	82.90241	3.83608	0.1881309	2.4434747	70	5	1991-1999	0.74	M-v	1	Williams	32063	1998 FF ₉
1998 FW ₉	15.7	0.15	19990810	85.31489	62.57029	194.87451	12.68986	0.1804466	2.3227182	70	3	1991-1999	0.79	M-v	3	Williams	32316	1998 FW ₉

1998 FF ₁₀	15.0	0.15	19990810	128.74905	6.01621	204.52023	5.19018	0.1438935	2.2393222	80	3	1996-1999	0.57	M-v	3	Williams	35951	1998 FF ₁₀
1998 FU ₁₀	13.9	0.15	19990810	14.29221	297.57035	357.38057	8.65477	0.1369019	2.7819808	67	3	1990-1999	0.65	M-v	3	Williams	36079	1998 FU ₁₀
1998 FV ₁₀	14.9	0.15	19990810	16.95963	42.44713	277.39221	1.43059	0.1023057	2.3126120	122	2	1998-1999	0.60	M-v	3	Williams	35952	1998 FV ₁₀
1998 FB ₁₁	14.3	0.15	19990810	104.26722	63.23978	161.78537	6.50334	0.1210045	2.7332983	56	2	1998-1999	0.70	M-v	4	Williams	35952	1998 FB ₁₁
1998 FG ₁₁	13.1	0.15	19990810	20.49861	274.17441	34.38789	15.08457	0.1147683	2.5907627	64	4	1987-1999	0.70	M-v	3	Williams	36079	1998 FG ₁₁
1998 FP ₁₁	14.5	0.15	19990810	130.03536	25.70696	168.24170	5.97129	0.1139792	2.4001358	85	4	1983-1999	0.60	M-v	3	Williams	36079	1998 FP ₁₁
1998 FM ₁₂	14.3	0.15	19990810	26.77637	138.77086	159.40202	3.98609	0.2100984	2.5669882	74	3	1995-1999	0.48	M-v	2	Williams	36079	1998 FM ₁₂
1998 FR ₁₃	13.1	0.15	19990810	235.41274	341.70030	34.65857	10.68416	0.1045363	2.9974119	49	4	1975-1999	0.66	M-v	1	Williams	35321	1998 FR ₁₃
1998 FT ₁₃	13.1	0.15	19990810	219.92197	347.54346	42.09851	10.35583	0.1057458	3.0125951	56	3	1990-1999	0.74	M-v	2	Williams	35437	1998 FT ₁₃
1998 FB ₁₄	13.9	0.15	19990810	16.51193	127.79555	167.74539	12.21766	0.2068537	2.7103418	95	3	1990-1999	0.60	M-v	2	Williams	36079	1998 FB ₁₄
1998 FQ ₁₄	14.8	0.15	19990810	48.03109	76.37650	206.81397	6.89420	0.2871324	2.6833503	90	4	1990-1999	0.66	M-v	1	Williams	35437	1998 FQ ₁₄
1998 FW ₁₄	15.1	0.15	19990810	40.87622	89.33068	205.17475	6.24813	0.1070881	2.3573734	81	3	1992-1999	0.60	M-v	2	Williams	35952	1998 FW ₁₄
1998 FY ₁₄	13.8	0.15	19990810	43.82513	285.43033	0.84840	13.23995	0.2508463	2.6703544	110	4	1990-1999	0.59	M-v	1	Williams	36079	1998 FY ₁₄
1998 FZ ₁₄	14.8	0.15	19990810	41.85633	5.20443	267.20926	5.93815	0.1626326	2.8300225	63	3	1994-1999	0.73	M-v	2	Williams	35952	1998 FZ ₁₄
1998 FD ₁₅	14.0	0.15	19990810	100.99752	24.36036	215.50181	2.30438	0.1656823	2.3070108	83	5	1977-1999	0.60	M-v	3	Williams	36079	1998 FD ₁₅
1998 FS ₁₅	14.8	0.15	19990810	43.45196	80.74572	196.74193	13.86447	0.1513708	2.5979824	62	4	1990-1999	0.70	M-v	2	Williams	36079	1998 FS ₁₅
1998 FV ₁₅	14.9	0.15	19990810	1.14737	336.51120	5.34259	4.74271	0.1210798	2.2147118	126	3	1996-1999	0.55	M-v	3	Williams	36079	1998 FV ₁₅
1998 FF ₁₆	14.6	0.15	19990810	75.05400	106.46600	161.21053	2.47971	0.1855155	2.3956395	102	3	1995-1999	0.60	M-v	3	Williams	36079	1998 FF ₁₆
1998 FU ₂₀	14.9	0.15	19990810	77.54599	103.54187	143.98014	5.11587	0.1032246	2.2848839	62	2	1998-1999	0.54	M-v	4	Williams	35953	1998 FU ₂₀
1998 FW ₂₀	14.8	0.15	19990810	79.20607	155.70230	95.66918	2.51757	0.1639063	2.3022749	52	2	1998-1999	0.57	M-v	4	Williams	35953	1998 FW ₂₀
1998 FJ ₂₂	15.0	0.15	19990810	143.51854	334.49265	202.27826	3.13664	0.1202903	2.2476219	49	4	1971-1999	0.68	M-v	2	Williams	36079	1998 FJ ₂₂
1998 FU ₂₂	14.6	0.15	19990810	43.74786	124.29741	166.09888	2.82646	0.1299966	2.2126677	73	2	1998-1999	0.57	M-v	4	Williams	35953	1998 FU ₂₂
1998 FJ ₂₅	15.3	0.15	19990810	333.59176	15.81326	330.38854	7.42479	0.0733853	2.2544589	45	3	1996-1999	0.72	M-v	3	Williams	35954	1998 FJ ₂₅
1998 FQ ₂₇	14.2	0.15	19990810	64.86511	305.58198	311.99542	4.09456	0.2432848	2.5687318	55	2	1998-1999	0.50	M-v	4	Williams	35954	1998 FQ ₂₇
1998 FM ₂₉	14.7	0.15	19990810	49.53527	91.08997	177.92072	14.84902	0.2009210	2.5569371	70	2	1998-1999	0.54	M-v	4	Williams	35954	1998 FM ₂₉
1998 FZ ₂₉	14.9	0.15	19990810	85.42866	46.32744	211.37643	4.89031	0.1630954	2.2356635	71	3	1995-1999	0.54	M-v	3	Williams	32318	1998 FZ ₂₉
1998 FL ₃₀	14.7	0.15	19990810	71.61360	35.21997	216.98334	2.21051	0.1391055	2.4129208	82	2	1998-1999	0.55	M-v	4	Williams	35955	1998 FL ₃₀
1998 FP ₃₀	14.1	0.15	19990810	42.76127	72.53706	178.97867	15.90042	0.1852216	2.9269347	46	2	1998-1999	0.71	M-v	3	Williams	36079	1998 FP ₃₀
1998 FR ₃₀	14.4	0.15	19990810	27.31017	91.12771	209.31297	1.91905	0.1872564	2.4078758	88	3	1997-1999	0.57	M-v	2	Williams	35955	1998 FR ₃₀
1998 FW ₃₀	14.5	0.15	19990810	57.78997	115.35410	164.13078	6.46566	0.1446670	2.2709815	64	4	1989-1999	0.58	M-v	1	Williams	35955	1998 FW ₃₀
1998 FY ₃₁	15.3	0.15	19990810	136.98574	356.42512	194.78223	3.69396	0.0638462	2.2326697	51	3	1976-1999	0.71	M-v	4	Williams	35955	1998 FY ₃₁
1998 FK ₃₂	14.5	0.15	19990810	150.64898	312.33200	227.45830	2.28060	0.0412802	2.2077781	85	4	1995-1999	0.56	M-v	2	Williams	35955	1998 FK ₃₂
1998 FO ₃₂	14.0	0.15	19990810	37.27006	299.81971	348.48353	11.02049	0.2648050	2.6143740	65	2	1998-1999	0.48	M-v	3	Williams	35956	1998 FO ₃₂
1998 FF ₃₄	14.2	0.15	19990810	54.10249	340.88747	301.37542	1.58592	0.1981026	2.3848769	84	3	1996-1999	0.50	M-v	3	Williams	35956	1998 FF ₃₄
1998 FT ₃₄	14.5	0.15	19990810	84.62262	31.69227	198.17874	6.01433	0.0966331	2.4861318	36	3	1995-1999	0.69	M-v	3	Williams	35956	1998 FT ₃₄
1998 FY ₃₅	14.6	0.15	19990810	68.65987	269.60309	13.34356	5.80422	0.1800508	2.2006408	83	3	1989-1999	0.55	M-v	2	Williams	36079	1998 FY ₃₅
1998 FL ₃₆	13.3	0.15	19990810	16.33474	119.09317	165.21039	6.75088	0.1136340	2.7558460	55	6	1986-1999	0.54	M-v	1	Williams	35437	1998 FL ₃₆
1998 FZ ₄₀	15.0	0.15	19990810	24.54283	40.44511	251.74233	0.13434	0.0926537	2.4846570	46	5	1991-1999	0.73	M-v	1	Williams	36079	1998 FZ ₄₀
1998 FH ₄₁	15.3	0.15	19990810	67.24554	81.84811	189.14652	2.18644	0.1904750	2.3716707	63	3	1991-1999	0.66	M-v	3	Williams	32258	1998 FH ₄₁
1998 FJ ₄₂	15.3	0.15	19990810	126.53170	302.57682	254.73766	2.21371	0.1786400	2.3542362	65	2	1998-1999	0.72	M-v	4	Williams	35956	1998 FJ ₄₂
1998 FO ₄₂	16.1	0.15	19990810	146.03550	337.06491	213.03616	3.12941	0.1092865	2.1942843	37	3	1996-1999	0.73	M-v	4	Williams	36079	1998 FO ₄₂
1998 FG ₄₃	14.2	0.15	19990810	67.28135	53.16366	183.63502	15.60612	0.1623252	2.7619521	57	3	1980-1999	0.61	M-v	2	Williams	36079	1998 FG ₄₃
1998 FN ₄₃	15.2	0.15	19990810	349.96067	352.04666	356.64597	6.78115	0.1927424	2.2116340	73	3	1986-1999	0.61	M-v	3	Williams	36079	1998 FN ₄₃
1998 FK ₄₄	14.3	0.15	19990810	20.05114	285.83585	7.07647	4.27236	0.2752060	2.9050080	57	2	1998-1999	0.68	M-v	4	Williams	35957	1998 FK ₄₄
1998 FL ₄₄	14.1	0.15	19990810	42.32414	269.97007	3.33275	13.49951	0.1562599	2.6170842	60	3	1995-1999	0.55	M-v	2	Williams	36079	1998 FL ₄₄
1998 FK ₄₇	14.6	0.15	19990810	26.16311	315.42446	352.55543	7.37539	0.1261951	2.3299076	85	2	1998-1999	0.58	M-v	3	Williams	35957	1998 FK ₄₇
1998 FR ₄₇	13.8	0.15	19990810	358.33479	6.24863	337.28009	6.78956	0.2287151	2.2124993	76	4	1943-1999	0.56	M-v	2	Williams	36079	1998 FR ₄₇
1998 FX ₄₇	14.4	0.15	19990810	17.43060	110.50647	203.60045	5.73189	0.1945331	2.4259426	88	3	1991-1999	0.53	M-v	3	Williams	36079	1998 FX ₄₇
1998 FZ ₄₇	14.8	0.15	19990810	135.54819	208.86479	341.47815	5.58154	0.0845384	2.3015025	68	3	1977-1999	0.62	M-v	4	Williams	36079	1998 FZ ₄₇
1998 FO ₄₈	14.3	0.15	19990810	115.36688	243.78780	309.10504	3.29462	0.0879299	2.5346428	79	2	1998-1999	0.66	M-v	3	Williams	36079	1998 FO ₄₈
1998 FB ₄₉	15.0	0.15	19990810	51.24480	333.03503	328.12652	2.14547	0.1766383	2.2117604	83	5	1986-1999	0.50	M-v	1	Williams	32065	1998 FB ₄₉
1998 FJ ₄₉	13.9	0.15	19990810	96.08969	26.53942	185.22914	12.60725	0.0984660	2.5885519	74	3	1991-1999	0.58	M-v	3	Williams	36079	1998 FJ ₄₉
1998 FL ₄₉	14.7	0.15	19990810	54.47000	312.71886	345.10638	2.01520	0.1466543	2.1959913	92	3	1976-1999	0.49	M-v	2	Williams	32065	1998 FL ₄₉

1998 FO ₄₉	14.2	0.15	19990810	298.50201	25.12434	358.08611	7.83523	0.1040699	2.3047387	67	4	1982–1999	0.60	M-v	2	Williams	36079	1998 FO ₄₉
1998 FQ ₄₉	14.4	0.15	19990810	2.13541	355.70561	332.88195	1.66533	0.2112566	2.4388410	90	3	1976–1999	0.61	M-v	3	Williams	36079	1998 FQ ₄₉
1998 FS ₄₉	15.3	0.15	19990810	108.71063	210.62643	1.40326	2.66534	0.1232711	2.4266416	48	2	1998–1999	0.61	M-v	4	Williams	35957	1998 FS ₄₉
1998 FN ₅₃	14.9	0.15	19990810	287.84605	183.94770	223.42484	3.05175	0.0858820	2.1467688	75	2	1998–1999	0.58	M-v	4	Williams	35957	1998 FN ₅₃
1998 FA ₅₄	15.5	0.15	19990810	111.60438	324.09422	256.90436	2.03226	0.1564877	2.3577679	64	3	1996–1999	0.52	M-v	3	Williams	35958	1998 FA ₅₄
1998 FM ₅₄	14.2	0.15	19990810	14.44745	329.71989	351.22673	5.29644	0.1994536	2.4138531	111	4	1969–1999	0.59	M-v	2	Williams	36079	1998 FM ₅₄
1998 FG ₅₆	14.5	0.15	19990810	25.06299	143.17755	160.53457	7.79004	0.1995048	2.5610187	86	2	1998–1999	0.60	M-v	3	Williams	35958	1998 FG ₅₆
1998 FH ₅₆	14.7	0.15	19990810	13.72685	152.95746	152.48707	5.88537	0.0953047	2.5305977	40	2	1998–1999	0.67	M-v	3	Williams	35958	1998 FH ₅₆
1998 FF ₅₇	15.5	0.15	19990810	76.59152	103.05481	171.69237	1.91164	0.1551653	2.2482450	59	3	1971–1999	0.57	M-v	3	Williams	36079	1998 FF ₅₇
1998 FG ₅₇	15.3	0.15	19990810	227.69790	279.62366	178.70925	5.78439	0.0557602	2.2622896	56	3	1996–1999	0.54	M-v	2	Williams	35958	1998 FG ₅₇
1998 FT ₅₇	14.8	0.15	19990810	21.87492	105.18474	208.68337	7.10884	0.1298662	2.3829782	59	2	1998–1999	0.72	M-v	4	Williams	35959	1998 FT ₅₇
1998 FG ₅₈	14.8	0.15	19990810	23.31746	312.60053	0.93541	7.12123	0.1208443	2.3580554	84	2	1997–1999	0.66	M-v	3	Williams	35959	1998 FG ₅₈
1998 FN ₅₈	15.2	0.15	19990810	43.01688	279.18393	12.41595	3.36146	0.1469055	2.4338222	70	3	1994–1999	0.73	M-v	3	Williams	36079	1998 FN ₅₈
1998 FQ ₅₈	15.1	0.15	19990810	77.50849	80.12108	169.75549	2.24278	0.1713855	2.5282915	61	2	1998–1999	0.61	M-v	4	Williams	35959	1998 FQ ₅₈
1998 FX ₅₈	15.1	0.15	19990810	227.17706	282.11709	174.99843	6.67319	0.0604409	2.2787372	52	2	1998–1999	0.59	M-v	4	Williams	35959	1998 FX ₅₈
1998 FT ₅₉	15.1	0.15	19990810	106.64714	53.02785	168.84726	6.86474	0.0686145	2.3573097	80	4	1992–1999	0.60	M-v	1	Williams	36080	1998 FT ₅₉
1998 FF ₆₀	15.7	0.15	19990810	122.88724	35.52329	167.10895	2.81314	0.1507673	2.3937102	47	2	1998–1999	0.68	M-v	4	Williams	35960	1998 FF ₆₀
1998 FH ₆₀	15.3	0.15	19990810	315.58659	205.16877	174.75690	3.82108	0.1950982	2.1952936	74	4	1983–1999	0.69	M-v	2	Williams	36080	1998 FH ₆₀
1998 FD ₆₁	14.4	0.15	19990810	118.29892	48.00858	185.99820	4.87436	0.1217010	2.1712696	86	3	1996–1999	0.57	M-v	3	Williams	35960	1998 FD ₆₁
1998 FH ₆₁	14.8	0.15	19990810	88.59162	34.74394	196.37466	4.53463	0.1020633	2.5263336	50	3	1995–1999	0.58	M-v	3	Williams	35960	1998 FH ₆₁
1998 FO ₆₁	15.3	0.15	19990810	86.96209	28.44210	219.21297	2.73447	0.1239897	2.3899507	69	3	1977–1999	0.82	M-v	3	Williams	36080	1998 FO ₆₁
1998 FR ₆₁	14.8	0.15	19990810	69.01911	306.83698	302.12466	1.47306	0.1136042	2.6054843	51	2	1998–1999	0.71	M-v	4	Williams	35960	1998 FR ₆₁
1998 FT ₆₁	14.8	0.15	19990810	82.51750	2.89151	254.79792	1.47162	0.1809558	2.4067060	84	4	1991–1999	0.60	M-v	3	Williams	36080	1998 FT ₆₁
1998 FD ₆₂	14.7	0.15	19990810	64.32103	284.66560	349.06630	6.22855	0.0945505	2.3481062	93	2	1998–1999	0.56	M-v	3	Williams	35960	1998 FD ₆₂
1998 FL ₆₂	14.7	0.15	19990810	349.24467	122.20951	219.20131	4.72372	0.0522495	2.3593762	71	2	1998–1999	0.67	M-v	4	Williams	35961	1998 FL ₆₂
1998 FS ₆₂	15.2	0.15	19990810	85.94416	46.25601	200.31179	6.07488	0.1128305	2.4234373	56	2	1998–1999	0.59	M-v	3	Williams	35961	1998 FS ₆₂
1998 FF ₆₃	15.4	0.15	19990810	66.17377	80.21739	182.10367	12.87528	0.1641116	2.5454620	51	2	1998–1999	0.71	M-v	4	Williams	35961	1998 FF ₆₃
1998 FS ₆₃	14.9	0.15	19990810	343.10748	330.42021	29.58740	7.60935	0.1480805	2.2004787	49	4	1986–1999	0.56	M-v	2	Williams	35961	1998 FS ₆₃
1998 FW ₆₃	15.4	0.15	19990810	112.37483	95.99858	119.95179	3.32308	0.1342333	2.3923754	57	3	1994–1999	0.63	M-v	3	Williams	35961	1998 FW ₆₃
1998 FQ ₆₄	14.3	0.15	19990810	38.74822	289.05613	15.72546	6.45493	0.1237273	2.3212289	94	3	1991–1999	0.52	M-v	3	Williams	36080	1998 FQ ₆₄
1998 FC ₆₅	15.2	0.15	19990810	106.88431	44.11623	193.72842	5.56650	0.1227366	2.2769972	79	4	1974–1999	0.50	M-v	2	Williams	35706	1998 FC ₆₅
1998 FG ₆₅	15.1	0.15	19990810	75.37195	56.01239	196.24235	9.30573	0.2151945	2.6287094	81	4	1989–1999	0.62	M-v	1	Williams	36080	1998 FG ₆₅
1998 FH ₆₅	14.7	0.15	19990810	81.75814	46.53384	221.08942	1.74549	0.1293898	2.2809532	110	4	1991–1999	0.62	M-v	2	Williams	32322	1998 FH ₆₅
1998 FP ₆₅	14.1	0.15	19990810	42.97741	64.27240	212.45548	7.65429	0.1608841	2.7352990	66	3	1990–1999	0.67	M-v	3	Williams	36080	1998 FP ₆₅
1998 FR ₆₅	14.8	0.15	19990810	194.58982	213.95741	291.88313	2.61474	0.0587038	2.1879078	81	2	1998–1999	0.62	M-v	4	Williams	35962	1998 FR ₆₅
1998 FS ₆₅	15.3	0.15	19990810	127.58970	317.34992	253.91587	2.36004	0.1090869	2.2875247	102	2	1998–1999	0.60	M-v	3	Williams	35962	1998 FS ₆₅
1998 FT ₆₅	15.0	0.15	19990810	76.14841	288.12659	355.51778	6.27992	0.1517206	2.2104047	76	3	1992–1999	0.66	M-v	3	Williams	32322	1998 FT ₆₅
1998 FC ₆₆	13.7	0.15	19990810	34.20486	121.65050	196.72054	10.32642	0.2222607	2.3583988	104	4	1973–1999	0.55	M-v	3	Williams	36080	1998 FC ₆₆
1998 FF ₆₆	14.6	0.15	19990810	70.40596	243.66937	9.44114	3.78638	0.1125652	2.5681208	85	3	1995–1999	0.60	M-v	3	Williams	36080	1998 FF ₆₆
1998 FJ ₆₆	13.8	0.15	19990810	88.36322	218.10032	12.36723	9.66957	0.0627309	2.5304301	60	5	1951–1999	0.61	M-v	2	Williams	36080	1998 FJ ₆₆
1998 FL ₆₆	14.2	0.15	19990810	65.13684	268.14869	20.06914	0.77551	0.1971250	2.3312513	101	5	1977–1999	0.60	M-v	1	Williams	35706	1998 FL ₆₆
1998 FW ₆₆	14.7	0.15	19990810	39.49341	252.62025	27.03590	7.94909	0.1932151	2.8003214	64	3	1995–1999	0.74	M-v	2	Williams	35962	1998 FW ₆₆
1998 FY ₆₆	14.0	0.15	19990810	293.20078	216.72905	169.45123	7.93893	0.0614559	2.4458096	69	3	1994–1999	0.66	M-v	3	Williams	36080	1998 FY ₆₆
1998 FF ₆₇	15.3	0.15	19990810	88.25492	119.61142	129.81819	3.30866	0.1511358	2.4008956	74	4	1994–1999	0.57	M-v	1	Williams	36080	1998 FF ₆₇
1998 FJ ₆₇	15.0	0.15	19990810	278.13811	335.34973	89.90002	3.37921	0.0385782	2.1476922	72	3	1995–1999	0.62	M-v	3	Williams	35963	1998 FJ ₆₇
1998 FW ₆₇	15.4	0.15	19990810	100.04594	64.10093	164.72970	3.80254	0.0675166	2.3981235	63	2	1998–1999	0.65	M-v	4	Williams	35963	1998 FW ₆₇
1998 FM ₆₈	15.0	0.15	19990810	85.35709	41.09994	206.06004	5.67389	0.1038732	2.4396036	87	3	1992–1999	0.58	M-v	3	Williams	35963	1998 FM ₆₈
1998 FO ₆₈	14.5	0.15	19990810	55.60554	328.49802	326.69892	1.85120	0.2104037	2.4060450	111	5	1991–1999	0.58	M-v	1	Williams	32323	1998 FO ₆₈
1998 FS ₆₈	14.4	0.15	19990810	65.96609	36.45934	250.13122	3.13359	0.1144027	2.2596066	110	3	1994–1999	0.57	M-v	2	Williams	36080	1998 FS ₆₈
1998 FG ₆₉	12.6	0.15	19990810	332.78408	133.08637	196.57870	10.21620	0.1082394	2.9891823	85	2	1998–1999	0.67	M-v	3	Williams	35438	1998 FG ₆₉
1998 FO ₆₉	14.7	0.15	19990810	171.83453	336.83766	162.72455	3.52154	0.1475803	2.4121125	59	4	1977–1999	0.57	M-v	2	Williams	32323	1998 FO ₆₉
1998 FQ ₆₉	14.0	0.15	19990810	331.70497	179.05354	182.41563	11.82121	0.2513615	2.4142610	92	3	1994–1999	0.57	M-v	2	Williams	36080	1998 FQ ₆₉
1998 FM ₇₀	14.3	0.15	19990810	25.67308	271.53885	50.11900	2.66044	0.2108519	2.4119399	73	3	1969–1999	0.60	M-v	4	Williams	32323	1998 FM ₇₀

1998 FN ₇₀	14.8	0.15	19990810	16.41242	292.72954	30.94335	6.52096	0.1515870	2.4140184	80	3	1984–1999	0.60	M-v	3	Williams	36080	1998 FN ₇₀
1998 FV ₇₀	15.0	0.15	19990810	146.98090	14.13010	169.41430	2.69494	0.0960083	2.3394382	86	4	1980–1999	0.57	M-v	2	Williams	35964	1998 FV ₇₀
1998 FH ₇₁	13.0	0.15	19990810	10.01282	83.39039	208.55832	9.87529	0.0787646	3.0007680	62	3	1995–1999	0.67	M-v	3	Williams	36080	1998 FH ₇₁
1998 FY ₇₁	15.3	0.15	19990810	279.12276	49.43976	2.16960	5.32437	0.0857097	2.1813674	62	3	1993–1999	0.60	M-v	3	Williams	36080	1998 FY ₇₁
1998 FP ₇₂	15.5	0.15	19990810	157.65489	195.65779	339.69077	2.39703	0.1144350	2.2753033	71	4	1991–1999	0.64	M-v	2	Williams	36080	1998 FP ₇₂
1998 FQ ₇₂	14.3	0.15	19990810	348.38089	317.52054	30.82611	3.26422	0.1958336	2.4413109	82	3	1980–1999	0.70	M-v	3	Williams	36080	1998 FQ ₇₂
1998 FF ₇₃	15.8	0.15	19990810	6.00228	359.09120	5.30269	19.56764	0.0880318	1.9394407	44	3	1971–1999	0.79	M-v	4	Williams	32069	1998 FF ₇₃
1998 FC ₇₄	14.3	0.15	19990810	321.79785	278.89450	103.82185	3.67520	0.1439594	2.1780875	89	4	1994–1999	0.60	M-v	2	Williams	35964	1998 FC ₇₄
1998 FL ₇₄	15.5	0.15	19990810	37.49288	299.43485	349.56308	5.77656	0.1847267	2.2825832	113	3	1996–1999	0.61	M-v	3	Williams	35964	1998 FL ₇₄
1998 FC ₇₅	13.9	0.15	19990810	49.36437	72.07783	198.05565	8.74982	0.1239049	2.7571727	72	4	1991–1999	0.55	M-v	2	Williams	36080	1998 FC ₇₅
1998 FF ₇₅	13.6	0.15	19990810	287.20172	15.78785	25.77323	7.31690	0.1059913	2.3562772	65	3	1992–1999	0.65	M-v	3	Williams	36080	1998 FF ₇₅
1998 FG ₇₅	14.9	0.15	19990810	28.44105	129.15800	189.98051	6.04466	0.1339426	2.3626534	91	2	1998–1999	0.70	M-v	4	Williams	35965	1998 FG ₇₅
1998 FH ₇₅	14.8	0.15	19990810	324.13535	220.21454	165.35382	2.09873	0.1282796	2.1719868	98	3	1992–1999	0.66	M-v	3	Williams	36080	1998 FH ₇₅
1998 FL ₇₅	14.8	0.15	19990810	45.02786	276.50612	41.26509	3.19766	0.1800233	2.2372411	69	3	1992–1999	0.74	M-v	3	Williams	36080	1998 FL ₇₅
1998 FS ₇₅	14.2	0.15	19990810	357.83830	277.15627	59.64109	5.96402	0.1516710	2.3874606	57	5	1981–1999	0.62	M-v	2	Williams	36080	1998 FS ₇₅
1998 FL ₇₆	14.7	0.15	19990810	95.21883	179.89224	69.63755	5.93509	0.1352982	2.3064415	53	4	1994–1999	0.54	M-v	2	Williams	36080	1998 FL ₇₆
1998 FM ₇₆	15.2	0.15	19990810	143.94594	100.41267	86.77549	4.58873	0.1238372	2.3101640	41	2	1998–1999	0.65	M-v	4	Williams	35965	1998 FM ₇₆
1998 FP ₇₆	15.1	0.15	19990810	179.34079	20.10262	130.55100	4.72537	0.0601669	2.2880710	39	2	1998–1999	0.59	M-v	4	Williams	35965	1998 FP ₇₆
1998 FG ₇₇	14.1	0.15	19990810	23.92281	245.53570	76.46208	6.86951	0.1803913	2.3671031	48	2	1998–1999	0.58	M-v	4	Williams	35966	1998 FG ₇₇
1998 FN ₇₇	14.2	0.15	19990810	28.10643	199.24717	136.66121	5.24969	0.1217949	2.1864658	54	6	1978–1999	0.71	M-v	1	Williams	32324	1998 FN ₇₇
1998 FP ₇₇	14.9	0.15	19990810	297.85123	274.73037	122.86386	5.26757	0.0890562	2.2603427	45	3	1994–1999	0.69	M-v	3	Williams	36080	1998 FP ₇₇
1998 FS ₇₇	14.3	0.15	19990810	63.67274	102.35268	164.51079	8.04328	0.1444276	2.5623166	76	2	1998–1999	0.70	M-v	3	Williams	35966	1998 FS ₇₇
1998 FV ₇₇	14.3	0.15	19990810	9.88085	144.82312	175.98681	13.83271	0.1798394	2.6333438	72	2	1998–1999	0.71	M-v	3	Williams	35966	1998 FV ₇₇
1998 FA ₇₈	14.9	0.15	19990810	63.66441	127.87005	137.50667	6.74084	0.1366999	2.5719906	36	2	1998–1999	0.74	M-v	4	Williams	35966	1998 FA ₇₈
1998 FB ₇₉	14.7	0.15	19990810	22.13351	152.83103	154.40189	13.45416	0.1716393	2.6843388	41	2	1998–1999	0.66	M-v	3	Williams	35966	1998 FB ₇₉
1998 FJ ₇₉	14.8	0.15	19990810	30.70995	151.05314	154.73081	7.30803	0.0536320	2.4159304	77	3	1994–1999	0.61	M-v	3	Williams	35967	1998 FJ ₇₉
1998 FK ₇₉	14.9	0.15	19990810	52.69462	100.18250	175.61743	12.13288	0.1197006	2.6304038	50	2	1998–1999	0.60	M-v	3	Williams	35967	1998 FK ₇₉
1998 FQ ₇₉	14.0	0.15	19990810	332.42686	235.51619	109.09187	5.19900	0.1306054	2.7812590	30	3	1993–1999	0.85	M-v	4	Williams	35327	1998 FQ ₇₉
1998 FG ₈₀	15.7	0.15	19990810	117.93082	131.08981	83.39457	3.70355	0.1323182	2.3018276	34	2	1998–1999	0.79	M-v	4	Williams	35967	1998 FG ₈₀
1998 FU ₉₀	14.1	0.15	19990810	86.93739	197.03220	24.95071	8.15864	0.1831084	2.5800993	47	2	1998–1999	0.62	M-v	4	Williams	35968	1998 FU ₉₀
1998 FP ₉₃	15.3	0.15	19990810	82.02315	139.41577	111.10823	9.37304	0.1440693	2.3214291	36	3	1996–1999	0.64	M-v	2	Williams	36080	1998 FP ₉₃
1998 FZ ₉₇	13.2	0.15	19990810	27.28761	64.95736	232.25057	6.04866	0.2219670	2.5588185	71	4	1983–1999	0.56	M-v	2	Williams	36080	1998 FZ ₉₇
1998 FY ₉₉	13.9	0.15	19990810	112.36389	249.76729	325.13178	7.63827	0.0753385	2.3219763	88	3	1980–1999	0.63	M-v	3	Williams	36080	1998 FY ₉₉
1998 FZ ₉₉	14.0	0.15	19990810	72.32152	291.36275	321.98091	7.84238	0.0658399	2.3722403	68	2	1998–1999	0.53	M-v	3	Williams	35968	1998 FZ ₉₉
1998 FU ₁₀₁	14.2	0.15	19990810	330.98323	83.24344	263.42561	3.56916	0.1184781	2.4358797	46	3	1994–1999	0.71	M-v	3	Williams	35327	1998 FU ₁₀₁
1998 FA ₁₀₂	15.0	0.15	19990810	91.77042	278.10619	321.75109	5.64502	0.1445662	2.3889714	58	3	1994–1999	0.61	M-v	3	Williams	35968	1998 FA ₁₀₂
1998 FT ₁₀₂	14.4	0.15	19990810	89.39360	6.63608	211.05099	14.76545	0.0756617	2.6144374	45	2	1998–1999	0.57	M-v	3	Williams	35969	1998 FT ₁₀₂
1998 FU ₁₀₂	14.8	0.15	19990810	105.74359	324.98616	263.23775	5.84086	0.0770983	2.3009120	51	3	1995–1999	0.62	M-v	3	Williams	35969	1998 FU ₁₀₂
1998 FW ₁₀₂	14.4	0.15	19990810	132.06128	306.65558	254.53333	5.11496	0.0907147	2.2662926	78	3	1993–1999	0.60	M-v	3	Williams	35969	1998 FW ₁₀₂
1998 FJ ₁₀₃	14.5	0.15	19990810	45.94739	76.07130	215.72491	7.89442	0.2018844	2.4446957	68	3	1995–1999	0.48	M-v	2	Williams	36080	1998 FJ ₁₀₃
1998 FM ₁₀₃	15.5	0.15	19990810	65.12918	331.33713	296.06109	3.41133	0.1071956	2.3682013	46	2	1998–1999	0.80	M-v	4	Williams	35969	1998 FM ₁₀₃
1998 FQ ₁₀₃	14.6	0.15	19990810	64.73697	328.44933	284.02637	3.93538	0.1210224	2.5841097	71	2	1998–1999	0.66	M-v	3	Williams	35969	1998 FQ ₁₀₃
1998 FR ₁₀₃	15.2	0.15	19990810	105.58557	294.88659	298.32174	3.76666	0.0676611	2.2469048	72	3	1992–1999	0.64	M-v	3	Williams	36080	1998 FR ₁₀₃
1998 FZ ₁₀₃	14.9	0.15	19990810	61.18661	299.63118	314.36684	5.70296	0.2504772	2.8313577	45	2	1998–1999	0.62	M-v	4	Williams	35970	1998 FZ ₁₀₃
1998 FD ₁₀₄	14.4	0.15	19990810	55.77826	58.23190	207.05379	16.12866	0.2325785	2.7280480	57	3	1971–1999	0.59	M-v	2	Williams	36080	1998 FD ₁₀₄
1998 FG ₁₀₄	15.3	0.15	19990810	86.25090	289.36174	326.71729	9.23818	0.1325918	2.3040863	56	3	1994–1999	0.55	M-v	2	Williams	35970	1998 FG ₁₀₄
1998 FJ ₁₀₅	14.1	0.15	19990810	48.14220	43.35748	225.08781	8.81681	0.1739903	2.7362164	55	3	1990–1999	0.51	M-v	2	Williams	36081	1998 FJ ₁₀₅
1998 FK ₁₀₅	13.4	0.15	19990810	48.50477	78.188156	222.56749	9.86555	0.1679943	3.1499915	40	2	1998–1999	0.55	M-v	3	Williams	35328	1998 FK ₁₀₅
1998 FK ₁₀₆	14.6	0.15	19990810	70.11658	45.40309	226.32129	6.91596	0.1265261	2.3330328	104	3	1991–1999	0.56	M-v	2	Williams	36081	1998 FK ₁₀₆
1998 FG ₁₀₇	14.8	0.15	19990810	355.39234	69.87937	266.57291	6.00240	0.1372490	2.3875424	52	3	1988–1999	0.61	M-v	3	Williams	35970	1998 FG ₁₀₇
1998 FU ₁₀₈	14.3	0.15	19990810	311.74173	57.12395	318.34396	5.77656	0.1400437	2.3288582	53	2	1998–1999	0.62	M-v	3	Williams	36081	1998 FU ₁₀₈
1998 FX ₁₀₈	15.1	0.15	19990810	69.47066	30.50089	239.73201	5.28998	0.0835877	2.3115095	50	2	1998–1999	0.66	M-v	4	Williams	35970	1998 FX ₁₀₈
1998 FJ ₁₀₉	15.7	0.15	19990810	68.31124	292.48841	339.29803	6.83814	0.0958035	2.3320087	37	2	1998–1999	0.78	M-v	4	Williams	35971	1998 FJ ₁₀₉

1998 FB ₁₁₁	13.2	0.15	19990810	48.22837	328.98380	293.89056	7.15743	0.1874890	3.1076880	65	4	1984–1999	0.52	M-v	1	Williams	36081	1998 FB ₁₁₁
1998 FG ₁₁₂	14.3	0.15	19990810	86.49225	269.38740	309.72542	8.35500	0.1330083	2.7801649	33	2	1998–1999	0.58	M-v	3	Williams	36081	1998 FG ₁₁₂
1998 FR ₁₁₃	15.0	0.15	19990810	75.82664	18.42828	248.57335	6.19187	0.1101380	2.3410599	54	3	1978–1999	0.69	M-v	2	Williams	36081	1998 FR ₁₁₃
1998 FU ₁₁₃	14.7	0.15	19990810	131.07783	299.65238	255.55031	4.93404	0.0457613	2.3807289	49	2	1998–1999	0.69	M-v	4	Williams	35971	1998 FU ₁₁₃
1998 FZ ₁₁₃	14.0	0.15	19990810	4.18364	96.49002	238.15641	6.94761	0.1645372	2.4133533	75	5	1988–1999	0.53	M-v	2	Williams	35971	1998 FZ ₁₁₃
1998 FA ₁₁₄	13.8	0.15	19990810	98.65483	318.93335	262.43896	5.49438	0.1357603	2.5684515	53	2	1998–1999	0.51	M-v	3	Williams	35971	1998 FA ₁₁₄
1998 FB ₁₁₄	14.6	0.15	19990810	54.28401	50.10792	216.86333	14.67884	0.1169749	2.6391200	46	2	1998–1999	0.69	M-v	3	Williams	35972	1998 FB ₁₁₄
1998 FD ₁₁₄	14.2	0.15	19990810	272.82508	140.41859	275.75771	5.94939	0.1062931	2.2918693	84	3	1993–1999	0.55	M-v	3	Williams	36081	1998 FD ₁₁₄
1998 FE ₁₁₄	14.7	0.15	19990810	243.68539	144.21840	297.05123	5.64423	0.1301348	2.2727041	49	2	1998–1999	0.68	M-v	4	Williams	36081	1998 FE ₁₁₄
1998 FJ ₁₁₄	14.7	0.15	19990810	64.98223	22.26616	260.56017	5.81672	0.1032961	2.3139484	53	2	1998–1999	0.53	M-v	4	Williams	35972	1998 FJ ₁₁₄
1998 FX ₁₁₄	14.3	0.15	19990810	80.43185	18.23492	229.99334	11.07521	0.1194217	2.5549232	51	2	1998–1999	0.62	M-v	3	Williams	35972	1998 FX ₁₁₄
1998 FE ₁₁₅	13.5	0.15	19990810	105.56549	345.05975	225.05163	11.28097	0.1359900	2.6693404	78	2	1998–1999	0.52	M-v	3	Williams	35972	1998 FE ₁₁₅
1998 FK ₁₁₅	14.2	0.15	19990810	337.54490	123.59768	248.08796	5.93133	0.1484214	2.2952911	50	2	1998–1999	0.48	M-v	3	Williams	35973	1998 FK ₁₁₅
1998 FS ₁₁₅	14.8	0.15	19990810	76.90731	245.51889	358.31329	13.41011	0.1205960	2.6223783	43	2	1998–1999	0.57	M-v	3	Williams	35973	1998 FS ₁₁₅
1998 FB ₁₁₆	13.7	0.15	19990810	327.02022	123.93598	242.27064	12.99372	0.1917289	2.5981874	53	2	1998–1999	0.53	M-v	3	Williams	36081	1998 FB ₁₁₆
1998 FD ₁₁₆	14.0	0.15	19990810	38.23035	327.93454	331.10305	5.94621	0.1299774	2.4287015	60	2	1998–1999	0.46	M-v	3	Williams	35973	1998 FD ₁₁₆
1998 FG ₁₁₆	15.0	0.15	19990810	254.19039	213.10729	223.05860	6.56541	0.0765051	2.2335241	55	3	1997–1999	0.59	M-v	3	Williams	35973	1998 FG ₁₁₆
1998 FL ₁₁₆	15.3	0.15	19990810	197.66376	177.83604	320.57035	3.73796	0.0854815	2.1863492	67	3	1996–1999	0.60	M-v	3	Williams	35974	1998 FL ₁₁₆
1998 FN ₁₁₆	14.4	0.15	19990810	334.44289	125.55796	230.63776	5.04411	0.1422423	2.3839896	64	2	1998–1999	0.66	M-v	4	Williams	36081	1998 FN ₁₁₆
1998 FB ₁₁₇	14.9	0.15	19990810	245.31778	162.34386	295.56296	3.41075	0.0518051	2.1677547	76	2	1998–1999	0.61	M-v	4	Williams	35974	1998 FB ₁₁₇
1998 FC ₁₁₇	14.6	0.15	19990810	23.43733	92.40205	234.21758	5.68916	0.1339859	2.2927670	79	2	1998–1999	0.62	M-v	4	Williams	35974	1998 FC ₁₁₇
1998 FD ₁₁₇	13.9	0.15	19990810	314.67080	160.27511	216.81901	11.39304	0.2478449	2.3293574	51	3	1992–1999	0.65	M-v	3	Williams	36081	1998 FD ₁₁₇
1998 FG ₁₁₇	13.7	0.15	19990810	0.54721	114.25619	211.53013	12.37687	0.1874804	2.6366447	97	3	1994–1999	0.60	M-v	2	Williams	36081	1998 FG ₁₁₇
1998 FH ₁₁₇	14.7	0.15	19990810	72.88408	308.63376	302.02678	3.98931	0.0833565	2.5795081	53	3	1991–1999	0.79	M-v	3	Williams	36081	1998 FH ₁₁₇
1998 FL ₁₁₇	14.3	0.15	19990810	126.72562	333.02029	217.81150	13.25294	0.0920448	2.5458367	67	3	1995–1999	0.55	M-v	3	Williams	36081	1998 FL ₁₁₇
1998 FT ₁₁₇	15.7	0.15	19990810	183.87038	209.82319	304.89126	2.87416	0.1204102	2.2561963	43	2	1998–1999	0.65	M-v	5	Williams	35974	1998 FT ₁₁₇
1998 FY ₁₁₇	14.9	0.15	19990810	51.07293	37.67672	270.48723	3.80886	0.1718126	2.3092134	64	4	1991–1999	0.73	M-v	1	Williams	32324	1998 FY ₁₁₇
1998 FC ₁₁₈	14.4	0.15	19990810	332.54631	136.53704	240.33028	6.13037	0.1752110	2.2547304	87	4	1986–1999	0.70	M-v	2	Williams	36081	1998 FC ₁₁₈
1998 FE ₁₁₈	12.7	0.15	19990810	118.37012	326.50820	223.61584	9.15120	0.0555933	2.7642618	86	4	1991–1999	0.51	M-v	2	Williams	36081	1998 FE ₁₁₈
1998 FH ₁₁₈	14.1	0.15	19990810	288.64994	51.00374	345.83747	5.72299	0.1305800	2.4280135	73	3	1988–1999	0.68	M-v	3	Williams	36081	1998 FH ₁₁₈
1998 FN ₁₁₈	14.4	0.15	19990810	341.93250	140.55996	206.15957	22.04534	0.0413313	2.4216688	62	2	1998–1999	0.70	M-v	3	Williams	36081	1998 FN ₁₁₈
1998 FM ₁₂₁	14.8	0.15	19990810	354.58526	97.66451	243.84269	3.86344	0.2188434	2.3987671	85	4	1969–1999	0.63	M-v	2	Williams	36081	1998 FM ₁₂₁
1998 FQ ₁₂₁	14.5	0.15	19990810	51.63610	53.81672	246.27999	0.20263	0.1856955	2.2981439	80	5	1977–1999	0.66	M-v	2	Williams	35707	1998 FQ ₁₂₁
1998 FM ₁₂₂	14.7	0.15	19990810	26.24242	102.64980	197.02676	5.84329	0.0978366	2.5379118	69	3	1994–1999	0.64	M-v	3	Williams	35975	1998 FM ₁₂₂
1998 FN ₁₂₂	15.4	0.15	19990810	83.74587	56.04816	194.20077	5.08748	0.1288421	2.4394777	57	3	1992–1999	0.70	M-v	3	Williams	35975	1998 FN ₁₂₂
1998 FP ₁₂₂	14.8	0.15	19990810	353.84928	178.62120	156.43062	2.68436	0.0815796	2.4150383	57	3	1994–1999	0.66	M-v	3	Williams	35975	1998 FP ₁₂₂
1998 FY ₁₂₂	14.6	0.15	19990810	72.85740	58.25646	186.69242	15.71708	0.1962755	2.7482994	75	2	1998–1999	0.67	M-v	3	Williams	35976	1998 FY ₁₂₂
1998 FH ₁₂₃	15.8	0.15	19990810	103.04111	297.72048	284.34111	1.81516	0.2603745	2.5909814	46	3	1995–1999	0.70	M-v	3	Williams	32262	1998 FH ₁₂₃
1998 FE ₁₂₅	14.2	0.15	19990810	79.00966	74.76547	169.49566	11.60252	0.1467308	2.6291508	94	3	1989–1999	0.71	M-v	3	Williams	36081	1998 FE ₁₂₅
1998 FP ₁₂₅	14.1	0.15	19990810	44.57338	48.80824	212.03491	12.43755	0.1077019	2.6482753	60	3	1978–1999	0.68	M-v	2	Williams	36081	1998 FP ₁₂₅
1998 FX ₁₂₅	14.7	0.15	19990810	171.26453	243.88796	278.65419	5.85826	0.0511424	2.2651498	56	3	1991–1999	0.57	M-v	3	Williams	35976	1998 FX ₁₂₅
1998 FM ₁₂₆	15.1	0.15	19990810	128.89791	1.09068	189.99969	4.38603	0.1583168	2.2324746	66	3	1996–1999	0.63	M-v	3	Williams	36081	1998 FM ₁₂₆
1998 FC ₁₂₇	15.0	0.15	19990810	56.65695	220.34221	58.50263	7.29085	0.0921939	2.3142767	68	2	1998–1999	0.68	M-v	4	Williams	35976	1998 FC ₁₂₇
1998 FQ ₁₃₃	15.0	0.15	19990810	353.92570	10.08714	327.44695	4.15056	0.1731087	2.2982159	64	2	1998–1999	0.74	M-v	4	Williams	35976	1998 FQ ₁₃₃
1998 FO ₁₄₁	14.2	0.15	19990810	346.61734	138.38918	194.27511	13.37305	0.1989320	2.5774151	47	2	1998–1999	0.62	M-v	3	Williams	35976	1998 FO ₁₄₁
1998 FC ₁₄₄	14.3	0.15	19990810	53.61838	52.62779	238.63134	5.12514	0.1458053	2.4851756	66	3	1991–1999	0.68	M-v	1	Williams	36081	1998 FC ₁₄₄
1998 GF	14.7	0.15	19990810	211.38499	121.70552	35.26976	22.40703	0.0315576	1.9407066	38	3	1990–1999	0.59	M-v	3	Williams	32006	1998 GF
1998 GK	15.0	0.15	19990810	143.53946	211.93781	33.90028	24.78478	0.1584950	1.9333925	49	3	1980–1999	0.60	M-v	2	Williams	32325	1998 GK
1998 GZ	15.5	0.15	19990810	126.02373	173.49812	32.07967	6.54787	0.0553362	2.2742408	50	3	1996–1999	0.76	M-v	3	Williams	36081	1998 GZ
1998 GG ₁	15.3	0.15	19990810	68.21870	41.36847	216.20629	7.82568	0.1380804	2.7634186	52	2	1998–1999	0.66	M-v	4	Williams	35977	1998 GG ₁
1998 GH ₁	14.8	0.15	19990810	56.68764	214.57187	41.75112	8.36342	0.1773622	2.7898761	47	2	1998–1999	0.51	M-v	4	Williams	35977	1998 GH ₁
1998 GJ ₁	14.6	0.15	19990810	325.39071	230.14367	131.79862	4.90832	0.0771003	2.3610240	78	2	1997–1999	0.57	M-v	3	Williams	36081	1998 GJ ₁
1998 GK ₁	13.5	0.15	19990810	29.29255	331.79253	332.01502	8.28355	0.1800250	2.5719702	74	3	1970–1999	0.50	M-v	2	Williams	36081	1998 GK ₁

1998 GO ₁	14.5	0.15	19990810	136.94851	73.10572	146.71103	8.76745	0.1416261	2.2994789	78	2	1998–1999	0.37	M-v	3	Williams	35977	1998 GO ₁
1998 GE ₉	13.5	0.15	19990810	59.56964	118.48993	150.94846	15.18218	0.1157585	2.6290756	64	2	1998–1999	0.54	M-v	3	Williams	36081	1998 GE ₉
1998 GW ₁₀	15.1	0.15	19990810	78.72616	224.39489	27.10514	7.33877	0.0576175	2.2300674	54	2	1998–1999	0.64	M-v	4	Williams	35977	1998 GW ₁₀
1998 HT	15.0	0.15	19990810	14.19521	183.05406	140.84923	4.78560	0.2004890	2.6458624	69	4	1984–1999	0.60	M-v	2	Williams	36081	1998 HT
1998 HF ₃	14.1	0.15	19990810	22.80876	112.36758	194.08742	12.98304	0.1579524	3.0488459	79	2	1998–1999	0.55	M-v	3	Marsden	36081	1998 HF ₃
1998 HV ₆	14.5	0.15	19990810	113.60729	355.07458	222.04584	5.48289	0.1549505	2.5488385	75	2	1998–1999	0.66	M-v	4	Williams	35978	1998 HV ₆
1998 HW ₇	14.9	0.15	19990810	64.16691	84.15994	224.68972	5.06752	0.1917467	2.2700635	53	4	1985–1999	0.59	M-v	1	Williams	32076	1998 HW ₇
1998 HE ₈	13.9	0.15	19990810	94.21256	36.78053	210.98774	6.80757	0.0734500	2.4417957	89	4	1991–1999	0.63	M-v	2	Williams	36081	1998 HE ₈
1998 HN ₈	14.7	0.15	19990810	73.68145	139.34607	127.01377	3.44993	0.0815236	2.4094671	68	3	1996–1999	0.48	M-v	3	Williams	35978	1998 HN ₈
1998 HY ₈	14.7	0.15	19990810	46.38457	187.83627	104.96752	4.56490	0.1446518	2.5631711	37	2	1998–1999	0.50	M-v	4	Williams	35978	1998 HY ₈
1998 HM ₁₁	14.3	0.15	19990810	150.96007	89.09077	107.27563	7.86936	0.1690379	2.2878721	57	4	1932–1999	0.60	M-v	2	Williams	36081	1998 HM ₁₁
1998 HQ ₁₂	14.8	0.15	19990810	193.95075	3.60456	146.49686	13.02795	0.1163451	2.4022420	36	4	1990–1999	0.70	M-v	3	Williams	36081	1998 HQ ₁₂
1998 HT ₁₃	15.0	0.15	19990810	34.93413	311.34820	341.10613	6.12758	0.1144747	2.5351374	58	2	1998–1999	0.73	M-v	4	Williams	35978	1998 HT ₁₃
1998 HW ₁₃	14.0	0.15	19990810	23.45821	311.16461	347.81128	13.25745	0.2352931	2.6581253	99	3	1986–1999	0.58	M-v	2	Williams	35979	1998 HW ₁₃
1998 HH ₁₄	15.6	0.15	19990810	199.45956	36.98704	117.23128	5.11426	0.0762401	2.1958787	49	3	1979–1999	0.66	M-v	3	Williams	36081	1998 HH ₁₄
1998 HJ ₁₄	13.6	0.15	19990810	29.71566	149.71653	122.90081	11.80173	0.0929134	3.0632033	65	3	1996–1999	0.55	M-v	2	Williams	35707	1998 HJ ₁₄
1998 HL ₁₄	12.3	0.15	19990810	126.62461	49.05205	50.77036	22.88879	0.1051628	3.1951098	70	4	1987–1999	0.67	M-v	2	Williams	35332	1998 HL ₁₄
1998 HT ₁₄	15.9	0.15	19990810	8.44455	189.40552	140.78266	3.04945	0.1822479	2.4065155	61	4	1991–1999	0.70	M-v	2	Williams	35979	1998 HT ₁₄
1998 HC ₁₈	14.3	0.15	19990810	12.26802	38.19633	265.37325	3.39710	0.1269712	2.7612475	75	2	1998–1999	0.74	M-v	3	Williams	35979	1998 HC ₁₈
1998 HQ ₁₈	15.1	0.15	19990810	70.19296	34.43780	223.79043	4.78036	0.0583693	2.4323319	65	3	1995–1999	0.68	M-v	2	Williams	36081	1998 HQ ₁₈
1998 HR ₁₈	15.9	0.15	19990810	80.90017	276.92212	350.17953	4.39828	0.2115467	2.3931379	61	4	1994–1999	0.80	M-v	1	Williams	32326	1998 HR ₁₈
1998 HH ₁₉	15.3	0.15	19990810	326.41747	126.14049	241.91240	3.25696	0.1517747	2.2279863	55	2	1998–1999	0.68	M-v	4	Williams	35979	1998 HH ₁₉
1998 HP ₁₉	14.8	0.15	19990810	17.85832	305.73440	2.97540	11.02275	0.1638748	2.5826034	83	3	1995–1999	0.64	M-v	3	Williams	35979	1998 HP ₁₉
1998 HQ ₁₉	14.6	0.15	19990810	25.80900	113.92729	210.36133	7.41599	0.1745889	2.2699134	99	3	1992–1999	0.56	M-v	2	Williams	35980	1998 HQ ₁₉
1998 HR ₁₉	15.4	0.15	19990810	58.55537	279.44471	359.33459	6.82210	0.1093563	2.3472628	71	2	1998–1999	0.58	M-v	4	Williams	35980	1998 HR ₁₉
1998 HS ₁₉	14.3	0.15	19990810	242.74019	328.07474	118.85055	6.30475	0.1227593	2.4421385	54	2	1998–1999	0.54	M-v	3	Williams	36081	1998 HS ₁₉
1998 HU ₁₉	15.4	0.15	19990810	118.98072	21.31184	191.33727	23.61263	0.1315991	2.2941923	48	2	1998–1999	0.69	M-v	3	Williams	35980	1998 HU ₁₉
1998 HC ₂₀	15.1	0.15	19990810	12.88735	334.04785	27.74408	2.24080	0.1785778	2.1524824	60	5	1980–1999	0.66	M-v	2	Williams	34916	1998 HC ₂₀
1998 HE ₂₀	13.2	0.15	19990810	323.76287	194.92452	176.81800	2.21514	0.1060659	2.9050765	78	3	1992–1999	0.61	M-v	4	Williams	36081	1998 HE ₂₀
1998 HE ₂₁	15.6	0.15	19990810	88.40693	75.99557	179.65731	4.09803	0.1234672	2.2977970	79	5	1977–1999	0.65	M-v	2	Williams	34916	1998 HE ₂₁
1998 HG ₂₃	15.9	0.15	19990810	344.23529	289.20844	77.25789	2.60413	0.0458497	2.1301909	65	3	1996–1999	0.72	M-v	4	Williams	36082	1998 HG ₂₃
1998 HR ₂₃	16.0	0.15	19990810	127.60746	2.16893	217.44453	1.58398	0.1530803	2.4576279	44	2	1998–1999	0.74	M-v	4	Marsden	35980	1998 HR ₂₃
1998 HS ₂₃	14.8	0.15	19990810	293.65474	320.91875	108.75976	0.69521	0.0722909	2.2793871	67	4	1992–1999	0.50	M-v	1	Williams	36082	1998 HS ₂₃
1998 HT ₂₃	15.2	0.15	19990810	14.73075	313.00322	3.81497	12.73303	0.1863385	2.5481948	55	3	1991–1999	0.64	M-v	3	Williams	36082	1998 HT ₂₃
1998 HK ₂₄	15.3	0.15	19990810	316.54292	211.35677	180.20496	14.12622	0.1992501	2.5626071	41	3	1997–1999	0.52	M-v	3	Williams	36082	1998 HK ₂₄
1998 HM ₂₆	14.5	0.15	19990810	12.52466	169.33262	177.17234	5.31407	0.1681280	2.5484268	57	4	1994–1999	0.44	M-v	2	Williams	32327	1998 HM ₂₆
1998 HR ₂₇	15.5	0.15	19990810	1.76199	23.87189	319.55865	3.32867	0.1774098	2.2731309	70	3	1994–1999	0.55	M-v	3	Williams	35981	1998 HR ₂₇
1998 HY ₃₁	15.3	0.15	19990810	80.45869	32.86658	242.34214	2.60936	0.1258000	2.2328866	113	3	1997–1999	0.64	M-v	3	Williams	32327	1998 HY ₃₁
1998 HJ ₃₂	13.9	0.15	19990810	320.56800	159.54016	203.90183	13.03976	0.1988136	2.5296630	43	2	1998–1999	0.72	M-v	4	Williams	35333	1998 HJ ₃₂
1998 HS ₃₂	14.5	0.15	19990810	15.01786	122.02427	197.29804	2.20719	0.1745263	2.5620004	101	4	1992–1999	0.60	M-v	2	Williams	35981	1998 HS ₃₂
1998 HJ ₃₃	15.4	0.15	19990810	109.74061	250.19325	329.35353	1.79260	0.1379051	2.4546816	54	3	1971–1999	0.65	M-v	4	Williams	36082	1998 HJ ₃₃
1998 HK ₃₃	15.0	0.15	19990810	29.52115	319.05213	1.00358	6.37987	0.1399444	2.3310860	56	3	1981–1999	0.63	M-v	3	Williams	32327	1998 HK ₃₃
1998 HO ₃₃	14.1	0.15	19990810	25.08706	116.58386	211.22855	23.43089	0.1935008	2.3283753	78	2	1998–1999	0.57	M-v	3	Williams	36082	1998 HO ₃₃
1998 HU ₃₃	14.8	0.15	19990810	73.18141	244.28189	7.07001	4.64255	0.1134412	2.6093922	46	2	1998–1999	0.77	M-v	4	Williams	35981	1998 HU ₃₃
1998 HK ₃₄	15.5	0.15	19990810	140.58188	117.04916	61.88650	2.89579	0.1561421	2.4335664	44	3	1994–1999	0.61	M-v	3	Williams	32327	1998 HK ₃₄
1998 HK ₃₆	14.4	0.15	19990810	19.25207	287.43258	50.16221	4.03053	0.2066384	2.2867990	64	4	1978–1999	0.71	M-v	3	Williams	32327	1998 HK ₃₆
1998 HB ₃₈	15.0	0.15	19990810	73.85087	331.89237	294.96447	2.45961	0.2278449	2.5742065	65	3	1978–1999	0.68	M-v	3	Williams	32328	1998 HB ₃₈
1998 HN ₃₈	14.3	0.15	19990810	103.79469	245.90059	12.83106	2.81677	0.1618946	2.2152634	80	3	1982–1999	0.63	M-v	3	Williams	32266	1998 HN ₃₈
1998 HO ₃₈	15.6	0.15	19990810	53.45333	76.95513	237.70018	1.89361	0.0965999	2.1292022	39	3	1993–1999	0.75	M-v	3	Williams	32266	1998 HO ₃₈
1998 HZ ₃₈	14.5	0.15	19990810	40.26330	80.25158	208.33516	13.44600	0.0961528	2.5870302	47	2	1998–1999	0.89	M-v	3	Williams	35981	1998 HZ ₃₈
1998 HA ₃₉	15.1	0.15	19990810	246.88856	232.27286	213.74618	4.77450	0.1228352	2.2383393	54	4	1976–1999	0.70	M-v	1	Williams	36082	1998 HA ₃₉
1998 HG ₄₀	16.0	0.15	19990810	127.02571	177.15077	50.38986	3.96780	0.1093287	2.1823639	33	3	1996–1999	0.58	M-v	4	Williams	36082	1998 HG ₄₀
1998 HS ₄₂	14.0	0.15	19990810	71.77756	106.31998	155.04673	8.34558	0.2702214	2.7808854	71	3	1994–1999	0.60	M-v	2	Williams	36082	1998 HS ₄₂

1998 HT ₄₂	14.2	0.15	19990810	73.84874	101.75850	181.60146	4.01468	0.0420322	2.3092607	71	4	1984–1999	0.51	M-v	3	Williams	36082	1998 HT ₄₂
1998 HE ₄₃	14.2	0.15	19990810	36.89462	164.09931	163.02129	4.95481	0.1380584	2.4390230	55	4	1971–1999	0.58	M-v	1	Williams	32328	1998 HE ₄₃
1998 HU ₄₃	14.0	0.15	19990810	284.97348	17.04776	38.00919	7.22531	0.1380159	2.1944322	56	4	1978–1999	0.63	M-v	3	Williams	36082	1998 HU ₄₃
1998 HW ₄₄	14.9	0.15	19990810	346.82961	331.64727	17.82268	3.02486	0.1054765	2.4468894	74	3	1971–1999	0.70	M-v	4	Williams	35981	1998 HW ₄₄
1998 HB ₄₅	14.8	0.15	19990810	91.29417	253.75875	13.60539	4.89401	0.0779086	2.1943966	86	4	1989–1999	0.58	M-v	2	Williams	32521	1998 HB ₄₅
1998 HK ₄₅	14.3	0.15	19990810	48.87689	293.40148	8.60375	9.88759	0.1868200	2.4457743	65	3	1971–1999	0.68	M-v	2	Williams	36082	1998 HK ₄₅
1998 HO ₄₅	13.7	0.15	19990810	41.97827	323.54606	330.35001	4.34656	0.1266804	2.5511405	138	3	1995–1999	0.45	M-v	2	Williams	36082	1998 HO ₄₅
1998 HW ₄₅	15.1	0.15	19990810	86.71244	226.93118	20.42828	3.57349	0.1779996	2.5638445	73	4	1978–1999	0.70	M-v	2	Williams	36082	1998 HW ₄₅
1998 HO ₄₉	14.6	0.15	19990810	145.23615	62.02786	136.99596	7.01520	0.0864095	2.4107595	63	3	1995–1999	0.63	M-v	3	Williams	35982	1998 HO ₄₉
1998 HF ₅₁	14.5	0.15	19990810	289.23740	6.07864	51.33593	3.83401	0.0410629	2.3571553	71	2	1998–1999	0.64	M-v	4	Williams	36082	1998 HF ₅₁
1998 HH ₅₁	14.6	0.15	19990810	206.85433	70.61954	66.97470	3.95361	0.1179436	2.2784833	97	4	1989–1999	0.60	M-v	1	Williams	36082	1998 HH ₅₁
1998 HJ ₅₁	14.2	0.15	19990810	359.15920	251.94562	103.49531	6.59259	0.1443089	2.3844926	59	3	1997–1999	0.58	M-v	3	Williams	35982	1998 HJ ₅₁
1998 HL ₅₁	15.1	0.15	19990810	147.72099	130.18999	71.53489	3.92098	0.1505116	2.2653676	67	3	1996–1999	0.65	M-v	3	Williams	36082	1998 HL ₅₁
1998 HN ₅₁	14.8	0.15	19990810	243.27040	284.83626	173.92200	4.63048	0.0677069	2.3286713	87	3	1992–1999	0.67	M-v	2	Williams	35982	1998 HN ₅₁
1998 HB ₅₂	13.8	0.15	19990810	27.27426	70.40673	215.86847	21.39829	0.1680272	3.1917763	44	2	1998–1999	0.56	M-v	3	Williams	35983	1998 HB ₅₂
1998 HD ₅₂	15.9	0.15	19990810	85.75621	120.58544	155.90213	0.65385	0.1949003	2.3508858	58	5	1977–1999	0.71	M-v	1	Williams	35983	1998 HD ₅₂
1998 HH ₅₂	14.6	0.15	19990810	15.09745	327.27847	35.81170	7.11670	0.2384367	2.1556129	29	3	1983–1999	0.75	M-v	4	Williams	34218	1998 HH ₅₂
1998 HL ₅₂	13.4	0.15	19990810	79.29520	199.28196	62.49118	14.43031	0.0190221	2.5746031	69	3	1992–1999	0.57	M-v	2	Williams	35983	1998 HL ₅₂
1998 HM ₅₂	13.8	0.15	19990810	65.00712	235.86499	85.53412	6.12656	0.2159357	2.2773035	80	5	1982–1999	0.65	M-v	2	Williams	32521	1998 HM ₅₂
1998 HP ₅₂	15.4	0.15	19990810	111.35356	131.60607	123.07097	2.26476	0.2035744	2.2848143	43	4	1993–1999	0.55	M-v	3	Williams	35625	1998 HP ₅₂
1998 HJ ₅₄	14.5	0.15	19990810	29.13284	77.30595	216.40352	8.28295	0.1226747	2.7485072	55	3	1996–1999	0.60	M-v	3	Williams	36082	1998 HJ ₅₄
1998 HH ₅₅	15.0	0.15	19990810	97.61564	31.44058	222.61242	1.44838	0.1927015	2.3659675	95	4	1995–1999	0.55	M-v	2	Williams	35983	1998 HH ₅₅
1998 HS ₆₀	14.3	0.15	19990810	254.15823	120.55257	330.95727	2.17094	0.0596785	2.2072962	86	3	1983–1999	0.64	M-v	3	Williams	36082	1998 HS ₆₀
1998 HQ ₆₈	14.5	0.15	19990810	331.94540	137.92150	236.66399	6.24859	0.1233236	2.3507260	50	2	1998–1999	0.45	M-v	4	Williams	35984	1998 HQ ₆₈
1998 HV ₇₈	14.3	0.15	19990810	22.87963	101.28827	252.93901	4.80071	0.2938676	2.2467950	31	6	1938–1999	0.71	M-v	2	Williams	35708	1998 HV ₇₈
1998 HX ₇₈	14.6	0.15	19990810	45.42834	52.59060	251.57864	4.89372	0.1091271	2.4232748	64	3	1980–1999	0.57	M-v	2	Williams	36082	1998 HX ₇₈
1998 HH ₈₀	14.1	0.15	19990810	2.48900	339.43161	20.66818	5.88755	0.1889317	2.2943232	71	4	1971–1999	0.53	M-v	3	Williams	36082	1998 HH ₈₀
1998 HL ₈₀	15.6	0.15	19990810	80.62913	59.04287	220.16322	4.10056	0.1368284	2.3048837	51	3	1995–1999	0.66	M-v	3	Williams	32016	1998 HL ₈₀
1998 HP ₈₃	14.6	0.15	19990810	195.64370	71.52807	75.17580	6.03180	0.0699452	2.2692323	59	3	1989–1999	0.71	M-v	3	Williams	36082	1998 HP ₈₃
1998 HL ₈₄	15.0	0.15	19990810	53.15653	119.35577	179.65591	6.15403	0.1318673	2.4350632	58	3	1995–1999	0.64	M-v	2	Williams	32521	1998 HL ₈₄
1998 HR ₈₄	14.3	0.15	19990810	59.86812	69.42875	202.28706	14.49191	0.0687783	2.6179639	53	2	1998–1999	0.67	M-v	3	Williams	35984	1998 HR ₈₄
1998 HL ₈₆	15.4	0.15	19990810	338.55920	342.46922	24.84556	8.17120	0.1009690	2.4056051	43	3	1994–1999	0.58	M-v	4	Williams	35984	1998 HL ₈₆
1998 HH ₈₇	15.1	0.15	19990810	17.07117	89.30473	244.58852	4.98293	0.1473618	2.4729553	44	2	1998–1999	0.64	M-v	4	Williams	35984	1998 HH ₈₇
1998 HV ₈₇	13.7	0.15	19990810	8.61949	84.51696	231.42705	11.85606	0.1722229	3.0170895	56	2	1998–1999	0.64	M-v	3	Williams	35984	1998 HV ₈₇
1998 HB ₈₈	14.5	0.15	19990810	73.81478	55.44321	234.38709	8.27665	0.2523311	2.4522869	52	3	1995–1999	0.43	M-v	2	Williams	35708	1998 HB ₈₈
1998 HD ₈₈	15.2	0.15	19990810	172.41676	296.29991	237.09283	5.76774	0.1012468	2.2546236	51	2	1998–1999	0.64	M-v	4	Williams	35984	1998 HD ₈₈
1998 HH ₈₈	14.9	0.15	19990810	93.72987	49.23224	225.85774	5.72555	0.2016552	2.2856610	49	3	1978–1999	0.55	M-v	3	Williams	32329	1998 HH ₈₈
1998 HX ₈₉	15.5	0.15	19990810	288.25456	44.44067	16.27447	3.87950	0.1373346	2.2278345	49	3	1994–1999	0.65	M-v	4	Williams	36082	1998 HX ₈₉
1998 HX ₉₁	14.4	0.15	19990810	303.97759	228.35727	168.78162	5.09530	0.0775351	2.4166242	56	3	1997–1999	0.60	M-v	4	Williams	35985	1998 HX ₉₁
1998 HZ ₉₁	14.9	0.15	19990810	142.65986	59.67534	137.33881	2.84777	0.1497974	2.3636142	53	4	1976–1999	0.65	M-v	2	Williams	36082	1998 HZ ₉₁
1998 HA ₉₃	14.7	0.15	19990810	23.28177	329.76251	9.34274	2.13653	0.2093192	2.4268584	53	3	1995–1999	0.61	M-v	3	Williams	36082	1998 HA ₉₃
1998 HH ₉₃	13.9	0.15	19990810	285.68510	75.45765	355.72233	2.41795	0.0712574	2.1843960	96	5	1965–1999	0.52	M-v	2	Williams	36082	1998 HH ₉₃
1998 HX ₉₃	14.8	0.15	19990810	111.12289	0.58027	232.24934	7.26868	0.0597603	2.4048890	41	3	1994–1999	0.59	M-v	3	Williams	36082	1998 HX ₉₃
1998 HY ₉₃	13.2	0.15	19990810	27.87363	275.84650	7.23494	5.04669	0.1071010	3.1862901	54	2	1998–1999	0.52	M-v	3	Williams	35985	1998 HY ₉₃
1998 HR ₉₄	13.2	0.15	19990810	61.08648	59.51420	216.89368	12.24121	0.1495574	2.6792466	73	2	1998–1999	0.51	M-v	3	Williams	35985	1998 HR ₉₄
1998 HC ₉₅	15.1	0.15	19990810	249.59859	7.22200	92.58269	3.51240	0.0815778	2.2153182	46	2	1998–1999	0.74	M-v	4	Williams	35986	1998 HC ₉₅
1998 HT ₉₅	13.4	0.15	19990810	63.93073	182.60260	110.02760	3.67818	0.1751411	2.4573378	73	4	1991–1999	0.60	M-v	1	Williams	32521	1998 HT ₉₅
1998 HC ₉₆	14.7	0.15	19990810	278.13539	243.75190	183.64111	8.09769	0.1257541	2.2736786	71	3	1994–1999	0.56	M-v	3	Williams	35986	1998 HC ₉₆
1998 HF ₉₆	14.2	0.15	19990810	40.40034	188.32973	149.24350	5.59857	0.2139547	2.2466082	41	4	1985–1999	0.47	M-v	2	Williams	32018	1998 HF ₉₆
1998 HZ ₉₆	13.8	0.15	19990810	51.22470	236.21557	43.83039	14.97956	0.0473961	2.6386387	47	5	1987–1999	0.65	M-v	2	Williams	36082	1998 HZ ₉₆
1998 HD ₉₇	14.4	0.15	19990810	60.97391	217.67193	55.50416	3.34742	0.1049351	2.6769309	63	3	1997–1999	0.60	M-v	3	Williams	35986	1998 HD ₉₇
1998 HQ ₉₇	13.6	0.15	19990810	326.42700	344.91398	9.41504	2.03508	0.0759745	2.9015688	60	4	1993–1999	0.65	M-v	1	Williams	36082	1998 HQ ₉₇
1998 HV ₉₇	14.2	0.15	19990810	18.60169	23.52177	316.75881	3.89274	0.2659483	2.6103689	28	3	1997–1999	0.88	M-v	3	Williams	32329	1998 HV ₉₇

1998 HP ₉₈	13.9	0.15	19990810	46.21279	48.87897	223.88271	5.31876	0.0144661	2.8430407	65	2	1998–1999	0.77	M-v	3	Williams	35986	1998 HP ₉₈
1998 HB ₉₉	15.4	0.15	19990810	89.92096	72.75127	200.75850	6.27145	0.1082650	2.2798458	41	4	1984–1999	0.72	M-v	4	Williams	34917	1998 HB ₉₉
1998 HE ₉₉	14.0	0.15	19990810	246.57604	240.50787	198.87163	8.24503	0.0278621	2.6335744	57	3	1991–1999	0.55	M-v	3	Williams	35987	1998 HE ₉₉
1998 HH ₉₉	14.6	0.15	19990810	46.81899	232.80910	90.87992	3.21833	0.1300461	2.2572455	62	3	1996–1999	0.46	M-v	2	Williams	32019	1998 HH ₉₉
1998 HL ₉₉	14.9	0.15	19990810	9.56634	200.64500	157.03492	3.09716	0.1418600	2.2664270	40	4	1975–1999	0.68	M-v	2	Williams	32020	1998 HL ₉₉
1998 HC ₁₀₀	14.5	0.15	19990810	111.46947	99.02698	126.92097	4.41978	0.0898497	2.5145887	74	3	1995–1999	0.58	M-v	3	Williams	35987	1998 HC ₁₀₀
1998 HF ₁₀₀	13.9	0.15	19990810	137.34641	55.98790	123.30952	4.67433	0.1548028	2.6672212	50	3	1980–1999	0.68	M-v	4	Williams	36083	1998 HF ₁₀₀
1998 HH ₁₀₀	13.3	0.15	19990810	9.20603	273.58429	78.70427	5.90726	0.2192077	2.4659831	65	4	1991–1999	0.54	M-v	1	Williams	36083	1998 HH ₁₀₀
1998 HL ₁₀₀	13.9	0.15	19990810	171.02631	298.25106	204.87767	12.79403	0.1156446	2.6676153	50	3	1991–1999	0.76	M-v	4	Williams	35987	1998 HL ₁₀₀
1998 HQ ₁₀₀	15.1	0.15	19990810	107.41340	173.20381	85.57716	2.60063	0.0417679	2.1831475	49	3	1973–1999	0.66	M-v	4	Williams	32021	1998 HQ ₁₀₀
1998 HV ₁₀₁	15.2	0.15	19990810	56.46248	32.83905	265.79644	5.43137	0.1740298	2.6453534	40	3	1973–1999	0.68	M-v	2	Williams	32522	1998 HV ₁₀₁
1998 HW ₁₀₁	14.5	0.15	19990810	151.20305	180.70782	31.62938	6.49347	0.0542724	2.2153608	95	4	1976–1999	0.56	M-v	2	Williams	36083	1998 HW ₁₀₁
1998 HG ₁₀₃	15.0	0.15	19990810	47.23562	234.20002	101.97145	0.74392	0.1961538	2.3190070	44	4	1994–1999	0.71	M-v	2	Williams	32755	1998 HG ₁₀₃
1998 HT ₁₀₇	15.0	0.15	19990810	76.97306	201.27141	72.02827	6.78430	0.0532563	2.2735322	52	3	1996–1999	0.60	M-v	3	Williams	36083	1998 HT ₁₀₇
1998 HH ₁₁₄	14.5	0.15	19990810	78.75192	140.94468	132.73155	6.77813	0.0959652	2.3395699	62	3	1991–1999	0.63	M-v	3	Williams	36083	1998 HH ₁₁₄
1998 HY ₁₁₄	13.5	0.15	19990810	85.98999	66.34673	147.47224	13.18795	0.2345877	3.0633182	50	2	1998–1999	0.77	M-v	3	Williams	35988	1998 HY ₁₁₄
1998 HB ₁₁₅	13.0	0.15	19990810	186.01985	345.66562	140.84402	14.71345	0.0906306	2.6253589	57	4	1989–1999	0.56	M-v	3	Williams	36083	1998 HB ₁₁₅
1998 HA ₁₁₆	13.8	0.15	19990810	198.66840	311.24335	170.48850	11.36278	0.1325624	2.4498436	59	3	1994–1999	0.59	M-v	3	Williams	35988	1998 HA ₁₁₆
1998 HO ₁₁₆	14.1	0.15	19990810	188.80797	304.83158	185.44229	13.46153	0.0826993	2.5610337	50	2	1998–1999	0.64	M-v	3	Williams	36083	1998 HO ₁₁₆
1998 HM ₁₁₇	15.5	0.15	19990810	114.47977	72.11763	164.41363	6.74895	0.1075849	2.3280288	36	4	1991–1999	0.82	M-v	2	Williams	32755	1998 HM ₁₁₇
1998 HO ₁₁₇	14.3	0.15	19990810	342.33144	282.88527	93.74611	7.21321	0.1789222	2.2785995	37	3	1992–1999	0.62	M-v	3	Williams	36083	1998 HO ₁₁₇
1998 HC ₁₁₈	13.8	0.15	19990810	21.22023	170.74473	137.99124	10.30747	0.0408889	2.5968917	46	2	1998–1999	0.57	M-v	3	Williams	35989	1998 HC ₁₁₈
1998 HJ ₁₁₈	14.2	0.15	19990810	107.27408	51.76671	161.31111	14.23959	0.0931517	2.6843430	37	2	1998–1999	0.65	M-v	4	Williams	35989	1998 HJ ₁₁₈
1998 HW ₁₁₈	13.9	0.15	19990810	11.39631	188.26855	131.58174	11.91107	0.2138667	2.9713075	38	3	1992–1999	0.76	M-v	3	Williams	36083	1998 HW ₁₁₈
1998 HN ₁₁₉	14.4	0.15	19990810	46.29333	112.43259	185.46501	11.62292	0.1610972	2.6369201	76	2	1998–1999	0.60	M-v	3	Williams	35989	1998 HN ₁₁₉
1998 HW ₁₁₉	14.8	0.15	19990810	185.20644	19.12158	130.84892	7.31341	0.0684909	2.3990259	67	2	1998–1999	0.60	M-v	4	Williams	36083	1998 HW ₁₁₉
1998 HF ₁₂₁	14.3	0.15	19990810	135.33900	91.66536	122.46297	6.45785	0.0692513	2.3211840	53	3	1987–1999	0.74	M-v	3	Williams	36083	1998 HF ₁₂₁
1998 HM ₁₂₁	14.4	0.15	19990810	43.44942	167.18167	121.75058	5.77234	0.0847313	2.7326514	59	3	1997–1999	0.64	M-v	3	Williams	36083	1998 HM ₁₂₁
1998 HV ₁₂₁	12.7	0.15	19990810	313.98625	244.22743	116.49155	10.92210	0.0960731	3.0259602	46	4	1992–1999	0.55	M-v	2	Williams	35708	1998 HV ₁₂₁
1998 HD ₁₂₃	15.1	0.15	19990810	204.80862	8.77282	139.60137	4.83856	0.0935593	2.1996644	55	2	1998–1999	0.62	M-v	4	Williams	35989	1998 HD ₁₂₃
1998 HH ₁₂₃	13.5	0.15	19990810	307.95039	207.39974	181.59852	11.82190	0.0848455	2.6009336	75	3	1995–1999	0.59	M-v	3	Williams	36083	1998 HH ₁₂₃
1998 HK ₁₂₄	14.8	0.15	19990810	352.21186	250.57997	126.99809	6.20678	0.1192167	2.2147043	34	3	1984–1999	0.59	M-v	3	Williams	36083	1998 HK ₁₂₄
1998 HO ₁₂₄	14.3	0.15	19990810	217.85174	321.31639	155.80477	6.09330	0.1201513	2.4103555	61	3	1993–1999	0.56	M-v	3	Williams	35989	1998 HO ₁₂₄
1998 HX ₁₂₄	14.5	0.15	19990810	112.88196	70.59015	161.66052	11.87747	0.0590921	2.4477091	51	3	1995–1999	0.69	M-v	3	Williams	35990	1998 HX ₁₂₄
1998 HG ₁₂₅	14.1	0.15	19990810	57.62672	117.26069	177.47822	14.57516	0.1696055	2.6058724	46	2	1998–1999	0.61	M-v	4	Williams	35990	1998 HG ₁₂₅
1998 HY ₁₂₇	15.1	0.15	19990810	349.55488	322.55393	18.97682	4.63254	0.0751748	2.4233035	45	2	1998–1999	0.67	M-v	4	Williams	35990	1998 HY ₁₂₇
1998 HC ₁₂₉	15.3	0.15	19990810	152.37423	195.25301	339.62038	6.16140	0.0459029	2.3263714	42	3	1994–1999	0.59	M-v	4	Williams	35990	1998 HC ₁₂₉
1998 HD ₁₂₉	14.5	0.15	19990810	18.20499	313.43831	356.07465	12.61294	0.1690400	2.5349651	87	5	1991–1999	0.63	M-v	2	Williams	35991	1998 HD ₁₂₉
1998 HR ₁₃₆	15.5	0.15	19990810	91.00964	62.00603	174.08256	3.58145	0.1164891	2.4866369	40	4	1979–1999	0.76	M-v	2	Williams	36083	1998 HR ₁₃₆
1998 HV ₁₃₇	15.1	0.15	19990810	9.06299	334.31946	2.29311	6.81847	0.1251812	2.3516219	91	3	1994–1999	0.58	M-v	3	Williams	36083	1998 HV ₁₃₇
1998 HV ₁₄₃	14.8	0.15	19990810	332.28944	344.06463	29.61720	7.52436	0.1209034	2.4110504	46	2	1998–1999	0.56	M-v	4	Williams	35991	1998 HV ₁₄₃
1998 HT ₁₄₇	14.5	0.15	19990810	57.95257	105.72369	184.07304	14.13527	0.1932189	2.6749966	47	4	1990–1999	0.77	M-v	1	Williams	34918	1998 HT ₁₄₇
1998 HZ ₁₄₇	15.2	0.15	19990810	107.38069	198.49863	58.97961	0.91546	0.1831356	2.3636379	53	4	1977–1999	0.59	M-v	2	Williams	32331	1998 HZ ₁₄₇
1998 HB ₁₄₈	14.1	0.15	19990810	39.35114	138.12996	148.96519	1.36941	0.1595676	3.2162077	63	3	1992–1999	0.55	M-v	3	Williams	35991	1998 HB ₁₄₈
1998 HD ₁₄₈	13.7	0.15	19990810	277.00871	188.39891	234.65359	12.15211	0.1481842	2.5976325	61	3	1991–1999	0.56	M-v	3	Williams	36083	1998 HD ₁₄₈
1998 HF ₁₄₈	13.6	0.15	19990810	341.64600	154.06603	185.76926	2.22247	0.0633073	3.1961902	32	4	1993–1999	0.77	M-v	1	Williams	35440	1998 HF ₁₄₈
1998 HN ₁₄₈	14.3	0.15	19990810	38.15942	126.11103	169.48842	2.01605	0.0887464	2.9366552	46	2	1998–1999	0.70	M-v	4	Williams	35991	1998 HN ₁₄₈
1998 HV ₁₄₈	14.1	0.15	19990810	15.60019	289.15982	39.99038	3.07897	0.1816108	2.9892905	64	3	1994–1999	0.71	M-v	3	Williams	36083	1998 HV ₁₄₈
1998 HL ₁₄₉	14.1	0.15	19990810	131.04681	177.70418	31.58582	5.79769	0.1218115	2.2513096	52	3	1991–1999	0.54	M-v	3	Williams	35992	1998 HL ₁₄₉
1998 HT ₁₅₀	15.5	0.15	19990810	139.43246	94.22530	121.14790	4.46636	0.0442853	2.1900578	43	3	1973–1999	0.60	M-v	3	Williams	36083	1998 HT ₁₅₀
1998 JK	14.1	0.15	19990810	122.34059	132.25410	68.39654	3.23176	0.1448517	2.3980214	77	4	1976–1999	0.60	M-v	2	Williams	36083	1998 JK
1998 JQ	14.3	0.15	19990810	49.50753	306.33944	7.51850	7.44787	0.1421974	2.3218179	47	3	1994–1999	0.57	M-v	2	Williams	32027	1998 JQ
1998 JT	14.7	0.15	19990810	39.03229	86.10181	251.32708	6.11600	0.2205220	2.2548586	38	3	1985–1999	0.61	M-v	3	Williams	35708	1998 JT

1998 JW	14.3	0.15	19990810	40.94643	66.99018	220.21922	11.69367	0.0839757	2.7188802	79	3	1995–1999	0.67	M-v	2	Williams	36083	1998 JW
1998 JH ₁	14.4	0.15	19990810	70.39921	18.76074	258.58461	8.02085	0.0487531	2.4507174	47	2	1998–1999	0.38	M-v	3	Williams	35992	1998 JH ₁
1998 JQ ₁	14.9	0.15	19990810	139.05195	355.73156	217.16501	9.71602	0.0958573	2.3135662	85	3	1993–1999	0.51	M-v	3	Williams	35992	1998 JQ ₁
1998 JY ₁	13.7	0.15	19990810	328.99660	74.88383	303.35750	6.08762	0.1252840	2.6386703	60	3	1984–1999	0.57	M-v	3	Williams	35992	1998 JY ₁
1998 JA ₂	14.6	0.15	19990810	105.47331	207.40264	42.73687	3.01928	0.1276612	2.4247377	64	4	1979–1999	0.62	M-v	2	Williams	32028	1998 JA ₂
1998 JE ₂	14.9	0.15	19990810	152.33215	50.59634	140.32549	3.11226	0.1331132	2.4124212	63	4	1991–1999	0.57	M-v	3	Williams	36083	1998 JE ₂
1998 JO ₂	14.8	0.15	19990810	181.96586	87.59023	81.24647	9.62010	0.0638608	2.2884815	56	3	1996–1999	0.58	M-v	3	Williams	36083	1998 JO ₂
1998 JQ ₂	14.2	0.15	19990810	32.81456	164.95725	154.99835	8.16783	0.1970905	2.6866717	37	3	1990–1999	0.66	M-v	2	Williams	35708	1998 JQ ₂
1998 JE ₃	14.2	0.15	19990810	73.77824	109.63766	184.00923	7.17114	0.1344681	2.3609697	63	5	1988–1999	0.62	M-v	1	Williams	32332	1998 JE ₃
1998 JF ₃	14.5	0.15	19990810	321.06494	216.45932	171.91836	8.00083	0.0587230	2.4619909	67	2	1998–1999	0.62	M-v	3	Williams	35992	1998 JF ₃
1998 JH ₃	13.5	0.15	19990810	321.83750	295.01381	92.12993	10.01267	0.1331628	2.5235134	31	3	1987–1999	0.74	M-v	4	Williams	36083	1998 JH ₃
1998 JK ₃	13.4	0.15	19990810	352.88385	214.87599	123.26968	6.33887	0.1580498	3.1227797	51	3	1992–1999	0.60	M-v	3	Williams	35993	1998 JK ₃
1998 JE ₄	14.6	0.15	19990810	78.40519	22.15234	235.60273	12.98204	0.1588326	2.7184892	56	2	1998–1999	0.77	M-v	4	Williams	35993	1998 JE ₄
1998 JH ₄	15.2	0.15	19990810	45.00544	208.49279	85.66752	3.74371	0.0431499	2.6922320	44	2	1998–1999	0.71	M-v	4	Williams	35993	1998 JH ₄
1998 JK ₄	14.7	0.15	19990810	83.29806	72.28636	221.27515	3.52561	0.1549554	2.2666229	39	3	1991–1999	0.69	M-v	4	Williams	32029	1998 JK ₄
1998 KK	12.6	0.15	19990810	180.18479	227.84551	245.35685	5.19444	0.1484625	3.0936197	36	4	1990–1999	0.71	M-v	1	Williams	35078	1998 KK
1998 KJ ₁	14.9	0.15	19990810	109.18322	351.14241	236.14228	1.09918	0.1523466	2.6108575	66	4	1993–1999	0.59	M-v	2	Williams	36083	1998 KJ ₁
1998 KL ₁	14.1	0.15	19990810	93.24454	207.47290	32.90887	2.49701	0.0412687	2.6788065	79	4	1995–1999	0.67	M-v	1	Williams	35994	1998 KL ₁
1998 KG ₂	14.7	0.15	19990810	92.54888	4.88990	253.70211	15.05969	0.2598143	2.6104795	40	3	1977–1999	0.63	M-v	3	Williams	32275	1998 KG ₂
1998 KQ ₂	14.4	0.15	19990810	126.17270	359.01845	249.47216	22.92494	0.1086782	2.2703880	36	3	1989–1999	0.72	M-v	3	Williams	32276	1998 KQ ₂
1998 KE ₃	15.5	0.15	19990810	169.85216	130.37959	63.02017	47.88712	0.2534454	2.0494263	162	2	1998–1999	0.65	M-v	3	Williams	35627	1998 KE ₃
1998 KW ₃	13.5	0.15	19990810	71.13681	63.68222	180.80884	5.37620	0.1081312	3.1316482	72	3	1994–1999	0.60	M-v	3	Williams	36083	1998 KW ₃
1998 KC ₄	12.6	0.15	19990810	38.17094	219.66816	65.15891	10.43551	0.0520894	3.0649019	52	4	1979–1999	0.52	M-v	1	Williams	36083	1998 KC ₄
1998 KW ₄	15.5	0.15	19990810	139.16982	12.17020	213.20505	4.56484	0.1408833	2.2855444	42	3	1996–1999	0.56	M-v	4	Williams	32031	1998 KW ₄
1998 KC ₅	13.0	0.15	19990810	319.76765	243.27293	137.74840	2.74615	0.1268228	2.9310864	103	6	1974–1999	0.54	M-v	3	Williams	36083	1998 KC ₅
1998 KD ₅	12.9	0.15	19990810	58.52747	275.45691	42.38260	10.12805	0.0883865	3.0750261	48	4	1981–1999	0.50	M-v	1	Williams	32522	1998 KD ₅
1998 KP ₆	14.1	0.15	19990810	61.84560	66.29643	212.05216	7.29246	0.0815755	2.7314719	60	2	1998–1999	0.63	M-v	3	Williams	35994	1998 KP ₆
1998 KV ₇	14.0	0.15	19990810	43.38280	135.88696	149.84614	2.91855	0.0476998	2.9634454	55	4	1992–1999	0.72	M-v	1	Williams	36084	1998 KV ₇
1998 KW ₇	12.7	0.15	19990810	165.79595	290.72408	220.81301	8.97924	0.0469323	3.0327746	69	3	1995–1999	0.59	M-v	3	Williams	36084	1998 KW ₇
1998 KK ₈	13.5	0.15	19990810	35.92292	91.00879	202.03403	10.31634	0.0750116	2.9993792	60	2	1998–1999	0.54	M-v	3	Williams	35994	1998 KK ₈
1998 KM ₈	13.9	0.15	19990810	58.23203	93.72670	195.33606	8.90967	0.2042643	2.8488400	58	3	1979–1999	0.44	M-v	3	Williams	32277	1998 KM ₈
1998 KZ ₈	13.0	0.15	19990810	287.17400	321.96131	96.53597	15.90913	0.0706910	2.5503770	37	3	1975–1999	0.65	M-v	3	Williams	36084	1998 KZ ₈
1998 KC ₉	13.9	0.15	19990810	45.47174	105.76723	183.55856	16.06328	0.2176517	3.1255362	59	3	1997–1999	0.57	M-v	3	Williams	35995	1998 KC ₉
1998 KM ₉	15.1	0.15	19990810	247.72902	338.78173	137.16821	7.54138	0.0763623	2.3745455	36	2	1998–1999	0.48	M-v	4	Williams	35995	1998 KM ₉
1998 KW ₉	13.0	0.15	19990810	14.19798	36.36890	286.35631	9.18728	0.2106403	3.1586554	62	2	1998–1999	0.41	M-v	3	Williams	35995	1998 KW ₉
1998 KF ₁₀	14.3	0.15	19990810	347.76088	172.45686	174.67201	5.19493	0.0555097	2.7153992	88	4	1995–1999	0.69	M-v	1	Williams	35995	1998 KF ₁₀
1998 KN ₁₀	15.5	0.15	19990810	354.18129	154.24396	193.81563	14.32014	0.0557628	2.6651327	38	4	1973–1999	0.62	M-v	1	Williams	36084	1998 KN ₁₀
1998 KK ₁₇	16.3	0.15	19990810	305.70173	333.85797	141.48086	11.14637	0.5245589	1.4258213	140	3	1992–1999	0.58	M-v	2	Williams	35708	1998 KK ₁₇
1998 KS ₁₉	13.3	0.15	19990810	279.91324	216.98403	194.33035	9.10118	0.0700602	2.6490584	55	2	1998–1999	0.54	M-v	3	Williams	35996	1998 KS ₁₉
1998 KT ₂₈	13.1	0.15	19990810	258.75998	209.73688	207.55895	9.44993	0.0981881	3.0518341	51	4	1982–1999	0.82	M-v	1	Williams	35708	1998 KT ₂₈
1998 KR ₂₉	12.8	0.15	19990810	292.86835	270.61180	132.25029	6.48061	0.0782360	2.7607285	52	3	1949–1999	0.54	M-v	3	Williams	35996	1998 KR ₂₉
1998 KE ₃₀	14.1	0.15	19990810	31.59500	59.61841	250.43232	6.19967	0.0691311	2.7552684	54	3	1981–1999	0.58	M-v	2	Williams	36084	1998 KE ₃₀
1998 KH ₃₀	14.7	0.15	19990810	175.65246	258.82624	282.71328	7.18705	0.0826578	2.3084093	78	3	1987–1999	0.57	M-v	3	Williams	35996	1998 KH ₃₀
1998 KZ ₃₀	15.0	0.15	19990810	93.62621	59.82548	209.52480	1.89210	0.1546677	2.4292192	43	4	1994–1999	0.50	M-v	2	Williams	35996	1998 KZ ₃₀
1998 KL ₃₁	13.2	0.15	19990810	90.56105	169.46306	81.74512	14.48191	0.1265004	2.6747280	59	4	1989–1999	0.74	M-v	2	Williams	36084	1998 KL ₃₁
1998 KC ₃₂	14.5	0.15	19990810	257.63988	9.61054	78.46822	3.53020	0.1566098	2.4315056	47	4	1992–1999	0.72	M-v	1	Williams	35996	1998 KC ₃₂
1998 KT ₃₂	14.6	0.15	19990810	77.76703	247.95852	42.21292	4.77508	0.1267307	2.4138050	58	4	1995–1999	0.57	M-v	1	Williams	35708	1998 KT ₃₂
1998 KV ₃₂	14.7	0.15	19990810	84.18371	31.50176	261.95876	6.28712	0.1859176	2.3548829	51	3	1995–1999	0.70	M-v	3	Williams	35708	1998 KV ₃₂
1998 KR ₃₃	16.3	0.15	19990810	176.35853	118.46128	65.68497	2.77589	0.1376839	2.2241350	25	3	1996–1999	0.54	M-v	5	Williams	32688	1998 KR ₃₃
1998 KV ₃₃	14.7	0.15	19990810	67.63810	159.44963	99.92033	0.82581	0.1823686	3.0997819	28	2	1998–1999	0.51	M-v	4	Williams	35997	1998 KV ₃₃
1998 KW ₃₃	14.7	0.15	19990810	359.76225	215.17000	144.55515	0.92725	0.1201220	2.5764432	20	4	1994–1999	0.73	M-v	2	Williams	32755	1998 KW ₃₃
1998 KB ₃₄	13.9	0.15	19990810	65.40403	86.15316	171.43848	4.05376	0.1189514	3.1249419	58	3	1994–1999	0.64	M-v	4	Williams	35997	1998 KB ₃₄
1998 KW ₃₄	15.6	0.15	19990810	72.60313	108.24656	183.14938	5.08723	0.1868402	2.5468376	32	4	1995–1999	0.59	M-v	1	Williams	32334	1998 KW ₃₄

1998 KY ₃₄	15.0	0.15	19990810	32.10661	142.65259	169.68924	4.32738	0.0927469	2.8015570	41	2	1998–1999	0.71	M-v	4	Williams	35997	1998 KY ₃₄
1998 KF ₃₅	13.7	0.15	19990810	28.73968	272.08912	71.98432	7.02009	0.1540820	2.4492162	59	5	1953–1999	0.63	M-v	1	Williams	34920	1998 KF ₃₅
1998 KL ₃₅	14.9	0.15	19990810	290.87346	4.00935	70.34095	5.98464	0.1129252	2.2812896	41	3	1982–1999	0.57	M-v	4	Williams	36084	1998 KL ₃₅
1998 KM ₃₅	14.1	0.15	19990810	73.71700	202.72691	64.13265	16.35407	0.2422860	2.8918971	42	3	1993–1999	0.66	M-v	3	Williams	36084	1998 KM ₃₅
1998 KS ₃₅	14.4	0.15	19990810	149.20318	107.98256	102.23995	0.75725	0.1458804	2.2972419	53	4	1993–1999	0.57	M-v	3	Williams	32522	1998 KS ₃₅
1998 KT ₃₆	14.6	0.15	19990810	153.34386	315.00245	256.64179	3.69467	0.1041848	2.2711703	60	3	1996–1999	0.57	M-v	4	Williams	36084	1998 KT ₃₆
1998 KL ₃₇	14.1	0.15	19990810	279.42798	239.11876	206.46411	5.91858	0.0703591	2.2905756	67	3	1992–1999	0.53	M-v	3	Williams	36084	1998 KL ₃₇
1998 KM ₃₇	14.6	0.15	19990810	76.63346	167.38657	115.44391	3.84796	0.2428781	2.6510689	46	3	1990–1999	0.60	M-v	3	Williams	32279	1998 KM ₃₇
1998 KP ₃₇	14.7	0.15	19990810	197.18531	341.85543	162.70480	4.99900	0.0605234	2.5642823	55	2	1998–1999	0.51	M-v	4	Williams	35997	1998 KP ₃₇
1998 KV ₃₇	15.2	0.15	19990810	64.32982	196.37189	109.98708	6.74729	0.2060942	2.5423846	34	4	1995–1999	0.69	M-v	2	Williams	35708	1998 KV ₃₇
1998 KX ₃₇	14.1	0.15	19990810	83.41745	168.79403	89.28357	9.25962	0.1459851	2.7707428	49	3	1995–1999	0.61	M-v	3	Williams	36084	1998 KX ₃₇
1998 KG ₃₈	13.6	0.15	19990810	351.92115	182.80830	173.71313	2.87948	0.0999610	2.7900937	89	3	1985–1999	0.63	M-v	3	Williams	36084	1998 KG ₃₈
1998 KQ ₃₈	14.7	0.15	19990810	171.32651	153.82397	25.43026	2.54769	0.1402843	2.3650460	53	2	1998–1999	0.78	M-v	4	Williams	35997	1998 KQ ₃₈
1998 KZ ₃₈	13.2	0.15	19990810	87.76682	5.97928	261.99190	13.26174	0.1396751	2.5745588	44	2	1998–1999	0.52	M-v	3	Williams	35337	1998 KZ ₃₈
1998 KS ₃₉	13.9	0.15	19990810	253.31628	279.07311	162.84865	2.33627	0.0333698	2.8333933	58	4	1996–1999	0.73	M-v	2	Williams	36084	1998 KS ₃₉
1998 KE ₄₀	14.1	0.15	19990810	295.65468	307.53764	126.55636	4.41361	0.1268642	2.2658969	43	3	1982–1999	0.75	M-v	4	Williams	35998	1998 KE ₄₀
1998 KF ₄₀	12.8	0.15	19990810	201.61185	268.35883	226.03645	12.49035	0.1150272	2.6076954	47	2	1998–1999	0.50	M-v	4	Williams	35998	1998 KF ₄₀
1998 KG ₄₁	14.2	0.15	19990810	350.78816	307.25870	78.55397	2.20961	0.0291499	2.2541320	54	5	1977–1999	0.83	M-v	1	Williams	34920	1998 KG ₄₁
1998 KM ₄₁	14.4	0.15	19990810	217.04848	92.47991	56.92875	7.30343	0.0644876	2.2743640	19	3	1975–1999	0.56	M-v	4	Williams	32688	1998 KM ₄₁
1998 KP ₄₁	15.7	0.15	19990810	148.07837	269.81680	317.62009	3.64227	0.0873744	2.2160876	31	3	1994–1999	0.67	M-v	4	Williams	32280	1998 KP ₄₁
1998 KR ₄₂	14.1	0.15	19990810	151.95573	350.06749	190.18510	12.95960	0.0996134	2.7242610	51	3	1977–1999	0.82	M-v	3	Williams	36084	1998 KR ₄₂
1998 KD ₄₄	14.8	0.15	19990810	125.38495	344.41105	250.10916	5.71090	0.0661634	2.4429909	46	2	1998–1999	0.70	M-v	4	Williams	35998	1998 KD ₄₄
1998 KT ₄₄	14.2	0.15	19990810	35.04798	132.48193	199.36051	6.90733	0.1917380	2.6891652	48	4	1992–1999	0.64	M-v	2	Williams	32755	1998 KT ₄₄
1998 KH ₄₅	15.5	0.15	19990810	86.53775	189.47706	96.46040	4.24031	0.1720036	2.4438379	27	3	1995–1999	0.61	M-v	3	Williams	32280	1998 KH ₄₅
1998 KN ₄₅	13.8	0.15	19990810	76.27154	170.55974	77.53750	2.11079	0.0964773	3.2177400	33	2	1998–1999	0.77	M-v	5	Williams	35998	1998 KN ₄₅
1998 KM ₄₆	14.2	0.15	19990810	300.15877	242.96957	190.80935	6.16290	0.0764506	2.2924473	52	4	1992–1999	0.62	M-v	2	Williams	32335	1998 KM ₄₆
1998 KO ₄₆	14.3	0.15	19990810	95.97713	133.76507	124.00066	5.58443	0.0547130	2.6055273	44	5	1991–1999	0.67	M-v	2	Williams	36084	1998 KO ₄₆
1998 KS ₄₆	14.5	0.15	19990810	54.51099	124.63665	216.66308	6.63392	0.1955084	2.3078264	42	3	1991–1999	0.62	M-v	3	Williams	32281	1998 KS ₄₆
1998 KW ₄₆	12.7	0.15	19990810	20.01892	74.28807	245.14284	11.53272	0.0833940	3.1004555	62	3	1978–1999	0.56	M-v	3	Williams	36084	1998 KW ₄₆
1998 KZ ₄₆	13.0	0.15	19990810	326.81050	136.80282	258.77195	13.97427	0.1173663	2.6034328	67	3	1991–1999	0.63	M-v	3	Williams	36084	1998 KZ ₄₆
1998 KH ₄₇	13.0	0.15	19990810	151.78442	300.17226	236.30155	12.30344	0.0434541	3.0546881	60	2	1998–1999	0.60	M-v	4	Williams	35998	1998 KH ₄₇
1998 KR ₄₇	14.3	0.15	19990810	54.09846	101.13234	223.34751	10.05368	0.2733568	2.6765476	32	3	1990–1999	0.72	M-v	3	Williams	32281	1998 KR ₄₇
1998 KS ₄₇	14.4	0.15	19990810	167.83558	27.98327	148.11585	4.52112	0.0759269	2.6551613	34	5	1980–1999	0.81	M-v	2	Williams	36084	1998 KS ₄₇
1998 KV ₄₇	14.1	0.15	19990810	266.41012	238.74949	218.97924	5.05132	0.1009602	2.3857125	76	3	1977–1999	0.68	M-v	3	Williams	36084	1998 KV ₄₇
1998 KW ₄₇	13.1	0.15	19990810	115.85131	33.46273	208.09728	2.75187	0.1386032	2.5249507	67	3	1995–1999	0.57	M-v	3	Williams	32522	1998 KW ₄₇
1998 KX ₄₇	14.0	0.15	19990810	171.89209	123.49710	71.29882	8.66080	0.0538463	2.3638926	39	3	1981–1999	0.76	M-v	4	Williams	36084	1998 KX ₄₇
1998 KZ ₄₇	14.3	0.15	19990810	100.69301	176.21944	107.51867	7.62253	0.1179150	2.2886256	32	4	1995–1999	0.72	M-v	2	Williams	35078	1998 KZ ₄₇
1998 KE ₄₈	14.7	0.15	19990810	128.71062	125.25580	125.89907	2.93011	0.0954434	2.2700415	41	5	1977–1999	0.80	M-v	2	Williams	32755	1998 KE ₄₈
1998 KL ₄₈	14.9	0.15	19990810	33.94972	244.76249	116.48839	7.05450	0.1453056	2.2753943	28	5	1991–1999	0.70	M-v	1	Williams	34532	1998 KL ₄₈
1998 KW ₅₀	14.5	0.15	19990810	120.56350	75.93522	148.20391	9.07772	0.1119622	2.5594002	34	2	1998–1999	0.56	M-v	4	Williams	35999	1998 KW ₅₀
1998 KB ₅₁	13.4	0.15	19990810	112.19373	60.20295	179.00761	8.51661	0.1067180	2.5180761	80	6	1982–1999	0.46	M-v	3	Williams	36084	1998 KB ₅₁
1998 KE ₅₁	14.2	0.15	19990810	124.45665	5.89208	205.70500	12.98840	0.1060229	2.7005986	36	2	1998–1999	0.60	M-v	4	Williams	35999	1998 KE ₅₁
1998 KF ₅₁	13.9	0.15	19990810	192.49577	291.95429	214.23362	14.86853	0.1178187	2.5314309	48	2	1998–1999	0.62	M-v	4	Williams	35999	1998 KF ₅₁
1998 KG ₅₁	14.8	0.15	19990810	33.59280	183.81645	163.03360	6.05210	0.1369117	2.3375963	34	3	1981–1999	0.49	M-v	3	Williams	32282	1998 KG ₅₁
1998 KQ ₅₁	12.9	0.15	19990810	242.92299	277.78174	163.82870	11.16278	0.0892311	2.9842112	75	4	1994–1999	0.67	M-v	1	Williams	36084	1998 KQ ₅₁
1998 KS ₅₁	14.2	0.15	19990810	52.33815	139.50083	178.71031	10.96599	0.1887697	2.5451027	33	3	1978–1999	0.68	M-v	2	Williams	32335	1998 KS ₅₁
1998 KT ₅₁	14.3	0.15	19990810	123.80806	41.39932	170.49294	11.16707	0.0889319	2.6997372	54	2	1998–1999	0.67	M-v	4	Williams	35999	1998 KT ₅₁
1998 KU ₅₁	13.7	0.15	19990810	31.72355	168.37498	134.06743	11.71385	0.0980895	3.0188958	53	3	1993–1999	0.63	M-v	2	Williams	36084	1998 KU ₅₁
1998 KF ₅₃	13.8	0.15	19990810	115.49261	83.34507	140.40734	11.16700	0.1431115	2.6609687	50	2	1998–1999	0.52	M-v	3	Williams	35999	1998 KF ₅₃
1998 KA ₅₄	13.5	0.15	19990810	174.75264	323.04058	210.83930	13.89741	0.0560478	2.5599687	46	2	1998–1999	0.51	M-v	4	Williams	36084	1998 KA ₅₄
1998 KK ₅₄	13.4	0.15	19990810	198.96942	19.09054	112.45262	14.54837	0.0752868	2.8474856	42	4	1992–1999	0.75	M-v	1	Williams	36084	1998 KK ₅₄
1998 KM ₅₄	15.3	0.15	19990810	118.10162	115.48884	115.37587	10.87961	0.1252526	2.5825184	23	3	1997–1999	0.78	M-v	3	Williams	32336	1998 KM ₅₄
1998 KP ₅₄	13.6	0.15	19990810	28.95215	232.98346	97.67189	13.86961	0.1530674	2.7773181	43	3	1990–1999	0.58	M-v	2	Williams	36084	1998 KP ₅₄

1998 KR ₅₄	14.1	0.15	19990810	341.49196	288.43092	104.47539	14.03919	0.1212126	2.3980098	40	3	1982–1999	0.81	M-v	3	Williams	36084	1998 KR ₅₄
1998 KW ₅₄	12.8	0.15	19990810	34.42130	129.55374	187.65608	16.49456	0.2308526	3.1239779	56	4	1960–1999	0.56	M-v	1	Williams	32283	1998 KW ₅₄
1998 KZ ₅₄	13.2	0.15	19990810	50.34462	112.30648	178.50468	10.59594	0.1148564	3.0393449	77	3	1997–1999	0.59	M-v	3	Williams	36084	1998 KZ ₅₄
1998 KA ₅₅	13.1	0.15	19990810	9.91642	199.09135	135.05004	10.67678	0.0775262	2.9965870	47	3	1992–1999	0.42	M-v	2	Williams	36084	1998 KA ₅₅
1998 KB ₅₅	13.7	0.15	19990810	351.89432	207.27446	165.14047	8.97785	0.1411415	2.6942297	52	4	1985–1999	0.62	M-v	2	Williams	36084	1998 KB ₅₅
1998 KK ₅₅	13.8	0.15	19990810	284.84574	242.15762	182.61651	9.58685	0.0321126	2.7402651	73	3	1997–1999	0.58	M-v	3	Williams	36000	1998 KK ₅₅
1998 KL ₅₅	13.3	0.15	19990810	45.84267	91.26520	201.52118	9.11968	0.0687118	3.0592308	82	5	1992–1999	0.56	M-v	1	Williams	36084	1998 KL ₅₅
1998 KN ₅₅	13.7	0.15	19990810	244.68931	278.90740	177.34556	9.04745	0.1362101	2.7928771	49	2	1998–1999	0.61	M-v	4	Williams	36000	1998 KN ₅₅
1998 KR ₅₅	14.4	0.15	19990810	67.66928	114.11743	160.25513	9.22787	0.0396825	2.9730848	44	4	1988–1999	0.67	M-v	2	Williams	36084	1998 KR ₅₅
1998 KU ₅₅	13.4	0.15	19990810	330.81458	264.07124	138.37906	8.12389	0.1732619	2.5591645	53	4	1983–1999	0.69	M-v	3	Williams	36084	1998 KU ₅₅
1998 KC ₅₆	13.6	0.15	19990810	288.16508	273.90969	172.62242	12.29643	0.1323174	2.3483154	34	2	1998–1999	0.44	M-v	4	Williams	36000	1998 KC ₅₆
1998 KK ₅₈	15.0	0.15	19990810	75.56701	259.89553	357.55075	1.68401	0.0936913	2.8667410	38	3	1997–1999	0.50	M-v	4	Williams	36000	1998 KK ₅₈
1998 KZ ₅₉	14.6	0.15	19990810	122.83062	57.55845	163.56629	15.01908	0.1015521	2.5341793	31	2	1998–1999	0.74	M-v	4	Williams	36001	1998 KZ ₅₉
1998 KL ₆₅	14.7	0.15	19990810	100.33030	228.78028	44.80434	2.92198	0.1849253	2.4176014	34	4	1995–1999	0.68	M-v	2	Williams	32755	1998 KL ₆₅
1998 LA	14.7	0.15	19990810	109.37180	126.90164	119.96000	5.01458	0.2114228	2.5780181	74	4	1994–1999	0.68	M-v	2	Williams	32755	1998 LA
1998 LK ₂	13.9	0.15	19990810	63.93920	176.66527	163.53693	6.63084	0.2108667	2.3190688	32	5	1959–1999	0.64	M-v	1	Williams	32523	1998 LK ₂
1998 LL ₂	13.1	0.15	19990810	163.00437	35.45252	140.94821	11.00045	0.0448221	2.9906734	62	3	1992–1999	0.56	M-v	3	Williams	36001	1998 LL ₂
1998 LB ₃	13.6	0.15	19990810	314.28263	217.48035	197.08736	9.32606	0.1107794	2.6962972	67	4	1977–1999	0.46	M-v	2	Williams	36084	1998 LB ₃
1998 MG ₁	14.7	0.15	19990810	51.52307	113.44886	173.88500	4.16398	0.0762391	2.7999987	46	3	1995–1999	0.53	M-v	3	Williams	36001	1998 MG ₁
1998 MY ₁	14.5	0.15	19990810	207.74949	261.44345	231.62301	11.34357	0.1157895	2.6452401	50	3	1991–1999	0.49	M-v	2	Williams	36084	1998 MY ₁
1998 MF ₃	15.6	0.15	19990810	239.48546	169.71505	359.90032	3.03621	0.0655899	2.1518029	32	4	1991–1999	0.52	M-v	2	Williams	32486	1998 MF ₃
1998 MH ₃	14.4	0.15	19990810	292.60518	173.74371	236.95423	27.62530	0.0331252	2.6419659	30	3	1978–1999	0.83	M-v	4	Williams	32285	1998 MH ₃
1998 ML ₄	13.0	0.15	19990810	4.32057	176.53238	143.29658	24.50932	0.0955790	3.2388382	62	2	1998–1999	0.59	M-v	3	Williams	36084	1998 ML ₄
1998 MZ ₇	12.6	0.15	19990810	56.86377	93.18662	246.94148	14.16926	0.2905653	3.1008717	64	4	1987–1999	0.66	M-v	1	Williams	33558	1998 MZ ₇
1998 MA ₈	12.7	0.15	19990810	82.95183	54.00887	253.15635	15.89519	0.0970035	2.8982520	24	3	1977–1999	0.68	M-v	3	Williams	32487	1998 MA ₈
1998 MZ ₈	14.1	0.15	19990810	76.86246	84.20144	174.10541	8.77772	0.0802071	3.0599036	67	3	1994–1999	0.63	M-v	3	Williams	36001	1998 MZ ₈
1998 MN ₁₆	14.0	0.15	19990810	27.41320	271.82941	115.30302	14.21303	0.1759760	2.5905777	41	3	1995–1999	0.63	M-v	2	Williams	32523	1998 MN ₁₆
1998 MM ₁₉	14.8	0.15	19990810	245.35852	335.30655	196.18298	21.24651	0.0575942	1.9383167	36	4	1977–1999	0.73	M-v	2	Williams	32286	1998 MM ₁₉
1998 MZ ₂₃	13.4	0.15	19990810	44.79280	79.73585	293.53086	5.55515	0.1495685	2.4681081	40	3	1994–1999	0.66	M-v	2	Williams	33078	1998 MZ ₂₃
1998 MS ₂₉	13.1	0.15	19990810	99.06785	133.71111	119.22353	6.41326	0.1197056	3.1653879	35	2	1998–1999	0.66	M-v	4	Williams	36001	1998 MS ₂₉
1998 MY ₂₉	12.2	0.15	19990810	137.16804	311.70624	272.77489	13.70428	0.1030624	2.8585392	62	3	1996–1999	0.54	M-v	3	Williams	36002	1998 MY ₂₉
1998 MZ ₃₀	13.5	0.15	19990810	17.55239	235.94727	144.60085	9.61637	0.1264886	2.6042263	32	4	1957–1999	0.68	M-v	1	Williams	32523	1998 MZ ₃₀
1998 MF ₃₂	12.8	0.15	19990810	286.53752	352.46721	98.58045	10.15238	0.0097786	2.7650109	40	3	1995–1999	0.63	M-v	4	Williams	35709	1998 MF ₃₂
1998 MT ₃₂	14.8	0.15	19990810	155.76991	356.03335	243.78423	4.17036	0.0995930	2.2925399	26	3	1994–1999	0.76	M-v	4	Williams	35709	1998 MT ₃₂
1998 MD ₃₃	12.8	0.15	19990810	345.93703	272.35601	130.62191	9.87673	0.1958442	3.0570118	34	4	1989–1999	0.72	M-v	1	Williams	33509	1998 MD ₃₃
1998 MT ₃₄	14.7	0.15	19990810	148.21033	9.71994	239.63632	5.61083	0.1409326	2.2749326	30	6	1984–1999	0.73	M-v	2	Williams	32756	1998 MT ₃₄
1998 MW ₃₄	14.5	0.15	19990810	141.91628	52.86164	203.80755	3.58080	0.1108274	2.3069207	26	5	1980–1999	0.58	M-v	2	Williams	35709	1998 MW ₃₄
1998 MF ₃₇	13.3	0.15	19990810	64.24021	187.27944	133.23699	13.50047	0.1833077	2.8817462	38	3	1995–1999	0.58	M-v	2	Williams	32756	1998 MF ₃₇
1998 MK ₃₇	14.1	0.15	19990810	111.97664	358.18277	276.56393	7.15245	0.1722100	2.5773550	32	4	1990–1999	0.70	M-v	2	Williams	32756	1998 MK ₃₇
1998 MR ₃₇	14.3	0.15	19990810	101.48049	245.23382	64.81924	4.21308	0.2129020	2.3438711	29	4	1991–1999	0.65	M-v	3	Williams	32756	1998 MR ₃₇
1998 MT ₃₇	14.3	0.15	19990810	22.01685	340.72173	47.93996	3.12428	0.2193097	2.7696144	24	4	1992–1999	0.62	M-v	1	Williams	32756	1998 MT ₃₇
1998 MV ₃₇	14.1	0.15	19990810	58.12063	249.04752	103.37593	14.45810	0.1608917	2.4737212	31	3	1994–1999	0.61	M-v	3	Williams	32524	1998 MV ₃₇
1998 MG ₃₈	14.5	0.15	19990810	115.61629	131.92610	246.33848	12.64581	0.2187067	2.6018355	56	3	1989–1999	0.69	M-v	3	Williams	36085	1998 MG ₃₈
1998 MC ₄₅	13.4	0.15	19990810	343.32232	186.59681	208.48042	13.30662	0.1639531	2.6097747	62	3	1995–1999	0.46	M-v	2	Williams	36085	1998 MC ₄₅
1998 OH	16.1	0.15	19990810	259.49210	321.59935	220.83780	24.51386	0.4061865	1.5417023	104	4	1991–1999	0.51	M-v	2	Williams	35709	1998 OH
1998 OP	15.1	0.15	19990810	124.81106	128.87322	161.43643	3.85544	0.1799629	2.1734724	38	5	1950–1999	0.81	M-v	2	Williams	35709	1998 OP
1998 OQ	15.5	0.15	19990810	292.25782	230.85028	235.94831	4.25682	0.1337058	2.5339290	31	4	1993–1999	0.43	M-v	1	Williams	32756	1998 OQ
1998 ON ₁	14.3	0.15	19990810	45.72547	164.08080	198.13130	7.73845	0.2335898	2.7634812	58	4	1994–1999	0.35	M-v	1	Williams	35628	1998 ON ₁
1998 OP ₂	13.6	0.15	19990810	144.36782	303.59104	297.06820	3.72678	0.0576448	2.7388723	62	4	1981–1999	0.61	M-v	1	Williams	32525	1998 OP ₂
1998 OZ ₄	14.1	0.15	19990810	352.84416	209.60789	206.67164	10.18121	0.1372366	3.1359615	38	3	1993–1999	0.60	M-v	3	Williams	36002	1998 OZ ₄
1998 OH ₆	12.7	0.15	19990810	212.98458	353.76737	165.96359	6.27876	0.0991556	3.1640280	80	5	1985–1999	0.75	M-v	2	Williams	36085	1998 OH ₆
1998 OU ₇	14.6	0.15	19990810	97.75490	26.24939	297.90596	5.34289	0.1259244	2.3443988	42	4	1991–1999	0.66	M-v	2	Williams	33346	1998 OU ₇
1998 OZ ₈	14.8	0.15	19990810	130.16897	338.19905	309.80487	3.56706	0.1401104	2.2689043	32	3	1996–1999	0.51	M-v	3	Williams	35709	1998 OZ ₈

1998 OU ₉	13.5	0.15	19990810	290.57950	204.67714	261.43727	0.88832	0.0143314	2.9020885	42	5	1979–1999	0.69	M-v	1	Williams	34532	1998 OU ₉
1998 OG ₁₂	14.2	0.15	19990810	141.82513	261.63765	343.37794	9.16108	0.0898315	2.6313393	46	4	1986–1999	0.65	M-v	2	Williams	33079	1998 OG ₁₂
1998 OM ₁₂	11.6	0.15	19990810	346.24370	324.41316	27.37541	7.48769	0.0379635	5.3296241	58	2	1998–1999	0.56	M-v	3	Williams	36085	1998 OM ₁₂
1998 ON ₁₃	14.1	0.15	19990810	81.23456	35.71627	318.18490	9.52799	0.0682710	2.2635243	54	3	1981–1999	0.67	M-v	2	Williams	33559	1998 ON ₁₃
1998 OZ ₁₄	13.9	0.15	19990810	54.69540	238.68916	140.46156	12.00075	0.1523792	2.4522838	58	4	1981–1999	0.72	M-v	2	Williams	33559	1998 OZ ₁₄
1998 PF	15.0	0.15	19990810	210.12387	53.53857	152.48595	41.95838	0.2874842	2.0084844	99	2	1998–1999	0.59	M-v	3	Williams	35628	1998 PF
1998 PL	15.0	0.15	19990810	75.55540	213.90873	125.22876	6.95901	0.1697203	2.2743113	41	3	1997–1999	0.58	M-v	2	Williams	35628	1998 PL
1998 PQ	13.9	0.15	19990810	146.54247	80.02468	160.90442	1.16662	0.1294109	3.0904746	31	3	1996–1999	0.78	M-v	4	Williams	32689	1998 PQ
1998 PA ₁	14.0	0.15	19990810	330.67000	196.19162	238.69362	5.63516	0.1293558	3.0477347	44	4	1991–1999	0.56	M-v	1	Williams	35628	1998 PA ₁
1998 PD ₁	13.2	0.15	19990810	110.93091	104.58859	172.67479	11.21987	0.1172541	3.0164251	52	4	1993–1999	0.72	M-v	1	Williams	35709	1998 PD ₁
1998 PN ₁	14.1	0.15	19990810	49.73026	295.64809	34.45023	5.05710	0.1424247	3.1808709	58	4	1993–1999	0.74	M-v	1	Williams	35709	1998 PN ₁
1998 PO ₁	13.1	0.15	19990810	307.94281	146.18221	275.46939	13.61075	0.0635569	2.5810669	60	2	1998–1999	0.55	M-v	3	Williams	36085	1998 PO ₁
1998 QW	13.9	0.15	19990810	87.09783	109.63210	212.38902	14.41398	0.1527070	2.6032927	42	3	1990–1999	0.67	M-v	2	Williams	33559	1998 QW
1998 QZ	13.5	0.15	19990810	161.41627	91.69209	176.22227	1.75627	0.0674479	2.8447954	82	5	1992–1999	0.58	M-v	1	Williams	34533	1998 QZ
1998 QR ₁	14.6	0.15	19990810	240.21901	290.85267	261.08143	5.50444	0.0872066	2.4565926	45	3	1995–1999	0.64	M-v	4	Williams	33347	1998 QR ₁
1998 QA ₂	14.4	0.15	19990810	17.42963	196.25754	216.88367	3.08659	0.1997520	2.6830076	36	4	1985–1999	0.70	M-v	1	Williams	32759	1998 QA ₂
1998 QW ₂	13.9	0.15	19990810	158.54688	261.64575	320.60646	45.76224	0.1811060	2.7502205	31	2	1998–1999	0.61	M-v	4	Williams	36002	1998 QW ₂
1998 QM ₅	13.8	0.15	19990810	75.01001	98.59251	195.99931	7.00737	0.1834909	2.3650747	67	4	1976–1999	0.53	M-v	1	Williams	35709	1998 QM ₅
1998 QN ₇	12.0	0.15	19990810	52.87003	349.55574	324.22324	17.04220	0.1086801	3.4077712	44	3	1996–1999	0.67	M-v	3	Williams	36085	1998 QN ₇
1998 QQ ₈	13.4	0.15	19990810	40.23736	232.33520	121.32515	6.86073	0.0745220	2.8015977	26	3	1997–1999	0.67	M-v	4	Williams	35710	1998 QQ ₈
1998 QM ₉	14.3	0.15	19990810	49.13803	117.52883	224.17194	4.95673	0.1570557	3.0545279	27	3	1997–1999	0.60	M-v	4	Williams	32760	1998 QM ₉
1998 QX ₉	13.9	0.15	19990810	23.62928	262.37348	116.41441	5.49710	0.2222916	3.1032347	34	6	1971–1999	0.64	M-v	1	Williams	35710	1998 QX ₉
1998 QR ₁₀	13.8	0.15	19990810	54.73499	34.83156	302.56111	0.97553	0.0870908	2.9282394	45	4	1996–1999	0.47	M-v	1	Williams	35710	1998 QR ₁₀
1998 QF ₁₁	13.4	0.15	19990810	288.47392	13.71730	116.23375	12.76178	0.0807758	2.3519725	32	4	1988–1999	0.59	M-v	2	Williams	32760	1998 QF ₁₁
1998 QH ₁₁	14.3	0.15	19990810	66.52707	244.52165	94.62454	3.63551	0.0985742	2.6246858	31	5	1960–1999	0.60	M-v	2	Williams	35710	1998 QH ₁₁
1998 QS ₁₁	14.7	0.15	19990810	269.00505	237.44816	273.27816	4.30846	0.0642478	2.3167982	24	3	1995–1999	0.67	M-v	4	Williams	35710	1998 QS ₁₁
1998 QZ ₁₁	14.3	0.15	19990810	25.96612	105.52981	297.03085	10.77499	0.1848637	2.5701886	22	3	1990–1999	0.51	M-v	2	Williams	33706	1998 QZ ₁₁
1998 QJ ₁₃	13.4	0.15	19990810	116.96144	130.58653	129.19950	7.28909	0.1492922	2.9383817	31	3	1994–1999	0.52	M-v	4	Williams	32692	1998 QJ ₁₃
1998 QZ ₁₅	13.0	0.15	19990810	111.69086	7.60674	287.25107	12.75062	0.1571491	2.5492242	71	5	1952–1999	0.68	M-v	2	Williams	34924	1998 QZ ₁₅
1998 QJ ₁₆	13.0	0.15	19990810	322.43403	173.13625	284.14852	7.21323	0.1859511	2.7931790	33	4	1949–1999	0.57	M-v	3	Williams	32760	1998 QJ ₁₆
1998 QP ₁₆	14.1	0.15	19990810	94.18513	129.68414	170.05801	9.52331	0.0457979	2.9665971	28	3	1971–1999	0.71	M-v	4	Williams	32693	1998 QP ₁₆
1998 QC ₁₇	14.0	0.15	19990810	229.80717	58.99204	127.80433	6.91431	0.0531582	2.3932044	26	3	1982–1999	0.78	M-v	3	Williams	33080	1998 QC ₁₇
1998 QF ₁₇	13.9	0.15	19990810	143.50989	146.38833	122.46400	6.32558	0.1022805	2.3773106	43	4	1991–1999	0.53	M-v	2	Williams	32760	1998 QF ₁₇
1998 QL ₁₈	14.0	0.15	19990810	359.42173	68.25383	340.76033	4.38080	0.1660655	3.1570552	35	4	1993–1999	0.60	M-v	1	Williams	35629	1998 QL ₁₈
1998 QN ₁₈	13.1	0.15	19990810	190.81546	223.01284	335.18073	10.20051	0.0506874	3.0077746	38	5	1991–1999	0.66	M-v	1	Williams	35710	1998 QN ₁₈
1998 QT ₁₈	14.2	0.15	19990810	122.09867	63.41034	238.15905	2.85262	0.1489229	2.2858433	38	3	1981–1999	0.61	M-v	4	Williams	32761	1998 QT ₁₈
1998 QK ₁₉	13.9	0.15	19990810	111.61514	181.61150	122.27905	7.71573	0.1135893	2.4180452	33	4	1983–1999	0.50	M-v	2	Williams	33081	1998 QK ₁₉
1998 QT ₁₉	13.8	0.15	19990810	119.07106	116.07241	165.14306	5.57426	0.0482727	2.8082952	43	6	1987–1999	0.83	M-v	1	Williams	35710	1998 QT ₁₉
1998 QV ₁₉	14.0	0.15	19990810	114.87762	127.43373	163.25183	4.95569	0.1135105	2.6006232	47	3	1997–1999	0.60	M-v	3	Williams	33347	1998 QV ₁₉
1998 QM ₂₀	12.7	0.15	19990810	265.55668	324.10258	169.67542	11.66348	0.0360131	3.0311595	64	3	1996–1999	0.52	M-v	3	Williams	35629	1998 QM ₂₀
1998 QJ ₂₁	13.6	0.15	19990810	83.82101	155.69560	146.62393	1.01424	0.1648304	3.0846595	49	5	1982–1999	0.65	M-v	1	Williams	33347	1998 QJ ₂₁
1998 QL ₂₂	13.4	0.15	19990810	32.73474	90.31111	281.30313	7.50053	0.1328971	3.1745920	34	4	1987–1999	0.82	M-v	1	Williams	33081	1998 QL ₂₂
1998 QV ₂₂	13.3	0.15	19990810	320.38518	66.82915	15.74045	1.94302	0.0871326	3.1132859	33	3	1993–1999	0.84	M-v	5	Williams	32695	1998 QV ₂₂
1998 QW ₂₂	14.5	0.15	19990810	353.65746	70.26628	14.26056	3.87145	0.0903265	2.2999868	35	3	1997–1999	0.73	M-v	4	Williams	35710	1998 QW ₂₂
1998 QD ₂₃	13.9	0.15	19990810	148.63604	249.71023	17.80027	5.68186	0.0603590	2.4219920	42	4	1987–1999	0.70	M-v	2	Williams	33559	1998 QD ₂₃
1998 QL ₂₃	14.0	0.15	19990810	24.39006	33.01709	352.43549	5.17552	0.2000780	3.1424007	56	3	1993–1999	0.61	M-v	2	Williams	33347	1998 QL ₂₃
1998 QJ ₂₅	14.5	0.15	19990810	341.53623	330.96978	129.10526	2.88093	0.1602676	2.3908566	45	4	1989–1999	0.76	M-v	1	Williams	35710	1998 QJ ₂₅
1998 QA ₂₆	13.5	0.15	19990810	42.12849	218.37454	154.66598	5.67820	0.0865882	3.0289184	43	4	1994–1999	0.71	M-v	1	Williams	35630	1998 QA ₂₆
1998 QK ₂₆	14.3	0.15	19990810	14.99003	186.72849	205.95554	0.40882	0.2153687	3.1360961	28	3	1982–1999	0.47	M-v	2	Williams	33081	1998 QK ₂₆
1998 QO ₂₆	13.0	0.15	19990810	304.74228	252.72851	212.48091	4.33617	0.1533630	3.2103897	44	4	1996–1999	0.62	M-v	2	Williams	35710	1998 QO ₂₆
1998 QR ₃₀	12.8	0.15	19990810	213.59625	15.73527	181.49451	13.26008	0.0820385	2.6036065	42	5	1949–1999	0.72	M-v	1	Williams	35710	1998 QR ₃₀
1998 QY ₃₀	13.9	0.15	19990810	65.77441	19.27338	321.49938	1.47118	0.0861486	2.8621132	43	4	1992–1999	0.68	M-v	2	Williams	35710	1998 QY ₃₀
1998 QF ₃₁	14.5	0.15	19990810	81.06482	199.35374	134.88130	3.60307	0.1586205	2.6042364	52	6	1981–1999	0.66	M-v	1	Williams	33082	1998 QF ₃₁

1998 QS ₃₁	12.6	0.15	19990810	97.47858	298.28954	347.72645	13.89385	0.1101300	3.2147925	58	4	1981–1999	0.59	M-v	1	Williams	33347	1998 QS ₃₁
1998 QY ₃₂	14.0	0.15	19990810	232.73850	343.83161	211.35604	3.05805	0.0929177	2.2747470	40	4	1980–1999	0.58	M-v	2	Williams	32763	1998 QY ₃₂
1998 QL ₃₄	13.1	0.15	19990810	1.81520	295.18066	115.91747	2.43761	0.1626536	3.1843420	42	4	1987–1999	0.55	M-v	1	Williams	32699	1998 QL ₃₄
1998 QM ₃₄	13.5	0.15	19990810	169.88151	85.48707	136.75176	8.05984	0.1414713	2.8051235	34	4	1992–1999	0.75	M-v	1	Williams	32699	1998 QM ₃₄
1998 QW ₃₄	13.1	0.15	19990810	94.96132	130.36873	175.59580	14.82980	0.2004086	2.7721430	40	3	1992–1999	0.70	M-v	3	Williams	35710	1998 QW ₃₄
1998 QG ₃₅	13.5	0.15	19990810	47.34406	29.18882	344.91073	8.70807	0.1789740	2.7628001	43	5	1974–1999	0.53	M-v	1	Williams	34924	1998 QG ₃₅
1998 QP ₃₅	13.3	0.15	19990810	38.82191	284.85152	86.10425	2.60888	0.2212609	3.1585264	43	5	1987–1999	0.75	M-v	1	Williams	35710	1998 QP ₃₅
1998 QW ₃₇	14.7	0.15	19990810	266.63935	203.05080	330.77107	4.68040	0.1025762	2.1941819	34	6	1969–1999	0.75	M-v	2	Williams	34924	1998 QW ₃₇
1998 QK ₃₈	13.6	0.15	19990810	96.93127	328.40528	324.53941	0.32932	0.1310408	3.1777766	43	4	1988–1999	0.51	M-v	1	Williams	34925	1998 QK ₃₈
1998 QE ₃₉	14.4	0.15	19990810	42.45153	352.39530	19.58884	0.46460	0.2136363	3.0793491	43	3	1982–1999	0.63	M-v	3	Williams	33082	1998 QE ₃₉
1998 QQ ₃₉	13.3	0.15	19990810	152.09130	257.15221	8.40326	5.49228	0.0954252	2.4226769	49	8	1953–1999	0.77	M-v	2	Williams	33560	1998 QQ ₃₉
1998 QB ₄₀	14.2	0.15	19990810	75.02344	178.64359	161.60494	10.04256	0.1875364	2.7398753	39	4	1971–1999	0.74	M-v	2	Williams	35710	1998 QB ₄₀
1998 QV ₄₀	13.2	0.15	19990810	68.29321	124.72235	223.97839	4.08800	0.0461257	2.7752752	50	4	1978–1999	0.54	M-v	2	Williams	34301	1998 QV ₄₀
1998 QN ₄₂	14.1	0.15	19990810	79.82179	10.00046	326.34278	8.52080	0.1846854	2.7252358	59	3	1996–1999	0.75	M-v	2	Williams	34301	1998 QN ₄₂
1998 QR ₄₂	12.8	0.15	19990810	239.01363	348.41934	177.86339	15.75200	0.1269791	3.1484105	36	5	1955–1999	0.84	M-v	1	Williams	34925	1998 QR ₄₂
1998 QW ₄₂	12.8	0.15	19990810	183.99275	6.01373	205.65404	1.57217	0.1140657	3.1281741	53	4	1990–1999	0.74	M-v	1	Williams	35711	1998 QW ₄₂
1998 QB ₄₃	13.9	0.15	19990810	336.53957	249.45977	218.34224	7.72722	0.2371176	2.7408462	34	3	1996–1999	0.78	M-v	3	Williams	32708	1998 QB ₄₃
1998 QG ₄₃	13.0	0.15	19990810	21.10119	234.98195	148.36215	11.89214	0.0052158	3.0851379	40	4	1990–1999	0.71	M-v	1	Williams	35711	1998 QG ₄₃
1998 QP ₄₃	12.9	0.15	19990810	301.25689	111.07190	356.86566	16.92663	0.0984268	3.1588444	35	3	1993–1999	0.73	M-v	3	Williams	33348	1998 QP ₄₃
1998 QQ ₄₅	12.3	0.15	19990810	257.80713	191.25969	324.21987	13.54384	0.0772182	3.1245342	61	4	1979–1999	0.65	M-v	1	Williams	34591	1998 QQ ₄₅
1998 QZ ₄₆	14.5	0.15	19990810	286.19815	53.42050	105.62754	3.51653	0.0571745	2.2029633	42	5	1987–1999	0.80	M-v	2	Williams	32766	1998 QZ ₄₆
1998 QA ₄₇	13.2	0.15	19990810	97.69872	172.46157	120.70769	6.44449	0.1400230	3.1588151	40	6	1987–1999	0.76	M-v	1	Williams	34591	1998 QA ₄₇
1998 QP ₄₇	12.6	0.15	19990810	62.07179	202.59521	149.59280	2.57615	0.0830825	2.8894548	71	6	1974–1999	0.70	M-v	1	Williams	35711	1998 QP ₄₇
1998 QG ₄₈	14.3	0.15	19990810	337.52147	267.88671	200.65196	6.45054	0.0627762	2.3812052	45	6	1984–1999	0.74	M-v	1	Williams	32712	1998 QG ₄₈
1998 QE ₄₉	14.1	0.15	19990810	34.94085	346.93605	41.22641	1.57729	0.0714735	2.7810307	45	4	1992–1999	0.73	M-v	2	Williams	35711	1998 QE ₄₉
1998 QQ ₄₉	14.0	0.15	19990810	315.93397	332.42938	139.89317	8.51484	0.1149774	2.7565259	36	4	1982–1999	0.70	M-v	1	Williams	35711	1998 QQ ₄₉
1998 QN ₅₀	14.5	0.15	19990810	165.00109	141.25336	118.58794	5.28801	0.1403193	2.2901261	29	4	1983–1999	0.76	M-v	3	Williams	35630	1998 QN ₅₀
1998 QO ₅₀	13.7	0.15	19990810	63.81391	201.40051	145.35090	9.99333	0.0791506	2.9724055	25	3	1997–1999	0.47	M-v	4	Williams	32714	1998 QO ₅₀
1998 QU ₅₀	13.2	0.15	19990810	126.38556	284.95856	348.79540	21.28775	0.0370889	3.2081850	34	5	1979–1999	0.72	M-v	1	Williams	34926	1998 QU ₅₀
1998 QF ₅₁	14.6	0.15	19990810	120.47558	8.09333	295.37975	0.38367	0.1897316	2.4005266	46	5	1991–1999	0.72	M-v	1	Williams	36085	1998 QF ₅₁
1998 QH ₅₁	13.3	0.15	19990810	66.71071	165.46685	189.83249	3.63620	0.1109010	2.7934297	48	5	1991–1999	0.76	M-v	1	Williams	36085	1998 QH ₅₁
1998 QB ₅₂	14.0	0.15	19990810	84.72444	155.39859	183.01283	13.00244	0.1807939	2.6681987	70	4	1985–1999	0.69	M-v	1	Williams	35711	1998 QB ₅₂
1998 QE ₅₂	13.0	0.15	19990810	346.19517	209.50683	244.60303	5.78400	0.1418256	2.7809332	54	4	1992–1999	0.75	M-v	1	Williams	33560	1998 QE ₅₂
1998 QR ₅₂	18.6	0.15	19990810	145.13223	204.18675	316.32519	17.63633	0.2879286	1.0437824	174	2	1998–1999	0.54	M-v	3	Williams	36085	1998 QR ₅₂
1998 QK ₅₃	13.6	0.15	19990810	218.17347	264.61485	326.18591	6.26821	0.0726475	2.3603220	58	4	1986–1999	0.60	M-v	2	Williams	33084	1998 QK ₅₃
1998 QE ₅₄	13.8	0.15	19990810	243.74409	254.23711	311.72950	5.32081	0.1283227	2.3195289	50	3	1993–1999	0.79	M-v	4	Williams	35711	1998 QE ₅₄
1998 QQ ₅₄	12.8	0.15	19990810	3.88620	190.59868	228.37576	4.82713	0.0095458	3.1577164	53	4	1993–1999	0.56	M-v	1	Williams	35711	1998 QQ ₅₄
1998 QP ₅₇	13.6	0.15	19990810	339.08814	269.45206	185.04001	3.13899	0.1761525	3.1515829	36	3	1993–1999	0.75	M-v	5	Williams	35711	1998 QP ₅₇
1998 QV ₆₃	13.3	0.15	19990810	59.24529	200.62060	180.91543	4.26822	0.1096380	2.8130830	89	5	1979–1999	0.68	M-v	1	Williams	33756	1998 QV ₆₃
1998 QB ₆₉	11.4	0.15	19990810	203.11146	251.11150	299.58531	14.02585	0.0229921	3.2090463	38	6	1967–1999	0.67	M-v	1	Williams	35712	1998 QB ₆₉
1998 QJ ₆₉	13.3	0.15	19990810	160.71202	22.04666	210.58994	15.44001	0.0358543	3.1534454	50	3	1993–1999	0.73	M-v	3	Williams	35631	1998 QJ ₆₉
1998 QR ₆₉	13.0	0.15	19990810	129.34800	18.47353	229.11805	15.48379	0.1986454	3.1584112	47	3	1997–1999	0.55	M-v	3	Williams	33086	1998 QR ₆₉
1998 QF ₇₀	12.8	0.15	19990810	316.56803	239.62834	212.89611	15.67513	0.0953147	3.1968304	49	3	1996–1999	0.69	M-v	3	Williams	35712	1998 QF ₇₀
1998 QX ₇₂	14.3	0.15	19990810	63.60929	155.72175	184.18773	15.54661	0.0792914	3.0772553	35	3	1997–1999	0.86	M-v	3	Williams	35712	1998 QX ₇₂
1998 QN ₇₃	13.2	0.15	19990810	92.93850	49.75013	269.64300	10.64308	0.2048233	2.6883371	47	4	1954–1999	0.74	M-v	1	Williams	35712	1998 QN ₇₃
1998 QV ₇₃	13.4	0.15	19990810	327.39295	214.54247	260.51683	14.23821	0.1793564	2.6498535	28	3	1990–1999	0.91	M-v	4	Williams	32981	1998 QV ₇₃
1998 QK ₇₅	12.6	0.15	19990810	27.29948	150.53349	244.60688	9.10568	0.1101209	2.9960037	43	4	1978–1999	0.76	M-v	2	Williams	35712	1998 QK ₇₅
1998 QN ₇₅	12.3	0.15	19990810	40.84564	202.49941	188.16335	22.01260	0.0951604	2.6595361	53	6	1968–1999	0.77	M-v	1	Williams	35712	1998 QN ₇₅
1998 QM ₇₆	13.0	0.15	19990810	253.16429	291.40130	245.04611	9.91941	0.1339237	2.6413299	44	4	1986–1999	0.73	M-v	2	Williams	35712	1998 QM ₇₆
1998 QR ₇₇	13.8	0.15	19990810	260.04343	316.64388	214.41119	12.42579	0.1089400	2.6740028	21	4	1990–1999	0.55	M-v	3	Williams	35712	1998 QR ₇₇
1998 QW ₇₇	12.4	0.15	19990810	163.30665	286.90093	323.94905	11.94409	0.1631584	2.6746543	48	3	1992–1999	0.71	M-v	3	Williams	35712	1998 QW ₇₇
1998 QQ ₈₄	13.6	0.15	19990810	327.57152	214.08848	236.96493	12.98307	0.1286698	3.0925777	38	3	1996–1999	0.83	M-v	4	Williams	35712	1998 QQ ₈₄
1998 QG ₈₆	13.7	0.15	19990810	347.96644	169.38660	286.43332	12.14128	0.1916526	2.7726209	46	3	1997–1999	0.72	M-v	3	Williams	35712	1998 QG ₈₆

1998 QN ₈₆	13.4	0.15	19990810	30.86179	118.43109	286.27341	8.08345	0.1598085	2.7591599	47	3	1989–1999	0.80	M-v	2	Williams	35712	1998 QN ₈₆
1998 QD ₉₉	13.3	0.15	19990810	44.60150	284.09883	93.28195	3.29884	0.0708407	2.9096242	71	3	1989–1999	0.70	M-v	2	Williams	35713	1998 QD ₉₉
1998 QO ₉₉	14.7	0.15	19990810	284.64583	37.63222	128.76595	6.11354	0.1040927	2.2381243	45	4	1991–1999	0.95	M-v	3	Williams	33562	1998 QO ₉₉
1998 QV ₁₀₂	12.6	0.15	19990810	34.54311	322.55395	47.15939	6.34688	0.2918115	3.9518755	61	5	1975–1999	0.79	M-v	1	Williams	35713	1998 QV ₁₀₂
1998 RV	13.7	0.15	19990810	29.29388	4.10930	4.98532	9.84553	0.0969911	2.9877948	52	4	1991–1999	0.53	M-v	1	Williams	34591	1998 RV
1998 RE ₂	12.8	0.15	19990810	14.53170	281.40357	133.31120	10.63588	0.0916584	3.0595016	29	3	1995–1999	0.46	M-v	2	Williams	32989	1998 RE ₂
1998 RK ₆	13.3	0.15	19990810	84.82886	155.88779	151.25637	6.37612	0.1428657	3.1842768	42	4	1996–1999	0.60	M-v	1	Williams	35713	1998 RK ₆
1998 RP ₁₉	14.3	0.15	19990810	36.96170	94.03152	292.10839	1.01630	0.0896247	2.6886771	48	4	1981–1999	0.70	M-v	1	Williams	35714	1998 RP ₁₉
1998 RN ₃₅	14.0	0.15	19990810	86.57546	328.43254	359.56296	1.72168	0.0549378	2.8799932	29	4	1993–1999	0.58	M-v	3	Williams	35714	1998 RN ₃₅
1998 RO ₃₈	14.1	0.15	19990810	180.84615	247.70360	6.75738	3.78878	0.1265487	2.2106577	36	3	1988–1999	0.84	M-v	4	Williams	35714	1998 RO ₃₈
1998 RF ₅₀	13.3	0.15	19990810	318.50164	318.48716	153.51555	6.59102	0.1034334	2.9761940	43	5	1980–1999	0.71	M-v	1	Williams	35714	1998 RF ₅₀
1998 RD ₅₁	13.6	0.15	19990810	156.03045	36.92169	234.23639	5.10627	0.0562294	2.6495169	61	4	1981–1999	0.55	M-v	2	Williams	35714	1998 RD ₅₁
1998 RW ₅₂	12.6	0.15	19990810	240.48874	164.11647	13.63740	9.71079	0.0393825	3.0343241	54	6	1980–1999	0.71	M-v	1	Williams	35714	1998 RW ₅₂
1998 RU ₅₆	13.5	0.15	19990810	314.90294	272.83388	211.73973	3.26306	0.0663089	2.6982196	56	4	1980–1999	0.78	M-v	1	Williams	35715	1998 RU ₅₆
1998 RK ₅₇	14.2	0.15	19990810	138.81186	128.26293	154.32709	2.60866	0.1967025	2.4266067	59	4	1994–1999	0.79	M-v	2	Williams	36085	1998 RK ₅₇
1998 RC ₅₈	13.3	0.15	19990810	148.41922	115.21094	139.43236	1.72955	0.1211097	3.1525657	56	4	1982–1999	0.60	M-v	1	Williams	34302	1998 RC ₅₈
1998 RL ₅₉	14.0	0.15	19990810	9.88364	223.73832	205.82356	3.43244	0.0821780	2.8001644	44	5	1989–1999	0.68	M-v	1	Williams	34534	1998 RL ₅₉
1998 RP ₇₀	13.2	0.15	19990810	226.49614	126.32104	58.87680	7.64402	0.1110485	3.3947252	40	3	1996–1999	0.70	M-v	4	Williams	35715	1998 RP ₇₀
1998 RS ₇₂	13.7	0.15	19990810	267.79277	14.06048	155.28189	4.21634	0.0324885	2.7875339	57	5	1992–1999	0.74	M-v	2	Williams	35715	1998 RS ₇₂
1998 RH ₇₆	13.1	0.15	19990810	30.75743	335.78039	68.02831	3.23749	0.1044916	2.9445895	47	3	1989–1999	0.69	M-v	3	Williams	35716	1998 RH ₇₆
1998 RB ₇₇	13.5	0.15	19990810	29.21686	282.37399	130.16809	4.70319	0.0916094	2.7550254	44	4	1989–1999	0.71	M-v	1	Williams	33566	1998 RB ₇₇
1998 RZ ₇₉	13.1	0.15	19990810	355.24422	357.18978	92.50158	4.97539	0.0637181	2.7887648	63	3	1997–1999	0.53	M-v	3	Williams	34302	1998 RZ ₇₉
1998 RC ₈₀	13.0	0.15	19990810	35.41681	242.77013	155.13118	11.12802	0.1151822	3.0624903	32	4	1982–1999	0.65	M-v	1	Williams	35716	1998 RC ₈₀
1998 RH ₈₀	13.1	0.15	19990810	79.07191	294.69058	44.98191	5.95245	0.1806460	3.1084123	56	4	1987–1999	0.64	M-v	2	Williams	35716	1998 RH ₈₀
1998 SK ₂	13.8	0.15	19990810	66.78755	317.47101	30.74085	1.40836	0.2242441	3.1545752	78	4	1995–1999	0.46	M-v	1	Williams	36085	1998 SK ₂
1998 SG ₅	13.4	0.15	19990810	68.74570	179.48617	183.27368	12.77908	0.1727895	2.6691029	83	3	1979–1999	0.63	M-v	2	Williams	35716	1998 SG ₅
1998 SX ₇	12.8	0.15	19990810	211.98360	153.82689	43.29171	0.77099	0.1283899	3.1152538	65	6	1990–1999	0.73	M-v	1	Williams	35716	1998 SX ₇
1998 SA ₁₀	13.0	0.15	19990810	68.00973	131.10146	213.99035	34.33731	0.2118701	2.8566238	53	3	1997–1999	0.88	M-v	2	Williams	35716	1998 SA ₁₀
1998 SG ₁₀	13.9	0.15	19990810	276.85996	118.81418	60.64158	6.62295	0.1399662	2.3173984	59	4	1977–1999	0.74	M-v	2	Williams	33015	1998 SG ₁₀
1998 SD ₁₅	19.0	0.15	19990810	97.77091	35.77871	184.01051	26.79621	0.3449328	0.9325085	128	2	1998–1999	0.72	M-v	4	Williams	36085	1998 SD ₁₅
1998 SJ ₂₄	13.7	0.15	19990810	50.29362	296.55949	76.99849	3.76365	0.0649561	2.8741682	38	2	1998–1999	0.53	M-v	4	Williams	35717	1998 SJ ₂₄
1998 SH ₂₅	13.0	0.15	19990810	166.36069	207.98748	71.88555	6.33505	0.0210635	2.7412505	75	3	1997–1999	0.63	M-v	3	Williams	36085	1998 SH ₂₅
1998 SA ₂₈	13.7	0.15	19990810	137.05829	277.71848	27.48081	4.35110	0.0652417	2.7513005	68	3	1996–1999	0.62	M-v	3	Williams	33757	1998 SA ₂₈
1998 SB ₃₂	13.4	0.15	19990810	98.39136	140.81060	187.08686	6.45721	0.0831026	2.9588899	56	4	1993–1999	0.55	M-v	1	Williams	34022	1998 SB ₃₂
1998 SP ₃₆	11.8	0.15	19990810	203.32354	205.47108	13.61922	12.54194	0.0911626	3.1632137	78	5	1973–1999	0.66	M-v	1	Williams	35717	1998 SP ₃₆
1998 SA ₄₃	12.9	0.15	19990810	61.41427	255.16157	126.24046	1.64919	0.0856328	2.7417036	97	5	1980–1999	0.63	M-v	2	Williams	34592	1998 SA ₄₃
1998 SO ₄₉	13.6	0.15	19990810	147.33621	114.15420	180.33487	1.61469	0.0411194	2.8325026	81	6	1988–1999	0.69	M-v	1	Williams	35717	1998 SO ₄₉
1998 SV ₅₃	13.4	0.15	19990810	313.36701	262.17481	205.32757	6.24513	0.0961943	3.1853135	43	4	1996–1999	0.70	M-v	2	Williams	35717	1998 SV ₅₃
1998 SH ₅₄	13.4	0.15	19990810	314.47960	274.76165	200.40902	5.04064	0.1049037	3.2030819	50	6	1978–1999	0.68	M-v	1	Williams	35717	1998 SH ₅₄
1998 SN ₅₄	14.1	0.15	19990810	249.78556	216.71058	340.99136	6.74296	0.0514028	2.3288359	65	3	1991–1999	0.65	M-v	3	Williams	35441	1998 SN ₅₄
1998 SP ₅₆	13.7	0.15	19990810	94.91930	310.23001	15.52255	3.66823	0.0746064	2.8075446	36	3	1992–1999	0.60	M-v	3	Williams	35718	1998 SP ₅₆
1998 SN ₅₇	13.8	0.15	19990810	50.88454	327.99784	56.33449	2.18676	0.1609360	2.7775066	54	3	1975–1999	0.63	M-v	2	Williams	35718	1998 SN ₅₇
1998 SD ₅₈	12.8	0.15	19990810	331.86853	278.50436	178.79541	9.68799	0.0442972	3.0181511	68	3	1993–1999	0.68	M-v	3	Williams	35718	1998 SD ₅₈
1998 SE ₅₈	13.7	0.15	19990810	201.07069	227.26477	358.15003	2.19984	0.1273754	2.6587108	44	3	1990–1999	0.66	M-v	3	Williams	35718	1998 SE ₅₈
1998 SM ₅₈	14.1	0.15	19990810	31.89187	239.14142	164.74071	2.25093	0.0594731	2.8391755	59	4	1993–1999	0.61	M-v	2	Williams	35718	1998 SM ₅₈
1998 SY ₅₉	13.7	0.15	19990810	19.44075	284.57183	134.19851	6.09153	0.1490383	3.1565580	34	4	1989–1999	0.61	M-v	1	Williams	35718	1998 SY ₅₉
1998 SO ₆₁	13.5	0.15	19990810	147.73213	12.35738	274.80534	3.25978	0.0367711	2.7848993	50	3	1994–1999	0.73	M-v	5	Williams	33357	1998 SO ₆₁
1998 SU ₇₁	12.9	0.15	19990810	334.11246	323.54720	150.85656	2.14185	0.051266	3.2093038	51	5	1981–1999	0.66	M-v	1	Williams	33358	1998 SU ₇₁
1998 SM ₁₀₇	13.8	0.15	19990810	110.31179	356.05333	333.78195	2.67140	0.0967619	2.5721330	33	3	1994–1999	0.55	M-v	4	Williams	33359	1998 SM ₁₀₇
1998 SN ₁₀₈	13.5	0.15	19990810	39.65725	180.98425	211.45084	7.79261	0.0948040	3.2057168	36	3	1996–1999	0.70	M-v	3	Williams	35719	1998 SN ₁₀₈
1998 SZ ₁₁₄	13.7	0.15	19990810	99.92048	250.36348	88.50089	1.43355	0.0626922	2.7326869	46	5	1992–1999	0.79	M-v	2	Williams	35719	1998 SZ ₁₁₄
1998 SK ₁₂₁	13.1	0.15	19990810	256.57186	318.14092	227.69091	9.22593	0.1034645	3.0415271	45	3	1996–1999	0.57	M-v	4	Williams	33569	1998 SK ₁₂₁
1998 SD ₁₂₂	13.0	0.15	19990810	194.34090	23.68050	217.64922	8.86058	0.0393169	3.0503859	48	4	1991–1999	0.69	M-v	2	Williams	34593	1998 SD ₁₂₂

1998 SO ₁₂₉	13.4	0.15	19990810	58.85823	336.37355	45.27452	2.60907	0.0555509	2.9377119	53	3	1996–1999	0.60	M-v	3	Williams	35719	1998 SO ₁₂₉
1998 SR ₁₃₀	13.4	0.15	19990810	129.91651	97.52633	213.75427	5.63038	0.0519046	2.7763462	60	4	1975–1999	0.60	M-v	1	Williams	34024	1998 SR ₁₃₀
1998 SE ₁₃₂	12.7	0.15	19990810	137.51634	80.99800	219.94080	12.46213	0.0698116	2.8485936	67	3	1992–1999	0.68	M-v	3	Williams	33759	1998 SE ₁₃₂
1998 SW ₁₃₂	13.1	0.15	19990810	41.41948	184.61528	217.72926	9.51530	0.1077642	3.0696949	65	4	1991–1999	0.84	M-v	2	Williams	35719	1998 SW ₁₃₂
1998 SV ₁₃₄	12.6	0.15	19990810	76.85478	226.95140	117.08736	1.78379	0.2185341	3.1788535	46	3	1992–1999	0.55	M-v	4	Williams	33293	1998 SV ₁₃₄
1998 SZ ₁₄₀	13.1	0.15	19990810	140.84206	82.27423	223.28258	1.75001	0.0086483	2.8571061	50	3	1993–1999	0.64	M-v	3	Williams	33759	1998 SZ ₁₄₀
1998 SA ₁₄₄	13.2	0.15	19990810	270.22273	26.78254	151.42959	2.24815	0.0603056	2.9191911	23	3	1996–1999	0.66	M-v	4	Williams	35720	1998 SA ₁₄₄
1998 ST ₁₄₄	12.9	0.15	19990810	43.49367	197.24000	200.29989	9.20692	0.0744332	3.2031072	37	4	1981–1999	0.71	M-v	2	Williams	34305	1998 ST ₁₄₄
1998 SL ₁₆₁	13.3	0.15	19990810	229.13770	358.02254	219.81423	1.39498	0.1619459	2.6379633	56	7	1988–1999	0.71	M-v	2	Williams	35720	1998 SL ₁₆₁
1998 SV ₁₆₃	13.0	0.15	19990810	266.99123	121.06729	62.78070	11.06621	0.0325099	3.0208573	41	4	1951–1999	0.73	M-v	3	Williams	33570	1998 SV ₁₆₃
1998 TX ₅	12.7	0.15	19990810	143.61393	26.28203	269.02023	1.89541	0.1268080	2.7845302	57	3	1993–1999	0.61	M-v	5	Williams	34305	1998 TX ₅
1998 TV ₆	12.7	0.15	19990810	232.54267	3.16802	214.82041	15.59984	0.0459765	3.1854225	49	3	1981–1999	0.61	M-v	3	Williams	33367	1998 TV ₆
1998 TU ₁₂	11.4	0.15	19990810	325.45894	73.80660	41.95741	15.44535	0.1356870	5.1651007	39	5	1951–1999	0.60	M-v	1	Williams	34929	1998 TU ₁₂
1998 TL ₁₅	11.6	0.15	19990810	340.45498	221.69944	219.69875	26.27045	0.0241967	5.2696096	36	4	1986–1999	0.61	M-v	1	Williams	35721	1998 TL ₁₅
1998 TP ₁₇	11.6	0.15	19990810	133.68442	186.38846	117.75154	10.92309	0.0797789	3.0420992	52	6	1987–1999	0.60	M-v	1	Williams	35721	1998 TP ₁₇
1998 TR ₃₀	13.7	0.15	19990810	207.53140	28.49335	213.79153	5.35338	0.0268488	2.9911537	41	3	1996–1999	0.59	M-v	3	Williams	35721	1998 TR ₃₀
1998 TR ₃₃	14.0	0.15	19990810	124.29848	213.07168	102.47401	2.71387	0.1494328	2.8693153	31	4	1993–1999	0.55	M-v	3	Williams	35721	1998 TR ₃₃
1998 TW ₃₄	13.3	0.15	19990810	142.05734	101.96838	193.90083	10.12337	0.0952781	2.9733652	26	3	1996–1999	0.60	M-v	3	Williams	34593	1998 TW ₃₄
1998 UR ₁₆	12.9	0.15	19990810	155.07615	204.68913	81.81214	2.68668	0.1424859	3.1173578	45	4	1995–1999	0.63	M-v	1	Williams	35722	1998 UR ₁₆
1998 UL ₂₀	12.4	0.15	19990810	133.35186	79.21809	244.12555	8.90035	0.1106350	3.0205549	57	4	1982–1999	0.79	M-v	2	Williams	35722	1998 UL ₂₀
1998 VB ₅	13.0	0.15	19990810	199.95348	225.39681	37.50225	1.30604	0.0588530	3.0584329	69	6	1981–1999	0.76	M-v	1	Williams	35723	1998 VB ₅
1998 VB ₆	13.9	0.15	19990810	98.28310	66.45622	256.91290	6.37365	0.2181908	2.2730874	48	6	1974–1999	0.82	M-v	2	Williams	35723	1998 VB ₆
1998 VU ₆	10.7	0.15	19990810	51.53615	303.90357	96.67432	7.31164	0.0486594	5.2059914	44	4	1996–1999	0.80	M-v	2	Williams	35637	1998 VU ₆
1998 VL ₁₆	13.4	0.15	19990810	71.30474	301.53082	71.08626	10.09579	0.1137445	3.0535401	23	3	1977–1999	0.51	M-v	4	Williams	34028	1998 VL ₁₆
1998 VP ₂₀	13.3	0.15	19990810	216.10780	86.01963	146.29018	2.16096	0.1370763	3.1730596	33	4	1991–1999	0.66	M-v	2	Williams	35724	1998 VP ₂₀
1998 VH ₂₆	13.8	0.15	19990810	250.18240	234.46445	337.61282	1.20350	0.0528235	2.9241571	30	4	1995–1999	0.84	M-v	2	Williams	34931	1998 VH ₂₆
1998 VC ₂₉	12.5	0.15	19990810	96.80042	212.46923	138.08617	4.98854	0.1125140	3.1887392	45	5	1975–1999	0.48	M-v	1	Williams	35724	1998 VC ₂₉
1998 VY ₂₉	10.6	0.15	19990810	20.43521	163.32829	258.43866	12.03355	0.2040953	5.1709488	48	3	1986–1999	0.75	M-v	3	Williams	35724	1998 VY ₂₉
1998 WM	16.7	0.15	19990810	59.89019	172.42397	45.71448	22.51777	0.3154523	1.2246193	129	1	334 days	0.52	M-v	3	Williams	36086	1998 WM
1998 WX ₄	9.4	0.15	19990810	45.40851	284.41593	120.55468	28.75211	0.0236329	5.2895743	25	3	1992–1999	0.56	M-v	2	Williams	34029	1998 WX ₄
1998 WV ₅	12.5	0.15	19990810	209.90564	352.36765	250.86332	13.51051	0.1073900	3.0315605	45	5	1951–1999	0.74	M-v	1	Williams	35725	1998 WV ₅
1998 WZ ₅	10.6	0.15	19990810	14.67059	272.29554	160.22212	12.80506	0.0945216	5.2320824	32	4	1986–1999	0.74	M-v	1	Williams	35725	1998 WZ ₅
1998 WZ ₆	17.3	0.15	19990810	84.77589	110.57520	68.85930	24.74824	0.4082927	1.4521498	235	1	316 days	0.50	M-v	3	Williams	35726	1998 WZ ₆
1998 WA ₁₅	11.2	0.15	19990810	13.98271	209.47923	218.88637	11.21422	0.1180181	5.2034155	48	4	1990–1999	0.74	M-v	1	Williams	35726	1998 WA ₁₅
1998 XB ₁₄	14.5	0.15	19990810	110.78642	157.60560	191.92058	3.13503	0.1993588	2.7234458	25	4	1980–1998	0.74	M-v	1	Williams	36086	1998 XB ₁₄
1998 XS ₁₆	16.5	0.15	19990810	5.28654	358.16932	273.06888	26.54906	0.4965338	1.2123569	124	3	1998–1999	0.55	M-v	3	Williams	36086	1998 XS ₁₆
1998 XS ₃₁	11.1	0.15	19990810	34.71837	160.60109	252.20766	6.40928	0.0659141	5.1175542	36	5	1951–1999	0.70	M-v	1	Williams	35728	1998 XS ₃₁
1998 XO ₇₉	10.0	0.15	19990810	125.36598	166.58293	157.13754	13.97619	0.0445563	5.2114265	25	4	1996–1999	0.75	M-v	3	Williams	35728	1998 XO ₇₉
1999 AC ₃	14.4	0.15	19990810	155.02439	212.11623	132.43671	14.79378	0.2021164	2.6449264	35	3	1984–1999	0.50	M-v	4	Williams	33977	1999 AC ₃
1999 CU ₃	16.9	0.15	19990810	356.40721	305.46247	339.28199	11.39983	0.5240950	1.5766057	97	2	1999–1999	0.52	M-v	3	Williams	36086	1999 CU ₃
1999 CF ₉	17.9	0.15	19990810	39.89277	89.49456	157.65314	5.54557	0.5986352	1.7732424	229	2	1999–1999	0.50	M-v	4	Williams	36086	1999 CF ₉
1999 DA	7.9	0.15	19990323	188.51395	258.41649	54.37772	2.79230	0.0769912	43.0211816	20	1	84 days	0.20		E	Marsden		1999 DA
1999 DH ₃	14.1	0.15	19990810	42.57320	56.27352	161.37668	4.64765	0.1079682	2.4057210	46	1	162 days	0.66	M-v	4	Williams	35444	1999 DH ₃
1999 DK ₃	17.3	0.15	19990810	14.91290	102.92955	149.97195	43.10524	0.4437405	2.1154565	95	1	229 days	0.62	M-v	3	Williams	35734	1999 DK ₃
1999 DH ₈	8.7	0.15	19990323	0.00000	34.11734	105.86266	4.61655	0.0000000	42.8212154	6	1	84 days	0.17		E	Marsden		1999 DH ₈
1999 ED ₅	19.8	0.15	19990810	21.09456	273.75616	5.80332	18.17989	0.4660901	1.7459638	57	1	219 days	0.52	M-v	3	Williams	35734	1999 ED ₅
1999 FN ₅₃	18.4	0.15	19990810	34.69726	191.44380	50.70105	20.17135	0.4547719	1.7354755	120	2	1999–1999	0.52	M-v	4	Williams	36086	1999 FN ₅₃
1999 GW	15.1	0.15	19990810	42.06576	70.70547	136.16642	3.57796	0.0958968	2.2054472	70	4	1989–1999	0.74	M-v	2	Williams	35647	1999 GW
1999 GJ ₂	16.8	0.15	19990810	299.62129	142.30329	196.34577	11.27550	0.1979310	1.5353929	133	1	200 days	0.62	M-v	4	Williams	35735	1999 GJ ₂
1999 GW ₃	14.7	0.15	19990810	281.12463	216.95857	110.79005	3.30352	0.1121674	2.2144533	46	5	1956–1999	0.73	M-v	2	Williams	35735	1999 GW ₃
1999 GY ₃	15.1	0.15	19990810	359.01920	255.59886	8.86684	28.52271	0.3477980	2.6238822	33	1	178 days	0.73	M-v	4	Williams	35735	1999 GY ₃
1999 GK ₄	16.1	0.15	19990810	352.03992	146.61033	168.46817	5.28137	0.4920435	1.9609840	282	3	1955–1999	0.56	M-v	2	Williams	36086	1999 GK ₄
1999 GS ₄	14.2	0.15	19990810	333.04392	111.39517	175.81743	5.20899	0.1401466	2.3886427	80	3	1995–1999	0.59	M-v	2	Williams	35447	1999 GS ₄

1999 GT ₆	17.0	0.15	19990810	358.69017	66.14359	217.72870	4.28390	0.5756738	2.8249698	116	1	184 days	0.73	M-v	4	Williams	35735	1999 GT ₆
1999 GZ ₁₈	12.6	0.15	19990412	123.78830	344.16516	76.61939	12.69379	0.1534689	2.7208074	14	1	4 days	0.94		E	Williams	35351	1999 GZ ₁₈
1999 HU	13.0	0.15	19990810	108.51676	284.63629	205.46524	9.20798	0.0395480	2.9991011	53	2	1986–1999	0.56	M-v	4	Williams	34971	1999 HU
1999 HV	15.3	0.15	19990810	327.00152	243.06963	66.09744	22.77353	0.2247685	2.3313402	51	1	79 days	0.51	M-v	4	Williams	35449	1999 HV
1999 HX	14.7	0.15	19990810	339.67164	79.15415	227.52144	29.20549	0.3740287	2.7630997	89	1	175 days	0.56	M-v	3	Williams	36087	1999 HX
1999 HE ₁	17.7	0.15	19990810	2.30957	221.73546	66.08942	8.18367	0.5688065	2.3696895	78	1	167 days	0.50	M-v	4	Williams	35735	1999 HE ₁
1999 HG ₁	13.5	0.15	19990810	342.26703	246.83048	17.02351	8.10745	0.0368900	3.2232592	54	2	1998–1999	0.61	M-v	4	Williams	35449	1999 HG ₁
1999 HY ₁	18.3	0.15	19990810	342.20052	89.84747	216.18194	34.22683	0.1306283	1.3863452	56	1	177 days	0.61	M-v	4	Williams	36087	1999 HY ₁
1999 HW ₂	15.8	0.15	19990810	9.75890	85.20577	180.75085	27.16412	0.4063285	2.6102153	127	1	182 days	0.56	M-v	3	Williams	36087	1999 HW ₂
1999 HX ₂	15.2	0.15	19990810	3.40191	148.90352	141.81785	16.45989	0.5543705	3.1771902	359	1	177 days	0.57	M-v	3	Williams	36087	1999 HX ₂
1999 JB	16.8	0.15	19990810	359.63361	178.82360	165.40842	23.66491	0.5663599	1.4203617	82	1	155 days	0.53	M-v	4	Williams	36087	1999 JB
1999 JM	14.0	0.15	19990522	313.40707	97.45108	197.26347	13.08109	0.0912362	2.4891065	43	1	39 days	0.54			Nakano		1999 JM
1999 JH ₃	14.5	0.15	19990810	2.62213	157.69597	96.08222	6.10404	0.1386730	2.4657081	105	2	1998–1999	0.63	M-v	3	Williams	35736	1999 JH ₃
1999 JK ₃	14.0	0.15	19990810	333.88748	202.79711	97.95180	14.34979	0.1550757	2.6066698	53	2	1998–1999	0.55	M-v	3	Williams	34979	1999 JK ₃
1999 JL ₃	14.2	0.15	19990810	70.69070	320.81614	210.86156	22.82705	0.2288954	2.3190728	50	1	80 days	0.48	M-v	4	Williams	35450	1999 JL ₃
1999 JV ₃	19.0	0.15	19990810	0.16139	101.33426	229.24248	15.22536	0.4149634	1.4512058	175	1	159 days	0.66	M-v	4	Williams	35450	1999 JV ₃
1999 JU ₄	15.0	0.15	19990810	357.56171	37.48517	226.35056	15.34858	0.2046123	2.6519724	67	2	1996–1999	0.60	M-v	4	Williams	35450	1999 JU ₄
1999 JD ₆	16.7	0.15	19990810	206.85553	309.11734	130.32564	17.04249	0.6329264	0.8825935	206	1	158 days	0.56	M-v	5	Williams	36087	1999 JD ₆
1999 JF ₆	14.7	0.15	19990810	342.67013	188.24384	95.77563	7.67348	0.1630265	2.5537544	85	1	82 days	0.66	M-v	5	Williams	35736	1999 JF ₆
1999 JG ₆	14.9	0.15	19990810	17.44558	80.06110	160.07424	4.53644	0.1174791	2.3883119	58	4	1991–1999	0.61	M-v	3	Williams	35451	1999 JG ₆
1999 JO ₆	16.9	0.15	19990810	350.60780	250.83078	64.69779	27.90750	0.4912108	2.5850672	61	1	145 days	0.63	M-v	3	Williams	35736	1999 JO ₆
1999 JU ₆	19.3	0.15	19990810	10.40690	68.94911	220.26636	22.45876	0.2004669	1.4691356	75	1	156 days	0.70	M-v	4	Williams	36087	1999 JU ₆
1999 JX ₆	15.4	0.15	19990810	310.14707	225.72198	90.81370	8.02811	0.1404297	2.3192723	45	2	1997–1999	0.81	M-v	4	Williams	35451	1999 JX ₆
1999 JA ₇	15.4	0.15	19990810	338.60646	222.50444	74.00127	12.18406	0.2634863	2.4093158	41	2	1977–1999	0.72	M-v	4	Williams	34981	1999 JA ₇
1999 JM ₈	15.1	0.15	19990810	3.72500	165.97270	134.13039	13.69299	0.6436756	2.7236138	361	3	1990–1999	0.58	M-v	0	Williams	36087	1999 JM ₈
1999 JO ₈	17.0	0.15	19990810	6.49879	204.74507	80.74262	24.66892	0.5700842	2.6535471	342	1	149 days	0.58	M-v	3	Williams	36087	1999 JO ₈
1999 JE ₁₂	14.0	0.15	19990810	0.77901	96.92646	190.57886	29.40837	0.2745900	2.5831100	52	3	1987–1999	0.68	M-v	2	Williams	35736	1999 JE ₁₂
1999 JD ₁₃	16.6	0.15	19990810	38.85314	53.72860	220.24772	5.67917	0.2662752	2.1919229	36	1	148 days	0.41	M-v	4	Williams	36087	1999 JD ₁₃
1999 JD ₁₅	15.0	0.15	19990810	323.24925	247.01786	86.53939	22.60027	0.2927901	2.3526276	36	1	68 days	0.61	M-v	4	Williams	35452	1999 JD ₁₅
1999 JN ₁₇	14.1	0.15	19990810	10.77261	79.13706	216.08465	4.27103	0.2080605	2.2359977	62	1	155 days	0.65	M-v	3	Williams	36087	1999 JN ₁₇
1999 JQ ₁₇	14.9	0.15	19990810	17.03475	120.55043	125.95635	6.82837	0.0826067	2.5626818	41	1	68 days	0.65	M-v	4	Williams	35452	1999 JQ ₁₇
1999 JP ₁₉	12.8	0.15	19990810	190.30818	26.51895	16.86502	10.40692	0.1223261	3.0243670	28	3	1980–1999	0.84	M-v	4	Williams	35650	1999 JP ₁₉
1999 JU ₁₉	14.3	0.15	19990810	336.18795	16.59330	263.54998	5.89859	0.1415879	2.5163354	48	4	1960–1999	0.64	M-v	2	Williams	35452	1999 JU ₁₉
1999 JD ₂₃	13.1	0.15	19990810	315.63289	244.25623	44.28098	10.64544	0.0808793	2.9970989	31	3	1990–1999	0.66	M-v	4	Williams	35362	1999 JD ₂₃
1999 JG ₂₉	15.1	0.15	19990810	28.89342	327.53482	221.59653	19.67224	0.4063662	3.5029971	102	1	109 days	0.59	M-v	3	Williams	36087	1999 JG ₂₉
1999 JM ₃₀	14.9	0.15	19990810	36.10720	267.42112	305.19104	3.85147	0.1106115	2.3246331	58	3	1995–1999	0.51	M-v	3	Williams	35364	1999 JM ₃₀
1999 JN ₃₂	13.7	0.15	19990810	332.11449	66.61043	210.89646	11.18849	0.0716140	3.0597592	32	1	63 days	0.75	M-v	5	Williams	35455	1999 JN ₃₂
1999 JY ₃₃	14.0	0.15	19990810	319.58226	49.13213	261.84394	5.42975	0.1432780	2.2365455	40	3	1973–1999	0.74	M-v	2	Williams	35455	1999 JY ₃₃
1999 JH ₃₅	14.8	0.15	19990502	293.52957	252.94333	55.67034	2.10160	0.1462760	3.2431031	12	1	5 days	0.88		E	Williams		1999 JH ₃₅
1999 JO ₃₈	13.4	0.15	19990810	146.23948	244.93983	204.15731	8.54919	0.1360145	2.8104830	56	5	1991–1999	0.67	M-v	1	Williams	35456	1999 JO ₃₈
1999 JD ₃₉	14.5	0.15	19990810	313.23153	24.06338	288.12247	3.05741	0.0949141	2.3420913	34	1	61 days	0.64	M-v	5	Williams	35456	1999 JD ₃₉
1999 JQ ₃₉	12.7	0.15	19990810	180.92919	18.81370	44.32635	11.24884	0.0999771	2.9836381	42	1	61 days	0.56	M-v	5	Williams	35457	1999 JQ ₃₉
1999 JT ₄₀	15.7	0.15	19990810	5.80393	74.22378	180.39933	4.14095	0.1287114	2.3177770	42	2	1996–1999	0.70	M-v	5	Williams	35457	1999 JT ₄₀
1999 JA ₄₁	15.0	0.15	19990810	342.11670	178.79530	105.57975	4.31805	0.1834263	2.5618035	57	3	1995–1999	0.64	M-v	3	Williams	35736	1999 JA ₄₁
1999 JP ₄₁	15.2	0.15	19990810	17.41821	64.86460	176.18267	4.30630	0.1231683	2.2886256	49	2	1993–1999	0.50	M-v	4	Williams	35457	1999 JP ₄₁
1999 JO ₄₂	15.1	0.15	19990810	305.99659	285.11195	49.81151	4.19114	0.2222836	2.3330517	38	2	1996–1999	0.70	M-v	4	Williams	36006	1999 JO ₄₂
1999 JV ₄₅	15.8	0.15	19990810	352.00596	94.97950	191.03289	4.05669	0.2326605	2.2138562	57	3	1992–1999	0.57	M-v	2	Williams	35458	1999 JV ₄₅
1999 JV ₅₀	14.1	0.15	19990810	297.26268	126.00373	213.85440	12.54482	0.1945574	2.6766768	31	2	1978–1999	0.68	M-v	4	Williams	35459	1999 JV ₅₀
1999 JO ₅₅	14.7	0.15	19990810	338.91925	98.60300	194.69177	9.69444	0.2109537	3.0427407	38	1	82 days	0.72	M-v	4	Williams	35109	1999 JO ₅₅
1999 JN ₅₉	15.4	0.15	19990810	354.74479	128.75158	149.71668	5.05631	0.1397448	2.3097294	43	1	82 days	0.59	M-v	4	Williams	35461	1999 JN ₅₉
1999 JP ₅₉	14.4	0.15	19990810	318.65780	147.75060	161.02690	6.32486	0.0580939	2.6375717	59	4	1992–1999	0.61	M-v	2	Williams	35371	1999 JP ₅₉
1999 JX ₆₀	14.2	0.15	19990810	268.99936	256.80357	106.22783	6.23047	0.0987902	2.6129816	54	4	1982–1999	0.73	M-v	2	Williams	35012	1999 JX ₆₀
1999 JP ₆₁	14.9	0.15	19990810	4.49284	59.35204	210.95679	3.42507	0.1771173	2.2852223	53	1	114 days	0.56	M-v	4	Williams	35461	1999 JP ₆₁

1999 JU ₆₁	16.2	0.15	19990810	358.38488	53.21407	238.28537	7.76996	0.3551428	2.4404118	34	1	64 days	0.60	M-v	4	Williams	35461	1999 JU ₆₁
1999 JZ ₆₁	14.2	0.15	19990810	7.55624	10.66046	254.86290	10.57127	0.1980465	2.4655212	39	1	83 days	0.60	M-v	4	Williams	35461	1999 JZ ₆₁
1999 JQ ₆₂	13.9	0.15	19990810	334.13986	187.35241	102.84045	10.31564	0.0590656	3.0712084	36	3	1994–1999	0.88	M-v	4	Williams	35014	1999 JQ ₆₂
1999 JO ₆₃	14.7	0.15	19990810	89.54456	290.02042	229.11188	7.70900	0.1791904	2.3494959	40	2	1997–1999	0.75	M-v	4	Williams	35014	1999 JO ₆₃
1999 JT ₆₃	15.0	0.15	19990810	23.72008	109.78663	136.57285	4.67822	0.1001111	2.1804182	38	1	171 days	0.66	M-v	4	Williams	35737	1999 JT ₆₃
1999 JX ₆₈	14.0	0.15	19990810	103.10172	286.54169	203.50953	10.61033	0.0813639	2.6415263	45	2	1990–1999	0.72	M-v	5	Williams	35018	1999 JX ₆₈
1999 JF ₇₀	12.6	0.15	19990810	349.03940	193.07932	60.65965	13.57982	0.0609541	2.9342054	60	6	1979–1999	0.67	M-v	3	Williams	35462	1999 JF ₇₀
1999 JB ₇₁	13.7	0.15	19990810	358.69017	188.75696	63.68144	15.75303	0.1458795	2.5680137	70	1	105 days	0.64	M-v	4	Williams	35113	1999 JB ₇₁
1999 JJ ₇₂	12.7	0.15	19990810	70.39318	96.60999	71.22476	13.23591	0.0203217	3.0010759	68	3	1991–1999	0.64	M-v	3	Williams	35463	1999 JJ ₇₂
1999 JO ₇₂	16.2	0.15	19990810	13.47718	97.06345	148.52603	3.91188	0.1727494	2.2457093	51	3	1992–1999	0.67	M-v	3	Williams	35463	1999 JO ₇₂
1999 JP ₇₂	14.6	0.15	19990810	8.84116	180.93453	65.78028	10.33402	0.1406072	2.3558317	70	1	63 days	0.66	M-v	4	Williams	35463	1999 JP ₇₂
1999 JO ₇₃	13.5	0.15	19990810	79.28890	76.08052	76.27523	11.71774	0.1077778	3.1997725	51	2	1998–1999	0.72	M-v	4	Williams	35463	1999 JO ₇₃
1999 JZ ₇₃	14.0	0.15	19990810	350.25297	201.59875	70.36367	10.24147	0.2450668	2.7389391	55	3	1978–1999	0.57	M-v	3	Williams	35463	1999 JZ ₇₃
1999 JF ₇₄	14.9	0.15	19990810	129.76754	293.99093	183.17876	6.39765	0.0612139	2.2840428	77	3	1993–1999	0.73	M-v	3	Williams	35463	1999 JF ₇₄
1999 JA ₇₅	13.8	0.15	19990810	327.66796	212.55281	109.80432	17.66873	0.2239899	2.4416801	56	1	162 days	0.57	M-v	4	Williams	35463	1999 JA ₇₅
1999 JO ₇₆	14.2	0.15	19990810	345.61661	163.04920	125.94691	6.85427	0.1405181	2.3762787	56	3	1992–1999	0.65	M-v	3	Williams	35021	1999 JO ₇₆
1999 JN ₇₇	14.5	0.15	19990810	304.77451	212.70965	130.43317	7.21071	0.2446277	2.3113315	49	5	1977–1999	0.54	M-v	1	Williams	35023	1999 JN ₇₇
1999 JO ₇₇	13.7	0.15	19990810	262.51229	226.98243	145.18545	8.18347	0.2008104	2.5700842	46	2	1998–1999	0.65	M-v	5	Williams	35464	1999 JO ₇₇
1999 JV ₈₀	13.6	0.15	19990810	298.25022	207.81894	129.21546	10.11255	0.1297607	2.7531670	42	3	1993–1999	0.56	M-v	3	Williams	35026	1999 JV ₈₀
1999 JK ₈₁	13.4	0.15	19990810	9.84828	132.25420	160.51287	8.87205	0.2395090	2.8061523	67	3	1990–1999	0.60	M-v	2	Williams	36087	1999 JK ₈₁
1999 JL ₈₁	14.0	0.15	19990810	337.91741	111.84601	247.51508	10.57447	0.3395527	2.5527209	68	3	1979–1999	0.64	M-v	3	Williams	36087	1999 JL ₈₁
1999 JM ₈₁	13.4	0.15	19990810	336.33843	70.02076	282.99912	12.22651	0.1911416	2.5937683	53	3	1987–1999	0.67	M-v	3	Williams	36007	1999 JM ₈₁
1999 JC ₈₃	15.5	0.15	19990810	26.28083	52.82479	176.51646	7.02405	0.0885549	2.3199429	36	1	61 days	0.57	M-v	4	Williams	35465	1999 JC ₈₃
1999 JP ₈₅	14.3	0.15	19990810	53.79827	39.03680	173.58783	10.33160	0.0620525	2.5417116	34	1	77 days	0.60	M-v	4	Williams	35465	1999 JP ₈₅
1999 JM ₉₇	15.0	0.15	19990810	351.71577	117.01587	158.00146	6.54540	0.1072119	2.4598883	28	2	1992–1999	0.70	M-v	5	Williams	35032	1999 JM ₉₇
1999 JD ₁₂₁	14.9	0.15	19990810	95.84818	334.65052	190.70832	6.29566	0.0472449	2.3515253	47	3	1994–1999	0.64	M-v	3	Williams	35469	1999 JD ₁₂₁
1999 JU ₁₂₂	14.1	0.15	19990810	13.96163	25.52439	232.32846	6.73660	0.0687648	2.3874414	40	3	1996–1999	0.66	M-v	3	Williams	35039	1999 JU ₁₂₂
1999 JT ₁₂₆	14.3	0.15	19990810	284.48263	90.08438	248.46573	1.48097	0.0657156	2.8967469	23	4	1993–1999	0.79	M-v	1	Williams	36088	1999 JT ₁₂₆
1999 KK ₁	18.2	0.15	19990810	352.85943	229.91755	76.93192	7.10890	0.4598251	2.1168224	34	1	141 days	0.57	M-v	4	Williams	35737	1999 KK ₁
1999 KF ₄	11.2	0.15	19990810	6.12591	54.08708	247.74264	23.45260	0.2866148	3.0917033	75	2	1972–1999	0.54	M-v	2	Williams	36088	1999 KF ₄
1999 KG ₄	14.1	0.15	19990810	10.38622	152.37590	146.26654	7.90574	0.2330265	2.3515762	78	3	1981–1999	0.69	M-v	2	Williams	36088	1999 KG ₄
1999 KK ₄	13.9	0.15	19990810	23.50236	43.55689	183.04776	9.52152	0.0784331	3.1796066	58	3	1995–1999	0.68	M-v	3	Williams	35470	1999 KK ₄
1999 KQ ₄	13.3	0.15	19990810	350.54969	82.22592	261.43464	28.23779	0.3838193	2.7822457	73	1	148 days	0.45	M-v	3	Williams	35737	1999 KQ ₄
1999 KR ₄	14.3	0.15	19990810	0.04700	114.87142	209.51856	8.69849	0.2598114	2.3952018	67	5	1988–1999	0.55	M-v	1	Williams	36007	1999 KR ₄
1999 KU ₄	16.8	0.15	19990810	1.02563	222.92372	76.61660	8.44409	0.4037254	2.1942867	161	1	149 days	0.61	M-v	3	Williams	36088	1999 KU ₄
1999 KX ₄	16.9	0.15	19990810	97.89841	76.23774	105.05716	16.57064	0.2929204	1.4574377	61	1	139 days	0.53	M-v	4	Williams	35737	1999 KX ₄
1999 KK ₆	13.7	0.15	19990810	326.23493	134.92255	220.00201	23.86563	0.0620063	1.8921546	61	4	1991–1999	0.53	M-v	2	Williams	35737	1999 KK ₆
1999 KL ₆	12.4	0.15	19990810	4.92491	92.32546	201.23680	21.08817	0.2854161	2.3694852	70	2	1992–1999	0.58	M-v	2	Williams	35737	1999 KL ₆
1999 KS ₇	12.9	0.15	19990810	52.42193	20.70004	242.46117	11.30106	0.0502406	2.5528708	73	2	1998–1999	0.63	M-v	3	Williams	36088	1999 KS ₇
1999 KJ ₁₅	13.6	0.15	19990810	355.23037	173.66395	145.41137	18.99934	0.2373449	3.0997442	48	2	1998–1999	0.77	M-v	3	Williams	36088	1999 KJ ₁₅
1999 KK ₁₅	14.2	0.15	19990810	3.76430	145.16532	167.99575	13.95877	0.1688747	2.5939158	88	4	1991–1999	0.63	M-v	2	Williams	36007	1999 KK ₁₅
1999 KM ₁₅	13.2	0.15	19990810	52.72651	5.26349	248.74129	11.03020	0.1173869	2.6056023	66	4	1985–1999	0.59	M-v	1	Williams	36088	1999 KM ₁₅
1999 KA ₁₆	13.7	0.15	19990810	40.58623	29.25265	227.29825	12.96922	0.1921532	2.3282689	46	4	1982–1999	0.65	M-v	2	Williams	36008	1999 KA ₁₆
1999 KJ ₁₇	14.4	0.15	19990810	51.07411	47.76295	202.41661	4.72420	0.1094881	2.2755435	41	5	1975–1999	0.67	M-v	1	Williams	36008	1999 KJ ₁₇
1999 KL ₁₇	8.7	0.15	19990611	180.08475	180.30582	307.23514	2.87971	0.0294238	46.2377937	13	1	90 days	0.14		E	Marsden		1999 KL ₁₇
1999 KR ₁₈	8.0	0.15	19990611	276.00789	149.11800	284.61427	0.62095	0.3799145	47.9147465	9	1	89 days	0.15		E	Marsden		1999 KR ₁₈
1999 LT ₁	17.4	0.15	19990810	14.05896	158.49169	67.58332	42.60376	0.6583477	2.9752306	54	1	125 days	0.68	M-v	4	Williams	35737	1999 LT ₁
1999 LV ₁	14.5	0.15	19990810	336.41934	142.23768	86.26253	25.76417	0.1246334	1.9235706	59	1	203 days	0.71	M-v	4	Williams	36088	1999 LV ₁
1999 LY ₅	14.6	0.15	19990810	52.90727	329.70700	206.43238	29.27073	0.4660852	3.0536739	35	1	126 days	0.54	M-v	4	Williams	36088	1999 LY ₅
1999 LH ₆	13.1	0.15	19990810	43.50666	342.24909	269.79992	5.05024	0.0725067	2.4002738	60	3	1980–1999	0.54	M-v	2	Williams	36088	1999 LH ₆
1999 LM ₇	15.7	0.15	19990810	351.54893	199.25149	129.89526	7.93471	0.3196603	2.3875217	50	3	1988–1999	0.70	M-v	2	Williams	36088	1999 LM ₇
1999 LO ₇	14.5	0.15	19990810	335.59850	208.10054	140.99215	4.82764	0.2314874	2.2900560	63	2	1998–1999	0.75	M-v	3	Williams	36088	1999 LO ₇
1999 LU ₂₆	14.1	0.15	19990810	359.84686	18.83177	270.25646	14.51521	0.2652435	2.5409962	33	2	1991–1999	0.67	M-v	3	Williams	35391	1999 LU ₂₆

1999 LN ₂₈	19.3	0.15	19990810	5.39863	186.50349	115.77861	9.18389	0.4658903	2.1427152	188	1	115 days	0.54	M-v	4	Williams	36088	1999 LN ₂₈
1999 LO ₂₈	15.6	0.15	19990810	56.84421	283.56063	280.25381	33.92395	0.4126437	1.8765973	213	2	1954–1999	0.62	M-v	3	Williams	35738	1999 LO ₂₈
1999 LQ ₂₈	19.1	0.15	19990810	256.84619	320.42661	95.07851	21.77067	0.1201958	1.1985488	75	1	114 days	0.48	M-v	4	Williams	35738	1999 LQ ₂₈
1999 LD ₃₀	20.4	0.15	19990810	6.52562	203.13567	87.94816	8.70051	0.6035146	2.9024692	58	1	124 days	0.57	M-v	4	Williams	36088	1999 LD ₃₀
1999 MA	14.8	0.15	19990810	330.51607	82.43299	264.00942	6.75886	0.1999439	2.4088839	30	1	107 days	0.32	M-v	4	Williams		1999 MA
1999 MJ	14.5	0.15	19990810	347.26385	33.06422	286.18336	5.90103	0.1213433	2.5301481	30	1	103 days	0.41	M-v	5	Williams		1999 MJ
1999 MK	15.3	0.15	19990810	358.07128	67.18612	245.53461	6.62048	0.1681579	2.2321183	34	2	1989–1999	0.67	M-v	3	Williams	36088	1999 MK
1999 ML	17.6	0.15	19990810	2.68575	110.95219	211.78095	2.50794	0.4539918	2.2659408	219	1	121 days	0.56	M-v	4	Williams	36088	1999 ML
1999 MO	14.9	0.15	19990810	28.87553	242.23200	18.58660	2.31712	0.1768692	2.4022930	60	1	143 days	0.47	M-v	4	Williams	36088	1999 MO
1999 MT	14.9	0.15	19990810	5.41861	57.44818	236.35965	1.64837	0.2279365	2.4189859	56	3	1973–1999	0.62	M-v	2	Williams	36088	1999 MT
1999 MG ₁	13.1	0.15	19990810	30.23744	356.48330	268.76846	11.65782	0.1391108	2.8331887	25	1	172 days	0.43	M-v	4	Williams	35474	1999 MG ₁
1999 MH ₁	13.8	0.15	19990810	333.53313	231.50574	114.22226	13.44863	0.1984094	2.6753935	40	2	1998–1999	0.78	M-v	3	Williams	35395	1999 MH ₁
1999 MK ₁	14.6	0.15	19990810	353.10209	21.20878	308.31377	14.28598	0.1264066	2.5630201	42	1	110 days	0.50	M-v	4	Williams	36088	1999 MK ₁
1999 ML ₁	14.1	0.15	19990810	3.52389	11.18300	302.11367	12.89829	0.3112659	2.5807600	47	1	111 days	0.54	M-v	3	Williams	36088	1999 ML ₁
1999 MM ₁	14.9	0.15	19990810	15.82341	215.62632	80.79816	2.25997	0.1852332	2.3935380	30	2	1991–1999	0.63	M-v	4	Williams	36008	1999 MM ₁
1999 MN ₁	14.9	0.15	19990810	348.11127	346.84804	353.06860	2.72516	0.2218084	2.4135834	71	1	118 days	0.53	M-v	4	Williams	36088	1999 MN ₁
1999 MV ₁	16.5	0.15	19990810	348.93556	254.82624	89.86938	1.44231	0.3003444	2.1778370	64	1	118 days	0.54	M-v	4	Williams	36088	1999 MV ₁
1999 MB ₂	13.6	0.15	19990810	74.20500	86.78005	130.09051	6.08471	0.1366326	2.2844000	59	3	1991–1999	0.73	M-v	2	Williams	35738	1999 MB ₂
1999 NJ	17.6	0.15	19990810	2.34909	199.25500	104.46462	6.40385	0.2932013	2.3401655	25	1	101 days	0.46	M-v	4	Williams	36088	1999 NJ
1999 NT	13.7	0.15	19990810	344.21720	35.78230	302.82578	8.43829	0.1973631	2.3946374	72	2	1998–1999	0.65	M-v	3	Williams	36088	1999 NT
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	36088	1999 NV
1999 NW	16.1	0.15	19990810	320.93232	166.75928	182.48322	5.22577	0.1034627	2.8090140	14	1	83 days	0.47	M-v	5	Williams		1999 NW
1999 NY	16.6	0.15	19990810	334.42941	254.45580	85.99717	2.24637	0.1819627	2.4026110	19	1	81 days	0.23	M-v	5	Williams		1999 NY
1999 NB ₁	15.4	0.15	19990810	22.10760	149.51162	134.87848	7.03383	0.1369230	2.3325324	37	1	95 days	0.56	M-v	4	Williams	36089	1999 NB ₁
1999 NQ ₁	13.9	0.15	19990810	31.03619	97.03534	151.49558	26.16932	0.3020335	2.6763055	27	1	80 days	0.42	M-v	4	Williams	36089	1999 NQ ₁
1999 NT ₁	13.8	0.15	19990810	334.73283	90.79638	282.39406	21.36325	0.3189718	2.3054116	47	1	154 days	0.46	M-v	3	Williams	36089	1999 NT ₁
1999 NV ₁	15.2	0.15	19990810	15.48609	25.12506	291.49605	22.25459	0.1227646	2.3346820	22	1	83 days	0.55	M-v	4	Williams		1999 NV ₁
1999 NW ₁	14.2	0.15	19990810	359.72537	23.43882	308.52026	24.55995	0.2328389	2.3484020	22	1	82 days	0.36	M-v	4	Williams	36089	1999 NW ₁
1999 NM ₂	14.3	0.15	19990810	358.51194	106.59800	221.94704	10.64371	0.1881667	2.5454822	73	4	1987–1999	0.56	M-v	2	Williams	36089	1999 NM ₂
1999 NN ₂	14.2	0.15	19990810	324.16995	133.15496	261.00030	15.67175	0.2317065	3.1072031	27	1	83 days	0.51	M-v	4	Williams		1999 NN ₂
1999 NO ₂	16.3	0.15	19990810	9.36656	40.11212	276.66645	7.03250	0.1819457	2.2484743	40	1	89 days	0.63	M-v	4	Williams	36089	1999 NO ₂
1999 NP ₂	14.9	0.15	19990810	3.69825	124.56773	200.44863	5.23293	0.1809592	2.2536390	76	2	1998–1999	0.64	M-v	3	Williams	36008	1999 NP ₂
1999 NP ₃	12.9	0.15	19990810	141.31047	261.08326	250.87187	10.06395	0.1575078	2.6636655	50	3	1983–1999	0.66	M-v	3	Williams	35739	1999 NP ₃
1999 NU ₃	13.8	0.15	19990810	3.89538	169.52439	131.87331	14.48849	0.1585366	2.6128815	37	2	1998–1999	0.62	M-v	3	Williams	36089	1999 NU ₃
1999 NB ₄	15.4	0.15	19990810	350.81289	68.99840	260.55814	4.99766	0.2095240	2.2666249	39	1	87 days	0.32	M-v	4	Williams	36089	1999 NB ₄
1999 ND ₄	15.5	0.15	19990810	317.51295	322.40220	53.12600	0.23074	0.1981256	2.4164404	37	3	1977–1999	0.56	M-v	3	Williams	36089	1999 ND ₄
1999 NF ₄	15.7	0.15	19990810	17.48191	327.23728	322.30981	3.39634	0.2173809	2.5552185	35	1	83 days	0.43	M-v	4	Williams		1999 NF ₄
1999 NH ₄	15.1	0.15	19990810	287.94206	210.16257	197.41447	2.97179	0.1449795	2.2256777	68	3	1996–1999	0.67	M-v	3	Williams	36009	1999 NH ₄
1999 NN ₄	15.3	0.15	19990810	358.45742	203.84894	106.00526	10.49015	0.1860055	2.7708209	22	1	87 days	0.40	M-v	4	Williams		1999 NN ₄
1999 NS ₄	14.9	0.15	19990810	26.54888	148.56237	148.47407	2.86849	0.1801315	2.4444702	68	2	1998–1999	0.63	M-v	4	Williams	36089	1999 NS ₄
1999 NT ₄	14.3	0.15	19990810	270.15086	97.07654	338.43648	2.20553	0.0794165	2.3762684	176	3	1976–1999	0.49	M-v	3	Williams	36009	1999 NT ₄
1999 NX ₄	15.0	0.15	19990810	339.70874	205.62280	154.38772	16.21445	0.2850184	2.8701269	63	1	92 days	0.56	M-v	4	Williams	36089	1999 NX ₄
1999 NZ ₄	17.5	0.15	19990810	0.71985	19.46190	297.76048	19.61137	0.4961906	2.8547002	117	1	97 days	0.42	M-v	3	Williams	36089	1999 NZ ₄
1999 NF ₅	14.1	0.15	19990810	284.82512	141.57486	270.26919	1.65104	0.2060406	2.3565150	52	1	94 days	0.59	M-v	5	Williams	36089	1999 NF ₅
1999 NG ₅	14.1	0.15	19990810	24.43769	148.37679	126.71646	11.68025	0.2221806	2.7720015	53	2	1998–1999	0.57	M-v	3	Williams	36089	1999 NG ₅
1999 NZ ₅	13.8	0.15	19990810	336.25920	199.06747	151.64791	13.54586	0.2794349	2.4136862	48	3	1995–1999	0.49	M-v	2	Williams	36089	1999 NZ ₅
1999 NG ₆	15.1	0.15	19990810	346.81581	200.16118	129.14010	7.53568	0.1600884	2.2736832	41	2	1998–1999	0.69	M-v	3	Williams	36009	1999 NG ₆
1999 NZ ₆	14.4	0.15	19990810	295.80438	179.10233	202.36320	1.46186	0.0505621	2.6501205	41	4	1978–1999	0.72	M-v	2	Williams	36009	1999 NZ ₆
1999 NJ ₇	13.9	0.15	19990810	264.78691	286.13560	129.82576	5.43171	0.0658324	2.5755168	47	3	1989–1999	0.64	M-v	3	Williams	36089	1999 NJ ₇
1999 NO ₇	15.4	0.15	19990810	352.66706	32.83623	290.70268	6.16002	0.1069249	2.2187109	28	1	109 days	0.56	M-v	4	Williams		1999 NO ₇
1999 NR ₇	15.5	0.15	19990810	327.97968	146.53733	212.57769	1.63802	0.1650527	2.1810207	47	1	125 days	0.53	M-v	4	Williams	36089	1999 NR ₇
1999 NU ₇	13.9	0.15	19990810	26.77269	51.34465	226.67088	2.66447	0.1744019	3.0973870	61	3	1997–1999	0.73	M-v	3	Williams	36089	1999 NU ₇
1999 NX ₇	14.8	0.15	19990810	4.08939	12.11483	298.00428	13.37161	0.1663396	2.5721666	32	1	117 days	0.46	M-v	3	Williams	36089	1999 NX ₇

1999 NA ₈	15.9	0.15	19990810	37.35138	85.95526	176.48025	1.19492	0.1848321	2.3293252	20	1	92 days	0.53	M-v	5	Williams	1999 NA ₈
1999 NC ₈	14.9	0.15	19990810	357.54278	188.58662	130.07824	14.38780	0.1957854	2.6654108	30	1	78 days	0.48	M-v	4	Williams	36089 1999 NC ₈
1999 ND ₈	14.5	0.15	19990810	307.85602	256.13268	132.38091	9.78083	0.2089731	2.7584125	25	1	94 days	0.59	M-v	5	Williams	36089 1999 ND ₈
1999 NE ₈	15.5	0.15	19990810	354.54132	198.12841	125.67931	6.46704	0.1998488	2.2439349	27	1	90 days	0.41	M-v	4	Williams	36089 1999 NE ₈
1999 NF ₈	15.3	0.15	19990810	356.41621	14.85469	306.49453	3.42843	0.2055077	2.4005072	42	1	125 days	0.51	M-v	3	Williams	36089 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	36089 1999 NJ ₈
1999 NK ₈	13.7	0.15	19990810	244.32174	159.56830	280.96077	3.28549	0.0904578	2.6979766	52	4	1982–1999	0.67	M-v	2	Williams	36010 1999 NK ₈
1999 NN ₈	14.7	0.15	19990810	68.07561	322.99035	273.71462	4.08692	0.1064136	2.2946777	50	4	1974–1999	0.56	M-v	1	Williams	36089 1999 NN ₈
1999 NR ₈	14.3	0.15	19990810	330.50506	222.51467	136.30750	8.10650	0.1727223	2.4573920	44	2	1998–1999	0.55	M-v	3	Williams	36010 1999 NR ₈
1999 NT ₈	15.4	0.15	19990810	92.42934	40.16870	180.12248	1.20244	0.0305386	2.1920961	43	3	1996–1999	0.69	M-v	2	Williams	36089 1999 NT ₈
1999 NV ₈	14.8	0.15	19990810	28.29255	353.11548	284.98636	1.45725	0.1639269	2.5907711	42	1	94 days	0.55	M-v	4	Williams	36089 1999 NV ₈
1999 ND ₉	13.7	0.15	19990810	260.22166	299.15104	118.31545	4.97211	0.0076214	2.3278211	42	4	1985–1999	0.70	M-v	2	Williams	36010 1999 ND ₉
1999 NH ₉	14.4	0.15	19990810	314.39985	250.01086	127.78169	6.75766	0.1572918	2.4090721	40	2	1998–1999	0.54	M-v	3	Williams	36090 1999 NH ₉
1999 NJ ₉	14.2	0.15	19990810	24.51788	327.88633	307.48036	6.49425	0.2691421	2.7740131	61	2	1998–1999	0.52	M-v	3	Williams	36090 1999 NJ ₉
1999 NM ₉	14.8	0.15	19990810	117.50664	353.54685	201.65130	1.20539	0.0525672	2.1902024	47	2	1996–1999	0.53	M-v	5	Williams	36090 1999 NM ₉
1999 NN ₉	15.3	0.15	19990810	32.20160	342.87733	295.59702	5.58710	0.1129949	2.3077619	41	1	95 days	0.55	M-v	4	Williams	36090 1999 NN ₉
1999 NO ₉	13.8	0.15	19990810	283.73688	102.37030	298.01426	7.67345	0.0480704	2.9103337	26	1	94 days	0.52	M-v	6	Williams	36090 1999 NO ₉
1999 NP ₉	15.5	0.15	19990810	302.73963	127.38395	273.01057	2.96848	0.2218437	2.3290916	31	2	1998–1999	0.58	M-v	4	Williams	36011 1999 NP ₉
1999 NS ₉	13.3	0.15	19990810	69.98487	92.94362	145.23153	9.63232	0.1008858	2.7936041	61	3	1993–1999	0.64	M-v	2	Williams	36011 1999 NS ₉
1999 NW ₉	13.8	0.15	19990810	299.61061	231.06172	160.79237	2.35558	0.1067395	2.9387997	42	3	1997–1999	0.71	M-v	4	Williams	36011 1999 NW ₉
1999 NA ₁₀	13.8	0.15	19990810	247.40682	137.09295	301.17662	0.98707	0.0582865	2.8504084	51	3	1995–1999	0.53	M-v	4	Williams	36011 1999 NA ₁₀
1999 NB ₁₀	14.6	0.15	19990810	326.88557	62.37088	309.75996	15.88405	0.2479843	2.6164831	47	2	1984–1999	0.48	M-v	4	Williams	36090 1999 NB ₁₀
1999 ND ₁₀	15.5	0.15	19990810	2.76243	359.52942	315.23784	6.16014	0.1346084	2.3318175	25	1	94 days	0.48	M-v	4	Williams	36090 1999 ND ₁₀
1999 NF ₁₀	14.4	0.15	19990810	348.51336	230.94126	108.09411	1.02903	0.2426122	3.2616543	33	1	94 days	0.46	M-v	4	Williams	36090 1999 NF ₁₀
1999 NG ₁₀	14.2	0.15	19990810	95.28548	255.43067	314.97528	11.45639	0.1177632	2.5549287	55	2	1998–1999	0.67	M-v	3	Williams	36090 1999 NG ₁₀
1999 NH ₁₀	15.4	0.15	19990810	11.62464	350.03157	312.16835	5.26669	0.1734507	2.2403367	56	2	1998–1999	0.62	M-v	3	Williams	36012 1999 NH ₁₀
1999 NJ ₁₀	14.9	0.15	19990810	39.05078	312.24433	318.66708	6.16066	0.0971967	2.2965735	50	1	118 days	0.52	M-v	4	Williams	36090 1999 NJ ₁₀
1999 NO ₁₀	14.3	0.15	19990810	310.94636	47.32745	332.85689	1.78897	0.1173671	2.6375525	61	2	1998–1999	0.61	M-v	4	Williams	36012 1999 NO ₁₀
1999 NP ₁₀	15.3	0.15	19990810	46.18742	293.87515	318.70359	2.95772	0.2076036	2.3462495	34	1	94 days	0.49	M-v	5	Williams	36090 1999 NP ₁₀
1999 NQ ₁₀	16.0	0.15	19990810	13.41910	342.41962	318.91182	5.46433	0.1412419	2.2345048	35	1	94 days	0.55	M-v	4	Williams	36090 1999 NQ ₁₀
1999 NR ₁₀	12.8	0.15	19990810	341.83477	34.30973	308.64717	8.51497	0.0929100	3.0631718	42	1	95 days	0.46	M-v	4	Williams	36090 1999 NR ₁₀
1999 NA ₁₁	13.5	0.15	19990810	287.06109	91.33024	320.91641	11.78799	0.1680151	2.6372674	54	1	95 days	0.59	M-v	5	Williams	36090 1999 NA ₁₁
1999 NG ₁₁	13.5	0.15	19990810	347.73655	276.23521	59.45202	2.93638	0.0601811	2.9171622	42	3	1995–1999	0.75	M-v	4	Williams	36090 1999 NG ₁₁
1999 NK ₁₁	15.2	0.15	19990810	21.27278	171.23341	121.94891	3.45528	0.1425890	2.3290013	32	1	117 days	0.53	M-v	4	Williams	36090 1999 NK ₁₁
1999 NO ₁₁	15.8	0.15	19990810	0.64299	13.60150	307.86044	6.38592	0.1275218	2.3602327	37	1	94 days	0.53	M-v	4	Williams	36090 1999 NO ₁₁
1999 NR ₁₁	14.2	0.15	19990810	354.38608	37.70105	295.64990	5.91951	0.2821467	2.3834750	36	1	88 days	0.47	M-v	4	Williams	36090 1999 NR ₁₁
1999 NS ₁₁	15.1	0.15	19990810	330.12996	232.59915	147.00075	7.09068	0.3080212	2.3000266	56	4	1978–1999	0.62	M-v	3	Williams	36012 1999 NS ₁₁
1999 NV ₁₁	15.2	0.15	19990810	341.63018	52.52993	302.75990	4.50724	0.2641090	2.2948313	54	2	1992–1999	0.63	M-v	4	Williams	36012 1999 NV ₁₁
1999 NW ₁₁	14.4	0.15	19990810	65.19422	303.50959	305.38490	5.61082	0.0873747	2.3645408	40	1	95 days	0.55	M-v	5	Williams	36090 1999 NW ₁₁
1999 NH ₁₂	15.6	0.15	19990810	106.76039	11.38099	184.20490	2.69027	0.1446017	2.2059682	40	4	1992–1999	0.78	M-v	1	Williams	36090 1999 NH ₁₂
1999 NQ ₂₆	15.0	0.15	19990810	350.41350	45.78681	278.22498	2.93644	0.2707294	2.5590150	21	1	103 days	0.31	M-v	4	Williams	1999 NQ ₂₆
1999 NL ₃₁	14.4	0.15	19990810	30.10226	308.82987	314.70044	6.13854	0.2108100	2.3100859	54	4	1992–1999	0.60	M-v	2	Williams	36013 1999 NL ₃₁
1999 NC ₃₄	13.7	0.15	19990810	189.44151	349.85802	123.94773	5.76695	0.1053577	3.1611761	23	3	1992–1999	0.67	M-v	4	Williams	36014 1999 NC ₃₄
1999 NH ₃₆	14.9	0.15	19990810	339.70983	27.96349	313.75887	7.43199	0.1921634	2.3586884	34	3	1981–1999	0.48	M-v	2	Williams	36014 1999 NH ₃₆
1999 NR ₃₆	14.0	0.15	19990810	28.84880	185.02933	94.17102	9.54214	0.0564013	2.2969971	26	4	1977–1999	0.54	M-v	2	Williams	35400 1999 NR ₃₆
1999 NH ₃₇	13.7	0.15	19990810	283.36958	87.95741	313.52320	9.00539	0.1231356	3.0036838	54	2	1994–1999	0.65	M-v	4	Williams	36090 1999 NH ₃₇
1999 NP ₃₇	13.1	0.15	19990810	124.58825	236.70614	303.58108	9.71756	0.0578974	2.9969743	31	3	1992–1999	0.62	M-v	3	Williams	36090 1999 NP ₃₇
1999 NW ₃₇	14.8	0.15	19990810	352.38372	245.24772	76.84922	2.92117	0.1182413	2.4020930	29	1	115 days	0.56	M-v	4	Williams	36090 1999 NW ₃₇
1999 NZ ₃₇	15.1	0.15	19990810	335.32423	41.61930	313.44724	9.89552	0.2536587	2.3359550	42	1	115 days	0.62	M-v	4	Williams	36090 1999 NZ ₃₇
1999 NB ₃₈	10.6	0.15	19990810	358.01340	356.06967	317.99709	25.25814	0.0826202	5.1558643	29	1	78 days	0.46	M-v	4	Williams	1999 NB ₃₈
1999 NG ₃₈	14.5	0.15	19990810	26.06385	284.58941	353.87804	4.80273	0.1384120	2.3173548	26	1	77 days	0.52	M-v	4	Williams	1999 NG ₃₈
1999 NQ ₃₈	15.1	0.15	19990810	329.40340	29.33333	336.23194	8.20166	0.2749393	2.5279371	34	2	1991–1999	0.53	M-v	4	Williams	36014 1999 NQ ₃₈
1999 NC ₃₉	14.0	0.15	19990810	5.11530	185.83445	119.97129	9.95626	0.1592022	3.1405001	36	2	1998–1999	0.66	M-v	3	Williams	36015 1999 NC ₃₉

1999 NL ₃₉	15.2	0.15	19990810	43.71622	284.55960	332.99346	4.09585	0.1429551	2.3115681	41	3	1996–1999	0.55	M-v	2	Williams	36015	1999 NL ₃₉
1999 NM ₃₉	15.5	0.15	19990810	355.87920	300.22508	20.39478	2.66078	0.1943090	2.4424904	30	1	115 days	0.58	M-v	4	Williams	36090	1999 NM ₃₉
1999 NN ₃₉	14.4	0.15	19990810	260.17981	89.29707	339.11241	4.91691	0.1398012	2.3891619	34	2	1998–1999	0.65	M-v	4	Williams	36015	1999 NN ₃₉
1999 NO ₃₉	14.8	0.15	19990810	335.68544	25.01369	326.07506	8.20686	0.2013024	2.5886639	39	1	93 days	0.47	M-v	4	Williams	36090	1999 NO ₃₉
1999 NX ₃₉	14.3	0.15	19990810	287.25377	51.19856	356.52697	5.82384	0.1800822	2.2773692	53	4	1977–1999	0.67	M-v	1	Williams	36015	1999 NX ₃₉
1999 NZ ₃₉	14.7	0.15	19990810	19.71388	314.36507	334.41120	9.17318	0.1450492	2.7511799	25	1	78 days	0.45	M-v	4	Williams		1999 NZ ₃₉
1999 NM ₄₀	15.7	0.15	19990810	10.97367	345.17844	312.35557	12.37634	0.2558495	2.6180813	35	1	78 days	0.49	M-v	4	Williams		1999 NM ₄₀
1999 NV ₄₀	13.5	0.15	19990810	312.28121	60.26605	325.12620	16.45674	0.2170588	3.1305409	41	1	93 days	0.42	M-v	4	Williams	36091	1999 NV ₄₀
1999 NW ₄₀	14.8	0.15	19990810	358.09061	334.30716	344.24248	5.97409	0.1622684	2.4180849	35	1	114 days	0.45	M-v	3	Williams	36091	1999 NW ₄₀
1999 NH ₄₁	15.4	0.15	19990810	32.62299	259.94984	12.59479	3.23415	0.1803089	2.2378279	47	3	1995–1999	0.57	M-v	2	Williams	36016	1999 NH ₄₁
1999 NJ ₄₁	13.8	0.15	19990810	311.72644	55.75995	330.00363	13.51803	0.1853121	2.6317874	65	1	94 days	0.51	M-v	4	Williams	36091	1999 NJ ₄₁
1999 NU ₄₁	13.7	0.15	19990810	335.52897	21.43107	333.85441	16.15616	0.1761545	3.1895545	33	1	93 days	0.53	M-v	4	Williams	36091	1999 NU ₄₁
1999 NV ₄₁	12.8	0.15	19990810	232.24243	104.69626	356.51056	7.78064	0.1394580	2.5333188	40	1	93 days	0.61	M-v	4	Williams	36091	1999 NV ₄₁
1999 NY ₄₁	13.3	0.15	19990810	324.17712	37.56236	334.33661	17.98781	0.1601469	3.1677069	55	1	94 days	0.51	M-v	4	Williams	36091	1999 NY ₄₁
1999 NC ₄₂	14.0	0.15	19990810	309.80875	276.31148	119.17803	13.55845	0.1893811	2.5807720	22	1	78 days	0.65	M-v	5	Williams		1999 NC ₄₂
1999 NJ ₄₂	15.5	0.15	19990810	293.47927	282.11763	110.69526	3.90115	0.1389581	2.2507746	20	4	1984–1999	0.52	M-v	2	Williams	36016	1999 NJ ₄₂
1999 NX ₄₂	15.1	0.15	19990810	316.31527	28.11331	342.26831	7.68288	0.1334298	2.4126469	55	2	1998–1999	0.68	M-v	3	Williams	36091	1999 NX ₄₂
1999 NC ₄₃	15.9	0.15	19990810	292.72470	120.27889	312.03986	7.11497	0.5795757	1.7592657	58	1	134 days	0.59	M-v	4	Williams	36091	1999 NC ₄₃
1999 ND ₄₃	19.2	0.15	19990810	326.39667	51.70744	332.34090	5.56033	0.3144294	1.5235746	353	1	95 days	0.54	M-v	4	Williams	36091	1999 ND ₄₃
1999 NY ₄₈	13.8	0.15	19990810	310.99082	179.01131	197.00395	8.90259	0.1612535	2.7647836	44	4	1993–1999	0.62	M-v	2	Williams	36017	1999 NY ₄₈
1999 NG ₄₉	14.6	0.15	19990810	18.46944	27.75438	258.00462	3.80223	0.1682848	2.2738936	21	1	147 days	0.46	M-v	4	Williams	36091	1999 NG ₄₉
1999 NK ₄₉	14.6	0.15	19990810	341.43477	138.54513	199.46662	5.66489	0.1611136	2.4117276	25	1	95 days	0.37	M-v	4	Williams	36091	1999 NK ₄₉
1999 NS ₄₉	13.2	0.15	19990810	272.64096	281.12491	141.01768	14.85649	0.2152839	2.9414384	31	1	94 days	0.49	M-v	4	Williams	36091	1999 NS ₄₉
1999 NU ₄₉	16.3	0.15	19990810	0.49985	172.13888	140.29467	5.78283	0.2234304	2.2689574	23	1	60 days	0.50	M-v	5	Williams	36091	1999 NU ₄₉
1999 NY ₄₉	15.0	0.15	19990810	29.43512	57.04142	214.79196	2.65243	0.1810643	2.2671554	23	1	85 days	0.36	M-v	4	Williams		1999 NY ₄₉
1999 NA ₅₀	14.4	0.15	19990810	306.18824	223.93438	165.52373	9.10543	0.2104811	2.4137263	44	3	1973–1999	0.76	M-v	3	Williams	36017	1999 NA ₅₀
1999 NB ₅₀	14.1	0.15	19990810	50.49753	324.05652	275.51637	11.88631	0.2303258	2.6456552	28	1	140 days	0.48	M-v	4	Williams	36091	1999 NB ₅₀
1999 NF ₅₀	15.5	0.15	19990810	312.09669	237.94670	152.84912	9.50683	0.2704650	2.2867857	27	3	1982–1999	0.51	M-v	3	Williams	36017	1999 NF ₅₀
1999 NJ ₅₀	14.6	0.15	19990810	12.88280	1.07498	295.25202	12.63763	0.1556637	2.6504843	36	2	1998–1999	0.48	M-v	3	Williams	36091	1999 NJ ₅₀
1999 NK ₅₀	13.4	0.15	19990810	178.85895	241.62014	253.33063	4.21986	0.1498167	2.5274527	48	2	1998–1999	0.47	M-v	3	Williams	36017	1999 NK ₅₀
1999 NT ₅₂	14.5	0.15	19990810	31.95807	71.96879	198.61486	11.69091	0.1171825	2.5117322	26	1	88 days	0.42	M-v	4	Williams	36091	1999 NT ₅₂
1999 NU ₅₂	13.4	0.15	19990810	310.90390	190.39456	179.40755	14.96392	0.1080948	2.6167353	80	3	1991–1999	0.56	M-v	3	Williams	36091	1999 NU ₅₂
1999 NV ₅₂	15.4	0.15	19990810	328.77393	179.54925	184.72112	13.74081	0.2545308	2.3245884	25	1	88 days	0.58	M-v	4	Williams	36091	1999 NV ₅₂
1999 NZ ₅₂	12.4	0.15	19990810	289.94506	160.18709	236.91921	16.37367	0.1292321	3.1474043	45	2	1998–1999	0.48	M-v	4	Williams	36018	1999 NZ ₅₂
1999 ND ₅₃	14.8	0.15	19990810	329.17518	178.66299	183.12058	12.80651	0.2325790	2.5750756	28	2	1991–1999	0.46	M-v	3	Williams	36018	1999 ND ₅₃
1999 NG ₅₃	14.1	0.15	19990810	4.48669	57.57808	250.99214	12.46738	0.1824869	2.5927249	33	1	141 days	0.56	M-v	3	Williams	36091	1999 NG ₅₃
1999 NK ₅₃	14.1	0.15	19990810	273.79162	233.74648	184.13738	13.08484	0.1620803	2.6684705	34	3	1997–1999	0.72	M-v	3	Williams	36018	1999 NK ₅₃
1999 NN ₅₃	15.3	0.15	19990810	339.44223	124.48676	228.97052	10.81737	0.2867624	2.5711305	32	1	82 days	0.42	M-v	4	Williams	36091	1999 NN ₅₃
1999 NS ₅₃	15.0	0.15	19990810	336.93237	159.46482	192.33739	12.87256	0.2163800	2.6573657	28	1	88 days	0.45	M-v	4	Williams	36091	1999 NS ₅₃
1999 NT ₅₃	13.7	0.15	19990810	56.82520	33.91642	210.27451	11.21719	0.1427384	2.6696504	48	3	1994–1999	0.46	M-v	1	Williams	36019	1999 NT ₅₃
1999 NV ₅₃	15.4	0.15	19990810	332.91945	191.37342	172.40468	13.61586	0.2763654	2.6614556	47	2	1982–1999	0.80	M-v	4	Williams	36019	1999 NV ₅₃
1999 NW ₅₃	14.7	0.15	19990810	306.69913	204.39922	175.95428	14.70614	0.1098804	2.5216177	26	1	80 days	0.52	M-v	4	Williams	36091	1999 NW ₅₃
1999 NA ₅₄	16.3	0.15	19990810	14.00503	126.92047	164.94053	12.62298	0.2864621	2.5548004	36	1	85 days	0.73	M-v	4	Williams	36091	1999 NA ₅₄
1999 NE ₅₄	14.2	0.15	19990810	344.15028	144.49190	192.38407	10.43262	0.0797212	2.6615682	53	3	1994–1999	0.68	M-v	3	Williams	36019	1999 NE ₅₄
1999 NF ₅₄	13.4	0.15	19990810	302.79502	134.38167	253.68683	13.24779	0.1066416	3.1148586	29	2	1978–1999	0.42	M-v	4	Williams	36019	1999 NF ₅₄
1999 NH ₅₄	14.8	0.15	19990810	327.97120	134.73331	234.23679	11.58662	0.2287328	2.6952139	37	1	88 days	0.48	M-v	4	Williams	36091	1999 NH ₅₄
1999 NJ ₅₄	13.9	0.15	19990810	297.23169	195.91298	205.90182	13.28810	0.1759202	2.6620976	49	4	1993–1999	0.61	M-v	3	Williams	36019	1999 NJ ₅₄
1999 NN ₅₄	14.8	0.15	19990810	356.51600	109.49144	215.66153	10.83035	0.1804525	2.6059428	28	1	88 days	0.43	M-v	3	Williams	36091	1999 NN ₅₄
1999 NT ₅₄	14.1	0.15	19990810	294.56592	226.39431	170.62686	15.29403	0.1126756	2.5197883	61	2	1998–1999	0.44	M-v	3	Williams	36091	1999 NT ₅₄
1999 NX ₅₄	12.8	0.15	19990810	334.95118	187.20030	159.00746	25.11952	0.0264280	2.7147077	56	1	149 days	0.41	M-v	3	Williams	36091	1999 NX ₅₄
1999 NC ₅₅	12.7	0.15	19990810	354.09887	89.89096	241.71670	13.15277	0.1684043	3.2026561	59	2	1998–1999	0.62	M-v	3	Williams	36019	1999 NC ₅₅
1999 NE ₅₅	13.4	0.15	19990810	319.32350	106.58342	268.00809	20.54461	0.0913171	3.1578711	27	1	84 days	0.43	M-v	4	Williams	36091	1999 NE ₅₅
1999 NF ₅₅	13.8	0.15	19990810	309.58686	128.31287	259.00061	14.06130	0.1327634	2.5273355	35	3	1989–1999	0.48	M-v	3	Williams	36020	1999 NF ₅₅

1999 NG ₅₅	14.1	0.15	19990810	311.64961	128.33012	256.75530	13.76160	0.1341630	2.6410999	24	1	89 days	0.50	M-v	5	Williams	36092	1999 NG ₅₅
1999 NH ₅₅	14.4	0.15	19990810	54.60876	2.36763	250.61202	11.92584	0.1414933	2.6237564	22	1	88 days	0.44	M-v	4	Williams	36092	1999 NH ₅₅
1999 NJ ₅₅	15.7	0.15	19990810	12.83894	33.69215	268.20205	11.12348	0.2129218	2.3070409	21	1	89 days	0.46	M-v	4	Williams	36092	1999 NJ ₅₅
1999 NL ₅₅	13.7	0.15	19990810	46.91729	359.42026	264.95034	14.36779	0.1364163	3.0986598	22	1	89 days	0.42	M-v	4	Williams	36092	1999 NL ₅₅
1999 NN ₅₅	14.2	0.15	19990810	36.20019	39.77209	243.99701	13.20190	0.0589554	2.5722680	27	1	89 days	0.50	M-v	4	Williams	36092	1999 NN ₅₅
1999 NQ ₅₅	14.9	0.15	19990810	4.87625	111.44554	206.31626	12.13821	0.2068709	2.6182645	36	1	88 days	0.45	M-v	3	Williams	36092	1999 NQ ₅₅
1999 NS ₅₅	13.1	0.15	19990810	150.78592	353.10725	178.19480	17.67890	0.0460646	3.1832939	26	1	88 days	0.48	M-v	4	Williams	36092	1999 NS ₅₅
1999 NT ₅₅	16.0	0.15	19990810	1.36858	99.70999	221.82122	7.27279	0.2183272	2.2956743	34	1	88 days	0.54	M-v	4	Williams	36092	1999 NT ₅₅
1999 NU ₅₅	14.0	0.15	19990810	299.28451	150.39628	256.45943	10.77381	0.1834545	2.6946594	27	1	89 days	0.41	M-v	4	Williams	36092	1999 NU ₅₅
1999 NY ₅₅	13.7	0.15	19990810	223.14363	215.42161	255.78098	12.50105	0.1086978	2.6647274	21	1	89 days	0.60	M-v	4	Williams	36092	1999 NY ₅₅
1999 NZ ₅₅	13.4	0.15	19990810	118.44089	309.25977	247.87845	12.28253	0.1237781	2.6664389	42	2	1998–1999	0.60	M-v	3	Williams	36020	1999 NZ ₅₅
1999 NA ₅₆	14.5	0.15	19990810	311.09714	164.81923	229.53097	12.53911	0.1920190	2.6177921	29	1	89 days	0.49	M-v	4	Williams	36092	1999 NA ₅₆
1999 NC ₅₆	15.5	0.15	19990810	346.49765	124.15320	221.82931	13.66237	0.1769002	2.4822441	23	1	89 days	0.68	M-v	4	Williams	36092	1999 NC ₅₆
1999 ND ₅₆	13.7	0.15	19990810	22.34045	69.53340	224.61099	15.47802	0.1990001	3.0452407	40	2	1998–1999	0.58	M-v	3	Williams	36020	1999 ND ₅₆
1999 NE ₅₆	14.8	0.15	19990810	325.58590	106.61339	270.00495	12.19260	0.1970716	2.6067157	23	1	89 days	0.37	M-v	4	Williams	36092	1999 NE ₅₆
1999 NF ₅₆	13.8	0.15	19990810	332.80092	88.22062	272.13058	13.11845	0.1053303	2.6172298	26	1	89 days	0.41	M-v	4	Williams	36092	1999 NF ₅₆
1999 NK ₅₆	12.6	0.15	19990810	47.99975	2.51602	264.70226	12.06217	0.1336535	2.6398762	61	3	1989–1999	0.67	M-v	2	Williams	36092	1999 NK ₅₆
1999 NM ₅₆	14.8	0.15	19990810	324.67256	118.15306	265.05853	12.36490	0.2175242	2.7155296	29	1	84 days	0.47	M-v	4	Williams	36092	1999 NM ₅₆
1999 NQ ₅₆	16.1	0.15	19990810	20.84125	25.49726	264.19904	8.29465	0.2767466	2.3718933	26	1	89 days	0.64	M-v	4	Williams	36092	1999 NQ ₅₆
1999 NR ₅₆	14.1	0.15	19990810	2.61926	59.38363	268.29599	11.17371	0.1496043	3.1330830	32	1	89 days	0.62	M-v	4	Williams	36092	1999 NR ₅₆
1999 NS ₅₆	13.6	0.15	19990810	337.94674	118.99772	243.00916	13.77341	0.1316212	2.6136610	28	1	84 days	0.29	M-v	3	Williams	36092	1999 NS ₅₆
1999 NT ₅₆	15.1	0.15	19990810	1.91601	88.30599	241.52195	12.04197	0.1894841	2.6185682	39	1	99 days	0.53	M-v	3	Williams	36092	1999 NT ₅₆
1999 NU ₅₆	13.9	0.15	19990810	25.03255	56.49715	244.21711	12.10209	0.1380594	2.6641903	36	3	1978–1999	0.67	M-v	3	Williams	36020	1999 NU ₅₆
1999 NV ₅₆	15.4	0.15	19990810	342.28299	98.60849	262.23851	9.52763	0.2299200	2.7955091	25	1	84 days	0.64	M-v	4	Williams	36092	1999 NV ₅₆
1999 NW ₅₆	14.9	0.15	19990810	318.83379	114.56503	276.24506	11.11140	0.1872621	2.6483786	29	1	84 days	0.54	M-v	4	Williams	36092	1999 NW ₅₆
1999 NX ₅₆	14.5	0.15	19990810	50.29399	346.66433	282.66650	13.39913	0.1371485	2.5468214	27	1	84 days	0.52	M-v	4	Williams	36092	1999 NX ₅₆
1999 NY ₅₆	14.6	0.15	19990810	348.66191	119.97968	229.28639	10.49134	0.1544724	2.7111094	43	2	1998–1999	0.56	M-v	3	Williams	36021	1999 NY ₅₆
1999 NZ ₅₆	14.8	0.15	19990810	355.00784	132.34865	209.40822	14.43851	0.2180835	2.6406834	20	1	84 days	0.46	M-v	4	Williams	36092	1999 NZ ₅₆
1999 NA ₅₇	14.5	0.15	19990810	49.93407	35.96431	236.70363	13.13633	0.1331569	2.5833056	52	2	1998–1999	0.52	M-v	3	Williams	36021	1999 NA ₅₇
1999 NB ₅₇	14.2	0.15	19990810	284.41130	177.40718	261.09063	11.51459	0.2297787	2.6000431	27	1	84 days	0.60	M-v	5	Williams	36092	1999 NB ₅₇
1999 NC ₅₇	12.6	0.15	19990810	324.34151	116.83707	262.89882	10.35898	0.1056946	3.0313214	61	3	1984–1999	0.69	M-v	3	Williams	36021	1999 NC ₅₇
1999 ND ₅₇	13.9	0.15	19990810	338.31185	116.00195	244.60431	10.74159	0.0329784	2.6788104	48	3	1976–1999	0.68	M-v	3	Williams	36021	1999 ND ₅₇
1999 NF ₅₇	14.2	0.15	19990810	59.41915	14.93389	240.69147	11.32773	0.2055401	2.6650449	61	2	1998–1999	0.61	M-v	3	Williams	36092	1999 NF ₅₇
1999 NH ₅₇	15.0	0.15	19990810	341.97100	85.44458	276.17904	11.53786	0.1653603	2.6520882	24	1	84 days	0.54	M-v	4	Williams	36092	1999 NH ₅₇
1999 NN ₅₉	15.1	0.15	19990810	345.40975	135.51912	209.46248	8.10357	0.2852135	2.7582993	39	2	1990–1999	0.56	M-v	4	Williams	36021	1999 NN ₅₉
1999 NQ ₅₉	14.3	0.15	19990810	1.31706	150.07930	163.15583	14.43743	0.1970859	2.7277853	47	1	94 days	0.39	M-v	3	Williams	36092	1999 NQ ₅₉
1999 NS ₅₉	14.7	0.15	19990810	19.52501	34.56025	252.59930	11.01667	0.1845692	2.6603382	21	1	81 days	0.44	M-v	4	Williams		1999 NS ₅₉
1999 NJ ₆₂	13.9	0.15	19990810	344.71649	102.04399	231.86673	8.37066	0.2068536	2.7354189	41	3	1995–1999	0.55	M-v	3	Williams	36021	1999 NJ ₆₂
1999 NM ₆₂	15.2	0.15	19990810	99.91917	296.68442	261.90625	3.78963	0.0820284	2.2214261	36	4	1993–1999	0.52	M-v	2	Williams	36022	1999 NM ₆₂
1999 NY ₆₂	13.7	0.15	19990810	240.65791	192.71229	258.31717	12.52899	0.1925821	2.4430279	57	3	1996–1999	0.59	M-v	3	Williams	36022	1999 NY ₆₂
1999 NW ₆₃	15.1	0.15	19990810	349.65928	340.70591	347.90310	5.46271	0.2165156	2.2254077	34	2	1998–1999	0.75	M-v	3	Williams	36022	1999 NW ₆₃
1999 NG ₆₄	14.8	0.15	19990810	126.30154	19.57155	188.60767	12.03618	0.0907838	2.7507801	33	3	1993–1999	0.71	M-v	3	Williams	36022	1999 NG ₆₄
1999 NH ₆₄	15.9	0.15	19990810	335.42305	159.68355	211.42815	6.27377	0.1266723	2.2841966	49	1	98 days	0.51	M-v	4	Williams	36092	1999 NH ₆₄
1999 OA	16.6	0.15	19990810	304.67123	197.24457	181.73890	14.77940	0.1290151	2.5713777	14	1	75 days	0.30	M-v	4	Williams		1999 OA
1999 OB	14.6	0.15	19990810	330.97079	189.82792	164.86952	4.41211	0.1364980	2.2823295	92	2	1998–1999	0.63	M-v	3	Williams	36092	1999 OB
1999 OC	14.2	0.15	19990810	340.95323	195.12453	146.09198	11.43654	0.1226921	2.6397663	71	2	1998–1999	0.60	M-v	3	Williams	36092	1999 OC
1999 OH	13.9	0.15	19990810	17.57535	343.42359	306.00664	10.92780	0.1647498	2.6570416	60	1	100 days	0.47	M-v	4	Williams	36092	1999 OH
1999 OL	14.1	0.15	19990810	344.87818	354.06228	346.22628	7.03215	0.1505218	2.7345594	65	3	1997–1999	0.55	M-v	3	Williams	36023	1999 OL
1999 OO	13.9	0.15	19990810	7.92277	18.91502	275.84378	5.87472	0.1180077	2.3859294	46	2	1998–1999	0.43	M-v	3	Williams	36092	1999 OO
1999 OT	15.6	0.15	19990810	332.84723	209.05690	148.97429	13.30879	0.1496312	3.0987277	31	1	76 days	0.50	M-v	4	Williams		1999 OT
1999 OW	15.0	0.15	19990810	347.44896	172.60139	163.09475	6.49938	0.3149318	2.5791609	78	2	1995–1999	0.51	M-v	3	Williams	36092	1999 OW
1999 OB ₁	15.1	0.15	19990810	34.08002	49.81836	233.01902	6.07485	0.1221600	2.3003291	47	3	1992–1999	0.55	M-v	3	Williams	36092	1999 OB ₁
1999 OF ₁	15.0	0.15	19990810	353.29255	189.02147	125.87916	13.79742	0.0249277	2.8437641	28	1	78 days	0.72	M-v	5	Williams		1999 OF ₁

1999 OV ₁	14.5	0.15	19990810	326.98008	73.50863	314.01752	5.55932	0.1515285	2.3053671	39	3	1985–1999	0.69	M-v	3	Williams	36023	1999 OV ₁
1999 OX ₁	15.4	0.15	19990810	16.31954	354.71981	320.91125	7.49841	0.2266613	2.3970616	33	1	88 days	0.53	M-v	4	Marsden	36092	1999 OX ₁
1999 OB ₂	14.9	0.15	19990810	20.64765	79.67622	236.41146	14.15920	0.2609846	2.8691265	27	1	73 days	0.50	M-v	5	Williams		1999 OB ₂
1999 OD ₂	14.0	0.15	19990810	14.62472	96.47133	235.25566	14.85926	0.2425379	3.0633108	32	1	73 days	0.31	M-v	5	Williams		1999 OD ₂
1999 OE ₂	12.6	0.15	19990810	126.28337	342.87382	247.15266	15.27976	0.0555186	3.1874205	27	1	73 days	0.44	M-v	5	Williams		1999 OE ₂
1999 OG ₂	14.7	0.15	19990810	32.58427	122.89289	185.05277	22.30894	0.1180521	1.9357702	45	1	78 days	0.34	M-v	4	Williams		1999 OG ₂
1999 OJ ₂	12.8	0.15	19990810	213.46313	255.94874	259.29992	12.40578	0.1054400	2.5898863	48	3	1987–1999	0.48	M-v	2	Williams	36023	1999 OJ ₂
1999 OL ₂	13.6	0.15	19990810	298.02721	139.98364	314.92666	23.53602	0.2834243	2.3715158	22	1	68 days	0.41	M-v	5	Williams		1999 OL ₂
1999 OM ₂	14.0	0.15	19990810	141.39364	291.27647	281.87768	17.99000	0.0590583	1.9419305	26	1	85 days	0.48	M-v	4	Williams		1999 OM ₂
1999 OH ₃	13.5	0.15	19990810	19.97204	98.61047	243.99855	18.86944	0.2149202	2.7900526	24	1	79 days	0.55	M-v	6	Williams		1999 OH ₃
1999 OO ₃	14.6	0.15	19990810	351.08442	128.83681	232.77165	11.93687	0.2212158	2.5281830	35	1	92 days	0.52	M-v	4	Williams		1999 OO ₃
1999 OP ₃	14.4	0.15	19990810	41.65244	271.09079	311.82762	27.57515	0.6112319	2.7093720	124	2	1990–1999	0.56	M-v	3	Marsden	36093	1999 OP ₃
1999 OQ ₃	19.9	0.15	19990810	4.98682	164.24614	148.09863	9.14841	0.4238846	1.8968274	44	1	76 days	0.50	M-v	5	Williams	36093	1999 OQ ₃
1999 OR ₃	17.8	0.15	19990810	26.27453	27.19063	200.43353	9.52011	0.5792677	2.0322419	118	1	70 days	0.57	M-v	4	Williams	36093	1999 OR ₃
1999 OS ₃	15.1	0.15	19990810	17.84045	281.98927	6.27161	5.60177	0.1912967	2.2848598	51	1	146 days	0.54	M-v	4	Williams	36093	1999 OS ₃
1999 OT ₃	18.5	0.15	19990810	347.61615	94.21907	254.01444	7.33789	0.3308187	2.0614962	28	1	80 days	0.69	M-v	5	Williams		1999 OT ₃
1999 OW ₃	14.8	0.15	19990810	67.66292	34.93223	196.88462	35.52864	0.7792371	2.0884386	42	1	83 days	0.54	M-v	5	Williams	36093	1999 OW ₃
1999 OX ₃	7.5	0.15	19990810	285.21823	152.71006	260.09691	2.66125	0.3071236	27.7128237	18	1	64 days	0.48		E	Marsden		1999 OX ₃
1999 OZ ₃	7.4	0.15	19990721	179.95996	358.86206	137.70768	2.69932	0.0224133	43.2876388	14	1	19 days	0.23		E	Williams		1999 OZ ₃
1999 OC ₄	8.1	0.15	19990721	0.00958	267.30924	48.19603	1.15320	0.0438201	42.5307327	8	1	20 days	0.20		E	Marsden		1999 OC ₄
1999 OD ₄	7.4	0.15	19990721	0.00000	2.87490	301.33914	13.54970	0.0000000	44.1002178	13	1	19 days	0.19		E	Marsden		1999 OD ₄
1999 OE ₄	6.9	0.15	19990721	0.00000	185.31111	130.83176	2.12735	0.0000000	43.6950085	11	1	18 days	0.17		E	Marsden		1999 OE ₄
1999 OF ₄	6.9	0.15	19990721	0.00000	181.88691	134.26032	2.47214	0.0000000	44.9504302	12	1	17 days	0.15		E	Marsden		1999 OF ₄
1999 PB	15.7	0.15	19990810	6.49250	339.34773	328.13830	3.69085	0.1816395	2.4753471	25	1	75 days	0.50	M-v	4	Williams		1999 PB
1999 PC	14.8	0.15	19990810	357.11773	185.62593	137.76523	13.98547	0.2664694	2.5875266	38	1	78 days	0.45	M-v	4	Williams	36093	1999 PC
1999 PE	15.8	0.15	19990810	328.76479	230.58745	142.76475	6.94549	0.1243987	2.2977526	37	1	67 days	0.48	M-v	5	Williams		1999 PE
1999 PF	16.2	0.15	19990810	343.05144	220.64115	137.32141	6.79106	0.1978409	2.2453470	36	1	67 days	0.46	M-v	4	Williams		1999 PF
1999 PJ	16.3	0.15	19990830	9.57425	169.56589	152.08719	3.16312	0.2327868	2.4056281	54	1	58 days	0.40			Marsden		1999 PJ
1999 PK	16.0	0.15	19990810	219.09214	326.46441	145.60740	23.99567	0.0652690	1.9190955	38	1	71 days	0.54	M-v	5	Williams		1999 PK
1999 PL	15.5	0.15	19990810	327.87102	135.61916	262.89804	14.79508	0.2939086	2.5879120	68	1	62 days	0.60	M-v	4	Williams		1999 PL
1999 PM	16.0	0.15	19990810	347.23535	202.60240	149.60645	11.48069	0.2703839	2.5253594	62	1	71 days	0.52	M-v	4	Williams		1999 PM
1999 PV	13.4	0.15	19990810	167.25129	352.45456	158.62373	14.13921	0.1115244	2.5706734	94	2	1998–1999	0.56	M-v	3	Williams	36093	1999 PV
1999 PX	16.1	0.15	19990810	63.05332	98.45799	152.38141	5.21654	0.1458063	2.1342360	41	3	1992–1999	0.50	M-v	3	Williams	36093	1999 PX
1999 PY	14.4	0.15	19990810	26.19250	292.87229	49.03096	6.30150	0.1246592	2.2345192	88	2	1998–1999	0.58	M-v	4	Williams	36093	1999 PY
1999 PZ	14.3	0.15	19990810	348.17810	176.37186	157.28369	7.23803	0.2381102	2.3075714	58	1	147 days	0.53	M-v	4	Williams	36093	1999 PZ
1999 PB ₁	15.5	0.15	19990810	5.39709	209.53626	139.25355	3.92361	0.2308346	2.5643763	31	1	60 days	0.38	M-v	5	Williams		1999 PB ₁
1999 PC ₁	13.4	0.15	19990810	79.64412	7.40021	293.62142	13.38023	0.1775570	2.6469508	34	2	1998–1999	0.55	M-v	5	Williams	36023	1999 PC ₁
1999 PH ₁	13.9	0.15	19990810	273.48851	295.25407	138.75143	1.87848	0.1493364	3.2091244	55	3	1994–1999	0.64	M-v	3	Williams	36023	1999 PH ₁
1999 PJ ₁	18.0	0.15	19990810	319.68885	80.45304	319.59374	34.49106	0.3595645	1.6753509	208	1	62 days	0.56	M-v	5	Williams	36093	1999 PJ ₁
1999 PL ₁	16.5	0.15	19990810	339.79675	311.47622	40.75931	14.26239	0.3159834	2.5442947	8	1	63 days	0.32	M-v	5	Williams		1999 PL ₁
1999 PM ₁	14.7	0.15	19990810	336.03147	258.94824	95.85226	28.14254	0.2406639	2.6838182	20	1	78 days	0.41	M-v	4	Williams	36093	1999 PM ₁
1999 PO ₁	14.4	0.15	19990810	315.66095	333.29537	24.23997	22.02294	0.0290914	3.0895190	10	1	63 days	0.36	M-v	5	Williams		1999 PO ₁
1999 PP ₁	14.2	0.15	19990830	309.22856	40.81005	9.50954	9.97567	0.1087184	3.0596679	44	1	59 days	0.50			Williams		1999 PP ₁
1999 PR ₁	15.0	0.15	19990810	333.16952	353.60578	11.05624	2.18081	0.0745580	2.4384250	81	2	1998–1999	0.54	M-v	4	Williams	36024	1999 PR ₁
1999 PT ₁	14.3	0.15	19990810	44.24485	312.56873	320.93257	16.83679	0.1454413	2.7392368	45	1	85 days	0.62	M-v	4	Williams	36093	1999 PT ₁
1999 PU ₁	14.2	0.15	19990810	298.94670	57.24259	346.45978	9.72775	0.0629853	3.0071029	41	1	62 days	0.54	M-v	5	Williams		1999 PU ₁
1999 PV ₁	16.1	0.15	19990830	358.07674	1.56655	340.56801	11.42642	0.1929480	2.6076441	40	1	54 days	0.67			Williams		1999 PV ₁
1999 PX ₁	14.5	0.15	19990810	0.70317	204.78036	130.48201	9.24165	0.2242198	2.7106472	52	4	1990–1999	0.69	M-v	2	Williams	36093	1999 PX ₁
1999 PZ ₁	15.2	0.15	19990810	215.03737	332.20982	151.97509	7.28370	0.0533893	2.2955340	71	3	1989–1999	0.67	M-v	2	Williams	36024	1999 PZ ₁
1999 PA ₂	16.1	0.15	19990810	52.17157	260.77399	4.22708	2.52976	0.1540016	2.1566337	52	4	1992–1999	0.46	M-v	1	Williams	36024	1999 PA ₂
1999 PB ₂	14.8	0.15	19990810	13.37576	300.80142	21.44009	2.33228	0.0239863	2.6257369	44	2	1998–1999	0.65	M-v	4	Williams	36024	1999 PB ₂
1999 PC ₂	16.2	0.15	19990810	56.13984	130.75951	136.11793	4.17666	0.1023952	2.1510869	37	2	1993–1999	0.70	M-v	5	Williams	36025	1999 PC ₂
1999 PV ₂	15.5	0.15	19990810	80.62322	245.43899	341.39459	12.04240	0.2729230	2.6183385	25	2	1998–1999	0.88	M-v	4	Williams	36025	1999 PV ₂

1999 PH ₃	16.0	0.15	19990810	346.38610	65.38790	286.74913	6.04425	0.2885730	2.7580541	33	1	64 days	0.51	M-v	5	Williams	1999 PH ₃
1999 PK ₃	16.8	0.15	19990810	51.58945	163.33623	95.75595	5.09975	0.1814172	2.3519906	23	1	63 days	0.76	M-v	6	Williams	1999 PK ₃
1999 PL ₃	16.1	0.15	19990830	309.80034	299.82510	130.86835	13.26968	0.3892230	2.7520017	24	1	54 days	0.88			Williams	1999 PL ₃
1999 PM ₃	16.7	0.15	19990830	354.31708	29.66259	314.77860	3.49897	0.1697421	2.2723253	34	1	50 days	0.42			Marsden	1999 PM ₃
1999 PN ₃	14.3	0.15	19990810	9.65801	36.62745	264.61110	9.10203	0.2043748	2.3503255	53	1	165 days	0.62	M-v	3	Williams	36093 1999 PN ₃
1999 PO ₃	15.5	0.15	19990830	335.85035	24.24010	342.06086	8.95141	0.2215354	2.7102141	55	1	52 days	0.74			Williams	1999 PO ₃
1999 PP ₃	14.4	0.15	19990810	273.35290	228.24913	204.13863	5.03465	0.1975562	2.5506673	51	1	87 days	0.45	M-v	4	Williams	36093 1999 PP ₃
1999 PR ₃	14.6	0.15	19990810	27.06885	260.11160	46.99717	4.90108	0.1431050	2.5745899	66	3	1995–1999	0.64	M-v	3	Williams	36025 1999 PR ₃
1999 PS ₃	21.7	0.15	19990810	353.68053	78.03798	257.90745	3.60004	0.4894527	2.0453980	48	1	57 days	0.70	M-v	5	Williams	1999 PS ₃
1999 PT ₃	16.8	0.15	19990810	7.99518	339.66637	311.06233	9.03894	0.3628642	2.1667641	51	1	57 days	0.67	M-v	5	Williams	36093 1999 PT ₃
1999 PY ₃	12.0	0.15	19990810	31.82229	129.05558	148.53446	26.30475	0.0938004	5.1849099	36	1	85 days	0.59	M-v	4	Williams	1999 PY ₃
1999 PZ ₃	16.4	0.15	19990810	224.43672	130.13991	340.03271	20.58503	0.0925904	1.8710629	38	1	62 days	0.76	M-v	5	Williams	1999 PZ ₃
1999 PA ₄	13.9	0.15	19990810	33.36363	297.51618	6.72044	6.18191	0.0753267	3.1011911	30	2	1997–1999	0.60	M-v	4	Williams	36025 1999 PA ₄
1999 PB ₄	14.6	0.15	19990810	350.46879	247.90913	107.68949	3.04148	0.2164250	3.1556621	56	2	1993–1999	0.60	M-v	4	Williams	36025 1999 PB ₄
1999 PD ₄	15.0	0.15	19990830	326.55280	262.81901	124.79712	5.81911	0.0997948	2.7684438	34	1	58 days	0.68			Williams	1999 PD ₄
1999 PE ₄	15.9	0.15	19990830	347.64577	231.30886	137.59850	8.12657	0.2723475	3.0108719	23	1	58 days	0.64			Williams	1999 PE ₄
1999 PF ₄	15.1	0.15	19990810	315.68061	43.31535	341.92242	1.34919	0.0816684	2.8936788	30	2	1992–1999	0.46	M-v	5	Williams	36025 1999 PF ₄
1999 PG ₄	17.9	0.15	19990810	347.64184	22.60821	330.55308	12.98016	0.3052652	2.5892357	20	1	62 days	0.87	M-v	5	Williams	1999 PG ₄
1999 PH ₄	15.5	0.15	19990830	346.46803	238.44767	129.64563	5.56742	0.2000943	3.1151176	37	1	57 days	0.67			Williams	1999 PH ₄
1999 PK ₄	13.8	0.15	19990830	16.03084	187.90122	126.09488	10.90689	0.1572759	3.0804081	41	1	48 days	0.98			Williams	1999 PK ₄
1999 PO ₄	15.1	0.15	19990830	347.28927	20.47129	349.35361	19.24393	0.3057845	2.5659483	81	1	56 days	0.43			Williams	1999 PO ₄
1999 PP ₄	13.6	0.15	19990830	16.69515	296.61856	33.07016	6.57401	0.0784056	3.1901158	39	1	56 days	0.46			Williams	1999 PP ₄
1999 PR ₄	15.6	0.15	19990810	298.96990	225.76648	191.86020	3.40035	0.1529407	2.2342006	68	1	60 days	0.58	M-v	5	Williams	1999 PR ₄
1999 PS ₄	15.8	0.15	19990810	297.09797	162.36518	259.10052	1.43813	0.1579564	2.2852628	63	1	60 days	0.56	M-v	5	Williams	1999 PS ₄
1999 PT ₄	13.9	0.15	19990810	222.80370	216.07327	263.96327	2.62879	0.1010946	2.3887461	84	3	1981–1999	0.63	M-v	3	Williams	36026 1999 PT ₄
1999 PU ₄	15.4	0.15	19990810	299.72790	290.58120	125.64441	5.09660	0.1447709	2.2905796	42	2	1998–1999	0.68	M-v	4	Williams	36026 1999 PU ₄
1999 PV ₄	14.2	0.15	19990810	313.63036	240.05445	177.88391	21.67250	0.0789478	2.6148431	45	1	61 days	0.41	M-v	4	Williams	1999 PV ₄
1999 PW ₄	14.5	0.15	19990810	29.74910	121.87093	162.94431	15.29358	0.1034530	2.5974987	66	1	95 days	0.46	M-v	4	Williams	36094 1999 PW ₄
1999 PY ₄	15.4	0.15	19990810	1.86656	232.12164	80.94096	1.06559	0.3125387	2.6814467	38	1	124 days	0.61	M-v	4	Williams	35742 1999 PY ₄
1999 PZ ₄	16.1	0.15	19990810	2.13991	93.87859	224.26733	1.73689	0.2934764	2.6408412	44	2	1994–1999	0.50	M-v	4	Williams	36094 1999 PZ ₄
1999 PB ₅	13.6	0.15	19990810	349.97640	355.18967	24.56593	11.48162	0.0803196	3.2361762	35	1	67 days	0.41	M-v	4	Williams	1999 PB ₅
1999 QA	14.8	0.15	19990810	36.12874	130.15111	168.78426	7.18502	0.1064335	2.3979776	76	1	63 days	0.64	M-v	5	Williams	1999 QA
1999 QC	15.3	0.15	19990810	26.12179	142.19871	141.66994	10.00144	0.2386867	2.3455613	37	1	76 days	0.51	M-v	4	Williams	36094 1999 QC
1999 QG	13.5	0.15	19990810	248.17110	29.77556	65.86148	14.08023	0.1440781	2.6936283	44	3	1982–1999	0.56	M-v	2	Williams	36094 1999 QG
1999 QH	15.1	0.15	19990830	21.58306	283.49009	23.08804	5.80131	0.1491562	2.2356972	39	1	50 days	0.45			Williams	1999 QH
1999 QJ	17.4	0.15	19990810	346.48188	14.98757	344.29893	32.05506	0.4404623	2.4274187	177	1	67 days	0.53	M-v	4	Williams	36094 1999 QJ
1999 QO	13.7	0.15	19990810	265.56158	186.41383	237.68789	7.68481	0.0778427	2.9823362	39	2	1998–1999	0.60	M-v	4	Williams	36094 1999 QO
1999 QP	16.4	0.15	19990830	28.24752	352.26637	314.77795	0.61686	0.1911305	2.3840742	39	1	55 days	0.72			Williams	1999 QP
1999 QR	16.1	0.15	19990830	345.03298	201.08251	155.91416	7.73808	0.1388229	2.3888832	39	1	38 days	0.53			Marsden	1999 QR
1999 QT ₁	14.0	0.15	19990810	280.74225	130.91884	316.16633	11.81582	0.1436690	2.6315095	39	1	73 days	0.57	M-v	5	Williams	1999 QT ₁
1999 QU ₁	15.4	0.15	19990810	339.27466	80.46397	297.01424	5.40164	0.2691475	2.3772545	40	1	73 days	0.50	M-v	4	Williams	1999 QU ₁
1999 QV ₁	15.9	0.15	19990810	343.88030	207.95959	167.80874	6.97285	0.3652243	2.6045376	86	1	87 days	0.49	M-v	3	Williams	1999 QV ₁
1999 QA ₂	14.3	0.15	19990810	320.65256	271.43134	125.62956	13.28036	0.1874464	3.0355373	28	3	1994–1999	0.35	M-v	3	Williams	36026 1999 QA ₂
1999 QB ₂	13.7	0.15	19990810	353.13112	43.63689	305.69653	6.75517	0.2339117	2.7960782	57	1	86 days	0.50	M-v	4	Williams	1999 QB ₂
1999 QD ₂	16.9	0.15	19990810	44.09713	122.64296	154.13633	23.28567	0.0606506	1.6858261	57	1	86 days	0.56	M-v	4	Williams	36094 1999 QD ₂
1999 QG ₂	15.6	0.15	19990810	38.43186	156.97252	108.55756	8.35467	0.3285767	2.3883723	25	2	1995–1999	0.36	M-v	5	Williams	36026 1999 QG ₂
1999 QH ₂	14.7	0.15	19990830	6.17890	32.71856	307.07695	0.44469	0.2502941	3.1677617	57	1	53 days	0.59			Williams	1999 QH ₂
1999 QJ ₂	14.6	0.15	19990810	34.97098	123.18235	164.67444	13.93881	0.2379810	2.6730497	61	1	76 days	0.59	M-v	4	Williams	1999 QJ ₂
1999 QL ₂	16.1	0.15	19990919	355.21116	173.41686	168.63791	11.36276	0.1741065	2.6400702	24	1	35 days	0.42			Williams	1999 QL ₂
1999 QM ₂	15.3	0.15	19990830	284.61906	78.87451	355.38292	4.47905	0.1595932	2.4391841	43	1	30 days	0.39			Williams	1999 QM ₂
1999 QP ₂	14.2	0.15	19990830	205.48457	195.67420	307.86912	8.77498	0.1305214	2.3636795	41	1	41 days	0.51			Williams	1999 QP ₂
1999 QQ ₂	14.4	0.15	19990810	313.84231	56.99270	345.11512	13.20136	0.2054629	2.5906583	200	1	91 days	0.39	M-v	4	Williams	36094 1999 QQ ₂
1999 QS ₂	13.8	0.15	19990919	8.06485	215.77566	123.33685	2.34487	0.1823524	3.1747165	42	1	40 days	1.15			Williams	1999 QS ₂

1999 QT ₂	15.2	0.15	19990810	358.27612	195.07462	143.73439	6.17456	0.1298343	2.4837160	91	4	1991–1999	0.55	M-v	3	Williams	36026	1999 QT ₂
1999 RA	15.0	0.15	19990810	348.21983	166.48061	166.25540	5.61513	0.2492782	2.3600838	90	1	147 days	0.53	M-v	4	Williams	36094	1999 RA
1999 RB	13.7	0.15	19990810	293.71925	263.65320	159.54065	12.27012	0.1857511	2.8559888	81	2	1998–1999	0.51	M-v	3	Williams	36027	1999 RB
1999 RC	13.8	0.15	19990810	7.14928	356.08483	344.81478	13.04681	0.1695209	2.5449065	72	4	1993–1999	0.48	M-v	2	Williams	36027	1999 RC
1999 RE	15.7	0.15	19990919	24.37186	300.96673	23.88765	12.08278	0.3082711	2.6460875	34	1	42 days	0.47			Williams		1999 RE
1999 RF	14.5	0.15	19990810	332.12416	207.28118	174.49477	14.64495	0.1935884	2.6154595	81	3	1997–1999	0.60	M-v	3	Williams	36027	1999 RF
1999 RG	15.7	0.15	19990830	321.69213	269.40225	113.75212	4.81735	0.2116368	2.2948691	24	1	26 days	0.38			Marsden		1999 RG
1999 RL	14.8	0.15	19990830	292.03618	351.41990	66.72861	3.25658	0.0834975	2.9124999	29	1	27 days	0.58			Marsden		1999 RL
1999 RM	13.9	0.15	19990810	28.93595	148.82104	171.22189	9.28769	0.1313013	3.0599046	61	2	1998–1999	0.61	M-v	3	Williams	36027	1999 RM
1999 RN	15.9	0.15	19990830	303.73693	68.55858	351.62363	3.71387	0.1196106	2.3347183	52	1	46 days	0.75			Williams		1999 RN
1999 RO	16.1	0.15	19990830	325.86867	234.79732	158.27760	16.22875	0.2251280	2.6533929	31	1	46 days	0.60			Williams		1999 RO
1999 RP	16.5	0.15	19990830	6.43985	267.49961	64.79729	3.71391	0.1995031	2.4776012	47	1	28 days	0.62			Williams		1999 RP
1999 RQ	15.6	0.15	19990830	1.79156	250.50819	90.70598	4.54687	0.0968126	2.7722316	24	1	28 days	0.51			Williams		1999 RQ
1999 RR	14.3	0.15	19990919	307.04358	334.83491	85.61483	6.99344	0.1781984	3.1357310	24	1	30 days	0.68			Williams		1999 RR
1999 RS	13.6	0.15	19990919	299.31156	282.66404	162.25007	9.74582	0.0693549	3.1774374	27	1	29 days	0.62			Williams		1999 RS
1999 RT	12.9	0.15	19990810	250.99047	337.20455	116.98434	10.96991	0.0876503	2.6884943	64	4	1990–1999	0.62	M-v	1	Williams	36028	1999 RT
1999 RU	16.1	0.15	19990830	343.32308	209.93552	153.68665	4.84195	0.1863840	2.3230645	54	1	43 days	0.61			Williams		1999 RU
1999 RV	14.4	0.15	19990810	308.06483	194.78867	209.00518	4.91300	0.2964147	2.6060693	57	2	1993–1999	0.49	M-v	4	Williams	36028	1999 RV
1999 RY	15.0	0.15	19990810	31.90476	74.27471	194.40934	4.40740	0.2348939	2.5972078	44	1	94 days	0.53	M-v	4	Williams	36095	1999 RY
1999 RD ₁	16.0	0.15	19990919	342.01606	335.38067	40.35775	2.47629	0.1699636	2.2666582	73	1	53 days	0.44			Nakano		1999 RD ₁
1999 RE ₁	13.6	0.15	19990810	116.05299	285.82787	305.01144	14.16450	0.0783379	2.6055870	68	5	1990–1999	0.52	M-v	1	Williams	36028	1999 RE ₁
1999 RG ₁	14.5	0.15	19990919	272.07451	69.71013	30.00159	9.58260	0.2067157	2.6163295	30	1	29 days	0.48			Williams		1999 RG ₁
1999 RJ ₁	12.9	0.15	19990830	241.07990	59.16906	45.20670	9.38941	0.0668056	3.1851009	24	1	25 days	1.07			Williams		1999 RJ ₁
1999 RK ₁	17.5	0.15	19990919	343.73189	44.51557	358.99070	28.44357	0.2966930	2.2280399	18	1	41 days	0.36			Williams		1999 RK ₁
1999 RL ₁	17.6	0.15	19990919	2.58983	23.59297	342.74087	5.54757	0.3405631	2.4592971	14	1	28 days	0.68			Williams		1999 RL ₁
1999 RM ₁	16.2	0.15	19990810	315.80394	229.11688	153.12229	2.56171	0.0582412	2.1970252	49	3	1960–1999	0.68	M-v	4	Williams	36028	1999 RM ₁
1999 RN ₁	15.9	0.15	19990919	320.13110	132.84720	278.92483	1.44696	0.1987468	2.4323091	46	1	40 days	0.61			Williams		1999 RN ₁
1999 RS ₁	15.2	0.15	19990810	274.78859	103.97379	341.26840	3.87826	0.1237334	2.2570502	68	1	61 days	0.57	M-v	5	Williams		1999 RS ₁
1999 RT ₁	13.6	0.15	19990810	346.65751	11.68208	351.57504	15.11782	0.1799234	2.5957470	70	3	1995–1999	0.43	M-v	2	Williams	36028	1999 RT ₁
1999 RV ₁	15.6	0.15	19990919	339.25530	221.58254	171.19662	10.54937	0.2587229	2.7763924	35	1	31 days	0.95			Williams		1999 RV ₁
1999 RX ₁	15.7	0.15	19990830	13.81906	346.94981	347.27310	2.12025	0.2098548	2.4403333	53	1	55 days	0.60			Williams		1999 RX ₁
1999 RZ ₁	15.3	0.15	19990810	336.59345	18.81758	5.29349	0.91922	0.1982630	2.4188987	71	3	1995–1999	0.58	M-v	3	Williams	36029	1999 RZ ₁
1999 RA ₂	15.9	0.15	19990810	5.17663	167.95292	170.39823	3.32910	0.1780489	2.1769873	78	2	1998–1999	0.61	M-v	4	Williams	36029	1999 RA ₂
1999 RB ₂	16.9	0.15	19990919	156.01062	345.94521	208.23981	21.71033	0.0482934	1.9285006	21	1	34 days	0.66			Williams		1999 RB ₂
1999 RC ₂	16.4	0.15	19990810	8.95895	347.70280	331.01317	24.51487	0.1484422	1.6191479	51	1	45 days	0.47	M-v	5	Williams		1999 RC ₂
1999 RD ₂	12.1	0.15	19990919	286.87467	113.19006	23.52095	32.70905	0.3189932	2.7969083	52	1	43 days	0.52			Williams		1999 RD ₂
1999 RE ₂	14.9	0.15	19990919	342.70277	215.95632	192.47412	8.46879	0.2443817	2.3779765	28	1	39 days	0.71			Williams		1999 RE ₂
1999 RM ₂	14.2	0.15	19990830	258.60134	167.04201	278.69696	9.19080	0.0796211	2.9746922	21	1	28 days	0.72			Williams		1999 RM ₂
1999 RN ₂	14.0	0.15	19990830	142.80225	323.52513	227.76366	8.52642	0.0186237	2.9884986	29	1	28 days	0.53			Williams		1999 RN ₂
1999 RO ₂	15.7	0.15	19990830	37.45364	35.17713	254.67040	6.52151	0.1124647	2.3408121	29	1	28 days	0.56			Williams		1999 RO ₂
1999 RP ₂	15.8	0.15	19990810	6.91072	42.25643	283.96585	13.18698	0.2556159	2.4229666	29	1	73 days	0.43	M-v	4	Williams	36095	1999 RP ₂
1999 RQ ₂	17.0	0.15	19990919	69.12488	71.37337	202.67522	20.71243	0.0781658	1.9041419	21	1	43 days	0.48			Williams		1999 RQ ₂
1999 RR ₂	12.8	0.15	19990919	299.01671	173.72164	259.52830	17.32852	0.1693974	3.1386611	22	1	27 days	0.26			Williams		1999 RR ₂
1999 RS ₂	15.6	0.15	19990919	15.77532	205.89338	115.65988	3.51184	0.2063470	2.4488009	41	1	24 days	0.45			Williams		1999 RS ₂
1999 RU ₂	20.0	0.15	19990810	345.24767	202.72890	179.69843	5.45062	0.5601059	2.8078962	118	1	42 days	0.54	M-v	6	Williams		1999 RU ₂
1999 RV ₂	18.6	0.15	19990810	345.36002	42.84646	335.61503	4.85644	0.5090317	2.4372493	129	1	47 days	0.50	M-v	5	Williams		1999 RV ₂
1999 RA ₃	15.3	0.15	19990919	310.24091	238.77501	191.10533	2.40127	0.1581615	2.4202572	36	1	31 days	0.65			Williams		1999 RA ₃
1999 RC ₃	13.9	0.15	19990919	306.57048	71.33204	4.04104	10.84859	0.1447232	3.2178926	43	1	31 days	0.67			Williams		1999 RC ₃
1999 RE ₃	16.5	0.15	19990810	1.42477	153.16130	182.71751	4.49401	0.3126025	2.5872876	68	1	76 days	0.56	M-v	4	Williams		1999 RE ₃
1999 RF ₃	15.8	0.15	19990830	355.90886	7.58156	348.41736	4.28946	0.1829818	2.2951998	46	1	47 days	0.57			Williams		1999 RF ₃
1999 RH ₃	16.4	0.15	19990830	340.46473	41.67516	320.12888	1.62441	0.2467634	2.3456501	37	1	54 days	0.45			Williams		1999 RH ₃
1999 RK ₃	15.8	0.15	19990919	257.68153	75.33186	44.24025	7.28701	0.0408160	2.2258812	29	1	44 days	0.75			Williams		1999 RK ₃
1999 RL ₃	13.3	0.15	19990919	322.75666	69.55018	36.21311	15.39449	0.0785403	2.5870335	22	1	32 days	0.23			Marsden		1999 RL ₃

1999 RM ₃	14.3	0.15	19990810	60.75113	356.03427	256.61087	3.98300	0.1229348	2.2877863	38	1	112 days	0.42	M-v	4	Williams	1999 RM ₃
1999 RN ₃	16.2	0.15	19990810	340.41991	142.79825	208.10764	4.80661	0.2524846	2.5412124	31	1	79 days	0.53	M-v	4	Williams	1999 RN ₃
1999 RO ₃	15.9	0.15	19990810	29.81056	55.26452	220.30250	4.27799	0.1835940	2.1848797	50	2	1998–1999	0.58	M-v	4	Williams	36029 1999 RO ₃
1999 RU ₃	14.4	0.15	19990810	102.30697	12.95256	195.97635	7.00273	0.0913717	2.1950846	41	1	95 days	0.43	M-v	4	Williams	36096 1999 RU ₃
1999 RZ ₃	15.5	0.15	19990810	355.46313	120.88319	205.90073	2.80010	0.1587004	2.2488436	56	3	1996–1999	0.61	M-v	3	Williams	36029 1999 RZ ₃
1999 RB ₄	16.3	0.15	19990919	13.17802	133.32076	181.39285	4.58545	0.2332268	2.5533558	27	1	32 days	0.60			Williams	1999 RB ₄
1999 RE ₄	15.0	0.15	19990810	350.84834	166.25877	165.05089	13.98849	0.1767687	2.6142800	43	1	95 days	0.45	M-v	3	Williams	36096 1999 RE ₄
1999 RF ₄	16.0	0.15	19990810	347.92417	23.30421	316.16485	13.66464	0.2613959	2.5366909	36	1	86 days	0.60	M-v	4	Williams	36096 1999 RF ₄
1999 RJ ₄	16.3	0.15	19990810	311.93426	92.45842	284.39694	4.42164	0.0962339	2.1653793	31	1	62 days	0.66	M-v	5	Williams	1999 RJ ₄
1999 RL ₆	15.5	0.15	19990810	310.70152	56.50437	352.19867	3.96269	0.1999516	2.5624826	55	2	1995–1999	0.61	M-v	4	Williams	36030 1999 RL ₆
1999 RZ ₆	14.3	0.15	19990830	37.45681	303.87677	359.40847	6.62519	0.1949460	2.9905156	32	1	46 days	0.51			Williams	1999 RZ ₆
1999 RK ₇	15.5	0.15	19990810	4.06478	318.09048	16.15471	2.07569	0.2439631	2.1737159	49	1	85 days	0.45	M-v	4	Williams	1999 RK ₇
1999 RX ₇	16.8	0.15	19990919	3.00132	350.92288	8.18055	6.49429	0.1454149	2.2261854	30	1	34 days	0.60			Williams	1999 RX ₇
1999 RA ₈	15.9	0.15	19990919	25.68561	168.72054	162.29431	4.52929	0.1386392	2.6488630	32	1	34 days	0.58			Williams	1999 RA ₈
1999 RK ₈	15.3	0.15	19990830	283.25672	88.65325	340.22947	7.30372	0.0746662	2.4289402	52	1	51 days	0.43			Williams	1999 RK ₈
1999 RE ₉	14.7	0.15	19990919	325.30804	228.17544	166.39731	6.30399	0.1186814	2.7997489	34	1	33 days	0.58			Williams	1999 RE ₉
1999 RK ₉	15.3	0.15	19990810	324.05479	32.71640	352.39968	2.67331	0.1634981	2.1930649	70	2	1998–1999	0.51	M-v	3	Williams	36030 1999 RK ₉
1999 RN ₉	14.8	0.15	19990830	343.81782	201.66109	166.76437	22.81070	0.1437763	3.0960817	32	1	27 days	0.67			Williams	1999 RN ₉
1999 RW ₉	16.7	0.15	19990919	336.35939	214.46625	179.71511	4.75591	0.1610272	2.3368318	32	1	30 days	0.49			Williams	1999 RW ₉
1999 RD ₁₀	14.0	0.15	19990810	315.84608	194.36808	185.49012	6.99718	0.2024274	2.5333103	62	4	1991–1999	0.69	M-v	3	Williams	36030 1999 RD ₁₀
1999 RG ₁₀	15.5	0.15	19990919	308.68120	84.77919	334.70077	22.33886	0.3287638	2.2721295	26	1	23 days	0.56			Williams	1999 RG ₁₀
1999 RK ₁₀	16.8	0.15	19990830	349.36330	189.26730	158.56074	1.98173	0.2395698	2.3393730	32	1	58 days	0.60			Williams	1999 RK ₁₀
1999 RU ₁₀	14.6	0.15	19990919	162.69372	201.73636	332.16371	20.59846	0.0578766	1.9221554	38	1	30 days	0.38			Williams	1999 RU ₁₀
1999 RD ₁₁	14.9	0.15	19990810	326.44450	332.09516	35.10351	2.56402	0.1255008	2.2715913	45	3	1996–1999	0.53	M-v	3	Williams	36030 1999 RD ₁₁
1999 RG ₁₁	12.7	0.15	19990810	257.29226	297.99624	138.03649	15.45000	0.0584968	2.7927861	68	3	1996–1999	0.64	M-v	3	Williams	36031 1999 RG ₁₁
1999 RJ ₁₁	16.6	0.15	19990919	303.52362	63.26419	342.54612	18.65643	0.0933400	1.9448360	35	1	29 days	0.74			Williams	1999 RJ ₁₁
1999 RN ₁₁	15.7	0.15	19990810	248.01741	296.40977	154.76115	25.84313	0.1336161	1.8641827	55	2	1998–1999	0.46	M-v	4	Williams	36031 1999 RN ₁₁
1999 RP ₁₁	15.0	0.15	19990810	20.08607	92.13810	204.31864	0.70617	0.1719449	2.4298782	60	2	1998–1999	0.59	M-v	3	Williams	36031 1999 RP ₁₁
1999 RV ₁₁	14.4	0.15	19990810	308.64823	72.87203	334.86431	22.51252	0.2624611	2.3322059	40	1	62 days	0.48	M-v	4	Williams	1999 RV ₁₁
1999 RY ₁₁	15.8	0.15	19990919	313.87040	50.96397	355.92255	1.78375	0.2031580	2.3756991	19	1	23 days	0.53			Williams	1999 RY ₁₁
1999 RB ₁₂	14.8	0.15	19990830	339.10525	189.38154	177.75392	7.05189	0.1548711	3.2120104	38	1	45 days	0.54			Williams	1999 RB ₁₂
1999 RD ₁₂	15.6	0.15	19990919	1.25673	177.09798	166.12872	15.53134	0.2423892	2.7758121	34	1	27 days	0.88			Williams	1999 RD ₁₂
1999 RH ₁₂	14.8	0.15	19990810	357.47522	16.81371	318.60118	4.03259	0.1956901	2.5978576	41	1	63 days	0.62	M-v	5	Williams	1999 RH ₁₂
1999 RK ₁₂	15.1	0.15	19990919	0.66869	125.64110	217.58250	3.19273	0.0558298	2.7447064	22	1	25 days	0.42			Williams	1999 RK ₁₂
1999 RL ₁₂	15.9	0.15	19990919	349.00633	139.43453	223.63049	2.47705	0.1869004	2.3087297	41	1	31 days	0.51			Williams	1999 RL ₁₂
1999 RN ₁₂	15.9	0.15	19990919	339.11009	192.84143	181.98990	6.12604	0.1554985	2.3894837	24	1	27 days	0.41			Williams	1999 RN ₁₂
1999 RP ₁₂	13.8	0.15	19990810	191.68079	328.48254	175.86355	14.68080	0.0520428	2.6026076	58	4	1982–1999	0.69	M-v	1	Williams	36031 1999 RP ₁₂
1999 RR ₁₂	15.8	0.15	19990919	316.08944	93.92687	309.91858	5.92490	0.1575801	2.4793956	28	1	27 days	0.54			Williams	1999 RR ₁₂
1999 RS ₁₂	15.2	0.15	19990830	340.06078	55.01863	309.38183	6.82412	0.1236222	2.3654658	45	1	46 days	0.55			Williams	1999 RS ₁₂
1999 RT ₁₂	15.1	0.15	19990830	120.43315	306.02951	263.47476	3.80992	0.1020940	2.2429190	37	1	41 days	0.44			Williams	1999 RT ₁₂
1999 RV ₁₂	16.1	0.15	19990810	330.57633	168.66439	202.67675	5.45779	0.1677759	2.2224035	49	1	94 days	0.52	M-v	4	Williams	36097 1999 RV ₁₂
1999 RW ₁₂	16.2	0.15	19990919	18.35845	149.44314	168.84472	29.56929	0.1738837	2.6390414	27	1	23 days	0.62			Williams	1999 RW ₁₂
1999 RY ₁₂	15.9	0.15	19990919	344.58095	67.70604	300.62927	4.10855	0.1803729	2.6403665	28	1	27 days	0.51			Williams	1999 RY ₁₂
1999 RZ ₁₂	13.9	0.15	19990830	326.07979	199.13773	180.36293	9.39337	0.0859583	2.9759896	53	1	46 days	0.57			Williams	1999 RZ ₁₂
1999 RB ₁₃	15.4	0.15	19990830	22.16941	148.29390	164.50695	14.23416	0.1090792	2.4073385	46	1	57 days	0.50			Williams	1999 RB ₁₃
1999 RD ₁₃	16.9	0.15	19990830	339.96760	201.00937	164.00718	7.02866	0.1294344	2.3511564	28	1	26 days	0.69			Williams	1999 RD ₁₃
1999 RH ₁₃	15.0	0.15	19990830	358.02712	178.69062	163.38397	2.10832	0.0891964	2.8577149	29	1	26 days	0.49			Williams	1999 RH ₁₃
1999 RL ₁₃	14.8	0.15	19990919	280.88932	101.32260	345.43521	2.16303	0.1933133	2.3431068	42	1	32 days	0.54			Williams	1999 RL ₁₃
1999 RN ₁₃	16.0	0.15	19990919	330.39419	250.76947	139.91189	1.01667	0.2055885	2.3983390	31	1	24 days	0.48			Williams	1999 RN ₁₃
1999 RS ₁₃	14.2	0.15	19990919	276.03758	302.56819	142.88810	13.01768	0.1548676	2.5862156	22	1	23 days	0.59			Williams	1999 RS ₁₃
1999 RU ₁₃	15.1	0.15	19990919	342.80144	338.78295	28.94467	3.69111	0.1541806	3.0290920	32	1	30 days	0.62			Williams	1999 RU ₁₃
1999 RA ₁₄	15.5	0.15	19990919	308.93655	34.01523	18.43359	2.36747	0.1630805	2.4383476	39	1	24 days	0.50			Williams	1999 RA ₁₄
1999 RB ₁₄	14.5	0.15	19990919	342.42853	25.39812	347.00766	15.67899	0.2275199	3.1641324	38	1	30 days	0.49			Williams	1999 RB ₁₄

1999 RF ₁₄	14.4	0.15	19990810	289.81328	90.94666	345.30254	20.82352	0.2831828	2.2958531	95	1	60 days	0.50	M-v	4	Williams		1999 RF ₁₄
1999 RH ₁₄	14.4	0.15	19990810	354.85654	185.27197	156.69132	11.14709	0.1035558	2.9788888	47	2	1998–1999	0.62	M-v	3	Williams	36032	1999 RH ₁₄
1999 RJ ₁₄	14.2	0.15	19990830	18.71819	305.99132	4.77492	2.66345	0.2073444	2.5309069	45	1	26 days	1.19			Williams		1999 RJ ₁₄
1999 RK ₁₄	14.7	0.15	19990810	311.51879	235.80902	166.54425	8.10449	0.1926288	2.5543462	67	4	1991–1999	0.52	M-v	3	Williams	36032	1999 RK ₁₄
1999 RL ₁₄	16.6	0.15	19990919	339.93445	210.27683	167.11615	3.31149	0.1842799	2.2976022	30	1	24 days	0.60			Williams		1999 RL ₁₄
1999 RN ₁₄	16.7	0.15	19990830	354.11885	164.34975	183.05053	2.45225	0.1206463	2.1295350	29	1	54 days	0.55			Williams		1999 RN ₁₄
1999 RU ₁₄	13.8	0.15	19990919	358.72343	8.08087	340.45742	9.44492	0.1022226	2.9800791	28	1	29 days	0.27			Williams		1999 RU ₁₄
1999 RC ₁₅	17.2	0.15	19990830	339.39189	215.68899	163.52336	5.10099	0.2942894	2.5490264	113	1	44 days	0.63			Williams		1999 RC ₁₅
1999 RN ₁₅	14.9	0.15	19990919	325.90775	55.12480	345.67546	26.68354	0.2378363	3.1527610	127	1	29 days	0.48			Williams		1999 RN ₁₅
1999 RQ ₁₅	16.9	0.15	19990810	282.06462	79.79112	346.15676	19.36014	0.1281154	1.8942542	171	2	1998–1999	0.54	M-v	4	Williams	36032	1999 RQ ₁₅
1999 RU ₁₅	15.8	0.15	19990919	330.22809	226.10612	168.06146	2.26467	0.2127369	2.3559909	133	1	30 days	0.36			Williams		1999 RU ₁₅
1999 RY ₁₅	15.5	0.15	19990919	298.70795	204.83214	223.67897	2.01399	0.1686297	2.4214553	29	1	29 days	0.42			Williams		1999 RY ₁₅
1999 RD ₁₆	14.3	0.15	19990830	269.11142	287.71040	169.15897	30.50972	0.2008045	2.7220722	37	1	46 days	0.53			Williams		1999 RD ₁₆
1999 RE ₁₆	13.0	0.15	19990919	52.75313	322.91867	326.76129	5.29839	0.0609203	3.1673476	79	1	30 days	0.40			Williams		1999 RE ₁₆
1999 RK ₁₆	15.6	0.15	19990919	331.08664	55.88312	347.45584	4.57931	0.3074606	2.5811053	55	1	29 days	0.44			Williams		1999 RK ₁₆
1999 RT ₁₆	15.7	0.15	19990919	16.90894	157.96987	167.09967	5.45937	0.1985475	2.4496985	44	1	30 days	0.41			Williams		1999 RT ₁₆
1999 RU ₁₆	13.6	0.15	19990810	8.85064	59.12758	272.12970	1.10158	0.0429486	2.8435044	65	3	1997–1999	0.59	M-v	3	Williams	36032	1999 RU ₁₆
1999 RW ₁₆	14.8	0.15	19990919	333.62609	179.06745	208.60677	4.74817	0.1764362	3.2013705	32	1	33 days	0.53			Williams		1999 RW ₁₆
1999 RY ₁₆	14.3	0.15	19990830	354.97527	149.13392	202.26239	6.18147	0.0112758	3.0304921	31	1	46 days	0.70			Williams		1999 RY ₁₆
1999 RB ₁₇	15.7	0.15	19990919	319.08897	64.03141	337.94505	21.74950	0.1154599	2.6051701	33	1	30 days	0.56			Williams		1999 RB ₁₇
1999 RD ₁₇	15.6	0.15	19990919	28.05982	103.78298	203.47159	6.91777	0.2227524	2.8091741	39	1	32 days	0.65			Williams		1999 RD ₁₇
1999 RK ₁₇	15.6	0.15	19990810	293.61110	166.76396	244.10350	2.68835	0.0485804	2.3040286	47	2	1998–1999	0.62	M-v	6	Williams	36033	1999 RK ₁₇
1999 RN ₁₇	17.2	0.15	19990919	24.45831	349.01937	325.68132	5.35237	0.2092790	2.3131975	30	1	33 days	0.63			Williams		1999 RN ₁₇
1999 RS ₁₇	15.6	0.15	19990919	4.73540	48.52057	293.84237	1.34900	0.2818177	2.9312652	29	1	29 days	0.60			Williams		1999 RS ₁₇
1999 RT ₁₇	15.1	0.15	19990810	168.43095	346.62811	183.82735	4.88871	0.0890898	2.3222447	62	2	1998–1999	0.52	M-v	4	Williams	36033	1999 RT ₁₇
1999 RV ₁₇	14.6	0.15	19990830	36.75595	325.65020	335.73099	7.56504	0.1060123	3.1745957	41	1	41 days	0.56			Williams		1999 RV ₁₇
1999 RW ₁₇	16.4	0.15	19990810	30.83010	347.57321	311.36905	2.16741	0.1051093	2.1635516	56	2	1996–1999	0.53	M-v	5	Williams	36033	1999 RW ₁₇
1999 RA ₁₈	13.9	0.15	19990919	153.12979	209.80515	344.68680	14.89106	0.0422013	3.2356906	32	1	31 days	0.42			Williams		1999 RA ₁₈
1999 RC ₁₈	16.3	0.15	19990919	331.02592	210.50895	184.54736	2.22373	0.2096621	2.4190246	31	1	25 days	0.39			Williams		1999 RC ₁₈
1999 RF ₁₈	15.6	0.15	19990810	339.72706	41.49683	323.14086	1.12987	0.0988029	2.7099636	43	3	1993–1999	0.45	M-v	4	Williams	36033	1999 RF ₁₈
1999 RH ₁₈	16.0	0.15	19990919	356.66396	329.64477	28.01977	3.19230	0.2379638	2.2812829	51	1	34 days	0.50			Williams		1999 RH ₁₈
1999 RL ₁₈	14.6	0.15	19990830	161.76808	209.07863	336.52193	14.58600	0.0593211	2.6338662	30	1	27 days	0.63			Williams		1999 RL ₁₈
1999 RO ₁₈	14.7	0.15	19990919	16.35640	13.23606	317.20862	6.42556	0.1778879	3.0625414	35	1	33 days	0.42			Williams		1999 RO ₁₈
1999 RP ₁₈	15.1	0.15	19990919	27.94925	123.65919	182.15070	12.85869	0.2679421	2.6814850	37	1	29 days	0.38			Williams		1999 RP ₁₈
1999 RS ₁₈	16.1	0.15	19990919	3.98993	172.55416	174.59188	15.81628	0.2150070	2.4290758	45	1	33 days	0.44			Williams		1999 RS ₁₈
1999 RT ₁₈	14.0	0.15	19990810	347.36775	24.23700	339.17918	9.03699	0.2839790	3.1185400	60	1	83 days	0.38	M-v	3	Williams		1999 RT ₁₈
1999 RW ₁₈	14.9	0.15	19990810	283.58398	69.45875	356.41488	4.78870	0.0828371	2.2033644	67	2	1998–1999	0.39	M-v	4	Williams	36034	1999 RW ₁₈
1999 RH ₁₉	14.9	0.15	19990830	330.14021	41.76663	342.89968	12.07011	0.1485430	2.7902298	37	1	25 days	0.36			Williams		1999 RH ₁₉
1999 RJ ₁₉	15.6	0.15	19990919	72.27767	291.09376	338.72355	13.05403	0.0727314	2.6621231	30	1	30 days	0.77			Williams		1999 RJ ₁₉
1999 RK ₁₉	14.6	0.15	19990919	320.77343	72.82529	328.93376	9.30991	0.1405403	3.0647111	39	1	33 days	0.54			Williams		1999 RK ₁₉
1999 RO ₁₉	14.4	0.15	19990810	18.37981	311.80667	2.70816	2.50165	0.1747291	2.7376266	72	2	1998–1999	0.45	M-v	3	Williams	36034	1999 RO ₁₉
1999 RT ₁₉	12.6	0.15	19990919	274.68767	99.66236	350.41694	18.23836	0.1023442	3.1838611	70	1	37 days	0.46			Williams		1999 RT ₁₉
1999 RU ₁₉	14.9	0.15	19990810	98.08046	134.81172	96.12903	0.07979	0.1186941	2.1898114	75	3	1996–1999	0.71	M-v	3	Williams	36034	1999 RU ₁₉
1999 RY ₁₉	16.0	0.15	19990919	1.28809	51.40825	302.42605	3.33410	0.1653184	2.2819138	22	1	30 days	0.33			Williams		1999 RY ₁₉
1999 RC ₂₀	15.0	0.15	19990919	299.52578	219.39528	211.22786	5.28051	0.1261592	3.1939247	25	1	45 days	0.58			Williams		1999 RC ₂₀
1999 RD ₂₀	15.2	0.15	19990830	326.06378	60.61574	338.20662	10.80104	0.1967302	2.5854908	32	1	53 days	0.43			D Williams		1999 RD ₂₀
1999 RJ ₂₀	14.0	0.15	19990919	257.41882	128.92541	339.89778	10.06544	0.0670377	2.9779220	36	1	36 days	0.56			Williams		1999 RJ ₂₀
1999 RN ₂₀	15.0	0.15	19990810	339.02767	198.60706	173.52095	27.09093	0.2688664	2.1516943	79	1	79 days	0.39	M-v	4	Williams		1999 RN ₂₀
1999 RT ₂₀	16.0	0.15	19990919	2.51323	27.35038	327.17244	5.05651	0.1300138	2.3669185	14	1	27 days	0.48			Williams		1999 RT ₂₀
1999 RU ₂₀	15.7	0.15	19990919	4.69666	147.44781	203.16515	3.14012	0.1932940	2.3802235	29	1	29 days	0.49			Williams		1999 RU ₂₀
1999 RA ₂₁	17.1	0.15	19990830	341.44044	22.29735	348.86238	18.43751	0.0848389	1.9568189	64	1	43 days	0.58			Williams		1999 RA ₂₁
1999 RC ₂₁	14.9	0.15	19990919	322.27092	222.02379	181.82448	17.48204	0.0977281	3.1176145	30	1	25 days	0.69			Williams		1999 RC ₂₁
1999 RF ₂₁	15.5	0.15	19990830	24.08472	183.52707	131.44370	2.91030	0.2046932	2.9028704	40	1	46 days	0.65			Williams		1999 RF ₂₁

1999 RH ₂₁	16.6	0.15	19990919	1.27992	347.69572	7.08704	7.95090	0.2040920	2.6249451	45	1	39 days	0.60		Williams	1999 RH ₂₁
1999 RJ ₂₁	14.8	0.15	19990830	26.66124	157.25667	166.25894	13.37041	0.0406909	2.5979444	49	1	46 days	0.68		Williams	1999 RJ ₂₁
1999 RL ₂₁	15.6	0.15	19990810	357.76713	209.95616	132.87846	3.00618	0.2266901	2.3605825	57	3	1994–1999	0.50	M-v 2	Williams	36034 1999 RL ₂₁
1999 RO ₂₁	17.3	0.15	19990919	342.76021	27.91714	355.91968	25.03951	0.2209825	2.3193506	38	1	42 days	0.49		Williams	1999 RO ₂₁
1999 RP ₂₁	16.3	0.15	19990919	311.55398	310.92665	111.44183	2.27491	0.1707014	2.3932251	24	1	30 days	0.56		Williams	1999 RP ₂₁
1999 RS ₂₁	16.7	0.15	19990919	0.61494	206.60673	149.66656	5.36679	0.1228928	2.2391393	23	1	25 days	0.53		Williams	1999 RS ₂₁
1999 RT ₂₁	16.7	0.15	19990919	7.67349	246.12064	99.68793	2.26867	0.2001638	2.4110582	25	1	32 days	0.56		Williams	1999 RT ₂₁
1999 RU ₂₁	16.1	0.15	19990830	21.47009	314.71060	4.18202	11.96484	0.1950498	2.5860575	28	1	46 days	0.54		Williams	1999 RU ₂₁
1999 RV ₂₁	16.3	0.15	19990830	353.72918	207.78153	153.34853	5.95302	0.3128088	2.5791560	29	1	23 days	0.44		Williams	1999 RV ₂₁
1999 RA ₂₂	16.8	0.15	19990830	330.87092	18.42380	14.71300	5.13539	0.2032135	2.2549802	38	1	46 days	0.65		Williams	1999 RA ₂₂
1999 RC ₂₂	13.7	0.15	19990830	258.80811	305.75103	164.11981	9.94840	0.1218981	2.7667820	43	1	46 days	0.47		Williams	1999 RC ₂₂
1999 RF ₂₂	16.5	0.15	19990919	349.30189	15.38041	2.77903	3.05548	0.2725814	2.9759852	31	1	25 days	0.61		Williams	1999 RF ₂₂
1999 RG ₂₂	15.5	0.15	19990810	306.49012	75.14711	355.67913	22.39909	0.2986405	2.3390279	56	1	68 days	0.49	M-v 4	Williams	1999 RG ₂₂
1999 RH ₂₂	14.3	0.15	19990919	310.03253	241.04138	173.79063	9.60478	0.0568818	3.0328835	41	1	30 days	0.64		Williams	1999 RH ₂₂
1999 RL ₂₂	14.8	0.15	19990919	319.21275	46.78781	359.76537	8.06597	0.0852051	2.2830807	57	1	38 days	0.48		Williams	1999 RL ₂₂
1999 RQ ₂₂	15.8	0.15	19990810	334.50551	201.73195	179.48552	23.03028	0.2229436	2.2791329	51	1	78 days	0.51	M-v 4	Williams	1999 RQ ₂₂
1999 RS ₂₂	16.0	0.15	19990830	7.11278	9.83758	329.35312	5.17016	0.2221785	2.3456587	40	1	56 days	0.47		Williams	1999 RS ₂₂
1999 RZ ₂₂	15.4	0.15	19990919	7.46582	189.22317	163.08843	2.26639	0.0592596	2.8848601	24	1	31 days	0.66		Williams	1999 RZ ₂₂
1999 RC ₂₃	15.4	0.15	19990830	3.12871	180.96239	168.59220	5.58711	0.1118077	2.5905348	42	1	46 days	0.48		Williams	1999 RC ₂₃
1999 RD ₂₃	15.7	0.15	19990919	116.83594	53.01528	174.40232	23.64360	0.1708456	2.3387417	16	1	30 days	0.50		Williams	1999 RD ₂₃
1999 RH ₂₃	14.0	0.15	19990830	342.00655	338.34472	38.34781	2.47599	0.0860447	2.8881838	40	1	46 days	0.44		Williams	1999 RH ₂₃
1999 RN ₂₃	16.4	0.15	19990919	18.82541	220.04822	111.94984	1.81577	0.1699250	2.2263487	22	1	30 days	0.53		Williams	1999 RN ₂₃
1999 RO ₂₃	15.5	0.15	19990919	297.57793	305.10519	131.29310	3.61475	0.1389217	2.5182078	29	1	32 days	0.55		Williams	1999 RO ₂₃
1999 RQ ₂₃	15.6	0.15	19990810	26.89241	160.19549	142.32893	4.61820	0.2120638	2.3931742	42	1	84 days	0.46	M-v 4	Williams	36100 1999 RQ ₂₃
1999 RR ₂₃	15.3	0.15	19990830	280.95377	75.08052	15.90536	7.13768	0.1649591	2.3325937	29	1	41 days	0.44		Williams	1999 RR ₂₃
1999 RS ₂₃	16.0	0.15	19990830	336.38669	227.22747	158.85669	8.99266	0.1638424	2.7424151	24	1	46 days	0.59		Williams	1999 RS ₂₃
1999 RT ₂₃	15.6	0.15	19990919	353.00876	320.40396	47.18452	3.46616	0.1058553	2.6511046	32	1	25 days	0.53		Williams	1999 RT ₂₃
1999 RW ₂₃	16.2	0.15	19990919	358.11612	339.41271	21.35663	6.00219	0.2334119	2.2956085	37	1	32 days	0.47		Williams	1999 RW ₂₃
1999 RX ₂₃	15.7	0.15	19990810	30.37007	260.29314	33.88379	5.32387	0.2263337	2.2371809	45	1	83 days	0.65	M-v 5	Williams	1999 RX ₂₃
1999 RA ₂₄	16.7	0.15	19990830	341.06982	218.09033	168.89848	33.48182	0.3092335	2.5831148	27	1	39 days	0.50		Williams	1999 RA ₂₄
1999 RB ₂₄	14.2	0.15	19990810	356.24418	322.91681	25.26585	6.38422	0.1650924	2.3734565	93	2	1998–1999	0.64	M-v 3	Williams	36035 1999 RB ₂₄
1999 RE ₂₄	16.2	0.15	19990830	300.71702	16.21048	47.23400	4.41186	0.1182000	2.2221237	29	1	46 days	0.70		Williams	1999 RE ₂₄
1999 RJ ₂₄	15.3	0.15	19990919	43.99654	262.64675	37.56048	0.88738	0.1835502	3.0444563	34	1	30 days	0.60		Williams	1999 RJ ₂₄
1999 RK ₂₄	16.2	0.15	19990919	14.62730	339.99326	359.73594	11.25535	0.1692599	2.6024362	35	1	29 days	0.59		Williams	1999 RK ₂₄
1999 RO ₂₄	17.6	0.15	19990830	10.16880	329.84131	355.46491	12.85361	0.3602740	2.4095395	32	1	43 days	0.53		Williams	1999 RO ₂₄
1999 RP ₂₄	16.2	0.15	19990919	26.85978	215.43332	109.99244	0.40833	0.1345113	2.2726867	35	1	30 days	0.40		Williams	1999 RP ₂₄
1999 RS ₂₄	15.4	0.15	19990919	29.84220	118.98526	193.33868	10.32125	0.2532418	2.3901120	23	1	29 days	0.32		Williams	1999 RS ₂₄
1999 RV ₂₄	15.7	0.15	19990810	20.93769	136.86294	178.76842	26.48528	0.1068464	1.8878262	39	1	86 days	0.46	M-v 4	Williams	1999 RV ₂₄
1999 RY ₂₄	15.9	0.15	19990919	356.95773	164.64097	200.74052	5.44094	0.1118044	2.3416062	18	1	29 days	0.44		Williams	1999 RY ₂₄
1999 RZ ₂₄	15.5	0.15	19990919	343.94629	120.43814	266.83676	2.16215	0.2167602	2.6846314	27	1	30 days	0.44		Williams	1999 RZ ₂₄
1999 RA ₂₅	16.8	0.15	19990919	343.17130	46.58532	336.45321	6.41975	0.1058295	2.3318191	20	1	27 days	0.65		Williams	1999 RA ₂₅
1999 RB ₂₅	17.9	0.15	19990919	7.05555	4.59450	342.28601	7.57211	0.3005716	2.2167334	33	1	32 days	0.46		Williams	1999 RB ₂₅
1999 RT ₂₅	16.3	0.15	19990919	16.15149	134.77034	199.71077	4.32542	0.2633984	2.5805741	17	1	29 days	0.44		Williams	1999 RT ₂₅
1999 RU ₂₅	16.0	0.15	19990919	348.02643	42.04480	340.85982	3.58549	0.2450577	2.5860197	31	1	32 days	0.43		Williams	1999 RU ₂₅
1999 RC ₂₆	16.5	0.15	19990919	7.76224	212.77436	138.07256	3.50797	0.2001068	2.5290287	30	1	30 days	0.50		Williams	1999 RC ₂₆
1999 RE ₂₆	13.8	0.15	19990919	135.55304	207.25996	6.87362	32.60353	0.2156527	2.5697603	38	1	32 days	0.41		Williams	1999 RE ₂₆
1999 RG ₂₆	17.1	0.15	19990919	350.42014	353.91375	24.97045	4.42217	0.2725868	2.3002891	36	1	30 days	0.39		Williams	1999 RG ₂₆
1999 RH ₂₆	14.4	0.15	19990810	40.23425	133.15257	167.15102	15.32853	0.1356597	2.5845056	44	2	1998–1999	0.64	M-v 4	Williams	36035 1999 RH ₂₆
1999 RJ ₂₆	15.5	0.15	19990830	35.97171	170.08671	134.87670	4.52603	0.1742678	2.3281157	32	1	46 days	0.55		Williams	1999 RJ ₂₆
1999 RK ₂₆	13.3	0.15	19990919	311.02318	272.11078	153.73743	9.31823	0.1322686	3.0915621	20	1	25 days	0.35		Williams	1999 RK ₂₆
1999 RN ₂₆	15.3	0.15	19990919	341.40026	10.42405	18.93683	10.95864	0.1418679	2.9413528	34	1	30 days	0.57		Williams	1999 RN ₂₆
1999 RO ₂₆	15.4	0.15	19990919	62.81085	266.78285	3.87851	23.11861	0.2620236	2.2771768	24	1	30 days	0.52		Williams	1999 RO ₂₆
1999 RP ₂₆	14.7	0.15	19990919	340.02721	13.15101	20.85179	5.70498	0.1660222	3.1567384	30	1	30 days	0.58		Williams	1999 RP ₂₆

1999 RU ₂₆	14.7	0.15	19990830	349.34244	210.54489	159.12957	5.47809	0.1055923	3.2060059	28	1	46 days	0.62		Williams	1999 RU ₂₆
1999 RA ₂₇	15.2	0.15	19990919	352.41345	205.43226	173.22321	30.70656	0.3005465	3.1225184	21	1	23 days	0.45		Williams	1999 RA ₂₇
1999 RE ₂₇	15.3	0.15	19990810	318.21876	229.30004	171.53854	23.13722	0.1091265	1.9707563	27	1	69 days	0.50	M-v 4	Williams	1999 RE ₂₇
1999 RG ₂₇	16.9	0.15	19990919	345.39800	22.99683	4.63359	22.65024	0.1745622	1.9111096	29	1	37 days	0.49		Williams	1999 RG ₂₇
1999 RH ₂₇	16.5	0.15	19990810	334.22157	95.35423	343.91266	4.39666	0.5765946	2.8837327	136	1	49 days	0.51	M-v 4	Williams	1999 RH ₂₇
1999 RJ ₂₇	19.4	0.15	19990810	59.44076	64.18295	170.42464	25.77354	0.3520349	1.4785957	37	1	39 days	0.60	M-v 6	Williams	1999 RJ ₂₇
1999 RK ₂₇	14.4	0.15	19990810	334.64964	213.21514	162.58573	7.61761	0.1530213	2.5460196	91	4	1991-1999	0.55	M-v 2	Williams	36035 1999 RK ₂₇
1999 RL ₂₇	12.3	0.15	19990919	78.32851	262.51038	32.48428	13.37545	0.1708298	2.6005599	33	1	41 days	0.35		Williams	1999 RL ₂₇
1999 RO ₂₇	14.8	0.15	19990830	358.76654	190.04573	162.47535	4.48333	0.1542972	3.1010552	30	1	38 days	0.96		Williams	1999 RO ₂₇
1999 RP ₂₇	15.8	0.15	19990830	11.02568	189.49012	141.53757	1.11787	0.1779383	2.1978534	48	1	46 days	0.62		Williams	1999 RP ₂₇
1999 RQ ₂₇	13.5	0.15	19990810	40.80346	301.23286	358.87972	9.45765	0.0929190	3.2539028	80	2	1997-1999	0.67	M-v 4	Williams	36035 1999 RQ ₂₇
1999 RR ₂₇	14.8	0.15	19990919	339.37142	45.52130	350.78351	10.37667	0.3066319	3.0316634	55	1	34 days	0.48		Williams	1999 RR ₂₇
1999 RU ₂₇	13.0	0.15	19990830	286.51649	81.68502	356.76710	15.30516	0.1109743	3.2262256	51	1	46 days	0.85		Williams	1999 RU ₂₇
1999 RV ₂₇	14.1	0.15	19990810	330.60033	218.98153	172.84882	5.34616	0.2218669	3.0890139	62	1	91 days	0.54	M-v 4	Williams	36101 1999 RV ₂₇
1999 RX ₂₇	14.8	0.15	19990919	17.85188	125.16465	200.46483	16.59028	0.2295360	3.0550128	75	1	43 days	0.49		Marsden	1999 RX ₂₇
1999 RY ₂₇	13.1	0.15	19990810	102.21358	227.69115	353.37795	12.59486	0.1231707	2.6374421	87	3	1987-1999	0.48	M-v 3	Williams	36035 1999 RY ₂₇
1999 RB ₂₈	13.2	0.15	19990810	6.69538	141.32577	165.06767	15.60772	0.0394213	2.6571339	104	3	1995-1999	0.51	M-v 2	Williams	36036 1999 RB ₂₈
1999 RE ₂₈	16.2	0.15	19990919	346.72545	39.72322	348.12467	5.18307	0.3504817	2.5633848	60	1	57 days	0.55		Williams	1999 RE ₂₈
1999 RL ₂₈	16.1	0.15	19990919	59.16096	83.12093	173.06138	20.62704	0.4117247	2.3768155	29	1	28 days	0.64		Williams	1999 RL ₂₈
1999 RM ₂₈	16.8	0.15	19990810	291.18138	301.69195	136.20977	30.54922	0.3239953	1.8171029	28	1	43 days	0.48	M-v 6	Williams	1999 RM ₂₈
1999 RN ₂₈	20.7	0.15	19990810	355.66457	342.51618	346.20971	8.78717	0.4559364	2.1683952	61	1	41 days	0.68	M-v 5	Williams	1999 RN ₂₈
1999 RP ₂₈	22.5	0.15	19990919	22.71390	144.75540	174.25826	9.25718	0.2412278	1.4779720	38	1	29 days	0.59		Williams	1999 RP ₂₈
1999 RQ ₂₈	20.7	0.15	19990810	329.95772	269.46836	124.48826	3.55681	0.4243403	1.9083517	76	1	43 days	0.59	M-v 5	Williams	1999 RQ ₂₈
1999 RR ₂₈	18.3	0.15	19990810	308.85615	283.78296	178.85881	7.12097	0.6542273	1.8760357	91	1	39 days	0.47	M-v 6	Williams	1999 RR ₂₈
1999 RT ₂₈	15.7	0.15	19990919	348.19714	13.55065	8.19191	14.22740	0.1814097	2.5791446	41	1	30 days	0.57		Williams	1999 RT ₂₈
1999 RZ ₂₈	17.9	0.15	19990919	317.59152	227.76516	175.58901	22.21074	0.1001052	1.9047296	29	1	39 days	0.59		Williams	1999 RZ ₂₈
1999 RA ₂₉	16.5	0.15	19990919	327.69188	30.25754	353.09858	22.95349	0.0176061	1.8720476	67	1	31 days	0.41		Williams	1999 RA ₂₉
1999 RL ₂₉	16.3	0.15	19990919	14.60874	146.08955	169.31807	22.80815	0.0888222	1.9239444	30	1	37 days	0.53		Williams	1999 RL ₂₉
1999 RM ₂₉	15.7	0.15	19990919	347.03923	193.45703	158.81144	26.39092	0.2218153	2.3271494	26	1	37 days	0.60		Williams	1999 RM ₂₉
1999 RO ₂₉	16.1	0.15	19990810	337.67754	169.72335	195.03396	15.45768	0.2682652	2.4428287	34	2	1980-1999	0.39	M-v 3	Williams	36036 1999 RO ₂₉
1999 RP ₂₉	15.9	0.15	19990919	158.10101	223.84670	318.49504	18.18659	0.0550049	1.9349957	44	1	25 days	0.52		Williams	1999 RP ₂₉
1999 RQ ₂₉	16.2	0.15	19990919	3.85710	25.78530	316.54606	17.91469	0.0683241	1.9530522	31	1	26 days	0.59		Williams	1999 RQ ₂₉
1999 RS ₂₉	16.2	0.15	19990830	313.11664	84.84576	327.04493	22.40890	0.2375420	2.3345900	39	1	57 days	0.54		Williams	1999 RS ₂₉
1999 RT ₂₉	15.8	0.15	19990830	18.12030	126.43001	184.32531	16.64298	0.2245299	2.5841672	39	1	25 days	0.45		Williams	1999 RT ₂₉
1999 RU ₂₉	16.7	0.15	19990830	21.55373	135.48599	178.07985	22.66471	0.0781636	1.9189451	51	1	58 days	0.55		Williams	1999 RU ₂₉
1999 RW ₂₉	14.5	0.15	19990810	6.11583	2.45713	322.34059	16.07044	0.2983980	2.6741115	45	1	86 days	0.39	M-v 3	Williams	36102 1999 RW ₂₉
1999 RD ₃₀	15.6	0.15	19990830	27.16455	326.75520	332.57346	17.47099	0.2560151	2.7905598	42	1	43 days	0.53		Williams	1999 RD ₃₀
1999 RG ₃₀	14.1	0.15	19990810	21.72646	351.55089	329.34477	21.49483	0.0496305	2.5722696	20	1	69 days	0.48	M-v 4	Williams	1999 RG ₃₀
1999 RH ₃₀	16.1	0.15	19990919	333.78249	60.44423	328.29686	22.60801	0.0863899	1.9321016	31	1	25 days	0.45		Williams	1999 RH ₃₀
1999 RJ ₃₀	15.4	0.15	19990919	351.97791	49.72720	325.69915	21.05200	0.3007005	3.0140665	20	1	25 days	0.44		Williams	1999 RJ ₃₀
1999 RN ₃₀	15.7	0.15	19990810	50.41555	95.39281	187.05831	21.57310	0.0836247	1.9213865	62	1	86 days	0.43	M-v 4	Williams	1999 RN ₃₀
1999 RP ₃₀	15.6	0.15	19990919	40.26954	318.65892	342.54036	22.82448	0.2127520	2.4307563	22	1	25 days	0.44		Williams	1999 RP ₃₀
1999 RR ₃₀	16.9	0.15	19990919	341.90059	61.34503	333.17697	23.69649	0.2726401	2.2979957	43	1	36 days	0.49		Williams	1999 RR ₃₀
1999 RS ₃₀	15.3	0.15	19990919	323.42891	80.27497	345.10793	25.06774	0.2781093	2.7546350	39	1	32 days	0.31		Williams	1999 RS ₃₀
1999 RY ₃₀	15.1	0.15	19990919	72.74822	73.49421	188.68832	23.47645	0.2145203	2.2909427	19	1	29 days	0.41		Williams	1999 RY ₃₀
1999 RD ₃₁	16.3	0.15	19990919	326.16500	55.04956	357.33332	24.43977	0.0836163	1.9616125	50	1	38 days	0.54		Williams	1999 RD ₃₁
1999 RK ₃₁	16.5	0.15	19990919	352.23666	14.23093	1.41134	4.81409	0.1623655	2.3522029	38	1	32 days	0.62		Williams	1999 RK ₃₁
1999 RM ₃₁	14.7	0.15	19990919	357.60506	2.17527	6.77908	14.59515	0.1011570	2.7088520	50	1	29 days	0.55		Williams	1999 RM ₃₁
1999 RO ₃₁	16.2	0.15	19990830	347.25382	239.24896	122.23882	6.06096	0.1743975	2.7695543	22	1	27 days	0.44		Williams	1999 RO ₃₁
1999 RP ₃₁	14.8	0.15	19990919	18.11245	311.05671	13.33053	1.95780	0.0724630	2.9016115	28	1	25 days	0.51		Williams	1999 RP ₃₁
1999 RQ ₃₁	17.8	0.15	19990919	9.28206	213.34153	140.62106	4.92758	0.2564977	2.3646931	18	1	27 days	0.66		Williams	1999 RQ ₃₁
1999 RR ₃₁	15.1	0.15	19990810	15.59795	306.13365	23.01275	5.35726	0.2033265	2.2453582	51	2	1998-1999	0.42	M-v 4	Williams	36036 1999 RR ₃₁
1999 RU ₃₁	15.6	0.15	19990919	60.33634	81.86931	220.74786	7.78724	0.0237510	2.4219039	48	1	31 days	0.49		Williams	1999 RU ₃₁

1999 RX ₃₁	16.0	0.15	19990810	333.85446	359.99001	16.43711	20.27308	0.0745674	1.9678799	88	2	1998–1999	0.51	M-v	4	Williams	36036	1999 RX ₃₁
1999 RA ₃₂	20.9	0.15	19990810	133.36750	8.97730	167.83846	10.51686	0.0905212	1.0259578	62	1	39 days	0.54	M-v	5	Williams		1999 RA ₃₂
1999 RB ₃₂	19.9	0.15	19990810	347.40772	39.27374	330.28924	3.94739	0.5726964	2.4293705	173	1	40 days	0.53	M-v	5	Williams		1999 RB ₃₂
1999 RC ₃₂	18.4	0.15	19990810	315.46148	82.67498	352.51791	30.96869	0.4319270	1.8390314	111	1	43 days	0.55	M-v	5	Williams		1999 RC ₃₂
1999 RD ₃₂	16.3	0.15	19990810	12.01223	294.66515	315.02397	6.63643	0.7782961	2.6166690	205	1	42 days	0.53	M-v	5	Williams		1999 RD ₃₂
1999 RF ₃₂	14.8	0.15	19990919	313.03485	244.22101	167.68167	12.34828	0.1650326	2.5588126	61	1	30 days	0.45			Williams		1999 RF ₃₂
1999 RH ₃₂	14.6	0.15	19990830	334.48882	211.54331	169.36566	9.66704	0.1680306	2.8054889	49	1	46 days	0.48			Williams		1999 RH ₃₂
1999 RJ ₃₂	12.6	0.15	19990810	354.30438	0.92938	357.15741	8.14156	0.0811426	3.1669699	62	1	93 days	0.36	M-v	4	Williams	36102	1999 RJ ₃₂
1999 RK ₃₂	17.2	0.15	19990919	357.90014	190.17614	172.18215	5.46551	0.2322962	2.2664363	37	1	30 days	0.53			Williams		1999 RK ₃₂
1999 RM ₃₂	16.0	0.15	19990830	338.83134	23.72564	356.42803	6.90003	0.1218662	2.3574031	45	1	46 days	0.54			Williams		1999 RM ₃₂
1999 RN ₃₂	13.4	0.15	19990810	332.72745	208.13611	177.71540	9.27134	0.0974949	3.1692253	51	2	1994–1999	0.51	M-v	4	Williams	36037	1999 RN ₃₂
1999 RO ₃₂	13.3	0.15	19990810	297.38366	88.79957	358.70284	12.96188	0.2913909	3.1240003	73	2	1988–1999	0.47	M-v	4	Williams	36037	1999 RO ₃₂
1999 RP ₃₂	16.4	0.15	19990830	13.01222	332.78938	354.31406	2.22286	0.1983533	2.1996160	53	1	53 days	0.56			Williams		1999 RP ₃₂
1999 RQ ₃₂	15.1	0.15	19990919	18.70508	344.74247	359.44079	4.99473	0.1358173	2.5857677	54	1	31 days	0.96			Williams		1999 RQ ₃₂
1999 RR ₃₂	17.6	0.15	19990919	5.27803	203.37873	143.73584	1.55444	0.1778270	2.1684790	18	1	32 days	0.57			Marsden		1999 RR ₃₂
1999 RS ₃₂	16.4	0.15	19990919	20.08742	1.75395	339.12839	6.30170	0.1358615	2.2606936	28	1	29 days	0.67			Williams		1999 RS ₃₂
1999 RW ₃₂	13.4	0.15	19990919	338.31559	101.28186	309.40015	8.55945	0.0966631	3.0616848	21	1	42 days	0.39			Williams		1999 RW ₃₂
1999 RX ₃₂	13.3	0.15	19990810	268.08965	309.48213	124.62847	3.26111	0.0675273	2.9233311	35	1	68 days	0.52	M-v	5	Williams		1999 RX ₃₂
1999 RY ₃₂	15.3	0.15	19990919	319.45578	104.44262	299.15226	8.23017	0.1126574	2.5335151	46	1	41 days	0.62			Williams		1999 RY ₃₂
1999 RZ ₃₂	14.3	0.15	19990919	18.53944	320.76095	17.93240	3.54330	0.1788673	3.1946518	69	1	37 days	0.53			Williams		1999 RZ ₃₂
1999 RA ₃₃	15.0	0.15	19990919	0.79758	338.07417	29.34966	1.18042	0.1332668	2.4188019	41	1	42 days	0.60			Williams		1999 RA ₃₃
1999 RG ₃₃	12.2	0.15	19990810	12.47263	274.46870	23.82950	35.14140	0.7752200	9.6358090	90	1	44 days	0.37	M-v	4	Williams		1999 RG ₃₃
1999 RH ₃₃	19.2	0.15	19990810	177.70840	351.26376	168.45346	11.01471	0.1710118	1.5512108	25	1	42 days	0.69	M-v	6	Williams		1999 RH ₃₃
1999 RK ₃₃	22.3	0.15	19990830	351.50975	51.46943	321.24345	2.97671	0.5941616	2.5004741	70	1	10 days	0.72			Williams		1999 RK ₃₃
1999 RN ₃₃	14.4	0.15	19990919	312.09049	51.42378	348.70727	10.24207	0.0431071	2.9893732	18	1	23 days	0.70			Williams		1999 RN ₃₃
1999 RP ₃₃	15.5	0.15	19990830	299.50464	52.03917	7.97974	7.06392	0.0964817	2.3909803	35	1	46 days	0.76			Williams		1999 RP ₃₃
1999 RQ ₃₃	15.0	0.15	19990830	291.39974	283.50392	161.46768	8.02989	0.2210671	2.6908638	33	1	46 days	0.65			Williams		1999 RQ ₃₃
1999 RV ₃₃	14.6	0.15	19990830	257.94226	100.41144	3.43125	1.45201	0.0871983	2.9367419	54	1	53 days	0.82			Williams		1999 RV ₃₃
1999 RZ ₃₃	16.1	0.15	19990830	332.88763	174.57007	187.54791	22.45873	0.0580350	1.9293178	20	1	58 days	0.47			Williams		1999 RZ ₃₃
1999 RA ₃₄	15.7	0.15	19990810	14.24992	117.56708	191.10764	22.24064	0.1004417	1.9254346	52	1	110 days	0.43	M-v	3	Williams	36103	1999 RA ₃₄
1999 RB ₃₄	15.4	0.15	19990810	15.43190	103.63711	184.50837	27.72357	0.3856448	2.6262528	43	1	73 days	0.44	M-v	4	Williams		1999 RB ₃₄
1999 RC ₃₄	14.9	0.15	19990919	8.57786	151.55183	196.93504	2.73502	0.0717571	2.5564968	55	1	41 days	0.50			Williams		1999 RC ₃₄
1999 RD ₃₄	14.1	0.15	19990810	343.70483	5.49691	4.18960	3.22664	0.1263231	3.0592372	69	3	1995–1999	0.56	M-v	3	Williams	36037	1999 RD ₃₄
1999 RF ₃₄	14.1	0.15	19990810	310.48013	272.83895	147.85594	0.53606	0.1902427	3.1362328	56	3	1994–1999	0.49	M-v	4	Williams	36037	1999 RF ₃₄
1999 RL ₃₄	13.6	0.15	19990919	275.56696	284.95620	188.10162	11.87585	0.1738081	2.6283442	30	1	38 days	0.47			Williams		1999 RL ₃₄
1999 RP ₃₄	13.6	0.15	19990810	120.05767	85.95617	148.90819	2.37745	0.0245273	2.8803854	53	3	1992–1999	0.48	M-v	4	Williams	36037	1999 RP ₃₄
1999 RR ₃₄	16.5	0.15	19990830	334.33729	214.31897	176.91940	3.78165	0.2507215	2.3238030	45	1	54 days	0.61			Williams		1999 RR ₃₄
1999 RS ₃₄	14.6	0.15	19990919	229.11741	122.58650	33.48269	13.19585	0.0940986	2.8061539	20	1	22 days	0.75			Williams		1999 RS ₃₄
1999 RU ₃₄	14.5	0.15	19990919	343.54497	201.60283	193.07072	9.92140	0.1037419	3.0380582	28	1	26 days	0.71			Williams		1999 RU ₃₄
1999 RV ₃₄	16.7	0.15	19990919	35.47815	307.77474	6.97835	4.12786	0.2368581	2.4036492	30	1	25 days	0.31			Williams		1999 RV ₃₄
1999 RW ₃₄	15.1	0.15	19990810	6.65068	154.88609	187.06384	6.89030	0.2581738	2.5442289	63	3	1995–1999	0.58	M-v	2	Williams	36038	1999 RW ₃₄
1999 RZ ₃₄	13.9	0.15	19990919	31.95737	314.23344	34.99243	22.61448	0.1345565	2.4315722	38	1	41 days	0.43			Williams		1999 RZ ₃₄
1999 RA ₃₅	15.1	0.15	19990810	355.46368	48.94047	285.96271	12.01215	0.2076087	2.5703814	33	1	116 days	0.51	M-v	4	Williams	36103	1999 RA ₃₅
1999 RB ₃₅	14.3	0.15	19990810	285.90804	136.58028	291.28280	21.26721	0.0406801	2.6497904	81	1	90 days	0.67	M-v	4	Williams	36103	1999 RB ₃₅
1999 RC ₃₅	12.2	0.15	19990810	332.04270	14.79914	27.07575	10.88706	0.0754660	2.9842194	60	5	1958–1999	0.47	M-v	2	Williams	36038	1999 RC ₃₅
1999 RD ₃₅	14.9	0.15	19990810	330.68581	199.58783	205.11418	24.35744	0.2164828	2.3364581	67	1	88 days	0.41	M-v	3	Williams		1999 RD ₃₅
1999 RE ₃₅	15.0	0.15	19990919	113.66372	163.69326	61.21547	3.44189	0.0409091	2.6603011	27	1	23 days	0.45			Williams		1999 RE ₃₅
1999 RH ₃₅	14.6	0.15	19990810	28.02195	138.61532	173.56013	3.13539	0.1913045	2.2817067	70	2	1998–1999	0.62	M-v	4	Williams	36038	1999 RH ₃₅
1999 RK ₃₅			19990919	215.70089	218.53787	296.64054	11.90141	0.1064294	2.7355109	14	1	32 days	1.03			Williams		1999 RK ₃₅
1999 RL ₃₅	14.5	0.15	19990810	342.06243	119.38856	250.83182	0.99239	0.0736016	2.8943243	72	4	1979–1999	0.58	M-v	4	Williams	36038	1999 RL ₃₅
1999 RM ₃₅	13.5	0.15	19990919	76.21102	84.92481	192.33733	2.99009	0.1209770	3.0549387	46	1	41 days	0.66			Williams		1999 RM ₃₅
1999 RN ₃₅	15.5	0.15	19990810	339.64228	186.95063	182.53466	6.46678	0.1317606	2.3012773	67	2	1998–1999	0.53	M-v	3	Williams	36038	1999 RN ₃₅
1999 RO ₃₅	15.2	0.15	19990810	357.50767	275.66806	72.92724	1.15480	0.2972638	2.5761974	74	3	1996–1999	0.48	M-v	2	Williams	36038	1999 RO ₃₅

1999 RP ₃₅	16.4	0.15	19990919	349.89492	15.58317	6.46456	5.95220	0.2728884	2.5398511	54	1	30 days	0.65		Williams	1999 RP ₃₅
1999 RR ₃₅	14.0	0.15	19990919	141.61493	198.97598	21.94809	4.00423	0.0207535	2.7411452	30	1	30 days	0.48		Williams	1999 RR ₃₅
1999 RW ₃₅	14.9	0.15	19990919	22.38667	339.10606	8.72641	2.14906	0.0775900	2.8467208	30	1	24 days	0.38		Williams	1999 RW ₃₅
1999 RY ₃₅	15.9	0.15	19990810	34.69988	303.51214	331.75823	6.11393	0.1110943	2.3641754	16	1	63 days	0.33	M-v 5	Williams	1999 RY ₃₅
1999 RZ ₃₅	17.2	0.15	19990919	8.96136	308.48422	43.31832	7.24331	0.1540277	2.4043456	14	1	23 days	0.38		Williams	1999 RZ ₃₅
1999 RD ₃₆	17.2	0.15	19990919	348.34433	193.70787	180.32004	7.24452	0.3707415	2.6212875	49	1	35 days	0.44		Marsden	1999 RD ₃₆
1999 RG ₃₆	13.7	0.15	19990810	306.30149	246.06295	205.22991	13.95057	0.1297482	2.6157283	47	3	1992-1999	0.62	M-v 3	Williams	36039 1999 RG ₃₆
1999 RO ₃₆	20.6	0.15	19990810	347.62688	196.97528	168.24956	3.28858	0.4857865	2.3833727	120	1	39 days	0.57	M-v 6	Williams	1999 RO ₃₆
1999 RP ₃₆	18.8	0.15	19990810	340.62001	321.22648	58.13150	5.47807	0.4166456	2.2274517	96	1	39 days	0.41	M-v 4	Williams	1999 RP ₃₆
1999 RR ₃₆	14.2	0.15	19990919	321.71622	51.93065	0.79640	1.70665	0.0482890	2.9546615	25	1	26 days	0.59		Williams	1999 RR ₃₆
1999 RS ₃₆	15.6	0.15	19990919	323.67007	222.11766	189.47558	4.93385	0.1413851	2.3407747	35	1	30 days	0.70		Williams	1999 RS ₃₆
1999 RT ₃₆	14.9	0.15	19990919	320.76855	67.44553	0.41465	12.89624	0.2533148	2.6349617	23	1	30 days	0.67		Williams	1999 RT ₃₆
1999 RU ₃₆	16.1	0.15	19990919	315.46834	252.06720	153.83734	12.94996	0.0946517	2.8566151	12	1	23 days	0.41		Williams	1999 RU ₃₆
1999 RV ₃₆	17.2	0.15	19990919	357.33988	338.41876	18.25351	6.51599	0.1426971	2.3165621	20	1	26 days	0.44		Williams	1999 RV ₃₆
1999 RW ₃₆	16.8	0.15	19990919	25.76501	200.99868	109.07614	2.76632	0.1940378	2.2587050	31	1	23 days	0.44		Marsden	1999 RW ₃₆
1999 RZ ₃₆	13.3	0.15	19990810	30.90794	335.31266	324.94547	9.47305	0.0495064	3.0707310	32	1	64 days	0.56	M-v 5	Williams	1999 RZ ₃₆
1999 RF ₃₇	14.5	0.15	19990919	193.58207	17.55765	161.53817	7.40955	0.1785274	2.5324923	49	1	20 days	0.91		Williams	1999 RF ₃₇
1999 RJ ₃₇	15.2	0.15	19990810	359.64195	122.20655	201.53014	14.61971	0.3246470	2.5383528	55	1	111 days	0.39	M-v 3	Williams	36104 1999 RJ ₃₇
1999 RK ₃₇	13.3	0.15	19990919	314.54212	46.20796	329.37885	25.45694	0.0740694	1.9166130	20	1	18 days	0.42		Williams	1999 RK ₃₇
1999 RN ₃₇	15.8	0.15	19990919	348.74780	4.86819	350.85060	28.17226	0.2053751	2.1796401	19	1	34 days	0.51		Williams	1999 RN ₃₇
1999 RS ₃₇	15.6	0.15	19990830	331.32867	109.63167	265.09969	12.24006	0.1750282	2.5661495	24	1	9 days	0.63		Williams	1999 RS ₃₇
1999 RW ₃₇	14.4	0.15	19990919	328.60419	223.64644	189.08240	12.56364	0.1589984	2.6872728	34	1	41 days	0.44		Williams	1999 RW ₃₇
1999 RX ₃₇	13.8	0.15	19990919	283.12674	267.94799	187.33552	9.43440	0.0606406	3.0583809	24	1	24 days	0.73		Williams	1999 RX ₃₇
1999 RA ₃₈	14.3	0.15	19990919	312.71563	30.49309	38.89846	3.10612	0.1439289	2.4072095	25	1	29 days	0.34		Williams	1999 RA ₃₈
1999 RD ₃₈	14.2	0.15	19990919	332.51293	217.38151	185.95051	14.23094	0.0955862	2.6412989	26	1	38 days	0.52		Williams	1999 RD ₃₈
1999 RF ₃₈	15.1	0.15	19990919	343.05742	33.17158	9.11632	16.21872	0.3102495	3.0495235	33	1	32 days	0.55		Williams	1999 RF ₃₈
1999 RG ₃₈	14.9	0.15	19990919	28.67473	311.47511	16.78509	4.66310	0.1975171	2.9779447	26	1	27 days	0.79		Williams	1999 RG ₃₈
1999 RH ₃₈	15.6	0.15	19990919	354.95479	355.44961	19.12674	5.93736	0.1530787	2.3460575	24	1	24 days	0.42		Williams	1999 RH ₃₈
1999 RL ₃₈	14.9	0.15	19990810	29.34985	162.05213	149.94317	3.85048	0.1898830	2.4077226	58	3	1994-1999	0.48	M-v 3	Williams	36039 1999 RL ₃₈
1999 RR ₃₈	17.0	0.15	19990810	10.55283	150.65427	172.13652	0.36792	0.2250077	2.3082892	45	2	1992-1999	0.57	M-v 5	Williams	36039 1999 RR ₃₈
1999 RV ₃₈	16.2	0.15	19990919	12.55109	292.62878	37.76984	6.84314	0.1445977	2.3600194	25	1	27 days	0.50		Williams	1999 RV ₃₈
1999 RX ₃₈	15.6	0.15	19990919	21.47798	275.29501	44.80893	7.09614	0.1271470	2.3227438	20	1	24 days	0.33		Williams	1999 RX ₃₈
1999 RY ₃₈	14.1	0.15	19990810	313.06157	278.70095	121.74663	9.73421	0.1703324	2.7700220	44	4	1990-1999	0.52	M-v 1	Williams	36039 1999 RY ₃₈
1999 RB ₃₉	16.2	0.15	19990919	15.37856	322.15760	356.46133	4.52384	0.2514901	2.5807698	30	1	29 days	0.77		Williams	1999 RB ₃₉
1999 RG ₃₉	15.9	0.15	19990919	342.35863	78.03089	323.44746	11.97962	0.2758502	2.6569795	21	1	29 days	0.71		Williams	1999 RG ₃₉
1999 RP ₃₉	14.0	0.15	19990919	357.95897	329.90625	32.10355	8.10651	0.2007809	3.1781142	56	1	45 days	0.57		Williams	1999 RP ₃₉
1999 RR ₃₉	16.1	0.15	19990919	2.96449	111.18132	226.12701	7.36332	0.1523520	2.4617517	36	1	25 days	0.63		Williams	1999 RR ₃₉
1999 RS ₃₉	15.3	0.15	19990810	328.84221	162.03433	213.31825	7.78957	0.2184762	2.6420204	45	3	1995-1999	0.68	M-v 3	Williams	36039 1999 RS ₃₉
1999 RU ₃₉	14.8	0.15	19990810	332.99762	105.30313	265.71242	6.37783	0.2434059	2.3590517	49	1	110 days	0.41	M-v 4	Williams	36105 1999 RU ₃₉
1999 RV ₃₉	15.7	0.15	19990919	8.23486	9.65410	354.73888	7.95140	0.1637393	2.4205814	13	1	21 days	0.44		Williams	1999 RV ₃₉
1999 RY ₃₉	14.5	0.15	19990919	30.79519	128.91724	208.22511	8.39449	0.1619665	2.7648243	32	1	30 days	0.43		Williams	1999 RY ₃₉
1999 RC ₄₀	14.5	0.15	19990919	334.65932	40.26708	17.55491	16.89459	0.1358630	3.2112199	17	1	25 days	0.61		Williams	1999 RC ₄₀
1999 RG ₄₀	16.7	0.15	19990919	16.40959	25.88971	300.50008	1.95378	0.1876770	2.3252626	50	1	30 days	0.56		Williams	1999 RG ₄₀
1999 RH ₄₀	16.0	0.15	19990919	28.42146	21.41682	285.73529	8.01437	0.1437908	2.4390120	34	1	38 days	0.40		Williams	1999 RH ₄₀
1999 RJ ₄₀	14.4	0.15	19990919	314.40282	152.46560	243.59448	8.36251	0.0926415	3.0703368	38	1	34 days	0.56		Williams	1999 RJ ₄₀
1999 RL ₄₀	17.8	0.15	19990919	304.78880	235.56264	174.10401	19.44709	0.0600502	1.8874955	23	1	30 days	0.52		Williams	1999 RL ₄₀
1999 RP ₄₀	15.1	0.15	19990919	259.96216	292.03935	164.84515	22.43331	0.0381227	2.6586227	18	1	23 days	0.47		Williams	1999 RP ₄₀
1999 RV ₄₀	14.1	0.15	19990919	138.98611	208.91887	357.32571	23.82368	0.2021879	2.3752175	20	1	29 days	0.41		Williams	1999 RV ₄₀
1999 RF ₄₁	15.6	0.15	19990830	314.20967	244.18002	162.89849	23.02422	0.1311388	1.9332979	30	1	40 days	0.40		Williams	1999 RF ₄₁
1999 RJ ₄₁	16.9	0.15	19990919	322.88628	34.61876	9.01342	24.75337	0.1334869	1.8372560	30	1	32 days	0.77		Williams	1999 RJ ₄₁
1999 RS ₄₁	17.1	0.15	19990919	76.91772	106.81458	167.91931	22.50678	0.0871786	1.9018216	32	1	28 days	0.48		Marsden	1999 RS ₄₁
1999 RU ₄₁	15.6	0.15	19990919	6.70922	180.30150	175.06145	4.69645	0.2608358	2.5861770	27	1	28 days	0.65		Williams	1999 RU ₄₁
1999 RV ₄₁	14.1	0.15	19990919	355.81970	330.42081	45.79872	1.98290	0.1890760	3.0786515	28	1	32 days	0.50		Williams	1999 RV ₄₁

1999 RW ₄₁	13.7	0.15	19990810	354.31743	325.69300	20.25857	2.13426	0.0686540	2.8394123	89	2	1998–1999	0.45	M-v	4	Williams	36040	1999 RW ₄₁
1999 RX ₄₁	13.9	0.15	19990919	105.74339	261.43611	349.23613	13.90097	0.0815913	2.6064513	39	1	32 days	0.71			Williams		1999 RX ₄₁
1999 RY ₄₁	13.4	0.15	19990810	344.51742	170.15454	217.40419	6.19796	0.3415989	3.9655346	90	1	88 days	0.47	M-v	4	Williams	36105	1999 RY ₄₁
1999 RZ ₄₁	12.6	0.15	19990810	40.02610	107.89563	204.19378	8.48394	0.0672905	3.1898239	61	3	1982–1999	0.50	M-v	3	Williams	36040	1999 RZ ₄₁
1999 RC ₄₂	13.9	0.15	19990810	347.34625	33.45405	332.98636	4.83851	0.0839327	2.4307701	63	3	1995–1999	0.51	M-v	3	Williams	36040	1999 RC ₄₂
1999 RF ₄₂	16.0	0.15	19990919	356.43943	57.17427	334.90161	3.72074	0.1470593	2.6846457	19	1	36 days	0.37			Williams		1999 RF ₄₂
1999 RG ₄₂	15.2	0.15	19990919	30.62574	248.80442	83.78871	5.37996	0.1789126	3.1842665	20	1	36 days	0.49			Williams		1999 RG ₄₂
1999 RK ₄₂	14.9	0.15	19990919	324.77613	234.98509	208.29926	22.46528	0.1990710	2.3255310	43	1	36 days	1.30			Williams		1999 RK ₄₂
1999 RL ₄₂	13.3	0.15	19990919	30.36358	309.11083	41.67295	4.55234	0.2096943	2.7972697	14	1	29 days	0.56			Williams		1999 RL ₄₂
1999 RN ₄₂	13.8	0.15	19990919	57.15504	246.02342	64.08620	10.56205	0.1300650	3.0576199	17	1	20 days	0.82			Williams		1999 RN ₄₂
1999 RO ₄₂	15.9	0.15	19990919	41.62744	197.36537	113.89104	5.48705	0.2264129	2.1328435	20	1	20 days	0.55			Williams		1999 RO ₄₂
1999 RP ₄₂	15.8	0.15	19990919	330.52026	10.30415	51.52390	9.38207	0.2348789	2.3499572	23	1	21 days	0.56			Williams		1999 RP ₄₂
1999 RQ ₄₂	13.8	0.15	19990919	315.77488	265.76739	173.19422	12.77793	0.1586829	2.5882963	19	1	20 days	0.63			Williams		1999 RQ ₄₂
1999 RR ₄₂	13.6	0.15	19990830	2.19059	211.84389	163.60299	10.06480	0.1096959	3.0645722	22	1	43 days	0.58			Williams		1999 RR ₄₂
1999 RV ₄₂	15.2	0.15	19990810	74.45880	226.58709	28.69287	4.60238	0.1264407	2.2598288	52	2	1998–1999	0.62	M-v	4	Williams	36040	1999 RV ₄₂
1999 RW ₄₂	11.9	0.15	19990830	317.39967	261.26042	136.76526	8.16529	0.2186794	3.9734628	29	1	53 days	0.51			Williams		1999 RW ₄₂
1999 RY ₄₂	15.1	0.15	19990830	358.86984	174.65399	165.79633	13.43674	0.1827209	2.5724281	41	1	43 days	0.55			Williams		1999 RY ₄₂
1999 RC ₄₃	14.9	0.15	19990919	45.00880	262.58543	6.45448	22.66682	0.2581069	2.2710553	25	1	34 days	0.77			Williams		1999 RC ₄₃
1999 RD ₄₃	17.8	0.15	19990919	11.62816	264.17668	81.40377	8.15842	0.3532689	2.1737909	16	1	32 days	0.50			Williams		1999 RD ₄₃
1999 RJ ₄₃	17.1	0.15	19990919	10.62676	340.28276	11.54169	7.50071	0.1103780	2.4516187	23	1	31 days	0.87			Williams		1999 RJ ₄₃
1999 RL ₄₃	14.7	0.15	19990919	292.67295	204.25475	235.02952	8.33493	0.0607382	2.9797446	33	1	31 days	0.51			Williams		1999 RL ₄₃
1999 RO ₄₃	15.5	0.15	19990810	58.54633	288.00458	328.45901	4.11298	0.1056069	2.2408062	60	2	1998–1999	0.68	M-v	4	Williams	36040	1999 RO ₄₃
1999 RT ₄₃	13.7	0.15	19990919	333.96138	300.74803	133.97661	2.46842	0.1687186	3.0980428	16	1	37 days	0.97			Williams		1999 RT ₄₃
1999 RU ₄₃	12.5	0.15	19990919	65.86958	265.05669	40.26678	22.89592	0.2159383	2.5815831	24	1	29 days	0.43			Williams		1999 RU ₄₃
1999 RV ₄₃	15.0	0.15	19990919	11.10286	194.82176	169.45659	9.66110	0.1392453	2.5628903	19	1	19 days	0.94			Williams		1999 RV ₄₃
1999 RW ₄₃	14.1	0.15	19990919	355.37157	216.98624	171.18845	10.09343	0.1083718	3.0562141	29	1	19 days	0.69			Williams		1999 RW ₄₃
1999 RZ ₄₃	14.2	0.15	19990830	354.13924	296.80707	89.02697	6.24845	0.1460329	3.1756619	28	1	44 days	0.73			Williams		1999 RZ ₄₃
1999 RB ₄₄	13.8	0.15	19990919	345.27340	16.34521	39.38036	11.22895	0.1704825	2.5372248	14	1	18 days	0.42			Williams		1999 RB ₄₄
1999 RC ₄₄	12.7	0.15	19990919	15.25757	328.04882	45.22997	11.89467	0.1684275	2.6228831	28	1	32 days	0.66			Williams		1999 RC ₄₄
1999 RD ₄₄	14.5	0.15	19990919	147.36889	220.63814	358.54374	14.85824	0.0332397	2.5883212	32	1	24 days	0.49			Williams		1999 RD ₄₄
1999 RF ₄₄	15.7	0.15	19990919	329.17291	266.66994	138.11526	15.48389	0.1355567	2.6264177	18	1	20 days	0.27			Williams		1999 RF ₄₄
1999 RG ₄₄	15.4	0.15	19990830	7.72628	187.76939	141.36471	10.27068	0.2520060	3.0812957	32	1	58 days	0.70			Williams		1999 RG ₄₄
1999 RJ ₄₄	13.7	0.15	19990810	234.80482	26.52647	109.35365	3.50183	0.0806736	3.2521817	37	2	1998–1999	0.66	M-v	5	Williams	36041	1999 RJ ₄₄
1999 RK ₄₄	14.3	0.15	19990919	296.91034	250.78099	192.48202	5.50223	0.2208349	2.7871994	48	1	40 days	0.62			Williams		1999 RK ₄₄
1999 RN ₄₄	15.6	0.15	19990919	20.79909	126.68133	194.01490	12.64941	0.2921476	2.3327312	18	1	29 days	0.28			Williams		1999 RN ₄₄
1999 RQ ₄₄	14.7	0.15	19990919	331.33982	216.52237	178.79938	9.51353	0.0652163	2.7394753	30	1	30 days	0.61			Williams		1999 RQ ₄₄
1999 RT ₄₄	13.6	0.15	19990810	323.53763	48.63165	331.21216	13.08542	0.2162859	2.5819223	54	2	1997–1999	0.40	M-v	4	Williams	36041	1999 RT ₄₄
1999 RU ₄₄	14.2	0.15	19990919	5.07478	162.66388	173.09232	13.40572	0.1935867	2.5638011	41	1	40 days	0.44			Williams		1999 RU ₄₄
1999 RB ₄₅	15.2	0.15	19990919	345.20192	40.86568	347.74862	1.92451	0.2136963	2.3747365	16	1	24 days	0.41			Williams		1999 RB ₄₅
1999 RC ₄₅	16.3	0.15	19990919	318.03769	258.53733	148.27950	8.92581	0.1726653	2.3707336	46	1	27 days	0.54			Williams		1999 RC ₄₅
1999 RH ₄₅	14.1	0.15	19990919	239.46390	139.38105	357.18856	7.74471	0.3075465	2.8081122	11	1	19 days	0.63			Williams		1999 RH ₄₅
1999 RJ ₄₅	15.1	0.15	19990810	349.66046	241.79907	126.40883	15.22911	0.4435725	2.8617603	98	1	96 days	0.56	M-v	4	Williams	36106	1999 RJ ₄₅
1999 RK ₄₅	19.8	0.15	19990919	330.59495	4.02142	120.04889	5.87989	0.7720506	1.5943738	78	1	24 days	0.53			Williams		1999 RK ₄₅
1999 RL ₄₅	18.6	0.15	19990810	314.03124	234.01637	172.11758	22.45404	0.3748395	1.8263257	50	1	32 days	0.53	M-v	5	Williams		1999 RL ₄₅
1999 RM ₄₅	19.3	0.15	19990810	16.79308	88.15927	163.36217	10.89238	0.6438523	1.6815147	62	1	34 days	0.47	M-v	6	Williams		1999 RM ₄₅
1999 RO ₄₅	15.3	0.15	19990919	191.84802	285.32758	242.62549	8.06156	0.0617905	3.0920994	15	1	35 days	0.56			Marsden		1999 RO ₄₅
1999 RQ ₄₅	15.5	0.15	19990810	348.25530	180.18377	177.06955	6.71237	0.1392642	2.3227361	39	1	76 days	0.51	M-v	4	Williams		1999 RQ ₄₅
1999 RR ₄₅	16.1	0.15	19990919	196.74773	174.29342	349.28551	5.92815	0.1272255	2.3748748	25	1	40 days	0.45			Williams		1999 RR ₄₅
1999 RU ₄₅	15.1	0.15	19990919	314.79397	212.34742	200.56080	6.01132	0.0684100	2.7204913	36	1	30 days	0.49			Williams		1999 RU ₄₅
1999 RW ₄₅	15.2	0.15	19990810	351.18049	288.12476	68.88956	1.44354	0.3104211	3.0724889	34	1	83 days	0.57	M-v	4	Williams		1999 RW ₄₅
1999 RA ₄₆	14.4	0.15	19990810	319.72600	209.33725	161.37430	13.99088	0.1865250	2.5325810	41	1	94 days	0.56	M-v	4	Williams	36106	1999 RA ₄₆
1999 RQ ₄₆	15.5	0.15	19990810	350.52285	4.28752	323.85316	8.98920	0.2417919	2.3426977	38	1	91 days	0.51	M-v	4	Williams		1999 RQ ₄₆
1999 RW ₄₆	15.2	0.15	19990810	354.74639	12.58700	311.43864	2.76682	0.3465195	2.6356842	47	1	125 days	0.50	M-v	4	Williams		1999 RW ₄₆

1999 RH ₄₇	13.4	0.15	19990810	321.86784	225.45071	135.83709	12.92180	0.1099487	3.1664468	27	1	94 days	0.48	M-v	4	Williams	36106	1999 RH ₄₇
1999 RS ₄₇	15.3	0.15	19990810	21.98415	128.37568	154.47639	7.46466	0.1974747	2.3167404	35	1	138 days	0.64	M-v	4	Williams	36106	1999 RS ₄₇
1999 RN ₄₈	15.6	0.15	19990810	342.85908	35.99412	315.00685	3.84508	0.3185829	2.6218468	31	1	60 days	0.56	M-v	5	Williams		1999 RN ₄₈
1999 RR ₄₈	15.3	0.15	19990810	3.82176	332.66347	334.89985	8.76689	0.2487988	2.5937338	22	1	92 days	0.48	M-v	3	Williams		1999 RR ₄₈
1999 RG ₄₉	15.0	0.15	19990830	356.72155	218.44840	112.24431	3.29266	0.2268359	2.4749062	17	1	26 days	0.59			Williams		1999 RG ₄₉
1999 RJ ₅₀	16.2	0.15	19990810	355.34835	78.78300	247.84867	1.73719	0.2592933	2.3640712	35	1	77 days	0.66	M-v	4	Williams		1999 RJ ₅₀
1999 RN ₅₀	15.6	0.15	19990810	356.86333	344.39430	338.84311	10.00922	0.2463666	2.3792394	36	1	78 days	0.57	M-v	4	Williams		1999 RN ₅₀
1999 RA ₅₁	14.2	0.15	19990810	243.35484	109.96407	336.79832	5.93237	0.0940838	2.4362380	26	1	93 days	0.44	M-v	4	Williams		1999 RA ₅₁
1999 RE ₅₁	15.3	0.15	19990810	0.96087	165.77106	151.59835	7.77181	0.2378317	2.4588463	42	1	94 days	0.58	M-v	3	Williams	36106	1999 RE ₅₁
1999 RO ₅₁	15.3	0.15	19990810	9.04083	109.36475	198.46639	3.98965	0.1914454	2.5739607	28	1	75 days	0.59	M-v	4	Williams		1999 RO ₅₁
1999 RR ₅₁	16.3	0.15	19990919	347.53430	179.80207	175.86490	9.04920	0.1951202	2.3359490	30	1	30 days	0.64			Williams		1999 RR ₅₁
1999 RC ₅₂	15.0	0.15	19990810	351.05833	312.99422	20.43096	3.54524	0.1835281	2.3100357	45	4	1971–1999	0.66	M-v	3	Williams	36041	1999 RC ₅₂
1999 RK ₅₂	15.9	0.15	19990830	0.05092	270.90918	57.73167	3.02439	0.2088128	2.3717827	17	1	27 days	0.58			Williams		1999 RK ₅₂
1999 RP ₅₂	14.5	0.15	19990919	340.89037	13.21355	347.87405	12.96657	0.1760090	2.6749192	16	1	23 days	0.50			Williams		1999 RP ₅₂
1999 RX ₅₂	14.0	0.15	19990810	333.05940	27.65376	335.05691	14.41966	0.2116175	2.6542327	37	1	84 days	0.63	M-v	4	Williams		1999 RX ₅₂
1999 RZ ₅₂	16.3	0.15	19990919	351.66728	13.41181	335.17652	4.43449	0.1441856	2.2122411	21	1	40 days	0.34			Williams		1999 RZ ₅₂
1999 RA ₅₄	16.9	0.15	19990830	0.34650	341.30913	348.38300	4.70534	0.2484843	2.3473205	17	1	24 days	0.51			Williams		1999 RA ₅₄
1999 RW ₅₄	14.7	0.15	19990919	350.80805	171.33018	180.31725	6.51029	0.1500105	2.4410903	26	1	32 days	1.69			Williams		1999 RW ₅₄
1999 RK ₅₅	13.4	0.15	19990810	8.61951	199.07508	115.76874	2.82985	0.0882406	3.2541210	41	5	1987–1999	0.68	M-v	1	Williams	36041	1999 RK ₅₅
1999 RM ₅₅	16.5	0.15	19990919	22.91165	281.97081	22.45628	2.18534	0.1949186	2.4054966	11	1	25 days	0.40			Williams		1999 RM ₅₅
1999 RO ₅₇	16.0	0.15	19990830	347.07214	337.03399	17.06320	3.10638	0.2217619	2.1608736	25	1	27 days	0.51			Williams		1999 RO ₅₇
1999 RZ ₆₁	17.6	0.15	19990919	27.85124	115.92206	176.53468	10.97093	0.3027757	2.4218210	24	1	31 days	0.61			Williams		1999 RZ ₆₁
1999 RO ₆₃	13.5	0.15	19990810	288.74323	212.51911	202.08450	2.85112	0.0881939	2.5953375	93	3	1962–1999	0.69	M-v	4	Williams	36041	1999 RO ₆₃
1999 RV ₆₃	16.5	0.15	19990830	26.54042	314.18737	338.03658	7.60621	0.2682460	2.3589032	23	1	56 days	0.51			Williams		1999 RV ₆₃
1999 RY ₆₃	16.0	0.15	19990830	61.55675	251.70253	7.45616	2.66625	0.1432202	2.2768922	20	1	58 days	0.67			Williams		1999 RY ₆₃
1999 RE ₆₄	13.6	0.15	19990830	309.87928	322.35986	82.02722	3.02889	0.1825231	3.1073261	24	1	53 days	0.49			Williams		1999 RE ₆₄
1999 RD ₆₅	16.2	0.15	19990830	349.71436	12.21146	340.13226	8.56056	0.1420347	2.9267336	11	1	9 days	0.57			Williams		1999 RD ₆₅
1999 RK ₆₇	16.5	0.15	19990830	4.15840	161.58210	171.35880	10.39647	0.2187751	2.4119694	34	1	26 days	0.52			Williams		1999 RK ₆₇
1999 RM ₆₇	14.9	0.15	19990919	0.33441	163.40215	181.93516	10.28821	0.1882778	3.1031002	22	1	29 days	0.32			Williams		1999 RM ₆₇
1999 RW ₇₀	11.8	0.15	19990919	339.76137	51.95145	324.58112	4.00183	0.1762409	5.5741142	13	1	29 days	0.39			Williams		1999 RW ₇₀
1999 RK ₇₁	15.2	0.15	19990810	354.07294	327.25448	18.06968	3.34120	0.0484617	2.7514259	32	2	1993–1999	0.61	M-v	5	Williams	36042	1999 RK ₇₁
1999 RR ₇₁	16.2	0.15	19990919	359.89690	343.89904	5.54172	4.70674	0.1834231	2.4138868	37	1	30 days	0.53			Williams		1999 RR ₇₁
1999 RZ ₇₁	16.4	0.15	19990919	2.75676	329.63196	14.37495	4.94558	0.1924924	2.4413781	28	1	23 days	0.50			Williams		1999 RZ ₇₁
1999 RD ₇₂	15.5	0.15	19990810	350.17093	285.31479	63.91140	3.73455	0.1521185	2.5898150	52	4	1991–1999	0.65	M-v	4	Williams	36042	1999 RD ₇₂
1999 RE ₇₂	16.4	0.15	19990919	5.77742	200.45328	141.67681	7.17266	0.1326141	2.2412560	54	1	27 days	0.46			Williams		1999 RE ₇₂
1999 RF ₇₂	15.3	0.15	19990919	343.80879	238.26369	134.83911	5.79447	0.1789660	2.3746726	44	1	23 days	0.26			Williams		1999 RF ₇₂
1999 RG ₇₂	15.7	0.15	19990919	324.59736	260.60985	127.35864	4.44638	0.0643130	2.5819418	25	1	23 days	0.69			Williams		1999 RG ₇₂
1999 RP ₇₂	14.1	0.15	19990830	31.46452	239.45665	70.62923	3.03983	0.0412264	2.8551529	58	1	49 days	0.47			Williams		1999 RP ₇₂
1999 RD ₇₃	17.4	0.15	19990919	351.74907	103.83466	261.15936	1.17281	0.2432453	2.3774916	54	1	29 days	0.51			Williams		1999 RD ₇₃
1999 RH ₇₃	17.9	0.15	19990830	346.25546	111.53740	257.12987	3.37834	0.2835751	2.5789189	22	1	26 days	0.64			Williams		1999 RH ₇₃
1999 RL ₇₃	15.3	0.15	19990810	334.19051	54.03586	330.12409	11.08736	0.3003106	2.5833666	46	1	95 days	0.51	M-v	4	Williams	36108	1999 RL ₇₃
1999 RO ₇₃	14.9	0.15	19990919	290.38319	249.62270	188.50164	12.38383	0.1500384	2.5522057	30	1	33 days	0.47			Williams		1999 RO ₇₃
1999 RC ₇₄	15.0	0.15	19990919	22.94522	168.94568	152.64748	7.42177	0.1209681	3.1155960	16	1	24 days	0.52			Williams		1999 RC ₇₄
1999 RD ₇₄	17.0	0.15	19990830	329.75931	233.98093	150.76574	6.29339	0.1504904	2.2575967	26	1	49 days	0.81			Williams		1999 RD ₇₄
1999 RL ₇₄	15.7	0.15	19990919	5.95980	271.75310	71.07034	2.52343	0.1012513	2.9152131	16	1	24 days	0.58			Williams		1999 RL ₇₄
1999 RN ₇₄	15.9	0.15	19990919	13.58729	197.50312	135.27726	5.55453	0.1218531	2.4791092	22	1	23 days	0.57			Williams		1999 RN ₇₄
1999 RR ₇₄	15.1	0.15	19990830	302.24659	289.19042	127.50139	5.39629	0.1506547	2.4053053	58	1	56 days	0.38			Williams		1999 RR ₇₄
1999 RJ ₇₅	14.4	0.15	19990919	23.04970	337.53784	344.60875	5.90905	0.1265745	3.0761770	15	1	23 days	0.35			Williams		1999 RJ ₇₅
1999 RQ ₇₅	16.3	0.15	19990830	0.19728	52.04481	292.51095	3.15595	0.1644679	2.2832905	35	1	46 days	0.57			Williams		1999 RQ ₇₅
1999 RR ₇₅	15.1	0.15	19990810	250.30038	208.86894	248.62864	4.65209	0.0651525	2.2256432	55	3	1993–1999	0.52	M-v	3	Williams	36042	1999 RR ₇₅
1999 RV ₇₅	14.1	0.15	19990919	308.34021	231.66817	187.15922	14.99786	0.1399442	2.5935323	33	1	36 days	0.49			Williams		1999 RV ₇₅
1999 RZ ₇₅	14.5	0.15	19990919	10.91930	150.18596	189.38036	10.19920	0.1157123	2.9697755	31	1	39 days	0.55			Williams		1999 RZ ₇₅
1999 RM ₇₆	16.3	0.15	19990830	348.89552	191.97944	171.34859	5.37374	0.2562140	2.3565328	45	1	46 days	0.50			Williams		1999 RM ₇₆

1999 RR ₇₇	18.2	0.15	19990830	353.06762	191.18566	157.76699	2.14776	0.2292798	2.2790909	11	1	4 days	0.46	Williams	1999 RR ₇₇
1999 RD ₇₈	15.6	0.15	19990919	58.18788	93.85584	166.69775	10.71616	0.2483099	2.6054656	16	1	24 days	0.46	Williams	1999 RD ₇₈
1999 RM ₇₈	15.8	0.15	19990919	303.76912	294.29761	128.28294	1.78837	0.1856254	2.5835601	12	1	27 days	0.53	Williams	1999 RM ₇₈
1999 RV ₇₈	15.9	0.15	19990830	328.06715	59.87036	330.25038	12.95944	0.1823363	2.6749061	32	1	46 days	0.53	Williams	1999 RV ₇₈
1999 RW ₈₀	14.8	0.15	19990830	38.83910	340.20562	321.72389	9.41851	0.0802647	3.1017046	25	1	27 days	0.62	Williams	1999 RW ₈₀
1999 RN ₈₁	15.4	0.15	19990919	18.81404	344.14145	341.82223	3.47589	0.1881892	2.5604188	52	1	32 days	0.44	Williams	1999 RN ₈₁
1999 RR ₈₁	14.3	0.15	19990919	323.04988	212.76243	185.52998	9.79628	0.1007136	3.1045404	20	1	32 days	0.42	Williams	1999 RR ₈₁
1999 RS ₈₁	16.6	0.15	19990830	13.23179	350.18969	336.17656	7.04505	0.1833529	2.2064378	36	1	41 days	0.70	Williams	1999 RS ₈₁
1999 RT ₈₁	15.7	0.15	19990830	327.07182	61.23365	337.74488	9.11870	0.2309382	2.5767054	41	1	46 days	0.60	Williams	1999 RT ₈₁
1999 RV ₈₁	13.3	0.15	19990830	341.12983	154.89413	220.47417	3.80386	0.1531074	3.2054542	43	1	50 days	0.56	Williams	1999 RV ₈₁
1999 RX ₈₁	15.5	0.15	19990919	345.35550	152.12962	227.32316	3.03417	0.2467164	2.7228163	31	1	34 days	0.62	Williams	1999 RX ₈₁
1999 RZ ₈₁	15.3	0.15	19990919	237.14496	290.14417	191.07509	9.82894	0.0386430	2.6482975	13	1	30 days	0.58	Williams	1999 RZ ₈₁
1999 RP ₈₂	14.4	0.15	19990919	15.67718	152.65376	182.17951	18.84408	0.1238578	3.0383771	20	1	30 days	0.71	Williams	1999 RP ₈₂
1999 RT ₈₂	15.6	0.15	19990919	10.45650	59.70674	282.53278	2.87490	0.1073733	2.5892185	13	1	30 days	0.54	Williams	1999 RT ₈₂
1999 RW ₈₂	15.9	0.15	19990919	341.22012	42.51781	346.26051	8.78578	0.2765590	2.7697735	29	1	30 days	0.57	Williams	1999 RW ₈₂
1999 RH ₈₃	15.9	0.15	19990830	317.35467	246.63411	162.56542	13.08217	0.2003081	2.5485571	28	1	25 days	0.47	Williams	1999 RH ₈₃
1999 RJ ₈₃	15.7	0.15	19990919	12.25493	300.63458	33.82472	2.67391	0.2238519	2.3760592	26	1	30 days	0.42	Williams	1999 RJ ₈₃
1999 RV ₈₃	14.8	0.15	19990919	297.91228	320.58026	104.64662	3.94948	0.0761653	2.7418622	14	1	23 days	0.50	Williams	1999 RV ₈₃
1999 RB ₈₄	13.5	0.15	19990810	151.42691	193.92070	359.37115	10.53796	0.0730090	2.9466465	48	1	63 days	0.70	M-v 5 Williams	1999 RB ₈₄
1999 RE ₈₄	15.8	0.15	19990830	303.53159	71.62004	3.34070	3.45746	0.2626415	2.5359592	24	1	24 days	0.48	Williams	1999 RE ₈₄
1999 RN ₈₄	14.1	0.15	19990810	34.58436	30.64362	258.30077	2.54805	0.2264936	2.3068968	68	5	1981–1999	0.44	M-v 1 Williams	36042 1999 RN ₈₄
1999 RS ₈₄	15.2	0.15	19990919	49.15928	90.42203	199.35114	5.25092	0.1830455	2.2978723	19	1	29 days	0.25	Williams	1999 RS ₈₄
1999 RB ₈₅	17.4	0.15	19990919	11.69487	71.42210	268.39021	0.59242	0.1629542	2.3224130	11	1	25 days	0.92	Williams	1999 RB ₈₅
1999 RC ₈₅	17.5	0.15	19990919	344.08685	183.13481	199.15671	1.24028	0.2311387	2.7913571	12	1	37 days	0.39	Marsden	1999 RC ₈₅
1999 RT ₈₅	13.7	0.15	19990919	172.08514	25.29944	159.38731	10.06706	0.0056414	3.0455275	13	1	30 days	0.39	Williams	1999 RT ₈₅
1999 RZ ₈₅	15.9	0.15	19990830	310.98130	270.34418	143.09685	6.32867	0.1486758	2.4725292	25	1	46 days	0.61	Williams	1999 RZ ₈₅
1999 RB ₈₆	16.2	0.15	19990919	14.76551	236.31610	100.57080	3.94687	0.1203369	2.5879082	20	1	32 days	0.57	Williams	1999 RB ₈₆
1999 RJ ₈₆	16.7	0.15	19990830	333.15605	323.72450	63.43000	4.02571	0.1778170	2.4125469	21	1	26 days	0.51	Williams	1999 RJ ₈₆
1999 RS ₈₆	15.2	0.15	19990810	0.81579	325.79919	11.68323	6.38023	0.2802561	2.5644359	35	1	78 days	0.44	M-v 4 Williams	1999 RS ₈₆
1999 RE ₈₇	14.1	0.15	19990919	7.58456	170.63894	176.73424	2.05535	0.1328383	3.1632647	12	1	36 days	0.47	Williams	1999 RE ₈₇
1999 RF ₈₇	16.4	0.15	19990830	339.16155	29.95819	352.85571	12.67263	0.2267170	2.5783616	29	1	46 days	0.60	Williams	1999 RF ₈₇
1999 RM ₈₇	14.0	0.15	19990830	275.06908	219.91012	236.63371	0.25686	0.1431560	3.1849935	37	1	54 days	0.87	Williams	1999 RM ₈₇
1999 RT ₈₇	15.3	0.15	19990830	324.49114	242.49429	156.56386	5.36233	0.1529598	2.5589892	30	1	46 days	0.52	Williams	1999 RT ₈₇
1999 RX ₈₇	14.9	0.15	19990919	319.56613	35.28940	9.35961	4.35148	0.0707986	2.7766105	22	1	30 days	0.42	Williams	1999 RX ₈₇
1999 RK ₈₈	14.2	0.15	19990810	60.10077	8.87582	280.33862	0.86695	0.0307043	2.9080505	41	2	1992–1999	0.58	M-v 5 Williams	36042 1999 RK ₈₈
1999 RR ₈₈	13.2	0.15	19990919	298.78691	101.26996	336.33202	4.55891	0.1500064	3.1899151	25	1	30 days	0.43	Williams	1999 RR ₈₈
1999 RW ₈₈	15.3	0.15	19990919	313.39290	209.58224	207.06664	2.44303	0.1222253	2.1646512	29	1	35 days	0.58	Williams	1999 RW ₈₈
1999 RB ₈₉	13.5	0.15	19990810	285.57860	259.96728	183.05814	13.59384	0.1433551	2.8861369	32	1	76 days	0.43	M-v 5 Williams	1999 RB ₈₉
1999 RJ ₈₉	14.7	0.15	19990830	271.68530	92.48711	1.22856	9.58422	0.0725590	3.0526776	25	1	41 days	0.48	Williams	1999 RJ ₈₉
1999 RK ₈₉	15.4	0.15	19990919	349.05612	202.60174	170.83137	6.03315	0.1117638	2.4576221	24	1	30 days	0.33	Williams	1999 RK ₈₉
1999 RL ₈₉	15.2	0.15	19990919	177.53143	178.30910	4.08045	2.55964	0.1186259	2.4407152	26	1	31 days	0.47	Williams	1999 RL ₈₉
1999 RH ₉₀	15.7	0.15	19990919	358.89981	216.21085	143.10755	7.22042	0.0890048	2.3306052	14	1	23 days	0.43	Williams	1999 RH ₉₀
1999 RN ₉₁	16.2	0.15	19990919	326.94654	264.16862	144.89219	2.65137	0.2050916	2.3810914	24	1	42 days	0.62	Williams	1999 RN ₉₁
1999 RQ ₉₁	15.3	0.15	19990919	299.36165	71.55852	4.59035	12.67118	0.1345955	2.7234109	16	1	30 days	0.43	Williams	1999 RQ ₉₁
1999 RT ₉₁	16.5	0.15	19990919	333.27401	49.50672	351.26617	2.05944	0.2121151	2.2372751	33	1	34 days	0.51	Williams	1999 RT ₉₁
1999 RW ₉₁	16.5	0.15	19990919	0.37493	167.02634	193.46534	0.56861	0.1920545	2.5255252	23	1	30 days	0.53	Williams	1999 RW ₉₁
1999 RX ₉₁	14.9	0.15	19990919	3.01727	172.98171	184.21383	10.23817	0.1874376	2.9919523	15	1	30 days	0.38	Williams	1999 RX ₉₁
1999 RZ ₉₁	16.3	0.15	19990919	336.55346	98.87700	303.28747	0.73340	0.0797546	2.3648858	19	1	29 days	0.27	Williams	1999 RZ ₉₁
1999 RB ₉₂	15.9	0.15	19990919	330.79954	40.98113	353.10126	4.33141	0.2653212	2.1537145	18	1	29 days	0.41	Williams	1999 RB ₉₂
1999 RC ₉₂	15.4	0.15	19990810	339.41295	27.02097	353.06575	6.21574	0.2628088	2.5366771	37	1	83 days	0.47	M-v 4 Williams	1999 RC ₉₂
1999 RH ₉₂	13.7	0.15	19990919	19.39784	7.81820	335.02378	1.39342	0.0258069	2.9524278	29	1	36 days	0.74	Williams	1999 RH ₉₂
1999 RJ ₉₂	16.1	0.15	19990919	301.40538	76.94882	356.57563	7.38833	0.1279338	2.2021553	14	1	29 days	0.54	Williams	1999 RJ ₉₂
1999 RP ₉₂	15.4	0.15	19990919	314.10013	53.61393	8.46983	5.87595	0.1545308	2.3356174	33	1	36 days	0.34	Williams	1999 RP ₉₂

1999 RQ ₉₂	15.7	0.15	19990919	17.16812	330.41471	1.74254	7.51100	0.2293052	2.2253864	20	1	29 days	0.25	Williams	1999 RQ ₉₂
1999 RV ₉₂	16.3	0.15	19990919	307.82499	54.63817	15.89128	5.83919	0.1704417	2.4085105	16	1	30 days	0.54	Williams	1999 RV ₉₂
1999 RX ₉₂	15.5	0.15	19990919	336.17027	16.41628	14.41768	5.24855	0.1107570	2.4433672	24	1	30 days	0.39	Williams	1999 RX ₉₂
1999 RC ₉₃	14.4	0.15	19990919	337.15382	224.49097	165.68985	9.62865	0.1018008	3.0834478	10	1	30 days	0.45	Williams	1999 RC ₉₃
1999 RF ₉₃	14.8	0.15	19990830	320.61495	359.33607	47.06070	3.75822	0.1148452	3.0464916	27	1	46 days	0.50	Williams	1999 RF ₉₃
1999 RV ₉₃	16.7	0.15	19990830	0.03536	342.35502	8.53950	12.62604	0.2044448	2.3596957	28	1	46 days	0.61	Williams	1999 RV ₉₃
1999 RH ₉₄	16.6	0.15	19990919	356.57814	262.23113	103.88429	2.93463	0.2170271	2.3481964	24	1	35 days	0.49	Williams	1999 RH ₉₄
1999 RP ₉₄	14.4	0.15	19990919	7.15102	253.80888	98.48838	3.07071	0.1923954	3.1671781	20	1	30 days	0.52	Williams	1999 RP ₉₄
1999 RF ₉₅	16.4	0.15	19990919	311.71231	212.98610	208.85754	2.73237	0.1145493	2.1970025	28	1	30 days	0.53	Williams	1999 RF ₉₅
1999 RH ₉₅	17.1	0.15	19990919	10.12189	168.43070	173.97825	2.32328	0.2944534	2.2630298	38	1	32 days	0.58	Williams	1999 RH ₉₅
1999 RO ₉₅	15.0	0.15	19990919	20.96120	185.52148	145.26099	5.29293	0.2086869	2.8094922	20	1	30 days	0.44	Williams	1999 RO ₉₅
1999 RR ₉₅	15.9	0.15	19990919	0.08554	290.92589	69.97349	3.29095	0.2236015	2.3783065	23	1	32 days	0.40	Williams	1999 RR ₉₅
1999 RX ₉₅	14.6	0.15	19990830	350.52819	206.20957	162.88203	14.56382	0.1636405	2.5470823	20	1	41 days	0.39	Williams	1999 RX ₉₅
1999 RY ₉₅	14.1	0.15	19990919	10.10784	247.28086	102.51280	4.86524	0.1452851	3.1829168	18	1	27 days	0.45	Williams	1999 RY ₉₅
1999 RZ ₉₅	13.8	0.15	19990919	330.34365	4.77432	35.09117	9.38924	0.1060672	3.1676154	20	1	30 days	0.48	Williams	1999 RZ ₉₅
1999 RD ₉₆	16.1	0.15	19990919	354.70523	356.95284	12.02898	14.40472	0.0849568	2.3686805	33	1	32 days	0.54	Williams	1999 RD ₉₆
1999 RM ₉₆	14.2	0.15	19990919	352.34698	274.65234	102.52989	2.27583	0.1886528	3.1387239	32	1	30 days	0.59	Williams	1999 RM ₉₆
1999 RF ₉₇	16.2	0.15	19990830	323.85489	358.16042	42.00168	1.72399	0.1926036	2.3724953	25	1	46 days	0.77	Williams	1999 RF ₉₇
1999 RM ₉₇	16.5	0.15	19990919	332.70377	264.63647	128.96944	5.82234	0.1342902	2.5906995	14	1	23 days	0.68	Williams	1999 RM ₉₇
1999 RR ₉₇	16.3	0.15	19990919	334.97505	194.06980	196.62899	0.57803	0.0872952	2.3839709	26	1	30 days	0.62	Williams	1999 RR ₉₇
1999 RX ₉₇	15.8	0.15	19990919	7.89475	181.71099	170.81693	8.86941	0.1512269	2.7982901	14	1	30 days	1.14	Williams	1999 RX ₉₇
1999 RY ₉₇	15.4	0.15	19990919	350.18147	206.05278	169.27222	4.17865	0.1126669	2.8026476	14	1	34 days	0.72	Williams	1999 RY ₉₇
1999 RH ₉₈	14.6	0.15	19990919	12.93659	260.06638	86.04172	2.59568	0.1995683	3.2004947	27	1	30 days	0.67	Williams	1999 RH ₉₈
1999 RM ₉₈	15.0	0.15	19990810	291.33759	262.30609	174.11468	3.45293	0.1503778	2.6303774	44	2	1997–1999	0.56	M-v 5 Williams	36043 1999 RM ₉₈
1999 RQ ₉₈	16.1	0.15	19990919	3.14290	189.49202	170.10051	9.04387	0.2817229	2.7895063	23	1	30 days	0.59	Williams	1999 RQ ₉₈
1999 RW ₉₈	13.4	0.15	19990919	346.19307	212.76772	180.57061	24.82659	0.2141273	3.1570017	20	1	31 days	0.49	Williams	1999 RW ₉₈
1999 RX ₉₈	14.5	0.15	19990919	345.58838	221.60464	169.52405	13.62820	0.2178153	2.4547976	24	1	31 days	0.41	Williams	1999 RX ₉₈
1999 RY ₉₈	15.4	0.15	19990919	11.32554	338.96717	14.42837	25.89011	0.1195772	2.6872572	35	1	42 days	0.48	Williams	1999 RY ₉₈
1999 RB ₉₉	14.4	0.15	19990919	7.69715	194.55736	168.56950	12.57231	0.1534669	3.1915038	19	1	25 days	0.58	Williams	1999 RB ₉₉
1999 RS ₁₀₀	13.4	0.15	19990810	20.85825	66.52304	236.11929	9.33704	0.0810352	2.9744851	39	2	1998–1999	0.58	M-v 3 Williams	36043 1999 RS ₁₀₀
1999 RW ₁₀₀	13.4	0.15	19990810	4.76882	40.26050	279.40005	11.33657	0.3107308	3.0976938	26	1	80 days	0.52	M-v 4 Williams	36110 1999 RW ₁₀₀
1999 RY ₁₀₀	14.6	0.15	19990919	258.55831	106.96130	350.81157	8.46577	0.1157912	2.7390274	20	1	23 days	0.76	Williams	1999 RY ₁₀₀
1999 RQ ₁₀₁	14.7	0.15	19990810	330.03856	136.62954	238.50851	10.99687	0.2085694	2.6167886	28	1	74 days	0.62	M-v 4 Williams	1999 RQ ₁₀₁
1999 RR ₁₀₁	14.6	0.15	19990919	43.55690	107.72814	180.91437	6.26507	0.1275129	2.8247724	18	1	28 days	0.48	Williams	1999 RR ₁₀₁
1999 RD ₁₀₂	13.1	0.15	19990810	47.47820	28.21131	247.59587	10.85042	0.1248117	3.0306019	64	3	1994–1999	0.70	M-v 2 Williams	36043 1999 RD ₁₀₂
1999 RE ₁₀₂	12.8	0.15	19990810	336.70723	164.44841	199.63736	16.41639	0.1360754	3.0978412	60	3	1983–1999	0.58	M-v 3 Williams	36043 1999 RE ₁₀₂
1999 RF ₁₀₂	12.6	0.15	19990810	255.34390	159.36741	293.41005	14.26058	0.1046966	3.0197602	41	1	87 days	0.53	M-v 4 Williams	1999 RF ₁₀₂
1999 RN ₁₀₂	14.8	0.15	19990810	353.00762	106.07685	236.32788	7.02455	0.2713902	2.6899951	42	1	89 days	0.57	M-v 4 Williams	36110 1999 RN ₁₀₂
1999 RQ ₁₀₂	14.6	0.15	19990810	326.32601	66.17603	307.67242	12.54991	0.0817646	2.6617144	31	1	87 days	0.53	M-v 4 Williams	1999 RQ ₁₀₂
1999 RR ₁₀₂	13.9	0.15	19990810	309.71094	114.12046	279.34591	8.42764	0.0840450	2.9872277	37	1	87 days	0.54	M-v 4 Williams	1999 RR ₁₀₂
1999 RS ₁₀₂	13.9	0.15	19990810	350.41235	77.04339	269.76880	8.90561	0.0906097	3.0918981	44	1	89 days	0.50	M-v 4 Williams	36110 1999 RS ₁₀₂
1999 RT ₁₀₂	14.5	0.15	19990810	38.54465	36.73900	242.13879	6.84363	0.1698309	2.2375838	47	1	87 days	0.45	M-v 4 Williams	1999 RT ₁₀₂
1999 RV ₁₀₂	14.8	0.15	19990810	357.33459	59.05738	279.47754	7.69315	0.2495832	3.0758565	40	1	89 days	0.52	M-v 4 Williams	36110 1999 RV ₁₀₂
1999 RZ ₁₀₂	15.1	0.15	19990810	323.87894	89.54630	298.26585	7.27953	0.2319174	2.3571503	40	1	60 days	0.44	M-v 4 Williams	1999 RZ ₁₀₂
1999 RB ₁₀₃	14.8	0.15	19990830	339.52899	157.52397	214.60885	15.95186	0.2342426	3.0424388	30	1	54 days	0.33	Williams	1999 RB ₁₀₃
1999 RD ₁₀₃	16.1	0.15	19990919	2.89739	130.02740	211.98064	12.39975	0.2182489	2.6312307	20	1	29 days	0.50	Williams	1999 RD ₁₀₃
1999 RE ₁₀₃	15.3	0.15	19990919	351.96024	61.94130	305.46678	14.51569	0.3509979	2.9800614	24	1	26 days	0.59	Williams	1999 RE ₁₀₃
1999 RF ₁₀₃	15.7	0.15	19990810	351.11462	52.56706	296.00514	11.55778	0.2721788	2.5712226	28	1	84 days	0.60	M-v 4 Williams	1999 RF ₁₀₃
1999 RG ₁₀₃	14.3	0.15	19990810	335.25889	150.48824	218.71633	12.72006	0.1777398	2.5525578	29	1	74 days	0.40	M-v 4 Williams	1999 RG ₁₀₃
1999 RH ₁₀₃	14.8	0.15	19990810	319.65782	179.78428	214.65935	12.22596	0.2195651	2.4307757	29	1	84 days	0.42	M-v 4 Williams	1999 RH ₁₀₃
1999 RL ₁₀₃	14.5	0.15	19990810	23.83893	56.95901	248.42174	6.00640	0.1107377	2.4131760	40	2	1998–1999	0.55	M-v 4 Williams	36043 1999 RL ₁₀₃
1999 RM ₁₀₃	15.0	0.15	19990919	340.09876	86.45828	287.54632	6.08378	0.1306935	2.3433653	30	1	24 days	0.42	Williams	1999 RM ₁₀₃
1999 RO ₁₀₃	14.7	0.15	19990919	38.35275	99.78170	200.34331	10.37620	0.0867049	2.9792543	33	1	27 days	0.44	Williams	1999 RO ₁₀₃

1999 RT ₁₀₃	14.7	0.15	19990810	329.23960	199.72526	185.79536	13.39278	0.2478014	2.5739538	53	1	95 days	0.49	M-v	4	Williams	36110	1999 RT ₁₀₃
1999 RU ₁₀₃	17.9	0.15	19990919	353.29976	75.97672	293.46420	4.60583	0.3980859	2.6386933	18	1	27 days	0.43			Williams		1999 RU ₁₀₃
1999 RV ₁₀₃	14.0	0.15	19990810	41.55996	11.37898	275.66077	5.73706	0.1136553	2.3699488	44	2	1998–1999	0.47	M-v	4	Williams	36044	1999 RV ₁₀₃
1999 RF ₁₀₄	16.0	0.15	19990919	357.99572	165.38634	192.87145	6.63951	0.1558454	2.4271477	21	1	31 days	0.42			Williams		1999 RF ₁₀₄
1999 RJ ₁₀₄	14.9	0.15	19990810	2.93000	35.41365	300.54194	6.25322	0.1448681	2.3541796	56	2	1998–1999	0.55	M-v	3	Williams	36044	1999 RJ ₁₀₄
1999 RM ₁₀₄	15.1	0.15	19990830	339.11127	139.02305	230.49133	8.59035	0.1373677	3.1187412	14	1	25 days	0.51			Williams		1999 RM ₁₀₄
1999 RE ₁₀₅	17.0	0.15	19990919	4.59604	341.61417	21.04528	5.58165	0.1624500	2.2797625	18	1	29 days	0.45			Williams		1999 RE ₁₀₅
1999 RH ₁₀₅	13.8	0.15	19990919	30.89840	291.15033	46.68718	3.29115	0.0670816	2.7140097	35	1	29 days	0.40			Williams		1999 RH ₁₀₅
1999 RJ ₁₀₅	15.6	0.15	19990919	354.09612	359.59373	18.72818	8.21290	0.1216665	2.3812164	30	1	43 days	0.36			Williams		1999 RJ ₁₀₅
1999 RO ₁₀₅	14.6	0.15	19990810	91.67676	357.77911	256.48312	5.42014	0.0874196	2.3930734	32	1	78 days	0.44	M-v	5	Williams		1999 RO ₁₀₅
1999 RT ₁₀₅	13.3	0.15	19990810	24.40385	357.19788	323.72190	14.64630	0.0654230	3.0498206	33	1	73 days	0.51	M-v	4	Williams		1999 RT ₁₀₅
1999 RU ₁₀₅	14.3	0.15	19990919	325.41928	113.32305	285.26316	12.95141	0.0966847	2.5960667	20	1	25 days	0.30			Williams		1999 RU ₁₀₅
1999 RV ₁₀₅	14.4	0.15	19990919	338.16971	161.24864	224.42224	14.49830	0.1356881	2.6657103	20	1	25 days	0.34			Williams		1999 RV ₁₀₅
1999 RW ₁₀₅	16.7	0.15	19990919	359.95869	49.27321	308.81982	12.08392	0.2877488	2.6309274	18	1	25 days	0.67			Williams		1999 RW ₁₀₅
1999 RC ₁₀₆	15.0	0.15	19990810	39.76083	1.92483	281.81557	5.01568	0.1937883	2.1956617	43	1	76 days	0.43	M-v	4	Williams		1999 RC ₁₀₆
1999 RE ₁₀₆	14.0	0.15	19990810	345.12501	157.87951	205.29720	8.59958	0.1669491	2.8049842	40	1	76 days	0.41	M-v	4	Williams		1999 RE ₁₀₆
1999 RO ₁₀₆	14.4	0.15	19990919	53.40443	357.90364	299.02509	8.07442	0.0862809	3.0959910	26	1	34 days	0.43			Marsden		1999 RO ₁₀₆
1999 RU ₁₀₆	15.6	0.15	19990919	55.75576	330.29071	316.52788	13.84646	0.1851235	2.6400287	22	1	25 days	0.46			Williams		1999 RU ₁₀₆
1999 RG ₁₀₇	14.7	0.15	19990919	301.56429	132.62177	306.25131	1.78935	0.1596454	2.4663618	18	1	28 days	0.41			Williams		1999 RG ₁₀₇
1999 RL ₁₀₇	13.9	0.15	19990919	11.62642	157.49328	200.22480	9.42728	0.0835869	3.1886884	23	1	30 days	0.52			Williams		1999 RL ₁₀₇
1999 RM ₁₀₇	13.5	0.15	19990919	312.75818	136.18382	297.26139	1.93400	0.1505871	3.1721293	17	1	28 days	0.62			Williams		1999 RM ₁₀₇
1999 RO ₁₀₇	13.9	0.15	19990919	334.97985	145.10201	247.78131	8.45488	0.0966370	3.1641977	22	1	26 days	0.66			Williams		1999 RO ₁₀₇
1999 RY ₁₀₇	14.6	0.15	19990919	335.55069	143.75702	239.14011	5.66429	0.1258309	2.9864021	27	1	33 days	0.46			Williams		1999 RY ₁₀₇
1999 RC ₁₀₈	14.6	0.15	19990919	322.84798	177.98177	219.39040	10.09111	0.0868284	3.0688441	24	1	29 days	0.54			Williams		1999 RC ₁₀₈
1999 RD ₁₀₈	15.5	0.15	19990919	68.94843	55.30522	206.79546	11.38449	0.1975780	2.5013085	24	1	30 days	0.64			Williams		1999 RD ₁₀₈
1999 RG ₁₀₈	15.4	0.15	19990919	25.93176	89.60930	229.63274	10.45928	0.1421256	3.0449942	21	1	27 days	0.57			Williams		1999 RG ₁₀₈
1999 RO ₁₀₈	16.8	0.15	19990919	332.56288	150.48340	257.52563	5.54379	0.3241031	2.6353105	26	1	33 days	0.62			Williams		1999 RO ₁₀₈
1999 RP ₁₀₈	13.8	0.15	19990810	325.25971	89.49653	298.95451	8.59965	0.1003473	3.0164996	29	1	73 days	0.61	M-v	4	Williams		1999 RP ₁₀₈
1999 RT ₁₀₈	16.6	0.15	19990919	2.00078	77.84943	275.14179	5.32554	0.1296862	2.2183810	28	1	27 days	0.51			Williams		1999 RT ₁₀₈
1999 RX ₁₀₈	15.3	0.15	19990919	9.87694	114.84509	233.09080	11.49097	0.1382944	2.6345946	22	1	25 days	0.40			Williams		1999 RX ₁₀₈
1999 RD ₁₀₉	15.9	0.15	19990810	1.21355	157.24323	191.53936	8.00036	0.3049516	2.7528070	27	1	76 days	0.61	M-v	4	Williams		1999 RD ₁₀₉
1999 RH ₁₀₉	14.6	0.15	19990919	15.01820	123.84120	219.23785	8.79755	0.1013147	3.0738697	17	1	26 days	0.36			Williams		1999 RH ₁₀₉
1999 RJ ₁₀₉	14.9	0.15	19990810	1.81785	12.29594	329.34288	9.06341	0.1966801	2.3623397	40	1	96 days	0.41	M-v	3	Williams	36111	1999 RJ ₁₀₉
1999 RN ₁₀₉	16.2	0.15	19990919	344.23204	76.96316	304.42529	5.68478	0.1216222	2.2934645	24	1	26 days	0.37			Williams		1999 RN ₁₀₉
1999 RQ ₁₀₉	14.7	0.15	19990919	9.65259	30.74955	318.63061	12.15801	0.2487223	2.6073582	20	1	25 days	0.27			Williams		1999 RQ ₁₀₉
1999 RR ₁₀₉	14.5	0.15	19990810	336.45565	52.72667	334.88852	10.59406	0.1843269	2.7522650	40	1	78 days	0.37	M-v	3	Williams		1999 RR ₁₀₉
1999 RS ₁₀₉	16.8	0.15	19990919	18.19175	34.91672	301.88241	4.77116	0.1920861	2.2853956	27	1	31 days	0.64			Williams		1999 RS ₁₀₉
1999 RU ₁₀₉	16.4	0.15	19990919	334.17102	169.80996	227.06396	5.87362	0.1117900	2.3736426	31	1	31 days	0.55			Williams		1999 RU ₁₀₉
1999 RV ₁₀₉	15.4	0.15	19990919	93.23098	307.94217	313.36659	5.94795	0.1015408	2.1474294	38	1	31 days	0.48			Williams		1999 RV ₁₀₉
1999 RY ₁₀₉	14.6	0.15	19990919	345.12783	88.92668	301.41573	9.62351	0.1054979	3.1499659	21	1	25 days	0.47			Williams		1999 RY ₁₀₉
1999 RZ ₁₀₉	16.0	0.15	19990919	0.46283	96.74541	270.03086	6.42472	0.1352853	2.1990074	20	1	25 days	0.40			Williams		1999 RZ ₁₀₉
1999 RC ₁₁₀	16.3	0.15	19990919	352.81613	59.23486	321.40147	10.55941	0.1984862	2.6440268	23	1	25 days	0.65			Williams		1999 RC ₁₁₀
1999 RF ₁₁₀	13.8	0.15	19990919	314.88294	126.74161	298.29471	8.34469	0.0750635	3.0329964	20	1	25 days	0.44			Williams		1999 RF ₁₁₀
1999 RM ₁₁₀	15.6	0.15	19990919	351.61716	69.36963	317.05884	13.50984	0.2597877	2.6503669	18	1	27 days	0.35			Williams		1999 RM ₁₁₀
1999 RP ₁₁₀	13.8	0.15	19990919	313.62809	119.07145	314.35221	9.76064	0.1113197	3.0107181	18	1	25 days	0.47			Williams		1999 RP ₁₁₀
1999 RB ₁₁₁	14.3	0.15	19990919	227.32501	284.83603	220.94908	8.22697	0.1469608	2.4031994	21	1	26 days	0.42			Williams		1999 RB ₁₁₁
1999 RR ₁₁₃	13.4	0.15	19990919	320.35660	102.13124	303.35117	13.41430	0.2046673	2.5524318	31	1	42 days	0.24			Williams		1999 RR ₁₁₃
1999 RC ₁₁₄	13.8	0.15	19990919	52.85352	34.90279	252.24339	7.72055	0.0599993	3.0457598	33	1	27 days	0.55			Williams		1999 RC ₁₁₄
1999 RZ ₁₁₄	17.1	0.15	19990830	341.05197	108.59222	260.12210	4.26602	0.1736131	2.2969111	29	1	26 days	0.60			Williams		1999 RZ ₁₁₄
1999 RC ₁₁₅	14.6	0.15	19990810	246.01964	309.59625	145.03636	8.73344	0.1168841	2.3915526	57	3	1990–1999	0.73	M-v	3	Williams	36044	1999 RC ₁₁₅
1999 RG ₁₁₅	15.5	0.15	19990810	354.34237	188.87243	147.09606	5.52420	0.2923322	2.6194873	56	3	1997–1999	0.45	M-v	2	Williams	36044	1999 RG ₁₁₅
1999 RJ ₁₁₅	14.5	0.15	19990810	16.55856	157.48180	149.71618	6.91489	0.0859229	2.4820427	49	2	1998–1999	0.47	M-v	3	Williams	36044	1999 RJ ₁₁₅
1999 RM ₁₁₅	15.2	0.15	19990830	19.64802	158.76024	149.67023	11.27985	0.1160869	2.5818534	39	1	56 days	0.69			Williams		1999 RM ₁₁₅

1999 RS ₁₁₅	14.8	0.15	19990830	32.39161	129.95809	156.44035	6.22211	0.1526882	2.2462020	25	1	26 days	0.43		Williams	1999 RS ₁₁₅	
1999 RW ₁₁₅	15.8	0.15	19990810	346.46889	173.46272	167.76246	4.67489	0.2405919	2.3189326	40	1	98 days	0.52	M-v	4	Williams	1999 RW ₁₁₅
1999 RX ₁₁₅	15.8	0.15	19990810	3.81386	149.57059	163.65372	4.15809	0.1910499	2.2860686	39	1	75 days	0.49	M-v	4	Williams	1999 RX ₁₁₅
1999 RA ₁₁₆	14.3	0.15	19990810	1.69899	160.17746	155.60022	14.40662	0.1999321	2.6599004	51	1	138 days	0.62	M-v	3	Williams	1999 RA ₁₁₆
1999 RW ₁₁₆	15.1	0.15	19990810	18.02385	129.66346	154.90464	8.33930	0.2732541	2.7297276	38	1	94 days	0.48	M-v	4	Williams	36111 1999 RW ₁₁₆
1999 RX ₁₁₆	14.8	0.15	19990810	340.64626	194.36738	151.93931	14.30239	0.1885000	2.5440964	47	1	94 days	0.48	M-v	4	Williams	36111 1999 RX ₁₁₆
1999 RX ₁₁₇	14.6	0.15	19990810	357.29393	62.10011	263.68607	7.38443	0.2397021	2.5732118	29	1	99 days	0.44	M-v	4	Williams	1999 RX ₁₁₇
1999 RA ₁₁₈	15.7	0.15	19990810	348.95201	51.07497	284.56399	6.24965	0.1487288	2.2814909	30	1	87 days	0.58	M-v	4	Williams	36111 1999 RA ₁₁₈
1999 RE ₁₁₈	15.1	0.15	19990810	6.67889	78.55906	231.97761	4.05002	0.1921833	2.3077332	57	2	1992–1999	0.59	M-v	3	Williams	36044 1999 RE ₁₁₈
1999 RH ₁₁₈	16.2	0.15	19990919	13.27922	132.98692	183.51570	2.99524	0.1929342	2.4336917	25	1	38 days	0.43			Williams	1999 RH ₁₁₈
1999 RL ₁₁₉	14.6	0.15	19990810	324.18900	65.24355	314.06929	14.05500	0.2335953	2.7143672	32	1	105 days	0.54	M-v	4	Williams	36111 1999 RL ₁₁₉
1999 RY ₁₁₉	15.2	0.15	19990810	355.49697	174.12695	152.20962	7.09894	0.1328090	2.3161446	71	4	1995–1999	0.60	M-v	1	Williams	36045 1999 RY ₁₁₉
1999 RH ₁₂₀	16.5	0.15	19990830	350.11516	174.12954	173.20118	2.62824	0.2356851	2.3308785	22	1	24 days	0.50			Williams	1999 RH ₁₂₀
1999 RP ₁₂₀	14.9	0.15	19990810	346.87854	24.96806	320.74906	13.21041	0.2501586	2.6593086	31	1	75 days	0.44	M-v	4	Williams	1999 RP ₁₂₀
1999 RX ₁₂₁	16.9	0.15	19990810	355.01375	140.93400	187.45021	6.75509	0.2595522	2.2808681	19	1	69 days	0.34	M-v	4	Williams	1999 RX ₁₂₁
1999 RA ₁₂₂	15.0	0.15	19990810	83.06929	270.62259	318.82087	5.99778	0.0887871	2.3741216	46	3	1994–1999	0.56	M-v	3	Williams	36045 1999 RA ₁₂₂
1999 RA ₁₂₃	16.2	0.15	19990919	34.31976	21.46587	286.38981	5.14301	0.1147597	2.3404562	28	1	32 days	0.60			Williams	1999 RA ₁₂₃
1999 RE ₁₂₃	13.8	0.15	19990810	82.03666	322.51886	287.43013	6.25339	0.0764531	2.3527470	49	2	1998–1999	0.46	M-v	3	Williams	36045 1999 RE ₁₂₃
1999 RG ₁₂₃	15.2	0.15	19990810	301.16240	163.95996	245.16681	6.37420	0.0968045	2.3731622	39	2	1992–1999	0.47	M-v	5	Williams	36045 1999 RG ₁₂₃
1999 RH ₁₂₃	13.9	0.15	19990919	219.16661	212.45956	282.07613	8.07608	0.0229734	3.0857418	23	1	26 days	0.51			Williams	1999 RH ₁₂₃
1999 RN ₁₂₃	13.3	0.15	19990810	331.54766	70.50439	308.82921	10.99150	0.0768161	2.9423265	31	1	73 days	0.57	M-v	4	Williams	1999 RN ₁₂₃
1999 RO ₁₂₃	16.7	0.15	19990919	3.81267	112.31543	237.24194	7.45587	0.1394176	2.3131104	23	1	27 days	0.59			Williams	1999 RO ₁₂₃
1999 RQ ₁₂₃	15.7	0.15	19990919	350.33815	151.44219	223.56156	8.17950	0.3255822	2.7245791	34	1	27 days	0.37			Williams	1999 RQ ₁₂₃
1999 RR ₁₂₃	13.0	0.15	19990919	179.86107	305.57559	229.47006	10.74966	0.0720892	3.1680175	36	1	27 days	0.38			Williams	1999 RR ₁₂₃
1999 RY ₁₂₃	14.5	0.15	19990919	44.15911	4.55090	301.80607	13.52581	0.0857424	2.7547949	18	1	24 days	0.45			Williams	1999 RY ₁₂₃
1999 RZ ₁₂₃	13.5	0.15	19990810	142.41218	289.22001	269.95943	12.46783	0.1609999	2.7040626	53	2	1998–1999	0.62	M-v	4	Williams	36045 1999 RZ ₁₂₃
1999 RB ₁₂₄	14.7	0.15	19990810	51.25259	49.81405	220.58923	7.94591	0.1957910	2.2342573	53	2	1996–1999	0.49	M-v	4	Williams	36045 1999 RB ₁₂₄
1999 RG ₁₂₄	14.3	0.15	19990919	355.24120	58.12537	306.53922	8.99574	0.1325402	2.5834668	23	1	26 days	0.36			Williams	1999 RG ₁₂₄
1999 RH ₁₂₄	14.1	0.15	19990919	22.37547	13.66812	312.87388	16.49656	0.2112355	3.1918273	17	1	24 days	0.33			Williams	1999 RH ₁₂₄
1999 RL ₁₂₄	13.6	0.15	19990810	337.21333	52.23937	327.80921	12.35912	0.2022376	2.6395716	44	1	86 days	0.37	M-v	3	Williams	1999 RL ₁₂₄
1999 RN ₁₂₄	15.7	0.15	19990919	15.49977	80.18400	257.69451	5.26052	0.1366993	2.3319055	14	1	25 days	0.35			Williams	1999 RN ₁₂₄
1999 RO ₁₂₄	14.6	0.15	19990919	343.74302	173.10340	207.83652	10.99999	0.1547475	2.7343404	25	1	29 days	0.52			Williams	1999 RO ₁₂₄
1999 RQ ₁₂₄	15.4	0.15	19990919	0.57411	41.24282	318.83814	12.22394	0.1689476	2.6570438	22	1	24 days	0.49			Williams	1999 RQ ₁₂₄
1999 RD ₁₂₅	15.3	0.15	19990919	45.68986	306.46937	339.86371	10.71456	0.1556079	2.6757230	23	1	29 days	0.44			Williams	1999 RD ₁₂₅
1999 RL ₁₂₅	13.7	0.15	19990919	9.75750	358.99067	333.09107	15.92375	0.0853469	3.1492047	31	1	30 days	0.60			Williams	1999 RL ₁₂₅
1999 RY ₁₂₅	14.2	0.15	19990830	45.35290	306.88950	325.10617	15.86317	0.1941867	3.1210917	29	1	41 days	0.52			Williams	1999 RY ₁₂₅
1999 RA ₁₂₈	15.0	0.15	19990810	6.16472	135.00103	182.09264	1.67068	0.0787688	2.6461345	45	3	1991–1999	0.73	M-v	4	Williams	36046 1999 RA ₁₂₈
1999 RT ₁₂₈	14.0	0.15	19990810	354.12656	152.28772	183.41876	6.91818	0.2768438	2.7598115	58	3	1981–1999	0.78	M-v	3	Williams	36046 1999 RT ₁₂₈
1999 RB ₁₂₉	13.3	0.15	19990830	5.38694	168.77345	156.43047	23.20644	0.0823053	3.1655404	39	1	46 days	0.36			Williams	1999 RB ₁₂₉
1999 RC ₁₂₉	12.2	0.15	19990830	222.22671	153.44427	325.79337	12.45346	0.1413527	3.0272158	34	1	50 days	0.81			Williams	1999 RC ₁₂₉
1999 RM ₁₂₉	15.7	0.15	19990830	332.64484	35.13052	340.42620	4.99945	0.2204705	2.3432665	33	1	57 days	0.38			Williams	1999 RM ₁₂₉
1999 RY ₁₂₉	14.2	0.15	19990830	352.25670	260.18115	83.11150	2.31520	0.1689111	3.1178384	25	1	53 days	0.52			Williams	1999 RY ₁₂₉
1999 RC ₁₃₀	15.2	0.15	19990810	47.15941	118.39221	150.81302	6.93895	0.1156141	2.4307149	47	3	1994–1999	0.59	M-v	3	Williams	36046 1999 RC ₁₃₀
1999 RD ₁₃₀	14.4	0.15	19990830	344.59914	16.81135	335.79365	11.23330	0.1282336	3.0379848	27	1	57 days	0.53			Williams	1999 RD ₁₃₀
1999 RT ₁₃₀	14.9	0.15	19990919	6.45301	163.12910	167.95897	12.11030	0.1839029	2.6719902	28	1	27 days	0.47			Williams	1999 RT ₁₃₀
1999 RF ₁₃₁	15.0	0.15	19990919	4.18885	125.14023	208.99549	8.36384	0.1674313	2.7661179	25	1	24 days	0.39			Williams	1999 RF ₁₃₁
1999 RM ₁₃₁	16.8	0.15	19990919	341.33917	135.89553	237.76049	6.36698	0.2082410	2.2044132	38	1	33 days	0.64			Williams	1999 RM ₁₃₁
1999 RT ₁₃₁	15.0	0.15	19990919	277.35425	138.63803	301.73411	10.00267	0.1571818	2.6017080	14	1	23 days	0.36			Williams	1999 RT ₁₃₁
1999 RV ₁₃₂	15.3	0.15	19990919	20.04645	111.66288	204.85302	5.54688	0.1461558	2.2729292	18	1	23 days	0.47			Williams	1999 RV ₁₃₂
1999 RB ₁₃₃	14.4	0.15	19990919	302.11802	199.40805	232.13218	6.18092	0.2842469	2.6285413	26	1	24 days	0.30			Williams	1999 RB ₁₃₃
1999 RE ₁₃₃	15.9	0.15	19990810	36.01176	6.41954	266.21597	5.78148	0.2355980	2.3339337	31	1	82 days	0.56	M-v	4	Williams	1999 RE ₁₃₃
1999 RG ₁₃₃	13.7	0.15	19990830	162.57813	294.14580	237.80263	7.66925	0.0580375	3.1850323	26	1	28 days	0.82			Williams	1999 RG ₁₃₃
1999 RH ₁₃₃	14.4	0.15	19990830	41.81692	20.44227	264.61907	8.14742	0.1202465	2.7624096	21	1	26 days	0.34			Williams	1999 RH ₁₃₃

1999 RK ₁₃₃	14.5	0.15	19990919	7.98761	141.39702	189.42563	16.35197	0.1174533	3.1640517	24	1	33 days	0.54		Williams	1999 RK ₁₃₃
1999 RM ₁₃₃	14.3	0.15	19990830	307.41834	175.91058	222.19607	9.01170	0.0835012	2.9715244	29	1	28 days	0.49		Williams	1999 RM ₁₃₃
1999 RN ₁₃₃	15.4	0.15	19990919	33.12412	104.86377	191.35376	12.45347	0.1842672	2.5778779	30	1	33 days	0.48		Williams	1999 RN ₁₃₃
1999 RQ ₁₃₃	15.5	0.15	19990810	28.77040	39.79967	251.66159	5.91107	0.1558615	2.4310036	32	1	87 days	0.51	M-v 4	Williams	1999 RQ ₁₃₃
1999 RW ₁₃₃	15.2	0.15	19990810	9.71038	92.79753	223.34328	5.42032	0.1393158	2.3160117	30	1	82 days	0.42	M-v 4	Williams	1999 RW ₁₃₃
1999 RY ₁₃₃	13.9	0.15	19990919	274.83882	237.83311	192.01352	12.30992	0.0396964	3.0035926	21	1	23 days	0.59		Williams	1999 RY ₁₃₃
1999 RK ₁₃₄	11.7	0.15	19990810	242.27901	194.86883	270.74388	6.28626	0.1473290	3.9631656	28	1	71 days	0.56	M-v 5	Williams	1999 RK ₁₃₄
1999 RR ₁₃₄	15.0	0.15	19990830	350.80718	31.49231	315.34591	7.90757	0.1597501	3.0900578	30	1	56 days	0.62		Williams	1999 RR ₁₃₄
1999 RU ₁₃₄	11.7	0.15	19990830	358.76711	168.99260	164.77211	15.81328	0.0491388	5.1846674	29	1	45 days	0.45		Williams	1999 RU ₁₃₄
1999 RD ₁₃₅	13.3	0.15	19990919	338.08618	205.82602	161.00447	11.35754	0.1163184	2.9889422	36	1	33 days	0.39		Williams	1999 RD ₁₃₅
1999 RF ₁₃₅	14.1	0.15	19990830	319.10705	230.56947	158.52740	21.65131	0.1573074	3.1586357	38	1	46 days	0.52		Williams	1999 RF ₁₃₅
1999 RM ₁₃₅	12.2	0.15	19990810	176.97674	171.99168	340.45670	22.67519	0.0699543	3.2146594	40	1	83 days	0.44	M-v 4	Williams	1999 RM ₁₃₅
1999 RO ₁₃₅	15.7	0.15	19990919	356.54779	0.57955	346.16053	13.37670	0.1893402	2.5621955	32	1	27 days	0.48		Williams	1999 RO ₁₃₅
1999 RS ₁₃₅	14.5	0.15	19990919	258.05732	109.84413	347.21925	13.98702	0.1586082	2.5215883	23	1	23 days	0.86		Williams	1999 RS ₁₃₅
1999 RW ₁₃₅	15.2	0.15	19990919	347.10623	4.98876	358.37592	6.42609	0.2175129	2.4386317	25	1	23 days	0.32		Williams	1999 RW ₁₃₅
1999 RP ₁₃₆	13.6	0.15	19990810	291.07675	77.07977	336.44236	14.41735	0.1200045	2.8099529	31	1	60 days	0.53	M-v 5	Williams	1999 RP ₁₃₆
1999 RS ₁₃₆	14.5	0.15	19990919	336.55599	210.70427	163.53954	8.92872	0.1890392	3.0116128	19	1	23 days	0.59		Williams	1999 RS ₁₃₆
1999 RU ₁₃₆	15.9	0.15	19990830	0.78538	168.37278	165.44599	8.15564	0.2389947	2.5425804	31	1	43 days	0.47		Williams	1999 RU ₁₃₆
1999 RA ₁₃₇	15.6	0.15	19990830	9.50412	141.57221	177.41332	4.02983	0.2532298	2.5842682	27	1	39 days	0.42		Williams	1999 RA ₁₃₇
1999 RG ₁₃₇	15.5	0.15	19990830	269.67758	117.99760	327.59077	6.50807	0.1687167	2.3099057	27	1	45 days	0.57		Williams	1999 RG ₁₃₇
1999 RH ₁₃₇	14.7	0.15	19990830	27.32352	136.81174	164.52611	15.03709	0.1199724	2.5954215	38	1	46 days	0.51		Williams	1999 RH ₁₃₇
1999 RT ₁₃₇	13.2	0.15	19990810	299.91801	66.98307	333.83618	9.01501	0.0876238	2.9914558	48	1	64 days	0.65	M-v 5	Williams	1999 RT ₁₃₇
1999 RU ₁₃₇	15.6	0.15	19990830	317.90264	228.16074	166.34734	5.57992	0.1796368	2.4220228	30	1	43 days	0.69		Williams	1999 RU ₁₃₇
1999 RV ₁₃₇	16.0	0.15	19990919	28.03350	321.80593	342.25248	5.05605	0.1842734	2.2019224	22	1	23 days	0.44		Williams	1999 RV ₁₃₇
1999 RX ₁₃₇	15.4	0.15	19990919	336.06330	217.88890	157.30830	6.25297	0.1417011	2.3903015	29	1	27 days	0.38		Williams	1999 RX ₁₃₇
1999 RY ₁₃₇	16.3	0.15	19990830	12.84786	332.16908	344.58298	8.11633	0.1806711	2.3356017	23	1	53 days	0.70		Williams	1999 RY ₁₃₇
1999 RM ₁₃₈	17.1	0.15	19990919	3.18001	216.72396	126.11708	5.29557	0.2542247	2.5693013	21	1	27 days	0.63		Williams	1999 RM ₁₃₈
1999 RN ₁₃₈	14.2	0.15	19990810	45.71497	345.82096	289.90592	12.78123	0.2137838	2.4691508	37	1	73 days	0.42	M-v 4	Williams	1999 RN ₁₃₈
1999 RO ₁₃₈	16.6	0.15	19990919	8.35792	81.97796	261.65530	11.45035	0.1935687	2.6146407	25	1	25 days	0.58		Williams	1999 RO ₁₃₈
1999 RR ₁₃₈	15.0	0.15	19990919	329.55514	89.84262	310.25959	14.45317	0.1330526	2.5465145	15	1	24 days	0.45		Williams	1999 RR ₁₃₈
1999 RX ₁₃₈	15.3	0.15	19990919	3.77874	119.75799	215.99889	5.04855	0.1970266	2.2745033	17	1	23 days	0.49		Williams	1999 RX ₁₃₈
1999 RN ₁₄₀	16.2	0.15	19990830	46.22414	264.68007	3.43554	1.85051	0.2019864	2.3918370	19	1	53 days	0.75		Williams	1999 RN ₁₄₀
1999 RG ₁₄₁	15.9	0.15	19990919	346.15620	122.30103	244.91693	1.24576	0.1912097	2.5845793	24	1	29 days	0.56		Williams	1999 RG ₁₄₁
1999 RO ₁₄₁	14.9	0.15	19990810	50.43501	314.32711	311.25024	5.50061	0.1016845	2.4072726	26	2	1998–1999	0.76	M-v 4	Williams	36046 1999 RO ₁₄₁
1999 RH ₁₄₃	13.9	0.15	19990919	23.57416	159.22877	179.58974	10.76938	0.0135691	3.1174065	38	1	30 days	0.46		Williams	1999 RH ₁₄₃
1999 RM ₁₄₃	15.4	0.15	19990830	18.58184	315.39982	8.14442	4.96330	0.2447793	2.6563023	39	1	46 days	0.45		Williams	1999 RM ₁₄₃
1999 RQ ₁₄₃	16.1	0.15	19990919	322.25962	225.00084	180.43683	11.38555	0.1124852	2.6481328	23	1	30 days	0.48		Williams	1999 RQ ₁₄₃
1999 RS ₁₄₃	13.6	0.15	19990919	9.28530	157.90569	187.18831	10.32333	0.1146914	3.1226883	31	1	30 days	0.43		Williams	1999 RS ₁₄₃
1999 RU ₁₄₃	16.1	0.15	19990919	347.55108	168.33886	203.71814	4.26133	0.1348356	2.7602391	24	1	40 days	0.47		Williams	1999 RU ₁₄₃
1999 RW ₁₄₃	15.7	0.15	19990919	33.62895	78.36620	227.47885	2.27735	0.2050059	2.2430589	20	1	27 days	0.31		Williams	1999 RW ₁₄₃
1999 RA ₁₄₄	11.8	0.15	19990919	42.60270	106.34015	196.78156	9.90951	0.0907374	5.2119563	22	1	38 days	0.50		Williams	1999 RA ₁₄₄
1999 RE ₁₄₄	14.9	0.15	19990919	352.91706	42.34797	318.61175	7.86303	0.1065388	3.0637295	24	1	33 days	0.42		Williams	1999 RE ₁₄₄
1999 RH ₁₄₄	15.4	0.15	19990919	22.40392	119.54078	201.27113	9.81392	0.0977038	3.0152778	21	1	32 days	0.53		Williams	1999 RH ₁₄₄
1999 RJ ₁₄₄	16.3	0.15	19990919	353.68860	76.31667	281.47163	5.10281	0.1245650	2.4143826	20	1	23 days	0.47		Williams	1999 RJ ₁₄₄
1999 RL ₁₄₄	16.5	0.15	19990830	28.80544	37.11723	261.89436	4.94560	0.1861268	2.2720685	28	1	39 days	0.76		Williams	1999 RL ₁₄₄
1999 RO ₁₄₄	14.1	0.15	19990919	173.85124	334.40735	194.39283	13.75824	0.1299649	2.6583431	42	1	27 days	0.60		Williams	1999 RO ₁₄₄
1999 RS ₁₄₄	13.2	0.15	19990810	64.48381	354.47336	271.84666	8.82698	0.0448198	2.9929499	52	3	1989–1999	0.56	M-v 3	Williams	36047 1999 RS ₁₄₄
1999 RU ₁₄₄	16.1	0.15	19990919	7.03075	145.63046	184.81440	15.15298	0.3215554	3.1797480	16	1	21 days	0.97		Williams	1999 RU ₁₄₄
1999 RD ₁₄₅	15.2	0.15	19990810	35.83010	50.63097	223.79344	5.24378	0.2313841	2.2249697	40	1	82 days	0.49	M-v 4	Williams	1999 RD ₁₄₅
1999 RE ₁₄₅	16.4	0.15	19990919	290.37121	151.89548	271.46970	5.77465	0.0848799	2.3692947	16	1	24 days	0.63		Williams	1999 RE ₁₄₅
1999 RX ₁₄₅	15.5	0.15	19990810	21.39142	41.37524	261.53792	3.43135	0.1160712	2.3014570	45	3	1996–1999	0.71	M-v 3	Williams	36047 1999 RX ₁₄₅
1999 RM ₁₄₆	13.4	0.15	19990919	326.53808	201.64283	183.00882	10.56451	0.1119101	2.9758653	29	1	28 days	0.54		Williams	1999 RM ₁₄₆
1999 RD ₁₄₇	14.4	0.15	19990830	68.06536	314.02053	306.64671	10.63957	0.1035147	2.9872407	29	1	46 days	0.50		Williams	1999 RD ₁₄₇

1999 RG ₁₄₇	14.4	0.15	19990919	332.75437	89.26895	288.31923	8.28191	0.1091113	3.0941653	33	1	27 days	0.65		Williams		1999 RG ₁₄₇
1999 RG ₁₄₈	15.0	0.15	19990810	199.54684	191.89605	304.31646	4.43691	0.0629058	2.2479550	52	3	1996–1999	0.70	M-v 3	Williams	36047	1999 RG ₁₄₈
1999 RO ₁₄₈	13.9	0.15	19990919	278.22665	264.68107	167.71905	15.50958	0.0918154	3.4001460	29	1	23 days	0.65		Williams		1999 RO ₁₄₈
1999 RA ₁₄₉	15.1	0.15	19990919	354.99158	85.47323	266.86431	0.48345	0.1976382	2.4019252	36	1	23 days	0.58		Williams		1999 RA ₁₄₉
1999 RE ₁₄₉	16.9	0.15	19990919	3.92711	358.65464	340.47469	5.56508	0.2990227	2.3903466	28	1	23 days	0.43		Williams		1999 RE ₁₄₉
1999 RO ₁₄₉	15.5	0.15	19990919	61.73691	282.22282	342.81325	3.40308	0.1601918	2.2133434	24	1	23 days	0.42		Williams		1999 RO ₁₄₉
1999 RC ₁₅₀	15.4	0.15	19990810	285.54358	102.06285	321.62011	2.29120	0.1446429	2.2241225	38	1	61 days	0.58	M-v 5	Williams		1999 RC ₁₅₀
1999 RF ₁₅₀	15.2	0.15	19990919	354.93876	188.92982	162.66313	6.09905	0.1819708	3.1747130	20	1	24 days	0.59		Williams		1999 RF ₁₅₀
1999 RJ ₁₅₀	14.3	0.15	19990919	24.69719	153.08221	157.14610	7.60058	0.1350444	3.1308705	18	1	27 days	0.59		Williams		1999 RJ ₁₅₀
1999 RK ₁₅₀	14.7	0.15	19990919	20.00657	327.49203	342.14504	18.23831	0.2586995	3.1815561	21	1	23 days	0.49		Williams		1999 RK ₁₅₀
1999 RN ₁₅₀	16.9	0.15	19990830	326.38795	247.68926	143.18567	2.87462	0.2381576	2.2845740	14	1	6 days	0.59		Williams		1999 RN ₁₅₀
1999 RP ₁₅₀	14.6	0.15	19990919	5.75822	348.40842	346.91914	13.69766	0.1799949	2.6873098	33	1	24 days	0.45		Williams		1999 RP ₁₅₀
1999 RW ₁₅₀	16.2	0.15	19990919	51.62251	272.87398	0.58845	6.36022	0.1721863	2.2760593	19	1	23 days	0.78		Williams		1999 RW ₁₅₀
1999 RB ₁₅₁	13.8	0.15	19990830	271.14131	314.49302	124.63638	6.75789	0.1245053	3.1489074	26	1	53 days	0.50		Williams		1999 RB ₁₅₁
1999 RH ₁₅₁	13.5	0.15	19990830	54.94761	277.84104	356.89639	10.18954	0.0668309	3.0785574	25	1	53 days	0.43		Williams		1999 RH ₁₅₁
1999 RF ₁₅₂	14.7	0.15	19990919	8.80852	355.36772	336.29449	7.57314	0.2195635	2.7816959	28	1	28 days	0.54		Williams		1999 RF ₁₅₂
1999 RM ₁₅₂	14.7	0.15	19990919	9.81440	354.02925	334.70178	5.49209	0.2704292	2.9836062	22	1	29 days	0.49		Williams		1999 RM ₁₅₂
1999 RO ₁₅₂	15.4	0.15	19990919	8.48473	167.07614	167.61497	7.11731	0.1957163	2.3171872	31	1	25 days	0.49		Williams		1999 RO ₁₅₂
1999 RR ₁₅₂	16.0	0.15	19990919	345.24297	186.25050	191.36926	4.61267	0.3191431	2.5483461	19	1	27 days	0.37		Williams		1999 RR ₁₅₂
1999 RY ₁₅₂	15.3	0.15	19990830	341.71587	66.54397	298.17458	5.23973	0.1515141	2.3761251	29	1	41 days	0.46		Williams		1999 RY ₁₅₂
1999 RB ₁₅₃	15.1	0.15	19990810	24.94601	93.98955	205.65493	5.56974	0.1441160	2.3232901	56	3	1996–1999	0.67	M-v 3	Williams	36047	1999 RB ₁₅₃
1999 RC ₁₅₃	15.3	0.15	19990919	36.23131	334.54773	318.65377	9.46065	0.1997494	3.0586886	21	1	25 days	0.54		Williams		1999 RC ₁₅₃
1999 RH ₁₅₃	16.0	0.15	19990919	55.32879	358.94935	277.85055	4.60411	0.1507947	2.2144866	26	1	27 days	0.43		Williams		1999 RH ₁₅₃
1999 RZ ₁₅₃	15.3	0.15	19990919	58.97346	317.43353	323.87393	10.84983	0.0602742	2.6823684	21	1	25 days	0.72		Williams		1999 RZ ₁₅₃
1999 RE ₁₅₄	14.0	0.15	19990830	354.41016	13.37632	334.91838	14.21333	0.1219150	2.6400849	40	1	57 days	0.68		Williams		1999 RE ₁₅₄
1999 RG ₁₅₄	13.9	0.15	19990810	214.77762	271.24681	213.04095	3.47092	0.0247448	2.7424050	62	2	1998–1999	0.65	M-v 4	Williams	36047	1999 RG ₁₅₄
1999 RK ₁₅₄	14.7	0.15	19990919	320.79458	92.41899	308.44473	3.19006	0.1824724	2.6016088	20	1	27 days	0.45		Williams		1999 RK ₁₅₄
1999 RM ₁₅₄	15.1	0.15	19990810	54.20808	333.72665	290.59387	2.05610	0.1533896	2.4308326	55	2	1998–1999	0.64	M-v 4	Williams	36048	1999 RM ₁₅₄
1999 RS ₁₅₄	14.5	0.15	19990919	292.58516	134.70000	284.89314	2.54490	0.0620275	3.2233138	21	1	31 days	0.48		Williams		1999 RS ₁₅₄
1999 RK ₁₅₅	13.1	0.15	19990810	161.30779	223.18466	314.49128	8.79047	0.0377401	3.0682795	34	1	60 days	0.48	M-v 5	Williams		1999 RK ₁₅₅
1999 RO ₁₅₅	14.0	0.15	19990830	351.78267	36.79330	317.89377	10.02978	0.1120880	2.9755907	33	1	41 days	0.34		Williams		1999 RO ₁₅₅
1999 RQ ₁₅₅	16.9	0.15	19990919	346.88427	135.10619	234.94816	3.77821	0.1947445	2.3501356	25	1	32 days	0.50		Williams		1999 RQ ₁₅₅
1999 RZ ₁₅₅	16.0	0.15	19990810	352.95042	141.86800	203.76791	5.04442	0.2893340	2.5590930	51	1	87 days	0.63	M-v 4	Williams		1999 RZ ₁₅₅
1999 RA ₁₅₆	15.7	0.15	19990830	41.45329	38.61120	247.72988	3.45158	0.1674593	2.2907468	35	1	46 days	0.61		Williams		1999 RA ₁₅₆
1999 RB ₁₅₆	16.6	0.15	19990919	338.80030	115.22998	270.27983	3.53894	0.2483889	2.5528794	23	1	32 days	0.86		Williams		1999 RB ₁₅₆
1999 RC ₁₅₆	16.9	0.15	19990830	14.71317	9.19332	304.67643	4.72184	0.3009641	2.5753012	35	1	40 days	0.59		Williams		1999 RC ₁₅₆
1999 RD ₁₅₆	14.6	0.15	19990919	17.60066	58.41490	266.20706	3.70416	0.1364880	3.1621352	22	1	30 days	0.40		Williams		1999 RD ₁₅₆
1999 RL ₁₅₆	12.6	0.15	19990919	348.88050	169.36191	198.65909	3.60758	0.2465933	2.6323819	20	1	28 days	0.55		Williams		1999 RL ₁₅₆
1999 RB ₁₅₇	14.9	0.15	19990919	337.53047	25.54229	347.72152	9.13896	0.1106298	3.0889966	19	1	24 days	0.69		Williams		1999 RB ₁₅₇
1999 RM ₁₅₇	15.3	0.15	19990919	302.42763	326.66137	96.01693	3.41315	0.1893188	2.5687568	17	1	23 days	0.66		Williams		1999 RM ₁₅₇
1999 RX ₁₅₇	14.8	0.15	19990919	37.12730	295.74348	358.27673	15.47669	0.1595604	3.0497890	21	1	27 days	0.68		Williams		1999 RX ₁₅₇
1999 RE ₁₅₈	14.5	0.15	19990919	318.66486	319.37667	86.14764	2.54905	0.2079998	3.2184059	24	1	30 days	1.25		Williams		1999 RE ₁₅₈
1999 RN ₁₅₈	14.5	0.15	19990830	40.81247	141.38166	156.72714	11.49216	0.0353489	3.0631884	25	1	58 days	0.62		Williams		1999 RN ₁₅₈
1999 RB ₁₅₉	16.1	0.15	19990919	1.39179	204.78155	141.20232	4.41532	0.1216747	2.4622032	24	1	27 days	0.72		Williams		1999 RB ₁₅₉
1999 RF ₁₅₉	12.6	0.15	19990830	183.36584	168.04521	350.48647	19.39167	0.0818203	3.1189919	29	1	56 days	0.49		Williams		1999 RF ₁₅₉
1999 RR ₁₅₉	14.8	0.15	19990810	334.05442	14.26790	358.18279	11.93785	0.1990118	2.6652513	40	3	1973–1999	0.61	M-v 3	Williams	36048	1999 RR ₁₅₉
1999 RV ₁₅₉	14.6	0.15	19990919	336.32652	9.68666	2.88215	11.20777	0.0795013	2.8732097	26	1	27 days	0.50		Williams		1999 RV ₁₅₉
1999 RY ₁₅₉	15.1	0.15	19990830	317.42268	259.21297	138.09591	7.57654	0.1559790	2.4259089	30	1	49 days	0.45		Williams		1999 RY ₁₅₉
1999 RZ ₁₅₉	16.1	0.15	19990919	288.69193	7.92272	64.70376	3.39926	0.1292308	2.3166534	17	1	26 days	0.65		Williams		1999 RZ ₁₅₉
1999 RC ₁₆₀	15.2	0.15	19990919	343.97166	9.45369	2.24878	14.02163	0.2267426	2.7338327	38	1	30 days	0.63		Williams		1999 RC ₁₆₀
1999 RJ ₁₆₀	16.3	0.15	19990919	336.57154	274.07237	108.91201	5.28622	0.1954417	2.4656795	28	1	27 days	0.68		Williams		1999 RJ ₁₆₀
1999 RR ₁₆₀	14.7	0.15	19990830	323.15453	257.75977	127.37577	6.12562	0.0800962	2.7646092	28	1	49 days	0.43		Williams		1999 RR ₁₆₀
1999 RZ ₁₆₀	15.8	0.15	19990919	357.38142	200.60619	163.69052	2.33638	0.0997670	2.8704090	22	1	29 days	0.66		Williams		1999 RZ ₁₆₀

1999 RA ₁₆₁	17.0	0.15	19990830	48.61363	292.87029	2.59915	6.50190	0.1093938	2.3592304	18	1	22 days	0.57	Williams	1999 RA ₁₆₁
1999 RB ₁₆₁	15.9	0.15	19990919	339.92975	21.74504	11.65082	1.88999	0.2211972	3.0839397	25	1	30 days	0.59	Williams	1999 RB ₁₆₁
1999 RC ₁₆₁	14.4	0.15	19990919	21.31676	116.63924	212.20969	3.72403	0.1245252	3.1033717	21	1	34 days	0.72	Williams	1999 RC ₁₆₁
1999 RQ ₁₆₂	16.4	0.15	19990919	319.16856	109.10382	299.78858	4.84771	0.1590896	2.2606083	30	1	33 days	0.49	Williams	1999 RQ ₁₆₂
1999 RR ₁₆₂	15.2	0.15	19990830	13.83839	351.96732	333.35673	13.23984	0.2025311	2.5416007	28	1	43 days	0.37	Williams	1999 RR ₁₆₂
1999 RT ₁₆₂	16.7	0.15	19990919	16.77609	51.44094	277.01257	3.76824	0.2000115	2.2771816	33	1	33 days	0.41	Williams	1999 RT ₁₆₂
1999 RZ ₁₆₂	14.5	0.15	19990919	32.43317	104.65092	204.79024	6.93191	0.1074171	3.1406434	23	1	32 days	0.44	Williams	1999 RZ ₁₆₂
1999 RD ₁₆₃	14.9	0.15	19990919	347.22762	71.09456	295.40414	4.45518	0.1333364	2.7482163	35	1	32 days	0.53	Williams	1999 RD ₁₆₃
1999 RP ₁₆₃	14.6	0.15	19990919	49.33519	81.57456	192.13288	5.23794	0.2588853	2.3095188	25	1	28 days	0.36	Williams	1999 RP ₁₆₃
1999 RY ₁₆₃	15.4	0.15	19990919	305.65683	187.41569	237.36608	1.36814	0.2043106	2.3452555	15	1	27 days	0.36	Williams	1999 RY ₁₆₃
1999 RG ₁₆₄	15.5	0.15	19990810	28.62058	107.74331	198.41850	2.48428	0.0778225	2.6360082	48	4	1991–1999	0.59	M-v 2 Williams	36048 1999 RG ₁₆₄
1999 RO ₁₆₄	15.9	0.15	19990919	74.84049	293.15870	329.83487	6.78999	0.1122833	2.2403242	29	1	30 days	0.46	Williams	1999 RO ₁₆₄
1999 RZ ₁₆₄	15.1	0.15	19990919	284.56399	101.36720	336.64892	14.38560	0.0918963	2.6294418	23	1	30 days	0.58	Williams	1999 RZ ₁₆₄
1999 RG ₁₆₅	13.4	0.15	19990810	82.15850	268.42641	338.41899	15.01604	0.1337613	3.1216094	37	1	83 days	0.61	M-v 5 Williams	1999 RG ₁₆₅
1999 RQ ₁₆₅	15.4	0.15	19990810	24.17452	104.28314	208.89673	1.31231	0.0650203	2.6320850	36	4	1995–1999	0.68	M-v 1 Williams	36048 1999 RQ ₁₆₅
1999 RR ₁₆₅	13.6	0.15	19990830	7.12141	359.46495	339.56127	5.25014	0.0409650	3.0168920	40	1	56 days	0.51	Williams	1999 RR ₁₆₅
1999 RS ₁₆₅	15.6	0.15	19990919	275.01445	284.09141	173.00219	1.82180	0.1848548	2.3504056	25	1	32 days	0.42	Williams	1999 RS ₁₆₅
1999 RT ₁₆₅	13.6	0.15	19990810	271.50034	105.76804	334.31140	1.69976	0.0817445	3.0615054	55	2	1993–1999	0.51	M-v 4 Williams	36048 1999 RT ₁₆₅
1999 RV ₁₆₅	11.9	0.15	19990830	50.58764	123.30956	161.17740	7.55684	0.1204597	5.1976768	27	1	56 days	0.54	Williams	1999 RV ₁₆₅
1999 RG ₁₆₆	15.3	0.15	19990830	306.80173	254.83271	157.76839	13.06887	0.1575583	2.7661019	28	1	56 days	0.62	Williams	1999 RG ₁₆₆
1999 RH ₁₆₆	19.4	0.15	19990919	330.65064	70.56351	324.60071	1.33457	0.1941096	2.0718936	10	1	22 days	0.58	Williams	1999 RH ₁₆₆
1999 RX ₁₆₆	16.3	0.15	19990919	334.85565	248.42110	145.68375	13.75532	0.2836726	2.5700371	20	1	23 days	0.46	Williams	1999 RX ₁₆₆
1999 RG ₁₆₇	14.4	0.15	19990919	242.39778	50.38220	67.93120	5.83124	0.1326525	2.5657076	16	1	27 days	0.56	Williams	1999 RG ₁₆₇
1999 RH ₁₆₇	16.3	0.15	19990810	338.06418	327.47167	45.18899	3.50508	0.3079473	2.3629014	33	1	83 days	0.59	M-v 5 Williams	1999 RH ₁₆₇
1999 RN ₁₆₇	13.9	0.15	19990830	290.64677	282.62996	142.27573	11.80489	0.0938014	3.0526634	27	1	53 days	0.67	Williams	1999 RN ₁₆₇
1999 RQ ₁₆₇	15.2	0.15	19990830	304.36306	39.21068	20.45973	5.85156	0.1914318	2.3344061	30	1	56 days	0.53	Williams	1999 RQ ₁₆₇
1999 RX ₁₆₇	14.5	0.15	19990919	45.16075	123.67820	163.45518	13.61293	0.1891913	2.7101507	24	1	34 days	0.41	Williams	1999 RX ₁₆₇
1999 RA ₁₆₈	14.9	0.15	19990810	331.51445	11.05608	4.13700	4.96603	0.1671566	2.2849872	38	1	83 days	0.52	M-v 4 Williams	1999 RA ₁₆₈
1999 RC ₁₆₈	14.2	0.15	19990919	2.25826	257.05674	89.90598	1.92532	0.1698998	3.2835983	23	1	23 days	0.40	Williams	1999 RC ₁₆₈
1999 RS ₁₆₈	17.1	0.15	19990830	353.47236	184.02460	170.28221	6.41405	0.2667503	2.2651709	32	1	41 days	0.50	Williams	1999 RS ₁₆₈
1999 RC ₁₆₉	15.5	0.15	19990810	4.60610	146.72168	183.88423	2.82250	0.1889676	2.4350491	30	1	83 days	0.54	M-v 5 Williams	1999 RC ₁₆₉
1999 RD ₁₆₉	15.0	0.15	19990830	341.88278	62.35423	315.29404	2.38779	0.2892850	2.6200987	35	1	50 days	0.68	Williams	1999 RD ₁₆₉
1999 RG ₁₆₉	14.8	0.15	19990919	293.10924	104.08606	330.06599	8.10500	0.1372934	2.7961646	31	1	33 days	0.44	Williams	1999 RG ₁₆₉
1999 RQ ₁₆₉	16.5	0.15	19990919	341.90064	157.85309	218.01730	2.96977	0.1163168	2.1679998	31	1	41 days	0.38	Williams	1999 RQ ₁₆₉
1999 RR ₁₆₉	15.6	0.15	19990919	330.82960	111.40007	275.69470	3.29115	0.0854256	2.7857106	24	1	33 days	0.53	Williams	1999 RR ₁₆₉
1999 RS ₁₆₉	16.3	0.15	19990830	354.23114	99.72153	255.50288	2.71391	0.2151683	2.6891159	24	1	10 days	0.64	Williams	1999 RS ₁₆₉
1999 RV ₁₆₉	16.8	0.15	19990830	331.10205	92.58608	297.06375	2.24507	0.2134814	2.2817529	30	1	46 days	0.44	Williams	1999 RV ₁₆₉
1999 RY ₁₆₉	15.6	0.15	19990919	55.94067	333.05250	305.11993	1.78715	0.1754630	2.4194656	19	1	27 days	0.50	Williams	1999 RY ₁₆₉
1999 RZ ₁₆₉	15.8	0.15	19990919	65.98437	16.01219	259.11912	1.31872	0.1073125	2.3048147	24	1	29 days	0.54	Williams	1999 RZ ₁₆₉
1999 RE ₁₇₀	15.1	0.15	19990810	57.15263	79.44494	186.27009	2.74533	0.1702155	2.4463696	40	2	1998–1999	0.77	M-v 5 Williams	36048 1999 RE ₁₇₀
1999 RF ₁₇₀	13.8	0.15	19990919	80.27350	32.36683	227.69462	0.91345	0.1034666	3.2351052	15	1	23 days	0.50	Williams	1999 RF ₁₇₀
1999 RL ₁₇₀	15.0	0.15	19990830	132.23636	215.08355	350.48657	10.72784	0.1376715	2.5450631	29	1	26 days	0.53	Williams	1999 RL ₁₇₀
1999 RJ ₁₇₁	16.1	0.15	19990919	31.52790	289.90364	20.99126	2.69789	0.1405677	2.3980638	30	1	30 days	0.52	Williams	1999 RJ ₁₇₁
1999 RS ₁₇₁	16.0	0.15	19990830	338.13317	218.83221	152.75391	6.68506	0.1132534	2.3731900	23	1	49 days	0.51	Williams	1999 RS ₁₇₁
1999 RG ₁₇₂	13.9	0.15	19990830	329.60302	279.01583	102.15094	3.74359	0.0905310	2.7722978	30	1	56 days	0.54	Williams	1999 RG ₁₇₂
1999 RJ ₁₇₂	14.8	0.15	19990919	324.51311	12.44509	20.72403	7.16050	0.1039610	2.7463236	22	1	30 days	0.54	Williams	1999 RJ ₁₇₂
1999 RK ₁₇₂	15.1	0.15	19990919	283.10626	294.82550	147.32055	11.87839	0.1314475	3.0029695	22	1	23 days	0.61	Williams	1999 RK ₁₇₂
1999 RM ₁₇₂	13.9	0.15	19990810	324.35848	257.39056	137.73951	6.11890	0.2567566	2.5586155	35	1	93 days	0.52	M-v 4 Williams	1999 RM ₁₇₂
1999 RZ ₁₇₂	14.6	0.15	19990919	18.88664	190.66410	133.12952	12.03362	0.1490235	2.9664013	11	1	21 days	0.70	Williams	1999 RZ ₁₇₂
1999 RD ₁₇₃	13.8	0.15	19990919	25.78589	303.13670	14.66449	16.21065	0.0833170	3.2053013	11	1	21 days	0.42	Williams	1999 RD ₁₇₃
1999 RF ₁₇₃	16.6	0.15	19990919	8.78745	266.74587	72.71592	5.84739	0.1398271	2.3658494	14	1	27 days	0.66	Williams	1999 RF ₁₇₃
1999 RL ₁₇₃	14.5	0.15	19990919	184.26652	95.04999	71.12730	6.13699	0.0489947	2.7946684	23	1	27 days	0.68	Williams	1999 RL ₁₇₃
1999 RR ₁₇₃	13.5	0.15	19990919	343.43259	231.02888	141.92046	11.80107	0.1336451	3.0334425	21	1	27 days	0.29	Williams	1999 RR ₁₇₃

1999 RV ₁₇₃	15.1	0.15	19990919	9.41446	331.19757	7.64630	11.08478	0.1423325	2.5587750	36	1	28 days	0.53	Williams	1999 RV ₁₇₃
1999 RD ₁₇₄	14.9	0.15	19990919	353.88925	340.90226	16.25232	6.55987	0.0310118	2.7706821	24	1	30 days	0.64	Williams	1999 RD ₁₇₄
1999 RF ₁₇₄	15.6	0.15	19990919	269.86341	49.51098	44.98544	3.36914	0.1154594	2.2840513	25	1	24 days	0.37	Williams	1999 RF ₁₇₄
1999 RK ₁₇₄	14.2	0.15	19990919	328.42214	16.56176	23.19356	3.74267	0.2163646	3.1464486	28	1	30 days	0.38	Williams	1999 RK ₁₇₄
1999 RU ₁₇₄	14.4	0.15	19990919	295.24657	279.12629	161.47696	13.22676	0.2035770	2.7606079	26	1	30 days	0.45	Williams	1999 RU ₁₇₄
1999 RV ₁₇₄	16.7	0.15	19990919	325.09608	238.01778	157.77556	7.01696	0.1055156	2.3155073	18	1	21 days	0.76	Williams	1999 RV ₁₇₄
1999 RY ₁₇₄	15.9	0.15	19990919	301.94408	57.40229	7.16412	2.82411	0.1315644	2.2990555	24	1	25 days	0.45	Williams	1999 RY ₁₇₄
1999 RG ₁₇₅	16.0	0.15	19990919	347.46825	15.82124	354.75087	5.45753	0.1451452	2.4666421	29	1	40 days	0.40	Williams	1999 RG ₁₇₅
1999 RH ₁₇₅	15.3	0.15	19990919	247.49533	120.48470	355.77088	6.90825	0.1024955	2.2939097	24	1	33 days	0.53	Williams	1999 RH ₁₇₅
1999 RK ₁₇₅	14.4	0.15	19990919	3.13398	155.19431	194.23992	1.46256	0.1735202	3.1903530	47	1	37 days	0.48	Williams	1999 RK ₁₇₅
1999 RO ₁₇₅	15.9	0.15	19990919	316.62353	64.07878	342.58097	5.43568	0.1074427	2.7172374	22	1	29 days	0.50	Williams	1999 RO ₁₇₅
1999 RP ₁₇₅	14.2	0.15	19990919	34.94359	330.75503	342.24321	5.67132	0.0842741	3.2182613	15	1	27 days	0.51	Williams	1999 RP ₁₇₅
1999 RB ₁₇₆	16.6	0.15	19990919	341.26784	43.72402	339.36625	11.12911	0.1982667	2.6018647	23	1	30 days	0.67	Williams	1999 RB ₁₇₆
1999 RD ₁₇₆	16.7	0.15	19990919	40.43882	235.74470	72.30066	2.76430	0.1902533	2.3083628	46	1	27 days	0.74	Williams	1999 RD ₁₇₆
1999 RG ₁₇₆	15.9	0.15	19990810	5.68411	21.32937	306.96635	2.18736	0.1902696	2.1585897	44	1	87 days	0.45	M-v 4 Williams	1999 RG ₁₇₆
1999 RH ₁₇₆	15.7	0.15	19990919	40.53320	101.67935	196.53946	4.75893	0.1830268	2.4288382	19	1	27 days	0.34	Williams	1999 RH ₁₇₆
1999 RN ₁₇₆	14.9	0.15	19990919	345.85171	176.55833	198.87344	3.82280	0.1686631	3.0850636	28	1	35 days	0.55	Williams	1999 RN ₁₇₆
1999 RQ ₁₇₆	15.1	0.15	19990919	265.85774	263.18403	199.03564	4.26869	0.1129580	2.2531294	16	1	27 days	0.32	Williams	1999 RQ ₁₇₆
1999 RR ₁₇₆	15.3	0.15	19990919	334.84734	194.04420	193.23647	4.26302	0.1313796	2.5456952	26	1	32 days	0.58	Williams	1999 RR ₁₇₆
1999 RS ₁₇₆	16.0	0.15	19990919	4.34696	155.94324	193.36779	3.90401	0.1043548	2.4385490	21	1	30 days	0.53	Williams	1999 RS ₁₇₆
1999 RX ₁₇₆	15.8	0.15	19990919	345.23322	181.72106	189.57388	3.20286	0.0529563	2.2277099	22	1	35 days	0.43	Williams	1999 RX ₁₇₆
1999 RY ₁₇₆	15.2	0.15	19990919	27.09434	131.91515	191.58526	4.13173	0.0816484	2.5172951	19	1	30 days	0.70	Williams	1999 RY ₁₇₆
1999 RE ₁₇₇	16.2	0.15	19990919	333.98932	52.20808	340.82783	1.79469	0.1942544	2.4200812	21	1	24 days	0.51	Williams	1999 RE ₁₇₇
1999 RJ ₁₇₇	13.6	0.15	19990830	14.12088	339.24919	355.02563	11.66284	0.0624993	3.0335465	39	1	58 days	0.66	Williams	1999 RJ ₁₇₇
1999 RK ₁₇₈	13.2	0.15	19990919	314.38987	241.55613	161.31555	15.87567	0.0473038	3.1704134	28	1	30 days	0.53	Williams	1999 RK ₁₇₈
1999 RS ₁₇₈	15.9	0.15	19990830	343.41705	216.77645	153.96776	12.61472	0.1989771	2.7010950	25	1	49 days	0.63	Williams	1999 RS ₁₇₈
1999 RU ₁₇₈	15.3	0.15	19990919	34.26089	153.36421	148.02106	9.19147	0.2058419	2.5523607	22	1	23 days	0.38	Williams	1999 RU ₁₇₈
1999 RZ ₁₇₈	18.0	0.15	19990919	337.92648	46.32396	340.79165	1.93230	0.2143574	2.3257308	9	1	16 days	0.11	Williams	1999 RZ ₁₇₈
1999 RB ₁₇₉	15.6	0.15	19990919	345.86361	234.15256	136.44780	7.03656	0.1269550	2.3552661	15	1	21 days	0.49	Williams	1999 RB ₁₇₉
1999 RC ₁₇₉	14.6	0.15	19990810	260.28385	50.36114	44.56872	5.15643	0.1248921	2.3877700	24	1	83 days	0.46	M-v 5 Williams	1999 RC ₁₇₉
1999 RG ₁₇₉	17.4	0.15	19990919	349.47555	306.05470	62.36510	4.09047	0.1861019	2.2985966	14	1	23 days	0.60	Williams	1999 RG ₁₇₉
1999 RP ₁₇₉	17.2	0.15	19990919	12.89761	177.76655	152.89886	15.03114	0.2572625	2.6378086	15	1	23 days	0.68	Williams	1999 RP ₁₇₉
1999 RV ₁₇₉	15.8	0.15	19990919	5.03907	237.12073	108.34966	5.64928	0.1330333	2.3990031	19	1	27 days	0.58	Williams	1999 RV ₁₇₉
1999 RW ₁₇₉	15.6	0.15	19990919	7.37394	202.67430	139.62310	10.45239	0.1614544	2.4265868	21	1	27 days	0.49	Williams	1999 RW ₁₇₉
1999 RX ₁₇₉	15.9	0.15	19990919	356.78047	242.92842	112.99901	6.31683	0.1294483	2.3380744	11	1	21 days	0.44	Williams	1999 RX ₁₇₉
1999 RC ₁₈₀	15.8	0.15	19990919	23.18092	292.34936	20.27417	12.28101	0.2430094	2.7127487	13	1	23 days	0.54	Williams	1999 RC ₁₈₀
1999 RD ₁₈₀	15.5	0.15	19990919	15.57916	278.65413	52.36640	7.24866	0.1399104	2.3563067	18	1	25 days	0.81	Williams	1999 RD ₁₈₀
1999 RH ₁₈₀	15.3	0.15	19990919	319.50900	306.31928	99.02272	7.48315	0.1438729	2.3691466	15	1	22 days	0.53	Williams	1999 RH ₁₈₀
1999 RW ₁₈₀	15.9	0.15	19990830	16.71984	273.44144	47.89368	3.42173	0.1880778	2.3776982	23	1	25 days	0.49	Williams	1999 RW ₁₈₀
1999 RX ₁₈₀	14.9	0.15	19990919	12.52057	250.43995	87.27592	3.09501	0.1034188	2.9520260	22	1	23 days	0.61	Williams	1999 RX ₁₈₀
1999 RY ₁₈₀	13.3	0.15	19990919	26.94918	312.55133	359.74244	16.62645	0.2100460	3.1188831	27	1	30 days	0.32	Williams	1999 RY ₁₈₀
1999 RC ₁₈₁	15.5	0.15	19990919	287.36851	323.66663	111.47628	2.41154	0.0761211	2.2688261	21	1	30 days	0.62	Williams	1999 RC ₁₈₁
1999 RE ₁₈₁	14.9	0.15	19990919	229.95996	127.44270	11.47076	8.77732	0.2044305	2.4389421	22	1	30 days	0.37	Williams	1999 RE ₁₈₁
1999 RK ₁₈₁	15.1	0.15	19990830	278.72050	74.86026	9.42749	5.74032	0.1192630	2.4487007	31	1	56 days	0.67	Williams	1999 RK ₁₈₁
1999 RB ₁₈₂	14.9	0.15	19990919	359.83050	177.06233	178.26971	1.42822	0.1090634	2.8634522	9	1	21 days	0.57	Williams	1999 RB ₁₈₂
1999 RO ₁₈₂	15.0	0.15	19990919	189.28775	192.56732	334.91859	5.84708	0.0572204	2.3796192	22	1	35 days	0.64	Williams	1999 RO ₁₈₂
1999 RS ₁₈₂	15.8	0.15	19990919	358.85809	95.70233	262.34633	1.04422	0.2244615	2.4062755	20	1	27 days	0.36	Williams	1999 RS ₁₈₂
1999 RW ₁₈₂	15.9	0.15	19990919	30.86679	330.70496	341.41676	1.63808	0.1855702	2.5797009	22	1	25 days	0.50	Williams	1999 RW ₁₈₂
1999 RX ₁₈₂	15.0	0.15	19990830	306.83555	232.71658	187.53734	2.83174	0.1567144	2.5677832	46	1	46 days	0.66	Williams	1999 RX ₁₈₂
1999 RA ₁₈₃	12.9	0.15	19990810	347.52082	4.77869	357.27478	21.44129	0.0295958	3.2212365	45	1	67 days	0.53	M-v 4 Williams	1999 RA ₁₈₃
1999 RK ₁₈₃	14.2	0.15	19990830	35.34565	183.19320	132.75303	2.84171	0.0143735	2.9239498	12	1	13 days	0.52	E Marsden	1999 RK ₁₈₃
1999 RM ₁₈₃	15.1	0.15	19990810	336.90469	7.67666	3.57487	6.55588	0.1337064	2.3954152	36	1	64 days	0.48	M-v 4 Williams	1999 RM ₁₈₃
1999 RM ₁₈₅	14.9	0.15	19990919	11.51866	52.85292	281.67673	1.47756	0.0839335	2.7881789	11	1	27 days	0.50	Williams	1999 RM ₁₈₅

1999 RR ₁₈₅	16.6	0.15	19990919	14.15276	348.01389	345.09172	6.50041	0.1303210	2.4086686	26	1	31 days	0.42	Williams	1999 RR ₁₈₅
1999 RE ₁₈₆	16.5	0.15	19990919	316.99377	256.98592	151.66692	8.01787	0.1878037	2.5678991	24	1	23 days	0.89	Williams	1999 RE ₁₈₆
1999 RT ₁₈₆	11.7	0.15	19990919	63.13869	85.78725	193.74827	2.37928	0.0795151	5.2024440	20	1	31 days	0.59	Williams	1999 RT ₁₈₆
1999 RB ₁₈₇	15.5	0.15	19990830	357.29945	155.84950	195.54496	0.38478	0.2778824	3.0125687	25	1	24 days	0.53	Williams	1999 RB ₁₈₇
1999 RN ₁₈₇	14.3	0.15	19990919	348.17672	343.81764	21.61573	5.81557	0.0961115	2.7377234	48	1	30 days	0.73	Williams	1999 RN ₁₈₇
1999 RO ₁₈₇	14.4	0.15	19990919	307.82550	309.15127	95.09353	3.47018	0.0123229	2.8273925	19	1	23 days	0.68	Williams	1999 RO ₁₈₇
1999 RT ₁₈₇	15.5	0.15	19990919	271.05031	302.91461	164.47283	14.09335	0.2282249	2.6494231	13	1	25 days	0.57	Williams	1999 RT ₁₈₇
1999 RJ ₁₈₈	14.6	0.15	19990919	342.99519	345.60965	26.64828	10.31402	0.1273567	3.2073678	11	1	21 days	0.78	Williams	1999 RJ ₁₈₈
1999 RY ₁₈₈	16.9	0.15	19990919	4.31202	345.64706	2.47262	4.79468	0.2311893	2.2404949	23	1	33 days	0.54	Williams	1999 RY ₁₈₈
1999 RC ₁₈₉	16.4	0.15	19990919	6.91509	149.66021	194.90269	1.58998	0.2129583	2.6741448	13	1	30 days	0.49	Williams	1999 RC ₁₈₉
1999 RF ₁₈₉	16.2	0.15	19990919	4.01577	3.65357	346.99879	9.96116	0.2001726	2.8721165	20	1	30 days	0.49	Williams	1999 RF ₁₈₉
1999 RT ₁₈₉	15.0	0.15	19990919	332.95999	327.64694	59.36207	5.80042	0.1117252	2.8586375	11	1	21 days	0.43	Williams	1999 RT ₁₈₉
1999 RV ₁₈₉	16.4	0.15	19990919	337.07913	268.92676	124.95455	5.80175	0.3192154	2.5849987	17	1	27 days	0.68	Williams	1999 RV ₁₈₉
1999 RZ ₁₈₉	17.0	0.15	19990919	0.51053	344.98928	6.43435	13.40488	0.2987526	2.6598478	11	1	21 days	0.49	Williams	1999 RZ ₁₈₉
1999 RK ₁₉₀	15.2	0.15	19990919	246.89192	128.43205	339.64018	5.38284	0.0563590	2.2167350	41	1	28 days	0.35	Williams	1999 RK ₁₉₀
1999 RO ₁₉₀	15.2	0.15	19990919	337.00719	29.05554	13.09421	6.47318	0.1415330	2.4592132	38	1	33 days	0.50	Williams	1999 RO ₁₉₀
1999 RQ ₁₉₀	14.9	0.15	19990919	344.47205	172.92229	202.01580	11.34804	0.1422828	3.0465190	29	1	33 days	0.70	Williams	1999 RQ ₁₉₀
1999 RN ₁₉₁	16.8	0.15	19990830	359.18229	230.32891	112.37857	3.17624	0.2419337	2.3605077	43	1	49 days	0.60	Williams	1999 RN ₁₉₁
1999 RU ₁₉₁	14.3	0.15	19990919	108.91580	245.12400	348.70601	4.91275	0.1019186	3.0476718	19	1	33 days	0.53	Williams	1999 RU ₁₉₁
1999 RY ₁₉₁	13.2	0.15	19990919	2.06722	264.71939	86.57190	15.60574	0.0976043	2.6959542	20	1	20 days	0.32	Williams	1999 RY ₁₉₁
1999 RF ₁₉₂	14.0	0.15	19990919	359.30930	331.05576	14.75954	10.54083	0.1227225	3.0335033	39	1	30 days	0.51	Williams	1999 RF ₁₉₂
1999 RB ₁₉₃	16.1	0.15	19990830	28.55964	264.42872	39.72344	4.60718	0.1456056	2.3262628	38	1	49 days	0.55	Williams	1999 RB ₁₉₃
1999 RD ₁₉₃	14.6	0.15	19990919	329.24239	295.43139	101.79567	8.94742	0.1272590	2.8005847	14	1	17 days	0.32	Williams	1999 RD ₁₉₃
1999 RM ₁₉₃	17.1	0.15	19990919	342.86184	215.01385	174.70646	5.79639	0.2106167	2.3599493	47	1	35 days	0.87	Williams	1999 RM ₁₉₃
1999 RN ₁₉₃	18.5	0.15	19990919	3.58666	183.15597	174.11135	5.69286	0.2140169	2.3495206	19	1	43 days	0.94	Williams	1999 RN ₁₉₃
1999 RO ₁₉₃	12.5	0.15	19990810	329.25544	39.47446	353.28045	12.84268	0.1748653	2.6863269	60	4	1982-1999	0.51	M-v 1 Williams 36049	1999 RO ₁₉₃
1999 RQ ₁₉₃	14.9	0.15	19990919	68.22215	158.50594	132.64999	5.66740	0.1913947	2.3339804	16	1	19 days	0.36	Williams	1999 RQ ₁₉₃
1999 RR ₁₉₃	13.3	0.15	19990919	319.07583	266.85661	167.67011	10.30528	0.0735334	3.5163905	14	1	19 days	0.41	Williams	1999 RR ₁₉₃
1999 RT ₁₉₃	16.4	0.15	19990919	10.36202	21.67948	318.59628	7.18281	0.1776723	2.6268756	19	1	30 days	0.66	Williams	1999 RT ₁₉₃
1999 RX ₁₉₃	15.2	0.15	19990810	5.04235	8.19703	323.74389	6.99479	0.1940079	2.3021898	32	1	80 days	0.49	M-v 4 Williams	1999 RX ₁₉₃
1999 RY ₁₉₃	13.6	0.15	19990810	345.42312	94.40223	272.74895	4.82924	0.1470306	3.1214552	41	1	76 days	0.40	M-v 4 Williams	1999 RY ₁₉₃
1999 RB ₁₉₄	15.1	0.15	19990919	317.09720	144.66704	277.56936	3.37830	0.2254135	2.5978418	22	1	30 days	0.48	Williams	1999 RB ₁₉₄
1999 RH ₁₉₄	14.5	0.15	19990919	24.88152	35.08625	291.43800	3.86036	0.1137650	2.6042814	18	1	30 days	0.39	Williams	1999 RH ₁₉₄
1999 RK ₁₉₄	15.1	0.15	19990919	347.31644	155.83835	223.77624	3.54265	0.2500650	2.6075310	21	1	30 days	0.39	Williams	1999 RK ₁₉₄
1999 RQ ₁₉₄	12.7	0.15	19990810	323.18495	66.42769	343.52498	16.20100	0.2548703	2.9947699	28	1	89 days	0.40	M-v 4 Williams	1999 RQ ₁₉₄
1999 RR ₁₉₄	15.3	0.15	19990919	17.91955	58.57132	275.05250	3.44512	0.1967393	2.4092940	29	1	30 days	0.57	Williams	1999 RR ₁₉₄
1999 RC ₁₉₅	13.9	0.15	19990919	329.48409	139.75993	250.67923	7.86434	0.1459203	3.1132979	25	1	29 days	0.43	Williams	1999 RC ₁₉₅
1999 RD ₁₉₅	14.5	0.15	19990919	5.71250	76.49071	264.55305	7.78556	0.1661905	2.7662845	27	1	29 days	0.63	Williams	1999 RD ₁₉₅
1999 RU ₁₉₅	14.8	0.15	19990830	18.62705	1.37240	318.84694	22.01681	0.0794073	3.0948327	14	1	25 days	0.54	Williams	1999 RU ₁₉₅
1999 RC ₁₉₆	14.3	0.15	19990919	54.82958	334.03730	300.48366	12.68739	0.2042001	2.6777814	16	1	26 days	0.52	Williams	1999 RC ₁₉₆
1999 RF ₁₉₆	14.7	0.15	19990919	351.81150	164.68703	196.39948	14.99757	0.1435378	2.6154501	11	1	23 days	0.32	Williams	1999 RF ₁₉₆
1999 RV ₁₉₆	14.6	0.15	19990919	7.29027	42.28048	299.85336	9.17314	0.1187454	3.0036597	23	1	32 days	0.68	Williams	1999 RV ₁₉₆
1999 RJ ₁₉₇	14.6	0.15	19990919	340.63653	65.35822	313.04307	7.85665	0.0238220	2.9956113	17	1	21 days	0.41	Williams	1999 RJ ₁₉₇
1999 RK ₁₉₇	14.9	0.15	19990919	226.59563	227.10901	272.04481	4.68623	0.1085035	2.3969269	25	1	29 days	0.57	Williams	1999 RK ₁₉₇
1999 RO ₁₉₇	14.2	0.15	19990810	271.81558	150.61851	296.08997	5.99997	0.0807982	2.2749354	27	1	73 days	0.38	M-v 5 Williams	1999 RO ₁₉₇
1999 RQ ₁₉₇	13.9	0.15	19990919	62.76794	286.12411	337.60194	24.74610	0.2390920	3.1987508	15	1	26 days	0.73	Williams	1999 RQ ₁₉₇
1999 RR ₁₉₇	14.9	0.15	19990810	194.05313	218.66036	293.48853	6.38765	0.1048171	2.3249624	30	1	73 days	0.67	M-v 5 Williams	1999 RR ₁₉₇
1999 RX ₁₉₇	13.7	0.15	19990919	326.64788	135.19671	261.02162	8.23753	0.0974473	3.1659795	35	1	27 days	0.56	Williams	1999 RX ₁₉₇
1999 RZ ₁₉₇	14.1	0.15	19990919	279.36863	138.41366	309.00935	9.15037	0.0740024	3.0678116	14	1	26 days	0.80	Williams	1999 RZ ₁₉₇
1999 RC ₁₉₈	12.1	0.15	19990810	299.49814	106.86370	333.37182	14.31013	0.2146494	3.1285079	33	1	86 days	0.37	M-v 4 Williams	1999 RC ₁₉₈
1999 RO ₁₉₈	16.6	0.15	19990919	308.30436	92.35175	322.61840	6.79631	0.0997620	2.2150420	28	1	33 days	0.76	D Williams	1999 RO ₁₉₈
1999 RP ₁₉₈	16.5	0.15	19990830	352.24390	34.27060	324.81013	4.17261	0.1672907	2.1612528	36	1	56 days	0.62	D Williams	1999 RP ₁₉₈
1999 RX ₁₉₈	14.7	0.15	19990810	334.06595	122.20316	248.20165	12.17635	0.1901566	2.5480398	32	1	74 days	0.34	M-v 4 Williams	1999 RX ₁₉₈

1999 RA ₁₉₉	14.5	0.15	19990919	341.09175	68.42530	302.16140	20.98867	0.1119581	3.0991396	11	1	19 days	0.43	Williams	1999 RA ₁₉₉	
1999 RY ₁₉₉	13.7	0.15	19990919	154.97656	274.90195	284.73285	14.20326	0.0788097	2.6189105	14	1	25 days	0.42	Williams	1999 RY ₁₉₉	
1999 RG ₂₀₀	14.9	0.15	19990919	343.63893	143.46619	233.83611	12.56797	0.1115469	2.9433493	25	1	37 days	0.69	Williams	1999 RG ₂₀₀	
1999 RK ₂₀₀	16.5	0.15	19990919	339.97963	147.88406	236.44751	12.78893	0.1442924	2.5403861	16	1	25 days	0.55	Williams	1999 RK ₂₀₀	
1999 RV ₂₀₀	15.3	0.15	19990919	1.76415	138.74089	217.14482	13.53341	0.1390543	2.7459791	11	1	26 days	0.51	Williams	1999 RV ₂₀₀	
1999 RY ₂₀₀	15.2	0.15	19990919	335.85532	166.08405	223.77074	15.88263	0.1330051	2.6549555	19	1	25 days	0.48	Williams	1999 RY ₂₀₀	
1999 RK ₂₀₁	14.5	0.15	19990919	311.81102	169.45578	248.40775	9.34917	0.0849022	3.0378878	24	1	26 days	0.42	Williams	1999 RK ₂₀₁	
1999 RL ₂₀₁	14.7	0.15	19990919	331.85902	212.56601	202.86942	18.56303	0.3271900	3.1688049	19	1	26 days	0.26	Williams	1999 RL ₂₀₁	
1999 RQ ₂₀₁	14.5	0.15	19990919	312.31851	195.43369	226.38962	12.62816	0.1308572	2.5987623	15	1	25 days	0.29	Williams	1999 RQ ₂₀₁	
1999 RR ₂₀₁	12.9	0.15	19990810	326.95780	101.53598	294.58267	11.66997	0.1640117	2.7831496	35	1	81 days	0.31	M-v 4	Williams	1999 RR ₂₀₁
1999 RS ₂₀₁	14.1	0.15	19990919	299.62179	199.36638	242.50784	13.42064	0.1758425	3.1571596	23	1	27 days	0.43	Williams	1999 RS ₂₀₁	
1999 RT ₂₀₁	14.9	0.15	19990810	24.37197	43.23440	266.68584	10.47204	0.2220785	2.6151777	38	1	74 days	0.48	M-v 4	Williams	1999 RT ₂₀₁
1999 RV ₂₀₁	14.7	0.15	19990919	64.04052	23.75193	249.30943	13.01689	0.2215297	2.6462972	16	1	26 days	0.61	Williams	1999 RV ₂₀₁	
1999 RE ₂₀₂	14.0	0.15	19990919	310.51593	145.72915	280.67086	9.63180	0.1302560	2.9512984	18	1	25 days	0.49	Williams	1999 RE ₂₀₂	
1999 RL ₂₀₂	15.2	0.15	19990919	340.13720	163.02277	230.15301	8.70366	0.1863448	3.0675064	21	1	31 days	0.45	Williams	1999 RL ₂₀₂	
1999 RM ₂₀₂	15.4	0.15	19990919	2.42329	32.58008	329.27026	11.58227	0.0877326	2.7712506	21	1	25 days	0.65	Williams	1999 RM ₂₀₂	
1999 RN ₂₀₂	16.2	0.15	19990919	15.56652	76.80387	265.62736	5.59069	0.1451395	2.4601867	25	1	31 days	0.60	Williams	1999 RN ₂₀₂	
1999 RO ₂₀₂	14.1	0.15	19990919	358.92729	34.90818	330.72414	13.85571	0.1587468	3.0538190	11	1	25 days	0.87	Williams	1999 RO ₂₀₂	
1999 RQ ₂₀₂	14.4	0.15	19990810	359.08515	41.72638	310.28362	8.22576	0.1693483	2.7356040	21	1	68 days	0.41	M-v 4	Williams	1999 RQ ₂₀₂
1999 RH ₂₀₃	16.1	0.15	19990919	22.21986	96.74696	230.04419	7.36599	0.1302888	2.3497132	19	1	27 days	0.59	Williams	1999 RH ₂₀₃	
1999 RP ₂₀₃	14.8	0.15	19990919	3.56304	133.97502	219.50091	18.23810	0.2347479	3.1521402	14	1	25 days	0.44	Williams	1999 RP ₂₀₃	
1999 RA ₂₀₄	14.1	0.15	19990919	291.62209	111.37940	347.55141	28.05877	0.2303192	2.6471495	28	1	37 days	0.39	Williams	1999 RA ₂₀₄	
1999 RB ₂₀₄	14.1	0.15	19990919	344.17110	76.26033	306.58981	9.88626	0.0542730	3.1488006	11	1	25 days	0.50	Williams	1999 RB ₂₀₄	
1999 RL ₂₀₄	14.5	0.15	19990919	166.72171	238.99608	317.32329	11.82290	0.1098095	2.6386888	18	1	25 days	0.55	Williams	1999 RL ₂₀₄	
1999 RP ₂₀₄	14.6	0.15	19990919	11.11043	94.68612	255.42569	9.53168	0.1274054	2.9657227	18	1	25 days	0.49	Williams	1999 RP ₂₀₄	
1999 RY ₂₀₄	14.0	0.15	19990919	344.88818	77.87539	308.34817	15.18454	0.1537846	3.0391434	15	1	25 days	0.27	Williams	1999 RY ₂₀₄	
1999 RZ ₂₀₄	16.1	0.15	19990919	339.83831	153.65402	245.93086	11.77469	0.2897495	2.6412269	12	1	25 days	0.57	Williams	1999 RZ ₂₀₄	
1999 RK ₂₀₅	13.9	0.15	19990919	28.51547	72.87514	253.22508	13.38041	0.1722910	3.2200080	18	1	25 days	0.33	Williams	1999 RK ₂₀₅	
1999 RM ₂₀₅	14.4	0.15	19990919	345.55688	118.84607	264.61635	12.20623	0.0795184	3.1401392	20	1	25 days	0.76	Williams	1999 RM ₂₀₅	
1999 RP ₂₀₅	14.9	0.15	19990810	333.18379	180.07590	209.13433	16.98580	0.1820299	2.6217422	37	1	80 days	0.55	M-v 4	Williams	1999 RP ₂₀₅
1999 RR ₂₀₅	13.2	0.15	19990810	314.13019	165.97973	247.51689	10.39216	0.1079552	3.0582378	24	1	72 days	0.39	M-v 5	Williams	1999 RR ₂₀₅
1999 RV ₂₀₅	14.4	0.15	19990919	10.60584	44.38111	308.28518	9.47220	0.1037336	2.9796582	23	1	31 days	0.42	Williams	1999 RV ₂₀₅	
1999 RA ₂₀₆	15.1	0.15	19990810	12.96445	22.51445	308.56016	7.41828	0.2132578	2.7345843	23	1	78 days	0.57	M-v 5	Williams	1999 RA ₂₀₆
1999 RB ₂₀₆	16.0	0.15	19990919	332.84785	97.93775	299.83178	6.23981	0.1049349	2.2862780	23	1	31 days	0.74	Williams	1999 RB ₂₀₆	
1999 RC ₂₀₆	16.7	0.15	19990919	346.27754	72.06054	313.80153	7.06535	0.2137596	2.4471282	26	1	31 days	0.61	Williams	1999 RC ₂₀₆	
1999 RL ₂₀₆	16.5	0.15	19990919	2.54558	159.34952	199.18757	23.84116	0.1688576	2.2633364	44	1	41 days	0.39	Williams	1999 RL ₂₀₆	
1999 RN ₂₀₆	15.5	0.15	19990919	6.91408	128.57127	227.25954	13.96492	0.1221381	2.6052988	19	1	31 days	0.33	Williams	1999 RN ₂₀₆	
1999 RT ₂₀₆	12.7	0.15	19990919	5.01769	77.12805	284.40967	13.18479	0.1172526	3.1409049	19	1	25 days	0.32	Williams	1999 RT ₂₀₆	
1999 RC ₂₀₇	14.3	0.15	19990919	325.71638	170.68931	244.05701	11.93335	0.1567297	3.0993190	19	1	25 days	0.33	Williams	1999 RC ₂₀₇	
1999 RF ₂₀₇	15.0	0.15	19990919	347.76748	111.29618	272.53167	6.47044	0.1889751	2.3199282	14	1	25 days	1.24	Williams	1999 RF ₂₀₇	
1999 RG ₂₀₇	14.7	0.15	19990919	315.43417	144.71959	275.64525	8.23259	0.0852860	3.1721213	19	1	31 days	0.43	Williams	1999 RG ₂₀₇	
1999 RO ₂₀₇	14.3	0.15	19990919	273.73437	156.40221	305.24479	8.66506	0.0571935	3.0948828	19	1	30 days	0.49	Williams	1999 RO ₂₀₇	
1999 RP ₂₀₇	16.2	0.15	19990919	341.85883	69.40984	321.26934	8.77462	0.1656268	2.2634084	14	1	25 days	0.27	Williams	1999 RP ₂₀₇	
1999 RQ ₂₀₇	15.6	0.15	19990919	11.09014	47.91352	300.04776	6.68136	0.2326768	2.8055077	18	1	30 days	0.27	Williams	1999 RQ ₂₀₇	
1999 RW ₂₀₇	17.2	0.15	19990919	350.73084	111.87977	268.53561	4.66567	0.2456824	2.2578105	22	1	31 days	0.45	Williams	1999 RW ₂₀₇	
1999 RY ₂₀₇	14.8	0.15	19990810	336.41795	180.85319	208.80702	13.89332	0.2655277	2.5209037	37	1	89 days	0.28	M-v 3	Williams	1999 RY ₂₀₇
1999 RG ₂₀₈	15.7	0.15	19990919	2.10399	43.98759	323.84253	13.65600	0.1238132	2.6333860	16	1	25 days	0.67	Williams	1999 RG ₂₀₈	
1999 RL ₂₀₈	16.2	0.15	19990919	353.33794	75.43735	300.95448	6.49239	0.1286603	2.3074079	20	1	31 days	0.49	Williams	1999 RL ₂₀₈	
1999 RN ₂₀₈	16.3	0.15	19990919	323.58609	185.95336	236.47622	7.44441	0.2207010	2.5247629	18	1	31 days	0.48	Williams	1999 RN ₂₀₈	
1999 RR ₂₀₈	16.8	0.15	19990919	359.66678	71.30626	296.20580	5.80060	0.2985739	2.7934995	17	1	25 days	0.49	Williams	1999 RR ₂₀₈	
1999 RT ₂₀₈	14.4	0.15	19990919	79.19396	57.74042	224.81052	10.45822	0.0697320	2.9643808	23	1	31 days	0.53	Williams	1999 RT ₂₀₈	
1999 RW ₂₀₈	13.1	0.15	19990810	322.70994	177.47949	233.79190	6.48115	0.2200889	2.7093391	29	1	78 days	0.46	M-v 5	Williams	1999 RW ₂₀₈
1999 RB ₂₀₉	13.2	0.15	19990919	351.02283	62.89832	319.97072	7.61647	0.1659095	3.1507736	17	1	30 days	0.28	Williams	1999 RB ₂₀₉	

1999 RC ₂₀₉	15.7	0.15	19990919	348.02249	108.00731	274.70995	4.68288	0.1105786	2.3768054	27	1	33 days	0.83	Williams	1999 RC ₂₀₉
1999 RE ₂₀₉	16.8	0.15	19990919	5.50462	53.29755	306.59928	5.28707	0.1536470	2.3898208	22	1	31 days	0.84	Williams	1999 RE ₂₀₉
1999 RV ₂₀₉	13.9	0.15	19990919	354.19056	56.37038	323.17123	9.89747	0.1150755	2.9616843	14	1	25 days	0.45	Williams	1999 RV ₂₀₉
1999 RD ₂₁₀	14.5	0.15	19990919	343.70338	73.98642	321.44453	6.09411	0.2279634	2.4362975	15	1	25 days	0.25	Williams	1999 RD ₂₁₀
1999 RO ₂₁₀	15.6	0.15	19990919	4.86328	98.24696	263.75759	5.77800	0.1709020	2.2154484	15	1	25 days	0.30	Williams	1999 RO ₂₁₀
1999 RW ₂₁₀	13.8	0.15	19990919	329.57282	97.92590	315.87578	9.89938	0.1138083	3.1126656	13	1	25 days	0.49	Williams	1999 RW ₂₁₀
1999 RM ₂₁₁	13.7	0.15	19990919	195.60951	214.22287	327.15749	9.46219	0.0131456	2.8023544	15	1	25 days	0.49	Williams	1999 RM ₂₁₁
1999 RN ₂₁₁	16.9	0.15	19990919	4.05322	54.76375	306.07755	5.11701	0.3559741	2.5906663	13	1	25 days	0.59	Williams	1999 RN ₂₁₁
1999 RO ₂₁₁	13.5	0.15	19990810	337.29680	190.10182	206.92322	27.45669	0.1641990	3.1758409	49	1	90 days	0.65	M-v 4 Williams	1999 RO ₂₁₁
1999 RQ ₂₁₁	13.9	0.15	19990919	0.01988	42.56093	331.60454	9.98717	0.2119422	2.7357515	15	1	24 days	0.48	Williams	1999 RQ ₂₁₁
1999 RC ₂₁₂	15.5	0.15	19990919	7.30669	55.17099	306.78679	6.08820	0.2303857	2.4033464	15	1	25 days	0.45	Williams	1999 RC ₂₁₂
1999 RH ₂₁₂	15.3	0.15	19990919	332.58802	139.98277	259.50382	8.24079	0.0895332	3.0580653	20	1	31 days	0.63	Williams	1999 RH ₂₁₂
1999 RK ₂₁₂	14.9	0.15	19990919	167.01249	333.74042	224.93108	13.91252	0.0310804	2.6002484	26	1	31 days	0.73	Williams	1999 RK ₂₁₂
1999 RQ ₂₁₂	14.1	0.15	19990919	188.59695	231.44934	316.81376	12.25895	0.1077308	2.5876916	12	1	25 days	0.51	Williams	1999 RQ ₂₁₂
1999 RU ₂₁₂	16.1	0.15	19990919	12.95178	74.96451	273.67377	5.41576	0.2145747	2.3862533	14	1	25 days	0.60	Williams	1999 RU ₂₁₂
1999 RX ₂₁₂	14.7	0.15	19990919	353.76442	151.42638	211.56779	12.87535	0.1343880	3.0133917	15	1	25 days	0.56	Williams	1999 RX ₂₁₂
1999 RE ₂₁₃	14.0	0.15	19990810	354.99975	80.67611	264.88848	14.10396	0.0864514	3.0244056	22	1	74 days	0.47	M-v 4 Williams	1999 RE ₂₁₃
1999 RH ₂₁₃	16.3	0.15	19990919	328.08187	51.30717	343.70826	1.24370	0.0896958	2.9157596	23	1	34 days	0.47	Williams	1999 RH ₂₁₃
1999 RP ₂₁₃	16.1	0.15	19990919	299.56635	129.28713	323.43738	6.65546	0.2418278	2.3510259	38	1	42 days	0.53	Williams	1999 RP ₂₁₃
1999 RV ₂₁₃	15.1	0.15	19990919	284.44888	72.56309	337.55345	1.73121	0.0477370	2.8783606	11	1	31 days	0.13	Williams	1999 RV ₂₁₃
1999 RH ₂₁₄	16.9	0.15	19990919	355.64902	85.01958	279.21604	4.99448	0.1924911	2.3591009	20	1	28 days	0.16	Marsden	1999 RH ₂₁₄
1999 RJ ₂₁₄	16.5	0.15	19990919	9.72895	310.89621	18.53566	6.21234	0.3098270	2.5633899	42	1	23 days	0.54	Williams	1999 RJ ₂₁₄
1999 RO ₂₁₄	13.7	0.15	19990919	296.73581	85.00764	356.29255	10.82634	0.1235027	3.0257439	29	1	45 days	0.57	Williams	1999 RO ₂₁₄
1999 RR ₂₁₄	13.9	0.15	19990919	315.59684	268.17748	155.64180	9.00455	0.1737256	3.9627859	30	1	28 days	0.53	Marsden	1999 RR ₂₁₄
1999 SB	17.5	0.15	19990919	350.37730	335.38369	46.90178	5.92741	0.3087518	2.5786744	23	1	23 days	0.51	Williams	1999 SB
1999 SE	14.3	0.15	19990810	354.47832	174.20865	195.25660	12.01511	0.2028084	3.1959790	35	1	86 days	0.51	M-v 4 Williams	1999 SE
1999 SG	14.6	0.15	19990830	257.62799	112.03106	8.18626	5.32377	0.1143610	2.3022858	35	1	55 days	0.56	Williams	1999 SG
1999 SH	15.6	0.15	19990919	5.89126	339.78672	17.99862	4.32162	0.2846506	2.6911967	26	1	27 days	0.39	Williams	1999 SH
1999 SL	13.9	0.15	19990919	343.87404	10.95240	30.71635	8.68799	0.2289751	2.8017850	39	1	33 days	0.39	Williams	1999 SL
1999 SS	15.1	0.15	19990919	333.63766	214.41895	182.58701	12.82466	0.0939593	3.0846052	14	1	21 days	0.69	Williams	1999 SS
1999 SV	16.2	0.15	19990919	354.44443	217.27508	155.96762	1.28246	0.1991333	3.0849234	10	1	14 days	0.66	Williams	1999 SV
1999 SY	16.0	0.15	19990919	290.86943	288.64395	166.34711	2.45144	0.1858552	2.3853696	26	1	30 days	0.61	Williams	1999 SY
1999 SB ₁	16.5	0.15	19990919	123.27917	173.91036	62.26847	1.59839	0.0791715	2.4848726	9	1	18 days	0.51	Williams	1999 SB ₁
1999 SE ₁	16.0	0.15	19990919	320.91090	341.56805	75.34054	3.21243	0.1906644	2.5867297	14	1	19 days	0.40	Williams	1999 SE ₁
1999 SH ₁	15.4	0.15	19990919	353.23073	173.43725	191.98277	9.05857	0.2386189	2.4332493	33	1	37 days	0.50	Williams	1999 SH ₁
1999 SL ₁	16.8	0.15	19990919	347.52982	241.31084	142.34553	15.28653	0.2194533	2.6002507	11	1	16 days	0.26	Williams	1999 SL ₁
1999 SM ₁	14.4	0.15	19990919	14.78700	94.62387	274.86814	1.12407	0.1896946	2.2179738	12	1	11 days	0.42	E Williams	1999 SM ₁
1999 SN ₁	12.7	0.15	19990919	177.34343	187.39034	39.40668	14.33584	0.1232651	2.6340681	17	1	20 days	0.79	Williams	1999 SN ₁
1999 SP ₁	15.2	0.15	19990919	301.84384	230.81915	213.65515	13.21944	0.1955805	3.1025284	12	1	12 days	0.37	Williams	1999 SP ₁
1999 SQ ₁	16.2	0.15	19990919	10.69381	339.56109	14.15513	2.54172	0.2258287	2.6240012	19	1	17 days	0.31	Williams	1999 SQ ₁
1999 SR ₁	16.8	0.15	19990919	45.02323	263.91494	43.95354	7.66468	0.1887081	2.2124462	19	1	25 days	0.54	Williams	1999 SR ₁
1999 SU ₁	13.1	0.15	19990919	0.49640	29.49080	352.94684	12.54364	0.1396620	2.7230128	24	1	23 days	0.29	Williams	1999 SU ₁
1999 SB ₂	13.6	0.15	19990810	332.93845	118.89927	267.84175	12.59397	0.1991939	2.6402570	32	1	83 days	0.41	M-v 4 Williams	1999 SB ₂
1999 SD ₂	15.6	0.15	19990919	257.44754	255.79148	209.39163	23.22303	0.1472807	1.8624285	23	1	22 days	0.38	Williams	1999 SD ₂
1999 SE ₂	14.6	0.15	19990919	337.00836	73.86403	324.21819	25.62882	0.3105115	2.6713357	29	1	15 days	0.27	Williams	1999 SE ₂
1999 SG ₂	14.5	0.15	19990919	222.60608	114.32131	51.67723	9.32300	0.0817684	2.4390099	20	1	15 days	0.63	Williams	1999 SG ₂
1999 SH ₂	15.0	0.15	19990919	352.52565	254.55734	146.12523	2.44586	0.1965903	2.4082722	10	1	28 days	0.21	Williams	1999 SH ₂
1999 SJ ₂	14.3	0.15	19990810	334.45390	37.72260	353.95776	13.63088	0.2753512	2.5396926	37	1	61 days	0.46	M-v 4 Williams	1999 SJ ₂
1999 SK ₂	16.6	0.15	19990810	61.25075	231.25767	357.33321	4.74803	0.4535025	2.4056453	34	1	30 days	0.45	M-v 7 Williams	1999 SK ₂
1999 SN ₂	16.6	0.15	19990919	3.03932	169.33184	184.37246	5.26615	0.0278170	2.8095805	15	1	16 days	0.56	Williams	1999 SN ₂
1999 SO ₂	15.5	0.15	19990919	337.98323	92.77450	336.21832	21.97237	0.3713560	2.5681088	18	1	6 days	0.59	Williams	1999 SO ₂
1999 SP ₂	15.5	0.15	19990919	25.69457	359.08078	345.68947	25.62188	0.2223808	2.3440770	12	1	6 days	0.36	Williams	1999 SP ₂
1999 SQ ₂	15.5	0.15	19990919	338.99180	2.23700	28.75092	14.29809	0.1840052	2.6204550	45	1	37 days	0.52	Marsden	1999 SQ ₂

1999 SR ₂	15.3	0.15	19990919	279.23833	337.90255	112.26231	7.41598	0.0667825	2.3979213	28	1	28 days	0.53	Marsden	1999 SR ₂
1999 SS ₂	14.9	0.15	19990919	345.07432	358.50973	23.23482	18.67217	0.1729212	2.7767145	51	1	42 days	0.50	Marsden	1999 SS ₂
1999 SV ₂	14.6	0.15	19990919	344.61311	38.03657	10.68482	9.26972	0.0612970	2.9685881	16	1	27 days	0.38	Williams	1999 SV ₂
1999 SY ₂	16.4	0.15	19990919	4.56154	119.73947	229.26841	23.14750	0.2997072	2.2625107	47	1	24 days	1.03	Williams	1999 SY ₂
1999 SB ₃	13.4	0.15	19990919	349.70670	60.05426	354.50486	32.11267	0.3396883	2.7676713	32	1	24 days	0.54	Williams	1999 SB ₃
1999 SC ₃	15.5	0.15	19990919	18.79241	51.69380	316.20371	23.05475	0.0553084	1.8474588	22	1	8 days	0.56	Williams	1999 SC ₃
1999 SD ₃	14.3	0.15	19990919	327.17145	115.90716	328.59316	30.29412	0.3252329	2.6993108	17	1	4 days	0.50	Williams	1999 SD ₃
1999 SN ₃	13.5	0.15	19990919	48.28004	48.64800	258.52813	23.55417	0.2064311	2.2776941	17	1	21 days	0.46	Williams	1999 SN ₃
1999 SU ₃	16.9	0.15	19990919	349.16648	1.83237	17.99634	9.96071	0.2704414	2.6997318	17	1	26 days	0.71	Williams	1999 SU ₃
1999 SV ₃	15.2	0.15	19990919	355.83487	1.86194	343.59342	26.98452	0.3401802	3.0235913	38	1	6 days	0.38	Williams	1999 SV ₃
1999 SA ₄	15.9	0.15	19990919	18.50605	146.61498	191.59535	12.00150	0.1918777	2.6912342	24	1	10 days	0.45	Williams	1999 SA ₄
1999 SB ₄	14.1	0.15	19990919	31.59186	324.71863	3.34801	6.87378	0.1175305	3.1512447	34	1	16 days	0.61	Williams	1999 SB ₄
1999 SC ₄	14.6	0.15	19990919	27.49586	318.16835	5.80322	9.51803	0.2241556	3.1062486	34	1	16 days	0.50	Williams	1999 SC ₄
1999 SG ₄	13.3	0.15	19990919	247.78126	100.18828	53.04262	15.11477	0.1973810	2.5939048	14	1	5 days	0.34	Williams	1999 SG ₄
1999 SH ₄	15.8	0.15	19990919	48.41967	359.99113	293.85357	2.22764	0.2072963	2.3692600	29	1	16 days	1.48	Williams	1999 SH ₄
1999 SL ₄	13.6	0.15	19991009	337.50984	214.38536	199.28403	4.73203	0.2924990	3.1218098	38	1	20 days	0.35	Williams	1999 SL ₄
1999 SM ₄	15.7	0.15	19990919	27.58227	322.39303	6.84406	15.04002	0.1495498	2.5527730	22	1	15 days	0.84	Williams	1999 SM ₄
1999 SN ₄	13.9	0.15	19990919	312.23820	60.57284	12.33421	10.41142	0.1281321	2.4343126	21	1	32 days	0.27	Williams	1999 SN ₄
1999 SO ₄	14.4	0.15	19990919	293.78182	67.35713	18.12800	4.94403	0.0547448	2.3578295	19	1	41 days	0.48	Williams	1999 SO ₄
1999 SP ₄	14.0	0.15	19991009	328.96359	224.66154	199.71434	8.79298	0.1875012	2.7480020	31	1	18 days	0.58	Williams	1999 SP ₄
1999 SS ₄	15.6	0.15	19991009	30.86864	287.73714	43.45693	0.70054	0.2234062	2.3526692	20	1	20 days	1.00	Williams	1999 SS ₄
1999 SV ₄	15.9	0.15	19990919	319.96226	199.84196	200.72249	14.93938	0.0797879	2.5939623	15	1	8 days	0.73	Williams	1999 SV ₄
1999 SX ₄	15.5	0.15	19990919	334.89417	258.36335	145.48563	3.91536	0.2004656	2.7350226	49	1	12 days	0.65	Williams	1999 SX ₄
1999 SZ ₄	16.2	0.15	19990919	3.84659	342.38766	354.81405	12.35502	0.2773620	2.3566543	21	1	9 days	0.45	Williams	1999 SZ ₄
1999 SD ₅	13.6	0.15	19990919	333.35118	263.47090	137.55408	18.83190	0.2174124	3.1801194	17	1	6 days	0.45	Williams	1999 SD ₅
1999 SJ ₅	16.1	0.15	19990919	352.80289	294.94369	67.88050	1.90814	0.2115082	2.3541570	27	1	7 days	0.50	Williams	1999 SJ ₅
1999 SK ₅	18.2	0.15	19991009	349.46813	33.96435	353.50949	46.99639	0.4201967	2.4510401	47	1	17 days	0.81	Williams	1999 SK ₅
1999 SL ₅	17.3	0.15	19991009	28.90782	43.00302	239.35804	22.82183	0.5376011	1.9222042	113	1	25 days	0.43	Williams	1999 SL ₅
1999 SM ₅	19.1	0.15	19990810	0.14090	318.49254	328.39187	5.17135	0.6928817	2.3015002	240	1	22 days	0.56	M-v 6 Williams	1999 SM ₅
1999 SO ₅	21.3	0.15	19991009	171.90709	359.54647	196.21596	13.35212	0.0646618	1.0851319	65	1	19 days	0.99	Williams	1999 SO ₅
1999 SD ₆	16.8	0.15	19990919	339.39734	273.06855	114.53666	6.91057	0.2188187	2.5477189	13	1	4 days	0.44	Williams	1999 SD ₆
1999 SN ₆	13.0	0.15	19990919	349.78664	264.64958	116.08350	10.78079	0.1104007	2.9919226	25	1	6 days	0.38	Williams	1999 SN ₆
1999 SU ₆	14.0	0.15	19990919	50.01788	1.38249	322.64169	0.89428	0.0780548	2.9058649	42	1	28 days	0.41	Williams	1999 SU ₆
1999 SW ₆	15.3	0.15	19990919	17.23934	123.34723	219.56778	1.43853	0.2347231	2.4050307	26	1	11 days	0.60	Williams	1999 SW ₆
1999 SO ₉	13.1	0.15	19990919	336.13878	309.05580	45.51728	8.78275	0.2101311	2.6565529	15	1	19 days	0.80	Williams	1999 SO ₉
1999 SS ₉	15.1	0.15	19990919	319.48999	19.70963	64.07330	5.90197	0.2514743	2.5654455	14	1	7 days	0.48	E Williams	1999 SS ₉
1999 ST ₉	14.7	0.15	19990919	2.47708	13.33998	358.35181	5.96548	0.1916896	3.1618353	23	1	7 days	0.67	Williams	1999 ST ₉
1999 SU ₉	15.9	0.15	19990919	355.54318	5.71557	11.55084	3.56790	0.1443760	2.2823818	25	1	7 days	0.51	Williams	1999 SU ₉
1999 SX ₉	16.8	0.15	19990919	3.10863	326.43546	34.05046	5.20302	0.1544093	2.2539475	37	1	27 days	0.55	Williams	1999 SX ₉
1999 SY ₉	15.7	0.15	19990919	55.07045	228.19452	35.45477	7.86520	0.1463307	2.4947748	9	1	3 days	0.27	E Williams	1999 SY ₉
1999 SZ ₉	16.2	0.15	19990919	355.02583	150.69787	196.65752	11.45697	0.2032742	2.6131834	14	1	36 days	0.55	Williams	1999 SZ ₉
1999 SB ₁₀	14.8	0.15	19990919	65.31698	352.45725	242.36079	3.70100	0.1437307	2.1776345	8	1	3 days	0.27	E Williams	1999 SB ₁₀
1999 SC ₁₀	14.7	0.15	19990919	319.81335	198.66424	235.68736	16.83831	0.1994974	3.1299668	15	1	27 days	0.80	Williams	1999 SC ₁₀
1999 SD ₁₀	17.4	0.15	19991009	9.58252	227.51586	91.74778	5.98529	0.5267874	3.0136267	48	1	17 days	0.53	Williams	1999 SD ₁₀
1999 SE ₁₀	20.0	0.15	19991009	356.49966	349.48625	40.40887	6.89850	0.6210735	3.2119231	46	1	20 days	0.62	Nakano	1999 SE ₁₀
1999 SF ₁₀	24.2	0.15	19990810	293.85233	28.25225	27.60118	1.12581	0.2496558	1.2696330	49	1	9 days	0.69	M-v 6 Williams	1999 SF ₁₀
1999 SG ₁₀	20.6	0.15	19990810	292.76575	103.10503	13.68346	23.58271	0.6135593	1.4532085	86	1	17 days	0.55	M-v 7 Williams	1999 SG ₁₀
1999 SH ₁₀	22.7	0.15	19990919	46.68176	118.74607	178.70826	9.59297	0.1305932	1.0982582	45	1	16 days	0.61	Williams	1999 SH ₁₀
1999 SJ ₁₀	19.5	0.15	19991009	23.97870	126.43358	133.92342	6.70558	0.7095235	2.1333899	33	1	17 days	0.43	Williams	1999 SJ ₁₀
1999 SK ₁₀	19.5	0.15	19991009	324.08216	268.75251	198.14779	6.96334	0.4410949	1.7644626	53	1	22 days	0.58	Williams	1999 SK ₁₀
1999 SR ₁₀	15.7	0.15	19990919	11.12828	138.67025	209.70770	6.47055	0.1356108	2.2581690	11	1	8 days	0.34	Williams	1999 SR ₁₀
1999 SS ₁₀	16.8	0.15	19990919	359.27356	34.63901	328.91741	3.48848	0.2448154	2.3553718	11	1	8 days	0.64	Williams	1999 SS ₁₀
1999 SP ₁₁	16.9	0.15	19990919	13.65893	230.39645	120.02200	3.26585	0.2601727	2.2557464	13	1	7 days	0.35	Williams	1999 SP ₁₁

1999 SQ ₁₁	14.8	0.15	19990919	17.30231	279.73447	78.18882	5.67223	0.1604347	2.7881885	13	1	7 days	0.38		Williams	1999 SQ ₁₁
1999 ST ₁₁	15.5	0.15	19990919	356.69947	328.48407	55.49424	8.06029	0.0636448	2.2591277	13	1	7 days	0.87	E	Williams	1999 ST ₁₁
1999 SU ₁₁	16.0	0.15	19990919	321.55141	267.59653	161.77406	6.40331	0.1247303	2.3463847	12	1	7 days	0.72		Williams	1999 SU ₁₁
1999 SW ₁₁	14.5	0.15	19990919	307.92841	23.23427	60.86248	7.32843	0.1102882	2.3377513	13	1	7 days	0.27	E	Williams	1999 SW ₁₁
1999 TA	15.4	0.15	19990919	113.47980	232.86157	12.56214	6.46589	0.1383901	2.2604012	12	1	6 days	0.37	E	Williams	1999 TA
1999 TD	13.6	0.15	19990919	305.21136	252.81839	201.91424	22.45039	0.2366841	3.1400846	37	1	27 days	0.57		Williams	1999 TD
1999 TE	16.6	0.15	19990919	350.99151	153.90631	230.06851	2.89953	0.2393477	2.2930138	20	1	6 days	0.40	E	Williams	1999 TE
1999 TF	16.0	0.15	19991009	13.91255	217.57002	127.59502	5.37414	0.2594961	2.3508186	24	1	17 days	0.26		Marsden	1999 TF
1999 TG	16.9	0.15	19990919	27.08445	327.55367	358.49196	0.71361	0.1657385	2.2270892	14	1	5 days	0.38	E	Williams	1999 TG
1999 TH	14.1	0.15	19990919	198.72104	322.25265	211.22010	0.35629	0.1593463	3.1859977	10	1	5 days	0.44	E	Williams	1999 TH
1999 TK	14.9	0.15	19990919	332.10152	335.81545	77.42985	2.14669	0.1903827	3.0921970	18	1	5 days	0.39		Williams	1999 TK
1999 TL	14.3	0.15	19990919	277.83789	26.78723	89.01353	2.21844	0.1673727	3.1038215	23	1	5 days	0.38	E	Williams	1999 TL
1999 TN	15.3	0.15	19990919	346.02956	183.04603	209.29939	7.09466	0.1976670	2.3943330	36	1	32 days	0.28		Williams	1999 TN
1999 TO	16.6	0.15	19990919	337.20478	115.29964	284.37356	0.73065	0.1743132	2.3809505	25	1	9 days	0.39		Williams	1999 TO
1999 TQ	16.0	0.15	19991009	354.56099	185.87705	209.26998	1.64468	0.2345367	2.3981788	21	1	14 days	0.59		Williams	1999 TQ
1999 TS	15.1	0.15	19991009	28.36772	133.42542	202.51461	8.46404	0.1716351	2.7981453	27	1	16 days	0.37		Williams	1999 TS
1999 TT	15.6	0.15	19991009	35.20873	310.03968	21.23096	7.14139	0.1310079	2.3579983	23	1	15 days	0.55		Williams	1999 TT
1999 TV	16.1	0.15	19991009	7.32286	145.82082	219.83616	2.31245	0.3012902	2.4308771	28	1	14 days	0.66		Williams	1999 TV
1999 TY	14.0	0.15	19991009	78.41644	255.65175	22.29332	16.94043	0.2089199	2.5971773	20	1	16 days	0.87		Williams	1999 TY
1999 TZ	15.7	0.15	19990919	3.53992	174.92567	188.03719	4.52726	0.3005244	2.5048393	24	1	7 days	0.55		Williams	1999 TZ
1999 TA ₁	16.4	0.15	19990919	12.82338	176.44031	174.16210	2.66995	0.2217222	2.3584095	24	1	7 days	0.89		Williams	1999 TA ₁
1999 TB ₁	15.7	0.15	19991009	355.49074	179.08457	208.78070	4.68962	0.2347443	2.3668358	33	1	14 days	0.25		Williams	1999 TB ₁
1999 TD ₁	14.4	0.15	19990919	33.02323	129.91276	199.78251	22.87780	0.1888902	3.1288182	18	1	6 days	0.49		Williams	1999 TD ₁
1999 TE ₁	13.6	0.15	19990919	1.47318	307.45879	67.40528	2.23025	0.1122063	3.1498431	25	1	7 days	0.48	E	Williams	1999 TE ₁
1999 TF ₁	14.8	0.15	19990919	329.81315	201.49076	224.29035	2.76855	0.2445545	3.0435534	32	1	13 days	0.89		Williams	1999 TF ₁
1999 TG ₁	14.5	0.15	19990919	357.61275	71.80355	308.77481	0.96914	0.1389647	2.9292118	30	1	13 days	0.57		Williams	1999 TG ₁
1999 TH ₁	14.9	0.15	19991009	249.96221	289.01468	211.38191	4.69477	0.0792628	2.2755848	24	1	17 days	0.65		Williams	1999 TH ₁
1999 TJ ₁	14.2	0.15	19991009	317.15161	53.10253	15.57250	6.38357	0.0495061	2.4501250	33	1	14 days	0.50		Williams	1999 TJ ₁
1999 TK ₁	13.7	0.15	19991009	243.11937	286.97173	213.49085	1.24894	0.0113498	2.7024839	22	1	18 days	0.45		Williams	1999 TK ₁
1999 TL ₁	15.5	0.15	19991009	355.84091	190.44830	196.74887	6.24477	0.2012871	2.5204771	24	1	18 days	2.22		Williams	1999 TL ₁
1999 TN ₁	14.2	0.15	19991009	44.09226	109.94801	205.62063	15.06820	0.2387933	3.1439327	21	1	16 days	0.49		Williams	1999 TN ₁
1999 TO ₁	15.2	0.15	19990919	5.67824	350.25672	16.17737	11.27325	0.1681815	2.4148116	35	1	11 days	0.43		Williams	1999 TO ₁
1999 TP ₁	15.7	0.15	19990919	352.62321	166.88121	217.50406	1.70551	0.1873022	2.4026350	20	1	5 days	0.52	E	Williams	1999 TP ₁
1999 TQ ₁	15.7	0.15	19991009	20.00393	327.23487	16.25391	13.04062	0.3017724	2.6483207	38	1	13 days	0.44		Williams	1999 TQ ₁
1999 TT ₁	13.6	0.15	19990919	22.96809	324.04470	18.35861	10.69863	0.2211838	3.1453481	27	1	13 days	0.53		Williams	1999 TT ₁
1999 TU ₁	13.0	0.15	19991009	170.74697	178.74826	33.48293	6.79002	0.0365403	3.0371913	30	1	16 days	0.62	E	Williams	1999 TU ₁
1999 TV ₁	15.7	0.15	19990919	15.95846	174.16409	170.54181	2.61513	0.2510084	2.3412997	28	1	9 days	0.38		Williams	1999 TV ₁
1999 TW ₁	15.1	0.15	19990919	59.94521	120.90536	183.34802	4.50433	0.1128935	2.3553667	26	1	9 days	0.97		Williams	1999 TW ₁
1999 TY ₁	14.5	0.15	19991009	5.20076	336.60458	50.76723	15.20605	0.3158791	2.5462051	19	1	15 days	0.29		Williams	1999 TY ₁
1999 TZ ₁	8.9	0.15	19990919	12.78333	130.15854	200.27647	43.56037	0.0407159	5.1879133	26	1	33 days	0.50		Williams	1999 TZ ₁
1999 TA ₂	13.8	0.15	19990919	6.07704	34.37159	309.73484	16.27860	0.3644191	2.9162524	28	1	38 days	0.55		Williams	1999 TA ₂
1999 TB ₂	13.6	0.15	19990919	359.14176	272.30864	93.57203	13.76894	0.1970481	2.6280054	25	1	31 days	0.51		Williams	1999 TB ₂
1999 TC ₂	14.1	0.15	19990919	3.59726	272.19076	87.33021	13.69868	0.2111983	2.6965970	18	1	14 days	0.43		Williams	1999 TC ₂
1999 TF ₂	15.8	0.15	19990919	347.03541	173.05268	216.99916	5.64921	0.2590919	2.2807791	26	1	28 days	0.52		Williams	1999 TF ₂
1999 TJ ₂	16.4	0.15	19991009	26.50603	139.44309	196.99967	2.87298	0.2218119	2.3586852	29	1	18 days	0.30		Williams	1999 TJ ₂
1999 TK ₂	13.7	0.15	19990919	125.11851	231.95438	343.05384	29.16523	0.2031280	3.1292552	11	1	10 days	0.71		Williams	1999 TK ₂
1999 TM ₂	14.8	0.15	19990919	303.31161	341.98342	98.97486	12.27008	0.1885214	2.6207522	9	1	2 days	0.29		Williams	1999 TM ₂
1999 TO ₂	14.6	0.15	19990919	7.31397	260.32861	94.21155	13.59159	0.2187880	2.6188911	18	1	14 days	0.67		Williams	1999 TO ₂
1999 TQ ₂	14.3	0.15	19990919	343.87002	260.52152	141.16930	21.44672	0.3086501	3.0367246	22	1	31 days	0.62		Williams	1999 TQ ₂
1999 TR ₂	12.5	0.15	19990919	52.48714	206.94569	111.07724	22.75652	0.0394764	3.1655262	8	1	12 days	0.55		Williams	1999 TR ₂
1999 TS ₂	12.6	0.15	19990919	29.16228	254.85485	76.74205	23.68261	0.1191236	3.2324361	20	1	14 days	0.70		Williams	1999 TS ₂
1999 TU ₂	16.4	0.15	19990919	3.57811	352.27151	26.27647	6.59424	0.1915162	2.4568050	10	1	4 days	0.25		Williams	1999 TU ₂
1999 TX ₂	18.4	0.15	19991009	74.72979	53.57335	180.00072	61.39758	0.4628384	1.2808541	45	1	23 days	0.57		Williams	1999 TX ₂

1999 TY ₂	23.3	0.15	19990810	332.80236	230.13737	192.27374	23.09586	0.6066571	2.2674805	96	1	5 days	0.72	M-v 6	Williams	1999 TY ₂
1999 TA ₃	12.6	0.15	19991009	13.84462	80.61871	297.22863	8.74530	0.1187221	3.0079871	12	1	11 days	0.57		Williams	1999 TA ₃
1999 TB ₃	16.1	0.15	19990919	140.63319	232.09555	345.77063	1.53669	0.1322427	2.1609985	16	1	3 days	0.64	E	Williams	1999 TB ₃
1999 TD ₃	15.0	0.15	19990919	265.80359	279.30731	206.16220	4.84654	0.1923272	2.4873729	23	1	5 days	0.46	E	Williams	1999 TD ₃
1999 TE ₃	16.9	0.15	19991009	9.50651	345.05496	11.28877	24.73507	0.3103353	2.9853170	24	1	11 days	0.56		Williams	1999 TE ₃
1999 TG ₃	16.8	0.15	19990919	54.97701	121.16197	176.46412	2.55131	0.1461122	2.3638887	7	1	8 days	0.17	E	Williams	1999 TG ₃
1999 TK ₃	14.7	0.15	19990919	345.90474	165.31369	227.32441	1.73663	0.1044196	3.1889721	13	1	3 days	0.23	E	Williams	1999 TK ₃
1999 TL ₃	17.0	0.15	19991009	345.26189	31.71516	13.53132	11.30429	0.2803975	2.5484092	25	1	11 days	0.56		Williams	1999 TL ₃
1999 TM ₃	15.6	0.15	19990919	74.10991	202.94387	85.10205	4.26917	0.1197215	2.2975270	13	1	5 days	0.51		Williams	1999 TM ₃
1999 TN ₃	14.7	0.15	19991009	322.60011	65.33506	28.54232	24.28181	0.3588569	2.7460413	43	1	16 days	0.35		Williams	1999 TN ₃
1999 TP ₃	13.5	0.15	19990919	355.45384	11.29927	18.23209	10.81354	0.1086882	3.0474370	30	1	31 days	0.59		Williams	1999 TP ₃
1999 TQ ₃	14.7	0.15	19990919	324.20865	79.12070	328.99438	9.43536	0.0852893	3.1019166	10	1	9 days	0.59		Williams	1999 TQ ₃
1999 TR ₃	16.6	0.15	19990919	61.49790	86.98481	203.78139	4.45518	0.1748663	2.2774576	18	1	13 days	0.45		Williams	1999 TR ₃
1999 TS ₃	15.8	0.15	19990919	74.47957	325.66091	324.59667	0.78821	0.0785626	2.6377892	16	1	12 days	0.38		Williams	1999 TS ₃
1999 TT ₃	17.1	0.15	19991009	1.88073	357.38894	17.16915	3.42296	0.2643893	2.6463074	16	1	15 days	0.26		Williams	1999 TT ₃
1999 TU ₃	13.6	0.15	19991009	251.21052	117.53964	16.23211	10.08683	0.0567256	2.9683365	33	1	17 days	0.50		Williams	1999 TU ₃
1999 TV ₃	17.5	0.15	19991009	3.67388	225.74091	146.76113	4.43847	0.2300026	2.4257104	13	1	17 days	0.36		Williams	1999 TV ₃
1999 TX ₃	16.0	0.15	19990919	19.87471	329.32140	13.74693	4.25223	0.1604666	2.3160195	26	1	24 days	0.29		Williams	1999 TX ₃
1999 TY ₃	15.6	0.15	19991009	287.02197	83.82133	24.88656	3.61772	0.1533918	2.3304728	27	1	19 days	0.56		Williams	1999 TY ₃
1999 TZ ₃	14.6	0.15	19991009	279.68018	270.89747	192.84772	9.28912	0.0363485	3.1313754	9	1	18 days	0.26		Williams	1999 TZ ₃
1999 TA ₄	13.5	0.15	19991009	111.13634	37.14575	231.18636	12.47972	0.1632894	2.7403377	9	1	17 days	0.16		Williams	1999 TA ₄
1999 TB ₄	15.4	0.15	19991009	321.44823	101.17947	340.55701	4.44358	0.0929948	3.0679754	14	1	18 days	0.36		Williams	1999 TB ₄
1999 TD ₄	15.1	0.15	19991009	118.69673	280.65971	307.97443	5.33049	0.2374200	2.2554340	14	1	14 days	0.24		Williams	1999 TD ₄
1999 TF ₄	13.4	0.15	19991009	322.32417	39.41521	56.64747	2.31931	0.3006218	3.1338896	20	1	17 days	0.62		Williams	1999 TF ₄
1999 TG ₄	14.8	0.15	19990919	313.31301	61.18223	316.44961	9.07746	0.1161256	2.8080644	16	1	6 days	0.98	E	Williams	1999 TG ₄
1999 TJ ₄	13.4	0.15	19990919	65.91037	78.46921	221.27387	5.72488	0.1206834	3.0566484	21	1	5 days	0.58	E	Williams	1999 TJ ₄
1999 TL ₄	14.9	0.15	19990919	320.67145	50.21507	15.29203	5.93976	0.1049292	2.4032352	28	1	11 days	0.70		Williams	1999 TL ₄
1999 TM ₄	14.3	0.15	19991009	41.17780	88.57075	243.70628	4.08721	0.2477523	3.0777957	13	1	15 days	0.79		Williams	1999 TM ₄
1999 TN ₄	17.3	0.15	19991009	29.73373	311.32144	21.85647	7.49504	0.1943064	2.1428134	20	1	10 days	0.55		Williams	1999 TN ₄
1999 TP ₄	15.9	0.15	19991009	352.85799	189.72593	205.73606	22.34659	0.0953184	1.9754269	29	1	16 days	0.43		Williams	1999 TP ₄
1999 TQ ₄	16.6	0.15	19991009	5.70139	176.68749	202.88117	21.98235	0.0645234	1.9116049	23	1	16 days	0.49		Williams	1999 TQ ₄
1999 TR ₄	19.3	0.15	19991009	353.28807	11.33269	11.24659	22.55466	0.1738705	1.9107848	35	1	12 days	0.41		Williams	1999 TR ₄
1999 TS ₄	15.1	0.15	19990919	66.39221	85.61072	190.79841	22.96669	0.2158069	2.3437484	36	1	27 days	0.31		Williams	1999 TS ₄
1999 TT ₄	15.5	0.15	19991009	333.38261	52.32190	17.26830	27.17364	0.3432090	3.0870237	40	1	17 days	0.63		Williams	1999 TT ₄
1999 TV ₄	18.2	0.15	19991009	1.08694	0.86675	14.61770	14.04142	0.3221430	2.5190891	34	1	18 days	0.60		Williams	1999 TV ₄
1999 TW ₄	14.6	0.15	19991009	16.80095	334.35568	22.05420	17.88121	0.2143851	2.5233398	42	1	11 days	0.43		Williams	1999 TW ₄
1999 TX ₄	15.8	0.15	19991009	355.76201	249.30003	126.62594	6.13349	0.2416944	2.6111540	19	1	16 days	0.38		Marsden	1999 TX ₄
1999 TZ ₄	19.7	0.15	19991009	316.48589	61.48066	15.16610	32.01079	0.1570127	1.5146600	60	1	21 days	0.56		Williams	1999 TZ ₄
1999 TA ₅	20.9	0.15	19991009	358.12544	82.54701	298.45877	4.24223	0.4885486	2.3970928	46	1	20 days	0.59		Williams	1999 TA ₅
1999 TB ₅	19.2	0.15	19991009	335.36295	238.58193	195.78406	30.43519	0.3923739	1.9659370	86	1	16 days	0.50		Williams	1999 TB ₅
1999 TC ₅	18.6	0.15	19991009	327.33015	282.51754	192.62232	29.11173	0.5480031	2.0174149	44	1	16 days	0.57		Nakano	1999 TC ₅
1999 TD ₅	19.3	0.15	19991009	351.54067	309.50334	105.32400	4.14723	0.5275281	2.4693139	52	1	18 days	0.39		Nakano	1999 TD ₅
1999 TE ₅	20.3	0.15	19991009	4.26510	354.83410	12.61445	6.60105	0.4832328	2.2354352	43	1	19 days	0.45		Williams	1999 TE ₅
1999 TF ₅	18.8	0.15	19990919	25.35903	63.36545	199.79759	26.56343	0.6305259	1.9914095	49	1	7 days	0.60		Williams	1999 TF ₅
1999 TG ₅	14.7	0.15	19991009	33.85466	289.82287	43.56907	1.65459	0.1526441	3.1171186	22	1	18 days	0.39		Williams	1999 TG ₅
1999 TH ₅	15.7	0.15	19991009	44.18326	149.15815	178.59484	12.45169	0.0862679	2.5742180	30	1	16 days	0.83		Williams	1999 TH ₅
1999 TM ₅	15.7	0.15	19991009	303.59164	69.18091	27.87451	5.83913	0.1873713	2.3350847	28	1	18 days	0.75		Williams	1999 TM ₅
1999 TN ₅	15.6	0.15	19991009	6.79134	198.71457	173.80974	2.27324	0.0900000	2.3792869	25	1	18 days	0.70		Williams	1999 TN ₅
1999 TO ₅	15.4	0.15	19990919	29.55869	309.96230	20.46281	5.23826	0.2081332	2.4420995	23	1	7 days	0.42		Williams	1999 TO ₅
1999 TP ₅	15.7	0.15	19990919	34.51447	228.36907	111.56491	1.73009	0.0108262	2.1795832	21	1	7 days	0.55	E	Williams	1999 TP ₅
1999 TQ ₅	14.9	0.15	19990919	333.04508	213.08307	201.10440	4.16874	0.1752606	2.6016561	24	1	7 days	0.50		Williams	1999 TQ ₅
1999 TR ₅	14.2	0.15	19990919	15.88561	330.82080	28.05963	8.56483	0.1716747	2.5083116	9	1	5 days	0.22		Williams	1999 TR ₅
1999 TS ₅	15.3	0.15	19990919	6.08652	24.45553	337.53690	3.71294	0.1795657	2.2022823	23	1	14 days	0.53		Williams	1999 TS ₅

1999 TT ₅	15.2	0.15	19991009	346.37345	184.04050	220.55769	5.09734	0.1991007	2.4353230	33	1	13 days	0.44		Williams	1999 TT ₅
1999 TU ₅	14.3	0.15	19991009	342.37052	343.32603	72.50824	5.32451	0.1043952	2.7845073	6	1	9 days	0.48	E	Williams	1999 TU ₅
1999 TW ₅	15.3	0.15	19991009	341.28134	94.92193	303.87104	1.05629	0.0499774	2.6551578	33	1	15 days	0.70		Williams	1999 TW ₅
1999 TY ₅	14.8	0.15	19991009	140.06603	207.09556	27.66692	3.06996	0.1225372	2.4250383	24	1	18 days	0.72		Williams	1999 TY ₅
1999 TA ₆	14.4	0.15	19991009	33.54417	326.16642	355.37662	9.85431	0.0431818	3.4248539	24	1	9 days	0.80	E	Williams	1999 TA ₆
1999 TB ₆	16.2	0.15	19991009	38.04439	236.81188	96.78700	3.85152	0.0891113	2.2825664	23	1	14 days	0.46		Williams	1999 TB ₆
1999 TD ₆	14.5	0.15	19990919	3.59858	247.00684	122.88170	4.45522	0.1234553	2.6538347	25	1	6 days	0.67		Williams	1999 TD ₆
1999 TF ₆	15.1	0.15	19991009	356.14910	354.01914	27.91070	7.20861	0.1675637	3.1342781	41	1	18 days	0.63		Williams	1999 TF ₆
1999 TG ₆	14.9	0.15	19990919	151.42079	224.47136	10.01338	4.51603	0.2127662	2.2031964	25	1	5 days	0.46		Williams	1999 TG ₆
1999 TK ₆	16.1	0.15	19991009	352.84937	192.29513	199.15032	3.76173	0.2212992	2.5720269	25	1	18 days	0.59		Williams	1999 TK ₆
1999 TL ₆	13.5	0.15	19991009	79.74279	276.95735	17.53787	9.56277	0.0829478	3.0715216	25	1	13 days	0.68		Williams	1999 TL ₆
1999 TM ₆	15.3	0.15	19990919	339.40818	333.94292	67.42558	1.86711	0.1656510	2.3790615	14	1	5 days	0.45		Williams	1999 TM ₆
1999 TO ₆	14.2	0.15	19991009	4.36225	234.22034	142.39936	1.67264	0.1859430	3.2038087	21	1	15 days	0.35		Williams	1999 TO ₆
1999 TP ₆	14.4	0.15	19991009	356.87376	293.91816	93.37038	2.61106	0.2232148	3.0846961	22	1	14 days	0.46		Williams	1999 TP ₆
1999 TQ ₆	16.0	0.15	19990919	15.92062	237.00756	114.60461	2.24523	0.1443802	2.1428140	22	1	5 days	0.51		Williams	1999 TQ ₆
1999 TR ₆	13.4	0.15	19991009	40.67097	294.25800	41.66540	10.71418	0.0857246	3.0365371	20	1	14 days	0.57		Williams	1999 TR ₆
1999 TU ₆	15.2	0.15	19990919	50.09672	300.37893	15.82899	3.42331	0.1084448	2.3242664	18	1	7 days	0.61		Williams	1999 TU ₆
1999 TW ₆	15.4	0.15	19990919	33.14550	311.92784	23.28170	15.66899	0.1349623	2.7019377	22	1	8 days	0.73		Williams	1999 TW ₆
1999 TY ₆	14.6	0.15	19990919	99.39460	242.03255	14.74723	4.07077	0.1737331	2.2837045	30	1	8 days	0.36		Williams	1999 TY ₆
1999 TB ₇	15.3	0.15	19991009	283.88848	85.42593	38.84199	5.17108	0.2208724	2.3756568	14	1	15 days	0.99		Williams	1999 TB ₇
1999 TC ₇	13.8	0.15	19990919	232.02877	130.85838	31.96432	9.08826	0.2012129	2.3443709	19	1	7 days	0.48		Williams	1999 TC ₇
1999 TD ₇	14.9	0.15	19990919	356.94922	198.60047	182.69582	3.82414	0.2028874	2.8349525	23	1	7 days	0.40		Williams	1999 TD ₇
1999 TE ₇	14.6	0.15	19990919	262.73737	85.74846	45.88589	5.43142	0.1392852	2.6343112	14	1	6 days	0.59	E	Williams	1999 TE ₇
1999 TF ₇	14.8	0.15	19991009	5.19008	321.50753	54.80347	3.92119	0.1453213	3.0548675	19	1	14 days	0.66		Williams	1999 TF ₇
1999 TH ₇	14.6	0.15	19990919	40.54992	122.00129	212.68409	5.23606	0.0458801	2.3771711	29	1	7 days	0.31		Williams	1999 TH ₇
1999 TJ ₇	15.7	0.15	19990919	62.73211	98.29843	204.37385	2.64747	0.1146033	2.2945882	11	1	3 days	0.70	E	Williams	1999 TJ ₇
1999 TK ₇	16.3	0.15	19990919	326.44681	50.41919	11.37587	2.73667	0.2095426	2.3990680	25	1	8 days	0.33		Williams	1999 TK ₇
1999 TL ₇	16.3	0.15	19990919	23.77576	293.15257	32.97293	5.78712	0.3403818	2.6522218	16	1	6 days	0.49		Williams	1999 TL ₇
1999 TM ₇	16.4	0.15	19991009	22.82957	312.28511	34.34402	3.60300	0.2147661	2.2447741	17	1	3 days	0.63		Williams	1999 TM ₇
1999 TN ₇	16.2	0.15	19991009	314.21891	19.64822	67.30952	2.59584	0.1931181	2.3848915	12	1	13 days	1.28		Williams	1999 TN ₇
1999 TO ₇	13.9	0.15	19990919	279.81192	96.70775	53.33718	16.89446	0.2840198	2.1778474	9	1	2 days	0.58	E	Williams	1999 TO ₇
1999 TP ₇	14.7	0.15	19990810	31.68756	46.60941	264.45098	12.05539	0.2431617	2.3853989	58	1	91 days	0.53	M-v 5 D	Williams	1999 TP ₇
1999 TR ₇	17.0	0.15	19990919	352.37897	348.23290	29.34246	14.00827	0.3023752	2.7843768	13	1	6 days	0.47	E	Williams	1999 TR ₇
1999 TS ₇	17.1	0.15	19990919	7.65465	321.57891	28.53885	16.37995	0.2583154	2.6300166	14	1	6 days	0.42		Williams	1999 TS ₇
1999 TT ₇	16.7	0.15	19990919	349.97826	354.04848	29.19629	17.46323	0.3231397	2.7963340	13	1	6 days	0.38	E	Williams	1999 TT ₇
1999 TA ₈	15.0	0.15	19991009	8.96142	225.74349	138.72013	5.00128	0.2719489	2.7383106	16	1	15 days	0.45		Williams	1999 TA ₈
1999 TB ₈	14.3	0.15	19991009	348.79233	13.45105	32.41805	14.44760	0.2720823	2.6718850	28	1	13 days	0.38		Williams	1999 TB ₈
1999 TC ₈	14.5	0.15	19990919	8.88316	263.20857	98.24437	3.82280	0.2612837	3.9672860	12	1	12 days	0.44		Williams	1999 TC ₈
1999 TD ₈	15.5	0.15	19991009	350.12526	357.66794	37.51969	0.84541	0.2051987	2.3258003	26	1	16 days	0.53		Williams	1999 TD ₈
1999 TE ₈	16.0	0.15	19991009	11.65390	168.01159	195.65067	6.33018	0.1562989	2.2396720	22	1	13 days	0.53		Williams	1999 TE ₈
1999 TF ₈	14.4	0.15	19991009	20.08765	47.59571	303.83472	7.82531	0.2384404	2.7298098	14	1	10 days	0.60		Williams	1999 TF ₈
1999 TG ₈	12.9	0.15	19991009	327.74431	85.56936	342.83629	6.53299	0.1320232	2.3118845	8	1	7 days	0.43		Williams	1999 TG ₈
1999 TH ₈	14.8	0.15	19991009	354.08257	111.11787	283.23097	3.79612	0.2072897	2.3550257	7	1	7 days	0.25		Williams	1999 TH ₈
1999 TJ ₈	16.1	0.15	19991009	326.05620	32.93585	36.17823	3.12948	0.1888626	2.4172459	23	1	17 days	0.79		Williams	1999 TJ ₈
1999 TK ₈	16.0	0.15	19991009	68.63230	213.71872	72.53411	1.31631	0.2272339	2.4021185	17	1	18 days	1.06		Williams	1999 TK ₈
1999 TL ₈	15.5	0.15	19990919	359.64871	344.20617	29.95409	10.07323	0.1845173	2.4442738	23	1	8 days	0.44		Williams	1999 TL ₈
1999 TM ₈	14.5	0.15	19991009	353.38069	312.54957	78.14955	3.10527	0.1084786	2.8993813	12	1	13 days	0.68		Williams	1999 TM ₈
1999 TN ₈	14.6	0.15	19990919	334.03659	240.47454	172.34004	4.00796	0.1495428	3.0330924	14	1	9 days	0.70		Williams	1999 TN ₈
1999 TO ₈	14.8	0.15	19990919	30.73559	167.95464	155.99308	2.00038	0.2876154	3.1377655	17	1	5 days	0.56		Williams	1999 TO ₈
1999 TQ ₈	14.1	0.15	19990919	109.62635	59.19373	212.02604	9.47503	0.0143982	2.9840863	33	1	31 days	0.45		Williams	1999 TQ ₈
1999 TT ₈	13.5	0.15	19991009	25.96671	131.10706	216.91867	8.06983	0.1542838	3.0439901	36	1	18 days	0.44		Williams	1999 TT ₈
1999 TW ₈	15.8	0.15	19990919	320.46477	59.64089	352.66628	9.04932	0.1755828	2.7186102	16	1	6 days	0.44		Williams	1999 TW ₈
1999 TX ₈	16.1	0.15	19990919	359.31018	37.54847	320.60549	1.69804	0.2047048	2.3591122	58	1	38 days	0.47		Williams	1999 TX ₈

1999 TY ₈	16.0	0.15	19990919	11.58414	162.25557	177.48297	3.07991	0.2214435	3.1011825	26	1	25 days	0.46		Williams	1999 TY ₈
1999 TZ ₈	16.2	0.15	19991009	329.63045	56.25265	340.40769	3.88990	0.0473388	2.3449138	15	1	6 days	0.34	E	Williams	1999 TZ ₈
1999 TA ₉	15.7	0.15	19991009	337.22907	24.91157	31.61018	4.16500	0.2256084	2.7119731	23	1	17 days	0.99		Williams	1999 TA ₉
1999 TB ₉	15.8	0.15	19990919	21.29888	137.93053	203.82281	10.69127	0.2264276	2.6509015	17	1	2 days	0.48		Williams	1999 TB ₉
1999 TC ₉	14.6	0.15	19991009	8.81530	0.07483	11.31119	3.90835	0.1784343	2.5812497	33	1	13 days	0.40		Williams	1999 TC ₉
1999 TD ₉	14.6	0.15	19991009	323.22248	256.31620	182.69467	7.94949	0.2245048	3.1893033	15	1	14 days	0.66		Williams	1999 TD ₉
1999 TE ₉	15.9	0.15	19991009	13.49911	340.87722	21.75287	5.74471	0.1968374	2.2803562	19	1	6 days	0.32		Williams	1999 TE ₉
1999 TG ₉	16.4	0.15	19991009	23.76269	322.17627	22.29671	5.34781	0.2389291	2.2532269	19	1	7 days	0.45		Williams	1999 TG ₉
1999 TJ ₉	12.6	0.15	19990919	267.27460	271.63560	210.04626	11.40119	0.0411901	3.1721182	29	1	11 days	0.31		Williams	1999 TJ ₉
1999 TK ₉	14.6	0.15	19991009	352.97380	22.56128	15.89044	4.46776	0.2475800	3.1093535	30	1	14 days	0.45		Williams	1999 TK ₉
1999 TL ₉	15.3	0.15	19990919	352.38871	7.90295	22.21147	9.74036	0.1890590	2.6041420	37	1	31 days	0.35		Williams	1999 TL ₉
1999 TN ₉	14.9	0.15	19990919	119.56503	224.95022	29.33002	7.61030	0.0865051	2.3165501	22	1	9 days	0.51		Williams	1999 TN ₉
1999 TO ₉	15.8	0.15	19990919	330.83503	47.24576	23.07335	7.85247	0.2832382	2.7054980	12	1	2 days	0.72	E	Williams	1999 TO ₉
1999 TP ₉	14.7	0.15	19991009	322.44468	55.13237	20.93304	3.00870	0.1523405	2.3354254	21	1	4 days	1.19	E	Williams	1999 TP ₉
1999 TQ ₉	14.0	0.15	19991009	5.35138	187.54616	191.71143	0.70141	0.2131232	3.1104869	29	1	14 days	0.46		Williams	1999 TQ ₉
1999 TR ₉	14.9	0.15	19990919	350.84069	13.47041	20.18151	2.93562	0.2759065	2.5961394	9	1	2 days	0.65	E	Williams	1999 TR ₉
1999 TS ₉	14.4	0.15	19990919	61.06158	263.57884	31.67505	6.70835	0.2275359	2.3634635	9	1	2 days	0.36	E	Williams	1999 TS ₉
1999 TT ₉	16.5	0.15	19991009	339.15549	210.39786	205.34448	3.00062	0.2262333	2.4874024	15	1	3 days	0.63	E	Williams	1999 TT ₉
1999 TV ₉	14.6	0.15	19991009	294.91369	247.93097	200.01635	20.94913	0.0398179	2.5705548	36	1	15 days	0.42		Williams	1999 TV ₉
1999 TX ₉	14.1	0.15	19991009	1.10249	11.80813	49.39822	25.96326	0.2305933	2.1473496	21	1	4 days	0.79		Williams	1999 TX ₉
1999 TZ ₉	15.5	0.15	19991009	337.27317	354.07606	57.72818	3.05048	0.1902972	2.7037266	14	1	4 days	0.30		Williams	1999 TZ ₉
1999 TA ₁₀	17.7	0.15	19991009	53.85183	84.64515	214.78593	20.83320	0.2413798	1.5055099	144	1	15 days	0.54		Nakano	1999 TA ₁₀
1999 TB ₁₀	18.5	0.15	19991009	251.42487	137.20770	2.01327	15.94937	0.2314139	1.3631634	43	1	16 days	0.48		Williams	1999 TB ₁₀
1999 TC ₁₀	19.0	0.15	19991009	344.46567	57.71443	28.58218	19.30197	0.5852360	2.3206021	60	1	14 days	0.54		Williams	1999 TC ₁₀
1999 TH ₁₀	14.8	0.15	19991009	324.99012	247.00485	184.16510	1.76221	0.2105848	3.0637989	20	1	7 days	0.38		Williams	1999 TH ₁₀
1999 TK ₁₀	13.7	0.15	19991009	292.62884	283.63324	185.07687	10.32795	0.1912417	3.9056657	8	1	4 days	0.32	E	Williams	1999 TK ₁₀
1999 TN ₁₀	16.4	0.15	19990919	29.20683	119.89422	204.68224	4.70655	0.3051173	2.5852657	15	1	9 days	0.50		Williams	1999 TN ₁₀
1999 TO ₁₀	16.6	0.15	19991009	2.43458	177.20109	205.04582	3.94366	0.1911302	2.5303344	10	1	7 days	0.33		Williams	1999 TO ₁₀
1999 TQ ₁₀	16.4	0.15	19990919	57.47390	279.46466	14.70825	2.51455	0.1603930	2.1401715	21	1	14 days	0.38		Williams	1999 TQ ₁₀
1999 TR ₁₀	13.0	0.15	19990919	3.23212	358.86856	20.51447	10.49005	0.0554761	3.0674110	26	1	10 days	0.30		Williams	1999 TR ₁₀
1999 TT ₁₀	12.7	0.15	19991009	71.97392	276.98638	31.54625	11.16451	0.0905152	3.0331863	16	1	15 days	0.32		Williams	1999 TT ₁₀
1999 TU ₁₀	14.7	0.15	19991009	347.59134	41.24940	59.51703	24.99927	0.3569784	2.6920780	11	1	5 days	0.48		Marsden	1999 TU ₁₀
1999 TW ₁₀	16.0	0.15	19990919	306.36347	50.96547	45.13626	8.98945	0.1632940	2.3788225	13	1	10 days	0.76		Williams	1999 TW ₁₀
1999 TX ₁₀	13.9	0.15	19990919	245.76920	25.89473	124.92154	3.43254	0.0584122	2.7239097	14	1	10 days	1.30		Williams	1999 TX ₁₀
1999 TY ₁₀	15.1	0.15	19991009	226.42863	7.58334	163.84504	4.84949	0.0471793	2.5469329	9	1	4 days	0.80	E	Williams	1999 TY ₁₀
1999 TZ ₁₀	16.8	0.15	19990919	356.04762	102.70961	268.68592	6.79900	0.1127164	2.3784022	25	1	15 days	0.84		Williams	1999 TZ ₁₀
1999 TA ₁₁	15.6	0.15	19990919	276.73989	294.01596	184.78439	7.80988	0.0771996	2.2842586	17	1	10 days	0.65		Williams	1999 TA ₁₁
1999 TD ₁₁	15.1	0.15	19991009	6.27540	75.56836	349.72841	1.92571	0.2185535	2.2416121	24	1	14 days	0.53		Williams	1999 TD ₁₁
1999 TE ₁₁	13.7	0.15	19991009	4.23845	156.58822	220.22870	16.58026	0.2147365	3.1744064	16	1	16 days	0.46		Williams	1999 TE ₁₁
1999 TG ₁₁	14.9	0.15	19990919	12.89761	344.58631	9.92972	16.47815	0.2391913	2.6593422	31	1	44 days	0.55		Williams	1999 TG ₁₁
1999 TH ₁₁	12.4	0.15	19991009	347.50144	175.94037	223.77594	14.37396	0.0895544	3.2019960	16	1	16 days	0.61		Williams	1999 TH ₁₁
1999 TN ₁₁	15.5	0.15	19991009	14.79339	247.47608	99.80654	22.91644	0.2950469	2.3603473	11	1	10 days	0.29		Williams	1999 TN ₁₁
1999 TO ₁₁	18.0	0.15	19991009	10.46834	341.83308	23.62022	4.71266	0.3276599	2.3270586	26	1	12 days	0.37		Marsden	1999 TO ₁₁
1999 TP ₁₁	15.0	0.15	19991009	354.28177	328.14863	71.23514	7.28046	0.0967773	2.2522769	17	1	11 days	0.16		Marsden	1999 TP ₁₁
1999 TR ₁₁	8.4	0.15	19991009	359.99836	359.67706	54.69846	17.48259	0.2458681	39.6327709	4	1	1 days		E	Marsden	1999 TR ₁₁
1999 TW ₁₁	14.7	0.15	19991009	353.31326	220.16934	185.29484	4.59031	0.0825937	2.4161399	9	1	5 days	0.78	E	Williams	1999 TW ₁₁
1999 TX ₁₁	14.8	0.15	19991009	269.31051	118.82567	15.85930	11.92764	0.1296266	2.6181389	12	1	8 days	0.33		Williams	1999 TX ₁₁
1999 TZ ₁₁	15.6	0.15	19991009	55.15216	100.99355	204.15350	3.58705	0.1686724	2.2367953	24	1	15 days	0.35		Williams	1999 TZ ₁₁
1999 TA ₁₂	15.4	0.15	19991009	24.59428	129.99756	208.40969	1.88460	0.2319488	2.3356180	21	1	11 days	0.34		Williams	1999 TA ₁₂
1999 TC ₁₂	14.7	0.15	19991009	28.66743	237.48963	113.05208	3.45411	0.1725583	2.3766927	14	1	7 days	0.39		Williams	1999 TC ₁₂
1999 TD ₁₂	15.8	0.15	19990919	18.07728	243.43741	111.69703	3.29627	0.2067070	2.4330222	19	1	10 days	0.38		Williams	1999 TD ₁₂
1999 TE ₁₂	14.9	0.15	19991009	38.34266	133.04516	200.59744	10.00023	0.2512464	3.1971687	8	1	2 days	0.36	E	Williams	1999 TE ₁₂
1999 TG ₁₂	16.4	0.15	19990919	356.74784	235.82851	151.38893	2.85854	0.1948293	2.3879773	18	1	12 days	0.44		Williams	1999 TG ₁₂

1999 TJ ₁₂	18.2	0.15	19990919	343.89338	203.49719	195.74066	26.67480	0.3559066	2.3401404	71	1	14 days	0.61		Williams	1999 TJ ₁₂
1999 TK ₁₂	18.4	0.15	19991009	305.81631	112.04657	359.19872	24.24529	0.3917489	1.6769620	56	1	13 days	0.70		Williams	1999 TK ₁₂
1999 TL ₁₂	18.7	0.15	19991009	191.62550	346.27111	202.58837	16.84718	0.4285110	1.0810202	25	1	4 days	0.62		Williams	1999 TL ₁₂
1999 TM ₁₂	21.6	0.15	19990810	303.12213	250.58133	199.13934	28.72886	0.4666062	1.5976239	43	1	7 days	0.96	M-v 8	Williams	1999 TM ₁₂
1999 TN ₁₂	17.3	0.15	19991009	14.88213	150.18555	212.45214	37.26534	0.3917219	1.8870016	37	1	10 days	0.59		Nakano	1999 TN ₁₂
1999 TO ₁₂	16.5	0.15	19991009	21.88716	175.99632	168.05043	4.70179	0.2536018	2.6249720	10	1	7 days	0.37		Williams	1999 TO ₁₂
1999 TQ ₁₂	15.8	0.15	19991009	13.54860	294.51974	66.69311	3.36162	0.1702430	2.2224058	24	1	11 days	0.90		Williams	1999 TQ ₁₂
1999 TR ₁₂	17.6	0.15	19991009	9.10985	12.38058	3.75343	1.54463	0.1467693	2.3205057	9	1	7 days	0.34		Williams	1999 TR ₁₂
1999 TS ₁₂	15.5	0.15	19991009	1.38592	1.47939	27.52338	10.20083	0.1343392	2.7630601	14	1	7 days	0.52		Williams	1999 TS ₁₂
1999 TT ₁₂	15.7	0.15	19991009	7.77308	325.37597	29.76725	15.99564	0.2183937	2.6166000	20	1	7 days	0.30		Marsden	1999 TT ₁₂
1999 TU ₁₂	15.8	0.15	19990919	346.64595	214.10676	178.61662	6.86409	0.2091582	2.3208204	27	1	44 days	0.55		Williams	1999 TU ₁₂
1999 TW ₁₂	13.4	0.15	19991009	313.14054	58.40304	36.08462	17.45867	0.2483361	3.1094398	19	1	17 days	0.65		Williams	1999 TW ₁₂
1999 TY ₁₂	13.3	0.15	19990919	354.65686	320.32416	55.63894	4.49363	0.1961371	4.0020751	40	1	12 days	0.48		Williams	1999 TY ₁₂
1999 TZ ₁₂	14.0	0.15	19991009	26.06851	266.34507	83.93739	4.41780	0.2722526	2.4020022	10	1	10 days	0.44	E	Nakano	1999 TZ ₁₂
1999 TB ₁₃	13.7	0.15	19991009	17.94931	73.85024	291.77009	7.94186	0.2107203	2.7101948	7	1	8 days	0.22		Nakano	1999 TB ₁₃
1999 TC ₁₃	12.9	0.15	19991029	43.57705	289.44548	55.00959	2.13107	0.1756350	3.1285879	10	1	11 days	0.29		Nakano	1999 TC ₁₃
1999 TD ₁₃	15.4	0.15	19991009	356.27019	188.43522	211.15076	5.35673	0.3101910	2.5205146	8	1	8 days	0.33		Nakano	1999 TD ₁₃
1999 TE ₁₃	14.7	0.15	19991009	249.29220	112.62733	52.72919	15.72801	0.0566874	2.6287402	17	1	10 days	0.78		Nakano	1999 TE ₁₃
1999 TF ₁₃	15.4	0.15	19991009	44.12356	284.22448	54.90485	4.67467	0.2034387	2.2627101	21	1	10 days	0.42		Nakano	1999 TF ₁₃
1999 TH ₁₃	13.4	0.15	19991009	205.77623	163.58744	26.68437	17.85916	0.2962418	2.6100976	10	1	5 days	0.43	E	Williams	1999 TH ₁₃
1999 TJ ₁₃	13.6	0.15	19991009	185.20517	248.45613	293.53705	11.10955	0.1240572	2.6916557	25	1	17 days	0.38		Williams	1999 TJ ₁₃
1999 TK ₁₃	14.8	0.15	19991009	7.84670	299.10429	85.22777	7.19942	0.2155796	3.0056687	9	1	8 days	0.76	E	Williams	1999 TK ₁₃
1999 TL ₁₃	15.6	0.15	19991009	23.17451	306.57420	38.23900	5.89824	0.2323723	2.2466373	22	1	14 days	0.64		Williams	1999 TL ₁₃
1999 TM ₁₃	24.7	0.15	19991009	358.75629	191.17293	190.28144	2.96877	0.5737121	2.5186338	28	1	13 days	1.37		Williams	1999 TM ₁₃
1999 TN ₁₃	23.6	0.15	19990810	327.28211	216.43308	202.59659	5.40675	0.5275304	2.0363936	54	1	7 days	0.71	M-v 7	Williams	1999 TN ₁₃
1999 TO ₁₃	21.4	0.15	19991009	22.85702	302.26186	15.13758	20.30645	0.4377343	1.5880612	98	1	11 days	0.48		Williams	1999 TO ₁₃
1999 TP ₁₃	13.4	0.15	19991009	336.56197	190.41178	219.50484	1.89469	0.1426847	2.3577699	24	1	12 days	0.43		Williams	1999 TP ₁₃
1999 TQ ₁₃	13.9	0.15	19991009	356.39382	121.52005	262.84411	2.24658	0.1661186	3.0615685	22	1	17 days	0.63		Williams	1999 TQ ₁₃
1999 TS ₁₃	16.2	0.15	19991009	4.88174	286.23306	85.63677	4.40571	0.2342004	2.3932055	17	1	16 days	0.46		Williams	1999 TS ₁₃
1999 TT ₁₃	13.6	0.15	19991009	50.79196	289.85056	40.00378	5.40675	0.0704370	2.6847375	24	1	16 days	0.72		Williams	1999 TT ₁₃
1999 TZ ₁₃	14.6	0.15	19991009	28.26847	89.63174	252.05165	5.34325	0.2490093	2.7905128	11	1	5 days	0.23		Williams	1999 TZ ₁₃
1999 TB ₁₄	16.2	0.15	19991009	352.78484	208.05744	183.97389	8.28287	0.1884296	2.5732174	11	1	8 days	0.27		Williams	1999 TB ₁₄
1999 TC ₁₄	16.6	0.15	19991009	339.51181	271.67363	140.65309	2.86058	0.2091930	2.4370150	6	1	2 days	0.07		Marsden	1999 TC ₁₄
1999 TD ₁₄	15.9	0.15	19991009	25.05449	137.83994	217.20300	5.61082	0.1464302	2.2693270	16	1	9 days	0.43		Williams	1999 TD ₁₄
1999 TE ₁₄	15.0	0.15	19991009	36.54021	252.84124	74.04509	1.75586	0.2285499	2.3889771	10	1	13 days	0.55		Williams	1999 TE ₁₄
1999 TH ₁₄	13.7	0.15	19991009	31.54914	236.01509	104.16290	1.85660	0.1896999	3.1803762	11	1	13 days	0.57		Williams	1999 TH ₁₄
1999 TK ₁₄	14.9	0.15	19991009	340.88205	264.29717	147.88290	2.45243	0.1948752	2.3757158	13	1	9 days	0.20		Williams	1999 TK ₁₄
1999 TL ₁₄	15.1	0.15	19991009	33.16014	271.54797	67.75862	4.83403	0.2785435	2.5872086	9	1	8 days	0.90		Williams	1999 TL ₁₄
1999 TN ₁₄	14.3	0.15	19991009	13.08036	167.86416	208.48401	9.43096	0.2609955	3.0566563	12	1	7 days	0.54		Williams	1999 TN ₁₄
1999 TO ₁₄	13.7	0.15	19991009	28.23977	234.72599	135.34363	2.87871	0.0499098	2.7969637	15	1	10 days	0.57		Williams	1999 TO ₁₄
1999 TP ₁₄	17.5	0.15	19991009	26.08875	25.16241	322.52858	2.84483	0.2433577	2.3673862	8	1	14 days	0.28		Williams	1999 TP ₁₄
1999 TQ ₁₄	17.3	0.15	19991009	7.29899	353.48955	14.96823	1.27105	0.1199636	2.2079526	15	1	14 days	0.32		Williams	1999 TQ ₁₄
1999 TR ₁₄	15.5	0.15	19991009	15.68876	7.01241	344.49654	9.80819	0.1091570	2.9970729	10	1	14 days	0.29		Williams	1999 TR ₁₄
1999 TS ₁₄	14.9	0.15	19991009	348.51913	187.60258	207.07753	2.04940	0.1641414	3.0353371	26	1	16 days	0.58		Williams	1999 TS ₁₄
1999 TU ₁₄	15.3	0.15	19991009	336.25281	97.20816	319.96989	0.75171	0.2623418	3.1298989	19	1	5 days	0.73	E	Williams	1999 TU ₁₄
1999 TW ₁₄	13.3	0.15	19991009	63.23348	261.80213	58.06935	7.19769	0.1353001	2.5705620	12	1	16 days	0.55		Williams	1999 TW ₁₄
1999 TX ₁₄	15.3	0.15	19991009	0.93867	341.30069	39.25727	9.47870	0.3213488	2.6713722	14	1	12 days	0.51		Williams	1999 TX ₁₄
1999 TY ₁₄	15.8	0.15	19991009	4.10320	278.55077	94.43797	2.89142	0.3477008	2.6568139	14	1	12 days	0.62		Williams	1999 TY ₁₄
1999 TA ₁₅	14.8	0.15	19991009	10.27576	196.38747	173.48800	6.59091	0.1457636	2.3098989	14	1	12 days	0.45		Williams	1999 TA ₁₅
1999 TC ₁₅	15.6	0.15	19991009	83.80675	122.45496	138.03751	3.43538	0.2449339	2.5344813	21	1	2 days	1.01		Williams	1999 TC ₁₅
1999 TD ₁₅	14.5	0.15	19991009	313.06518	231.56772	213.60245	22.78961	0.2976347	2.3592733	18	1	10 days	0.30		Nakano	1999 TD ₁₅
1999 TG ₁₅	15.4	0.15	19991009	323.70215	226.20487	203.85762	7.79027	0.1904582	2.7540450	22	1	16 days	0.35		Williams	1999 TG ₁₅
1999 TH ₁₅	14.5	0.15	19991009	146.29936	198.92702	17.93514	21.04691	0.3512527	2.5897250	10	1	7 days	0.35		Williams	1999 TH ₁₅

1999 TJ ₁₅	15.5	0.15	19991009	103.57637	243.32126	17.38250	16.36079	0.1403208	3.0847484	8	1	7 days	0.41	E	Williams	1999 TJ ₁₅
1999 TK ₁₅	16.8	0.15	19991009	354.19281	193.33367	193.55460	3.93556	0.1889763	2.9402920	7	1	6 days	0.46	E	Williams	1999 TK ₁₅
1999 TL ₁₅	16.0	0.15	19991009	235.58727	337.63219	186.51365	2.11482	0.2698384	2.4812115	7	1	7 days	0.55	E	Williams	1999 TL ₁₅
1999 TM ₁₅	17.5	0.15	19991009	0.78931	346.81327	29.93623	1.82333	0.1848957	2.6149608	8	1	7 days	0.27		Williams	1999 TM ₁₅
1999 TO ₁₅	16.3	0.15	19991009	4.60665	166.79010	204.89650	1.23663	0.1746221	2.7605312	9	1	7 days	0.66	E	Williams	1999 TO ₁₅
1999 TP ₁₅	14.2	0.15	19991009	0.46332	5.62424	21.01120	10.17816	0.0823545	3.1930447	21	1	8 days	0.37		Williams	1999 TP ₁₅
1999 TR ₁₅	15.4	0.15	19991009	5.59557	6.60821	12.32515	4.40816	0.1045700	2.6867458	15	1	8 days	0.29		Williams	1999 TR ₁₅
1999 TS ₁₅	15.2	0.15	19991009	84.08409	257.70952	38.29947	3.52186	0.1315571	2.6180530	12	1	12 days	0.32		Williams	1999 TS ₁₅
1999 TT ₁₅	14.8	0.15	19991009	332.88648	220.90789	242.12135	13.21394	0.1383749	2.6553543	13	1	5 days	0.28		Marsden	1999 TT ₁₅
1999 TV ₁₅	14.5	0.15	19991009	106.22400	107.26107	169.92781	4.18813	0.0974156	2.3126229	11	1	7 days	0.45		Williams	1999 TV ₁₅
1999 TW ₁₅	14.6	0.15	19991009	87.24037	81.14438	206.27141	5.50746	0.1083323	3.0234534	12	1	9 days	0.94		Williams	1999 TW ₁₅
1999 TX ₁₅	17.1	0.15	19991009	347.75100	26.00979	14.25948	0.79561	0.2742191	3.0937466	6	1	6 days	0.22		Williams	1999 TX ₁₅
1999 TY ₁₅	13.8	0.15	19991009	341.03608	203.99140	199.65965	5.71268	0.1453010	2.5667253	25	1	16 days	0.72		Williams	1999 TY ₁₅
1999 TA ₁₆	14.2	0.15	19991009	278.74878	279.24295	222.04194	2.42830	0.2537607	3.0566705	13	1	10 days	0.64	E	Williams	1999 TA ₁₆
1999 TB ₁₆	14.1	0.15	19991009	108.89778	225.47368	24.73309	17.11183	0.1618598	3.1190613	18	1	15 days	0.66		Williams	1999 TB ₁₆
1999 TC ₁₆	15.2	0.15	19991009	18.93443	169.89196	186.08834	1.88571	0.1654182	2.1942783	6	1	6 days	0.07		Williams	1999 TC ₁₆
1999 TD ₁₆	13.3	0.15	19991009	341.83728	22.19104	15.47857	6.75518	0.1394342	3.2041289	18	1	14 days	0.55		Williams	1999 TD ₁₆
1999 TE ₁₆	14.5	0.15	19991009	315.80473	70.35939	16.31998	12.36808	0.2378747	2.6653821	18	1	14 days	0.49		Williams	1999 TE ₁₆
1999 TF ₁₆	13.1	0.15	19991009	151.05647	81.61311	143.88010	3.54429	0.0345086	2.7261009	12	1	8 days	0.38		Williams	1999 TF ₁₆
1999 TG ₁₆	14.8	0.15	19991009	305.66533	253.57384	208.50486	3.95523	0.2506876	2.9566173	23	1	9 days	1.08	E	Williams	1999 TG ₁₆
1999 TH ₁₆	14.5	0.15	19991009	34.50800	255.33792	86.98441	2.01829	0.2184693	2.3570192	9	1	8 days	0.68	E	Williams	1999 TH ₁₆
1999 TJ ₁₆	15.3	0.15	19991009	1.63168	301.95504	78.65141	3.62536	0.1802439	2.3786837	13	1	12 days	0.45		Williams	1999 TJ ₁₆
1999 TK ₁₆	15.4	0.15	19991009	337.04317	356.44265	55.17811	3.19401	0.2199367	2.8977312	11	1	10 days	0.56		Williams	1999 TK ₁₆
1999 TL ₁₆	16.9	0.15	19991009	352.30553	7.35937	20.59284	14.76047	0.1193874	2.5628416	8	1	6 days	0.42		Williams	1999 TL ₁₆
1999 TM ₁₆	15.3	0.15	19991009	257.09528	266.16474	237.41653	10.90719	0.0397414	3.0431326	7	1	4 days	0.30	E	Williams	1999 TM ₁₆
1999 TN ₁₆	15.5	0.15	19991009	302.34538	120.10063	325.95954	0.88228	0.0935924	2.9500819	13	1	13 days	0.70		Williams	1999 TN ₁₆
1999 TP ₁₆	14.3	0.15	19991009	6.75851	177.76418	191.81352	1.51753	0.1340788	3.0861324	30	1	18 days	0.44		Williams	1999 TP ₁₆
1999 TQ ₁₆	15.6	0.15	19991009	72.16930	287.86225	21.56379	15.54768	0.1178863	2.6145385	6	1	5 days	0.21		Williams	1999 TQ ₁₆
1999 TR ₁₆	17.3	0.15	19991009	304.57985	108.85882	351.36893	4.99437	0.1259311	2.2147157	6	1	5 days	0.18		Williams	1999 TR ₁₆
1999 TS ₁₆	16.6	0.15	19991009	344.50407	200.49344	211.38953	5.34651	0.1484880	2.2429942	14	1	17 days	0.21		Williams	1999 TS ₁₆
1999 TT ₁₆	19.5	0.15	19991009	328.17548	148.25744	328.89722	2.03252	0.6665922	2.1741297	33	1	14 days	0.88		Williams	1999 TT ₁₆
1999 TU ₁₆	22.2	0.15	19991009	0.21545	175.32503	202.66606	18.78501	0.5035431	2.5625939	25	1	7 days	0.48		Williams	1999 TU ₁₆
1999 TV ₁₆	23.4	0.15	19990810	307.35131	84.97052	345.79097	1.11076	0.4096664	1.5790299	64	1	6 days	0.63	M-v 6	Williams	1999 TV ₁₆
1999 TW ₁₆	19.4	0.15	19991009	315.59780	134.63167	28.38168	34.63129	0.7357236	1.4252911	51	1	9 days	0.47		Williams	1999 TW ₁₆
1999 TX ₁₆	15.6	0.15	19991009	26.27920	310.79314	54.62511	38.09054	0.3314548	1.5445276	49	1	7 days	0.45		Nakano	1999 TX ₁₆
1999 TY ₁₆	16.2	0.15	19991009	8.74513	153.78169	241.41213	59.62289	0.3680170	1.9493405	56	1	8 days	0.57		Nakano	1999 TY ₁₆
1999 TZ ₁₆	15.0	0.15	19990919	347.72529	312.69317	74.10469	3.84704	0.2564463	2.9746385	23	1	39 days	0.72		Williams	1999 TZ ₁₆
1999 TB ₁₇	13.5	0.15	19991009	328.97565	6.23161	67.89951	3.10168	0.2069680	3.1953502	16	1	13 days	0.57		Williams	1999 TB ₁₇
1999 TC ₁₇	15.1	0.15	19991009	324.53743	327.04433	116.80193	1.58344	0.1339972	2.4075984	11	1	14 days	0.69		Williams	1999 TC ₁₇
1999 TH ₁₇	13.9	0.15	19991009	33.72705	250.24191	93.55741	3.16573	0.1450664	2.9850002	9	1	9 days	0.65	E	Williams	1999 TH ₁₇
1999 TJ ₁₇	14.6	0.15	19991009	260.35534	291.06848	197.72790	21.16357	0.2973779	2.3797239	23	1	9 days	0.82		Williams	1999 TJ ₁₇
1999 TK ₁₇	15.3	0.15	19991009	287.74579	143.43885	321.61917	1.58841	0.2298086	2.5187454	17	1	5 days	1.04	E	Williams	1999 TK ₁₇
1999 TL ₁₇	15.8	0.15	19991009	26.78841	180.16014	168.46632	14.84684	0.1008044	2.5458237	16	1	15 days	0.34		Williams	1999 TL ₁₇
1999 TM ₁₇	13.7	0.15	19991009	290.83359	10.19876	92.06036	11.99961	0.0899805	3.0618236	12	1	6 days	0.23		Marsden	1999 TM ₁₇
1999 TN ₁₇	15.9	0.15	19991009	346.92035	260.93322	140.09196	8.86763	0.1912323	2.3147334	17	1	18 days	0.32		Williams	1999 TN ₁₇
1999 TO ₁₇	15.4	0.15	19991009	348.73054	18.94633	30.97584	20.93321	0.1125917	1.9798777	17	1	18 days	0.41		Williams	1999 TO ₁₇
1999 TQ ₁₇	16.5	0.15	19991009	288.66282	166.70311	299.53674	0.41853	0.1497543	2.3889234	12	1	14 days	0.35		Williams	1999 TQ ₁₇
1999 TR ₁₇	14.1	0.15	19991009	180.51576	306.80770	251.39609	0.30687	0.0951903	3.0723590	10	1	3 days	0.28	E	Williams	1999 TR ₁₇
1999 TS ₁₇	16.0	0.15	19991009	322.81635	222.40954	202.82455	4.51224	0.1233058	2.4089662	21	1	12 days	0.27		Williams	1999 TS ₁₇
1999 TT ₁₇	15.9	0.15	19991009	250.49351	106.93030	25.94700	2.61663	0.0442585	2.6835095	12	1	4 days	0.48	E	Williams	1999 TT ₁₇
1999 TU ₁₇	14.6	0.15	19990919	12.36627	76.42710	255.63307	11.30252	0.3752966	2.6756536	31	1	32 days	0.40		Williams	1999 TU ₁₇
1999 TW ₁₇	16.1	0.15	19991009	13.09065	251.62431	109.00298	3.15077	0.2249696	2.3442776	17	1	11 days	0.38		Williams	1999 TW ₁₇
1999 TX ₁₇	16.3	0.15	19991009	13.83883	176.13354	183.26250	10.25597	0.2352810	2.3646157	9	1	10 days	0.18		Williams	1999 TX ₁₇

1999 TZ ₁₇	14.0	0.15	19991009	165.48611	8.93125	205.38344	12.57564	0.0768131	2.6101885	19	1	12 days	0.32	Williams	1999 TZ ₁₇
1999 TA ₁₈	15.4	0.15	19991009	3.08517	138.92128	238.25310	1.15516	0.1451626	2.8486316	29	1	18 days	0.56	Williams	1999 TA ₁₈
1999 TB ₁₈	15.2	0.15	19991009	306.47672	67.60669	13.11286	3.96978	0.0528198	2.7089189	35	1	18 days	0.43	Williams	1999 TB ₁₈
1999 TC ₁₈	15.7	0.15	19991009	11.83175	178.68092	187.13604	13.01859	0.2017396	3.0776442	9	1	8 days	0.50	Williams	1999 TC ₁₈
1999 TE ₁₈	15.2	0.15	19991009	356.18303	202.38533	187.95394	12.18948	0.2540071	3.1425829	13	1	11 days	0.34	Williams	1999 TE ₁₈
1999 TF ₁₈	15.8	0.15	19991009	32.15114	122.08984	226.57806	0.52892	0.2246401	2.1890539	18	1	10 days	0.45	Williams	1999 TF ₁₈
1999 TL ₁₈	15.1	0.15	19991009	20.78266	307.94379	47.28241	7.73598	0.1309805	2.3545833	14	1	8 days	0.21	Williams	1999 TL ₁₈
1999 TM ₁₈	15.2	0.15	19991009	252.34059	278.15547	228.66789	2.45801	0.1663839	2.4254932	11	1	9 days	0.38	Williams	1999 TM ₁₈
1999 TO ₁₈	15.2	0.15	19991009	25.29420	137.24021	206.40124	19.76561	0.2075889	3.1194616	15	1	12 days	0.37	Williams	1999 TO ₁₈
1999 TP ₁₈	14.8	0.15	19991009	23.87172	136.87472	210.02649	7.06451	0.1957856	3.2101992	17	1	12 days	0.40	Williams	1999 TP ₁₈
1999 TR ₁₈	13.4	0.15	19991009	343.53422	34.75691	8.41922	1.78316	0.1132209	2.9218891	18	1	12 days	0.20	Williams	1999 TR ₁₈
1999 TV ₁₈	13.4	0.15	19991009	296.40999	260.46555	214.89457	10.86727	0.2176307	3.1153673	10	1	11 days	0.34	Williams	1999 TV ₁₈
1999 TZ ₁₈	15.2	0.15	19991009	329.66815	259.58039	164.89148	2.50117	0.1391031	2.3034589	14	1	13 days	0.32	Williams	1999 TZ ₁₈
1999 TA ₁₉	13.8	0.15	19991009	22.61574	324.53973	36.76916	15.93607	0.0835838	3.1315694	11	1	11 days	0.51	Williams	1999 TA ₁₉
1999 TB ₁₉	13.3	0.15	19991009	284.00377	281.13994	208.47833	7.90492	0.1982072	3.0767132	7	1	2 days	0.88	E Williams	1999 TB ₁₉
1999 TC ₁₉	12.8	0.15	19991009	91.61785	56.72885	211.89920	34.15413	0.2937060	3.1415453	7	1	2 days	1.50	E Williams	1999 TC ₁₉
1999 TF ₁₉	15.6	0.15	19991009	17.69262	295.91118	56.67894	13.37979	0.1703061	2.6888926	13	1	9 days	0.20	Williams	1999 TF ₁₉
1999 TH ₁₉	14.3	0.15	19991009	29.16320	316.37887	30.81651	15.05871	0.2001305	2.5792683	20	1	14 days	0.34	Williams	1999 TH ₁₉
1999 TJ ₁₉	15.3	0.15	19991009	20.35296	337.40722	24.88961	3.07331	0.2158719	2.5754195	24	1	20 days	0.45	Williams	1999 TJ ₁₉
1999 TO ₁₉	14.2	0.15	19991009	206.50974	324.56537	205.80105	4.68590	0.0922277	2.2255586	14	1	14 days	0.31	Williams	1999 TO ₁₉
1999 TR ₁₉	14.6	0.15	19991009	334.05118	315.29354	97.71249	27.05142	0.2854911	2.8851494	7	1	2 days	0.30	Williams	1999 TR ₁₉
1999 TS ₁₉	14.6	0.15	19991009	333.74646	312.06238	102.00321	25.69846	0.2798938	2.5200947	7	1	2 days	0.20	Williams	1999 TS ₁₉
1999 TT ₁₉	14.5	0.15	19991009	46.37976	194.51054	94.92919	27.92169	0.2939689	2.5109610	7	1	2 days	0.47	Williams	1999 TT ₁₉
1999 TX ₁₉	15.6	0.15	19991009	320.81496	61.45812	8.57678	1.91502	0.1140630	2.5356308	11	1	12 days	0.22	Williams	1999 TX ₁₉
1999 TY ₁₉	14.5	0.15	19991009	309.00552	71.60943	6.77522	2.00214	0.0535493	2.9403279	11	1	12 days	0.18	Williams	1999 TY ₁₉
1999 TE ₂₀	14.9	0.15	19991009	0.55386	200.35391	183.87747	10.82085	0.1346360	3.0541216	10	1	11 days	0.24	Williams	1999 TE ₂₀
1999 TF ₂₀	15.0	0.15	19991009	32.22087	273.88309	83.65644	5.58946	0.1028052	2.2228734	12	1	11 days	1.38	Williams	1999 TF ₂₀
1999 TH ₂₀	14.6	0.15	19991009	20.45676	242.40167	123.02434	4.56659	0.2187977	2.5067741	7	1	7 days	0.73	Nakano	1999 TH ₂₀
1999 TK ₂₀	16.3	0.15	19990919	8.96022	358.35783	354.72896	2.09919	0.2167823	2.4519164	21	1	3 days	0.38	Williams	1999 TK ₂₀
1999 TL ₂₀	16.1	0.15	19990919	320.11685	57.34631	7.94769	4.55236	0.1862693	2.4474231	16	1	3 days	0.58	Williams	1999 TL ₂₀
1999 TM ₂₀	14.9	0.15	19990919	47.29408	286.41080	7.13605	3.91982	0.2847685	2.8195747	19	1	3 days	0.58	E Williams	1999 TM ₂₀
1999 TO ₂₀	14.7	0.15	19990919	28.12065	123.70527	212.19600	1.02150	0.1160596	2.7312021	11	1	3 days	0.32	E Williams	1999 TO ₂₀
1999 TP ₂₀	13.9	0.15	19990919	269.36161	92.70640	21.39904	3.45558	0.0823344	2.9616550	10	1	3 days	0.50	E Williams	1999 TP ₂₀
1999 TR ₂₀	14.1	0.15	19990919	17.41956	336.80691	10.81084	3.84302	0.1588956	3.2166664	15	1	3 days	0.59	E Williams	1999 TR ₂₀
1999 TT ₂₀	13.9	0.15	19990919	71.78948	47.56439	233.77136	1.98769	0.1589155	3.1025776	16	1	2 days	0.53	E Williams	1999 TT ₂₀
1999 TU ₂₀	16.4	0.15	19990919	359.28934	171.24624	197.55009	10.65599	0.2184808	2.4905546	16	1	2 days	0.43	Williams	1999 TU ₂₀
1999 TV ₂₀	17.4	0.15	19990919	3.50616	161.08682	197.54170	6.90720	0.2783663	2.2412900	16	1	2 days	0.44	E Williams	1999 TV ₂₀
1999 TL ₂₁	14.5	0.15	19991009	244.38420	301.31436	187.50136	0.23466	0.1449123	3.2017829	9	1	4 days	0.24	E Williams	1999 TL ₂₁
1999 TM ₂₁	16.1	0.15	19991009	242.22424	120.02531	1.99260	15.24281	0.0286414	2.5920975	9	1	5 days	0.28	E Williams	1999 TM ₂₁
1999 TN ₂₁	16.3	0.15	19991009	211.25028	311.51057	244.08188	6.05786	0.0567569	2.3968760	18	1	6 days	0.30	E Williams	1999 TN ₂₁
1999 UA	16.6	0.15	19991009	12.32124	122.27094	245.97231	4.35407	0.2485942	2.3264655	13	1	14 days	0.34	Williams	1999 UA
1999 UB	16.5	0.15	19991009	291.08790	101.03616	11.00766	7.34300	0.0904548	2.2682888	8	1	4 days	0.24	Williams	1999 UB
1999 UC	17.2	0.15	19991009	21.62331	325.19085	35.97951	5.42380	0.1711975	2.4135723	7	1	4 days	0.48	Williams	1999 UC
1999 UE	14.3	0.15	19991009	356.21988	36.87110	341.65510	0.71008	0.2177563	3.0775604	16	1	13 days	0.87	E Williams	1999 UE
1999 UF	13.2	0.15	19991009	265.52369	106.58328	18.65513	5.00629	0.0976337	3.1954786	14	1	16 days	0.79	Williams	1999 UF
1999 UG	15.8	0.15	19991009	359.03869	351.48926	28.71183	1.82849	0.1967865	2.3581722	11	1	13 days	0.52	Williams	1999 UG
1999 UK	15.1	0.15	19991009	346.63882	139.79690	259.84279	1.22513	0.1693000	2.5493663	16	1	16 days	0.32	Williams	1999 UK
1999 UM	15.6	0.15	19991009	307.70062	82.17061	4.56739	2.32442	0.1347095	2.3981380	17	1	14 days	0.44	Williams	1999 UM
1999 UN	14.8	0.15	19991009	39.14793	290.91310	20.02076	7.59210	0.3215375	3.0764344	16	1	13 days	0.46	Williams	1999 UN
1999 UO	14.1	0.15	19991009	356.15391	181.03550	205.92748	10.99315	0.1088010	3.0712529	25	1	14 days	0.59	Williams	1999 UO
1999 UQ	21.9	0.15	19991009	157.01267	7.67665	211.39481	24.83236	0.0160851	1.0943403	57	1	6 days	0.57	Williams	1999 UQ
1999 UR	21.5	0.15	19991029	351.14748	17.77712	50.89465	3.60293	0.5054003	1.9034839	54	1	4 days	0.54	Nakano	1999 UR
1999 UV	15.1	0.15	19991009	324.92027	35.18155	29.00183	7.72032	0.1125401	2.4756743	11	1	13 days	0.57	Williams	1999 UV

1999 UW	14.6	0.15	19991009	356.37087	212.97792	173.36594	1.93951	0.1016455	2.7557553	10	1	13 days	0.57		Williams	1999 UW	
1999 UC ₁	13.3	0.15	19991009	29.79909	309.27864	34.87543	12.29137	0.1988875	2.5735429	13	1	11 days	0.28		Williams	1999 UC ₁	
1999 UF ₁	13.9	0.15	19991009	328.53128	43.71793	34.08892	17.25946	0.2122210	3.1301158	11	1	13 days	0.48		Williams	1999 UF ₁	
1999 UH ₁	17.5	0.15	19991009	342.46420	207.66746	195.75180	2.09534	0.1822284	2.2616887	9	1	2 days	0.20		Williams	1999 UH ₁	
1999 UJ ₁	16.0	0.15	19991009	94.74503	263.13420	22.04805	21.90450	0.0669440	1.9332927	19	1	15 days	0.43		Williams	1999 UJ ₁	
1999 UP ₁	16.2	0.15	19991009	359.09443	340.16455	39.43711	8.76611	0.2529056	2.7658662	16	1	13 days	0.72		Williams	1999 UP ₁	
1999 UQ ₁	15.1	0.15	19991029	4.39596	352.51458	52.63683	7.26592	0.1027304	2.3600390	10	1	5 days	0.37		Nakano	1999 UQ ₁	
1999 UR ₁	16.1	0.15	19991029	59.67629	115.16265	218.56972	3.19287	0.1529854	2.1601615	10	1	5 days	0.49	E	Nakano	1999 UR ₁	
1999 US ₁	15.4	0.15	19991009	176.96068	222.51012	338.63570	0.97215	0.0492845	2.9475708	10	1	13 days	0.31		Williams	1999 US ₁	
1999 UU ₁	14.7	0.15	19991009	89.60776	72.31850	196.21592	8.16528	0.1839408	2.3996829	10	1	11 days	0.24	E	Williams	1999 UU ₁	
1999 UA ₂	14.3	0.15	19991009	37.18648	98.74518	228.35609	2.55183	0.2806185	2.5767269	26	1	17 days	1.17		Williams	1999 UA ₂	
1999 UB ₂	15.1	0.15	19991009	39.88050	236.82798	92.63394	6.36295	0.1746803	2.7932128	13	1	3 days	0.95	E	Williams	1999 UB ₂	
1999 UU ₂	13.6	0.15	19991009	50.73009	345.79515	315.17525	6.58976	0.1671822	2.3202267	7	1	2 days	0.33		Williams	1999 UU ₂	
1999 UV ₂	14.4	0.15	19991009	307.75622	23.93055	66.79855	5.41548	0.1394257	2.5638253	7	1	2 days	0.73	E	Williams	1999 UV ₂	
1999 UX ₂	14.7	0.15	19991009	350.01422	357.34677	34.36012	15.67540	0.0916429	2.6467669	13	1	14 days	0.28		Williams	1999 UX ₂	
1999 UY ₂	17.2	0.15	19991009	340.28361	216.65446	189.17804	3.58530	0.1699363	2.0728052	11	1	14 days	0.35		Williams	1999 UY ₂	
1999 UZ ₂	15.9	0.15	19991029	22.09014	125.84798	229.67265	6.47267	0.2195504	2.2413207	9	1	3 days	0.54		Nakano	1999 UZ ₂	
1999 UC ₃	15.7	0.15	19991029	8.84344	283.31745	96.71105	3.84069	0.2976036	2.3805582	14	1	3 days	0.51		Nakano	1999 UC ₃	
1999 UD ₃	17.4	0.15	19991009	347.36048	38.10119	21.38472	4.81946	0.2031697	2.6012863	21	1	4 days	0.37	E	Williams	1999 UD ₃	
1999 UE ₃	14.8	0.15	19991009	358.58173	340.32310	111.31202	6.09879	0.2201590	3.1686830	12	1	3 days	0.62	E	Williams	1999 UE ₃	
1999 UL ₃	15.0	0.15	19991029	349.86899	55.18397	1.59746	7.69913	0.2191970	2.7299800	7	1	3 days	0.47		Nakano	1999 UL ₃	
1999 UM ₃	16.5	0.15	19991009	346.56230	29.28379	117.13204	10.88391	0.7581338	3.4008981	34	1	4 days	0.37		Williams	1999 UM ₃	
1999 UR ₃	14.5	0.15	19991009	279.59671	22.95660	89.58271	27.07589	0.0587078	1.8796449	5	1	4 days	0.82	D	Marsden	1999 UR ₃	
2013 P-L	15.5	0.15	19990810	359.44782	346.03517	334.18646	4.07140	0.2252034	2.1996868	63	3	1960–1999	0.55	M-v	2	Williams	36049 2013 P-L
2033 P-L	12.2	0.15	19990810	245.26731	231.95801	223.99330	3.54113	0.1616869	3.9998313	31	2	1960–1999	0.61	M-v	4	Williams	36049 2033 P-L
2040 P-L	16.8	0.15	19990810	357.83774	342.96939	1.03297	4.81923	0.2442946	2.1944166	65	3	1960–1999	0.74	M-v	4	Williams	36119 2040 P-L
2041 P-L	14.5	0.15	19990810	50.09583	287.07983	0.64495	14.80126	0.0518842	2.6667827	42	3	1960–1999	0.80	M-v	4	Williams	36119 2041 P-L
2043 P-L	14.8	0.15	19990810	63.95562	294.97792	354.00397	5.85725	0.2615900	2.4658953	72	4	1960–1999	0.70	M-v	1	Williams	32091 2043 P-L
2047 P-L	15.7	0.15	19990810	0.78937	315.54107	4.76618	6.63520	0.0971470	2.2025728	23	3	1960–1999	0.59	M-v	3	Williams	36049 2047 P-L
2054 P-L	14.5	0.15	19990810	176.26833	329.36638	227.19647	4.75103	0.1434672	2.3209973	53	3	1960–1999	0.59	M-v	4	Williams	30285 2054 P-L
2058 P-L	14.4	0.15	19990810	75.82857	8.43948	277.48755	2.17952	0.0349267	2.6560405	43	4	1960–1999	0.61	M-v	1	Williams	29668 2058 P-L
2071 P-L	15.2	0.15	19990810	18.12503	106.56540	217.95707	2.14229	0.0999942	2.6629932	65	2	1960–1999	0.48	M-v	5	Williams	36049 2071 P-L
2091 P-L	15.2	0.15	19990810	346.88535	133.18515	248.69633	3.51834	0.1172281	2.3211215	59	5	1960–1999	0.48	M-v	1	Williams	32091 2091 P-L
2098 P-L	12.8	0.15	19990810	52.16907	158.18585	192.06553	11.95858	0.2654612	2.6275668	48	6	1960–1999	0.74	M-v	1	Williams	32342 2098 P-L
2100 P-L	14.2	0.15	19990810	107.69683	75.62785	193.30067	16.80639	0.0735059	2.8618570	38	3	1960–1999	0.69	M-v	3	Williams	30797 2100 P-L
2113 P-L	15.1	0.15	19990810	323.90658	166.18703	222.45416	3.52804	0.0891827	2.6626624	49	4	1960–1999	0.82	M-v	4	Williams	36119 2113 P-L
2129 P-L	15.0	0.15	19990810	244.76491	278.55991	201.53497	5.53462	0.0874395	2.4799591	39	3	1960–1999	0.73	M-v	4	Williams	29321 2129 P-L
2155 P-L	13.6	0.15	19990810	29.34576	34.03870	300.58897	0.87528	0.1816073	3.1257696	40	4	1960–1999	0.61	M-v	2	Williams	36119 2155 P-L
2506 P-L	15.0	0.15	19990810	7.18702	315.80612	7.51891	11.99269	0.2081291	2.6644449	69	5	1960–1999	0.81	M-v	2	Williams	36119 2506 P-L
2508 P-L	15.0	0.15	19990810	333.60564	351.01724	10.19541	6.37739	0.2501768	2.3312579	45	5	1951–1999	0.73	M-v	2	Williams	36119 2508 P-L
2514 P-L	15.7	0.15	19990810	13.28179	322.42895	9.02792	11.89169	0.1819336	2.6591135	42	3	1960–1999	0.93	M-v	4	Williams	36119 2514 P-L
2549 P-L	13.9	0.15	19990810	336.70460	284.24255	167.69209	2.13781	0.0343650	2.8315653	73	4	1960–1999	0.65	M-v	1	Williams	36119 2549 P-L
2551 P-L	13.8	0.15	19990810	72.72095	295.31032	25.69411	1.73889	0.1023625	2.8472208	32	6	1960–1999	0.67	M-v	1	Williams	32785 2551 P-L
2554 P-L	12.4	0.15	19990810	300.42496	359.71387	50.69603	3.53798	0.2420650	3.9687335	20	2	1960–1999	0.55	M-v	4	Williams	36049 2554 P-L
2555 P-L	14.0	0.15	19990810	18.62133	195.22413	188.69968	2.45074	0.2268456	3.1069819	25	5	1960–1999	0.73	M-v	1	Williams	32502 2555 P-L
2592 P-L	14.1	0.15	19990810	141.12906	74.37857	176.68113	5.25603	0.0876996	2.4583216	29	5	1960–1999	0.83	M-v	2	Williams	32785 2592 P-L
2613 P-L	14.5	0.15	19990810	332.54657	220.08698	192.88445	4.51632	0.1480338	3.1324122	41	4	1960–1999	0.46	M-v	2	Williams	32785 2613 P-L
2646 P-L	14.9	0.15	19990810	4.79001	21.68185	18.79824	5.31087	0.1599674	2.6377734	17	4	1960–1999	0.67	M-v	2	Williams	35046 2646 P-L
2650 P-L	16.9	0.15	19990810	70.99289	221.76487	166.50187	1.76723	0.1907468	2.2870669	35	3	1960–1998	0.70	M-v	3	Williams	36120 2650 P-L
2665 P-L	16.2	0.15	19990810	13.26053	160.44158	171.15364	3.95760	0.2583384	2.4752105	45	3	1960–1999	0.71	M-v	4	Williams	31436 2665 P-L
2688 P-L	15.3	0.15	19990810	190.96828	196.49067	126.05848	1.63403	0.1024342	3.0137376	25	5	1960–1999	0.79	M-v	1	Williams	36120 2688 P-L
2722 P-L	14.7	0.15	19990810	53.39402	67.99669	181.49559	14.97971	0.1549845	2.6782774	50	3	1960–1999	0.72	M-v	2	Williams	36120 2722 P-L
2727 P-L	15.4	0.15	19990810	120.12428	189.04120	21.14002	4.93633	0.1453932	2.3330630	63	3	1960–1999	0.66	M-v	3	Williams	36120 2727 P-L

2733 P-L	14.9	0.15	19990810	218.63452	307.84724	109.16663	2.87678	0.1232162	2.5190721	20	4	1960-1999	0.84	M-v	3	Williams	36120	2733 P-L
2737 P-L	16.1	0.15	19990810	352.28779	300.50725	55.52422	3.77732	0.1079551	2.4799106	31	2	1960-1999	0.70	M-v	4	Williams	36050	2737 P-L
2740 P-L	15.3	0.15	19990810	301.10646	244.41135	165.42594	5.46069	0.1061439	2.6656021	49	4	1960-1999	0.83	M-v	3	Williams	36120	2740 P-L
2806 P-L	16.3	0.15	19990810	18.47719	332.76600	11.07039	7.60367	0.1826562	2.4721170	19	3	1960-1999	0.37	M-v	4	Williams	25969	2806 P-L
2825 P-L	14.5	0.15	19990810	179.17266	313.40793	204.32577	0.93489	0.1095802	3.1703710	27	4	1960-1999	0.65	M-v	2	Williams	29948	2825 P-L
3024 P-L	13.5	0.15	19990810	249.03280	252.27081	290.75372	11.09885	0.1834088	2.6178578	40	5	1960-1999	0.65	M-v	1	Williams	33129	3024 P-L
3090 P-L	13.1	0.15	19990810	280.88982	198.06546	231.49121	14.20743	0.2318891	3.1633629	60	3	1960-1999	0.63	M-v	3	Williams	36120	3090 P-L
3092 P-L	14.4	0.15	19990810	55.98123	2.69941	295.17273	7.37488	0.2381427	2.6496027	24	3	1960-1999	0.61	M-v	5	Williams	17974	3092 P-L
3503 P-L	14.2	0.15	19990810	70.93235	57.14544	244.68273	11.37594	0.1522083	2.6435903	30	3	1960-1999	0.67	M-v	5	Williams	32290	3503 P-L
3560 P-L	12.1	0.15	19990810	297.37713	21.90324	353.95346	15.25935	0.0941681	3.1768943	27	4	1960-1999	0.67	M-v	2	Williams	29948	3560 P-L
4024 P-L	13.9	0.15	19990810	30.57069	52.81207	286.31972	2.97197	0.1390232	2.6474082	37	5	1960-1999	0.52	M-v	1	Williams	32343	4024 P-L
4026 P-L	13.2	0.15	19990810	152.45655	249.29344	359.74022	13.27624	0.1255077	2.6259240	45	5	1960-1999	0.75	M-v	2	Williams	33588	4026 P-L
4037 P-L	14.1	0.15	19990810	282.45661	97.30727	358.02859	6.85060	0.0865541	2.3198095	37	4	1960-1999	0.53	M-v	4	Williams	36120	4037 P-L
4060 P-L	13.9	0.15	19990810	196.34023	289.26505	241.86161	1.60354	0.0337115	2.6530286	58	4	1960-1999	0.75	M-v	4	Williams	22086	4060 P-L
4061 P-L	13.9	0.15	19990810	37.54457	55.31622	238.58677	4.78429	0.1441961	3.1544458	71	3	1960-1999	0.67	M-v	3	Williams	36120	4061 P-L
4071 P-L	14.8	0.15	19990810	4.81780	109.32877	199.32046	5.42881	0.1006449	2.3369316	54	3	1960-1999	0.60	M-v	3	Williams	36120	4071 P-L
4119 P-L	14.9	0.15	19990810	37.06922	138.74559	191.49601	4.44534	0.2170848	2.1846938	68	5	1951-1999	0.68	M-v	1	Williams	32091	4119 P-L
4161 P-L	14.1	0.15	19990810	274.93315	156.78428	338.05721	7.22931	0.1424860	2.6376814	20	4	1960-1999	0.76	M-v	2	Williams	32536	4161 P-L
4202 P-L	13.8	0.15	19990810	275.56882	78.70776	338.55431	8.71141	0.0636049	2.6726142	49	3	1960-1999	0.51	M-v	2	Williams	36120	4202 P-L
4214 P-L	14.1	0.15	19990810	241.48629	255.47201	232.02540	4.61901	0.0759488	3.1471900	42	4	1960-1999	0.66	M-v	2	Williams	36120	4214 P-L
4218 P-L	14.4	0.15	19990810	68.17294	302.15361	314.08700	4.66150	0.2466051	2.6596867	44	3	1960-1999	0.50	M-v	2	Williams	34265	4218 P-L
4517 P-L	13.7	0.15	19990810	71.49323	322.48361	9.84838	6.86383	0.1772450	2.3007090	35	5	1960-1999	0.83	M-v	4	Williams	29948	4517 P-L
4588 P-L	15.2	0.15	19990810	48.14774	143.51952	188.13386	5.67059	0.1762855	2.3102722	39	5	1960-1999	0.63	M-v	1	Williams	32091	4588 P-L
4626 P-L	13.8	0.15	19990810	290.29544	53.47531	28.48683	1.99449	0.0560281	2.8708875	62	5	1951-1999	0.53	M-v	1	Williams	35671	4626 P-L
4636 P-L	13.5	0.15	19990810	208.96992	130.83031	13.26119	14.09826	0.0711400	3.1533565	41	3	1960-1999	0.68	M-v	4	Williams	36120	4636 P-L
4644 P-L	14.6	0.15	19990810	91.03531	285.93808	187.00098	4.97670	0.0035047	2.7438479	24	3	1960-1999	0.74	M-v	4	Williams	36120	4644 P-L
4646 P-L	12.6	0.15	19990810	329.53226	288.90764	186.07995	10.83187	0.1208234	3.0854045	85	3	1960-1999	0.66	M-v	3	Williams	33588	4646 P-L
4764 P-L	14.1	0.15	19990810	144.85704	44.99662	152.21325	2.24530	0.0324722	2.8830641	49	4	1960-1999	0.67	M-v	2	Williams	36121	4764 P-L
4780 P-L	13.7	0.15	19990810	220.25100	305.94854	185.51918	5.30687	0.1306063	3.1606929	61	3	1960-1999	0.56	M-v	3	Williams	36121	4780 P-L
4821 P-L	15.8	0.15	19990810	333.14582	247.11890	139.85055	3.29514	0.1147574	2.6571970	40	5	1960-1999	0.62	M-v	1	Williams	26423	4821 P-L
4861 P-L	15.9	0.15	19990810	264.29066	268.97262	181.05355	22.17197	0.1293173	1.9821829	67	3	1960-1999	0.69	M-v	2	Williams	36121	4861 P-L
4874 P-L	15.0	0.15	19990810	354.58413	341.55049	54.55766	3.38814	0.1004809	2.6429009	26	4	1960-1999	0.63	M-v	1	Williams	29668	4874 P-L
4893 P-L	14.5	0.15	19990810	266.31548	61.65257	25.46521	2.27954	0.0281651	2.8795382	21	2	1960-1999	0.78	M-v	5	Williams	36050	4893 P-L
5565 P-L	14.3	0.15	19990810	11.23439	353.93557	35.82839	6.26698	0.1814317	2.1801847	26	3	1960-1999	0.95	M-v	4	Williams	24585	5565 P-L
5568 P-L	14.0	0.15	19990810	32.61596	321.90376	30.66901	8.08980	0.1248282	2.6417104	30	7	1960-1999	0.83	M-v	2	Williams	22601	5568 P-L
5578 P-L	14.7	0.15	19990810	41.68810	75.60558	191.04835	8.22869	0.2066604	2.6709640	46	3	1960-1999	0.73	M-v	3	Williams	36121	5578 P-L
6012 P-L	14.2	0.15	19990810	253.58595	224.25443	244.72083	3.50463	0.1462062	3.1528418	22	4	1960-1999	0.83	M-v	4	Williams	24585	6012 P-L
6193 P-L	15.2	0.15	19990810	30.84435	138.07551	191.64895	12.39300	0.1217980	2.6496878	34	4	1960-1999	0.73	M-v	3	Williams	29321	6193 P-L
6217 P-L	13.3	0.15	19990810	182.18847	10.82656	196.63145	16.06538	0.1309554	3.1229482	47	4	1960-1999	0.85	M-v	1	Williams	32785	6217 P-L
6242 P-L	14.4	0.15	19990810	250.42534	293.41184	220.94550	5.54221	0.0744751	2.4571408	30	5	1960-1999	0.64	M-v	1	Williams	32536	6242 P-L
6326 P-L	13.8	0.15	19990810	286.70179	203.11762	236.65925	1.13851	0.1231478	3.1448093	36	2	1960-1999	0.48	M-v	4	Williams	36051	6326 P-L
6335 P-L	13.6	0.15	19990810	146.99153	60.28143	180.06663	0.90772	0.1320777	3.1157988	47	4	1960-1999	0.73	M-v	1	Williams	36121	6335 P-L
6539 P-L	14.2	0.15	19990810	35.04431	119.03413	170.47763	7.77822	0.0669469	2.6677351	75	3	1960-1999	0.53	M-v	2	Williams	36121	6539 P-L
6569 P-L	13.3	0.15	19990810	328.23467	150.08233	133.47168	2.70471	0.1416072	3.2208778	42	3	1960-1999	0.72	M-v	5	Williams	35402	6569 P-L
6585 P-L	13.9	0.15	19990810	30.49879	207.61986	148.17601	2.42692	0.1348901	3.1097465	37	4	1960-1999	0.81	M-v	1	Williams	32536	6585 P-L
6589 P-L	13.9	0.15	19990810	284.18997	61.32487	8.27023	9.89229	0.2156895	2.8850225	20	2	1960-1999	0.73	M-v	4	Williams	36051	6589 P-L
6602 P-L	16.2	0.15	19990810	338.42967	2.59813	11.68968	6.56846	0.1373616	2.1931562	75	3	1960-1999	0.71	M-v	4	Williams	36121	6602 P-L
6606 P-L	14.9	0.15	19990810	209.50170	105.08550	29.04300	6.64543	0.0431131	2.3281474	58	3	1960-1999	0.70	M-v	3	Williams	36121	6606 P-L
6614 P-L	13.9	0.15	19990810	67.44172	187.65939	117.81597	2.77766	0.0801847	2.6424443	44	5	1960-1999	0.62	M-v	1	Williams	29668	6614 P-L
6680 P-L	15.4	0.15	19990810	237.29733	256.86175	183.86714	6.26776	0.0635389	2.3386666	38	4	1960-1999	0.80	M-v	1	Williams	36121	6680 P-L
6761 P-L	13.1	0.15	19990810	317.86642	317.41915	174.80656	9.73563	0.0568606	3.0680111	52	4	1960-1999	0.67	M-v	1	Williams	33384	6761 P-L
6772 P-L	15.7	0.15	19990810	193.61845	354.50228	168.21299	2.40654	0.1207685	2.4789156	22	3	1960-1999	0.55	M-v	5	Williams	36121	6772 P-L
6791 P-L	14.3	0.15	19990810	120.59457	197.14252	17.84173	13.05785	0.1496170	2.6590637	23	3	1960-1999	0.67	M-v	4	Williams	36121	6791 P-L

7569 P-L	15.1	0.15	19990810	277.78191	32.82201	38.98978	4.17329	0.1091758	2.3292569	60	3	1960-1999	0.52	M-v	4	Williams	36122	7569 P-L
7590 P-L	16.2	0.15	19990810	326.26275	11.57050	35.17301	6.96802	0.2914035	2.6559597	30	3	1960-1999	0.81	M-v	3	Williams	36122	7590 P-L
7606 P-L	16.1	0.15	19990810	7.22759	249.43984	83.43234	3.04376	0.2615478	2.3235318	30	3	1960-1999	0.50	M-v	4	Williams	36122	7606 P-L
9056 P-L	15.9	0.15	19990810	11.09211	320.39666	353.13919	5.86536	0.1543758	2.1971499	57	3	1960-1999	0.56	M-v	3	Williams	36122	9056 P-L
9509 P-L	14.5	0.15	19990810	31.29792	124.86228	187.93557	10.89635	0.2553440	2.6512392	65	4	1960-1999	0.64	M-v	3	Williams	32092	9509 P-L
9534 P-L	14.4	0.15	19990810	204.01622	63.02215	172.36216	3.21505	0.1334246	2.4285390	70	5	1960-1999	0.71	M-v	2	Williams	33129	9534 P-L
9544 P-L	14.5	0.15	19990810	55.18317	171.21670	164.26100	4.86259	0.0552830	2.4574323	27	4	1960-1999	0.67	M-v	2	Williams	29948	9544 P-L
9547 P-L	14.3	0.15	19990810	330.53995	164.98280	189.91657	7.56050	0.2124873	2.4866929	45	3	1960-1999	0.64	M-v	3	Williams	36122	9547 P-L
9565 P-L	14.7	0.15	19990810	50.40956	207.75421	138.94559	4.39440	0.1434361	2.3042289	32	6	1960-1999	0.63	M-v	1	Williams	32343	9565 P-L
9578 P-L	12.7	0.15	19990810	323.45281	74.77258	3.58105	5.89965	0.1110390	3.1172294	49	4	1960-1999	0.75	M-v	2	Williams	32786	9578 P-L
1101 T-1	14.5	0.15	19990810	197.01092	232.49151	278.78311	3.58355	0.0448638	2.6811862	26	3	1971-1999	0.63	M-v	4	Williams	36122	1101 T-1
1182 T-1	13.3	0.15	19990810	319.11299	208.26471	188.63414	12.98389	0.1637437	2.6675157	100	3	1971-1999	0.63	M-v	3	Williams	36122	1182 T-1
1222 T-1	14.3	0.15	19990810	19.27450	354.82957	347.17982	11.29008	0.2339110	2.4389716	34	4	1971-1999	0.66	M-v	2	Williams	36122	1222 T-1
1230 T-1	15.4	0.15	19990810	88.21842	302.02557	329.08617	2.20193	0.1398962	2.2450824	51	4	1971-1999	0.72	M-v	2	Williams	32092	1230 T-1
1285 T-1	15.5	0.15	19990810	265.02220	173.79340	277.55081	1.43335	0.1061448	2.4260978	71	3	1971-1999	0.60	M-v	3	Williams	36122	1285 T-1
1290 T-1	15.0	0.15	19990810	298.54605	282.20166	195.11720	6.18448	0.0670123	2.3949234	40	4	1971-1999	0.88	M-v	1	Williams	36122	1290 T-1
2024 T-1	15.0	0.15	19990810	327.25605	205.28239	182.09502	12.91396	0.1222952	2.6706307	74	3	1971-1999	0.53	M-v	3	Williams	36122	2024 T-1
2117 T-1	15.6	0.15	19990810	84.60528	216.63780	19.24950	3.39451	0.1211044	2.2595035	38	3	1971-1999	0.70	M-v	5	Williams	36122	2117 T-1
2120 T-1	15.0	0.15	19990810	149.54738	98.46997	135.88986	2.76581	0.1242995	2.4231491	42	5	1971-1999	0.81	M-v	1	Williams	32343	2120 T-1
2168 T-1	14.2	0.15	19990810	20.63408	176.67815	182.63682	11.77938	0.1289982	2.4193746	45	5	1971-1999	0.83	M-v	1	Williams	32343	2168 T-1
2208 T-1	14.4	0.15	19990810	91.63664	232.58854	14.73425	8.47199	0.1888084	2.4549137	99	3	1971-1999	0.67	M-v	2	Williams	36122	2208 T-1
3033 T-1	14.0	0.15	19990810	54.16540	301.88851	6.32236	6.37613	0.1400842	2.4387980	52	4	1971-1999	0.71	M-v	1	Williams	32343	3033 T-1
3041 T-1	14.1	0.15	19990810	52.61681	338.30080	333.03217	5.42858	0.1990752	2.6915214	21	3	1971-1999	0.53	M-v	4	Williams	34617	3041 T-1
3051 T-1	13.4	0.15	19990810	78.31341	111.80400	189.18927	10.95375	0.2064757	2.9966541	41	5	1955-1999	0.82	M-v	1	Williams	32786	3051 T-1
3099 T-1	14.4	0.15	19990810	312.70701	102.24736	336.46211	5.45962	0.1101071	2.2167268	31	4	1971-1999	0.67	M-v	2	Williams	28892	3099 T-1
3105 T-1	14.5	0.15	19990810	175.84779	233.62798	325.96961	1.97443	0.1117399	2.4270069	59	7	1971-1999	0.68	M-v	1	Williams	32343	3105 T-1
3119 T-1	15.4	0.15	19990810	255.03783	260.88605	251.87993	1.55445	0.1075668	2.4018786	35	5	1971-1999	0.69	M-v	1	Williams	36122	3119 T-1
3163 T-1	12.1	0.15	19990810	332.93778	345.83108	12.44915	3.20551	0.1275877	5.2587019	23	3	1971-1999	0.56	M-v	3	Williams	36122	3163 T-1
3178 T-1	15.4	0.15	19990810	113.96367	237.68662	20.55967	2.55250	0.1484095	2.4351840	35	5	1971-1999	0.60	M-v	2	Williams	29321	3178 T-1
3195 T-1	14.7	0.15	19990810	280.71648	99.93344	338.89323	4.75589	0.1210295	2.2312342	82	3	1971-1999	0.57	M-v	3	Williams	36052	3195 T-1
3243 T-1	15.2	0.15	19990810	355.09743	347.90820	357.79410	3.92075	0.1423116	2.2504422	79	4	1971-1999	0.81	M-v	3	Williams	36122	3243 T-1
3248 T-1	16.9	0.15	19990810	161.15078	4.50375	189.56563	5.41698	0.1255838	2.2410685	23	4	1971-1999	0.91	M-v	2	Williams	35051	3248 T-1
3770 T-1	15.4	0.15	19990810	134.74920	28.86918	191.20431	6.23518	0.1289206	2.2451095	76	3	1971-1999	0.63	M-v	3	Williams	32092	3770 T-1
4220 T-1	13.1	0.15	19990810	52.92172	130.05028	180.60538	10.35246	0.0968338	3.0033677	37	4	1952-1999	0.75	M-v	2	Williams	30466	4220 T-1
4273 T-1	14.6	0.15	19990810	315.04961	312.59651	135.64347	5.69245	0.1141543	2.9399917	32	4	1971-1999	0.85	M-v	2	Williams	36122	4273 T-1
4290 T-1	12.0	0.15	19990810	156.66550	222.07433	24.00042	12.49790	0.1272843	3.3652782	55	4	1971-1999	0.63	M-v	1	Williams	36122	4290 T-1
4854 T-1	13.0	0.15	19990810	62.13301	272.66136	31.37911	10.74594	0.0721163	3.0011070	32	5	1971-1999	0.74	M-v	1	Williams	28620	4854 T-1
1038 T-2	16.9	0.15	19990810	319.63511	183.77190	210.96439	1.58694	0.1440906	2.1946626	41	3	1960-1999	0.66	M-v	5	Williams	36122	1038 T-2
1043 T-2	15.3	0.15	19990810	253.48859	163.68302	306.66663	2.03561	0.1726014	2.4015120	36	3	1973-1999	0.74	M-v	5	Williams	36052	1043 T-2
1053 T-2	14.1	0.15	19990810	353.60071	223.04882	189.40258	0.93124	0.1988551	2.6268415	72	9	1971-1999	0.84	M-v	1	Williams	32537	1053 T-2
1059 T-2	14.3	0.15	19990810	66.51423	52.16901	209.43040	3.85995	0.0427508	2.4089730	98	3	1973-1999	0.67	M-v	2	Williams	36122	1059 T-2
1063 T-2	14.7	0.15	19990810	319.32668	255.33893	198.18589	1.80340	0.1782065	2.3720035	35	5	1955-1999	0.73	M-v	2	Williams	30474	1063 T-2
1102 T-2	14.7	0.15	19990810	115.47425	79.21009	198.87746	1.59168	0.0753800	2.9506013	37	4	1973-1998	0.94	M-v	1	Williams	36123	1102 T-2
1105 T-2	14.0	0.15	19990810	282.90421	304.27389	184.20820	2.68835	0.1361164	2.6234334	45	6	1973-1999	0.96	M-v	1	Williams	32537	1105 T-2
1108 T-2	14.6	0.15	19990810	34.54030	313.39747	353.24361	6.35841	0.1308694	2.3966805	103	3	1973-1999	0.74	M-v	3	Williams	36123	1108 T-2
1114 T-2	16.8	0.15	19990810	334.21437	77.71686	301.69862	0.39645	0.1942899	2.3992801	68	3	1973-1999	0.55	M-v	3	Williams	36052	1114 T-2
1173 T-2	14.0	0.15	19990810	332.73578	46.26480	1.22772	9.39304	0.0682197	2.9810030	37	3	1973-1999	0.81	M-v	4	Williams	22701	1173 T-2
1231 T-2	13.9	0.15	19990810	6.53469	45.19123	9.19233	1.88537	0.0512864	2.9343408	47	5	1973-1999	0.92	M-v	1	Williams	34617	1231 T-2
1236 T-2	15.1	0.15	19990810	331.66814	17.71815	347.34226	1.79833	0.1406377	2.4072926	76	4	1973-1999	0.88	M-v	3	Williams	36123	1236 T-2
1260 T-2	14.4	0.15	19990810	248.17937	303.80692	179.70030	7.86709	0.1176885	2.6549014	53	4	1960-1999	0.79	M-v	3	Williams	36123	1260 T-2
1262 T-2	15.7	0.15	19990810	87.53723	229.68988	7.75917	5.07212	0.1585930	2.1988332	32	3	1960-1999	0.75	M-v	5	Williams	36123	1262 T-2
1264 T-2	14.1	0.15	19990810	10.35987	38.15393	355.42026	2.17901	0.1257772	2.6226472	32	5	1973-1999	0.87	M-v	1	Williams	32786	1264 T-2
1278 T-2	14.2	0.15	19990810	338.80378	231.08394	182.15116	10.56353	0.1088822	2.9725139	47	3	1973-1999	0.76	M-v	4	Williams	32731	1278 T-2

1310 T-2	15.2	0.15	19990810	339.01428	345.44087	45.68866	2.06903	0.1866928	2.3916846	35	6	1951-1999	0.91	M-v	2	Williams	29321	1310 T-2
1348 T-2	14.6	0.15	19990810	308.13336	297.34071	189.84714	4.51862	0.1750828	2.3593011	49	5	1973-1999	0.84	M-v	1	Williams	36123	1348 T-2
1405 T-2	15.9	0.15	19990810	266.27642	96.97726	351.81516	1.10365	0.1406803	2.4039187	41	3	1973-1999	0.74	M-v	4	Williams	36052	1405 T-2
1474 T-2	15.4	0.15	19990810	61.05481	67.73646	224.66599	2.63185	0.1665990	2.1843485	72	3	1973-1999	0.80	M-v	3	Williams	32092	1474 T-2
1503 T-2	16.1	0.15	19990810	293.27153	229.63856	216.41178	2.14171	0.1528499	2.3924855	50	3	1973-1999	0.88	M-v	3	Williams	29668	1503 T-2
1607 T-2	14.3	0.15	19990810	34.21309	42.23483	344.88179	7.44928	0.1261492	2.3565712	35	5	1973-1999	0.82	M-v	2	Williams	32537	1607 T-2
2027 T-2	16.1	0.15	19990810	289.04601	109.81225	321.58021	1.72992	0.1830095	2.4040660	43	2	1973-1999	0.91	M-v	5	Williams	36052	2027 T-2
2039 T-2	13.7	0.15	19990810	226.63747	189.02148	359.85911	6.58592	0.0509919	2.3599239	36	3	1973-1999	0.78	M-v	3	Williams	32786	2039 T-2
2092 T-2	14.4	0.15	19990810	215.48285	337.47819	181.53173	5.29866	0.0988402	2.6496491	48	5	1960-1999	1.04	M-v	2	Williams	26423	2092 T-2
2097 T-2	15.1	0.15	19990810	219.31544	161.17438	350.96134	6.75399	0.0548174	2.3913356	48	4	1973-1999	0.96	M-v	2	Williams	31436	2097 T-2
2121 T-2	16.6	0.15	19990810	333.00107	172.28296	188.31111	4.78945	0.2026596	2.2017854	35	2	1973-1999	0.67	M-v	4	Williams	36053	2121 T-2
2162 T-2	15.3	0.15	19990810	106.01591	85.21756	193.12383	4.45146	0.0787294	2.6297672	33	4	1973-1999	0.83	M-v	1	Williams	36123	2162 T-2
2168 T-2	14.1	0.15	19990810	37.83976	185.14781	198.22809	1.63783	0.1198497	2.9346291	73	5	1973-1999	0.84	M-v	2	Williams	33785	2168 T-2
2184 T-2	16.2	0.15	19990810	72.95446	283.93710	31.88932	2.59869	0.2183454	2.3648824	39	3	1973-1998	1.09	M-v	3	Williams	36123	2184 T-2
2243 T-2	14.8	0.15	19990810	240.35717	304.10852	168.19007	2.58105	0.1506167	2.4102536	59	3	1973-1999	0.73	M-v	3	Williams	36053	2243 T-2
2304 T-2	14.7	0.15	19990810	277.49355	25.41891	43.64528	2.69742	0.0873172	3.0224757	41	4	1973-1999	0.82	M-v	3	Williams	36123	2304 T-2
2316 T-2	15.3	0.15	19990810	191.00009	312.56376	179.13943	2.82257	0.0358011	2.2117136	46	3	1973-1999	0.76	M-v	3	Williams	36053	2316 T-2
3086 T-2	14.0	0.15	19990810	24.49283	285.34052	62.57467	4.17344	0.0777234	2.6393781	38	5	1973-1999	0.65	M-v	2	Williams	35672	3086 T-2
3109 T-2	16.3	0.15	19990810	35.46566	150.95978	167.33821	10.74686	0.1224137	2.9907380	27	3	1973-1999	0.86	M-v	3	Williams	33130	3109 T-2
3152 T-2	15.7	0.15	19990810	75.62126	147.48473	23.47764	6.35981	0.0656252	2.2480402	27	4	1973-1999	0.93	M-v	2	Williams	36123	3152 T-2
3169 T-2	15.7	0.15	19990810	296.08672	26.16450	15.89874	8.62716	0.1419219	2.2036647	24	3	1973-1999	1.15	M-v	4	Williams	32293	3169 T-2
3180 T-2	13.6	0.15	19990810	142.80489	138.56402	114.54215	3.30989	0.0343251	2.9543460	56	5	1973-1999	0.93	M-v	1	Williams	32786	3180 T-2
3240 T-2	14.5	0.15	19990810	356.55453	253.38018	106.06378	1.80311	0.1051300	2.9970130	58	2	1973-1999	0.84	M-v	5	Williams	36053	3240 T-2
3270 T-2	14.6	0.15	19990810	240.12305	65.00715	72.65701	3.34599	0.1354035	2.3905016	46	4	1973-1999	0.63	M-v	2	Williams	31436	3270 T-2
3285 T-2	14.5	0.15	19990810	6.26964	320.09715	56.25141	3.74266	0.2300128	2.3815356	29	6	1951-1999	0.83	M-v	2	Williams	32093	3285 T-2
3305 T-2	15.2	0.15	19990810	83.08835	201.70720	48.77861	3.21792	0.1417121	2.4008424	82	3	1973-1999	0.77	M-v	3	Williams	36123	3305 T-2
4072 T-2	16.9	0.15	19990810	38.17833	284.51618	34.40924	4.65968	0.1891896	2.1835832	25	3	1973-1999	0.74	M-v	3	Williams	31576	4072 T-2
4087 T-2	15.1	0.15	19990810	9.98089	178.92291	115.10585	1.88625	0.2064507	3.0392004	32	4	1973-1999	0.87	M-v	2	Williams	35743	4087 T-2
4092 T-2	14.9	0.15	19990810	67.75750	348.71404	20.65515	8.93369	0.2919666	2.9104411	64	3	1973-1998	0.68	M-v	3	Williams	36123	4092 T-2
4120 T-2	15.5	0.15	19990810	203.94501	257.98199	134.84665	3.93540	0.1510432	2.2581734	31	5	1973-1997	0.93	M-v	2	Williams	36124	4120 T-2
4165 T-2	14.6	0.15	19990810	358.49162	240.62959	171.24029	4.83688	0.0942345	2.6200923	41	6	1973-1999	1.01	M-v	2	Williams	32537	4165 T-2
4200 T-2	16.6	0.15	19990810	2.34374	225.59290	109.44623	3.08683	0.1996080	2.4010321	48	3	1973-1999	0.73	M-v	3	Williams	36054	4200 T-2
4209 T-2	14.0	0.15	19990810	55.75631	178.84866	43.33327	5.85412	0.1138164	3.0830786	29	3	1973-1998	0.88	M-v	4	Williams	36124	4209 T-2
4240 T-2	14.8	0.15	19990810	343.39510	319.21891	85.42809	3.47929	0.1891866	2.3838152	48	6	1973-1999	0.72	M-v	1	Williams	30095	4240 T-2
5036 T-2	14.0	0.15	19990810	305.99753	181.35052	262.21201	8.46745	0.0373105	2.6351409	29	3	1973-1999	0.46	M-v	4	Williams	26583	5036 T-2
5124 T-2	14.0	0.15	19990810	126.35089	323.22481	236.76604	11.90906	0.1188596	2.6797713	73	4	1973-1999	0.74	M-v	2	Williams	36124	5124 T-2
5161 T-2	13.8	0.15	19990810	280.74149	87.50283	338.42541	12.28095	0.1705039	2.6784107	72	3	1973-1999	0.57	M-v	2	Williams	36124	5161 T-2
5178 T-2	13.4	0.15	19990810	271.77762	196.18245	246.09223	8.71300	0.0665872	3.0143202	42	2	1973-1999	0.59	M-v	4	Williams	36054	5178 T-2
5332 T-2	14.3	0.15	19990810	290.61423	219.18761	238.95784	10.03657	0.0566038	2.9783253	24	4	1973-1999	0.94	M-v	2	Williams	20517	5332 T-2
5366 T-2	14.0	0.15	19990810	97.67197	336.11373	258.19450	7.58582	0.0500996	3.0250820	38	2	1973-1999	0.62	M-v	5	Williams	36054	5366 T-2
5415 T-2	15.5	0.15	19990810	260.21925	133.32173	294.69615	5.81072	0.1283240	2.2124048	34	3	1973-1999	0.84	M-v	2	Williams	35743	5415 T-2
5485 T-2	13.4	0.15	19990810	314.49468	133.06495	298.65793	5.69149	0.0891594	2.3854091	33	7	1954-1999	0.79	M-v	1	Williams	32344	5485 T-2
1061 T-3	14.3	0.15	19990810	43.90555	172.64159	247.33279	9.69283	0.0588141	2.9888387	22	2	1977-1999	0.84	M-v	4	Williams	36124	1061 T-3
1068 T-3	13.3	0.15	19990810	268.02785	114.90186	2.76817	21.80379	0.1919103	3.1356672	45	3	1977-1999	0.59	M-v	3	Williams	36124	1068 T-3
1071 T-3	14.2	0.15	19990810	12.98390	0.16965	324.90253	5.94878	0.1478662	2.3856131	78	4	1977-1999	0.61	M-v	2	Williams	36124	1071 T-3
1078 T-3	13.9	0.15	19990810	303.57955	268.85466	237.47137	14.05809	0.0702019	2.6085703	27	5	1954-1999	0.84	M-v	2	Williams	33130	1078 T-3
1079 T-3	14.3	0.15	19990810	37.57273	57.72915	243.79233	11.78958	0.1636952	2.6935881	28	2	1977-1999	0.71	M-v	5	Williams	36055	1079 T-3
1102 T-3	13.4	0.15	19990810	245.80188	266.82956	248.39287	11.56661	0.1478744	3.1030332	36	4	1977-1999	0.68	M-v	1	Williams	35480	1102 T-3
1135 T-3	14.5	0.15	19990810	91.12289	298.68345	320.11683	6.21621	0.0806227	2.3822424	61	5	1958-1999	0.51	M-v	1	Williams	36124	1135 T-3
1158 T-3	13.2	0.15	19990810	172.92885	327.10951	259.67785	10.01138	0.1065625	3.0689926	32	3	1977-1999	0.78	M-v	4	Williams	36124	1158 T-3
1168 T-3	14.4	0.15	19990810	328.60270	49.71427	355.94269	13.32873	0.1623183	2.6853422	59	3	1977-1999	0.66	M-v	4	Williams	36124	1168 T-3
1177 T-3	12.5	0.15	19990810	216.64697	244.16629	284.69392	7.53677	0.1633180	3.1304006	49	3	1977-1999	0.77	M-v	4	Williams	36124	1177 T-3
1194 T-3	13.7	0.15	19990810	70.35886	8.90752	312.13147	6.18269	0.1287774	2.3493585	20	4	1977-1999	0.72	M-v	2	Williams	29669	1194 T-3

2053 T-3	14.3	0.15	19990810	8.31551	61.27357	272.58115	4.03357	0.1531578	3.1311439	44	3	1977–1999	0.78	M-v	3	Williams	36124	2053 T-3
2065 T-3	16.0	0.15	19990810	9.47026	355.84096	329.80268	4.59860	0.0145859	2.1592979	41	3	1977–1999	0.84	M-v	4	Williams	36124	2065 T-3
2203 T-3	13.6	0.15	19990810	216.30927	272.50879	215.22379	11.93292	0.1010477	3.1687000	41	3	1960–1999	0.91	M-v	4	Williams	36124	2203 T-3
2239 T-3	14.2	0.15	19990810	232.50144	190.35212	322.99671	5.00356	0.1137104	2.6792519	34	3	1977–1999	0.90	M-v	5	Williams	36124	2239 T-3
2247 T-3	14.5	0.15	19990810	95.43545	320.12430	306.29598	4.10634	0.2113475	2.3629103	42	6	1977–1999	0.82	M-v	1	Williams	34569	2247 T-3
2268 T-3	13.8	0.15	19990810	15.88456	163.30061	224.81680	10.04674	0.1307941	3.0701616	38	6	1977–1999	0.98	M-v	1	Williams	32537	2268 T-3
2315 T-3	15.5	0.15	19990810	310.13619	194.79709	221.46374	1.94614	0.1437770	2.3814979	60	3	1977–1999	0.75	M-v	3	Williams	29669	2315 T-3
2416 T-3	13.8	0.15	19990810	270.62914	197.06384	274.41402	1.40165	0.1664059	2.3792398	49	3	1977–1999	0.63	M-v	4	Williams	35125	2416 T-3
2622 T-3	14.3	0.15	19990810	145.52584	14.61913	226.34635	9.11708	0.1347477	3.0856419	24	4	1977–1999	0.85	M-v	2	Williams	32735	2622 T-3
2664 T-3	15.7	0.15	19990810	299.69864	82.98355	355.22209	2.46082	0.1396872	2.3755675	49	5	1977–1999	0.61	M-v	1	Williams	29949	2664 T-3
3093 T-3	14.7	0.15	19990810	346.81722	156.11337	195.11230	5.88974	0.1398042	2.3914098	76	3	1977–1999	0.82	M-v	3	Williams	36124	3093 T-3
3102 T-3	16.2	0.15	19990810	338.74224	262.66273	111.84972	2.35797	0.1826922	2.3835402	54	3	1977–1999	0.85	M-v	4	Williams	36124	3102 T-3
3105 T-3	14.9	0.15	19990810	349.60691	172.52399	170.90019	2.71295	0.1809438	2.3917277	95	5	1977–1999	0.70	M-v	2	Williams	36124	3105 T-3
3166 T-3	15.3	0.15	19990810	226.42588	305.61582	179.43390	2.45189	0.1593430	2.4002745	52	3	1977–1999	0.66	M-v	4	Williams	36124	3166 T-3
3283 T-3	15.1	0.15	19990810	264.10451	309.31732	169.63082	3.57739	0.0360480	2.6744418	28	5	1977–1999	0.76	M-v	1	Williams	36125	3283 T-3
3482 T-3	14.9	0.15	19990810	345.11016	73.34516	336.69488	0.34254	0.1773044	3.0942907	32	4	1977–1999	0.69	M-v	1	Williams	34570	3482 T-3
3535 T-3	14.7	0.15	19990810	291.48150	37.86378	24.48442	2.42363	0.1879788	2.3923510	57	5	1955–1999	0.76	M-v	1	Williams	36125	3535 T-3
3574 T-3	13.9	0.15	19990810	352.67743	231.30381	185.43105	10.34250	0.0734732	3.0671266	28	4	1977–1999	0.75	M-v	2	Williams	34570	3574 T-3
4012 T-3	13.4	0.15	19990810	80.58611	283.94891	41.03604	10.65438	0.0708268	3.0508492	27	4	1977–1999	0.62	M-v	1	Williams	32787	4012 T-3
4030 T-3	14.5	0.15	19990810	280.38339	314.85478	134.14688	4.22541	0.0649048	2.6886233	36	3	1977–1999	0.74	M-v	5	Williams	27929	4030 T-3
4039 T-3	15.2	0.15	19990810	79.50477	148.63217	120.17127	2.63042	0.0989685	2.1460493	68	3	1977–1999	0.65	M-v	3	Williams	36125	4039 T-3
4054 T-3	13.2	0.15	19990810	63.42961	271.73565	42.14611	10.60759	0.1031816	3.0881667	49	4	1964–1999	0.75	M-v	1	Williams	33061	4054 T-3
4064 T-3	13.6	0.15	19990810	31.35393	217.03839	171.18135	10.94686	0.1062163	3.0451490	44	4	1977–1999	0.78	M-v	1	Williams	32787	4064 T-3
4072 T-3	13.7	0.15	19990810	316.22323	293.61825	159.44476	5.86317	0.1304240	3.0866162	38	3	1977–1999	0.87	M-v	4	Williams	32787	4072 T-3
4118 T-3	13.7	0.15	19990810	39.90087	172.16730	178.54477	11.74750	0.1101238	3.0760104	49	5	1977–1999	0.81	M-v	1	Williams	32538	4118 T-3
4138 T-3	13.3	0.15	19990810	309.90168	11.02831	35.09715	19.17316	0.1769654	3.1422561	29	3	1977–1999	0.56	M-v	4	Williams	36125	4138 T-3
4170 T-3	15.3	0.15	19990810	279.46562	336.03080	109.29034	4.17554	0.1710310	2.3880422	52	2	1977–1999	0.59	M-v	4	Williams	36055	4170 T-3
4220 T-3	13.5	0.15	19990810	282.31102	47.65681	30.96602	22.21523	0.1301418	3.1465811	43	3	1977–1999	0.70	M-v	3	Marsden	29131	4220 T-3
4221 T-3	13.4	0.15	19990810	149.88815	349.27861	177.05088	9.31446	0.1432598	2.7460030	51	3	1977–1999	0.74	M-v	3	Williams	36125	4221 T-3
4388 T-3	15.2	0.15	19990810	5.20142	204.91103	140.16152	6.16575	0.1468516	2.6932260	36	4	1977–1999	0.79	M-v	2	Williams	36125	4388 T-3
5019 T-3	13.7	0.15	19990810	283.58965	253.56518	155.77971	14.26504	0.1171167	3.1720232	39	2	1977–1999	0.71	M-v	4	Williams	36055	5019 T-3
5041 T-3	12.8	0.15	19990810	137.28817	117.55846	152.21438	11.70836	0.1003285	3.0435615	73	5	1977–1999	0.87	M-v	2	Williams	33590	5041 T-3
5170 T-3	13.6	0.15	19990810	251.14674	26.20255	153.30589	10.90051	0.1785175	2.6325425	49	5	1977–1999	0.90	M-v	2	Williams	32787	5170 T-3

1999 RD₂₀ = 1999 RN₁₉₈ (A. Doppler)1999 RO₁₉₈ = 1999 RL₁₉ (G. V. Williams)1999 RP₁₉₈ = 1999 RH₂₀ (G. V. Williams)1999 TP₇ = 1999 OU₂ (G. V. Williams)

2000 01 27	22 16.00	+24 48.5	4.759	4.195	50.0	10.4	15.6
2000 02 06	22 19.17	+25 27.0	4.783	4.133	44.1	9.6	15.6
2000 02 16	22 22.78	+26 19.0	4.784	4.071	39.5	8.9	15.5

EPHEMERIDES									
C/1999 T2 (LINEAR)					Elements MPC 36213				
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 10 19		22 52.55	+29 00.7	4.064	4.848	137.8	7.9	15.9	
1999 10 29		22 40.93	+28 10.5	4.093	4.780	129.0	9.3	15.9	
1999 11 08		22 31.15	+27 16.2	4.147	4.713	119.4	10.6	15.8	
1999 11 18		22 23.40	+26 23.1	4.221	4.647	109.6	11.6	15.8	
1999 11 28		22 17.66	+25 35.6	4.307	4.581	99.9	12.3	15.8	
1999 12 08		22 13.83	+24 56.8	4.400	4.515	90.4	12.6	15.8	
1999 12 18		22 11.72	+24 29.1	4.492	4.450	81.2	12.6	15.7	
1999 12 28		22 11.11	+24 13.9	4.579	4.385	72.5	12.4	15.7	
2000 01 07		22 11.77	+24 11.9	4.655	4.321	64.3	11.8	15.7	
2000 01 17		22 13.47	+24 23.4	4.716	4.257	56.8	11.1	15.7	

C/1999 S3 (LINEAR)					Elements MPC 36212				
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 10 19		22 56.94	+58 33.9	1.177	1.911	122.9	26.0	13.2	
1999 10 29		21 57.57	+58 29.6	1.253	1.899	115.0	28.3	13.3	
1999 11 08		21 15.31	+56 57.8	1.351	1.895	107.0	30.0	13.4	
1999 11 18		20 49.07	+55 10.6	1.462	1.898	99.7	30.9	13.6	
1999 11 28		20 34.26	+53 45.3	1.575	1.908	93.4	31.1	13.8	
1999 12 08		20 27.09	+52 55.6	1.685	1.926	88.2	30.8	14.0	
1999 12 18		20 25.02	+52 45.6	1.788	1.950	84.1	30.1	14.2	
1999 12 28		20 26.38	+53 15.0	1.882	1.981	80.9	29.4	14.3	
2000 01 07		20 30.17	+54 22.3	1.964	2.018	78.8	28.5	14.5	
2000 01 17		20 35.67	+56 06.3	2.036	2.061	77.6	27.8	14.7	
2000 01 27		20 42.36	+58 25.3	2.098	2.109	77.1	27.1	14.8	
2000 02 06		20 49.92	+61 17.9	2.152	2.162	77.4	26.4	15.0	
2000 02 16		20 58.03	+64 42.6	2.201	2.219	78.1	25.8	15.2	

2000 02 26	21 06.36	+68 36.8	2.248	2.280	79.2	25.2	15.3
2000 03 07	21 14.6	+72 57.7	2.296	2.344	80.4	24.7	15.5
2000 03 17	21 21.9	+77 41.2	2.349	2.411	81.4	24.1	15.7
2000 03 27	21 25.5	+82 42.0	2.410	2.480	82.2	23.5	15.9

C/1999 T1 (McNaught-Hartley)				Elements <i>MPC</i> 36213					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 10 19	01 55.53	−40 43.2	4.574	5.261	129.3	8.4	15.5		
1999 10 29	01 46.92	−41 48.1	4.537	5.167	124.7	9.1	15.4		
1999 11 08	01 38.16	−42 32.9	4.521	5.073	118.8	9.9	15.3		
1999 11 18	01 29.83	−42 56.7	4.523	4.978	112.0	10.6	15.2		
1999 11 28	01 22.47	−43 00.4	4.537	4.882	104.7	11.3	15.2		
1999 12 08	01 16.49	−42 46.1	4.561	4.786	97.3	11.8	15.1		
1999 12 18	01 12.18	−42 16.5	4.588	4.689	89.8	12.1	15.0		
1999 12 28	01 09.70	−41 34.9	4.615	4.591	82.5	12.3	14.9		
2000 01 07	01 09.08	−40 44.3	4.637	4.493	75.5	12.2	14.9		
2000 01 17	01 10.27	−39 47.7	4.652	4.394	68.9	12.1	14.8		
2000 01 27	01 13.17	−38 47.5	4.656	4.294	62.7	11.8	14.7		
2000 02 06	01 17.66	−37 45.8	4.646	4.194	57.1	11.4	14.6		
2000 02 16	01 23.61	−36 44.4	4.622	4.093	52.3	11.0	14.4		

C/1999 S2 (McNaught-Watson)					Elements <i>MPC</i> 36212				
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 10 19		02 52.97	−64 30.7	7.648	7.952	104.2	7.0	15.4	
1999 10 29		02 44.38	−64 19.8	7.721	7.989	102.2	7.0	15.5	
1999 11 08		02 35.87	−63 54.7	7.801	8.027	99.7	7.0	15.5	
1999 11 18		02 27.96	−63 15.4	7.889	8.065	96.7	7.0	15.6	
1999 11 28		02 21.12	−62 23.1	7.982	8.103	93.5	7.0	15.6	
1999 12 08		02 15.64	−61 19.6	8.081	8.141	90.0	7.0	15.6	
1999 12 18		02 11.69	−60 06.7	8.183	8.179	86.3	6.9	15.7	
1999 12 28		02 09.30	−58 46.8	8.288	8.218	82.6	6.8	15.7	
2000 01 07		02 08.42	−57 21.9	8.392	8.257	78.8	6.7	15.8	
2000 01 17		02 08.94	−55 54.1	8.496	8.296	75.0	6.6	15.8	
2000 01 27		02 10.71	−54 25.2	8.597	8.336	71.4	6.4	15.9	
2000 02 06		02 13.56	−52 56.9	8.694	8.376	68.0	6.3	15.9	
2000 02 16		02 17.36	−51 30.6	8.786	8.416	65.0	6.1	16.0	
2000 02 26		02 21.93	−50 07.6	8.871	8.456	62.3	5.9	16.0	
2000 03 07		02 27.15	−48 48.9	8.948	8.496	60.1	5.8	16.1	
2000 03 17		02 32.87	−47 35.5	9.016	8.537	58.4	5.7	16.1	
2000 03 27		02 38.99	−46 28.0	9.075	8.578	57.4	5.6	16.1	
2000 04 06		02 45.39	−45 27.1	9.124	8.619	57.0	5.6	16.2	
2000 04 16		02 51.96	−44 33.3	9.162	8.660	57.2	5.6	16.2	
2000 04 26		02 58.63	−43 47.0	9.190	8.702	58.2	5.6	16.2	
2000 05 06		03 05.28	−43 08.5	9.208	8.743	59.8	5.7	16.2	

C/1999 T3 (LINEAR)				Elements MPC 36213					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 10 19		02 58.44	+19 46.6	4.920	5.851	157.1	3.8	17.1	
1999 10 29		02 50.74	+18 06.5	4.843	5.822	169.3	1.8	17.1	
1999 11 08		02 42.77	+16 21.1	4.804	5.795	178.1	0.3	17.0	
1999 11 18		02 34.92	+14 33.7	4.804	5.768	165.8	2.4	17.0	
1999 11 28		02 27.60	+12 48.1	4.843	5.742	153.4	4.4	17.0	
1999 12 08		02 21.13	+11 07.8	4.915	5.716	141.2	6.2	17.0	
1999 12 18		02 15.78	+09 35.5	5.018	5.692	129.2	7.7	17.1	

1999 12 28	02 11.68	+08 13.0	5.144	5.668	117.6	8.8	17.1
2000 01 07	02 08.90	+07 01.2	5.288	5.645	106.4	9.6	17.1
2000 01 17	02 07.45	+06 00.1	5.441	5.623	95.6	10.0	17.2
2000 01 27	02 07.23	+05 08.8	5.598	5.601	85.1	10.1	17.2
2000 02 06	02 08.17	+04 26.2	5.753	5.581	75.1	9.8	17.3
2000 02 16	02 10.14	+03 51.0	5.900	5.561	65.4	9.3	17.3
2000 02 26	02 13.01	+03 21.7	6.035	5.543	56.0	8.5	17.3
2000 03 07	02 16.67	+02 56.7	6.153	5.525	47.0	7.6	17.4
2000 03 17	02 20.98	+02 34.6	6.252	5.508	38.5	6.5	17.4
2000 03 27	02 25.84	+02 14.0	6.330	5.492	30.3	5.3	17.4

C/1999 U1 (Ferris)				Elements MPC 36213					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 10 19		04 38.14	+08 26.8	4.300	5.048	134.4	8.1	16.7	
1999 10 29		04 29.08	+08 56.4	4.262	5.115	146.0	6.2	16.7	
1999 11 08		04 19.01	+09 27.8	4.254	5.183	157.4	4.2	16.8	
1999 11 18		04 08.36	+10 01.0	4.282	5.251	167.3	2.4	16.9	
1999 11 28		03 57.67	+10 36.1	4.348	5.320	168.8	2.1	17.0	
1999 12 08		03 47.45	+11 12.8	4.452	5.388	159.9	3.6	17.1	
1999 12 18		03 38.15	+11 51.1	4.592	5.457	148.7	5.4	17.2	
1999 12 28		03 30.12	+12 30.9	4.764	5.526	137.1	7.0	17.3	
2000 01 07		03 23.57	+13 12.1	4.962	5.594	125.8	8.2	17.5	
2000 01 17		03 18.57	+13 54.7	5.182	5.663	114.7	9.1	17.6	
2000 01 27		03 15.12	+14 38.5	5.415	5.732	103.9	9.6	17.8	
2000 02 06		03 13.12	+15 23.5	5.657	5.802	93.5	9.8	17.9	
2000 02 16		03 12.45	+16 09.4	5.900	5.871	83.5	9.6	18.0	
2000 02 26		03 12.96	+16 56.1	6.141	5.940	73.7	9.2	18.2	
2000 03 07		03 14.47	+17 43.3	6.374	6.009	64.2	8.6	18.3	
2000 03 17		03 16.85	+18 30.9	6.594	6.079	55.0	7.7	18.4	
2000 03 27		03 19.94	+19 18.6	6.799	6.148	46.0	6.7	18.5	
2000 04 06		03 23.60	+20 06.2	6.985	6.217	37.2	5.6	18.7	

C/1999 S4 (LINEAR)				Elements MPC 36213					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 10 19		04 45.67	+35 56.0	3.392	4.096	129.2	10.9	15.8	
1999 10 29		04 31.67	+36 35.1	3.166	3.987	140.9	9.0	15.5	
1999 11 08		04 13.86	+37 01.4	2.971	3.877	152.4	6.8	15.2	
1999 11 18		03 52.65	+37 06.9	2.815	3.765	161.4	4.8	15.0	
1999 11 28		03 29.15	+36 44.9	2.703	3.653	161.7	4.9	14.8	
1999 12 08		03 05.01	+35 52.9	2.636	3.539	152.4	7.4	14.6	
1999 12 18		02 42.09	+34 35.1	2.614	3.424	139.7	10.7	14.4	
1999 12 28		02 21.91	+33 01.2	2.630	3.307	126.2	13.9	14.3	
2000 01 07		02 05.28	+31 22.7	2.675	3.189	112.9	16.5	14.2	
2000 01 17		01 52.43	+29 49.7	2.739	3.070	100.2	18.4	14.1	
2000 01 27		01 43.11	+28 29.1	2.813	2.949	88.1	19.5	13.9	
2000 02 06		01 36.89	+27 24.2	2.886	2.826	76.6	19.8	13.8	
2000 02 16		01 33.27	+26 36.3	2.951	2.702	65.9	19.5	13.7	
2000 02 26		01 31.77	+26 04.8	3.000	2.575	55.7	18.5	13.5	
2000 03 07		01 31.97	+25 48.5	3.028	2.447	46.1	17.0	13.3	
2000 03 17		01 33.52	+25 46.3	3.031	2.318	37.2	15.0	13.1	

C/1995 O1 (Hale-Bopp)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 35204			
						ϵ	ϕ	m_1	m_2
1999 11 18		06 45.5	-76 27.5	9.937	9.816	80.2	5.7	12.9	
1999 11 28		06 31.1	-77 10.5	10.020	9.889	79.5	5.6	13.0	
1999 12 08		06 13.9	-77 40.7	10.102	9.961	79.0	5.6	13.0	
1999 12 18		05 54.9	-77 56.3	10.180	10.034	78.7	5.5	13.1	
1999 12 28		05 35.6	-77 56.9	10.256	10.106	78.5	5.5	13.1	
2000 01 07		05 17.5	-77 43.0	10.328	10.177	78.5	5.4	13.1	
2000 01 17		05 01.9	-77 16.5	10.397	10.249	78.6	5.4	13.2	
2000 01 27		04 49.6	-76 40.2	10.462	10.320	79.0	5.4	13.2	
2000 02 06		04 40.6	-75 56.8	10.524	10.391	79.6	5.4	13.3	
2000 02 16		04 35.0	-75 09.1	10.583	10.462	80.3	5.3	13.3	
2000 02 26		04 32.3	-74 19.5	10.639	10.532	81.2	5.3	13.4	
2000 03 07		04 32.2	-73 29.9	10.692	10.603	82.2	5.3	13.4	
2000 03 17		04 34.2	-72 42.2	10.742	10.673	83.3	5.3	13.4	
2000 03 27		04 37.9	-71 57.5	10.792	10.743	84.6	5.3	13.5	
2000 04 06		04 43.0	-71 16.9	10.840	10.813	85.8	5.3	13.5	
2000 04 16		04 49.4	-70 41.3	10.888	10.882	87.0	5.3	13.6	
2000 04 26		04 56.6	-70 11.3	10.936	10.952	88.2	5.3	13.6	
2000 05 06		05 04.64	-69 47.4	10.985	11.021	89.4	5.3	13.6	
2000 05 16		05 13.22	-69 30.1	11.036	11.090	90.4	5.2	13.7	
2000 05 26		05 22.20	-69 19.4	11.089	11.158	91.3	5.2	13.7	
2000 06 05		05 31.47	-69 15.6	11.144	11.227	92.1	5.2	13.7	
2000 06 15		05 40.89	-69 18.6	11.203	11.295	92.6	5.2	13.8	
2000 06 25		05 50.34	-69 28.4	11.265	11.363	93.0	5.1	13.8	
2000 07 05		05 59.71	-69 44.8	11.331	11.431	93.1	5.1	13.9	
2000 07 15		06 08.9	-70 07.5	11.401	11.499	93.0	5.1	13.9	
2000 07 25		06 17.7	-70 36.3	11.474	11.566	92.7	5.0	13.9	
2000 08 04		06 26.0	-71 10.7	11.552	11.634	92.1	5.0	14.0	
2000 08 14		06 33.7	-71 50.2	11.633	11.701	91.3	5.0	14.0	
2000 08 24		06 40.6	-72 34.2	11.718	11.768	90.4	4.9	14.1	
2000 09 03		06 46.4	-73 22.0	11.805	11.835	89.2	4.9	14.1	
2000 09 13		06 51.0	-74 12.8	11.895	11.901	87.9	4.8	14.1	
2000 09 23		06 54.0	-75 05.7	11.987	11.968	86.5	4.8	14.2	
2000 10 03		06 55.0	-75 59.6	12.079	12.034	85.0	4.8	14.2	
2000 10 13		06 53.8	-76 53.0	12.172	12.100	83.5	4.7	14.3	
2000 10 23		06 49.8	-77 44.7	12.264	12.166	82.0	4.6	14.3	
2000 11 02		06 42.7	-78 32.6	12.355	12.232	80.6	4.6	14.3	
2000 11 12		06 32.2	-79 14.9	12.443	12.297	79.3	4.5	14.4	

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Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 27082			
						ϵ	ϕ	m_1	m_2
1999 11 18		11 57.84	+09 30.2	2.303	1.999	59.9	25.3	16.8	22.5
1999 11 28		12 16.84	+06 27.3	2.200	1.982	64.3	26.6	16.7	22.4
1999 12 08		12 35.12	+03 21.7	2.098	1.970	68.9	27.8	16.5	22.3
1999 12 18		12 52.56	+00 14.8	1.997	1.963	73.7	28.8	16.4	22.2
1999 12 28		13 09.01	-02 52.8	1.898	1.961	78.8	29.5	16.3	22.1
2000 01 07		13 24.29	-06 00.4	1.801	1.964	84.3	29.9	16.2	22.0
2000 01 17		13 38.12	-09 07.4	1.706	1.971	90.1	29.9	16.1	21.9
2000 01 27		13 50.20	-12 13.3	1.616	1.984	96.4	29.5	16.0	21.8
2000 02 06		14 00.12	-15 17.7	1.531	2.001	103.2	28.7	15.9	21.7
2000 02 16		14 07.43	-18 19.5	1.452	2.023	110.6	27.2	15.9	21.6
2000 02 26		14 11.69	-21 16.9	1.383	2.050	118.5	25.1	15.9	21.4

2000 03 07	14 12.46	-24 06.6	1.326	2.080	127.0	22.4	15.9	21.3
2000 03 17	14 09.54	-26 42.7	1.283	2.114	135.9	19.1	15.9	21.1
2000 03 27	14 03.14	-28 58.5	1.258	2.152	144.7	15.5	16.0	21.0
2000 04 06	13 53.94	-30 46.4	1.254	2.192	152.7	12.1	16.1	20.9
2000 04 16	13 43.26	-32 01.4	1.273	2.236	158.1	9.6	16.3	20.9
2000 04 26	13 32.75	-32 43.9	1.316	2.283	158.5	9.3	16.5	21.0
2000 05 06	13 23.88	-32 59.0	1.382	2.331	154.0	10.9	16.7	21.2
2000 05 16	13 17.74	-32 55.8	1.470	2.382	146.9	13.4	17.0	21.5
2000 05 26	13 14.79	-32 43.6	1.577	2.435	139.1	15.8	17.3	21.8
2000 06 05	13 15.02	-32 29.7	1.702	2.489	131.1	17.9	17.6	22.1
2000 06 15	13 18.20	-32 19.5	1.841	2.545	123.4	19.5	17.9	22.3

C/1999 F1 (Catalina)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 34734			
						ϵ	ϕ	m_1	m_2
1999 11 18		13 11.74	-18 01.5	8.900	8.090	33.1	3.8		19.1
1999 11 28		13 14.35	-18 54.8	8.750	8.044	42.0	4.7		19.1
1999 12 08		13 16.52	-19 48.5	8.580	7.999	51.1	5.5		19.1
1999 12 18		13 18.15	-20 42.0	8.393	7.954	60.4	6.2		19.1
1999 12 28		13 19.10	-21 35.0	8.193	7.909	69.9	6.7		19.1
2000 01 07		13 19.27	-22 26.9	7.984	7.864	79.5	7.1		19.0
2000 01 17		13 18.55	-23 17.1	7.771	7.819	89.2	7.2		18.9
2000 01 27		13 16.85	-24 04.8	7.558	7.775	99.1	7.2		18.9
2000 02 06		13 14.09	-24 49.1	7.352	7.731	109.1	6.9		18.8
2000 02 16		13 10.26	-25 28.9	7.157	7.687	119.1	6.4		18.7
2000 02 26		13 05.37	-26 03.4	6.980	7.643	129.1	5.8		18.6
2000 03 07		12 59.51	-26 31.4	6.825	7.600	138.8	4.9		18.5
2000 03 17		12 52.84	-26 52.2	6.697	7.557	147.8	4.0		18.4
2000 03 27		12 45.59	-27 05.4	6.598	7.514	155.0	3.2		18.3
2000 04 06		12 38.01	-27 11.1	6.531	7.472	158.6	2.8		18.2
2000 04 16		12 30.44	-27 09.8	6.497	7.430	156.8	3.1		18.2
2000 04 26		12 23.15	-27 02.8	6.494	7.388	150.6	3.8		18.3
2000 05 06		12 16.44	-26 51.8	6.522	7.346	142.3	4.8		18.3
2000 05 16		12 10.52	-26 38.6	6.576	7.305	133.2	5.8		18.4
2000 05 26		12 05.54	-26 25.2	6.652	7.264	123.8	6.7		18.4
2000 06 05		12 01.60	-26 13.5	6.745	7.223	114.4	7.4		18.5
2000 06 15		11 58.72	-26 05.1	6.852	7.183	105.1	7.8		18.5
2000 06 25		11 56.90	-26 01.1	6.965	7.143	96.0	8.1		18.6
2000 07 05		11 56.07	-26 02.7	7.082	7.104	87.1	8.2		18.6
2000 07 15		11 56.17	-26 10.4	7.196	7.064	78.5	8.1		18.6
2000 07 25		11 57.10	-26 24.7	7.304	7.025	70.2	7.8		18.6
2000 08 04		11 58.77	-26 45.7	7.403	6.987	62.2	7.4		18.6
2000 08 14		12 01.08	-27 13.5	7.488	6.949	54.5	6.8		18.6
2000 08 24		12 03.93	-27 48.1	7.557	6.911	47.3	6.2		18.6
2000 09 03		12 07.22	-28 29.4	7.608	6.874	40.6	5.5		18.5
2000 09 13		12 10.85	-29 17.2	7.639	6.837	34.8	4.8		18.5
2000 09 23		12 14.71	-30 11.4	7.649	6.801	30.3	4.3		18.5

C/1999 G1 (LINEAR)

Date	TT	α_{2000}	δ_{2000}	Δ	r	Elements <i>MPC</i> 34734			
						ϵ	ϕ	m_1	m_2
1999 11 28		13 41.49	-29 03.9	6.239	5.462	35.1	6.0	18.8	
1999 12 08		13 45.99	-30 36.5	6.188	5.510	43.1	7.0	18.9	
1999 12 18		13 49.80	-32 10.1	6.121	5.558	51.3	7.9	18.9	
1999 12 28		13 52.77	-33 44.4	6.039	5.607	59.7	8.7	18.9	
2000 01 07		13 54.73	-35 18.8	5.945	5.657	68.3	9.3	18.9	

2000 01 17	13 55.48	−36 52.6	5.844	5.706	77.1	9.7	18.9
2000 01 27	13 54.84	−38 24.6	5.740	5.756	86.0	9.8	18.9
2000 02 06	13 52.66	−39 53.5	5.637	5.806	95.0	9.7	18.9
2000 02 16	13 48.80	−41 17.2	5.540	5.856	103.9	9.4	18.9
2000 02 26	13 43.23	−42 33.4	5.453	5.907	112.7	8.9	18.9
2000 03 07	13 35.98	−43 39.6	5.382	5.957	121.2	8.2	18.9
2000 03 17	13 27.26	−44 33.3	5.331	6.008	129.1	7.4	18.9
2000 03 27	13 17.41	−45 12.3	5.303	6.060	135.9	6.6	18.9
2000 04 06	13 06.90	−45 35.6	5.302	6.111	140.9	5.9	19.0
2000 04 16	12 56.30	−45 43.1	5.328	6.162	143.4	5.6	19.0
2000 04 26	12 46.17	−45 36.5	5.382	6.214	142.8	5.6	19.1
2000 05 06	12 36.99	−45 18.2	5.464	6.266	139.6	6.0	19.2
2000 05 16	12 29.15	−44 51.7	5.571	6.318	134.3	6.6	19.2
2000 05 26	12 22.84	−44 20.7	5.700	6.370	127.7	7.2	19.3
2000 06 05	12 18.17	−43 48.6	5.848	6.422	120.4	7.8	19.4
2000 06 15	12 15.11	−43 18.4	6.012	6.475	112.9	8.3	19.5
2000 06 25	12 13.56	−42 52.5	6.187	6.527	105.2	8.6	19.6
2000 07 05	12 13.39	−42 32.6	6.369	6.580	97.5	8.8	19.7
2000 07 15	12 14.45	−42 19.8	6.554	6.632	90.0	8.8	19.8
2000 07 25	12 16.58	−42 14.9	6.738	6.685	82.7	8.7	19.9
2000 08 04	12 19.64	−42 18.0	6.919	6.738	75.5	8.4	20.0

P/1998 U3 (Jäger)			Elements MPC 34421					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 11 28	13 43.59	−26 56.6	3.924	3.161	34.6	10.2	14.5	
1999 12 08	13 57.12	−28 35.9	3.902	3.220	40.7	11.5	14.5	
1999 12 18	14 09.94	−30 11.3	3.868	3.279	47.2	12.7	14.6	
1999 12 28	14 21.93	−31 42.4	3.821	3.338	53.9	13.8	14.6	
2000 01 07	14 32.92	−33 09.5	3.764	3.398	61.0	14.7	14.7	
2000 01 17	14 42.71	−34 32.2	3.697	3.457	68.4	15.3	14.7	
2000 01 27	14 51.09	−35 50.5	3.622	3.517	76.0	15.8	14.8	
2000 02 06	14 57.85	−37 04.1	3.542	3.576	84.0	15.9	14.8	
2000 02 16	15 02.73	−38 12.1	3.460	3.635	92.3	15.8	14.8	
2000 02 26	15 05.55	−39 13.5	3.379	3.695	100.8	15.3	14.8	
2000 03 07	15 06.13	−40 06.8	3.302	3.754	109.7	14.4	14.8	
2000 03 17	15 04.39	−40 49.8	3.234	3.813	118.7	13.2	14.9	
2000 03 27	15 00.44	−41 20.2	3.179	3.872	127.8	11.7	14.9	
2000 04 06	14 54.54	−41 35.3	3.142	3.931	136.8	10.0	14.9	
2000 04 16	14 47.16	−41 33.4	3.125	3.990	145.1	8.3	15.0	
2000 04 26	14 38.98	−41 14.0	3.133	4.048	151.8	6.7	15.1	
2000 05 06	14 30.74	−40 38.3	3.167	4.106	155.4	5.9	15.1	
2000 05 16	14 23.16	−39 49.4	3.229	4.164	154.5	6.0	15.2	
2000 05 26	14 16.82	−38 51.5	3.317	4.222	149.5	7.0	15.4	
2000 06 05	14 12.09	−37 49.5	3.431	4.279	142.3	8.3	15.5	
2000 06 15	14 09.18	−36 47.8	3.567	4.336	134.1	9.7	15.6	
2000 06 25	14 08.11	−35 50.2	3.724	4.393	125.5	10.9	15.8	
2000 07 05	14 08.78	−34 59.1	3.896	4.449	116.9	11.8	15.9	
2000 07 15	14 11.08	−34 16.2	4.080	4.505	108.4	12.4	16.1	
2000 07 25	14 14.81	−33 42.0	4.274	4.561	100.0	12.7	16.2	
2000 08 04	14 19.82	−33 16.4	4.472	4.617	91.8	12.7	16.4	
2000 08 14	14 25.92	−32 59.1	4.672	4.672	83.8	12.4	16.5	
2000 08 24	14 32.97	−32 49.3	4.870	4.727	75.9	12.0	16.7	
2000 09 03	14 40.83	−32 46.1	5.064	4.781	68.2	11.3	16.8	

2000 09 13	14 49.37	−32 48.7	5.250	4.835	60.6	10.4	16.9
2000 09 23	14 58.49	−32 56.0	5.426	4.889	53.1	9.4	17.1
2000 10 03	15 08.08	−33 07.3	5.590	4.943	45.7	8.3	17.2
2000 10 13	15 18.05	−33 21.7	5.739	4.996	38.4	7.1	17.3
2000 10 23	15 28.30	−33 38.5	5.871	5.049	31.4	5.9	17.4

C/1998 M6 (Montani)			Elements MPC 33188					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 12 08	19 22.99	+21 19.7	7.169	6.677	56.6	7.1	19.5	
1999 12 18	19 27.24	+21 41.1	7.270	6.708	52.0	6.6	19.6	
1999 12 28	19 31.82	+22 11.0	7.353	6.739	48.3	6.3	19.6	
2000 01 07	19 36.62	+22 49.7	7.420	6.771	45.8	6.0	19.7	
2000 01 17	19 41.50	+23 37.2	7.468	6.803	44.6	5.8	19.7	
2000 01 27	19 46.35	+24 33.3	7.499	6.836	44.8	5.8	19.7	
2000 02 06	19 51.05	+25 38.0	7.512	6.869	46.4	6.0	19.7	
2000 02 16	19 55.47	+26 50.9	7.509	6.903	49.1	6.2	19.8	
2000 02 26	19 59.49	+28 11.4	7.492	6.937	52.7	6.5	19.8	
2000 03 07	20 03.00	+29 39.1	7.462	6.971	57.0	6.9	19.8	
2000 03 17	20 05.85	+31 13.0	7.421	7.006	61.8	7.2	19.8	
2000 03 27	20 07.94	+32 52.3	7.372	7.042	67.0	7.5	19.8	
2000 04 06	20 09.13	+34 35.6	7.317	7.077	72.3	7.7	19.8	
2000 04 16	20 09.29	+36 21.5	7.260	7.114	77.7	7.9	19.8	
2000 04 26	20 08.32	+38 08.3	7.203	7.150	83.0	8.0	19.8	
2000 05 06	20 06.10	+39 53.7	7.149	7.187	88.1	8.1	19.8	
2000 05 16	20 02.55	+41 35.6	7.100	7.224	93.0	8.0	19.8	
2000 05 26	19 57.66	+43 11.4	7.060	7.262	97.5	7.9	19.9	
2000 06 05	19 51.44	+44 38.5	7.030	7.300	101.5	7.8	19.9	
2000 06 15	19 44.02	+45 54.3	7.013	7.339	104.8	7.7	19.9	
2000 06 25	19 35.58	+46 56.6	7.009	7.378	107.4	7.6	19.9	
2000 07 05	19 26.43	+47 43.7	7.020	7.417	109.2	7.4	19.9	
2000 07 15	19 16.94	+48 14.7	7.046	7.456	110.1	7.4	20.0	
2000 07 25	19 07.52	+48 29.6	7.087	7.496	110.0	7.3	20.0	
2000 08 04	18 58.58	+48 29.3	7.142	7.536	109.2	7.3	20.0	

130P/McNaught-Hughes			Elements MPC 32411					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 12 08	06 22.14	+23 26.8	3.255	4.196	160.4	4.5	21.9	22.6
1999 12 18	06 14.35	+23 39.7	3.246	4.224	172.3	1.8	21.9	22.4
1999 12 28	06 06.26	+23 51.1	3.269	4.251	175.6	1.0	22.0	22.4
2000 01 07	05 58.52	+24 00.4	3.325	4.277	163.7	3.7	22.1	22.6

C/1998 T1 (LINEAR)			Elements MPC 35206					
Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1 m_2
1999 12 08	14 08.72	−19 20.0	3.331	2.642	39.2	13.6	14.8	
1999 12 18	14 08.15	−19 23.7	3.279	2.742	49.4	15.8	15.0	
1999 12 28	14 05.93	−19 21.6	3.203	2.842	60.0	17.4	15.1	
2000 01 07	14 01.71	−19 11.2	3.110	2.943	71.1	18.4	15.2	
2000 01 17	13 55.08	−18 49.7	3.005	3.043	82.9	18.7	15.2	
2000 01 27	13 45.71	−18 13.5	2.896	3.143	95.3	18.2	15.3	
2000 02 06	13 33.38	−17 18.9	2.794	3.243	108.4	16.8	15.3	
2000 02 16	13 18.09	−16 02.4	2.710	3.343	122.3	14.5	15.4	
2000 02 26	13 00.24	−14 22.3	2.654	3.442	136.8	11.4	15.5	
2000 03 07	12 40.64	−12 20.5	2.637	3.541	151.7	7.6	15.6	
2000 03 17	12 20.48	−10 03.1	2.667	3.640	166.0	3.8	15.7	

2000 03 27	12 01.06	-07 39.8	2.747	3.738	172.3	2.0	15.9
2000 04 06	11 43.50	-05 21.0	2.877	3.836	160.7	4.9	16.1
2000 04 16	11 28.53	-03 15.5	3.052	3.933	147.2	7.9	16.4
2000 04 26	11 16.45	-01 28.1	3.263	4.030	134.2	10.3	16.6
2000 05 06	11 07.23	-00 00.4	3.503	4.126	121.9	12.0	16.9
2000 05 16	11 00.63	+01 08.2	3.762	4.222	110.4	13.0	17.1
2000 05 26	10 56.31	+01 59.6	4.034	4.318	99.5	13.4	17.4
2000 06 05	10 53.92	+02 36.2	4.310	4.412	89.1	13.3	17.6
2000 06 15	10 53.13	+03 00.2	4.584	4.507	79.3	12.8	17.8
2000 06 25	10 53.63	+03 13.8	4.852	4.600	69.8	12.0	18.1
2000 07 05	10 55.17	+03 18.8	5.109	4.694	60.6	10.9	18.3
2000 07 15	10 57.53	+03 16.8	5.351	4.786	51.6	9.6	18.4
2000 07 25	11 00.52	+03 09.1	5.575	4.879	42.8	8.1	18.6
2000 08 04	11 03.98	+02 57.0	5.777	4.970	34.1	6.6	18.8

OPPOSITION DATA

Planet	Opposition	α_{2000}	δ_{2000}	V	$\dot{\alpha}$	$\dot{\delta}$	ϕ_{MIN}	MPC
1996 VG ₆	1999 09 26.0	00 09.12	-11 21.0	18.9	-0.98	- 4.3	4.7/22.2	36520
1997 EL ₅₅	1999 09 26.0	00 09.17	+02 16.9	16.4	-0.80	- 4.8	0.4/26.4	36524
1998 HD ₁₂₃	1999 09 26.0	00 09.22	-05 04.0	17.9	-0.95	- 7.9	2.3/24.0	36534
(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	36532
1996 CM ₉	1999 09 26.0	00 09.30	+14 34.4	17.1	-0.78	- 2.1	3.6/30.4	36342
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
(11970)	1999 09 26.1	00 09.54	+00 40.2	18.0	-0.72	- 6.1	0.1/26.0	36265
(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	36513
(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	36527
1999 RO ₁₉₃	1999 09 26.1	00 09.78	+05 39.6	15.0	-1.06	+ 1.2	1.9/27.3	36567
2737 P-L	1999 09 26.1	00 09.83	-05 02.3	18.5	-0.90	- 4.2	2.6/24.3	36579
(11819)	1999 09 26.2	00 09.92	+14 33.1	18.1	-0.81	- 3.8	4.6/30.7	36224
1998 EE ₁₂	1999 09 26.2	00 09.92	-10 50.6	16.9	-0.97	- 4.8	5.0/22.5	36357
1999 OO ₃	1999 09 26.2	00 10.08	+20 06.7	16.7	-0.66	-10.4	8.3/04.3	36548
1993 OY ₉	1999 09 26.2	00 10.16	+15 21.2	17.3	-0.83	- 3.3	4.6/30.9	36512
1998 FJ ₁₀₉	1999 09 26.2	00 10.27	+06 36.7	18.4	-1.04	- 3.3	2.2/27.9	36530
1999 RS ₂₀₂	1999 09 26.3	00 10.47	+12 53.4	17.5	-0.73	- 6.6	3.8/30.6	36474
1994 WU ₇	1999 09 26.3	00 10.48	-05 07.6	17.9	-0.69	- 6.1	1.9/24.2	36515
1998 FO ₃₂	1999 09 26.3	00 10.48	+06 57.8	16.6	-1.08	- 1.0	2.4/28.0	36528
(12140)	1999 09 26.3	00 10.63	+01 08.7	18.2	-0.91	- 5.1	0.0/26.4	36312
1999 RW ₁₄₂	1999 09 26.3	00 10.63	+01 37.5	17.5	-0.90	- 3.7	0.2/26.5	36444
1999 RR ₃₃	1999 09 26.4	00 10.56	-01 44.5	18.0	-0.99	- 3.6	1.1/25.5	36399
3305 T-2	1999 09 26.4	00 10.59	-03 09.1	18.2	-0.95	- 4.9	1.6/25.1	36581
1998 KQ ₃₈	1999 09 26.4	00 10.59	-00 34.7	18.1	-0.95	- 5.2	0.6/25.9	36536
1999 RL ₃₂	1999 09 26.4	00 10.61	+02 23.0	17.5	-0.77	- 4.1	0.5/26.8	36398
3102 T-3	1999 09 26.4	00 10.64	-03 48.1	17.8	-0.82	- 5.9	2.3/24.8	36582
1998 HL ₇₉	1999 09 26.4	00 10.71	+09 21.3	18.1	-0.95	- 7.5	3.3/29.2	36369
1994 XY ₄	1999 09 26.4	00 10.76	-54 52.9	17.2	-1.38	+ 2.6	27.3/11.0	36515
1999 OB ₂	1999 09 26.4	00 10.80	+21 42.9	17.9	-0.72	- 9.7	7.7/05.1	36548

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	17.9	-0.82	- 7.0	0.4/26.2	36560
1998 BH ₂₆	1999 09 26.5	00 10.94	+05 03.0	17.0	-1.15	+ 0.1	1.5/27.5	36526
(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	36514
1998 HR ₉₄	1999 09 26.5	00 11.09	+12 28.9	16.7	-0.78	- 9.4	3.8/01.0	36533
1998 FX ₁₁₅	1999 09 26.5	00 11.13	+10 03.4	18.7	-1.05	- 5.4	3.4/29.3	36081
1999 RE ₂₅	1999 09 26.5	00 11.14	+04 32.3	17.5	-0.92	- 5.9	1.2/27.6	36395
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 11.31	+02 46.1	18.9	-0.89	- 5.8	0.6/27.1	36517
1999 RV ₉₁	1999 09 26.6	00 11.28	+02 49.4	16.2	-0.95	- 1.7	0.6/27.1	36422
1999 RN ₃₂	1999 09 26.6	00 11.35	-00 08.2	17.2	-0.67	- 7.7	0.4/26.1	36555
1993 HY ₅	1999 09 26.6	00 11.41	-09 14.2	16.6	-0.81	-25.2	4.4/22.0	36512
1998 HN ₈	1999 09 26.6	00 11.46	-04 01.0	17.6	-0.89	- 6.6	2.0/24.9	36532
1997 AM ₁₁	1999 09 26.6	00 11.49	+03 55.7	17.8	-0.85	- 5.9	1.3/27.5	36345
(12031)	1999 09 26.6	00 11.63	-18 58.0	16.0	-0.98	- 1.9	9.3/20.3	36281
1995 UF ₂₄	1999 09 26.7	00 11.78	+05 04.9	17.9	-0.85	- 5.3	1.5/28.0	36518
1996 XH ₁₉	1999 09 26.7	00 11.95	-23 59.4	17.9	-0.88	- 4.4	7.7/18.1	36521
1990 SO ₈	1999 09 26.7	00 12.00	-06 42.9	17.5	-0.76	- 7.1	3.3/23.9	36506
(11925)	1999 09 26.8	00 12.22	+00 26.1	16.9	-0.86	- 7.3	0.4/26.6	36252
(8924)	1999 09 26.9	00 12.39	+04 04.2	17.6	-0.94	- 6.1	1.0/27.8	31929
1999 RQ ₂₀₄	1999 09 26.9	00 12.52	+17 04.0	17.4	-0.78	- 4.4	4.8/02.3	36475
6772 P-L	1999 09 26.9	00 12.61	+00 18.2	19.2	-0.87	- 6.5	0.4/26.6	36579
(11852)	1999 09 26.9	00 12.62	-01 49.0	14.1	-1.69	+13.3	1.7/26.7	36233
1996 RG ₁	1999 09 26.9	00 12.67	-00 04.1	15.5	-1.05	- 0.8	0.7/26.6	36520
(12093)	1999 09 26.9	00 12.71	+02 09.9	17.7	-0.85	- 8.4	0.3/27.3	36299
1999 RQ ₉₀	1999 09 27.0	00 12.70	-07 11.5	16.9	-0.86	- 8.0	3.7/24.0	36422
1998 FW ₂₀	1999 09 27.0	00 12.75	-03 20.8	17.6	-0.97	- 6.1	1.8/25.5	36528
1994 PK ₂₀	1999 09 27.0	00 12.76	+00 34.4	17.6	-0.78	- 5.7	0.3/26.7	36514
(9081)	1999 09 27.0	00 12.85	+14 42.3	18.7	-0.76	- 5.5	4.0/01.7	32192
(12065)	1999 09 27.0	00 12.87	-00 35.6	18.1	-0.91	- 7.1	0.7/26.4	36290
1990 TT	1999 09 27.0	00 13.02	-01 05.9	16.9	-0.92	- 2.3	0.9/26.3	36328
1991 FH	1999 09 27.0	00 13.06	+12 06.2	17.8	-0.66	- 7.8	2.6/01.1	36507
1997 GW ₃₀	1999 09 27.1	00 13.24	+01 39.1	18.1	-0.72	- 4.8	0.1/27.2	36525
1999 RB ₂₃	1999 09 27.1	00 13.30	-01 23.3	16.7	-0.66	- 9.9	1.0/26.1	36394
(11898)	1999 09 27.1	00 13.34	-01 03.9	18.1	-0.69	- 4.7	0.6/26.3	36246
(12007)	1999 09 27.1	00 13.48	-04 35.8	18.4	-1.03	- 4.0	2.3/25.4	36274
1999 RF ₉₁	1999 09 27.2	00 13.51	-02 17.0	17.7	-0.77	- 6.9	1.3/25.9	36422
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	36499
1999 RM ₉₃	1999 09 27.3	00 14.09	-02 03.7	18.3	-1.00	- 1.6	1.4/26.4	36423
1997 EK ₅₄	1999 09 27.4	00 14.19	+00 07.7	17.4	-0.73	- 4.3	0.4/26.9	36524
1999 RE ₉₂	1999 09 27.4	00 14.26	+02 19.7	16.8	-0.73	- 8.6	0.3/27.7	36422
(11909)	1999 09 27.4	00 14.35	-19 17.4	16.3	-0.96	+ 1.2	7.3/21.8	36248
(11654)	1999 09 27.4	00 14.42	-06 37.9	16.9	-0.80	- 7.4	3.5/24.6	35872
1999 RP ₁₉₉	1999 09 27.4	00 14.46	+13 19.3	16.8	-0.87	- 4.7	4.0/01.4	36474
1981 EH ₂₇	1999 09 27.4	00 14.59	+04 11.5	18.2	-1.02	- 1.7	0.9/28.2	36501
1999 RZ ₃₀	1999 09 27.4	00 14.61	+24 03.9	17.1	-1.55	+ 2.4	10.5/02.7	36397
1997 CS ₂₈	1999 09 27.5	00 14.73	-05 04.1	17.7	-0.86	- 5.0	2.5/25.4	36524
1997 BU ₄	1999 09 27.5	00 14.91	-12 20.2	18.5	-0.75	- 7.5	4.2/22.5	36523
1999 RU ₂₀₅	1999 09 27.5	00 14.92	+15 59.9	18.2	-0.80	- 3.6	4.7/02.4	36475

1999 OCT. 26

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1999 RC₉₂ 1999 09 27.6 00 14.92 +04 31.1 16.7 -0.92 + 0.4 1.5/28.4 36559
 (11599) 1999 09 27.6 00 15.26 -01 34.7 16.4 -0.92 - 4.1 1.4/26.7 35858
 1999 RV₂₄ 1999 09 27.6 00 15.27 -03 56.1 16.6 -0.70 -34.3 2.4/25.1 36553
 1997 CH₁ 1999 09 27.7 00 15.27 +08 38.2 17.3 -0.85 - 4.6 2.3/30.0 36523
 (11442) 1999 09 27.7 00 15.30 -06 52.8 16.7 -1.02 - 4.0 3.7/25.2 35817
 1990 EP₂ 1999 09 27.7 00 15.39 +09 31.8 18.6 -0.89 - 6.8 2.7/30.4 32221
 1997 AW₆ 1999 09 27.7 00 15.51 +02 59.6 17.0 -0.92 - 3.6 0.5/28.2 36522
 1998 HH₉₃ 1999 09 27.8 00 15.64 +02 27.1 15.8 -1.02 - 4.9 0.3/28.0 36533
 1991 GJ₈ 1999 09 27.8 00 15.75 -02 04.4 18.3 -1.06 - 2.8 1.5/26.8 36507
 1999 RK₉₂ 1999 09 27.8 00 15.86 +03 11.6 16.7 -1.05 - 3.8 0.6/28.3 36423
 (11711) 1999 09 27.8 00 15.89 +07 37.1 16.3 -0.91 - 6.0 2.5/29.8 35888
 1999 OE₂ 1999 09 27.8 00 15.89 +21 46.4 17.5 -0.72 - 5.9 5.4/05.4 36548
 1993 OX₆ 1999 09 27.9 00 16.06 -21 12.4 16.3 -0.75 - 6.0 7.0/19.3 36334
 1997 AB₂ 1999 09 27.9 00 16.08 -24 09.3 17.7 -0.87 - 5.1 8.9/18.7 36075
 1981 DL₂ 1999 09 27.9 00 16.29 +13 00.9 18.5 -1.08 - 3.7 4.5/01.4 36500
 1998 HX₁₂₄ 1999 09 28.0 00 16.45 -05 56.9 17.8 -0.81 - 9.9 2.7/25.2 36534
 (12063) 1999 09 28.0 00 16.57 -10 33.8 18.4 -0.90 - 7.4 4.4/23.9 36290
 1998 KL₅₂ 1999 09 28.0 00 16.63 +09 57.9 18.0 -0.74 - 8.9 2.6/01.1 36375
 1988 VH₂ 1999 09 28.0 00 16.63 -19 11.5 15.8 -0.89 - 1.3 10.2/21.4 36504
 1998 HK₅₀ 1999 09 28.0 00 16.70 -00 32.4 18.1 -0.71 -10.4 0.8/27.2 36369
 1999 OL₂ 1999 09 28.0 00 16.72 +42 37.4 16.5 -1.53 + 7.7 18.2/05.7 36548
 (8819) 1999 09 28.1 00 16.76 +00 22.6 16.1 -0.69 - 9.9 0.5/27.6 36060
 1999 RN₉₃ 1999 09 28.1 00 16.76 -03 01.7 17.3 -0.85 - 4.6 1.7/26.6 36424
 1999 RT₃₇ 1999 09 28.1 00 16.84 +01 46.3 17.3 -1.02 - 2.0 0.0/28.1 36404
 (11714) 1999 09 28.1 00 16.84 +01 17.2 16.0 -0.78 - 7.1 0.2/28.0 35888
 1997 AZ₃ 1999 09 28.1 00 16.89 -18 56.2 17.4 -0.81 - 7.5 6.8/20.5 36522
 1998 FN₇₀ 1999 09 28.1 00 16.90 -04 28.0 17.0 -1.00 - 1.8 2.8/26.4 36530
 1999 RA₂₀₆ 1999 09 28.1 00 16.94 +14 21.1 17.8 -0.89 - 3.1 5.2/02.2 36568
 1999 RT₉₃ 1999 09 28.1 00 16.98 -04 44.5 17.2 -0.81 - 4.4 2.6/26.1 36424
 1999 RE₉₁ 1999 09 28.1 00 17.04 -04 38.5 17.3 -0.81 - 6.3 3.1/26.0 36422
 1998 KV₄₇ 1999 09 28.1 00 17.06 +07 04.2 16.9 -0.88 - 7.8 2.0/30.0 36536
 (8918) 1999 09 28.2 00 17.21 +02 07.7 17.0 -1.03 - 3.9 0.1/28.3 31927
 1997 BH₆ 1999 09 28.2 00 17.41 -01 37.1 18.2 -0.79 - 7.0 1.4/27.1 36345
 1995 SR₁₃ 1999 09 28.3 00 17.45 +02 31.3 18.8 -0.92 - 5.1 0.2/28.5 36517
 1978 VB₃ 1999 09 28.3 00 17.53 -16 58.3 16.8 -0.85 - 1.7 6.1/22.4 36500
 (11830) 1999 09 28.4 00 18.00 -03 23.8 16.7 -1.08 - 3.3 2.0/26.9 36227
 (12083) 1999 09 28.4 00 18.09 +04 45.9 16.6 -1.04 - 5.3 1.2/29.3 36296
 1993 FX₅₀ 1999 09 28.4 00 18.15 +03 47.0 17.9 -0.78 - 7.0 0.6/29.1 36512
 (11906) 1999 09 28.4 00 18.17 -15 22.8 17.5 -0.84 - 5.2 5.3/22.5 36248
 1997 AJ₁₃ 1999 09 28.5 00 18.11 +06 37.8 17.1 -1.04 - 2.0 1.9/29.8 36522
 (11636) 1999 09 28.5 00 18.13 -08 54.6 18.1 -0.84 - 6.8 4.0/24.8 35868
 1990 EC₁ 1999 09 28.5 00 18.13 +07 24.3 18.9 -0.84 - 9.0 1.8/30.5 36505
 (9365) 1999 09 28.5 00 18.21 +06 20.6 17.5 -1.01 - 4.8 1.7/29.9 32621
 1998 KF₅₃ 1999 09 28.5 00 18.23 -10 18.4 17.9 -0.79 - 7.2 3.8/24.2 36536
 1997 HX₆ 1999 09 28.5 00 18.32 -01 38.4 18.5 -0.74 - 4.8 1.0/27.3 36525
 1992 SX₁ 1999 09 28.5 00 18.40 -00 02.1 17.5 -0.95 - 5.7 0.9/27.9 36510
 (8900) 1999 09 28.5 00 18.41 +14 10.2 15.5 -0.79 - 8.9 4.9/03.1 31923
 (11985) 1999 09 28.5 00 18.46 +05 17.1 16.4 -0.82 - 5.2 1.1/29.7 36269
 1999 RP₂₀₅ 1999 09 28.5 00 18.49 +14 48.0 17.4 -0.65 -14.3 5.0/04.0 36568
 1999 RB₉₃ 1999 09 28.5 00 18.52 -02 07.2 17.2 -0.77 - 4.0 1.5/27.3 36423
 1999 SP₉ 1999 09 28.6 00 18.47 +12 56.9 18.4 -0.78 - 9.2 3.6/02.7 36480

1990 UG₅ 1999 09 28.6 00 18.51 +01 46.3 17.9 -0.70 - 9.5 0.1/28.5 36506
 (9040) 1999 09 28.6 00 18.54 +01 13.0 17.4 -0.74 - 4.8 0.2/28.4 32183
 1994 WB₃ 1999 09 28.6 00 18.54 -01 58.3 17.7 -0.75 - 5.2 1.4/27.3 36515
 1999 RR₂₀₅ 1999 09 28.6 00 18.57 +17 00.3 17.2 -0.74 - 6.1 4.8/04.0 36568
 (12044) 1999 09 28.6 00 18.85 -17 33.8 15.9 -1.04 - 0.5 7.7/23.0 36284
 1993 FQ₂₁ 1999 09 28.7 00 18.90 +02 40.3 17.9 -0.85 - 4.5 0.2/28.9 36511
 1994 AC 1999 09 28.7 00 18.90 +08 20.8 16.3 -0.95 - 6.8 2.8/30.8 36513
 1988 BJ₅ 1999 09 28.7 00 18.97 +22 10.0 17.5 -0.88 - 4.4 6.4/05.6 36503
 1996 XN₃₂ 1999 09 28.7 00 19.10 -10 59.5 19.3 -0.96 - 4.5 5.1/24.6 31980
 1999 RH₄₁ 1999 09 28.7 00 19.19 -16 52.3 16.2 -0.69 -12.9 6.5/21.0 36407
 1998 KZ₅₉ 1999 09 28.8 00 19.18 -06 41.8 18.3 -0.79 -10.0 2.9/25.6 36537
 1997 GY₂₆ 1999 09 28.8 00 19.28 +00 59.7 19.2 -0.72 - 4.8 0.3/28.5 36525
 1992 DC₇ 1999 09 28.9 00 19.78 -02 41.0 17.7 -0.77 - 5.5 1.6/27.3 36329
 1993 FN 1999 09 28.9 00 19.83 +01 43.8 18.2 -1.02 - 2.5 0.1/28.8 36511
 1999 RC 1999 09 28.9 00 19.85 +12 34.4 16.2 -1.12 + 1.4 4.6/01.6 36550
 1997 BZ 1999 09 29.0 00 20.13 +18 41.4 17.7 -0.92 - 4.2 5.3/04.6 36523
 (11966) 1999 09 29.0 00 20.19 +03 50.2 17.7 -0.80 - 5.2 0.5/29.6 36264
 1999 RH₉₃ 1999 09 29.0 00 20.31 -00 53.0 17.6 -0.87 - 1.7 1.5/28.2 36423
 (12076) 1999 09 29.0 00 20.34 -00 35.2 18.4 -0.90 - 4.6 0.9/28.2 36294
 1994 EO₁ 1999 09 29.1 00 20.36 -06 12.0 16.8 -1.04 - 3.1 3.0/26.7 23345
 1998 FG₇₁ 1999 09 29.1 00 20.38 +04 26.5 18.2 -1.04 - 4.1 0.8/29.8 36361
 1999 RQ₉₃ 1999 09 29.1 00 20.68 -02 51.1 17.7 -0.84 - 3.1 2.6/27.6 36424
 1998 KB₇ 1999 09 29.2 00 20.66 +06 50.9 18.1 -0.87 - 8.0 1.6/30.8 36372
 1997 CL₁₃ 1999 09 29.2 00 20.74 -08 24.5 17.9 -0.83 - 7.9 3.8/25.4 36346
 1999 RD₉₅ 1999 09 29.2 00 20.85 +05 05.1 16.3 -0.86 - 4.1 1.0/30.1 36425
 1999 RC₄₂ 1999 09 29.2 00 20.88 +07 35.8 16.4 -0.96 - 3.6 2.2/30.9 36557
 1998 HV₁₃₇ 1999 09 29.2 00 20.90 +03 08.9 17.0 -1.04 - 1.6 0.4/29.5 36534
 1992 DP₁₃ 1999 09 29.2 00 21.01 -08 18.9 19.1 -0.77 - 6.9 3.2/25.5 36067
 1998 HW₄₅ 1999 09 29.2 00 21.05 +00 39.7 18.5 -0.92 - 4.6 0.6/28.8 36533
 (8447) 1999 09 29.3 00 21.04 -00 26.0 16.4 -1.07 - 2.2 1.2/28.6 31483
 1998 HR₂₇ 1999 09 29.3 00 21.10 +07 55.8 16.9 -0.93 - 3.9 2.8/01.1 36532
 1999 RL₉₂ 1999 09 29.3 00 21.28 +02 20.0 18.0 -0.76 - 5.7 0.0/29.4 36423
 1981 EM₂₈ 1999 09 29.3 00 21.35 +09 38.7 19.3 -1.04 + 0.4 2.3/01.3 26920
 1994 PK₁₈ 1999 09 29.4 00 21.53 +06 52.8 17.8 -0.86 - 3.7 1.7/01.0 36337
 1999 RN₁₄₃ 1999 09 29.4 00 21.57 -01 31.5 16.2 -0.38 -15.0 1.9/27.7 36444
 1997 JG₁₆ 1999 09 29.4 00 21.72 -24 07.6 17.6 -0.89 - 1.9 7.9/20.6 34873
 1999 RL₁₄₃ 1999 09 29.4 00 21.74 +00 02.6 17.8 -0.79 - 8.6 0.8/28.7 36444
 2040 P-L 1999 09 29.4 00 21.78 +03 29.5 17.2 -0.95 + 0.6 0.6/29.8 36578
 1999 RY₉₄ 1999 09 29.5 00 21.75 +03 05.6 17.5 -0.90 - 4.7 0.4/29.7 36425
 1988 RW₁₀ 1999 09 29.5 00 21.80 +02 46.2 17.9 -0.76 - 4.7 0.1/29.7 36504
 1999 RG₉₅ 1999 09 29.5 00 21.88 +06 14.8 16.9 -0.94 - 0.9 1.6/30.6 36425
 1998 FF₃₃ 1999 09 29.5 00 22.07 -00 32.5 18.2 -0.91 - 7.3 1.0/28.6 36358
 1999 SJ₂ 1999 09 29.5 00 22.14 +09 53.7 15.7 -1.19 + 6.6 3.9/31.0 36569
 1999 RN₂₅ 1999 09 29.5 00 22.16 +01 48.6 17.2 -1.11 - 1.2 0.3/29.4 36395
 (11990) 1999 09 29.6 00 22.13 +03 27.2 17.0 -0.83 - 6.5 0.3/30.0 36270
 1999 RR₁₀₉ 1999 09 29.6 00 22.31 +13 56.9 17.2 -0.98 - 0.2 4.8/02.8 36561
 1999 RO₉₂ 1999 09 29.6 00 22.36 -00 54.1 17.5 -0.73 - 5.9 1.1/28.5 36423
 1994 PC₇ 1999 09 29.7 00 22.44 -07 08.0 17.6 -0.76 - 7.0 2.9/26.3 36514
 1999 RZ₄₁ 1999 09 29.7 00 22.46 +06 28.4 16.8 -0.68 - 7.0 1.2/01.2 36557
 1998 FP₉₃ 1999 09 29.8 00 22.91 -13 59.3 18.5 -0.94 - 6.0 6.2/24.5 36530
 (11947) 1999 09 29.8 00 23.07 +02 08.3 17.2 -0.74 - 4.8 0.1/29.7 36258

(11812)	1999 09 29.9	00 23.15 +08 54.6	17.7	-0.85	- 2.5	2.0/01.9	36222	1998 FL ₇₉	1999 09 30.9	00 27.21 -04 12.2	18.3	-0.87	- 7.9	2.7/28.6	35967
(11833)	1999 09 29.9	00 23.19 +33 01.4	17.9	-1.03	-10.9	12.8/12.4	36228	(11723)	1999 10 01.0	00 27.23 -03 50.7	17.5	-0.92	- 6.5	2.3/28.8	35891
1999 RE ₉₅	1999 09 29.9	00 23.24 +04 32.0	17.9	-0.82	- 8.9	0.6/30.6	36425	(9257)	1999 10 01.0	00 27.25 +02 24.2	16.6	-0.70	- 7.9	0.2/30.8	35414
1994 XM	1999 09 29.9	00 23.27 +01 16.7	17.7	-0.77	- 4.6	0.4/29.5	36515	(11969)	1999 10 01.1	00 27.58 +07 06.0	17.4	-0.83	- 4.9	1.4/02.5	36265
(11897)	1999 09 29.9	00 23.28 -01 10.4	17.9	-1.02	- 4.4	1.4/28.8	36245	4300 T-1	1999 10 01.1	00 27.73 -01 07.9	20.1	-0.89	- 6.2	1.4/29.8	32092
1998 HV ₁₄₈	1999 09 29.9	00 23.34 -00 37.2	17.2	-0.80	- 3.8	1.2/28.9	36534	1999 TH ₁₂	1999 10 01.1	00 27.86 -07 56.0	16.2	-0.69	- 9.0	5.7/27.0	36488
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 FR ₁₁₃	1999 10 01.1	00 27.86 +12 58.1	17.9	-0.93	- 7.5	3.8/04.6	36531
1981 DD ₁	1999 09 29.9	00 23.43 +18 55.0	18.3	-1.09	- 0.5	6.2/04.4	36500	1994 SH ₉	1999 10 01.1	00 27.87 +01 40.7	17.6	-0.80	- 4.4	0.4/30.8	36515
1975 SX	1999 09 29.9	00 23.43 +03 11.1	17.9	-0.70	- 5.1	0.2/30.2	36499	(8509)	1999 10 01.2	00 27.86 +00 54.7	16.7	-1.03	- 4.1	0.8/30.6	31498
1995 OG ₁₀	1999 09 29.9	00 23.44 -00 26.0	17.6	-0.91	- 6.4	1.2/29.0	36339	1992 SO	1999 10 01.2	00 28.06 +13 08.5	16.4	-0.86	- 8.3	4.5/04.9	36510
1108 T-2	1999 09 30.0	00 23.56 +05 34.8	16.9	-1.02	- 2.7	1.3/01.0	36580	1995 XU ₁	1999 10 01.2	00 28.25 +02 59.4	16.7	-0.86	- 7.0	0.0/01.3	36519
1999 RT ₃₅	1999 09 30.0	00 23.56 +02 25.0	17.1	-1.07	- 0.7	0.1/30.0	36402	1998 KW ₅₁	1999 10 01.2	00 28.27 -20 20.3	16.3	-0.76	- 7.7	9.4/22.1	36375
1991 EW ₁₀	1999 09 30.0	00 23.70 +11 41.1	20.2	-1.04	- 4.7	3.4/02.8	26916	(11892)	1999 10 01.3	00 28.28 +02 46.8	17.2	-1.04	- 4.1	0.1/01.2	36244
1998 HH ₁₄	1999 09 30.0	00 23.80 -06 23.6	18.4	-0.97	- 7.0	3.5/27.1	36532	1991 UD ₃	1999 10 01.3	00 28.60 +08 07.7	16.6	-0.80	- 9.2	2.1/03.2	36508
2610 T-3	1999 09 30.0	00 23.94 +05 16.7	18.4	-0.94	- 5.6	0.9/30.9	22088	1999 QV ₁	1999 10 01.4	00 28.57 -03 09.6	16.4	-0.30	-11.9	3.2/28.5	36549
6602 P-L	1999 09 30.1	00 24.07 +01 09.5	17.5	-1.08	- 0.6	0.7/29.8	36579	1981 EO ₃₅	1999 10 01.4	00 28.68 +14 04.8	17.3	-0.91	- 6.7	5.0/05.2	36502
1999 RD ₉₄	1999 09 30.1	00 24.09 -06 18.4	16.9	-0.82	- 8.2	3.2/27.0	36424	1995 XC ₅	1999 10 01.4	00 28.80 +02 17.3	17.5	-0.77	- 7.2	0.3/01.2	36519
1999 RK ₉₄	1999 09 30.1	00 24.14 -01 10.4	17.3	-0.99	+ 0.4	1.4/29.2	36425	1993 FZ ₄₁	1999 10 01.4	00 28.85 +03 31.4	17.7	-1.02	- 1.4	0.1/01.6	36512
1998 OB	1999 09 30.1	00 24.17 -00 57.3	19.6	-0.68	- 7.9	1.2/28.9	32973	1999 RK ₃₄	1999 10 01.4	00 28.92 +02 29.7	16.9	-0.77	-10.2	0.3/01.2	36401
1994 SE ₅	1999 09 30.2	00 24.27 +01 20.0	20.1	-0.79	- 4.5	0.4/29.8	33488	1995 UR ₈	1999 10 01.4	00 29.00 -01 10.8	18.1	-0.93	- 2.3	1.9/30.3	36517
(11528)	1999 09 30.2	00 24.45 -17 58.3	15.4	-0.72	- 9.1	8.3/22.0	35840	1998 KW ₅₀	1999 10 01.4	00 29.00 -06 16.1	18.3	-0.82	- 7.5	3.1/28.2	36536
1999 RX ₂₅	1999 09 30.2	00 24.48 +01 21.3	16.3	-1.03	- 1.5	0.7/29.9	36395	2514 P-L	1999 10 01.5	00 29.03 +02 37.1	18.0	-1.06	+ 0.9	0.2/01.4	36578
1988 VL ₂	1999 09 30.2	00 24.61 +16 48.0	16.3	-0.86	- 8.3	5.3/05.3	36504	1996 EG	1999 10 01.5	00 29.04 +07 45.6	17.3	-0.68	- 7.7	1.5/03.2	36519
1999 RZ ₉₄	1999 09 30.2	00 24.63 +01 05.3	18.3	-0.90	- 8.2	0.6/29.8	36425	1998 KF ₃₆	1999 10 01.5	00 29.08 +07 13.5	17.2	-0.84	- 4.9	1.5/02.9	32033
1998 ET ₁₁	1999 09 30.2	00 24.65 -02 32.2	16.2	-1.09	- 0.2	2.5/29.0	36527	(8757)	1999 10 01.5	00 29.13 -00 00.1	17.5	-1.01	- 5.8	1.2/30.6	31700
1998 DC ₃₀	1999 09 30.3	00 24.61 +02 24.7	17.9	-0.92	-11.1	11.7/21.0	36527	1999 RK ₇	1999 10 01.5	00 29.22 +02 21.2	16.0	-0.89	- 2.8	0.4/01.3	36551
1998 DT ₃₄	1999 09 30.3	00 24.80 +00 33.8	16.3	-1.06	- 1.6	1.0/29.8	36527	1998 KC ₉	1999 10 01.5	00 29.31 +01 17.0	17.6	-0.68	-10.1	0.6/30.9	36535
1999 RF ₉₂	1999 09 30.3	00 24.92 +01 21.4	17.5	-0.66	-10.3	0.5/29.9	36422	1993 DJ ₁	1999 10 01.5	00 29.37 -14 12.0	16.8	-0.79	- 8.4	6.0/25.2	36511
1993 FJ ₂₅	1999 09 30.4	00 25.00 +04 43.1	17.5	-0.89	- 4.2	0.7/31.0	36333	1999 RB ₃	1999 10 01.6	00 29.33 +05 27.9	17.8	-1.03	- 4.4	0.9/02.3	36384
1999 RW ₉₇	1999 09 30.4	00 25.17 -05 05.3	18.3	-0.92	- 8.2	3.1/27.8	36426	1999 RB ₁₄₃	1999 10 01.6	00 29.57 -05 04.2	17.5	-0.94	- 6.3	3.9/29.0	36444
1998 KS ₅₄	1999 09 30.4	00 25.38 -03 50.1	17.9	-0.81	- 7.5	2.2/28.2	36375	1999 OM ₂	1999 10 01.6	00 29.63 +39 38.8	16.8	-1.30	- 3.8	15.4/15.3	36548
(12172)	1999 09 30.5	00 25.37 +00 46.6	16.6	-1.02	- 3.0	0.7/30.0	36321	1999 SX ₃	1999 10 01.6	00 29.64 +04 37.4	17.7	-0.93	- 7.0	0.6/02.1	36478
1997 BS ₃	1999 09 30.5	00 25.49 -09 09.7	18.2	-0.84	- 6.5	3.9/26.5	36523	1999 RE ₃₄	1999 10 01.6	00 29.69 +05 11.6	18.0	-1.01	- 4.9	0.7/02.3	36400
1999 RO ₁₀₅	1999 09 30.5	00 25.50 +11 54.9	17.7	-0.92	- 6.8	3.4/03.6	36561	1998 JO ₂	1999 10 01.6	00 29.70 -14 02.3	18.1	-1.00	- 4.3	6.5/26.3	36535
1999 RC ₉₄	1999 09 30.5	00 25.58 -06 58.5	16.2	-0.79	- 9.0	4.3/27.0	36424	1999 OD ₂	1999 10 01.7	00 29.83 +21 55.7	17.3	-0.69	- 9.6	6.7/09.4	36548
1999 RY ₄₁	1999 09 30.5	00 25.68 +08 04.3	16.8	-0.59	- 6.3	1.8/02.5	36557	1999 RZ ₂	1999 10 01.7	00 29.92 +04 29.9	17.6	-0.81	- 4.9	0.4/02.2	36384
1981 ET ₂₃	1999 09 30.5	00 25.71 +02 55.4	16.1	-1.03	+ 0.6	0.1/30.6	36501	1998 DB ₃₆	1999 10 01.7	00 29.95 +03 38.3	16.0	-1.20	+ 0.6	0.2/01.9	36527
(8884)	1999 09 30.5	00 25.71 +15 05.2	16.4	-1.01	- 4.8	5.1/04.4	31919	1999 TO ₄	1999 10 01.7	00 29.97 +01 26.4	17.4	-1.82	+10.0	1.0/01.5	36484
1999 RP ₃₈	1999 09 30.6	00 25.75 +10 48.1	17.4	-0.82	- 7.8	3.7/03.5	36405	2129 P-L	1999 10 01.7	00 30.09 +05 27.9	18.1	-0.85	- 7.8	0.8/02.6	36578
1998 HS ₁₀₂	1999 09 30.6	00 25.76 +01 57.7	17.6	-0.80	- 4.0	0.3/30.4	36370	(11950)	1999 10 01.8	00 30.19 +00 52.9	18.0	-0.72	- 4.9	0.6/01.0	36259
1997 EN ₃₂	1999 09 30.6	00 25.92 +02 52.6	17.9	-0.88	- 3.9	0.0/30.7	36524	(8783)	1999 10 01.8	00 30.33 +04 06.4	17.4	-0.91	- 7.9	0.3/02.1	31895
1998 KH ₃₀	1999 09 30.6	00 26.03 +15 48.4	18.0	-0.98	- 5.6	4.8/04.9	36535	1995 WF ₁₃	1999 10 01.8	00 30.35 +01 46.7	20.4	-0.79	- 7.1	0.5/01.4	36518
1999 RX ₂₆	1999 09 30.6	00 26.04 +00 03.6	18.3	-1.01	- 5.5	1.2/29.8	36395	1999 RQ ₃₄	1999 10 01.8	00 30.47 -00 15.0	18.1	-0.88	- 8.8	1.5/30.7	36401
(11603)	1999 09 30.7	00 26.08 +01 13.3	16.6	-1.13	+ 1.4	0.7/30.3	35859	1999 RH ₂₆	1999 10 01.9	00 30.45 -06 09.8	17.4	-0.74	-11.7	3.5/28.3	36553
1990 WP ₁	1999 09 30.7	00 26.34 -16 15.0	17.3	-0.79	- 4.4	7.5/24.2	36506	1999 RP ₃₄	1999 10 01.9	00 30.48 +00 49.8	17.5	-0.77	- 5.6	0.8/01.1	36555
(11900)	1999 09 30.7	00 26.47 -04 23.2	16.7	-0.87	- 5.3	3.3/28.5	36246	1999 PK ₆	1999 10 01.9	00 30.68 -04 04.1	16.8	-0.82	- 9.4	3.4/29.3	36382
1989 YY	1999 09 30.8	00 26.53 -02 05.5	18.6	-0.91	- 6.0	1.6/29.2	36065	1998 EK ₁₁	1999 10 01.9	00 30.69 -03 47.5	17.7	-0.96	- 5.6	2.7/29.8	36356
(11986)	1999 09 30.9	00 26.90 +11 57.3	17.0	-0.80	- 5.8	2.8/04.0	36269	6056 P-L	1999 10 02.0	00 30.76 +06 21.1	17.2	-0.76	-10.6	1.2/03.1	36492
1998 JZ	1999 09 30.9	00 26.94 -12 11.7	18.8	-0.97	- 1.6	5.3/26.7	32085	1996 DE ₂	1999 10 02.0	00 30.80 -00 49.1	18.8	-0.74	- 5.5	1.4/30.6	27457
(9464)	1999 09 30.9	00 27.00 -13 56.7	15.3	-0.71	- 3.4	7.6/25.2	32645	(11948)	1999 10 02.0	00 30.80 +01 59.2	18.0	-0.70	- 4.9	0.4/01.6	36259
5188 T-3	1999 09 30.9	00 27.16 -07 08.2	17.7	-0.61	-11.9	3.5/26.9	36495	1998 FG ₁₀₄	1999 10 02.0	00 30.82 +15 24.6	18.4	-1.09	- 3.5	4.7/06.0	36530

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1981 EA₄ 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 15.5 17.9 -0.77 - 5.0 1.1/01.0 36581
 1998 EY₁₁ 1999 10 02.0 00 31.08 +00 18.7 16.8 -1.10 - 1.5 1.3/01.3 36527
 1995 SS₅₂ 1999 10 02.1 00 31.38 +02 56.3 18.7 -0.91 - 4.3 0.2/02.0 36517
 1998 HN₂₁ 1999 10 02.2 00 31.49 +05 34.9 17.8 -0.91 - 9.2 0.9/03.0 36367
 1999 RO₃₅ 1999 10 02.2 00 31.51 +00 53.9 16.3 -0.72 - 3.9 1.3/01.4 36555
 (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
 7590 P-L 1999 10 02.2 00 31.74 -03 45.7 18.0 -0.94 - 0.7 3.4/30.2 36580
 1993 FQ₂₀ 1999 10 02.2 00 31.75 -02 46.9 17.0 -0.87 - 6.9 2.3/30.2 36511
 1999 RO₃₄ 1999 10 02.2 00 31.81 +00 32.4 17.4 -0.69 - 7.2 0.8/01.2 36401
 (11946) 1999 10 02.2 00 31.86 +03 13.6 17.4 -0.73 - 4.8 0.1/02.2 36258
 (11995) 1999 10 02.3 00 31.96 -04 43.7 17.6 -0.71 - 5.0 2.2/29.6 36271
 1998 FY₁₄ 1999 10 02.3 00 32.11 +07 14.8 16.7 -1.09 - 0.5 1.5/03.4 36528
 (11891) 1999 10 02.3 00 32.17 +03 17.8 17.7 -0.95 - 7.5 0.1/02.3 36244
 (11827) 1999 10 02.3 00 32.25 +07 35.2 17.0 -0.92 - 7.5 1.8/03.8 36226
 1993 OM₈ 1999 10 02.4 00 32.40 +04 18.0 17.0 -0.75 - 5.6 0.3/02.7 36334
 (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
 1999 RA₉₆ 1999 10 02.4 00 32.46 -04 00.8 18.1 -0.86 - 6.3 2.6/30.0 36426
 1998 HG₂₃ 1999 10 02.4 00 32.52 -01 42.9 17.8 -1.01 - 5.6 2.4/30.9 36532
 (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
 (12022) 1999 10 02.5 00 32.81 +03 45.6 17.9 -0.93 - 6.3 0.1/02.6 36279
 1997 HK₁₆ 1999 10 02.5 00 32.82 +04 00.2 17.0 -0.79 - 4.5 0.2/02.7 36352
 1993 EL 1999 10 02.5 00 32.84 -19 45.1 20.4 -0.81 - 4.4 5.8/24.7 32306
 (12132) 1999 10 02.6 00 33.19 +05 57.4 17.9 -0.82 - 6.1 0.7/03.5 36310
 (8750) 1999 10 02.6 00 33.23 +04 15.4 16.8 -0.87 - 7.8 0.3/02.9 31699
 1999 OJ₂ 1999 10 02.6 00 33.32 +22 37.0 16.8 -0.88 - 6.2 6.1/09.3 36548
 1997 CL₁ 1999 10 02.7 00 33.54 -02 38.9 18.0 -0.93 - 5.5 2.4/30.8 36523
 1998 FF₆₇ 1999 10 02.7 00 33.58 -01 26.0 18.5 -0.91 - 6.4 1.8/01.1 36529
 (12111) 1999 10 02.8 00 33.75 +09 25.6 17.5 -0.86 - 6.2 2.0/04.7 36304
 1979 MX₈ 1999 10 02.8 00 33.84 +04 36.7 18.1 -0.79 - 5.5 0.3/03.2 36324
 1981 QR₂ 1999 10 02.8 00 33.99 +06 54.4 16.3 -1.00 - 3.7 1.5/03.8 36502
 (11627) 1999 10 02.8 00 34.06 +12 06.0 16.8 -0.98 - 6.3 3.3/05.6 35865
 1981 EM₉ 1999 10 02.9 00 34.10 +13 01.4 19.0 -0.99 - 6.9 3.9/06.0 26916
 (11917) 1999 10 02.9 00 34.10 -10 24.7 16.3 -0.98 - 2.4 6.4/28.8 36250
 1999 RN₁₉₉ 1999 10 02.9 00 34.13 +12 34.3 17.4 -0.86 - 6.0 4.2/05.9 36474
 1991 VT₃ 1999 10 02.9 00 34.26 +22 05.9 15.8 -0.74 -10.3 7.5/10.4 36509
 (12109) 1999 10 02.9 00 34.36 -08 21.4 16.8 -0.80 - 6.1 3.8/28.9 36304
 4214 P-L 1999 10 02.9 00 34.38 +08 31.0 18.6 -0.72 - 5.5 1.4/04.6 36579
 (11640) 1999 10 03.0 00 34.42 +13 48.5 16.9 -0.94 - 4.4 4.4/06.2 35869
 2315 T-3 1999 10 03.0 00 34.43 +05 49.0 17.5 -0.88 - 6.8 0.9/03.7 36582
 1994 GE 1999 10 03.0 00 34.47 -07 28.1 18.4 -0.95 - 4.3 4.0/29.6 36513
 1997 GM₁₁ 1999 10 03.0 00 34.49 +05 01.0 18.2 -0.84 - 2.4 0.4/03.4 36351
 1999 RL₁₉₃ 1999 10 03.0 00 34.59 +00 57.3 19.6 -0.67 - 8.5 0.9/02.0 36471
 (8949) 1999 10 03.0 00 34.59 +01 32.2 17.2 -0.82 - 6.5 0.8/02.3 31934
 1999 RG₁₉₃ 1999 10 03.0 00 34.66 -13 08.7 17.4 -0.74 - 4.7 4.9/27.3 36470
 1990 GD 1999 10 03.0 00 34.68 +08 09.0 17.7 -1.00 - 3.4 1.6/04.4 36505
 1994 CG₁₂ 1999 10 03.1 00 35.05 -00 57.6 17.4 -0.96 - 4.8 1.8/01.7 36513

1997 BG₁ 1999 10 03.1 00 35.05 -04 25.1 18.5 -0.80 - 6.3 2.3/30.4 36523
 (12070) 1999 10 03.2 00 35.37 +00 41.2 17.7 -0.95 - 4.9 1.1/02.3 36292
 4236 T-3 1999 10 03.2 00 35.41 -04 43.1 17.7 -0.75 - 3.8 2.3/30.5 34276
 1995 VE₁ 1999 10 03.3 00 35.50 -01 44.3 17.8 -0.83 - 5.3 2.1/01.5 36340
 1998 HY₈ 1999 10 03.3 00 35.55 -04 33.2 17.7 -0.87 - 5.4 3.2/30.6 36532
 1998 FC₅₈ 1999 10 03.3 00 35.56 +05 11.0 17.4 -0.95 - 4.9 0.6/03.7 36360
 4821 P-L 1999 10 03.3 00 35.58 -00 50.1 18.6 -0.81 - 6.3 1.8/01.8 36579
 1978 VX₄ 1999 10 03.3 00 35.59 -03 55.3 16.9 -0.94 - 3.7 3.6/01.0 36500
 1995 UQ₄₄ 1999 10 03.3 00 35.60 +00 02.0 16.2 -1.10 + 1.2 1.6/02.4 36518
 1999 SK₄ 1999 10 03.3 00 35.61 +03 27.8 16.9 -0.80 - 9.9 0.2/03.2 36479
 1999 RV₃₇ 1999 10 03.3 00 35.76 +03 50.1 17.7 -0.84 - 8.0 0.0/03.4 36404
 1995 WF₅ 1999 10 03.3 00 35.80 -01 10.2 16.9 -0.82 - 7.0 1.9/01.7 36518
 (12142) 1999 10 03.3 00 35.85 -00 38.1 18.1 -0.73 - 5.9 1.5/01.8 36313
 1999 SY₃ 1999 10 03.4 00 36.00 +04 08.1 18.0 -0.73 - 4.5 0.1/03.5 36478
 1998 HM₁₁ 1999 10 03.4 00 36.15 -09 30.4 18.0 -0.95 - 5.9 4.6/29.2 36532
 (8974) 1999 10 03.4 00 36.17 +02 40.9 17.1 -1.01 - 5.9 0.5/03.1 31940
 1982 UA₆ 1999 10 03.5 00 36.30 +08 27.5 16.4 -0.80 - 1.4 2.3/04.9 36502
 (11435) 1999 10 03.5 00 36.34 +06 05.7 15.5 -0.80 - 6.1 1.0/04.3 35815
 1999 RL₃₁ 1999 10 03.5 00 36.46 +05 22.1 15.8 -1.10 - 0.2 0.7/03.9 36397
 1998 FK₁₀₆ 1999 10 03.5 00 36.57 +11 25.5 17.4 -0.90 - 8.8 2.9/06.2 36530
 1992 EO 1999 10 03.6 00 36.55 +03 45.2 16.4 -0.91 - 1.7 0.1/03.5 36509
 1990 UO₄ 1999 10 03.6 00 36.63 +03 32.0 16.9 -0.71 -10.6 0.1/03.5 36506
 1992 RW₂ 1999 10 03.6 00 36.72 +12 51.7 17.0 -1.04 - 3.1 4.1/06.3 36510
 (11931) 1999 10 03.6 00 36.81 +01 42.1 15.8 -1.08 0.0 0.9/03.1 36254
 1987 XC 1999 10 03.6 00 36.91 -24 50.0 15.8 -1.12 + 7.2 14.3/27.8 36503
 1997 HV₈ 1999 10 03.7 00 37.01 +01 40.3 19.4 -0.74 - 4.5 0.6/03.0 36525
 1998 JQ₁ 1999 10 03.7 00 37.16 +11 32.6 18.1 -0.89 - 9.4 2.7/06.4 36535
 1996 YR₁ 1999 10 03.8 00 37.35 +14 46.3 18.4 -0.96 - 4.4 4.0/07.1 36344
 1999 SZ₃ 1999 10 03.8 00 37.48 +05 03.4 17.6 -0.79 - 4.7 0.3/04.2 36479
 (11937) 1999 10 03.8 00 37.50 -03 18.3 17.5 -0.87 - 3.7 2.6/01.6 36256
 1991 PL₂ 1999 10 03.8 00 37.56 +08 15.7 17.9 -0.99 - 4.4 1.7/05.1 36507
 1995 WP₁₇ 1999 10 03.8 00 37.62 +02 44.7 16.2 -0.87 - 1.4 0.7/03.5 36518
 1989 YA₅ 1999 10 03.9 00 37.71 +32 57.6 18.0 -0.87 - 2.5 7.3/14.0 36505
 (12127) 1999 10 03.9 00 37.84 +01 48.4 15.4 -0.92 - 2.9 1.0/03.3 36308
 1995 UC₅ 1999 10 03.9 00 37.90 +13 31.0 18.1 -0.86 - 5.3 3.4/07.1 36340
 1993 QH₈ 1999 10 04.0 00 38.04 -00 03.6 18.2 -0.74 - 4.4 1.2/02.7 36512
 1981 EF₁₆ 1999 10 04.0 00 38.20 +06 39.6 16.8 -0.71 -12.3 1.1/05.0 36501
 1994 VM₁ 1999 10 04.0 00 38.21 +02 46.3 17.0 -0.73 - 6.8 0.5/03.6 36515
 1998 HR₂₃ 1999 10 04.0 00 38.39 +05 20.8 19.5 -0.89 - 6.2 0.4/04.5 36532
 1999 RZ₁ 1999 10 04.1 00 38.37 +04 19.1 16.7 -0.85 - 4.6 0.1/04.2 36550
 1999 RW₃₃ 1999 10 04.1 00 38.42 -00 52.9 17.9 -0.75 -10.5 1.8/02.2 36400
 1999 RW₂₀₈ 1999 10 04.1 00 38.50 +12 42.1 15.6 -0.76 - 7.6 3.5/07.2 36568
 4388 T-3 1999 10 04.1 00 38.61 -04 38.1 18.0 -0.77 - 6.9 3.4/01.1 36582
 1999 RX₃₁ 1999 10 04.1 00 38.62 -02 07.1 17.2 -1.72 + 9.8 3.4/03.4 36555
 1999 RA₂ 1999 10 04.1 00 38.65 +01 29.0 17.0 -0.83 - 8.4 1.3/03.2 36550
 1999 RS₂₀₈ 1999 10 04.1 00 38.67 +13 25.6 17.8 -0.77 - 8.9 3.8/07.6 36475
 1997 GO₆ 1999 10 04.1 00 38.70 +04 02.6 18.4 -0.73 - 4.6 0.0/04.1 36525
 (11997) 1999 10 04.1 00 38.75 +19 37.1 17.9 -0.82 - 4.2 5.0/09.4 36272
 1999 RQ₂₆ 1999 10 04.2 00 38.91 -00 18.7 18.2 -0.70 - 6.7 1.2/02.7 36395
 (11980) 1999 10 04.2 00 38.92 +00 47.7 17.9 -0.85 - 8.1 1.2/03.1 36267
 1981 EY₃₉ 1999 10 04.2 00 39.03 +04 11.3 19.1 -0.97 - 6.7 0.0/04.3 36502

(8416)	1999 10 04.2	00 39.14 +01 40.9 15.5	-0.93 - 8.5	1.2/03.4	35675
(12066)	1999 10 04.3	00 39.09 +07 27.1 16.8	-0.86 - 8.2	1.4/06.0	36290
(12032)	1999 10 04.3	00 39.15 +00 08.8 18.0	-0.89 - 7.1	1.7/03.0	36281
(11444)	1999 10 04.3	00 39.18 +03 50.9 15.8	-0.75 - 8.8	0.2/04.2	35818
1998 FK ₇₁	1999 10 04.3	00 39.25 +06 17.3 18.5	-0.95 - 6.5	0.8/05.0	36361
1991 GH ₁₁	1999 10 04.3	00 39.39 +01 34.2 18.7	-0.73 - 5.0	0.7/03.5	36507
1978 VP ₉	1999 10 04.4	00 39.65 +13 31.4 17.4	-0.87 - 8.8	3.9/07.7	36500
(11786)	1999 10 04.4	00 39.82 +10 28.5 16.7	-0.88 - 3.0	2.1/06.4	36215
1999 RY ₂₀₇	1999 10 04.4	00 39.84 +13 33.3 16.3	-0.52 -16.6	4.1/08.6	36568
1998 FW ₃₀	1999 10 04.5	00 39.85 -01 13.4 17.0	-0.90 - 8.9	2.2/02.6	36528
1999 RE ₄₄	1999 10 04.5	00 39.90 +08 36.4 18.0	-0.83 - 4.8	1.7/06.0	36409
(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 16.1	-0.71 - 7.1	1.7/06.5	36509
(11364)	1999 10 04.5	00 40.09 -03 11.7 17.5	-0.87 - 5.3	2.8/02.2	35581
1999 RC ₂₁₃	1999 10 04.5	00 40.15 +19 47.4 18.6	-0.95 - 2.9	6.1/09.4	36476
1996 BU ₃	1999 10 04.6	00 40.25 -22 31.3 17.7	-0.70 - 5.8	7.0/24.4	36519
1998 HF ₁₂₁	1999 10 04.6	00 40.26 -06 25.9 17.5	-0.92 - 6.6	4.0/01.1	36534
1998 FB ₅	1999 10 04.6	00 40.34 +08 16.9 17.5	-0.88 -23.1	1.7/06.0	36527
1999 UD	1999 10 04.6	00 40.55 +06 14.5 16.4	-0.85 -11.2	11.8/26.0	36490
1990 QY ₅	1999 10 04.7	00 40.55 +21 05.4 16.6	-1.05 + 0.4	7.1/09.3	36505
1999 RM	1999 10 04.7	00 40.93 -00 40.1 17.6	-0.70 - 7.7	1.7/03.0	36550
1985 DA	1999 10 04.7	00 40.95 -20 56.0 18.3	-0.95 -17.2	10.4/24.1	36502
(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	36527
1068 T-3	1999 10 04.8	00 41.09 +10 47.4 17.7	-0.98 - 0.1	1.9/06.5	36581
1998 HL ₅₁	1999 10 04.8	00 41.11 -01 41.1 18.5	-0.99 - 5.4	2.2/03.0	36533
1135 T-3	1999 10 04.8	00 41.35 +13 35.0 17.6	-1.00 - 4.4	3.4/07.7	36581
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
(11788)	1999 10 04.9	00 41.56 +09 09.3 16.4	-0.92 - 4.9	2.3/06.4	36215
(12089)	1999 10 04.9	00 41.62 -00 26.5 17.6	-0.92 - 6.6	1.8/03.4	36298
1994 PH ₃₀	1999 10 05.0	00 41.96 +03 07.7 17.2	-0.76 - 7.8	0.4/04.6	36514
(11932)	1999 10 05.1	00 42.09 +14 58.7 17.3	-1.00 - 2.2	3.4/08.1	36254
3138 T-3	1999 10 05.1	00 42.18 +04 52.4 19.5	-0.91 - 6.8	0.1/05.2	32294
1999 RP ₂₁₂	1999 10 05.1	00 42.37 +21 56.3 18.5	-1.12 + 3.4	8.3/09.5	36476
1995 UM ₅₀	1999 10 05.2	00 42.77 +05 23.6 20.8	-0.90 - 4.2	0.3/05.5	31107
1981 EW ₃₇	1999 10 05.2	00 42.81 +11 41.6 19.9	-0.90 - 5.0	2.5/07.6	26922
1998 FC ₆₅	1999 10 05.3	00 42.73 +04 57.4 18.0	-0.92 - 8.5	0.1/05.4	36529
1998 FD ₁₅	1999 10 05.3	00 42.79 +06 15.3 17.0	-0.95 - 7.0	0.6/06.0	36528
1988 FE ₃	1999 10 05.3	00 42.97 +06 37.2 17.4	-0.80 - 5.3	0.6/06.0	36503
1981 UL ₂₉	1999 10 05.4	00 43.18 +14 47.8 17.0	-0.65 -13.4	4.0/09.6	36502
1994 PK ₄	1999 10 05.4	00 43.48 +07 06.6 18.0	-0.84 - 4.7	0.7/06.3	36514
1978 VD ₅	1999 10 05.5	00 43.61 +04 24.6 18.1	-0.75 - 5.1	0.1/05.4	36500
1998 FW ₃₉	1999 10 05.5	00 43.64 +08 34.2 18.0	-0.94 - 9.2	1.7/06.9	32258
1991 US ₃	1999 10 05.5	00 43.64 -21 35.1 16.0	-1.03 + 1.8	11.1/28.5	36508
(8603)	1999 10 05.5	00 43.68 +04 12.7 15.8	-0.87 - 9.2	12.8/26.0	31520
(8964)	1999 10 05.5	00 43.73 -01 07.7 17.1	-0.93 - 8.3	2.5/03.6	36060
1999 RM ₃₄	1999 10 05.6	00 43.98 +06 18.4 16.7	-1.09 - 0.6	0.8/06.0	36401
(12078)	1999 10 05.6	00 44.11 +04 24.6 16.7	-0.88 - 8.7	0.2/05.6	36294
1996 VX ₂₉	1999 10 05.7	00 44.19 -04 41.4 17.1	-1.06 - 4.0	3.9/03.0	36520
1999 TZ ₇	1999 10 05.7	00 44.30 -02 30.0 18.0	-0.98 - 5.8	2.9/03.5	36486

1997 EK ₆	1999 10 05.7	00 44.32 -25 26.4 16.7	-0.93 - 0.4	12.7/25.9	36524
1998 FQ ₆₄	1999 10 05.8	00 44.79 +03 57.6 16.4	-1.06 - 2.5	10.9/26.0	36529
(11924)	1999 10 05.8	00 44.86 +08 19.9 16.9	-0.99 - 5.3	1.4/06.9	36252
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	1.1/06.9	35889
1260 T-2	1999 10 06.0	00 45.43 +02 04.8 17.9	-0.80 - 8.0	0.9/05.1	36580
(11546)	1999 10 06.0	00 45.44 +12 14.4 16.1	-0.97 - 4.7	3.3/08.3	35844
(11888)	1999 10 06.0	00 45.56 +14 42.8 15.7	-0.60 - 9.8	4.4/10.0	36243
(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 17.9	-1.04 - 4.3	1.5/07.3	36520
(12108)	1999 10 06.2	00 46.19 +00 36.2 17.4	-0.73 - 6.2	1.4/04.8	36303
(12034)	1999 10 06.2	00 46.20 -15 08.6 16.5	-0.72 - 7.9	7.9/28.7	36282
(11793)	1999 10 06.2	00 46.27 -06 34.4 16.5	-0.71 - 7.2	3.9/02.1	36217
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 06.2	00 46.40 +04 29.4 19.9	-0.93 - 8.2	0.2/06.1	36580
1999 TH ₆	1999 10 06.4	00 46.86 -00 02.9 18.3	-1.06 - 3.9	1.9/05.0	36485
1996 XL ₁	1999 10 06.4	00 46.92 -09 40.1 17.0	-0.96 - 4.5	6.1/01.8	36521
3563 P-L	1999 10 06.5	00 47.10 +20 48.6 17.7	-1.00 + 0.5	5.5/10.7	36492
1998 KL ₃₅	1999 10 06.5	00 47.24 -05 24.5 17.3	-1.00 - 4.1	4.5/03.4	36536
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	36513
(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 17.7	-1.02 - 3.1	0.2/06.5	36580
1998 KM ₉	1999 10 06.6	00 47.85 -06 03.5 18.2	-0.88 - 7.5	4.2/02.9	36535
(11839)	1999 10 06.6	00 47.87 +04 29.8 15.8	-1.06 - 4.6	0.3/06.5	36229
1999 RK ₁₉₃	1999 10 06.6	00 47.89 -19 19.2 18.0	-0.82 - 2.6	8.6/28.8	36470
1993 NS ₁	1999 10 06.7	00 48.02 -10 47.8 17.1	-0.70 - 5.4	6.4/31.0	36512
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 48.07 +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 16.5	-1.09 - 3.2	1.6/08.0	36504
1991 TC ₂	1999 10 06.8	00 48.57 -13 10.1 16.5	-1.93 +11.1	9.8/04.8	36508
(12023)	1999 10 06.8	00 48.62 +18 37.1 16.4	-0.92 - 5.6	6.1/11.3	36279
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	36538
1998 GO ₁₀	1999 10 06.9	00 48.86 +07 10.5 17.5	-0.92 - 5.4	0.7/07.6	36365
1981 EB ₁₈	1999 10 06.9	00 48.89 +03 13.4 19.0	-0.84 - 6.6	0.6/06.3	36501
1999 RM ₃₆	1999 10 06.9	00 48.95 -10 04.8 15.9	-0.62 -15.1	6.3/30.5	36403
1977 PB	1999 10 06.9	00 48.95 -13 30.4 17.5	-0.81 - 6.4	6.0/30.6	36499
1995 WN ₃₃	1999 10 07.0	00 48.98 +10 26.8 17.5	-0.80 - 9.9	1.8/08.9	36518
1993 FX ₃₁	1999 10 07.0	00 49.07 -01 44.8 16.0	-0.82 - 5.4	2.6/04.8	26173
4122 T-3	1999 10 07.0	00 49.07 -00 42.7 19.3	-0.95 - 5.7	2.4/05.2	29131
(11963)	1999 10 07.0	00 49.15 +14 11.7 18.0	-0.87 - 4.2	2.8/09.9	36263
(11843)	1999 10 07.0	00 49.27 +05 09.4 16.8	-0.94 - 8.0	0.1/07.0	36231
(11871)	1999 10 07.0	00 49.30 -02 36.6 18.1	-0.94 - 7.5	3.0/04.5	36238
1989 AZ ₅	1999 10 07.1	00 49.29 -02 20.8 18.3	-0.90 - 5.9	2.7/04.6	29656
1991 GR ₇	1999 10 07.1	00 49.29 +10 51.6 17.2	-0.95 - 7.9	2.1/08.9	36507
1994 PS ₇	1999 10 07.1	00 49.54 +07 10.7 17.7	-0.80 - 5.7	0.7/07.8	36336
1994 CU ₁₀	1999 10 07.1	00 49.59 -05 32.4 17.7	-0.92 - 7.0	4.3/03.6	36513

(12015)	1999 10 07.1	00 49.61 +02 26.6 16.5	-1.05 - 3.6	1.3/06.4	36277
1991 GW ₈	1999 10 07.1	00 49.62 +07 32.1 19.7	-0.98 - 6.0	0.8/07.9	32047
1998 FO ₂	1999 10 07.1	00 49.69 +15 39.4 18.0	-1.84 + 6.8	5.1/08.6	36527
1996 WA ₁	1999 10 07.2	00 49.72 +10 07.2 17.0	-0.99 - 6.0	1.9/08.7	36520
1976 QK ₁	1999 10 07.2	00 49.93 +05 56.2 16.0	-0.85 - 7.2	0.3/07.5	36499
1998 KL ₃₇	1999 10 07.3	00 50.08 +07 51.8 16.5	-0.89 - 9.1	1.0/08.2	36536
1998 KJ ₄₇	1999 10 07.3	00 50.10 +06 59.7 18.3	-0.83 - 6.7	0.5/07.9	36375
1994 PG ₂₂	1999 10 07.3	00 50.15 +17 18.1 18.0	-0.95 - 2.4	3.8/11.0	36514
1998 HS ₂₃	1999 10 07.3	00 50.30 +04 00.4 17.0	-0.96 - 6.1	0.6/06.9	36532
(8948)	1999 10 07.3	00 50.38 +08 55.8 15.8	-0.84 - 5.1	1.7/08.5	36060
1994 PJ ₇	1999 10 07.3	00 50.45 +01 43.8 17.5	-0.79 - 6.0	1.3/06.2	36336
1981 EK ₂₇	1999 10 07.4	00 50.39 +09 15.8 16.6	-1.08 - 3.0	1.7/08.5	36501
1999 RQ ₂₀₉	1999 10 07.4	00 50.66 +21 30.8 16.9	-0.81 - 4.9	5.5/13.0	36475
1982 BU	1999 10 07.5	00 50.78 -42 40.3 17.2	-1.09 - 2.6	17.2/21.0	32299
(8672)	1999 10 07.5	00 50.99 +00 13.3 17.3	-0.90 - 6.4	2.0/05.9	31680
1998 MY ₂₉	1999 10 07.5	00 51.03 +26 17.9 16.8	-0.84 - 5.2	6.0/14.9	36537
1981 EF ₄₅	1999 10 07.5	00 51.07 +03 26.8 19.6	-0.75 - 4.3	0.5/06.9	36502
1998 HX	1999 10 07.6	00 51.24 -02 43.9 16.7	-0.91 - 5.8	3.3/05.0	32075
1982 US ₁	1999 10 07.6	00 51.29 +00 46.2 16.3	-1.00 - 5.3	1.7/06.2	31782
1999 RZ ₁₀₄	1999 10 07.7	00 51.49 +08 07.9 16.7	-0.88 - 6.5	1.1/08.6	36428
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 FJ ₁₁₄	1999 10 07.7	00 51.54 +15 33.0 17.5	-0.96 - 7.3	4.0/11.1	36531
1999 RJ ₄₄	1999 10 07.7	00 51.65 +00 10.8 18.4	-0.71 - 4.5	1.5/06.0	36557
(12017)	1999 10 07.7	00 51.74 +05 49.0 16.8	-0.93 - 7.1	0.1/07.8	36277
1998 LB ₃	1999 10 07.7	00 51.79 +06 24.4 16.4	-0.75 - 9.5	0.3/08.1	36537
(12040)	1999 10 07.7	00 51.82 +07 25.3 17.3	-0.98 - 4.4	0.8/08.3	36283
(11631)	1999 10 07.7	00 51.84 +17 23.3 16.6	-0.95 - 6.0	5.1/11.7	35866
(11864)	1999 10 07.7	00 51.86 -06 47.0 16.0	-0.94 - 5.9	5.8/03.9	36237
1998 HE ₂₁	1999 10 07.8	00 51.98 +03 43.2 18.4	-0.93 - 7.8	0.7/07.2	36532
1998 FF ₃₄	1999 10 07.8	00 52.16 +08 29.5 16.8	-0.98 - 6.0	1.2/08.8	36528
1999 SN ₉	1999 10 07.8	00 52.19 +07 59.5 16.7	-0.93 - 4.5	1.1/08.6	36480
(11882)	1999 10 07.8	00 52.23 +06 55.5 16.9	-0.83 - 5.7	0.5/08.3	36241
(12050)	1999 10 07.8	00 52.23 +07 28.1 16.4	-0.80 - 4.8	0.7/08.5	36286
1998 KX ₃₇	1999 10 07.9	00 52.25 -09 27.9 18.2	-0.85 - 3.8	4.8/03.2	36536
1981 EP ₂	1999 10 07.9	00 52.36 +14 08.4 16.7	-0.69 -10.1	2.8/11.2	36501
1998 FC ₁₁	1999 10 07.9	00 52.37 -10 20.3 20.3	-0.97 - 2.2	5.0/03.4	32317
1999 RR ₉₈	1999 10 07.9	00 52.41 -04 34.9 16.2	-0.65 -13.9	4.5/03.8	36426
1992 GM ₂	1999 10 08.0	00 52.67 +07 34.9 16.9	-1.04 - 6.3	0.8/08.6	36509
1995 SH ₂₆	1999 10 08.0	00 52.83 +06 47.6 17.5	-0.92 - 4.9	0.4/08.4	36517
1998 EV ₈	1999 10 08.0	00 53.05 -32 58.2 18.5	-1.34 + 5.2	12.4/29.9	32316
1999 RH ₁₁₀	1999 10 08.1	00 53.01 +18 19.0 17.4	-0.77 - 6.0	4.1/12.5	36430
1999 TP	1999 10 08.1	00 53.04 +07 24.6 17.0	-0.66 -11.2	0.6/08.8	36481
1979 MM ₃	1999 10 08.1	00 53.31 -23 03.5 17.7	-0.77 - 5.2	10.0/27.4	36500
1998 AV ₉	1999 10 08.2	00 53.41 +06 35.3 17.3	-1.02 - 6.2	0.4/08.5	36526
1998 FJ ₁₀₃	1999 10 08.2	00 53.47 +10 57.4 17.1	-0.87 - 9.8	2.0/10.1	36530
(11930)	1999 10 08.2	00 53.48 -05 47.2 17.2	-0.80 - 9.0	3.8/04.1	36254
1999 RY ₃₇	1999 10 08.2	00 53.53 +06 36.1 17.0	-1.04 - 2.3	0.4/08.5	36404
(12106)	1999 10 08.2	00 53.56 +07 19.2 17.2	-0.83 - 9.1	0.7/08.8	36303
1997 EA ₃₆	1999 10 08.3	00 53.77 +01 59.2 18.3	-0.88 - 5.8	1.3/07.1	36524
(9180)	1999 10 08.3	00 53.79 +15 07.3 17.1	-0.69 - 7.7	2.5/11.7	32419
1998 MC	1999 10 08.3	00 53.81 -00 19.1 18.7	-0.91 - 3.8	2.0/06.5	36376

(12075)	1999 10 08.3	00 53.96 -00 30.6 17.4	-0.90 - 6.3	2.4/06.4	36293
7606 P-L	1999 10 08.4	00 54.30 -01 07.0 17.3	-0.87 - 3.4	3.6/06.4	36580
(9506)	1999 10 08.4	00 54.32 +17 44.3 17.4	-0.82 - 4.1	3.6/12.3	36061
1993 FR ₅	1999 10 08.4	00 54.42 +01 28.1 17.1	-0.87 - 4.7	1.6/07.1	36332
1996 AR ₁	1999 10 08.5	00 54.54 +20 24.3 17.1	-0.84 - 3.6	4.6/13.2	36519
1998 HD ₁₄₉	1999 10 08.5	00 54.79 +07 10.8 18.3	-0.89 - 6.0	0.5/09.0	32331
(11815)	1999 10 08.5	00 54.84 +10 53.1 17.4	-0.92 - 4.3	2.1/10.1	36223
1994 XM ₂	1999 10 08.6	00 54.86 -07 12.2 16.9	-0.77 - 3.5	4.0/04.5	36515
(12079)	1999 10 08.6	00 54.97 +07 52.3 17.5	-0.94 - 6.3	0.7/09.3	36295
1998 FT ₆₁	1999 10 08.6	00 55.01 +08 08.8 17.9	-0.95 - 6.3	0.8/09.4	36529
1997 FC ₃	1999 10 08.6	00 55.02 +06 29.4 16.9	-0.78 - 5.3	0.2/08.9	36349
1981 EZ ₄	1999 10 08.6	00 55.07 +20 35.3 19.2	-0.97 - 3.9	5.1/13.2	26915
(11836)	1999 10 08.6	00 55.08 -39 06.3 15.5	-0.57 -13.7	20.0/21.0	36228
1998 FC ₁₄₄	1999 10 08.7	00 55.30 +12 18.4 17.2	-0.89 - 7.5	2.4/11.0	36531
(11996)	1999 10 08.7	00 55.48 -21 13.6 17.6	-0.77 - 3.8	8.2/29.4	36272
1991 VT ₅	1999 10 08.7	00 55.54 -01 50.0 17.7	-0.80 - 7.6	2.9/06.1	36509
1992 PA ₂	1999 10 08.8	00 55.61 +18 47.7 16.5	-0.95 - 3.7	6.5/12.9	36510
1998 KL ₃₁	1999 10 08.8	00 55.70 -17 08.2 17.3	-0.91 - 2.3	7.6/01.9	36535
1999 OG ₂	1999 10 08.9	00 56.08 -02 27.5 16.0	-0.79 -26.0	3.7/05.3	36548
1981 EQ ₃₉	1999 10 08.9	00 56.12 +06 29.8 20.2	-0.75 - 4.7	0.1/09.1	29910
1993 CK ₁	1999 10 08.9	00 56.21 +02 19.2 17.8	-0.94 - 3.2	1.2/07.9	36511
1997 BO ₃	1999 10 08.9	00 56.21 +00 00.4 16.8	-0.90 - 5.0	2.1/07.1	36523
(9010)	1999 10 09.0	00 56.55 +05 16.2 16.8	-1.00 - 5.2	0.3/08.8	32176
1998 HX ₇₈	1999 10 09.0	00 56.69 +13 38.7 17.4	-0.91 - 7.2	3.0/11.6	36533
1998 HH ₈₇	1999 10 09.1	00 56.63 +13 24.6 17.5	-0.86 - 7.6	3.1/11.6	36533
1997 JB ₁₃	1999 10 09.1	00 56.91 +05 00.8 19.1	-0.71 - 4.6	0.3/08.8	36525
(11968)	1999 10 09.2	00 56.98 +06 48.6 17.2	-0.88 - 3.8	0.2/09.4	36264
1996 BO ₁	1999 10 09.2	00 56.98 +19 03.3 17.2	-0.83 - 3.7	4.0/13.4	36342
1996 VU ₁₇	1999 10 09.2	00 57.41 +03 07.8 18.0	-1.01 - 5.8	1.3/08.4	36520
(11958)	1999 10 09.3	00 57.40 -06 41.7 15.9	-0.93 - 3.9	6.0/05.4	36261
1998 EU ₁₂	1999 10 09.3	00 57.40 +05 30.7 17.5	-1.08 - 3.3	0.3/09.1	32316
(8987)	1999 10 09.3	00 57.52 +02 40.8 17.5	-0.89 - 4.2	1.3/08.3	32171
(12105)	1999 10 09.3	00 57.71 -02 21.7 15.7	-0.82 - 7.6	4.0/06.5	36302
1998 EB ₈	1999 10 09.3	00 57.75 +03 57.5 18.4	-1.02 - 5.8	0.9/08.7	36527
1999 RN ₃₈	1999 10 09.3	00 57.78 +03 03.8 16.1	-0.91 - 5.9	1.4/08.4	36405
1995 FM ₁₁	1999 10 09.3	00 57.78 +04 43.8 17.7	-0.97 - 8.6	0.6/08.9	36516
(12112)	1999 10 09.4	00 57.97 -13 44.0 16.9	-0.68 - 8.0	5.4/02.1	36304
1998 KO ₄₆	1999 10 09.5	00 58.07 -02 51.7 17.9	-0.85 - 5.7	3.1/06.6	36536
(11874)	1999 10 09.5	00 58.10 -01 36.8 16.5	-0.81 - 8.1	3.8/06.8	36239
(8997)	1999 10 09.5	00 58.26 +13 19.2 18.3	-0.91 - 5.3	2.4/11.8	32173
1981 EF ₆	1999 10 09.5	00 58.41 +21 16.4 19.1	-0.86 - 3.8	4.8/14.4	26915
1999 RX ₂₁₀	1999 10 09.6	00 58.64 +21 25.2 17.2	-0.93 - 2.4	4.9/14.2	36475
1998 HU ₁₁₇	1999 10 09.6	00 58.68 -04 02.3 18.7	-0.97 - 5.8	3.8/06.5	32083
1992 UR ₂	1999 10 09.6	00 58.72 -22 09.8 16.8	-1.43 + 3.6	12.1/02.7	36331
1999 SU ₅	1999 10 09.6	00 58.77 -09 17.9 17.3	-1.82 +11.8	8.5/08.2	36479
1988 DG ₂	1999 10 09.6	00 58.80 -08 45.7 18.4	-0.82 - 6.9	5.4/04.5	36503
(9097)	1999 10 09.6	00 58.83 +03 16.9 18.1	-0.72 - 4.6	0.8/08.7	32196
1999 RR ₄₄	1999 10 09.7	00 58.88 +02 51.8 18.0	-0.71 - 7.3	1.1/08.5	36410
1990 VU ₈	1999 10 09.7	00 58.94 -09 09.4 16.8	-0.78 - 6.0	5.6/04.5	36506
1981 EW ₄₆	1999 10 09.7	00 59.01 +05 53.2 18.4	-0.80 - 4.6	0.1/09.6	26923
(11975)	1999 10 09.7	00 59.14 +07 26.5 17.9	-1.02 - 7.2	0.4/10.1	36266

(8772)	1999 10 09.7	00 59.16 +00 16.7 15.8	-0.92 - 3.3	2.9/08.0	31704
1998 FX ₄₉	1999 10 09.8	00 59.20 +07 12.9 19.5	-1.06 - 5.9	0.4/10.1	32320
1999 RZ ₃₇	1999 10 09.8	00 59.22 +04 08.1 17.8	-0.81 - 8.6	0.9/09.1	36404
1999 RM ₃₈	1999 10 09.8	00 59.23 +06 15.3 17.3	-0.69 - 7.1	0.0/09.8	36405
1995 UB ₃₂	1999 10 09.8	00 59.24 -00 56.4 18.2	-0.83 - 5.0	3.2/07.5	26570
(9032)	1999 10 09.8	00 59.27 -03 01.2 17.6	-0.96 - 6.0	3.5/06.9	36060
1981 EX ₄₀	1999 10 09.8	00 59.31 +14 37.7 19.0	-0.89 - 2.1	2.7/12.2	26922
1997 AP ₄	1999 10 09.8	00 59.33 +06 26.7 17.2	-0.92 - 6.3	0.0/09.9	36522
1999 OW ₂	1999 10 09.8	00 59.59 +44 01.8 15.7	-1.25 + 2.1	15.0/21.8	36381
1998 KR ₃₃	1999 10 09.8	00 59.61 +02 31.5 19.4	-1.01 - 5.5	1.4/08.7	36535
1999 RN ₂₁₄	1999 10 09.9	00 59.57 +01 13.0 16.7	-0.79 - 6.9	1.8/08.2	36476
1999 RB ₂₁₁	1999 10 09.9	00 59.65 +15 51.0 18.1	-0.94 - 8.4	3.4/13.2	36475
1998 FZ ₇₁	1999 10 09.9	00 59.67 +09 22.4 17.7	-0.98 - 5.5	1.2/11.0	36361
(11899)	1999 10 09.9	00 59.88 -00 40.5 17.5	-0.80 - 2.5	2.0/07.9	36246
1998 KB ₅₁	1999 10 09.9	00 59.94 +02 16.7 16.9	-0.83 - 8.2	1.4/08.6	36536
(12046)	1999 10 10.0	00 59.92 +11 22.4 17.2	-0.74 - 5.2	1.4/11.7	36285
1993 KW ₁	1999 10 10.0	01 00.03 +16 36.2 17.1	-0.93 -20.8	4.3/14.2	36512
1998 HX ₁₈	1999 10 10.0	01 00.11 +07 30.1 17.9	-1.10 - 3.0	0.4/10.3	36366
(11935)	1999 10 10.0	01 00.16 +00 35.7 17.6	-0.86 - 4.3	2.0/08.3	36255
1979 MF ₅	1999 10 10.0	01 00.29 +15 53.8 18.1	-0.83 - 5.1	3.2/13.2	30778
1997 AC ₁₃	1999 10 10.1	01 00.31 +12 33.7 16.8	-0.98 - 5.5	2.6/12.0	36522
1993 FS ₂₂	1999 10 10.1	01 00.68 +10 05.2 17.6	-0.87 - 6.3	1.4/11.4	36512
1995 KO ₁	1999 10 10.1	01 00.73 -35 19.6 18.3	-0.99 - 3.2	16.0/25.3	36072
1999 RN ₁₆₂	1999 10 10.2	01 00.67 +01 01.8 16.4	-1.00 + 0.5	2.1/08.9	36456
1998 HN ₁₁₉	1999 10 10.2	01 00.70 +02 43.4 17.4	-0.77 -10.2	1.4/08.9	36534
(11506)	1999 10 10.2	01 00.73 +18 39.6 18.0	-0.96 - 5.7	4.5/14.1	35834
1998 HA ₆	1999 10 10.2	01 00.80 -02 32.7 19.2	-1.05 - 3.8	3.4/07.7	32484
1997 ER ₃₁	1999 10 10.2	01 00.83 +06 15.7 17.9	-0.76 - 4.4	0.1/10.2	36524
1998 HT ₁₀₇	1999 10 10.2	01 00.88 -04 31.6 17.8	-1.02 - 3.7	4.5/07.1	36534
1998 FH ₄₁	1999 10 10.4	01 01.40 +06 01.6 18.0	-0.95 - 6.9	0.2/10.2	36528
(8991)	1999 10 10.4	01 01.44 +17 14.4 17.4	-0.85 - 5.1	3.1/13.9	32172
1999 RH ₃₅	1999 10 10.4	01 01.51 +03 59.1 16.4	-0.91 - 7.7	1.2/09.6	36555
(11934)	1999 10 10.4	01 01.53 +03 07.7 16.5	-0.87 - 6.1	1.3/09.3	36255
1999 RJ ₂₁₁	1999 10 10.4	01 01.56 +17 27.3 17.8	-0.99 - 1.9	3.6/13.5	36476
4082 T-3	1999 10 10.4	01 01.57 +01 40.8 17.6	-0.77 - 8.6	1.5/08.7	30683
(11954)	1999 10 10.4	01 01.57 +03 14.2 17.2	-1.06 - 4.1	1.3/09.5	36260
1998 KX ₄₆	1999 10 10.4	01 01.57 +07 48.9 17.8	-0.95 - 6.3	0.4/10.8	36374
1997 EV	1999 10 10.4	01 01.66 +04 32.8 17.2	-1.60 + 8.1	1.0/10.2	36347
1998 FG ₇₅	1999 10 10.4	01 01.82 +05 13.2 17.0	-0.85 - 9.3	0.6/10.0	36530
(8903)	1999 10 10.5	01 01.82 +08 19.5 15.8	-0.70 -13.1	0.7/11.2	31924
1998 FR ₆₂	1999 10 10.5	01 01.85 +08 26.5 17.9	-0.94 - 6.6	0.7/11.1	36360
1999 RC ₃₈	1999 10 10.5	01 01.90 +04 10.8 15.6	-0.78 -10.2	0.8/09.7	36405
1982 VY ₃	1999 10 10.5	01 01.92 -03 10.7 16.8	-1.03 - 3.7	3.9/07.8	36502
1994 JU ₈	1999 10 10.5	01 02.06 +21 32.2 17.1	-0.84 -11.0	5.3/16.2	36514
(11805)	1999 10 10.6	01 02.17 +07 58.9 17.6	-0.70 - 8.4	0.5/11.1	36220
1991 UE ₂	1999 10 10.6	01 02.20 +03 12.9 16.6	-0.92 - 4.2	1.3/09.6	36508
1997 EX ₇	1999 10 10.6	01 02.27 +09 53.3 16.8	-0.93 - 3.4	1.4/11.6	36524
1995 QC ₁₀	1999 10 10.7	01 02.54 +11 53.6 18.1	-0.88 - 8.4	2.1/12.5	36516
1994 VS ₁	1999 10 10.7	01 02.81 +03 15.8 17.1	-0.83 - 3.0	1.2/09.7	36515
1999 RA ₁₉₂	1999 10 10.7	01 02.83 +23 14.6 17.4	-1.05 - 2.6	5.7/15.7	36470
1999 RL ₃₈	1999 10 10.7	01 02.85 +01 05.4 17.1	-0.88 - 6.9	2.4/09.0	36556

1997 FU ₂	1999 10 10.8	01 02.90 +12 52.4 16.5	-0.90 - 1.6	2.1/12.6	36524
1999 RO ₃₈	1999 10 10.8	01 03.02 +04 07.5 16.3	-0.76 -11.0	1.3/09.9	36405
1998 HT ₁₅₀	1999 10 10.9	01 03.27 -01 31.2 18.2	-0.99 - 6.5	3.3/08.4	36534
(11927)	1999 10 10.9	01 03.31 -18 38.7 16.2	-0.86 - 4.5	9.1/02.5	36253
1995 UE ₁₂	1999 10 10.9	01 03.51 +07 51.2 19.6	-0.93 - 4.4	0.4/11.3	36340
1995 VG ₁₁	1999 10 11.0	01 03.72 -04 40.6 19.1	-0.91 - 3.5	3.7/07.6	26407
1999 RD ₁₀₉	1999 10 11.0	01 03.78 +05 07.4 17.4	-0.61 -11.0	0.8/10.4	36561
(9101)	1999 10 11.0	01 03.80 +03 17.6 18.1	-0.98 - 5.9	1.4/10.0	32197
1996 BP ₃	1999 10 11.0	01 03.92 +14 51.1 17.2	-0.90 - 2.1	2.7/13.4	36519
1998 KN ₆₀	1999 10 11.1	01 03.96 -17 29.2 18.4	-0.91 - 4.2	8.2/03.3	32755
1994 JB	1999 10 11.1	01 04.06 +02 24.8 17.9	-0.93 - 4.5	1.7/09.8	32307
1999 RF ₂₇	1999 10 11.1	01 04.34 -03 15.9 17.6	-0.82 - 5.9	2.9/07.9	36396
1998 KM ₅₄	1999 10 11.1	01 04.36 -10 50.3 19.4	-0.86 - 5.0	5.7/05.5	36536
(12152)	1999 10 11.2	01 04.55 +07 57.2 17.8	-0.97 - 7.0	0.4/11.6	36315
1981 EG ₁₂	1999 10 11.2	01 04.61 +11 24.1 18.4	-0.84 - 7.4	1.4/12.8	36501
1998 MS ₂₉	1999 10 11.3	01 04.85 -02 41.4 17.9	-0.73 - 4.6	2.6/08.2	36537
1999 SJ	1999 10 11.3	01 04.87 +04 50.3 17.5	-0.94 - 7.0	0.9/10.7	36476
1998 OH ₆	1999 10 11.3	01 04.88 +02 02.5 17.5	-0.70 - 5.6	1.3/09.7	36537
1993 RC ₄	1999 10 11.4	01 05.17 +12 23.6 18.0	-0.74 - 4.1	1.4/13.2	35688
1999 SE	1999 10 11.4	01 05.29 +06 06.3 17.4	-0.64 - 9.8	0.3/11.1	36569
1996 BE ₁	1999 10 11.4	01 05.38 -00 46.4 17.6	-0.84 - 4.2	2.7/09.1	36519
1999 RZ ₉₈	1999 10 11.5	01 05.46 +04 22.9 16.8	-0.95 + 0.4	0.8/10.9	36426
(9306)	1999 10 11.5	01 05.47 +07 31.1 16.1	-0.82 - 4.5	0.2/11.7	32607
1998 KE ₄₀	1999 10 11.5	01 05.51 -01 34.6 16.3	-0.93 - 6.8	3.7/08.8	36536
1998 FL ₇₆	1999 10 11.5	01 05.55 -01 44.8 17.8	-1.01 - 4.2	3.3/09.0	36530
1999 TE ₆	1999 10 11.5	01 05.62 +04 10.1 17.7	-0.80 - 8.7	1.0/10.6	36485
1999 TE ₁₅	1999 10 11.5	01 05.70 +04 13.6 18.1	-0.76 - 9.9	1.0/10.6	36490
(11875)	1999 10 11.5	01 05.78 -14 39.2 17.4	-0.75 - 3.0	5.4/04.6	36239
1998 FQ ₁₄	1999 10 11.5	01 05.83 +08 51.1 17.9	-0.86 - 8.4	0.7/12.2	36528
1988 RM ₇	1999 10 11.5	01 05.85 +09 15.1 17.8	-0.80 - 4.9	0.7/12.3	36504
1998 HX ₂	1999 10 11.6	01 05.86 +10 26.2 16.3	-0.80 -26.6	1.5/13.1	36365
(12137)	1999 10 11.6	01 05.95 +12 35.5 17.7	-0.92 - 3.8	2.0/13.3	36311
4030 T-3	1999 10 11.6	01 05.97 +00 30.0 17.9	-0.83 - 5.9	2.3/09.5	36582
1998 FZ ₆₄	1999 10 11.6	01 05.99 +09 58.6 17.1	-1.10 - 3.2	1.2/12.5	36360
1995 YJ ₁	1999 10 11.7	01 06.44 +02 17.9 16.6	-0.79 - 5.2	1.7/10.2	36519
4315 P-L	1999 10 11.7	01 06.51 +07 36.9 18.2	-0.80 - 5.4	0.2/12.0	30466
1999 TU	1999 10 11.7	01 06.58 +06 17.6 17.3	-0.92 - 4.5	0.3/11.6	36482
1999 SO ₁	1999 10 11.8	01 06.53 +04 59.1 16.6	-0.92 - 2.8	0.8/11.2	36477
1999 RM ₂₁₄	1999 10 11.8	01 06.61 +03 49.5 17.3	-0.86 - 1.9	1.1/10.9	36476
1991 GW ₁	1999 10 11.8	01 06.71 +20 54.0 17.6	-0.93 -13.0	4.5/17.0	36507
1996 WE ₃	1999 10 11.8	01 06.73 +13 24.7 17.7	-0.95 - 7.9	2.4/13.9	36521
1994 BD ₁	1999 10 11.8	01 06.85 +09 52.6 16.1	-1.11 - 0.9	1.4/12.6	36335
(12091)	1999 10 11.8	01 06.98 +04 41.4 17.3	-0.86 - 8.0	0.9/11.1	36298
1998 HM ₁₁₇	1999 10 11.9	01 07.03 +00 38.5 18.7	-0.90 - 7.9	2.4/09.8	36534
(11483)	1999 10 11.9	01 07.13 +05 09.0 16.6	-0.84 - 6.5	0.8/11.3	35828
1999 TG ₂	1999 10 11.9	01 07.18 +12 12.5 16.6	-0.90 - 2.9	1.6/13.4	36483
1999 TH ₂	1999 10 11.9	01 07.27 +11 31.4 17.3	-0.81 - 6.5	1.8/13.4	36483
1998 FC ₁₁₇	1999 10 12.0	01 07.35 +13 52.7 16.7	-0.90 - 9.0	2.9/14.3	36531
1998 DC ₁₄	1999 10 12.0	01 07.54 +05 06.2 18.9	-0.97 - 7.2	0.8/11.4	32060
1999 RR ₁₁₀	1999 10 12.0	01 07.57 +21 02.3 17.7	-0.97 - 5.0	6.3/16.5	36430
1993 FN ₂₈	1999 10 12.1	01 07.74 +11 18.8 19.2	-0.90 - 4.6	1.2/13.4	29662

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1998 FZ₂₉ 1999 10 12.1 01 07.85 +09 11.9 17.6 -0.97 - 8.4 0.8/12.8 36528
 (11957) 1999 10 12.1 01 08.03 +02 00.0 16.4 -1.03 - 3.9 2.3/10.7 36261
 1997 GT₃₄ 1999 10 12.2 01 08.05 +05 54.8 19.1 -0.75 - 4.5 0.4/11.8 32253
 (11709) 1999 10 12.2 01 08.30 +06 50.4 17.8 -0.85 - 6.5 0.1/12.1 35887
 (8692) 1999 10 12.2 01 08.30 +13 05.2 16.3 -0.91 - 8.3 2.4/14.2 31685
 1999 RQ₄₃ 1999 10 12.2 01 08.36 +04 42.6 16.2 -0.81 - 9.9 1.4/11.4 36409
 1998 FA₃ 1999 10 12.2 01 08.37 +01 59.5 19.6 -0.86 - 6.6 1.7/10.6 36357
 1998 MD₉ 1999 10 12.4 01 08.83 -09 18.1 16.5 -0.71 - 9.7 6.5/06.1 36376
 1168 T-3 1999 10 12.4 01 09.19 +18 21.5 17.1 -1.10 + 1.3 4.6/15.1 36581
 (8407) 1999 10 12.5 01 09.15 -04 10.5 17.4 -0.94 - 6.4 4.3/08.9 31367
 (12146) 1999 10 12.5 01 09.58 +14 45.0 17.1 -1.06 - 1.4 2.8/14.6 36314
 1983 AA 1999 10 12.5 01 09.61 +50 29.7 17.6 -1.43 - 0.3 16.1/26.2 36502
 1998 FE₄₉ 1999 10 12.6 01 09.62 +05 23.4 17.4 -0.87 - 9.6 0.8/12.0 36359
 1995 VL 1999 10 12.6 01 09.65 -10 12.5 17.0 -1.00 + 1.0 7.5/08.3 36518
 (11797) 1999 10 12.6 01 09.69 +16 23.6 16.7 -1.05 - 1.6 3.3/15.1 36218
 1978 ST₇ 1999 10 12.6 01 09.72 +16 54.2 16.4 -1.05 - 3.9 4.0/15.4 36500
 (11913) 1999 10 12.6 01 09.79 +16 34.6 16.4 -1.01 - 2.9 4.5/15.3 36249
 (8860) 1999 10 12.6 01 09.90 +09 11.8 15.8 -1.11 + 0.2 0.7/13.1 31913
 1998 HS₄₂ 1999 10 12.7 01 09.88 -01 42.3 18.1 -0.82 - 6.5 2.9/09.8 36532
 1999 SK 1999 10 12.7 01 09.90 +05 06.4 17.8 -0.86 - 6.1 0.9/12.0 36477
 (11816) 1999 10 12.7 01 09.95 +12 19.9 17.9 -0.86 - 8.3 1.8/14.4 36223
 (11806) 1999 10 12.7 01 09.96 +11 43.2 18.2 -1.00 - 6.6 1.6/14.1 36220
 1992 SA₁₇ 1999 10 12.8 01 10.40 +08 01.2 17.5 -0.97 - 6.3 0.2/13.0 36510
 1978 RG₉ 1999 10 12.8 01 10.42 +19 46.7 17.8 -1.04 - 2.7 4.4/16.4 36324
 (11514) 1999 10 12.8 01 10.44 +02 40.5 16.5 -0.71 - 7.1 1.4/11.2 35836
 1993 DM 1999 10 12.8 01 10.45 +14 23.7 17.8 -0.90 - 5.6 2.3/15.0 36511
 1991 CM 1999 10 12.8 01 10.65 -16 04.6 17.3 -0.72 - 4.8 6.4/04.9 36506
 1999 RC₉₉ 1999 10 12.9 01 10.60 -01 14.3 17.6 -1.02 - 3.5 3.5/10.5 36426
 1998 FL₇₈ 1999 10 12.9 01 10.60 +00 47.5 17.0 -1.01 - 5.8 2.8/10.9 32324
 1994 EL 1999 10 12.9 01 10.63 +08 16.4 18.7 -0.95 - 6.6 0.3/13.2 36513
 1998 KD₄₄ 1999 10 12.9 01 10.76 +15 08.0 18.2 -0.91 - 7.0 2.7/15.4 36536
 1999 RM₄₃ 1999 10 12.9 01 10.79 +07 24.4 18.8 -0.85 - 6.1 0.0/12.9 36408
 3109 T-2 1999 10 12.9 01 10.89 -01 31.1 20.1 -0.72 - 7.6 3.0/09.8 36581
 1998 KW₃₃ 1999 10 12.9 01 10.93 +06 04.5 17.1 -0.86 - 5.5 0.6/12.5 36535
 1994 FY 1999 10 13.0 01 11.42 -01 11.6 17.4 -1.07 - 1.9 3.2/10.8 36513
 (12156) 1999 10 13.1 01 11.36 +08 31.4 16.9 -0.84 - 6.1 0.4/13.4 36317
 1995 TZ₁ 1999 10 13.1 01 11.55 +02 17.6 18.6 -0.93 - 3.4 1.7/11.6 36517
 1979 MM₇ 1999 10 13.2 01 11.77 +03 37.2 19.1 -1.00 - 7.3 1.6/12.0 30779
 (9459) 1999 10 13.2 01 11.85 +15 05.6 17.0 -1.04 - 5.3 2.7/15.5 36061
 (8611) 1999 10 13.2 01 11.91 +07 33.5 15.3 -0.95 - 3.5 0.0/13.2 31666
 1999 TO₁₆ 1999 10 13.2 01 12.07 +06 55.4 18.7 -0.75 - 4.6 0.2/13.1 36490
 2058 P-L 1999 10 13.3 01 12.14 +11 19.0 17.8 -0.87 - 5.4 1.3/14.5 36578
 1999 SW₂ 1999 10 13.3 01 12.17 +07 51.7 18.0 -0.79 - 4.4 0.1/13.4 36478
 1999 SV₆ 1999 10 13.3 01 12.18 +14 35.6 16.4 -0.92 - 7.8 3.3/16.0 36480
 1993 GC 1999 10 13.3 01 12.36 +07 57.6 17.3 -0.78 - 8.6 0.1/13.5 36334
 (11579) 1999 10 13.3 01 12.40 +08 29.7 16.5 -0.81 -11.3 0.3/13.7 35853
 1999 RE₂₇ 1999 10 13.3 01 12.40 -16 06.6 16.9 -0.71 -23.9 10.5/02.3 36554
 (8474) 1999 10 13.3 01 12.51 -02 38.9 16.6 -0.98 - 6.6 4.2/10.3 31490
 1999 RZ₁₁₀ 1999 10 13.3 01 12.51 +19 33.4 17.7 -0.99 - 2.4 4.8/16.8 36430
 1990 RT₂ 1999 10 13.4 01 12.49 +17 37.5 15.7 -1.07 + 0.8 4.2/16.0 36506
 1981 EO₄₃ 1999 10 13.4 01 12.54 +10 42.4 20.4 -0.80 - 3.9 0.9/14.4 26923

1998 HK₃₃ 1999 10 13.4 01 12.82 +12 02.9 17.2 -1.08 - 2.5 1.9/14.6 36532
 1991 WD 1999 10 13.4 01 12.84 -14 58.4 17.6 -0.94 - 3.6 7.6/06.2 36067
 1993 FU₄₉ 1999 10 13.4 01 12.88 +09 25.4 17.1 -0.88 - 5.9 0.6/14.0 36333
 3770 T-1 1999 10 13.5 01 13.02 +06 08.2 18.4 -0.94 - 8.4 0.6/13.0 36580
 (9028) 1999 10 13.5 01 13.11 -00 09.9 15.9 -0.91 - 5.6 3.3/11.1 32180
 1997 FU₁ 1999 10 13.5 01 13.14 -15 57.0 18.0 -0.79 - 2.1 7.4/06.2 36349
 1999 TG₁₀ 1999 10 13.5 01 13.20 +09 41.8 17.5 -0.95 - 4.9 0.7/14.2 36487
 1998 FW₉ 1999 10 13.6 01 13.30 +05 55.1 18.7 -0.89 -11.0 0.7/13.0 36527
 4060 P-L 1999 10 13.6 01 13.39 +09 34.9 17.4 -0.86 - 5.6 0.6/14.2 36579
 1999 SU₂ 1999 10 13.6 01 13.45 +07 09.7 17.9 -0.71 - 6.5 0.2/13.5 36478
 (11844) 1999 10 13.6 01 13.52 +06 58.4 16.7 -0.77 - 4.2 0.2/13.4 36231
 2416 T-3 1999 10 13.7 01 13.56 +10 20.4 16.4 -0.97 - 6.0 1.0/14.5 36582
 1989 TN₁₆ 1999 10 13.7 01 13.62 +07 06.7 17.2 -0.98 - 7.1 0.3/13.5 36505
 4626 P-L 1999 10 13.7 01 13.62 +07 17.3 17.3 -0.83 - 4.3 0.2/13.6 36579
 1999 QZ₁ 1999 10 13.7 01 13.66 +06 44.7 17.8 -0.80 - 6.8 0.4/13.4 36382
 (9067) 1999 10 13.7 01 13.78 +07 59.5 15.7 -0.94 - 2.2 0.1/13.8 32189
 1998 EE₁₀ 1999 10 13.7 01 13.80 +07 22.1 16.2 -1.07 - 3.7 0.2/13.6 36527
 1995 BL 1999 10 13.7 01 13.97 +44 40.3 16.9 -1.54 + 0.6 16.9/24.8 36515
 1997 ED₈ 1999 10 13.7 01 13.99 +09 16.5 19.1 -0.91 - 4.4 0.5/14.2 36524
 1997 AG 1999 10 13.9 01 14.32 +15 08.0 16.9 -1.00 - 4.7 3.1/16.0 36521
 1990 TZ₁ 1999 10 13.9 01 14.65 +11 55.3 16.7 -0.85 - 5.3 1.5/15.2 36506
 1997 HO₁ 1999 10 13.9 01 14.69 +08 59.3 17.5 -0.86 - 5.7 0.4/14.3 36525
 1999 RX₁₁₀ 1999 10 14.0 01 14.79 +18 20.5 17.3 -0.94 - 5.3 3.9/17.3 36430
 (11911) 1999 10 14.0 01 14.98 -15 27.9 15.9 -0.65 - 8.5 7.6/05.0 36249
 2649 P-L 1999 10 14.1 01 15.09 +05 06.7 17.6 -0.79 - 8.0 0.9/13.2 23680
 (12165) 1999 10 14.1 01 15.34 +00 12.8 17.2 -0.72 - 7.0 2.4/11.5 36319
 (11866) 1999 10 14.1 01 15.35 +09 19.7 16.4 -0.83 - 4.8 0.5/14.6 36237
 1999 RR₃₁ 1999 10 14.2 01 15.62 +07 25.8 16.4 -1.08 - 1.4 0.3/14.1 36554
 (11860) 1999 10 14.2 01 15.66 +04 08.7 16.5 -0.77 - 4.2 1.3/13.1 36236
 1998 HJ₅₁ 1999 10 14.2 01 15.74 -05 39.8 16.4 -0.90 - 4.1 6.1/10.2 36533
 1998 HZ₉₂ 1999 10 14.3 01 15.82 +09 33.7 17.7 -1.00 - 5.4 0.6/14.8 36370
 1997 AF₇ 1999 10 14.3 01 16.19 +02 21.6 18.7 -0.92 - 6.5 2.0/12.6 29634
 (8652) 1999 10 14.4 01 16.23 +11 25.1 16.8 -0.95 - 5.6 1.3/15.4 31676
 1998 HB₃₈ 1999 10 14.4 01 16.34 +12 16.2 18.5 -0.93 - 5.6 1.4/16.0 36532
 1998 HD₈ 1999 10 14.4 01 16.34 +03 08.9 18.0 -0.97 - 7.5 1.9/12.9 36366
 1999 RO₂₁₁ 1999 10 14.4 01 16.50 +12 41.9 17.0 -0.66 -15.4 1.5/16.3 36569
 1991 PY₁ 1999 10 14.4 01 16.56 -05 24.6 17.9 -0.91 - 5.3 5.3/10.4 36507
 (12166) 1999 10 14.5 01 16.57 -01 13.8 17.2 -0.84 - 6.7 3.3/11.5 36319
 1990 WZ 1999 10 14.5 01 16.65 +05 33.6 17.3 -0.76 - 8.1 0.9/13.7 36506
 4039 T-3 1999 10 14.5 01 16.77 +03 00.9 17.6 -1.03 - 6.3 2.1/13.0 36582
 (11841) 1999 10 14.5 01 16.88 +09 58.2 15.3 -1.11 - 0.4 1.0/15.0 36230
 1996 YX 1999 10 14.6 01 17.11 +21 26.3 16.7 -0.97 - 6.4 5.6/18.9 36521
 (12043) 1999 10 14.7 01 17.32 -06 46.1 16.8 -0.87 - 1.4 5.0/10.5 36284
 (12018) 1999 10 14.7 01 17.39 -04 13.5 17.1 -0.94 - 3.9 5.2/11.2 36278
 1998 HT₄₂ 1999 10 14.7 01 17.47 +05 43.6 16.8 -0.92 - 7.6 1.0/14.0 36533
 1998 KC₅₆ 1999 10 14.7 01 17.57 -02 36.1 16.1 -0.82 -11.8 4.3/10.8 36537
 1981 ET₃₅ 1999 10 14.7 01 17.65 +15 01.6 19.9 -0.74 - 6.7 2.0/17.1 26921
 1988 VX₂ 1999 10 14.8 01 17.65 +16 07.7 16.6 -0.71 - 8.2 2.3/17.6 36504
 1999 RW₃₄ 1999 10 14.8 01 17.72 +04 44.2 16.8 -0.72 -10.0 1.6/13.6 36555
 (8905) 1999 10 14.8 01 17.79 -01 39.6 15.8 -0.87 - 1.1 4.8/12.2 36060
 1999 TM 1999 10 14.8 01 17.92 +10 21.4 16.7 -0.86 - 9.0 0.9/15.6 36481

(12047)	1999 10 14.9	01 18.20 +07 00.9	16.9	-0.89	- 1.8	0.4/14.6	36285	1994 WP ₈	1999 10 16.2	01 23.25 +08 28.9	18.5	-0.71	- 8.0	0.1/16.2	36338
1994 ET	1999 10 14.9	01 18.20 +22 10.2	17.5	-1.10	- 1.8	6.8/18.8	36335	1999 SR ₄	1999 10 16.4	01 23.60 +07 49.5	16.5	-0.77	- 7.2	0.3/16.1	36479
1999 TG ₁₉	1999 10 14.9	01 18.26 +14 28.1	17.9	-0.88	- 4.9	2.1/16.9	36490	1995 WC ₅	1999 10 16.4	01 23.66 +11 04.1	17.1	-0.84	- 6.3	0.8/17.1	36341
1977 TD	1999 10 15.0	01 18.43 -52 08.2	18.2	-1.52	+ 2.8	24.9/26.0	31271	1999 TM ₁₁	1999 10 16.4	01 23.73 -32 43.9	18.6	-1.07	- 1.2	14.5/03.9	36487
1999 TK ₁₁	1999 10 15.1	01 18.78 +13 24.1	16.4	-1.03	- 3.0	2.0/16.5	36487	1984 UN ₂	1999 10 16.4	01 23.97 +08 33.8	17.0	-0.80	- 5.3	0.1/16.4	36502
1998 KU ₆₀	1999 10 15.1	01 18.98 -03 03.7	17.8	-0.80	- 7.9	3.7/11.3	32755	2097 T-2	1999 10 16.4	01 23.98 +15 31.4	18.2	-1.04	- 3.3	2.5/18.3	36581
1996 AL	1999 10 15.1	01 19.03 -16 15.7	18.0	-0.79	- 4.2	6.9/06.9	36073	1999 TW ₃	1999 10 16.4	01 24.00 +01 31.3	16.9	-0.99	- 3.5	3.0/14.5	36483
1991 EM	1999 10 15.1	01 19.08 +38 27.2	18.1	-0.88	- 4.8	8.6/26.6	36506	1998 HO ₄₃	1999 10 16.5	01 23.98 +04 17.0	17.1	-0.89	- 8.7	1.8/15.0	32328
1998 FD ₆₁	1999 10 15.1	01 19.09 +06 01.3	17.1	-0.98	- 8.2	0.9/14.4	36529	1998 FN ₄₁	1999 10 16.6	01 24.35 +10 55.4	17.7	-1.03	- 4.9	0.8/17.2	36359
1998 QN ₇	1999 10 15.2	01 19.13 +31 55.5	16.9	-0.89	- 1.9	6.5/22.8	36538	1999 TP ₇	1999 10 16.6	01 24.35 +29 23.6	17.3	-0.98	- 9.8	8.5/24.4	36573
(11804)	1999 10 15.2	01 19.17 +19 32.5	17.9	-1.00	- 4.1	4.1/18.6	36220	(9014)	1999 10 16.6	01 24.60 -07 27.8	15.8	-1.03	- 0.9	7.7/12.3	36060
1998 KS ₃₅	1999 10 15.2	01 19.26 +07 03.6	17.7	-0.98	- 5.8	0.5/14.8	36536	(11956)	1999 10 16.7	01 24.79 -02 12.7	16.6	-0.93	- 4.7	5.0/13.4	36261
1995 SJ ₁	1999 10 15.2	01 19.27 +12 43.4	17.0	-0.95	- 2.6	2.0/16.4	36516	1999 TS ₁₁	1999 10 16.7	01 24.80 +30 14.4	15.8	-1.08	- 1.3	8.9/23.1	36488
1999 TU ₁₈	1999 10 15.2	01 19.62 +09 21.6	15.5	-1.77	+14.5	13.7/05.0	36490	1996 AL ₃	1999 10 16.7	01 24.82 +04 55.4	17.6	-0.78	- 4.6	1.2/15.5	32243
1999 PB ₅	1999 10 15.3	01 19.53 +07 17.5	17.5	-0.86	- 1.3	0.3/15.0	36549	(11174)	1999 10 16.7	01 24.91 +03 37.1	17.7	-1.03	- 5.2	2.2/15.2	35256
1992 JU ₂	1999 10 15.3	01 19.55 +10 34.5	15.5	-0.80	-10.9	1.1/16.1	36509	1979 MP ₈	1999 10 16.7	01 24.97 +15 15.2	19.0	-0.94	- 5.8	2.1/18.7	36500
1998 HO ₁₁₇	1999 10 15.3	01 19.56 -07 32.7	16.0	-0.91	- 2.4	7.9/10.7	36534	1997 FJ ₄	1999 10 16.7	01 25.08 +10 36.2	17.9	-0.82	- 4.7	0.5/17.3	36350
1998 KY ₆	1999 10 15.3	01 19.61 +15 18.6	19.9	-0.89	- 8.3	2.2/17.6	32333	2665 P-L	1999 10 16.7	01 25.09 +04 31.9	17.9	-0.82	- 7.4	2.0/15.4	36578
1998 FF ₁₆	1999 10 15.3	01 19.62 +05 33.2	17.6	-0.94	- 6.4	1.1/14.5	36528	1998 KZ ₃₈	1999 10 16.7	01 25.14 +27 20.8	17.1	-0.93	- 7.5	6.1/23.2	36536
1981 EO ₁₉	1999 10 15.3	01 19.76 +03 43.6	18.0	-0.73	- 7.4	1.5/13.8	36501	1988 VC ₂	1999 10 16.8	01 25.11 +04 30.5	16.4	-0.82	- 2.2	1.6/15.6	36504
1994 YG	1999 10 15.3	01 19.86 +08 06.6	17.2	-0.80	- 4.3	0.1/15.3	36515	(11907)	1999 10 16.8	01 25.21 +05 31.4	16.8	-0.84	- 4.1	1.1/15.8	36248
1999 SV ₉	1999 10 15.3	01 19.89 +08 28.8	17.0	-0.76	-11.0	0.0/15.4	36481	(11842)	1999 10 16.8	01 25.21 +15 53.6	16.3	-0.99	- 6.4	3.0/18.9	36230
1997 ET ₇	1999 10 15.4	01 19.86 +29 27.1	18.2	-1.01	- 1.0	5.9/21.6	36348	1999 TW	1999 10 16.8	01 25.28 +10 26.4	16.0	-0.95	- 8.7	0.7/17.3	36482
1999 TC ₆	1999 10 15.4	01 19.96 -03 55.4	17.9	-0.90	- 6.2	4.8/11.6	36485	1995 TB ₈	1999 10 16.8	01 25.32 +11 05.9	17.5	-0.88	- 5.5	0.7/17.5	36517
1999 TN ₂	1999 10 15.4	01 19.99 -18 52.5	16.9	-0.83	- 2.8	11.4/06.2	36483	1997 BP ₁	1999 10 16.8	01 25.46 +08 22.6	16.0	-0.91	- 3.5	0.3/16.7	36523
1997 GK ₈	1999 10 15.4	01 20.14 +09 23.8	18.8	-0.75	- 4.2	0.3/15.8	36350	(9041)	1999 10 16.9	01 25.53 +11 10.1	17.4	-1.00	- 7.2	0.9/17.6	32183
1998 KM ₄₁	1999 10 15.5	01 20.27 +00 14.9	17.3	-1.05	- 3.2	3.3/13.3	36536	1995 UX ₂	1999 10 17.0	01 25.88 +06 28.2	17.8	-0.87	- 2.0	0.7/16.3	36517
1998 HT ₁₄₉	1999 10 15.5	01 20.59 +01 51.0	17.9	-0.95	- 1.6	2.4/13.8	32522	(9056)	1999 10 17.0	01 25.91 +10 21.9	16.4	-0.82	- 5.8	0.4/17.4	36498
1998 HS ₁₀₆	1999 10 15.5	01 20.60 -06 44.8	18.5	-0.95	- 4.6	5.5/11.1	32329	1998 FG ₇₇	1999 10 17.0	01 26.09 -02 33.5	16.4	-1.00	- 2.1	5.2/14.0	36530
1997 AR ₆	1999 10 15.5	01 20.64 +22 56.9	17.3	-1.03	- 6.9	6.2/20.1	36345	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 HG ₄₀	1999 10 15.6	01 20.67 +04 54.0	18.8	-1.07	- 4.6	1.4/14.6	36532	1988 RL ₁₂	1999 10 17.1	01 26.40 +09 04.3	17.3	-0.77	- 4.8	0.0/17.1	36327
(9222)	1999 10 15.6	01 20.68 -16 47.9	17.0	-0.74	- 3.0	6.2/07.5	32428	(11876)	1999 10 17.1	01 26.42 +14 24.0	16.6	-0.88	- 8.3	2.2/18.9	36239
1996 YC ₁	1999 10 15.6	01 20.83 +18 22.6	18.2	-0.93	- 5.9	3.2/18.7	36521	2588 P-L	1999 10 17.1	01 26.59 +10 14.1	17.2	-1.09	- 2.7	0.5/17.5	36491
1995 SC ₂	1999 10 15.6	01 20.93 -00 07.4	16.5	-0.81	- 8.4	3.7/12.7	36516	1992 EX ₁₀	1999 10 17.2	01 26.63 +13 44.4	18.6	-0.88	- 3.4	1.5/18.6	36509
1998 DN ₂₃	1999 10 15.7	01 21.14 +07 18.5	20.0	-0.95	- 6.5	0.4/15.4	32060	1999 TO ₃	1999 10 17.2	01 26.93 +11 01.0	17.5	-0.92	- 5.7	0.8/17.9	36483
1503 T-2	1999 10 15.7	01 21.41 +09 37.1	18.3	-0.92	- 6.8	10.7/26.0	36581	(11988)	1999 10 17.3	01 27.19 +04 39.6	16.6	-0.87	- 5.1	1.7/16.0	36270
1999 SQ ₄	1999 10 15.8	01 21.58 +08 14.6	17.3	-0.69	- 8.8	0.1/15.7	36479	1997 GX ₁₈	1999 10 17.4	01 27.36 +11 45.7	18.3	-0.91	- 5.6	1.0/18.2	36525
(8753)	1999 10 15.8	01 21.61 +05 46.2	18.1	-0.96	- 6.6	1.0/15.0	31699	1997 GB ₂₃	1999 10 17.4	01 27.38 +02 58.7	17.8	-0.95	- 4.1	2.4/15.6	36525
1997 FW ₁	1999 10 15.9	01 21.81 +02 38.0	17.4	-0.90	- 1.7	1.9/14.3	36524	1999 TM ₁	1999 10 17.4	01 27.42 +10 01.3	16.3	-1.16	- 1.1	0.4/17.6	36482
1999 TD ₂	1999 10 15.9	01 21.96 -10 53.7	17.1	-1.74	+10.2	10.4/13.6	36482	1981 EB ₂₉	1999 10 17.4	01 27.55 +04 50.8	19.7	-0.84	- 8.2	1.4/16.0	26920
(11923)	1999 10 16.0	01 22.34 -03 08.0	15.3	-0.84	- 5.7	5.6/12.4	36252	2664 T-3	1999 10 17.4	01 27.71 +11 34.7	17.8	-0.99	- 4.2	1.0/18.2	36582
3270 T-2	1999 10 16.0	01 22.41 +03 58.9	17.7	-0.97	- 4.9	1.7/14.7	36581	1999 RT ₃₄	1999 10 17.4	01 27.74 +03 28.7	18.6	-1.02	- 4.7	2.3/15.9	36401
(12139)	1999 10 16.0	01 22.42 +13 17.8	17.8	-1.00	- 5.2	1.6/17.4	36312	1987 DD ₆	1999 10 17.5	01 27.75 +03 45.8	17.8	-0.94	- 6.7	2.0/15.9	36503
1177 T-3	1999 10 16.0	01 22.45 +19 48.7	17.6	-0.77	- 4.5	2.9/19.6	36581	(11781)	1999 10 17.6	01 28.38 -04 08.1	17.0	-0.93	- 5.4	5.3/13.7	36213
1992 HD ₇	1999 10 16.1	01 22.46 -07 03.9	18.6	-0.72	- 5.0	4.0/11.0	36509	1998 KB ₅₅	1999 10 17.6	01 28.45 -00 50.8	16.5	-0.75	- 8.2	3.9/14.2	36537
(11835)	1999 10 16.1	01 22.50 +15 34.5	16.9	-0.94	- 3.1	2.4/18.1	36228	1971 FB	1999 10 17.6	01 28.49 -03 34.2	18.5	-0.86	-15.2	4.4/12.8	36499
1999 RJ ₃	1999 10 16.1	01 22.66 +04 42.1	18.5	-0.78	- 5.0	1.3/14.9	36385	1975 SZ ₁	1999 10 17.7	01 28.58 +06 03.2	17.1	-0.88	- 7.5	1.5/16.7	36499
(9073)	1999 10 16.1	01 22.75 -04 12.8	17.0	-0.96	- 5.9	5.5/12.2	32190	1981 EQ ₃₈	1999 10 17.7	01 28.73 +02 39.0	20.8	-0.81	- 9.1	2.1/15.5	26922
1998 FH ₆₅	1999 10 16.1	01 22.79 +09 44.6	17.4	-0.98	- 6.7	0.4/16.5	36529	1997 FG ₃	1999 10 17.8	01 28.99 +06 59.8	17.7	-0.81	- 6.9	0.8/17.1	36349
2092 T-2	1999 10 16.1	01 22.85 +05 40.9	18.1	-0.83	- 6.7	1.0/15.2	36581	(11878)	1999 10 17.8	01 29.19 +06 16.0	17.3	-0.98	- 4.4	1.1/17.0	36240
1998 FV ₈	1999 10 16.2	01 23.20 +05 03.2	18.4	-0.97	- 5.1	1.4/15.2	36527	1991 JC	1999 10 17.9	01 29.33 +04 47.2	17.9	-1.01	- 4.7	1.7/16.7	36507

2190 P-L	1999 10 17.9	01 29.43 +09 47.2 19.4	-0.74 - 5.5	0.1/18.1	27116	6847 P-L	1999 10 19.2	01 34.30 -01 53.3 19.2	-0.61 - 5.9	3.5/15.3	36493
1992 RS ₃	1999 10 17.9	01 29.51 +09 27.4 17.0	-0.97 - 7.2	0.0/18.0	36510	1998 JA ₂	1999 10 19.2	01 34.31 +08 14.9 17.9	-0.97 - 4.5	0.6/18.8	36535
1997 AF ₃	1999 10 18.0	01 29.57 +07 35.3 17.8	-1.03 - 3.7	0.7/17.5	36522	4104 P-L	1999 10 19.3	01 34.45 +10 40.0 17.3	-0.84 - 9.7	0.4/19.6	36492
1998 KO ₄₂	1999 10 18.0	01 29.82 -09 15.2 19.1	-0.98 - 1.8	6.2/13.1	32334	(9098)	1999 10 19.3	01 34.48 +07 51.5 16.0	-0.85 - 3.6	0.7/18.7	36498
1998 KQ ₄₄	1999 10 18.0	01 29.96 +11 44.3 18.4	-0.91 - 7.5	0.8/18.8	36374	(11952)	1999 10 19.3	01 34.57 +14 58.1 17.0	-1.13 - 3.2	2.0/20.7	36260
1999 TQ ₁₈	1999 10 18.1	01 29.96 +10 29.3 17.1	-0.97 - 3.2	0.4/18.4	36490	(12179)	1999 10 19.3	01 34.72 -05 53.0 17.2	-0.72 - 6.2	5.3/14.2	36323
1981 EA ₁₉	1999 10 18.1	01 30.03 +10 57.5 16.8	-0.93 - 3.7	0.7/18.6	36501	1998 FT ₁₂₁	1999 10 19.3	01 34.89 +06 49.7 17.7	-0.96 - 7.8	1.2/18.5	36364
1995 SK ₃	1999 10 18.1	01 30.07 +03 26.4 17.7	-0.95 - 4.8	2.2/16.4	36516	1999 TP ₁₂	1999 10 19.4	01 34.95 +05 27.9 16.1	-1.12 + 2.2	1.9/18.5	36488
1999 TZ ₅	1999 10 18.1	01 30.30 +10 04.7 17.7	-1.15 - 3.2	0.3/18.3	36484	1995 ST ₅₃	1999 10 19.4	01 35.11 +02 14.3 16.4	-1.15 + 1.5	3.2/17.9	36339
1999 TP ₂	1999 10 18.2	01 30.30 -11 56.6 17.8	-1.05 - 0.8	8.8/12.9	36483	1990 QE ₆	1999 10 19.5	01 35.44 +31 04.3 17.6	-1.28 + 0.8	8.1/25.0	36505
1998 EA ₉	1999 10 18.2	01 30.31 -06 01.5 18.5	-0.92 - 4.3	5.4/13.8	36356	1998 HW ₁₀₁	1999 10 19.5	01 35.45 +08 37.8 17.1	-1.11 - 3.0	0.5/19.2	36534
3854 T-3	1999 10 18.2	01 30.35 +06 11.9 18.3	-0.74 - 4.6	0.9/17.2	25085	1998 KM ₈	1999 10 19.5	01 35.47 +07 24.2 17.5	-0.79 - 7.7	0.8/18.7	36535
(11789)	1999 10 18.2	01 30.43 -10 57.3 17.1	-1.55 + 5.6	9.6/14.9	36216	(11992)	1999 10 19.5	01 35.56 +06 20.6 16.4	-0.88 - 3.2	1.3/18.6	36271
1998 GO ₁	1999 10 18.2	01 30.52 -02 59.9 18.0	-0.93 - 6.9	4.4/14.4	36532	(12039)	1999 10 19.5	01 35.64 +16 51.9 16.7	-0.91 - 3.4	2.2/21.6	36283
1998 KT ₈	1999 10 18.2	01 30.63 -05 36.9 18.3	-0.83 - 4.4	5.0/13.8	36373	(11832)	1999 10 19.7	01 36.14 +03 51.3 16.8	-0.98 - 4.5	2.6/18.0	36227
1994 PQ ₁₁	1999 10 18.3	01 30.68 +14 52.4 17.7	-0.88 - 4.7	1.7/19.9	36514	1998 EW ₁₂	1999 10 19.7	01 36.29 +14 23.9 17.4	-1.14 - 3.4	1.9/21.0	36357
(11991)	1999 10 18.3	01 30.78 +02 11.6 17.1	-0.88 - 3.3	2.5/16.3	36270	1998 HH ₁₂₅	1999 10 19.8	01 36.60 -01 59.1 18.5	-0.95 - 7.6	4.6/16.1	32330
(11586)	1999 10 18.3	01 30.81 +13 55.7 16.1	-0.73 - 8.6	1.5/19.9	35855	(11905)	1999 10 19.9	01 36.74 +09 58.5 16.4	-0.73 -13.3	0.0/19.9	36247
1995 KM ₁	1999 10 18.3	01 30.94 +01 28.5 17.6	-0.99 - 5.3	3.5/16.1	36516	1999 PB ₁	1999 10 19.9	01 36.89 +02 38.1 17.5	-0.82 - 5.5	3.4/17.7	36548
1985 VE	1999 10 18.3	01 31.06 +04 01.3 16.5	-0.93 - 7.3	2.1/16.7	36503	(9034)	1999 10 20.0	01 37.14 +00 21.2 16.6	-0.81 - 7.4	3.4/16.9	32182
1998 HH ₁₁₄	1999 10 18.4	01 31.06 -02 07.6 17.5	-0.93 - 6.0	4.5/14.9	36534	1997 AB ₁₈	1999 10 20.0	01 37.28 +17 41.3 16.6	-1.06 - 2.7	3.1/22.0	36523
(11618)	1999 10 18.4	01 31.15 -01 00.4 17.0	-0.68 - 8.8	3.2/14.7	35863	1994 NW ₁	1999 10 20.0	01 37.51 +00 22.3 18.2	-0.86 - 5.2	2.9/17.2	36514
1995 WD ₃₂	1999 10 18.4	01 31.47 +04 19.9 18.3	-0.78 - 5.0	1.6/16.9	36518	1995 WF ₃	1999 10 20.1	01 37.74 -00 53.6 17.6	-1.00 - 2.0	3.9/17.2	36518
1993 RC	1999 10 18.5	01 31.50 +01 56.3 18.1	-0.67 - 9.2	2.3/15.8	30782	1989 TY ₄	1999 10 20.1	01 37.81 +02 45.7 17.8	-0.97 - 7.7	3.0/17.9	36505
(11989)	1999 10 18.5	01 31.71 +02 17.3 16.5	-0.88 - 3.3	2.5/16.5	36270	1995 DB ₃	1999 10 20.1	01 37.81 +21 43.5 17.8	-0.97 -19.7	5.1/24.6	25433
1997 GZ ₇	1999 10 18.5	01 31.79 +02 33.3 18.3	-0.86 - 1.0	2.1/16.7	30094	1994 EA ₂	1999 10 20.2	01 37.94 +04 53.4 18.3	-1.02 - 9.4	2.0/18.6	36513
(12082)	1999 10 18.5	01 31.85 +20 12.2 16.5	-1.15 - 0.4	4.4/21.3	36296	(12069)	1999 10 20.2	01 38.03 +01 24.5 15.9	-0.87 - 8.9	4.0/17.4	36291
1995 SK ₂	1999 10 18.5	01 31.87 +13 27.0 17.0	-0.96 - 3.7	1.8/19.7	36516	(8574)	1999 10 20.2	01 38.17 +12 20.2 15.8	-0.96 - 6.5	1.1/21.0	31514
1991 TE ₁	1999 10 18.6	01 31.82 -14 35.3 16.9	-0.96 - 2.2	8.7/11.4	36508	1981 ES ₂₇	1999 10 20.3	01 38.21 +14 59.6 19.5	-1.11 - 3.5	1.7/21.6	36501
1998 KW ₄₇	1999 10 18.6	01 31.88 +09 51.8 16.6	-0.89 - 6.2	0.1/18.7	36536	1999 TX ₆	1999 10 20.3	01 38.22 +11 14.7 16.7	-1.11 + 1.5	0.4/20.5	36486
1999 TS ₈	1999 10 18.6	01 32.09 +13 27.4 17.2	-0.97 - 3.4	1.6/19.7	36486	1991 GF ₉	1999 10 20.3	01 38.33 +05 49.1 17.9	-0.95 - 7.1	1.7/19.0	36507
1997 AC ₁	1999 10 18.6	01 32.09 +08 17.9 17.4	-0.96 - 4.3	0.5/18.3	36522	(8856)	1999 10 20.3	01 38.41 +05 47.1 17.6	-0.97 - 5.2	1.8/19.1	31912
1999 PV ₄	1999 10 18.6	01 32.09 -06 32.1 17.5	-0.74 -13.3	5.8/12.4	36549	1996 XX ₃₁	1999 10 20.3	01 38.51 +24 45.1 16.5	-1.19 - 1.7	5.6/24.2	36521
1998 HN ₁	1999 10 18.7	01 32.24 +12 13.2 17.7	-0.95 -21.7	1.1/19.7	36365	1998 HL ₈₄	1999 10 20.3	01 38.60 +05 17.1 17.8	-0.89 - 7.8	1.9/18.8	36533
(11573)	1999 10 18.7	01 32.27 +13 27.5 16.2	-0.80 - 4.2	1.4/19.9	35851	1999 TX ₁₂	1999 10 20.4	01 38.59 +03 55.5 16.6	-0.83 - 3.2	2.1/18.6	36489
6622 P-L	1999 10 18.7	01 32.34 +05 51.3 17.7	-0.96 - 6.6	1.4/17.6	36492	1998 KZ ₂₆	1999 10 20.4	01 39.03 +04 30.6 17.8	-1.03 - 0.2	2.4/19.1	36373
1997 AA ₁₀	1999 10 18.7	01 32.41 +09 35.3 18.6	-0.89 - 5.9	0.0/18.7	36345	1999 TV ₆	1999 10 20.5	01 39.15 +09 18.0 15.7	-0.89 - 7.7	0.4/20.2	36485
1999 TS ₁	1999 10 18.8	01 32.83 +09 17.3 17.4	-0.96 - 6.9	0.2/18.7	36482	1989 YB ₆	1999 10 20.5	01 39.29 -10 40.7 18.3	-0.71 - 3.9	5.1/13.9	36505
1999 RC ₃₅	1999 10 18.9	01 33.00 +09 01.0 15.7	-0.92 - 1.1	0.2/18.7	36555	1993 FS ₂₄	1999 10 20.5	01 39.39 +14 33.0 18.6	-0.93 - 3.9	1.4/21.8	36512
(8896)	1999 10 18.9	01 33.01 -00 34.0 17.1	-1.00 - 3.4	3.9/16.1	36060	1988 VG ₄	1999 10 20.6	01 39.77 +19 54.1 15.8	-0.78 - 5.2	3.3/23.7	36504
1998 FS ₆₈	1999 10 18.9	01 33.20 +13 54.4 16.9	-1.00 - 7.1	1.7/20.2	36529	(11933)	1999 10 20.7	01 39.73 +18 26.9 16.9	-0.96 - 2.6	2.4/22.9	36255
1999 TR ₁₃	1999 10 18.9	01 33.29 +15 10.3 16.6	-1.12 + 0.4	2.1/20.2	36489	1995 WB ₅	1999 10 20.7	01 40.13 +27 03.0 16.9	-0.85 - 9.5	6.4/26.8	36518
1988 AX ₁	1999 10 18.9	01 33.32 +32 37.5 17.0	-1.06 - 2.8	8.5/25.7	21971	1999 TP ₈	1999 10 20.8	01 40.18 +07 03.7 17.9	-0.98 - 4.4	1.4/19.9	36486
(11967)	1999 10 19.0	01 33.53 +13 58.3 17.1	-0.89 - 4.0	1.4/20.3	36264	(11979)	1999 10 20.8	01 40.28 +10 41.2 17.7	-0.83 -11.1	9.5/10.0	36267
(8761)	1999 10 19.0	01 33.70 +13 53.0 16.7	-1.00 - 6.9	1.6/20.3	31701	1993 FO ₂₃	1999 10 20.9	01 40.50 +08 29.3 17.8	-0.80 - 8.3	0.6/20.3	36333
1999 TR ₁	1999 10 19.1	01 33.77 +08 38.9 17.5	-0.88 - 9.1	0.5/18.7	36482	1998 FM ₇₀	1999 10 20.9	01 40.51 +08 17.2 16.3	-0.99 - 3.8	1.0/20.3	36529
1998 KT ₃₆	1999 10 19.1	01 33.90 +14 51.6 17.7	-1.00 - 6.7	1.9/20.7	36536	(11326)	1999 10 20.9	01 40.76 +21 28.5 16.8	-0.98 - 4.0	4.8/24.1	35572
1999 OB ₃	1999 10 19.1	01 34.02 +25 03.7 16.2	-0.80 - 7.2	5.0/24.5	36382	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 KJ ₃	1999 10 19.1	01 34.11 +08 14.5 18.6	-1.06 - 5.8	0.6/18.7	36516	(11187)	1999 10 20.9	01 40.86 +04 04.7 17.7	-0.88 - 5.3	2.3/19.1	35260
1994 LC	1999 10 19.2	01 34.11 -05 36.5 18.4	-0.87 - 5.2	4.9/14.6	36514	4091 T-2	1999 10 21.0	01 40.94 +04 13.3 17.0	-0.89 - 4.6	2.4/19.2	36494
(12133)	1999 10 19.2	01 34.11 +10 48.2 16.7	-0.84 - 2.7	0.3/19.5	36310	1979 MM ₄	1999 10 21.0	01 40.97 +10 05.1 18.3	-1.02 - 7.2	0.2/20.9	36500

1998 HA ₉₈	1999 10 21.1	01 41.21 +13 34.3 17.1	-1.09	- 0.1	1.2/21.8	36370	1981 ES ₁₆	1999 10 22.5	01 46.53 +15 54.1 19.8	-0.93	- 4.9	1.6/23.9	29093
1981 EA ₃₈	1999 10 21.1	01 41.31 +18 10.3 21.4	-0.81	- 3.9	2.1/23.4	30780	1998 DD ₁₈	1999 10 22.5	01 46.65 -00 21.2 18.0	-0.96	- 6.1	5.0/19.3	36527
2712 P-L	1999 10 21.1	01 41.34 +05 32.1 17.6	-0.87	- 4.8	1.7/19.7	23531	(12030)	1999 10 22.5	01 46.95 -01 32.4 16.4	-0.80	- 5.5	6.4/18.7	36281
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 TK ₅	1999 10 22.6	01 46.89 +12 28.4 16.7	-0.84	-11.3	0.6/23.1	36484
1998 KM ₃₅	1999 10 21.3	01 41.98 -06 40.5 18.5	-0.93	- 0.7	5.3/17.0	36536	1982 JD ₂	1999 10 22.6	01 46.98 +03 31.7 17.9	-1.04	- 5.3	3.0/20.6	36502
(11847)	1999 10 21.3	01 42.00 +25 25.2 17.4	-0.99	- 3.1	4.9/25.5	36232	2054 P-L	1999 10 22.6	01 47.20 +13 33.7 17.8	-0.96	- 7.1	0.9/23.4	36578
(8476)	1999 10 21.3	01 42.05 +05 57.0 16.5	-1.03	- 5.5	2.1/20.0	36498	1998 HH ₅₅	1999 10 22.6	01 47.30 +11 39.5 18.2	-0.98	- 6.0	0.2/22.9	36533
1998 FQ ₅	1999 10 21.3	01 42.22 +05 23.8 17.9	-1.10	- 1.2	2.0/20.1	36527	(11884)	1999 10 22.7	01 47.32 +27 24.8 17.2	-1.10	- 2.0	5.9/27.2	36242
1991 FP	1999 10 21.3	01 42.38 +04 01.2 18.0	-0.67	- 6.3	1.6/19.2	36507	(11961)	1999 10 22.7	01 47.42 +30 41.4 17.2	-1.04	- 3.4	6.4/28.4	36262
(9346)	1999 10 21.4	01 42.43 +03 56.7 16.1	-0.89	- 4.6	3.1/19.5	36061	(8807)	1999 10 22.7	01 47.44 +06 05.2 16.5	-0.97	- 3.9	2.2/21.4	31900
4037 P-L	1999 10 21.4	01 42.73 +17 29.1 16.6	-1.10	- 2.3	2.9/23.2	36579	1999 TF ₁₄	1999 10 22.7	01 47.50 +08 14.1 16.3	-0.95	- 2.6	1.3/22.0	36489
1998 HO ₂₇	1999 10 21.5	01 42.87 -00 38.9 16.1	-0.95	- 3.8	4.8/18.4	32327	1997 FB ₄	1999 10 22.7	01 47.59 +14 21.5 17.8	-0.90	- 1.9	1.0/23.6	36525
1981 EU ₃₈	1999 10 21.5	01 43.02 +10 19.9 17.5	-0.99	- 7.0	0.1/21.5	36502	(11862)	1999 10 22.8	01 47.64 +15 06.0 16.2	-0.96	- 3.1	1.9/23.9	36236
1994 PH ₂₉	1999 10 21.5	01 43.02 +05 44.4 17.8	-0.86	- 4.4	1.6/20.1	36337	(12000)	1999 10 22.8	01 47.70 +16 26.7 17.1	-0.89	- 1.8	1.6/24.2	36272
1998 HT ₁₄₇	1999 10 21.6	01 43.12 +01 33.4 18.0	-0.80	- 9.4	3.1/18.6	36534	(11799)	1999 10 22.8	01 47.97 +14 27.8 16.8	-0.75	- 8.2	1.1/24.0	36218
1998 HQ ₁₉	1999 10 21.6	01 43.23 +11 21.5 16.3	-0.89	-10.7	0.3/21.9	36532	1990 OS ₄	1999 10 22.8	01 48.02 +31 11.2 16.9	-0.96	- 7.0	6.9/29.5	36505
1996 YF ₁	1999 10 21.6	01 43.25 -01 46.4 20.9	-1.12	- 4.5	4.5/18.2	29667	1998 HH ₁₄₇	1999 10 22.9	01 48.12 -00 00.5 18.4	-0.96	- 6.4	4.4/19.7	32755
1986 WZ	1999 10 21.6	01 43.27 +14 18.8 16.4	-0.85	- 5.8	1.4/22.7	36503	1999 TU ₈	1999 10 22.9	01 48.23 +07 23.7 16.7	-0.76	- 3.9	1.1/21.8	36487
(11784)	1999 10 21.6	01 43.30 +08 18.4 16.3	-0.75	- 5.1	0.9/20.9	36214	2239 T-3	1999 10 22.9	01 48.39 +18 49.7 18.0	-0.93	- 4.2	2.5/25.1	36582
1981 EY ₆	1999 10 21.6	01 43.30 +29 02.8 18.0	-0.90	- 3.4	6.7/27.3	26916	1992 PT ₁	1999 10 23.0	01 48.40 +00 22.7 19.5	-1.02	- 6.5	4.2/20.0	31382
(9250)	1999 10 21.6	01 43.35 -00 40.3 18.4	-0.68	- 7.1	2.8/17.9	32435	1998 QZ ₈₅	1999 10 23.0	01 48.40 +55 49.9 19.0	-1.40	- 0.6	10.8/06.6	35712
1998 FZ ₄₆	1999 10 21.6	01 43.37 +15 10.3 18.4	-1.12	- 4.5	1.9/22.9	36359	(8837)	1999 10 23.0	01 48.51 +04 12.8 18.2	-0.98	- 7.0	2.6/21.0	31908
1989 GJ ₄	1999 10 21.6	01 43.51 +13 44.6 17.4	-0.90	- 6.2	1.0/22.6	36504	1998 HY ₃₅	1999 10 23.0	01 48.84 +07 52.7 17.4	-1.03	- 4.5	1.3/22.2	36368
1991 NU ₃	1999 10 21.6	01 43.52 +22 32.9 15.5	-0.91	- 5.7	5.4/25.4	36507	(11649)	1999 10 23.1	01 48.80 +19 25.8 16.1	-1.05	- 3.1	3.8/25.3	35871
(11994)	1999 10 21.7	01 43.79 +05 30.6 16.8	-0.82	- 4.5	1.7/20.2	36271	1992 SY ₁₇	1999 10 23.1	01 48.83 +19 55.9 15.9	-0.97	-11.7	3.9/26.1	36510
1997 EQ ₁₁	1999 10 21.8	01 43.87 -04 43.8 19.3	-0.68	- 7.9	3.8/16.5	30085	(11811)	1999 10 23.1	01 48.89 +14 03.2 17.9	-1.07	- 4.5	1.1/23.9	36222
1994 VX ₁	1999 10 21.8	01 43.91 +05 09.9 17.6	-0.80	- 4.0	1.9/20.2	36338	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 HZ ₁₁₄	1999 10 21.8	01 43.95 -08 40.4 18.0	-0.93	- 4.6	7.2/16.2	32329	(9093)	1999 10 23.2	01 49.26 +19 28.7 16.7	-0.84	-10.5	2.9/26.1	32195
4359 T-3	1999 10 21.8	01 43.97 +02 19.6 18.2	-0.91	- 2.7	3.1/19.6	27929	1997 HY ₆	1999 10 23.2	01 49.34 +04 26.1 17.6	-0.84	- 1.9	2.1/21.4	36352
1998 KX ₄₇	1999 10 21.8	01 44.02 -00 18.3 17.3	-1.02	- 2.7	4.2/19.0	36536	1997 HP ₁₁	1999 10 23.2	01 49.35 +13 25.7 17.4	-0.84	- 4.3	0.7/23.9	36352
(11825)	1999 10 21.8	01 44.11 +07 59.5 15.8	-0.71	- 7.8	0.9/20.9	36225	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 FX ₃₇	1999 10 21.9	01 44.26 +09 28.0 16.7	-0.90	- 3.9	0.5/21.5	36512	1998 HK ₄₅	1999 10 23.4	01 49.99 +18 20.3 17.1	-1.14	- 1.6	2.8/25.1	36533
1998 HB ₄₅	1999 10 21.9	01 44.45 +13 12.9 17.3	-1.12	- 3.6	1.0/22.6	36533	(8738)	1999 10 23.4	01 50.00 +10 29.5 15.5	-0.85	- 4.6	0.4/23.2	31696
1996 AX	1999 10 21.9	01 44.46 +01 27.6 17.5	-0.83	- 4.2	3.2/19.2	26748	1998 KV ₅₀	1999 10 23.4	01 50.07 +05 52.5 18.1	-0.82	- 9.2	1.8/21.7	36375
1993 OR ₉	1999 10 21.9	01 44.60 +07 24.9 17.3	-0.80	- 4.9	1.1/21.0	36512	1985 PH	1999 10 23.4	01 50.27 +36 56.9 16.1	-0.98	- 0.9	11.8/31.5	36326
1171 T-2	1999 10 21.9	01 44.62 +18 34.8 18.2	-0.91	- 2.3	2.4/24.1	31269	1310 T-2	1999 10 23.5	01 50.50 +10 06.1 16.7	-0.92	- 3.3	0.6/23.2	36581
(11541)	1999 10 22.0	01 44.66 +18 53.7 16.1	-0.89	- 9.9	3.6/24.7	35843	1981 EA ₃₂	1999 10 23.5	01 50.53 +18 56.1 18.5	-0.77	- 8.0	2.6/26.1	26921
6617 P-L	1999 10 22.0	01 44.79 +12 53.3 17.4	-1.04	- 2.4	0.8/22.6	36492	(8604)	1999 10 23.5	01 50.58 +02 21.3 15.2	-0.77	- 6.7	4.7/20.7	31664
1997 GF ₉	1999 10 22.1	01 45.07 +09 00.7 18.6	-0.81	-10.0	0.6/21.5	36351	1996 XE ₃₁	1999 10 23.6	01 50.68 +27 00.5 18.2	-0.99	- 6.6	5.2/28.5	36521
1999 TG ₁₄	1999 10 22.1	01 45.34 +07 08.0 16.6	-1.06	- 0.9	1.7/21.3	36489	1999 RM ₄₂	1999 10 23.6	01 50.69 +03 01.5 17.7	-1.08	0.0	3.1/21.7	36408
9509 P-L	1999 10 22.3	01 45.74 +04 10.1 17.2	-0.81	- 9.8	2.6/20.1	36580	1981 EG ₈	1999 10 23.6	01 50.83 +16 34.4 20.8	-0.91	- 5.1	1.5/25.1	26916
1997 AM ₄	1999 10 22.3	01 45.98 -10 45.2 17.9	-0.84	- 4.8	7.2/15.8	36522	(11504)	1999 10 23.6	01 50.84 +25 15.6 15.9	-1.09	- 2.0	6.6/27.2	35834
(9071)	1999 10 22.3	01 45.99 +09 02.6 17.7	-0.80	- 5.0	0.6/21.8	32190	1981 EM ₇	1999 10 23.6	01 50.89 +13 30.4 16.4	-0.89	- 7.6	0.8/24.3	36501
4854 T-1	1999 10 22.3	01 46.10 +10 00.9 16.9	-0.90	- 1.6	0.3/22.1	36580	4220 T-1	1999 10 23.6	01 50.92 +03 37.7 17.1	-0.74	- 7.0	2.4/21.2	36580
1990 QX ₅	1999 10 22.4	01 46.16 +33 05.9 16.1	-1.05	+ 1.6	10.6/28.1	25649	1992 UR ₈	1999 10 23.6	01 50.93 +13 10.2 16.7	-1.09	- 2.6	0.7/24.1	36331
1995 WE ₂₇	1999 10 22.4	01 46.16 +32 56.2 18.2	-0.88	- 4.2	6.3/29.6	32749	1995 UB ₁₅	1999 10 23.6	01 50.98 +13 11.3 18.7	-0.96	- 3.9	0.6/24.1	36518
(8689)	1999 10 22.4	01 46.21 +07 11.3 16.7	-1.00	- 4.5	1.8/21.4	31684	1990 DU ₄	1999 10 23.6	01 51.01 +09 24.8 16.3	-0.94	- 6.9	0.9/23.1	29096
1998 HR ₁₈	1999 10 22.4	01 46.28 +15 50.8 19.2	-1.04	- 4.5	1.8/23.8	36532	1997 HS ₃	1999 10 23.6	01 51.04 +06 42.3 19.5	-0.80	- 5.0	1.5/22.3	30474
1997 BU ₂	1999 10 22.4	01 46.32 +00 08.8 19.6	-0.89	- 4.9	3.4/19.3	32250	(11865)	1999 10 23.6	01 51.10 +19 25.4 16.5	-1.21	- 3.4	3.5/26.0	36237
1998 KU ₅₅	1999 10 22.4	01 46.42 -03 58.9 15.9	-0.80	- 6.1	6.4/17.7	36537	1981 EL ₂₃	1999 10 23.7	01 51.08 +06 30.9 18.1	-0.88	- 6.2	2.0/22.2	26919
1995 UV ₈	1999 10 22.4	01 46.50 +06 47.4 15.8	-0.92	- 3.5	1.9/21.3	36340	1998 KM ₄₆	1999 10 23.7	01 51.31 +07 35.5 16.4	-0.90	- 8.9	1.6/22.5	36536

(9077)	1999 10 23.7	01 51.32 -03 45.2 15.8	-0.73 - 9.2	6.1/18.4	32191
2814 P-L	1999 10 23.7	01 51.34 +15 58.4 19.9	-0.83 - 3.0	1.3/25.0	33324
1998 KW ₅₄	1999 10 23.7	01 51.42 +01 46.2 16.6	-0.71 - 9.4	3.2/20.5	36537
(11987)	1999 10 23.7	01 51.46 -04 26.4 16.6	-0.94 - 1.6	5.2/19.7	36269
1994 PN ₅	1999 10 23.8	01 51.53 +07 12.3 17.5	-0.84 - 5.3	1.5/22.6	36514
1995 VJ	1999 10 23.8	01 51.55 +10 12.8 17.4	-0.95 - 3.7	0.5/23.5	36518
1998 HM ₂₆	1999 10 23.8	01 51.60 +06 01.0 16.9	-0.83 - 7.3	2.3/22.2	36532
1992 EV ₃₂	1999 10 23.9	01 51.98 +11 25.7 17.1	-0.82 - 6.3	0.0/23.9	36509
(12003)	1999 10 23.9	01 52.25 +16 56.2 16.6	-0.83 - 1.8	1.6/25.4	36273
(11850)	1999 10 24.0	01 52.28 +19 46.8 16.8	-1.04 - 1.1	2.8/26.0	36233
6193 P-L	1999 10 24.0	01 52.39 +04 54.2 18.3	-0.79 - 9.9	2.4/21.8	36579
(9227)	1999 10 24.0	01 52.42 +16 08.8 17.3	-0.81 - 3.8	1.4/25.4	32430
1993 FW ₃₇	1999 10 24.1	01 52.89 +03 32.2 17.8	-0.82 - 8.0	2.6/21.6	36512
(9467)	1999 10 24.1	01 52.92 +09 16.9 17.3	-0.77 - 6.0	0.7/23.5	36499
1996 YG ₁	1999 10 24.2	01 52.95 -05 34.4 18.4	-1.00 - 1.3	6.2/20.0	36521
1994 PB ₁₄	1999 10 24.2	01 53.05 +06 08.7 16.9	-0.83 - 6.1	1.8/22.6	36514
1998 KG ₂	1999 10 24.2	01 53.38 +27 09.9 19.0	-0.94 - 7.9	4.7/29.4	36535
(12049)	1999 10 24.3	01 53.33 +13 08.1 16.5	-0.85 - 4.2	0.5/24.7	36286
1992 ET ₁₄	1999 10 24.3	01 53.52 +12 43.5 16.9	-0.84 - 5.8	0.4/24.7	36329
(8669)	1999 10 24.3	01 53.67 +04 27.7 16.7	-0.90 - 7.4	2.8/22.2	31679
(11785)	1999 10 24.4	01 53.72 +04 04.3 16.1	-0.89 - 2.7	2.5/22.4	36215
1998 KW ₄	1999 10 24.4	01 53.80 +12 01.5 18.6	-0.97 - 7.2	0.1/24.5	36535
(11783)	1999 10 24.4	01 53.89 +10 43.7 15.9	-0.76 - 4.8	0.4/24.2	36214
1996 YF	1999 10 24.4	01 54.05 +02 46.2 16.3	-1.04 - 2.9	4.1/22.2	36521
1173 T-2	1999 10 24.4	01 54.05 +19 48.9 17.8	-0.93 - 1.8	2.7/26.6	36580
(9394)	1999 10 24.4	01 54.07 +15 22.3 17.4	-0.90 - 4.1	1.2/25.5	36499
1998 FF ₅₇	1999 10 24.5	01 54.31 +09 30.8 18.2	-1.02 - 6.3	0.9/23.9	36529
(9100)	1999 10 24.5	01 54.44 -00 12.8 17.3	-0.95 - 3.9	4.0/21.3	32196
1999 TZ ₁₄	1999 10 24.7	01 55.21 +03 42.8 16.2	-0.81 -10.4	4.0/22.1	36489
1998 HV ₁₀₁	1999 10 24.7	01 55.27 +19 19.9 18.6	-0.92 - 6.3	2.7/27.1	36534
(8897)	1999 10 24.7	01 55.27 +08 39.7 16.6	-0.88 - 8.5	1.3/23.8	36498
1992 SM ₂₆	1999 10 24.8	01 55.38 +08 47.2 17.5	-1.09 - 0.3	1.4/24.2	36331
1978 UJ ₅	1999 10 24.8	01 55.51 +15 22.6 17.3	-0.97 - 5.1	1.6/25.9	20806
1998 HH ₄	1999 10 24.8	01 55.52 +00 58.3 17.4	-1.00 - 1.4	4.8/22.2	36366
5078 T-3	1999 10 24.9	01 55.71 +01 10.2 17.0	-0.82 - 1.9	3.2/22.1	30294
1998 HY ₃₁	1999 10 24.9	01 55.82 +14 20.5 17.9	-1.03 - 6.8	1.0/26.0	36532
1998 KH ₃₄	1999 10 24.9	01 56.05 +03 42.5 18.8	-0.97 - 5.6	3.0/22.7	32334
4266 T-1	1999 10 25.0	01 56.45 +08 14.9 20.1	-0.94 - 5.4	1.2/24.1	32092
1993 FZ ₂₁	1999 10 25.1	01 56.62 +14 34.8 17.8	-0.96 - 4.1	0.9/25.9	36511
1997 CK ₂₉	1999 10 25.1	01 56.68 +14 03.8 16.5	-1.01 - 4.9	1.0/25.7	36524
(11867)	1999 10 25.1	01 56.70 +21 50.8 16.1	-0.97 - 6.4	4.8/28.2	36237
1997 DQ	1999 10 25.1	01 56.78 +20 10.3 17.2	-1.14 - 1.1	3.6/27.1	36347
5727 T-3	1999 10 25.1	01 56.81 -02 47.3 18.9	-0.94 - 1.5	4.6/21.5	34000
1990 KR	1999 10 25.2	01 56.78 +02 56.3 18.2	-0.86 - 7.9	3.0/22.4	36505
1991 JD	1999 10 25.2	01 56.85 +11 12.4 17.3	-1.05 - 4.3	0.3/25.0	36507
(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 17.1	-0.93 - 7.1	1.9/26.7	36578
3105 T-1	1999 10 25.5	01 57.91 +15 06.0 18.0	-0.98 - 4.9	1.1/26.3	36580
1999 TU ₁₃	1999 10 25.5	01 57.92 +10 50.8 16.7	-1.11 - 0.7	0.6/25.2	36489
1991 FN ₂	1999 10 25.5	01 58.15 +07 16.2 17.6	-0.78 - 5.0	1.5/24.1	36507
1998 DB ₃₄	1999 10 25.5	01 58.33 +05 11.3 18.3	-0.98 - 5.8	2.3/23.7	36527

1999 TW ₉	1999 10 25.5	01 58.36 +15 43.1 17.6	-0.95 - 4.4	1.7/26.6	36487
1992 OM ₆	1999 10 25.6	01 58.45 +06 42.0 17.7	-1.00 - 6.6	2.3/24.1	36510
1998 FL ₄₉	1999 10 25.6	01 58.53 +15 00.2 16.9	-1.09 - 5.1	1.2/26.4	36528
1997 AG ₁₃	1999 10 25.6	01 58.75 +04 37.8 17.5	-1.04 - 3.2	2.9/23.8	36522
(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 16.3 17.6	-0.82 - 8.9	4.7/21.4	36534
1998 HF ₃₀	1999 10 25.7	01 58.93 +05 16.0 17.5	-0.96 - 4.9	3.0/23.9	36367
1988 TS ₁	1999 10 25.7	01 58.99 +10 25.2 16.4	-0.76 - 4.8	0.7/25.3	36504
1980 FZ ₂	1999 10 25.8	01 59.19 -00 51.3 18.1	-0.70 - 7.0	3.7/21.7	36500
1998 KS ₄	1999 10 25.8	01 59.29 +00 09.9 16.6	-0.99 - 1.3	5.3/22.9	36372
(11873)	1999 10 25.8	01 59.34 -03 04.8 15.8	-0.97 - 3.6	7.1/21.7	36239
1998 KR ₁	1999 10 25.9	01 59.46 +03 24.3 16.2	-1.06 + 1.1	3.5/24.1	36371
1995 XK ₁	1999 10 25.9	01 59.66 +30 59.7 16.5	-0.86 - 8.0	7.9/01.4	36519
1994 PC ₂₉	1999 10 25.9	01 59.68 -00 40.4 18.1	-0.83 - 4.8	4.4/22.3	36514
(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	36498
1992 YJ ₂	1999 10 26.1	02 00.51 -01 05.9 16.2	-0.97 - 1.8	6.1/22.8	36511
1997 EM ₃₆	1999 10 26.1	02 00.57 +01 40.7 17.6	-0.95 - 7.2	4.6/23.0	36349
1998 OP ₁₂	1999 10 26.1	02 00.62 +10 30.7 19.8	-0.76 - 4.0	0.4/25.7	32757
1990 VE	1999 10 26.2	02 00.66 +03 56.5 15.8	-0.91 - 1.7	3.4/24.1	36328
1998 JQ ₂	1999 10 26.2	02 00.72 +00 14.5 17.3	-0.83 - 6.1	4.6/22.7	36535
1997 EQ ₃₀	1999 10 26.3	02 01.08 -05 04.3 18.4	-0.86 - 3.2	5.3/21.6	36524
(11795)	1999 10 26.3	02 01.22 +11 45.9 16.7	-0.84 - 4.9	0.2/26.2	36217
1999 RD ₃₅	1999 10 26.3	02 01.33 +05 45.0 16.2	-0.63 -28.0	2.9/23.5	36555
(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
(12035)	1999 10 26.4	02 01.72 +14 31.1 17.7	-0.98 - 5.0	0.8/27.1	36282
(8885)	1999 10 26.5	02 01.81 -04 12.1 16.9	-0.86 - 8.5	6.5/21.2	31919
(11941)	1999 10 26.5	02 01.95 -29 10.6 16.6	-1.52 + 8.8	19.6/20.7	36257
1981 EQ ₃₀	1999 10 26.6	02 02.13 +25 44.4 16.7	-1.21 - 0.4	5.5/29.8	36501
1992 EM ₈	1999 10 26.6	02 02.21 -00 07.9 17.1	-0.85 - 3.5	4.9/23.2	36509
1998 LA	1999 10 26.6	02 02.40 +04 26.2 18.8	-0.90 - 4.6	2.5/24.5	36537
(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 02.51 +06 46.8 17.1	-0.99 - 3.6	2.4/25.2	36527
1999 RS ₄₄	1999 10 26.6	02 02.55 +06 46.9 16.4	-0.91 + 0.9	2.9/25.4	36410
1998 OW ₁₁	1999 10 26.7	02 02.51 -05 04.3 18.6	-0.84 - 2.0	6.0/22.0	36377
1994 PK ₅	1999 10 26.8	02 02.91 +26 47.3 16.9	-1.00 - 3.2	5.0/30.7	36514
(8671)	1999 10 26.8	02 03.08 +18 00.7 16.9	-0.97 - 6.6	2.3/28.5	31680
1997 CW ₁	1999 10 26.8	02 03.23 -01 26.2 18.5	-0.95 - 4.4	5.2/23.0	36346
(12174)	1999 10 26.8	02 03.27 +06 04.8 16.3	-0.76 -10.6	2.4/24.7	36322
1998 FF ₇₇	1999 10 26.9	02 03.35 +01 18.1 18.2	-1.00 - 4.8	4.6/24.0	36362
1997 AV	1999 10 27.0	02 03.72 +20 19.0 16.5	-1.05 - 4.4	3.5/29.1	36521
1995 UV ₁₆	1999 10 27.0	02 03.77 +05 20.0 18.1	-0.96 - 3.1	2.6/25.2	36518
(12167)	1999 10 27.0	02 04.01 +17 40.7 16.5	-1.19 - 0.6	2.2/28.2	36320
1998 HK ₉₄	1999 10 27.0	02 04.09 +14 34.9 16.5	-0.93 - 6.1	0.9/27.7	36370
1992 WC ₉	1999 10 27.1	02 04.39 +06 50.7 16.4	-1.07 - 1.6	2.5/25.8	36511
1991 UA	1999 10 27.2	02 04.57 +15 06.9 16.6	-0.70 - 3.1	0.8/27.9	36508
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
1981 EN ₁₃	1999 10 27.3	02 04.82 +18 30.0 17.2	-1.04 - 6.8	2.3/29.0	36325

1994 EQ ₁	1999 10 27.3	02 04.91 +08 01.1	15.9	-0.97	- 7.1	2.0/26.0	36513
1989 CP ₂	1999 10 27.4	02 05.23 +24 44.2	18.0	-0.96	- 6.2	3.9/31.0	36504
1998 MR ₁₆	1999 10 27.4	02 05.32 +27 32.8	20.1	-0.87	- 3.9	4.8/31.7	32973
1997 GL ₂₁	1999 10 27.4	02 05.52 +14 05.6	17.7	-0.84	- 4.0	0.4/27.9	36351
1999 SR ₉	1999 10 27.5	02 05.72 +04 38.3	17.1	-0.98	- 7.5	3.6/25.2	36481
(11918)	1999 10 27.5	02 05.98 +04 53.1	16.0	-0.79	- 9.1	3.8/25.0	36251
1990 VF ₈	1999 10 27.5	02 06.02 +15 13.4	16.0	-1.01	- 0.6	1.0/28.2	36506
1131 T-2	1999 10 27.6	02 05.98 +16 01.3	20.0	-1.01	- 5.2	1.2/28.5	36123
(12097)	1999 10 27.6	02 06.05 +00 57.7	16.4	-0.91	- 5.0	5.1/24.4	36300
1992 DH ₃	1999 10 27.6	02 06.21 +21 20.3	19.1	-0.89	- 3.5	2.5/30.0	36509
1988 PW ₂	1999 10 27.6	02 06.23 +03 04.2	18.3	-0.75	- 6.3	2.9/24.7	36503
(11861)	1999 10 27.7	02 06.56 +01 52.9	14.9	-0.86	- 0.7	3.5/25.1	36236
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	16.0	-0.84	-20.9	0.8/27.0	36532
1981 DX ₂	1999 10 27.8	02 07.18 +22 28.6	18.3	-0.82	- 5.4	2.8/30.8	36500
1992 UU ₅	1999 10 27.9	02 07.26 +08 11.9	15.3	-0.93	- 2.2	2.4/26.8	36510
1991 RA ₄	1999 10 27.9	02 07.33 +12 53.6	17.4	-0.90	- 7.6	0.0/27.9	36508
1997 CK ₁	1999 10 27.9	02 07.50 +06 45.6	19.1	-0.91	- 4.2	1.9/26.3	32251
1998 KB	1999 10 27.9	02 07.59 +12 18.5	18.0	-0.93	- 5.3	0.2/27.8	36371
1996 XC ₁₅	1999 10 28.0	02 07.52 +11 56.5	16.7	-1.03	- 5.1	0.4/27.8	36344
1997 GP ₃₃	1999 10 28.0	02 07.66 +10 32.9	17.6	-0.86	- 5.7	0.9/27.4	36525
1998 HE ₁₂₃	1999 10 28.0	02 07.88 +02 16.3	17.8	-1.02	- 2.3	4.2/25.5	36371
1991 VE ₃	1999 10 28.1	02 08.12 +02 34.3	15.8	-0.78	- 3.8	5.3/25.2	36509
1995 WG ₂	1999 10 28.1	02 08.28 +22 17.1	16.7	-0.89	- 7.5	3.1/31.0	36518
1995 WK ₁	1999 10 28.2	02 08.61 +11 34.2	16.4	-0.97	- 2.7	0.6/27.9	36341
1998 GF	1999 10 28.2	02 08.75 +12 05.6	16.2	-1.74	+ 8.1	0.4/28.2	36531
1990 ES ₄	1999 10 28.3	02 08.78 +14 41.0	18.2	-0.97	- 5.4	0.6/28.8	36505
1997 FK ₃	1999 10 28.3	02 09.02 +03 10.8	17.9	-0.76	- 9.2	3.7/25.2	36350
1999 TE ₂	1999 10 28.3	02 09.04 +11 32.3	17.0	-1.08	- 2.1	0.7/28.0	36483
1997 CC ₂₀	1999 10 28.3	02 09.11 +06 37.9	18.1	-0.85	- 4.5	2.0/26.6	36524
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	16.3	-1.02	- 4.5	8.6/03.5	36500
1991 VD ₁	1999 10 28.4	02 09.46 +14 20.9	16.2	-1.21	+ 2.9	0.5/28.7	36508
1992 BT ₂	1999 10 28.5	02 09.43 -08 57.5	16.1	-0.82	- 6.4	8.2/21.4	36509
1998 HQ ₁₀₀	1999 10 28.5	02 09.87 +09 13.3	17.6	-1.07	- 4.6	1.6/27.6	36534
1992 SB ₁₃	1999 10 28.5	02 09.88 +11 37.8	16.2	-1.07	- 3.7	0.6/28.2	36510
1998 FY ₃₅	1999 10 28.6	02 09.85 +17 13.2	17.2	-1.18	- 3.3	1.7/29.6	36528
2155 P-L	1999 10 28.6	02 09.88 +14 32.8	17.2	-0.82	- 4.3	0.5/29.0	36578
1992 ES ₆	1999 10 28.6	02 10.07 -00 32.0	16.9	-0.84	- 3.4	5.9/24.9	36509
(9226)	1999 10 28.7	02 10.21 +07 49.9	16.8	-0.84	- 4.2	1.8/27.3	32429
1991 PL ₁₃	1999 10 28.7	02 10.64 +15 35.0	17.2	-0.98	- 5.7	1.0/29.5	36507
(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 11.27 +04 29.4	17.2	-0.99	- 5.0	3.3/26.6	36513
1999 SS ₁₁	1999 10 28.9	02 11.31 +05 39.8	16.9	-0.92	- 2.8	3.3/27.1	36481
1999 SF ₂	1999 10 28.9	02 11.37 +06 13.4	17.0	-0.87	- 4.9	3.3/27.0	36478
1998 HU ₃₂	1999 10 29.0	02 11.38 +12 48.6	17.5	-1.06	- 4.1	0.2/28.9	36367
(11999)	1999 10 29.0	02 11.45 +26 53.8	17.7	-1.05	- 2.4	4.8/01.4	36272
(11971)	1999 10 29.0	02 11.53 +03 36.5	16.0	-0.97	+ 1.4	3.7/27.0	36265
1995 WM ₃	1999 10 29.0	02 11.62 +11 43.1	17.8	-0.93	- 4.1	0.6/28.7	36518
1978 RT ₆	1999 10 29.1	02 12.07 +05 19.0	18.4	-0.99	- 6.6	3.1/27.0	36500

1989 CR	1999 10 29.2	02 12.36 -24 12.8	18.6	-0.94	- 1.4	10.6/19.0	36504
(11511)	1999 10 29.2	02 12.40 +35 16.4	15.9	-0.95	- 5.5	8.9/05.1	35836
1994 CO ₁	1999 10 29.2	02 12.51 +09 54.5	18.0	-0.99	- 6.3	1.3/28.3	36513
1985 RP	1999 10 29.2	02 12.51 -00 39.4	16.0	-0.70	- 9.1	7.2/24.5	36502
(8928)	1999 10 29.2	02 12.60 +10 24.6	16.1	-1.01	- 2.4	1.3/28.6	31929
1998 OW ₅	1999 10 29.3	02 12.96 -07 38.8	17.9	-0.73	- 4.5	5.9/23.0	36377
1983 TX	1999 10 29.4	02 13.01 +06 54.6	16.6	-0.74	- 7.6	2.2/27.4	36502
1993 TN ₂₄	1999 10 29.4	02 13.07 +10 45.0	17.7	-0.74	- 3.8	0.7/28.7	36513
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	36529
2613 P-L	1999 10 29.5	02 13.61 +10 33.0	17.9	-0.76	- 5.7	1.0/28.7	36578
(11787)	1999 10 29.6	02 13.74 +30 12.8	15.4	-1.17	- 0.2	6.7/02.6	36215
1999 TJ ₆	1999 10 29.6	02 13.81 +12 52.1	17.2	-0.80	- 3.7	0.2/29.5	36485
1993 FX ₄₀	1999 10 29.6	02 13.95 +01 49.8	18.3	-0.81	- 7.7	3.8/26.1	36512
1998 DZ ₁₃	1999 10 29.6	02 14.00 +10 44.6	18.0	-1.05	- 5.0	1.1/29.0	36526
1981 RF ₂	1999 10 29.7	02 14.37 +26 21.3	16.7	-0.79	- 6.5	3.5/02.8	36502
1998 FQ ₁₂₁	1999 10 29.7	02 14.41 +13 41.2	16.8	-1.05	- 5.5	0.1/29.8	36531
1997 GN ₂₂	1999 10 29.8	02 14.66 +14 40.8	18.3	-0.83	- 4.3	0.4/30.2	36351
(12175)	1999 10 29.8	02 14.90 +10 36.0	15.8	-0.82	- 3.0	1.1/29.1	36322
1995 UQ ₁₆	1999 10 29.9	02 14.91 +07 13.5	17.4	-0.95	- 3.5	2.2/28.3	36518
1998 BK ₂₆	1999 10 29.9	02 14.92 +04 46.0	18.3	-1.00	- 6.5	3.5/27.5	32314
(8670)	1999 10 29.9	02 15.13 +16 07.9	16.8	-1.02	- 5.3	0.9/31.0	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
(12025)	1999 10 30.0	02 15.30 +18 38.9	17.5	-1.06	- 4.5	1.9/31.3	36279
(11818)	1999 10 30.0	02 15.38 +14 48.1	17.3	-0.83	- 4.4	0.4/30.4	36224
1230 T-1	1999 10 30.0	02 15.42 +17 15.9	18.2	-1.08	- 5.1	1.4/31.0	36580
1998 HN ₄₉	1999 10 30.1	02 15.78 +13 33.6	18.1	-0.99	- 6.6	0.0/30.1	36369
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 52.6	15.3	-1.15	- 0.2	1.2/29.6	36499
1998 FB ₄₉	1999 10 30.2	02 16.03 +17 31.2	17.3	-1.11	- 5.3	1.7/31.2	36528
1990 KD	1999 10 30.3	02 16.43 -07 25.0	18.3	-0.96	- 1.9	7.1/25.3	36505
1978 XW	1999 10 30.3	02 16.75 +10 49.1	16.4	-0.83	- 4.0	1.0/29.6	36500
1998 KP ₅₄	1999 10 30.3	02 16.76 -08 11.1	17.2	-0.91	- 0.5	8.1/25.3	36536
1993 XQ ₁	1999 10 30.3	02 16.79 +12 47.2	16.4	-1.02	- 6.7	0.4/30.1	36513
1980 TK ₆	1999 10 30.5	02 17.18 +15 27.9	15.9	-0.89	- 8.7	0.7/31.0	36500
1998 HO ₁₀₂	1999 10 30.5	02 17.18 +13 40.2	19.2	-1.01	- 6.9	0.0/30.5	35988
(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 17.99 +13 14.8	17.3	-0.80	- 2.8	0.2/30.6	36512
1999 OH ₃	1999 10 30.7	02 18.00 +28 18.7	16.6	-0.85	-13.0	5.4/05.0	36548
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	17.1	-0.97	- 1.4	7.3/27.3	36521
1998 HH ₈₀	1999 10 30.7	02 18.33 +17 33.4	15.6	-1.11	- 0.6	1.9/31.6	36533
1977 JA	1999 10 30.9	02 18.87 +27 34.9	19.5	-1.03	-12.1	4.5/04.4	36499
1995 WN ₄	1999 10 30.9	02 19.16 +05 10.0	17.8	-0.87	- 3.6	3.8/28.7	36341
1998 MR ₃₃	1999 10 31.0	02 19.32 +06 06.6	18.2	-0.80	- 3.1	2.2/29.0	36377
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 19.59 +16 04.0	17.9	-0.98	- 5.2	0.7/31.7	36521
1981 KJ	1999 10 31.1	02 19.66 +14 30.2	16.8	-0.93	- 0.4	0.2/31.3	36502
1995 OD	1999 10 31.2	02 19.96 +16 16.8	17.5	-1.04	- 5.0	0.9/31.8	36516
1999 RC ₃₆	1999 10 31.2	02 20.18 +22 43.2	17.2	-0.91	- 1.5	2.7/02.4	36402
1996 XG ₁₉	1999 10 31.2	02 20.32 +08 26.9	16.9	-1.02	- 6.0	2.3/29.8	36521

(12141)	1999 10 31.2	02 20.37 +16 41.7	17.1	-0.93	- 4.2	1.0/32.0	36312	3086 T-2	1999 11 01.7	02 26.16 +11 28.1	17.1	-0.95	- 2.8	1.1/01.1	36581
1998 HL ₈₀	1999 10 31.3	02 20.32 +14 20.1	18.3	-1.00	- 7.0	0.1/31.4	36533	1990 SN ₈	1999 11 01.8	02 26.34 +11 58.9	17.0	-0.94	- 3.2	0.9/01.2	36506
1474 T-2	1999 10 31.3	02 20.40 +14 37.3	17.6	-1.07	- 6.9	0.3/31.5	36581	3123 T-3	1999 11 01.8	02 26.46 +08 45.6	18.3	-0.75	- 5.5	1.7/31.2	24238
1991 VY ₅	1999 10 31.4	02 20.69 +03 55.3	17.1	-0.85	- 3.6	4.8/28.7	36329	1994 RN ₇	1999 11 01.8	02 26.54 +19 06.6	17.9	-0.92	- 3.7	1.6/03.1	36515
1997 AM ₅	1999 10 31.4	02 20.84 +16 09.3	16.9	-1.08	- 3.7	0.8/31.9	36522	1981 EO ₃₈	1999 11 01.9	02 26.67 +04 22.3	17.3	-0.84	- 8.8	3.8/29.9	36502
1999 TL ₁₁	1999 10 31.4	02 21.09 +09 53.8	16.7	-0.80	-13.5	1.8/30.1	36487	1998 ER ₁₄	1999 11 01.9	02 26.70 +06 37.7	17.1	-1.12	- 3.0	3.6/31.2	32316
1991 VE ₂	1999 10 31.5	02 21.13 +18 46.3	15.8	-0.85	-11.9	1.8/02.1	36508	(11798)	1999 11 01.9	02 26.86 +33 32.7	16.1	-1.21	+ 1.4	8.1/05.8	36218
1991 PW ₁₁	1999 10 31.5	02 21.28 +07 55.1	17.0	-0.93	- 7.2	2.3/29.8	36507	(12136)	1999 11 01.9	02 26.94 +34 48.4	16.7	-1.13	- 2.8	7.2/07.4	36311
2806 P-L	1999 10 31.5	02 21.52 +21 02.9	18.6	-1.11	- 1.1	3.1/02.2	36579	1997 AD ₁₃	1999 11 02.0	02 27.00 -01 04.8	17.7	-0.90	- 2.6	4.5/29.2	36522
1998 HJ ₁₂₄	1999 10 31.6	02 21.60 +06 04.7	19.5	-0.94	- 6.4	2.6/29.5	32330	(11855)	1999 11 02.0	02 27.15 +09 37.4	16.4	-0.89	- 5.1	2.5/31.8	36234
3092 P-L	1999 10 31.7	02 22.17 +26 11.0	18.0	-1.01	- 5.6	4.2/04.2	36579	(8530)	1999 11 02.0	02 27.41 +12 04.6	15.8	-1.14	- 2.5	1.1/01.6	31503
1998 MF ₃₂	1999 10 31.7	02 22.23 -00 52.5	16.7	-0.88	- 2.4	5.1/28.0	36537	1998 HT ₉₅	1999 11 02.1	02 27.40 +08 27.6	16.5	-0.99	- 4.1	2.3/31.6	36533
1997 JE ₁₀	1999 10 31.8	02 22.28 +02 32.1	16.8	-0.86	- 1.5	3.6/29.0	36525	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 HH ₁₄₈	1999 10 31.8	02 22.42 +15 02.6	19.3	-1.03	- 4.8	0.3/01.1	32331	1994 CV ₉	1999 11 02.1	02 27.56 +03 26.8	18.3	-0.98	- 5.1	4.2/30.3	36513
1991 VB ₅	1999 10 31.8	02 22.48 +03 52.3	16.1	-0.78	-11.9	4.1/28.4	36509	1998 FB ₆	1999 11 02.1	02 27.73 +08 20.5	18.8	-1.04	- 5.6	2.4/31.6	36527
(11475)	1999 10 31.8	02 22.58 +10 29.4	16.0	-1.16	- 0.4	1.6/31.1	35826	(11859)	1999 11 02.1	02 27.79 +00 18.8	17.1	-1.00	- 2.8	6.2/29.9	36235
1994 CM ₁₁	1999 10 31.8	02 22.72 +14 05.9	17.8	-1.02	- 4.4	0.0/31.9	36513	1997 AH ₁	1999 11 02.2	02 27.85 +02 43.8	18.5	-0.94	- 3.1	4.0/30.4	30786
1998 HE ₃₈	1999 10 31.9	02 22.76 +16 04.5	17.0	-1.02	- 6.8	0.7/01.4	36368	(9228)	1999 11 02.2	02 28.02 +15 49.9	16.5	-0.85	- 2.5	0.4/02.6	32430
1995 SM ₃	1999 11 01.0	02 23.02 +26 22.4	17.3	-1.14	- 2.1	4.9/03.8	36516	1997 AX ₅	1999 11 02.3	02 28.16 +26 15.1	17.1	-1.00	- 5.0	5.8/05.4	36344
1992 SQ ₂₃	1999 11 01.0	02 23.13 +14 44.9	15.9	-0.96	-11.4	0.2/01.2	36510	(11838)	1999 11 02.3	02 28.16 +07 31.5	18.5	-0.96	- 4.4	2.4/31.6	36229
(9446)	1999 11 01.0	02 23.14 +12 26.4	18.3	-0.76	- 4.0	0.5/31.5	32640	1995 UB ₂₁	1999 11 02.3	02 28.25 +12 20.1	18.0	-0.93	- 7.3	0.8/01.7	36518
1995 UP ₇	1999 11 01.0	02 23.27 +07 31.3	16.1	-0.86	- 6.7	2.7/30.1	36517	(8855)	1999 11 02.3	02 28.28 +10 21.9	18.4	-0.99	- 6.6	1.5/01.2	31912
1992 RH ₇	1999 11 01.1	02 23.54 +14 44.8	16.4	-1.12	- 2.5	0.2/01.2	36510	1994 WU	1999 11 02.3	02 28.55 +25 01.0	17.5	-0.80	- 5.8	2.7/05.4	36515
(11977)	1999 11 01.1	02 23.81 +24 11.0	16.4	-1.01	- 6.8	4.3/04.0	36267	1992 PE ₃	1999 11 02.4	02 28.57 +18 34.3	16.1	-0.94	- 9.4	1.9/03.6	36510
1995 SX ₂	1999 11 01.2	02 23.96 +13 50.7	16.5	-1.05	- 3.0	0.2/01.1	36516	(12001)	1999 11 02.4	02 28.58 -04 07.4	18.1	-0.73	- 5.1	5.7/28.0	36273
1981 EQ ₇	1999 11 01.3	02 24.26 +27 14.0	19.3	-0.89	- 4.0	4.0/04.9	26916	1992 QW	1999 11 02.4	02 28.59 +22 04.4	16.7	-1.17	- 1.6	3.6/04.1	36510
5332 T-2	1999 11 01.3	02 24.27 +19 43.6	18.2	-0.81	- 7.1	1.7/02.9	36581	1995 SL ₃	1999 11 02.4	02 28.67 +15 12.7	18.4	-1.01	- 5.2	0.2/02.6	36516
1996 YY	1999 11 01.3	02 24.36 +28 42.4	17.6	-1.00	- 5.4	4.3/05.4	36521	1998 QC ₇	1999 11 02.4	02 28.76 -01 24.8	18.1	-0.77	- 4.2	4.8/29.1	32529
(9109)	1999 11 01.3	02 24.47 +01 31.9	16.5	-0.91	- 6.2	5.6/28.8	32198	1995 VM	1999 11 02.4	02 28.84 +05 04.0	17.1	-1.00	- 0.6	3.1/31.4	36518
1998 NF	1999 11 01.3	02 24.50 +10 40.2	18.5	-0.99	- 3.9	1.3/31.5	33078	1998 FT ₆₅	1999 11 02.5	02 29.11 +22 58.5	17.8	-1.20	- 3.4	3.4/04.5	36529
1997 GH ₂₇	1999 11 01.3	02 24.56 +16 05.7	17.2	-1.02	- 3.4	0.7/01.8	36525	1998 KZ ₃₀	1999 11 02.5	02 29.13 +14 09.5	18.2	-0.98	- 5.5	0.2/02.4	36535
(11810)	1999 11 01.3	02 24.59 +13 04.1	18.3	-0.79	- 5.1	0.4/01.0	36221	1990 VS ₅	1999 11 02.5	02 29.14 -01 56.1	16.0	-0.90	- 1.1	6.7/29.6	36506
(9347)	1999 11 01.4	02 24.59 +09 25.8	17.3	-0.97	- 4.3	1.7/31.2	32617	1997 GP ₃₆	1999 11 02.5	02 29.19 +13 31.9	17.2	-0.86	- 7.6	0.4/02.2	36525
1998 HB ₉₉	1999 11 01.4	02 24.69 +11 00.8	18.2	-0.98	- 7.7	1.3/31.5	36534	(12021)	1999 11 02.5	02 29.28 +07 02.2	16.5	-1.02	- 3.0	3.7/31.8	36279
1998 FL ₆₆	1999 11 01.4	02 24.72 +14 48.0	16.9	-1.06	- 4.9	0.2/01.5	36529	(9137)	1999 11 02.6	02 29.65 +10 59.7	16.5	-0.98	- 6.3	1.5/01.7	32205
(8812)	1999 11 01.4	02 24.80 +15 25.7	15.9	-1.05	- 1.2	0.5/01.7	31902	1992 UK ₈	1999 11 02.6	02 29.68 +17 32.8	16.1	-0.93	- 7.6	1.3/03.5	36511
1999 TJ ₅	1999 11 01.4	02 24.83 +21 06.5	16.7	-1.10	- 3.4	3.4/03.1	36484	1992 HD ₁	1999 11 02.8	02 30.21 +13 04.7	20.0	-0.80	- 3.5	0.4/02.4	35685
1998 HQ ₁₁₇	1999 11 01.4	02 24.86 +05 16.0	19.1	-1.04	- 5.2	3.5/30.2	32329	1994 SP ₉	1999 11 02.8	02 30.52 +03 09.0	19.4	-0.79	- 6.8	3.5/30.5	30080
3283 T-3	1999 11 01.5	02 25.14 +09 54.0	18.5	-0.87	- 5.3	1.6/31.3	36582	(8988)	1999 11 02.9	02 30.64 +11 33.9	17.1	-0.74	- 4.6	1.0/02.0	32171
1102 T-3	1999 11 01.5	02 25.24 +22 42.4	18.0	-0.80	- 6.2	2.4/04.0	36581	1981 EE ₁₆	1999 11 02.9	02 30.84 +18 28.7	20.6	-0.94	- 5.1	1.1/03.9	30779
3033 T-1	1999 11 01.5	02 25.26 +20 45.0	16.9	-1.09	- 2.7	2.5/03.1	36580	1998 HN ₃₈	1999 11 02.9	02 30.86 +17 09.5	17.3	-1.12	- 4.3	0.9/03.5	36532
1981 EN ₇	1999 11 01.5	02 25.31 +28 57.2	17.4	-0.95	- 3.0	4.9/05.4	36501	(9053)	1999 11 02.9	02 30.95 +00 47.6	17.5	-0.96	- 2.5	5.0/30.8	32186
(11944)	1999 11 01.5	02 25.32 +09 39.2	16.9	-0.83	- 4.1	1.5/31.3	36258	1998 MC ₄₅	1999 11 03.0	02 30.91 +09 57.4	15.7	-0.77	-12.3	2.0/01.4	36537
1995 RK	1999 11 01.5	02 25.43 +19 04.0	17.8	-0.99	- 7.2	1.8/02.9	36516	1995 VA ₂	1999 11 03.0	02 31.02 +08 47.6	17.4	-1.01	- 1.3	2.1/01.7	36518
(9327)	1999 11 01.5	02 25.44 +08 09.8	17.6	-0.84	- 3.2	1.8/31.0	32612	1979 MQ ₂	1999 11 03.0	02 31.14 +08 01.0	19.3	-0.93	- 5.3	2.3/01.3	30778
1994 PA ₄	1999 11 01.6	02 25.49 +10 23.6	18.7	-0.86	- 5.5	1.5/31.5	31239	(8442)	1999 11 03.1	02 31.45 +07 58.3	17.6	-1.03	- 3.5	2.8/01.5	36498
1991 PL ₅	1999 11 01.6	02 25.62 +16 33.8	18.0	-1.02	- 5.1	0.8/02.2	36507	1994 PJ ₁₀	1999 11 03.1	02 31.46 +17 14.2	17.0	-0.90	- 4.6	0.9/03.7	30900
1998 QN ₁₈	1999 11 01.7	02 25.77 +28 52.4	17.7	-0.93	- 2.8	4.3/05.4	36538	(9054)	1999 11 03.1	02 31.49 -10 16.3	16.2	-0.94	+ 1.2	10.8/28.9	36060
1997 JF ₁₂	1999 11 01.7	02 25.86 +13 53.4	19.0	-0.80	- 4.2	0.2/01.6	32753	(11657)	1999 11 03.2	02 31.70 +11 42.4	16.3	-0.98	- 6.1	1.5/02.4	35873
1996 VN ₆	1999 11 01.7	02 25.98 +38 16.8	17.2	-1.29	0.0	9.7/07.5	36520	(9293)	1999 11 03.2	02 31.74 +12 32.5	17.7	-0.75	- 3.8	0.6/02.6	32604
1998 HQ ₂₃	1999 11 01.7	02 26.08 +21 28.1	18.3	-0.95	-14.4	2.5/04.1	36367	1996 XZ ₂₆	1999 11 03.2	02 32.09 +17 33.4	18.7	-1.05	- 4.0	1.0/03.9	30786

1991 GU ₄	1999 11 03.3	02 32.12 +21 03.5 17.4	-0.91 - 1.7	1.9/04.7	36507	(9117)	1999 11 04.9	02 38.62 +01 09.7 15.5	-1.04 - 1.9	5.6/01.7	36498
(11901)	1999 11 03.3	02 32.12 -05 02.8 17.6	-0.91 - 5.0	6.7/29.0	36246	1998 HZ ₁₄₇	1999 11 05.0	02 39.08 +15 03.5 18.5	-1.03 - 4.5	0.2/05.0	36534
1998 QZ ₂₄	1999 11 03.3	02 32.13 +05 15.2 17.7	-0.76 - 4.5	2.9/31.7	33347	1998 JQ	1999 11 05.0	02 39.19 +23 41.5 17.0	-1.18 - 2.1	3.4/06.9	36534
1978 RQ ₁	1999 11 03.3	02 32.16 +07 31.2 16.9	-0.97 - 6.9	3.2/01.4	36500	1995 YN ₁₁	1999 11 05.1	02 39.39 +11 25.1 19.2	-0.82 - 4.3	1.3/04.1	31545
2206 T-1	1999 11 03.4	02 32.45 +18 12.1 18.5	-1.13 - 3.4	1.2/04.1	32290	1998 KD ₅	1999 11 05.1	02 39.54 +15 30.7 16.9	-0.91 - 1.1	0.0/05.2	36535
1999 TB ₁₂	1999 11 03.4	02 32.48 +11 01.4 16.3	-1.10 + 0.6	1.5/02.6	36488	2100 P-L	1999 11 05.2	02 39.62 +03 30.0 18.5	-0.78 - 7.8	3.7/01.7	36578
(12155)	1999 11 03.4	02 32.63 +08 28.0 15.8	-0.90 - 3.7	3.2/01.8	36316	1994 SZ ₉	1999 11 05.2	02 39.68 +16 39.5 19.7	-0.91 - 3.3	0.4/05.5	36515
(8857)	1999 11 03.4	02 32.68 +18 15.7 17.6	-1.05 - 4.4	1.3/04.3	31913	(9118)	1999 11 05.2	02 39.87 +14 03.4 15.5	-0.84 - 3.5	0.6/04.9	32200
1994 RL ₇	1999 11 03.4	02 32.70 +18 04.9 17.4	-0.94 - 4.2	1.1/04.2	36515	1997 GR ₄	1999 11 05.2	02 39.90 +16 30.0 19.8	-0.98 - 3.8	0.3/05.5	36525
1981 EV ₂	1999 11 03.5	02 32.86 +21 56.8 17.6	-0.82 - 6.4	2.2/05.5	26915	1999 TG ₂₀	1999 11 05.2	02 39.91 +13 55.8 17.3	-0.87 - 3.0	0.5/04.9	36490
(9203)	1999 11 03.5	02 33.07 +12 19.7 17.5	-0.78 - 3.3	0.7/02.9	32425	1981 EX ₃₃	1999 11 05.2	02 39.97 +26 27.4 19.0	-0.90 - 4.1	3.6/08.1	26921
1995 BD	1999 11 03.5	02 33.09 +03 15.0 17.2	-0.74 - 2.1	3.1/31.7	36515	1992 EH ₇	1999 11 05.3	02 40.10 +06 39.2 19.4	-0.88 - 3.5	3.0/03.2	32744
(9237)	1999 11 03.6	02 33.36 +12 45.8 17.3	-0.92 - 4.0	0.8/03.1	36498	(9138)	1999 11 05.3	02 40.20 +11 25.3 17.1	-1.05 - 6.2	1.8/04.3	32205
1987 BF	1999 11 03.6	02 33.51 +23 17.1 17.5	-1.08 - 5.5	3.0/05.8	36503	1222 T-1	1999 11 05.3	02 40.26 +34 37.2 16.8	-1.26 - 1.4	8.5/10.0	36580
1992 EJ ₆	1999 11 03.6	02 33.65 +04 57.7 18.2	-0.87 - 3.6	3.5/01.2	32226	(12061)	1999 11 05.3	02 40.27 +17 58.6 16.9	-1.15 - 3.3	1.0/05.9	36289
1997 AU ₁₇	1999 11 03.6	02 33.65 +06 11.4 18.2	-1.01 - 3.4	3.8/01.6	36522	6217 P-L	1999 11 05.4	02 40.52 +05 56.0 18.3	-0.72 - 6.4	2.6/02.7	36579
1998 HU ₁₀₁	1999 11 03.7	02 33.85 +18 31.8 20.5	-1.02 - 6.9	1.2/04.7	32522	4024 P-L	1999 11 05.4	02 40.63 +20 17.2 16.9	-0.95 - 5.0	1.8/06.7	36579
1993 FD ₃₇	1999 11 03.7	02 34.05 +11 11.1 16.8	-0.93 - 5.5	1.5/02.8	32515	(9591)	1999 11 05.4	02 40.64 +16 35.5 17.8	-0.84 - 4.0	0.3/05.7	32887
1989 WB ₃	1999 11 03.8	02 34.06 +06 59.1 17.3	-0.89 - 1.0	2.7/02.0	36505	1998 DO ₂₃	1999 11 05.4	02 40.69 +43 37.5 17.4	-2.07 +11.0	15.3/07.8	36527
1998 KP ₄₁	1999 11 03.8	02 34.07 +21 35.3 18.7	-1.12 - 4.9	2.5/05.4	36536	1997 BZ ₂	1999 11 05.5	02 40.81 +09 34.9 18.8	-0.90 - 4.5	1.9/04.0	36523
1998 FK ₂	1999 11 03.8	02 34.25 -14 00.1 16.7	-0.89 -17.1	13.7/23.5	36527	(9316)	1999 11 05.5	02 40.94 +04 47.2 16.7	-0.76 - 6.4	3.6/02.5	32609
1999 RJ ₄₂	1999 11 03.8	02 34.42 +20 16.5 15.4	-0.83 - 8.3	2.0/05.4	36408	1981 EG ₄₆	1999 11 05.5	02 40.97 +22 25.5 20.2	-0.99 - 3.7	2.1/07.2	32214
1995 WB ₉	1999 11 03.8	02 34.48 +21 03.0 16.4	-0.90 -15.9	2.1/05.9	36341	1998 HE ₄₃	1999 11 05.5	02 41.05 +07 54.0 16.9	-0.95 - 5.5	3.2/03.6	36533
1991 EC	1999 11 04.0	02 35.23 +23 16.3 16.7	-1.00 - 2.0	2.8/05.9	36506	(8527)	1999 11 05.5	02 41.21 +23 54.9 17.1	-1.22 - 2.6	3.3/07.4	31502
1997 BX ₂	1999 11 04.1	02 35.34 +00 17.8 18.2	-0.98 - 3.4	6.0/31.5	36523	(12164)	1999 11 05.6	02 41.15 +11 35.5 17.1	-1.08 - 5.0	1.7/04.6	36319
1995 OE ₆	1999 11 04.1	02 35.35 +08 15.6 19.5	-1.01 - 4.9	3.0/02.4	36516	2247 T-3	1999 11 05.6	02 41.24 +22 26.7 18.0	-1.07 - 5.1	2.4/07.3	36582
1997 AL ₃	1999 11 04.1	02 35.48 -01 44.8 19.9	-0.92 - 3.0	5.3/31.1	32248	1998 FY ₁₁₇	1999 11 05.6	02 41.34 +20 50.3 17.5	-1.07 - 6.4	2.1/07.0	36531
(9043)	1999 11 04.1	02 35.60 +21 27.6 16.7	-0.84 - 3.8	1.8/05.8	32184	(9092)	1999 11 05.6	02 41.45 -00 28.7 16.5	-0.80 - 2.6	4.9/01.7	32195
1995 XY ₄	1999 11 04.1	02 35.60 +08 19.2 19.5	-0.90 - 4.8	2.5/02.4	30082	1991 EF ₂	1999 11 05.7	02 41.54 +08 32.8 16.9	-1.02 - 6.7	2.9/03.9	36506
1998 HK ₃₆	1999 11 04.2	02 35.73 +13 55.3 16.1	-1.10 - 2.0	0.6/03.9	36532	1994 PF ₁₄	1999 11 05.7	02 41.76 +09 14.0 18.2	-0.87 - 5.3	2.3/04.1	36514
1985 TS	1999 11 04.2	02 35.91 +19 51.5 16.2	-1.09 - 2.8	2.1/05.3	36502	1998 QR ₆₉	1999 11 05.7	02 41.89 +17 58.9 18.1	-0.75 - 6.3	0.6/06.4	36539
(11962)	1999 11 04.3	02 36.33 -04 53.3 16.7	-0.80 - 5.4	7.5/29.8	36263	2043 P-L	1999 11 05.8	02 41.94 +23 23.4 18.2	-1.12 - 3.7	2.8/07.6	36578
1998 HH ₁₀₀	1999 11 04.3	02 36.36 +07 47.9 15.3	-1.01 - 0.7	3.5/02.9	36534	(9395)	1999 11 05.8	02 42.00 +17 53.8 17.2	-0.93 - 4.9	0.7/06.4	32628
1996 YD	1999 11 04.3	02 36.40 +15 06.5 16.1	-1.09 - 3.7	0.1/04.3	36521	1991 TM ₁₄	1999 11 05.9	02 42.52 +09 47.4 17.6	-0.97 - 4.2	2.1/04.5	36508
(9048)	1999 11 04.3	02 36.45 +05 53.3 17.8	-0.97 - 4.0	3.4/02.1	32184	1991 BZ	1999 11 05.9	02 42.66 +26 20.8 16.2	-0.86 - 5.3	4.6/08.8	36506
1998 FC ₆₆	1999 11 04.4	02 36.65 +07 18.2 16.1	-0.93 - 9.7	3.4/02.2	36529	1993 TA ₂₄	1999 11 05.9	02 42.67 +12 34.0 18.0	-0.77 - 3.3	0.9/05.2	36513
1998 HQ ₂₇	1999 11 04.5	02 36.90 +17 27.1 16.2	-1.01 - 8.5	1.0/05.1	36367	2276 T-2	1999 11 06.0	02 42.75 +16 40.5 18.0	-0.96 - 3.5	0.3/06.2	32344
(11853)	1999 11 04.5	02 37.00 +19 49.5 16.3	-1.10 - 2.6	1.9/05.5	36233	1998 HK ₁₂₄	1999 11 06.0	02 42.76 +02 47.0 16.7	-0.99 - 3.5	6.2/03.0	36534
1993 HE	1999 11 04.5	02 37.01 -03 56.7 17.2	-0.93 - 1.6	6.0/31.1	36512	6614 P-L	1999 11 06.0	02 42.86 +11 17.2 17.3	-0.92 - 3.9	1.6/05.0	36579
1993 PV ₅	1999 11 04.5	02 37.10 +31 11.0 16.5	-0.93 - 3.5	5.4/08.8	36512	1981 EU ₂₇	1999 11 06.0	02 43.06 +07 45.9 19.3	-1.03 - 5.9	2.9/04.1	36501
(9356)	1999 11 04.6	02 37.24 -07 22.8 16.5	-0.93 - 1.7	8.4/30.1	32619	1998 HV ₉₇	1999 11 06.0	02 43.07 +23 17.6 16.6	-1.01 - 4.7	3.2/08.0	36533
1989 GN ₄	1999 11 04.6	02 37.27 +17 34.6 18.1	-0.93 - 5.0	0.7/05.2	36504	1995 UK ₂₈	1999 11 06.1	02 43.33 +16 21.3 16.7	-1.08 - 1.7	0.2/06.3	36518
1995 XH ₃	1999 11 04.6	02 37.32 +10 51.4 19.9	-0.90 - 5.7	1.6/03.4	29924	(8927)	1999 11 06.1	02 43.47 +16 23.7 17.8	-1.06 - 3.4	0.2/06.3	31929
1997 GX ₁₆	1999 11 04.7	02 37.66 +25 33.5 19.7	-1.06 - 1.5	3.3/07.0	30767	1998 FF ₇₃	1999 11 06.2	02 43.75 +45 53.7 17.7	-2.02 + 7.5	15.7/10.4	36530
1996 BX	1999 11 04.7	02 38.03 +11 26.8 17.5	-0.86 - 3.3	1.3/03.8	36519	1981 EO ₂	1999 11 06.2	02 43.87 +18 52.8 17.4	-0.82 - 6.0	0.9/07.1	36501
1993 FP ₂₉	1999 11 04.8	02 38.41 +08 45.2 16.9	-0.86 - 8.0	2.2/03.0	36333	1998 FJ	1999 11 06.2	02 43.90 +17 37.7 17.8	-1.13 - 5.5	0.7/06.7	36527
1998 FS ₅	1999 11 04.8	02 38.44 +14 12.9 18.3	-1.04 - 3.3	9.5/25.0	36527	1988 RO ₁₁	1999 11 06.4	02 44.32 +16 43.2 16.5	-0.86 - 3.3	0.3/06.6	36504
1994 VT ₆	1999 11 04.9	02 38.36 +12 36.1 16.8	-0.87 - 2.9	1.0/04.2	36515	1991 GR ₂	1999 11 06.4	02 44.64 +17 43.0 16.5	-1.11 - 3.9	0.8/06.9	36507
1993 QD ₃	1999 11 04.9	02 38.47 +02 18.2 17.7	-0.76 - 5.1	4.1/01.3	36512	1998 QB ₆₉	1999 11 06.4	02 44.75 +35 52.1 16.3	-0.90 - 4.1	5.6/11.9	36539
1994 JE ₉	1999 11 04.9	02 38.55 +04 16.9 17.4	-0.96 - 3.6	4.0/02.3	36514	1978 RD ₂	1999 11 06.5	02 44.74 +17 29.5 16.3	-1.01 - 1.1	0.7/06.8	36500
1997 AK ₁	1999 11 04.9	02 38.55 +07 41.7 16.4	-1.06 - 2.7	3.4/03.2	36522	1991 GP ₇	1999 11 06.5	02 44.97 +20 42.7 16.0	-1.08 - 4.3	2.2/07.7	36507

(11942)	1999 11 06.5	02 45.06 +16 24.7 17.3	-0.87 - 4.1	0.1/06.7	36257	4054 T-3	1999 11 08.1	02 51.17 +17 21.8 17.3	-0.92 - 0.9	0.3/08.3	36582
(11845)	1999 11 06.5	02 45.11 +12 37.9 16.8	-0.82 - 3.5	1.2/05.8	36231	1981 DN ₃	1999 11 08.1	02 51.18 +21 27.5 17.2	-1.07 - 8.2	2.3/10.0	36501
1998 KG ₄₁	1999 11 06.7	02 45.54 +13 33.7 16.5	-1.07 - 3.7	1.1/06.2	36536	1998 HG ₅₃	1999 11 08.1	02 51.34 +16 44.7 17.1	-1.05 - 5.8	0.1/08.2	36369
1993 TB ₂₃	1999 11 06.7	02 45.57 +12 22.3 17.4	-0.76 - 3.8	1.0/05.8	31538	3041 T-1	1999 11 08.1	02 51.37 +25 08.7 17.6	-1.02 - 3.8	3.1/10.2	36580
1995 SD ₅₃	1999 11 06.7	02 45.76 +08 28.4 17.6	-0.88 - 6.7	3.4/04.8	30093	1998 OP ₂	1999 11 08.1	02 51.39 +22 01.2 17.5	-0.93 - 4.3	1.8/09.5	36537
1981 EO ₂₃	1999 11 06.7	02 45.81 +16 55.8 17.6	-1.03 - 5.3	0.4/07.0	26919	1999 TQ ₁₁	1999 11 08.1	02 51.47 +07 58.9 16.7	-0.82 - 1.9	3.0/06.3	36488
(11851)	1999 11 06.7	02 45.89 -21 47.7 16.6	-0.79 -10.3	16.8/23.8	36233	1996 XQ ₅	1999 11 08.1	02 51.53 +13 44.8 16.3	-1.11 - 3.4	1.2/07.6	36521
1995 OB	1999 11 06.7	02 45.91 +21 12.3 17.7	-1.08 - 6.9	2.1/08.1	36516	3178 T-1	1999 11 08.1	02 51.55 +18 13.1 18.9	-1.03 - 3.7	0.6/08.6	36580
(9391)	1999 11 06.7	02 45.95 -03 37.2 17.9	-0.92 - 3.0	6.9/02.4	32627	(8649)	1999 11 08.2	02 51.55 +05 56.2 18.1	-1.05 - 4.8	4.3/05.8	31675
(11834)	1999 11 06.8	02 45.97 +01 26.2 18.3	-0.87 - 4.9	4.7/03.2	36228	1998 QS ₃₁	1999 11 08.2	02 51.73 +34 28.4 17.6	-0.95 - 1.8	5.0/12.6	36539
(9175)	1999 11 06.8	02 46.02 +41 06.9 16.0	-1.22 - 2.6	9.2/13.4	32418	1997 LU ₁	1999 11 08.2	02 51.86 +08 19.3 17.7	-0.77 - 6.6	2.4/06.1	36525
1994 SO ₅	1999 11 06.9	02 46.62 +14 28.1 18.3	-0.89 - 4.0	0.5/06.6	36515	1997 AW ₁₇	1999 11 08.2	02 51.89 +14 29.9 19.0	-1.02 - 3.8	0.7/07.8	36522
(8887)	1999 11 06.9	02 46.75 -10 50.0 16.8	-0.92 - 2.1	9.9/31.8	31920	1993 FG ₇₆	1999 11 08.3	02 51.91 +08 48.2 17.9	-0.87 - 6.6	2.8/06.3	36512
1992 WJ ₂	1999 11 07.0	02 46.75 +14 16.5 16.2	-1.14 - 0.8	0.8/06.7	36511	1971 UR	1999 11 08.3	02 52.25 +16 14.2 16.6	-0.87 - 1.8	0.1/08.3	36499
1998 HS ₅₁	1999 11 07.0	02 46.78 +15 25.1 17.1	-1.16 - 1.7	0.3/06.9	32328	1990 QR	1999 11 08.4	02 52.36 -01 20.4 17.2	-0.87 - 5.8	6.1/03.9	36505
1998 KR ₅₄	1999 11 07.0	02 46.92 -08 29.6 16.8	-1.01 + 1.2	11.0/02.2	36537	1991 GH ₅	1999 11 08.4	02 52.71 +15 09.9 18.5	-0.78 - 4.4	0.4/08.1	36507
(8898)	1999 11 07.0	02 47.16 +12 36.6 17.6	-0.99 - 5.5	1.4/06.2	31922	(8842)	1999 11 08.5	02 52.87 -04 50.1 16.1	-0.88 - 3.1	9.5/03.6	36060
1997 EX ₁₃	1999 11 07.0	02 47.18 +20 32.5 17.0	-0.98 - 4.5	2.1/08.2	36348	1981 ER ₄	1999 11 08.5	02 53.08 +12 45.1 18.0	-0.80 - 7.4	1.3/07.5	26915
5485 T-2	1999 11 07.1	02 47.10 +26 28.3 15.9	-1.05 - 5.2	4.4/09.7	36581	1981 EV ₁₁	1999 11 08.6	02 53.24 +13 41.6 18.8	-1.00 - 8.6	1.2/07.9	26917
1998 RD ₂₄	1999 11 07.1	02 47.24 +13 50.1 18.9	-0.76 - 3.6	0.6/06.6	35714	1998 HP ₅₂	1999 11 08.6	02 53.41 +12 53.4 18.8	-1.05 - 4.4	1.3/07.8	36533
1998 HY ₃₃	1999 11 07.2	02 47.71 +13 08.0 19.0	-1.00 - 7.3	1.0/06.5	32327	1996 BN ₆	1999 11 08.6	02 53.47 +13 34.1 17.8	-0.88 - 2.6	1.0/08.0	36519
1992 DT ₈	1999 11 07.2	02 47.71 +36 25.8 19.2	-1.04 - 2.8	5.9/12.3	32744	1982 VU ₂	1999 11 08.6	02 53.56 +12 35.1 16.5	-1.04 - 0.1	1.3/07.9	36502
1989 YC ₆	1999 11 07.2	02 47.82 +05 16.3 16.5	-0.90 - 5.8	5.4/04.5	36505	4072 T-2	1999 11 08.7	02 53.66 +18 29.0 18.8	-1.21 - 2.2	0.9/09.1	36581
1981 DC ₁	1999 11 07.2	02 47.82 +12 10.0 19.4	-0.89 - 7.5	1.3/06.2	26914	(11904)	1999 11 08.7	02 53.91 +14 58.9 15.3	-0.98 -25.3	0.8/08.2	36247
1997 CU ₅	1999 11 07.3	02 47.96 +06 41.4 18.6	-1.00 - 4.6	3.7/05.0	30786	(9270)	1999 11 08.7	02 53.97 +13 07.8 17.4	-0.83 - 3.4	1.1/08.0	36499
1979 KO ₁	1999 11 07.3	02 48.04 +24 11.1 17.7	-1.04 - 6.4	2.7/09.4	36500	1997 AN ₇	1999 11 08.7	02 53.97 +16 23.5 16.2	-1.04 - 6.0	0.1/08.7	29634
1998 KQ ₂	1999 11 07.3	02 48.24 +31 50.3 17.8	-1.11 -12.9	5.6/12.3	36535	1996 BG ₂	1999 11 08.8	02 53.91 +51 50.2 16.8	-1.40 - 0.8	12.5/17.7	36073
1998 QF	1999 11 07.4	02 48.47 +27 24.7 18.3	-0.86 - 2.8	3.1/10.2	36377	1989 TA ₆	1999 11 08.8	02 54.12 +11 36.7 17.7	-0.87 - 3.4	1.7/07.7	34489
(9475)	1999 11 07.5	02 48.78 +11 40.5 17.9	-0.79 - 3.1	1.3/06.4	32647	(11782)	1999 11 08.8	02 54.29 +18 17.8 15.7	-1.01 - 2.5	0.8/09.2	36214
1986 QZ ₂	1999 11 07.5	02 48.84 +25 08.3 17.1	-1.07 - 2.1	2.9/09.5	36503	1992 PF	1999 11 08.9	02 54.61 +13 27.5 17.1	-1.08 - 5.6	1.4/08.2	36510
(11863)	1999 11 07.5	02 48.90 -02 26.8 17.5	-0.90 - 3.8	6.1/02.9	36236	1995 SY ₃₀	1999 11 08.9	02 54.69 +04 50.2 18.3	-0.96 - 5.8	4.9/06.0	35693
(11902)	1999 11 07.5	02 48.96 +27 06.9 16.3	-1.05 - 3.8	4.8/10.1	36247	1981 EO ₄₇	1999 11 08.9	02 54.70 +10 14.1 18.3	-0.96 - 4.8	2.4/07.5	30780
(9462)	1999 11 07.5	02 49.11 +19 13.8 16.5	-1.08 - 4.7	1.3/08.3	36499	1988 RY ₂	1999 11 09.0	02 55.00 +08 18.0 17.4	-0.78 - 5.8	2.8/06.9	36503
(11826)	1999 11 07.5	02 49.13 +17 36.4 16.7	-0.84 - 3.0	0.5/07.9	36226	1995 UG ₆	1999 11 09.0	02 55.06 +20 02.5 16.8	-1.00 - 2.8	1.5/10.0	36517
1998 KE ₅₄	1999 11 07.6	02 49.24 -08 43.7 18.0	-0.88 - 4.0	8.6/01.5	32336	1998 HD ₅₂	1999 11 09.0	02 55.12 +15 39.4 19.1	-1.05 - 4.6	0.4/08.8	36533
1982 UH ₉	1999 11 07.6	02 49.25 +26 28.4 15.9	-1.12 + 0.2	5.1/10.0	36325	(9074)	1999 11 09.0	02 55.15 +09 08.0 17.6	-1.01 - 3.3	2.6/07.4	32190
1981 ET ₃₇	1999 11 07.6	02 49.31 +15 41.5 18.9	-1.08 - 6.3	0.2/07.5	36502	1995 WQ	1999 11 09.2	02 55.59 +19 06.7 16.4	-0.95 - 1.4	1.2/09.7	36518
(12045)	1999 11 07.6	02 49.34 +34 44.4 16.6	-1.20 - 1.7	6.8/11.9	36285	1997 CT ₅	1999 11 09.2	02 55.91 +29 52.7 16.9	-1.17 - 3.7	5.7/12.2	36523
1992 EE ₁₄	1999 11 07.6	02 49.49 +13 58.8 17.9	-0.87 - 5.0	0.8/07.1	36509	(12038)	1999 11 09.3	02 56.18 +08 16.2 16.9	-0.96 - 2.2	3.6/07.6	36283
(12162)	1999 11 07.7	02 49.52 +01 55.3 16.9	-0.78 - 5.6	5.9/03.4	36318	(8843)	1999 11 09.4	02 56.57 +12 39.8 16.0	-0.81 -12.9	1.8/08.2	35675
1988 PE	1999 11 07.7	02 49.67 +31 46.7 17.3	-1.28 - 3.9	6.2/11.5	36503	1981 EZ ₂₆	1999 11 09.4	02 56.74 +18 10.0 18.5	-0.98 - 4.6	0.5/09.8	36501
1990 UB ₄	1999 11 07.7	02 49.94 +05 21.9 16.8	-0.81 - 7.6	4.2/04.7	36506	1998 HA ₉₃	1999 11 09.5	02 57.11 +19 22.1 16.9	-1.06 - 3.5	1.1/10.1	36533
1989 TR ₂	1999 11 07.7	02 49.96 +13 09.0 15.4	-1.02 + 1.4	1.2/07.2	36327	1995 UT ₄	1999 11 09.5	02 57.17 +14 04.7 16.0	-1.16 + 2.5	1.1/09.2	36517
1999 RF ₃₆	1999 11 07.8	02 49.90 +17 31.7 16.8	-1.14 - 0.6	0.5/08.0	36402	1996 XD ₃	1999 11 09.6	02 57.18 +12 56.3 18.0	-1.05 - 4.4	1.5/08.7	36521
1998 HK ₁₄₈	1999 11 07.8	02 50.21 +14 25.0 18.8	-1.08 - 3.4	0.7/07.4	32331	(11974)	1999 11 09.6	02 57.58 +12 52.4 15.8	-0.83 - 3.1	1.5/08.8	36266
1998 HL ₉₉	1999 11 07.8	02 50.24 +10 30.1 16.8	-0.99 - 5.1	2.7/06.5	36534	1990 OY ₁	1999 11 09.7	02 57.64 +12 37.3 17.0	-0.99 - 2.4	1.5/08.8	36505
1997 EX ₄₅	1999 11 07.9	02 50.64 +11 08.2 16.6	-0.97 - 3.7	2.0/06.8	29646	1981 ES ₃₃	1999 11 09.7	02 57.77 +28 27.1 17.4	-1.07 - 4.3	4.6/12.5	36502
(12005)	1999 11 08.0	02 50.74 +00 30.2 17.9	-0.75 - 3.0	4.3/04.2	36274	1997 AQ	1999 11 09.7	02 57.87 +01 12.0 17.1	-1.00 - 2.0	7.5/06.4	36521
1998 KT ₃₂	1999 11 08.0	02 50.92 +16 49.9 17.6	-1.07 - 2.6	0.2/08.1	36535	(11840)	1999 11 09.7	02 57.93 -09 02.8 16.1	-0.81 - 2.1	12.3/03.9	36230
1988 FD ₃	1999 11 08.0	02 51.04 +23 45.0 17.3	-1.16 - 4.5	2.9/09.7	36503	(9015)	1999 11 09.7	02 58.01 +08 16.6 15.9	-0.92 - 1.3	3.4/08.0	32177
(11881)	1999 11 08.1	02 51.17 -05 13.3 17.5	-0.85 - 5.0	8.3/02.6	36241	1993 DT ₁	1999 11 09.8	02 57.99 +14 42.8 19.2	-0.92 - 4.6	0.7/09.3	36511

1997 CZ ₆	1999 11 09.8	02 58.05 +13 30.1	17.0	-0.98	-	5.1	1.5/09.0	36523
1992 US ₁	1999 11 09.8	02 58.38 +16 57.9	16.2	-1.18	+	0.9	11.6/30.0	36510
1990 HP	1999 11 09.9	02 58.41 +30 02.2	17.2	-1.82	+	7.2	6.3/11.1	36505
(8858)	1999 11 09.9	02 58.72 +19 08.4	18.1	-1.07	-	3.8	0.8/10.5	31913
(8715)	1999 11 10.0	02 59.05 +12 23.3	16.6	-1.13	-	1.2	2.0/09.2	31690
1998 KM ₃₇	1999 11 10.0	02 59.11 +11 15.8	18.5	-0.95	-	3.5	1.9/08.8	36536
1977 TQ ₆	1999 11 10.0	02 59.17 +14 09.8	15.7	-1.12	+	2.5	1.2/09.7	36499
1995 UB ₁₃	1999 11 10.0	02 59.18 +23 38.2	19.2	-1.13	-	2.0	2.3/11.4	26760
1997 CW ₁₁	1999 11 10.1	02 59.21 +19 07.2	19.0	-1.07	-	2.8	0.9/10.6	36523
1997 FA ₅	1999 11 10.1	02 59.26 +12 40.2	20.8	-0.88	-	4.7	1.3/09.1	34873
(12107)	1999 11 10.1	02 59.26 +15 04.6	16.7	-1.05	-	7.5	0.8/09.7	36303
5036 T-2	1999 11 10.1	02 59.30 +24 59.5	17.3	-0.95	-	6.8	2.9/12.2	36581
2622 T-3	1999 11 10.1	02 59.50 +16 47.6	19.0	-0.78	-	5.3	0.1/10.1	36582
(9062)	1999 11 10.1	02 59.58 +10 59.7	16.6	-1.04	-	2.9	2.5/08.9	32188
(9410)	1999 11 10.2	02 59.97 +14 19.9	16.6	-0.81	-	3.0	0.8/09.7	32632
1995 BQ	1999 11 10.3	03 00.14 +14 54.1	16.4	-0.82	-	3.4	0.8/09.8	36515
1997 FG ₁	1999 11 10.3	03 00.43 +02 25.8	17.7	-0.98	-	4.1	5.4/07.0	36524
1998 QJ ₁₃	1999 11 10.4	03 00.74 +06 18.0	18.1	-0.82	-	3.1	3.1/08.0	36538
1994 LS	1999 11 10.5	03 00.78 -20 00.1	18.9	-1.01	-	1.3	11.9/01.4	25532
1992 SK ₁₃	1999 11 10.5	03 00.85 +26 37.9	16.3	-1.07	-	5.3	4.6/12.8	36510
1981 EU ₉	1999 11 10.5	03 00.94 +15 13.2	17.5	-1.07	-	6.7	0.8/10.1	36501
1994 UZ ₁	1999 11 10.6	03 01.18 +15 38.6	16.2	-1.01	+	0.9	0.5/10.3	36515
1999 RY ₃₄	1999 11 10.6	03 01.38 +15 09.7	16.0	-1.11	-	3.2	0.9/10.2	36402
1981 EA ₃	1999 11 10.6	03 01.43 +24 39.4	18.5	-1.12	-	6.4	3.0/12.5	36501
6335 P-L	1999 11 10.6	03 01.49 +16 10.6	18.4	-0.80	-	3.5	0.3/10.4	36579
1998 OB ₁₄	1999 11 10.6	03 01.57 +45 09.4	18.8	-1.20	-	2.4	8.7/17.5	34922
1998 KW ₃₄	1999 11 10.6	03 01.58 +11 20.5	19.1	-0.95	-	5.2	2.1/09.3	36535
(11877)	1999 11 10.7	03 01.64 +23 19.6	16.5	-1.09	-	3.3	2.4/12.0	36240
(9163)	1999 11 10.8	03 02.06 +16 02.1	17.9	-0.83	-	3.8	0.4/10.6	32415
(11857)	1999 11 10.8	03 02.07 -04 52.7	17.6	-0.81	-	3.2	7.2/05.7	36235
1978 NF	1999 11 10.8	03 02.25 -05 15.2	17.9	-0.98	-	0.4	8.4/06.7	36499
(9377)	1999 11 10.9	03 02.42 +20 29.0	17.7	-0.87	-	3.4	1.0/11.7	36499
1996 XL ₃₁	1999 11 10.9	03 02.59 +10 29.2	17.2	-1.02	-	4.3	2.5/09.5	36521
1995 YP ₁	1999 11 10.9	03 02.68 +22 27.5	17.1	-0.91	-	5.2	1.7/12.2	36519
1999 PY	1999 11 10.9	03 02.76 +17 01.6	16.3	-1.18	-	0.6	0.1/10.9	36548
1992 YK	1999 11 11.0	03 02.83 +25 28.3	15.6	-1.16	-	1.3	3.5/12.6	36332
1998 MR ₃₅	1999 11 11.0	03 03.03 +16 44.7	17.1	-0.91	-	2.7	0.2/10.9	32288
1998 OG ₁₂	1999 11 11.1	03 03.34 +30 42.1	18.3	-1.07	-	2.7	4.4/14.1	36538
1997 AB ₇	1999 11 11.1	03 03.53 +13 15.4	18.2	-1.01	-	3.7	1.5/10.3	36522
1998 PQ	1999 11 11.1	03 03.55 +15 43.6	18.7	-0.80	-	3.4	0.4/10.8	36538
1997 GQ ₂₂	1999 11 11.2	03 03.60 +13 53.9	17.1	-0.77	-	7.4	1.1/10.3	36525
1998 QW ₄₂	1999 11 11.2	03 03.70 +16 25.4	17.5	-0.80	-	3.6	0.2/11.0	36539
1998 FV ₇₈	1999 11 11.3	03 04.17 +12 16.0	17.3	-1.13	-	2.4	2.1/10.4	32070
1988 BO ₃	1999 11 11.3	03 04.23 +09 22.0	16.7	-0.88	-	7.4	3.2/09.3	36326
1993 FU ₁₁	1999 11 11.3	03 04.28 +11 00.9	17.4	-0.94	-	3.5	2.2/10.0	36511
1996 DV	1999 11 11.3	03 04.32 +00 48.9	18.3	-0.75	-	3.7	4.7/07.4	36519
1981 EO ₄	1999 11 11.4	03 04.40 +30 53.3	18.2	-0.93	-	5.0	4.5/15.0	36501
(9195)	1999 11 11.4	03 04.70 +14 10.7	17.8	-0.79	-	2.9	0.9/10.7	32423
1999 TU ₁₁	1999 11 11.4	03 04.85 +10 42.7	17.0	-0.78	-	6.9	2.1/09.8	36488
1999 RW ₂₇	1999 11 11.4	03 04.91 +32 29.4	14.5	-1.27	+	8.1	7.9/13.0	36396
1997 GM ₁₃	1999 11 11.5	03 04.80 +03 49.4	18.9	-0.82	-	7.5	4.2/07.9	32520

1998 JE ₃	1999 11 11.5	03 04.88 +08 48.1	17.3	-0.98	-	6.1	3.3/09.5	36535
(11790)	1999 11 11.5	03 04.90 +21 26.3	17.5	-1.05	-	3.2	1.4/12.4	36216
(9384)	1999 11 11.5	03 05.02 +12 43.7	17.9	-0.79	-	3.1	1.3/10.5	36499
1998 QQ ₂₄	1999 11 11.5	03 05.18 +29 59.0	19.3	-0.86	-	3.5	3.6/14.6	32696
1995 VG ₁₀	1999 11 11.5	03 05.21 +16 15.6	20.6	-1.00	-	4.3	0.4/11.3	30784
1980 PJ ₁	1999 11 11.6	03 05.33 +26 32.2	15.6	-0.82	-	7.5	5.2/14.2	36500
1998 HO ₃₈	1999 11 11.6	03 05.55 +17 59.6	17.6	-1.13	-	5.8	0.3/11.8	36532
1990 OB ₄	1999 11 11.6	03 05.62 +31 45.7	16.4	-0.97	-	9.6	6.0/15.9	36505
5124 T-3	1999 11 11.6	03 05.69 +06 58.8	17.1	-1.04	-	2.3	4.1/09.6	29321
1978 NC	1999 11 11.6	03 05.69 -26 20.9	18.0	-1.05	+	3.5	15.8/05.3	32297
1998 KH ₅₄	1999 11 11.8	03 06.44 +02 54.1	17.8	-0.95	-	4.2	5.1/08.7	32336
(8984)	1999 11 11.8	03 06.51 +29 45.8	17.1	-1.17	-	1.2	4.7/15.0	32170
1992 UT ₂	1999 11 11.9	03 06.72 +12 03.5	16.1	-1.16	+	0.1	2.5/11.1	36510
1992 WY ₁	1999 11 11.9	03 06.75 +22 16.4	16.6	-1.11	-	2.9	2.1/12.9	36511
2085 T-2	1999 11 11.9	03 06.80 +24 07.3	17.4	-1.03	-	2.9	2.4/13.4	24764
1997 AS ₁₉	1999 11 11.9	03 06.85 +19 41.6	19.9	-1.04	-	4.8	0.8/12.5	34518
1981 EG ₂₇	1999 11 11.9	03 06.90 +20 57.1	18.6	-0.87	-	3.5	1.0/12.8	36501
1997 AJ ₇	1999 11 12.0	03 07.13 +19 07.6	18.2	-1.06	-	4.6	0.6/12.4	36522
1998 KT ₄₄	1999 11 12.1	03 07.25 +11 44.6	17.3	-0.90	-	6.2	2.2/10.7	36536
1994 PW ₂₆	1999 11 12.1	03 07.28 -00 37.5	16.3	-0.78	-	3.1	8.3/07.8	29138
1985 TZ ₃	1999 11 12.1	03 07.42 +26 39.5	16.7	-1.16	-	5.2	3.6/14.2	36503
(9274)	1999 11 12.1	03 07.45 +26 37.7	18.7	-1.02	-	2.9	2.8/14.1	32599
1991 PT ₁₄	1999 11 12.1	03 07.58 +12 40.1	17.1	-1.01	-	4.2	1.9/11.1	36507
1997 EM	1999 11 12.2	03 07.69 +15 23.1	17.5	-0.93	-	2.7	0.7/11.8	32956
1981 EG ₁₆	1999 11 12.2	03 07.74 +36 12.4	18.6	-1.16	-	2.2	6.0/16.2	35677
(12028)	1999 11 12.3	03 08.15 -05 24.3	18.1	-0.92	-	2.2	7.9/07.6	36280
1988 PG ₂	1999 11 12.3	03 08.34 +10 52.4	16.5	-0.91	-	3.1	3.5/10.9	36503
1981 ED ₉	1999 11 12.4	03 08.46 +21 35.2	17.8	-1.05	-	7.1	1.9/13.4	26916
1997 JN ₁₂	1999 11 12.4	03 08.52 +15 45.7	16.7	-0.91	-	0.7	0.6/12.1	36352
1991 LR	1999 11 12.4	03 08.68 -07 22.2	17.4	-1.06	+	0.5	10.1/08.5	36507
1995 UH ₅	1999 11 12.4	03 08.82 +18 17.1	16.7	-1.09	-	1.5	0.3/12.6	36517
1981 EF ₃₅	1999 11 12.4	03 08.93 +12 06.8	18.3	-0.95	-	4.6	2.2/11.3	32299
1989 SZ ₁	1999 11 12.5	03 08.97 +10 53.2	17.9	-1.08	-	4.8	2.6/11.1	36504
1997 EK ₁₅	1999 11 12.5	03 09.24 +29 39.0	21.2	-1.10	-	2.2	3.8/15.0	29929
1999 RH ₃₆	1999 11 12.6	03 09.56 +20 03.2	16.6	-1.00	+	0.8	0.9/13.1	36403
1997 GZ ₃₁	1999 11 12.6	03 09.67 +06 34.6	19.0	-0.79	-	1.9	2.7/10.4	32679
1997 AW ₁₈	1999 11 12.7	03 09.69 +27 53.3	17.5	-1.16	-	3.9	4.1/14.8	36523
1981 EF ₃₇	1999 11 12.7	03 09.82 +37 22.6	16.4	-1.27	-	0.5	7.0/16.6	36502
1998 OQ	1999 11 12.8	03 10.39 +18 32.1	18.0	-0.96	-	6.1	0.3/13.0	36537
1119 T-1	1999 11 12.8	03 10.54 +22 37.4	19.0	-1.15	-	3.6	2.0/13.9	34566
1994 FB	1999 11 12.9	03 10.83 +15 12.1	17.0	-1.05	-	5.4	1.1/12.4	36513
1998 KN ₉	1999 11 13.0	03 11.01 +16 37.5	17.4	-0.92	-	9.4	0.4/12.7	36373
1992 PZ ₁	1999 11 13.0	03 11.32 +09 55.2	17.4	-1.08	-	5.4	3.5/11.4	36510
(9110)	1999 11 13.1	03 11.30 +12 05.6	16.6	-1.04	-	4.2	2.3/11.9	32199
1995 BQ ₂	1999 11 13.1	03 11.42 +15 19.3	17.5	-0.81	-	13.0	0.8/12.4	25431
1990 FL	1999 11 13.1	03 11.69 -15 57.7	18.4	-0.93	-	5.3	10.8/04.1	36505
(9510)	1999 11 13.2	03 11.86 +02 38.1	18.4	-0.79	-	3.1	4.6/09.8	32656
1997 FC ₅	1999 11 13.2	03 11.92 +09 29.0	17.4	-0.88	-	4.9	3.1/11.3	30672
1997 GZ ₃₂	1999 11 13.2	03 12.10 +19 42.9	19.5	-0.90	-	3.7	0.5/13.7	35700
2245 T-2	1999 11 13.2	03 12.14 +15 02.4	18.8	-1.03	-	4.7	1.0/12.7	36123
1996 KA	1999 11 13.2	03 12.19 +21 09.9	17.5	-0.83	-	6.4	1.0/14.1	36520

(8557)	1999 11 13.3	03 12.41 +05 11.8 17.9	-1.04 - 2.4	5.5/11.0	31509
1998 HR ₇	1999 11 13.4	03 12.65 +02 17.3 19.0	-0.89 - 9.8	4.7/09.3	32326
1995 OF	1999 11 13.4	03 12.76 +24 08.7 18.9	-1.07 - 7.3	2.7/15.0	32239
(11945)	1999 11 13.4	03 12.77 +03 49.5 17.3	-0.79 - 4.4	4.6/10.2	36258
(9140)	1999 11 13.4	03 12.84 +01 40.1 17.4	-0.94 - 7.1	5.9/09.5	32206
1990 TD ₁₂	1999 11 13.4	03 12.95 +19 56.8 16.7	-0.89 - 5.3	0.9/14.0	36506
1997 JU ₃	1999 11 13.5	03 13.04 +16 29.6 19.4	-0.93 - 1.5	0.4/13.2	32753
1988 RX ₁₂	1999 11 13.5	03 13.14 +08 53.4 16.8	-0.80 - 5.9	3.1/11.3	36504
1987 SL ₃	1999 11 13.5	03 13.15 +33 31.1 16.7	-0.94 - 3.3	5.1/17.1	36503
1996 CF ₃	1999 11 13.5	03 13.40 +00 12.1 17.1	-0.80 - 2.1	5.3/09.9	36519
(11949)	1999 11 13.6	03 13.66 +17 12.6 15.3	-0.82 - 6.1	0.3/13.5	36259
2120 T-1	1999 11 13.6	03 13.67 +13 28.6 18.6	-1.00 - 3.9	1.6/12.7	36580
1997 AR ₂₂	1999 11 13.6	03 13.77 +21 27.8 16.4	-1.14 - 0.3	1.7/14.3	36523
1995 WM ₄	1999 11 13.7	03 13.85 +12 13.2 17.0	-0.99 - 2.3	2.3/12.6	36518
1997 AP ₁₅	1999 11 13.7	03 13.94 +29 31.9 18.9	-1.12 - 4.0	3.9/16.2	36522
1997 CB ₂₆	1999 11 13.7	03 14.16 +29 08.8 16.6	-1.12 - 3.9	4.8/16.2	36347
1997 GT ₂₂	1999 11 13.8	03 14.23 +21 01.6 17.7	-0.95 - 0.7	0.9/14.4	36351
(9393)	1999 11 13.8	03 14.37 +11 44.7 17.6	-0.92 - 4.2	2.1/12.5	32628
1998 QR ₄₂	1999 11 13.8	03 14.45 +00 06.2 17.7	-0.75 - 5.2	5.1/09.4	36539
1998 HU ₁₂₉	1999 11 13.8	03 14.49 +23 13.8 19.3	-1.21 - 3.6	2.1/15.0	32273
1991 PH ₁₈	1999 11 13.8	03 14.63 -02 14.2 17.8	-0.96 - 4.0	7.8/09.7	36508
1997 GK ₂₃	1999 11 13.9	03 14.93 +15 24.1 18.5	-0.86 - 3.8	0.9/13.4	30094
1998 QJ ₆₉	1999 11 13.9	03 14.96 +10 22.0 17.9	-0.76 - 6.6	2.2/12.0	36539
1990 GN	1999 11 14.0	03 15.23 +20 27.3 18.0	-1.10 - 3.7	0.9/14.5	36505
1999 RN ₃₆	1999 11 14.0	03 15.26 +12 22.5 15.5	-0.85 -11.2	2.4/12.5	36403
(11936)	1999 11 14.0	03 15.33 +14 56.4 16.8	-1.01 - 2.6	1.2/13.5	36255
1998 MF ₂₄	1999 11 14.0	03 15.35 +11 08.4 20.5	-0.92 - 3.3	2.3/12.6	32286
1992 PL ₂	1999 11 14.0	03 15.41 +44 00.4 17.3	-1.00 - 4.6	7.1/20.8	36510
1998 HF ₁₀₂	1999 11 14.0	03 15.49 +20 10.5 18.3	-1.15 - 5.0	0.8/14.5	32329
1995 YB	1999 11 14.1	03 15.59 +00 32.4 16.8	-1.02 + 1.9	7.3/11.7	36519
1998 MD ₃₃	1999 11 14.1	03 15.66 +01 16.4 16.1	-0.81 - 1.9	6.5/10.7	36537
1997 AW	1999 11 14.1	03 15.78 +20 06.3 18.7	-1.06 - 3.7	0.6/14.6	30084
3503 P-L	1999 11 14.2	03 15.80 +22 12.1 17.8	-0.95 - 7.7	1.4/15.2	36579
1992 WR	1999 11 14.2	03 15.81 +17 09.8 16.4	-1.12 - 0.2	0.4/14.0	36511
1987 HE	1999 11 14.2	03 15.86 -14 12.5 17.9	-0.97 - 7.2	11.2/05.0	36503
1994 CD ₈	1999 11 14.2	03 15.94 +17 00.3 16.8	-1.05 - 5.4	0.4/14.0	36513
1981 EZ ₁₉	1999 11 14.2	03 15.97 +23 52.0 19.4	-1.04 - 3.4	2.1/15.4	29094
1039 T-3	1999 11 14.2	03 16.00 +37 23.7 18.4	-1.17 - 2.0	6.7/18.3	29142
1278 T-2	1999 11 14.3	03 16.44 +05 18.6 17.8	-0.79 - 5.8	4.6/11.2	36580
(9294)	1999 11 14.3	03 16.66 +21 56.1 16.8	-0.98 - 2.7	1.3/15.0	32604
1999 UY ₁	1999 11 14.4	03 16.67 +14 54.3 16.2	-1.00 - 8.3	1.4/13.6	36491
1998 FL ₇₅	1999 11 14.5	03 17.27 +19 18.7 17.0	-1.18 - 2.7	10.9/05.0	36530
1996 XM ₂	1999 11 14.6	03 17.61 +12 49.0 16.2	-1.18 - 0.8	2.6/13.8	36521
1996 XM ₅	1999 11 14.6	03 17.75 +24 00.9 16.9	-1.12 - 4.9	2.2/15.9	36521
1993 BV ₅	1999 11 14.6	03 17.75 +29 10.1 18.1	-1.11 - 3.6	4.3/17.0	31233
1998 DS ₉	1999 11 14.6	03 17.76 -19 59.8 17.1	-0.96 - 3.6	14.4/06.0	32315
1998 FA ₁₆	1999 11 14.7	03 17.88 +09 38.9 19.4	-1.02 - 4.3	3.2/12.9	32317
1990 WP ₄	1999 11 14.7	03 17.95 +08 25.1 16.7	-0.92 - 1.2	3.1/12.9	36506
1995 TA ₁	1999 11 14.7	03 18.11 +15 42.2 18.0	-1.01 - 4.4	1.0/14.2	36517
(9059)	1999 11 14.7	03 18.25 +21 27.6 17.6	-1.14 - 5.4	1.3/15.5	32187
(8817)	1999 11 14.8	03 18.59 +12 37.1 17.3	-1.13 - 2.4	2.3/13.8	31903

1998 PN ₁	1999 11 14.9	03 18.67 +20 41.4 18.2	-0.88 - 1.9	0.8/15.4	36538
1997 GB ₈	1999 11 14.9	03 18.73 +16 41.3 20.0	-0.99 - 3.9	0.6/14.6	30094
1998 QM ₃₄	1999 11 15.0	03 19.20 +06 17.9 18.1	-0.85 - 3.0	3.6/12.5	36539
1981 EU ₁₀	1999 11 15.0	03 19.20 +25 46.4 20.3	-1.16 - 4.6	2.8/16.6	26916
1994 GB ₉	1999 11 15.0	03 19.43 +14 55.9 17.3	-1.05 - 4.6	1.3/14.4	36514
1999 RG ₃₆	1999 11 15.1	03 19.60 +07 27.8 16.6	-0.85 - 9.9	4.3/12.2	36556
1973 UQ ₅	1999 11 15.1	03 19.83 +15 59.0 17.0	-1.00 - 4.7	1.1/14.7	36324
1991 GC ₆	1999 11 15.2	03 20.07 +25 08.1 16.0	-1.23 + 0.9	3.3/16.3	36507
1997 CB ₂₇	1999 11 15.2	03 20.12 +23 57.4 19.2	-1.17 - 1.5	2.1/16.2	29642
1998 QU ₅₀	1999 11 15.2	03 20.25 +47 29.0 18.3	-1.16 - 0.5	8.1/21.5	36539
(8875)	1999 11 15.2	03 20.39 +13 40.2 16.4	-1.02 + 0.1	2.5/14.5	31917
1998 KE ₄₈	1999 11 15.3	03 20.78 +13 34.0 17.8	-1.07 - 3.7	1.9/14.4	36536
1990 FG	1999 11 15.5	03 21.23 +64 37.4 16.7	-2.86 + 6.8	22.0/22.9	36505
1991 NG ₅	1999 11 15.5	03 21.26 +24 43.2 18.0	-1.11 - 5.1	2.3/16.9	36507
1997 BC ₃	1999 11 15.6	03 21.72 +28 28.7 17.4	-1.16 - 2.5	3.9/17.5	36523
1997 AR	1999 11 15.6	03 21.77 +21 23.8 18.2	-1.05 - 4.2	1.0/16.2	36521
(9210)	1999 11 15.6	03 22.03 +29 45.3 15.8	-0.96 - 1.3	4.5/17.9	32426
1997 AZ ₁₇	1999 11 15.7	03 21.97 +18 14.3 15.9	-1.12 - 2.4	0.1/15.7	36523
1056 T-1	1999 11 15.7	03 22.42 +35 22.0 18.9	-1.12 - 2.0	5.5/19.1	36122
1992 DD ₃	1999 11 15.8	03 22.48 +19 43.1 17.5	-0.95 - 3.5	0.4/16.1	36509
4765 P-L	1999 11 15.8	03 22.54 +19 41.3 19.9	-1.00 - 3.3	0.4/16.1	32729
(12163)	1999 11 15.8	03 22.55 +11 23.5 17.1	-0.92 - 4.1	2.8/14.3	36319
1991 VP ₁₂	1999 11 15.8	03 22.61 +15 12.1 18.1	-1.03 - 1.6	1.3/15.3	36509
(9135)	1999 11 15.8	03 22.66 +19 56.2 18.1	-1.15 - 1.6	0.5/16.1	32205
1997 EU ₂	1999 11 15.9	03 23.05 +14 25.7 17.4	-1.06 - 3.0	1.7/15.2	36524
1998 QP ₄₃	1999 11 15.9	03 23.20 +41 21.0 17.3	-1.12 + 0.1	7.3/20.2	36539
1992 UW ₂	1999 11 16.0	03 23.33 +18 23.9 16.0	-1.19 - 0.1	0.1/16.0	36510
9578 P-L	1999 11 16.0	03 23.63 +25 54.9 16.5	-0.93 - 1.8	2.5/17.5	36580
1995 WL ₄₂	1999 11 16.2	03 24.23 +17 01.5 18.3	-0.88 - 3.2	0.5/15.9	36518
(11920)	1999 11 16.3	03 24.57 +14 12.8 16.4	-1.00 - 6.6	2.0/15.3	36251
1988 XJ ₁	1999 11 16.3	03 24.57 +10 51.0 16.9	-0.90 + 0.7	2.5/15.1	36504
1992 DD ₄	1999 11 16.4	03 25.18 +11 53.7 18.8	-0.91 - 3.8	2.5/15.1	31381
1987 YS ₁	1999 11 16.5	03 25.35 -04 07.9 16.1	-0.90 - 3.7	9.2/11.4	36503
1992 PH ₁	1999 11 16.5	03 25.38 +25 42.3 18.2	-1.19 - 4.9	2.8/18.0	36510
1999 RS ₄₃	1999 11 16.5	03 25.42 +11 27.6 16.9	-1.02 - 5.7	3.6/15.0	36409
(9317)	1999 11 16.5	03 25.60 +01 43.7 17.0	-0.80 - 4.1	6.1/12.8	36499
1992 RL ₃	1999 11 16.5	03 25.65 +10 22.5 19.0	-1.09 - 4.8	3.6/15.0	36510
1991 GY ₄	1999 11 16.6	03 25.66 +18 22.9 17.5	-1.13 - 3.1	0.1/16.5	36507
1985 PC	1999 11 16.6	03 25.75 +14 31.2 16.8	-1.08 - 4.8	1.7/15.8	36502
(11780)	1999 11 16.6	03 25.96 -00 29.5 14.9	-0.84 - 2.3	9.4/13.0	36213
1998 EL ₂	1999 11 16.7	03 26.51 +13 58.9 17.6	-1.09 - 4.1	2.0/15.9	32316
1988 VT ₁	1999 11 16.8	03 26.53 +01 05.3 16.0	-0.74 - 6.1	7.0/12.4	36504
1997 AS ₁₂	1999 11 16.8	03 26.73 +06 23.5 17.8	-0.99 - 1.9	4.1/14.6	36522
1998 RM	1999 11 16.9	03 27.07 +07 05.3 17.0	-0.83 - 8.7	4.1/13.9	36377
1992 LQ	1999 11 17.0	03 27.48 +12 09.3 16.8	-0.90 - 0.3	2.1/15.9	25441
1998 HH ₈₈	1999 11 17.0	03 27.73 +17 28.7 18.1	-1.07 - 6.0	0.5/16.8	36533
1996 CA ₃	1999 11 17.1	03 28.12 +17 26.5 17.1	-0.81 - 2.5	0.4/16.9	36519
(11808)	1999 11 17.2	03 28.12 +11 06.7 16.2	-0.92 - 6.9	3.4/15.4	36221
3482 T-3	1999 11 17.2	03 28.29 +19 26.6 18.0	-0.86 - 3.1	0.2/17.3	36582
1999 RT ₃₈	1999 11 17.2	03 28.30 +18 52.0 16.0	-1.11 - 0.1	0.0/17.2	36406
1997 AW ₃	1999 11 17.2	03 28.30 +08 47.7 16.7	-1.05 - 3.1	4.4/15.3	36522

2162 T-2	1999 11 17.3	03 28.82 +14 15.2 19.0	-0.93 - 4.5	1.6/16.4	36581	(11922)	1999 11 18.9	03 35.65 +18 46.5 15.4	-1.14 + 1.0	0.3/18.9	36252
(11739)	1999 11 17.3	03 28.89 +29 15.4 16.6	-0.77 - 5.8	3.2/20.0	35895	1981 EN ₂₂	1999 11 19.0	03 35.74 +26 26.8 18.4	-1.07 - 3.0	2.7/20.3	31224
(11889)	1999 11 17.3	03 28.94 -11 00.0 16.2	-0.93 + 1.4	11.0/12.9	36243	1998 QM ₂₀	1999 11 19.0	03 35.82 +03 18.0 17.1	-0.79 - 4.0	5.0/15.7	36538
1991 PE ₃	1999 11 17.3	03 29.00 +13 00.4 16.1	-0.95 - 1.6	3.0/16.3	36507	(8805)	1999 11 19.0	03 35.91 +15 05.4 16.4	-1.01 - 4.6	2.0/18.2	36060
1998 FN ₁₂₆	1999 11 17.4	03 29.11 +23 05.9 17.6	-1.19 - 5.0	1.7/18.3	32521	1996 JX ₇	1999 11 19.1	03 36.02 +16 07.3 18.2	-0.88 - 2.6	1.0/18.5	27452
1996 XT ₁₉	1999 11 17.4	03 29.14 +19 34.8 16.9	-1.11 - 5.2	0.3/17.6	36521	1981 EM ₁₃	1999 11 19.3	03 36.84 +18 49.7 17.9	-1.10 - 6.3	0.2/19.2	36501
1998 QO ₂₆	1999 11 17.4	03 29.27 +16 24.0 16.8	-0.81 - 4.4	0.8/16.9	36538	1997 DL	1999 11 19.3	03 37.10 +29 07.9 17.7	-1.19 - 3.3	4.5/21.1	36524
1998 KL ₆₅	1999 11 17.4	03 29.38 +19 45.9 18.2	-1.07 - 2.8	0.3/17.6	36537	(10414)	1999 11 19.3	03 37.22 +09 01.9 18.0	-0.77 - 4.0	3.0/17.2	36499
(10778)	1999 11 17.5	03 29.67 +11 58.6 16.7	-1.10 - 1.2	3.3/16.4	34764	(9019)	1999 11 19.4	03 37.44 +10 23.1 17.6	-1.01 - 2.8	3.5/17.9	32178
1998 HH ₉₉	1999 11 17.6	03 30.15 +15 26.0 17.0	-1.12 - 2.4	1.5/17.1	36534	(11939)	1999 11 19.4	03 37.44 +05 23.2 15.5	-0.87 - 5.6	6.1/16.4	36256
1992 WV ₃	1999 11 17.6	03 30.18 +26 12.8 16.0	-1.16 - 1.1	3.3/18.9	36511	1991 PQ ₂	1999 11 19.4	03 37.60 +21 40.5 17.7	-1.10 - 3.1	0.9/20.0	36507
1995 QD ₃	1999 11 17.7	03 30.20 +23 02.6 15.7	-0.99 - 3.6	2.0/18.5	36516	(9385)	1999 11 19.4	03 37.65 +04 16.5 18.6	-0.78 - 4.5	4.3/16.4	32626
1992 SF	1999 11 17.8	03 30.68 +29 02.3 16.2	-1.17 - 1.0	5.1/20.0	36510	1998 QV ₂₂	1999 11 19.6	03 38.07 +21 27.6 17.1	-0.88 - 2.4	0.7/20.0	36538
1991 PE ₂	1999 11 17.8	03 30.88 +21 40.2 18.0	-1.11 - 3.0	1.2/18.3	36507	1998 QD ₁₁	1999 11 19.6	03 38.26 -07 04.0 18.3	-0.91 - 0.7	8.0/15.2	32530
(12170)	1999 11 17.8	03 30.94 +20 01.0 18.1	-0.90 - 4.0	0.3/18.1	36321	1988 BF ₅	1999 11 19.6	03 38.43 +21 25.9 18.5	-0.94 - 6.1	0.6/20.1	32443
1997 AH ₈	1999 11 17.8	03 31.06 +05 38.5 17.0	-1.03 - 2.8	5.8/15.4	36522	1998 OB ₁₃	1999 11 19.7	03 38.66 -02 56.2 17.4	-0.78 - 2.5	7.1/15.2	35709
(11893)	1999 11 17.8	03 31.07 +10 58.3 17.8	-0.81 - 3.8	2.5/16.2	36244	1993 HZ ₅	1999 11 19.7	03 38.82 +05 39.2 16.4	-1.91 +16.6	7.5/20.0	36512
1998 KF ₃₅	1999 11 17.8	03 31.10 +15 11.7 16.2	-1.10 0.0	1.6/17.3	36536	1996 EJ ₁₄	1999 11 19.7	03 38.86 +42 35.6 18.4	-1.14 - 1.1	7.5/24.2	36520
1997 AS	1999 11 17.8	03 31.11 +10 55.7 17.9	-1.03 - 2.4	2.9/16.5	36521	(9441)	1999 11 19.7	03 38.95 +22 59.7 18.2	-0.89 - 1.7	1.1/20.4	32639
(11650)	1999 11 17.9	03 31.16 +29 53.5 14.8	-1.11 - 6.3	4.9/20.4	35871	1993 SN ₃	1999 11 19.8	03 39.01 +18 09.4 16.2	-0.84 - 3.0	0.5/19.6	36512
1995 QN ₂	1999 11 17.9	03 31.42 +06 00.9 17.4	-0.98 - 3.6	5.9/15.4	36516	1999 TV ₅	1999 11 19.8	03 39.39 +14 16.5 16.2	-0.92 - 9.4	2.2/18.6	36484
4206 P-L	1999 11 17.9	03 31.48 +38 29.5 17.6	-1.36 - 1.9	8.0/21.7	29141	1998 SX ₇	1999 11 19.9	03 39.33 +19 47.0 17.4	-0.84 - 2.6	6.7/31.0	36540
1981 EW ₁₅	1999 11 18.0	03 31.65 +36 11.6 19.1	-1.13 - 1.2	6.4/20.9	26918	1994 UK ₅	1999 11 19.9	03 39.49 +19 51.8 16.4	-0.95 - 1.6	9.6/10.0	36515
1158 T-3	1999 11 18.0	03 31.82 +24 55.1 18.0	-0.85 - 4.9	1.6/19.4	36581	1994 EZ ₆	1999 11 19.9	03 39.50 +12 28.4 17.5	-1.11 - 1.1	3.0/18.9	36513
1998 OU ₉	1999 11 18.0	03 31.86 +19 42.2 17.2	-0.90 - 3.4	0.2/18.2	36538	1992 PU ₁	1999 11 19.9	03 39.54 +14 19.6 18.5	-0.79 - 3.0	1.4/18.9	27445
1999 SZ ₅	1999 11 18.1	03 32.14 -29 00.4 15.9	-0.54 - 3.0	24.9/31.0	36480	(8424)	1999 11 19.9	03 39.73 +12 25.8 15.8	-1.00 - 3.5	3.3/18.7	31370
1997 GQ ₇	1999 11 18.2	03 32.43 +24 04.2 15.5	-1.18 + 4.6	2.1/18.8	36525	1990 GE	1999 11 19.9	03 39.75 +29 10.9 17.7	-1.20 - 2.2	3.6/21.6	36505
4161 P-L	1999 11 18.2	03 32.61 +31 09.6 17.4	-1.09 - 2.4	4.6/20.5	36579	1981 EU ₃	1999 11 19.9	03 39.75 +17 16.0 18.8	-0.97 - 6.8	0.8/19.5	26915
1981 EK ₂₆	1999 11 18.3	03 32.70 +14 46.6 18.5	-0.97 - 3.7	1.5/17.5	36501	1993 FV ₁₂	1999 11 20.0	03 39.86 +02 16.0 19.7	-0.87 - 3.6	5.1/16.7	32515
1998 SH ₄	1999 11 18.3	03 32.93 +16 04.8 18.8	-0.80 - 2.7	0.8/17.8	35716	1998 QM ₅	1999 11 20.0	03 40.05 +11 55.3 17.1	-1.02 - 5.4	2.9/18.6	36538
1998 KH ₃₂	1999 11 18.3	03 32.97 +19 21.7 17.4	-1.01 - 4.6	0.1/18.4	36373	1998 RP ₇₀	1999 11 20.0	03 40.07 +19 14.5 18.1	-0.81 - 1.1	0.1/20.0	36540
1997 AD ₁₀	1999 11 18.3	03 33.10 +11 29.6 17.4	-1.03 - 3.2	3.3/17.0	36522	4041 T-2	1999 11 20.0	03 40.15 +21 32.1 19.0	-1.01 - 2.4	0.8/20.4	29651
1998 HB ₈₈	1999 11 18.3	03 33.15 +18 53.6 17.8	-1.03 - 6.5	0.1/18.3	36533	1995 QS	1999 11 20.1	03 40.17 +19 15.9 17.7	-1.16 - 1.7	0.1/20.1	36516
1998 KE ₃₇	1999 11 18.4	03 33.20 +17 10.5 17.7	-1.10 - 5.3	0.8/18.0	36374	1998 RS ₁₈	1999 11 20.1	03 40.23 +26 17.0 19.8	-0.89 - 2.5	1.9/21.4	35714
1978 TT ₈	1999 11 18.4	03 33.30 +19 04.6 16.2	-1.10 - 1.1	0.0/18.4	36500	1998 FL ₅₇	1999 11 20.2	03 40.71 +20 34.0 19.8	-1.19 - 3.9	0.4/20.4	32685
1995 XB ₂	1999 11 18.4	03 33.34 +19 45.8 16.4	-1.09 - 2.7	0.2/18.6	36519	1981 UQ ₂₂	1999 11 20.2	03 40.95 +13 31.7 17.4	-1.06 - 2.9	2.4/19.2	32441
1992 RX	1999 11 18.5	03 33.50 +23 06.0 17.1	-1.19 - 2.6	1.5/19.2	36510	1993 TD ₃₇	1999 11 20.3	03 41.05 +07 41.9 18.0	-0.79 - 3.2	3.7/18.0	36513
(12114)	1999 11 18.5	03 33.61 -04 50.8 16.8	-0.78 - 1.7	8.6/13.7	36305	3180 T-2	1999 11 20.3	03 41.37 +15 23.1 17.8	-0.87 - 2.4	1.3/19.6	36581
1980 EF	1999 11 18.5	03 33.83 +33 04.2 17.9	-1.29 - 1.3	5.3/20.8	18804	4078 T-1	1999 11 20.4	03 41.40 +09 53.2 17.4	-1.01 - 3.1	4.9/18.7	24115
1998 KH ₄₅	1999 11 18.5	03 33.85 +14 36.7 19.0	-1.04 - 2.4	1.7/17.8	36536	1997 EW ₄₅	1999 11 20.4	03 41.84 +12 22.4 18.0	-1.00 - 1.8	2.4/19.3	36524
1998 MX ₃₄	1999 11 18.5	03 33.87 +31 38.1 18.6	-1.05 - 6.5	4.1/21.4	32287	1987 KF ₁	1999 11 20.5	03 42.19 +03 09.9 19.7	-0.98 - 3.8	5.4/17.6	32300
1981 EL ₁₈	1999 11 18.5	03 33.95 +16 58.9 18.5	-0.97 - 4.3	0.7/18.1	36501	1981 QN ₃	1999 11 20.6	03 42.25 +16 38.9 17.7	-0.85 - 2.6	1.0/20.1	36502
3099 T-1	1999 11 18.5	03 33.97 +30 11.9 16.3	-1.19 - 2.8	5.3/20.6	36580	(9330)	1999 11 20.6	03 42.27 +16 53.1 17.7	-0.80 - 2.5	0.7/20.1	32613
(9136)	1999 11 18.7	03 34.58 +24 21.5 17.2	-1.15 - 1.2	2.0/20.0	32205	1997 AL ₇	1999 11 20.6	03 42.30 +12 37.3 17.1	-1.02 - 3.4	2.6/19.4	36522
1998 MM ₃₇	1999 11 18.7	03 34.61 +04 35.7 17.8	-0.84 - 1.4	4.7/16.2	32524	1998 KF ₆₄	1999 11 20.6	03 42.69 +11 03.7 19.7	-1.02 - 4.3	3.3/19.1	32486
1994 PR ₁₄	1999 11 18.8	03 34.99 +13 52.8 20.4	-0.93 - 4.0	1.9/17.8	36514	1991 LK ₂	1999 11 20.7	03 42.70 +17 25.4 17.7	-0.86 - 1.3	0.7/20.3	36507
1994 NB	1999 11 18.9	03 35.25 -15 23.5 18.1	-0.99 - 0.7	10.5/12.4	36514	(9114)	1999 11 20.7	03 42.85 +13 13.1 16.6	-1.06 - 2.1	2.9/19.7	32199
1994 PU ₁₈	1999 11 18.9	03 35.26 +21 47.5 19.4	-0.99 - 2.9	0.9/19.4	29620	2183 T-1	1999 11 20.7	03 42.96 +18 57.6 17.7	-1.06 - 1.9	0.3/20.6	27926
1988 CO ₇	1999 11 18.9	03 35.49 +18 08.1 16.9	-1.15 - 3.2	0.6/18.8	36503	1990 QW ₉	1999 11 20.7	03 42.97 +04 19.4 18.7	-0.92 - 3.7	4.8/17.9	36505
(8714)	1999 11 18.9	03 35.58 +22 11.1 17.0	-1.19 - 2.3	1.2/20.0	31690	1997 AR ₁	1999 11 20.8	03 43.13 +17 49.5 17.9	-1.05 - 2.4	0.7/20.5	36522
1981 EE ₁₀	1999 11 18.9	03 35.61 +23 55.1 18.4	-1.16 - 4.7	1.9/20.0	36501	1998 HK ₄₃	1999 11 20.8	03 43.53 +11 37.8 19.8	-1.06 - 4.4	2.8/19.4	32328

1981 EU ₄	1999 11 20.9	03 43.72 +24 57.1 17.3	-0.89 - 5.1	1.6/22.0	36501	2839 P-L	1999 11 22.5	03 50.46 +24 35.0 18.9	-1.01 - 2.6	1.5/23.3	30797
6529 P-L	1999 11 20.9	03 43.97 +16 35.5 18.5	-0.86 - 2.5	1.0/20.4	36121	1998 HH ₄₃	1999 11 22.5	03 50.50 +11 43.7 19.2	-1.07 - 2.1	3.0/21.3	32328
1998 MB ₃₈	1999 11 21.0	03 43.91 +34 23.4 17.9	-1.05 - 4.5	4.8/24.0	33078	1997 GX ₂₁	1999 11 22.5	03 50.56 +16 23.7 17.7	-0.91 - 1.8	1.3/22.0	32679
1998 DH ₁₁	1999 11 21.0	03 44.32 -27 28.9 17.7	-1.18 + 2.3	21.7/13.3	36078	1993 FB ₁	1999 11 22.5	03 50.69 +18 40.1 16.8	-1.03 - 0.7	0.5/22.4	36511
1990 QR ₉	1999 11 21.0	03 44.40 +13 21.3 17.7	-0.96 - 2.9	2.6/20.0	36505	1988 CK ₄	1999 11 22.5	03 50.69 +34 04.9 17.9	-1.06 - 5.0	4.4/25.4	36503
4290 T-1	1999 11 21.1	03 44.44 +30 05.1 17.4	-0.88 - 0.8	2.6/22.9	36580	1998 KW ₂₅	1999 11 22.5	03 50.70 +14 06.4 17.8	-1.06 - 1.9	2.7/21.7	32277
4874 P-L	1999 11 21.1	03 44.60 +20 12.1 17.7	-1.01 - 1.5	0.2/21.2	36579	1991 PX ₆	1999 11 22.6	03 50.88 +21 06.3 18.7	-1.11 - 2.7	0.4/22.8	32303
6585 P-L	1999 11 21.1	03 44.62 +16 00.6 17.7	-0.86 - 2.7	1.3/20.5	36579	(8894)	1999 11 22.6	03 50.93 +33 22.9 17.3	-1.28 - 3.0	5.3/25.0	31921
1992 WJ ₃	1999 11 21.1	03 44.68 +11 03.3 17.2	-1.03 - 4.4	3.4/19.5	36511	1995 CE ₁	1999 11 22.7	03 51.11 +28 39.2 18.0	-0.93 - 2.0	2.8/24.1	36515
(9305)	1999 11 21.1	03 44.71 +15 00.2 16.8	-1.18 - 1.9	2.2/20.5	32607	1994 TJ ₁₁	1999 11 22.7	03 51.21 +12 38.3 19.0	-0.84 - 6.2	3.2/21.1	33245
1997 FO ₃	1999 11 21.1	03 44.83 +14 46.5 18.9	-0.90 - 3.2	1.6/20.3	36524	1981 EP ₂₁	1999 11 22.7	03 51.35 +35 29.9 20.6	-1.16 - 1.8	4.7/25.3	26919
(9115)	1999 11 21.1	03 44.84 +23 54.0 17.0	-1.07 - 5.1	1.5/22.0	36498	2184 T-1	1999 11 22.7	03 51.49 +08 52.1 19.0	-0.99 - 4.1	4.6/20.7	29650
1988 SH ₂	1999 11 21.2	03 44.97 +05 49.1 16.8	-0.88 - 0.3	4.6/19.1	36504	1988 RD ₁	1999 11 22.7	03 51.54 +34 58.9 16.6	-1.01 - 3.4	5.0/25.6	36503
1997 AU ₁₀	1999 11 21.2	03 45.09 +31 16.5 17.9	-1.20 - 3.1	4.5/23.2	36522	1996 HE ₁	1999 11 22.8	03 51.47 +21 31.5 16.9	-0.95 + 1.3	0.4/23.0	36520
1993 SQ ₃	1999 11 21.2	03 45.16 +19 31.6 16.5	-0.87 - 1.8	0.1/21.2	36512	1991 GV ₃	1999 11 22.8	03 51.55 +24 49.0 17.7	-1.22 - 1.5	1.9/23.5	36507
1995 OA ₁	1999 11 21.2	03 45.23 +17 25.1 17.0	-1.05 - 6.4	1.0/20.8	36516	1983 XE	1999 11 22.8	03 51.70 +19 38.8 16.3	-0.92 - 7.4	0.2/22.7	36502
1993 TJ	1999 11 21.3	03 45.18 +12 07.9 17.3	-0.82 - 5.0	2.4/19.7	36512	1991 RW ₁₂	1999 11 22.8	03 51.85 +15 13.8 17.0	-1.02 - 4.1	1.9/22.0	36508
4273 T-1	1999 11 21.3	03 45.18 +10 43.3 18.1	-0.87 - 2.3	3.3/19.7	36580	1975 SU ₁	1999 11 22.9	03 52.16 +18 15.7 17.9	-0.81 - 2.6	0.5/22.6	36499
(9145)	1999 11 21.3	03 45.61 +27 38.6 16.8	-1.13 + 0.5	2.6/22.5	32411	(9131)	1999 11 23.0	03 52.77 +19 54.0 17.3	-1.11 - 4.1	0.1/23.0	32204
1996 DB	1999 11 21.5	03 46.06 +51 40.7 20.0	-1.18 - 1.0	7.1/27.6	34861	1995 BT	1999 11 23.1	03 52.97 +50 54.5 17.5	-1.18 - 3.7	9.8/30.1	36071
1997 EQ ₁₆	1999 11 21.5	03 46.08 +07 41.4 20.3	-0.88 - 4.0	3.7/19.2	29929	(9490)	1999 11 23.1	03 53.17 +25 33.4 17.5	-0.93 - 2.7	1.6/24.1	32651
1998 KM ₆₁	1999 11 21.5	03 46.26 +10 54.9 19.2	-1.10 - 3.3	3.5/20.0	32755	(11027)	1999 11 23.2	03 53.50 +22 28.4 16.6	-1.17 - 3.7	1.0/23.6	35219
1995 SQ ₂₉	1999 11 21.5	03 46.32 +22 06.3 17.3	-1.13 - 1.7	0.9/21.9	36517	1998 QP ₁₆	1999 11 23.2	03 53.57 +06 51.0 18.5	-0.83 - 3.3	4.2/20.9	36538
1998 PD ₁	1999 11 21.6	03 46.44 +05 07.6 18.0	-0.80 - 3.5	4.3/18.8	36538	1998 QQ ₄₅	1999 11 23.3	03 53.72 +40 08.1 16.9	-1.03 - 2.7	6.0/27.0	36539
(9207)	1999 11 21.6	03 46.56 +18 55.8 17.7	-0.96 - 2.6	0.3/21.5	32425	(9433)	1999 11 23.3	03 53.81 +11 12.3 18.2	-1.02 - 3.6	3.4/21.8	32637
1990 WS ₄	1999 11 21.6	03 46.66 +14 54.1 16.6	-0.92 - 3.1	1.9/20.8	36506	1998 KV ₃₇	1999 11 23.3	03 53.83 +11 47.2 18.7	-1.03 - 1.2	3.1/22.1	36536
1988 RO ₂	1999 11 21.7	03 47.13 +35 07.7 17.4	-1.00 - 3.5	5.2/24.8	36503	(9176)	1999 11 23.4	03 54.06 +14 42.9 15.8	-0.92 - 3.5	2.2/22.4	32418
1982 VS ₂	1999 11 21.8	03 47.35 +17 31.8 17.1	-0.99 - 2.6	0.9/21.4	36502	1994 PN ₁	1999 11 23.4	03 54.42 -14 55.8 16.3	-1.02 + 6.8	14.7/20.9	32235
1998 KS ₅₁	1999 11 21.8	03 47.66 +04 20.4 17.7	-0.94 - 4.6	5.9/19.0	36536	1998 QK ₃₈	1999 11 23.4	03 54.46 +20 46.9 18.2	-0.84 - 2.5	0.1/23.6	36539
1993 FL ₁₉	1999 11 21.8	03 47.67 +03 28.5 19.2	-0.90 - 3.3	5.4/18.9	29300	1993 FM ₂₈	1999 11 23.5	03 54.42 +22 47.2 17.5	-1.05 - 3.6	1.1/23.9	36512
1995 VX ₄	1999 11 21.8	03 47.75 +14 19.7 19.7	-1.03 - 2.7	2.0/21.0	29319	1998 NS	1999 11 23.5	03 54.47 +32 54.8 19.7	-1.13 - 4.9	4.0/25.9	32525
1994 WS ₁	1999 11 21.9	03 47.75 +29 44.8 16.3	-0.92 - 5.6	3.7/24.0	24574	1995 YF ₁	1999 11 23.5	03 54.52 +25 48.4 17.6	-0.95 - 4.7	1.7/24.6	36519
(9166)	1999 11 21.9	03 47.82 +18 18.1 17.1	-0.84 - 2.7	0.5/21.6	32416	1993 FX ₂₁	1999 11 23.5	03 54.59 +17 06.8 18.4	-0.98 - 3.8	1.2/23.0	36069
1998 KM ₃₉	1999 11 21.9	03 47.85 +19 18.8 19.0	-1.14 - 3.8	0.3/21.8	32755	1995 WX ₄₂	1999 11 23.5	03 54.72 +03 22.6 16.3	-1.06 + 4.2	7.4/22.0	26572
1996 BM	1999 11 21.9	03 47.90 +24 21.0 17.6	-0.99 - 3.2	1.6/22.7	36519	1981 EV ₂₈	1999 11 23.5	03 54.74 +12 42.8 18.2	-0.84 - 5.1	2.5/22.1	36501
1982 SC ₈	1999 11 21.9	03 48.11 +25 42.3 17.0	-1.22 - 3.4	2.4/23.0	36502	1995 QT ₃	1999 11 23.6	03 54.88 +25 16.8 19.1	-1.19 - 3.7	1.9/25.0	36516
1994 AY ₁₀	1999 11 21.9	03 48.12 +21 15.1 19.1	-1.17 - 2.5	0.5/22.2	32307	1993 ST ₁	1999 11 23.6	03 54.96 +04 28.4 17.0	-0.79 - 3.6	5.3/20.7	36512
(9660)	1999 11 21.9	03 48.14 +19 39.7 17.7	-0.83 - 2.2	0.1/21.9	32903	1997 GD ₁₅	1999 11 23.6	03 55.00 +21 26.8 17.8	-0.97 - 3.4	0.4/23.8	36525
1998 QA ₂₂	1999 11 22.0	03 48.22 -01 58.7 17.8	-0.76 - 2.8	6.4/17.9	33081	1991 RB ₂₄	1999 11 23.6	03 55.15 +13 55.8 18.4	-1.05 - 2.8	2.3/22.7	36508
(9173)	1999 11 22.0	03 48.45 +31 51.4 17.4	-1.03 - 2.0	3.7/24.1	32418	(9111)	1999 11 23.7	03 55.29 +01 22.9 15.6	-1.01 + 0.6	9.2/21.3	32199
1996 CO ₂	1999 11 22.0	03 48.60 +04 38.5 17.3	-0.84 - 1.4	4.8/19.6	36519	4737 P-L	1999 11 23.7	03 55.34 +42 45.5 18.8	-1.25 + 1.7	8.7/26.7	34265
1998 RP ₂₈	1999 11 22.1	03 48.57 +15 48.9 19.0	-0.81 - 2.6	1.2/21.4	35714	1979 DF	1999 11 23.7	03 55.68 +31 10.6 16.6	-1.21 + 2.0	4.0/24.9	36500
1997 EY ₄₅	1999 11 22.2	03 48.97 +17 42.3 16.4	-1.09 - 1.7	1.0/21.8	35072	1242 T-2	1999 11 23.7	03 55.75 +03 19.9 18.7	-0.89 - 4.6	5.3/20.5	36123
1981 EQ ₂₀	1999 11 22.2	03 49.14 +16 29.9 18.9	-0.99 - 3.5	1.3/21.6	29940	1998 FN ₇₇	1999 11 23.8	03 55.82 +10 18.5 16.3	-1.14 - 1.7	4.8/22.5	36530
1992 EQ ₁₃	1999 11 22.2	03 49.22 +24 31.1 17.2	-0.97 - 4.3	1.7/23.1	32453	1997 EX ₂₅	1999 11 23.8	03 56.18 +15 24.0 17.4	-1.07 - 2.9	2.2/23.1	36524
1997 MR	1999 11 22.2	03 49.28 +14 16.8 18.2	-0.83 - 4.6	1.9/21.1	36077	1995 UT ₂	1999 11 24.0	03 56.57 +15 51.4 18.2	-1.06 - 1.8	1.7/23.3	34512
(9625)	1999 11 22.3	03 49.37 +20 17.6 16.7	-0.99 - 6.3	0.1/22.4	32895	1990 HE	1999 11 24.0	03 56.77 +43 56.4 17.1	-2.10 + 8.2	10.9/25.2	36505
1995 DL ₁	1999 11 22.3	03 49.42 +12 15.0 16.6	-1.03 + 2.6	2.6/21.4	36515	1998 PP ₁	1999 11 24.0	03 56.90 +31 07.0 16.7	-0.90 - 4.3	3.4/26.1	35709
1102 T-2	1999 11 22.4	03 50.21 +18 32.6 18.9	-0.88 - 3.0	0.5/22.2	36580	1993 TX ₁₄	1999 11 24.0	03 56.95 +18 13.3 17.6	-0.87 - 2.4	0.8/23.7	27106
1997 LN ₄	1999 11 22.4	03 50.28 +14 24.1 19.2	-0.94 - 3.6	1.9/21.5	33949	1997 ER ₄₀	1999 11 24.0	03 56.95 +01 42.7 19.7	-0.87 - 4.6	6.2/20.5	30786
1992 YR ₂	1999 11 22.5	03 50.32 +18 37.6 17.5	-1.10 - 1.3	0.6/22.3	32453	5568 P-L	1999 11 24.1	03 57.16 +27 38.1 17.2	-1.11 - 0.1	2.8/25.1	36579

1995 QC ₃	1999 11 24.1	03 57.31 +30 44.6	17.7	-1.31	-	4.1	4.4/26.0	36516
(9064)	1999 11 24.2	03 57.58 +09 09.8	17.7	-1.01	-	1.6	4.0/22.6	36498
1998 MA ₈	1999 11 24.2	03 57.76 +25 12.4	16.8	-0.93	-	7.2	1.5/25.3	36537
2168 T-1	1999 11 24.3	03 57.97 +02 33.8	17.0	-0.94	-	5.4	7.6/21.0	36580
1981 EN ₃	1999 11 24.3	03 58.09 +09 16.3	19.2	-0.98	-	7.8	4.3/22.0	26165
(9544)	1999 11 24.3	03 58.11 +21 11.7	17.0	-0.88	-	1.0	0.2/24.5	36061
(9005)	1999 11 24.3	03 58.18 +23 38.3	17.1	-1.01	-	4.1	1.1/25.0	32175
(8854)	1999 11 24.3	03 58.23 +16 51.8	17.9	-1.13	-	1.6	1.4/23.9	31912
1995 SB ₃₁	1999 11 24.4	03 58.29 +29 01.2	18.0	-1.23	-	2.4	3.3/25.7	36517
1998 OA ₁	1999 11 24.4	03 58.31 +27 57.7	18.9	-0.92	-	4.2	2.3/25.8	35709
1998 QL ₅₉	1999 11 24.4	03 58.42 +30 31.1	19.9	-1.01	-	1.9	2.9/26.0	35711
1980 FU	1999 11 24.4	03 58.74 +31 41.0	17.4	-1.23	-	2.5	4.2/26.2	32509
(10635)	1999 11 24.5	03 58.92 +02 32.2	18.0	-0.81	-	2.9	5.8/21.5	34472
(9155)	1999 11 24.5	03 58.98 +22 40.3	16.8	-0.89	-	2.0	0.7/24.9	32413
1995 LK	1999 11 24.6	03 59.18 +57 48.6	17.7	-1.79	-	9.3	14.1/06.0	36338
1994 GL ₉	1999 11 24.6	03 59.22 +18 48.0	17.8	-1.09	-	4.7	0.7/24.3	36514
1991 XD	1999 11 24.7	03 59.52 +16 49.5	15.0	-1.82	+18.9		2.1/24.9	36509
1998 RZ ₅₀	1999 11 24.7	03 59.62 +03 14.7	18.9	-0.75	-	3.9	4.5/21.5	34021
(9675)	1999 11 24.7	03 59.74 +01 39.1	18.2	-0.77	-	2.8	5.4/21.5	32907
1995 SU	1999 11 24.7	03 59.96 +28 46.8	17.5	-1.17	-	3.6	3.1/26.1	36516
1997 JP ₁₆	1999 11 24.8	03 59.99 +16 25.7	17.0	-0.91	-	1.9	1.3/24.2	36525
1994 WB ₁	1999 11 24.8	04 00.26 +12 06.2	16.1	-1.87	+15.0		4.5/25.0	36515
2592 P-L	1999 11 24.9	04 00.57 +12 55.9	17.7	-0.99	-	3.6	2.8/23.7	36578
1999 PC ₁	1999 11 24.9	04 00.67 +36 31.5	17.5	-1.12	-	5.5	5.3/28.2	36548
4647 P-L	1999 11 25.0	04 00.77 +18 41.3	18.3	-1.15	-	3.7	0.8/24.7	32343
(9340)	1999 11 25.0	04 01.07 +18 30.3	18.1	-0.81	-	2.0	0.6/24.7	32615
1989 UA ₁	1999 11 25.1	04 01.32 +29 58.3	16.3	-1.25	-	1.5	4.6/26.5	36505
1998 QO ₄	1999 11 25.1	04 01.35 +37 08.7	18.1	-0.97	-	4.2	5.0/28.3	36085
1996 XZ ₃₁	1999 11 25.1	04 01.61 +14 37.7	17.7	-1.16	-	0.5	2.4/24.4	36521
(9432)	1999 11 25.2	04 02.01 +08 23.1	17.8	-1.03	-	2.5	4.9/23.4	32637
(10638)	1999 11 25.2	04 02.09 +12 14.7	18.3	-0.79	-	2.6	2.3/23.9	34473
1995 SR ₂₉	1999 11 25.3	04 02.05 +20 24.8	17.2	-1.12	-	1.9	0.1/25.3	36517
(9229)	1999 11 25.3	04 02.15 +21 42.8	16.9	-0.92	-	2.9	0.4/25.5	32430
1998 PA ₁	1999 11 25.3	04 02.18 +20 04.2	17.3	-0.87	-	4.7	0.2/25.2	36538
1998 GK	1999 11 25.4	04 02.73 +45 01.1	18.0	-2.04	+	6.4	10.4/26.8	36531
1998 QO ₃₃	1999 11 25.4	04 02.73 +10 20.2	17.7	-0.82	-	3.8	3.3/23.6	36377
(10612)	1999 11 25.4	04 02.85 +17 12.5	17.4	-0.89	-	2.6	1.2/24.9	34466
4072 T-3	1999 11 25.4	04 02.86 +11 27.5	17.4	-0.84	-	2.7	3.3/24.0	36582
(12113)	1999 11 25.4	04 02.89 +09 10.4	17.8	-0.90	+	0.6	3.8/24.1	36305
1991 GT ₄	1999 11 25.4	04 02.92 +13 39.9	17.4	-1.09	-	4.4	3.0/24.4	36507
(9714)	1999 11 25.4	04 02.94 +39 42.7	17.2	-1.14	+	1.4	5.7/27.9	36061
1979 QF ₂	1999 11 25.5	04 02.95 +16 46.3	16.5	-0.92	-	2.6	1.4/24.9	35677
1992 PK ₂	1999 11 25.5	04 03.01 +19 44.9	18.0	-0.82	-	3.5	0.3/25.4	36510
1998 FG ₄	1999 11 25.6	04 03.29 +08 35.4	17.5	-1.09	+	0.6	5.4/24.3	32316
1985 TN	1999 11 25.6	04 03.30 +26 59.0	16.5	-1.17	-	0.1	3.1/26.4	36502
3051 T-1	1999 11 25.6	04 03.55 +08 01.0	18.0	-0.83	-	3.7	3.8/23.5	36580
1998 JK ₄	1999 11 25.7	04 03.79 +18 33.3	17.6	-1.11	-	4.5	0.9/25.4	36535
1997 AK ₅	1999 11 25.7	04 03.80 +30 16.1	19.1	-1.21	-	2.8	3.8/27.1	32472
3039 T-3	1999 11 25.7	04 03.99 +15 06.6	17.4	-0.96	-	2.4	2.3/24.9	26417
1998 QR ₁₀	1999 11 25.7	04 04.14 +22 04.3	17.6	-0.93	-	2.7	0.4/26.0	36538
1995 PA	1999 11 25.8	04 04.31 +21 11.1	18.0	-1.11	-	0.2	0.2/25.9	25964

5122 T-3	1999 11 25.8	04 04.42 +11 46.1	18.2	-1.12	-	0.8	3.5/24.8	32344
1998 QF ₇₀	1999 11 25.8	04 04.49 +09 00.9	16.9	-0.79	-	6.6	3.8/23.4	36539
1995 UY ₄₄	1999 11 25.8	04 04.55 +30 03.7	17.0	-1.24	+	2.2	4.2/26.9	36518
4240 T-2	1999 11 25.9	04 04.76 +18 03.1	16.4	-1.03	0.0		1.4/25.6	36581
1998 KK ₉	1999 11 25.9	04 04.77 +17 11.1	18.5	-1.11	-	1.8	1.4/25.4	32333
1981 EE ₁₁	1999 11 25.9	04 04.84 +25 32.4	18.5	-1.19	-	3.5	1.8/26.7	36501
1998 QJ ₂₁	1999 11 25.9	04 04.89 +19 20.3	18.1	-0.87	-	2.3	0.4/25.7	36538
1105 T-2	1999 11 25.9	04 04.93 +16 53.0	17.0	-0.98	-	3.4	1.6/25.3	36580
1998 MK ₃₇	1999 11 25.9	04 05.05 +26 44.4	18.1	-1.03	-	4.5	1.9/27.0	36537
(9191)	1999 11 26.0	04 05.21 +33 59.9	16.6	-1.10	-	5.4	4.6/28.5	32422
1993 LO ₁	1999 11 26.2	04 06.02 +35 07.6	18.9	-1.08	-	3.3	4.1/28.6	33485
4118 T-3	1999 11 26.2	04 06.34 +04 51.6	18.0	-0.81	-	3.5	5.2/23.6	36582
3276 T-2	1999 11 26.3	04 06.30 +13 06.5	18.6	-0.97	-	1.6	2.9/25.2	34568
1990 KN ₁	1999 11 26.3	04 06.52 +18 31.2	17.1	-1.23	-19.7		1.2/25.7	36505
1997 AM ₇	1999 11 26.4	04 06.87 +26 56.0	18.3	-1.18	-	3.1	2.5/27.3	31144
1997 CF ₂₀	1999 11 26.4	04 06.93 +31 42.6	17.9	-1.20	-	2.0	4.5/28.0	29928
1998 JD ₂	1999 11 26.5	04 07.20 +14 35.8	18.8	-1.08	-	3.8	2.4/25.6	32331
1994 PL ₃₄	1999 11 26.5	04 07.39 +18 24.8	17.5	-0.95	-	4.1	1.0/26.1	32237
1990 SY ₃	1999 11 26.5	04 07.50 +30 48.7	15.5	-1.05	-	7.8	4.0/28.7	36065
(9646)	1999 11 26.6	04 07.78 +20 28.5	17.2	-0.84	-	1.7	0.1/26.6	32900
1997 AR ₁₇	1999 11 26.6	04 07.96 +21 56.5	18.5	-1.14	-	3.8	0.4/26.8	32519
1998 FD ₇₈	1999 11 26.7	04 08.10 +06 54.0	19.4	-1.10	-	2.8	5.4/24.8	32070
1997 JT ₁₅	1999 11 26.7	04 08.22 +17 11.1	17.1	-0.91	-	1.8	1.2/26.2	36525
4638 P-L	1999 11 26.7	04 08.36 +18 19.9	18.8	-0.99	-	2.4	1.0/26.4	29948
5104 T-2	1999 11 26.7	04 08.43 +22 42.9	18.6	-0.90	-	4.8	0.6/27.1	22701
1993 HA ₆	1999 11 26.8	04 08.58 +24 31.7	17.6	-1.07	-	1.0	1.2/27.3	35065
1996 TB ₁₅	1999 11 26.9	04 09.02 +60 49.2	17.4	-2.24	+	2.1	19.6/02.1	34866
1150 T-2	1999 11 26.9	04 09.21 +21 40.7	18.5	-1.13	-	2.5	0.3/27.1	32786
1996 DO ₁	1999 11 27.0	04 09.35 +31 43.0	17.3	-0.93	-	3.7	3.0/28.9	36519
1997 ED ₂₃	1999 11 27.0	04 09.36 +24 52.2	19.5	-1.05	-	2.4	1.3/27.6	30473
1998 QA ₄₇	1999 11 27.0	04 09.54 +13 14.1	18.0	-0.83	-	1.3	2.2/26.0	36539
1997 EY ₂₀	1999 11 27.0	04 09.58 +18 33.4	17.9	-1.04	-	3.2	0.9/26.7	36524
1993 GO	1999 11 27.0	04 09.59 +23 36.0	17.1	-1.14	+	1.3	0.9/27.3	36512
4026 P-L	1999 11 27.0	04 09.60 +39 35.2	17.5	-1.21	-	0.9	6.0/29.7	36579
(9042)	1999 11 27.0	04 09.69 +19 38.7	15.7	-0.91	-	2.8	0.5/26.9	32183
3119 T-1	1999 11 27.0	04 09.73 +21 22.6	18.0	-1.08	-	3.6	0.1/27.1	36580
1995 YT ₂	1999 11 27.1	04 09.80 +18 06.5	16.1	-0.94	+	2.7	1.5/26.9	26907
1991 GD ₈	1999 11 27.1	04 09.91 +15 00.3	17.6	-0.84	-	4.9	2.0/26.1	36507
(8782)	1999 11 27.1	04 10.03 +25 03.5	16.6	-1.12	-	3.2	1.8/27.8	31895
1981 EP ₁₄	1999 11 27.1	04 10.04 +18 38.4	19.1	-1.12	-	5.0	0.9/26.8	26917
1990 WA ₅	1999 11 27.1	04 10.15 +12 46.0	16.8	-0.94	-	1.2	2.9/26.1	36506
1997 GJ	1999 11 27.2	04 10.16 +21 55.6	18.0	-1.05	-	2.1	0.3/27.3	30691
6242 P-L	1999 11 27.2	04 10.20 +17 19.0	17.4	-1.02	-	5.1	1.5/26.6	36579
1998 KE ₅	1999 11 27.2	04 10.44 -00 13.9	16.9	-0.80	-	3.4	7.4/23.8	35708
3109 T-1	1999 11 27.2	04 10.54 +21 14.9	18.9	-1.06	-	3.8	0.1/27.3	24115
1998 QE ₁₄	1999 11 27.2	04 10.57 +03 47.1	18.6	-0.82	-	2.3	5.3/24.7	32760
1997 GX ₂₇	1999 11 27.3	04 10.61 +45 29.8	21.3	-1.88	+	6.2	9.0/28.1	30788
1995 WJ ₅	1999 11 27.3	04 10.67 +25 12.6	16.6	-1.02	-	5.4	1.4/28.1	36518
1993 FJ ₃₂	1999 11 27.3	04 10.81 +25 39.4	18.4	-1.04	-	3.6	1.5/28.1	32745
(10235)	1999 11 27.3	04 10.91 +22 53.3	17.2	-0.88	-	2.8	0.5/27.7	33915
1998 KV ₃₂	1999 11 27.4	04 11.24 +24 05.8	18.0	-1.12	-	5.2	1.1/28.0	36535