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EDITORIAL NOTICE

The next *MPC*s will be published on 1999 June 22.

ERRATA

MPC	Line	
25978	− 3	*For* (b. 1948) *read* (b. 1943)
33236	−14	The identification 1993 SQ_6 = 1997 YH_{20} is invalid (see *MPC* 34091) and 1993 SQ_6 = 1978 UX is thus unsupported
34091	30	*Add* The double designation 1932 CC_1 = 1932 EU (*MPC* 1749) is invalid
34261	−38	*Add* The identification 1977 EH_7 = 1982 VW_1 (*MPC* 13600) is invalid
34350	−42	*Add* Name proposed and citation prepared by L. D. Schmadel.
34350	−30	*Add* Name proposed and citation prepared by L. D. Schmadel.
34350	−18	*Add* Name proposed and citation prepared by L. D. Schmadel.
34350	− 7	*Add* Name proposed and citation prepared by L. D. Schmadel.

NEW OBSERVATORY CODES

The following listing is a continuation to that on *MPC* 34089. 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	$\rho\cos\phi'$	$\rho\sin\phi'$	
161	8.1605	0.70725	+0.70467	Cerrina Tololo Observatory
321	115.7571	0.85078	−0.52378	Craigie
431	149.7578	0.83548	−0.54793	Mt. Tarana Observatory, Bathurst
841	279.4423	0.79623	+0.60322	Martin Observatory, Blacksburg
842	282.7678	0.76901	+0.63713	Gettysburg College Observatory

CORRECTED OBSERVATION

The following observation corrects that previously published.

Object	Date	UT	α_{2000}	δ_{2000}	Reference	Obs.
(1980)	1998 01	17.57778	03 24 10.16	−01 10 47.8	*MPS* 3500	323

DELETED OBSERVATIONS

The following observations are to be deleted.

Object		Date	UT	α_{2000}	δ_{2000}	Reference	N Obs.
1981 US_{14}		1991 03	09.35208	13 05 00.41	−02 52 02.2	*MPC* 23180	675
1992 OW_{10}	*	1992 07	27.04028	23 40 08.78	−04 47 18.9	*MPS* 2524	033
(9)		1999 02	16.98355	09 23 09.31	+36 59 41.1	*MPS* 4269	1 071
(9)		1999 02	16.98853	09 23 07.72	+36 59 48.7	*MPS* 4269	1 071
(9)		1999 02	16.98904	09 23 07.54	+36 59 50.4	*MPS* 4269	1 071
(9)		1999 02	16.98956	09 23 07.46	+36 59 51.5	*MPS* 4270	1 071
(9)		1999 02	16.99008	09 23 07.10	+36 59 53.1	*MPS* 4270	1 071
(4434)		1951 11	08.46806	06 47 11.53	+14 43 15.1	*MPC* 21710	675

Note 1: observations published correctly as C/1998 P1 on *MPC* 33825.

IDENTIFICATION CHANGES

Continuation to *MPC* 34090.

Object		Date	UT	α_{2000}	δ_{2000}	Originally	Mag.	Obs.
1953 XX_1	*	1953 12	08.90139	03 31 21.52	+14 49 40.2	1953 VR_2		024
1973 RH	*	1973 09	02.92715	22 54 54.05	+02 18 46.8	1973 QN_1	16.5	095
1978 RE_{17}	*	1978 09	06.08576	22 52 57.05	−07 44 55.5	1978 RM_3		809
1980 SW	*	1980 09	16.16565	23 02 15.48	+03 21 02.0	1980 RL_1	18	801
1989 CP_9	*	1989 02	10.24583	08 08 31.05	+08 55 10.6	1989 CC_2		675
1991 HG_5	*	1991 04	19.14792	13 25 42.15	−09 49 37.6	1991 GR_9	19.7	809
1991 HG_5		1991 04	19.16111	13 25 41.53	−09 49 33.5	1991 GR_9		809
1991 HG_5		1991 04	19.17431	13 25 41.03	−09 49 27.4	1991 GR_9		809
1991 SP_5	*	1991 09	17.04642	01 32 13.44	+19 38 06.2	1991 RQ_{41}	16.3	095
1992 GM_8	*	1992 04	06.22500	13 52 16.83	−13 03 16.3	1992 GG_2		809
1992 GM_8		1992 04	06.23819	13 52 16.27	−13 03 14.3	1992 GG_2		809
1992 GM_8		1992 04	06.25139	13 52 15.69	−13 03 11.6	1992 GG_2		809
1992 TB_2	*	1992 10	04.28767	00 19 59.22	+09 10 36.9	1992 TO_1	17.5	675

1992 TB_2		1992 10 04.32205	00 19 57.24	+09 10 22.9	1992 TO_1			675
1993 UM_9	*	1993 10 22.27743	01 01 24.47	+09 13 25.7	1993 TK_{47}			809
1993 UM_9		1993 10 22.29826	01 01 23.26	+09 13 17.6	1993 TK_{47}			809
1993 UM_9		1993 10 22.31910	01 01 22.11	+09 13 10.7	1993 TK_{47}			809
1996 FZ_{23}	*	1996 03 27.29097	14 40 34.48	−11 48 16.9	1996 FB_{23}			809
1996 FZ_{23}		1996 03 27.30278	14 40 34.08	−11 48 16.3	1996 FB_{23}			809
1996 FZ_{23}		1996 03 27.31458	14 40 33.75	−11 48 16.4	1996 FB_{23}			809
1996 JW_{16}	*	1996 05 13.53538	14 13 11.87	−12 09 21.6	1996 HX_8	17.5	V	566
1996 JW_{16}		1996 05 13.55567	14 13 11.09	−12 09 16.2	1996 HX_8	17.6	V	566
1996 JW_{16}		1996 05 13.57435	14 13 10.32	−12 09 11.6	1996 HX_8	17.5	V	566
1998 TE_{35}	*	1998 10 12.35658	02 08 06.56	+13 36 20.7	1998 SQ_{146}	20.7	V	691
1998 TE_{35}		1998 10 12.37908	02 08 05.24	+13 36 20.3	1998 SQ_{146}	20.6	V	691
1998 TE_{35}		1998 10 12.40064	02 08 04.00	+13 36 20.6	1998 SQ_{146}	20.8	V	691
1998 TE_{35}		1998 10 15.28207	02 05 23.06	+13 36 24.1	1998 SQ_{146}	20.6	V	691
1998 TE_{35}		1998 10 15.29284	02 05 22.40	+13 36 23.9	1998 SQ_{146}	21.0	V	691
1998 TE_{35}		1998 10 15.30274	02 05 21.79	+13 36 23.8	1998 SQ_{146}	20.9	V	691
1998 VO_{44}	*	1998 11 01.76810	04 25 30.79	+19 49 49.4	1998 UU_{31}			327
1998 VO_{44}		1998 11 01.78081	04 25 30.25	+19 49 46.7	1998 UU_{31}	18.7		327
1998 VO_{44}		1998 11 01.79347	04 25 29.78	+19 49 45.0	1998 UU_{31}			327
1999 BW_{33}	*	1999 01 19.21287	06 33 49.24	+26 15 06.7	1999 BG_{21}	18.2		704
1999 BW_{33}		1999 01 19.23514	06 33 48.52	+26 15 06.9	1999 BG_{21}	18.2		704
1999 BW_{33}		1999 01 19.25738	06 33 47.90	+26 15 07.0	1999 BG_{21}	19.2		704
1999 BW_{33}		1999 01 19.27960	06 33 46.69	+26 15 08.1	1999 BG_{21}	19.6		704
1999 CU_{154}	*	1999 02 15.89737	11 02 17.13	+04 36 31.2	1999 CS_9	18.8	V	557
1999 CU_{154}		1999 02 15.92266	11 02 15.93	+04 36 38.8	1999 CS_9			557
1999 FL_{53}	*	1999 03 21.25220	12 46 58.34	−12 05 24.0	1999 EM_9	17.7	V	860
1999 FL_{53}		1999 03 21.25720	12 46 58.09	−12 05 23.6	1999 EM_9	18.5	V	860
1999 FL_{53}		1999 03 21.26329	12 46 57.78	−12 05 21.5	1999 EM_9	18.3	V	860

IDENTIFICATIONS

The following identifications with numbered minor planets, by G. V. Williams, continue the list on *MPC* 34091:

A917 TG	= (10287)	1929 RG_1	= (10261)	1969 RB_1	= (10320)
1971 SH_4	= (10437)	1973 RH	= (10313)	1977 RY_2	= (10312)
1979 SD_8	= (10315)	1985 VC_4	= (10441)	1988 FA_2	= (10349)
1988 RX_{13}	= (10350)	1992 CU_4	= (10301)	1992 GM_8	= (10296)
1993 UM_9	= (10279)	1996 FZ_{23}	= (10440)		

OBSERVATIONS OF COMETS

Observations are published here for the following observatory codes:

046 Kleť. 0.57-m $f/5.2$ reflector + CCD. Observers J. Tichá, M. Tichý and Z. Moravec.

071 Rozhen. 0.5-m $f/1.4$ Schmidt + CCD. Observers V. Redeva and G. Borisov.

104 San Marcello Pistoise. 0.40-m $f/5$ reflector + CCD. Observers L. Tesi, A. Caronia, A. Boattini and M. Tombelli. Measured by G. Forti, L. Tesi, A. Boattini and M. Tombelli.

108 Montelupo. 0.30-m $f/5.7$ Schmidt-Cassegrain + CCD. Observers M. Tombelli, A. Boattini, L. Tesi, D. Guidetti, G. Forti and E. Masotti. Measured by M. Tombelli, A. Boattini, L. Tesi, S. Bartolini and G. Forti.

113 Drebach. 0.18-m $f/9$ refractor + CCD. Observers G. Lehmann and J. Kandler.

118 Modra. 0.6-m $f/5.5$ reflector + CCD. Observers A. Galád, D. Kalmančok, P. Kolény, L. Kornoš and J. Tóth.

159 Monte Agliale. 0.51-m $f/4.5$ reflector + CCD. Observer M. M. M. Santangelo.

249 SOHO. SOHO-LASCO coronagraphs C3 and C2. Observers D. A. Biesecker, S. Stezelberger and S. Gregory. New measurements by S. Gregory and D. A. Biesecker, with reduction by G. V. Williams, that in some cases supersede those previously published.

321 Craigie. 0.25-m Schmidt-Cassegrain + CCD. Observer G. G. Bolt.

327 Xinglong. 0.60-m Schmidt + CCD. Observers J. Zhu and X. Y. Li.

351 Sakamoto. 0.15-m $f/7.0$ lens + CCD. Observer Y. Kitamura.

355 Hadano. 0.28-m $f/5.0$ reflector + CCD. Observer A. Asami.

360 Kuma Kogen. 0.60-m $f/5.8$ Ritchey-Chrétien + CCD. Observer A. Nakamura.

367 Yatsuka. 0.26-m $f/4.8$ reflector. Observer H. Abe.

372 Geisei. 0.60-m $f/3.5$ reflector. Observer T. Seki.

402 Dynic Astronomical Observatory. 0.60-m $f/3.7$ reflector + CCD. Observers A. Sugie and Y. Ikari.

422 Loomberah. 0.25-m $f/4.1$ reflector + CCD. Observer G. J. Garradd.

423 North Ryde. 0.20-m $f/4$ hyperbolic astrograph + CCD. Observer S. G. McAndrew.

426 Woomera. 0.30-m $f/3.3$ Schmidt-Cassegrain + CCD. Observer F. B. Zoltowski.

427 Stockport. 0.50-m $f/5$ reflector + CCD. Observers R. Purvinskis and F. Farrell. Measurer R. Purvinskis.

428 Reedy Creek. 0.25-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer J. Broughton.

429 Hawker. 0.32-m $f/4.8$ reflector + CCD. Observers J. B. Child and G. C. H. Bryant. Measurers J. B. Child and J. E. Rogers.

430 Rainbow Observatory, near Coonabarabran. 0.30-m $f/5$ reflector + CCD. Observer S. Lee.

431 Bathurst. 0.25-m $f/7.5$ Schmidt-Cassegrain + CCD. Observer C. Bembrick.

491 Yebes. 0.40-m $f/5$ astrograph + CCD. Observers J. F. Lahulla, J. García and A. Martin.

504 Le Creusot. 0.40-m $f/5$ reflector + CCD. Observer J. C. Merlin.

557 Ondřejov. 0.65-m $f/3.6$ reflector + CCD. Observers P. Pravec, L. Šarounová and M. Wolf.

561 Piszkéstető. 0.60-m Schmidt + CCD. Observers K. Sárneczky and L. Kiss.

587 Sormano. 0.5-m reflector + CCD. Observers G. Ventre, E. Colzani, F. Manca and M. Cavagna.

605 Marl. 0.2-m $f/10$ Schmidt-Cassegrain + CCD. Observer E. Jung.

611 Starkenburg. 0.45-m $f/4.4$ reflector + CCD. Observers E. Schwab, M. Busch and R. Stoss. Measured by M. Busch and R. Stoss.

620 Mallorca. 0.25-m $f/6.3$ reflector + CCD. Observers À. López, R. Pacheco and S. Sanchez.

658 Dominion Astrophysical Observatory. 1.82-m Plaskett telescope + CCD. Observer D. D. Balam.

691 Kitt Peak. 0.91-m Spacewatch telescope. Observer J. Montani.

693 University of Arizona, Catalina Station. 1.5-m reflector + CCD. Observers S. M. Larson and C. W. Hergenrother.

703 Catalina Sky Survey. 0.41-m $f/3$ Schmidt + CCD. Observer T. B. Spahr.
704 LINEAR. 1.0-m $f/2.15$ reflector + CCD. Observers M. Blythe, F. Shelly, M. Bezpalko and M. Elowitz. Measured by J. Stuart, H. Viggh and R. Sayer.
750 Hobbs Observatory, Fall Creek. 0.6-m $f/5$ telescope + CCD. Observer R. Elliott.
841 Blacksburg. 0.4-m $f/4$ reflector + CCD. Observers M. Blackmon, J. Ciccarelli, D. Fisher, R. Fortgang, K. Hale and N. Smith.
844 Los Molinos. 0.35-m $f/6.4$ reflector + CCD. Observers R. Salvo, J. C. Tulic, A. Sosa and E. Acosta.
859 Wykrota. 0.30-m $f/3.3$ reflector + CCD. Observers C. Jacques and J. Amansio.
860 Valinhos. 0.20-m $f/3.3$ reflector + CCD. Observer P. R. Holvorcem.
903 Fukuchiyama. 0.25-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer M. Yoshimi.
958 Dax. 0.32-m $f/5.7$ reflector + CCD. Observers P. Dupouy and F. Marechal. Measurers J.-F. Lahitte and F. Marechal.
963 Werrington. 0.28-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer J. Mackey.

Object	Date	UT	α_{2000}	δ_{2000}	Mag.	N	Obs.
C/1995 O1 (Hale-Bopp)							
C/1995 O1	1999 04	06.11222	04 55 34.10	−65 34 24.7			844
C/1995 O1	1999 04	06.11789	04 55 34.12	−65 34 23.2			844
C/1995 O1	1999 04	06.12891	04 55 34.63	−65 34 19.0			844
C/1995 O1	1999 04	07.06816	04 56 05.60	−65 29 39.3			844
C/1995 O1	1999 04	07.08498	04 56 06.21	−65 29 33.3			844
C/1995 O1	1999 04	07.10485	04 56 06.83	−65 29 27.7			844
C/1995 O1	1999 04	07.12030	04 56 07.35	−65 29 22.5			844
C/1995 O1	1999 04	13.41706	04 59 51.83	−64 59 33.0	13.1	N	422
C/1995 O1	1999 04	13.41765	04 59 51.83	−64 59 32.9	13.2	N	422
C/1995 O1	1999 04	13.42007	04 59 51.92	−64 59 32.4	13.2	N	422
C/1995 O1	1999 05	03.39370	05 14 18.27	−63 44 27.4			426
C/1995 O1	1999 05	03.39733	05 14 18.44	−63 44 26.9			426
C/1995 O1	1999 05	03.40045	05 14 18.57	−63 44 26.2	12.7	N	426
C/1996 B3 (SOHO)							
C/1996 B3	1996 01	27.97116	20 56 37.2	−19 58 17			249
Geocentric position (AU)			+0.00177619	−0.00880849	−0.00412441		
C/1996 B3	1996 01	27.98535	20 56 26.1	−19 56 37			249
Geocentric position (AU)			+0.00177817	−0.00880803	−0.00412379		
C/1996 B3	1996 01	27.99957	20 56 17.1	−19 54 16			249
Geocentric position (AU)			+0.00178018	−0.00880756	−0.00412316		
C/1996 B3	1996 01	28.01209	20 56 06.3	−19 52 20			249
Geocentric position (AU)			+0.00178189	−0.00880716	−0.00412262		
C/1996 B3	1996 01	28.02580	20 55 55.5	−19 49 49			249
Geocentric position (AU)			+0.00178381	−0.00880671	−0.00412202		
C/1996 B3	1996 01	28.03994	20 55 48.2	−19 48 44			249
Geocentric position (AU)			+0.00178578	−0.00880625	−0.00412139		
C/1996 B3	1996 01	28.05412	20 55 35.1	−19 45 26			249
Geocentric position (AU)			+0.00178776	−0.00880578	−0.00412077		
C/1996 B3	1996 01	28.08245	20 55 11.6	−19 41 10			249
Geocentric position (AU)			+0.00179172	−0.00880485	−0.00411952		
C/1996 B3	1996 01	28.09659	20 55 00.6	−19 38 44			249
Geocentric position (AU)			+0.00179369	−0.00880439	−0.00411890		
C/1996 B3	1996 01	28.11079	20 54 49.3	−19 36 36			249
Geocentric position (AU)			+0.00179567	−0.00880392	−0.00411827		
C/1996 B3	1996 01	28.13903	20 54 20.9	−19 31 37			249
Geocentric position (AU)			+0.00179962	−0.00880299	−0.00411703		
C/1996 B3	1996 01	28.16743	20 53 59.0	−19 26 56			249
Geocentric position (AU)			+0.00180359	−0.00880205	−0.00411577		
C/1996 B3	1996 01	28.18170	20 53 46.9	−19 24 25			249
Geocentric position (AU)			+0.00180558	−0.00880157	−0.00411514		
C/1996 B3	1996 01	28.19585	20 53 33.9	−19 22 13			249
Geocentric position (AU)			+0.00180756	−0.00880110	−0.00411451		
C/1996 B3	1996 01	28.21008	20 53 20.9	−19 19 46			249
Geocentric position (AU)			+0.00180955	−0.00880063	−0.00411388		
C/1996 B3	1996 01	28.22426	20 53 06.4	−19 17 34			249
Geocentric position (AU)			+0.00181153	−0.00880016	−0.00411325		
C/1996 B3	1996 01	28.25165	20 52 41.0	−19 12 30			249
Geocentric position (AU)			+0.00181536	−0.00879924	−0.00411204		
C/1996 B3	1996 01	28.26588	20 52 28.1	−19 10 46			249
Geocentric position (AU)			+0.00181735	−0.00879876	−0.00411140		
C/1996 B3	1996 01	28.28000	20 52 10.8	−19 07 26			249
Geocentric position (AU)			+0.00181933	−0.00879829	−0.00411078		
C/1996 B3	1996 01	28.29413	20 52 00.5	−19 05 28			249
Geocentric position (AU)			+0.00182131	−0.00879781	−0.00411015		
C/1996 Y1 (SOHO)							
C/1996 Y1	1996 12	21.67928	18 10 41.2	−28 44 28			249
Geocentric position (AU)			−0.00193610	−0.00953181	−0.00503058		
C/1996 Y1	1996 12	21.72792	18 10 52.8	−28 36 26			249
Geocentric position (AU)			−0.00193373	−0.00953196	−0.00503006		
C/1996 Y1	1996 12	22.07167	18 12 07.0	−27 37 15			249
Geocentric position (AU)			−0.00191703	−0.00953309	−0.00502631		
C/1996 Y1	1996 12	22.10647	18 12 14.2	−27 31 06			249
Geocentric position (AU)			−0.00191533	−0.00953321	−0.00502593		
C/1996 Y1	1996 12	22.14123	18 12 20.1	−27 24 52			249
Geocentric position (AU)			−0.00191363	−0.00953333	−0.00502555		
C/1996 Y1	1996 12	22.17603	18 12 27.6	−27 18 38			249
Geocentric position (AU)			−0.00191193	−0.00953345	−0.00502516		
C/1996 Y1	1996 12	22.21082	18 12 32.9	−27 12 25			249
Geocentric position (AU)			−0.00191023	−0.00953358	−0.00502478		
C/1996 Y1	1996 12	22.24558	18 12 38.9	−27 06 32			249
Geocentric position (AU)			−0.00190852	−0.00953371	−0.00502439		
C/1996 Y1	1996 12	22.28070	18 12 43.6	−26 59 42			249
Geocentric position (AU)			−0.00190680	−0.00953383	−0.00502400		
C/1996 Y1	1996 12	22.31547	18 12 50.0	−26 53 27			249
Geocentric position (AU)			−0.00190509	−0.00953396	−0.00502361		
C/1996 Y1	1996 12	22.35065	18 12 55.4	−26 47 03			249
Geocentric position (AU)			−0.00190337	−0.00953410	−0.00502322		
C/1996 Y1	1996 12	22.38545	18 13 00.0	−26 40 28			249
Geocentric position (AU)			−0.00190165	−0.00953423	−0.00502283		
C/1996 Y1	1996 12	22.42021	18 13 03.9	−26 33 47			249
Geocentric position (AU)			−0.00189994	−0.00953436	−0.00502245		
C/1996 Y1	1996 12	22.45539	18 13 08.9	−26 27 22			249
Geocentric position (AU)			−0.00189821	−0.00953450	−0.00502205		

C/1996 Y1	1996 12 22.49018	18 13 13.5	−26 20 39		249
Geocentric position (AU)	−0.00189649	−0.00953463	−0.00502166		
C/1996 Y1	1996 12 22.52494	18 13 17.0	−26 13 51		249
Geocentric position (AU)	−0.00189478	−0.00953477	−0.00502127		
C/1996 Y1	1996 12 22.55977	18 13 20.5	−26 06 55		249
Geocentric position (AU)	−0.00189306	−0.00953491	−0.00502088		
C/1996 Y1	1996 12 22.59492	18 13 23.9	−26 00 07		249
Geocentric position (AU)	−0.00189132	−0.00953505	−0.00502048		
C/1996 Y1	1996 12 22.83777	18 13 28.5	−25 09 06		249
Geocentric position (AU)	−0.00187925	−0.00953607	−0.00501773		
C/1996 Y1	1996 12 22.87254	18 13 27.8	−25 01 13		249
Geocentric position (AU)	−0.00187752	−0.00953622	−0.00501733		
C/1996 Y1	1996 12 22.90738	18 13 25.3	−24 53 19		249
Geocentric position (AU)	−0.00187578	−0.00953637	−0.00501693		
C/1996 Y1	1996 12 22.94214	18 13 20.0	−24 45 07		249
Geocentric position (AU)	−0.00187404	−0.00953652	−0.00501654		
C/1996 Y1	1996 12 22.97688	18 13 14.9	−24 36 35		249
Geocentric position (AU)	−0.00187230	−0.00953668	−0.00501614		
C/1996 Y1	1996 12 22.93386	18 13 23.3	−24 46 06		249
Geocentric position (AU)	−0.00187445	−0.00953649	−0.00501663		
C/1996 Y1	1996 12 22.96860	18 13 19.6	−24 38 37		249
Geocentric position (AU)	−0.00187272	−0.00953664	−0.00501623		
C/1996 Y1	1996 12 22.98931	18 13 12.6	−24 33 42		249
Geocentric position (AU)	−0.00187168	−0.00953674	−0.00501600		
C/1996 Y1	1996 12 23.05883	18 12 55.4	−24 15 29		249
Geocentric position (AU)	−0.00186820	−0.00953705	−0.00501520		
C/1996 Y1	1996 12 23.07325	18 12 52.5	−24 11 28		249
Geocentric position (AU)	−0.00186747	−0.00953712	−0.00501503		
C/1996 Y1	1996 12 23.09357	18 12 44.9	−24 05 47		249
Geocentric position (AU)	−0.00186645	−0.00953721	−0.00501480		
C/1996 Y1	1996 12 23.16312	18 12 04.2	−23 44 56		249
Geocentric position (AU)	−0.00186295	−0.00953754	−0.00501399		
C/1996 Y1	1996 12 23.17754	18 11 50.9	−23 40 35		249
Geocentric position (AU)	−0.00186222	−0.00953760	−0.00501383		
C/1996 Y1	1996 12 23.19785	18 11 30.6	−23 34 32		249
Geocentric position (AU)	−0.00186120	−0.00953770	−0.00501359		

C/1997 B2 (SOHO)

C/1997 B2	1997 01 26.30651	20 53 01.3	−20 09 38		249
Geocentric position (AU)	+0.00185031	−0.00898610	−0.00391180		
C/1997 B2	1997 01 26.36465	20 52 20.6	−20 01 01		249
Geocentric position (AU)	+0.00185986	−0.00898257	−0.00390840		
C/1997 B2	1997 01 26.42918	20 51 24.9	−19 50 23		249
Geocentric position (AU)	+0.00187049	−0.00897864	−0.00390461		
C/1997 B2	1997 01 26.48965	20 50 36.8	−19 41 10		249
Geocentric position (AU)	+0.00188046	−0.00897495	−0.00390105		
C/1997 B2	1997 01 26.55224	20 49 40.7	−19 30 35		249
Geocentric position (AU)	+0.00189079	−0.00897110	−0.00389736		

C/1997 BA_6 (Spacewatch)

C/1997 BA_6	1999 04 06.01560	08 00 51.81	−47 55 03.5	14.3 T	860
C/1997 BA_6	1999 04 06.02194	08 00 51.51	−47 55 02.3	14.5 T	860
C/1997 BA_6	1999 04 06.02786	08 00 51.24	−47 55 00.4	14.3 T	860
C/1997 BA_6	1999 04 10.12057	07 58 10.29	−47 35 40.8		844
C/1997 BA_6	1999 04 10.14073	07 58 09.55	−47 35 35.0		844
C/1997 BA_6	1999 04 10.16196	07 58 08.80	−47 35 28.7		844
C/1997 BA_6	1999 04 10.18117	07 58 08.13	−47 35 22.7		844
C/1997 BA_6	1999 04 19.43865	07 53 50.09	−46 51 03.9	16.2 T	422
C/1997 BA_6	1999 04 19.44021	07 53 50.04	−46 51 03.5	16.4 T	422
C/1997 BA_6	1999 04 19.44105	07 53 50.05	−46 51 03.2	16.2 T	422

C/1997 K1 (SOHO)

C/1997 K1	1997 05 31.22090	04 36 12.8	+18 14 15		249
Geocentric position (AU)	+0.00357786	+0.01019855	+0.00342245		
C/1997 K1	1997 05 31.33340	04 36 08.7	+18 25 48		249
Geocentric position (AU)	+0.00357371	+0.01020094	+0.00342312		
C/1997 K1	1997 05 31.38340	04 36 03.5	+18 32 08		249
Geocentric position (AU)	+0.00357186	+0.01020199	+0.00342342		
C/1997 K1	1997 05 31.48548	04 35 56.3	+18 44 40		249
Geocentric position (AU)	+0.00356807	+0.01020414	+0.00342403		
C/1997 K1	1997 05 31.78088	04 35 37.8	+19 23 52		249
Geocentric position (AU)	+0.00355700	+0.01021030	+0.00342585		
C/1997 K1	1997 05 31.86628	04 35 26.7	+19 36 03		249
Geocentric position (AU)	+0.00355377	+0.01021206	+0.00342638		
C/1997 K1	1997 05 31.94451	04 35 19.0	+19 48 03		249
Geocentric position (AU)	+0.00355080	+0.01021367	+0.00342687		
C/1997 K1	1997 05 31.97576	04 35 16.3	+19 52 56		249
Geocentric position (AU)	+0.00354962	+0.01021430	+0.00342706		
C/1997 K1	1997 06 01.02785	04 35 13.0	+20 01 53		249
Geocentric position (AU)	+0.00354763	+0.01021537	+0.00342739		
C/1997 K1	1997 06 01.07437	04 35 09.4	+20 09 48		249
Geocentric position (AU)	+0.00354586	+0.01021631	+0.00342769		
C/1997 K1	1997 06 01.12159	04 35 03.2	+20 18 41		249
Geocentric position (AU)	+0.00354405	+0.01021727	+0.00342798		
C/1997 K1	1997 06 01.18759	04 34 59.2	+20 31 23		249
Geocentric position (AU)	+0.00354152	+0.01021861	+0.00342840		
C/1997 K1	1997 06 01.22923	04 34 56.7	+20 39 18		249
Geocentric position (AU)	+0.00353992	+0.01021944	+0.00342867		
C/1997 K1	1997 06 01.25631	04 34 57.6	+20 45 01		249
Geocentric position (AU)	+0.00353888	+0.01021999	+0.00342884		
C/1997 K1	1997 06 01.27090	04 34 57.3	+20 47 21		249
Geocentric position (AU)	+0.00353832	+0.01022028	+0.00342894		
C/1997 K1	1997 06 01.31256	04 34 53.6	+20 56 37		249
Geocentric position (AU)	+0.00353671	+0.01022112	+0.00342920		
C/1997 K1	1997 06 01.35423	04 34 56.5	+21 05 48		249
Geocentric position (AU)	+0.00353510	+0.01022195	+0.00342947		
C/1997 K1	1997 06 01.39590	04 34 54.4	+21 16 57		249
Geocentric position (AU)	+0.00353349	+0.01022278	+0.00342974		

C/1998 M3 (Larsen)

C/1998 M3	1999 04 14.76094	16 31 22.50	+27 13 51.9	18.8 T	360
C/1998 M3	1999 04 14.76580	16 31 22.25	+27 13 55.1		360
C/1998 M3	1999 04 14.77118	16 31 22.00	+27 13 59.6		360

C/1998 M5 (LINEAR)

C/1998 M5	1999 03 18.02778	07 38 47.20	+87 18 12.5	12.8 T	561
C/1998 M5	1999 03 18.03738	07 38 50.52	+87 17 36.8	12.6 T	561
C/1998 M5	1999 03 18.04022	07 38 51.84	+87 17 25.7	12.7 T	561

C/1998 M5	1999 03 18.04149	07 38 52.35	+87 17 21.4	12.9 T	561
C/1998 M5	1999 03 22.51493	07 51 46.30	+82 39 17.6	13.0 T	372
C/1998 M5	1999 03 23.67969	07 53 31.82	+81 27 10.8	12.9 T	372
C/1998 M5	1999 03 30.87953	08 02 08.65	+74 10 22.7	11.6 T	504
C/1998 M5	1999 03 30.88015	08 02 08.72	+74 10 20.5	11.6 T	504
C/1998 M5	1999 03 30.88214	08 02 08.80	+74 10 13.2	11.6 T	504
C/1998 M5	1999 03 30.88278	08 02 08.81	+74 10 11.3	11.6 T	504
C/1998 M5	1999 03 30.88340	08 02 08.88	+74 10 09.3	11.7 T	504
C/1998 M5	1999 03 31.55245	08 02 50.95	+73 30 34.7	11.7 T	402
C/1998 M5	1999 03 31.55360	08 02 51.08	+73 30 30.1	11.9 T	355
C/1998 M5	1999 03 31.55371	08 02 51.01	+73 30 30.0		402
C/1998 M5	1999 03 31.55498	08 02 51.10	+73 30 25.6		402
C/1998 M5	1999 03 31.55589	08 02 51.18	+73 30 22.1		355
C/1998 M5	1999 03 31.56024	08 02 51.40	+73 30 06.5		355
C/1998 M5	1999 04 03.82470	08 06 13.13	+70 20 10.2		963
C/1998 M5	1999 04 05.94803	08 08 20.38	+68 19 38.4		046
C/1998 M5	1999 04 05.94931	08 08 20.46	+68 19 33.9		046
C/1998 M5	1999 04 05.95071	08 08 20.54	+68 19 29.2		046
C/1998 M5	1999 04 06.43854	08 08 49.99	+67 52 13.8	13.5 T	372
C/1998 M5	1999 04 07.19231	08 09 34.32	+67 10 16.0	14.1 T	750
C/1998 M5	1999 04 07.20088	08 09 34.80	+67 09 47.5	14.2 T	750
C/1998 M5	1999 04 07.21293	08 09 35.48	+67 09 07.1	14.4 T	750
C/1998 M5	1999 04 07.56736	08 09 56.43	+66 49 32.2	11.1 T	360
C/1998 M5	1999 04 07.56910	08 09 56.51	+66 49 26.5		360
C/1998 M5	1999 04 07.59420	08 09 57.99	+66 48 02.2		355
C/1998 M5	1999 04 07.59685	08 09 58.15	+66 47 53.6		355
C/1998 M5	1999 04 07.59949	08 09 58.30	+66 47 44.5		355
C/1998 M5	1999 04 07.86100	08 10 14.25	+66 33 22.0		963
C/1998 M5	1999 04 08.23538	08 10 35.92	+66 12 48.4	14.5 T	750
C/1998 M5	1999 04 08.23773	08 10 36.04	+66 12 40.6	14.6 T	750
C/1998 M5	1999 04 08.24467	08 10 36.43	+66 12 17.6	14.7 T	750
C/1998 M5	1999 04 08.47822	08 10 50.52	+65 59 32.0	13.1 T	372
C/1998 M5	1999 04 08.49072	08 10 51.18	+65 58 52.4	11.8 T	402
C/1998 M5	1999 04 08.49198	08 10 51.26	+65 58 48.3		402
C/1998 M5	1999 04 08.49450	08 10 51.39	+65 58 40.0		402
C/1998 M5	1999 04 08.83895	08 11 11.68	+65 39 53.1	12.7 T	118
C/1998 M5	1999 04 08.84406	08 11 12.06	+65 39 35.8		118
C/1998 M5	1999 04 09.85086	08 12 11.18	+64 45 10.1		963
C/1998 M5	1999 04 10.93639	08 13 14.30	+63 47 13.4		963
C/1998 M5	1999 04 11.48321	08 13 46.38	+63 18 20.1	11.5 T	351
C/1998 M5	1999 04 11.48897	08 13 46.81	+63 18 02.2		351
C/1998 M5	1999 04 11.49512	08 13 47.06	+63 17 43.0		351
C/1998 M5	1999 04 12.86927	08 15 07.37	+62 06 01.6	13.3 T	491
C/1998 M5	1999 04 12.87438	08 15 06.75	+62 05 39.6	13.1 T	491
C/1998 M5	1999 04 12.87873	08 15 07.84	+62 05 26.1	13.3 T	491
C/1998 M5	1999 04 12.88263	08 15 07.94	+62 05 17.2	13.3 T	491
C/1998 M5	1999 04 12.96730	08 15 12.72	+62 00 52.2	12.8 T	491
C/1998 M5	1999 04 13.23194	08 15 27.98	+61 47 12.2	15.7 T	750
C/1998 M5	1999 04 13.24005	08 15 28.48	+61 46 46.9	15.8 T	750
C/1998 M5	1999 04 13.24977	08 15 29.04	+61 46 16.5	15.7 T	750
C/1998 M5	1999 04 14.51088	08 16 42.37	+60 41 53.2	11.2 T	903
C/1998 M5	1999 04 14.51458	08 16 42.56	+60 41 42.4	11.4 T	360
C/1998 M5	1999 04 14.51632	08 16 42.66	+60 41 37.2		360
C/1998 M5	1999 04 14.63722	08 16 49.63	+60 35 27.1		903
C/1998 M5	1999 04 14.63934	08 16 49.71	+60 35 21.2		903
C/1998 M5	1999 04 15.83052	08 17 58.96	+59 35 37.0		046
C/1998 M5	1999 04 15.83147	08 17 58.99	+59 35 34.3		046
C/1998 M5	1999 04 15.83218	08 17 59.02	+59 35 32.1		046
C/1998 M5	1999 04 16.62268	08 18 44.56	+58 56 23.5	11.6 T	903
C/1998 M5	1999 04 16.62694	08 18 44.78	+58 56 11.7		903
C/1998 M5	1999 04 16.63120	08 18 45.04	+58 55 58.1		903
C/1998 M5	1999 04 16.87935	08 18 59.51	+58 43 47.4	11.6 T	504
C/1998 M5	1999 04 16.87999	08 18 59.55	+58 43 45.4	11.7 T	504
C/1998 M5	1999 04 16.88063	08 18 59.57	+58 43 43.6	11.7 T	504
C/1998 M5	1999 04 16.88253	08 18 59.72	+58 43 38.1	11.6 T	504
C/1998 M5	1999 04 16.88318	08 18 59.74	+58 43 36.0	11.8 T	504
C/1998 M5	1999 04 16.88383	08 18 59.75	+58 43 34.2	11.6 T	504
C/1998 M5	1999 04 19.13650	08 21 10.53	+56 54 53.3	14.9 T	704
C/1998 M5	1999 04 19.15678	08 21 11.76	+56 53 56.3		704
C/1998 M5	1999 04 19.17680	08 21 12.95	+56 52 56.3		704
C/1998 M5	1999 04 19.19700	08 21 14.64	+56 52 00.5		704
C/1998 M5	1999 04 20.51461	08 22 29.57	+55 50 01.6	12.2 T	351
C/1998 M5	1999 04 20.52039	08 22 29.89	+55 49 45.2		351
C/1998 M5	1999 04 20.53609	08 22 30.85	+55 49 01.2		351
C/1998 M5	1999 04 20.81296	08 22 46.84	+55 36 10.7		118
C/1998 M5	1999 04 20.82082	08 22 47.28	+55 35 47.8	13.6 T	118
C/1998 M5	1999 04 27.51524	08 29 12.50	+50 40 31.8	12.3 T	351
C/1998 M5	1999 04 27.52021	08 29 12.75	+50 40 19.5		351
C/1998 M5	1999 04 27.55906	08 29 14.85	+50 38 40.9		351
C/1998 M5	1999 04 28.84616	08 30 28.90	+49 45 18.7		118
C/1998 M5	1999 04 28.84841	08 30 29.04	+49 45 13.2		118
C/1998 M5	1999 04 28.84949	08 30 29.09	+49 45 10.6		118
C/1998 M5	1999 04 28.86744	08 30 30.15	+49 44 27.2		046
C/1998 M5	1999 04 28.86868	08 30 30.20	+49 44 24.1		046
C/1998 M5	1999 04 28.87015	08 30 30.29	+49 44 20.5		046
C/1998 M5	1999 05 01.55209	08 33 03.88	+47 56 32.8	12.2 T	903
C/1998 M5	1999 05 01.55634	08 33 04.20	+47 56 23.0		903
C/1998 M5	1999 05 01.56059	08 33 04.44	+47 56 12.9		903

C/1998 P1 (Williams)

C/1998 P1	1999 03 30.86568	07 21 24.26	+41 51 03.8	14.1 T	504
C/1998 P1	1999 03 30.86962	07 21 24.07	+41 51 03.8	14.2 T	504
C/1998 P1	1999 03 31.54524	07 20 49.48	+41 49 54.2	14.1 T	402
C/1998 P1	1999 03 31.54650	07 20 49.51	+41 49 54.4		402
C/1998 P1	1999 03 31.54777	07 20 49.28	+41 49 56.0		402
C/1998 P1	1999 04 04.46388	07 18 00.11	+41 42 58.1	17.3 T	351
C/1998 P1	1999 04 04.48404	07 17 59.16	+41 42 54.6		351
C/1998 P1	1999 04 04.54464	07 17 56.51	+41 42 48.7	14.5 T	402
C/1998 P1	1999 04 04.54786	07 17 56.44	+41 42 48.0		402
C/1998 P1	1999 04 04.54947	07 17 56.34	+41 42 48.0		402
C/1998 P1	1999 04 07.50920	07 16 19.64	+41 37 16.5	14.9 T	360
C/1998 P1	1999 04 07.51198	07 16 19.57	+41 37 17.0		360
C/1998 P1	1999 04 09.44250	07 15 29.66	+41 33 36.6	15.5 T	402
C/1998 P1	1999 04 09.44410	07 15 29.47	+41 33 36.7		402
C/1998 P1	1999 04 09.44729	07 15 29.48	+41 33 35.6		402
C/1998 P1	1999 04 09.79869	07 15 21.25	+41 32 55.4	15.2 T	118

C/1998 P1	1999 04 09.80914	07 15 21.12	+41 32 54.1			118
C/1998 P1	1999 04 12.15648	07 14 34.55	+41 28 26.8			693
C/1998 P1	1999 04 12.15994	07 14 34.52	+41 28 26.5			693
C/1998 P1	1999 04 12.16406	07 14 34.44	+41 28 26.2	14.9	T	693
C/1998 P1	1999 04 14.49653	07 14 00.89	+41 23 59.6	15.0	T	360
C/1998 P1	1999 04 14.50087	07 14 00.84	+41 23 59.9			360

P/1998 U3 (Jäger)

P/1998 U3	1999 03 17.58559	06 44 28.39	+21 23 08.9	14.1	T	372
P/1998 U3	1999 03 22.52917	06 50 35.69	+20 30 06.9	14.7	T	372
P/1998 U3	1999 03 23.74443	06 52 10.20	+20 17 18.0	14.2	T	071
P/1998 U3	1999 03 23.75124	06 52 10.88	+20 17 12.4	16.0	T	071
P/1998 U3	1999 03 23.75401	06 52 11.04	+20 17 11.0	15.4	T	071
P/1998 U3	1999 03 23.75661	06 52 11.20	+20 17 10.5	14.3	T	071
P/1998 U3	1999 03 29.79767	07 00 23.39	+19 14 32.9	13.0	T	605
P/1998 U3	1999 03 29.81414	07 00 24.71	+19 14 22.3	12.9	T	605
P/1998 U3	1999 03 29.82204	07 00 25.35	+19 14 18.3	13.7	T	620
P/1998 U3	1999 03 29.84005	07 00 26.82	+19 14 07.2	13.7	T	620
P/1998 U3	1999 03 29.86476	07 00 28.91	+19 13 51.6	13.7	T	620
P/1998 U3	1999 03 29.87392	07 00 29.61	+19 13 46.3	13.6	T	620
P/1998 U3	1999 03 30.85353	07 01 52.65	+19 03 44.8	11.9	T	504
P/1998 U3	1999 03 30.85492	07 01 52.78	+19 03 44.5	11.9	T	504
P/1998 U3	1999 03 30.85595	07 01 52.89	+19 03 43.3	11.9	T	504
P/1998 U3	1999 03 30.85809	07 01 53.04	+19 03 42.8	11.9	T	504
P/1998 U3	1999 03 30.85906	07 01 53.17	+19 03 41.6	11.9	T	504
P/1998 U3	1999 03 31.81094	07 03 14.68	+18 54 01.1			046
P/1998 U3	1999 03 31.81209	07 03 14.79	+18 54 00.4			046
P/1998 U3	1999 03 31.81326	07 03 14.92	+18 53 59.6			046
P/1998 U3	1999 04 01.82707	07 04 42.62	+18 43 42.2	13	T	118
P/1998 U3	1999 04 01.83152	07 04 42.97	+18 43 39.1			118
P/1998 U3	1999 04 01.83426	07 04 43.20	+18 43 37.5			118
P/1998 U3	1999 04 05.44618	07 10 02.30	+18 07 15.9	14.5	T	372
P/1998 U3	1999 04 05.77458	07 10 31.92	+18 03 58.0			104
P/1998 U3	1999 04 05.77724	07 10 32.12	+18 03 56.2			104
P/1998 U3	1999 04 05.77959	07 10 32.39	+18 03 55.4			104
P/1998 U3	1999 04 05.97760	07 10 50.20	+18 02 00.3	12.6	T	860
P/1998 U3	1999 04 05.98182	07 10 50.55	+18 01 58.0	12.9	T	860
P/1998 U3	1999 04 05.98591	07 10 50.95	+18 01 54.6	13.2	T	860
P/1998 U3	1999 04 06.43194	07 11 31.17	+17 57 23.7			372
P/1998 U3	1999 04 06.47312	07 11 34.89	+17 56 58.2	12.4	T	402
P/1998 U3	1999 04 06.47473	07 11 35.03	+17 56 57.2			402
P/1998 U3	1999 04 06.47634	07 11 35.20	+17 56 56.2			402
P/1998 U3	1999 04 07.04907	07 12 27.43	+17 51 13.5	13.9	N	841
P/1998 U3	1999 04 07.12764	07 12 34.23	+17 50 28.1	17.5	T	704
P/1998 U3	1999 04 07.13735	07 12 35.35	+17 50 20.2	14.2	N	841
P/1998 U3	1999 04 07.13876	07 12 35.22	+17 50 12.9	17.6	T	704
P/1998 U3	1999 04 07.14988	07 12 36.42	+17 50 07.3	18.5	T	704
P/1998 U3	1999 04 07.50174	07 13 08.32	+17 46 41.3	12.3	T	360
P/1998 U3	1999 04 07.50417	07 13 08.52	+17 46 39.9			360
P/1998 U3	1999 04 07.55255	07 13 13.03	+17 46 10.0			355
P/1998 U3	1999 04 07.55457	07 13 13.20	+17 46 08.8			355
P/1998 U3	1999 04 07.55799	07 13 13.54	+17 46 07.8			355
P/1998 U3	1999 04 08.13215	07 14 06.03	+17 40 23.4	16.1	T	750
P/1998 U3	1999 04 08.16447	07 14 09.05	+17 40 04.3	15.2	T	750
P/1998 U3	1999 04 08.53531	07 14 43.07	+17 36 22.1	13.4	T	351
P/1998 U3	1999 04 08.53898	07 14 43.46	+17 36 20.4			351
P/1998 U3	1999 04 08.54876	07 14 44.36	+17 36 14.3			351
P/1998 U3	1999 04 08.81609	07 15 09.00	+17 33 33.0			118
P/1998 U3	1999 04 08.82072	07 15 09.41	+17 33 30.4	13.3	T	118
P/1998 U3	1999 04 10.17789	07 17 15.02	+17 20 02.0	15.8	T	704
P/1998 U3	1999 04 10.19726	07 17 17.15	+17 19 48.2			704
P/1998 U3	1999 04 10.19890	07 17 17.10	+17 19 48.0	14.4	N	841
P/1998 U3	1999 04 10.21609	07 17 18.65	+17 19 43.2			704
P/1998 U3	1999 04 12.17450	07 20 22.11	+17 00 12.3			693
P/1998 U3	1999 04 12.17861	07 20 22.53	+17 00 09.8			693
P/1998 U3	1999 04 12.18267	07 20 22.92	+17 00 07.3	12.2	T	693
P/1998 U3	1999 04 12.88788	07 21 30.03	+16 53 06.5			491
P/1998 U3	1999 04 12.89234	07 21 30.27	+16 53 01.8			491
P/1998 U3	1999 04 12.89762	07 21 30.77	+16 52 58.9			491
P/1998 U3	1999 04 13.10499	07 21 50.40	+16 50 57.3	16.9	T	750
P/1998 U3	1999 04 13.11415	07 21 51.24	+16 50 51.9	17.0	T	750
P/1998 U3	1999 04 14.50660	07 24 03.96	+16 37 04.4	12.4	T	360
P/1998 U3	1999 04 14.50903	07 24 04.19	+16 37 03.1			360
P/1998 U3	1999 04 14.80284	07 24 32.40	+16 34 07.6			118
P/1998 U3	1999 04 14.80638	07 24 32.77	+16 34 05.5			118
P/1998 U3	1999 04 14.81057	07 24 33.17	+16 34 03.1			118
P/1998 U3	1999 04 16.86644	07 27 51.70	+16 13 41.7			504
P/1998 U3	1999 04 16.86841	07 27 51.84	+16 13 41.0			504
P/1998 U3	1999 04 16.87301	07 27 52.33	+16 13 37.7	13.1	T	504
P/1998 U3	1999 04 16.87444	07 27 52.46	+16 13 37.3	12.8	T	504
P/1998 U3	1999 04 16.87516	07 27 52.57	+16 13 36.2	12.5	T	504
P/1998 U3	1999 04 18.88552	07 31 08.98	+15 53 42.1	14.3	T	113
P/1998 U3	1999 04 18.88729	07 31 09.15	+15 53 41.2	14.4	T	113
P/1998 U3	1999 04 20.49475	07 33 47.61	+15 37 45.1	13.9	T	351
P/1998 U3	1999 04 20.50104	07 33 48.30	+15 37 42.5			351
P/1998 U3	1999 04 20.50854	07 33 48.87	+15 37 36.7			351
P/1998 U3	1999 04 28.81745	07 47 46.42	+14 14 53.7			118
P/1998 U3	1999 04 28.82108	07 47 46.83	+14 14 51.8			118
P/1998 U3	1999 04 28.82330	07 47 47.02	+14 14 50.8	13	T	118
P/1998 U3	1999 04 29.81537	07 49 28.77	+14 04 53.0			118
P/1998 U3	1999 04 29.81821	07 49 29.10	+14 04 51.5			118
P/1998 U3	1999 04 29.81962	07 49 29.25	+14 04 50.5			118
P/1998 U3	1999 04 30.82926	07 51 13.06	+13 54 43.3			118
P/1998 U3	1999 04 30.83500	07 51 13.67	+13 54 39.9			118

C/1998 U5 (LINEAR)

C/1998 U5	1999 04 14.80625	20 41 32.10	+15 54 40.7	15.6	T	360
C/1998 U5	1999 04 14.81024	20 41 31.84	+15 54 41.5			360

P/1998 W1 (Spahr)

P/1998 W1	1999 04 07.47378	06 24 09.93	+33 25 30.9	17.9	T	360
P/1998 W1	1999 04 07.47760	06 24 10.52	+33 25 32.0			360
P/1998 W1	1999 04 07.48507	06 24 11.60	+33 25 33.6			360
P/1998 W1	1999 04 08.47389	06 26 41.85	+33 30 29.7	18.2	T	402
P/1998 W1	1999 04 08.47550	06 26 42.37	+33 30 30.7			402
P/1998 W1	1999 04 08.47871	06 26 42.81	+33 30 30.8			402
P/1998 W1	1999 04 14.48316	06 42 04.09	+33 55 00.2	17.9	T	360

P/1998 W1	1999 04 14.48681	06 42 04.65	+33 55 00.3			360
P/1998 W1	1999 04 14.49045	06 42 05.24	+33 55 01.4			360
P/1998 W1	1999 04 15.14206	06 43 45.81	+33 57 05.7			693
P/1998 W1	1999 04 15.14704	06 43 46.62	+33 57 08.3			693
P/1998 W1	1999 04 15.15116	06 43 47.22	+33 57 07.7	17.5 T		693
P/1998 W1	1999 04 16.14873	06 46 21.53	+34 00 07.2			693
P/1998 W1	1999 04 16.15069	06 46 21.82	+34 00 07.5	17.9 T		693

P/1998 W2 (Hergenrother)

P/1998 W2	1999 04 12.14375	03 49 01.46	+37 06 47.5		1	693
P/1998 W2	1999 04 12.14839	03 49 02.33	+37 06 49.0		1	693
P/1998 W2	1999 04 15.13385	03 58 01.28	+37 26 17.7			693
P/1998 W2	1999 04 15.13584	03 58 01.69	+37 26 18.8			693
P/1998 W2	1999 04 15.13778	03 58 02.01	+37 26 19.5	20.2 T		693

C/1998 W3 (LINEAR)

C/1998 W3	1999 04 06.46247	06 12 25.49	+45 17 42.3	17.9 T		402
C/1998 W3	1999 04 08.43750	06 12 02.90	+45 19 02.0			402
C/1998 W3	1999 04 09.45127	06 11 52.33	+45 19 45.5			402

P/1998 X1 (ODAS)

P/1998 X1	1999 04 04.52780	09 12 29.13	+16 56 07.6	19.4 T		402
P/1998 X1	1999 04 04.53471	09 12 29.33	+16 56 06.6			402
P/1998 X1	1999 04 14.22360	09 15 44.53	+16 35 26.7			693
P/1998 X1	1999 04 14.23188	09 15 44.54	+16 35 26.7	19.4 T		693

D/1998 Y1 (LINEAR)

D/1998 Y1	1999 04 12.28554	08 10 54.46	+42 56 05.2			693
D/1998 Y1	1999 04 12.28992	08 10 55.02	+42 56 04.9			693
D/1998 Y1	1999 04 12.29397	08 10 55.31	+42 56 03.0			693
D/1998 Y1	1999 04 16.20464	08 17 36.21	+42 36 46.1			693
D/1998 Y1	1999 04 16.20880	08 17 36.66	+42 36 45.1	21.3 T		693

P/1998 Y2 (Li)

P/1998 Y2	1999 04 05.77437	04 22 50.27	+18 35 05.1	15.8 T		118
P/1998 Y2	1999 04 05.78255	04 22 51.05	+18 35 09.4			118
P/1998 Y2	1999 04 07.44826	04 25 33.91	+18 51 53.3	16.9 T		360
P/1998 Y2	1999 04 07.45069	04 25 34.10	+18 51 55.2			360
P/1998 Y2	1999 04 07.45313	04 25 34.36	+18 51 56.6			360
P/1998 Y2	1999 04 08.44789	04 27 12.14	+19 01 47.3	17.0 T		402
P/1998 Y2	1999 04 08.44949	04 27 12.37	+19 01 48.0			402
P/1998 Y2	1999 04 08.45110	04 27 12.39	+19 01 49.7			402

P/1999 D1 (Hermann)

P/1999 D1	1999 04 04.57090	11 30 20.78	−14 42 11.5	17.7 T		402
P/1999 D1	1999 04 04.57322	11 30 20.63	−14 42 12.5			402
P/1999 D1	1999 04 04.57781	11 30 20.34	−14 42 17.7			402
P/1999 D1	1999 04 07.59253	11 28 01.59	−15 34 03.8	17.9 T		360
P/1999 D1	1999 04 07.59670	11 28 01.40	−15 34 08.4			360
P/1999 D1	1999 04 07.60104	11 28 01.20	−15 34 13.1			360
P/1999 D1	1999 04 14.24293	11 24 11.89	−17 15 00.5			693
P/1999 D1	1999 04 14.24697	11 24 11.78	−17 15 04.0			693
P/1999 D1	1999 04 14.25102	11 24 11.65	−17 15 07.6	18.5 T		693
P/1999 D1	1999 04 14.58177	11 24 03.11	−17 19 43.0	18.6 T		360
P/1999 D1	1999 04 14.58594	11 24 02.96	−17 19 45.6			360
P/1999 D1	1999 04 14.59010	11 24 02.89	−17 19 49.5			360

D/1999 E1 (Li)

D/1999 E1	1999 03 31.49397	06 32 49.17	+08 05 36.4	16.0 T		402
D/1999 E1	1999 03 31.49560	06 32 49.22	+08 05 37.6			402
D/1999 E1	1999 03 31.49720	06 32 49.28	+08 05 38.4			402
D/1999 E1	1999 04 03.45479	06 34 34.67	+08 35 29.7	16.4 T		402
D/1999 E1	1999 04 03.45640	06 34 34.85	+08 35 30.1			402
D/1999 E1	1999 04 03.45801	06 34 34.84	+08 35 30.8			402
D/1999 E1	1999 04 04.76083	06 35 23.43	+08 48 23.4			118
D/1999 E1	1999 04 04.76248	06 35 23.44	+08 48 24.7			118
D/1999 E1	1999 04 04.76689	06 35 23.65	+08 48 27.3	16.3 T		118
D/1999 E1	1999 04 05.45398	06 35 49.72	+08 55 12.0	16.9 T		372
D/1999 E1	1999 04 05.95816	06 36 08.99	+09 00 07.7	16.3 T		860
D/1999 E1	1999 04 05.97020	06 36 09.51	+09 00 14.7	16.3 T		860
D/1999 E1	1999 04 06.44784	06 36 28.25	+09 04 49.3	16.7 T		402
D/1999 E1	1999 04 06.45014	06 36 28.25	+09 04 50.2			402
D/1999 E1	1999 04 06.45642	06 36 28.46	+09 04 52.8			402
D/1999 E1	1999 04 07.45799	06 37 07.99	+09 14 30.7	16.1 T		360
D/1999 E1	1999 04 07.46042	06 37 08.06	+09 14 32.1			360
D/1999 E1	1999 04 07.46285	06 37 08.16	+09 14 32.9			360
D/1999 E1	1999 04 08.44722	06 37 47.67	+09 23 54.4	17.0 T		372
D/1999 E1	1999 04 08.45694	06 37 48.00	+09 23 59.7	17.0 T		372
D/1999 E1	1999 04 08.46543	06 37 48.43	+09 24 02.6	16.3 T		402
D/1999 E1	1999 04 08.46703	06 37 48.50	+09 24 03.7			402
D/1999 E1	1999 04 08.46863	06 37 48.57	+09 24 04.7			402
D/1999 E1	1999 04 08.79616	06 38 01.90	+09 27 08.7			118
D/1999 E1	1999 04 08.79897	06 38 02.00	+09 27 10.6	16.1 T		118
D/1999 E1	1999 04 12.35616	06 40 31.56	+09 59 59.0	15.6 T		428
D/1999 E1	1999 04 12.37774	06 40 32.49	+10 00 10.4	15.7 T		428
D/1999 E1	1999 04 14.47587	06 42 04.83	+10 18 51.1	16.2 T		360
D/1999 E1	1999 04 14.47830	06 42 04.92	+10 18 52.9			360
D/1999 E1	1999 04 14.78324	06 42 18.62	+10 21 33.0			118
D/1999 E1	1999 04 14.78630	06 42 18.75	+10 21 34.1			118
D/1999 E1	1999 04 14.79052	06 42 18.93	+10 21 36.6	16.6 T		118
D/1999 E1	1999 04 16.15904	06 43 21.05	+10 33 32.3			693
D/1999 E1	1999 04 16.16307	06 43 21.17	+10 33 34.0			693
D/1999 E1	1999 04 16.16709	06 43 21.43	+10 33 36.4	15.7 T		693
D/1999 E1	1999 04 18.84370	06 45 26.52	+10 56 19.9	15.9 T		113
D/1999 E1	1999 04 18.87094	06 45 27.87	+10 56 33.7	15.7 T		113
D/1999 E1	1999 04 28.79775	06 53 49.12	+12 14 27.8			118
D/1999 E1	1999 04 28.80244	06 53 49.33	+12 14 30.0	15.9 T		118
D/1999 E1	1999 04 28.80419	06 53 49.40	+12 14 30.4			118
D/1999 E1	1999 04 29.79788	06 54 42.65	+12 21 46.3			118
D/1999 E1	1999 04 29.80370	06 54 42.98	+12 21 49.0			118
D/1999 E1	1999 04 30.79767	06 55 36.72	+12 28 59.2			118
D/1999 E1	1999 04 30.80221	06 55 36.96	+12 29 00.9			118

C/1999 F1 (Catalina)

C/1999 F1	1999 03 13.43348	13 26 44.51	−08 27 45.0	18.8 N	2	691
C/1999 F1	1999 03 13.45471	13 26 43.95	−08 27 45.0	18.7 N	2	691
C/1999 F1	1999 03 13.47617	13 26 43.39	−08 27 45.1	18.8 N	2	691
C/1999 F1	1999 03 23.31633	13 22 09.56	−08 27 59.9	18.3 N		703
C/1999 F1	1999 03 23.33257	13 22 09.08	−08 28 02.3	18.5 N		703
C/1999 F1	1999 03 23.34944	13 22 08.55	−08 28 02.0	18.1 N		703

C/1999 F1	1999 03 23.36542	13 22 08.13	−08 28 03.9	18.4 N		703
C/1999 F1	1999 03 23.38204	13 22 07.62	−08 28 05.3	18.4 N		703
C/1999 F1	1999 04 16.28690	13 09 48.19	−08 22 56.9			703
C/1999 F1	1999 04 16.29656	13 09 47.95	−08 22 56.8			703
C/1999 F1	1999 04 17.24230	13 09 17.94	−08 22 39.7	18.1 N		703
C/1999 F1	1999 04 17.25304	13 09 17.64	−08 22 40.0	18.2 N		703
C/1999 F1	1999 04 17.26512	13 09 17.27	−08 22 40.3	17.9 N		703
C/1999 F1	1999 04 17.27868	13 09 16.85	−08 22 40.6	18.2 N		703
C/1999 F1	1999 04 17.91748	13 08 56.58	−08 22 29.8			557
C/1999 F1	1999 04 17.92578	13 08 56.35	−08 22 29.9			557
C/1999 F1	1999 04 17.93556	13 08 56.09	−08 22 28.8	18.3 N		557
C/1999 F1	1999 04 18.24472	13 08 46.36	−08 22 24.1			703
C/1999 F1	1999 04 18.27088	13 08 45.43	−08 22 22.1			703
C/1999 F1	1999 04 18.32324	13 08 43.81	−08 22 22.6			703
C/1999 F1	1999 04 18.54631	13 08 36.84	−08 22 17.4	18.9 N		428
C/1999 F1	1999 04 18.61035	13 08 34.70	−08 22 15.7	18.8 N		428
C/1999 F1	1999 04 19.48819	13 08 07.17	−08 21 59.9	18.8 N		422
C/1999 F1	1999 04 19.48900	13 08 07.13	−08 22 00.4	18.9 N		422
C/1999 F1	1999 04 19.48971	13 08 07.06	−08 22 00.4	19.0 N		422
C/1999 F1	1999 04 19.49036	13 08 07.04	−08 22 00.1	19.1 N		422
C/1999 F1	1999 04 19.95071	13 07 52.56	−08 21 55.4	17.4 N		046
C/1999 F1	1999 04 19.95674	13 07 52.40	−08 21 55.2			046
C/1999 F1	1999 04 19.96472	13 07 52.08	−08 21 55.5			046
C/1999 F1	1999 04 19.97262	13 07 51.80	−08 21 55.4			046
C/1999 F1	1999 04 19.99832	13 07 51.11	−08 21 54.7			118
C/1999 F1	1999 04 20.00496	13 07 50.76	−08 21 53.6	18.3 N		118
C/1999 F1	1999 04 20.00726	13 07 50.61	−08 21 53.8			118
C/1999 F1	1999 04 20.09256	13 07 48.17	−08 21 52.3	18.8 N	1	860
C/1999 F1	1999 04 20.10152	13 07 47.88	−08 21 51.3	19.0 N	1	860
C/1999 F1	1999 04 20.10554	13 07 47.68	−08 21 52.5	19.1 N	1	860
C/1999 F1	1999 04 20.31402	13 07 41.15	−08 21 49.2			658
C/1999 F1	1999 04 20.32275	13 07 40.85	−08 21 49.0			658
C/1999 F1	1999 04 20.32792	13 07 40.61	−08 21 49.4			658
C/1999 F1	1999 04 24.35612	13 05 34.84	−08 20 45.3			658
C/1999 F1	1999 04 24.36611	13 05 34.53	−08 20 45.4			658
C/1999 F1	1999 04 24.37446	13 05 34.27	−08 20 45.1			658

C/1999 G1 (LINEAR)

C/1999 G1	1999 04 07.23782	13 37 55.16	−02 33 04.1	18.9 T		704
C/1999 G1	1999 04 07.25151	13 37 54.22	−02 33 11.6	19.2 T		704
C/1999 G1	1999 04 07.26499	13 37 53.31	−02 33 16.1	19.0 T		704
C/1999 G1	1999 04 07.27893	13 37 52.29	−02 33 19.1	19.3 T		704
C/1999 G1	1999 04 08.52875	13 36 27.16	−02 38 12.6	18.0 T		402
C/1999 G1	1999 04 08.53001	13 36 27.00	−02 38 15.1			402
C/1999 G1	1999 04 08.53127	13 36 26.93	−02 38 17.8			402
C/1999 G1	1999 04 08.53253	13 36 26.98	−02 38 16.8			402
C/1999 G1	1999 04 09.04341	13 35 51.79	−02 40 16.9			118
C/1999 G1	1999 04 09.04716	13 35 51.70	−02 40 18.8			118
C/1999 G1	1999 04 09.05124	13 35 51.30	−02 40 19.1			118
C/1999 G1	1999 04 09.05547	13 35 50.83	−02 40 16.5	17.4 T		118
C/1999 G1	1999 04 09.06174	13 35 50.57	−02 40 20.1			118
C/1999 G1	1999 04 09.31463	13 35 33.28	−02 41 18.7	18.7 T		704
C/1999 G1	1999 04 09.33369	13 35 32.02	−02 41 24.1	18.8 T		704
C/1999 G1	1999 04 09.35269	13 35 30.65	−02 41 25.3	19.1 T		704
C/1999 G1	1999 04 09.37161	13 35 29.41	−02 41 31.7	19.0 T		704
C/1999 G1	1999 04 10.00249	13 34 46.28	−02 44 03.9	17.5 T		118
C/1999 G1	1999 04 10.00613	13 34 46.04	−02 44 05.2	17.4 T		118
C/1999 G1	1999 04 10.01150	13 34 45.66	−02 44 07.0			118
C/1999 G1	1999 04 10.02802	13 34 44.65	−02 44 10.5	17.5 T		046
C/1999 G1	1999 04 10.03101	13 34 44.25	−02 44 11.8			046
C/1999 G1	1999 04 10.03531	13 34 44.19	−02 44 11.6			046
C/1999 G1	1999 04 10.03671	13 34 44.08	−02 44 13.0			046
C/1999 G1	1999 04 10.03822	13 34 43.94	−02 44 13.1	17.6 T		046
C/1999 G1	1999 04 10.05872	13 34 42.56	−02 44 16.9			046
C/1999 G1	1999 04 10.06844	13 34 41.90	−02 44 19.1			046
C/1999 G1	1999 04 10.07017	13 34 41.59	−02 44 18.5	18.6 N		557
C/1999 G1	1999 04 10.07711	13 34 41.11	−02 44 21.0	17.0 T		557
C/1999 G1	1999 04 10.56586	13 34 07.72	−02 46 13.9	18.2 T		426
C/1999 G1	1999 04 10.57556	13 34 07.08	−02 46 16.1	18.1 T		426
C/1999 G1	1999 04 10.58207	13 34 06.65	−02 46 18.1	18.1 T		426
C/1999 G1	1999 04 10.94954	13 33 41.63	−02 47 46.4			587
C/1999 G1	1999 04 10.96435	13 33 40.44	−02 47 51.9			587
C/1999 G1	1999 04 11.00723	13 33 37.58	−02 48 02.7			108
C/1999 G1	1999 04 11.01248	13 33 37.13	−02 48 03.7			108
C/1999 G1	1999 04 11.01922	13 33 36.59	−02 48 05.2			108
C/1999 G1	1999 04 11.02682	13 33 36.25	−02 48 07.8	17.3 T		108
C/1999 G1	1999 04 11.12250	13 33 29.56	−02 48 28.5	17.5 T		159
C/1999 G1	1999 04 11.12541	13 33 29.39	−02 48 30.7	17.4 T		159
C/1999 G1	1999 04 11.12800	13 33 29.24	−02 48 30.7	17.5 T		159
C/1999 G1	1999 04 11.13093	13 33 29.01	−02 48 30.7	17.8 T		159
C/1999 G1	1999 04 11.13339	13 33 28.98	−02 48 32.2	17.5 T		159
C/1999 G1	1999 04 11.13662	13 33 28.83	−02 48 32.9	17.6 T		159
C/1999 G1	1999 04 11.13900	13 33 28.57	−02 48 37.1	17.6 T		159
C/1999 G1	1999 04 11.57813	13 32 58.42	−02 50 14.5	16.9 T		372
C/1999 G1	1999 04 11.59583	13 32 57.21	−02 50 20.5	16.9 T		372
C/1999 G1	1999 04 14.60833	13 29 31.28	−03 02 23.8	17.6 T		360
C/1999 G1	1999 04 14.61233	13 29 31.03	−03 02 23.8			360
C/1999 G1	1999 04 14.61632	13 29 30.73	−03 02 24.7			360
C/1999 G1	1999 04 16.36581	13 27 31.47	−03 09 23.9	18.8 T		704
C/1999 G1	1999 04 16.37782	13 27 30.66	−03 09 30.1	19.0 T		704
C/1999 G1	1999 04 16.39013	13 27 29.84	−03 09 32.6	18.9 T		704
C/1999 G1	1999 04 16.40243	13 27 28.88	−03 09 31.8	18.9 T		704
C/1999 G1	1999 04 16.41368	13 27 27.84	−03 09 39.7	18.9 T		704

C/1999 G2 (SOHO)

C/1999 G2	1999 04 13.33757	01 31 58.2	+07 58 00		249
Geocentric position (AU)	+0.00784157	+0.00715732	+0.00254573		
C/1999 G2	1999 04 13.35423	01 31 43.1	+07 59 54		249
Geocentric position (AU)	+0.00784075	+0.00715899	+0.00254602		
C/1999 G2	1999 04 13.37122	01 31 27.4	+08 01 55		249
Geocentric position (AU)	+0.00783991	+0.00716069	+0.00254631		
C/1999 G2	1999 04 13.37923	01 31 19.7	+08 02 50		249
Geocentric position (AU)	+0.00783952	+0.00716149	+0.00254645		
C/1999 G2	1999 04 13.39590	01 31 03.3	+08 04 48		249
Geocentric position (AU)	+0.00783870	+0.00716315	+0.00254674		

C/1999 G2	1999 04 13.41285	01 30 46.9	+08 06 57				249
Geocentric position (AU)		+0.00783786	+0.00716485	+0.00254703			
C/1999 G2	1999 04 13.43756	01 30 22.0	+08 10 03				249
Geocentric position (AU)		+0.00783664	+0.00716731	+0.00254745			
C/1999 G2	1999 04 13.45452	01 30 04.8	+08 12 12				249
Geocentric position (AU)		+0.00783580	+0.00716901	+0.00254775			
C/1999 G2	1999 04 13.46256	01 29 56.2	+08 13 15				249
Geocentric position (AU)		+0.00783540	+0.00716981	+0.00254788			
C/1999 G2	1999 04 13.47923	01 29 38.3	+08 15 30				249
Geocentric position (AU)		+0.00783458	+0.00717147	+0.00254817			
C/1999 G2	1999 04 13.49590	01 29 19.6	+08 17 53				249
Geocentric position (AU)		+0.00783375	+0.00717313	+0.00254845			

C/1999 H1 (Lee)

C/1999 H1	1999 04 16.59549	13 49 24.64	−68 21 33.6	14.0	N	422
C/1999 H1	1999 04 16.59650	13 49 23.58	−68 21 33.3	13.9	N	422
C/1999 H1	1999 04 16.59941	13 49 20.80	−68 21 32.3	14.2	N	422
C/1999 H1	1999 04 16.61689	13 49 03.53	−68 21 26.4	14.2	N	422
C/1999 H1	1999 04 16.61777	13 49 02.67	−68 21 26.0	14.0	N	422
C/1999 H1	1999 04 16.61839	13 49 02.14	−68 21 25.7	13.9	N	422
C/1999 H1	1999 04 16.77635	13 46 26.62	−68 20 21.9	13.9	N	422
C/1999 H1	1999 04 16.77679	13 46 26.17	−68 20 21.8	13.9	N	422
C/1999 H1	1999 04 16.77727	13 46 25.66	−68 20 21.6	13.9	N	422
C/1999 H1	1999 04 17.57644	13 33 12.48	−68 12 39.9			427
C/1999 H1	1999 04 17.57783	13 33 11.07	−68 12 38.9			427
C/1999 H1	1999 04 17.57922	13 33 09.69	−68 12 37.8			427
C/1999 H1	1999 04 17.58101	13 33 07.89	−68 12 36.4			427
C/1999 H1	1999 04 17.59843	13 32 50.27	−68 12 23.1			427
C/1999 H1	1999 04 17.60828	13 32 40.17	−68 12 14.8			427
C/1999 H1	1999 04 17.61129	13 32 37.11	−68 12 12.6			427
C/1999 H1	1999 04 17.63154	13 32 16.62	−68 11 56.6			427
C/1999 H1	1999 04 17.63351	13 32 14.57	−68 11 55.2			427
C/1999 H1	1999 04 17.65347	13 31 54.34	−68 11 39.8	13.1	N	426
C/1999 H1	1999 04 17.65748	13 31 50.22	−68 11 36.5	13.0	N	426
C/1999 H1	1999 04 17.66308	13 31 44.56	−68 11 32.1	13.0	N	426
C/1999 H1	1999 04 17.66996	13 31 37.60	−68 11 26.6	13.0	N	426
C/1999 H1	1999 04 17.98156	13 26 23.61	−68 06 50.5	10.6	T	860
C/1999 H1	1999 04 17.99127	13 26 13.56	−68 06 40.9	10.5	T	860
C/1999 H1	1999 04 18.00031	13 26 04.23	−68 06 32.6	10.5	T	860
C/1999 H1	1999 04 18.00573	13 25 58.59	−68 06 27.6	10.5	T	860
C/1999 H1	1999 04 18.01460	13 25 49.44	−68 06 19.4	10.6	T	860
C/1999 H1	1999 04 18.07109	13 24 51.49	−68 05 27.7	13.6	N	859
C/1999 H1	1999 04 18.07287	13 24 49.74	−68 05 26.2	13.6	N	859
C/1999 H1	1999 04 18.07419	13 24 48.35	−68 05 24.7	13.7	N	859
C/1999 H1	1999 04 18.07697	13 24 45.47	−68 05 22.2	13.8	N	859
C/1999 H1	1999 04 18.07778	13 24 44.64	−68 05 21.6	13.8	N	859
C/1999 H1	1999 04 18.07861	13 24 43.79	−68 05 20.7	13.7	N	859
C/1999 H1	1999 04 18.07932	13 24 43.07	−68 05 19.9	13.8	N	859
C/1999 H1	1999 04 18.42188	13 18 53.96	−67 59 04.5	13.9	N	430
C/1999 H1	1999 04 18.46632	13 18 08.07	−67 58 13.7	13.6	N	430
C/1999 H1	1999 04 18.48174	13 17 52.17	−67 57 56.2	9.1	T	428
C/1999 H1	1999 04 18.48248	13 17 51.41	−67 57 55.7	9.1	T	428
C/1999 H1	1999 04 18.48326	13 17 50.65	−67 57 54.8	9.1	T	428
C/1999 H1	1999 04 18.48865	13 17 45.29	−67 57 46.8	12.9	N	426
C/1999 H1	1999 04 18.49168	13 17 42.17	−67 57 43.1	12.9	N	426
C/1999 H1	1999 04 18.49377	13 17 39.97	−67 57 40.9	12.9	N	426
C/1999 H1	1999 04 18.49643	13 17 37.25	−67 57 37.5	12.8	N	426
C/1999 H1	1999 04 19.36876	13 02 37.53	−67 36 51.7	9.3	T	428
C/1999 H1	1999 04 19.36996	13 02 36.34	−67 36 49.7	9.1	T	428
C/1999 H1	1999 04 19.37067	13 02 35.61	−67 36 48.9	9.2	T	428
C/1999 H1	1999 04 19.46048	13 01 02.37	−67 34 19.7	12.9	N	426
C/1999 H1	1999 04 19.46301	13 00 59.75	−67 34 15.5	12.9	N	426
C/1999 H1	1999 04 19.46663	13 00 55.98	−67 34 09.3	12.8	N	426
C/1999 H1	1999 04 19.46958	13 00 52.93	−67 34 04.3	12.8	N	426
C/1999 H1	1999 04 19.47087	13 00 50.76	−67 34 02.5			423
C/1999 H1	1999 04 19.50323	13 00 17.46	−67 33 08.4	13.9	N	422
C/1999 H1	1999 04 19.50363	13 00 17.04	−67 33 07.7	13.8	N	422
C/1999 H1	1999 04 19.50427	13 00 16.35	−67 33 06.6	13.8	N	422
C/1999 H1	1999 04 19.51409	13 00 05.77	−67 32 47.4			423
C/1999 H1	1999 04 19.96417	12 52 20.53	−67 18 56.1	10.5	T	860
C/1999 H1	1999 04 19.97520	12 52 08.81	−67 18 34.4	10.2	T	860
C/1999 H1	1999 04 19.98083	12 52 02.87	−67 18 24.0	10.2	T	860
C/1999 H1	1999 04 19.98632	12 51 57.01	−67 18 12.2	10.1	T	860
C/1999 H1	1999 04 20.00032	12 51 42.12	−67 17 44.6	10.5	T	860
C/1999 H1	1999 04 20.00807	12 51 33.99	−67 17 29.6	10.0	T	860
C/1999 H1	1999 04 20.20558	12 48 08.90	−67 10 44.1			844
C/1999 H1	1999 04 20.20708	12 48 07.36	−67 10 40.6			844
C/1999 H1	1999 04 20.21760	12 47 56.22	−67 10 19.4			844
C/1999 H1	1999 04 20.49490	12 43 10.91	−67 00 13.1			423
C/1999 H1	1999 04 20.53376	12 42 30.66	−66 58 45.8			423
C/1999 H1	1999 04 21.44912	12 26 54.60	−66 19 55.1	9.3	T	428
C/1999 H1	1999 04 21.44979	12 26 53.90	−66 19 53.3	9.3	T	428
C/1999 H1	1999 04 21.45045	12 26 53.25	−66 19 51.7	9.4	T	428
C/1999 H1	1999 04 21.99453	12 17 44.87	−65 53 01.1	12.3	N	859
C/1999 H1	1999 04 22.00903	12 17 30.16	−65 52 16.9	12.4	N	859
C/1999 H1	1999 04 22.01316	12 17 25.96	−65 52 04.0	12.4	N	859
C/1999 H1	1999 04 22.43958	12 10 23.12	−65 28 55.2	13.7	N	430
C/1999 H1	1999 04 22.45139	12 10 11.37	−65 28 15.4	13.6	N	430
C/1999 H1	1999 04 23.99623	11 45 36.19	−63 49 46.3			844
C/1999 H1	1999 04 24.00697	11 45 26.10	−63 49 01.2			844
C/1999 H1	1999 04 24.02075	11 45 13.33	−63 48 02.8			844
C/1999 H1	1999 04 24.05216	11 44 44.23	−63 45 47.8			844
C/1999 H1	1999 04 24.06034	11 44 36.69	−63 45 13.2			844
C/1999 H1	1999 04 24.15266	11 43 10.95	−63 38 33.1	12.5	N	859
C/1999 H1	1999 04 24.15512	11 43 08.67	−63 38 22.2	12.2	N	859
C/1999 H1	1999 04 24.15738	11 43 06.66	−63 38 12.1	12.5	N	859
C/1999 H1	1999 04 24.37569	11 39 50.51	−63 22 07.8	13.3	N	430
C/1999 H1	1999 04 24.40167	11 39 26.82	−63 20 12.8	13.0	N	428
C/1999 H1	1999 04 24.40236	11 39 26.21	−63 20 09.8	13.4	N	428
C/1999 H1	1999 04 24.45278	11 38 40.36	−63 16 22.8	13.3	N	430
C/1999 H1	1999 04 24.55870	11 37 04.46	−63 08 19.8	10.8	T	429
C/1999 H1	1999 04 24.57222	11 36 52.31	−63 07 17.3	10.8	T	429
C/1999 H1	1999 04 25.20977	11 27 32.85	−62 16 40.9	12.3	N	859
C/1999 H1	1999 04 25.21113	11 27 31.62	−62 16 33.8	12.2	N	859
C/1999 H1	1999 04 25.21315	11 27 29.87	−62 16 23.8	12.3	N	859
C/1999 H1	1999 04 25.50142	11 23 26.14	−61 52 23.1	11.2	N	321

C/1999 H1	1999 04 25.50456	11 23 23.31	−61 52 07.8	11.1	N	321
C/1999 H1	1999 04 25.50527	11 23 22.95	−61 52 04.4	11.1	N	321
C/1999 H1	1999 04 25.50596	11 23 22.43	−61 52 01.3	11.1	N	321
C/1999 H1	1999 04 25.50665	11 23 21.83	−61 51 57.2	11.0	N	321
C/1999 H1	1999 04 25.50735	11 23 21.14	−61 51 53.3	11.2	N	321
C/1999 H1	1999 04 25.50804	11 23 20.58	−61 51 50.5	11.1	N	321
C/1999 H1	1999 04 25.50874	11 23 19.82	−61 51 46.8	11.1	N	321
C/1999 H1	1999 04 25.50943	11 23 19.31	−61 51 43.2	11.2	N	321
C/1999 H1	1999 04 25.51082	11 23 18.09	−61 51 36.0	11.1	N	321
C/1999 H1	1999 04 26.41329	11 10 59.39	−60 31 28.2			426
C/1999 H1	1999 04 26.41565	11 10 57.48	−60 31 15.1			426
C/1999 H1	1999 04 26.41862	11 10 55.13	−60 30 58.6			426
C/1999 H1	1999 04 26.42241	11 10 52.08	−60 30 37.6	12.4	N	426
C/1999 H1	1999 04 26.49028	11 09 57.26	−60 24 20.1			431
C/1999 H1	1999 04 26.49421	11 09 54.10	−60 23 57.2			431
C/1999 H1	1999 04 26.49514	11 09 53.44	−60 23 52.7			431
C/1999 H1	1999 04 26.49542	11 09 53.04	−60 23 52.4			423
C/1999 H1	1999 04 26.49652	11 09 52.38	−60 23 45.3			423
C/1999 H1	1999 04 26.53236	11 09 24.64	−60 20 23.9	11.2	N	321
C/1999 H1	1999 04 26.53375	11 09 23.52	−60 20 15.8	11.2	N	321
C/1999 H1	1999 04 26.53514	11 09 22.38	−60 20 07.8	11.4	N	321
C/1999 H1	1999 04 26.53653	11 09 21.18	−60 20 00.3	11.1	N	321
C/1999 H1	1999 04 26.53792	11 09 20.16	−60 19 52.8	11.0	N	321
C/1999 H1	1999 04 26.57356	11 08 51.88	−60 16 32.1	11.1	N	321
C/1999 H1	1999 04 26.57495	11 08 50.69	−60 16 23.9	11.1	N	321
C/1999 H1	1999 04 26.57634	11 08 49.60	−60 16 16.3	11.0	N	321
C/1999 H1	1999 04 26.57662	11 08 48.79	−60 16 12.3			431
C/1999 H1	1999 04 26.57824	11 08 47.47	−60 16 04.1			431
C/1999 H1	1999 04 26.59086	11 08 37.26	−60 14 50.0			431
C/1999 H1	1999 04 27.05398	11 02 40.64	−59 30 28.2	9.8	T	860
C/1999 H1	1999 04 27.06095	11 02 35.13	−59 29 46.3			860
C/1999 H1	1999 04 27.06898	11 02 28.91	−59 28 58.2	9.8	T	860
C/1999 H1	1999 04 27.07517	11 02 24.16	−59 28 20.7			860
C/1999 H1	1999 04 27.09303	11 02 10.27	−59 26 33.9	9.9	T	860
C/1999 H1	1999 04 27.09829	11 02 06.16	−59 26 02.7			860
C/1999 H1	1999 04 28.51379	10 45 12.84	−56 59 29.6	10.7	N	321
C/1999 H1	1999 04 28.51587	10 45 11.48	−56 59 16.4	10.5	N	321
C/1999 H1	1999 04 28.51796	10 45 10.14	−56 59 02.1	10.7	N	321
C/1999 H1	1999 04 28.52004	10 45 08.57	−56 58 48.7	10.7	N	321
C/1999 H1	1999 04 28.52212	10 45 07.11	−56 58 35.1	10.7	N	321
C/1999 H1	1999 04 28.52421	10 45 05.74	−56 58 21.6	10.7	N	321
C/1999 H1	1999 04 28.52629	10 45 04.26	−56 58 07.1	10.6	N	321
C/1999 H1	1999 04 28.53046	10 45 01.35	−56 57 40.3	10.7	N	321
C/1999 H1	1999 05 01.48391	10 15 25.15	−51 09 06.7			426
C/1999 H1	1999 05 01.48729	10 15 23.37	−51 08 41.2			426
C/1999 H1	1999 05 01.49090	10 15 21.42	−51 08 13.9	12.9	N	426

C/1999 H2 (SOHO)

C/1999 H2	1999 04 19.22923	01 53 29.4	+10 02 33		249
Geocentric position (AU)		+0.00753457	+0.00767619	+0.00262934	
C/1999 H2	1999 04 19.24590	01 53 14.6	+10 04 32		249
Geocentric position (AU)		+0.00753368	+0.00767743	+0.00262952	
C/1999 H2	1999 04 19.25423	01 53 07.2	+10 05 31		249
Geocentric position (AU)		+0.00753323	+0.00767805	+0.00262961	
C/1999 H2	1999 04 19.27090	01 52 52.2	+10 07 31		249
Geocentric position (AU)		+0.00753234	+0.00767928	+0.00262979	
C/1999 H2	1999 04 19.28756	01 52 36.9	+10 09 37		249
Geocentric position (AU)		+0.00753145	+0.00768052	+0.00262996	
C/1999 H2	1999 04 19.31346	01 52 12.4	+10 12 53		249
Geocentric position (AU)		+0.00753007	+0.00768244	+0.00263023	
C/1999 H2	1999 04 19.32923	01 51 57.4	+10 14 55		249
Geocentric position (AU)		+0.00752923	+0.00768360	+0.00263040	
C/1999 H2	1999 04 19.33756	01 51 49.1	+10 16 00		249
Geocentric position (AU)		+0.00752878	+0.00768422	+0.00263049	
C/1999 H2	1999 04 19.35423	01 51 32.7	+10 18 14		249
Geocentric position (AU)		+0.00752789	+0.00768545	+0.00263066	
C/1999 H2	1999 04 19.37121	01 51 15.4	+10 20 34		249
Geocentric position (AU)		+0.00752699	+0.00768670	+0.00263084	
C/1999 H2	1999 04 19.37923	01 51 06.7	+10 21 43		249
Geocentric position (AU)		+0.00752656	+0.00768729	+0.00263092	

C/1999 H3 (LINEAR)

C/1999 H3	1999 04 22.30901	19 17 19.76	+44 09 48.1	16.8	T	704
C/1999 H3	1999 04 22.32527	19 17 18.66	+44 10 09.3	17.1	T	704
C/1999 H3	1999 04 22.33342	19 17 18.04	+44 10 20.0	17.0	T	704
C/1999 H3	1999 04 22.34245	19 17 17.36	+44 10 33.7	16.8	T	704
C/1999 H3	1999 04 23.87372	19 15 28.48	+44 44 32.2	15.5	T	046
C/1999 H3	1999 04 23.87542	19 15 28.31	+44 44 34.2			046
C/1999 H3	1999 04 23.87583	19 15 28.26	+44 44 33.8			557
C/1999 H3	1999 04 23.87650	19 15 28.25	+44 44 35.6			046
C/1999 H3	1999 04 23.87781	19 15 28.13	+44 44 36.5			557
C/1999 H3	1999 04 23.89566	19 15 26.85	+44 45 00.0			557
C/1999 H3	1999 04 23.89766	19 15 26.68	+44 45 03.2			557
C/1999 H3	1999 04 24.04884	19 15 15.46	+44 48 25.1	15.4	N	620
C/1999 H3	1999 04 24.05706	19 15 14.85	+44 48 36.2	15.4	N	620
C/1999 H3	1999 04 24.08414	19 15 12.85	+44 49 12.7	15.5	N	620
C/1999 H3	1999 04 24.08981	19 15 12.43	+44 49 20.4			620
C/1999 H3	1999 04 24.10686	19 15 11.18	+44 49 44.0			046
C/1999 H3	1999 04 24.10882	19 15 11.04	+44 49 46.8			046
C/1999 H3	1999 04 24.10997	19 15 10.95	+44 49 48.3			046
C/1999 H3	1999 04 24.11125	19 15 10.84	+44 49 50.2			046
C/1999 H3	1999 04 24.11252	19 15 10.77	+44 49 51.7			046
C/1999 H3	1999 04 24.24407	19 15 01.07	+44 52 48.5	14.9	T	859
C/1999 H3	1999 04 24.24904	19 15 00.55	+44 52 54.9	15.1	T	859
C/1999 H3	1999 04 24.25477	19 15 00.32	+44 53 02.2	14.9	T	859
C/1999 H3	1999 04 24.25976	19 14 59.79	+44 53 09.5	15.0	T	859
C/1999 H3	1999 04 24.28389	19 14 57.96	+44 53 42.9	14.8	T	860
C/1999 H3	1999 04 24.29256	19 14 57.32	+44 53 54.9	15.1	T	860
C/1999 H3	1999 04 24.29605	19 14 57.11	+44 53 59.7	15.2	T	860
C/1999 H3	1999 04 24.29986	19 14 56.76	+44 54 03.8	15.4	T	860
C/1999 H3	1999 04 24.45257	19 14 45.44	+44 57 24.8			658
C/1999 H3	1999 04 24.46280	19 14 44.66	+44 57 38.4			658
C/1999 H3	1999 04 24.46519	19 14 44.47	+44 57 41.7			658
C/1999 H3	1999 04 24.70243	19 14 26.67	+45 02 57.2	16.1	T	372
C/1999 H3	1999 04 24.77780	19 14 20.76	+45 04 38.1	15.5	T	327

C/1999 H3	1999 04 24.78245	19 14 20.59	+45 04 42.6	15.2 T	327
C/1999 H3	1999 04 24.90418	19 14 11.22	+45 07 25.8		046
C/1999 H3	1999 04 24.90600	19 14 11.13	+45 07 27.7		046
C/1999 H3	1999 04 24.90715	19 14 11.08	+45 07 29.5		046
C/1999 H3	1999 04 24.90836	19 14 10.95	+45 07 30.9		046
C/1999 H3	1999 04 24.90995	19 14 10.87	+45 07 33.2		611
C/1999 H3	1999 04 24.91401	19 14 10.52	+45 07 38.5		611
C/1999 H3	1999 04 24.91701	19 14 10.28	+45 07 42.7		611
C/1999 H3	1999 04 25.00831	19 14 03.48	+45 09 43.8	15.5 T	958
C/1999 H3	1999 04 25.02733	19 14 01.84	+45 10 09.6	15.9 T	958
C/1999 H3	1999 04 25.04423	19 14 00.39	+45 10 31.5	15.9 T	958
C/1999 H3	1999 04 25.05561	19 13 59.67	+45 10 48.7	16.0 T	958
C/1999 H3	1999 04 25.08085	19 13 57.66	+45 11 21.5	15.1 T	958
C/1999 H3	1999 04 26.05376	19 12 41.37	+45 32 58.3	15.0 T	104
C/1999 H3	1999 04 26.74861	19 11 44.95	+45 48 25.9	15.9 T	372
C/1999 H3	1999 04 26.76823	19 11 43.44	+45 48 51.5	14.6 T	360
C/1999 H3	1999 04 26.77066	19 11 43.26	+45 48 54.8		360
C/1999 H3	1999 04 26.77309	19 11 43.05	+45 48 58.0		360
C/1999 H3	1999 04 26.78333	19 11 42.08	+45 49 12.4		372
C/1999 H3	1999 04 27.78576	19 10 18.26	+46 11 27.3	16.0 T	372
C/1999 H3	1999 04 27.79271	19 10 17.56	+46 11 35.9		372
C/1999 H3	1999 04 29.01008	19 08 31.54	+46 38 30.6		118
C/1999 H3	1999 04 29.01188	19 08 31.36	+46 38 33.3		118
C/1999 H3	1999 04 29.01355	19 08 31.25	+46 38 35.6	15.3 T	118
C/1999 H3	1999 04 29.64478	19 07 34.28	+46 52 32.5		355
C/1999 H3	1999 04 29.65822	19 07 33.05	+46 52 50.5	15.3 T	355
C/1999 H3	1999 04 29.66797	19 07 32.11	+46 53 03.8		355
C/1999 H3	1999 04 29.77743	19 07 21.91	+46 55 29.9	16.3 T	372
C/1999 H3	1999 04 29.79132	19 07 20.59	+46 55 48.6		372
C/1999 H3	1999 04 30.57026	19 06 08.30	+47 12 56.6	15.5 T	367
C/1999 H3	1999 04 30.57512	19 06 07.84	+47 13 02.8		367
C/1999 H3	1999 04 30.57998	19 06 07.36	+47 13 09.3		367
C/1999 H3	1999 04 30.64853	19 06 00.77	+47 14 41.1	15.1 T	355
C/1999 H3	1999 04 30.65178	19 06 00.55	+47 14 45.2		355
C/1999 H3	1999 04 30.67363	19 05 58.45	+47 15 14.1		355

C/1999 H4 (SOHO)

C/1999 H4	1999 04 26.82091	02 29 41.6	+11 29 16		249
Geocentric position (AU)	+0.00716973	+0.00811283	+0.00267755		
C/1999 H4	1999 04 26.84590	02 29 29.8	+11 31 25		249
Geocentric position (AU)	+0.00716874	+0.00811393	+0.00267763		
C/1999 H4	1999 04 26.90456	02 28 58.4	+11 37 26		249
Geocentric position (AU)	+0.00716641	+0.00811649	+0.00267782		
C/1999 H4	1999 04 26.92923	02 28 45.3	+11 39 12		249
Geocentric position (AU)	+0.00716543	+0.00811757	+0.00267790		
C/1999 H4	1999 04 26.97099	02 28 19.6	+11 43 39		249
Geocentric position (AU)	+0.00716378	+0.00811938	+0.00267803		
C/1999 H4	1999 04 26.98756	02 28 14.1	+11 45 22		249
Geocentric position (AU)	+0.00716312	+0.00812010	+0.00267809		
C/1999 H4	1999 04 27.01256	02 27 58.8	+11 48 19		249
Geocentric position (AU)	+0.00716214	+0.00812119	+0.00267817		
C/1999 H4	1999 04 27.02923	02 27 50.5	+11 49 34		249
Geocentric position (AU)	+0.00716148	+0.00812191	+0.00267822		
C/1999 H4	1999 04 27.07090	02 27 26.0	+11 53 59		249
Geocentric position (AU)	+0.00715985	+0.00812371	+0.00267835		
C/1999 H4	1999 04 27.09590	02 27 13.0	+11 56 28		249
Geocentric position (AU)	+0.00715887	+0.00812479	+0.00267843		
C/1999 H4	1999 04 27.11256	02 27 01.3	+11 58 14		249
Geocentric position (AU)	+0.00715821	+0.00812551	+0.00267848		
C/1999 H4	1999 04 27.13756	02 26 46.9	+12 00 56		249
Geocentric position (AU)	+0.00715724	+0.00812658	+0.00267856		
C/1999 H4	1999 04 27.17923	02 26 21.5	+12 05 19		249
Geocentric position (AU)	+0.00715561	+0.00812837	+0.00267869		
C/1999 H4	1999 04 27.19591	02 26 11.3	+12 07 23		249
Geocentric position (AU)	+0.00715496	+0.00812909	+0.00267875		
C/1999 H4	1999 04 27.22090	02 25 55.5	+12 10 06		249
Geocentric position (AU)	+0.00715399	+0.00813016	+0.00267882		
C/1999 H4	1999 04 27.26256	02 25 28.9	+12 14 56		249
Geocentric position (AU)	+0.00715237	+0.00813194	+0.00267895		
C/1999 H4	1999 04 27.27923	02 25 17.3	+12 16 43		249
Geocentric position (AU)	+0.00715173	+0.00813265	+0.00267901		
C/1999 H4	1999 04 27.32090	02 24 49.8	+12 21 38		249
Geocentric position (AU)	+0.00715011	+0.00813443	+0.00267913		
C/1999 H4	1999 04 27.36256	02 24 22.1	+12 26 53		249
Geocentric position (AU)	+0.00714851	+0.00813620	+0.00267926		
C/1999 H4	1999 04 27.38756	02 24 03.6	+12 29 57		249
Geocentric position (AU)	+0.00714755	+0.00813726	+0.00267934		
C/1999 H4	1999 04 27.43026	02 23 32.8	+12 35 20		249
Geocentric position (AU)	+0.00714591	+0.00813907	+0.00267947		
C/1999 H4	1999 04 27.44590	02 23 21.4	+12 37 20		249
Geocentric position (AU)	+0.00714531	+0.00813973	+0.00267952		
C/1999 H4	1999 04 27.48756	02 22 49.5	+12 43 06		249
Geocentric position (AU)	+0.00714371	+0.00814149	+0.00267964		
C/1999 H4	1999 04 27.51256	02 22 29.9	+12 46 08		249
Geocentric position (AU)	+0.00714276	+0.00814254	+0.00267972		
C/1999 H4	1999 04 27.52924	02 22 15.7	+12 49 02		249
Geocentric position (AU)	+0.00714212	+0.00814325	+0.00267977		
C/1999 H4	1999 04 27.64590	02 20 34.7	+13 07 07		249
Geocentric position (AU)	+0.00713770	+0.00814814	+0.00268012		
C/1999 H4	1999 04 27.66280	02 20 22.2	+13 10 12		249
Geocentric position (AU)	+0.00713706	+0.00814885	+0.00268017		

9P/Tempel 1

9P	1999 04 08.53542	08 04 26.06	+31 48 20.0	19.5 N	360
9P	1999 04 08.54097	08 04 26.19	+31 48 18.7		360
9P	1999 04 08.54670	08 04 26.42	+31 48 18.3		360
9P	1999 04 12.25803	08 06 02.00	+31 33 28.3		693
9P	1999 04 12.26218	08 06 02.11	+31 33 27.3		693
9P	1999 04 12.26624	08 06 02.22	+31 33 26.5		693
9P	1999 04 15.19550	08 07 33.02	+31 21 03.0		693
9P	1999 04 15.19956	08 07 33.14	+31 21 01.9		693
9P	1999 04 15.20358	08 07 33.27	+31 21 00.9	18.9 T	693

10P/Tempel 2

10P	1999 03 24.37609	16 59 30.32	−07 38 09.5	18.3 T	704
10P	1999 03 24.39673	16 59 31.67	−07 38 05.3	18.6 T	704
10P	1999 03 24.40695	16 59 32.40	−07 38 05.4	18.6 T	704

10P	1999 04 08.76638	17 15 13.37	−06 44 10.6			355
10P	1999 04 08.77104	17 15 13.63	−06 44 08.3			355
10P	1999 04 08.77756	17 15 13.97	−06 44 06.5	17.5	T	355
10P	1999 04 12.48317	17 18 23.37	−06 29 07.3			693
10P	1999 04 12.48722	17 18 23.56	−06 29 06.3			693
10P	1999 04 12.49127	17 18 23.75	−06 29 05.3	16.9	T	693
10P	1999 04 14.78125	17 20 12.35	−06 19 36.7	17.2	T	360
10P	1999 04 14.78542	17 20 12.51	−06 19 35.6			360
10P	1999 04 20.11691	17 23 58.04	−05 57 07.5	16.1	T	118
10P	1999 04 20.11949	17 23 58.11	−05 57 07.2			118
10P	1999 04 22.31462	17 25 19.74	−05 47 50.8	18.3	T	704
10P	1999 04 22.33736	17 25 20.55	−05 47 43.5	18.3	T	704
10P	1999 04 22.34870	17 25 20.95	−05 47 38.3	18.2	T	704
10P	1999 04 22.35993	17 25 21.24	−05 47 37.6	18.2	T	704
10P	1999 04 26.73316	17 27 41.65	−05 29 23.0	16.4	T	360
10P	1999 04 26.73576	17 27 41.71	−05 29 22.6			360
10P	1999 04 28.94883	17 28 41.78	−05 20 24.6			118
10P	1999 04 28.95220	17 28 41.85	−05 20 23.8			118
10P	1999 04 28.95579	17 28 41.95	−05 20 23.1			118

21P/Giacobini-Zinner

21P	1999 04 01.76417	05 03 53.03	−06 15 37.1			118
21P	1999 04 01.76773	05 03 53.54	−06 15 35.5			118
21P	1999 04 01.77061	05 03 53.92	−06 15 34.0	16	T	118
21P	1999 04 04.43529	05 09 56.53	−05 51 03.8	15.9	T	351
21P	1999 04 04.44131	05 09 57.59	−05 50 57.6			351
21P	1999 04 07.44167	05 16 40.87	−05 24 41.6	14.0	T	360
21P	1999 04 07.44410	05 16 41.22	−05 24 40.5			360
21P	1999 04 08.45545	05 18 55.98	−05 16 08.2	14.6	T	402
21P	1999 04 08.45706	05 18 56.22	−05 16 07.4			402
21P	1999 04 08.45867	05 18 56.41	−05 16 06.4			402

29P/Schwassmann-Wachmann 1

29P	1999 04 07.64479	15 17 00.83	−29 20 13.3	14.0	T	372
29P	1999 04 11.67118	15 15 34.42	−29 19 30.2	15.0	T	372
29P	1999 04 14.72604	15 14 23.46	−29 18 17.8	13.0	T	360
29P	1999 04 14.72882	15 14 23.38	−29 18 17.3	16.5	N	360
29P	1999 04 20.03125	15 12 10.62	−29 14 47.9			844
29P	1999 04 20.04689	15 12 10.18	−29 14 46.4			844
29P	1999 04 20.10713	15 12 08.57	−29 14 44.0			844
29P	1999 04 26.68194	15 09 09.80	−29 08 05.9	13.8	T	360
29P	1999 04 26.68472	15 09 09.72	−29 08 05.5	16.9	N	360
29P	1999 04 26.71766	15 09 08.85	−29 08 01.3	17.0	N	321
29P	1999 04 26.73247	15 09 08.45	−29 08 00.1	17.2	N	321
29P	1999 04 26.74287	15 09 08.10	−29 07 59.7	16.9	N	321
29P	1999 04 26.75846	15 09 07.67	−29 07 58.2	17.5	N	321

37P/Forbes

37P	1999 04 14.50440	21 07 19.19	−23 23 52.4	13.5	T	3 693
37P	1999 04 26.79115	21 46 47.69	−20 00 08.7	14.9	T	372
37P	1999 04 26.80521	21 46 50.29	−19 59 53.2			372
37P	1999 04 27.80486	21 49 55.05	−19 42 06.7	14.6	T	372
37P	1999 04 27.80833	21 49 55.68	−19 42 03.7			372
37P	1999 04 29.80035	21 56 00.11	−19 06 11.7	13.9	T	372

44P/Reinmuth 2

44P	1999 04 16.30157	12 46 33.14	−14 41 14.9			693
44P	1999 04 16.31258	12 46 32.75	−14 41 12.6	21.6	T	693

47P/Ashbrook-Jackson

47P	1999 04 14.36341	14 57 05.02	−27 57 25.9			693
47P	1999 04 14.37097	14 57 04.74	−27 57 25.7			693
47P	1999 04 14.37853	14 57 04.42	−27 57 26.3	20.1	T	693

49P/Arend-Rigaux

49P	1999 03 18.00862	14 45 03.68	+11 02 45.2	17.6	T	561
49P	1999 03 18.01470	14 45 03.49	+11 02 48.5	17.7	T	561
49P	1999 03 18.02089	14 45 03.27	+11 02 52.2	17.8	T	561
49P	1999 04 07.66267	14 29 52.22	+13 48 48.1	18.7	N	360
49P	1999 04 07.66667	14 29 52.01	+13 48 49.3			360
49P	1999 04 10.41057	14 27 22.38	+14 05 47.6	19.2	T	704
49P	1999 04 10.42926	14 27 21.30	+14 05 56.7	18.9	T	704
49P	1999 04 10.44792	14 27 20.37	+14 06 02.8	19.6	T	704
49P	1999 04 10.46661	14 27 19.24	+14 06 10.4	19.4	T	704
49P	1999 04 10.48526	14 27 18.22	+14 06 15.1	19.4	T	704
49P	1999 04 14.34316	14 23 42.59	+14 27 23.4			693
49P	1999 04 14.34722	14 23 42.37	+14 27 24.5			693
49P	1999 04 14.35126	14 23 42.16	+14 27 25.9	18.2	T	693

52P/Harrington-Abell

52P	1999 03 16.57326	07 35 32.70	+26 16 30.7	14.5	T	372
52P	1999 03 31.49198	07 58 07.72	+23 03 53.7	15.6	T	351
52P	1999 03 31.49716	07 58 08.20	+23 03 50.5			351
52P	1999 03 31.50336	07 58 08.88	+23 03 43.9			351
52P	1999 04 06.18705	08 07 32.34	+21 52 00.1	17.3	T	704
52P	1999 04 06.19826	08 07 33.52	+21 51 50.1	17.5	T	704
52P	1999 04 06.20953	08 07 34.66	+21 51 41.4	17.5	T	704
52P	1999 04 06.22093	08 07 35.76	+21 51 34.0	17.8	T	704
52P	1999 04 06.23194	08 07 37.05	+21 51 24.4	17.2	T	704
52P	1999 04 07.55608	08 09 50.89	+21 34 46.8	14.1	T	360
52P	1999 04 07.55851	08 09 51.13	+21 34 45.3			360
52P	1999 04 08.42921	08 11 20.15	+21 23 50.8	14.0	T	402
52P	1999 04 08.43082	08 11 20.34	+21 23 49.6			402
52P	1999 04 08.43243	08 11 20.48	+21 23 48.9			402
52P	1999 04 11.46290	08 16 31.86	+20 45 51.2	15.8	T	351
52P	1999 04 11.47428	08 16 32.95	+20 45 44.0			351
52P	1999 04 16.89403	08 26 00.39	+19 38 06.0	14.7	T	504
52P	1999 04 16.89522	08 26 00.50	+19 38 05.5	15.2	T	504
52P	1999 04 16.89792	08 26 00.78	+19 38 03.6	14.8	T	504
52P	1999 04 16.89928	08 26 00.91	+19 38 02.3	14.7	T	504
52P	1999 04 19.85658	08 31 14.95	+19 01 14.2	16.0	T	118
52P	1999 04 19.85983	08 31 15.36	+19 01 11.4			118
52P	1999 04 29.84073	08 49 11.36	+16 57 08.0			046
52P	1999 04 29.84245	08 49 11.40	+16 57 06.5			046
52P	1999 04 29.84473	08 49 11.78	+16 57 04.5			046
52P	1999 04 29.84591	08 49 11.83	+16 57 04.1			046
52P	1999 04 29.84956	08 49 12.22	+16 57 00.5			046

60P/Tsuchinshan 2

60P	1999 04 06.49211	07 32 34.88	+16 18 31.8	17.0	T		402
60P	1999 04 06.49372	07 32 35.09	+16 18 30.4				402
60P	1999 04 06.49532	07 32 35.37	+16 18 29.8				402
60P	1999 04 07.13038	07 33 50.31	+16 14 37.0	18.3	T		704
60P	1999 04 07.14156	07 33 51.42	+16 14 31.8	18.7	T		704
60P	1999 04 07.15263	07 33 52.82	+16 14 24.6	19.2	T		704
60P	1999 04 07.16369	07 33 53.94	+16 14 22.2	18.8	T		704
60P	1999 04 07.17472	07 33 55.31	+16 14 19.4	18.8	T		704
60P	1999 04 07.53403	07 34 37.53	+16 12 05.7	17.6	T		360
60P	1999 04 07.53889	07 34 38.09	+16 12 04.3				360
60P	1999 04 12.24013	07 44 00.70	+15 42 03.0				693
60P	1999 04 12.24424	07 44 01.25	+15 42 01.4				693
60P	1999 04 12.24830	07 44 01.71	+15 41 59.9	17.9	T		693
60P	1999 04 15.81674	07 51 18.27	+15 18 03.6			3	118
60P	1999 04 15.82000	07 51 18.55	+15 18 01.9			3	118
60P	1999 04 15.82355	07 51 19.08	+15 17 59.8	17	T	3	118
60P	1999 04 28.83209	08 18 37.99	+13 41 42.8				118
60P	1999 04 28.83487	08 18 38.27	+13 41 41.1				118
60P	1999 04 28.83760	08 18 38.70	+13 41 39.2	17	T		118

69P/Taylor

69P	1999 04 15.46514	15 59 41.08	+03 16 01.8				693
69P	1999 04 15.46925	15 59 40.93	+03 16 03.0				693
69P	1999 04 15.47329	15 59 40.84	+03 16 04.1	19.3	T		693

78P/Gehrels 2

78P	1999 04 12.34624	11 15 15.27	+00 02 44.7				693
78P	1999 04 12.35031	11 15 15.20	+00 02 45.5	19.5	T		693

93P/Lovas 1

93P	1999 04 06.13468	07 17 54.01	+28 46 21.9	18.3	T		704
93P	1999 04 06.14609	07 17 55.04	+28 46 14.0	18.3	T		704
93P	1999 04 06.15734	07 17 56.06	+28 46 09.3	18.6	T		704
93P	1999 04 06.16853	07 17 57.09	+28 46 04.6	18.6	T		704
93P	1999 04 06.17970	07 17 57.95	+28 45 58.7	18.2	T		704
93P	1999 04 06.49795	07 18 25.80	+28 43 17.9	16.9	T		402
93P	1999 04 06.49955	07 18 25.95	+28 43 16.5				402
93P	1999 04 06.50116	07 18 26.10	+28 43 16.4				402
93P	1999 04 07.51840	07 19 55.30	+28 34 45.5	16.5	T		360
93P	1999 04 07.52222	07 19 55.61	+28 34 43.8				360
93P	1999 04 12.20073	07 26 49.54	+27 55 47.1				693
93P	1999 04 12.20477	07 26 49.89	+27 55 45.1				693
93P	1999 04 12.20883	07 26 50.23	+27 55 43.1	16.8	T		693

103P/Hartley 2

103P	1999 04 08.57170	12 07 25.64	−10 52 07.4	18.5	T		360
103P	1999 04 08.57587	12 07 25.48	−10 52 06.1				360
103P	1999 04 08.57969	12 07 25.26	−10 52 04.0				360
103P	1999 04 12.36097	12 04 53.66	−10 27 51.7				693
103P	1999 04 12.36502	12 04 53.44	−10 27 50.1				693
103P	1999 04 12.36909	12 04 53.39	−10 27 48.4	19.2	T		693

105P/Singer Brewster

105P	1999 02 13.50502	16 20 15.18	−17 18 25.7				693
105P	1999 02 13.50639	16 20 15.30	−17 18 25.8				693
105P	1999 02 13.50779	16 20 15.46	−17 18 25.8	18.2	T		693
105P	1999 04 12.50068	17 53 52.15	−13 26 02.8				693
105P	1999 04 12.50473	17 53 52.36	−13 26 00.6				693

128P/Shoemaker-Holt 1

128P-B	1999 04 16.24260	09 26 51.09	+10 25 36.7				693
128P-B	1999 04 16.25366	09 26 51.18	+10 25 37.3	19.5	T		693

129P/Shoemaker-Levy 3

129P	1999 04 14.32910	13 36 35.17	−17 37 06.5				693
129P	1999 04 14.33314	13 36 35.00	−17 37 05.6				693
129P	1999 04 14.33716	13 36 34.81	−17 37 04.4	17.4	T		693
129P	1999 04 17.23172	13 34 30.35	−17 25 59.5	18.9	T		704
129P	1999 04 17.24872	13 34 29.61	−17 25 56.3	19.6	T		704
129P	1999 04 17.26569	13 34 28.96	−17 25 50.5	19.5	T		704
129P	1999 04 17.28266	13 34 27.92	−17 25 47.3	18.8	T		704
129P	1999 04 17.29974	13 34 27.39	−17 25 42.7	18.8	T		704
129P	1999 04 20.22192	13 32 22.80	−17 14 03.1	18.4	T		704
129P	1999 04 20.23824	13 32 22.11	−17 13 58.8	18.5	T		704
129P	1999 04 20.25462	13 32 21.30	−17 13 55.1	18.7	T		704

135P/Shoemaker-Levy 8

135P	1999 04 07.60677	11 16 37.33	−00 41 23.9	18.3	T		360
135P	1999 04 07.61059	11 16 37.24	−00 41 22.6				360
135P	1999 04 12.32404	11 14 34.77	−00 16 30.9				693
135P	1999 04 12.32809	11 14 34.68	−00 16 29.4				693
135P	1999 04 12.33215	11 14 34.57	−00 16 28.4	18.1	T		693

140P/Bowell-Skiff

140P	1999 03 16.56528	06 55 19.98	+25 40 45.2	16.8	T		372
140P	1999 03 17.59253	06 56 29.31	+25 36 13.9	16.9	T		372
140P	1999 04 06.13496	07 23 55.44	+23 57 23.9	18.0	T		704
140P	1999 04 06.14637	07 23 56.58	+23 57 19.5	18.0	T		704
140P	1999 04 06.15762	07 23 57.65	+23 57 15.5	18.1	T		704
140P	1999 04 06.16881	07 23 58.75	+23 57 12.0	18.3	T		704
140P	1999 04 06.17999	07 23 59.91	+23 57 09.7	18.2	T		704
140P	1999 04 06.47890	07 24 29.19	+23 55 22.5	15.8	T		402
140P	1999 04 06.48050	07 24 29.38	+23 55 23.0				402
140P	1999 04 06.48211	07 24 29.58	+23 55 21.5				402
140P	1999 04 07.52674	07 26 13.09	+23 49 12.4	15.8	T		360
140P	1999 04 07.52934	07 26 13.36	+23 49 11.2				360
140P	1999 04 10.17971	07 30 42.23	+23 33 06.9	17.3	T		704
140P	1999 04 10.17988	07 30 42.21	+23 33 07.5	17.1	T		704
140P	1999 04 10.18006	07 30 42.21	+23 33 10.4	17.2	T		704
140P	1999 04 10.19901	07 30 44.13	+23 33 00.1	18.1	T		704
140P	1999 04 10.19910	07 30 44.15	+23 33 00.9	18.3	T		704
140P	1999 04 10.19932	07 30 44.24	+23 32 58.3	17.7	T		704
140P	1999 04 10.21805	07 30 45.90	+23 32 51.8	18.2	T		704
140P	1999 04 10.21813	07 30 46.21	+23 32 50.2	18.3	T		704
140P	1999 04 10.21840	07 30 46.16	+23 32 51.6	18.6	T		704
140P	1999 04 10.25481	07 30 49.87	+23 32 39.4	18.2	T		704
140P	1999 04 10.25490	07 30 49.95	+23 32 39.0	18.2	T		704

140P	1999 04 10.25506	07 30 49.94	+23 32 38.1	18.2 T	704
140P	1999 04 12.23059	07 34 15.31	+23 20 12.9		693
140P	1999 04 12.23485	07 34 15.77	+23 20 11.3		693
140P	1999 04 14.81746	07 38 51.22	+23 03 21.4		118
140P	1999 04 14.82238	07 38 51.74	+23 03 19.5		118
140P	1999 04 14.82426	07 38 51.98	+23 03 19.0	15.7 T	118

Note 1: faint image. 2: prediscovery image. 3: involved with star.

OBSERVATIONS OF MINOR PLANETS

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

010 Caussols

E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium [elst@atmos.oma.be]
C. Pollas, Observatoire de la Côte d'Azur, Avenue Copernic, F-06130 Grasse, France [pollas@ocar01.obs-azur.fr]
Observers C. Pollas, D. Albanese
Measurer E. W. Elst
0.9-m Schmidt telescope
1996 QM_2, 3, 1, 0; *[3, 1, 0*, 1996/08/09]*

012 Uccle

T. Pauwels, Koninklijke Sterrenwacht van België, Ringlaan 3, B-1180 Brussels, Belgium [Thierry.Pauwels@oma.be]
Observers T. Pauwels, S. Ipatov
Measurer T. Pauwels
0.85-m $f/2.5$ Schmidt + CCD
GSC-1.2
1995 FQ_4, 5, 1, 0; 1996 VN_5, 4, 1, 0; 1999 AA_{25}, 2, 1, 0; 1999 DD_7, 5, 1, 0; 1999 EB_5, 4, 1, 0; 1999 FY_7, 4, 1, 0; (6946), 5, 1, 0; *[29, 7, 0*, 1999/04/08–1999/04/09]*

033 Tautenburg

F. Börngen, Thüringer Landessternwarte, Sternwarte 5, D-07778 Tautenburg, Germany [boerg@tls.tautenburg.de]
1.3-m Schmidt telescope
PPM
1992 UA_{10}, 2, 1, 0; 1997 YL_3, 2, 1, 0; *[4, 2, 0*, 1992/11/23–1994/01/15]*

046 Kleť

J. Tichá, Hvězdárna Kleť, Zátkovo nábřeží 4, CZ-37001 České Budějovice, Czech Republic [klet@klet.cz]
Observers J. Tichá, M. Tichý, Z. Moravec
Measurer M. Tichý
0.57-m $f/5.2$ reflector + CCD
USNO-SA2.0
1981 CH, 6, 2, 1; 1981 SN, 3, 1, 0; 1986 TZ_3, 5, 2, 1; 1995 JC, 6, 2, 3; 1997 UO_9, 4, 1, 0; 1997 UE_{15}, 5, 2, 1; 1998 CH, 6, 2, 6; 1998 CR, 6, 2, 6; 1998 DP, 4, 2, 3; 1998 DT_1, 4, 1, 0; 1998 DW_{12}, 5, 2, 1; 1999 BE_8, 3, 1, 0; 1999 CV_3, 4, 1, 0; 1999 EF_3, 6, 3, 8; 1999 EE_5, 3, 1, 0; 1999 FA, 8, 2, 18; 1999 FB, 4, 1, 0; 1999 FN_{19}, 8, 2, 15; 1999 FX_{20}, 17, 4, 25; 1999 FY_{20}, 19, 5, 28; 1999 FH_{21}, 4, 1, 0; 1999 FU_{28}, 13, 3, 3; 1999 FB_{29}, 13, 3, 3; 1999 FN_{53}, 8, 2, 22; 1999 GZ_1, 5, 1, 0; 1999 GA_2, 2, 1, 0; 1999 GG_2, 4, 1, 0; 1999 GH_2, 17, 4, 4; 1999 GJ_2, 12, 3, 9; 1999 GS_3, 10, 2, 1; 1999 GT_3, 6, 1, 0; 1999 GU_3, 23, 4, 13; 1999 GJ_4, 9, 2, 3; 1999 GK_4, 15, 4, 12; 1999 GL_4, 6, 1, 0; 1999 GL_5, 6, 2, 3; 1999 GY_5, 5, 1, 0; 1999 GS_6, 9, 2, 1; 1999 GT_6, 15, 3, 3; 1999 HC, 4, 1, 0; 1999 HD_1, 6, 1, 0; 1999 HE_1, 4, 1, 0; 1999 HF_1, 11, 3, 9; 1999 HW_1, 5, 1, 0; 1999 HX_1, 12, 3, 3; 1999 HY_1, 8, 2, 1; 1999 HZ_1, 6, 1, 0; 1999 HA_2, 21, 5, 4; 1999 HC_2 *, 13, 3, 3; 1999 HM_2 *, 8, 2, 3; 1999 HW_2, 12, 3, 2; 1999 HX_2, 13, 3, 2; (1981), 3, 1, 0; (3352), 3, 1, 0; (5164), 7, 2, 29; (5693), 3, 1, 0; *[447, 56, 2*, 1999/03/26–1999/04/29]*

071 Bulgarian National Observatory

V. Radeva, Astronomical Observatory and Planetarium, Varna, Bulgaria [astro@ms3.tu-varna.acad.bg]
Observers V. Radeva, G. Apostolovska, A. Marinov
Measurers V. Radeva, G. Borisov
0.50-m $f/1.4$ Schmidt
GSC
1999 CV_3, 6, 1, 0; 1999 FA, 3, 1, 0; *[9, 2, 0*, 1999/03/23–1999/03/24]*

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
1992 TB_2, 1, 1, 0; 1999 EH_5, 2, 1, 0; *[3, 2, 0*, 1991/10/05–1992/09/04]*

097 Wise Observatory, Mitzpeh Ramon

A. Gal-Yam, Wise Observatory, Tel-Aviv University, IL-69978 Tel-Aviv, Israel [ilam@trendline.co.il]
Observer A. Gal-Yam
Measurer I. Manulis
1.0-m $f/7$ reflector + CCD
USNO-A2.0
1999 GP_6 *, 6, 2, 1; *[6, 1, 1*, 1999/04/15–1999/04/16]*

098 Asiago Observatory, Cima Ekar

U. Munari, Osservatorio Astronomico di Padova, Sede di Asiago, I-36012 Asiago (VI), Italy [munari@astras.pd.astro.it]
Observers U. Munari, F. Castellani, M. Tombelli, P. Antolini
Measurers F. Castellani, M. Tombelli, G. Forti
0.67-m $f/3.2$ Schmidt
1999 CG_{28}, 2, 1, 0; *[2, 1, 0*, 1997/10/29]*

104 San Marcello Pistoiese

L. Tesi, Osservatorio di Pian dei Termini, Viale Panoramico 45, I-51028 San Marcello Pistoiese (PT), Italy [iau@arcetri.astro.it]
Observers L. Tesi, A. Boattini, M. Tombelli, G. D'Abramo
Measurers G. Forti, L. Tesi, A. Boattini, M. Tombelli, G. D'Abramo
0.40-m $f/5$ reflector + CCD
GSC
1994 WR_3, 3, 1, 0; 1995 KN, 2, 1, 0; 1996 FR_3, 8, 2, 1; 1996 OE_2, 4, 2, 2; 1996 OM_2, 7, 2, 13; 1996 OP_2, 5, 2, 1; 1996 PD_3, 3, 2, 14; 1996 RD_4, 4, 2, 13; 1996 VU_2, 4, 1, 0; 1997 TW_{25}, 5, 2, 1; 1998 BA_{34}, 2, 1, 0; 1998 YN_7, 2, 1, 0; 1998 YP_{10}, 2, 1, 0; 1999 BF_8, 2, 2, 16; 1999 CY_2, 2, 1, 0; 1999 CZ_8, 3, 1, 0; 1999 CD_{133}, 2, 1, 0; 1999 FA, 3, 1, 0; 1999 FH_{10}, 2, 1, 0; 1999 FP_{10}, 6, 2, 22; 1999 FN_{19}, 3, 1, 0; 1999 FF_{21}, 5, 1, 0; 1999 FL_{34}, 2, 1, 0; 1999 FV_{52}, 3, 1, 0; 1999 FN_{53},

4, 1, 0; 1999 GZ ∗, 7, 3, 14; 1999 GA_1 ∗, 6, 3, 20; 1999 GB_1 ∗, 6, 3, 14; 1999 GC_1 ∗, 8, 3, 14; 1999 GD_1 ∗, 8, 3, 9; 1999 GF_1 ∗, 4, 2, 1; 1999 GG_1 ∗, 10, 4, 9; 1999 GV_3 ∗, 6, 2, 5; 1999 GW_3 ∗, 12, 4, 13; 1999 GK_4, 2, 1, 0; 1999 GM_4, 3, 1, 0; 1999 GY_5, 3, 1, 0; 1999 GS_6, 2, 1, 0; 1999 HC, 4, 1, 0; 1999 HF_1, 4, 1, 0; 1999 HA_2, 3, 1, 0; 1999 HV_2 ∗, 8, 3, 7; 1999 HW_2, 3, 1, 0; 1999 HX_2, 3, 1, 0; 1999 HY_2 ∗, 9, 3, 8; (808), 3, 1, 0; (2360), 5, 2, 1; (2508), 2, 1, 0; (8089), 5, 2, 1; *[214, 49, 11∗, 1996/03/18–1999/05/02]*

106 Črni vrh
H. Mikuž, Kersnikova 11, SI-61000 Ljubljana, Slovenia [herman.mikuz@uni-lj.si]
Observers H. Mikuž, J. Skvarč
0.19-m $f/4$ Baker-Schmidt + CCD
GSC 1.1
(39), 3, 1, 0; (140), 3, 1, 0; (415), 3, 1, 0; (578), 3, 1, 0; (601), 3, 1, 0; (736), 3, 1, 0; (820), 3, 1, 0; (974), 3, 1, 0; (1277), 3, 1, 0; (1434), 3, 1, 0; (1724), 3, 1, 0; (2457), 3, 1, 0; (6170), 3, 1, 0; (10300), 2, 1, 0; (10344), 2, 1, 0; *[43, 15, 0∗, 1999/03/24–1999/04/06]*

108 Montelupo
M. Tombelli, Via Bozzeto 26, I-50056 Montelupo (Fi), Italy [iau@arcetri.astro.it]
Observers M. Tombelli, A. Boattini, L. Tesi, D. Guidetti, G. Forti, E. Masotti
Measurers M. Tombelli, A. Boattini, L. Tesi, S. Bartolini, G. Forti
0.30-m $f/5.7$ Schmidt-Cassegrain + CCD
GSC
1996 PD_3, 6, 2, 12; 1997 XL_{10}, 11, 3, 12; 1998 BA_{34}, 3, 1, 0; 1999 EV_4, 4, 1, 0; 1999 FP_{10}, 12, 4, 21; 1999 GZ, 6, 2, 7; 1999 GA_1, 12, 3, 7; 1999 GC_1, 3, 1, 0; 1999 GD_1, 3, 1, 0; 1999 GK_4, 3, 1, 0; 1999 GM_4 ∗, 15, 3, 21; 1999 HF_1, 4, 1, 0; 1999 HV_2, 2, 1, 0; (2360), 2, 1, 0; (2508), 3, 1, 0; *[89, 15, 1∗, 1999/03/23–1999/05/02]*

113 Volkssternwarte Drebach, Schönbrunn
G. Lehmann, Persterstrasse 6h, D-09430 Drebach, Germany [g.lehmann@abo.freiepresse.de]
Observers G. Lehmann, J. Kandler, M. Behnke
Measurers G. Lehmann, J. Kandler
0.50-m $f/4$ reflector + CCD, 0.18-m $f/9.0$ refractor + CCD
USNO-A2.0
1988 FM_1, 6, 2, 17; 1988 RX_2, 2, 1, 0; 1989 CD_6, 2, 1, 0; 1990 TK_4, 5, 2, 13; 1990 TE_9, 2, 1, 0; 1990 TO_9, 3, 1, 0; 1991 AQ_2, 2, 1, 0; 1991 AS_2, 2, 1, 0; 1991 AV_2, 4, 2, 13; 1991 RX_4, 2, 1, 0; 1991 RC_5, 2, 1, 0; 1992 DL_4, 2, 1, 0; 1993 SF_4, 4, 2, 13; 1995 EZ_8, 2, 1, 0; 1997 UA_4, 4, 2, 13; 1998 BQ, 2, 1, 0; 1998 DL_1, 3, 1, 0; 1998 WS, 3, 1, 0; (4503), 4, 1, 0; (5164), 2, 1, 0; (6411), 2, 1, 0; (9671), 2, 1, 0; *[62, 22, 0∗, 1999/04/01–1999/04/22]*

118 Modra
A. Galád, AGO MFF UK, P.O. Box 4, SK-90001 Modra, Slovakia [ago@fmph.uniba.sk]
Observers A. Galád, D. Kalmančok, L. Kornoš, P. Kolény, J. Tóth
0.6-m $f/5.5$ reflector + CCD
USNO-SA1.0
1995 LH, 2, 1, 0; 1996 FR_3, 5, 2, 11; 1996 HO, 2, 1, 0; 1997 VK_3, 3, 1, 0; 1998 BT_{26}, 3, 1, 0; 1998 CB, 9, 3, 8; 1998 WM, 2, 1, 0; 1998 YP_{11}, 10, 4, 27; 1999 BN, 13, 5, 20; 1999 BE_8, 2, 1, 0; 1999 CV_3, 6, 2, 28; 1999 CW_7, 3, 1, 0; 1999 CS_{149}, 3, 1, 0; 1999 DU_3, 2, 1, 0; 1999 EE_5, 3, 1, 0; 1999 FA, 3, 1, 0; 1999 FV_3, 23, 7, 14; 1999 FN_{19}, 11, 4, 13; 1999 FT_{20}, 10, 3, 3; 1999 FF_{21}, 17, 6, 17; 1999 FD_{31}, 3, 1, 0; 1999 FN_{53}, 14, 5, 13; 1999 GJ ∗, 21, 7, 13; 1999 GK ∗, 22, 7, 13; 1999 GY, 6, 2, 3; 1999 GZ_1, 3, 1, 0; 1999 GA_2, 3, 1, 0; 1999 GC_2 ∗, 24, 8, 21; 1999 GD_2 ∗, 20, 7, 11; 1999 GE_2 ∗, 18, 6, 11; 1999 GG_2, 3, 1, 0; 1999 GH_2, 9, 3, 3; 1999 GJ_2, 6, 2, 1; 1999 GS_3, 6, 2, 10; 1999 GT_3, 9, 3, 9; 1999 GU_3, 12, 4, 15; 1999 GJ_4, 3, 1, 0; 1999 GK_4, 6, 2, 6; 1999 GL_4, 3, 1, 0; 1999 GY_5, 3, 1, 0; 1999 GT_6, 6, 2, 1; 1999 HC, 3, 1, 0; 1999 HE_1, 3, 1, 0; 1999 HF_1, 6, 2, 1; 1999 HA_2, 5, 2, 1; (1373), 2, 1, 0; (1981), 5, 2, 5; (3103), 2, 1, 0; (3122), 2, 1, 0; (3199), 2, 1, 0; (3352), 2, 1, 0; (4195), 15, 6, 12; (5131), 2, 1, 0; (5164), 2, 1, 0; (6047), 3, 1, 0; (6322), 3, 1, 0; (9671), 2, 1, 0; (10295), 3, 1, 0; (10302), 2, 1, 0; *[396, 59, 5∗, 1999/03/25–1999/04/30]*

120 Višnjan
K. Korlević, Istarska 5, HR-51463 Višnjan, Croatia [korado@visnjan.hr]
Observers K. Korlević, P. Korlević, A. Ritosa, V. Jelic, R. Radonic, B. Andric, M. Jurić, P. Radovan
Measurers K. Korlević, V. Jelic, M. Jurić
0.41-m $f/4.3$ reflector + CCD
USNO-SA1.0
1973 SP_4, 2, 1, 0; 1981 US_{14}, 3, 1, 0; 1990 QV_5, 3, 1, 0; 1990 US_3, 3, 1, 0; 1992 FS_1, 3, 1, 0; 1993 FJ_{38}, 3, 1, 0; 1994 EY_5, 3, 1, 0; 1995 EO_8, 2, 1, 0; 1996 RD_4, 3, 1, 0; 1996 SF_6, 8, 3, 6; 1996 TK_{48}, 2, 1, 0; 1996 US, 3, 1, 0; 1997 AO_1, 9, 3, 13; 1997 YZ_{16}, 3, 1, 0; 1997 YS_{19}, 9, 3, 8; 1998 AL_{10}, 2, 1, 0; 1998 BC_1, 3, 1, 0; 1998 BH_{10}, 3, 1, 0; 1998 BV_{12}, 2, 1, 0; 1998 UB_{40}, 2, 1, 0; 1998 WV_{10}, 2, 1, 0; 1998 XN_{10}, 3, 1, 0; 1998 YO_9, 3, 1, 0; 1999 BN_1, 2, 1, 0; 1999 BQ_7, 2, 1, 0; 1999 BS_7, 3, 1, 0; 1999 BV_7, 2, 1, 0; 1999 BL_9, 3, 1, 0; 1999 CP_8, 6, 3, 3; 1999 DZ, 2, 1, 0; 1999 DL_4, 3, 1, 0; 1999 EZ_2, 5, 2, 21; 1999 EQ_4, 12, 4, 7; 1999 ER_4, 9, 4, 6; 1999 FG, 7, 3, 6; 1999 FH, 6, 3, 6; 1999 FF_7, 5, 2, 1; 1999 FL_{10}, 11, 4, 6; 1999 FM_{10}, 12, 4, 6; 1999 FP_{32}, 9, 4, 27; 1999 FQ_{32}, 7, 3, 7; 1999 FR_{32}, 10, 5, 29; 1999 FS_{32}, 12, 5, 27; 1999 FT_{32}, 11, 4, 20; 1999 FU_{32}, 13, 5, 13; 1999 FK_{53} ∗, 14, 5, 29; 1999 GF ∗, 10, 5, 6; 1999 GG ∗, 16, 6, 16; 1999 GM ∗, 9, 4, 6; 1999 GN ∗, 9, 3, 4; 1999 GO ∗, 13, 5, 16; 1999 GP ∗, 13, 5, 16; 1999 GQ ∗, 11, 5, 16; 1999 GR ∗, 11, 4, 14; 1999 GS ∗, 12, 5, 14; 1999 GT ∗, 8, 3, 4; 1999 GU ∗, 8, 3, 4; 1999 GV ∗, 17, 6, 20; 1999 GW ∗, 19, 6, 20; 1999 GX ∗, 17, 5, 13; 1999 GH_1, 2, 1, 0; 1999 GK_1, 6, 2, 3; 1999 GH_2, 5, 1, 0; 1999 GK_2 ∗, 5, 2, 4; 1999 GL_2 ∗, 7, 3, 26; 1999 GM_2 ∗, 12, 4, 19; 1999 GN_2 ∗, 9, 3, 4; 1999 GO_3 ∗, 8, 3, 10; 1999 GN_4 ∗, 9, 3, 8; 1999 GO_4 ∗, 17, 5, 13; 1999 GP_4 ∗, 15, 5, 15; 1999 GQ_4 ∗, 21, 7, 15; 1999 GR_4 ∗, 15, 5, 13; 1999 GS_4 ∗, 15, 5, 13; 1999 GF_6 ∗, 12, 4, 10; 1999 GG_6 ∗, 12, 4, 10; 1999 GH_6 ∗, 11, 4, 10; 1999 GL_6 ∗, 14, 4, 10; 1999 GC_7 ∗, 6, 2, 6; 1999 GE_7 ∗, 8, 3, 10; 1999 HS_1 ∗, 16, 5, 7; 1999 HT_1 ∗, 9, 3, 5; 1999 HD_2 ∗, 6, 2, 4; 1999 HE_2 ∗, 13, 4, 6; 1999 HF_2 ∗, 8, 3, 6; 1999 HG_2 ∗, 8, 3, 6; 1999 HK_2 ∗, 5, 2, 4; 1999 HL_2 ∗, 10, 3, 2; 1999 HN_2 ∗, 6, 3, 7; 4089 P-L, 2, 1, 0; (401), 2, 1, 0; (547), 3, 1, 0; (567), 2, 1, 0; (864), 3, 1, 0; (1091), 3, 1, 0; (1542), 3, 1, 0; (1573), 3, 1, 0; (1979), 6, 2, 12; (2010), 2, 1, 0; (2185), 8, 3, 8; (2311), 6, 2, 19; (2460), 3, 1, 0; (2493), 6, 2, 1; (2992), 3, 1, 0; (3069), 2, 1, 0; (3130), 3, 1, 0; (3253), 2, 1, 0; (3366), 2, 1, 0; (3532), 3, 1, 0; (3598), 3, 1, 0; (3783), 4, 2, 3; (3990), 6, 2, 3; (4080), 3, 1, 0; (4169), 2, 1, 0; (4272), 11, 4, 6; (4578), 3, 1, 0; (4647), 3, 1, 0; (4760), 16, 5, 13; (5039), 3, 1, 0; (5071), 3, 1, 0; (5328), 3, 1, 0; (5723), 3, 1, 0; (5825), 5, 1, 0; (5931), 3, 1, 0; (6103), 3, 1, 0; (6739), 2, 1, 0; (7133), 2, 1, 0; (7241), 3, 1, 0; (7297), 2, 1, 0; (7364), 11, 4, 6; (8167), 7, 3, 6; (8238), 8, 3, 10; (8329), 6, 2, 1; (8403), 3, 1, 0; (8694), 9, 3, 6; (9201), 3, 1, 0; (10395), 11, 4, 6; *[916, 137, 41∗, 1998/09/30–1999/05/02]*

121 Kharkov University, Chuguevskaya Station
Yu. N. Krugly, Astronomical Observatory, Kharkov State University, Sumska Street 35, Kharkov 310022, Ukraine [krugly@astron.kharkov.ua]
V. G. Shevchenko, Astronomical Observatory, Kharkov State University, Sumska Street 35, Kharkov 310022, Ukraine [krugly@astron.kharkov.ua]
Observers Yu. N. Krugly, V. G. Shevchenko
Measurers Yu. N. Krugly, I. A. Tereschenko
0.70-m $f/4$ reflector + CCD
GSC
1999 CV_3, 5, 1, 0; 1999 GU_3, 11, 2, 1; (20), 3, 1, 0; (119), 10, 3, 32; (6019), 8, 1, 0; *[37, 5, 0∗, 1996/08/16–1999/04/23]*

127 Bornheim
N. Ehring, Stationenweg 54, D-53332 Bornheim, Germany [norbert.ehring@t-online.de]
0.19-m $f/4$ FFC + CCD
GSC
1989 CH, 6, 3, 11; 1991 GV, 4, 2, 10; 1992 AU_1, 4, 2, 1; 1993 XN_1, 6, 3, 10; 1999 CC_{10}, 4, 2, 10; 1999 DC_3, 2, 1, 0; 1999 DR_3, 2, 1, 0; 1999 DS_3, 4, 2, 9; (10349), 2, 1, 0; *[34, 9, 0∗, 1999/04/09–1999/04/20]*

130 Lumezzane
S. Foglia, F. Bisleri 11, I-20418 Milan, Italy [md3576@mclink.it]
Observers G. Pizzetti, W. Marinello, L. Cocca
Measurer G. Pizzetti

0.40-m $f/4$ reflector + CCD
USNO-A1.0
1999 HF_1, 4, 1, 0; *[4, 1, 0∗, 1999/04/24]*

133 Les Tardieux
M. Boeuf, Les Tardieux, St Julien, F-13500 Martigues, France
[Michel.Boeuf@wanadoo.fr]
0.20-m $f/3.5$ reflector + CCD
GSC
1987 SG_{13}, 2, 1, 0; (1691), 3, 1, 0; (10353), 3, 1, 0; *[8, 3, 0∗, 1999/03/20–1999/04/13]*

138 Village-Neuf
C. Demeautis, 9 rue de Huningue, F-68300 Saint-Louis, France
[Sky.walker@wanadoo.fr]
Observers C. Demeautis, D. Matter
Measurer C. Demeautis
0.30-m $f/4$ reflector + CCD
GSC
(140), 3, 1, 0; (10353), 3, 1, 0; *[6, 2, 0∗, 1999/03/24]*

143 Gnosca
S. Sposetti, CH-6525 Gnosca, Switzerland [spo@dial.eunet.ch]
0.20-m $f/7.1$ reflector + CCD
GSC
1999 EV_2, 6, 2, 9; 1999 EY_4, 3, 1, 0; 1999 EZ_4, 6, 2, 9; (10380), 5, 2, 1; *[20, 4, 0∗, 1999/04/09–1999/04/19]*

151 Eschenberg Observatory, Winterthur
M. Griesser, Breitenstrasse 2, CH-8542 Wiesendangen, Switzerland
[griesser@spectraweb.ch]
0.25-m $f/8.0$ reflector + CCD
GSC
1998 YP_{11}, 10, 2, 22; 1999 CV_3, 13, 3, 10; 1999 FA, 4, 1, 0; 1999 FN_{19}, 12, 3, 12; 1999 FN_{53}, 19, 4, 14; 1999 GU_3, 16, 3, 6; 1999 GK_4, 6, 1, 0; 1999 GY_5, 4, 1, 0; 1999 HF_1, 42, 7, 11; (1036), 7, 2, 26; (1373), 6, 2, 30; (1508), 5, 2, 27; (1866), 6, 2, 24; (1981), 3, 1, 0; (4503), 3, 1, 0; (5131), 4, 2, 31; (5164), 3, 1, 0; (6047), 2, 1, 0; *[165, 18, 0∗, 1999/03/30–1999/05/02]*

153 Stuttgart–Hoffeld
R. Stuber, Hoffeldstrasse 121, D-70597 Stuttgart, Germany
[rolf.stuber@swol.de]
Observer R. Stuber
Measurer K. Stuber
0.25-m $f/7.2$ reflector + CCD
GSC
(431), 7, 2, 3; *[7, 1, 0∗, 1999/04/02–1999/04/05]*

159 Monte Agliale
M. M. M. Santangelo, Monte Agliale Astronomical Observatory, Borgo a Mozzano, Lucca, Italy [ilra@comune.lucca.it]
Observers M. M. M. Santangelo, F. Ciabattari
Measurer M. M. M. Santangelo
0.51-m $f/4.5$ Newtonian reflector + CCD
USNO-A2.0
1999 BH_8, 2, 1, 0; 1999 EK_3, 10, 2, 28; 1999 ET_4, 5, 1, 0; 1999 FT_{19}, 4, 1, 0; 1999 FU_{19}, 19, 4, 22; 1999 FQ_{21}, 10, 2, 5; 1999 FR_{21}, 4, 1, 0; 1999 FT_{21}, 5, 1, 0; 1999 GE ∗, 19, 3, 3; *[78, 9, 1∗, 1999/04/02–1999/04/30]*

161 Cerrini Tololo Observatory
P. Camaiti, via Maria Vittoria 35, 10123 Torino, Italy [P.Camaiti@flashnet.it]
0.13-m $f/6$ refractor + CCD
GSC
(1), 1, 1, 0; (164), 2, 1, 0; (389), 2, 1, 0; (6354), 1, 1, 0; *[6, 4, 0∗, 1999/04/04–1999/04/09]*

292 Burlington
T. Handley, 13 Linden Road, Burlington, NJ 08016, U.S.A.
0.30-m $f/3.0$ Schmidt-Cassegrain + focal reducer + CCD
GSC
1999 CQ_5, 8, 3, 14; 1999 CV_5, 12, 4, 19; 1999 GH_1, 12, 4, 7; 1999 GM_2, 3, 1, 0; 1999 GN_2, 3, 1, 0; *[38, 5, 0∗, 1999/03/23–1999/04/25]*

303 Mérida
O. Naranjo, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02318, U.S.A. [onaranjo@cfa.harvard.edu]
1.0-m Schmidt + CCD
1994 BC_1, 3, 1, 0; *[3, 1, 0∗, 1994/02/08]*

321 Craigie
G. G. Bolt, 295 Camberwarra Drive, Craigie, Western Australia 6025, Australia
[cheleb@ophiuchus.iinet.net.au]
0.25-m Schmidt-Cassegrain + CCD
GSC-1.1
1999 FE_{21}, 5, 1, 0; (694), 7, 2, 2; (914), 9, 2, 2; (983), 8, 2, 2; (1485), 4, 2, 2; (1834), 5, 2, 2; (1942), 5, 2, 2; (2050), 4, 1, 0; (2235), 6, 2, 2; (2735), 3, 2, 2; *[56, 10, 0∗, 1999/04/17–1999/04/26]*

323 Perth
J. Biggs, Perth Observatory, Bickley, WA 6076, Australia
[jamieb@calm.wa.gov.au]
Observers G. Lowe, T. Smith
Measurer T. Smith
0.3-m astrograph
(457), 1, 1, 0; (927), 1, 1, 0; (3687), 1, 1, 0; (3753), 1, 1, 0; (5186), 2, 2, 27; *[6, 5, 0∗, 1998/09/23–1998/10/20]*

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. Y. Li, H. T. Zhang, X. S. Liu, X. M. Teng
Measurers X. Y. Li, J. Zhu, Y. J. Chen
0.60-m Schmidt + CCD
1976 GV_2, 3, 1, 0; 1977 RS_{17}, 3, 1, 0; 1981 EV_3, 3, 1, 0; 1982 JH_2, 4, 1, 0; 1982 SW_3, 3, 1, 0; 1986 EA_5, 3, 1, 0; 1987 DG, 3, 1, 0; 1988 RM_5, 3, 1, 0; 1988 SL_1, 3, 1, 0; 1988 VT_3, 3, 1, 0; 1989 GV_1, 3, 1, 0; 1989 SD, 3, 1, 0; 1989 ST_3, 3, 1, 0; 1989 UY_2, 3, 1, 0; 1989 VP_1, 3, 1, 0; 1990 DV, 3, 1, 0; 1990 RH_2, 3, 1, 0; 1990 RM_3, 3, 1, 0; 1990 RN_{17}, 3, 1, 0; 1990 UW_2, 3, 1, 0; 1990 WF_3, 3, 1, 0; 1990 XN, 3, 1, 0; 1991 RE_1, 3, 1, 0; 1991 RK_{23}, 6, 2, 14; 1991 RC_{28}, 3, 1, 0; 1991 SN, 3, 1, 0; 1991 TD_6, 3, 1, 0; 1992 BX, 3, 1, 0; 1992 BP_2, 3, 1, 0; 1992 DW_7, 3, 1, 0; 1992 EL_{35}, 20, 5, 17; 1992 KA, 7, 2, 49; 1992 PU, 3, 1, 0; 1992 WD_3, 3, 1, 0; 1993 FS_{28}, 3, 1, 0; 1993 OS_{12}, 4, 1, 0; 1993 PC_7, 3, 1, 0; 1993 TW_{16}, 3, 1, 0; 1993 TJ_{39}, 3, 1, 0; 1993 XQ_2, 4, 1, 0; 1994 CA_5, 3, 1, 0; 1994 CQ_{13}, 3, 1, 0; 1994 PS, 7, 1, 0; 1994 PV_{19}, 3, 1, 0; 1994 PL_{26}, 3, 1, 0; 1994 TF_1, 3, 1, 0; 1995 BE_7, 4, 1, 0; 1995 EA_8, 6, 2, 21; 1995 EO_8, 6, 2, 4; 1995 KJ_3, 3, 1, 0; 1996 FT_{11}, 3, 1, 0; 1996 GR_{17}, 3, 1, 0; 1996 JZ, 3, 1, 0; 1996 JR_1, 4, 1, 0; 1996 KN, 3, 1, 0; 1996 PS_8, 4, 1, 0; 1996 TK_{11}, 3, 1, 0; 1997 GC_{15}, 3, 1, 0; 1997 MC_3, 3, 1, 0; 1997 QH_1, 3, 1, 0; 1997 QU_4, 3, 1, 0; 1997 SZ_2, 3, 1, 0; 1997 SO_{33}, 3, 1, 0; 1997 UC_4, 3, 1, 0; 1997 UW_9, 3, 1, 0; 1997 WN_1, 6, 2, 50; 1997 WC_3, 3, 1, 0; 1997 WW_7, 3, 1, 0; 1997 WV_{35}, 3, 1, 0; 1997 WN_{36}, 3, 1, 0; 1997 WC_{37}, 3, 1, 0; 1997 WQ_{54}, 3, 1, 0; 1997 XU_1, 3, 1, 0; 1997 XS_{11}, 3, 1, 0; 1998 BZ_{12}, 4, 1, 0; 1998 DC_6, 4, 1, 0; 1998 DJ_{32}, 3, 1, 0; 1998 EK_9, 6, 1, 0; 1998 FM_{12}, 3, 1, 0; 1998 KL_{48}, 3,

1, 0; 1998 MJ_{14}, 4, 1, 0; 1998 OZ_8, 3, 1, 0; 1998 QR_6, 3, 1, 0; 1998 QT_{39}, 3, 1, 0; 1998 QM_{42}, 3, 1, 0; 1998 QU_{43}, 3, 1, 0; 1998 QG_{49}, 4, 1, 0; 1998 QW_{53}, 3, 1, 0; 1998 QB_{69}, 4, 1, 0; 1998 QO_{92}, 3, 1, 0; 1998 QO_{105}, 3, 1, 0; 1998 RJ_{17}, 3, 1, 0; 1998 RP_{42}, 6, 2, 108; 1998 RQ_{42}, 3, 1, 0; 1998 RT_{48}, 3, 1, 0; 1998 RT_{50}, 3, 1, 0; 1998 RU_{56}, 3, 1, 0; 1998 RS_{72}, 2, 1, 0; 1998 SX_7, 2, 1, 0; 1998 SU_8, 3, 1, 0; 1998 SX_{21}, 3, 1, 0; 1998 SD_{27}, 3, 1, 0; 1998 SM_{41}, 3, 1, 0; 1998 ST_{43}, 3, 1, 0; 1998 SY_{45}, 3, 1, 0; 1998 SZ_{62}, 3, 1, 0; 1998 SV_{64}, 2, 1, 0; 1998 SW_{75}, 3, 1, 0; 1998 SK_{107}, 3, 1, 0; 1998 SV_{110}, 3, 1, 0; 1998 SQ_{111}, 3, 1, 0; 1998 SN_{114}, 3, 1, 0; 1998 SJ_{115}, 3, 1, 0; 1998 SK_{115}, 3, 1, 0; 1998 SP_{115}, 3, 1, 0; 1998 SX_{115}, 3, 1, 0; 1998 SY_{117}, 3, 1, 0; 1998 SZ_{118}, 3, 1, 0; 1998 SB_{119}, 3, 1, 0; 1998 SW_{135}, 2, 1, 0; 1998 SH_{145}, 3, 1, 0; 1998 SF_{155}, 3, 1, 0; 1998 SE_{163}, 3, 1, 0; 1998 TD_{18}, 3, 1, 0; 1998 TZ_{18}, 3, 1, 0; 1998 TO_{19}, 3, 1, 0; 1998 TP_{19}, 3, 1, 0; 1998 TQ_{25}, 6, 1, 0; 1998 TL_{32}, 3, 1, 0; 1998 TN_{33}, 5, 1, 0; 1998 UM_8, 3, 1, 0; 1998 UX_8, 3, 1, 0; 1998 UQ_{17}, 3, 1, 0; 1998 UB_{23}, 3, 1, 0; 1998 UX_{25}, 3, 1, 0; 1998 UH_{31}, 3, 1, 0; 1998 UR_{31}, 3, 1, 0; 1998 US_{31}, 6, 2, 13; 1998 UJ_{32}, 3, 1, 0; 1998 UB_{39}, 3, 1, 0; 1998 UP_{39}, 6, 1, 0; 1998 UB_{40}, 3, 1, 0; 1998 UF_{40}, 3, 1, 0; 1998 VF, 6, 2, 473; 1998 VH_5, 3, 1, 0; 1998 VN_6, 3, 1, 0; 1998 VN_8, 3, 1, 0; 1998 VG_{15}, 3, 1, 0; 1998 VZ_{29}, 3, 1, 0; 1998 VH_{31}, 3, 1, 0; 1998 VL_{35}, 6, 2, 11; 1998 VU_{41}, 3, 1, 0; 1998 VV_{41}, 7, 2, 16; 1998 WB_8, 7, 2, 864; 1998 WQ_{13}, 3, 1, 0; 1998 WY_{13}, 3, 1, 0; 1998 WV_{18}, 3, 1, 0; 1998 WA_{20}, 3, 1, 0; 1998 XN_3, 4, 1, 0; 1998 XW_9, 3, 1, 0; 1998 XH_{12}, 3, 1, 0; 1998 XJ_{19}, 3, 1, 0; 1998 XS_{20}, 3, 1, 0; 1998 XR_{28}, 3, 1, 0; 1998 XX_{49}, 3, 1, 0; 1998 XS_{52}, 7, 2, 72; 1998 XO_{79}, 3, 1, 0; 1998 XX_{93}, 3, 1, 0; 1998 XN_{96}, 7, 2, 856; 1998 YU, 3, 1, 0; 1998 YS_9, 3, 1, 0; 1999 AK, 6, 1, 0; 1999 AE_6, 3, 1, 0; 1999 AM_6, 3, 1, 0; 1999 AV_6, 3, 1, 0; 1999 AT_{22}, 3, 1, 0; 1999 AN_{24}, 3, 1, 0; 1999 AR_{25}, 3, 1, 0; 1999 AE_{28}, 3, 1, 0; 1999 BX_4, 3, 1, 0; 1999 BH_{10}, 3, 1, 0; 1999 BT_{12}, 3, 1, 0; 1999 CU_1, 3, 1, 0; 1999 CW_1, 4, 1, 0; 1999 CX_9, 3, 1, 0; 1999 CY_{11}, 3, 1, 0; 1999 CS_{14}, 3, 1, 0; 1999 CG_{17}, 6, 1, 0; 1999 CG_{19}, 3, 1, 0; 1999 CU_{25}, 3, 1, 0; 1999 CG_{28}, 3, 1, 0; 1999 CH_{34}, 3, 1, 0; 1999 CB_{43}, 3, 1, 0; 1999 CN_{47}, 3, 1, 0; 1999 CV_{48}, 6, 2, 72; 1999 CB_{50}, 3, 1, 0; 1999 CJ_{50}, 3, 1, 0; 1999 CB_{55}, 4, 1, 0; 1999 CC_{59}, 3, 1, 0; 1999 CH_{60}, 3, 1, 0; 1999 CW_{67}, 3, 1, 0; 1999 CD_{76}, 3, 1, 0; 1999 CA_{82}, 3, 1, 0; 1999 CF_{85}, 6, 2, 16; 1999 CL_{87}, 6, 2, 3; 1999 CV_{93}, 3, 1, 0; 1999 CE_{133}, 3, 1, 0; 1999 DK_2, 3, 1, 0; 1999 DN_2, 3, 1, 0; 1999 FE_1, 3, 1, 0; 1999 FY_9, 6, 2, 7; 1999 FZ_{26}, 4, 1, 0; 1999 FL_{33}, 6, 2, 6; 1999 FR_{59} *, 7, 2, 17; 1999 FS_{59} *, 7, 2, 17; 1999 GF_5 *, 8, 2, 3; 1999 GG_5 *, 6, 2, 7; 1999 GH_5 *, 9, 3, 8; 1999 GJ_5 *, 13, 3, 6; 1999 GK_5 *, 15, 4, 6; 1999 GL_5 *, 16, 4, 15; 1999 GY_5, 3, 1, 0; 1999 GB_6 *, 9, 2, 1; 1999 GM_6 *, 6, 2, 4; 1999 GT_6, 3, 1, 0; 1999 GF_7 *, 6, 2, 10; 1999 HD *, 6, 2, 2; 1999 HF *, 6, 2, 2; 1999 HK *, 6, 2, 1; 1999 HA_2, 3, 1, 0; 1999 HR_2 *, 6, 2, 7; 1999 HS_2 *, 9, 3, 2; 1999 HT_2 *, 6, 2, 1; 1999 HU_2 *, 10, 3, 2; 1999 HW_2, 3, 1, 0; 1999 HX_2, 3, 1, 0; 2022 P-L, 3, 1, 0; 2077 P-L, 7, 2, 596; 1143 T-1, 3, 1, 0; 2214 T-1, 3, 1, 0; 3041 T-1, 3, 1, 0; 1144 T-2, 3, 1, 0; 2141 T-2, 3, 1, 0; 5111 T-3, 3, 1, 0; (2190), 6, 2, 2; (3763), 6, 2, 7; (7145), 33, 8, 27; (10237), 3, 1, 0; (10258), 4, 1, 0; (10311), 3, 1, 0; (10332), 7, 2, 2; (10417), 3, 1, 0; *[1006, 252, 18*, 1995/02/02–1999/04/24]*

355 Hadano

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

GSC

1998 YP_{11}, 3, 1, 0; 1999 CV_3, 3, 1, 0; 1999 FN_{19}, 3, 1, 0; 1999 GU_3, 9, 3, 3; *[18, 4, 0*, 1999/04/08–1999/04/16]*

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, USNO-A2.0

1995 BU_4, 5, 2, 7; 1995 LH, 3, 1, 0; 1996 FR_3, 6, 2, 12; 1996 OP_2, 3, 1, 0; 1996 TK_7, 6, 2, 7; 1996 UC, 4, 2, 2; 1996 WC_3, 4, 2, 7; 1997 TW_{25}, 3, 1, 0; 1998 WM, 3, 1, 0; 1998 WP_5, 3, 1, 0; 1998 YC_1, 6, 2, 3; 1998 YN_1, 3, 1, 0; 1998 YP_{11}, 3, 1, 0; 1999 BM_5, 3, 1, 0; 1999 BY_9, 3, 1, 0; 1999 CU_3, 3, 1, 0; 1999 DB_2, 3, 1, 0; 1999 DK_3, 3, 1, 0; 1999 EE_5, 6, 2, 3; 1999 EF_5, 3, 1, 0; 1999 FB, 3, 1, 0; 1999 FJ_5, 3, 1, 0; 1999 FN_{19}, 6, 2, 3; 1999 FP_{19}, 4, 1, 0; 1999 FQ_{19}, 3, 1, 0; 1999 FN_{53}, 3, 1, 0; 1999 GJ_2, 3, 1, 0; 1999 GU_3, 6, 2, 12; 1999 GY_5, 2, 1, 0; 1999 HC, 3, 1, 0; 1999 HA_2, 3, 1, 0; 1999 HW_2, 3, 1, 0; 1999 HX_2, 3, 1, 0; (4641), 2, 1, 0; (5646), 2, 1, 0; (6489), 3, 1, 0; (8306), 2, 1, 0; (8432), 2, 1, 0; *[132, 38, 0*, 1999/01/21–1999/04/26]*

367 Yatsuka

H. Abe, 461-2, Futago, Yatsuka-Cho, Shimane-Ken, 690-14 Japan [abehiro@daikonshima.or.jp]

0.26-m $f/6.0$ reflector + CCD

GSC

1994 LR, 2, 1, 0; 1995 CW, 2, 1, 0; 1995 DO_1, 2, 1, 0; 1997 WP_2, 4, 2, 2; 1999 EG_5, 4, 2, 10; *[14, 5, 0*, 1999/04/04–1999/04/16]*

372 Geisei

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

0.60-m $f/3.5$ reflector

GSC

(2060), 2, 1, 0; *[2, 1, 0*, 1999/04/11]*

385 Nihondaira Observatory

T. Urata, 1-8, Dobayashi 1 Chome, Shimizu, Shizuoka-Ken 424-0851, Japan [urata@sannet.ne.jp]

0.31-m $f/4.0$ reflector + CCD

GSC-1.1, USNO-A2.0

1995 FM, 2, 1, 0; 1999 AL_5, 2, 1, 0; 1999 AM_5, 2, 1, 0; 1999 BC_2, 2, 1, 0; 1999 CH_3, 4, 2, 7; 1999 CC_5, 2, 1, 0; 1999 CK_5, 5, 2, 7; 1999 CL_9, 4, 2, 7; 1999 DX_2, 2, 1, 0; 1999 GC_5, 4, 2, 1; 1999 GD_5, 1, 1, 0; 1999 GQ_5, 3, 1, 0; 1999 GC_6, 2, 1, 0; 1999 GD_6, 2, 1, 0; 1999 GE_6, 2, 1, 0; 1999 GR_9, 3, 1, 0; 1999 GS_9, 1, 1, 0; 1999 HC, 4, 2, 1; 1999 HG_3 *, 2, 1, 0; *[49, 19, 1*, 1999/04/07–1999/04/25]*

402 Dynic Astronomical Observatory

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

Observers A. Sugie, Y. Ikari

0.60-m $f/5.0$ reflector + CCD

GSC

1995 TG, 3, 1, 0; 1996 VV, 2, 1, 0; 1997 SS_{17}, 4, 2, 23; 1999 BE_8, 3, 1, 0; 1999 CL_1, 2, 1, 0; 1999 DB_2, 3, 1, 0; 1999 EE_5, 3, 1, 0; 1999 EF_5, 3, 1, 0; 1999 EG_5, 2, 1, 0; 1999 FB, 3, 1, 0; 1999 FT_8, 2, 1, 0; 1999 FN_{19}, 3, 1, 0; 1999 FK_{21}, 2, 1, 0; 1999 FY_{33}, 3, 1, 0; 1999 GA_2, 4, 1, 0; 1999 GG_2, 4, 1, 0; 1999 GH_2, 4, 1, 0; 1999 GJ_2, 5, 1, 0; 1999 GU_3, 2, 1, 0; (10357), 3, 1, 0; *[60, 20, 0*, 1999/03/16–1999/04/11]*

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

1990 ET_2, 4, 2, 1; 1990 QW_4, 2, 1, 0; 1997 WP_{21}, 4, 2, 5; 1997 YN_7, 4, 2, 1; 1997 YQ_{10}, 4, 2, 1; 1997 YV_{11}, 4, 2, 1; 1998 WZ_6, 3, 1, 0; 1999 CJ_5, 2, 1, 0; 1999 CP_5, 4, 2, 23; 1999 CQ_5, 2, 1, 0; 1999 CR_5, 2, 1, 0; 1999 CS_5, 2, 1, 0; 1999 CT_5, 2, 1, 0; 1999 CU_5, 2, 1, 0; 1999 CV_5, 2, 1, 0; 1999 CW_5, 2, 1, 0; 1999 CH_8, 2, 1, 0; 1999 CJ_8, 2, 1, 0; 1999 CK_8, 2, 1, 0; 1999 CL_8, 2, 1, 0; 1999 CM_8, 2, 1, 0; 1999 CN_8, 4, 2, 18; 1999 CN_9, 2, 1, 0; 1999 CO_9, 2, 1, 0; 1999 CP_9, 2, 1, 0; 1999 CQ_9, 2, 1, 0; 1999 CG_{10}, 2, 1, 0; 1999 CH_{10}, 4, 2, 23; 1999 CJ_{10}, 2, 1, 0; 1999 DH_2, 2, 1, 0; 1999 DJ_2, 2, 1, 0; 1999 DK_2, 4, 2, 41; 1999 DL_2, 2, 1, 0; 1999 DM_2, 8, 4, 46; 1999 DN_2, 2, 1, 0; 1999 DO_2, 2, 1, 0; 1999 DP_2, 4, 2, 16; 1999 DQ_2, 2, 1, 0; 1999 DR_2, 2, 1, 0; 1999 DU_2, 4, 2, 6; 1999 DZ_2, 2, 1, 0; 1999 DA_3, 2, 1, 0; 1999 DB_3, 6, 3, 39; 1999 DC_3, 2, 1, 0; 1999 GH_1 *, 9, 4, 7; 1999 GJ_1 *, 9, 4, 7; 1999 GK_1 *, 8, 4, 7; 1999 GL_1 *, 8, 4, 7; 1999 GM_1 *, 9, 4, 7; 1999 GN_1 *, 9, 4, 7; *[173, 50, 6*, 1999/02/27–1999/04/14]*

413 Siding Spring

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

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

Observers K. S. Russell

Measurers O. Hernius, A. Gnädig

1.2-m U.K. Schmidt

(5) 1990 BL_1, 2, 2, 1919; 1991 UD_2, 2, 1, 0; 1997 UC_7, 2, 1, 0; 1997 WM_{49}, 2, 1, 0; 1998 QH_{93}, 6, 3, 4802; 1998 RC_{80}, 6, 3, 37; 1998 XN_{77}, 5, 3, 475; 1999 CS_{19}, 2, 1, 0; 1999 CG_{28}, 8, 4, 2933;

1999 CL_{50}, 2, 1, 0; 1999 CB_{67}, 2, 1, 0; 1999 CE_{67}, 2, 1, 0; 1999 CT_{123}, 2, 1, 0; *[43, 13, 0∗, 1978/02/18–1995/06/05]*

(8) 1993 FD_{82}, 1, 1, 0; *[1, 1, 0∗, 1993/04/16]*

422 Loomberah
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0.45-m f/5.4 reflector + CCD, 0.25-m f/4.1 reflector + CCD
GSC, ACT, USNO-A2.0
1992 CC_1, 3, 1, 0; 1995 LH, 3, 1, 0; 1997 AP_{10}, 1, 1, 0; 1998 QK_{56}, 3, 1, 0; 1998 XA_5, 3, 1, 0; 1999 BE_8, 5, 2, 4; 1999 DB_2, 11, 4, 13; 1999 DY_2, 5, 1, 0; 1999 DJ_4, 3, 1, 0; 1999 ED_5, 5, 2, 2; 1999 EE_5, 10, 4, 13; 1999 EF_5, 9, 3, 9; 1999 FB, 3, 1, 0; 1999 FN_{19}, 3, 1, 0; 1999 FP_{19}, 8, 3, 9; 1999 FQ_{19}, 8, 3, 13; 1999 FJ_{21}, 6, 3, 8; 1999 FP_{59}, 3, 1, 0; 1999 GH_2, 5, 2, 7; 1999 GJ_2, 9, 3, 7; 1999 GK_3, 6, 1, 0; 1999 GT_3, 9, 3, 7; 1999 GU_3, 11, 2, 1; 1999 GJ_4, 3, 1, 0; 1999 GK_4, 16, 5, 7; 1999 GL_4, 10, 3, 3; 1999 GO_5, 7, 2, 1; 1999 GT_6, 7, 2, 1; 1999 HD_1, 3, 1, 0; (27), 8, 2, 1; (132), 9, 2, 5; (1134), 3, 1, 0; (1685), 3, 1, 0; (1863), 3, 1, 0; (1980), 3, 1, 0; (3532), 4, 1, 0; (5349), 2, 1, 0; (5732), 2, 1, 0; (5869), 3, 1, 0; (6268), 2, 1, 0; (6491), 2, 1, 0; (9671), 3, 1, 0; (9969), 11, 3, 6; (10302), 20, 6, 8; *[256, 44, 0∗, 1999/04/06–1999/04/19]*

423 North Ryde
S. G. McAndrew, 2/32 Twin Rd, North Ryde, NSW 2113, Australia
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0.20-m f/4 hyperbolic astrograph + CCD
GSC
1991 EA, 4, 2, 6; 1992 FK_1, 5, 2, 11; 1993 SK_{16}, 7, 3, 13; 1993 XN, 6, 3, 13; 1995 AW_2, 5, 2, 1; 1996 NB_4, 3, 1, 0; (587), 4, 2, 1; (5349), 2, 1, 0; (6271), 2, 1, 0; *[38, 9, 0∗, 1999/03/14–1999/04/26]*

426 Woomera
F. B. Zoltowski, 10 Gundawarra St., P.O. Box 84, Woomera, SA 5720, Australia
[100356.23@CompuServe.com]
0.30-m f/3.3 Schmidt-Cassegrain + CCD
USNO-SA2.0, GSC
1979 KM, 6, 2, 1; 1979 QV_1, 5, 2, 1; 1980 VA_3, 6, 2, 2; 1981 ET_{10}, 6, 2, 1; 1981 EX_{28}, 6, 2, 2; 1981 EY_{38}, 5, 2, 1; 1982 HJ, 6, 2, 1; 1985 RR_3, 6, 2, 1; 1987 ON, 4, 2, 1; 1987 RT_5, 5, 2, 1; 1987 SU, 6, 2, 1; 1988 DD_3, 6, 2, 1; 1988 FW_2, 5, 2, 1; 1988 XO, 6, 2, 1; 1989 TJ_{14}, 6, 2, 1; 1990 SZ_7, 6, 2, 1; 1991 SY, 6, 2, 1; 1992 DW_5, 6, 2, 1; 1993 FT_4, 6, 2, 1; 1993 FZ_{35}, 3, 1, 0; 1993 QS_1, 5, 2, 1; 1993 VU_5, 6, 2, 1; 1994 YF_2, 5, 2, 1; 1995 CQ, 6, 2, 1; 1995 DO_1, 5, 2, 1; 1995 QS_3, 6, 2, 1; 1995 WC_4, 6, 2, 1; 1996 PM_3, 5, 2, 1; 1996 QD_1, 6, 2, 1; 1996 RF_5, 6, 2, 1; 1996 TK_{48}, 9, 3, 6; 1996 UB, 6, 2, 1; 1996 UN_1, 5, 2, 1; 1996 UD_3, 6, 2, 1; 1996 VP_1, 6, 2, 2; 1996 VQ_6, 6, 2, 1; 1996 XT_{30}, 6, 2, 1; 1997 VP_2, 6, 2, 1; 1997 VK_3, 6, 2, 2; 1997 VF_6, 4, 2, 1; 1997 WJ_2, 5, 2, 1; 1997 WU_7, 5, 2, 1; 1997 WO_{44}, 6, 2, 1; 1997 XF_1, 10, 4, 6; 1997 YG_1, 13, 5, 10; 1997 YA_5, 6, 2, 1; 1997 YQ_{10}, 6, 2, 1; 1997 YJ_{16}, 6, 2, 1; 1997 YU_{16}, 5, 2, 1; 1997 YB_{17}, 6, 2, 1; 1998 AV, 6, 2, 1; 1998 BJ_{10}, 6, 2, 1; 1998 BK_{10}, 5, 2, 1; 1998 CH, 7, 2, 1; 1998 DX, 6, 2, 1; 1998 DU_7, 6, 2, 1; 1998 DW_9, 5, 2, 2; 1998 SS_{49}, 6, 2, 1; 1998 UT_{18}, 3, 1, 0; 1998 VN, 4, 1, 0; 1998 WZ_1, 3, 1, 0; 1998 XS_{16}, 6, 2, 2; 1998 YQ_{11}, 4, 1, 0; 1999 BM_9, 3, 1, 0; 1999 BR_{14}, 4, 2, 1; 1999 CE_4, 3, 2, 1; 1999 CG_4, 5, 2, 1; 1999 CH_4, 4, 2, 1; 1999 CH_{18}, 3, 1, 0; 1999 DB_2, 6, 2, 15; 1999 EV_4, 6, 2, 3; 1999 ED_5, 13, 4, 21; 1999 EE_5, 6, 2, 15; 1999 EF_5, 3, 1, 0; 1999 FJ_5, 3, 1, 0; 1999 FP_{19}, 8, 3, 12; 1999 FQ_{19}, 3, 1, 0; 1999 FJ_{21}, 5, 2, 2; 1999 FU_{23}, 5, 2, 1; 1999 FN_{31}, 6, 2, 1; 1999 GZ_1, 3, 1, 0; 1999 GG_2, 3, 1, 0; 1999 GH_2, 6, 2, 6; 1999 GJ_2, 6, 2, 6; 1999 GZ_3 ∗, 11, 4, 11; 1999 GC_4 ∗, 10, 4, 14; 1999 GD_4 ∗, 4, 2, 1; 1999 GE_4 ∗, 10, 4, 11; 1999 GK_4, 6, 2, 1; 1999 GL_4, 3, 1, 0; 1999 GX_4 ∗, 11, 4, 13; 1999 GY_4 ∗, 9, 3, 6; 1999 GZ_4 ∗, 12, 4, 13; 1999 GO_5, 6, 2, 1; 1999 GW_5 ∗, 6, 2, 1; 1999 GY_5, 3, 1, 0; 1999 GN_6 ∗, 7, 3, 3; 1999 GS_6, 4, 1, 0; 1999 GT_6, 6, 2, 3; 1999 HE ∗, 5, 2, 1; 1999 HP ∗, 6, 2, 1; 1999 HQ ∗, 6, 2, 1; 1999 HS ∗, 6, 2, 1; 1999 HT ∗, 6, 2, 1; 1999 HU ∗, 5, 2, 1; 1999 HV ∗, 5, 2, 1; 1999 HE_1, 3, 1, 0; 1999 HV_1, 3, 1, 0; 1999 HW_1, 6, 2, 2; 1999 HX_1, 6, 2, 1; 1999 HY_1, 6, 2, 3; 1999 HZ_1, 6, 2, 1; 1999 HA_2, 6, 2, 3; 1999 HW_2, 3, 1, 0; 1999 HX_2, 3, 1, 0; 1999 HV_3 ∗, 6, 2, 3; 1999 HW_3 ∗, 5, 2, 2; 1999 HX_3 ∗, 6, 2, 1; 1999 HP_4 ∗, 6, 2, 5; 1999 JA ∗, 6, 2, 2; 3066 P-L, 5, 2, 1; 4285 P-L, 4, 2, 1; 1210 T-2, 6, 2, 1; (1669), 3, 1, 0; (1843), 6, 2, 2; (2417), 3, 1, 0; (2508), 6, 2, 1; (3448), 6, 2, 2; (4467), 4, 2, 3; (4759), 6, 2, 1; (4825), 6, 2, 2; (5277), 5, 2, 1; (5903), 6, 2, 1; (6047), 6, 2, 1; (6271), 6, 2, 2; (6468), 5, 2, 1; (6489), 6, 2, 2; *[773, 137, 21∗, 1999/04/10–1999/05/03]*

428 Reedy Creek
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0.25-m f/6.3 Schmidt-Cassegrain + CCD
GSC
1982 JB_2, 2, 1, 0; 1988 XL, 2, 1, 0; 1993 QS_1, 3, 2, 1; 1997 UK_3, 2, 1, 0; 1998 AL_{10}, 5, 3, 7; 1998 AM_{10}, 4, 3, 12; 1998 BS_{13}, 2, 1, 0; 1998 BK_{30}, 4, 3, 4; 1998 DS_4, 2, 1, 0; 1998 DE_5, 4, 3, 2; 1998 TU_3, 2, 1, 0; 1999 CC_9, 3, 2, 9; 1999 CU_9, 4, 2, 9; 1999 CV_9, 4, 2, 10; 1999 DE_2, 4, 2, 10; 1999 DF_2, 3, 2, 10; 1999 EG, 3, 2, 11; 1999 EH, 4, 2, 11; 1999 EJ, 2, 1, 0; 1999 EC_3, 5, 3, 11; 1999 EP_3, 6, 3, 18; 1999 EE_5, 2, 1, 0; 1999 EH_5, 7, 4, 27; 1999 EJ_5, 6, 3, 17; 1999 EO_5, 3, 2, 11; 1999 FN_{21}, 9, 5, 26; 1999 FO_{21}, 5, 3, 25; 1999 GX_3 ∗, 10, 5, 12; 1999 GK_4, 3, 2, 2; 1999 GA_5 ∗, 11, 5, 10; 1999 GR_5 ∗, 5, 3, 6; 1999 GU_5 ∗, 7, 4, 8; 1999 GV_5 ∗, 8, 4, 9; 1999 GX_5 ∗, 8, 4, 8; 1999 GO_6 ∗, 8, 5, 12; 1999 GS_6, 3, 1, 0; 1999 GT_6, 1, 1, 0; 1999 HR ∗, 6, 3, 5; 1999 HX ∗, 14, 7, 6; 1999 HG_1 ∗, 10, 4, 6; 1999 HH_1 ∗, 8, 4, 6; 1999 HY_1, 4, 2, 1; 1999 HZ_1, 3, 2, 1; 1999 HZ_2 ∗, 4, 2, 1; 1999 HA_3 ∗, 4, 2, 1; 1999 HB_3 ∗, 7, 4, 3; 1999 HC_3 ∗, 3, 2, 1; 1999 HD_3 ∗, 5, 3, 3; 1999 HE_3 ∗, 6, 3, 4; 1999 HF_3 ∗, 7, 4, 4; (355), 2, 1, 0; (699), 2, 1, 0; (957), 2, 1, 0; (1863), 6, 1, 0; (1980), 2, 1, 0; (5349), 1, 1, 0; (6047), 3, 1, 0; (6489), 2, 1, 0; *[267, 58, 18∗, 1999/03/28–1999/04/28]*

429 Hawker
J. B. Child, 64 Woolner Circuit, Hawker, ACT 2614, Australia
[jbchild@dynamite.com.au]
0.32-m f/4.8 reflector + CCD
GSC-1.2
1996 PY_6, 12, 4, 11; 1999 HB_2 ∗, 10, 4, 6; 1999 HQ_2 ∗, 6, 2, 2; *[28, 3, 2∗, 1999/04/10–1999/04/23]*

469 Courroux
H. Lehmann, Sports 6, CH-2822 Courroux, Switzerland [huble@vtx.ch]
0.20-m f/6.3 Schmidt-Cassegrain + CCD
GSC
1999 CV_3, 6, 1, 0; *[6, 1, 0∗, 1999/03/16]*

470 Ceccano
G. Masi, Via Madonna de Loco 47, I-03023 Ceccano (FR), Italy
[gianmasi@fr.flashnet.it]
0.28-m f/3.3 Schmidt-Cassegrain + CCD
USNO-A1.0
1999 HX_2, 2, 1, 0; *[2, 1, 0∗, 1999/04/25]*

491 Yebes
J. F. Lahulla, Centro Astronómico de Yebes, Apartado 148, E-19080 Guadalajara, Spain [lahulla@cay.es]
Observers J. F. Lahulla, J. García
0.40-m f/5 astrograph + CCD
GSC
(349), 2, 1, 0; (393), 2, 1, 0; (408), 2, 1, 0; (540), 2, 1, 0; (562), 2, 1, 0; (712), 2, 1, 0; (1036), 9, 3, 21; (1263), 3, 1, 0; (1356), 1, 1, 0; (1541), 2, 1, 0; (1591), 2, 1, 0; (2008), 2, 1, 0; (2167), 1, 1, 0; (3106), 1, 1, 0; (4163), 2, 1, 0; (4503), 2, 1, 0; (5131), 2, 2, 17; *[39, 17, 0∗, 1999/03/22–1999/04/13]*

540 Linz
E. Meyer, F. Marklstrasse 1/62, A-4040 Linz, Austria [erich.meyer@ooenet.at]
0.30-m f/5.2 Schmidt Cassegrain + CCD
USNO-A2.0
1998 WS, 3, 1, 0; 1998 YL_8, 3, 1, 0; 1999 CV_3, 3, 1, 0; 1999 GU_3, 4, 1, 0; *[13, 4, 0∗, 1999/04/01–1999/04/15]*

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

1986 TB, 4, 2, 6; 1995 OE, 3, 1, 0; 1997 TE, 5, 2, 6; 1999 FW_3, 7, 3, 6; 1999 FS_{19}, 8, 3, 6; 1999 GA_4 *, 8, 3, 6; (5157), 2, 1, 0; *[37, 7, 1*, 1999/04/10–1999/04/16]*

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Observers P. Pravec, L. Šarounová, M. Wolf
0.65-m $f/3.6$ reflector + CCD
USNO-SA1.0, USNO-SA2.0

1995 OD_1, 4, 3, 2; 1996 HU, 1, 1, 0; 1997 PD_3, 1, 1, 0; 1997 SB_2, 4, 2, 1; 1997 SC_2, 2, 1, 0; 1997 TB_{10}, 3, 1, 0; 1997 UT, 6, 2, 7; 1997 UV, 2, 1, 0; 1997 UL_9, 5, 2, 4; 1997 UO_9, 6, 2, 4; 1997 UU_{10}, 4, 2, 1; 1997 VJ_6, 5, 2, 6; 1998 AP_8, 4, 2, 4; 1998 AQ_8, 5, 2, 4; 1998 DP_1, 5, 2, 1; 1998 DF_{20}, 4, 2, 1; 1998 GM_1, 11, 4, 27; 1999 CF_2, 5, 2, 4; 1999 CE_3, 3, 2, 4; 1999 CX_3, 3, 1, 0; 1999 CR_9, 2, 1, 0; 1999 CA_{98}, 2, 1, 0; 1999 DM_1, 2, 1, 0; 1999 EG_3, 3, 1, 0; 1999 EL_5, 3, 1, 0; 1999 FQ_3, 9, 4, 17; 1999 FR_3, 6, 2, 4; 1999 FN_{19}, 3, 1, 0; 1999 FX_{37}, 4, 2, 8; 1999 FU_{38}, 4, 2, 8; 1999 FE_{51}, 1, 1, 0; 1999 FM_{53} *, 9, 3, 17; 1999 FN_{53}, 7, 2, 12; 1999 GZ_1, 6, 2, 1; 1999 GG_2, 2, 1, 0; 1999 GH_2, 5, 2, 3; 1999 GJ_2, 3, 1, 0; 1999 GS_3, 6, 2, 1; 1999 GT_3, 6, 2, 1; 1999 GU_3, 32, 7, 9; 1999 GJ_4, 6, 2, 1; 1999 GK_4, 20, 6, 11; 1999 GL_4, 6, 2, 1; 1999 GY_5, 5, 1, 0; 1999 GJ_6 *, 7, 3, 5; 1999 GK_6 *, 8, 3, 10; 1999 GR_6, 4, 1, 0; 1999 GS_6, 3, 1, 0; 1999 GT_6, 9, 3, 3; 1999 HL *, 12, 4, 5; 1999 HM *, 5, 2, 1; 1999 HN *, 8, 3, 6; 1999 HW *, 8, 3, 5; 1999 HC_1, 3, 1, 0; 1999 HD_1, 4, 1, 0; 1999 HE_1, 3, 1, 0; 1999 HF_1, 14, 3, 3; 1999 HW_1, 9, 3, 3; 1999 HX_1, 9, 3, 3; 1999 HA_2, 9, 3, 2; 1999 HW_2, 7, 2, 2; 1999 HX_2, 4, 1, 0; 6579 P-L, 7, 2, 8; (717), 4, 1, 0; (2215), 7, 1, 0; (5664), 2, 1, 0; (8038), 2, 1, 0; *[383, 67, 7*, 1997/11/10–1999/04/26]*

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Observers K. Sárneczky, L. Kiss, É. Barát
Measurers K. Sárneczky, L. Kiss
0.60-m Schmidt telescope + CCD
USNO-A2.0

1989 AV_6, 6, 2, 5; 1990 OK, 5, 2, 5; 1992 ED_{13}, 6, 2, 5; 1993 TL_{25}, 3, 1, 0; 1997 SK_{25}, 6, 2, 5; 1998 XG_{53}, 6, 2, 5; 1998 XE_{54}, 5, 2, 5; 1998 XD_{96}, 6, 2, 5; 1999 AU_2, 6, 2, 5; (10296), 6, 2, 5; *[55, 10, 0*, 1999/03/12–1999/03/17]*

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. Bambery, S. Levin, J. Lorre, S. Shaklan, R. Byrd, A. Esquibel, C. Cotton, D. Bascon
1-m $f/2.2$ Ritchey-Chrétien + CCD

1967 JQ, 3, 1, 0; 1973 SY_1, 3, 1, 0; 1976 GV_2, 6, 2, 29; 1978 VS_8, 3, 1, 0; 1979 MW_6, 3, 1, 0; 1979 MB_9, 6, 2, 25; 1981 EU_4, 3, 1, 0; 1981 ES_{28}, 3, 1, 0; 1981 QD, 3, 1, 0; 1982 JH_2, 3, 1, 0; 1982 KH_1, 3, 1, 0; 1984 SL_5, 9, 3, 89; 1985 CD, 3, 1, 0; 1986 EL_5, 3, 1, 0; 1986 VM_6, 1, 1, 0; 1987 GA, 3, 1, 0; 1987 QZ_6, 6, 2, 504; 1987 QG_{10}, 3, 1, 0; 1989 AU_6, 3, 1, 0; 1989 CR_1, 3, 1, 0; 1989 RN_2, 3, 1, 0; 1989 SK_3, 3, 1, 0; 1989 TJ_{14}, 3, 1, 0; 1989 TD_{16}, 3, 1, 0; 1990 OM_2, 3, 1, 0; 1990 QA_6, 3, 1, 0; 1990 RO_8, 3, 1, 0; 1990 SY_{15}, 3, 1, 0; 1990 SK_{28}, 3, 1, 0; 1990 TB_{13}, 3, 1, 0; 1990 TH_{13}, 3, 1, 0; 1990 UE_4, 6, 2, 66; 1990 UO_4, 3, 1, 0; 1990 UN_5, 3, 1, 0; 1990 VC_6, 3, 1, 0; 1990 WD_1, 6, 2, 58; 1990 WF_3, 3, 1, 0; 1991 GV, 3, 1, 0; 1991 GD_8, 3, 1, 0; 1991 LF_2, 3, 1, 0; 1991 PQ_3, 3, 1, 0; 1991 PP_8, 3, 1, 0; 1991 PV_9, 3, 1, 0; 1991 PB_{20}, 3, 1, 0; 1991 TF_1, 9, 3, 474; 1991 UZ_3, 3, 1, 0; 1992 BC_2, 3, 1, 0; 1992 ER_{18}, 3, 1, 0; 1992 GC_8, 3, 1, 0; 1992 JU_2, 3, 1, 0; 1992 JF_3, 3, 1, 0; 1992 JH_3, 3, 1, 0; 1992 OM_8, 3, 1, 0; 1992 PM, 3, 1, 0; 1992 PU, 3, 1, 0; 1992 PV_3, 3, 1, 0; 1992 PP_6, 3, 1, 0; 1992 SY_9, 3, 1, 0; 1992 TJ_1, 3, 1, 0; 1992 UB_3, 3, 1, 0; 1992 WL_3, 3, 1, 0; 1993 BG_6, 3, 1, 0; 1993 EU, 3, 1, 0; 1993 FN_9, 3, 1, 0; 1993 FD_{28}, 3, 1, 0; 1993 FE_{43}, 3, 1, 0; 1993 FV_{45}, 3, 1, 0; 1993 HW, 3, 1, 0; 1993 JW, 6, 2, 58; 1993 OS_{12}, 9, 3, 564; 1993 QU_3, 3, 1, 0; 1993 QV_4, 3, 1, 0; 1993 RJ_9, 3, 1, 0; 1993 SM_1, 6, 2, 27; 1993 SD_2, 3, 1, 0; 1993 TC, 3, 1, 0; 1993 TE_2, 6, 2, 32; 1993 TN_{18}, 3, 1, 0; 1993 TC_{20}, 3, 1, 0; 1993 TD_{27}, 3, 1, 0; 1993 TO_{36}, 3, 1, 0; 1993 UQ_2, 3, 1, 0; 1993 VP, 6, 2, 57; 1994 AA_1, 3, 1, 0; 1994 BC_1, 3, 1, 0; 1994 CG_1, 3, 1, 0; 1994 CF_2, 3, 1, 0; 1994 CD_{14}, 6, 2, 5; 1994 CG_{14}, 3, 1, 0; 1994 NO_1, 3, 1, 0; 1994 PG_{11}, 3, 1, 0; 1994 PQ_{15}, 3, 1, 0; 1994 PV_{19}, 6, 2, 37; 1994 PS_{31}, 3, 1, 0; 1994 SN_9, 3, 1, 0; 1994 WW_2, 3, 1, 0; 1994 YH_1, 3, 1, 0; 1995 DR_2, 3, 1, 0; 1995 EG_8, 3, 1, 0; 1995 EO_8, 3, 1, 0; 1995 GC_7, 3, 1, 0; 1995 KF_4, 3, 1, 0; 1995 QN_2, 3, 1, 0; 1995 XH_1, 3, 1, 0; 1996 AP_{15}, 3, 1, 0; 1996 EK_6, 3, 1, 0; 1996 GO_{20}, 3, 1, 0; 1996 HS_{10}, 3, 1, 0; 1996 HM_{18}, 6, 2, 418; 1996 HN_{19}, 6, 2, 592; 1996 HZ_{22}, 3, 1, 0; 1996 HH_{24}, 3, 1, 0; 1996 QA_3, 3, 1, 0; 1996 RL_5, 6, 2, 28; 1996 TZ_7, 3, 1, 0; 1996 XV, 6, 2, 30; 1996 XJ_{32}, 3, 1, 0; 1997 AH_{21}, 3, 1, 0; 1997 EF_{41}, 3, 1, 0; 1997 HQ, 3, 1, 0; 1997 JR_{17}, 3, 1, 0; 1997 PD_3, 3, 1, 0; 1997 QU_1, 3, 1, 0; 1997 RU_7, 3, 1, 0; 1997 SB_{34}, 3, 1, 0; 1997 UB_7, 3, 1, 0; 1997 UU_7, 3, 1, 0; 1997 WP_{22}, 3, 1, 0; 1997 WA_{30}, 3, 1, 0; 1997 WP_{30}, 3, 1, 0; 1997 WV_{35}, 3, 1, 0; 1997 WC_{45}, 3, 1, 0; 1997 WR_{53}, 3, 1, 0; 1997 XL_5, 3, 1, 0; 1997 XC_{11}, 3, 1, 0; 1998 BK_2, 3, 1, 0; 1998 BK_9, 6, 2, 28; 1998 BZ_{12}, 3, 1, 0; 1998 BQ_{42}, 3, 1, 0; 1998 CL_2, 6, 2, 61; 1998 DC_6, 3, 1, 0; 1998 DP_{23}, 3, 1, 0; 1998 DD_{36}, 3, 1, 0; 1998 FS_{13}, 3, 1, 0; 1998 FR_{54}, 3, 1, 0; 1998 FJ_{134}, 3, 1, 0; 1998 HW_{133}, 3, 1, 0; 1998 MJ_{14}, 3, 1, 0; 1998 QZ, 3, 1, 0; 1998 QP_1, 3, 1, 0; 1998 QU_7, 3, 1, 0; 1998 QH_8, 6, 2, 918; 1998 QS_9, 3, 1, 0; 1998 QL_{11}, 3, 1, 0; 1998 QR_{11}, 3, 1, 0; 1998 QY_{20}, 3, 1, 0; 1998 QM_{32}, 3, 1, 0; 1998 QN_{34}, 3, 1, 0; 1998 QZ_{35}, 3, 1, 0; 1998 QZ_{39}, 3, 1, 0; 1998 QP_{40}, 3, 1, 0; 1998 QX_{40}, 3, 1, 0; 1998 QP_{41}, 3, 1, 0; 1998 QU_{43}, 3, 1, 0; 1998 QD_{44}, 3, 1, 0; 1998 QQ_{45}, 3, 1, 0; 1998 QK_{46}, 3, 1, 0; 1998 QA_{47}, 6, 2, 385; 1998 QE_{47}, 3, 1, 0; 1998 QE_{49}, 3, 1, 0; 1998 QB_{52}, 6, 2, 25; 1998 QQ_{54}, 3, 1, 0; 1998 QA_{69}, 3, 1, 0; 1998 QD_{72}, 6, 2, 29; 1998 QB_{73}, 3, 1, 0; 1998 QE_{73}, 3, 1, 0; 1998 QV_{74}, 3, 1, 0; 1998 QZ_{76}, 3, 1, 0; 1998 QB_{94}, 3, 1, 0; 1998 QU_{96}, 3, 1, 0; 1998 QU_{97}, 3, 1, 0; 1998 QP_{104}, 3, 1, 0; 1998 QN_{105}, 3, 1, 0; 1998 RV, 3, 1, 0; 1998 RN_{16}, 3, 1, 0; 1998 RG_{37}, 3, 1, 0; 1998 RE_{47}, 3, 1, 0; 1998 RW_{52}, 3, 1, 0; 1998 RP_{70}, 3, 1, 0; 1998 RS_{72}, 3, 1, 0; 1998 RJ_{75}, 3, 1, 0; 1998 RW_{75}, 3, 1, 0; 1998 RO_{78}, 6, 1, 0; 1998 RL_{79}, 3, 1, 0; 1998 SG_5, 6, 1, 0; 1998 SH_{10}, 3, 1, 0; 1998 SL_{12}, 3, 1, 0; 1998 SN_{22}, 3, 1, 0; 1998 SH_{23}, 3, 1, 0; 1998 SA_{43}, 3, 1, 0; 1998 SM_{46}, 3, 1, 0; 1998 SG_{49}, 3, 1, 0; 1998 SO_{49}, 6, 2, 36; 1998 SH_{54}, 3, 1, 0; 1998 SV_{54}, 9, 3, 56; 1998 SV_{57}, 3, 1, 0; 1998 SM_{58}, 3, 1, 0; 1998 SQ_{59}, 3, 1, 0; 1998 SR_{60}, 3, 1, 0; 1998 SG_{65}, 3, 1, 0; 1998 SN_{67}, 3, 1, 0; 1998 SJ_{73}, 3, 1, 0; 1998 SV_{73}, 3, 1, 0; 1998 SZ_{115}, 3, 1, 0; 1998 SD_{122}, 3, 1, 0; 1998 SW_{132}, 3, 1, 0; 1998 SF_{138}, 3, 1, 0; 1998 SD_{139}, 3, 1, 0; 1998 SM_{144}, 3, 1, 0; 1998 SX_{144}, 3, 1, 0; 1998 SQ_{145}, 3, 1, 0; 1998 SY_{145}, 3, 1, 0; 1998 SZ_{163}, 3, 1, 0; 1998 TW_{34}, 3, 1, 0; 1998 UZ, 3, 1, 0; 1998 UD_8, 3, 1, 0; 1998 UM_8, 3, 1, 0; 1998 UR_{16}, 3, 1, 0; 1998 UF_{18}, 3, 1, 0; 1998 UU_{28}, 3, 1, 0; 1998 UO_{32}, 3, 1, 0; 1998 VU_4, 3, 1, 0; 1998 VV_5, 3, 1, 0; 1998 WT_{10}, 3, 1, 0; 1998 WV_{10}, 3, 1, 0; 1998 WQ_{11}, 3, 1, 0; 1998 WD_{12}, 3, 1, 0; 1998 WF_{12}, 3, 1, 0; 1998 WD_{21}, 3, 1, 0; 1998 WA_{32}, 3, 1, 0; 1998 XK_1, 3, 1, 0; 1998 XJ_5, 3, 1, 0; 1998 XC_{14}, 3, 1, 0; 1998 XA_{33}, 3, 1, 0; 1998 XZ_{40}, 3, 1, 0; 1998 XY_{41}, 3, 1, 0; 1998 XS_{52}, 3, 1, 0; 1998 XO_{64}, 3, 1, 0; 1998 XK_{72}, 3, 1, 0; 1998 XN_{77}, 3, 1, 0; 1998 XZ_{77}, 3, 1, 0; 1998 XR_{92}, 3, 1, 0; 1998 YK_{22}, 3, 1, 0; 1999 AT_{21}, 3, 1, 0; 1999 AT_{31}, 3, 1, 0; 1999 BC_{11}, 6, 1, 0; 1999 BG_{11}, 3, 1, 0; 1999 BK_{13}, 3, 1, 0; 1999 BN_{13}, 3, 1, 0; 1999 BK_{15}, 6, 1, 0; 1999 BL_{25}, 3, 1, 0; 1999 CG_{14}, 3, 1, 0; 1999 CG_{17}, 3, 1, 0; 1999 CJ_{19}, 6, 2, 649; 1999 CS_{19}, 6, 2, 436; 1999 CB_{21}, 3, 1, 0; 1999 CM_{32}, 6, 2, 65; 1999 CX_{38}, 3, 1, 0; 1999 CT_{42}, 6, 2, 31; 1999 CB_{43}, 3, 1, 0; 1999 CO_{45}, 3, 1, 0; 1999 CL_{46}, 3, 1, 0; 1999 CN_{47}, 3, 1, 0; 1999 CV_{48}, 6, 2, 588; 1999 CV_{50}, 6, 2, 89; 1999 CD_{52}, 3, 1, 0; 1999 CP_{60}, 3, 1, 0; 1999 CH_{66}, 3, 1, 0; 1999 CL_{69}, 6, 2, 495; 1999 CE_{78}, 3, 1, 0; 1999 CJ_{81}, 3, 1, 0; 1999 CW_{85}, 6, 2, 60; 1999 CD_{116}, 3, 1, 0; 1999 CM_{118}, 3, 1, 0; 1999 CT_{123}, 3, 1, 0; 1999 CU_{126}, 3, 1, 0; 1999 CE_{133}, 3, 1, 0; 1999 CJ_{138}, 3, 1, 0; 1999 CD_{150}, 3, 1, 0; 1999 DB_1, 3, 1, 0; 1999 DF_2, 3, 1, 0; 1999 DK_2, 3, 1, 0; 1999 DQ_3, 3, 1, 0; 1999 DV_3, 3, 1, 0; 1999 DH_4, 3, 1, 0; 1999 DV_7, 3, 1, 0; 1999 EL_{11}, 3, 1, 0; 1999 EM_{11}, 3, 1, 0; 1999 FU, 6, 1, 0; 1999 FE_6, 3, 1, 0; 1999 FW_8, 3, 1, 0; 1999 FS_{28}, 3, 1, 0; 1999 GC_2, 3, 1, 0; 2048 P-L, 3, 1, 0; 2688 P-L, 3, 1, 0; 2722 P-L, 6, 2, 28; 3021 P-L, 3, 1, 0; 3050 P-L, 3, 1, 0; 4075 P-L, 3, 1, 0; 4649 P-L, 3, 1, 0; 6323 P-L, 3, 1, 0; 6599 P-L, 3, 1, 0; 6705 P-L, 3, 1, 0; 9549 P-L, 3, 1, 0; 1080 T-1, 3, 1, 0; 2127 T-1, 12, 4, 1070; 3119 T-1, 3, 1, 0; 4104 T-1, 3, 1, 0; 1231 T-2, 3, 1, 0; 2042 T-2, 3, 1, 0; 3211 T-2, 3, 1, 0; 3288 T-2, 3, 1, 0; 4810 T-2, 3, 1, 0; 2349 T-3, 3, 1, 0; 3393 T-3, 3, 1, 0; (9675), 3, 1, 0; (9908), 3, 1, 0; (10311), 3, 1, 0; *[1123, 328, 0*, 1995/12/19–1999/02/19]*

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

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

Measurers C. Trujillo (1), D. J. Tholen (2), C. Veillet (3), J. Anderson (3), W. Morgan (3), T. Parker (3), B. Gladman (6), J.-M. Petit (6)
3.6-m Canada-France-Hawaii Telescope + CCD, 2.24-m reflector + CCD
USNO-A1.0, USNO-SA1.0

(1) 1994 JR_1, 2, 1, 0; 1998 HH_{151} *, 10, 4, 63; 1998 YF_{27}, 2, 1, 0; 1999 CX_{118}, 2, 1, 0; 1999 CY_{118}, 2, 1, 0; 1999 CB_{119}, 3, 3, 34; 1999 CC_{119}, 2, 1, 0; 1999 CD_{119}, 2, 1, 0; 1999 CE_{119}, 2, 1, 0; 1999 CG_{119}, 2, 2, 1; 1999 CH_{119}, 2, 2, 1; 1999 CJ_{119}, 2, 2, 2; 1999 CL_{119}, 4, 3, 32; 1999 CM_{119}, 2, 2, 2; 1999 CA_{132}, 2, 1, 0; 1999 CP_{133}, 3, 2, 33; 1999 CQ_{133}, 2, 2, 1; 1999 CM_{153}, 2, 1, 0; 1999 CN_{153}, 2, 1, 0; 1999 CO_{153}, 2, 2, 1; 1999 FV_{32}, 2, 1, 0; (8405), 2, 1, 0; *[56, 22, 1*, 1998/04/28–1999/04/13]*

(2) 1997 QK_1, 11, 2, 1; 1998 DV_9, 12, 6, 63; 1999 FV_{32} *, 2, 1, 0; *[25, 3, 1*, 1998/01/31–1999/03/22]*

(3) 1997 UD_{22}, 4, 1, 0; *[4, 1, 0*, 1997/11/02]*

(6) 1999 DA, 4, 1, 0; 1999 DZ_7 *, 4, 2, 1; 1999 DA_8 *, 6, 2, 1; *[14, 3, 2*, 1999/02/16–1999/02/17]*

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Observers A. Testa, F. Manca
0.5-m reflector + CCD
GSC

1996 FR_3, 3, 1, 0; 1996 VC_1, 1, 1, 0; 1996 VD_1, 2, 1, 0; 1998 BB_{19}, 3, 2, 21; 1998 WM, 3, 1, 0; 1999 FA, 4, 2, 8; 1999 FB, 3, 1, 0; 1999 FN_{53}, 3, 1, 0; 1999 GS_3, 3, 1, 0; 1999 GJ_4, 3, 1, 0; 1999 GK_4, 3, 1, 0; 1999 GL_4, 2, 1, 0; *[33, 12, 0*, 1999/03/20–1999/04/13]*

589 Santa Lucia Stroncone
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Observers A. Vagnozzi, G. Bernabei, V. Risoldi
0.50-m f/2.8 Ritchey-Chrétien + CCD
GSC

1994 WU_1, 8, 3, 7; 1997 VS_6, 16, 5, 18; 1997 VA_7, 6, 2, 6; 1999 GH *, 12, 3, 6; *[42, 4, 1*, 1999/01/15–1999/04/10]*

595 Farra d'Isonzo
L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy [ccaf@tmedia.it]
Observers A. Toso, E. Pettarin, M. Spolaor, G. Lombardi, L. Bittesini, W. Boschin
Measurers E. Pettarin, G. Lombardi, A. Toso, L. Drigo
0.4-m f/4.5 reflector + CCD
GSC

1999 BK_{12}, 2, 1, 0; 1999 CA_1, 2, 1, 0; 1999 CR_{35}, 4, 2, 4; 1999 FS_5, 4, 2, 4; 1999 FT_5, 2, 1, 0; (7837), 3, 1, 0; *[17, 6, 0*, 1999/04/05–1999/04/10]*

608 Haleakala-AMOS
P. Kervin, Air Force Maui Optical Station, 535 Lipoa Parkway, Suite 200, Kihei, Maui, HI 96753, U.S.A. [paul@ulua.mhpcc.af.mil]
E. F. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. [efh@temblor.jpl.nasa.gov]
Observers A. Alday, K. Moore, M. Tranilla, T. Goggia, A. Sylva
Measurers J. Africano, P. Sydney, D. Nishimoto, A. Angara, B. McCarthy, P. Kervin, B. Kraszewski, V. Soo Hoo, B. Africano
1.2-m reflector + CCD

1989 CQ, 2, 1, 0; 1999 FM_{31}, 2, 1, 0; 6323 P-L, 2, 1, 0; *[6, 3, 0*, 1996/03/24–1996/08/15]*

610 Pianoro
V. Goretti, Via Resistenza 93, I-40065 Pianoro (BO), Italy [astrofil@astbo1.bo.cnr.it]
0.25-m f/4 Schmidt-Cassegrain + CCD
GSC

1994 GT, 5, 1, 0; 1997 WK, 5, 1, 0; 1999 DR_3, 3, 1, 0; 1999 FN_{19}, 15, 3, 9; 1999 GA_4, 5, 1, 0; (39), 55, 2, 4; (60), 5, 1, 0; (80), 5, 1, 0; (143), 5, 1, 0; (164), 5, 1, 0; (177), 5, 1, 0; (190), 10, 2, 15; (340), 5, 1, 0; (808), 5, 1, 0; (834), 5, 1, 0; (905), 5, 1, 0; (1005), 5, 1, 0; (1095), 5, 1, 0; (1118), 5, 1, 0; (1128), 5, 1, 0; (1169), 5, 1, 0; (1170), 5, 1, 0; (1485), 5, 1, 0; (1514), 5, 1, 0; (1541), 5, 1, 0; (1736), 5, 1, 0; (1886), 5, 1, 0; (2008), 5, 1, 0; (2044), 5, 1, 0; (2046), 5, 1, 0; (2281), 5, 1, 0; (2320), 5, 1, 0; (2333), 5, 1, 0; (2337), 5, 1, 0; (2378), 5, 1, 0; (2584), 5, 1, 0; (3019), 5, 1, 0; (3103), 5, 1, 0; (3133), 5, 1, 0; (3352), 5, 1, 0; (3409), 5, 1, 0; (3659), 5, 1, 0; (3678), 5, 1, 0; (3931), 5, 1, 0; (4109), 5, 1, 0; (4503), 5, 1, 0; (4573), 5, 1, 0; (4721), 5, 1, 0; (4879), 5, 1, 0; (5032), 5, 1, 0; (5155), 5, 1, 0; (5236), 5, 1, 0; (5523), 5, 1, 0; (5665), 5, 1, 0; (5955), 5, 1, 0; (5968), 5, 1, 0; (6047), 5, 1, 0; (6207), 5, 1, 0; (6251), 5, 1, 0; (6411), 5, 1, 0; (6450), 5, 1, 0; (6646), 5, 1, 0; (7133), 5, 1, 0; (7366), 5, 1, 0; (8238), 5, 1, 0; (9845), 5, 1, 0; (10315), 5, 1, 0; (10374), 5, 1, 0; (10438), 5, 1, 0; *[408, 69, 0*, 1998/01/20–1999/04/15]*

611 Starkenburg Sternwarte, Heppenheim
M. Busch, Giessener Strasse 4, D-64646 Heppenheim, Germany [mab@iez.com]
Observers M. Busch, R. Stoss
0.45-m f/4.4 reflector + CCD
USNO-A2.0

1991 RC_5, 2, 1, 0; 1999 FN_{53}, 2, 1, 0; 1999 GS_3, 2, 1, 0; 1999 GT_3, 3, 1, 0; 1999 HF_1, 3, 1, 0; 1999 HA_2, 3, 1, 0; 1999 HW_2, 3, 1, 0; 1999 HX_2, 2, 1, 0; (582), 3, 1, 0; (5145), 3, 1, 0; (5856), 2, 1, 0; *[28, 11, 0*, 1999/04/09–1999/04/24]*

615 St. Véran
J. Schwaenen, Allée D 5, B-6001 Marcinelle, Belgium [jean.schwaenen@worldonline.be]
Observers B. Zeller, F. Papon, J. Bourgeois
Measurer J. Schwaenen
0.62-m f/3 reflector + CCD
GSC, USNO

1999 DN_4, 5, 1, 0; *[5, 1, 0*, 1999/04/10]*

619 Sabadell
F. Casarramona, P.O. Box 50, E-8200 Sabadell (BCN), Spain [astrosab@redestb.es]
Observers F. Casarramona, E. Vigil, X. Puig, M. Ribell, J. Presa
Measurer F. Casarramona
0.51-m f/3.9 reflector + CCD
GSC

1999 CV_3, 5, 2, 9; *[5, 1, 0*, 1999/03/21–1999/03/30]*

620 Observatorio Astronómico de Mallorca
À. López, Observatori Astronómic de Mallorca, Camí de l'observatori s/n, E-07144 Costitx, Baleares, Spain [astroam@dinky.bitel.es]
Observers À. López, R. Pacheco
0.30-m f/3.3 Schmidt-Cassegrain + CCD
GSC

1999 FO_3, 7, 2, 1; 1999 FN_{19}, 7, 2, 11; 1999 FW_{29}, 7, 2, 3; 1999 FQ_{59} *, 18, 5, 28; 1999 GO_2 *, 17, 5, 14; 1999 GU_3, 5, 1, 0; 1999 GQ_6 *, 10, 3, 10; 1999 GS_6, 3, 1, 0; 1999 HH_2 *, 7, 2, 4; 1999 HJ_2 *, 8, 2, 4; (8305), 3, 1, 0; *[92, 11, 5*, 1999/03/27–1999/04/24]*

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

0.60-m $f/5$ reflector + CCD
USNO-A2.0, USNO-SA1.0
1998 DY_{23}, 6, 2, 4; 1999 CX_9, 13, 5, 25; 1999 EM_3, 15, 5, 26; 1999 GP_2 *, 24, 6, 14; 1999 GY_5, 10, 1, 0; 1999 GD_7 *, 8, 3, 4; 1999 HU_1 *, 11, 3, 3; (786), 9, 3, 3; *[96, 8, 3*, 1999/03/25–1999/04/23]*

627 Blauvac
R. Roy, Le Badassier St Esteve, F-84570 Blauvac, France [Rene.Roy@wanadoo.fr]
0.26-m $f/4.7$ reflector + CCD
GSC, USNO-SA1.0
(4766), 6, 2, 2; (6047), 16, 2, 5; *[22, 2, 0*, 1999/03/29–1999/04/09]*

628 Mülheim-Ruhr
A. Martin, Turtle Star Observatory, Friedhostr. 15, D-45478 Mülheim-Ruhr, Germany [axelm@bph.ruhr-uni-bochum.de]
Observers A. Boeker, A. Martin
0.2-m Schmidt-Cassegrain + CCD
USNO-A2.0
1998 WS, 3, 1, 0; 1999 CV_3, 4, 1, 0; (2261), 4, 1, 0; *[11, 3, 0*, 1999/03/29–1999/04/11]*

632 San Polo A Mosciano
L. Ferrini, C/O Villa Mirenda, Via San Polo A Mosciano, Firenze, Italy [ferrini@dada.it]
Observers M. Mannucci, N. Montigiani, W. Benedetti
Measurers G. Forti, M. Mannucci, N. Montigiani
0.25-m $f/5.6$ Newtonian reflector + CCD
GSC
1997 XK_{10}, 7, 2, 3; *[7, 1, 0*, 1999/04/13–1999/04/16]*

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
1998 WS, 14, 4, 4; 1999 CV_3, 7, 2, 1; 1999 HF_1, 11, 3, 2; (1424), 7, 3, 3; (2044), 4, 2, 4; (2261), 7, 2, 3; *[50, 6, 0*, 1999/03/29–1999/04/30]*

649 Powell Observatory, Louisburg
L. Robinson, 14680 W 144 St., Olathe, KS 66062, U.S.A. [lrobinsn@ix.netcom.com]
Observers L. Yerino, S. Berg
Measurers L. Robinson, R. Wright
0.35-m Schmidt-Cassegrain + CCD, 0.31-m Schmidt-Cassegrain + CCD
GSC-1.1
1999 GU_3, 9, 1, 0; (132), 3, 1, 0; (233), 2, 1, 0; (258), 3, 1, 0; (947), 1, 1, 0; *[18, 5, 0*, 1999/03/27–1999/04/12]*

650 Temecula
J. R. Vail, 32170 Caminito Osuna, Temecula, CA 92592-1208, U.S.A. [jimvail@pe.net]
0.25-m Schmidt-Cassegrain + CCD
USNO-SA2.0, GSC-1.1
1982 HJ, 4, 2, 8; 1988 CT_4, 4, 2, 11; 1996 UG_3, 4, 2, 11; 1997 BB_1, 4, 2, 11; 1997 UK_{24}, 4, 2, 11; 1997 YY_8, 4, 2, 8; 1998 WT_{19}, 5, 2, 8; (10259), 4, 2, 11; *[33, 8, 0*, 1999/03/25–1999/04/18]*

658 Dominion Astrophysical Observatory, Victoria
J. B. Tatum, Dept. of Physics, University of Victoria, P.O. Box 3055, Victoria, BC V8W 3P6, Canada [universe@uvvm.uvic.ca]
Observers D. D. Balam, G. C. L. Aikman, C. Medina, F. Nores
Measurers D. D. Balam, G. C. L. Aikman
1.82-m Plaskett telescope + CCD
USNO-A2.0, GSC
1995 FD, 6, 2, 29; 1998 UT_{18}, 6, 2, 1; 1998 WP_5, 3, 1, 0; 1998 YJ_5, 6, 2, 1; 1999 BN_{33}, 3, 1, 0; 1999 FA, 9, 3, 30; 1999 FP_{59}, 3, 1, 0; 1999 GH_2, 3, 1, 0; 1999 GS_3, 12, 4, 8; 1999 GT_3, 3, 1, 0; 1999 GU_3, 9, 3, 8; 1999 GJ_4, 3, 1, 0; 1999 GK_4, 3, 1, 0; 1999 GL_4, 3, 1, 0; 1999 GR_6, 6, 2, 1; 1999 GT_6, 3, 1, 0; 1999 HE_1, 12, 4, 3; 1999 HF_1, 12, 4, 8; 1999 HV_1, 3, 1, 0; 1999 HW_1, 9, 3, 2; 1999 HX_1, 9, 3, 2; 1999 HA_2, 18, 5, 7; 1999 HW_2, 3, 1, 0; 1999 HX_2, 9, 3, 5; (8156), 3, 1, 0; *[159, 25, 0*, 1999/03/31–1999/04/30]*

673 Table Mountain Observatory
W. M. Owen, Jr., Jet Propulsion Laboratory 301-150, 4800 Oak Grove Drive, Pasadena, CA 91109-8099, U.S.A. [wmo@wansor.jpl.nasa.gov]
0.61-m $f/16$ reflector + CCD
ACT
(8), 3, 1, 0; (9), 7, 2, 1; (120), 5, 2, 1; (176), 4, 2, 1; (275), 4, 2, 1; (386), 3, 1, 0; (404), 3, 1, 0; (2342), 1, 1, 0; (9969), 3, 1, 0; *[33, 9, 0*, 1999/03/30–1999/03/31]*

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 [doppler@mind.de] (5)
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. [elgb@lowell.edu] (6)
9 = 6 + 3
Observers T. Gehrels (4, L), H. E. Holt (3, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S), K. W. Zeigler (3, S)
Measurers A. Gnädig (5), B. A. Skiff (6), C. J. van Houten (4), I. van Houten-Groeneveld (4), G. V. Williams (7), A. Wisse (4)
1.2-m Oschin Schmidt (L), 0.46-m Schmidt (S)
(2) 1998 BD_{41}, 9, 4, 1455; 1998 FT_{11}, 6, 3, 23; (8425), 2, 1, 0; *[17, 3, 0*, 1990/01/22–1994/01/16]*

(4) 2616 P-L *, 8, 4, 5; 2661 P-L *, 5, 3, 4; 2786 P-L *, 5, 5, 30; 3021 P-L *, 8, 4, 4; 3050 P-L *, 16, 8, 32; 4240 P-L *, 6, 6, 32; 4644 P-L *, 8, 7, 31; 4861 P-L *, 4, 4, 4; 4884 P-L *, 14, 5, 4; 6068 P-L *, 8, 8, 32; 6323 P-L *, 7, 7, 32; 6734 P-L *, 8, 4, 4; 6750 P-L *, 6, 3, 4; 9516 P-L *, 3, 3, 4; 9549 P-L *, 4, 4, 9; 9566 P-L *, 4, 4, 9; 1119 T-1 *, 5, 4, 9; 2117 T-1 *, 6, 5, 9; 3086 T-1 *, 4, 3, 2; 4025 T-1 *, 13, 9, 53; 4099 T-1 *, 5, 4, 9; 4827 T-1 *, 5, 4, 30; 4831 T-1 *, 5, 4, 30; 4881 T-1 *, 3, 3, 3; 1361 T-2 *, 22, 8, 16; 2042 T-2 *, 27, 8, 16; 2166 T-2 *, 13, 8, 16; 4117 T-2 *, 15, 8, 16; 2216 T-3 *, 13, 7, 15; 3046 T-3 *, 9, 3, 6; 3574 T-3 *, 7, 3, 5; 3761 T-3 *, 8, 4, 6; 5034 T-3 *, 12, 6, 11; *[286, 33, 33*, 1960/09/24–1977/10/22]*

(5) 1978 VM_9, 2, 1, 0; 1999 AM_{24}, 2, 2, 11696; 1999 CG_{89}, 1, 1, 0; (8125), 1, 1, 0; *[6, 4, 0*, 1950/03/21–1988/02/16]*

(9) 1988 UF, 2, 1, 0; 1995 KH_1, 2, 1, 0; *[4, 2, 0*, 1991/09/15–1993/09/21]*

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
1995 CR_1, 4, 2, 1; 1999 CA_3, 2, 1, 0; 1999 FE_7, 5, 3, 15; 1999 FG_7, 7, 3, 25; 1999 FV_{19}, 5, 2, 13; 1999 GE_1 *, 10, 5, 13; 1999 GS_2 *, 10, 4, 10; 1999 GQ_3 *, 11, 4, 9; 1999 GT_4 *, 9, 3, 8;

1999 GV_4 *, 7, 3, 8; 1999 GW_4 *, 10, 4, 8; 1999 GS_5 *, 6, 3, 4; 1999 GT_5 *, 7, 3, 4; 1999 HA_1 *, 5, 2, 1; 1999 HB_1 *, 4, 2, 1; *[102, 15, 10*, 1999/03/25–1999/04/20]*

682 Kanab

E. Sheridan, 7205 Sunflower Lane, Kanab, UT 84741, U.S.A.
[mened@xpressweb.com]

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

GSC

1989 UA, 2, 1, 0; 1990 SU_9, 3, 1, 0; 1991 GB_1, 5, 2, 1; 1996 RJ_4, 3, 1, 0; (8279), 3, 1, 0; *[16, 5, 0*, 1999/04/14–1999/04/19]*

683 Goodricke-Pigott Observatory, Tucson

R. A. Tucker, 5500 West Nebraska Street, Tucson, AZ 85746, U.S.A.
[tucker@noao.edu]

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

GSC

1998 BG_{11}, 6, 2, 1; 1999 ES_5, 8, 3, 20; 1999 FV_{32}, 5, 2, 1; 1999 GT_9 *, 5, 2, 1; 1999 GU_9 *, 6, 2, 1; 1999 GV_9 *, 6, 2, 1; 1999 HJ_3 *, 5, 2, 1; 1353 T-2, 3, 1, 0; (10325), 6, 2, 1; *[50, 9, 4*, 1999/03/09–1999/04/20]*

684 Prescott

P. G. Comba, 1411 Galaxy Lane, Prescott, AZ 86303, U.S.A.
[comba@northlink.com]

0.46-m $f/4.5$ reflector + CCD

GSC

1996 HY_1, 3, 2, 1; 1996 MN, 9, 4, 5; 1996 OE, 7, 3, 4; 1996 ON, 2, 1, 0; 1996 PA_1, 4, 2, 1; 1996 RE_1, 6, 2, 1; 1996 RK_3, 6, 3, 3; 1996 TS_{11}, 4, 2, 1; 1996 TT_{11}, 4, 2, 1; 1996 UA, 7, 3, 4; 1996 UU_1, 4, 2, 1; 1996 VM_2, 4, 2, 1; 1996 VQ_6, 4, 2, 1; 1996 VK_8, 2, 1, 0; 1997 UY_2, 4, 2, 3; 1997 VA_4, 4, 2, 1; 1997 YZ_7, 4, 2, 1; 1997 YE_8, 3, 2, 1; 1997 YP_{14}, 6, 3, 2; 1997 YQ_{14}, 5, 2, 1; 1999 CY_8, 6, 3, 3; 1999 EA, 4, 2, 1; 1999 EB, 6, 3, 9; 1999 ED, 11, 5, 13; 1999 EE, 4, 2, 1; 1999 EE_3, 4, 2, 3; 1999 EQ_3, 4, 2, 2; 1999 ET_3, 4, 2, 3; 1999 FP_5, 4, 2, 1; 1999 FW_{12}, 5, 2, 3; 1999 FA_{18}, 7, 3, 4; 1999 GL *, 8, 4, 11; 1999 GF_2 *, 6, 3, 6; 1999 GU_4 *, 4, 2, 3; 1999 GM_5 *, 4, 2, 1; 1999 GN_5 *, 8, 4, 5; 1999 HA *, 7, 3, 4; 1999 HB *, 5, 2, 1; 1999 HH *, 7, 3, 3; 1999 HJ *, 4, 2, 1; 1999 HO *, 6, 3, 3; 1999 HY *, 4, 2, 1; *[214, 42, 11*, 1999/04/06–1999/04/20]*

688 Lowell Observatory, Anderson Mesa Station

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

Observer M. W. Buie

Measurer M. W. Buie

1.07-m reflector + CCD

USNO-A1.0

1998 AZ_8, 2, 1, 0; *[2, 1, 0*, 1998/01/08]*

691 Kitt Peak, Steward Observatory

R. S. McMillan, Space Sciences Building, University of Arizona, Tucson, AZ 85721, U.S.A. [bob@lpl.arizona.edu]

Observers T. Gehrels, J. Larsen, J. Montani, J. V. Scotti, A. Tubiollo, A. Gleason, N. Danzl, T. Bressi, R. E. Smith, R. Kowalski, C. Bayus

0.91-m Spacewatch telescope + CCD

GSC

1977 DY_3, 9, 3, 11; 1977 RD, 6, 2, 4; 1978 SU_4, 3, 1, 0; 1979 SC, 3, 1, 0; 1980 VO, 3, 1, 0; 1981 EL_{21}, 3, 1, 0; 1981 EM_{25}, 3, 1, 0; 1981 ET_{34}, 3, 1, 0; 1985 RS_1, 3, 1, 0; 1985 RJ_5, 6, 2, 9; 1985 TJ_1, 3, 1, 0; 1987 QF_6, 3, 1, 0; 1988 CT_4, 3, 1, 0; 1988 GZ, 3, 1, 0; 1988 RT_{11}, 3, 1, 0; 1989 CQ, 3, 1, 0; 1990 BL_1, 3, 1, 0; 1990 QG_3, 3, 1, 0; 1990 UW_2, 3, 1, 0; 1991 PN_8, 6, 2, 9; 1991 RW_7, 3, 1, 0; 1991 RZ_8, 3, 1, 0; 1991 RB_9, 3, 1, 0; 1991 RZ_{14}, 9, 3, 9; 1991 VP_2, 3, 1, 0; 1992 ET_{23}, 3, 1, 0; 1992 FD_1, 3, 1, 0; 1992 JF_3, 3, 1, 0; 1992 SF_{17}, 6, 2, 2; 1993 FP_{19}, 6, 2, 17; 1993 FW_{31}, 2, 1, 0; 1993 RH_9, 6, 2, 4; 1993 RB_{11}, 6, 2, 54; 1993 SK_1, 3, 1, 0; 1993 TM, 9, 3, 11; 1993 TV_{23}, 3, 1, 0; 1993 TY_{38}, 3, 1, 0; 1993 TN_{48} *, 6, 2, 26; 1993 UC_3, 3, 1, 0; 1994 CB_{17}, 3, 1, 0; 1994 TY_{14}, 3, 1, 0; 1995 EM, 6, 2, 9; 1995 FD, 3, 1, 0; 1995 FB_{14}, 3, 1, 0; 1996 HY_{12}, 6, 2, 2; 1996 JW_8, 6, 1, 0; 1996 KH_7, 3, 1, 0; 1996 SC_6, 3, 1, 0; 1996 SF_6, 2, 1, 0; 1996 SF_8, 3, 1, 0; 1996 TS, 6, 2, 9; 1996 TG_7, 2, 1, 0; 1996 TZ_9, 3, 1, 0; 1996 TK_{11}, 6, 2, 945; 1996 TS_{14}, 8, 2, 911; 1996 TV_{17}, 3, 1, 0; 1996 VU_5, 3, 1, 0; 1996 VA_{27}, 6, 2, 2; 1997 AP_{10}, 2, 1, 0; 1997 AS_{19}, 2, 1, 0; 1997 PX, 6, 2, 4; 1997 RO_3, 3, 1, 0; 1997 RU_7, 6, 2, 59; 1997 SL_1, 6, 2, 4; 1997 SB_3, 3, 1, 0; 1997 SK_{31}, 6, 2, 3; 1997 TB_{10}, 3, 1, 0; 1997 TW_{21}, 3, 1, 0; 1997 UQ_3, 3, 1, 0; 1997 UT_6, 6, 2, 2; 1997 UW_8, 3, 1, 0; 1997 UV_{21}, 3, 1, 0; 1997 VT_2, 3, 1, 0; 1997 WC_3, 3, 1, 0; 1997 WR_{31}, 5, 2, 2; 1997 WN_{32}, 6, 2, 23; 1997 WT_{33}, 6, 2, 3; 1997 WZ_{36}, 6, 2, 1; 1997 XM_{10}, 2, 1, 0; 1997 XA_{12}, 3, 1, 0; 1997 YQ_1, 9, 3, 7; 1997 YP_2, 6, 2, 2; 1997 YP_3, 3, 1, 0; 1998 AC_8, 3, 1, 0; 1998 AQ_8, 6, 2, 495; 1998 BH_{10}, 3, 1, 0; 1998 BD_{41}, 3, 1, 0; 1998 CF_1, 3, 1, 0; 1998 CH_1, 3, 1, 0; 1998 DD_{12}, 3, 1, 0; 1998 DT_{21}, 3, 1, 0; 1998 DP_{23}, 3, 1, 0; 1998 FR_{74}, 3, 1, 0; 1998 HH_6, 3, 1, 0; 1998 KL_{48}, 3, 1, 0; 1998 MH_{35}, 3, 1, 0; 1998 SM_{41}, 2, 1, 0; 1998 SQ_{111}, 6, 2, 16; 1998 SF_{155}, 3, 1, 0; 1998 SG_{159}, 3, 1, 0; 1998 TO_{19}, 6, 2, 105; 1998 TQ_{25}, 6, 2, 28; 1998 UX_8, 3, 1, 0; 1998 UX_{15}, 9, 3, 12; 1998 UU_{20}, 3, 1, 0; 1998 UO_{32}, 3, 1, 0; 1998 UB_{40}, 3, 1, 0; 1998 VJ_8, 3, 1, 0; 1998 VW_{10}, 6, 2, 8; 1998 VR_{13}, 3, 1, 0; 1998 VS_{13}, 3, 1, 0; 1998 VH_{15}, 6, 2, 40; 1998 VQ_{15}, 3, 1, 0; 1998 VD_{17}, 3, 1, 0; 1998 VL_{17}, 6, 2, 40; 1998 VO_{17}, 6, 2, 7; 1998 VR_{17}, 3, 1, 0; 1998 VX_{18}, 3, 1, 0; 1998 VB_{26}, 3, 1, 0; 1998 VF_{26}, 6, 2, 7; 1998 VJ_{26}, 3, 1, 0; 1998 VR_{27}, 3, 1, 0; 1998 WT_{10}, 3, 1, 0; 1998 WV_{10}, 6, 2, 7; 1998 WF_{12}, 2, 1, 0; 1998 WQ_{16}, 6, 2, 8; 1998 WC_{24}, 3, 1, 0; 1998 XE_{21}, 9, 3, 61; 1998 XR_{28}, 3, 1, 0; 1998 YY_{15}, 3, 1, 0; 1998 YG_{17}, 3, 1, 0; 1999 AT_6, 3, 1, 0; 1999 AR_9, 3, 1, 0; 1999 AN_{25}, 3, 1, 0; 1999 AR_{34}, 3, 1, 0; 1999 BW_1, 3, 1, 0; 1999 BR_4, 6, 2, 27; 1999 BK_7, 6, 2, 4; 1999 BQ_{14}, 3, 1, 0; 1999 CU_3, 3, 1, 0; 1999 CM_{16}, 3, 1, 0; 1999 CU_{17}, 3, 1, 0; 1999 CG_{19}, 3, 1, 0; 1999 CD_{21}, 3, 1, 0; 1999 CN_{25}, 6, 2, 951; 1999 CG_{28}, 3, 1, 0; 1999 CC_{30}, 3, 1, 0; 1999 CB_{38}, 6, 2, 5; 1999 CG_{38}, 3, 1, 0; 1999 CL_{42}, 12, 4, 36; 1999 CD_{46}, 6, 2, 8; 1999 CX_{46}, 3, 1, 0; 1999 CQ_{48}, 6, 2, 3; 1999 CH_{50}, 3, 1, 0; 1999 CU_{56}, 3, 1, 0; 1999 CF_{60}, 6, 2, 3; 1999 CJ_{60}, 3, 1, 0; 1999 CX_{73}, 6, 2, 5; 1999 CF_{74}, 3, 1, 0; 1999 CA_{76}, 3, 1, 0; 1999 CD_{76}, 8, 3, 1455; 1999 CJ_{76}, 6, 2, 4; 1999 CD_{79}, 3, 1, 0; 1999 CU_{95}, 9, 3, 23; 1999 CC_{98}, 9, 3, 8; 1999 CG_{98}, 6, 2, 3; 1999 CF_{104}, 3, 1, 0; 1999 CK_{104}, 3, 1, 0; 1999 CE_{114}, 6, 2, 1; 1999 CH_{141}, 3, 1, 0; 1999 CX_{146}, 3, 1, 0; 1999 CE_{149}, 3, 1, 0; 1999 CG_{152}, 3, 1, 0; 1999 DQ, 9, 3, 9; 1999 DA_4, 6, 2, 3; 1999 EN, 9, 3, 59; 1999 EG_1, 6, 2, 1; 1999 ER_4, 3, 1, 0; 1999 EE_6, 3, 1, 0; 1999 EY_6, 3, 1, 0; 1999 EN_7, 3, 1, 0; 1999 EL_8, 3, 1, 0; 1999 EA_9, 9, 3, 58; 1999 EL_{11}, 3, 1, 0; 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(8153), 15, 5, 18; (8226), 3, 1, 0; (8322), 3, 1, 0; (8330), 5, 2, 9; (8365), 6, 2, 9; (8372), 9, 3, 12; (8375), 3, 1, 0; (8377), 6, 2, 5; (8415), 6, 2, 8; (8426), 3, 1, 0; (8428), 3, 1, 0; (10072), 3, 1, 0; (10195), 9, 3, 9; (10270), 3, 1, 0; (10286), 9, 3, 13; (10291), 6, 2, 5; (10340), 3, 1, 0; (10352), 3, 1, 0; (10371), 6, 2, 9; *[3175, 611, 286*, 1991/09/07–1999/04/24]*

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1.54-m reflector + CCD

GSC-1.1

1993 WD, 3, 1, 0; 1994 LA$_1$, 3, 1, 0; 1995 LE, 6, 2, 1; 1998 SU$_{27}$, 3, 1, 0; 1998 XR$_{16}$, 6, 2, 1; 1998 XM$_{73}$, 3, 1, 0; 1999 CK$_{100}$, 3, 1, 0; (9671), 3, 1, 0; *[30, 8, 0*, 1999/04/12–1999/04/15]*

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

Observers O. Naranjo

Measurer M. J. Holman

1.2-m $f/8$ reflector + CCD

USNO-A2.0

1997 CT$_{29}$, 2, 1, 0; 1997 WT$_{37}$, 3, 2, 1; 1999 AE$_8$, 3, 2, 1; 1999 CP$_{133}$, 4, 2, 1; 1999 CE$_{149}$, 4, 2, 1; 1999 EG$_2$, 4, 2, 1; 1999 GW$_9$ *, 6, 3, 2; 1999 GX$_9$ *, 6, 3, 2; 1999 GY$_9$ *, 4, 2, 1; 1999 GZ$_9$ *, 4, 2, 1; (2552), 6, 3, 2; (4721), 3, 2, 1; (4839), 3, 2, 1; (5382), 4, 2, 1; *[56, 14, 4*, 1999/04/08–1999/04/10]*

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

Measurer B. W. Koehn

0.59-m LONEOS Schmidt + CCD

USNO-A1.0, USNO-A2.0

1971 UW, 3, 1, 0; 1974 SE, 3, 1, 0; 1975 SE, 3, 1, 0; 1976 UY, 3, 1, 0; 1978 NU$_3$, 3, 1, 0; 1978 PS$_2$, 3, 1, 0; 1978 RM$_7$, 3, 1, 0; 1978 SU$_4$, 3, 1, 0; 1978 VO$_4$, 3, 1, 0; 1978 VM$_7$, 3, 1, 0; 1979 MN$_3$, 3, 1, 0; 1979 MK$_5$, 3, 1, 0; 1979 MB$_9$, 3, 1, 0; 1979 SC, 3, 1, 0; 1980 LY, 3, 1, 0; 1980 PY$_2$, 3, 1, 0; 1980 TZ$_3$, 3, 1, 0; 1980 WE$_5$, 3, 1, 0; 1981 DA$_1$, 3, 1, 0; 1981 ET$_7$, 3, 1, 0; 1981 EZ$_7$, 3, 1, 0; 1981 EB$_{10}$, 3, 1, 0; 1981 EE$_{14}$, 3, 1, 0; 1981 EK$_{19}$, 3, 1, 0; 1981 EL$_{21}$, 3, 1, 0; 1981 EO$_{24}$, 3, 1, 0; 1981 ER$_{26}$, 6, 2, 47; 1981 ER$_{27}$, 3, 1, 0; 1981 ED$_{28}$, 3, 1, 0; 1981 EO$_{28}$, 6, 2, 2; 1981 EB$_{37}$, 3, 1, 0; 1981 EP$_{41}$, 3, 1, 0; 1981 RQ$_1$, 3, 1, 0; 1981 SE$_2$, 2, 1, 0; 1981 US$_{14}$, 3, 1, 0; 1981 WO, 3, 1, 0; 1982 HJ, 3, 1, 0; 1982 UZ$_9$, 3, 1, 0; 1982 UC$_{11}$, 3, 1, 0; 1982 YR$_1$, 3, 1, 0; 1984 AJ$_1$, 3, 1, 0; 1984 EQ, 3, 1, 0; 1985 CM$_1$, 3, 1, 0; 1985 CS$_2$, 3, 1, 0; 1985 QF$_1$, 3, 1, 0; 1985 RS$_1$, 3, 1, 0; 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703 Catalina Sky Survey

C. W. Hergenrother, Space Sciences Building, University of Arizona, Tucson, AZ 85721, U.S.A. [chergen@pirl.lpl.arizona.edu]
Observers T. B. Spahr, J. W. Brownlee
Measurer T. B. Spahr

0.41-m $f/3$ Schmidt + CCD
USNO-SA2.0, USNO-SA1.0

1936 UD, 4, 1, 0; 1978 RM_7, 4, 1, 0; 1979 KJ, 4, 1, 0; 1981 RQ_1, 4, 1, 0; 1983 RG_2, 4, 1, 0; 1985 CM_1, 4, 1, 0; 1985 RR_3, 4, 1, 0; 1985 UF, 4, 1, 0; 1986 QG_1, 4, 1, 0; 1988 CD_2, 4, 1, 0; 1988 GZ, 4, 1, 0; 1988 SF_3, 4, 1, 0; 1989 MH, 4, 1, 0; 1989 TJ_{14}, 3, 1, 0; 1989 UY_2, 4, 1, 0; 1989 UB_3, 4, 1, 0; 1990 QA, 4, 1, 0; 1990 QN_9, 4, 1, 0; 1990 SM_6, 4, 1, 0; 1990 SU_9, 4, 1, 0; 1990 TQ_1, 4, 1, 0; 1990 TK_4, 4, 1, 0; 1991 CW_2, 8, 2, 1; 1991 FX_2, 4, 1, 0; 1991 NM_6, 4, 1, 0; 1991 PV_{16}, 4, 1, 0; 1991 RS_7, 4, 1, 0; 1991 RD_{12}, 4, 1, 0; 1991 VN_4, 4, 1, 0; 1992 BD_2, 4, 1, 0; 1993 SH_1, 4, 1, 0; 1993 SJ_1, 4, 1, 0; 1993 TN, 4, 1, 0; 1993 TT_{12}, 4, 1, 0; 1993 VS, 4, 1, 0; 1993 VS_4, 12, 2, 1; 1994 GD_1, 4, 1, 0; 1995 DR, 4, 1, 0; 1995 KH_1, 4, 1, 0; 1995 SU_{32}, 4, 1, 0; 1996 NF_3, 4, 1, 0; 1996 NS_3, 4, 1, 0; 1996 NX_4, 4, 1, 0; 1996 RK_3, 4, 1, 0; 1996 SC_6, 4, 1, 0; 1996 TE, 4, 1, 0; 1996 TV_{14}, 4, 1, 0; 1996 TN_{41}, 4, 1, 0; 1996 UG_3, 4, 1, 0; 1996 VT_8, 4, 1, 0; 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(10372), 4, 1, 0; (10396), 4, 1, 0; (10431), 4, 1, 0; (10448), 4, 1, 0; *[1379, 305, 13*, 1998/11/15–1999/04/19]*

704 Lincoln Laboratory Experimental Test System, New Mexico

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Observers M. Blythe, F. Shelly, M. Bezpalko, M. Elowitz
Measurers J. Stuart, H. Viggh, R. Sayer

1.0-m $f/2.15$ reflector + CCD
USNO-SA1.0

1936 UD, 19, 4, 12; 1972 RF_2, 8, 2, 7; 1973 SP_4, 5, 1, 0; 1975 SE, 4, 1, 0; 1976 QS, 11, 3, 5; 1976 SQ_7, 19, 4, 12; 1976 UY, 3, 1, 0; 1977 DY_3, 37, 5, 24; 1977 DC_4, 8, 2, 1; 1977 FN, 5, 1, 0; 1978 NY, 10, 2, 3; 1978 NU_3, 15, 3, 7; 1978 PS_2, 20, 4, 11; 1978 QE_2, 4, 1, 0; 1978 RN_5, 8, 2, 3; 1978 RM_7, 19, 4, 10; 1978 SU_4, 8, 2, 8; 1978 SJ_5, 9, 2, 12; 1978 VO_4, 25, 5, 12; 1978 VU_5, 17, 4, 6; 1978 VK_8, 10, 2, 7; 1978 XU, 11, 3, 3; 1979 KJ, 20, 4, 7; 1979 KM, 8, 2, 26; 1979 MD_2, 14, 3, 7; 1979 MF_2, 8, 2, 2; 1979 MN_3, 13, 3, 5; 1979 MK_5, 19, 4, 10; 1979 MG_6, 18, 4, 6; 1979 ME_8, 10, 2, 1; 1979 MB_9, 5, 1, 0; 1979 PA, 15, 3, 5; 1979 SC, 24, 5, 12; 1979 TH_2, 4, 1, 0; 1979 WY_3, 5, 1, 0; 1979 XL, 5, 1, 0; 1980 KK, 4, 1, 0; 1980 LY, 10, 2, 4; 1980 PY_2, 13, 3, 7; 1980 PE_3, 3, 1, 0; 1980 RV_2, 12, 3, 5; 1980 VA_3, 8, 2, 5; 1980 WE_5, 15, 3, 3; 1981 CH, 5, 1, 0; 1981 DA_1, 14, 3, 3; 1981 DR_2, 3, 1, 0; 1981 ET_7, 14, 3, 10; 1981 EZ_7, 3, 1, 0; 1981 EH_9, 9, 2, 1; 1981 EB_{10}, 15, 3, 3; 1981 ET_{10}, 15, 3, 5; 1981 EE_{14}, 4, 1, 0; 1981 ER_{15}, 9, 2, 11; 1981 EJ_{16}, 3, 1, 0; 1981 EW_{18}, 7, 2, 2; 1981 EK_{19}, 12, 3, 5; 1981 EH_{20}, 12, 3, 7; 1981 EO_{20}, 15, 3, 7; 1981 ES_{20}, 3, 1, 0; 1981 EL_{21}, 13, 3, 11; 1981 ER_{21}, 11, 3, 7; 1981 ES_{21}, 6, 2, 2; 1981 EJ_{23}, 9, 2, 2; 1981 EO_{24}, 10, 2, 7; 1981 EV_{25}, 7, 2, 3; 1981 ER_{26}, 10, 2, 3; 1981 ER_{27}, 14, 3, 5; 1981 ED_{28}, 8, 2, 7; 1981 EX_{28}, 42, 5, 26; 1981 EQ_{32}, 8, 2, 2; 1981 EW_{33}, 3, 1, 0; 1981 EH_{35}, 3, 1, 0; 1981 EB_{37}, 13, 3, 5; 1981 ED_{37}, 13, 3, 5; 1981 EL_{38}, 7, 2, 12; 1981 EY_{38}, 3, 1, 0; 1981 ET_{41}, 14, 3, 12; 1981 EV_{41}, 3, 1, 0; 1981 ET_{47}, 3, 1, 0; 1981 PF, 13, 3, 7; 1981 QD, 17, 4, 10; 1981 QS, 4, 1, 0; 1981 QU_3, 15, 3, 7; 1981 RQ_1, 19, 4, 13; 1981 SN, 4, 1, 0; 1981 SE_2, 9, 2, 7; 1981 US_{14}, 8, 2, 7; 1981 UP_{25}, 4, 1, 0; 1981 UE_{26}, 10, 2, 7; 1981 WO, 25, 5, 13; 1982 BE_1, 13, 3, 7; 1982 HJ, 19, 4, 7; 1982 JE_1, 5, 1, 0; 1982 JB_2, 10, 2, 7; 1982 QK_3, 10, 2, 2; 1982 TT_2, 8, 2, 5; 1982 UE_6, 4, 1, 0; 1982 UZ_9, 11, 3, 5; 1982 YR_1, 9, 2, 6; 1983 QG, 10, 2, 7; 1983 RP_2, 19, 4, 13; 1983 WM, 24, 5, 26; 1983 XC, 7, 2, 7; 1984 AJ_1, 10, 2, 3; 1984 SL, 4, 1, 0; 1984 SS_1, 5, 1, 0; 1984 SR_5, 10, 2, 3; 1984 SY_5, 4, 1, 0; 1984 SN_6, 20, 4, 12; 1985 CM_1, 5, 1, 0; 1985 CU_1, 4, 1, 0; 1985 CS_2, 24, 5, 11; 1985 GP_1, 10, 2, 11; 1985 QM_5, 4, 1, 0; 1985 RS_1, 18, 4, 10; 1985 RP_3, 48, 6, 24; 1985 RR_3, 15, 3, 7; 1985 TW, 9, 2, 5; 1985 TJ_1, 24, 5, 10; 1985 UF, 15, 3, 7; 1985 VL, 17, 4, 5; 1986 EP_2, 5, 1, 0; 1986 GY, 15, 3, 5; 1986 QO_1, 9, 2, 3; 1986 QS_1, 10, 2, 7; 1986 QZ_1, 4, 1, 0; 1986 QH_2, 9, 2, 7; 1986 QO_4, 4, 1, 0; 1986 RD, 28, 5, 11; 1986 RK, 12, 3, 3; 1986 RG_3, 4, 1, 0; 1986 RY_4, 12, 3, 5; 1986 RN_5, 56, 5, 6; 1986 TB, 5, 1, 0; 1986 TS, 3, 1, 0; 1986 TZ_3, 8, 2, 6; 1986 VQ_2, 3, 1, 0; 1986 VR_5, 13, 3, 5; 1986 VM_6, 9, 2, 7; 1987 DN, 14, 3, 5; 1987 QO_5, 10, 2, 2; 1987 QG_{10}, 12, 3, 9; 1987 RN_3, 13, 3, 5; 1987 RO_5, 5, 1,

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(8336), 12, 3, 3; (8337), 3, 1, 0; (8347), 36, 6, 24; (8353), 20, 4, 11; (8354), 19, 4, 10; (8355), 7, 2, 4; (8356), 3, 1, 0; (8360), 5, 1, 0; (8361), 13, 3, 5; (8362), 7, 2, 7; (8363), 8, 2, 1; (8365), 12, 3, 3; (8366), 14, 3, 11; (8369), 23, 5, 7; (8372), 5, 1, 0; (8374), 18, 4, 7; (8375), 11, 3, 3; (8376), 12, 3, 5; (8377), 13, 3, 8; (8380), 4, 1, 0; (8382), 4, 1, 0; (8383), 12, 3, 5; (8385), 10, 2, 6; (8386), 20, 3, 5; (8391), 3, 1, 0; (8393), 13, 3, 5; (8400), 19, 4, 7; (8401), 10, 2, 7; (8403), 10, 2, 7; (8408), 3, 1, 0; (8409), 15, 3, 5; (8415), 10, 2, 7; (8422), 12, 3, 7; (8426), 24, 4, 4; (8427), 5, 1, 0; (8428), 8, 2, 4; (8429), 18, 4, 10; (8430), 22, 5, 12; (8431), 14, 3, 5; (8432), 5, 1, 0; (8437), 5, 1, 0; (8439), 4, 1, 0; (8440), 4, 1, 0; (8444), 10, 2, 2; (8473), 4, 1, 0; (8475), 14, 3, 7; (8496), 19, 4, 11; (8517), 7, 2, 7; (8535), 13, 3, 5; (8537), 5, 1, 0; (8540), 12, 3, 7; (8550), 3, 1, 0; (8551), 9, 2, 7; (8556), 8, 2, 7; (8564), 3, 1, 0; (8570), 13, 3, 5; (8578), 3, 1, 0; (8582), 10, 2, 7; (8601), 13, 3, 7; (8628), 5, 1, 0; (8635), 14, 3, 7; (8643), 7, 2, 3; (8655), 13, 3, 5; (8660), 19, 4, 7; (8694), 14, 3, 5; (8696), 17, 4, 12; (8713), 10, 2, 7; (8726), 13, 3, 5; (8735), 3, 1, 0; (8740), 3, 1, 0; (8755), 4, 1, 0; (8919), 19, 4, 26; (9120), 9, 2, 6; (9121), 15, 3, 5; (9201), 13, 3, 5; (9230), 5, 1, 0; (9312), 7, 2, 3; (9451), 24, 5, 12; (9671), 5, 1, 0; (9710), 4, 1, 0; (9717), 5, 1, 0; (9730), 5, 1, 0; (9732), 4, 1, 0; (9741), 5, 1, 0; (9765), 4, 1, 0; (9780), 5, 1, 0; (9830), 4, 1, 0; (9833), 3, 1, 0; (9835), 5, 1, 0; (9842), 4, 1, 0; (9869), 4, 1, 0; (9870), 5, 1, 0; (9874), 4, 1, 0; (9888), 4, 1, 0; (9889), 4, 1, 0; (9929), 5, 1, 0; (9930), 3, 1, 0; (9943), 4, 1, 0; (9945), 3, 1, 0; (9953), 3, 1, 0; (9956), 4, 1, 0; (9959), 4, 1, 0; (9961), 4, 1, 0; (9980), 5, 1, 0; (9984), 4, 1, 0; (9985), 5, 1, 0; (9994), 3, 1, 0; (10013), 4, 1, 0; (10027), 4, 1, 0; (10035), 5, 1, 0; (10041), 5, 1, 0; (10057), 5, 1, 0; (10069), 4, 1, 0; (10070), 4, 1, 0; (10094), 5, 1, 0; (10107), 4, 1, 0; (10108), 4, 1, 0; (10111), 14, 3, 4; (10113), 4, 1, 0; (10133), 4, 1, 0; (10135), 4, 1, 0; (10139), 4, 1, 0; (10140), 5, 1, 0; (10142), 5, 1, 0; (10143), 5, 1, 0; (10151), 4, 1, 0; (10164), 5, 1, 0; (10171), 9, 2, 4; (10174), 3, 1, 0; (10187), 5, 1, 0; (10195), 15, 3, 5; (10203), 4, 1, 0; (10212), 4, 1, 0; (10222), 5, 1, 0; (10226), 4, 1, 0; (10234), 10, 2, 4; (10259), 17, 4, 3; (10260), 4, 1, 0; (10261), 9, 2, 6; (10262), 24, 5, 7; (10265), 14, 3, 3; (10268), 5, 1, 0; (10269), 14, 3, 7; (10271), 9, 2, 6; (10273), 5, 1, 0; (10277), 9, 2, 7; (10281), 14, 3, 10; (10284), 20, 4, 13; (10286), 23, 5, 13; (10290), 25, 5, 13; (10291), 9, 2, 1; (10294), 19, 4, 7; (10298), 25, 5, 13; (10300), 25, 5, 13; (10301), 18, 4, 10; (10302), 5, 1, 0; (10303), 8, 2, 6; (10304), 20, 4, 7; (10307), 8, 2, 6; (10312), 9, 2, 6; (10317), 20, 4, 11; (10325), 19, 4, 7; (10326), 10, 2, 6; (10328), 29, 6, 13; (10330), 5, 1, 0; (10331), 17, 4, 12; (10332), 20, 4, 7; (10333), 4, 1, 0; (10335), 4, 1, 0; (10340), 23, 5, 13; (10344), 15, 3, 10; (10348), 12, 3, 5; (10349), 25, 5, 7; (10350), 20, 4, 10; (10352), 21, 5, 12; (10353), 14, 3, 10; (10357), 30, 6, 13; (10364), 4, 1, 0; (10365), 20, 4, 11; (10366), 24, 5, 13; (10368), 15, 3, 9; (10371), 10, 2, 4; (10374), 5, 1, 0; (10382), 18, 4, 10; (10385), 25, 5, 12; (10386), 10, 2, 6; (10387), 16, 4, 11; (10388), 5, 1, 0; (10391), 5, 1, 0; (10395), 15, 3, 11; (10396), 4, 1, 0; (10399), 9, 2, 6; (10400), 29, 6, 13; (10403), 15, 3, 5; (10420), 5, 1, 0; (10422), 4, 1, 0; (10425), 10, 2, 6; (10426), 5, 1, 0; (10430), 3, 1, 0; (10431), 9, 2, 12; (10434), 3, 1, 0; (10435), 5, 1, 0; (10438), 27, 6, 11; (10444), 23, 5, 13; (10445), 10, 2, 3; (10446), 27, 6, 12; (10448), 19, 4, 13; *[44127, 4377, 955*, 1997/03/31–1999/04/26]*

709 W & B Observatory, Cloudcroft
W. Offutt, P.O. Drawer 1130, Cloudcroft, NM 88317, U.S.A.
[offutt@galileo.apo.nmsu.edu]
Observer W. Offutt
Measurers W. Offutt, B. Ford
0.60-m $f/7$ Ritchey-Chrétien + CCD
USNO-SA1.0
1997 WM_{24}, 11, 1, 0; *[11, 1, 0∗, 1999/04/06]*

711 McDonald Observatory
P. J. Shelus, McDonald Observatory, University of Texas, Austin, TX 78712-1013, U.S.A. [pjs@astro.as.utexas.edu]
Observers J. G. Ries, J. L. Africano
0.76-m $f/3.0$ reflector + CCD
GSC
1998 UT_{18}, 6, 3, 2; 1998 WZ_1, 4, 3, 2; 1999 DB_2, 2, 1, 0; 1999 GS_6, 6, 2, 1; 1999 GT_6, 3, 1, 0; 1999 HE_1, 3, 1, 0; 1999 HF_1, 3, 1, 0; 1999 HY_1, 3, 1, 0; 1999 HA_2, 3, 1, 0; (6322), 2, 1, 0; *[35, 10, 0∗, 1999/04/20–1999/04/22]*

713 Thornton
R. A. Koff, 1915 W. 101st Ave., Thornton, CO 80221, U.S.A.
[Bob.Koff@worldnet.att.net]
0.20-m $f/10$ Schmidt-Cassegrain + CCD
USNO-A2.0
1999 GU_3, 7, 1, 0; *[7, 1, 0∗, 1999/04/12]*

715 Las Cruces
D. Dixon, 3208 Jupiter Rd., Las Cruces, NM 88012, U.S.A.
[ddixon@lascruces.com]
0.2-m $f/3.9$ Schmidt-Cassegrain + CCD
GSC, USNO-A2.0
1981 QU_3, 6, 2, 6; 1988 ER_1, 6, 2, 6; 1989 CH, 6, 2, 6; (2209), 3, 1, 0; *[21, 4, 0∗, 1999/04/11–1999/04/17]*

719 Etscorn Observatory
D. A. Klinglesmith III, 1215 Vista Drive, Socorro, NM 87801, U.S.A.
[TheKs@aol.com]
Observers D. A. Klinglesmith III, R. Huber
0.355-m Schmidt-Cassegrain + CCD
GSC
1999 EF_5, 2, 1, 0; 1999 FN_{19}, 2, 1, 0; 1999 FN_{53}, 4, 1, 0; 1999 GZ_1, 4, 1, 0; 1999 GA_2, 4, 1, 0; 1999 GG_2, 4, 1, 0; 1999 GH_2, 3, 1, 0; 1999 GJ_2, 4, 1, 0; 1999 GS_3, 6, 2, 1; 1999 GU_3, 4, 1, 0; 1999 GK_4, 5, 1, 0; 1999 GO_5, 4, 1, 0; 1999 GS_6, 4, 1, 0; 1999 HC, 4, 1, 0; (587), 4, 2, 7; (1036), 4, 2, 3; (1373), 3, 2, 3; (1508), 4, 2, 1; (1627), 2, 1, 0; (1864), 4, 1, 0; (1866), 4, 2, 3; (1981), 4, 2, 3; (2938), 6, 2, 5; (3040), 4, 2, 3; (3122), 5, 2, 1; (3199), 4, 1, 0; (3352), 10, 3, 9; (4503), 10, 4, 10; (5131), 4, 2, 3; (5164), 4, 2, 3; (5349), 5, 2, 1; (5646), 1, 1, 0; (5732), 3, 2, 4; (6047), 4, 2, 3; (6354), 12, 1, 0; (6411), 4, 2, 3; (7059), 4, 1, 0; (9671), 2, 1, 0; *[165, 38, 0∗, 1999/03/28–1999/04/20]*

721 Lime Creek
R. Linderholm, R2 Box 79, Cambridge, NE 69022, U.S.A. [lindh@swnebr.net]
0.25-m $f/3.3$ Schmidt-Cassegrain + CCD
GSC
1996 QL, 2, 1, 0; 1997 YW_{11}, 2, 1, 0; *[4, 2, 0∗, 1999/04/12–1999/04/17]*

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 GU_3, 7, 1, 0; 1999 HF_1, 27, 4, 6; *[34, 2, 0∗, 1999/04/13–1999/05/02]*

727 Zeno Observatory, Edmond
T. Stafford, 2947 Village Circle, Edmond, OK 73013, U.S.A.
[tstaffor@aignetplex.com]
0.15-m $f/6$ refractor + CCD
GSC, USNO-SA2.0
1995 DO_1, 6, 2, 1; 1997 SD_{11}, 3, 1, 0; 1997 VA_3, 3, 1, 0; 1999 EK, 5, 2, 1; 1999 EL, 11, 4, 12; 1999 GY ∗, 5, 2, 1; 1999 HG ∗, 6, 2, 1; 3507 T-3, 6, 2, 1; (518), 2, 1, 0; (1669), 3, 1, 0; (2508), 3, 1, 0; (2771), 3, 1, 0; (4467), 3, 1, 0; (6496), 3, 1, 0; (7668), 3, 1, 0; *[65, 15, 2∗, 1999/04/06–1999/04/18]*

732 Oaxaca
J. Roe, Apdo. No. 221, MX-68000 Oaxaca, Mexico [jamesroe@antequera.com]
0.25-m $f/3.4$ reflector + CCD
GSC
1987 RU_5, 4, 2, 1; 1987 UZ_1, 6, 2, 1; 1991 CP_1, 6, 2, 1; 1991 RG_{25}, 5, 2, 1; 1991 VX_5, 5, 2, 1; 1993 QH_{10}, 5, 2, 1; 1994 AY_2, 6, 2, 1; 1995 SO_3, 5, 2, 1; 1996 HU_{24}, 5, 2, 1; 1996 HW_{25}, 6, 2, 1; 1996 TM_{36}, 6, 2, 1; 1996 VJ_4, 7, 2, 1; 1996 VA_5, 4, 2, 1; 1996 XE_{19}, 6, 2, 1; 1997 SV, 10, 3, 5; 1997 WJ_2, 6, 2, 1; 1998 DU_7, 5, 2, 2; 1998 EE_9, 9, 2, 1; 1999 CK_{109}, 6, 2, 1; 1999 FQ_3, 6, 2, 2; 1999 FR_3, 6, 2, 1; 1999 GZ_1, 4, 1, 0; 1999 GQ_2 ∗, 18, 6, 10; 1999 GR_2 ∗, 20, 6, 10; 1999 GS_3, 9, 2, 1; 1999 GU_3, 8, 1, 0; 1999 GH_4 ∗, 9, 2, 1; 1999 GJ_4, 3, 1, 0; 1999 GK_4, 3, 1, 0; (296), 6, 2, 1; (3532), 3, 1, 0; (5964), 6, 2, 1; (10357), 3, 1, 0; *[216, 33, 3∗, 1999/04/04–1999/04/19]*

734 Farpoint Observatory, Eskridge
G. Hug, RTE 1 Box 35c, Eskridge, KS 66423, U.S.A. [frogstar@inlandnet.net]
0.30-m Schmidt-Cassegrain + CCD
GSC-1.1
1998 YL_4, 6, 2, 14; 1999 GZ_1, 2, 1, 0; 1999 GG_2, 3, 1, 0; 1999 GH_2, 3, 1, 0; 1999 GS_3, 2, 1, 0; 1999 GU_3, 4, 1, 0; 1999 GT_6, 3, 1, 0; 1283 T-2, 8, 2, 7; *[31, 8, 0∗, 1999/04/04–1999/04/18]*

735 George Observatory, Needville
W. G. Dillon, 4703 Birkenhead Circle, Missouri City, TX 77459, U.S.A.
[bdillon@houston.geoquest.slb.com]
Observer K. Rivich
0.46-m reflector + CCD
USNO-A2.0
1992 HH_5, 3, 1, 0; 1999 FO_{10}, 5, 2, 13; (7041), 3, 1, 0; *[11, 3, 0∗, 1999/04/06–1999/04/19]*

739 Sunflower Observatory, Olathe
L. Robinson, Sunflower Observatory, 14680 W 144 St, Olathe, KS 66062, U.S.A.
[lrobinsn@ix.netcom.com]
0.25-m $f/4.1$ Schmidt-Cassegrain + CCD
GSC-1.1
1999 FN_{19}, 4, 1, 0; 1999 GU_3, 12, 2, 2; (12), 2, 1, 0; (512), 3, 1, 0; (686), 3, 1, 0; (2733), 3, 1, 0; (5764), 2, 1, 0; *[29, 7, 0∗, 1999/03/29–1999/04/19]*

744 Doyan Rose Observatory, Indianapolis
J. Ruthroff, 5221 Graceland Ave., Indianapolis, IN 46254, U.S.A.
[jruthroff@sprintmail.com]
0.25-m $f/7.5$ Schmidt-Cassegrain + CCD
GSC-1.1
1994 AT_1, 4, 2, 2; 1994 GT, 7, 3, 11; 1996 PY_4, 4, 2, 2; 1998 DZ_2, 4, 2, 2; *[19, 4, 0∗, 1999/03/27–1999/04/07]*

747 Baton Rouge Observatory
W. R. Cooney, 10330 Dunn Dr., Baton Rouge, LA 70810, U.S.A.
[walt@sprintmail.com]
0.51-m $f/8.4$ reflector + CCD
USNO-A2.0
1997 YP_2, 4, 1, 0; 1999 CA_{10}, 2, 1, 0; 1999 EX_4, 3, 1, 0; 1999 FD, 2, 1, 0; 1999 FE, 3, 1, 0; 1999 FF, 6, 1, 0; 1999 FO_{10}, 3, 1, 0; 1999 GF_4 *, 11, 4, 6; *[34, 8, 1*, 1999/04/08–1999/04/19]*

749 Oakwood
J. A. Howell, 4046 Lyman Way, Gainesville, GA 30507, U.S.A.
[andyho@mindspring.com]
0.46-m $f/4.4$ Newtonian reflector + CCD
GSC
1995 FN, 5, 2, 5; 1997 WQ_{34}, 5, 2, 1; (10283), 5, 2, 1; *[15, 3, 0*, 1999/03/12–1999/03/24]*

750 Hobbs Observatory, Fall Creek
R. Elliott, S475 County Road K, Fall Creek, WI 54742, U.S.A.
[elliottb@uwec.edu]
0.60-m $f/5$ reflector + CCD
GSC
1990 FM, 5, 2, 5; 1995 DO_1, 4, 1, 0; 1999 FN_{19}, 2, 1, 0; 1999 GH_2, 4, 1, 0; *[15, 4, 0*, 1999/04/08–1999/04/13]*

752 Puckett Observatory, Mountain Town
T. Puckett, P.O. Box 818, Ellijay, GA 30540, U.S.A. [tpuckett@mindspring.com]
Observer T. Puckett
Measurer R. Kiessig
0.60-m $f/5.83$ reflector + CCD
USNO-A2.0
1999 CY_{153}, 6, 2, 4; 1999 HZ *, 6, 2, 1; (86), 6, 2, 1; (1137), 6, 2, 1; (1330), 6, 2, 1; (1723), 6, 2, 1; (2008), 6, 2, 1; (2211), 6, 2, 1; (2213), 6, 2, 1; (2308), 6, 2, 1; (2312), 6, 2, 1; (2656), 6, 2, 1; (2821), 6, 2, 1; (3396), 6, 2, 1; (3802), 2, 1, 0; (4721), 6, 2, 1; (4795), 6, 2, 1; (4879), 6, 2, 1; (10407), 6, 2, 1; *[110, 19, 1*, 1999/04/19–1999/04/23]*

758 BCC Observatory, Cocoa
I. P. Griffin, BCC Observatory, 1519 Clearlake Road, Cocoa, FL 32922, U.S.A.
[griffini@brevard.cc.fl.us]
0.30-m $f/5$ Maksutov + CCD
USNO-A2.0
1998 BU_{25}, 6, 2, 1; 1999 DH_4, 6, 2, 1; 1999 GH_2, 4, 1, 0; 1999 GJ_2, 4, 1, 0; 1999 GS_3, 3, 1, 0; 1999 GU_3, 5, 1, 0; 1999 GY_3 *, 18, 6, 9; 1999 GK_4, 10, 3, 2; 1999 GO_5, 2, 1, 0; 1999 GS_6, 2, 1, 0; 1999 HF_1, 6, 1, 0; (1843), 5, 1, 0; (3532), 3, 1, 0; *[74, 13, 1*, 1999/04/08–1999/04/21]*

763 King City
R. Sandness, 263 Burns Boulevard, King City, ON L7B 1E3, Canada
[75443.2030@compuserve.com]
0.35-m reflector + CCD
GSC
1996 QQ_1, 3, 1, 0; 1999 EK_5, 3, 1, 0; 1999 FJ_{10}, 4, 1, 0; 1999 GP_3 *, 20, 6, 9; 1999 GG_4 *, 11, 3, 2; (7226), 3, 1, 0; (10366), 2, 1, 0; *[46, 7, 2*, 1999/04/06–1999/04/15]*

808 Carlos U. Cesco Observatory, El Leoncito
C. E. Lopez, Felix Aguilar Observatory, Benavidez 8175 (Oeste), AR-5407 Marquesado-San Juan, Argentina [clopez@iinfo.unsj.edu.ar]
Observers M. R. Cesco, H. S. Lepez, C. E. Lopez, J. E. Torres
Measurers R. Gil Hutton, C. E. Lopez
0.5-m $f/7.5$ double astrograph + CCD
GSC
(686), 1, 1, 0; (2352), 3, 2, 14; (2676), 2, 2, 25; (3614), 4, 2, 9; (3712), 4, 2, 9; (4130), 2, 1, 0; (4452), 4, 2, 2; (4601), 2, 1, 0; (4718), 2, 1, 0; (4896), 2, 1, 0; (4898), 2, 1, 0; (4914), 2, 1, 0; (4937), 4, 2, 2; (5378), 2, 1, 0; (5478), 2, 1, 0; (5670), 6, 3, 10; (5764), 2, 1, 0; (5820), 2, 1, 0; (6033), 2, 1, 0; (6148), 4, 2, 14; (6388), 4, 2, 14; (6635), 4, 2, 10; (6901), 2, 1, 0; (7134), 4, 2, 10; *[68, 24, 0*, 1999/02/24–1999/03/21]*

809 European Southern Observatory
H. Debehogne, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium [henri@astro.oma.be] (3)
E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium [elst@atmos.oma.be] (4)
7 = 3 + 4
C.-I. Lagerkvist, Uppsala Observatory, Box 515, S-75120 Uppsala, Sweden [classe@laban.uu.se] (8)
Observers H. Debehogne, C.-I. Lagerkvist, M. Lindgren, G. Pizarro, O. Pizarro
Measurers E. W. Elst, O. Hernius, C.-I. Lagerkvist
1.0-m Schmidt
(4) 1993 OO_{12}, 3, 1, 0; 1994 PS_{18}, 3, 1, 0; 1995 UT_2, 3, 1, 0; 1996 FC_{22}, 3, 1, 0; 1996 HW_{19}, 3, 1, 0; 1996 KH_7, 3, 1, 0; 1998 SF_{135}, 3, 1, 0; 1999 FK_{19}, 3, 1, 0; *[24, 8, 0*, 1993/05/23–1998/09/21]*

(7) 1993 TV_{13}, 3, 1, 0; *[3, 1, 0*, 1993/10/22]*

(8) 1987 SP_5, 1, 1, 0; 1992 DM_2, 1, 1, 0; 1999 CJ_{31}, 1, 1, 0; 4117 T-2, 9, 9, 34; *[12, 4, 0*, 1992/03/04–1995/09/22]*

816 Rand Observatory
G. R. Viscome, 30 Hyland Avenue, Lake Placid, NY 12946, U.S.A.
[GeorgeV@nct.org]
0.37-m $f/6$ reflector + CCD
USNO-SA1.0
1997 OF_1, 3, 1, 0; *[3, 1, 0*, 1997/09/05]*

819 Val-des-Bois
D. Bergeron, 117 Ch. Guenette, C.P. 130, Val-des-Bois, Quebec JOX 3C0, Canada
[bergeron@achilles.net]
Observer D. Bergeron
Measurer T. Alderweireldt
0.25-m $f/10$ Schmidt-Cassegrain + CCD
GSC-1.2
1999 CE_{57}, 15, 2, 6; *[15, 1, 0*, 1999/04/05–1999/04/11]*

835 Drum Hill Station, Chelmsford
R. Sinnott, Sky & Telescope, P. O. Box 9111, Belmont, MA 02478-9111, U.S.A.
[rsinnott@skypub.com]
0.20-m $f/3.3$ Schmidt-Cassegrain + CCD
GSC
1999 HF_1, 3, 1, 0; *[3, 1, 0*, 1999/04/25]*

838 Dayton
J. Chumack, 3118 Mesmer Avenue, Dayton, OH 45410, U.S.A.
[galactic@infinet.com]
0.25-m Schmidt-Cassegrain + CCD
GSC
(144), 4, 2, 1; (209), 4, 2, 1; (229), 4, 2, 1; (382), 4, 2, 1; (424), 4, 2, 1; (501), 4, 2, 1; (876), 4, 2, 1; *[28, 7, 0*, 1999/03/11–1999/03/12]*

841 Martin Observatory, Blacksburg
J. H. Simonetti, Physics Department, Virginia Tech, Blacksburg VA 24060, U.S.A. [jhs@vt.edu]
Observers K. Hale, S. Hornstein, C. King, N. Smith, M. Blackmon, J. Ciccarelli, A. Drake, D. Fisher, R. Fortgang, V. Gehman
Measurer J.H. Simonetti
0.4-m $f/4$ reflector + CCD
GSC
(52), 9, 3, 22; (762), 3, 1, 0; (778), 6, 2, 15; *[18, 3, 0∗, 1999/02/23–1999/03/17]*

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
(40), 4, 2, 1; (77), 4, 2, 1; (109), 2, 1, 0; (113), 5, 2, 1; (203), 2, 1, 0; (739), 2, 1, 0; *[19, 6, 0∗, 1999/04/13–1999/04/30]*

844 Los Molinos
T. Gallardo, Departamento de Astronomia, Facultad de Ciencias, Montevideo, Uruguay [gallardo@fisica.edu.uy]
Observer J. C. Tulic
0.35-m $f/6.4$ reflector + CCD
USNO-A2.0
1999 GJ_2, 3, 1, 0; 1999 GK_4, 5, 2, 1; (1863), 3, 1, 0; (6271), 3, 1, 0; *[14, 4, 0∗, 1999/04/06–1999/04/20]*

859 Serra da Piedade
C. Jacques, P.O. Box 1084, Belo Horizonte, Minas Gerais, BR-30000 Brazil [cjacques@unix.horizontes.com.br]
Observers C. Jacques, J. Amancio, A. Campos, L. Duczmal, E. Pimentel, C. Villaca
Measurer C. Jacques
0.30-m $f/3.3$ reflector + CCD
GSC
1999 FE_{21}, 17, 5, 10; 1999 FP_{21}, 9, 3, 2; 1999 FK_{24}, 7, 2, 1; 1999 FP_{59}, 3, 1, 0; 1999 GA ∗, 6, 2, 1; 1999 GB ∗, 6, 2, 1; 1999 GC ∗, 9, 3, 3; 1999 GD ∗, 10, 3, 3; 1999 GZ_1, 3, 1, 0; 1999 GA_2, 4, 1, 0; 1999 GG_2, 3, 1, 0; 1999 GH_2, 2, 1, 0; 1999 GJ_2, 3, 1, 0; 1999 GS_3, 3, 1, 0; 1999 GT_3, 3, 1, 0; 1999 GU_3, 5, 1, 0; 1999 GB_4 ∗, 6, 2, 1; 1999 GK_4, 3, 1, 0; 1999 GO_5, 3, 1, 0; 1999 HE_1, 6, 1, 0; 1999 HX_1, 3, 1, 0; 1999 HY_1, 9, 3, 3; 1999 HZ_1, 4, 1, 0; 1999 HA_2, 6, 2, 3; 1999 HO_2, 3, 1, 0; 1999 HW_2, 3, 1, 0; 1999 HX_2, 4, 1, 0; *[143, 27, 5∗, 1999/04/02–1999/04/25]*

860 Valinhos
P. R. Holvorcem, Departamento de Matematica/IMECC, Universidade Estadual de Campiñas SP, BR-13081-970, Brazil [canis@mpc.com.br]
0.20-m $f/3.3$ reflector + CCD
GSC
1986 RN_5, 3, 1, 0; 1999 FL_{24}, 3, 1, 0; 1999 GH_2, 7, 3, 12; 1999 GJ_2, 6, 2, 12; 1999 GU_3, 8, 2, 2; 1999 GK_4, 3, 1, 0; 1999 GY_5, 5, 1, 0; 1999 GS_6, 6, 1, 0; 1999 GT_6, 2, 1, 0; 1999 HC, 5, 2, 4; 1999 HY_1, 2, 1, 0; 1999 HZ_1, 3, 1, 0; 1999 HA_2, 3, 1, 0; 1999 HO_2 ∗, 3, 1, 0; 1999 HX_2, 4, 1, 0; (795), 4, 1, 0; (947), 7, 2, 4; *[74, 17, 1∗, 1999/04/08–1999/04/24]*

886 Susono
M. Akiyama, 1655-23, Chabatake, Susono, Shizuoka-Ken, 410-11 Japan
0.25-m $f/6.3$ reflector + CCD
GSC
1994 AT_1, 2, 1, 0; 1995 OV, 2, 1, 0; 1995 UQ_5, 2, 1, 0; 1997 VW_4, 2, 1, 0; 1999 CP, 2, 1, 0; 1999 DQ_3, 4, 2, 48; 1999 DR_3, 4, 2, 7; 1999 DS_3, 4, 2, 48; *[22, 8, 0∗, 1999/02/25–1999/04/15]*

888 Gekko Observatory
T. Kagawa, 1308-222, Kuwahara, Kannami-cho, Tagata-gun, Shizuoka-Ken, 419-010, Japan
0.50-m $f/4.0$ reflector + CCD
GSC-1.1
1988 EC, 2, 1, 0; 1988 VQ_3, 2, 1, 0; 1989 TU_1, 2, 1, 0; 1989 WJ, 4, 2, 7; 1992 WN_3, 2, 1, 0; 1994 AT_1, 2, 1, 0; 1995 FN, 2, 1, 0; 1995 OV, 4, 2, 7; 1996 VJ, 2, 1, 0; 1996 VA_5, 1, 1, 0; 1996 XH_6, 2, 1, 0; 1996 XT_{30}, 2, 1, 0; 1997 UH_1, 2, 1, 0; 1997 UP_7, 4, 2, 1; 1997 UB_{15}, 2, 1, 0; 1997 VW_4, 2, 1, 0; 1997 WO_{13}, 4, 2, 10; 1997 XL_5, 2, 1, 0; 1997 YB_{10}, 2, 1, 0; 1998 BW_2, 4, 2, 8; 1998 BT_{14}, 5, 2, 11; 1998 FN_{11}, 2, 1, 0; 1998 UU_6, 2, 1, 0; 1998 WZ_6, 1, 1, 0; 1999 AM_3, 2, 1, 0; 1999 AH_5, 2, 1, 0; 1999 AK_5, 2, 1, 0; 1999 AL_5, 2, 1, 0; 1999 AM_5, 2, 1, 0; 1999 AU_7, 2, 1, 0; 1999 BC_4, 2, 1, 0; 1999 BY_{25}, 2, 1, 0; 1999 CM, 2, 1, 0; 1999 CP, 2, 1, 0; 1999 CH_5, 4, 2, 8; 1999 CK_5, 2, 1, 0; 1999 CO_5, 2, 1, 0; 1999 CL_9, 4, 2, 16; 1999 CE_{14}, 2, 1, 0; 1999 DP_1, 2, 1, 0; 1999 DQ_3, 4, 2, 41; 1999 DR_3, 4, 2, 9; 1999 DS_3, 4, 2, 15; 1999 FC_{30}, 4, 2, 5; 1999 GB_2 ∗, 8, 4, 16; 1999 GB_5, 4, 2, 1; 1999 GC_5, 5, 2, 1; 1999 GD_5, 8, 3, 12; 1999 GE_5, 4, 2, 1; 1999 GP_5, 4, 2, 1; 1999 GQ_5 ∗, 4, 2, 1; 1999 GC_6, 4, 2, 9; 1999 GD_6, 2, 1, 0; 1999 GE_6, 4, 2, 8; 1999 GS_9, 2, 1, 0; 1999 HG_3, 5, 2, 1; 1999 HH_3 ∗, 5, 2, 1; (5959), 2, 1, 0; *[172, 58, 3∗, 1999/02/25–1999/04/29]*

903 Fukuchiyama
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Observer M. Yoshimi
0.25-m $f/6.3$ Schmidt-Cassegrain + CCD
GSC
1999 GK_4, 3, 1, 0; *[3, 1, 0∗, 1999/04/14]*

905 Nachi-Katsuura Observatory
T. Urata, 1-8, Dobayashi 1 Chome, Shimizu, Shizuoka-Ken 424, Japan [urata@sannet.ne.jp]
Observer Y. Shimizu
Measurer T. Urata
0.40-m $f/3.3$ Baker-Schmidt
GSC
1994 AT_1, 1, 1, 0; 1998 BW_2, 2, 1, 0; 1999 DR_3, 2, 1, 0; 1999 DS_3, 2, 1, 0; 1999 GR_3 ∗, 2, 2, 1; 1999 GB_5 ∗, 2, 1, 0; 1999 GC_5 ∗, 2, 1, 0; 1999 GD_5 ∗, 2, 1, 0; 1999 GE_5 ∗, 3, 1, 0; 1999 GP_5 ∗, 2, 1, 0; 1999 GC_6 ∗, 2, 1, 0; 1999 GD_6 ∗, 2, 1, 0; 1999 GE_6 ∗, 2, 1, 0; 1999 GR_9 ∗, 2, 1, 0; 1999 GS_9 ∗, 2, 1, 0; *[30, 15, 11∗, 1999/03/16–1999/04/14]*

910 Caussols-ODAS
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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
1992 OM_8, 6, 2, 150; 1993 TO_{36}, 3, 1, 0; 1996 KO, 3, 1, 0; 1996 PH_1, 3, 1, 0; 1996 UQ_3, 6, 2, 92; 1997 EF_{41}, 3, 1, 0; 1997 SO_{33}, 3, 1, 0; 1997 UU_8, 3, 1, 0; 1997 VP_1, 3, 1, 0; 1997 WU_{32}, 3, 1, 0; 1997 WC_{37}, 3, 1, 0; 1997 WL_{37}, 3, 1, 0; 1998 BB_{27}, 3, 1, 0; 1998 DP_{23}, 3, 1, 0; 1998 HH_6, 3, 1, 0; 1998 SG_{141}, 3, 1, 0; 1998 UO_2, 3, 1, 0; 1998 UX_{15}, 3, 1, 0; 1998 UD_{28}, 3, 1, 0; 1998 VT_{13}, 3, 1, 0; 1998 VH_{15}, 3, 1, 0; 1998 VG_{37}, 3, 1, 0; 1998 VC_{41}, 3, 1, 0; 1998 WA_8, 3, 1, 0; 1998 XK_{72}, 3, 1, 0; 1998 YV_8, 3, 1, 0; 1998 YM_{16}, 6, 2, 28; 1999 AT_{31}, 3, 1, 0; 1999 BC_{11}, 3, 1, 0; 1999 CD_{21}, 3, 1, 0; 1999 CA_{39}, 3, 1, 0; 1999 CO_{45}, 3, 1, 0; 1999 CT_{45}, 3, 1, 0; 1999 CB_{47}, 3, 1, 0; 1999 CL_{50}, 3, 1, 0; 1999 CG_{60}, 3, 1, 0; 1999 CJ_{79}, 3, 1, 0; 1999 CJ_{81}, 3, 1, 0; 1999 CW_{85}, 3, 1, 0; 1999 CG_{89},

6, 1, 0; 1999 CE_{97}, 3, 1, 0; 1999 CA_{150}, 3, 1, 0; 1999 DO_3, 3, 1, 0; 1999 DS_7, 3, 1, 0; 1999 FZ_6, 3, 1, 0; 1999 FC_7, 3, 1, 0; 1999 FJ_{10}, 3, 1, 0; 1999 FZ_{48}, 3, 1, 0; 1999 GT, 3, 1, 0; 1999 GK_4, 3, 1, 0; 4555 P-L, 3, 1, 0; 1056 T-1, 3, 1, 0; 1346 T-2, 3, 1, 0; 2042 T-2, 3, 1, 0; *[174, 54, 0∗, 1997/07/08–1999/03/21]*

951 Highworth
J. W. Rock, 2 Spa Close, Highworth, Swindon, Wiltshire SN6 7PJ, England [OC34@dial.pipex.com]
0.30-m Newtonian reflector + CCD
GSC
(855), 4, 2, 6; (1035), 4, 2, 6; (2865), 4, 2, 1; (7019), 4, 2, 6; *[16, 4, 0∗, 1999/03/13–1999/03/23]*

952 Marxuquera
J. J. Gómez D., Cardenal Cisneros 55-4-8, E-46700 Gandia, Spain [astsafor@arrakis.es]
0.25-m $f/6.3$ Schmidt-Cassegrain + CCD
GSC
1992 JF_3, 2, 1, 0; 1999 FY_{18}, 3, 1, 0; (21), 3, 1, 0; *[8, 3, 0∗, 1999/04/06–1999/04/11]*

955 Sassoeiros
R. Goncalves, Rua Augusto Jose Vieira, 10-3, P-1170 Lisbon, Portugal [m13406@correio.cc.fc.ul.pt]
0.25-m $f/8.0$ Schmidt-Cassegrain + CCD
USNO-A2.0
(258), 11, 2, 1; (313), 8, 1, 0; *[19, 2, 0∗, 1999/04/03–1999/04/17]*

ORBITAL ELEMENTS

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C/1996 B3 (SOHO)
T 1996 Jan. 28.60 TT Marsden

				P	**Q**
q	0.0069		(2000.0)		
		ω	65.71	+0.24789	−0.96101
		Ω	347.94	−0.95396	−0.22010
e	1.0	i	144.11	+0.16885	+0.16740

From 20 observations 1996 Jan. 27–28.

C/1996 Y1 (SOHO)
T 1996 Dec. 23.26 TT Marsden

				P	**Q**
q	0.0055		(2000.0)		
		ω	84.42	+0.17396	−0.98317
		Ω	5.48	−0.96044	−0.18191
e	1.0	i	144.24	+0.21748	−0.01695

From 32 observations 1996 Dec. 21–23.

C/1997 B2 (SOHO)
T 1997 Jan. 26.95 TT Marsden

				P	**Q**
q	0.0070		(2000.0)		
		ω	70.41	+0.23453	−0.96934
		Ω	352.68	−0.95582	−0.21618
e	1.0	i	144.82	+0.17720	+0.11686

From 5 observations 1997 Jan. 26.

C/1997 BA_6 (Spacewatch)
Epoch 1999 Dec. 8.0 TT = JDT 2451520.5
T 1999 Nov. 27.5835 TT Marsden

				P	**Q**
q	3.436300		(2000.0)		
z	+0.000330	ω	285.9398	+0.0105921	+0.7657391
	±0.000002	Ω	317.6638	+0.0017497	−0.6431134
e	0.998865	i	72.7149	−0.9999424	+0.0069859

From 242 observations 1997 Jan. 11–1999 Apr. 19, mean residual 0″.6.

C/1997 K1 (SOHO)
T 1997 June 1.58 TT Marsden

				P	**Q**
q	0.0058		(2000.0)		
		ω	80.84	+0.18056	−0.98344
		Ω	1.54	−0.95783	−0.17950
e	1.0	i	143.58	+0.22350	+0.02522

From 18 observations 1997 May 31–June 1.

C/1998 P1 (Williams)
Epoch 1998 Nov. 3.0 TT = JDT 2451120.5
T 1998 Oct. 17.8458 TT Nakano

				P	**Q**
q	1.146201		(2000.0)		
z	+0.001097	ω	294.4674	−0.6809261	−0.6967028
		Ω	156.3709	−0.2760426	+0.5296318
e	0.998742	i	145.7276	−0.6783363	+0.4838340

From 372 observations 1998 Aug. 11–1999 Apr. 14, mean residual 0″.7.
Nongravitational parameters $A_1 = +31.51$, $A_2 = +2.2940$.

P/1998 U3 (Jäger)
Epoch 1999 Mar. 3.0 TT = JDT 2451240.5
T 1999 Mar. 10.0703 TT Nakano
q 2.133893 (2000.0) **P** **Q**
n 0.0659744 ω 180.8950 −0.5647894 −0.7786669
a 6.065769 Ω 303.5427 +0.7591611 −0.3604043
e 0.648207 i 19.1413 +0.3235542 −0.5136016
P 14.9
From 721 observations 1998 Oct. 24–1999 Apr. 30, mean residual 0″.6.

C/1998 U5 (LINEAR)
Epoch 1998 Dec. 13.0 TT = JDT 2451160.5
T 1998 Dec. 21.7601 TT Nakano
q 1.236452 (2000.0) **P** **Q**
z +0.009729 ω 51.1344 +0.7248463 +0.0751357
±0.000016 Ω 66.6507 +0.1089684 −0.9940254
e 0.987970 i 131.7649 +0.6802380 +0.0791715
From 339 observations 1998 Oct. 30–1999 Apr. 14, mean residual 0″.7.

P/1998 Y2 (Li)
Epoch 1998 Dec. 13.0 TT = JDT 2451160.5
T 1998 Dec. 17.8038 TT Nakano
q 2.518820 (2000.0) **P** **Q**
n 0.0650710 ω 318.9800 +0.5736364 −0.7081383
a 6.121782 Ω 91.8320 +0.8169432 +0.4580756
e 0.588548 i 24.3237 +0.0595407 +0.5373146
P 15.1
From 134 observations 1998 Sept. 23–1999 Apr. 8, mean residual 0″.7.

P/1999 D1 (Hermann)
T 1999 Feb. 18.0263 TT Nakano
q 1.654647 (2000.0) **P** **Q**
n 0.0712612 ω 173.0972 −0.9551200 −0.2883929
a 5.761920 Ω 349.3758 +0.2512084 −0.6675852
e 0.712831 i 21.5232 +0.1569714 −0.6864106
P 13.8
From 108 observations 1999 Feb. 15–Apr. 14.

D/1999 E1 (Li)
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5
T 1999 Jan. 31.5851 TT Nakano
q 3.919890 (2000.0) **P** **Q**
n 0.0149564 ω 329.7388 −0.2577508 −0.7753134
a 16.314873 Ω 127.8316 +0.9660465 −0.2178166
e 0.759735 i 46.8887 +0.0178522 +0.5928280
P 65.9
From 135 observations 1999 Jan. 22–Apr. 30, mean residual 0″.6.

C/1999 F1 (Catalina)
T 2002 Feb. 13.758 TT Marsden
q 5.79721 (2000.0) **P** **Q**
ω 255.051 −0.254601 +0.904413
Ω 20.036 +0.333801 +0.414466
e 1.0 i 92.122 −0.907610 −0.101272
From 40 observations 1999 Mar. 13–Apr. 24.

C/1999 G1 (LINEAR)
T 1998 Aug. 20.3201 TT Nakano
q 4.224381 (2000.0) **P** **Q**
ω 139.6783 −0.7443565 −0.5439329
Ω 23.1495 −0.4356704 −0.0440844
e 1.0 i 80.1949 +0.5060877 −0.8379699
From 35 observations 1999 Apr. 8–16.

C/1999 G2 (SOHO)
T 1999 Apr. 13.73 TT Marsden
q 0.0049 (2000.0) **P** **Q**
ω 82.65 +0.11073 −0.99378
Ω 358.79 −0.97402 −0.10609
e 1.0 i 145.01 +0.19755 +0.03391
From 11 observations 1999 Apr. 13.

C/1999 H1 (Lee)
T 1999 July 11.1657 TT Nakano
q 0.708308 (2000.0) **P** **Q**
ω 40.6689 −0.5566131 +0.8167289
Ω 162.6375 +0.5665120 +0.2392274
e 1.0 i 149.3558 +0.6076562 +0.5250944
From 128 observations 1999 Apr. 16–May 1.

C/1999 H2 (SOHO)
T 1999 Apr. 19.63 TT Marsden
q 0.0051 (2000.0) **P** **Q**
ω 83.70 +0.15692 −0.98706
Ω 3.33 −0.96801 −0.16033
e 1.0 i 145.38 +0.19581 −0.00161
From 11 observations 1999 Apr. 19.

C/1999 H3 (LINEAR)
T 1999 Aug. 16.0382 TT Nakano
q 3.508940 (2000.0) **P** **Q**
ω 101.3411 −0.3710025 −0.8312063
Ω 332.6147 −0.6159319 +0.5539549
e 1.0 i 115.8150 +0.6949713 +0.0472233
From 69 observations 1999 Apr. 22–30.

C/1999 H4 (SOHO)
T 1999 Apr. 27.87 TT Marsden
q 0.0055 (2000.0) **P** **Q**
ω 85.20 +0.17281 −0.98285
Ω 6.35 −0.96128 −0.18253
e 1.0 i 144.45 +0.21465 −0.02614
From 27 observations 1999 Apr. 26–27.

Chronological listing of predicted orbital elements for comets returning to perihelion in 2002:

31P/Schwassmann-Wachmann 2
Epoch 2002 Jan. 6.0 TT = JDT 2452280.5

				Nakano	
T	2002 Jan. 18.4132 TT				
q	3.408440		(2000.0)	**P**	**Q**
n	0.1130644	ω	18.4010	−0.6759058	−0.7334276
a	4.235639	Ω	114.1941	+0.6658227	−0.6497793
e	0.195295	i	4.5497	+0.3159611	−0.1996770
P	8.72				

From 99 observations 1973–1989, mean residual 1″.0. Nongravitational parameters $A_1 = +1.31$, $A_2 = -0.3095$.

96P/Machholz 1
Epoch 2002 Jan. 6.0 TT = JDT 2452280.5

				Marsden	
T	2002 Jan. 8.6337 TT				
q	0.124105		(2000.0)	**P**	**Q**
n	0.1884437	ω	14.5807	−0.2025144	−0.4593833
a	3.013110	Ω	94.6084	+0.7889527	−0.5997079
e	0.958812	i	60.1866	+0.5801221	+0.6552232
P	5.23				

From 94 observations 1986–1991, mean residual 0″.9.

125P/Spacewatch
Epoch 2002 Feb. 15.0 TT = JDT 2452320.5

				Marsden	
T	2002 Jan. 28.0513 TT				
q	1.528592		(2000.0)	**P**	**Q**
n	0.1780371	ω	87.3013	−0.4850385	+0.8710026
a	3.129409	Ω	153.2367	−0.8553194	−0.4539232
e	0.511540	i	9.9815	−0.1821164	−0.1879047
P	5.54				

From 135 observations 1991–1996, mean residual 0″.6.

6P/d'Arrest
Epoch 2002 Feb. 15.0 TT = JDT 2452320.5

				Nakano	
T	2002 Feb. 3.5918 TT				
q	1.352768		(2000.0)	**P**	**Q**
n	0.1509234	ω	178.1117	+0.7332572	+0.6436451
a	3.493803	Ω	138.9440	−0.6281363	+0.7646520
e	0.612809	i	19.4973	−0.2603433	−0.0320663
P	6.53				

From 63 observations 1982–1995, mean residual 1″.0. Nongravitational parameters $A_1 = +0.65$, $A_2 = +0.1054$.

15P/Finlay
Epoch 2002 Feb. 15.0 TT = JDT 2452320.5

				Nakano	
T	2002 Feb. 7.1868 TT				
q	1.034108		(2000.0)	**P**	**Q**
n	0.1459816	ω	323.6355	+0.9944034	−0.0965650
a	3.572212	Ω	41.9696	+0.1055605	+0.8914358
e	0.710513	i	3.6748	+0.0043459	+0.4427386
P	6.75				

From 18 observations 1967–1988, mean residual 1″.0. Nongravitational parameters $A_1 = +0.10$, $A_2 = +0.0177$.

89P/Russell 2
Epoch 2002 Mar. 27.0 TT = JDT 2452360.5

				Nakano	
T	2002 Mar. 23.0248 TT				
q	2.290145		(2000.0)	**P**	**Q**
n	0.1328661	ω	249.2342	+0.3561042	+0.9237893
a	3.803587	Ω	42.4793	−0.7609891	+0.3740916
e	0.397899	i	12.0274	−0.5422964	+0.0816630
P	7.42				

From 14 observations 1980–1987, mean residual 1″.3.

7P/Pons-Winnecke
Epoch 2002 May 6.0 TT = JDT 2452400.5

				Nakano	
T	2002 May 15.7228 TT				
q	1.258149		(2000.0)	**P**	**Q**
n	0.1545937	ω	172.2915	−0.0642497	+0.9233590
a	3.438283	Ω	93.4504	−0.9346292	+0.0772684
e	0.634076	i	22.2848	−0.3497717	−0.3760821
P	6.38				

From 37 observations 1964–1989, mean residual 1″.0. Nongravitational parameters $A_1 = +0.05$, $A_2 = +0.0025$.

90P/Gehrels 1
Epoch 2002 June 15.0 TT = JDT 2452440.5

				Green	
T	2002 June 23.0188 TT				
q	2.965533		(2000.0)	**P**	**Q**
n	0.0664295	ω	28.1966	+0.7479020	−0.6626580
a	6.038030	Ω	13.5283	+0.5733154	+0.6151517
e	0.508858	i	9.6163	+0.3345924	+0.4271684
P	14.8				

From 37 observations 1972–1988, mean residual 0″.9.

124P/Mrkos
Epoch 2002 July 25.0 TT = JDT 2452480.5

				Marsden	
T	2002 July 27.0306 TT				
q	1.467056		(2000.0)	**P**	**Q**
n	0.1715607	ω	181.2447	−0.9990197	+0.0424298
a	3.207679	Ω	1.3902	−0.0347727	−0.5757036
e	0.542643	i	31.3522	−0.0273948	−0.8165568
P	5.74				

From 58 observations 1991–1995, mean residual 0″.9.

57P/du Toit-Neujmin-Delporte
Epoch 2002 July 25.0 TT = JDT 2452480.5

				Nakano	
T	2002 July 31.1636 TT				
q	1.729518		(2000.0)	**P**	**Q**
n	0.1536169	ω	115.2389	+0.5614863	+0.8274502
a	3.452842	Ω	188.9317	−0.7759393	+0.5232522
e	0.499103	i	2.8442	−0.2874914	+0.2037973
P	6.42				

From 35 observations 1970–1996, mean residual 0″.9. Nongravitational parameters $A_1 = +0.60$, $A_2 = +0.0106$.

54P/de Vico-Swift
Epoch 2002 July 25.0 TT = JDT 2452480.5
T 2002 Aug. 7.4524 TT Nakano

				P	**Q**
q	2.146053		(2000.0)		
n	0.1347130	ω	2.1374	+0.9998218	−0.0187750
a	3.768743	Ω	358.9324	+0.0153615	+0.8699563
e	0.430565	i	6.0925	+0.0109744	+0.4927712
P	7.32				

From 18 observations 1894–1965, mean residual 2″.0.

67P/Churyumov-Gerasimenko
Epoch 2002 Sept. 3.0 TT = JDT 2452520.5
T 2002 Aug. 18.3101 TT Marsden

				P	**Q**
q	1.292339		(2000.0)		
n	0.1500534	ω	11.4520	+0.4641682	−0.8804979
a	3.507294	Ω	50.9685	+0.8025537	+0.3720829
e	0.631528	i	7.1204	+0.3747738	+0.2937307
P	6.57				

From 474 observations 1969–1996, mean residual 1″.0. Nongravitational parameters $A_1 = +0.07$, $A_2 = +0.0099$.

46P/Wirtanen
Epoch 2002 Sept. 3.0 TT = JDT 2452520.5
T 2002 Aug. 26.9664 TT Marsden

				P	**Q**
q	1.058778		(2000.0)		
n	0.1810314	ω	356.4001	+0.1968017	−0.9595049
a	3.094806	Ω	82.1739	+0.9045439	+0.0983848
e	0.657885	i	11.7381	+0.3782453	+0.2639524
P	5.44				

From 80 observations 1991–1997, mean residual 0″.9.

77P/Longmore
Epoch 2002 Sept. 3.0 TT = JDT 2452520.5
T 2002 Sept. 4.7264 TT Muraoka

				P	**Q**
q	2.309542		(2000.0)		
n	0.1443860	ω	196.4473	−0.8598724	+0.4992193
a	3.598482	Ω	14.9763	−0.4093890	−0.5493563
e	0.358190	i	24.4034	−0.3049919	−0.6700655
P	6.83				

From 37 observations 1975–1988, mean residual 0″.6. Nongravitational parameters $A_1 = -0.08$, $A_2 = -0.0661$.

92P/Sanguin
Epoch 2002 Oct. 13.0 TT = JDT 2452560.5
T 2002 Sept. 23.0561 TT Marsden

				P	**Q**
q	1.807428		(2000.0)		
n	0.0792206	ω	163.0502	+0.9670736	+0.2541550
a	5.369214	Ω	182.3498	−0.2543691	+0.9636459
e	0.663372	i	18.7644	−0.0080677	+0.0824123
P	12.4				

From 30 observations 1977–1989, mean residual 1″.3.

26P/Grigg-Skjellerup
Epoch 2002 Nov. 22.0 TT = JDT 2452600.5
T 2002 Nov. 29.7204 TT Muraoka

				P	**Q**
q	1.117878		(2000.0)		
n	0.1856214	ω	1.6241	−0.8363148	+0.5104604
a	3.043575	Ω	211.7398	−0.5071984	−0.8588808
e	0.632709	i	22.3473	−0.2081521	+0.0418799
P	5.31				

From 173 observations 1961–1992, mean residual 0″.9. Nongravitational parameters $A_1 = +0.00$, $A_2 = -0.0011$.

22P/Kopff
Epoch 2003 Jan. 1.0 TT = JDT 2452640.5
T 2002 Dec. 12.0763 TT Marsden

				P	**Q**
q	1.583608		(2000.0)		
n	0.1526404	ω	162.7536	+0.2374054	+0.9688444
a	3.467553	Ω	120.9290	−0.9006722	+0.2467483
e	0.543307	i	4.7185	−0.3639070	+0.0213505
P	6.46				

From 237 observations 1983–1996, mean residual 1″.0. Nongravitational parameters $A_1 = -0.03$, $A_2 = -0.1127$.

P/1986 A1 (Shoemaker 3)
Epoch 2003 Jan. 1.0 TT = JDT 2452640.5
T 2002 Dec. 15.0206 TT Green

				P	**Q**
q	1.813723		(2000.0)		
n	0.0576212	ω	14.9411	−0.3764396	−0.9198474
a	6.638670	Ω	97.2704	+0.8381783	−0.3888855
e	0.726794	i	6.3862	+0.3946521	−0.0514671
P	17.1				

From 61 observations 1986 Jan. 10–May 14, mean residual 0″.8.

39P/Oterma
Epoch 2003 Jan. 1.0 TT = JDT 2452640.5
T 2002 Dec. 21.7164 TT Marsden

				P	**Q**
q	5.470734		(2000.0)		
n	0.0505734	ω	56.3664	+0.8831309	−0.4688491
a	7.241933	Ω	331.5834	+0.4184053	+0.8027381
e	0.244575	i	1.9432	+0.2121718	+0.3684998
P	19.5				

From 222 observations 1942–1962, mean residual 1″.0.

P/1993 K2 (Helin-Lawrence)
Epoch 2003 Jan. 1.0 TT = JDT 2452640.5
T 2002 Dec. 22.4478 TT Marsden

				P	**Q**
q	3.110104		(2000.0)		
n	0.1035017	ω	163.6906	−0.2427364	+0.9548431
a	4.492668	Ω	92.0158	−0.9080959	−0.1615280
e	0.307738	i	9.8713	−0.3412344	−0.2493660
P	9.52				

From 109 observations 1993 May 17–1997 Dec. 30, mean residual 0″.8.

115P/Maury

Epoch 2003 Jan. 1.0 TT = JDT 2452640.5

				Nakano	
T	2002 Dec. 23.8741 TT				
q	2.041656		(2000.0)	**P**	**Q**
n	0.1120721	ω	119.8758	+0.4492667	+0.8933242
a	4.260603	Ω	176.7557	−0.8735326	+0.4419308
e	0.520806	i	11.6826	−0.1873506	+0.0816642
P	8.79				

From 71 observations 1985–1994, mean residual 0″.9.

30P/Reinmuth 1

Epoch 2003 Jan. 1.0 TT = JDT 2452640.5

				Marsden	
T	2002 Dec. 24.3991 TT				
q	1.877508		(2000.0)	**P**	**Q**
n	0.1345938	ω	13.2867	−0.6805476	−0.7223433
a	3.770966	Ω	119.7568	+0.6586515	−0.6765273
e	0.502115	i	8.1306	+0.3209878	−0.1432865
P	7.32				

From 172 observations 1949–1996, mean residual 1″.1. Nongravitational parameters $A_1 = +0.07$, $A_2 = -0.0127$.

28P/Neujmin 1

Epoch 2003 Jan. 1.0 TT = JDT 2452640.5

				Marsden	
T	2002 Dec. 27.3786 TT				
q	1.552051		(2000.0)	**P**	**Q**
n	0.0541753	ω	346.9190	+0.8999819	+0.4324457
a	6.917280	Ω	347.0339	−0.3746429	+0.7027924
e	0.775627	i	14.1853	−0.2228797	+0.5648659
P	18.2				

From 90 observations 1913–1989, mean residual 1″.0.

(10449)∗ 1936 UD = 1952 SN = 1979 VW = 1998 $\mathbf{EV_{19}}$

Discovered 1936 Oct. 16 by M. Laugier at Nice.

Id. S. Nakano (*MPC* 32207)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	225.35038			(2000.0)		**P**		**Q**			
n	0.18171915	ω	180.98035			+0.95936535		+0.28187360			
a	3.0869925	Ω	162.63104			−0.25858892		+0.89652564			
e	0.3158338	i	2.46904			−0.11291538		+0.34174412			
P	5.42	H	12.8	G	0.15	U	2				

Residuals in seconds of arc

1936 10 16	020	(1.4−	4.5−)	1995 09 20	809	0.9−	0.3−	1999 04 07	704	0.7+	0.1+
1936 10 16	020	(6.1+	0.6+)	1995 09 22	809	0.6−	0.5−	1999 04 07	704	1.3+	0.2−
1936 10 23	020	(9.7−	4.4−)	1998 03 03	809	1.1−	1.2−	1999 04 07	704	0.6−	0.2+
1936 10 24	020	1.1+	1.6−	1998 03 03	809	1.6−	1.5−	1999 04 12	704	1.4−	1.0+
1936 11 08	020	(2.0+	19.4+)	1998 03 03	809	1.3−	1.1−	1999 04 12	704	(1.3+	2.7+)
1936 11 10	020	(5.0−	8.7−)	1998 03 04	809	0.9+	0.4+	1999 04 12	704	0.6−	1.0−
1936 11 10	020	(32.0+	7.6−)	1998 03 04	809	0.9+	1.5+	1999 04 12	704	0.8−	0.3−
1952 09 24	760	0.6−	0.3−	1998 03 04	809	(0.3−	2.1+)	1999 04 12	704	1.2−	0.7−
1952 09 24	760	0.2+	0.2−	1999 03 23	703	0.3+	0.3+	1999 04 16	704	0.8−	0.6−
1979 11 11	095	(5.5−	2.4−)	1999 03 23	703	0.4+	0.2+	1999 04 16	704	0.0	0.4−
1995 08 19	809	0.5+	0.4−	1999 03 23	703	1.9+	0.2+	1999 04 16	704	1.4−	1.9+
1995 08 20	809	0.1+	0.0	1999 03 23	703	1.5+	0.3−	1999 04 16	704	1.4+	1.3+
1995 08 22	809	0.3−	1.5−	1999 03 23	704	(2.2+	0.1−)	1999 04 19	704	1.3+	1.4−
1995 08 26	809	0.8+	0.5−	1999 03 23	704	0.7−	0.7−	1999 04 19	704	0.6+	1.4−
1995 08 27	809	0.8+	0.6−	1999 03 23	704	0.2+	0.6+	1999 04 19	704	0.2+	0.1−
1995 09 17	809	0.5+	1.8+	1999 04 07	704	0.8−	0.3−	1999 04 19	704	0.6−	1.0−
1995 09 18	809	(2.7+	1.8+)	1999 04 07	704	0.2+	0.6−	1999 04 19	704	0.7−	0.3−

(10450)∗ 1967 JQ = 1985 $\mathbf{FE_2}$ = 1998 $\mathbf{VX_4}$

Discovered 1967 May 6 by C. U. Cesco and A. R. Klemola at El Leoncito.

Id. T. B. Spahr (*MPC* 33217), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	254.91119			(2000.0)		**P**		**Q**			
n	0.26895821	ω	299.48301			−0.90943266		+0.39251654			
a	2.3769106	Ω	263.92069			−0.31741509		−0.86858148			
e	0.1958448	i	7.93904			−0.26866319		−0.30248468			
P	3.66	H	14.1	G	0.15	U	2				

Residuals in seconds of arc

1967 05 06	808	0.6+	1.4+	1997 08 30	566	0.8−	0.9+	1998 12 14	704	0.2+	0.6+
1967 05 10	808	0.6−	1.0+	1997 08 30	566	0.1−	0.7+	1998 12 14	704	0.6+	0.8+
1967 05 31	808	0.5+	1.8−	1998 11 12	557	0.2−	0.1−	1998 12 17	704	0.0	0.3−
1967 06 02	808	0.6−	1.3−	1998 11 12	557	0.0	0.1+	1998 12 17	704	1.0−	0.8−
1967 06 13	808	0.2−	0.7−	1998 11 13	557	0.2−	0.1−	1998 12 17	704	0.1+	0.5−
1985 03 24	688	0.5+	0.9+	1998 12 14	704	0.0	0.0	1998 12 17	704	0.0	0.8−
1985 03 24	688	0.2+	0.3+	1998 12 14	704	0.1−	0.7−				
1997 08 30	566	0.3+	0.3+	1998 12 14	704	0.3+	0.3+				

(10451)∗ 1975 SE = 1975 $\mathbf{TF_1}$ = 1991 $\mathbf{FN_6}$ = 1997 $\mathbf{XA_4}$ = 1999 $\mathbf{BR_{15}}$

Discovered 1975 Sept. 28 by H. L. Giclas at the Anderson Mesa Station of the Lowell Observatory.

Id. H. Oishi (d, *JAM* 1624), G. V. Williams (*MPC* 33671)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	112.65156			(2000.0)		**P**		**Q**			
n	0.22270597	ω	339.87108			+0.97974898		+0.19780377			
a	2.6955547	Ω	8.89347			−0.14488264		+0.80745925			
e	0.0584599	i	11.59541			−0.13820620		+0.55577264			
P	4.43	H	12.9	G	0.15	U	2				

Residuals in seconds of arc

1975 09 28	688	1.2+	0.3−	1997 12 29	566	0.4−	0.7+	1999 01 19	704	0.2+	0.6−
1975 10 03	095	0.0	0.7−	1997 12 29	566	0.0	1.0+	1999 01 19	704	0.2+	0.3−
1975 10 04	688	0.8+	1.6−	1997 12 29	566	0.6−	0.9+	1999 01 19	704	0.1+	1.0+
1975 10 10	688	1.7+	1.7−	1998 11 21	699	0.5+	0.1−	1999 01 19	704	0.2+	0.6+
1975 10 11	688	0.1−	0.8−	1998 11 21	699	0.6+	0.2+	1999 01 19	704	0.1−	0.9+
1991 03 17	372	(0.9−	3.5−)	1998 11 21	699	0.4−	0.6+	1999 01 21	327	0.3+	0.1−
1991 03 17	372	0.9−	1.5−	1998 12 17	704	0.4+	0.5−	1999 01 21	327	0.3−	0.1−
1997 11 29	566	1.2−	0.9−	1998 12 17	704	0.7−	0.4+	1999 01 21	327	0.4−	0.1−
1997 11 29	566	1.6−	0.0	1998 12 17	704	0.2−	0.1+	1999 01 25	327	0.1+	0.3+
1997 11 29	566	0.6−	0.2−	1998 12 17	704	0.5+	0.5+	1999 01 25	327	0.0	0.0
1997 12 05	910	0.2+	0.7+	1998 12 17	704	0.3+	0.5+	1999 01 25	327	0.0	0.1+
1997 12 05	910	0.2+	0.7+	1999 01 16	704	0.8−	0.5−	1999 04 06	704	1.6+	0.6+
1997 12 05	910	0.5+	0.7+	1999 01 16	704	0.6−	0.8−	1999 04 06	704	0.2−	0.0
1997 12 06	910	0.2+	0.5+	1999 01 16	704	0.5−	0.7−	1999 04 06	704	(2.5+	0.8−)
1997 12 06	910	0.1+	0.6+	1999 01 16	704	0.3+	0.2−	1999 04 06	704	0.1−	1.5−
1997 12 06	910	0.0	0.8+	1999 01 16	704	0.4−	0.6−				

(10452)∗ 1976 $\mathbf{SQ_7}$ = 1952 $\mathbf{QK_1}$ = 1993 $\mathbf{RU_2}$

Discovered 1976 Sept. 25 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. P. Wild (*MPC* 22681), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	216.14268			(2000.0)		**P**		**Q**			
n	0.28951330	ω	142.08367			+0.93687176		+0.34852980			
a	2.2630303	Ω	197.58276			−0.33931772		+0.88663570			
e	0.2103615	i	5.36673			−0.08446767		+0.30398044			
P	3.40	H	13.4	G	0.15	U	1				

Residuals in seconds of arc

1952 08 28	760	0.2−	0.7+	1996 05 12	684	0.1−	0.5−	1999 03 23	704	1.0+	0.4+
1952 08 28	760	0.5−	0.3−	1996 05 12	684	0.3−	0.5−	1999 03 23	704	0.6+	1.3+

1976 09 25	095	0.5+	2.4+	1996 05 13	684	0.0	0.1+	1999 03 23	704	0.3+	0.2−
1976 09 28	095	(3.5+	2.2+)	1996 05 13	684	0.1+	0.1+	1999 04 07	704	0.5−	0.4−
1976 10 25	095	0.4−	0.9+	1996 05 13	684	0.1+	0.4−	1999 04 07	704	0.3−	0.1+
1976 10 27	095	(2.6−	0.3+)	1996 05 13	684	0.1+	0.5−	1999 04 07	704	0.1−	0.3+
1993 09 14	894	0.4−	0.1−	1997 12 20	327	0.4−	0.3−	1999 04 07	704	0.1−	0.3−
1993 09 14	894	0.7−	0.2−	1997 12 20	327	0.2−	0.4−	1999 04 07	704	0.5−	0.6−
1993 09 18	033	0.6+	1.2−	1997 12 20	327	0.4−	0.4−	1999 04 15	704	0.2−	0.1+
1993 09 18	033	0.9+	1.4−	1999 03 19	704	1.0+	0.2−	1999 04 15	704	2.3−	0.8+
1993 09 19	026	0.4+	0.1+	1999 03 19	704	0.3+	0.9−	1999 04 15	704	0.5+	1.2−
1993 09 20	033	0.2−	1.1−	1999 03 19	704	0.4+	0.4+	1999 04 15	704	1.0−	0.0
1993 09 20	026	0.2+	0.7+	1999 03 19	704	0.1+	0.6+	1999 04 16	704	0.4+	0.2+
1993 09 22	033	0.3−	0.7−	1999 03 20	704	0.0	0.8+	1999 04 16	704	0.4+	0.4+
1993 09 25	894	(2.3−	0.0)	1999 03 20	704	0.5+	0.5−	1999 04 16	704	0.4+	1.0−
1993 09 25	894	1.0−	0.2+	1999 03 20	704	0.2+	0.3−	1999 04 16	704	0.5+	0.2−
1993 09 26	894	1.2−	1.3+	1999 03 20	704	0.2−	0.7−	1999 04 16	704	0.5+	1.0+
1993 10 09	026	0.8+	0.2+	1999 03 21	691	0.4+	0.4+	1999 04 19	704	0.0	0.1+
1993 10 10	675	0.3+	0.8+	1999 03 21	691	0.6+	0.5+	1999 04 19	704	1.1−	0.1−
1993 10 10	675	0.2+	0.2+	1999 03 21	691	0.6+	0.5+	1999 04 19	704	0.1+	0.8+
1993 10 11	026	0.2+	0.5+	1999 03 23	704	0.5+	0.4+	1999 04 19	704	0.4−	0.7+
1996 05 12	684	0.3−	0.5−	1999 03 23	704	0.9+	0.6+	1999 04 19	704	0.8−	0.6+

(10453)∗ 1977 DY$_3$ = 1978 LJ = 1982 BY$_{13}$

Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Id. S. J. Bus (*MPC* 20009), L. D. Schmadel (*ibid.*), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	280.24833		(2000.0)		**P**		**Q**
n	0.18496715	ω	253.10329		+0.35052409		+0.93632723
a	3.0507479	Ω	37.43652		−0.84586101		+0.32594459
e	0.1750653	i	1.94161		−0.40205971		+0.13058118
P	5.33	H	13.1	G	0.15	U	1

Residuals in seconds of arc

1977 02 18	381	0.8+	0.2−	1999 03 25	704	0.8−	1.1+	1999 04 18	691	0.1+	0.1−
1977 02 18	381	0.0	1.8−	1999 04 07	704	0.7+	0.3−	1999 04 18	704	0.5−	0.3−
1977 02 19	381	0.2+	0.1−	1999 04 07	704	0.6+	0.4−	1999 04 18	704	0.8+	1.1+
1977 02 19	381	0.3−	0.1+	1999 04 07	704	0.1+	0.2−	1999 04 18	704	0.1+	0.4−
1977 03 12	381	0.1+	0.1+	1999 04 07	704	0.6−	0.3+	1999 04 18	704	0.8+	1.4+
1977 03 12	381	0.1+	0.5−	1999 04 11	691	0.1−	0.3−	1999 04 18	704	(2.3−	0.4+)
1977 03 15	381	0.8−	0.4−	1999 04 11	691	0.1−	0.4−	1999 04 18	704	0.5−	1.8+
1977 03 15	381	0.2+	1.0−	1999 04 11	691	0.1+	0.3−	1999 04 18	691	0.5−	0.2−
1978 06 02	485	1.8−	1.4−	1999 04 15	704	0.4−	0.1−	1999 04 18	691	0.6−	0.4−
1978 06 02	485	0.4+	1.6−	1999 04 15	704	0.6−	0.7+	1999 04 18	704	(2.1+	0.0)
1982 01 30	675	0.8−	0.3−	1999 04 15	704	0.1−	0.1+	1999 04 18	704	(2.2+	0.2−)
1982 01 31	675	0.5−	1.5+	1999 04 15	704	0.6+	1.0+	1999 04 18	704	1.1+	0.5+
1995 10 15	104	0.5+	0.3+	1999 04 15	704	0.2−	1.4+	1999 04 18	704	0.5−	0.3−
1995 10 15	104	0.0	0.6−	1999 04 17	704	0.2−	0.3−	1999 04 18	704	(2.4+	3.1+)
1995 10 15	104	0.1−	0.1−	1999 04 17	704	0.2−	0.6−	1999 04 18	704	1.5−	1.3+
1999 03 23	704	1.0+	1.2−	1999 04 17	704	0.7+	0.2−	1999 04 18	704	0.3+	1.8+
1999 03 23	704	1.0−	0.9−	1999 04 17	704	0.5+	0.2−	1999 04 18	704	(2.5−	0.7−)
1999 03 23	704	0.4+	0.1−	1999 04 17	704	0.2−	0.3+	1999 04 18	704	(2.7−	0.9+)
1999 03 23	704	0.5−	1.3−	1999 04 18	704	1.9+	0.5−	1999 04 22	691	0.2+	0.3−
1999 03 25	704	0.4−	0.5−	1999 04 18	704	1.7+	0.4−	1999 04 22	691	0.2+	0.6−
1999 03 25	704	1.7+	0.4+	1999 04 18	704	1.4−	1.4−	1999 04 22	691	0.2+	0.4−
1999 03 25	704	1.0−	1.8+	1999 04 18	704	0.2−	1.1+				

(10454)∗ 1978 NY = 1984 BS$_3$ = 1986 VP$_2$ = 1995 DQ$_9$

Discovered 1978 July 9 by H.-E. Schuster at the European Southern Observatory.

Id. K. Kinoshita (*MPC* 25526)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	162.18744		(2000.0)		**P**		**Q**
n	0.27529556	ω	74.32512		+0.94801750		−0.30633467
a	2.3402913	Ω	303.44086		+0.23781012		+0.86190261
e	0.1226025	i	5.92586		+0.21144541		+0.40408286
P	3.58	H	14.1	G	0.15	U	2

Residuals in seconds of arc

1978 07 09	809	0.6−	0.3−	1995 02 26	691	0.6+	0.0	1999 03 23	704	0.4−	0.1+
1978 07 10	809	0.7−	0.2+	1995 02 26	691	0.3+	0.1−	1999 04 17	704	1.1+	0.8−
1978 07 11	809	0.2−	1.0−	1998 01 20	426	0.6−	0.7−	1999 04 17	704	0.6+	0.1−
1984 01 25	675	0.0	0.3+	1998 01 20	426	0.5−	0.5+	1999 04 17	704	0.4−	0.0
1984 01 26	675	0.3−	0.2+	1998 01 20	426	0.2−	0.2−	1999 04 17	704	1.0+	1.4−
1986 11 04	010	0.4−	0.3−	1998 01 21	426	0.3+	0.4+	1999 04 17	704	0.3+	0.2−
1986 11 04	010	0.9+	1.2−	1998 01 21	426	0.5−	0.6−	1999 04 20	704	0.0	1.2−
1986 11 04	010	2.0+	1.0−	1998 01 21	426	0.7−	0.3−	1999 04 20	704	(0.0	2.5−)
1995 02 25	691	0.2+	0.1−	1999 03 23	704	1.2+	0.4−	1999 04 20	704	0.1−	0.8+
1995 02 25	691	0.4+	0.2−	1999 03 23	704	1.0−	0.7+	1999 04 20	704	0.7−	0.0
1995 02 25	691	0.3+	0.2−	1999 03 23	704	(3.4−	0.1−)	1999 04 20	704	1.4−	0.5−
1995 02 26	691	0.3+	0.3−	1999 03 23	704	1.5−	0.2−				

(10455)∗ 1978 NU$_3$ = 1978 OH = 1978 SJ = 1949 OO

Discovered 1978 July 9 by C.-I. Lagerkvist at Mount Stromlo.

Id. H. Oishi (d, *JAM* 2044), O. Kippes (d, *MPC* 11722), W. Landgraf (*MPC* 11835), L. D. Schmadel (unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	222.97542		(2000.0)		**P**		**Q**
n	0.27160639	ω	185.84723		+0.79861906		+0.59747711
a	2.3614354	Ω	137.18864		−0.54777308		+0.77138255
e	0.2199604	i	6.10798		−0.24930353		+0.21906633
P	3.63	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1949 07 28	024	1.1+	1.6−	1992 04 26	691	1.4−	0.0	1999 04 12	704	0.1+	0.5−
1949 07 30	024	(0.2−	4.8−)	1992 04 26	691	1.5−	0.3−	1999 04 12	704	0.4+	0.2+
1978 07 09	414	0.6+	0.3+	1992 04 26	691	1.0−	0.4−	1999 04 12	704	0.0	0.6+
1978 07 09	414	0.0	0.2−	1995 02 02	691	0.0	0.2−	1999 04 12	704	0.2+	1.0+
1978 07 30	414	0.8−	0.8+	1995 02 02	691	0.1+	0.3−	1999 04 12	704	1.0+	0.1+
1978 07 30	414	0.1−	1.1+	1999 03 20	704	0.1−	0.1+	1999 04 16	704	(2.4+	0.5+)
1978 09 27	809	0.6−	0.6−	1999 03 20	704	1.3+	0.7+	1999 04 16	704	1.4−	0.1−
1978 09 28	809	0.3−	0.1+	1999 03 20	704	0.3+	1.4+	1999 04 16	704	1.7−	0.6−
1978 09 29	809	1.2−	0.8−	1999 03 20	704	0.3−	0.2−	1999 04 16	704	0.2+	0.6+
1989 09 04	801	0.1−	0.6−	1999 03 23	704	1.2+	0.9−	1999 04 16	704	(1.5−	2.4−)
1989 09 28	801	0.4+	0.4+	1999 03 23	704	0.3+	1.5−	1999 04 19	704	0.3+	0.2−
1989 09 28	801	0.4+	0.1+	1999 03 23	704	0.5−	1.2−	1999 04 19	704	0.3−	0.1+
1989 10 29	801	1.0+	0.2−	1999 03 23	704	1.7+	1.4−	1999 04 19	704	1.2+	0.1+
1989 10 30	801	0.2+	0.2−	1999 04 06	699	0.3−	0.9+	1999 04 19	704	1.2+	1.4+
1991 01 18	675	1.4−	1.3−	1999 04 06	699	0.6+	0.8−	1999 04 19	704	0.0	1.3−
1991 01 18	675	1.3−	0.5+	1999 04 06	699	0.1+	0.2+				

(10456)∗ 1978 PS$_2$ = 1978 RX$_2$ = 1993 TV$_{21}$

Discovered 1978 Aug. 8 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. B. G. Marsden (d, *MPC* 7139), E. Bowell (*MPC* 22947)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	240.95505		(2000.0)		**P**		**Q**
n	0.26848838	ω	82.71654		+0.41743634		+0.90850938
a	2.3796827	Ω	211.97742		−0.84717725		+0.38155990
e	0.0417909	i	2.04635		−0.32869074		+0.17036062
P	3.67	H	14.2	G	0.15	U	1

Residuals in seconds of arc

1978 08 08	095	(2.7−	1.5+)	1997 11 30	566	1.1−	0.6+	1999 04 06	704	0.1+	0.1+
1978 09 02	809	0.3−	1.3−	1997 12 04	704	0.8+	0.3−	1999 04 06	704	0.6+	0.1+

1978 09 02	809	0.7−	0.2−	1997 12 04	704	0.3−	0.3+	1999 04 06	704	0.9−	0.2+
1978 09 02	809	0.2+	0.1+	1997 12 04	704	0.8+	0.7−	1999 04 10	699	0.4+	0.1−
1978 09 02	809	0.2+	0.2−	1997 12 04	704	0.5−	0.4−	1999 04 10	699	0.2+	0.1+
1978 09 03	095	(4.5−	2.7+)	1997 12 04	704	0.1−	0.0	1999 04 10	699	0.6+	0.2−
1978 09 06	809	0.2+	0.1−	1997 12 05	704	0.9−	0.2+	1999 04 14	704	0.1−	1.2−
1978 09 10	809	0.8−	1.4+	1997 12 05	704	0.9+	0.2−	1999 04 14	704	(1.5−	2.4−)
1978 09 10	809	0.6+	1.3−	1997 12 05	704	1.3+	0.7−	1999 04 14	704	1.2−	1.1−
1978 09 10	809	0.2+	1.0+	1997 12 05	704	1.4+	0.1−	1999 04 14	704	1.1−	0.4+
1978 09 10	809	0.9+	0.5−	1997 12 05	704	1.5+	0.7−	1999 04 14	704	0.9−	0.7−
1993 10 10	675	0.7−	1.6−	1997 12 29	566	1.6−	0.3−	1999 04 15	704	0.7−	0.9−
1993 10 10	675	(0.0	2.5−)	1997 12 29	566	1.4−	0.2−	1999 04 15	704	0.2−	0.4−
1993 10 13	675	(0.4+	2.3−)	1997 12 29	566	1.8−	0.4−	1999 04 15	704	0.0	0.3−
1993 10 13	675	0.9+	1.0−	1998 01 03	910	0.6−	0.3+	1999 04 15	704	0.0	0.4−
1993 10 13	675	0.0	1.0−	1998 01 03	910	0.4−	0.1+	1999 04 15	704	0.2−	0.8−
1993 10 13	675	0.9+	0.2−	1998 01 03	910	0.5−	0.5+	1999 04 17	704	0.2+	0.9−
1997 11 26	704	1.6+	0.1+	1999 03 24	699	0.4+	0.9+	1999 04 17	704	0.4−	0.4−
1997 11 26	704	1.4+	0.1+	1999 03 24	699	0.5+	1.3+	1999 04 17	704	0.2−	0.5−
1997 11 26	704	1.5+	0.5−	1999 03 24	699	0.3+	0.7+	1999 04 17	704	1.1+	0.3−
1997 11 30	566	1.2−	0.7+	1999 04 06	704	0.4+	0.2−	1999 04 17	704	0.5−	0.0
1997 11 30	566	1.0−	0.7+	1999 04 06	704	0.2−	0.4−				

(10457)∗ 1978 QE$_2$ = 1989 RG$_4$ = 1992 HK$_6$ = 1993 VE$_3$

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

Id. K. Ichikawa (*MPC* 22808)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	194.49936		(2000.0)		**P**	**Q**	
n	0.26765301	ω	328.83900		+0.95332849	+0.30177561	
a	2.3846316	Ω	13.60725		−0.26772732	+0.85989903	
e	0.2282391	i	2.39026		−0.13959540	+0.41171003	
P	3.68	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1978 08 31	095	0.4−	1.1+	1992 04 25	809	0.7−	0.0	1999 03 20	704	1.2+	0.3−
1978 09 05	095	0.9−	0.0	1992 04 25	809	(2.1−	0.2−)	1999 03 20	704	(0.9−	3.0+)
1978 09 27	095	1.1+	0.8−	1993 11 11	399	0.4+	0.4−	1999 03 23	704	1.5−	0.3+
1989 07 29	675	0.7−	0.5+	1993 11 11	399	0.0	1.5−	1999 03 23	704	1.1−	0.8−
1989 07 29	675	0.7−	0.1−	1993 11 16	399	0.5−	0.6−	1999 03 23	704	0.9+	0.5−
1989 07 31	675	0.4+	0.3+	1993 11 16	399	0.0	0.4−	1999 03 23	704	0.2+	1.3−
1989 07 31	675	1.6+	0.5−	1995 03 26	691	0.9+	0.6+	1999 03 23	704	0.2+	0.4−
1989 09 02	675	0.6+	0.2−	1995 03 26	691	0.8+	0.5+	1999 04 12	704	1.3−	1.1−
1989 09 02	675	0.7+	0.7−	1995 03 26	691	0.3+	0.0	1999 04 12	704	0.7+	0.9−
1989 09 08	095	0.2+	2.5−	1999 03 20	704	0.7+	1.1−	1999 04 12	704	0.0	2.0−
1992 04 25	809	1.0−	0.7+	1999 03 20	704	1.2−	0.7+	1999 04 12	704	1.7−	0.5−

(10458)∗ 1978 RM$_7$ = 1988 DJ$_5$ = 1992 LO$_2$ = 1995 CA$_6$

Discovered 1978 Sept. 2 by C.-I. Lagerkvist at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 25060)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	300.39974		(2000.0)		**P**	**Q**	
n	0.27334527	ω	15.52173		−0.27748952	+0.96049128	
a	2.3514099	Ω	238.37212		−0.88409958	−0.26399282	
e	0.1890317	i	1.43718		−0.37598869	−0.08811522	
P	3.61	H	15.0	G	0.15	U	1

Residuals in seconds of arc

1978 09 02	809	0.6−	0.9−	1996 08 12	566	0.6−	0.9+	1999 04 09	699	0.7+	0.1+
1978 09 02	809	0.8−	0.3−	1996 08 12	566	0.3+	1.1+	1999 04 14	704	0.3−	0.8−
1978 09 02	809	0.3+	0.2+	1996 08 12	566	0.5+	1.1+	1999 04 14	704	0.7−	0.1−
1978 09 02	809	0.6−	0.6−	1996 08 18	010	0.5−	0.2−	1999 04 14	704	1.7−	0.9+
1978 09 06	809	0.0	0.1+	1996 08 18	010	0.6−	0.2+	1999 04 14	704	0.6−	1.2−
1978 09 10	809	1.5−	1.4+	1996 08 18	010	1.6−	0.7−	1999 04 15	704	0.0	0.2+
1978 09 10	809	0.7−	0.2+	1996 08 20	010	1.3+	0.9−	1999 04 15	704	0.0	0.2−
1978 09 10	809	0.8+	0.5−	1996 08 20	010	1.1+	0.3−	1999 04 15	704	2.0+	0.8+
1988 02 18	413	1.1−	0.2−	1996 08 20	010	1.1+	0.7−	1999 04 15	704	0.4−	1.6+
1988 02 18	413	1.6+	0.2+	1999 03 23	704	0.6−	0.5+	1999 04 15	704	0.1+	0.5−
1992 06 03	809	1.0+	1.9−	1999 03 23	704	0.0	0.5+	1999 04 17	704	0.3−	0.4+
1992 06 03	809	1.0+	1.6−	1999 03 23	704	0.4−	1.0+	1999 04 17	704	0.8−	0.4−
1992 06 03	809	1.5+	1.6−	1999 03 23	704	0.5−	0.8+	1999 04 17	703	0.4−	0.0
1995 02 01	691	0.2+	0.4−	1999 03 23	704	0.1−	0.7−	1999 04 17	703	0.1+	0.2+
1995 02 01	691	0.4+	0.5−	1999 04 07	704	0.4−	0.3+	1999 04 17	704	0.8−	0.8+
1995 02 01	691	0.3+	0.5−	1999 04 07	704	0.6−	0.1−	1999 04 17	703	0.1−	1.8+
1995 02 08	691	0.5+	0.6−	1999 04 07	704	0.3−	0.3−	1999 04 17	704	0.1−	0.0
1995 02 08	691	0.3+	0.6−	1999 04 07	704	0.2−	0.2−	1999 04 17	703	1.5+	1.2+
1995 02 21	691	0.1−	0.8−	1999 04 07	704	0.5−	0.0	1999 04 17	704	0.2+	0.6+
1995 02 21	691	0.5+	1.1−	1999 04 09	699	0.7+	0.3+				
1995 02 21	691	0.3−	1.0−	1999 04 09	699	0.8+	0.0				

(10459)∗ 1978 SJ$_5$ = 1993 VN$_4$

Discovered 1978 Sept. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Id. K. Ichikawa (*MPC* 22808), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	185.15890		(2000.0)		**P**	**Q**	
n	0.26629532	ω	330.79116		+0.99793090	−0.03710996	
a	2.3927300	Ω	31.46806		+0.05762798	+0.87838407	
e	0.2130004	i	5.77255		−0.02851198	+0.47651262	
P	3.70	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1978 09 27	095	0.0	0.7+	1993 11 15	408	0.4−	0.2−	1999 04 07	704	0.2−	0.4−
1978 10 01	049	0.6+	1.8−	1993 12 09	675	0.0	0.4+	1999 04 07	704	0.8−	0.4−
1978 10 01	049	(0.3+	3.1−)	1993 12 09	675	1.1−	0.8−	1999 04 07	704	0.6−	1.7+
1978 10 03	095	0.1−	0.1+	1997 12 28	566	0.0	0.3+	1999 04 07	704	0.4−	0.4+
1978 10 07	095	0.0	0.1+	1997 12 28	566	0.9+	0.8−	1999 04 19	704	0.1+	0.6+
1989 09 02	675	0.1+	0.6+	1997 12 28	566	0.3+	0.6+	1999 04 19	704	0.2−	1.1+
1989 09 02	675	0.0	0.0	1999 03 23	704	1.4+	0.4−	1999 04 19	704	(0.9−	2.2+)
1993 11 14	408	1.5+	0.0	1999 03 23	704	0.3−	0.6−	1999 04 19	704	0.3−	1.0−
1993 11 14	408	0.8−	0.5+	1999 03 23	704	(0.6+	2.7+)	1999 04 19	704	0.0	0.4−
1993 11 15	408	0.0	0.3−	1999 03 23	704	0.6+	1.1−				

(10460)∗ 1978 VK$_8$ = 1987 SQ$_9$

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

Id. S. Nakano (*MPC* 13603)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	112.38787		(2000.0)		**P**	**Q**	
n	0.20846153	ω	320.43576		+0.68851563	−0.72419469	
a	2.8169908	Ω	86.01395		+0.67479179	+0.62024127	
e	0.1578768	i	2.21629		+0.26571088	+0.30140142	
P	4.73	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1978 11 05	675	0.6−	0.1−	1989 03 10	033	1.6+	0.1+	1999 03 20	704	0.3−	0.3+
1978 11 06	675	0.0	0.1+	1989 03 10	033	1.0+	0.8+	1999 03 20	704	(2.3−	0.1−)
1978 11 07	675	0.5−	0.5+	1992 10 21	675	0.5−	0.0	1999 03 23	704	0.3+	0.3−
1978 11 08	675	0.3+	0.2+	1992 10 21	675	0.4+	0.9−	1999 03 23	704	0.6+	0.4−
1978 11 29	675	0.2−	0.1+	1992 10 21	675	0.4+	1.0+	1999 03 23	704	0.6+	0.3−
1978 11 30	675	0.4−	0.2−	1992 10 21	675	0.0	0.4+	1999 03 23	704	0.1+	0.1−
1987 09 19	071	0.6+	1.8−	1992 11 27	675	0.5−	1.1−	1999 04 12	704	2.9+	0.4−
1987 09 19	071	0.6−	1.9−	1992 11 27	675	0.3+	0.9−	1999 04 12	704	0.5+	0.2+
1987 09 20	071	(5.0−	3.0−)	1994 03 05	691	0.5+	0.0	1999 04 12	704	2.0−	0.1+
1987 09 21	071	(4.2−	3.1−)	1994 03 05	691	0.1+	0.2−	1999 04 12	704	0.0	0.4+
1987 09 22	071	1.7+	0.7+	1994 03 05	691	0.1−	0.4−	1999 04 12	704	0.5−	1.6+
1987 09 22	071	(0.9+	2.8+)	1998 01 06	704	0.0	0.3−	1999 04 19	704	0.5−	1.1+
1987 09 24	095	0.1−	2.0+	1998 01 06	704	0.2−	0.1−	1999 04 19	704	1.5−	1.9+
1987 09 27	095	(3.3+	1.9−)	1998 01 06	704	0.1+	0.0	1999 04 19	704	1.4−	0.4−
1989 02 02	675	0.3−	0.2+	1999 03 20	704	0.0	0.9−	1999 04 19	704	1.1−	0.9−
1989 02 02	675	0.4+	0.3−	1999 03 20	704	1.0+	1.8−	1999 04 19	704	1.2−	2.0−
1989 03 07	033	0.2−	0.1+	1999 03 20	704	1.0−	0.3−				

(10461)∗ 1978 XU = 1974 SB$_4$ = 1989 TD$_8$ = 1989 UV$_9$ = 1993 TZ$_1$

Discovered 1978 Dec. 6 by E. Bowell and A. Warnsch at Palomar.

Id. T. Kobayashi (*MPC* 24099)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	163.08513		(2000.0)		**P**	**Q**	
n	0.26111401	ω	148.74066		+0.99464543	−0.07537283	
a	2.4242790	Ω	215.79272		+0.05039589	+0.95105382	
e	0.1453162	*i*	6.94381		+0.09022596	+0.29969245	
P	3.77	*H*	14.0	*G*	0.15	*U*	2

Residuals in seconds of arc

1954 04 08	675	0.2+	0.4−	1993 10 15	400	(0.6+	2.0−)	1999 03 23	704	0.2−	0.4+
1974 09 22	095	0.5−	0.1+	1993 10 15	400	(3.1−	1.4−)	1999 03 23	704	0.8+	0.2−
1978 12 03	675	0.3−	0.0	1993 10 16	400	0.2+	0.9+	1999 03 24	699	0.8+	0.1−
1978 12 03	675	0.5−	0.1+	1993 10 16	400	1.5−	1.6+	1999 03 24	699	0.5+	0.8+
1978 12 05	675	0.6+	0.2−	1993 11 11	400	0.5−	0.3−	1999 03 24	699	1.5+	0.2−
1978 12 06	675	0.6−	0.6−	1993 11 11	400	(2.6−	2.1−)	1999 04 14	704	0.9+	0.0
1978 12 06	675	0.8+	0.4+	1996 07 18	689	0.6−	0.2−	1999 04 14	704	0.8−	1.5+
1989 10 02	071	1.0+	2.3−	1997 12 28	566	0.2+	0.0	1999 04 14	704	0.1+	0.3−
1989 10 02	071	0.8+	1.0+	1997 12 28	566	0.5−	0.3+	1999 04 15	704	2.0+	0.7+
1989 10 25	413	0.2+	0.3−	1997 12 28	566	0.3+	0.4−	1999 04 15	704	0.1+	0.5−
1989 10 25	413	0.9−	1.3+	1999 03 20	704	0.2−	0.1+	1999 04 15	704	1.1−	1.1+
1989 11 01	675	0.9+	1.8+	1999 03 20	704	0.0	0.1−	1999 04 15	704	1.4−	1.7−
1989 11 01	675	0.3−	1.3+	1999 03 20	704	0.6−	0.3+	1999 04 17	704	0.5−	0.7+
1992 05 02	809	(2.6+	0.1+)	1999 03 20	704	0.0	0.5−	1999 04 17	704	0.6+	0.4−
1992 05 02	809	0.1−	0.6+	1999 03 20	704	1.6−	0.5+	1999 04 17	704	0.9+	0.5−
1992 05 02	809	1.0−	1.8+	1999 03 23	704	0.5+	0.6+	1999 04 17	704	(2.4+	0.1−)
1993 10 13	095	(3.5+	1.7−)	1999 03 23	704	0.1+	0.5−				
1993 10 14	095	(3.1+	2.3+)	1999 03 23	704	0.2+	1.0+				

(10462)∗ 1979 KM = 1992 EN$_{10}$

Discovered 1979 May 19 by R. M. West at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 23968)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	323.07512		(2000.0)		**P**	**Q**	
n	0.29384194	ω	87.12326		−0.52971674	+0.84629757	
a	2.2407506	Ω	150.67038		−0.81674054	−0.49102202	
e	0.2047396	*i*	6.61140		−0.22876856	−0.20658608	
P	3.35	*H*	15.1	*G*	0.15	*U*	1

Residuals in seconds of arc

1979 05 19	809	0.9+	1.2−	1992 03 07	809	(1.1−	3.0+)	1999 03 24	704	0.6+	0.5+
1979 05 20	809	0.3+	0.4−	1996 07 14	809	0.5+	1.2+	1999 04 13	426	0.0	0.7+
1979 05 24	809	0.1+	0.7−	1996 07 14	809	(0.9+	2.3+)	1999 04 13	426	0.5+	0.4+
1979 06 16	809	1.1−	1.6−	1996 07 14	809	0.2−	1.6+	1999 04 13	426	0.6+	0.3+
1979 06 17	809	0.8+	0.7−	1996 07 16	809	0.5−	1.2+	1999 04 14	426	0.1+	0.1+
1979 06 18	809	1.3−	1.4−	1996 07 16	809	0.4−	1.0+	1999 04 14	426	0.4+	0.4+
1992 02 24	691	1.0+	0.0	1996 07 16	809	0.9−	1.1+	1999 04 14	426	0.2+	0.2+
1992 02 24	691	1.4+	0.2+	1996 08 09	809	0.6+	0.8+	1999 04 19	704	0.1+	0.2+
1992 02 24	691	0.7+	0.6+	1996 08 09	809	0.0	1.3+	1999 04 19	704	0.2+	0.3−
1992 02 25	675	0.2−	0.6+	1996 08 09	809	0.7−	0.4+	1999 04 19	704	0.0	0.6−
1992 02 25	675	0.4+	0.6+	1999 03 24	704	0.5−	0.3+	1999 04 19	704	0.9−	0.5−
1992 03 02	809	1.7−	1.7+	1999 03 24	704	1.3−	1.3+				
1992 03 04	809	0.6−	0.4−	1999 03 24	704	0.8+	0.9+				

(10463)∗ 1979 MB$_9$ = 1991 SY$_2$ = 1997 YF$_1$

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

Id. G. V. Williams (*MPC* 31096)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	85.68859		(2000.0)		**P**	**Q**	
n	0.17862765	ω	253.92888		+0.42648985	−0.90448217	
a	3.1225082	Ω	170.82260		+0.83979943	+0.39421933	
e	0.1678813	*i*	1.54158		+0.33592160	+0.16279779	
P	5.52	*H*	13.9	*G*	0.15	*U*	1

Residuals in seconds of arc

1979 06 24	413	0.5−	1.0−	1997 12 19	426	0.0	0.2−	1999 03 20	704	0.7−	0.3−
1979 06 25	413	0.5+	0.1−	1997 12 19	426	0.1−	0.1−	1999 03 20	704	1.8−	0.4+
1979 06 29	413	0.4−	0.2+	1997 12 19	426	0.3+	0.2−	1999 03 20	704	(2.4−	0.2+)
1979 07 24	675	0.6−	0.7−	1997 12 22	426	0.2−	0.5−	1999 03 23	704	1.3−	0.8+
1979 07 25	675	0.8+	0.4−	1997 12 22	426	0.4−	0.7−	1999 03 23	704	0.3−	0.8+
1991 09 29	691	0.6−	0.6+	1997 12 22	426	0.3+	1.0−	1999 03 23	704	0.0	0.8+
1991 09 29	691	0.4−	0.5+	1997 12 24	426	0.2−	1.0−	1999 03 23	704	0.4−	0.3−
1991 09 29	691	0.7−	0.5+	1997 12 24	426	0.3−	0.7−	1999 04 07	699	0.1+	1.3+
1991 10 13	691	0.7+	0.2+	1997 12 24	426	0.0	0.8−	1999 04 07	699	0.4+	0.3−
1991 10 13	691	0.7+	0.5+	1998 01 03	426	0.3−	0.2+	1999 04 07	699	1.6+	0.1−
1991 10 13	691	0.5+	0.2+	1998 01 03	426	0.0	0.1+	1999 04 12	704	1.2+	1.2−
1996 08 19	566	0.5+	0.8−	1998 01 03	426	0.1+	0.5+	1999 04 12	704	(1.6+	2.2−)
1996 08 19	566	0.2+	0.8−	1999 02 20	699	0.9+	0.7−	1999 04 12	704	0.8−	1.9−
1996 08 19	566	0.3+	0.9−	1999 02 20	699	0.7+	0.1−	1999 04 12	704	(0.3−	2.2−)
1996 09 13	566	0.3−	0.8−	1999 03 10	691	0.3−	0.5−	1999 04 12	704	0.4+	1.6−
1996 09 13	566	0.4−	0.8−	1999 03 10	691	0.1−	0.3−				
1996 09 13	566	1.3+	0.6−	1999 03 10	691	0.2−	0.4−				

(10464)∗ 1979 SC = 1987 YA$_5$

Discovered 1979 Sept. 17 at the Agassiz Station of the Harvard College Observatory.

Id. G. V. Williams (*MPC* 30867)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	288.43731		(2000.0)		**P**	**Q**	
n	0.28364556	ω	226.18575		−0.17609451	+0.98333943	
a	2.2941337	Ω	33.74890		−0.87824115	−0.13624822	
e	0.1258397	*i*	4.65673		−0.44461579	−0.12033285	
P	3.47	*H*	14.2	*G*	0.15	*U*	2

Residuals in seconds of arc

1979 09 16	801	0.5−	1.5−	1999 03 13	621	0.2−	0.6−	1999 04 07	699	0.8+	0.1+
1979 09 17	801	0.6+	1.0−	1999 03 16	621	0.3+	0.8−	1999 04 07	699	0.2+	0.4+
1979 09 17	801	0.3+	0.2+	1999 03 16	621	0.3+	0.5−	1999 04 07	699	0.4+	0.6+
1979 09 18	801	0.9+	0.9−	1999 03 18	621	0.6−	0.1−	1999 04 12	704	1.0−	0.0
1979 09 20	675	1.1+	1.0−	1999 03 18	621	0.5−	0.2+	1999 04 12	704	1.0−	0.0
1979 09 21	675	0.6+	1.1−	1999 03 18	621	0.2−	0.2−	1999 04 12	704	1.1−	1.1−
1987 12 24	010	0.8−	0.2+	1999 03 19	704	0.8+	0.3−	1999 04 12	704	1.2−	1.3−
1987 12 24	010	0.8+	0.4+	1999 03 19	704	0.3−	0.9−	1999 04 12	704	1.9−	0.4−
1993 09 21	675	0.7+	0.6−	1999 03 19	704	0.8+	0.5−	1999 04 15	704	0.7−	0.1−
1993 09 21	675	0.0	0.2−	1999 03 19	704	1.1+	1.1+	1999 04 15	704	(0.4+	2.1−)
1993 09 23	675	0.0	0.2−	1999 03 19	704	1.8−	1.2+	1999 04 15	704	0.0	0.9−
1997 11 29	704	0.3−	0.3+	1999 03 20	704	0.8+	1.1−	1999 04 15	704	1.1+	0.9−
1997 11 29	704	1.1−	0.2−	1999 03 20	704	0.6−	0.7−	1999 04 15	704	1.1−	0.4−
1997 11 29	704	0.6−	0.1−	1999 03 20	704	0.8+	1.1−	1999 04 16	691	0.2−	0.7+
1997 11 29	704	0.9−	1.0−	1999 03 20	704	0.1+	0.6−	1999 04 16	691	0.3−	0.1+
1997 11 29	704	1.3−	0.9−	1999 03 20	704	0.2+	1.9−	1999 04 16	691	0.4−	0.1+
1997 12 04	704	(2.9+	0.7+)	1999 03 22	699	1.3+	0.9+	1999 04 16	704	0.4+	0.4−
1997 12 04	704	(2.6+	0.2−)	1999 03 22	699	0.7+	0.3+	1999 04 16	704	0.5−	0.6+
1997 12 04	704	(2.8+	1.1+)	1999 03 22	699	1.6+	0.2+	1999 04 16	704	0.0	0.6+
1997 12 04	704	(4.2+	1.5+)	1999 03 23	704	0.2+	0.1−	1999 04 16	704	0.4+	0.5+
1997 12 04	704	1.0+	0.5+	1999 03 23	704	0.2−	0.0	1999 04 16	704	0.0	0.3+
1997 12 05	704	1.8+	0.3−	1999 03 23	704	0.3−	0.6+	1999 04 19	704	0.7−	0.4+
1997 12 05	704	0.3+	0.6−	1999 03 23	704	0.7+	0.4+	1999 04 19	704	0.1+	0.2+
1997 12 05	704	0.5+	0.4−	1999 03 23	704	0.6−	0.2−	1999 04 19	704	1.0−	0.0
1997 12 05	704	0.2+	0.3−	1999 04 07	704	0.3+	0.3−	1999 04 19	704	0.6−	0.1−
1997 12 05	704	0.7+	0.3−	1999 04 07	704	0.3+	0.4−	1999 04 19	704	0.3−	0.6−

1999 03 13	621	0.4−	0.2−	1999 04 07	704	(0.6+	3.4+)	
1999 03 13	621	0.2+	0.6−	1999 04 07	704	(0.5−	2.8+)	

(10465)∗ 1980 WE$_5$ = 1980 VV$_2$ = 1974 SK$_4$ = 1985 TT$_1$

Discovered 1980 Nov. 29 by S. J. Bus at Palomar.

Id. G. V. Williams (d, *MPC* 18775; *MPC* 23667)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	99.99149		(2000.0)		**P**		**Q**
n	0.17775463	ω	192.33748		+0.46756004		−0.86377713
a	3.1327238	Ω	230.10930		+0.83040318		+0.50203709
e	0.1012712	i	14.16950		+0.30301514		−0.04298641
P	5.54	H	12.1	G	0.15	U	1

Residuals in seconds of arc

1974 09 25	095	0.6−	1.9+	1998 02 06	688	0.2−	0.4+	1999 04 14	704	0.9+	1.2+
1980 11 13	330	2.0−	0.4+	1998 02 06	688	0.4−	0.4+	1999 04 14	704	0.6+	1.1+
1980 11 29	675	1.4+	0.3−	1998 02 06	688	0.3−	0.3+	1999 04 15	704	0.8−	0.6−
1980 12 01	675	1.0+	0.7−	1999 03 22	704	1.3+	0.3−	1999 04 15	704	2.0−	0.5+
1985 10 15	688	0.2+	0.1+	1999 03 22	704	0.8+	0.7−	1999 04 15	704	0.1+	2.0+
1985 10 15	688	0.3−	1.0+	1999 03 22	704	0.8+	0.6−	1999 04 15	704	0.4−	0.5+
1985 10 18	095	0.7−	1.4+	1999 03 22	704	0.2+	0.5−	1999 04 15	704	0.3+	0.7+
1996 09 19	563	0.4−	1.8+	1999 04 14	699	0.5+	0.3−	1999 04 17	704	0.6+	0.6+
1996 09 19	563	0.8−	0.4+	1999 04 14	699	0.7+	0.5−	1999 04 17	704	0.2−	0.6+
1996 09 19	563	0.8+	2.0+	1999 04 14	699	0.3+	0.3−	1999 04 17	704	0.7−	0.5+
1996 09 19	563	0.5−	1.9+	1999 04 14	704	0.1−	0.1+	1999 04 17	704	0.4−	0.9+
1996 11 15	801	0.2+	0.7−	1999 04 14	704	0.8+	1.6+	1999 04 17	704	1.0−	1.1+
1996 11 15	801	0.2+	0.9−	1999 04 14	704	0.8+	1.4+				

(10466)∗ 1981 ET$_7$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	84.97366		(2000.0)		**P**		**Q**
n	0.27675809	ω	150.42580		+0.08686946		−0.99400739
a	2.3320391	Ω	294.52188		+0.89909833		+0.10691196
e	0.0917442	i	4.18249		+0.42904067		−0.02278450
P	3.56	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1979 09 20	675	0.5−	0.7+	1981 04 30	413	0.2+	2.2−	1999 04 07	704	1.1+	0.3+
1979 09 21	675	0.4+	0.7+	1981 05 02	413	1.7+	1.5−	1999 04 07	704	1.0+	1.3+
1981 02 09	413	0.3+	0.7−	1993 08 15	010	0.2−	0.7−	1999 04 07	704	0.3+	0.6+
1981 02 13	413	1.5+	1.2−	1993 08 15	010	0.0	1.7−	1999 04 11	699	1.9+	0.2+
1981 03 01	413	1.0−	0.5+	1993 08 16	010	0.0	1.4−	1999 04 11	699	1.9+	0.1+
1981 03 01	413	0.6+	1.6−	1993 08 16	010	0.9+	1.8−	1999 04 11	699	0.8+	0.0
1981 03 07	413	1.1−	0.2+	1993 08 16	010	1.3+	0.2−	1999 04 15	704	0.5−	0.3+
1981 03 07	413	0.6+	0.7−	1993 08 19	010	(4.5−	3.7−)	1999 04 15	704	0.9+	1.1−
1981 03 11	413	0.5−	1.0−	1993 08 20	010	(5.1−	4.1−)	1999 04 15	704	0.1+	1.3+
1981 03 15	413	2.4−	0.3+	1999 03 23	704	0.9−	0.9−	1999 04 15	704	0.4−	1.8+
1981 03 15	413	0.4+	0.7−	1999 03 23	704	0.8+	0.6−	1999 04 15	704	0.4−	1.3+
1981 04 05	413	0.9−	0.8−	1999 03 23	704	1.8−	1.4+	1999 04 17	704	0.3−	0.8−
1981 04 05	413	1.7−	1.0−	1999 03 23	704	0.2−	0.9−	1999 04 17	704	0.1+	0.1+
1981 04 12	413	2.2−	0.4+	1999 04 07	704	1.3−	0.0	1999 04 17	704	0.3+	1.8+
1981 04 12	413	(3.1+	2.7−)	1999 04 07	704	0.6−	0.1−	1999 04 17	704	0.5+	0.2+

(10467)∗ 1981 EZ$_7$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	225.72098		(2000.0)		**P**		**Q**
n	0.22342212	ω	114.34188		+0.90134793		+0.42831686
a	2.6897914	Ω	220.38054		−0.42452990		+0.84445399
e	0.1514833	i	5.68357		−0.08571041		+0.32162420
P	4.41	H	14.3	G	0.15	U	1

Residuals in seconds of arc

1977 04 24	675	0.2+	0.5+	1987 09 17	095	0.7+	2.4−	1996 11 01	589	0.3+	0.9−
1977 04 25	675	1.4−	1.0+	1991 07 08	809	0.3+	0.8−	1996 11 19	691	0.2+	0.0
1981 02 09	413	0.7+	0.2−	1991 07 08	809	0.4+	1.0−	1996 11 19	691	0.0	0.1−
1981 02 13	413	(4.9−	2.5+)	1991 07 10	809	1.6+	0.2−	1996 11 19	691	0.2+	0.1−
1981 03 01	413	1.7−	0.3+	1991 07 10	809	1.9+	0.1−	1998 01 27	691	0.6−	0.3−
1981 03 01	413	0.9+	2.0−	1991 07 10	809	(2.5+	0.1−)	1998 01 27	691	0.5−	0.4−
1981 03 07	413	0.1−	1.3−	1991 07 11	809	1.6−	0.3−	1998 01 27	691	0.4−	0.2−
1981 03 11	413	0.7−	0.2+	1991 07 11	809	1.4−	0.1−	1999 03 23	704	0.6−	1.2+
1981 03 11	413	(3.1+	3.0−)	1991 07 11	809	1.0−	0.1−	1999 03 23	704	(0.1−	2.4−)
1981 03 15	413	(3.3−	0.0)	1991 07 12	809	(3.9−	1.3−)	1999 03 23	704	0.2−	0.6+
1981 03 15	413	1.2−	0.8−	1991 07 12	809	(3.4−	1.1−)	1999 03 23	704	1.0+	0.8−
1981 04 05	413	1.9+	2.1−	1991 07 12	809	(3.1−	1.1−)	1999 04 09	699	0.4−	0.8−
1981 04 06	413	1.0−	0.4+	1996 10 30	589	0.5+	0.7+	1999 04 09	699	1.1+	1.7+
1981 04 06	413	0.5−	0.4−	1996 10 30	589	0.5+	0.5−	1999 04 09	699	0.5+	0.7+
1981 04 12	413	(3.0−	1.5+)	1996 10 30	589	0.5−	0.4−	1999 04 15	704	1.4−	0.0
1981 04 30	413	1.1+	1.6−	1996 10 31	589	0.8−	0.5+	1999 04 15	704	0.6+	1.1−
1981 05 02	413	0.3+	0.8−	1996 10 31	589	0.6−	0.0	1999 04 15	704	0.7+	0.6+
1987 09 02	095	0.7+	0.3−	1996 10 31	589	0.3+	0.6+				

(10468)∗ 1981 EH$_9$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	13.86878		(2000.0)		**P**		**Q**
n	0.27562247	ω	246.80394		−0.87211108		−0.48560676
a	2.3384404	Ω	264.09694		+0.46811306		−0.79228348
e	0.1891652	i	3.46218		+0.14245151		−0.36942247
P	3.58	H	15.3	G	0.15	U	2

Residuals in seconds of arc

1979 09 20	675	1.5+	0.4+	1981 04 10	413	0.3+	0.9−	1999 03 20	704	0.4−	1.2+
1979 09 21	675	2.1−	0.3+	1981 04 12	413	0.9−	0.8+	1999 03 20	704	0.7+	0.7+
1981 02 09	413	1.7+	0.1+	1981 04 12	413	0.5+	0.7−	1999 03 20	704	0.1+	0.2+
1981 02 14	413	0.1+	1.1+	1981 05 03	413	1.8−	2.4−	1999 03 20	704	(2.3−	0.1+)
1981 03 01	413	0.9−	0.4+	1988 01 13	688	0.1−	0.0	1999 03 23	704	0.2−	0.3+
1981 03 07	413	0.1+	0.4−	1988 01 13	688	0.1−	0.0	1999 03 23	704	0.7−	0.9+
1981 03 07	413	0.3+	0.0	1988 01 13	688	0.1−	0.0	1999 03 23	704	0.1−	0.8−
1981 03 11	413	1.0+	1.2−	1988 01 14	688	0.3+	0.3+	1999 03 23	704	1.6−	0.5−
1981 03 15	413	1.1−	0.1+	1988 01 14	688	0.2+	0.3+	1999 04 14	704	1.1+	0.3+
1981 03 15	413	0.3+	0.2−	1993 09 16	691	0.4+	0.1+	1999 04 14	704	1.2+	0.4−
1981 04 05	413	1.2−	0.7+	1993 09 16	691	0.0	0.3−	1999 04 14	704	0.1+	1.5+
1981 04 05	413	0.6+	1.3−	1993 09 16	691	0.1+	0.2−	1999 04 14	704	2.3−	1.8+
1981 04 06	413	1.3−	0.1+	1999 03 19	704	1.7+	0.5+	1999 04 15	704	0.2+	0.2−
1981 04 06	413	0.1−	0.8−	1999 03 19	704	1.4+	0.3−	1999 04 15	704	0.3−	0.9+
1981 04 07	413	1.1−	0.2−	1999 03 19	704	0.2+	0.1+	1999 04 15	704	0.8+	0.5−
1981 04 07	413	1.3+	1.8−	1999 03 19	704	1.7+	0.4+	1999 04 15	704	0.3−	0.4+
1981 04 10	413	0.6−	0.5+	1999 03 20	704	0.9−	0.1−	1999 04 15	704	0.2−	0.2−

(10469)∗ 1981 EE$_{14}$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	238.47473		(2000.0)		**P**	**Q**	
n	0.27349680	ω	85.83910		+0.46818846	+0.88164476	
a	2.3505413	Ω	212.29051		−0.84829955	+0.42971231	
e	0.1090375	i	6.36011		−0.24736094	+0.19506370	
P	3.60	H	15.1	G	0.15	U	2

Residuals in seconds of arc

1978 07 05	675	1.2+	0.8+	1989 08 27	688	0.5−	0.4+	1993 10 22	809	1.9−	1.2+
1978 07 06	675	0.5+	1.3+	1989 08 27	688	0.4−	0.5+	1999 03 20	704	0.4+	0.2+
1981 02 12	413	0.4−	0.3+	1992 04 04	809	1.9−	1.3−	1999 03 20	704	(3.1+	0.2−)
1981 02 12	413	1.1+	0.1+	1992 04 04	809	0.6−	1.5−	1999 03 20	704	0.9+	0.0
1981 03 01	413	0.2−	0.2+	1992 04 04	809	(2.9−	1.9−)	1999 03 23	704	0.4+	1.8+
1981 03 06	413	(5.0+	2.6−)	1992 04 06	809	(2.3−	0.9−)	1999 03 23	704	0.3+	1.2+
1981 03 06	413	1.9+	0.0	1992 04 06	809	1.5−	1.2−	1999 03 23	704	1.2+	1.8+
1981 03 08	413	0.3−	1.2+	1992 04 06	809	(1.9−	2.9−)	1999 03 23	704	0.0	2.0+
1981 03 08	413	1.0+	0.1+	1993 10 10	675	0.4+	1.4−	1999 04 06	704	1.0+	1.6−
1981 03 12	413	1.6−	1.0+	1993 10 10	675	(2.2+	2.3−)	1999 04 06	704	0.0	0.4+
1981 03 12	413	1.2+	0.8−	1993 10 12	809	0.0	1.2+	1999 04 06	704	2.0+	0.1−
1981 04 08	413	1.9−	1.0+	1993 10 12	809	0.7−	0.3+	1999 04 06	704	1.5−	1.8+
1981 04 09	413	1.0−	0.1+	1993 10 12	809	0.3+	0.8+	1999 04 09	699	0.5+	0.2−
1981 04 09	413	0.1−	0.6−	1993 10 13	675	(2.0−	4.0−)	1999 04 09	699	0.7+	0.7−
1981 05 01	413	0.7+	1.3−	1993 10 13	675	0.5−	0.6−	1999 04 09	699	0.3−	0.3−
1981 05 03	413	1.7−	1.3−	1993 10 22	809	(2.3+	2.2−)				
1989 08 27	688	0.3−	0.5+	1993 10 22	809	1.5+	0.3−				

(10470)∗ 1981 EW$_{18}$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	201.82921		(2000.0)		**P**	**Q**	
n	0.27515022	ω	344.87801		+0.89867809	+0.43806161	
a	2.3411153	Ω	349.06364		−0.38948591	+0.77407050	
e	0.1340579	i	6.62944		−0.20168892	+0.45707428	
P	3.58	H	15.1	G	0.15	U	2

Residuals in seconds of arc

1981 02 02	413	1.2−	1.3−	1993 10 14	675	0.6+	0.7−	1999 03 23	704	1.5+	0.1−
1981 02 13	413	2.2−	0.2−	1997 12 27	688	0.1−	0.4+	1999 03 23	704	(3.1−	1.7−)
1981 03 02	413	(2.9−	1.0+)	1997 12 27	688	0.4+	0.3+	1999 04 15	704	1.2−	0.9+
1981 03 03	413	1.7+	0.9−	1997 12 29	688	0.4−	0.3+	1999 04 15	704	(2.2−	0.1−)
1981 03 11	413	0.3−	0.4−	1997 12 29	688	0.1−	0.5+	1999 04 15	704	0.6−	1.0+
1981 03 16	413	(4.7−	2.4+)	1999 03 20	704	(2.0+	0.4+)	1999 04 17	704	0.2+	0.7+
1981 04 08	413	0.4+	0.4−	1999 03 20	704	1.0+	0.4+	1999 04 17	704	0.2+	0.2+
1981 04 11	413	1.2−	1.1−	1999 03 20	704	0.0	0.4+	1999 04 17	704	1.0−	0.3+
1981 04 30	413	0.2+	0.1+	1999 03 20	704	(3.4−	1.0−)	1999 04 17	704	1.2+	0.7−
1993 10 14	675	0.1+	0.4−	1999 03 23	704	0.2+	0.2−				

(10471)∗ 1981 EH$_{20}$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	304.43351		(2000.0)		**P**	**Q**	
n	0.22153043	ω	67.55295		−0.32291918	+0.94642272	
a	2.7050821	Ω	183.61071		−0.88327822	−0.30239277	
e	0.1465944	i	2.44830		−0.33991585	−0.11332540	
P	4.45	H	15.1	G	0.15	U	2

Residuals in seconds of arc

1977 05 18	675	0.3+	0.3−	1981 05 02	413	0.2−	2.0+	1999 03 23	704	1.4−	1.5+
1977 05 19	675	0.5−	0.8+	1981 05 02	413	0.2−	1.6−	1999 03 23	704	0.2+	1.9+
1978 10 03	675	(4.4+	0.0)	1992 11 26	691	0.3+	0.8+	1999 03 23	704	(2.9−	2.6+)
1978 10 04	675	0.3+	0.2+	1992 11 26	691	0.5−	0.6+	1999 04 12	704	0.7+	0.3−
1981 02 09	413	1.6+	0.4−	1992 11 26	691	0.7−	0.5+	1999 04 12	704	0.5−	0.1+
1981 03 02	413	1.9−	0.6+	1999 03 10	691	0.1+	0.4+	1999 04 12	704	0.2+	1.3−
1981 03 02	413	0.5+	1.7−	1999 03 10	691	0.2+	0.2+	1999 04 12	704	0.1+	0.3−
1981 03 03	413	1.6−	0.4−	1999 03 10	691	0.2+	0.2+	1999 04 12	704	0.8−	1.7−
1981 03 07	413	0.9+	0.1−	1999 03 17	691	0.3−	0.3+	1999 04 16	704	0.8+	0.4+
1981 03 07	413	1.0+	0.6+	1999 03 17	691	0.1−	0.3+	1999 04 16	704	1.2+	0.5+
1981 03 11	413	1.8+	1.2−	1999 03 17	691	0.1−	0.0	1999 04 16	704	1.7+	0.9+
1981 03 16	413	0.5+	1.0−	1999 03 19	691	0.2+	0.4+	1999 04 19	704	1.1+	0.0
1981 03 29	413	0.4−	0.2+	1999 03 19	691	0.0	0.2+	1999 04 19	704	0.4−	1.0−
1981 03 29	413	1.5−	1.9+	1999 03 19	691	0.2+	0.1+	1999 04 19	704	1.0−	0.0
1981 04 08	413	0.7+	1.4−	1999 03 20	704	0.1−	0.1+	1999 04 19	704	0.4−	0.0
1981 04 11	413	1.0−	0.3−	1999 03 20	704	0.2−	0.0				
1981 04 30	413	1.5−	1.2−	1999 03 20	704	0.1−	1.9+				

(10472)∗ 1981 EO$_{20}$ = 1989 TV$_{16}$

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

Id. S. Nakano (*MPC* 16228)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	272.15267		(2000.0)		**P**	**Q**	
n	0.27501567	ω	113.71279		+0.22420528	+0.97450058	
a	2.3418788	Ω	169.23174		−0.91071428	+0.21279140	
e	0.2187659	i	2.75439		−0.34688830	+0.07119296	
P	3.58	H	15.1	G	0.15	U	2

Residuals in seconds of arc

1981 02 09	413	0.4+	0.7−	1989 09 27	675	1.0+	0.2+	1999 03 23	704	0.2+	0.3−
1981 02 13	413	1.3−	0.4−	1989 09 27	675	0.7+	0.4−	1999 03 23	704	0.7−	0.5−
1981 02 13	413	0.5−	0.6−	1989 10 07	809	0.4−	1.5−	1999 03 23	704	0.8−	0.6−
1981 03 02	413	1.5−	0.9+	1989 10 07	809	0.1−	1.4−	1999 04 12	704	0.0	1.6−
1981 03 02	413	(7.4+	3.8−)	1989 10 07	809	0.4+	1.4−	1999 04 12	704	0.4−	0.2+
1981 03 03	413	1.3+	0.6−	1989 10 08	809	(1.2−	3.1−)	1999 04 12	704	0.4−	0.7+
1981 03 07	413	0.1+	0.8+	1989 10 08	809	(0.9−	3.2−)	1999 04 12	704	0.7−	0.3−
1981 03 07	413	0.2−	2.1+	1989 10 08	809	(0.5−	3.3−)	1999 04 12	704	0.4+	0.7+
1981 03 11	413	1.3+	1.1−	1995 02 21	691	0.2−	0.8−	1999 04 16	704	0.3+	1.6−
1981 03 16	413	1.9−	1.5+	1995 02 21	691	0.2−	0.4−	1999 04 16	704	0.5+	0.1−
1981 03 29	413	0.4−	0.2−	1995 02 21	691	0.1−	0.5−	1999 04 16	704	1.4−	0.9−
1981 03 29	413	2.0+	0.8−	1999 03 20	704	0.4−	0.0	1999 04 16	704	0.6+	1.2−
1981 04 07	413	(3.6+	2.2−)	1999 03 20	704	0.5+	0.1−	1999 04 16	704	1.0−	1.1−
1981 04 07	413	1.2+	0.5−	1999 03 20	704	0.5−	0.8+	1999 04 19	704	0.7−	1.4−
1981 04 08	413	0.3−	1.6+	1999 03 20	704	0.1−	0.3+	1999 04 19	704	0.9+	0.4+
1981 04 11	413	(4.2−	2.3+)	1999 03 20	704	(3.0−	1.9+)	1999 04 19	704	0.2+	0.2+
1981 05 02	413	0.6+	0.1+	1999 03 23	704	0.5+	0.6+	1999 04 19	704	0.8+	1.0−
1981 05 03	413	0.3+	0.4+	1999 03 23	704	0.0	0.1+	1999 04 19	704	0.1+	0.3+

(10473)∗ 1981 EL$_{21}$ = 1978 QT

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

Id. H. Oishi (*JAM* 1958)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	193.50454		(2000.0)		**P**	**Q**	
n	0.22001404	ω	130.52083		+0.94927846	+0.31386109	
a	2.7174973	Ω	211.20079		−0.29845161	+0.88033301	
e	0.0938922	i	2.10373		−0.09898003	+0.35567544	
P	4.48	H	13.6	G	0.15	U	1

Residuals in seconds of arc

1978 08 31	095	0.8+	1.2−	1987 08 21	801	0.9−	0.2−	1999 03 23	704	0.3−	0.1+
1978 09 05	095	1.3+	1.6−	1992 10 21	675	0.2+	0.1+	1999 04 06	704	0.5−	1.2+
1981 02 09	413	0.8+	1.6−	1992 10 21	675	0.0	0.5+	1999 04 06	704	0.9+	0.9+
1981 02 13	413	1.2+	0.8−	1992 11 27	675	0.1+	0.5−	1999 04 06	704	0.8+	0.6−
1981 03 02	413	0.4−	0.3+	1992 11 27	675	0.6−	0.3+	1999 04 06	704	1.0+	1.6−
1981 03 02	413	1.4−	0.2−	1994 02 12	675	0.1−	1.7−	1999 04 10	699	0.2+	0.1+
1981 03 03	413	0.4−	0.1+	1994 02 12	675	0.2+	0.7−	1999 04 10	699	0.2+	0.8−
1981 03 07	413	0.7−	0.5+	1994 02 15	675	0.5−	0.4+	1999 04 10	699	1.2+	0.4+
1981 03 07	413	0.6+	0.1−	1994 02 15	675	(2.3−	0.3−)	1999 04 15	704	0.3−	1.7+

1981 03 11	413	0.3−	0.1−	1994 02 15	675	0.1+	0.2−	1999 04 15	704	1.2+	1.0+
1981 03 11	413	1.1+	0.9−	1999 03 20	704	0.5+	0.0	1999 04 15	704	0.0	0.3+
1981 03 16	413	0.2−	1.1−	1999 03 20	704	0.9−	0.0	1999 04 15	704	0.4−	0.3−
1981 03 29	413	0.6−	1.7+	1999 03 20	704	0.3−	1.1−	1999 04 17	704	0.1+	0.3+
1981 04 08	413	0.2−	0.1+	1999 03 20	704	0.9+	0.8+	1999 04 17	704	0.6+	0.2−
1981 04 08	413	(3.1+	1.5−)	1999 03 22	699	0.7+	1.2+	1999 04 17	704	0.5+	0.9+
1981 04 11	413	0.5−	0.3+	1999 03 22	699	0.7−	0.8+	1999 04 17	704	0.9+	0.2−
1981 04 11	413	1.5+	0.6−	1999 03 22	699	0.3−	0.8−	1999 04 17	704	0.3−	0.2+
1981 04 26	413	(4.4+	2.7−)	1999 03 23	704	0.6−	0.1−	1999 04 18	691	0.6−	0.4−
1981 04 30	413	1.8−	0.3−	1999 03 23	704	0.3−	0.0	1999 04 18	691	1.2−	0.3−
1981 05 02	413	1.3−	1.0−	1999 03 23	704	0.2−	0.4−	1999 04 18	691	1.0−	0.4−
1986 05 12	801	(3.4+	0.4+)	1999 03 23	704	0.3−	0.4−				

(10474)∗ 1981 EJ$_{23}$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	66.10810		(2000.0)		**P**	**Q**	
n	0.21985346	ω	108.80950		−0.11332145	−0.99344273	
a	2.7188204	Ω	347.66792		+0.88276020	−0.09367079	
e	0.0621961	i	4.07010		+0.45595250	−0.06555403	
P	4.48	H	14.2	G	0.15	U	1

Residuals in seconds of arc

1979 11 26	675	0.8+	0.5+	1981 04 30	413	0.4−	0.3−	1999 03 20	704	0.6+	0.6−
1979 11 27	675	0.8−	0.3−	1981 05 02	413	0.5+	1.0−	1999 03 23	704	0.5+	0.7+
1981 02 02	413	0.4+	1.3−	1996 09 08	809	(1.1−	2.4+)	1999 03 23	704	0.0	0.9+
1981 02 13	413	0.4−	0.3+	1996 09 08	809	0.7−	1.0+	1999 03 23	704	0.7+	0.5−
1981 02 13	413	0.1+	0.6−	1996 09 08	809	0.2−	1.7+	1999 03 23	704	1.2−	1.0+
1981 03 03	413	(2.6+	1.4−)	1997 11 26	704	(3.0−	1.7+)	1999 03 23	704	0.6+	0.2+
1981 03 03	413	1.3−	1.6+	1997 11 26	704	1.9−	0.2−	1999 04 15	704	1.6+	0.5+
1981 03 07	413	0.5−	0.4+	1997 11 26	704	(4.4−	1.2+)	1999 04 15	704	0.3−	0.8−
1981 03 07	413	1.8+	0.5−	1998 01 30	327	0.4+	0.6+	1999 04 15	704	0.8+	0.4+
1981 03 11	413	0.9−	0.0	1998 01 30	327	0.3+	1.1+	1999 04 15	704	0.2+	0.6+
1981 03 11	413	1.0+	0.1−	1998 01 30	327	1.2+	1.0+	1999 04 17	704	1.5−	0.4−
1981 03 16	413	1.2+	0.1+	1999 03 20	704	0.3+	0.3−	1999 04 17	704	1.2−	1.2+
1981 03 29	413	2.2−	0.5+	1999 03 20	704	1.5+	1.7−	1999 04 17	704	0.4−	0.7+
1981 04 08	413	1.1−	0.8+	1999 03 20	704	1.3−	0.4+	1999 04 17	704	0.2+	0.1−
1981 04 08	413	1.7+	0.5−	1999 03 20	704	0.3−	0.0	1999 04 17	704	0.6+	0.7+

(10475)∗ 1981 EX$_{28}$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	295.27184		(2000.0)		**P**	**Q**	
n	0.27693616	ω	320.16607		−0.20140580	+0.97469812	
a	2.3310394	Ω	298.01461		−0.86837870	−0.22347001	
e	0.0953234	i	6.30479		−0.45316017	−0.00497233	
P	3.56	H	15.0	G	0.15	U	1

Residuals in seconds of arc

1981 02 02	413	0.6−	0.6+	1999 03 25	704	0.6+	0.3−	1999 04 19	704	0.7+	0.1−
1981 02 14	413	1.1+	0.1−	1999 04 15	704	1.9−	0.7+	1999 04 19	704	0.6−	1.5+
1981 03 01	413	1.2+	0.9+	1999 04 15	704	0.6−	0.4+	1999 04 20	704	0.9+	0.6+
1981 03 07	413	0.5−	0.3−	1999 04 15	704	0.3−	1.7+	1999 04 20	704	0.3+	0.8−
1981 03 07	413	2.3+	0.2−	1999 04 15	704	1.5−	1.8+	1999 04 20	704	0.7+	0.3+
1981 03 11	413	1.2−	1.0+	1999 04 16	426	0.6+	0.1−	1999 04 20	704	0.0	0.0
1981 03 11	413	0.6+	0.7−	1999 04 16	426	0.1+	0.1−	1999 04 20	704	0.1−	0.2+
1981 03 15	413	1.6−	0.3+	1999 04 16	426	0.6+	0.1+	1999 04 20	704	0.1−	1.1−
1981 03 15	413	0.3+	0.4+	1999 04 17	704	0.6−	1.0+	1999 04 20	704	0.5−	0.6−
1981 04 29	413	0.6−	1.2−	1999 04 17	704	0.3+	0.7+	1999 04 20	704	1.0−	0.0
1982 11 04	413	0.1−	0.2−	1999 04 17	704	2.6−	0.7+	1999 04 20	704	0.7−	0.1+
1984 01 08	675	(3.4−	1.7+)	1999 04 17	704	0.3−	0.2−	1999 04 20	704	1.1+	1.6−
1984 01 08	675	0.4+	0.2−	1999 04 17	704	0.3+	0.5−	1999 04 20	704	0.4+	0.2−
1988 02 20	413	1.8−	0.3+	1999 04 18	426	0.5+	0.1−	1999 04 20	704	0.2+	0.2−
1988 02 20	413	2.1+	0.3−	1999 04 18	426	0.4+	0.2−	1999 04 20	704	0.5+	0.1+
1988 03 13	413	0.3−	0.8−	1999 04 18	426	0.5+	0.2−	1999 04 20	704	0.8−	0.5−
1988 03 13	413	1.4−	0.1−	1999 04 19	704	0.2−	0.4−	1999 04 20	704	0.3−	0.0
1989 08 27	688	0.4−	0.4+	1999 04 19	704	0.1−	0.8−	1999 04 20	704	0.5−	0.6−
1989 08 27	688	0.4−	0.2+	1999 04 19	704	0.1−	1.7−	1999 04 20	704	0.5−	0.1−
1996 08 09	566	0.3+	0.3−	1999 04 19	704	0.3−	0.8−	1999 04 20	704	0.3−	0.5+
1996 08 09	566	0.2+	0.2+	1999 04 19	704	0.8+	0.2−	1999 04 20	704	0.8−	0.9−
1996 08 09	566	0.1+	0.2+	1999 04 19	704	0.2+	0.4−	1999 04 20	704	0.3+	0.0
1999 03 25	704	1.3+	0.3−	1999 04 19	704	0.4+	0.2+				
1999 03 25	704	(3.9+	2.5+)	1999 04 19	704	0.0	0.7+				

(10476)∗ 1981 EY$_{38}$ = 1978 NB$_3$

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

Id. K. Hurukawa (*MPC* 10515), L. D. Schmadel (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	299.80070		(2000.0)		**P**	**Q**	
n	0.27920871	ω	38.41449		+0.30965886	+0.93826303	
a	2.3183735	Ω	250.10137		−0.90789124	+0.24356673	
e	0.2571450	i	9.43786		−0.28256837	+0.24563738	
P	3.53	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1978 07 09	095	0.4−	0.0	1981 03 12	413	1.1+	1.4−	1999 03 25	704	0.7−	1.7−
1978 07 11	095	0.0	1.2+	1981 04 29	413	(4.8−	0.2+)	1999 03 25	704	0.1−	1.0+
1981 02 02	413	1.6+	0.5+	1996 11 09	691	0.4−	0.4+	1999 03 25	704	(0.5−	4.2−)
1981 02 09	413	1.6−	1.6+	1996 11 09	691	0.4−	0.4+	1999 04 21	426	0.4+	0.2+
1981 03 02	413	0.3−	1.5+	1996 11 09	691	0.6−	0.4+	1999 04 21	426	0.4+	0.2+
1981 03 07	413	0.3−	0.9+	1996 11 10	691	0.3+	0.4+	1999 04 22	426	0.1+	0.3+
1981 03 10	413	0.2−	0.5+	1996 11 10	691	0.2+	0.4+	1999 04 22	426	0.1−	0.2+
1981 03 10	413	0.6+	0.6−	1996 11 10	691	0.1+	0.4+	1999 04 22	426	0.1−	0.1−

(10477)∗ 1981 ET$_{41}$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	178.13462		(2000.0)		**P**	**Q**	
n	0.27651136	ω	190.29009		+0.99764429	−0.06667622	
a	2.3334262	Ω	173.46808		+0.06856648	+0.96194029	
e	0.1341955	i	8.15117		+0.00212185	+0.26500029	
P	3.56	H	14.8	G	0.15	U	2

Residuals in seconds of arc

1981 02 09	413	0.8+	0.5−	1993 09 18	675	0.6+	0.5−	1999 04 07	704	0.0	0.2−
1981 02 13	413	0.5+	0.3−	1993 09 18	675	0.0	0.3−	1999 04 07	704	0.4−	0.6−
1981 03 02	413	0.1−	1.1−	1993 09 22	675	0.6−	0.1−	1999 04 12	704	1.0−	1.1+
1981 03 06	413	0.3−	0.7+	1993 09 22	675	0.5+	0.5−	1999 04 12	704	0.3−	1.8+
1981 03 11	413	0.0	0.5+	1997 12 29	688	0.2+	0.1−	1999 04 12	704	0.5+	1.7−
1981 03 11	413	1.2+	0.3+	1997 12 29	688	0.2−	0.3−	1999 04 12	704	1.7−	1.1−
1981 03 15	413	1.6−	0.4+	1999 03 23	704	0.1−	0.2−	1999 04 12	704	0.4+	0.4−
1981 03 15	413	0.3+	0.8−	1999 03 23	704	0.8+	0.0	1999 04 19	704	0.9+	0.3+
1981 04 06	413	1.7−	1.6+	1999 03 23	704	0.2−	0.6−	1999 04 19	704	0.7+	2.1+
1981 04 06	413	0.0	0.0	1999 03 23	704	1.7−	0.4−	1999 04 19	704	2.0+	0.5−
1981 04 26	413	(3.7+	1.7−)	1999 04 07	704	1.3+	1.9−	1999 04 19	704	0.1−	0.3+
1981 05 01	413	1.3+	0.5−	1999 04 07	704	0.4−	0.1−	1999 04 19	704	1.1−	0.3−

(10478)∗ 1981 WO = 1981 UG$_{14}$ = 1976 YG$_6$ = 1978 EH$_5$ = 1986 TA$_{10}$ = 1986 TT$_{18}$ = 1991 RX$_{16}$

Discovered 1981 Nov. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (d, *MPC* 11417), G. V. Williams (*MPC* 23668)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	86.18079		(2000.0)		**P**	**Q**	
n	0.18979847	ω	48.40488		+0.30301346	−0.94971319	
a	2.9987545	Ω	24.29953		+0.80734141	+0.21182404	
e	0.0898906	i	11.05626		+0.50634247	+0.23059801	
P	5.19	H	12.5	G	0.15	U	1

Residuals in seconds of arc

1950 12 09	675	0.4−	0.4+	1991 10 08	675	0.4−	0.4−	1999 04 12	704	0.1+	0.0
1950 12 09	675	1.1−	0.1+	1994 03 14	675	1.5−	0.7−	1999 04 12	704	0.2−	0.1−
1976 12 20	095	0.4−	0.9−	1994 03 14	675	0.0	1.3−	1999 04 12	704	1.1+	0.5+
1978 03 06	095	0.6−	1.0−	1998 02 01	689	0.1−	0.3+	1999 04 12	704	0.4−	0.5+
1981 10 23	095	0.2−	0.6−	1999 03 20	704	0.2−	0.4−	1999 04 12	704	0.3+	0.1+
1981 11 24	688	1.8+	0.8+	1999 03 20	704	0.2−	1.2+	1999 04 15	704	0.4+	0.7−
1981 11 24	688	0.9−	0.4−	1999 03 20	704	0.2+	0.4−	1999 04 15	704	0.3+	0.1−
1981 11 24	095	1.3−	0.5+	1999 03 20	704	0.7+	0.2−	1999 04 15	704	1.0−	0.3+
1981 12 02	688	2.4+	0.5−	1999 03 20	704	0.3−	0.1−	1999 04 15	704	(0.9−	2.6+)
1981 12 02	688	1.7+	0.4+	1999 03 23	704	0.6−	0.7−	1999 04 15	704	0.2+	1.2+
1986 10 03	095	(3.2−	0.4+)	1999 03 23	704	0.7−	0.7+	1999 04 16	704	0.2−	0.0
1986 10 08	095	1.0+	0.9+	1999 03 23	704	0.9−	0.8+	1999 04 16	704	0.5+	1.0−
1989 04 01	675	1.2+	0.8−	1999 03 23	704	0.7−	1.5+	1999 04 16	704	1.1−	0.9+
1989 04 01	675	0.5+	0.6−	1999 03 23	704	0.4−	0.4+	1999 04 16	704	0.5−	1.2−
1991 09 15	675	0.3+	1.6−	1999 04 06	699	0.7+	0.2+	1999 04 16	704	1.5−	0.8−
1991 09 15	675	1.0−	1.1−	1999 04 06	699	0.5+	0.3+	1999 04 19	704	0.2−	0.7−
1991 09 17	675	0.1−	1.8−	1999 04 06	704	0.8+	0.3−	1999 04 19	704	0.5−	0.7+
1991 09 17	675	0.1−	1.0−	1999 04 06	699	0.3+	0.1+	1999 04 19	704	0.3−	0.2−
1991 10 02	675	0.4+	0.2−	1999 04 06	704	0.4+	0.2−	1999 04 19	704	0.2+	1.7−
1991 10 02	675	0.9+	0.1+	1999 04 06	704	0.5+	0.2−	1999 04 19	704	0.4−	1.2−
1991 10 07	675	1.1+	0.3+	1999 04 06	704	0.3+	0.5−				
1991 10 07	675	0.0	0.7−	1999 04 06	704	0.9−	0.1−				

(10479)∗ 1982 HJ = 1965 JA

Discovered 1982 Apr. 18 by M. Watt at the Anderson Mesa Station of the Lowell Observatory.

Id. G. V. Williams (*MPC* 22949)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	298.73737		(2000.0)		**P**	**Q**	
n	0.29034388	ω	202.63788		−0.15423426	+0.98133648	
a	2.2587124	Ω	58.66283		−0.88467159	−0.08540185	
e	0.1800344	i	7.72772		−0.43996360	−0.17229406	
P	3.39	H	13.4	G	0.15	U	2

Residuals in seconds of arc

1949 11 23	675	0.1+	0.2−	1997 12 04	704	0.5−	0.5+	1999 04 15	704	0.8−	0.0
1949 11 23	675	0.7−	0.4−	1999 02 23	704	1.6−	0.1+	1999 04 15	704	0.7+	0.3+
1953 12 07	675	0.5−	1.8−	1999 02 23	704	(2.8+	2.5+)	1999 04 15	704	0.6+	0.5+
1953 12 07	675	0.2+	1.7−	1999 02 23	704	(2.1−	0.1+)	1999 04 16	704	0.8+	0.2+
1965 05 02	760	1.8−	1.0+	1999 02 23	704	1.3+	1.0−	1999 04 16	704	0.0	0.8−
1965 05 02	760	0.9−	0.3−	1999 02 26	704	1.1−	0.5+	1999 04 16	704	0.6−	1.8−
1965 05 04	760	0.2+	0.8−	1999 02 26	704	1.3−	0.5−	1999 04 16	704	1.2−	1.1−
1965 05 04	760	0.7−	0.9−	1999 02 26	704	0.3−	1.0+	1999 04 18	650	0.8+	0.5+
1982 04 18	688	0.2+	1.2−	1999 02 26	704	1.1−	0.7+	1999 04 18	650	0.8+	0.6+
1982 04 18	688	0.3+	1.2−	1999 02 26	704	1.3+	0.9−	1999 04 18	426	0.5+	0.3+
1982 04 26	688	0.5−	1.7−	1999 04 10	650	0.3−	0.1+	1999 04 18	426	0.5+	0.3+
1982 04 26	688	1.4+	1.8−	1999 04 10	650	0.3−	0.1−	1999 04 18	426	0.4+	0.2+
1982 05 20	688	0.1+	2.4−	1999 04 10	699	0.6+	0.7+	1999 04 19	704	1.2−	0.4+
1982 05 20	688	0.4+	2.1−	1999 04 10	699	0.2+	0.7+	1999 04 19	704	0.4−	0.7+
1993 10 13	675	0.4−	0.2−	1999 04 10	699	0.2+	0.6+	1999 04 19	704	1.3−	0.9+
1993 10 13	675	0.0	0.8−	1999 04 12	704	1.4+	1.1+	1999 04 19	704	0.8−	0.8+
1993 10 15	675	0.3−	0.6−	1999 04 12	704	0.1−	1.3+	1999 04 19	704	0.1−	1.1+
1996 10 12	689	0.6+	0.8+	1999 04 12	704	0.5+	0.4+	1999 04 19	426	0.5+	0.3+
1996 10 13	689	0.4+	1.0+	1999 04 12	704	0.6+	0.9+	1999 04 19	426	0.3+	0.2+
1997 12 04	704	1.9+	1.0+	1999 04 12	704	0.6−	0.2+	1999 04 19	426	0.4+	0.4+
1997 12 04	704	0.3−	1.8+	1999 04 15	704	0.0	0.8+				
1997 12 04	704	0.3+	1.8+	1999 04 15	704	0.5+	0.8+				

(10480)∗ 1982 JB$_2$ = 1997 WS$_7$

Discovered 1982 May 15 at Palomar.

Id. T. Kobayashi (*MPC* 30973), S. Nakano (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	106.05529		(2000.0)		**P**	**Q**	
n	0.28842353	ω	334.81301		+0.15170491	−0.98739834	
a	2.2687271	Ω	106.43512		+0.91462980	+0.12294976	
e	0.0828536	i	2.69254		+0.37475052	+0.09963871	
P	3.42	H	14.9	G	0.15	U	2

Residuals in seconds of arc

1982 05 15	675	0.3+	0.6+	1997 11 28	566	0.3−	0.1+	1997 12 25	428	1.5+	0.6+
1982 05 16	675	0.5−	0.7+	1997 11 28	566	0.0	0.1+	1998 01 02	428	0.2+	0.3+
1982 05 17	675	0.7+	0.3−	1997 11 28	428	1.2+	0.7−	1998 01 19	428	0.8+	0.6−
1982 05 18	675	0.1+	1.2+	1997 11 28	566	0.7−	0.4+	1998 01 19	428	1.2+	0.5−
1995 02 07	691	0.1+	0.8+	1997 11 29	704	1.3+	0.6−	1999 03 18	428	0.4+	0.6+
1995 02 07	691	0.1+	0.1+	1997 11 29	704	1.3+	0.7−	1999 03 19	428	0.2+	0.5+
1995 02 07	691	0.2−	0.0	1997 11 29	704	1.1+	1.7−	1999 04 11	428	0.2−	0.4+
1997 11 06	411	1.3−	1.0+	1997 11 29	704	0.5+	1.2−	1999 04 11	428	0.3−	0.4+
1997 11 06	411	1.2−	1.5+	1997 11 29	704	(2.3−	0.6−)	1999 04 12	704	0.5+	0.1+
1997 11 07	411	0.2−	0.4−	1997 11 30	428	0.5+	0.8−	1999 04 12	704	1.0−	0.5−
1997 11 07	411	0.4−	0.1−	1997 12 01	428	0.2−	0.3−	1999 04 12	704	0.8−	0.1−
1997 11 24	367	1.2−	0.2−	1997 12 01	428	0.2+	0.5−	1999 04 12	704	1.4−	0.8−
1997 11 24	367	1.2−	0.3−	1997 12 04	704	0.5−	0.0	1999 04 12	704	1.9−	1.7−
1997 11 26	704	1.5−	1.1−	1997 12 04	704	0.6−	0.5+	1999 04 19	704	0.4+	0.4−
1997 11 26	704	0.8−	0.5−	1997 12 04	704	1.4−	1.1+	1999 04 19	704	2.0+	0.2+
1997 11 26	704	1.6−	1.4−	1997 12 04	704	0.1+	0.6+	1999 04 19	704	1.1+	0.8+
1997 11 26	428	0.9+	0.5+	1997 12 05	704	1.5+	1.8+	1999 04 19	704	0.1+	1.8−
1997 11 26	367	0.6+	0.2+	1997 12 06	428	0.7−	0.9+	1999 04 19	704	(0.4−	2.3−)
1997 11 26	367	1.2+	0.3+	1997 12 06	428	0.2−	0.5+				
1997 11 26	428	0.2+	0.3+	1997 12 25	428	0.3+	0.9+				

(10481)∗ 1982 QK$_3$ = 1986 XE$_4$

Discovered 1982 Aug. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. D. W. E. Green (*MPC* 13593)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Green

M	196.28826		(2000.0)		**P**	**Q**	
n	0.27398141	ω	23.06862		+0.98429609	+0.17492358	
a	2.3477687	Ω	326.82961		−0.16796587	+0.88672386	
e	0.1866066	i	2.48545		−0.05430176	+0.42792819	
P	3.60	H	14.0	G	0.15	U	1

Residuals in seconds of arc

1982 08 23	095	0.2+	1.2−	1992 05 04	809	1.1−	0.6+	1999 03 23	704	0.8−	1.4−
1982 09 17	095	0.0	1.6+	1992 05 04	809	1.2−	0.7+	1999 03 23	704	1.1−	0.9+
1982 09 21	095	(4.3−	0.5+)	1993 10 13	095	(1.1+	2.6+)	1999 03 23	704	1.6+	1.8+
1986 12 04	010	(7.2−	6.4−)	1993 11 10	691	0.1−	0.0	1999 03 23	704	0.4−	0.4−
1986 12 05	010	(0.2+	6.9−)	1993 11 10	691	0.3−	0.0	1999 03 23	704	(2.3−	0.8−)
1986 12 07	046	0.7+	0.4−	1993 11 10	691	0.4−	0.2−	1999 04 15	704	0.9+	0.8−
1986 12 07	046	0.3+	0.1+	1993 11 16	801	0.2+	0.1−	1999 04 15	704	0.0	0.7−
1986 12 09	046	0.7−	0.4−	1993 11 16	801	0.2+	0.1−	1999 04 15	704	1.1+	1.6+
1986 12 09	046	1.1+	0.5+	1993 11 17	801	0.6−	0.0	1999 04 15	704	(2.2+	0.6+)
1992 05 02	809	0.6−	0.8−	1993 11 17	801	0.8−	0.1−	1999 04 15	704	(3.4−	0.2−)
1992 05 02	809	0.3−	1.2−	1996 06 17	689	0.7+	0.4+	1999 04 17	704	1.2−	0.1+
1992 05 02	809	0.0	0.8−	1996 06 18	689	0.8+	0.0	1999 04 17	704	0.6+	0.7+
1992 05 03	809	0.4−	0.0	1999 03 20	704	(2.7−	0.1−)	1999 04 17	704	1.1+	0.0
1992 05 03	809	0.2−	0.1+	1999 03 20	704	0.2−	0.3+	1999 04 17	704	0.5+	0.2−
1992 05 03	809	0.1+	0.1−	1999 03 20	704	0.1+	1.1−	1999 04 17	704	1.2+	0.5+
1992 05 04	809	0.9−	0.5+	1999 03 20	704	(3.2−	2.8−)				

(10482)∗ 1983 RG$_2$ = 1990 SG$_2$

Discovered 1983 Sept. 14 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. H. E. Holt (*MPC* 17202)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	144.40491		(2000.0)		**P**	**Q**	
n	0.28363595	ω	296.61957		+0.98777678	−0.11623269	
a	2.2941855	Ω	70.20380		+0.14995661	+0.89045917	
e	0.2017344	i	6.33744		−0.04254459	+0.43996867	
P	3.47	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1979 06 26	413	0.6+	0.1−	1996 03 26	691	0.2+	0.2−	1997 11 08	758	0.0	0.6+
1979 06 29	413	0.9−	0.5+	1996 03 26	691	0.1+	0.3−	1997 11 18	689	0.2−	0.4+
1983 09 12	688	0.3+	0.7−	1997 07 02	704	0.1+	0.2+	1999 03 15	704	0.5−	0.0
1983 09 14	688	0.3+	0.5−	1997 07 02	704	0.3+	1.3+	1999 03 15	704	0.8−	1.5−
1983 09 14	688	0.6−	0.4−	1997 07 02	704	0.2+	0.7+	1999 03 15	704	0.8+	0.0
1983 10 09	688	0.9+	0.4−	1997 07 02	704	0.6−	0.4+	1999 03 15	704	0.3−	0.0
1983 10 12	688	0.1+	0.6+	1997 07 02	704	0.1−	0.2+	1999 03 15	704	(3.0−	0.7+)
1983 10 12	688	0.9+	0.1−	1997 09 22	689	0.7−	1.2+	1999 04 18	703	0.7+	0.1−
1990 09 17	675	0.0	0.8−	1997 10 30	688	0.4−	0.1+	1999 04 18	703	1.2−	0.3−
1990 09 17	675	0.0	0.0	1997 10 30	688	0.6−	0.2+	1999 04 18	703	0.2−	0.1+
1990 09 19	675	0.1+	1.4−	1997 11 03	758	1.4+	1.4−	1999 04 18	703	0.1+	0.2−
1990 09 19	675	0.0	1.4−	1997 11 06	689	0.4−	1.0+				
1996 03 26	691	0.1+	0.3−	1997 11 08	758	0.1−	0.1+				

(10483)∗ 1983 RP$_2$ = 1985 DJ$_4$

Discovered 1983 Sept. 4 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. J. Bus (*MPC* 11843)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	152.72212		(2000.0)		**P**	**Q**	
n	0.28777283	ω	222.95118		+0.97101895	−0.23634224	
a	2.2721458	Ω	150.66381		+0.23420694	+0.91128835	
e	0.1706868	i	4.16232		+0.04763729	+0.33718822	
P	3.42	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1983 08 13	688	0.7−	1.9−	1996 05 24	809	(0.2−	4.2+)	1999 03 23	704	0.3+	0.3−
1983 08 13	688	0.4−	0.4−	1996 05 24	809	(0.4−	3.6+)	1999 03 23	704	0.1+	0.7−
1983 09 02	688	0.3−	1.4−	1997 10 30	688	0.4+	0.3−	1999 03 23	704	0.1−	0.2−
1983 09 02	688	1.9−	0.8+	1997 10 30	688	0.3+	0.3−	1999 03 23	699	0.3+	0.7−
1983 09 04	688	0.3+	0.0	1997 10 30	566	0.1+	0.3−	1999 03 23	704	0.3−	0.4−
1983 09 04	688	0.8−	0.3−	1997 10 30	566	0.0	0.5−	1999 03 23	704	0.1−	0.9+
1983 09 06	688	1.0+	0.1+	1997 10 30	566	0.1+	0.4−	1999 03 23	699	0.1+	0.3−
1983 09 06	688	2.4+	0.4+	1997 10 31	688	0.4+	0.5−	1999 03 23	699	0.0	1.2−
1983 09 10	688	0.0	0.4−	1997 10 31	688	0.5+	0.3−	1999 04 06	704	0.1−	1.3−
1983 09 10	688	0.0	1.2−	1997 11 01	372	0.6+	1.0+	1999 04 06	704	0.1+	1.2−
1983 09 12	688	2.3+	1.6−	1997 11 01	372	1.3−	0.5+	1999 04 06	704	0.1+	1.7−
1983 09 13	095	(0.7+	4.1−)	1997 11 07	372	0.0	0.7+	1999 04 06	704	0.6+	0.6−
1985 02 22	675	0.8−	0.5−	1997 11 07	372	1.4−	1.0−	1999 04 12	704	1.8−	1.5−
1985 02 23	675	0.2+	0.2+	1997 11 09	372	0.7−	1.5−	1999 04 12	704	0.3+	1.6−
1990 09 22	095	(0.7+	3.3−)	1997 11 18	689	0.6+	1.2+	1999 04 12	704	0.0	1.0+
1990 09 22	095	(1.4−	2.7−)	1997 11 18	426	0.4−	0.6−	1999 04 12	704	0.0	0.3+
1990 09 29	095	0.6−	0.9+	1997 11 18	426	0.3−	0.6−	1999 04 12	704	0.7+	1.5+
1990 10 11	399	1.0+	0.9−	1997 11 18	426	0.3−	0.6−	1999 04 16	704	(2.2−	0.1+)
1990 10 11	399	(3.4+	1.1+)	1997 11 21	426	0.7+	0.3−	1999 04 16	704	1.0+	0.2−
1990 10 11	399	0.3−	1.7−	1997 11 21	426	0.4+	0.4−	1999 04 16	704	0.2−	0.6−
1990 10 16	808	0.1−	0.6+	1997 11 21	426	0.5+	0.6−	1999 04 16	704	1.7−	0.1+
1990 10 16	808	(0.4+	2.7−)	1997 11 28	566	0.3+	0.2+	1999 04 16	704	1.2−	1.7+
1990 10 23	095	(1.0−	3.1+)	1997 11 28	566	0.3+	0.1−	1999 04 19	704	0.3+	0.4−
1990 11 20	801	0.2+	0.6+	1997 11 28	566	0.2−	0.2+	1999 04 19	704	0.1−	1.1+
1990 11 20	801	0.1+	0.5+	1999 03 20	704	0.7−	1.4−	1999 04 19	704	0.3+	0.6−
1996 05 22	809	(0.1+	4.2+)	1999 03 20	704	0.1+	1.0−	1999 04 19	704	0.3−	0.3−
1996 05 22	809	(0.1−	4.5+)	1999 03 20	704	0.4−	0.1−	1999 04 19	704	0.1−	0.1+
1996 05 22	809	(0.7+	3.9+)	1999 03 20	704	0.6−	0.1−				
1996 05 24	809	(0.8+	4.5+)	1999 03 20	704	0.1−	1.1−				

(10484)∗ 1983 WM = 1990 VJ$_1$

Discovered 1983 Nov. 28 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (*MPC* 17434)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	89.22798		(2000.0)		**P**	**Q**	
n	0.27876124	ω	190.44541		+0.10747816	−0.98960226	
a	2.3208538	Ω	253.43455		+0.91920815	+0.13554147	
e	0.0781107	i	5.72307		+0.37882031	−0.04812359	
P	3.54	H	13.9	G	0.15	U	2

Residuals in seconds of arc

1954 07 04	675	0.8−	1.4−	1997 10 30	566	0.5−	1.0+	1999 03 23	704	0.3+	0.8+
1954 07 04	675	2.0+	1.0−	1997 10 30	566	0.3−	1.2+	1999 03 23	704	1.0+	0.5+
1983 11 28	688	1.2+	1.4−	1997 10 31	688	0.1−	1.0+	1999 03 25	704	0.6+	0.3+
1983 11 28	688	1.9−	1.5+	1997 10 31	688	0.1+	0.9+	1999 03 25	704	1.9+	1.8−
1983 11 29	688	0.5−	0.2+	1997 11 01	367	0.4+	0.6+	1999 03 25	704	0.6+	0.1+
1983 11 29	688	1.5+	0.9−	1997 11 01	367	0.4+	0.6+	1999 03 25	704	(0.8+	2.7+)
1983 12 01	688	0.8+	1.0+	1997 11 02	900	0.2+	0.8+	1999 03 25	704	1.8−	0.9+
1983 12 01	688	1.5−	2.1−	1997 11 02	900	0.1−	0.8+	1999 04 14	704	0.0	0.0
1983 12 01	688	1.7+	0.1+	1997 11 03	367	0.9−	0.4−	1999 04 14	704	0.6+	0.2+
1983 12 01	688	(2.8−	0.8−)	1997 11 03	367	0.9−	0.1−	1999 04 14	704	0.6−	0.3+
1983 12 05	688	0.2−	0.6−	1997 11 03	900	0.3+	0.7+	1999 04 14	704	0.1−	1.1+
1983 12 05	688	(5.3−	2.2−)	1997 11 03	900	0.4+	0.7+	1999 04 15	704	0.2−	0.2+
1983 12 06	688	2.2−	0.7−	1997 12 19	426	0.1+	0.2−	1999 04 15	704	0.6−	1.0+
1983 12 06	688	(2.8−	0.2+)	1997 12 19	426	0.2−	0.1+	1999 04 15	704	0.5−	0.3+
1983 12 09	688	0.2−	0.9−	1997 12 19	426	0.3−	0.2−	1999 04 15	704	0.3−	0.9+
1983 12 09	688	0.5−	1.4−	1997 12 21	426	0.0	0.1−	1999 04 15	704	0.3−	1.3+
1983 12 29	688	0.4+	0.3−	1997 12 21	426	0.4−	0.1+	1999 04 17	704	0.5−	0.2−
1983 12 29	688	0.4−	0.4−	1997 12 21	426	0.0	0.1+	1999 04 17	704	0.0	0.5−
1984 01 02	688	1.5+	0.7+	1999 03 19	704	0.9+	0.2+	1999 04 17	704	0.1+	0.2−
1984 01 04	688	0.5−	2.1−	1999 03 19	704	0.8−	1.3−	1999 04 17	704	0.1+	1.2−
1984 01 04	688	0.4+	1.5−	1999 03 19	704	0.3+	1.0+	1999 04 17	704	0.2+	0.2−
1990 11 11	898	(2.4+	5.8+)	1999 03 19	704	(2.2−	0.9−)	1999 04 20	704	0.2+	0.4−
1990 11 11	898	0.7+	1.9+	1999 03 19	704	0.5−	0.4+	1999 04 20	704	0.1+	0.1+
1990 11 12	898	(8.0−	4.2+)	1999 03 20	704	0.8−	1.1−	1999 04 20	704	0.0	0.1−
1990 11 12	898	(4.1−	0.8+)	1999 03 20	704	(2.4+	0.1+)	1999 04 20	704	1.0+	0.5+
1997 10 30	688	0.2−	1.0+	1999 03 20	704	0.0	0.7+	1999 04 20	704	0.2−	1.4+
1997 10 30	688	0.2−	1.0+	1999 03 23	704	0.3+	0.2+				
1997 10 30	566	0.4−	1.0+	1999 03 23	704	0.9+	0.7+				

(10485)∗ 1984 SY$_5$ = 1955 UK = 1990 TO$_8$ = 1990 UW$_{12}$

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

Id. B. G. Marsden (*MPC* 17435), G. V. Williams (d, *MPC* 22051; unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	153.86221		(2000.0)		**P**	**Q**	
n	0.16802827	ω	251.09159		+0.98817059	−0.14883846	
a	3.2524788	Ω	117.45357		+0.15165379	+0.91254695	
e	0.1465416	i	2.38705		+0.02280384	+0.38092673	
P	5.87	H	12.9	G	0.15	U	1

Residuals in seconds of arc

1955 10 20	760	0.8+	1.1+	1984 09 28	809	0.4+	0.4+	1997 12 30	566	0.1−	0.8+
1955 10 20	760	0.9−	1.6−	1984 09 28	809	0.7+	0.3+	1998 01 20	704	1.4−	0.6−
1984 09 21	809	0.6−	0.7+	1984 09 29	809	0.5−	0.2−	1998 01 20	704	0.6+	0.5−
1984 09 21	809	0.4−	0.6+	1984 09 29	809	0.4−	0.2+	1998 01 20	704	0.4+	0.2−
1984 09 21	809	0.8−	0.6+	1984 09 29	809	0.3−	0.2+	1998 01 20	704	0.4−	0.0
1984 09 22	809	0.6−	0.8+	1984 09 30	809	0.8−	0.3+	1998 01 20	704	0.2−	0.5−
1984 09 22	809	0.2−	0.8+	1984 09 30	809	0.5−	0.3+	1998 01 22	691	0.1+	0.0
1984 09 22	809	0.2+	0.7+	1984 09 30	809	0.3−	0.3+	1998 01 22	691	0.2−	0.1−
1984 09 23	809	0.0	0.1+	1984 10 01	809	0.2−	0.0	1998 01 22	691	0.2−	0.2−
1984 09 23	809	0.5+	0.1+	1984 10 01	809	0.0	0.1+	1998 01 26	566	0.3+	0.6+
1984 09 23	809	1.1+	0.0	1984 10 01	809	0.0	0.0	1998 01 26	566	0.7+	0.9+

1984 09 24	809	0.8−	0.1+	1990 09 22	095	0.5+	0.6−	1998 01 26	566	0.5+	0.9+
1984 09 24	809	0.8−	0.1−	1990 09 22	095	1.4+	1.8−	1998 02 03	691	0.6+	0.1−
1984 09 24	809	0.5−	0.4−	1990 10 14	046	(2.6+	2.6+)	1998 02 03	691	0.2−	0.3−
1984 09 26	809	0.3+	0.5−	1990 10 14	046	(6.9+	2.2+)	1998 02 03	691	0.2−	0.4−
1984 09 26	809	0.6+	0.5−	1990 10 15	046	(2.9+	0.3+)	1999 03 20	704	0.8+	0.6−
1984 09 26	809	0.7+	0.7−	1990 10 15	046	0.6−	0.8+	1999 03 20	704	1.2−	0.7−
1984 09 27	809	0.0	0.4+	1990 10 23	095	(3.0+	2.7−)	1999 03 20	704	0.3−	0.8−
1984 09 27	809	0.2+	0.5+	1996 10 15	886	0.5−	2.0−	1999 03 20	704	0.3−	0.7−
1984 09 27	809	0.3+	0.4+	1996 10 15	886	(2.0−	1.8−)	1999 03 23	704	1.6+	0.7+
1984 09 27	809	0.2+	0.5+	1997 12 25	411	0.1−	0.9−	1999 03 23	704	0.1+	1.7+
1984 09 27	809	0.5+	0.7+	1997 12 25	566	0.1+	0.1−	1999 03 23	704	0.6+	0.8+
1984 09 27	809	0.6+	0.7+	1997 12 25	566	0.5+	0.2−	1999 04 12	704	0.2+	1.4+
1984 09 28	809	0.7−	0.3+	1997 12 25	411	0.3+	0.2+	1999 04 12	704	0.1−	1.1+
1984 09 28	809	0.7−	0.1−	1997 12 25	566	0.0	0.2+	1999 04 12	704	1.0−	0.7+
1984 09 28	809	0.5−	0.1+	1997 12 30	566	0.3−	0.6+	1999 04 12	704	1.6+	1.2+
1984 09 28	809	0.4+	0.5+	1997 12 30	566	0.4−	0.9+				

(10486)∗ 1985 CS_2 = 1978 EH_8

Discovered 1985 Feb. 15 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (*MPC* 24559)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	306.66658		(2000.0)		**P**	**Q**	
n	0.28394230	ω	294.42922		−0.64260368	+0.76361695	
a	2.2925351	Ω	295.43531		−0.67536208	−0.60324981	
e	0.0927734	i	3.99054		−0.36186540	−0.23017128	
P	3.47	H	14.0	G	0.15	U	2

Residuals in seconds of arc

1978 03 05	095	0.4−	1.0+	1994 12 28	411	0.3−	0.2−	1999 03 23	704	0.0	0.6+
1985 02 15	809	1.4−	0.7−	1994 12 29	411	0.1−	1.2+	1999 03 23	704	0.1−	0.8+
1985 02 15	809	1.4−	0.6−	1994 12 29	411	0.8−	1.1+	1999 03 23	704	0.5−	1.3+
1985 02 15	809	1.2−	0.6−	1995 01 20	411	0.1−	1.9+	1999 04 06	704	0.1+	0.5+
1985 02 17	809	0.4−	0.6−	1995 01 20	411	0.9+	0.4+	1999 04 06	704	0.0	0.6+
1985 02 17	809	0.2−	0.8−	1995 01 23	411	0.5+	1.0+	1999 04 06	704	0.0	0.0
1985 02 17	809	0.2+	1.0−	1995 01 23	411	0.5+	1.3+	1999 04 06	704	0.1+	0.7+
1985 02 18	809	0.6−	0.6−	1997 11 25	691	0.0	0.3+	1999 04 06	704	0.4+	0.4+
1985 02 18	809	0.5−	0.3−	1997 11 25	691	0.0	0.2+	1999 04 11	699	0.5+	0.5+
1985 02 18	809	0.2−	0.6−	1997 11 25	691	0.1−	0.3+	1999 04 11	699	0.5+	0.6+
1985 02 19	809	0.7−	0.6−	1997 11 29	704	0.0	1.2+	1999 04 11	699	0.3+	0.4+
1985 02 19	809	0.5−	0.7−	1997 11 29	704	(1.0−	2.1+)	1999 04 14	704	1.1+	0.4+
1985 02 19	809	0.3−	0.7−	1997 11 29	704	0.4+	0.1−	1999 04 14	704	1.3+	0.5+
1985 02 20	809	0.4−	0.8−	1997 11 29	704	0.3−	1.8+	1999 04 14	704	0.1+	0.1+
1985 02 20	809	0.2−	1.0−	1997 11 29	704	0.5−	0.1−	1999 04 14	704	1.3+	0.1−
1985 02 20	809	0.1−	1.1−	1998 12 23	704	(2.3+	1.1−)	1999 04 14	704	(2.4−	1.8−)
1985 02 21	809	1.4+	1.7−	1998 12 23	704	1.0−	1.1−	1999 04 15	704	0.0	0.5+
1985 02 21	809	1.5+	1.5−	1998 12 23	704	(1.5−	2.2−)	1999 04 15	704	0.1−	0.1−
1985 02 21	809	1.7+	1.8−	1998 12 23	704	1.1+	0.9−	1999 04 15	704	0.4+	0.8+
1985 02 23	809	0.3−	0.5+	1998 12 23	704	1.6−	0.8+	1999 04 15	704	0.4+	0.3+
1985 02 23	809	0.0	0.4+	1999 02 26	704	0.7+	0.2+	1999 04 15	704	0.2−	0.4−
1985 02 23	809	0.4+	0.4+	1999 02 26	704	1.7+	0.1+	1999 04 16	704	0.5−	0.7+
1985 02 24	809	0.7−	0.7−	1999 02 26	704	0.7−	1.7+	1999 04 16	704	0.9−	0.3+
1985 02 24	809	0.3−	0.8−	1999 02 26	704	(2.3−	0.6+)	1999 04 16	704	1.2−	0.1+
1985 02 24	809	0.5−	0.8−	1999 03 20	704	0.3+	0.5+	1999 04 16	704	(0.4−	2.3−)
1985 02 26	809	(3.0−	0.6−)	1999 03 20	704	0.6+	0.3+	1999 04 17	704	0.2+	0.3+
1985 02 26	809	(2.7−	0.5−)	1999 03 20	704	0.4+	0.7+	1999 04 17	704	0.7+	0.9+
1985 02 26	809	2.4−	0.6−	1999 03 20	704	0.4+	1.1+	1999 04 17	704	0.4+	0.1−
1985 02 28	809	0.5−	0.7−	1999 03 20	704	0.8+	0.7+	1999 04 17	704	0.2+	0.3+
1985 02 28	809	0.1−	1.0−	1999 03 23	704	0.3+	0.2+	1999 04 17	704	0.7−	0.1+
1994 12 28	411	0.3+	0.2+	1999 03 23	704	0.1+	0.7+				

(10487)∗ 1985 GP_1 = 1996 PM

Discovered 1985 Apr. 14 by C. S. Shoemaker at Palomar.

Id. G. V. Williams (*MPC* 27709)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	260.49368		(2000.0)		**P**	**Q**	
n	0.27997159	ω	202.42251		+0.47945984	+0.77267055	
a	2.3141602	Ω	98.53934		−0.72773960	+0.61502516	
e	0.1688424	i	24.87974		−0.49042159	−0.15723955	
P	3.52	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1985 04 14	675	1.4+	1.0+	1996 08 20	424	0.0	0.1+	1999 02 24	704	0.2−	1.5+
1985 04 23	675	1.1−	2.0−	1996 08 20	424	0.0	0.1−	1999 04 09	704	0.3−	0.5+
1985 04 25	675	1.2−	0.7−	1997 12 28	670	0.5+	0.0	1999 04 09	704	0.1−	1.0+
1996 08 09	424	0.0	0.6+	1997 12 28	670	0.2−	0.6−	1999 04 09	704	0.4+	0.9+
1996 08 09	424	1.0−	1.2−	1998 01 18	670	0.9−	0.4+	1999 04 09	704	0.1+	0.4+
1996 08 09	424	0.4+	0.2+	1998 01 18	670	0.4+	0.2−	1999 04 09	704	0.8−	0.6+
1996 08 11	424	0.2−	0.2+	1998 01 18	670	0.4+	0.7+	1999 04 20	704	1.6+	0.6−
1996 08 11	424	1.0+	0.3+	1999 02 24	704	0.7−	0.1−	1999 04 20	704	0.5+	1.0−
1996 08 11	424	0.3−	0.0	1999 02 24	704	0.9−	0.4+	1999 04 20	704	1.3+	0.8−
1996 08 16	424	0.1−	0.2+	1999 02 24	704	1.2−	0.1+	1999 04 20	704	1.2+	0.4−
1996 08 16	424	0.2+	0.3+	1999 02 24	704	1.3−	0.9+	1999 04 20	704	0.4+	0.8−

(10488)∗ 1985 RS_1 = 1970 PW

Discovered 1985 Sept. 12 by P. Wild at Zimmerwald.

Id. C. M. Bardwell (*MPC* 11151)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Bardwell

M	222.97906		(2000.0)		**P**	**Q**	
n	0.26460398	ω	312.55411		+0.93410837	+0.35637132	
a	2.4029153	Ω	26.58882		−0.31224433	+0.84412768	
e	0.2171077	i	2.68932		−0.17304632	+0.40055953	
P	3.72	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1970 08 10	095	0.6−	1.6−	1985 09 22	026	(3.7−	0.5+)	1999 03 20	704	0.5−	0.1+
1970 08 28	095	0.8+	0.8+	1985 09 25	026	1.0+	1.1+	1999 03 20	704	1.6−	1.3+
1985 09 11	809	0.3+	0.7+	1985 10 09	026	0.4−	0.3+	1999 03 20	704	1.2−	0.9+
1985 09 11	809	0.5+	0.6+	1985 10 12	026	2.0+	1.3+	1999 03 20	704	0.4+	0.0
1985 09 11	809	0.6+	0.6+	1985 10 13	026	0.0	0.6+	1999 03 20	704	(2.5−	0.8+)
1985 09 12	026	0.5−	0.7−	1985 10 14	026	0.5+	0.9+	1999 03 21	910	0.8+	0.3−
1985 09 14	809	0.0	0.4+	1985 10 16	026	0.4+	0.9+	1999 03 21	910	0.7+	0.4−
1985 09 14	809	0.3+	0.5+	1985 11 06	026	1.9+	1.0−	1999 03 21	910	0.7+	0.5−
1985 09 14	809	0.7+	0.5+	1989 09 07	033	0.6−	1.0+	1999 03 23	704	0.6+	0.7+
1985 09 15	809	0.0	0.3+	1989 09 08	033	0.2−	1.4+	1999 03 23	704	(2.6−	1.9+)
1985 09 15	809	0.3−	0.2+	1989 09 08	033	0.9−	1.6+	1999 03 23	704	0.7+	0.7−
1985 09 15	809	0.8−	0.0	1991 02 20	413	(66.0−	42.3+)	1999 03 23	704	(2.6−	1.7+)
1985 09 16	809	1.4−	0.0	1997 12 24	327	0.5−	0.3−	1999 03 29	699	0.1−	1.6−
1985 09 16	809	0.3−	0.3+	1997 12 24	327	0.2−	0.6−	1999 03 29	699	1.6+	1.0+
1985 09 16	809	0.4+	0.5+	1997 12 24	327	0.3−	0.1+	1999 03 29	699	1.8+	0.4−
1985 09 16	026	0.5−	0.5+	1998 01 23	704	0.3−	0.3+	1999 04 07	704	1.1−	0.3+
1985 09 18	809	0.2−	0.1−	1998 01 23	704	0.4−	0.1+	1999 04 07	704	0.9−	0.3+
1985 09 18	809	0.2+	0.0	1998 01 23	704	0.3−	0.0	1999 04 07	704	0.6−	1.0+
1985 09 18	809	0.5+	0.1+	1998 01 23	704	0.4−	0.2+	1999 04 07	704	1.1−	1.8+
1985 09 18	026	0.1−	0.0	1998 01 23	704	0.7−	0.4+	1999 04 14	691	0.3−	0.4+
1985 09 19	026	1.1−	0.4−	1998 01 24	704	0.2−	0.1−	1999 04 14	704	0.3+	0.1+
1985 09 19	809	0.4−	0.3+	1998 01 24	704	0.5−	0.0	1999 04 14	691	0.3−	0.2+
1985 09 19	809	0.2−	0.4+	1998 01 24	704	0.5−	0.0	1999 04 14	704	0.1+	0.3−
1985 09 19	809	0.1+	0.3+	1998 01 24	704	0.3+	0.2−	1999 04 14	704	0.0	0.5+
1985 09 20	809	0.3−	0.5+	1998 01 24	704	0.7−	0.4−	1999 04 14	691	0.2−	0.5+
1985 09 20	809	0.1−	0.5+	1998 01 25	704	(2.5−	0.9+)	1999 04 14	704	0.2−	0.6+
1985 09 20	809	0.1−	0.6+	1998 01 25	704	1.6+	1.0+	1999 04 15	704	0.8+	0.1+
1985 09 21	809	0.7−	0.7−	1998 01 25	704	0.9+	0.1+	1999 04 15	704	0.1−	0.3−
1985 09 21	809	0.6−	0.7−	1998 01 25	704	0.2+	0.5+	1999 04 15	704	1.0+	0.3+
1985 09 21	809	0.3−	0.6−	1998 01 25	704	0.5+	0.4+	1999 04 15	704	0.7+	0.4+
1985 09 21	809	0.1−	0.7−	1998 01 25	704	0.6+	0.0	1999 04 15	704	0.1+	0.2+
1985 09 21	809	0.0	0.7−	1998 01 25	704	0.1+	0.6+	1999 04 17	704	0.3−	0.4+
1985 09 21	809	0.3+	0.7−	1998 01 25	704	1.3+	1.0−	1999 04 17	704	1.0−	0.2+
1985 09 21	026	2.2−	1.5−	1998 01 25	704	0.2+	0.4+	1999 04 17	704	0.2+	0.0
1985 09 22	026	0.4+	0.4−	1999 03 20	910	1.1+	0.1+	1999 04 17	704	0.0	1.0+

1985 09 22	809	0.7−	0.5+	1999 03 20	910	1.0+	0.0	1999 04 17	704	0.1+	1.2+
1985 09 22	809	0.5−	0.1+	1999 03 20	910	1.2+	0.0				

(10489)∗ 1985 TJ$_1$ = 1975 TB$_5$ = 1990 QA$_5$

Discovered 1985 Oct. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. E. Bowell (*MPC* 17016), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	240.81176		(2000.0)		**P**		**Q**
n	0.18894754	ω	290.58054		+0.72607334		+0.68236587
a	3.0077510	Ω	26.61351		−0.53904523		+0.64142824
e	0.0832115	i	10.91437		−0.42690484		+0.35063746
P	5.22	H	12.4	G	0.15	U	2

Residuals in seconds of arc

1975 10 14	095	0.7+	1.6+	1985 10 15	688	0.5−	0.2−	1999 04 07	704	0.7+	0.1+
1985 09 11	809	1.9−	1.8+	1985 10 15	688	0.2+	2.2−	1999 04 07	704	0.9+	0.1+
1985 09 11	809	1.9−	1.7+	1990 08 24	675	0.9+	0.6−	1999 04 07	704	1.1+	0.9+
1985 09 11	809	2.0−	1.5+	1990 08 24	675	1.1+	0.3+	1999 04 12	704	0.2−	0.2−
1985 09 15	809	0.2−	0.7+	1990 08 26	675	(4.9+	0.8−)	1999 04 12	704	0.4−	0.4+
1985 09 15	809	0.0	0.7+	1990 08 26	675	0.8+	0.1−	1999 04 12	704	0.3+	0.6+
1985 09 15	809	0.2+	0.8+	1990 08 29	675	0.9+	0.6−	1999 04 12	704	0.3+	1.4+
1985 09 16	809	1.3−	0.1+	1997 11 29	688	0.6+	0.5+	1999 04 12	704	0.3−	1.0+
1985 09 16	809	1.3−	0.1+	1997 11 29	688	0.4+	0.2+	1999 04 14	691	0.1+	0.3+
1985 09 16	809	1.0−	0.1+	1997 12 27	688	0.2+	0.6+	1999 04 14	704	0.6+	0.1−
1985 09 17	809	0.8−	0.0	1998 02 26	098	0.0	0.4−	1999 04 14	691	0.0	0.1+
1985 09 17	809	0.8−	0.1+	1998 02 26	098	0.6+	0.1−	1999 04 14	704	0.1+	0.7−
1985 09 17	809	0.6−	0.1+	1998 02 27	098	0.4+	0.0	1999 04 14	704	1.9−	0.8−
1985 09 18	809	1.0−	0.7+	1998 02 27	098	0.5−	0.7+	1999 04 14	691	0.1+	0.1+
1985 09 18	809	1.0−	0.7+	1999 03 20	704	0.2+	1.7+	1999 04 14	704	1.9−	0.0
1985 09 18	809	0.6−	0.7+	1999 03 20	704	0.8+	1.2+	1999 04 15	704	0.1−	0.5+
1985 09 19	809	0.7−	1.1+	1999 03 20	704	0.1−	1.2+	1999 04 15	704	0.4−	0.3−
1985 09 19	809	0.9−	1.0+	1999 03 20	704	0.4−	1.3+	1999 04 15	704	0.0	0.7−
1985 09 19	809	0.8−	0.8+	1999 03 23	704	1.5+	0.2+	1999 04 15	704	0.2+	0.4−
1985 09 20	809	1.1+	0.7−	1999 03 23	704	0.3+	1.5+	1999 04 15	704	1.1−	0.8−
1985 09 20	809	1.3+	0.9−	1999 03 23	704	(0.4+	3.7+)	1999 04 17	704	0.6+	0.4−
1985 09 21	809	0.1−	0.0	1999 03 23	704	(0.1+	3.0+)	1999 04 17	704	(2.1−	1.0−)
1985 09 21	809	0.1+	0.2+	1999 03 29	699	1.3+	0.8−	1999 04 17	704	0.4−	0.1+
1985 09 21	809	0.0	0.3+	1999 03 29	699	0.0	0.8+	1999 04 17	704	0.4+	0.3−
1985 09 22	809	1.7+	0.7−	1999 03 29	699	1.4+	0.3−	1999 04 17	704	0.8−	0.1−
1985 09 22	809	1.9+	0.6−	1999 04 07	704	0.6+	0.5+				
1985 10 12	688	1.5+	1.3−	1999 04 07	704	0.6+	0.5+				

(10490)∗ 1985 VL = 1990 SY$_{10}$

Discovered 1985 Nov. 14 by P. Jensen at Brorfelde.

Id. H. Kaneda (*MPC* 18110)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	337.33814		(2000.0)		**P**		**Q**
n	0.17432361	ω	345.05133		−0.96408941		+0.23556736
a	3.1736954	Ω	209.46032		−0.21082315		−0.95966174
e	0.0266588	i	14.43913		−0.16150913		−0.15348408
P	5.65	H	12.2	G	0.15	U	2

Residuals in seconds of arc

1985 11 11	095	(1.2−	2.7−)	1996 12 24	327	0.2+	0.0	1999 04 14	704	0.9+	0.8−
1985 11 14	054	0.0	0.2−	1996 12 24	327	0.5+	0.8−	1999 04 14	704	1.1−	0.1−
1985 11 15	054	0.7+	0.3−	1996 12 24	327	0.8+	0.2+	1999 04 14	704	2.8+	1.7+
1985 11 15	054	0.7−	1.3+	1997 01 06	327	0.1+	1.0+	1999 04 14	704	0.0	1.3+
1990 09 17	675	0.1+	0.4−	1997 01 06	327	0.2−	0.5+	1999 04 15	704	0.0	0.6−
1990 09 17	675	0.1+	0.2−	1997 01 06	327	0.7+	0.0	1999 04 15	704	0.9+	0.9−
1990 09 19	675	0.4−	0.6−	1999 03 22	704	0.6−	0.2+	1999 04 15	704	1.1−	1.3−
1990 09 19	675	(0.5+	2.5−)	1999 03 22	704	0.2−	0.1−	1999 04 15	704	1.4−	0.2−
1990 09 20	675	0.3+	0.2+	1999 03 22	704	0.3+	0.2−	1999 04 15	704	0.2−	0.3+
1990 09 20	675	0.0	0.8+	1999 03 22	704	0.6−	0.1+	1999 04 17	704	0.1−	0.3−
1996 11 07	691	0.7−	0.4−	1999 04 11	699	1.6+	0.2−	1999 04 17	704	0.4+	0.3−
1996 11 07	691	0.3−	0.6−	1999 04 11	699	1.2+	0.4−	1999 04 17	704	0.6−	0.4−
1996 11 07	691	0.8−	0.4−	1999 04 11	699	1.3+	0.5−	1999 04 17	704	0.3−	0.1−
1996 11 08	691	0.1+	0.3−	1999 04 12	704	0.1+	0.2+	1999 04 17	704	0.9−	0.4+
1996 11 08	691	0.1+	0.2−	1999 04 12	704	0.5−	0.4+				
1996 11 08	691	0.1+	0.4−	1999 04 12	704	2.2−	0.2+				

(10491)∗ 1986 QS$_1$ = 1990 WY$_6$

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

Id. B. G. Marsden (*MPC* 18285)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	161.51813		(2000.0)		**P**		**Q**
n	0.27922908	ω	229.84777		+0.99525782		−0.06743131
a	2.3182608	Ω	133.89213		+0.08711595		+0.93853519
e	0.1496349	i	5.58270		−0.04327447		+0.33853317
P	3.53	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1986 07 27	413	0.4−	1.9−	1986 09 06	809	0.1−	0.4+	1995 01 21	596	0.3−	0.3−
1986 07 27	413	0.3+	1.2+	1986 09 06	809	0.0	0.4+	1995 01 21	596	0.9−	0.4−
1986 08 01	413	0.1+	2.0−	1986 09 07	809	0.6−	0.2+	1995 01 23	411	0.9−	0.4−
1986 08 01	413	1.2+	0.4+	1986 09 07	809	0.1−	0.3+	1995 01 23	411	0.4−	0.3+
1986 08 27	809	1.2−	0.2+	1986 09 07	809	0.1+	0.4+	1999 03 20	704	0.7−	1.2−
1986 08 27	809	1.0−	0.2+	1986 09 09	809	0.9+	0.2+	1999 03 20	704	0.7+	0.7−
1986 08 27	809	0.8−	0.2+	1986 09 09	809	1.0+	0.1+	1999 03 20	704	0.3+	0.0
1986 08 29	809	1.1−	0.1−	1986 09 09	809	0.9+	0.2+	1999 03 20	704	0.6+	0.8+
1986 08 29	809	0.8−	0.2+	1986 09 11	809	0.9+	0.3−	1999 03 20	704	0.0	1.6+
1986 08 29	809	0.3−	0.1+	1986 09 11	809	1.1+	0.3−	1999 03 23	704	0.5−	0.5−
1986 09 01	809	0.3−	1.0+	1986 09 11	809	1.1+	0.4−	1999 03 23	704	0.1−	0.4−
1986 09 01	809	0.3+	1.0+	1990 11 14	675	0.6+	0.9+	1999 03 23	704	1.2−	0.2+
1986 09 01	809	0.5+	0.8+	1990 11 14	675	0.5+	0.3+	1999 03 23	704	0.5−	0.5−
1986 09 01	809	0.3−	0.3−	1990 11 21	809	(3.2−	4.9+)	1999 03 23	704	0.3−	0.6−
1986 09 01	809	0.1−	0.1−	1990 11 21	809	(3.3−	4.9+)	1999 04 12	704	0.4+	0.1+
1986 09 01	809	0.1+	0.3−	1990 11 21	809	(4.0−	4.4+)	1999 04 12	704	0.3−	1.0+
1986 09 02	809	0.2−	0.1−	1990 11 22	809	(0.3−	3.3+)	1999 04 12	704	0.4+	1.7+
1986 09 02	809	0.0	0.3−	1990 11 22	809	(1.3−	3.3+)	1999 04 12	704	0.7+	1.4+
1986 09 02	809	0.0	0.3−	1990 11 22	809	(0.5−	3.8+)	1999 04 12	704	1.6+	1.1+
1986 09 03	809	0.1+	0.5+	1993 07 22	801	0.3+	1.0−	1999 04 19	704	0.2+	0.3−
1986 09 03	809	0.1−	0.6+	1993 07 22	801	0.3+	0.8−	1999 04 19	704	0.8+	0.1−
1986 09 03	809	0.2−	0.5+	1993 07 23	801	0.1−	0.4−	1999 04 19	704	1.2+	0.1−
1986 09 05	809	0.4−	0.5−	1993 07 23	801	0.2+	0.6−	1999 04 19	704	0.6+	1.3−
1986 09 05	809	0.2−	0.6−	1993 08 11	894	1.2−	1.1+	1999 04 19	704	1.1−	0.1−
1986 09 05	809	0.2−	0.6−	1993 08 11	894	0.2+	0.7+				
1986 09 06	809	0.2−	0.1+	1995 01 21	596	0.1−	0.2−				

(10492)∗ 1986 QZ$_1$ = 1989 CZ$_7$ = 1997 NN$_{11}$

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

Id. T. B. Spahr (*MPC* 30651), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	51.07322		(2000.0)		**P**		**Q**
n	0.18704136	ω	262.51876		+0.61577202		−0.78208011
a	3.0281516	Ω	148.82577		+0.77601609		+0.58091096
e	0.0613851	i	10.66397		+0.13646923		+0.22559513
P	5.27	H	12.6	G	0.15	U	2

Residuals in seconds of arc

1986 08 28	809	0.6−	0.7+	1997 07 02	704	0.6−	0.3+	1998 12 22	704	0.7+	0.6−
1986 08 28	809	0.2−	0.7+	1997 07 02	704	1.8+	0.1+	1998 12 22	704	0.2+	0.8+
1986 08 28	809	0.2+	0.6+	1997 07 02	704	0.4−	1.4+	1998 12 22	704	(2.3+	1.6+)
1986 08 30	809	0.3−	1.1+	1997 07 02	704	1.5+	0.1−	1998 12 22	704	1.5+	1.0+
1986 08 30	809	0.4−	1.1+	1997 07 02	704	1.8+	0.2+	1999 01 18	704	1.2+	0.9−
1986 08 30	809	0.4−	1.1+	1997 10 30	566	1.0−	1.3−	1999 01 18	704	0.0	0.1−
1986 09 07	809	0.2+	0.1+	1997 10 30	566	1.7−	0.9−	1999 01 18	704	0.6+	0.4+
1986 09 07	809	0.1+	0.2+	1997 10 30	566	1.2−	1.3−	1999 01 18	704	0.2+	1.1+

1986 09 07	809	0.1−	0.1−	1998 12 15	704	0.4−	0.0	1999 01 18	704	1.4−	0.8+
1986 09 08	809	0.3+	0.4−	1998 12 15	704	0.0	0.5+	1999 01 20	704	0.7−	0.4+
1986 09 08	809	0.3+	0.3−	1998 12 15	704	0.2+	0.4−	1999 01 20	704	(3.5−	3.2+)
1986 09 08	809	0.4+	0.3−	1998 12 15	704	1.3−	0.1+	1999 01 20	704	0.5+	0.5−
1986 09 10	809	0.3+	0.3−	1998 12 15	704	0.1+	0.0	1999 01 20	704	0.1+	0.8−
1986 09 10	809	0.3+	0.4−	1998 12 16	747	0.3+	0.1−	1999 01 20	704	(2.9−	0.4+)
1986 09 10	809	0.0	0.3−	1998 12 16	747	0.3+	0.0	1999 04 07	704	0.2−	0.4+
1989 02 07	888	0.5+	1.0+	1998 12 16	747	0.1+	0.1+	1999 04 07	704	1.1−	0.3−
1989 02 07	888	1.0−	0.8+	1998 12 17	747	0.0	0.1−	1999 04 07	704	1.1−	0.1−
1997 07 02	704	0.5−	1.7−	1998 12 17	747	0.2+	0.2+	1999 04 07	704	0.3+	1.0+
1997 07 02	704	1.4+	1.3+	1998 12 17	747	0.1−	0.1+				
1997 07 02	704	0.9−	1.7+	1998 12 22	704	0.3+	0.5−				

(10493)∗ 1986 QH$_2$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	108.13911		(2000.0)		**P**	**Q**	
n	0.28440103	ω	308.22086		+0.20690839	−0.97350491	
a	2.2900692	Ω	129.55386		+0.93245979	+0.16610219	
e	0.0640435	i	7.25357		+0.29615478	+0.15715677	
P	3.47	H	14.2	G	0.15	U	1

Residuals in seconds of arc

1986 08 28	809	0.7+	0.6+	1986 09 08	809	0.2−	0.1+	1997 11 08	587	0.1−	0.5+
1986 08 28	809	1.1+	1.0+	1986 09 08	809	0.1−	0.2+	1997 12 28	566	0.3−	0.4+
1986 08 28	809	1.3+	1.3+	1986 09 10	809	0.1−	0.0	1997 12 28	566	0.1−	0.4+
1986 09 01	809	0.9−	0.2+	1986 09 10	809	0.1+	0.0	1997 12 28	566	0.4−	0.6+
1986 09 01	809	0.6−	0.3+	1986 09 10	809	0.2+	0.1−	1999 02 23	704	(2.1−	0.6+)
1986 09 01	809	1.0−	0.3+	1986 09 12	809	0.1+	0.0	1999 02 23	704	0.2−	0.5+
1986 09 03	809	0.1−	0.4+	1986 09 12	809	0.1+	0.0	1999 02 23	704	1.5−	0.2−
1986 09 03	809	0.0	0.1+	1986 09 12	809	0.0	0.0	1999 04 12	704	0.0	0.5−
1986 09 03	809	0.3+	0.1+	1995 01 27	411	1.5−	0.7+	1999 04 12	704	0.8+	0.3+
1986 09 05	809	0.4−	0.0	1995 01 27	411	0.5+	0.4−	1999 04 12	704	0.4+	0.1+
1986 09 05	809	0.5−	0.0	1995 01 29	411	0.6+	0.7+	1999 04 12	704	0.5+	0.8+
1986 09 05	809	0.5−	0.2+	1995 01 29	411	0.7+	0.5+	1999 04 19	704	0.3+	0.1−
1986 09 06	809	0.2−	0.2+	1995 02 10	411	0.4−	1.2+	1999 04 19	704	0.2+	1.0+
1986 09 06	809	0.2−	0.2+	1995 02 10	411	1.2+	0.9+	1999 04 19	704	0.1−	0.8+
1986 09 06	809	0.1−	0.2+	1997 11 08	587	0.2+	0.3+	1999 04 19	704	0.4+	0.7+
1986 09 08	809	0.2−	0.1+	1997 11 08	587	0.1−	0.7+	1999 04 19	704	0.2−	0.6+

(10494)∗ 1986 QO$_3$ = 1953 VG$_2$ = 1990 WJ$_{12}$ = 1996 FS$_{21}$

Discovered 1986 Aug. 29 by H. Debehogne at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 28840), G. V. Williams, A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	97.44656		(2000.0)		**P**	**Q**	
n	0.26664549	ω	332.61380		+0.89429212	−0.44486578	
a	2.3906347	Ω	53.88319		+0.42072839	+0.79911535	
e	0.2255790	i	3.43012		+0.15241135	+0.40436259	
P	3.70	H	14.6	G	0.15	U	1

Residuals in seconds of arc

1953 11 14	760	0.4+	2.5−	1986 09 09	809	0.4−	0.2−	1997 12 07	910	(3.0−	2.1−)
1953 11 14	760	0.0	1.4+	1986 09 09	809	0.2−	0.3−	1997 12 07	910	(2.8−	1.6−)
1986 08 29	809	0.3+	1.2+	1986 09 09	809	0.1+	0.4−	1999 02 10	704	0.1+	1.3+
1986 08 29	809	0.2+	1.2+	1986 09 10	809	0.3+	0.1+	1999 02 10	704	0.7+	0.3+
1986 08 29	809	0.2+	1.2+	1986 09 10	809	0.2+	0.1−	1999 02 10	704	0.1+	0.4+
1986 08 31	809	0.4−	0.7+	1986 09 10	809	0.3+	0.5−	1999 02 10	704	1.1−	0.7+
1986 08 31	809	0.4−	0.6+	1986 09 11	809	0.8+	0.3−	1999 02 13	704	0.5+	0.6−
1986 08 31	809	0.1−	0.5+	1986 09 11	809	0.8+	0.3−	1999 02 13	704	(2.4+	0.9−)
1986 09 01	809	0.4−	1.0+	1986 09 11	809	0.9+	0.4−	1999 02 13	704	0.9+	0.9−
1986 09 01	809	0.4−	0.9+	1990 11 22	898	1.1−	0.9−	1999 02 13	704	0.8−	1.7−
1986 09 01	809	0.2−	0.9+	1990 11 22	898	0.0	0.9+	1999 02 13	704	0.4−	1.5−
1986 09 02	809	0.0	0.1−	1996 03 24	809	1.6−	1.0−	1999 02 23	699	0.6+	0.9+
1986 09 02	809	0.0	0.3−	1996 03 24	809	(2.6−	0.5−)	1999 02 23	699	0.7+	0.5+
1986 09 02	809	0.1+	0.5−	1996 03 24	809	1.5−	0.9−	1999 02 23	699	1.2+	0.5+
1986 09 04	809	0.7−	0.3−	1996 03 27	809	(1.1+	3.5+)	1999 03 20	704	0.2−	0.7+
1986 09 04	809	0.7−	0.4−	1996 03 27	809	(1.2+	2.7+)	1999 03 20	704	(2.3−	2.6+)
1986 09 04	809	0.9−	0.5−	1996 03 27	809	(1.9+	2.5+)	1999 03 20	704	0.4+	0.3+
1986 09 07	809	0.1+	0.7−	1997 10 31	688	0.5+	0.6−	1999 03 20	704	(1.6−	2.4+)
1986 09 07	809	0.3+	0.8−	1997 10 31	688	0.6+	0.9−				
1986 09 07	809	0.1+	0.9−	1997 12 07	910	(2.5−	1.7−)				

(10495)∗ 1986 RD = 1991 UB$_1$

Discovered 1986 Sept. 8 by P. Jensen at Brorfelde.

Id. H. Kaneda (*MPC* 19297)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	254.84084		(2000.0)		**P**	**Q**	
n	0.21090217	ω	101.86865		+0.70089366	+0.71029641	
a	2.7952159	Ω	212.93759		−0.69208898	+0.65520632	
e	0.2245917	i	6.86760		−0.17251358	+0.25726191	
P	4.67	H	13.2	G	0.15	U	1

Residuals in seconds of arc

1986 09 08	054	0.9+	0.6−	1995 07 04	596	0.6−	0.1−	1999 04 07	704	0.3+	0.2−
1986 09 11	054	0.3−	1.0−	1995 07 06	684	0.7−	0.1+	1999 04 07	704	0.3−	0.7+
1986 09 12	054	0.6+	0.8+	1995 07 06	684	0.6−	0.2+	1999 04 07	704	0.0	0.3−
1986 09 29	010(20.9+		7.0+)	1995 08 26	801	1.2+	0.9+	1999 04 07	704	0.2−	0.2+
1986 09 29	054 (3.5+		1.4+)	1995 08 26	801	1.3+	0.6+	1999 04 09	699	0.6+	0.5+
1986 09 29	010(20.7+		8.3+)	1995 08 28	801	1.4+	0.9+	1999 04 09	699	0.9+	0.3−
1991 10 18	399	0.7−	0.6−	1995 08 28	801	(2.1+	0.2+)	1999 04 09	699	0.6+	0.0
1991 10 18	399	1.0−	0.3−	1996 11 07	684	0.1+	0.2+	1999 04 14	704	0.6+	0.5−
1991 10 19	399	0.3−	0.1+	1996 11 07	684	0.1+	0.2+	1999 04 14	704	0.0	0.9−
1991 10 19	399	0.3+	0.8+	1996 11 07	684	0.3+	0.2+	1999 04 14	704	0.6−	0.7−
1994 04 05	675	0.9−	0.8+	1996 11 08	684	0.2+	0.1+	1999 04 14	704	0.6−	1.1−
1995 06 20	104	0.3+	0.3−	1996 11 08	684	0.0	0.1+	1999 04 15	704	0.4−	0.5−
1995 06 20	104	0.3+	0.6−	1998 01 26	566	0.4+	0.5+	1999 04 15	704	0.5−	0.1−
1995 06 20	104	0.1−	0.6−	1998 01 26	566	0.6+	0.5+	1999 04 15	704	0.2+	0.6−
1995 06 20	104	0.2−	0.6−	1998 01 26	566	0.2+	0.7+	1999 04 15	704	0.6−	0.3−
1995 06 20	104	1.3+	0.1−	1999 03 19	704	0.5+	0.8−	1999 04 15	704	0.4−	0.1+
1995 06 21	104	0.3+	0.2+	1999 03 19	704	1.5+	0.4+	1999 04 17	704	0.0	0.2−
1995 06 21	104	0.3+	0.1−	1999 03 19	704	(1.4−	2.2−)	1999 04 17	704	0.5+	0.4−
1995 06 21	104	0.1+	0.0	1999 03 19	704	0.3−	0.7−	1999 04 17	704	0.2+	0.0
1995 06 21	104	0.1−	0.1+	1999 03 20	704	1.1+	0.2−	1999 04 17	704	0.1−	0.3−
1995 06 30	596	0.3−	0.3+	1999 03 20	704	1.0−	1.6+	1999 04 17	704	0.1+	1.4−
1995 06 30	596	0.6−	0.2−	1999 03 20	704	0.5+	0.9−	1999 04 18	704	0.4+	0.2−
1995 06 30	596	0.1−	0.1+	1999 03 20	704	0.3+	0.8+	1999 04 18	704	0.6+	0.8−
1995 07 01	596	0.3−	1.2+	1999 03 20	704	1.3−	0.3+	1999 04 18	704	0.2+	0.2+
1995 07 01	596	0.4−	0.2+	1999 03 23	704	0.8−	0.9+	1999 04 18	704	0.1−	0.9+
1995 07 01	596	0.3−	0.3+	1999 03 23	704	0.4−	0.2+	1999 04 18	704	0.4+	0.7+
1995 07 04	684	0.4−	0.4−	1999 03 23	704	1.4−	0.3+	1999 04 18	704	0.8+	0.9−
1995 07 04	684	0.2−	0.2+	1999 03 23	704	1.3+	0.2−	1999 04 18	704	0.5+	0.6+
1995 07 04	596	0.5−	0.0	1999 03 23	704	0.1+	0.3+	1999 04 18	704	0.8+	1.1+
1995 07 04	596	1.0−	0.5+	1999 04 07	704	1.3−	1.6+	1999 04 18	704	2.1−	0.2−

(10496)∗ 1986 RK = 1993 RS$_2$

Discovered 1986 Sept. 11 by P. Jensen at Brorfelde.

Id. K. Watanabe (*MPC* 22683)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	225.66028		(2000.0)		**P**	**Q**	
n	0.28504322	ω	88.35399		+0.80327431	+0.58558044	
a	2.2866283	Ω	235.78740		−0.58529488	+0.74221219	
e	0.2022958	i	7.56286		−0.11036435	+0.32590890	
P	3.46	H	13.7	G	0.15	U	2

Residuals in seconds of arc

1986 09 05	688	1.2−	0.6+	1993 11 11	801	0.5−	0.1−	1999 04 11	699	1.2+	0.0
1986 09 05	688	1.0−	1.0+	1993 11 11	801	0.5−	0.1−	1999 04 11	699	1.2+	0.2+
1986 09 08	095	(5.8−	1.9+)	1993 11 13	801	0.4−	0.5−	1999 04 14	704	0.0	0.1+

1986 09 11	688	1.5+	0.1−	1993 11 13	801	0.3−	0.8−	1999 04 14	704	0.4−	0.1+
1986 09 11	688	1.5+	0.0	1996 05 15	801	0.3−	0.3+	1999 04 14	704	0.2+	0.2−
1986 09 11	095	(3.4−	2.0−)	1996 05 23	801	0.0	0.1+	1999 04 15	704	0.6+	0.9−
1986 09 11	054	0.9−	1.0+	1996 05 23	801	0.2−	0.3+	1999 04 15	704	0.5−	0.7−
1986 09 11	054	1.4−	0.1+	1996 06 15	801	0.4+	1.4−	1999 04 15	704	0.3+	0.1−
1986 10 05	688	1.0−	1.0+	1996 06 15	801	0.2+	1.2−	1999 04 15	704	0.1+	0.4−
1986 10 05	688	0.4+	2.2+	1999 03 22	704	0.2−	0.1+	1999 04 17	704	0.2−	0.5+
1993 09 15	400	0.4+	1.2−	1999 03 22	704	0.2+	0.1−	1999 04 17	704	0.2+	0.6+
1993 09 15	400	1.4+	0.4+	1999 03 22	704	0.4+	0.0	1999 04 17	704	0.3−	1.4+
1993 09 16	400	0.7+	0.9−	1999 03 22	704	1.4−	0.0	1999 04 17	704	0.2−	1.4+
1993 09 16	400	0.0	0.6−	1999 04 11	699	0.7+	0.9+	1999 04 17	704	0.6−	0.7+

(10497)∗ 1986 RQ = 1965 UO_2 = 1972 TX_2 = 1972 TR_6 = 1979 SO_2

Discovered 1986 Sept. 11 by P. Jensen at Brorfelde.

Id. B. G. Marsden (*MPC* 11342)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	210.49729		(2000.0)		**P**	**Q**	
n	0.28062769	ω	113.56316		+0.80729967	+0.58426802	
a	2.3105518	Ω	210.87625		−0.58306762	+0.76795795	
e	0.1860656	*i*	9.31382		−0.09110098	+0.26243376	
P	3.51	*H*	13.7	*G*	0.15	*U*	2

Residuals in seconds of arc

1965 10 20	330	1.0+	0.8−	1986 10 08	054	0.1+	0.2+	1996 06 23	691	0.2+	0.2+
1971 04 16	675	0.1+	2.1−	1986 10 08	054	0.8+	0.1+	1996 06 23	691	0.1+	0.0
1971 04 16	675	0.2−	0.5−	1993 09 12	675	1.1−	0.8+	1996 06 23	691	0.2+	0.2−
1971 05 13	675	1.6+	2.0−	1993 09 12	675	0.3+	0.9+	1999 03 20	704	0.2−	0.1+
1971 05 14	675	(0.5+	2.9−)	1993 09 13	675	(0.0	2.3−)	1999 03 20	704	1.4−	0.3−
1972 10 05	095	(2.5−	6.8+)	1993 09 13	675	(1.1−	2.1−)	1999 03 20	704	0.3−	0.5−
1972 10 06	095	(6.5+	10.9−)	1993 09 14	801	0.8+	0.0	1999 03 20	704	0.1−	0.3−
1972 10 13	095	2.1−	1.1+	1993 09 14	801	0.9+	0.0	1999 03 22	699	0.8+	0.4+
1979 09 22	095	0.9+	0.1−	1993 09 14	675	0.7+	0.5−	1999 03 22	699	0.5+	0.6+
1979 09 28	095	1.3−	2.1−	1993 09 14	675	0.2−	0.1+	1999 03 22	699	1.1+	0.2−
1986 09 11	054	0.8−	0.1−	1993 09 16	675	(2.1−	4.2−)	1999 03 23	704	0.0	0.1+
1986 10 03	054	0.1+	1.0−	1993 09 16	675	1.9−	0.7−	1999 03 23	704	1.1−	0.3+
1986 10 04	675	0.5−	1.7−	1993 09 19	801	0.6+	0.1−	1999 03 23	704	1.5−	0.5+
1986 10 04	675	1.5+	1.8+	1993 09 19	801	0.7+	0.1+	1999 03 23	704	0.6−	0.1−
1986 10 04	054	0.1−	0.3+	1993 10 12	801	0.7+	0.2+	1999 04 11	699	0.3+	0.6+
1986 10 05	675	1.1−	1.5−	1993 10 12	801	0.7+	0.0	1999 04 11	699	0.8+	1.0+
1986 10 05	675	0.5+	1.4+	1996 06 04	689	1.7−	0.6+	1999 04 11	699	1.0+	0.1+
1986 10 05	095	1.0−	0.6+	1996 06 05	689	0.4+	0.1−				

(10498)∗ 1986 RG_3 = 1979 ON_{16} = 1993 SW_1

Discovered 1986 Sept. 11 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (*MPC* 22684)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	225.42839		(2000.0)		**P**	**Q**	
n	0.28493452	ω	152.14382		+0.71962215	+0.69328821	
a	2.2872098	Ω	163.77589		−0.66002406	+0.70026733	
e	0.2591734	*i*	7.95578		−0.21566688	+0.17022671	
P	3.46	*H*	14.6	*G*	0.15	*U*	2

Residuals in seconds of arc

1979 07 31	095	0.7+	1.0+	1993 09 21	675	0.3+	1.1−	1999 03 20	704	0.6+	0.6+
1986 09 07	095	(0.3+	3.3−)	1993 09 21	675	1.0+	1.3−	1999 03 20	704	0.7+	0.5+
1986 09 11	688	1.4−	0.8−	1993 10 10	675	(2.0+	0.1−)	1999 03 20	704	0.1+	0.5+
1986 09 11	688	0.4−	1.2+	1993 10 10	675	0.7+	0.7−	1999 03 23	704	0.3−	0.4−
1986 09 12	095	0.0	1.0+	1993 10 11	400	(1.0+	3.7−)	1999 03 23	704	0.7+	1.0+
1986 09 30	010	(5.2−	0.8−)	1993 10 11	400	1.6−	0.6+	1999 03 23	704	0.8+	0.9+
1986 09 30	010	0.9−	1.4+	1993 10 12	675	1.5+	0.3−	1999 03 23	704	1.0+	0.0
1992 03 03	809	1.3−	0.1+	1993 10 12	675	1.5+	0.8+	1999 03 23	704	1.9−	0.3−
1992 03 06	809	0.3+	0.1−	1996 05 21	801	0.2+	0.2−	1999 04 06	704	0.1−	1.8+
1993 09 16	400	1.7−	1.1−	1996 05 21	801	0.3−	0.0	1999 04 06	704	0.4+	0.6+
1993 09 16	400	(2.6+	1.2+)	1996 05 23	801	0.3−	0.8−	1999 04 06	704	1.0−	0.8−
1993 09 18	400	(3.0+	0.5+)	1996 05 23	801	0.2−	0.8−	1999 04 06	704	0.4+	1.1+
1993 09 18	400	0.1+	1.3+	1999 03 20	704	0.5+	1.6−				

(10499)∗ 1986 RN_5 = 1955 TL = 1993 RG

Discovered 1986 Sept. 7 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (*MPC* 22684)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	204.96579		(2000.0)		**P**	**Q**	
n	0.28489451	ω	343.37274		+0.95581936	+0.29395319	
a	2.2874240	Ω	359.52945		−0.25519009	+0.82820094	
e	0.2241535	*i*	6.49217		−0.14590189	+0.47715273	
P	3.46	*H*	14.2	*G*	0.15	*U*	2

Residuals in seconds of arc

1955 10 11	760	0.7+	0.1−	1993 09 25	894	0.6−	0.1+	1999 04 17	704	0.4−	0.6+
1955 10 11	760	0.6+	0.2−	1993 09 25	894	0.7+	0.4+	1999 04 17	704	0.3−	0.8−
1955 10 20	760	0.9−	0.7−	1993 10 09	026	0.3−	1.0+	1999 04 17	704	0.3+	0.4+
1986 09 07	809	0.6−	1.5−	1993 10 10	675	0.4+	1.4+	1999 04 17	704	0.4+	0.9+
1986 09 07	809	0.3−	1.4−	1993 10 10	675	0.2+	0.7+	1999 04 17	704	1.0−	1.3+
1986 09 07	809	0.1+	1.3−	1993 10 11	026	0.5+	0.3+	1999 04 17	704	1.0+	0.9+
1986 09 08	809	0.4+	1.2+	1999 03 20	704	1.5+	0.6−	1999 04 19	704	0.8+	1.4−
1986 09 08	809	0.4+	1.4+	1999 03 20	704	(0.7−	2.2−)	1999 04 19	704	0.0	0.1+
1986 09 08	809	0.9+	1.4+	1999 03 20	704	0.7+	1.0−	1999 04 19	704	0.6+	0.8−
1986 09 11	809	0.9−	0.9+	1999 03 20	704	0.7−	0.7−	1999 04 19	704	0.3+	0.4+
1986 09 11	809	0.2−	0.8+	1999 03 20	704	0.9+	1.0+	1999 04 19	704	0.7−	0.1−
1986 09 11	809	0.2−	0.7+	1999 03 23	704	0.7−	1.0−	1999 04 19	704	0.3+	0.8+
1993 07 26	675	0.5+	0.4−	1999 03 23	704	0.6+	1.3−	1999 04 19	704	0.4+	0.7+
1993 07 26	675	0.3+	1.2−	1999 03 23	704	1.1−	0.2−	1999 04 19	704	1.7+	0.2+
1993 09 12	400	0.5+	0.6−	1999 03 23	704	0.7−	1.3−	1999 04 19	704	1.1−	1.1+
1993 09 12	400	0.1+	0.2+	1999 03 23	704	1.2+	0.9−	1999 04 19	704	0.4−	1.4−
1993 09 13	400	1.7−	0.8−	1999 04 10	699	0.1−	1.0−	1999 04 20	860	(2.4−	0.3−)
1993 09 13	400	(2.9+	0.7+)	1999 04 10	699	0.8+	0.4+	1999 04 20	860	1.1−	0.3+
1993 09 14	894	1.3−	1.1+	1999 04 10	699	1.0+	0.2+	1999 04 20	860	0.8−	0.3−
1993 09 14	894	1.6−	1.0−	1999 04 14	704	1.0−	0.2+	1999 04 20	704	0.5−	0.1−
1993 09 15	809	1.3+	0.3−	1999 04 14	704	(2.3+	1.5−)	1999 04 20	704	(0.1−	2.1−)
1993 09 15	809	0.0	0.9−	1999 04 14	704	0.1−	0.6−	1999 04 20	704	(0.5−	2.1−)
1993 09 15	809	0.4−	0.6−	1999 04 14	704	0.1+	1.2+	1999 04 20	704	0.4−	1.3−
1993 09 19	675	0.4+	0.8+	1999 04 15	704	0.7+	0.1+	1999 04 20	704	0.4−	1.1−
1993 09 19	675	0.5+	0.5+	1999 04 15	704	(2.8+	0.3+)	1999 04 20	704	0.8−	0.5−
1993 09 19	400	0.6−	1.4−	1999 04 15	704	0.4+	0.2−	1999 04 20	704	(0.3−	2.3+)
1993 09 19	400	(1.2−	3.5−)	1999 04 15	704	1.3+	0.9+	1999 04 20	704	0.4−	0.3+
1993 09 19	026	0.1−	0.3+	1999 04 15	704	0.2−	1.1+	1999 04 20	704	0.7−	1.0−
1993 09 20	691	0.0	0.2+	1999 04 17	704	(2.3+	0.5+)	1999 04 20	704	1.6+	1.0+
1993 09 20	691	0.0	0.1−	1999 04 17	704	1.3−	0.5+	1999 04 20	704	0.6+	1.3−
1993 09 20	691	0.1+	0.0	1999 04 17	704	0.0	0.6−	1999 04 20	704	0.7+	0.1+
1993 09 21	026	0.3−	0.1+	1999 04 17	704	0.2−	0.3+	1999 04 20	704	1.0−	1.2−
1993 09 21	400	0.7−	1.2+	1999 04 17	704	0.4+	0.9+	1999 04 20	704	0.6+	0.9+
1993 09 21	400	1.6−	0.2+	1999 04 17	704	1.3−	0.2−	1999 04 20	704	0.7+	0.3−
1993 09 22	809	1.8+	1.7−	1999 04 17	704	1.2+	0.8+	1999 04 20	704	0.7−	0.9+
1993 09 22	809	1.0+	1.6−	1999 04 17	704	(2.0+	0.0)	1999 04 20	704	0.8+	0.4+
1993 09 22	809	0.8+	1.9−	1999 04 17	704	1.2−	0.4+	1999 04 20	704	0.8+	1.1+
1993 09 23	675	0.5+	1.1+	1999 04 17	704	1.7−	1.7+	1999 04 20	704	0.7−	1.0+
1993 09 23	675	0.5+	1.1+	1999 04 17	704	0.5−	1.4−	1999 04 20	704	0.5−	1.2−

(10500)∗ 1987 GA = 1934 CP_1 = 1998 UD_{21}

Discovered 1987 Apr. 3 by M. Koishikawa at the Ayashi Station of the Sendai Observatory.

Id. E. Bowell (*MPC* 32919), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	218.89102		(2000.0)		**P**		**Q**
n	0.22447106	ω	167.21784		−0.79680153		+0.58624865
a	2.6814054	Ω	49.65783		−0.56990729		−0.64866391
e	0.1970532	i	11.07062		−0.20078097		−0.48533252
P	4.39	H	12.9	G	0.15	U	2

Residuals in seconds of arc

1934 02 15	754	0.7−	2.0+	1987 04 27	391	2.2+	1.4−	1998 10 30	120	0.9+	0.2−
1934 02 15	754	0.8+	1.5−	1987 04 27	391	0.5−	2.3−	1998 11 10	704	0.1+	0.5−
1987 04 03	391	1.9−	0.4+	1987 04 29	391	1.5−	0.2−	1998 11 10	704	0.1+	0.4−
1987 04 04	391	1.2−	0.8+	1987 04 29	391	(0.1−	2.7+)	1998 11 10	704	0.8−	0.2+
1987 04 05	391	1.4−	0.7+	1987 04 30	391	1.3+	1.7−	1998 11 10	704	0.1+	1.4+
1987 04 05	391	2.0−	1.0+	1987 04 30	391	1.0+	0.0	1998 11 11	704	0.3−	0.1−
1987 04 05	391	1.4+	0.3+	1987 05 04	391	(7.0+	13.5−)	1998 11 11	704	1.0−	0.2−
1987 04 15	391	0.0	0.7−	1987 05 04	391	2.3−	1.9−	1998 11 11	704	0.4−	0.2−
1987 04 15	391	1.3+	0.3+	1987 05 15	391	(3.8+	4.9−)	1998 11 11	704	(2.9−	0.6+)
1987 04 15	391	0.6−	0.1+	1987 05 15	391	1.5+	0.6−	1998 11 16	691	0.1+	0.1−
1987 04 16	391	(4.8−	1.5−)	1987 05 20	391	(2.7−	0.8−)	1998 11 16	691	0.4+	0.2−
1987 04 16	391	1.8+	0.0	1987 05 20	391	(18.6+	16.5−)	1998 11 16	691	0.4+	0.0
1987 04 16	391	(2.4+	3.3+)	1987 05 20	391	(3.0−	0.9−)	1998 11 18	704	0.3+	0.3−
1987 04 17	391	1.0+	1.9+	1987 05 21	391	(1.8+	6.5−)	1998 11 18	704	0.5−	0.6−
1987 04 17	391	(2.6+	3.8+)	1997 10 01	566	0.3+	0.8−	1998 11 18	704	1.4−	0.2−
1987 04 17	391	(4.4+	1.4+)	1997 10 01	566	0.4+	1.1−	1998 11 18	704	1.2−	0.4+
1987 04 17	391	(9.9−	0.5+)	1997 10 01	566	0.5+	0.6−	1998 11 18	704	1.0−	0.1−
1987 04 17	391	0.7−	1.3−	1998 10 18	699	0.0	0.2+	1998 11 21	704	0.3+	0.5+
1987 04 18	391	1.1−	1.0+	1998 10 18	699	0.2−	0.7−	1998 11 21	704	0.3+	0.6+
1987 04 18	391	(3.7+	1.0+)	1998 10 18	699	0.2−	0.8−	1998 11 21	704	1.2+	1.3+
1987 04 18	391	1.8+	1.4−	1998 10 20	699	0.0	0.0	1998 11 21	704	1.6+	0.9+
1987 04 18	391	1.5+	2.1+	1998 10 20	699	0.8+	1.1−	1998 11 21	704	(1.4+	2.3+)
1987 04 20	391	2.0−	2.0−	1998 10 20	699	0.3−	1.7+	1998 12 16	699	0.1−	0.3+
1987 04 20	391	0.3−	0.7−	1998 10 29	120	0.3+	1.0−	1998 12 16	699	0.3−	0.5−
1987 04 24	391	(0.0	4.1−)	1998 10 30	120	1.1+	0.8−	1998 12 16	699	0.3−	0.6+
1987 04 24	391	0.8−	1.0+	1998 10 30	120	0.2+	1.5−				
1987 04 26	801	(3.2−	0.2+)	1998 10 30	120	0.7+	0.9−				

(10501)∗ 1987 OT = 1977 DK$_{11}$ = 1991 JE$_6$ = 1992 UM$_{10}$ = 1996 QY$_1$

Discovered 1987 July 19 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 28071)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	216.32189		(2000.0)		**P**		**Q**
n	0.22009399	ω	120.87248		+0.40812911		+0.91274692
a	2.7168391	Ω	173.14147		−0.88058437		+0.39879393
e	0.2659705	i	8.66523		−0.24083564		+0.08863675
P	4.48	H	13.5	G	0.15	U	2

Residuals in seconds of arc

1977 02 19	381	1.0+	1.0+	1996 08 18	010	(1.5+	2.2+)	1999 02 12	704	(3.3+	2.2+)
1987 07 19	675	1.5−	0.3+	1996 08 18	010	1.7+	1.2+	1999 02 16	704	1.3+	0.6−
1987 07 19	675	0.4+	0.2+	1996 08 18	010	1.2+	1.9+	1999 02 16	704	0.4+	1.4+
1987 07 23	675	0.2−	0.5−	1996 08 20	010	0.1−	0.5+	1999 02 16	704	(2.6+	1.0−)
1987 07 23	675	1.1+	0.5+	1996 08 20	010	0.7−	0.1+	1999 02 16	704	0.5+	0.7+
1987 08 29	809	0.5−	0.4+	1996 08 20	010	0.9−	0.7−	1999 02 16	704	(2.5−	1.1−)
1987 08 29	809	1.0−	1.7+	1996 08 24	399	0.9−	0.6−	1999 03 10	704	0.2+	1.4+
1987 08 29	809	0.8−	1.7+	1996 08 24	399	0.3−	0.2+	1999 03 10	704	(2.8+	1.6−)
1987 08 31	095	1.4+	1.6−	1996 08 25	399	0.0	0.0	1999 03 10	704	1.0+	1.2−
1991 05 07	376	(8.9+	1.2−)Y	1996 08 25	399	(3.0−	1.9−)	1999 03 10	704	0.9−	1.5+
1991 05 07	376	(6.4+	2.2−)Y	1999 02 12	704	0.7−	1.4+	1999 03 10	704	(2.7−	0.8+)
1992 10 28	400	1.0+	0.4−	1999 02 12	704	0.8−	1.4+				
1992 10 28	400	1.1−	0.1−	1999 02 12	704	0.7−	0.1+				

(10502)∗ 1987 QF$_6$ = 1980 PJ$_2$ = 1994 RJ$_{29}$

Discovered 1987 Aug. 22 by E. F. Helin at Palomar.

Id. E. Bowell (*MPC* 30075), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	36.27140		(2000.0)		**P**		**Q**
n	0.28085316	ω	262.70047		+0.27674038		−0.95897580
a	2.3093150	Ω	170.52775		+0.96086100		+0.27530475
e	0.3173948	i	21.93773		+0.01268432		+0.06762183
P	3.51	H	15.0	G	0.15	U	2

Residuals in seconds of arc

1980 08 10	809	0.8+	1.1−	1994 09 02	675	0.2+	0.5+	1999 02 12	704	0.7+	0.7−
1987 08 22	675	(0.1−	3.4−)	1994 09 30	675	0.0	1.0+	1999 02 12	704	(3.4−	0.8−)
1987 08 22	675	(1.6+	2.7+)	1994 09 30	675	0.1−	1.5+	1999 02 12	704	0.7−	0.8−
1987 08 27	675	1.5−	1.8−	1997 07 29	658	1.1−	0.8−	1999 02 16	704	0.5+	0.4−
1987 08 27	675	(1.2+	2.7+)	1997 07 29	658	1.1−	0.5−	1999 02 16	704	0.5+	0.2−
1987 09 16	809	0.1+	1.0−	1997 07 29	658	1.1−	0.7−	1999 02 16	704	0.2+	0.8+
1987 09 16	809	0.1−	0.9−	1997 08 01	688	0.5+	0.0	1999 02 16	704	1.7−	0.7−
1987 09 16	809	0.1+	0.2+	1997 08 01	688	1.1+	0.6+	1999 04 19	691	0.4+	0.6−
1987 09 24	413	0.1−	1.5−	1997 08 01	688	0.7+	0.6+	1999 04 19	691	0.3+	0.3−
1987 09 24	413	0.2+	0.6+	1997 08 01	688	0.1+	0.2+	1999 04 19	691	0.3+	0.5−
1992 04 06	809	0.2−	0.3−	1999 02 12	704	0.1−	0.5−				
1994 09 02	675	1.1+	1.1−	1999 02 12	704	0.2+	0.2−				

(10503)∗ 1987 SG$_{13}$ = 1987 WZ$_2$ = 1954 UV = 1989 EX$_6$

Discovered 1987 Sept. 27 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (d, *MPC* 13674; *MPC* 15558)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	111.14690		(2000.0)		**P**		**Q**
n	0.29766164	ω	28.20543		+0.63480075		−0.77203652
a	2.2215400	Ω	22.43478		+0.69253476		+0.55045154
e	0.1139919	i	4.72351		+0.34267130		+0.31774629
P	3.31	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1954 10 22	760	2.0−	1.3+	1997 10 07	367	0.9−	0.0	1999 03 23	704	0.2+	1.3+
1954 10 22	760	0.4+	0.6−	1997 10 07	367	1.1−	0.1+	1999 03 24	699	0.2+	0.1+
1987 09 04	095	(3.3−	0.5−)	1997 10 30	704	0.3−	0.5−	1999 03 24	699	0.1−	0.0
1987 09 24	095	1.1+	0.9+	1997 10 30	704	0.1−	0.1−	1999 03 24	699	0.9−	0.7+
1987 09 27	809	0.1+	0.4−	1997 10 30	704	0.6+	0.1−	1999 04 03	133	0.2−	0.6+
1987 09 27	809	0.2+	0.2−	1997 10 30	704	0.8−	0.3+	1999 04 03	133	0.1+	0.4−
1987 09 27	809	0.2+	0.1−	1997 10 30	704	1.3−	0.2+	1999 04 12	704	0.3+	0.8−
1987 09 27	095	(3.0−	0.2+)	1997 12 30	566	1.0+	1.0−	1999 04 12	704	(2.3−	2.7−)
1987 10 01	809	0.1+	0.4+	1997 12 30	566	0.9+	0.7−	1999 04 12	704	0.3−	0.7−
1987 10 01	809	0.0	0.4+	1997 12 30	566	0.9+	0.9−	1999 04 12	704	0.4−	0.5−
1987 10 01	809	0.1+	0.3+	1999 03 19	704	1.1−	0.9+	1999 04 12	704	0.2−	0.0
1987 10 01	809	0.8+	0.3−	1999 03 19	704	0.6−	0.9−	1999 04 15	704	0.2+	0.4+
1987 10 01	809	1.0+	0.4−	1999 03 19	704	0.3−	0.2+	1999 04 15	704	0.3+	1.1−
1987 10 01	809	1.4+	0.6−	1999 03 19	704	0.5−	0.4−	1999 04 15	704	0.8−	1.0−
1987 10 01	809	1.3+	0.6−	1999 03 19	704	0.4−	0.3+	1999 04 15	704	0.3−	1.2−
1987 10 01	809	1.3+	0.7−	1999 03 20	704	0.4−	0.2+	1999 04 15	704	0.2−	1.6−
1987 10 01	809	1.3+	0.8−	1999 03 20	704	0.4−	0.3−	1999 04 16	704	0.2−	1.0−
1987 10 02	809	0.1−	1.2−	1999 03 20	704	0.1−	0.1−	1999 04 16	704	1.0−	0.0
1987 10 02	809	0.1−	1.3−	1999 03 20	704	0.3+	0.2−	1999 04 16	704	0.6−	1.2−
1987 10 02	809	0.2+	1.3−	1999 03 20	704	0.5+	0.8−	1999 04 16	704	0.7+	0.9+
1987 11 17	010	0.8+	0.6−	1999 03 22	699	0.3−	0.1+	1999 04 16	704	0.2+	0.3−
1987 11 17	010	1.0−	0.5−	1999 03 22	699	0.6+	0.3+	1999 04 19	704	0.5−	1.9−
1987 11 17	010	1.5−	0.4−	1999 03 22	699	0.2+	0.2+	1999 04 19	704	0.2−	0.5−
1989 03 06	033	0.2+	1.0−	1999 03 23	704	0.3+	0.4+	1999 04 19	704	0.1−	0.3−
1989 03 06	033	0.2+	1.0−	1999 03 23	704	0.1+	1.3+	1999 04 19	704	0.2+	0.5+
1992 02 04	894	0.6−	1.6−	1999 03 23	704	0.2−	0.3+	1999 04 19	704	0.4−	0.1−
1992 02 04	894	1.4+	0.0	1999 03 23	704	0.4+	1.1+				

(10504)∗ 1987 UF$_5$ = 1978 WV$_4$

Discovered 1987 Oct. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. S. Nakano (*MPC* 15250)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	178.39871		(2000.0)		**P**	**Q**	
n	0.21451186	ω	318.79440		+0.96683064	−0.24177865	
a	2.7637697	Ω	55.38072		+0.25262426	+0.85763088	
e	0.1628610	i	5.74308		+0.03767607	+0.45388585	
P	4.59	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1978 11 29	675	0.4−	0.8+	1999 03 23	704	1.1+	0.5−	1999 04 12	704	0.3−	0.3+
1978 11 30	675	0.3+	0.9+	1999 03 23	704	0.1−	0.1+	1999 04 15	704	2.0−	1.8+
1987 10 22	095	(0.4+	3.2−)	1999 03 23	704	0.0	0.1−	1999 04 15	704	0.6+	0.5+
1987 10 27	095	0.6−	0.3+	1999 03 23	704	1.0+	1.6−	1999 04 15	704	0.3+	0.9+
1987 11 21	095	0.8−	0.2−	1999 03 23	704	0.9−	1.3−	1999 04 16	704	0.9−	0.2−
1991 07 14	675	(0.4+	3.0−)	1999 04 07	704	0.8−	0.2+	1999 04 16	704	0.5−	0.1+
1991 07 14	675	0.7+	0.9+	1999 04 07	704	0.5−	0.1+	1999 04 16	704	(0.0	2.4+)
1992 10 22	801	0.3+	0.4+	1999 04 07	704	1.2−	0.6−	1999 04 16	704	0.9+	0.9−
1992 10 22	801	0.1−	0.1+	1999 04 07	704	0.3−	0.0	1999 04 16	704	0.5+	1.0−
1992 11 29	801	0.0	0.6−	1999 04 10	699	0.1+	0.2−	1999 04 19	704	0.9+	0.0
1992 11 29	801	0.1+	0.8−	1999 04 10	699	0.6+	0.4+	1999 04 19	704	0.7−	0.8+
1998 03 31	557	0.1+	0.5+	1999 04 10	699	0.8+	0.2+	1999 04 19	704	0.3−	1.2+
1998 03 31	557	0.3+	0.1+	1999 04 12	704	0.2−	0.0	1999 04 19	704	0.9+	1.2+
1998 04 01	557	0.4+	0.1−	1999 04 12	704	1.6+	0.4−				
1998 04 01	557	0.5+	0.2−	1999 04 12	704	0.8−	0.8+				

(10505)∗ 1988 BN_4 = 1997 YT_2

Discovered 1988 Jan. 22 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (*MPC* 31098)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	16.91484		(2000.0)		**P**	**Q**	
n	0.18809529	ω	229.91663		−0.79604252	−0.58633975	
a	3.0168295	Ω	273.66712		+0.59093861	−0.69937442	
e	0.0345675	i	8.64902		+0.13079703	−0.40875558	
P	5.24	H	12.5	G	0.15	U	1

Residuals in seconds of arc

1988 01 22	809	0.6−	0.1−	1997 12 24	369	0.1+	0.1−	1999 02 16	704	0.8−	0.3+
1988 01 22	809	0.2−	0.0	1997 12 24	369	0.1+	1.1+	1999 02 16	704	0.6−	0.1+
1988 01 22	809	0.7+	0.3+	1997 12 27	369	0.1−	0.1+	1999 03 22	704	1.2+	0.0
1988 01 23	809	0.3+	0.1+	1997 12 27	369	0.0	0.6−	1999 03 22	704	1.0−	0.8−
1988 01 23	809	0.6+	0.1+	1997 12 31	369	0.3−	0.4−	1999 03 22	704	0.0	0.5+
1988 01 24	809	0.5+	0.3+	1997 12 31	369	0.2−	0.4−	1999 03 22	704	0.2−	0.0
1988 01 24	809	0.5+	0.0	1997 12 31	369	0.3−	0.5−	1999 03 22	704	0.0	0.0
1988 01 24	809	0.6+	0.2−	1998 01 26	704	0.4+	0.5+	1999 03 25	699	0.8+	0.2−
1988 01 26	809	0.5−	0.3+	1998 01 26	704	0.3+	0.3−	1999 03 25	699	1.3+	0.3+
1988 01 26	809	0.1+	0.1+	1998 01 26	704	0.3−	0.1+	1999 03 25	699	0.3+	0.1−
1988 01 27	809	0.2−	0.1+	1998 01 26	704	0.3+	0.2+	1999 04 11	699	1.5+	0.6+
1988 01 27	809	0.5−	0.2+	1998 01 26	704	0.4−	0.3−	1999 04 11	699	1.6+	0.2−
1988 01 29	809	0.3−	0.4+	1999 02 12	704	0.2+	0.5−	1999 04 11	699	0.9+	1.1+
1988 01 30	809	0.2−	0.6+	1999 02 12	704	0.6+	0.4−	1999 04 12	704	0.2−	0.4−
1991 10 15	691	0.1−	0.2+	1999 02 12	704	0.3−	1.3+	1999 04 12	704	1.0−	1.3−
1991 10 15	691	0.1−	0.1+	1999 02 12	704	0.8−	1.9−	1999 04 12	704	1.1−	0.6−
1991 10 15	691	0.1+	0.2+	1999 02 16	704	0.5−	0.3+	1999 04 12	704	1.3−	0.6+
1997 12 21	369	0.1−	0.6−	1999 02 16	704	0.3−	0.2+				
1997 12 21	369	0.3+	0.6−	1999 02 16	704	1.0−	0.1+				

(10506)∗ 1988 CW_4 = 1991 VX_{12}

Discovered 1988 Feb. 13 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (*MPC* 20633)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	83.82942		(2000.0)		**P**	**Q**	
n	0.19026355	ω	214.55621		−0.24317281	−0.96335099	
a	2.9938657	Ω	249.74757		+0.91495456	−0.18904849	
e	0.0477590	i	6.93224		+0.32206386	−0.19030382	
P	5.18	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1955 10 25	675	1.6+	1.0+	1991 11 05	399	1.4+	0.1+	1999 03 25	704	(2.4+	0.5+)
1955 10 25	675	1.4−	0.2+	1991 11 05	399	0.3−	0.7−	1999 03 25	704	(2.3+	1.4+)
1988 02 13	809	0.9+	1.1−	1991 11 11	399	0.7+	1.1+	1999 04 15	704	0.2+	0.0
1988 02 15	809	1.4+	1.1−	1991 11 11	399	1.7−	0.3−	1999 04 15	704	0.2−	1.0+
1988 02 16	809	0.8−	0.7−	1993 02 21	801	0.9+	0.4−	1999 04 15	704	0.2−	1.7+
1988 02 16	809	0.4−	0.6−	1993 02 21	801	0.1+	0.3+	1999 04 15	704	0.1+	1.8+
1988 02 16	809	0.5−	0.9−	1998 01 24	355	0.7+	0.7+	1999 04 15	704	1.2+	1.5+
1988 02 21	809	0.2−	0.9−	1998 01 24	355	0.9+	0.8+	1999 04 17	704	0.9+	0.4−
1988 02 21	809	0.6−	0.3−	1998 01 25	355	0.4+	0.6+	1999 04 17	704	1.0+	1.3−
1988 02 21	809	0.5−	0.3−	1998 01 25	355	0.4+	0.4+	1999 04 17	704	0.5+	0.1−
1988 02 23	809	0.3−	0.4−	1998 01 25	355	0.0	0.6+	1999 04 17	704	0.1+	0.7−
1988 02 23	809	0.9−	0.4−	1998 01 28	758	0.2+	0.8+	1999 04 20	704	0.3+	0.3−
1988 02 23	809	1.9−	0.3−	1998 01 28	758	1.7−	1.0+	1999 04 20	704	0.1−	0.2−
1988 03 10	413	0.8−	0.0	1998 01 29	758	1.4+	0.9+	1999 04 20	704	0.5−	0.3+
1988 03 10	413	0.5+	0.1−	1998 01 29	758	0.4−	0.3−	1999 04 20	704	1.2−	1.0−
1991 11 04	399	0.5+	1.5−	1998 01 29	758	0.4−	0.1+	1999 04 20	704	1.3−	0.3+
1991 11 04	399	0.8−	0.7+	1999 03 25	704	0.5+	1.8+				

(10507)∗ 1988 ER_1 = 1975 TY_4 = 1975 VZ_6 = 1978 QQ_3 = 1986 WC_{11}

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

Id. S. Nakano (*MPC* 13161)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	287.09506		(2000.0)		**P**	**Q**	
n	0.27353470	ω	239.38905		−0.06072971	+0.99651598	
a	2.3503242	Ω	27.30588		−0.86782673	−0.02441898	
e	0.0941457	i	7.15837		−0.49314164	−0.07974723	
P	3.60	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1975 10 14	095	1.5+	1.4+	1995 02 20	108	0.4+	0.8+	1999 04 15	704	0.1+	0.5−
1975 11 06	095	1.4+	0.5+	1995 02 20	108	(2.1+	0.4−)	1999 04 15	704	0.0	0.0
1978 08 25	808	2.1−	1.0+	1997 12 06	704	(2.4−	0.3+)	1999 04 17	715	0.2+	0.5+
1978 08 25	808	0.3+	0.5−	1997 12 06	704	0.9−	0.3+	1999 04 17	715	0.4+	0.3+
1986 11 30	381	0.9−	0.2−	1997 12 06	704	(2.8−	0.7+)	1999 04 17	715	0.5+	0.4+
1986 11 30	381	0.8−	1.4+	1997 12 06	704	0.6−	1.1−	1999 04 17	704	0.0	0.3+
1986 12 01	381	1.1+	0.2−	1997 12 06	704	0.1+	0.3+	1999 04 17	704	0.0	0.8−
1986 12 01	381	0.9−	0.2−	1999 02 17	910	0.1−	0.3+	1999 04 17	704	0.5−	0.2−
1988 03 13	054	0.5+	0.5+	1999 02 17	910	0.1+	0.5+	1999 04 17	704	0.5−	0.4+
1988 03 13	054	0.6−	0.1−	1999 02 17	910	0.0	0.4+	1999 04 17	704	0.3−	0.4+
1988 03 14	054	0.3−	0.1+	1999 04 11	715	0.4+	0.0	1999 04 18	704	1.7+	1.2−
1988 03 18	675	0.2−	0.2+	1999 04 11	715	0.2−	0.1+	1999 04 18	704	(0.7+	4.3+)
1988 03 18	675	1.2−	0.1−	1999 04 11	715	0.6−	1.4+	1999 04 18	704	1.3+	0.8−
1988 03 18	054	0.1+	0.4−	1999 04 15	704	0.0	0.0	1999 04 18	704	(0.5−	4.3−)
1995 02 20	108	0.8−	0.6−	1999 04 15	704	0.1+	0.1+	1999 04 18	704	(4.1−	0.2−)
1995 02 20	108	1.0+	0.3+	1999 04 15	704	0.1−	0.6−				

(10508)∗ 1988 RM_4 = 1995 FZ_{11}

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

Id. G. V. Williams (*MPC* 25212)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	271.46231		(2000.0)		**P**		**Q**
n	0.25192505	ω	113.07717		+0.34339255		+0.93918888
a	2.4828767	Ω	177.00341		−0.87767900		+0.32181391
e	0.1858048	i	2.64159		−0.33430694		+0.11983345
P	3.91	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1988 09 01	809	0.4−	0.8+	1992 09 23	691	0.1−	0.5+	1999 04 07	704	1.0−	0.1−
1988 09 01	809	0.5−	0.9+	1992 09 23	691	0.3−	0.4+	1999 04 07	704	1.2−	0.3−
1988 09 01	809	0.4−	1.1+	1992 09 23	691	0.0	0.1−	1999 04 07	699	1.3+	0.3+
1988 09 03	809	0.5−	0.2+	1995 03 27	691	0.7−	0.0	1999 04 07	699	1.3+	0.0
1988 09 03	809	0.3−	0.2+	1995 03 27	691	0.2−	0.3−	1999 04 07	699	1.3+	0.2+
1988 09 03	809	0.2−	0.2+	1995 03 27	691	0.3−	0.2−	1999 04 12	704	0.3+	0.7−
1988 09 06	809	0.5+	0.0	1995 04 01	691	0.5+	0.2+	1999 04 12	704	0.3−	0.1−
1988 09 06	809	0.6+	0.1−	1995 04 01	691	0.1+	0.2−	1999 04 12	704	0.3+	0.0
1988 09 08	809	0.5+	0.6−	1995 04 01	691	0.2+	0.3−	1999 04 12	704	0.4−	0.5+
1988 09 08	809	0.6+	0.6−	1999 03 13	691	0.0	0.5+	1999 04 12	704	1.6−	0.9+
1988 09 08	809	1.1+	0.8−	1999 03 13	691	0.0	0.7+	1999 04 15	704	0.6−	0.4−
1988 09 11	809	1.2−	0.6−	1999 03 13	691	0.1−	0.7+	1999 04 15	704	(1.1−	2.3+)
1988 09 11	809	0.9−	0.7−	1999 03 20	704	0.8−	1.6+	1999 04 15	704	1.6+	0.2−
1988 09 11	809	0.7−	0.6−	1999 03 20	704	0.3−	0.8+	1999 04 15	704	(2.5−	1.1+)
1988 09 14	809	(7.7−	1.6−)	1999 03 20	704	0.2+	0.7+	1999 04 16	704	0.1−	1.3−
1988 09 14	809	(7.8−	1.8−)	1999 03 20	704	0.1−	0.2+	1999 04 16	704	0.5−	1.6−
1988 09 14	809	(7.6−	1.7−)	1999 03 23	704	1.8+	0.1+	1999 04 16	704	0.2+	1.6−
1988 10 04	807	1.0+	0.4+	1999 03 23	704	(2.0+	0.2−)	1999 04 16	704	1.3−	1.5+
1988 10 05	807	0.2+	0.5+	1999 03 23	704	0.7+	0.2−	1999 04 19	704	0.0	0.5+
1988 10 07	807	0.5+	0.3−	1999 03 23	704	(2.4+	0.4−)	1999 04 19	704	0.0	1.0−
1988 10 08	807	1.0+	0.1+	1999 04 07	704	0.9+	0.0	1999 04 19	704	0.0	0.3−
1988 11 04	807	(4.2+	1.5+)	1999 04 07	704	0.2−	0.0	1999 04 19	704	0.4−	0.3−
1988 11 06	807	0.9−	0.3−	1999 04 07	704	0.2−	0.5+	1999 04 19	704	0.4−	0.1+

(10509)∗ 1989 GD$_4$ = 1971 XD = 1976 UW$_4$ = 1983 BK = 1986 RS$_4$ = 1999 BC$_{25}$

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

Id. E. Bowell (*MPC* 34176), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	31.20306		(2000.0)		**P**		**Q**
n	0.18379459	ω	241.05179		+0.24008854		−0.97049679
a	3.0637094	Ω	195.10542		+0.91768502		+0.23436709
e	0.1831239	i	4.89009		+0.31656232		+0.05663970
P	5.36	H	13.1	G	0.15	U	1

Residuals in seconds of arc

1971 12 14	095	0.0	0.6−	1989 04 12	809	1.4−	0.5−	1999 01 10	699	0.1−	0.3−
1976 10 30	095	(2.1+	6.3−)	1989 04 12	809	1.2−	0.1−	1999 01 10	699	0.2+	0.1−
1983 01 22	688	0.3+	1.7−	1997 09 29	566	1.0+	0.4−	1999 01 10	699	0.3−	0.3+
1983 01 22	688	1.1−	1.3−	1997 09 29	566	0.2+	0.5−	1999 01 18	704	0.3−	0.0
1986 09 06	071	(2.5−	3.5−)	1997 09 29	566	1.5−	0.9−	1999 01 18	704	0.2−	0.1−
1986 09 06	071	0.4+	1.7−	1997 12 28	566	1.0+	1.4−	1999 01 18	704	0.6−	0.4−
1989 04 03	809	0.5+	1.6−	1997 12 28	566	1.0+	1.5−	1999 01 18	704	0.4−	0.3+
1989 04 03	809	1.1+	1.3−	1997 12 28	566	1.3+	1.5−	1999 01 18	704	0.2−	0.6−
1989 04 03	809	(3.0+	1.5−)	1998 11 01	699	0.2+	0.3+	1999 01 20	704	1.5+	0.7−
1989 04 05	809	2.0−	0.0	1998 11 01	699	0.6+	0.7−	1999 01 20	704	0.7−	1.2+
1989 04 05	809	0.2+	0.2−	1998 11 01	699	0.6−	0.0	1999 01 20	704	0.0	0.5+
1989 04 06	809	0.4−	0.9−	1998 11 17	699	0.2−	0.3+	1999 01 20	704	0.9+	0.2+
1989 04 06	809	0.6+	0.9−	1998 11 17	699	0.7−	0.5+	1999 01 20	704	0.5+	0.4+
1989 04 06	809	0.0	0.6−	1998 11 17	699	0.0	0.7+	1999 04 07	704	0.7+	0.3−
1989 04 07	809	2.1−	0.9−	1998 11 23	699	0.3+	0.6−	1999 04 07	704	1.2−	0.9−
1989 04 07	809	1.2−	1.0+	1998 11 23	699	0.4+	0.2+	1999 04 07	704	0.9+	0.6+
1989 04 07	809	0.2−	1.0+	1998 11 23	699	0.2+	0.4−	1999 04 07	704	0.8−	2.7+
1989 04 08	809	1.7+	0.2+	1998 12 16	699	0.3−	0.1−	1999 04 07	704	0.3+	0.9+
1989 04 08	809	1.4+	0.5−	1998 12 16	699	0.0	0.1−				
1989 04 08	809	0.8+	1.4−	1998 12 16	699	0.0	0.0				

(10510)∗ 1989 GQ$_4$ = 1979 FE$_3$ = 1993 PG$_4$

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

Id. T. Kobayashi (*MPC* 23972)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	320.83914		(2000.0)		**P**		**Q**
n	0.29750721	ω	40.73434		−0.66479721		+0.74693830
a	2.2223087	Ω	187.62305		−0.70560364		−0.63283441
e	0.0932236	i	4.88968		−0.24529202		−0.20397008
P	3.31	H	14.8	G	0.15	U	2

Residuals in seconds of arc

1979 03 31	095	0.0	0.7−	1997 11 29	704	0.5+	0.9+	1999 04 12	704	1.1−	0.5+
1989 04 03	809	1.3−	1.3+	1997 11 29	704	1.7−	1.8+	1999 04 12	704	0.3+	0.3+
1989 04 03	809	0.1−	0.0	1997 11 29	704	0.7+	0.8+	1999 04 15	704	0.9−	0.3−
1989 04 03	809	1.0+	0.2−	1997 11 29	704	0.1−	0.6−	1999 04 15	704	0.3−	0.1+
1989 04 05	809	0.3+	2.0+	1997 11 29	704	0.8+	0.3+	1999 04 15	704	1.7+	0.2+
1989 04 05	809	(0.3−	2.9+)	1997 12 29	688	0.5−	0.5+	1999 04 15	704	0.5+	0.1+
1989 04 05	809	(0.6+	3.8+)	1997 12 29	688	0.1−	0.1−	1999 04 16	704	0.1+	0.1+
1989 04 09	809	1.4−	0.5−	1999 02 23	704	0.2−	2.0−	1999 04 16	704	0.3+	0.1−
1989 04 09	809	0.2+	1.1−	1999 02 23	704	1.6−	1.8−	1999 04 16	704	0.7+	0.6−
1989 04 09	809	0.8+	0.4−	1999 02 23	704	0.8−	1.5−	1999 04 16	704	0.3+	0.1+
1989 04 11	809	1.4+	0.1−	1999 02 23	704	0.1−	1.3−	1999 04 16	704	0.1+	1.7+
1989 04 11	809	1.0−	0.3+	1999 04 11	699	0.4−	0.5+	1999 04 19	704	0.4+	0.2−
1993 08 15	010	0.1−	0.7+	1999 04 11	699	0.1−	0.6+	1999 04 19	704	0.6+	0.8+
1993 08 15	010	0.1+	0.3+	1999 04 11	699	0.5−	0.6+	1999 04 19	704	0.1+	1.0+
1993 08 16	010	0.4−	0.3−	1999 04 12	704	0.2−	0.4−	1999 04 19	704	0.3+	1.3+
1993 08 16	010	0.2+	0.1+	1999 04 12	704	0.4−	0.7−	1999 04 19	704	1.5+	0.4+
1993 08 16	010	0.0	0.9−	1999 04 12	704	0.3−	0.6+				

(10511)∗ 1989 OD = 1976 SK$_2$ = 1981 SR$_7$ = 1981 TJ$_1$ = 1990 TY$_8$ = 1998 FN$_{115}$

Discovered 1989 July 21 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 33476), A. Doppler (*ibid.*), A. Milani (*MPC* 34176)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	355.51175		(2000.0)		**P**		**Q**
n	0.21252055	ω	287.74762		+0.28657405		+0.95805350
a	2.7810071	Ω	358.89229		−0.81055200		+0.24079959
e	0.1338454	i	8.83005		−0.51076488		+0.15539966
P	4.64	H	12.9	G	0.15	U	2

Residuals in seconds of arc

1976 09 24	095	1.7−	1.4+	1990 10 12	033	0.7−	0.0	1998 03 31	704	0.5−	0.9+
1976 09 28	095	(6.2+	1.8+)	1990 10 13	033	0.5+	0.1−	1998 04 01	704	0.3+	0.8−
1976 09 29	095	0.1+	0.1+	1990 10 14	033	0.2−	0.0	1998 04 01	704	0.2−	0.3−
1981 09 29	095	0.7−	1.8+	1990 10 15	046	1.9+	0.9−	1998 04 01	704	0.4+	0.3+
1981 10 02	095	0.6+	0.2−	1990 10 15	046	1.2+	0.4+	1998 04 01	704	0.9−	1.2−
1989 07 21	413	0.4+	0.7+	1990 10 16	046	1.6−	2.0−	1998 04 01	704	0.9−	1.6−
1989 07 25	413	0.1+	0.4−	1990 10 16	046	1.3+	1.6−	1998 04 25	699	0.2−	0.2−
1989 08 02	413	(18.0−	4.6−)	1998 03 31	704	0.4+	0.7−	1998 04 25	699	0.1+	0.3+
1989 08 02	413	(18.7−	4.8−)	1998 03 31	704	0.8−	0.9−	1998 04 25	699	0.8−	0.3+
1990 10 11	033	1.0+	0.3−	1998 03 31	704	0.9+	1.4+				
1990 10 12	033	0.6−	0.3−	1998 03 31	704	0.7+	0.4+				

(10512)∗ 1989 TP$_{11}$ = 1978 WP$_{14}$ = 1993 VZ$_2$

Discovered 1989 Oct. 2 by S. J. Bus at Cerro Tololo.

Id. S. Nakano (*MPC* 22811)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	195.30194		(2000.0)		**P**		**Q**
n	0.26177766	ω	145.21372		+0.91384761		+0.40588396
a	2.4201800	Ω	190.85900		−0.38538091		+0.85773940
e	0.1572721	i	3.61070		−0.12792225		+0.31550171
P	3.77	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1978 11 28	330	0.1+	0.4−	1998 01 20	426	0.2−	0.5+	1999 03 23	704	0.3−	1.8−
1989 10 02	807	1.4+	0.1−	1998 01 20	426	0.6+	0.5+	1999 03 23	699	0.1+	0.6+
1989 10 03	809	0.6−	0.6−	1998 01 20	426	0.8+	0.5+	1999 03 25	691	0.6−	1.1−
1989 10 03	809	0.3−	0.7−	1998 01 21	426	0.8+	0.4−	1999 03 25	691	0.8−	0.5−
1989 10 03	809	0.2+	0.6−	1998 01 21	426	0.8−	0.3−	1999 03 25	691	1.6−	0.5−
1989 10 04	807	0.8+	0.4−	1998 01 21	426	0.0	0.4+	1999 04 06	704	0.8+	1.2−
1989 10 04	809	0.1+	0.0	1999 03 19	691	0.2−	0.5−	1999 04 06	704	1.1+	0.3+
1989 10 04	809	0.3+	0.0	1999 03 19	691	0.1−	0.3−	1999 04 06	704	0.2−	0.2+
1989 10 04	809	0.7+	0.2−	1999 03 19	691	0.2−	0.2−	1999 04 06	704	1.2−	0.6−
1989 10 06	809	1.0−	0.9−	1999 03 20	704	0.4−	0.6−	1999 04 06	704	0.6+	0.1−
1989 10 06	809	0.7−	0.8−	1999 03 20	704	0.3−	0.5−	1999 04 14	704	(2.1+	1.4−)
1989 10 06	809	0.1−	0.6−	1999 03 20	704	0.5+	1.0−	1999 04 14	704	1.5−	0.3+
1989 10 08	809	0.2−	1.3−	1999 03 20	704	0.2−	1.0−	1999 04 14	704	0.7−	0.5−
1989 10 08	809	0.0	1.1−	1999 03 22	699	1.1+	0.3+	1999 04 14	704	0.4+	1.2−
1989 10 08	809	0.2+	1.2−	1999 03 22	699	0.1+	0.2+	1999 04 15	704	0.3+	0.1+
1989 10 29	807	1.5+	0.5+	1999 03 22	699	0.3+	0.3+	1999 04 15	704	1.0+	0.4+
1989 11 01	807	1.2+	0.8+	1999 03 23	704	0.4−	0.4−	1999 04 15	704	0.2−	0.3+
1993 11 11	399	1.8−	1.3+	1999 03 23	704	0.3−	1.4−	1999 04 15	704	0.3+	0.4+
1993 11 11	399	(1.3−	3.4+)	1999 03 23	699	1.3+	1.0+	1999 04 15	704	1.2−	0.0
1993 11 16	399	(1.1−	2.1+)	1999 03 23	704	0.9−	0.3+				
1993 11 16	399	(2.4−	3.0+)	1999 03 23	699	0.1+	0.4+				

(10513)∗ 1989 TJ$_{14}$ = 1993 KQ$_3$ = 1998 FN$_{24}$

Discovered 1989 Oct. 2 by H. Debehogne at the European Southern Observatory.

Id. A. Doppler (*MPC* 33477)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	221.27568		(2000.0)		**P**	**Q**	
n	0.17024770	ω	184.77497		+0.99816089	+0.03172323	
a	3.2241498	Ω	172.77316		−0.03233583	+0.99941579	
e	0.0615825	i	24.24486		−0.05127610	−0.01271650	
P	5.79	H	11.7	G	0.15	U	1

Residuals in seconds of arc

1989 10 02	809	0.6−	0.3−	1998 02 24	566	0.6−	0.3−	1999 02 20	704	0.1+	1.8−
1989 10 02	809	0.3−	0.5−	1998 02 24	566	0.2−	0.6−	1999 02 20	704	(0.4−	2.2−)
1989 10 02	809	0.0	0.4−	1998 02 24	566	0.4−	0.6−	1999 02 20	704	0.3−	1.6−
1989 10 03	809	0.1+	0.2+	1998 03 20	704	0.4+	0.3−	1999 02 20	704	1.1−	1.1−
1989 10 03	809	0.5+	0.1+	1998 03 20	704	0.4+	0.5+	1999 04 16	703	0.2+	0.1−
1989 10 03	809	0.7+	0.0	1998 03 20	704	0.3+	0.4−	1999 04 16	703	0.0	0.1+
1989 10 04	809	0.3−	0.9−	1998 03 20	704	0.6+	0.4−	1999 04 16	703	0.2+	0.4+
1989 10 04	809	0.2−	0.9−	1998 03 20	704	0.1+	0.3−	1999 04 18	426	0.0	0.1−
1989 10 04	809	0.0	1.3−	1998 03 22	704	0.4+	0.6+	1999 04 18	426	0.3+	0.1−
1993 05 18	693	0.5−	1.4+	1998 03 22	704	0.1+	0.3−	1999 04 18	426	0.1−	0.2+
1993 05 18	693	1.1+	0.5+	1998 03 22	704	0.4−	0.1−	1999 04 19	426	0.1−	0.4−
1993 05 26	675	0.3−	0.3−	1998 03 22	704	0.0	0.5−	1999 04 19	426	0.1+	0.2−
1993 05 26	675	0.2−	1.0+	1998 03 22	704	0.3−	0.3−	1999 04 19	426	0.0	0.2−

(10514)∗ 1989 TD$_{16}$ = 1980 TF$_{10}$ = 1994 WC$_{11}$

Discovered 1989 Oct. 4 by H. Debehogne at the European Southern Observatory.

Id. T. Kobayashi (*MPC* 24738)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	44.12251		(2000.0)		**P**	**Q**	
n	0.22096005	ω	4.94348		+0.99375531	+0.11111826	
a	2.7097353	Ω	348.66166		−0.10406292	+0.89010718	
e	0.0986763	i	2.96080		−0.04026539	+0.44199767	
P	4.46	H	13.5	G	0.15	U	2

Residuals in seconds of arc

1980 10 15	095	(0.7+	4.2+)	1998 09 18	704	0.8−	0.4−	1998 10 27	104	0.0	0.8−
1989 10 04	809	0.8+	0.2−	1998 09 18	704	0.4+	0.3+	1998 10 27	104	0.8+	0.6−
1989 10 04	809	0.8+	0.4−	1998 09 18	704	1.5−	1.6+	1998 10 27	104	0.2+	0.9−
1989 10 04	809	1.2+	0.5−	1998 09 26	704	0.6−	0.2+	1998 10 28	704	0.1−	0.2−
1989 10 05	809	0.2−	0.5−	1998 09 26	704	0.1+	0.4−	1998 10 28	704	0.3−	0.3+
1989 10 05	809	0.2+	0.5−	1998 09 26	704	0.2−	0.3+	1998 10 28	704	0.1−	0.3−
1989 10 05	809	0.4+	0.5−	1998 09 26	704	1.0+	1.9+	1998 10 28	704	0.5−	1.5+
1989 10 07	809	0.0	1.2−	1998 09 26	704	0.4−	0.6+	1998 10 28	704	0.1−	0.7+
1989 10 07	809	0.4+	0.9−	1998 09 27	704	0.1−	0.8−	1998 10 29	704	0.7+	0.2−
1989 10 07	809	0.5+	0.7−	1998 09 27	704	0.5+	0.4+	1998 10 29	704	0.2+	1.2+
1989 10 08	809	0.7−	0.3−	1998 09 27	704	0.1−	0.3+	1998 10 29	704	1.1+	1.3+
1989 10 08	809	0.4−	0.3−	1998 09 27	704	0.8+	1.8+	1998 10 29	704	0.3+	1.5+
1989 10 08	809	0.1−	0.2−	1998 10 14	704	0.1−	0.4−	1998 10 29	704	0.0	1.5+
1994 11 27	010	0.3+	1.2+	1998 10 14	704	0.6+	1.0−	1998 12 11	704	0.7+	1.4−
1994 11 27	010	0.0	0.5+	1998 10 14	704	0.5+	0.8−	1998 12 11	704	0.5−	0.2+
1994 11 28	010	0.2−	0.9+	1998 10 14	704	(0.2+	2.5−)	1998 12 11	704	1.8−	0.4−
1994 11 28	010	0.5+	0.9+	1998 10 14	704	0.5+	0.0	1998 12 11	704	1.5+	1.0−
1994 11 28	010	0.3−	0.7+	1998 10 15	704	0.3−	0.8−	1998 12 11	704	1.3+	1.2−
1994 11 29	010	0.0	0.9+	1998 10 15	704	0.5+	0.5−	1999 01 10	699	0.4−	0.2+
1996 02 19	411	0.2+	0.4−	1998 10 15	704	0.5+	0.6−	1999 01 10	699	0.2−	0.7−
1996 02 19	411	0.4−	1.0−	1998 10 15	704	0.4−	0.1−	1999 01 10	699	0.0	0.0
1996 03 20	566	1.2−	1.6−	1998 10 15	704	0.9−	0.1+	1999 01 11	704	0.8−	1.3−
1996 03 20	566	1.0−	1.7−	1998 10 22	327	0.2−	0.8−	1999 01 11	704	0.1−	1.3+
1996 03 20	566	0.9−	1.7−	1998 10 22	327	0.0	0.8−	1999 01 11	704	(2.4+	0.5−)
1998 09 14	699	0.1−	0.2+	1998 10 22	327	0.0	0.7−	1999 01 11	704	(2.2+	0.1−)
1998 09 14	699	0.3−	0.0	1998 10 26	327	0.1+	0.5−	1999 01 11	704	(2.5−	0.9+)
1998 09 14	699	0.3−	0.4+	1998 10 26	327	0.2+	0.3−	1999 02 04	699	0.4−	0.2+
1998 09 18	704	0.7+	0.5+	1998 10 26	327	0.1+	0.7−	1999 02 04	699	0.7−	0.0
1998 09 18	704	1.0−	0.0	1998 10 27	104	0.5−	1.0−	1999 02 04	699	0.3−	1.4−

(10515)∗ 1989 UB$_3$ = 1952 YD = 1993 TB$_3$

Discovered 1989 Oct. 31 by B. G. W. Manning at Stakenbridge.

Id. S. Nakano (*MPC* 22812)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	64.24869		(2000.0)		**P**	**Q**	
n	0.23902517	ω	19.65770		+0.15571954	−0.98430444	
a	2.5714236	Ω	61.46052		+0.89317099	+0.10439692	
e	0.2587627	i	5.42426		+0.42189691	+0.14228862	
P	4.12	H	14.1	G	0.15	U	2

Residuals in seconds of arc

1952 12 17	760	(16.8+	2.9−)	1995 04 19	494	0.7−	0.7−	1999 03 20	704	0.2+	0.8−
1989 10 30	095	(0.8−	4.0+)	1995 04 19	494	0.2−	1.3−	1999 03 20	704	0.2+	0.2+
1989 10 30	095	1.9+	0.7+	1995 04 26	494	0.6+	0.0	1999 03 20	704	0.0	0.3+
1989 10 31	494	1.3+	0.1+	1995 04 26	494	0.5+	0.4+	1999 03 20	704	0.2+	0.1+
1989 10 31	494	1.0+	0.4−	1995 05 03	494	0.0	0.6+	1999 03 20	704	0.6−	0.3+
1989 11 04	494	1.5−	0.8−	1995 05 03	494	0.5+	0.8+	1999 03 23	703	0.1−	0.6−
1989 11 04	494	2.1−	0.5+	1997 10 05	494	0.5+	0.3−	1999 03 23	703	0.6−	2.6−
1989 11 05	494	1.9−	0.3−	1997 10 05	494	1.0+	0.2−	1999 03 23	703	0.8−	1.7+
1989 11 06	978	0.2+	2.3−	1997 10 21	494	0.7−	0.4−	1999 03 23	703	0.7−	0.7−
1989 11 07	399	(5.8+	2.6−)	1997 10 21	494	0.1−	0.6−	1999 03 23	704	0.4−	1.1−
1989 11 07	399	(2.9+	0.5−)	1997 10 27	494	0.6−	1.4−	1999 03 23	704	0.3−	0.8−
1989 11 21	095	(1.6−	4.8+)	1997 10 27	494	1.1−	0.7−	1999 03 23	704	0.6+	1.0−
1989 11 21	095	1.9−	1.7+	1997 10 30	704	0.1+	1.1−	1999 03 23	704	0.9−	1.3−
1989 12 02	808	0.9+	0.2−	1997 10 30	704	0.3+	1.1−	1999 03 23	704	0.7−	1.3−
1989 12 02	808	1.0+	0.1+	1997 10 30	704	(0.9−	2.3−)	1999 04 10	699	0.3+	0.1+
1993 09 24	095	0.6+	1.7+	1997 10 30	704	0.6−	1.6−	1999 04 10	699	0.4+	1.0+
1993 10 09	809	0.3+	0.2+	1997 11 09	494	(2.2−	2.8+)	1999 04 10	699	0.9+	0.8+
1993 10 09	809	0.1+	0.1+	1997 11 09	494	0.2−	2.1+	1999 04 12	704	0.5+	0.1+
1993 10 09	809	0.2−	0.6+	1997 11 21	494	0.2−	0.6+	1999 04 12	704	0.1+	0.5+
1993 10 11	809	0.1−	1.9+	1997 11 21	494	0.9−	0.4+	1999 04 12	704	0.4+	0.2+
1993 10 11	809	0.2−	1.6+	1997 11 21	494	0.3−	1.7+	1999 04 12	704	0.5+	0.4−
1993 10 11	809	1.4−	1.8+	1997 11 30	566	0.8+	1.1+	1999 04 12	704	1.0+	0.2+
1993 10 11	400	(2.2+	3.4+)	1997 11 30	566	0.8+	0.7+	1999 04 15	704	0.9−	0.2−
1993 10 11	400	0.6+	0.1−	1997 11 30	566	0.7+	0.9+	1999 04 15	704	1.9+	1.2+
1993 10 12	095	1.2−	0.9+	1997 11 30	494	0.8−	0.4−	1999 04 15	704	0.8+	0.3+
1993 10 14	675	0.8+	0.7−	1997 11 30	494	0.6−	0.3−	1999 04 16	704	0.3+	0.1+
1993 10 14	675	0.0	0.6−	1997 11 30	494	0.6−	0.4+	1999 04 16	704	0.2−	1.2+
1993 10 15	675	0.7+	1.1−	1997 12 30	566	0.4+	0.7+	1999 04 16	704	0.2+	0.6+
1993 10 15	400	0.3−	0.7−	1997 12 30	566	0.6−	0.4−	1999 04 16	704	0.5+	1.5+

1993 10 15	400	0.6+	0.7−	1997 12 30	566	0.1+	0.4+	1999 04 16	704	0.8+	1.1+
1993 10 20	809	(2.8+	0.5−)	1999 03 19	704	0.2−	0.1−	1999 04 19	704	0.8+	0.6+
1993 10 20	809	(2.6+	0.8−)	1999 03 19	704	0.3−	0.3+	1999 04 19	704	0.7−	0.0
1993 10 20	809	1.1+	0.7−	1999 03 19	704	0.9+	0.6+	1999 04 19	704	0.8−	0.3+
1993 11 14	494	0.7+	0.1−	1999 03 19	704	1.6−	0.4−	1999 04 19	704	0.8+	0.3−
1993 11 14	494	0.0	0.6−	1999 03 19	704	1.4−	0.2+	1999 04 19	704	0.7−	0.4+

(10516)∗ 1989 VQ = 1974 VE

Discovered 1989 Nov. 1 by M. Mukai and M. Takeishi at YCPM Kagoshima Station.

Id. S. Nakano (*MPC* 16585)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	187.15845		(2000.0)		**P**	**Q**	
n	0.26184499	ω	291.47925		+0.99722045	+0.06142116	
a	2.4197651	Ω	65.02000		−0.03840991	+0.90883942	
e	0.2209321	i	2.66685		−0.06384397	+0.41259950	
P	3.76	H	13.9	G	0.15	U	2

Residuals in seconds of arc

1974 11 12	095	0.0	0.3−	1991 03 13	675	(2.6+	1.4−)	1999 03 23	704	0.2+	0.7+
1974 11 17	095	(2.0+	8.5−)	1991 03 13	675	0.1−	0.0	1999 04 10	699	0.8+	0.3+
1989 09 30	675	0.3+	0.0	1993 10 12	801	0.4−	0.0	1999 04 10	699	1.2+	0.2+
1989 09 30	675	0.1−	0.2+	1997 12 27	566	0.1+	0.4+	1999 04 10	699	1.0+	1.1+
1989 10 30	095	1.1+	0.4+	1997 12 27	566	0.2+	0.3+	1999 04 12	704	0.4−	0.1+
1989 10 30	095	1.0−	0.6−	1997 12 27	566	0.2−	0.2+	1999 04 12	704	0.5+	0.4−
1989 11 01	364	1.7+	1.0−	1999 03 19	704	0.5−	0.2−	1999 04 12	704	0.7+	0.7−
1989 11 01	364	0.6+	1.0−	1999 03 19	704	1.3−	1.8−	1999 04 12	704	1.1+	1.1−
1989 11 03	675	1.1−	0.3+	1999 03 19	704	(2.1−	0.5−)	1999 04 12	704	1.0+	0.8−
1989 11 03	675	0.2−	0.0	1999 03 19	704	1.0−	0.7+	1999 04 16	704	1.1+	1.3−
1989 11 04	675	0.6−	0.2−	1999 03 20	704	1.6−	1.1−	1999 04 16	704	0.9+	0.2+
1989 11 04	675	0.5−	0.4−	1999 03 20	704	0.2−	0.5+	1999 04 16	704	(2.3−	2.4−)
1989 11 04	364	0.0	0.4−	1999 03 20	704	0.2−	0.4+	1999 04 16	704	1.5−	1.8−
1989 11 04	364	0.4−	0.6−	1999 03 20	704	1.4−	0.9+	1999 04 16	704	(3.3−	1.1−)
1989 11 21	095	1.0+	2.1+	1999 03 23	704	0.5+	0.9+	1999 04 19	704	0.3−	1.8+
1989 11 21	095	(2.8+	1.1+)	1999 03 23	704	0.5−	0.1+	1999 04 19	704	(1.4+	2.1+)
1991 02 10	675	(2.0+	0.9−)	1999 03 23	704	0.7−	1.2−	1999 04 19	704	(0.5+	2.3+)
1991 02 10	675	0.3+	0.1+	1999 03 23	704	0.1−	1.0−	1999 04 19	704	0.5−	1.3+

(10517)∗ 1990 BH_1 = 1977 AV_2 = 1980 XB_2

Discovered 1990 Jan. 28 by S. Ueda and H. Kaneda at Kushiro.

Id. H. Kaneda (*MPC* 16032)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	13.49858		(2000.0)		**P**	**Q**	
n	0.22994591	ω	87.11615		−0.92427193	−0.37027786	
a	2.6386731	Ω	71.13693		+0.29953724	−0.85421939	
e	0.1537836	i	5.62912		+0.23664073	−0.36497060	
P	4.29	H	13.6	G	0.15	U	1

Residuals in seconds of arc

1950 12 11	675	1.8−	0.6+	1997 12 04	704	0.2+	0.3+	1999 04 07	704	1.5+	0.1−
1950 12 11	675	1.1+	0.5+	1997 12 04	704	0.2−	0.4−	1999 04 07	704	0.8+	0.0
1954 11 24	675	0.6−	0.1−	1997 12 04	704	0.5−	0.5−	1999 04 07	704	0.9+	0.2+
1954 11 24	675	1.1+	0.2+	1997 12 04	704	0.6−	0.8−	1999 04 07	704	0.5+	0.0
1977 01 12	675	0.2+	0.2+	1997 12 05	704	0.7+	0.7+	1999 04 07	704	0.6+	0.3+
1977 01 13	675	0.2−	0.7+	1997 12 05	704	0.6+	0.3−	1999 04 10	699	1.3+	1.2+
1980 12 10	095	(1.3−	2.7+)	1997 12 05	704	0.8+	1.5−	1999 04 10	699	1.0+	1.3+
1990 01 27	675	0.4+	1.2−	1997 12 05	704	1.3+	0.2−	1999 04 10	699	0.7+	1.2+
1990 01 27	675	0.4+	0.1−	1997 12 05	704	0.6+	0.7−	1999 04 12	704	0.5−	0.5−
1990 01 28	399	0.9−	0.8−	1998 01 17	910	0.7−	0.9+	1999 04 12	704	1.0−	0.1+
1990 01 28	399	1.3+	0.7−	1998 01 17	910	0.8−	0.9+	1999 04 12	704	0.1−	1.3−
1990 01 28	399	(2.4−	1.1+)	1998 01 17	910	0.7−	0.8+	1999 04 12	704	1.3−	0.9−
1990 01 30	675	0.3+	0.3−	1998 01 25	566	0.5−	0.8+	1999 04 12	704	1.0−	1.9−
1990 01 30	675	0.1+	0.0	1998 01 25	566	0.5−	0.8+	1999 04 15	704	0.2−	0.3−
1990 01 30	399	1.7+	0.7+	1998 01 25	566	0.5−	0.8+	1999 04 15	704	0.7+	0.0
1990 01 30	399	(3.3−	0.1−)	1999 03 19	704	0.3−	0.3+	1999 04 15	704	0.0	0.1−
1990 01 30	399	(2.6−	0.3+)	1999 03 19	704	0.1+	0.7+	1999 04 15	704	1.9−	1.1−
1990 02 02	399	1.2−	0.2−	1999 03 19	704	1.5+	0.8+	1999 04 15	704	0.4+	0.2+
1990 02 02	399	1.5−	0.5−	1999 03 19	704	1.1−	0.8+	1999 04 16	704	0.5+	0.7−
1990 02 02	399	0.9+	0.2+	1999 03 19	704	1.2−	0.7+	1999 04 16	704	1.4−	1.3−
1990 02 23	675	1.7−	0.4+	1999 03 22	699	1.2+	1.6+	1999 04 16	704	0.0	0.6−
1990 02 23	675	(2.6−	1.1+)	1999 03 22	699	0.9+	1.3+	1999 04 16	704	0.1+	0.8−
1997 11 29	704	0.8−	0.9−	1999 03 22	699	1.5+	1.1+	1999 04 16	704	0.9−	0.8+
1997 11 29	704	0.0	0.6−	1999 03 23	704	0.6+	0.8−	1999 04 19	704	0.3−	0.7−
1997 11 29	704	0.4+	0.5−	1999 03 23	704	0.2−	0.1−	1999 04 19	704	0.6−	0.7−
1997 11 29	704	0.2+	0.7−	1999 03 23	704	1.0−	0.1−	1999 04 19	704	1.0−	0.9−
1997 11 29	704	0.4+	0.3−	1999 03 23	704	0.4−	0.1−	1999 04 19	704	0.1+	0.6−
1997 12 04	704	0.2+	0.1−	1999 03 23	704	0.8−	0.9+	1999 04 19	704	0.2−	0.9−

(10518)∗ 1990 MC = 1989 EW_5

Discovered 1990 June 18 by H. E. Holt at Palomar.

Id. H. Kaneda (*MPC* 17638)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	250.57234		(2000.0)		**P**	**Q**	
n	0.20137969	ω	113.65648		+0.60740632	+0.79229323	
a	2.8826523	Ω	194.20171		−0.78721840	+0.59059365	
e	0.3192367	i	13.60208		−0.10651179	+0.15320110	
P	4.89	H	12.7	G	0.15	U	1

Residuals in seconds of arc

1989 03 02	413	0.5+	0.5+	1995 07 31	292	0.9+	0.6+	1999 03 22	699	0.7+	0.7+
1989 03 02	413	0.3+	0.7−	1995 10 23	801	0.3−	0.4−	1999 04 06	704	0.1+	1.3−
1989 03 07	413	0.6−	0.3+	1995 10 23	801	0.4−	0.3−	1999 04 06	704	0.2+	0.9−
1989 03 07	413	1.2+	1.4−	1995 10 25	801	0.0	0.0	1999 04 06	704	0.4−	0.4−
1990 06 18	675	0.2+	0.0	1995 10 25	801	0.1−	0.3−	1999 04 06	704	0.8−	0.0
1990 06 22	675	0.2+	0.1+	1995 11 21	801	0.5−	0.3−	1999 04 06	704	1.1−	0.1+
1990 06 22	675	0.3−	0.6+	1995 11 21	801	0.3−	0.6−	1999 04 09	699	0.1+	0.6+
1990 06 23	675	0.1−	0.2−	1999 03 20	704	1.4−	0.2+	1999 04 09	699	0.4+	0.4+
1990 06 23	675	0.8−	0.5−	1999 03 20	704	0.8−	0.2+	1999 04 09	699	0.6+	0.3+
1991 12 02	675	0.7−	0.4+	1999 03 20	704	0.2−	0.1+	1999 04 12	704	0.2+	0.5+
1991 12 02	675	0.4+	1.2+	1999 03 20	704	0.3−	0.3+	1999 04 12	704	3.0+	0.7+
1995 07 20	292	1.0−	1.0+	1999 03 20	704	0.7−	0.6+	1999 04 12	704	1.4−	1.4−
1995 07 20	292	1.1+	0.4−	1999 03 22	699	1.1+	0.2−	1999 04 12	704	1.3−	0.3−
1995 07 31	292	0.4+	0.6+	1999 03 22	699	1.0+	1.3+				

(10519)∗ 1990 RO_2 = 1992 BZ_2 = 1993 OA_{10}

Discovered 1990 Sept. 15 by H. E. Holt at Palomar.

Id. K. Kinoshita (*MPC* 23338)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	258.81613		(2000.0)		**P**	**Q**	
n	0.30053342	ω	328.57634		+0.14058457	+0.98876876	
a	2.2073652	Ω	309.45503		−0.89420425	+0.10481527	
e	0.1264750	i	3.76626		−0.42501146	+0.10653682	
P	3.28	H	14.7	G	0.15	U	2

Residuals in seconds of arc

1990 09 15	675	0.2+	0.4+	1993 07 20	809	0.3−	0.5−	1999 03 23	704	0.0	0.1−
1990 09 15	675	0.5+	0.1+	1993 07 20	809	0.7−	0.1−	1999 03 23	704	0.5+	0.0
1990 09 16	675	0.7−	1.5−	1993 07 24	809	1.0+	0.6−	1999 03 23	704	1.4+	0.5+
1990 09 16	675	0.3−	1.9−	1993 07 26	809	1.7+	0.2−	1999 03 23	704	0.5+	0.8−
1990 09 19	675	0.8+	0.2−	1993 07 26	809	1.0+	0.2+	1999 03 23	704	0.4+	0.4−
1990 09 19	675	0.0	1.1−	1993 07 26	809	0.8−	0.9+	1999 04 06	704	1.2−	0.9−
1990 09 20	675	0.2−	0.3+	1997 12 21	691	0.3+	0.2−	1999 04 06	704	0.9−	0.5−
1990 09 20	675	0.4−	0.1+	1997 12 21	691	0.3+	0.1+	1999 04 06	704	0.9−	2.1−
1992 01 26	691	0.4−	0.5−	1997 12 21	691	0.4+	0.2−	1999 04 06	704	1.1−	0.3−
1992 01 26	691	0.1+	0.2−	1999 03 20	704	0.4−	0.7+	1999 04 06	704	0.8−	0.7−
1992 01 26	691	0.0	0.5−	1999 03 20	704	0.1−	0.1−	1999 04 11	699	0.9+	0.0
1992 02 04	675	0.3+	1.0−	1999 03 20	704	0.2−	0.5+	1999 04 11	699	0.5+	0.5+
1992 02 04	675	0.4−	1.7−	1999 03 20	704	0.4−	1.2+	1999 04 11	699	0.0	0.5+
1992 02 05	691	0.1+	0.3+	1999 03 20	704	0.1−	1.7+	1999 04 12	704	0.2−	0.5−
1992 02 05	691	0.1+	0.1+	1999 03 22	699	1.5+	0.6+	1999 04 12	704	0.4−	0.3−

1992 02 05	691	0.3+	0.3+	1999 03 22	699	0.1+	0.2−	1999 04 12	704	2.5−	1.5−
1993 07 20	809	0.1−	0.8−	1999 03 22	699	1.0+	0.2+				

(10520)∗ 1990 RS_2 = 1993 NH_1

Discovered 1990 Sept. 15 by H. E. Holt at Palomar.

Id. B. G. Marsden (*MPC* 22813)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	151.88971		(2000.0)		**P**	**Q**	
n	0.29302191	ω	95.00807		+0.87670192	−0.47996313	
a	2.2449292	Ω	293.67813		+0.42629676	+0.80610808	
e	0.1450829	*i*	2.00743		+0.22285603	+0.34615771	
P	3.36	*H*	14.0	*G*	0.15	*U*	2

Residuals in seconds of arc

1990 09 15	675	0.5+	1.8−	1993 07 23	809	0.7−	1.4−	1999 03 23	704	0.3+	1.1+
1990 09 15	095	(2.4−	0.7−)	1993 07 23	809	0.3−	0.3−	1999 03 23	704	0.3+	1.0−
1990 09 15	095	(1.3−	3.0+)	1993 07 26	809	(3.6+	0.9+)	1999 04 07	704	0.1+	0.7−
1990 09 16	675	0.1−	0.4+	1993 07 26	809	(2.4+	0.5+)	1999 04 07	704	0.6+	0.7+
1990 09 16	675	0.2−	0.2+	1993 07 26	809	1.5+	0.7+	1999 04 07	704	0.4−	0.6+
1990 09 17	675	(0.4+	2.4−)	1995 01 08	033	1.4+	0.0	1999 04 07	704	0.2−	0.8−
1990 09 17	675	(0.6−	2.6−)	1995 01 08	033	0.3−	0.6+	1999 04 09	699	1.2+	0.0
1990 09 19	675	0.7−	0.7+	1997 11 24	905	0.8−	0.2−	1999 04 09	699	1.1+	0.1−
1990 09 19	675	0.4−	0.8+	1997 11 24	905	0.4−	0.8−	1999 04 09	699	1.2+	0.3−
1990 09 23	095	(2.8−	2.6+)	1997 11 27	905	0.6−	1.4−	1999 04 15	704	0.1+	0.7−
1990 10 11	095	(5.5−	4.2+)	1997 11 27	905	0.3+	1.1−	1999 04 15	704	0.0	0.3+
1990 10 15	095	(3.0−	2.5+)	1997 12 04	704	0.6+	0.1+	1999 04 15	704	0.7−	0.0
1993 07 12	809	1.9+	1.3+	1997 12 04	704	0.3−	0.5+	1999 04 15	704	0.1+	1.0−
1993 07 12	809	0.6+	1.5+	1997 12 04	704	0.7+	0.2−	1999 04 15	704	1.4−	0.3−
1993 07 12	809	1.0+	1.7+	1997 12 04	704	0.4+	0.6+	1999 04 17	704	0.5−	0.2−
1993 07 19	809	1.4−	1.9−	1997 12 04	704	0.6+	0.5−	1999 04 17	704	0.5−	0.1−
1993 07 19	809	1.1−	1.1−	1999 03 23	704	1.3−	0.5+	1999 04 17	704	0.7−	0.1+
1993 07 19	809	0.3−	1.6−	1999 03 23	704	0.0	0.4−	1999 04 17	704	0.1−	0.3+
1993 07 23	809	0.0	0.2−	1999 03 23	704	0.2+	0.1+	1999 04 17	704	1.3−	0.3+

(10521)∗ 1990 RW_7 = 1996 TH_{15}

Discovered 1990 Sept. 14 by H. Debehogne at the European Southern Observatory.

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	138.72201		(2000.0)		**P**	**Q**	
n	0.17441628	ω	227.27065		+0.84869741	−0.52861725	
a	3.1725712	Ω	164.61754		+0.50171089	+0.79475542	
e	0.1753826	*i*	3.59408		+0.16732867	+0.29820736	
P	5.65	*H*	13.4	*G*	0.15	*U*	2

Residuals in seconds of arc

1990 08 20	809	0.0	0.1−	1990 09 16	400	(0.8+	4.3+)	1999 03 20	704	(2.6−	0.6−)
1990 08 20	809	0.7−	0.6−	1990 09 16	400	(2.2−	6.2+)	1999 03 23	704	0.6−	1.7+
1990 08 20	809	1.0−	0.5−	1996 10 09	399	0.7−	0.4+	1999 03 23	704	0.6−	0.9+
1990 08 26	809	0.1−	0.4−	1996 10 09	399	1.2−	1.7−	1999 03 23	704	0.3−	0.2−
1990 08 26	809	0.0	0.1+	1996 10 10	399	0.2−	1.8+	1999 03 23	704	0.8−	1.5+
1990 08 26	809	1.0−	1.2−	1996 10 10	399	1.2−	0.6+	1999 04 12	704	0.2+	1.2−
1990 09 14	809	0.4+	0.5−	1997 01 06	327	1.3+	0.9+	1999 04 12	704	1.2+	1.4−
1990 09 14	809	0.7+	0.5−	1997 01 06	327	1.2+	0.7+	1999 04 12	704	0.3−	1.5−
1990 09 14	809	0.8+	0.4−	1997 01 06	327	1.4+	1.0+	1999 04 12	704	1.1+	0.7−
1990 09 14	675	(0.5+	2.2−)	1998 02 24	566	0.0	1.3−	1999 04 12	704	1.5+	1.9+
1990 09 14	675	1.0+	1.4−	1998 02 24	566	0.4+	1.2−	1999 04 19	704	0.1−	0.1+
1990 09 15	809	0.2+	0.4−	1998 02 24	566	0.4−	1.0−	1999 04 19	704	0.6+	0.5+
1990 09 15	809	0.4+	0.2−	1998 03 31	910	0.4−	0.4−	1999 04 19	704	0.7+	0.7+
1990 09 15	809	0.5+	0.0	1998 03 31	910	0.5−	0.3−	1999 04 19	704	0.6−	1.5−
1990 09 16	809	0.3+	0.6+	1998 03 31	910	0.9−	0.5−	1999 04 19	704	(3.3−	0.2−)
1990 09 16	809	0.1+	0.4+	1999 03 20	704	0.1−	0.0				
1990 09 16	809	0.2+	0.2−	1999 03 20	704	1.5−	1.0−				

(10522)∗ 1990 SN_3 = 1990 SY_{26} = 1990 SG_{29} = 1990 UQ_{12} = 1990 XX_1 = 1977 TR_4 = 1977 UC_1 = 1987 XH = 1992 CV_3

Discovered 1990 Sept. 18 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 20927), N. S. Chernykh (d, *ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	234.34927		(2000.0)		**P**	**Q**	
n	0.30202215	ω	281.44061		+0.72061771	+0.69139811	
a	2.2001056	Ω	34.85544		−0.59557799	+0.65550667	
e	0.2130072	*i*	5.19594		−0.35496052	+0.30377568	
P	3.26	*H*	14.2	*G*	0.15	*U*	2

Residuals in seconds of arc

1951 12 01	675	0.0	0.4+	1996 05 19	566	0.5−	0.5+	1999 04 14	704	(0.8−	2.2−)
1951 12 01	675	0.4−	0.2−	1996 05 19	566	0.3−	0.5+	1999 04 14	704	(2.4−	3.4−)
1977 10 07	095	1.4+	1.7−	1996 05 22	566	0.1+	0.7+	1999 04 14	704	(1.9−	3.2−)
1977 10 17	095	2.2+	2.2−	1996 05 22	566	0.6+	0.8+	1999 04 15	704	(0.4+	2.4−)
1987 12 15	033	0.2−	1.0+	1996 05 22	566	0.0	1.0+	1999 04 15	704	1.6−	1.0−
1987 12 15	033	0.7−	0.8+	1999 03 19	704	0.1−	0.4−	1999 04 15	704	1.3+	0.3−
1990 09 18	675	(0.3−	3.2−)	1999 03 19	704	0.2+	1.1−	1999 04 15	704	0.4+	1.0−
1990 09 18	675	0.4+	1.5−	1999 03 19	704	0.2+	0.6−	1999 04 15	704	(0.9+	2.3−)
1990 09 20	675	(0.1+	2.5−)	1999 03 19	704	(2.1+	1.1+)	1999 04 16	704	0.1+	0.7−
1990 09 20	675	(0.5+	2.7−)	1999 03 23	704	0.0	0.1+	1999 04 16	704	0.5+	0.1−
1990 09 22	095	0.8−	0.8−	1999 03 23	704	0.9−	0.2+	1999 04 16	704	0.1−	1.9−
1990 09 22	095	(0.7−	2.4−)	1999 03 23	704	0.7−	0.5+	1999 04 16	704	0.3+	1.2−
1990 09 29	095	0.3+	0.0	1999 03 23	704	1.0−	0.4−	1999 04 16	704	1.6−	0.8−
1990 10 23	095	0.5−	0.1−	1999 03 23	704	1.2−	0.2−	1999 04 19	704	0.9+	0.7−
1990 12 06	372	(0.7−	2.7+)	1999 04 12	704	0.0	0.8−	1999 04 19	704	0.1+	0.5−
1990 12 06	372	1.2+	1.8+	1999 04 12	704	0.3−	0.5−	1999 04 19	704	(0.8+	3.8+)
1992 02 08	033	0.8−	1.6+	1999 04 12	704	0.3+	0.5−	1999 04 19	704	1.6+	0.3+
1992 02 08	033	(2.2−	1.7+)	1999 04 12	704	0.0	0.4−	1999 04 19	704	0.9−	0.6−
1992 02 09	033	1.1−	1.7+	1999 04 12	704	0.2+	0.5−				
1996 05 19	566	0.0	0.5+	1999 04 14	704	0.6+	1.5+				

(10523)∗ 1990 SM_6 = 1983 QH = 1983 RY_8 = 1985 DR_1

Discovered 1990 Sept. 22 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (*MPC* 18123)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	61.01347		(2000.0)		**P**	**Q**	
n	0.28680350	ω	72.78357		−0.23863598	−0.97030199	
a	2.2772624	Ω	31.10808		+0.85933071	−0.22997900	
e	0.0647805	*i*	4.39412		+0.45233129	−0.07499138	
P	3.44	*H*	13.7	*G*	0.15	*U*	1

Residuals in seconds of arc

1983 08 16	801	1.2−	0.3+	1997 11 03	704	0.5−	1.1−	1999 04 12	704	0.4−	0.9+
1983 09 11	095	0.9−	0.5−	1997 11 03	704	1.7−	1.7−	1999 04 12	704	0.1+	0.4+
1985 02 20	046	1.2−	1.0+	1999 03 15	145	0.2−	0.0	1999 04 12	704	0.5−	0.2−
1985 02 20	046	0.1−	0.4+	1999 03 15	145	1.1−	0.2−	1999 04 12	704	0.3+	0.5+
1989 05 30	675	0.9+	2.5−	1999 03 15	145	1.5−	1.0+	1999 04 12	704	0.9+	1.2+
1989 06 01	675	2.0+	1.2−	1999 03 15	145	0.0	0.0	1999 04 14	704	0.2+	0.6−
1989 06 01	675	0.1+	0.8−	1999 03 16	012	0.3−	0.2−	1999 04 14	704	0.3+	0.1+
1990 09 15	809	0.3+	0.6+	1999 03 16	012	0.5−	0.5−	1999 04 14	704	1.3+	0.8−
1990 09 15	809	0.5+	1.3+	1999 03 16	012	0.2+	0.3−	1999 04 14	704	1.0+	0.5+
1990 09 15	809	0.3+	1.4+	1999 03 16	012	0.2+	0.1−	1999 04 14	704	2.4+	1.1+
1990 09 22	809	0.5+	0.6+	1999 03 16	012	0.2+	0.0	1999 04 15	704	0.3+	0.6−
1990 09 22	809	0.6+	0.5+	1999 03 19	704	0.2−	0.4−	1999 04 15	704	0.3+	0.2−
1990 09 22	809	0.4+	0.6+	1999 03 19	704	1.2−	0.1+	1999 04 15	704	0.9+	0.0
1990 09 25	809	(0.3+	2.4−)	1999 03 19	704	0.6−	1.1+	1999 04 15	704	0.6+	0.4−
1990 09 25	809	0.4−	1.0−	1999 03 19	704	1.1+	0.0	1999 04 15	704	0.1−	0.8−
1990 09 25	809	0.1+	1.2−	1999 03 19	704	1.8−	1.3+	1999 04 16	704	0.7+	0.3−
1990 10 16	095	1.9−	1.5+	1999 03 20	704	0.1+	0.5−	1999 04 16	704	0.7−	0.7−
1990 10 16	095	0.2−	0.7−	1999 03 20	704	0.8−	0.3+	1999 04 16	704	0.3−	0.4+
1992 03 01	801	0.2−	1.0+	1999 03 20	704	0.7−	0.2−	1999 04 16	704	0.3+	0.2−

1992 03 01	801	0.4−	0.9+	1999 03 20	704	0.3−	0.2−	1999 04 16	704	1.7−	0.3−
1992 04 01	801	0.2−	0.0	1999 03 20	704	1.3−	0.7+	1999 04 17	704	0.5+	0.4+
1992 04 01	801	0.3−	0.1+	1999 03 23	703	0.8−	0.2+	1999 04 17	704	0.2+	0.1−
1995 01 04	010	1.4+	0.1+	1999 03 23	703	0.2−	0.5+	1999 04 17	704	0.3−	0.4−
1995 01 04	010	1.3+	0.2+	1999 03 23	704	0.1−	0.0	1999 04 17	704	0.2−	0.2−
1995 01 04	010	0.9+	0.2+	1999 03 23	703	0.0	0.3+	1999 04 17	704	1.0+	0.3+
1995 01 04	010	0.8+	0.6−	1999 03 23	704	0.5−	0.2+	1999 04 17	704	1.0−	0.1+
1995 01 05	010	0.1+	0.9−	1999 03 23	704	0.5−	0.3−	1999 04 17	704	0.0	0.4+
1995 01 05	010	0.0	1.8−	1999 03 23	703	0.7+	0.2+	1999 04 17	704	0.3−	0.7−
1997 10 30	704	0.2−	0.0	1999 03 23	704	0.4−	0.0	1999 04 17	704	0.4−	0.5+
1997 10 30	704	0.4−	0.6+	1999 03 23	704	1.2−	0.2+	1999 04 19	704	0.3+	0.7−
1997 10 30	704	0.7−	0.9+	1999 03 24	699	0.9+	0.2+	1999 04 19	704	0.9+	0.1−
1997 10 30	704	0.2−	0.7+	1999 03 24	699	0.8+	0.6+	1999 04 19	704	0.0	0.1+
1997 10 30	704	0.3−	0.7+	1999 03 24	699	0.6+	0.1+	1999 04 19	704	0.2+	0.0
1997 11 03	704	0.2+	0.1−	1999 04 10	699	0.8+	0.7+	1999 04 19	704	1.4+	0.2+
1997 11 03	704	0.5+	0.5+	1999 04 10	699	0.6+	0.8+				
1997 11 03	704	0.3−	0.5+	1999 04 10	699	0.5+	1.0+				

(10524)∗ 1990 SZ_7 = 1992 DW

Discovered 1990 Sept. 22 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (*MPC* 19866)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	40.62577		(2000.0)		**P**		**Q**
n	0.29358078	ω	99.69770		−0.76543813		−0.63921641
a	2.2420793	Ω	40.62211		+0.53664996		−0.69771122
e	0.1065557	i	6.54475		+0.35512152		−0.32342144
P	3.36	H	13.7	G	0.15	U	1

Residuals in seconds of arc

1990 09 14	809	0.5+	0.6−	1997 11 01	691	0.1−	0.2+	1999 04 15	704	0.0	0.2−
1990 09 14	809	1.6+	0.3+	1997 11 29	566	0.6+	0.6−	1999 04 15	704	0.6−	0.1+
1990 09 14	809	0.2−	0.3−	1997 11 29	566	0.2+	0.6−	1999 04 15	704	0.8−	0.4−
1990 09 22	809	0.1+	1.1−	1997 11 29	566	0.3+	1.1−	1999 04 15	704	0.3−	0.3−
1990 09 22	809	0.1+	1.0−	1998 01 24	566	0.1−	0.3+	1999 04 15	426	0.2+	0.1−
1990 09 22	809	0.4+	1.0−	1998 01 24	566	0.0	0.4+	1999 04 15	426	0.1+	0.2−
1990 09 25	809	0.2+	0.3−	1998 01 24	566	0.0	0.6+	1999 04 15	426	0.6+	0.1−
1990 09 25	809	0.1+	0.1−	1999 02 14	699	0.2−	0.2−	1999 04 16	426	0.2+	0.1−
1990 09 25	809	0.1−	0.4−	1999 02 14	699	0.4+	0.1−	1999 04 16	426	0.2−	0.1−
1992 02 26	399	1.0−	1.2−	1999 02 14	699	0.3+	0.2+	1999 04 16	426	0.0	0.0
1992 02 26	399	1.3−	0.9−	1999 02 20	704	1.6−	1.3+	1999 04 17	704	0.3−	0.6−
1992 02 29	399	(0.3+	3.0−)	1999 02 20	704	(2.2−	1.6+)	1999 04 17	704	0.1+	0.3−
1992 02 29	399	0.0	1.7−	1999 02 20	704	(2.3−	0.6+)	1999 04 17	704	0.2+	1.4+
1997 10 22	704	0.2+	0.4+	1999 02 23	704	1.1−	0.7−	1999 04 17	704	0.1+	0.8+
1997 10 22	704	0.6−	1.4−	1999 02 23	704	1.2+	1.1+	1999 04 20	704	0.2−	0.0
1997 10 22	704	0.8−	0.3+	1999 02 23	704	0.8+	0.3+	1999 04 20	704	0.4+	0.4−
1997 10 22	704	0.5−	0.3−	1999 02 23	704	0.3+	1.0+	1999 04 20	704	0.3−	0.3−
1997 10 23	367	0.4+	0.2−	1999 04 14	699	0.6+	0.2+	1999 04 20	704	0.3+	1.1−
1997 10 23	367	0.6+	0.9+	1999 04 14	699	0.2−	0.2−	1999 04 20	704	0.8−	1.1−
1997 11 01	691	0.2−	0.2+	1999 04 14	699	0.6+	0.2−				
1997 11 01	691	0.1+	0.5+	1999 04 15	704	0.3−	0.2−				

(10525)∗ 1990 TO = 1996 JP_6

Discovered 1990 Oct. 12 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 27444)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	164.23074		(2000.0)		**P**		**Q**
n	0.28685835	ω	287.59190		+0.99474381		+0.04455473
a	2.2769722	Ω	69.93307		−0.00095482		+0.90436671
e	0.1900925	i	5.63276		−0.10239061		+0.42442399
P	3.44	H	14.0	G	0.15	U	2

Residuals in seconds of arc

1989 03 08	413(23.0−	12.5+)		1996 05 20	691	0.1+	0.2+	1999 03 23	704	0.2+	0.2−
1990 09 23	413	0.1+	0.9+	1996 05 20	691	0.1−	0.2−	1999 03 23	704	0.2+	0.4+
1990 10 12	413	1.2−	0.9−	1996 06 08	809	0.1+	1.1−	1999 03 23	704	0.0	0.5−
1990 10 12	413	0.0	0.1+	1996 06 08	809	0.6−	1.6−	1999 03 23	704	0.2−	1.8−
1990 10 13	413	0.6−	0.8+	1996 06 08	809	0.9−	0.1+	1999 04 07	699	0.3−	0.2−
1990 10 15	374	0.8−	0.4+	1996 06 10	809	1.1+	0.9−	1999 04 07	699	0.9+	0.6+
1990 10 15	374	1.1+	0.8−	1996 06 10	809	0.3+	1.2−	1999 04 07	699	1.1−	0.3+
1990 10 20	374	0.6+	1.6−	1996 06 10	809	0.3−	0.8−	1999 04 12	704	0.6−	1.2+
1990 10 20	374	(2.5+	1.3−)	1997 11 29	704	0.2+	0.1+	1999 04 12	704	0.2−	1.1−
1990 10 28	413	0.3−	0.4+	1997 11 29	704	0.7−	0.0	1999 04 12	704	0.4+	0.9+
1990 11 12	413	1.6+	0.2+	1997 11 29	704	1.0+	0.6−	1999 04 12	704	0.3−	0.9−
1996 05 11	691	1.0−	0.1+	1997 11 29	704	0.3−	0.9−	1999 04 12	704	1.0−	1.5+
1996 05 11	691	0.8−	0.2+	1997 11 29	704	0.8+	1.1−	1999 04 16	704	1.0+	1.3+
1996 05 11	691	0.9−	0.3+	1999 03 20	704	0.1+	0.3−	1999 04 16	704	0.7+	0.4+
1996 05 16	691	0.6+	0.0	1999 03 20	704	0.3+	0.0	1999 04 16	704	0.5+	0.4−
1996 05 16	691	0.5+	0.1+	1999 03 20	704	0.1−	0.1−	1999 04 16	704	0.5+	0.9+
1996 05 20	691	0.0	0.4−	1999 03 20	704	0.5−	0.7−				

(10526)∗ 1990 UK_1 = 1980 WK_1 = 1983 RM_7

Discovered 1990 Oct. 19 by T. Hioki and S. Hayakawa at Okutama.

Id. R. Nagata (*MPC* 17457)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	173.55914		(2000.0)		**P**		**Q**
n	0.29101499	ω	114.22907		+0.98535575		−0.15498639
a	2.2552385	Ω	254.74936		+0.11705593		+0.91799895
e	0.1709010	i	4.22544		+0.12398369		+0.36504404
P	3.39	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1951 01 04	675	0.8+	0.1+	1993 07 21	801	1.0+	0.1+	1999 03 20	704	(0.3−	2.6+)
1951 01 04	675	0.7+	0.1+	1993 07 23	010	0.5−	1.3+	1999 04 07	704	1.7−	0.8+
1951 02 10	760	(4.7+	0.2−)	1993 07 23	010	0.7−	1.5+	1999 04 07	704	0.1+	0.1−
1980 11 30	095	1.4−	0.4+	1993 07 23	010	(0.2−	2.0+)	1999 04 07	704	0.1−	0.2−
1983 09 11	095	1.2−	0.5−	1993 08 22	801	0.8+	0.1+	1999 04 07	704	1.4−	0.1+
1990 10 19	877	(2.9+	0.9+)	1993 08 22	801	0.0	1.5−	1999 04 09	699	1.2+	0.9−
1990 10 19	877	(3.7+	1.1+)	1996 06 13	566	0.8−	0.1+	1999 04 09	699	1.0+	0.7+
1990 10 21	877	0.8+	1.3−	1996 06 13	566	0.6−	0.2−	1999 04 09	699	0.9+	0.3−
1990 10 21	877	0.1−	0.8−	1996 06 13	566	0.9−	0.1−	1999 04 15	704	2.0−	1.8−
1990 10 26	877	1.6+	0.9+	1996 06 14	566	0.7−	0.8−	1999 04 15	704	0.3+	0.3+
1990 10 26	877	0.1−	1.8−	1996 06 14	566	0.9−	0.9−	1999 04 15	704	0.3−	0.7+
1990 11 10	877	(2.2−	1.0+)	1996 06 14	566	0.4−	0.5−	1999 04 15	704	0.3+	0.1+
1990 11 10	877	0.1−	1.2−	1999 03 19	704	0.4+	0.3+	1999 04 15	704	0.0	1.9+
1993 07 17	801	0.1+	0.0	1999 03 19	704	1.0+	0.2+	1999 04 17	704	0.1−	0.8−
1993 07 17	801	0.0	0.4+	1999 03 19	704	0.6−	0.2+	1999 04 17	704	0.1+	1.9−
1993 07 20	010	1.5+	1.0+	1999 03 19	704	(0.2−	2.2+)	1999 04 17	704	0.7+	1.3−
1993 07 20	010	0.1−	0.4+	1999 03 20	704	0.6+	0.5−	1999 04 17	704	1.5+	0.6−
1993 07 21	010	0.0	1.0−	1999 03 20	704	0.3+	0.0	1999 04 17	704	1.1−	1.3−
1993 07 21	801	0.1+	0.1+	1999 03 20	704	0.8−	0.6+				

(10527)∗ 1990 UN_1 = 1977 DM_{11} = 1995 BD_4

Discovered 1990 Oct. 20 by A. Sugie at the Dynic Astronomical Observatory.

Id. S. Nakano (*MPC* 24739), A. Milani (*MPC* 34180)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	75.55898		(2000.0)		**P**		**Q**
n	0.27093548	ω	264.65790		+0.29570952		−0.95510245
a	2.3653321	Ω	168.09339		+0.90783838		+0.27500829
e	0.2084404	i	5.09103		+0.29729675		+0.11022590
P	3.64	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1977 02 19	381	1.8−	0.7+	1999 02 18	120	0.4+	0.6−	1999 03 23	704	0.9−	0.9+
1977 02 19	381	1.0+	1.3−	1999 02 18	120	0.5−	0.7+	1999 03 24	699	1.1+	1.5+
1990 10 20	402	(0.8+	3.4−)	1999 02 18	120	1.8−	1.1−	1999 03 24	699	0.6−	1.9+
1990 10 20	402	(2.6+	0.3+)	1999 02 18	120	2.0−	0.5+	1999 03 24	699	0.8+	1.2+
1990 10 21	402	(1.6+	2.1−)	1999 02 19	120	0.1−	0.1−	1999 04 12	704	1.0+	1.0−
1990 10 21	402	1.7+	0.2+	1999 02 19	120	0.1−	0.4−	1999 04 12	704	0.3+	0.4+
1990 10 28	402	(2.5−	3.3−)	1999 02 24	120	1.1−	0.1−	1999 04 12	704	1.1+	0.7−

1990 10 28	402	0.7+	0.2+	1999 02 24	120	0.3−	0.5−	1999 04 12	704	0.7+	0.2−
1990 11 13	402	0.1+	0.6−	1999 03 20	704	0.5+	0.1+	1999 04 12	704	0.6+	1.1−
1990 11 13	402	0.7−	0.1+	1999 03 20	704	0.8+	1.1+	1999 04 16	704	0.7+	0.6+
1995 01 28	400	0.1−	0.4+	1999 03 20	704	0.4+	0.0	1999 04 16	704	0.7−	1.4−
1995 01 28	400	1.3−	0.7+	1999 03 20	704	0.1−	0.7+	1999 04 16	704	1.0+	1.9−
1995 01 30	400	0.6+	0.4−	1999 03 20	704	0.2−	0.8−	1999 04 16	704	0.1+	0.0
1995 01 30	400	0.2−	0.4+	1999 03 22	699	0.6+	0.8+	1999 04 16	704	0.9−	0.8−
1997 11 29	688	0.4+	0.1+	1999 03 22	699	0.1+	0.3−	1999 04 19	704	0.8+	0.9−
1997 11 29	688	0.2+	0.3+	1999 03 23	704	0.3+	0.3−	1999 04 19	704	0.1−	0.4−
1997 12 03	910	1.0−	0.2−	1999 03 23	704	1.1−	0.5+	1999 04 19	704	0.3+	0.5−
1997 12 03	910	1.2−	0.3−	1999 03 23	704	0.9−	0.4+	1999 04 19	704	(0.4+	2.2−)
1997 12 03	910	1.0−	0.3−	1999 03 23	704	0.9+	0.3+	1999 04 19	704	0.1−	0.5+

(10528)∗ 1990 VX_3 = 1983 WB_1 = 1995 BR_2

Discovered 1990 Nov. 12 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Kinoshita (*MPC* 25063)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

			(2000.0)		**P**	**Q**
M	29.56811					
n	0.27631555	ω	110.37134		−0.85712479	−0.51393556
a	2.3345284	Ω	38.72478		+0.44947050	−0.77915170
e	0.1806824	i	3.18401		+0.25162146	−0.35887723
P	3.57	H	13.9	G	0.15	U 1

Residuals in seconds of arc

1982 07 27	675	0.0	1.1−	1990 11 24	399	0.8−	0.6−	1999 04 15	704	0.2+	0.3+
1982 07 27	675	0.5+	0.4−	1993 07 26	675	1.7−	0.3−	1999 04 15	704	0.0	0.7+
1982 07 27	675	0.4+	0.6−	1993 07 26	675	1.8−	0.8−	1999 04 15	699	0.6+	0.5+
1982 07 27	675	2.1+	0.4−	1995 01 26	400	0.3−	1.1−	1999 04 15	699	0.5+	1.4+
1982 07 28	675	0.4−	1.4−	1995 01 26	400	0.2−	0.3+	1999 04 15	704	0.2−	0.2+
1982 07 28	675	1.5+	2.0−	1995 01 28	400	0.9+	0.3−	1999 04 15	699	0.5+	0.9+
1982 07 28	675	2.0+	1.9−	1995 01 28	400	1.2−	1.2−	1999 04 15	704	0.2+	0.8+
1982 07 28	675	(3.9+	2.7−)	1995 02 22	033	0.2−	0.0	1999 04 15	704	0.2+	0.6+
1983 11 29	688	(3.8+	0.3−)	1995 02 22	033	0.9−	0.0	1999 04 17	704	0.2+	0.2−
1983 11 29	688	0.1−	1.1−	1996 07 18	689	0.6−	0.8+	1999 04 17	704	1.0−	1.0−
1989 07 05	675	2.1−	0.6+	1997 11 06	694	0.8+	1.3+	1999 04 17	704	0.3−	0.5−
1989 07 05	675	0.6−	2.0+	1997 11 06	694	0.9+	1.8+	1999 04 17	704	0.1−	0.8−
1990 11 12	399	(4.1+	1.0−)	1997 11 06	694	0.9−	1.1+	1999 04 20	704	0.1+	0.0
1990 11 12	399	1.6+	0.4−	1997 11 06	694	0.4−	0.7+	1999 04 20	704	0.1−	0.1+
1990 11 12	399	0.2+	0.1−	1999 02 23	704	1.0+	1.5−	1999 04 20	704	0.0	0.2+
1990 11 13	399	(2.3−	2.4−)	1999 02 23	704	1.6+	1.3−	1999 04 20	704	0.2−	0.1+
1990 11 13	399	(1.6−	3.5−)	1999 02 23	704	0.2−	0.6+	1999 04 20	704	0.5−	0.6−
1990 11 24	399	0.9−	1.0+	1999 02 23	704	(0.6+	2.7−)				

(10529)∗ 1990 WQ_4 = 1992 DJ_7 = 1993 SE_1

Discovered 1990 Nov. 16 by E. W. Elst at the European Southern Observatory.

Id. K. Ichikawa (*MPC* 24104)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

			(2000.0)		**P**	**Q**
M	245.84385					
n	0.29178161	ω	177.59933		+0.62167957	+0.78175514
a	2.2512865	Ω	130.83475		−0.71970631	+0.59466613
e	0.2028501	i	3.69184		−0.30909115	+0.18769945
P	3.38	H	14.3	G	0.15	U 2

Residuals in seconds of arc

1990 11 14	675	0.3−	1.1+	1993 10 13	675	0.5+	0.5−	1999 04 10	699	1.2+	0.6+
1990 11 14	675	0.2−	0.2+	1993 10 15	675	0.0	1.8−	1999 04 12	704	0.8+	0.1+
1990 11 16	809	0.6+	0.9−	1993 10 15	675	0.5+	1.6−	1999 04 12	704	0.4−	0.3+
1990 11 17	809	0.8+	0.2+	1996 06 15	012	0.4−	0.7+	1999 04 12	704	0.5+	0.4+
1990 11 21	809	0.7−	0.6+	1996 06 16	012	0.6−	1.6+	1999 04 15	704	1.3+	1.3+
1990 11 21	809	1.4−	0.3−	1999 03 19	704	0.5−	0.0	1999 04 15	704	0.4+	0.8+
1990 11 21	809	1.9−	0.4+	1999 03 19	704	1.5−	0.1−	1999 04 15	704	0.2−	1.7−
1990 11 22	809	(2.3−	0.1+)	1999 03 19	704	(2.2−	0.0)	1999 04 15	704	0.1+	0.1+
1990 11 22	809	(2.9−	0.5+)	1999 03 19	704	1.2−	0.1−	1999 04 15	704	(1.2+	2.3−)
1990 11 22	809	(4.0−	0.4−)	1999 03 20	704	0.4−	0.8−	1999 04 16	704	0.8+	0.8−
1992 02 29	809	0.9+	0.8+	1999 03 20	704	1.0−	0.4+	1999 04 16	704	0.6+	0.8−
1992 03 03	809	0.2+	0.6+	1999 03 20	704	0.2−	0.2+	1999 04 16	704	0.8+	0.7−
1992 03 07	809	1.4+	0.2+	1999 03 20	704	0.7−	0.1+	1999 04 16	704	0.5+	1.8−
1993 09 16	400	0.7+	1.9+	1999 03 23	704	1.7−	0.8−	1999 04 16	704	0.1+	1.6−
1993 09 16	400	0.3+	0.3+	1999 03 23	704	0.3−	0.6−	1999 04 19	704	0.2+	0.7−
1993 09 19	400	(2.1+	0.6−)	1999 03 23	704	0.1+	0.2+	1999 04 19	704	0.7−	0.6−
1993 09 19	400	(0.4−	4.3+)	1999 03 23	704	0.2−	0.8+	1999 04 19	704	0.7−	0.1+
1993 09 21	675	0.4+	0.5−	1999 03 23	704	0.1+	0.7−	1999 04 19	704	0.9−	0.7−
1993 09 21	675	0.1+	0.8−	1999 04 10	699	1.0+	0.4+	1999 04 19	704	1.3−	0.0
1993 10 13	675	0.6+	0.2+	1999 04 10	699	1.2+	0.9+				

(10530)∗ 1991 EA = 1983 AG_6 = 1983 CA_8

Discovered 1991 Mar. 7 by S. Ueda and H. Kaneda at Kushiro.

Id. H. Kaneda (*MPC* 18128)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

			(2000.0)		**P**	**Q**
M	34.88733					
n	0.25507192	ω	152.33470		−0.79694108	−0.60378452
a	2.4624133	Ω	350.46044		+0.53202699	−0.68737027
e	0.0766872	i	6.28504		+0.28606327	−0.40369093
P	3.86	H	13.6	G	0.15	U 1

Residuals in seconds of arc

1955 12 12	675	0.7−	0.6−	1993 11 17	560	1.3−	0.9+	1999 03 25	704	1.2−	0.6+
1955 12 12	675	0.2−	0.4−	1993 11 17	560	0.3+	0.5+	1999 03 25	704	0.1+	0.7+
1983 01 15	095	(0.1+	3.2+)	1993 11 17	560	1.9+	0.5+	1999 03 25	704	0.3−	0.0
1983 02 10	095	(2.6−	9.6+)	1993 11 17	560	0.3−	0.4+	1999 03 25	704	(2.3−	0.6+)
1991 02 13	675	1.2−	0.2−	1995 02 26	801	1.3−	0.1−	1999 04 07	704	0.1+	0.0
1991 02 13	675	0.9−	0.2−	1995 02 26	801	1.1−	0.9+	1999 04 07	704	0.4+	0.1−
1991 03 07	399	1.5−	1.1−	1995 03 02	801	0.1−	0.2−	1999 04 07	704	0.7+	0.2+
1991 03 07	399	0.9−	1.3−	1995 03 02	801	0.1−	0.5−	1999 04 07	704	0.2+	0.1+
1991 03 10	399	(2.8+	0.6−)	1995 03 28	399	0.4−	1.3−	1999 04 11	699	1.4+	0.2+
1991 03 10	399	(2.8+	0.4+)	1995 03 28	399	0.5+	0.7−	1999 04 11	699	1.2+	0.3+
1991 03 12	675	1.0−	0.9−	1995 04 04	399	0.9+	0.1+	1999 04 11	699	1.3+	0.5+
1991 03 17	809	0.8−	0.3+	1995 04 04	399	0.1+	1.5−	1999 04 12	423	0.8−	0.0
1991 03 17	809	0.2−	0.3+	1995 04 26	801	0.1+	0.5+	1999 04 12	423	0.3−	0.3−
1991 03 17	809	0.1−	0.1+	1995 04 26	801	0.3+	0.3+	1999 04 15	704	0.1+	0.1−
1991 03 18	402	0.5+	0.3−	1995 05 02	801	0.3+	0.0	1999 04 15	704	0.2+	0.1+
1991 03 18	402	1.4+	0.2+	1995 05 02	801	0.3+	0.2−	1999 04 15	704	0.2−	0.8+
1991 03 19	809	0.4−	0.8+	1997 11 17	104	0.4−	0.7−	1999 04 15	704	0.5+	0.2+
1991 03 19	809	0.3−	0.8+	1997 11 17	104	0.3−	0.7−	1999 04 15	704	0.2+	0.6+
1991 03 19	809	0.2−	1.0+	1997 11 17	104	0.6−	0.7−	1999 04 17	704	0.3−	0.4+
1991 03 19	402	0.2+	1.0−	1997 12 06	704	0.0	1.3+	1999 04 17	704	1.0+	0.7−
1991 03 19	402	0.9+	0.4+	1997 12 06	704	0.1−	0.6+	1999 04 17	704	0.3−	1.0+
1991 03 20	809	1.2+	0.2−	1997 12 06	704	0.2+	0.2+	1999 04 17	704	0.6−	0.9+
1991 03 20	809	1.2+	0.3−	1997 12 06	704	0.1+	0.1−	1999 04 18	423	0.6+	0.4+
1991 03 20	809	1.2+	0.3−	1997 12 06	704	0.6−	0.7+	1999 04 18	423	0.8+	0.4+
1991 03 20	809	1.9+	0.1+	1999 03 23	704	0.6+	0.6−	1999 04 20	704	0.7−	0.1+
1991 03 20	809	(2.2+	0.0)	1999 03 23	704	0.7+	0.2−	1999 04 20	704	1.2−	0.3+
1991 03 20	809	(2.4+	0.2+)	1999 03 23	704	0.1−	0.3−	1999 04 20	704	1.1−	0.7−
1991 03 21	809	0.5−	1.2+	1999 03 23	704	0.2+	0.6−	1999 04 20	704	1.0−	0.8−
1991 03 21	809	0.2+	1.3+	1999 03 23	704	1.0−	1.1−	1999 04 20	704	1.1−	0.0
1991 03 21	809	0.3+	1.3+	1999 03 25	704	(2.2+	0.4+)				

(10531)∗ 1991 GB_1

Discovered 1991 Apr. 8 by E. F. Helin at Palomar.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

			(2000.0)		**P**	**Q**
M	256.25964					
n	0.35868281	ω	221.53220		−0.42964763	+0.89100809
a	1.9618344	Ω	24.16061		−0.70479453	−0.22936118
e	0.0439928	i	20.99638		−0.56450650	−0.39178825
P	2.75	H	14.1	G	0.15	U 2

Residuals in seconds of arc

1989 10 04	675	0.9+	0.6+	1991 04 19	809	0.1−	0.3+	1996 02 08	608	0.3+	0.5−
1989 10 04	675	0.9−	0.4−	1991 05 07	675	1.1+	0.8−	1997 11 01	424	1.2+	0.2+

1989 10 06	675	0.1−	0.5−	1991 05 09	675	1.0−	1.1+	1997 11 01	424	0.3+	0.0
1989 10 27	675	1.9−	0.0	1991 05 09	675	1.3−	2.0+	1999 02 11	704	0.8+	0.3+
1989 10 27	675	2.1+	1.8−	1991 06 15	675	(2.7−	0.9+)	1999 02 11	704	0.7−	0.2−
1989 10 29	675	0.3−	1.1−	1991 06 15	675	1.3−	0.6+	1999 02 11	704	0.5−	0.7+
1989 10 29	675	0.3−	1.0+	1992 09 30	801	0.3−	0.2−	1999 02 11	704	0.7−	0.2−
1991 02 23	493	0.8+	0.2−	1992 09 30	801	0.1+	0.1−	1999 02 11	704	0.4−	0.2−
1991 02 23	493	0.1+	1.1−	1992 10 22	801	0.2+	0.1+	1999 02 18	704	0.0	0.4−
1991 02 23	493	0.8−	1.6−	1992 10 22	801	0.4+	0.2−	1999 02 18	704	0.1+	0.4−
1991 04 08	675	0.4−	0.3−	1992 10 29	801	0.7+	1.2+	1999 02 18	704	0.7−	0.3−
1991 04 08	675	1.0+	0.4+	1992 10 29	801	0.5+	1.1+	1999 02 18	704	0.3−	1.1−
1991 04 09	675	0.5+	0.7+	1995 12 25	608	0.5−	0.4+	1999 02 18	704	0.4+	0.3−
1991 04 12	675	1.6+	0.8−	1995 12 25	608	0.6−	0.3+	1999 04 14	682	0.2−	0.3−
1991 04 12	675	0.3+	0.1−	1995 12 27	608	0.3−	1.0+	1999 04 14	682	0.8+	0.5+
1991 04 15	675	0.2−	0.8−	1995 12 27	608	0.1−	0.1+	1999 04 14	682	0.1−	0.5+
1991 04 15	675	0.7−	0.4−	1996 02 05	608	0.6−	0.5+	1999 04 15	682	0.1−	0.9−
1991 04 19	809	0.7+	0.4+	1996 02 05	608	0.6−	1.1+	1999 04 15	682	0.6−	0.7+
1991 04 19	809	0.1−	0.4+	1996 02 08	608	0.4+	0.8−				

(10532)∗ 1991 NA_2 = 1977 DU_4 = 1990 DJ_7

Discovered 1991 July 14 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 18829)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	323.57992		(2000.0)		**P**	**Q**	
n	0.22903984	ω	112.75932		−0.47022656	+0.87404179	
a	2.6456275	Ω	128.61432		−0.85620781	−0.41821780	
e	0.1584534	i	8.99914		−0.21399805	−0.24727477	
P	4.30	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1977 02 18	381	0.3−	0.3−	1991 08 07	675	(1.3+	3.5+)	1999 02 23	704	1.3+	1.4−
1977 02 18	381	0.1−	0.5−	1991 08 07	675	1.5−	1.5−	1999 02 23	704	0.4−	1.9+
1977 02 19	381	0.0	0.7−	1991 08 10	675	(0.9+	3.2−)	1999 02 23	704	(2.5−	0.9+)
1990 02 20	372	(0.5−	5.6+)	1991 08 10	675	0.6+	1.4−	1999 02 23	704	0.2−	0.2−
1990 02 20	372	(3.3−	2.7+)	1992 10 26	675	0.2−	0.3+	1999 04 15	704	1.3−	0.3+
1991 07 14	675	0.2+	0.2−	1992 11 27	675	(2.7+	0.7−)	1999 04 15	704	1.1−	0.3+
1991 07 14	675	2.0+	0.4−	1995 06 19	104	0.5−	0.4+	1999 04 15	704	1.2+	1.2+
1991 07 17	675	0.5+	1.4−	1995 06 19	104	0.5−	0.4+	1999 04 19	704	0.3+	0.5−
1991 07 17	675	0.6+	0.7−	1995 06 19	104	0.4−	0.4+	1999 04 19	704	0.4+	0.6−
1991 08 05	675	0.4−	0.3+	1995 06 19	104	0.5−	0.6+	1999 04 19	704	0.6−	1.1−
1991 08 05	675	0.9−	0.9+	1995 06 28	657	1.4+	1.1+	1999 04 19	704	0.9+	1.1−
1991 08 06	675	(0.7+	2.3−)	1995 06 29	801	0.5+	0.7+	1999 04 19	704	0.2+	0.1+
1991 08 06	675	(3.9+	1.1−)	1999 02 23	704	1.1−	0.6−				

(10533)∗ 1991 PT_{12} = 1982 SR_{11}

Discovered 1991 Aug. 5 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 31100), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	191.80122		(2000.0)		**P**	**Q**	
n	0.21138082	ω	298.13559		+0.99790893	+0.06330169	
a	2.7909946	Ω	58.23778		−0.05259476	+0.91273573	
e	0.0828894	i	0.88039		−0.03757081	+0.40361664	
P	4.66	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1982 09 27	095	0.2−	1.7+	1998 01 23	691	0.2+	0.1+	1999 03 23	704	0.7+	1.8−
1991 08 05	675	0.5+	0.3−	1998 01 23	691	0.3+	0.1+	1999 03 23	704	(0.6+	2.2−)
1991 08 07	809	(0.2−	2.1−)	1998 01 30	691	0.4+	0.3+	1999 03 23	691	0.1+	0.2+
1991 08 07	809	(0.9−	2.3−)	1998 01 30	691	0.7+	0.1−	1999 03 23	691	0.2−	0.0
1991 08 07	809	(1.0−	3.1−)	1998 01 30	691	0.6+	0.2+	1999 03 24	691	0.1+	0.0
1991 08 08	675	0.8−	0.4−	1999 03 12	691	0.3−	0.0	1999 03 24	691	0.3+	0.0
1991 08 08	675	0.4−	0.0	1999 03 12	691	0.3−	0.1+	1999 03 24	691	0.2+	0.0
1991 09 12	675	0.4+	1.9+	1999 03 12	691	0.5−	0.2+	1999 04 07	704	1.4+	2.2−
1991 09 12	675	0.5−	0.3+	1999 03 17	691	0.4+	0.0	1999 04 07	704	0.9+	0.4+
1992 11 28	675	(1.2−	2.1−)	1999 03 17	691	0.3+	0.2+	1999 04 07	704	0.2−	1.1+
1992 11 28	675	(0.1+	2.5−)	1999 03 17	691	0.2+	0.0	1999 04 07	704	0.7+	0.4−
1992 12 01	675	1.2−	0.5−	1999 03 19	704	0.0	0.2+	1999 04 07	704	1.2−	0.2+
1994 03 12	691	0.4−	0.2−	1999 03 19	704	1.8+	0.7−	1999 04 12	704	1.3+	0.4−
1994 03 12	691	0.0	0.0	1999 03 19	704	0.3+	0.2+	1999 04 12	704	1.0−	0.5+
1994 03 12	691	0.2−	0.4−	1999 03 19	704	0.8+	0.0	1999 04 12	704	0.6−	0.5−
1997 12 25	369	0.1−	0.1−	1999 03 19	691	0.7+	0.2+	1999 04 12	704	0.0	0.2+
1997 12 25	369	0.4−	0.4−	1999 03 19	704	(2.0−	0.2+)	1999 04 12	704	0.4−	0.1+
1997 12 26	566	(2.5+	3.2−)	1999 03 19	691	0.4+	0.1+	1999 04 16	704	0.2−	0.2−
1997 12 26	566	(2.6+	2.7−)	1999 03 19	691	0.6+	0.3+	1999 04 16	704	0.9−	0.2+
1997 12 26	566	(3.2+	2.8−)	1999 03 20	704	0.6+	0.8+	1999 04 16	704	1.8−	0.8−
1997 12 27	369	0.1+	0.6−	1999 03 20	704	1.6−	1.9+	1999 04 16	704	0.3+	0.5+
1997 12 27	369	0.9−	0.1−	1999 03 20	704	(0.3−	2.1+)	1999 04 16	704	1.0−	0.1−
1998 01 22	704	0.5+	0.6+	1999 03 20	704	0.7+	1.3+	1999 04 19	704	0.7+	0.0
1998 01 22	704	0.1+	0.3+	1999 03 23	704	0.4+	0.8−	1999 04 19	704	1.1−	0.1+
1998 01 22	704	0.6+	0.2−	1999 03 23	704	0.4+	0.0	1999 04 19	704	0.6−	0.1−
1998 01 22	704	0.8−	1.0+	1999 03 23	704	0.6+	0.4−	1999 04 19	704	0.3−	0.3+
1998 01 23	691	0.3+	0.6+	1999 03 23	691	0.3−	1.6+	1999 04 19	704	0.8−	0.4+

(10534)∗ 1991 PV_{16} = 1986 RC_{13} = 1986 TQ_{18}

Discovered 1991 Aug. 7 by H. E. Holt at Palomar.

Id. T. B. Spahr (*MPC* 30655)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	141.35964		(2000.0)		**P**	**Q**	
n	0.19655609	ω	289.38501		+0.89741687	−0.43800287	
a	2.9296229	Ω	96.62132		+0.42212298	+0.81760408	
e	0.1216808	i	3.05167		+0.12827759	+0.37373394	
P	5.01	H	13.2	G	0.15	U	2

Residuals in seconds of arc

1986 09 09	095	(4.5−	4.0−)	1998 01 24	704	0.5+	0.0	1999 04 06	704	0.8−	0.7+
1986 10 06	095	0.3−	0.7+	1998 01 24	704	0.2+	0.1−	1999 04 06	704	0.7−	0.4+
1991 08 07	675	0.3+	1.8−	1998 01 24	704	0.0	0.3+	1999 04 06	704	1.0−	0.8+
1991 08 08	675	0.0	0.5−	1998 01 24	704	0.1+	0.2+	1999 04 07	699	0.9+	0.4+
1991 09 15	675	0.0	0.3−	1998 01 25	704	0.8−	1.4−	1999 04 07	699	0.3+	0.5+
1991 09 15	675	0.4+	0.3−	1998 01 25	704	0.1+	0.7+	1999 04 07	699	0.8−	0.4−
1991 09 17	675	0.5+	0.4−	1998 01 25	704	0.1−	0.0	1999 04 12	704	0.1+	1.2−
1991 09 17	675	(3.3+	2.3−)	1998 01 25	704	0.1+	0.1−	1999 04 12	704	0.3−	0.1−
1997 12 20	411	0.4−	0.1+	1999 03 20	704	0.3+	1.0−	1999 04 12	704	(1.0+	2.1−)
1997 12 20	411	0.0	0.0	1999 03 20	704	0.2−	2.0−	1999 04 12	704	0.4−	1.3−
1997 12 25	566	1.2−	0.5+	1999 03 20	704	0.5−	2.0−	1999 04 12	704	1.5−	0.4−
1997 12 25	566	0.2−	0.0	1999 03 20	704	0.5+	1.4−	1999 04 16	704	0.7+	0.8+
1997 12 25	566	0.2−	0.4−	1999 03 22	699	2.0+	0.7+	1999 04 16	704	0.8+	0.3+
1998 01 02	704	0.0	0.0	1999 03 22	699	1.9+	0.1−	1999 04 16	704	0.3−	0.6+
1998 01 02	704	0.1+	0.8+	1999 03 22	699	0.7+	0.3+	1999 04 17	703	0.2+	0.3−
1998 01 02	704	0.3+	0.2+	1999 03 23	704	0.3−	1.0−	1999 04 17	703	0.4+	1.1+
1998 01 02	704	0.3+	0.1+	1999 03 23	704	0.7−	0.1−	1999 04 17	703	0.7−	0.5+
1998 01 02	704	0.8−	0.4+	1999 03 23	704	0.6+	0.6−	1999 04 17	703	0.8−	0.7−
1998 01 23	704	0.5+	0.1−	1999 03 23	699	0.9+	0.1−	1999 04 19	704	0.7−	0.0
1998 01 23	704	0.9+	0.2−	1999 03 23	704	0.3+	0.2−	1999 04 19	704	0.7−	1.2+
1998 01 23	704	0.5+	0.9−	1999 03 23	699	1.4+	0.2−	1999 04 19	704	0.8+	0.4+
1998 01 23	704	0.7+	0.7−	1999 03 23	699	0.2−	0.1+	1999 04 19	704	0.6−	1.4+
1998 01 23	704	0.5−	0.2−	1999 04 06	704	1.2−	0.2−	1999 04 19	704	1.2−	1.3+

(10535)∗ 1991 RB_1 = 1987 WR_1 = 1998 DX_{28}

Discovered 1991 Sept. 10 by A. Sugie at the Dynic Astronomical Observatory.

Id. T. B. Spahr (*MPC* 31380), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	205.06592		(2000.0)		**P**	**Q**	
n	0.20860333	ω	97.67062		+0.98233797	+0.15594181	
a	2.8157142	Ω	253.40128		−0.18341172	+0.91189087	
e	0.1685123	i	6.19484		+0.03704400	+0.37965404	
P	4.72	H	13.2	G	0.15	U	2

Residuals in seconds of arc

1987 11 26	033	0.2−	0.6+	1998 03 03	691	0.1−	0.2−	1999 04 07	704	0.2+	0.1+
1987 11 26	033	0.2+	0.1−	1998 03 03	691	0.1−	0.2−	1999 04 07	704	0.0	0.3+

1991 09 07	399	0.3−	0.5−	1998 03 03	691	1.1−	0.1−	1999 04 14	704	0.7+	0.5+
1991 09 07	399	0.5+	0.4+	1999 03 19	704	0.9−	0.0	1999 04 14	704	(1.7+	2.4−)
1991 09 10	402	0.4−	0.1−	1999 03 19	704	0.7+	1.8−	1999 04 14	704	1.4−	1.9−
1991 09 10	402	(0.3+	2.7+)	1999 03 19	704	0.2+	0.7+	1999 04 14	704	1.8+	1.5+
1991 09 11	402	0.7+	0.2+	1999 03 19	704	0.5−	1.2−	1999 04 15	704	1.3+	1.7−
1991 09 11	402	1.0+	1.7+	1999 03 20	704	0.5−	0.5+	1999 04 15	704	0.2−	0.1+
1991 10 09	691	0.8−	0.3+	1999 03 20	704	1.3−	1.8+	1999 04 15	704	0.0	0.8+
1991 10 09	691	1.2−	0.4+	1999 03 20	704	0.4+	0.9+	1999 04 15	704	1.0+	0.1+
1991 10 09	691	0.9−	0.6+	1999 03 20	704	(5.8−	0.6−)	1999 04 17	704	1.0+	0.1−
1998 01 26	566	0.3+	0.6+	1999 03 23	704	0.7−	0.8−	1999 04 17	704	0.9+	0.3+
1998 01 26	566	0.2+	0.4+	1999 03 23	704	0.8−	0.3+	1999 04 17	704	0.7−	0.8+
1998 01 26	566	0.0	0.5+	1999 03 23	704	(0.5+	2.2+)	1999 04 17	704	0.2−	0.7+
1998 02 28	691	0.2+	0.0	1999 03 23	704	1.2−	0.2−	1999 04 17	704	0.2+	1.8+
1998 02 28	691	0.3+	0.0	1999 04 07	704	0.5+	0.2−				
1998 02 28	691	0.3+	0.1+	1999 04 07	704	0.7+	0.1+				

(10536)∗ 1991 RZ$_8$ = 1992 YH$_4$ = 1996 VN$_{33}$

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

Id. A. Lowe (*MPC* 28585), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	280.79905		(2000.0)		**P**		**Q**
n	0.20393410	ω	279.96220		+0.00124893		+0.99999055
a	2.8585304	Ω	350.10652		−0.90772612		−0.00061320
e	0.0269128	*i*	1.38857		−0.41956135		+0.00430340
P	4.83	*H*	12.8	*G*	0.15	*U*	1

Residuals in seconds of arc

1991 09 11	675	0.8+	0.2−	1998 01 23	704	0.2−	0.1+	1999 04 07	704	1.0−	0.2+
1991 09 11	675	0.6+	0.5−	1998 01 23	704	0.4−	0.5+	1999 04 07	704	1.1−	0.2−
1991 09 14	675	0.7+	0.3−	1998 01 23	704	0.4−	0.0	1999 04 07	704	0.9−	0.1+
1991 09 14	675	(2.5−	3.7+)	1998 01 24	704	0.0	0.3+	1999 04 07	704	1.3−	0.5−
1992 12 29	033	0.2−	0.4+	1998 01 24	704	0.4+	0.3−	1999 04 09	699	0.9+	0.5+
1992 12 30	033	0.6−	0.0	1998 01 24	704	0.3+	1.2−	1999 04 09	699	1.1+	1.0+
1993 01 01	033	0.9−	0.5−	1998 01 24	704	0.4−	0.1−	1999 04 09	699	0.8+	0.7+
1996 11 06	691	0.5−	0.2−	1998 01 24	704	0.2−	0.3−	1999 04 14	704	0.8+	1.0−
1996 11 06	691	0.9−	0.2−	1998 01 25	704	0.1−	0.0	1999 04 14	704	(0.3−	3.8−)
1996 11 06	691	1.2−	0.2+	1998 01 25	704	0.3−	0.1−	1999 04 14	704	(0.9−	6.8−)
1996 11 07	691	0.1+	0.4−	1998 01 25	704	0.2+	0.4−	1999 04 15	704	0.6−	0.7−
1996 11 07	691	0.1+	0.1−	1998 01 25	704	0.3−	0.3−	1999 04 15	704	0.8−	0.2−
1996 11 07	691	0.9+	0.2+	1998 01 27	104	0.3−	0.3−	1999 04 15	704	1.2−	0.1+
1997 12 29	691	0.4+	0.1−	1998 01 27	104	0.4+	0.5−	1999 04 15	704	0.7−	0.1−
1997 12 29	691	0.7+	0.2−	1998 01 27	104	0.3+	0.7−	1999 04 15	704	0.3−	0.2+
1997 12 29	691	0.8+	0.3−	1999 01 25	120	0.7+	0.4−	1999 04 17	704	0.7+	0.4−
1998 01 20	704	0.3+	0.2+	1999 01 25	120	1.5−	0.7+	1999 04 17	704	0.1−	0.1+
1998 01 20	704	0.6+	0.1+	1999 03 23	704	(2.1+	0.2−)	1999 04 17	704	0.5−	0.0
1998 01 20	704	0.5+	0.5+	1999 03 23	704	1.3+	0.0	1999 04 17	704	0.5−	0.1+
1998 01 20	704	1.0+	0.5+	1999 03 23	704	0.7+	0.0	1999 04 17	704	0.3−	0.7+
1998 01 20	704	0.1+	0.7+	1999 03 23	704	1.3+	1.5−	1999 04 18	704	1.1+	0.3−
1998 01 20	704	0.2−	0.1+	1999 03 23	704	0.6+	1.0−	1999 04 18	704	0.9+	1.6+
1998 01 22	704	0.2+	0.2−	1999 03 25	704	(4.0+	1.0+)	1999 04 18	704	1.1−	1.2−
1998 01 22	704	0.1−	1.6+	1999 03 25	704	0.3+	0.3−	1999 04 18	704	1.7−	0.5+
1998 01 22	704	0.4−	0.5+	1999 03 25	704	0.7+	1.8−	1999 04 22	691	0.6−	0.3+
1998 01 22	704	0.4−	0.4−	1999 03 25	704	1.4+	0.9+	1999 04 22	691	0.3−	0.9+
1998 01 23	704	0.1−	0.5−	1999 03 25	704	1.8+	0.3−	1999 04 22	691	0.2−	0.3+
1998 01 23	704	0.3−	0.2−	1999 04 07	704	0.9−	0.0				

(10537)∗ 1991 RY$_{16}$ = 1982 XP$_1$ = 1990 LF

Discovered 1991 Sept. 15 by H. E. Holt at Palomar.

Id. K. Ichikawa (*MPC* 20339), G. V. Williams (*MPC* 22233)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	319.89097		(2000.0)		**P**		**Q**
n	0.20489199	ω	161.57960		−0.71158566		+0.69354921
a	2.8496142	Ω	62.87238		−0.65945659		−0.60408925
e	0.0697510	*i*	7.25589		−0.24241051		−0.39251200
P	4.81	*H*	12.9	*G*	0.15	*U*	1

Residuals in seconds of arc

1955 03 22	675	0.9+	0.4+	1994 03 21	801	0.4−	0.4+	1999 04 12	704	0.1−	0.6−
1955 03 22	675	0.8−	0.6−	1994 03 21	801	0.6−	0.5+	1999 04 12	704	0.7+	0.4+
1982 12 13	381	0.7−	0.5+	1999 03 19	704	(2.1+	0.9−)	1999 04 12	704	1.4+	0.5−
1982 12 13	381	0.3+	1.6+	1999 03 19	704	0.2−	1.1−	1999 04 12	704	0.2+	0.4+
1982 12 14	381	1.0−	0.3+	1999 03 19	704	0.0	0.5+	1999 04 15	704	0.1−	0.6+
1982 12 14	381	0.2+	0.1+	1999 03 19	704	0.2−	1.0−	1999 04 15	704	0.4+	0.4+
1990 06 14	413	1.0+	0.4+	1999 03 19	704	1.8−	0.4+	1999 04 15	704	0.5−	0.6−
1991 09 09	675	(2.4+	0.1+)	1999 03 20	704	0.9−	1.2−	1999 04 15	704	0.1−	0.3−
1991 09 09	675	1.0−	0.5−	1999 03 20	704	0.7−	1.1−	1999 04 15	704	0.1+	0.2+
1991 09 12	675	0.4+	0.5+	1999 03 20	699	0.3+	1.3+	1999 04 16	704	1.0+	0.8−
1991 09 12	675	0.2+	0.5+	1999 03 20	704	0.9−	0.5−	1999 04 16	704	0.3+	0.1+
1991 09 15	675	1.2+	1.8−	1999 03 20	704	0.7−	0.9−	1999 04 16	704	0.1−	0.4−
1991 09 15	675	0.3−	1.5−	1999 03 20	699	0.4+	1.1+	1999 04 16	704	0.2+	0.3−
1991 09 17	675	0.3−	1.8−	1999 03 20	704	0.7−	0.4−	1999 04 16	704	0.4−	0.3−
1991 09 17	675	0.1−	1.0−	1999 03 20	699	0.4+	1.5+	1999 04 19	704	0.6−	0.1+
1991 10 02	675	1.4+	0.1+	1999 03 23	704	0.5+	1.4−	1999 04 19	704	0.5+	0.2+
1992 11 25	675	0.6+	1.7−	1999 03 23	704	0.6+	0.8−	1999 04 19	704	0.3+	0.1+
1992 11 25	675	0.4+	0.8−	1999 03 23	704	0.2+	0.2+	1999 04 19	704	0.3+	0.1+
1992 11 27	675	0.8+	0.3−	1999 03 23	704	0.1+	0.2+	1999 04 19	704	0.7−	1.2−
1994 03 12	801	0.5−	0.5+	1999 03 23	704	0.7−	0.2+				
1994 03 12	801	0.1−	0.4+	1999 04 12	704	0.2−	0.4+				

(10538)∗ 1991 VP$_2$ = 1989 AB$_1$ = 1994 TQ$_4$

Discovered 1991 Nov. 11 by B. G. W. Manning at Stakenbridge.

Id. G. V. Williams (*MPC* 24229)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	92.59171		(2000.0)		**P**		**Q**
n	0.31146107	ω	348.16792		+0.50995102		−0.86018971
a	2.1554281	Ω	71.17134		+0.78963949		+0.46587010
e	0.1515593	*i*	0.29424		+0.34120293		+0.20745774
P	3.16	*H*	15.8	*G*	0.15	*U*	2

Residuals in seconds of arc

1989 01 02	402	0.7+	0.3+	1994 10 11	691	0.3−	0.4−	1997 10 01	817	0.2−	0.2−
1989 01 02	402	0.7−	1.3−	1994 10 11	691	0.3−	0.3−	1999 03 20	704	0.3−	0.3−
1989 01 05	402	0.0	1.9+	1994 10 11	691	0.4+	0.7−	1999 03 20	704	1.8+	0.7+
1989 01 05	402	(3.9+	2.8+)	1996 05 05	494	0.5−	0.2+	1999 03 20	704	1.2−	0.6−
1991 11 08	691	0.4+	1.1−	1996 05 07	494	0.1+	0.4−	1999 03 20	704	0.4−	1.4+
1991 11 08	691	0.6+	0.2+	1997 08 12	691	0.3−	0.2+	1999 04 12	704	0.7+	0.6−
1991 11 08	691	0.4+	0.0	1997 08 12	691	0.3−	0.4−	1999 04 12	704	0.1+	1.1−
1991 11 11	494	0.3+	0.2+	1997 08 12	691	0.5−	0.1+	1999 04 12	704	1.5+	0.9−
1991 11 12	691	0.1+	0.0	1997 09 01	494	1.2+	0.3+	1999 04 15	704	0.1−	0.3+
1991 11 12	691	0.0	0.2+	1997 09 01	494	1.1+	0.5+	1999 04 15	704	0.6+	0.4+
1991 11 12	691	0.2+	0.1−	1997 09 04	494	0.0	0.4+	1999 04 15	704	1.0−	0.0
1991 11 12	494	0.4−	0.4−	1997 09 07	494	0.8+	0.5−	1999 04 15	704	0.5+	0.0
1991 11 12	494	0.2−	0.4−	1997 09 07	494	0.9−	0.2+	1999 04 15	704	1.7−	0.6−
1994 10 02	691	0.3+	0.1+	1997 09 21	494	0.3+	0.4−	1999 04 15	704	0.2−	0.4−
1994 10 02	691	0.2+	0.0	1997 09 21	494	0.0	0.7−	1999 04 15	704	0.2−	0.9−
1994 10 02	691	0.0	0.1−	1997 09 26	910	0.4+	0.3+	1999 04 15	704	1.2+	0.8−
1994 10 06	691	0.5−	0.4−	1997 09 26	910	0.2+	0.3+	1999 04 19	691	1.1−	0.1−
1994 10 06	691	0.5−	0.6−	1997 09 26	910	0.4+	0.3+	1999 04 19	691	0.8−	0.2−
1994 10 06	691	0.6−	0.1−	1997 10 01	817	0.7−	0.2−	1999 04 19	691	1.2−	0.0

(10539)∗ 1991 VH$_4$ = 1996 VC$_8$

Discovered 1991 Nov. 9 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 28585)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	185.09468		(2000.0)		**P**	**Q**	
n	0.19040154	ω	260.23245		+0.99460821	−0.01679382	
a	2.9924190	Ω	100.67787		+0.05448886	+0.92423707	
e	0.1246616	i	5.97753		−0.08823537	+0.38144960	
P	5.18	H	13.0	G	0.15	U	2

Residuals in seconds of arc

1991 11 09	399	0.7+	0.6+	1996 11 15	399	1.6−	1.1−	1999 04 12	704	0.3+	0.0
1991 11 09	399	1.4−	0.3−	1996 11 15	399	0.6−	0.9+	1999 04 12	704	0.8+	0.4+
1991 11 11	399	(2.7−	0.3−)	1997 01 25	327	1.2+	0.2+	1999 04 12	704	0.1+	0.7+
1991 11 11	399	(4.2−	1.4−)	1997 01 25	327	0.1+	0.2+	1999 04 16	704	0.3+	0.5−
1991 11 13	399	1.0+	0.5−	1997 01 25	327	0.1−	0.1−	1999 04 16	704	0.7−	0.6−
1991 11 13	399	1.1−	1.8+	1997 12 29	688	0.1−	0.4−	1999 04 16	704	1.4−	1.2+
1991 12 05	399	0.5+	0.5−	1997 12 29	688	0.2−	0.5−	1999 04 16	704	(1.2−	2.2+)
1991 12 05	399	(2.5+	1.5−)	1999 03 23	704	0.4−	0.9−	1999 04 19	704	0.3+	0.4+
1991 12 07	399	0.1−	0.6+	1999 03 23	704	0.2−	0.7−	1999 04 19	704	(2.1+	0.9+)
1996 11 03	399	1.7+	0.0	1999 03 23	704	0.3−	0.4−	1999 04 19	704	0.9+	1.4+
1996 11 03	399	1.2+	1.5−	1999 03 23	704	0.3−	0.2−	1999 04 19	704	1.3+	0.9+
1996 11 06	399	1.2−	1.4+	1999 04 12	704	0.1+	0.6−	1999 04 19	704	0.2+	0.3+
1996 11 06	399	0.1−	0.2−	1999 04 12	704	0.4−	0.2−				

(10540)∗ 1991 VP$_4$ = 1980 WZ$_4$

Discovered 1991 Nov. 13 by S. Otomo at Kiyosato.

Id. G. V. Williams (*MPC* 20339)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	110.80037		(2000.0)		**P**	**Q**	
n	0.17960353	ω	309.76173		+0.48365337	−0.86838062	
a	3.1111871	Ω	110.98912		+0.83463034	+0.41989667	
e	0.1599599	i	6.73646		+0.26357468	+0.26382169	
P	5.49	H	13.1	G	0.15	U	2

Residuals in seconds of arc

1980 11 29	675	0.5+	0.5+	1998 01 24	704	0.1+	0.0	1999 03 20	704	(2.4−	0.2+)
1980 12 01	675	0.6−	0.2−	1998 01 24	704	0.1+	0.1−	1999 03 23	704	0.5−	1.0−
1991 11 13	894	0.4−	0.3−	1998 01 25	704	0.2−	0.2−	1999 03 23	704	0.7−	1.6−
1991 11 13	894	0.5+	0.0	1998 01 25	704	0.5−	0.4−	1999 03 23	704	(2.0−	1.4−)
1991 11 14	894	0.2−	1.0−	1998 01 25	704	0.2−	0.5−	1999 03 23	704	1.4−	1.4−
1991 11 14	894	0.6−	1.2−	1998 01 25	704	0.7−	0.5−	1999 03 23	704	0.3−	1.3−
1991 12 03	691	0.3+	0.1−	1998 01 25	704	0.3−	0.4−	1999 04 12	704	0.6−	0.3+
1991 12 03	691	0.6+	0.2−	1998 01 27	360	0.2−	0.1+	1999 04 12	704	0.3−	0.3+
1991 12 03	691	0.7+	0.4−	1998 01 27	360	0.3+	0.2+	1999 04 12	704	0.3+	0.4−
1998 01 22	704	0.6+	0.6+	1998 01 28	566	0.0	0.5+	1999 04 12	704	1.0−	0.7+
1998 01 22	704	0.6+	0.6+	1998 01 28	566	0.3+	0.5+	1999 04 12	704	0.3−	0.8−
1998 01 22	704	0.7+	0.5+	1998 01 28	566	0.3−	0.6+	1999 04 16	704	0.6−	1.0+
1998 01 22	704	0.1+	1.4+	1998 02 06	688	0.1+	0.0	1999 04 16	704	0.4+	1.8−
1998 01 22	704	0.0	0.4+	1998 02 06	688	0.2+	0.1−	1999 04 16	704	1.6+	0.1−
1998 01 23	704	0.1−	0.4+	1998 02 06	688	0.1+	0.1−	1999 04 19	704	0.4+	0.2+
1998 01 23	704	0.1−	0.3−	1999 03 19	704	1.0+	0.3+	1999 04 19	704	1.6−	0.1+
1998 01 23	704	0.3−	0.1+	1999 03 19	704	1.8+	1.0+	1999 04 19	704	0.2+	0.6−
1998 01 23	704	0.3−	0.3−	1999 03 19	704	(2.5−	0.5+)	1999 04 19	704	0.3−	0.4+
1998 01 24	704	0.2+	0.2−	1999 03 20	704	0.5+	0.2+	1999 04 19	704	0.5−	0.1−
1998 01 24	704	0.1−	0.7−	1999 03 20	704	1.0+	0.4+				
1998 01 24	704	0.2−	0.2−	1999 03 20	704	0.1+	1.1+				

(10541)∗ 1991 YX = 1984 YT$_2$ = 1987 QP$_9$

Discovered 1991 Dec. 31 by E. W. Elst at Haute Provence.

Id. S. Nakano (*MPC* 19870)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	69.43224		(2000.0)		**P**	**Q**	
n	0.28733195	ω	265.60890		+0.75756318	−0.64882776	
a	2.2744694	Ω	134.82352		+0.63175665	+0.70118112	
e	0.1595934	i	5.79032		+0.16426067	+0.29558006	
P	3.43	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1984 12 23	095	(2.2+	3.5−)	1998 11 25	704	0.2−	1.4−	1999 02 13	704	0.3−	0.3−
1984 12 27	095	(15.2−	3.5+)	1998 11 25	704	(0.9−	2.7−)	1999 02 13	704	1.0+	1.1−
1987 08 21	809	0.1+	0.8−	1998 11 25	704	0.2+	0.0	1999 02 13	704	0.2+	0.2+
1987 08 21	809	0.3+	0.6−	1998 11 25	704	0.8−	1.7−	1999 02 13	704	0.3+	0.5+
1991 12 03	675	0.9−	1.7−	1998 11 25	704	0.6+	0.5−	1999 02 13	704	0.4+	0.5−
1991 12 03	675	(1.9+	3.4−)	1999 01 14	699	0.3+	0.9+	1999 02 18	566	0.1−	0.1+
1991 12 31	511	1.7+	0.7−	1999 01 14	699	0.2−	0.2+	1999 02 18	566	0.1+	0.1−
1991 12 31	511	0.5−	0.8−	1999 01 14	699	0.1+	0.5+	1999 02 18	566	0.1+	0.2+
1992 01 02	511	0.1+	0.2+	1999 01 15	691	0.3−	0.3+	1999 02 20	691	0.6−	0.3−
1992 01 02	511	0.9−	0.5+	1999 01 15	691	0.2−	0.2+	1999 02 20	691	0.3−	0.0
1992 01 03	511	(0.4+	3.6−)	1999 01 15	691	0.1−	0.6−	1999 02 20	691	0.4−	0.1−
1992 01 11	889	0.0	0.1+	1999 01 18	691	0.5−	0.1+	1999 02 23	699	0.2−	0.7+
1992 01 11	889	0.4+	0.6+	1999 01 18	691	0.6−	0.8+	1999 02 23	699	0.5+	0.7+
1994 10 03	675	0.4−	0.2−	1999 01 18	691	0.6−	0.8+	1999 02 23	699	0.2−	0.7+
1994 10 03	675	0.2−	0.0	1999 02 11	699	1.4+	0.5−	1999 04 06	704	1.2−	0.4−
1994 11 04	675	0.1−	1.4+	1999 02 11	699	0.8+	0.1+	1999 04 06	704	(2.6−	0.2+)
1994 11 04	675	0.1−	1.5+	1999 02 11	699	1.1+	0.0	1999 04 06	704	1.1−	0.8+

(10542)∗ 1992 CN$_3$ = 1969 EL = 1986 KM = 1990 SN$_{20}$

Discovered 1992 Feb. 2 by E. W. Elst at the European Southern Observatory.

Id. T. B. Spahr (*MPC* 30450)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	349.13829		(2000.0)		**P**	**Q**	
n	0.29799056	ω	332.20101		−0.99377456	+0.10668093	
a	2.2199049	Ω	213.97009		−0.08855200	−0.93127613	
e	0.0855059	i	3.29481		−0.06760671	−0.34834459	
P	3.31	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1969 03 12	095	1.4+	1.5+	1997 11 01	691	0.7−	0.1−	1999 04 09	699	0.9+	0.0
1986 05 29	095	1.3−	0.4+	1997 11 03	704	0.4+	0.4−	1999 04 09	699	1.3+	0.1+
1990 09 20	675	0.5+	0.1−	1997 11 03	704	0.7+	0.1−	1999 04 14	704	0.0	0.2−
1990 09 20	675	(2.1+	0.3+)	1997 11 03	704	1.2+	0.9+	1999 04 14	704	0.2−	0.4−
1992 01 24	399	(6.2−	0.6+)	1997 11 03	704	0.6+	0.6+	1999 04 14	704	0.4+	1.1−
1992 01 24	399	(4.4−	3.0+)	1997 11 03	704	0.1−	0.1−	1999 04 14	704	0.8−	0.3+
1992 01 30	809	(0.7+	2.8+)	1999 03 19	704	1.3+	0.2+	1999 04 15	704	0.2+	0.2−
1992 02 02	809	0.4−	1.4−	1999 03 19	704	0.8+	1.5+	1999 04 15	704	0.4+	0.0
1992 02 02	809	1.0−	1.5−	1999 03 19	704	(0.5−	3.0+)	1999 04 15	704	0.6+	0.4+
1992 02 02	809	1.3−	1.5−	1999 03 19	704	0.9+	0.1−	1999 04 15	704	0.5+	0.6−
1992 02 07	809	0.8+	0.2−	1999 03 19	704	(2.3−	0.0)	1999 04 15	704	0.4+	0.5−
1992 02 07	809	0.6+	0.0	1999 03 20	704	0.6−	0.7+	1999 04 17	704	0.4−	0.2+
1992 02 07	809	0.6−	0.3+	1999 03 20	704	0.3−	0.3+	1999 04 17	704	0.6+	0.4+
1992 02 12	809	1.2+	0.0	1999 03 20	704	0.8+	0.4+	1999 04 17	704	1.2−	2.9−
1992 02 12	809	0.2−	0.7+	1999 03 20	704	1.2−	0.8−	1999 04 17	704	0.8−	0.4−
1992 02 12	809	1.4−	0.8+	1999 03 23	704	0.5+	0.5+	1999 04 18	704	1.2+	0.8−
1997 09 26	557	0.5−	0.8+	1999 03 23	704	0.4+	0.9+	1999 04 18	704	0.6−	0.5−
1997 09 27	557	0.4−	0.7+	1999 03 23	704	0.5+	1.1+	1999 04 18	704	0.4+	0.5+
1997 10 05	557	0.4+	0.2+	1999 03 23	704	0.1−	1.6+	1999 04 18	704	0.0	0.7+
1997 10 05	557	0.4+	0.7+	1999 03 23	704	(0.3−	2.5+)	1999 04 18	704	0.9−	1.7+
1997 10 14	608	1.0−	1.3+	1999 04 07	704	2.2−	0.1+	1999 04 18	704	1.3+	1.0−
1997 10 14	608	0.9−	0.5+	1999 04 07	704	1.8−	0.0	1999 04 18	704	0.6−	0.4−
1997 10 23	691	0.8+	0.9+	1999 04 07	704	1.3−	0.4−	1999 04 18	704	1.1+	2.3+
1997 10 23	691	1.0−	0.1−	1999 04 07	704	0.6−	0.8−	1999 04 18	704	1.5−	1.8+
1997 11 01	691	0.8−	0.1−	1999 04 07	704	2.7+	0.5−				
1997 11 01	691	0.3−	0.3+	1999 04 09	699	0.6+	0.1−				

(10543)∗ 1992 DL$_4$ = 1980 TL$_7$

Discovered 1992 Feb. 27 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 20342)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	120.12520		(2000.0)		**P**	**Q**	
n	0.28837573	ω	6.61365		+0.96263082	−0.27019218	
a	2.2689778	Ω	9.12528		+0.24285603	+0.83120411	
e	0.1756005	i	6.65781		+0.11984513	+0.48589702	
P	3.42	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1980 10 10	095	0.6+	0.6−	1999 02 10	704	0.5+	0.9−	1999 03 17	113	0.4−	0.4−
1980 10 15	095	1.9+	2.0−	1999 02 10	704	0.3+	0.9−	1999 03 17	113	0.1−	0.1+
1992 01 03	033	0.5+	0.6+	1999 02 10	704	0.0	0.1+	1999 03 17	113	0.2−	0.0
1992 01 03	033	0.2−	0.9+	1999 02 10	704	1.0+	0.9+	1999 03 20	704	0.7+	0.6−
1992 02 08	033	0.1+	0.1−	1999 02 10	704	0.6−	0.5+	1999 03 20	704	0.2−	1.2−
1992 02 08	033	0.7−	0.6−	1999 02 13	704	0.6−	0.7−	1999 03 20	704	0.3−	0.1+
1992 02 09	033	0.7−	0.7−	1999 02 13	704	1.6+	0.1+	1999 03 20	704	0.2+	0.5−
1992 02 27	033	0.3−	0.0	1999 02 13	704	(0.9+	3.1−)	1999 03 20	704	(0.2+	2.4−)
1992 02 27	033	0.2−	0.3+	1999 02 13	704	1.9−	1.2+	1999 03 23	704	0.4−	1.6−
1992 02 28	033	1.4−	0.5+	1999 02 13	704	0.6+	0.2+	1999 03 23	704	0.5+	1.7+
1992 02 29	033	0.6−	0.1+	1999 02 18	699	1.2+	0.7−	1999 03 23	704	1.4−	0.6+
1996 04 21	566	0.6−	0.4−	1999 02 18	699	1.2+	0.5−	1999 03 23	704	0.3+	0.7−
1996 04 21	566	0.8−	0.8−	1999 02 18	699	0.6+	0.0	1999 03 23	704	1.4+	0.6+
1996 04 21	566	1.4−	0.2−	1999 03 06	113	0.0	0.1−	1999 04 09	113	0.0	0.4−
1997 11 29	688	0.5−	0.1−	1999 03 06	113	0.2−	0.0	1999 04 09	113	0.1+	0.4−
1997 11 29	688	0.6−	0.2−	1999 03 06	113	0.0	0.0				

(10544)∗ 1992 DA$_9$ = 1989 GG$_1$ = 1993 RE$_2$

Discovered 1992 Feb. 29 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 23861)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	256.17338		(2000.0)		**P**	**Q**	
n	0.29665735	ω	298.25196		+0.61413856	+0.78886841	
a	2.2265509	Ω	9.73631		−0.66855224	+0.53539778	
e	0.1767835	i	7.75285		−0.41937064	+0.30172148	
P	3.32	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1989 04 03	809	0.0	0.5−	1993 09 15	400	1.3+	0.5+	1999 03 25	704	1.0+	1.5−
1989 04 03	809	0.0	1.0−	1993 09 16	400	0.7+	0.9+	1999 04 15	704	0.3−	0.3−
1989 04 03	809	0.2+	0.2−	1993 09 16	400	1.0+	1.0+	1999 04 15	704	0.1−	0.6−
1989 04 05	809	(4.9+	1.4−)	1993 09 18	675	1.0+	0.4+	1999 04 15	704	0.3+	0.6−
1989 04 05	809	(4.7+	1.7−)	1993 09 18	675	0.1−	0.2−	1999 04 15	704	0.2+	0.1−
1989 04 05	809	(4.5+	1.3−)	1993 09 19	400	(3.6−	0.2+)	1999 04 17	704	0.6−	0.1−
1989 04 08	809	0.3+	0.5+	1993 09 19	400	1.0−	0.6−	1999 04 17	704	0.8−	0.1−
1989 04 08	809	0.4−	0.4+	1993 09 21	675	0.8+	0.4−	1999 04 17	704	0.7−	1.0−
1989 04 08	809	0.1+	1.0+	1993 09 21	675	0.3+	1.3−	1999 04 17	704	0.4−	0.4+
1992 02 29	809	1.4−	1.4−	1993 09 23	675	1.3−	0.2−	1999 04 20	704	0.0	0.1+
1992 03 03	809	0.2+	0.1+	1993 09 23	675	1.5−	0.4−	1999 04 20	704	0.5+	0.0
1992 03 07	809	0.6+	0.7+	1999 03 25	704	1.2+	0.9−	1999 04 20	704	0.9−	0.1+
1992 04 06	809	0.3+	0.2+	1999 03 25	704	0.9+	0.9+	1999 04 20	704	0.1−	1.4+
1993 09 15	400	0.8−	0.3−	1999 03 25	704	0.5+	0.5+	1999 04 20	704	0.3−	1.2+

(10545)∗ 1992 EQ$_9$ = 1977 UC$_3$

Discovered 1992 Mar. 2 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. T. Kobayashi (*MPC* 23979)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	88.87320		(2000.0)		**P**	**Q**	
n	0.29474960	ω	243.52018		+0.21515968	−0.97651770	
a	2.2361481	Ω	194.06784		+0.91124408	+0.20477793	
e	0.1198482	i	2.57754		+0.35119873	+0.06692665	
P	3.34	H	14.4	G	0.15	U	2

Residuals in seconds of arc

1977 10 18	675	0.1+	0.1+	1997 10 30	704	(0.6+	2.2+)	1999 04 09	699	1.8+	0.1+
1977 10 19	675	0.1+	0.3+	1997 10 30	704	0.6+	1.6+	1999 04 09	699	0.2+	0.1−
1992 02 25	675	0.0	0.0	1997 10 30	704	0.2+	1.6+	1999 04 14	704	0.1−	0.5−
1992 02 25	675	0.7+	0.4−	1999 03 21	691	0.5−	0.4+	1999 04 14	704	0.2+	0.3+
1992 03 02	809	0.5−	0.5+	1999 03 21	691	0.4−	0.5+	1999 04 14	704	0.7+	0.2−
1992 03 04	809	0.3−	1.1+	1999 03 21	691	0.2−	0.3+	1999 04 14	704	1.1+	1.1+
1992 03 07	809	0.7−	0.4+	1999 03 23	704	0.5+	0.1+	1999 04 15	704	0.5−	0.1−
1997 07 04	402	(2.4−	0.5+)	1999 03 23	704	0.4−	0.6−	1999 04 15	704	0.7−	0.6−
1997 07 04	402	1.3−	0.1+	1999 03 23	704	0.2−	0.5−	1999 04 15	704	1.4+	0.4+
1997 07 04	402	0.8−	0.2+	1999 03 23	704	0.7+	0.2−	1999 04 15	704	0.5−	0.5−
1997 07 04	402	1.0−	0.3+	1999 03 25	704	0.3−	0.0	1999 04 15	704	0.4+	0.0
1997 07 05	402	0.1−	0.0	1999 03 25	704	1.4+	0.7−	1999 04 17	704	0.5−	0.3+
1997 07 05	402	0.8−	0.2+	1999 03 25	704	0.5+	1.6+	1999 04 17	704	0.3−	0.5+
1997 07 05	402	0.5−	0.3−	1999 03 25	704	1.0+	0.0	1999 04 17	704	0.2+	1.2+
1997 07 05	360	0.3−	0.0	1999 03 25	704	1.6−	1.2−	1999 04 17	704	0.1−	1.7+
1997 07 05	360	0.5−	0.2+	1999 04 07	704	0.4−	0.3+	1999 04 19	704	0.6+	1.2−
1997 07 05	360	0.2−	0.4−	1999 04 07	704	0.3−	0.2+	1999 04 19	704	0.4+	0.6−
1997 10 08	894	(0.1+	2.1+)	1999 04 07	704	0.5−	0.9+	1999 04 19	704	1.0+	0.1−
1997 10 08	894	1.6−	1.7+	1999 04 07	704	0.7−	0.8+	1999 04 19	704	0.4+	0.6+
1997 10 30	704	0.5+	1.0+	1999 04 07	704	1.2−	1.5+	1999 04 19	704	0.0	0.3−
1997 10 30	704	0.4+	1.0+	1999 04 09	699	0.2+	1.2+				

(10546)∗ 1992 FS$_1$ = 1989 NF

Discovered 1992 Mar. 28 by K. Endate and K. Watanabe at Kitami.

Id. H. Kaneda (*MPC* 20156)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	301.19749		(2000.0)		**P**	**Q**	
n	0.28966861	ω	172.59246		+0.12857734	+0.98437200	
a	2.2622213	Ω	104.73896		−0.91612847	+0.16436021	
e	0.1729703	i	7.14758		−0.37970581	−0.06322562	
P	3.40	H	13.7	G	0.15	U	2

Residuals in seconds of arc

1989 07 01	675	0.3−	0.5−	1998 01 02	704	0.0	0.4−	1999 02 20	704	0.3+	1.3−
1989 07 01	675	0.1+	0.6−	1998 01 02	704	0.5+	0.1−	1999 02 20	704	0.6+	0.0
1989 07 03	675	0.7+	0.9−	1998 01 02	704	0.2−	0.2−	1999 02 20	704	0.9+	1.2+
1989 07 03	675	0.1−	1.1−	1998 01 03	426	0.2−	0.5−	1999 02 26	704	1.2+	0.6−
1992 03 28	400	0.6−	0.2+	1998 01 03	426	0.6−	0.2−	1999 02 26	704	0.1−	0.4+
1992 03 28	400	0.1+	0.7−	1998 01 06	426	0.1−	0.9−	1999 02 26	704	1.5−	1.2+
1992 03 31	400	0.8+	1.0−	1998 01 06	426	0.8+	0.7−	1999 02 26	704	0.7−	0.1−
1992 03 31	400	0.3+	1.4−	1998 01 24	704	0.3+	0.8−	1999 02 26	704	0.1−	0.2−
1992 04 07	400	1.3+	0.8+	1998 01 24	704	0.2+	0.8−	1999 03 24	704	0.3−	1.2−
1992 04 07	400	0.6−	1.1+	1998 01 24	704	0.3−	0.5+	1999 03 24	704	0.5−	0.1−
1992 05 02	399	(4.3−	0.0)	1998 01 24	704	(2.5−	1.3−)	1999 03 24	704	0.4−	1.6+
1992 05 02	399	2.0−	0.8−	1998 01 25	704	0.6−	0.5−	1999 03 24	704	(2.5−	0.5+)
1995 02 19	292	0.5+	0.7+	1998 01 25	704	1.6−	1.3−	1999 03 24	704	0.2−	0.7+
1995 02 19	292	0.3−	0.9+	1998 01 25	704	0.8+	0.4+	1999 04 14	120	0.3+	0.1+
1998 01 02	704	0.4−	0.2−	1998 01 25	704	0.7+	0.1+	1999 04 14	120	0.3+	0.2+
1998 01 02	704	1.0+	0.3+	1999 02 20	704	0.2+	1.4−	1999 04 14	120	0.3+	0.2+

(10547)∗ 1992 JF = 1971 FH$_1$ = 1985 GF$_1$ = 1989 RT$_2$

Discovered 1992 May 2 by T. Seki at Geisei.

Id. K. Ichikawa (*MPC* 20346), S. Nakano (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	290.95345		(2000.0)		**P**	**Q**	
n	0.28355065	ω	235.21535		+0.36536442	+0.92837238	
a	2.2946456	Ω	56.35565		−0.82511333	+0.35684217	
e	0.2157279	i	4.69013		−0.43092556	+0.10386713	
P	3.48	H	14.0	G	0.15	U	1

Residuals in seconds of arc

1957 04 28	675	0.3−	0.2+	1992 05 10	372	1.5−	1.6+	1998 01 29	560	0.3+	0.3+
1957 04 28	675	0.6−	0.3+	1992 05 10	372	0.5−	0.3+	1998 01 29	560	0.1+	1.1+
1971 03 19	095	0.8+	0.7−	1992 05 22	372	(2.9−	1.0+)	1998 01 29	560	0.5+	0.7+

1985 04 15	688	2.1+	1.9−	1992 05 22	372	0.9−	0.2+	1999 02 23	704	0.3−	1.2−
1985 04 15	688	0.9+	1.1−	1995 02 05	372	0.1−	0.5−	1999 02 23	704	0.2+	0.7−
1989 09 02	675	0.1+	1.2+	1995 02 05	372	0.3+	0.8+	1999 02 23	704	0.5+	1.4+
1989 09 02	675	0.3+	1.0+	1995 02 06	372	1.8+	0.7+	1999 02 23	704	1.8−	0.8−
1989 09 07	046	1.2−	0.9+	1995 02 06	372	(3.2+	1.7+)	1999 02 23	704	(0.6−	2.3−)
1989 09 08	046	0.1+	0.5−	1995 02 09	411	0.7−	0.5+	1999 02 26	704	0.5+	0.7−
1989 09 08	046	0.6+	0.3−	1995 02 09	411	0.8+	1.3+	1999 02 26	704	0.4−	1.9+
1989 09 09	046	1.2−	0.5+	1995 02 10	372	(2.3−	0.6−)	1999 02 26	704	0.7+	0.0
1992 04 08	675	0.8−	0.5+	1995 02 10	372	1.6−	0.7−	1999 02 26	704	(2.4−	0.7−)
1992 04 08	675	0.8−	1.0+	1998 01 25	566	0.2−	0.2+	1999 03 24	704	0.1−	1.0+
1992 05 02	372	1.0+	0.4−	1998 01 25	566	0.1+	0.1−	1999 03 24	704	1.5+	0.1+
1992 05 02	372	0.1−	0.9+	1998 01 25	566	0.1+	0.3−	1999 03 24	704	1.4+	0.2+
1992 05 03	372	(2.5−	0.3−)	1998 01 26	560	0.6−	1.0−	1999 03 24	704	1.2+	1.2−
1992 05 03	372	1.4−	0.7+	1998 01 26	560	0.1−	0.7+				
1992 05 04	372	(2.5−	1.5+)	1998 01 26	560	0.1+	0.2+				

(10548)∗ 1992 PJ$_2$ = 1988 JZ

Discovered 1992 Aug. 2 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 20935)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	271.84599		(2000.0)		**P**		**Q**
n	0.26259603	ω	82.86356		+0.41828106		+0.90683810
a	2.4151491	Ω	212.02154		−0.86717737		+0.38170929
e	0.3175517	*i*	5.60877		−0.27026719		+0.17872516
P	3.75	*H*	14.5	*G*	0.15	*U*	1

Residuals in seconds of arc

1988 05 09	046	1.3+	0.7−	1997 12 06	691	0.1+	1.0−	1999 04 06	704	1.3−	0.1−
1988 05 09	046	0.4−	1.8−	1997 12 06	691	0.2−	0.7−	1999 04 06	704	0.3−	0.2+
1988 05 12	046	1.5−	0.7−	1997 12 29	691	0.2−	1.3−	1999 04 06	704	0.4+	0.3+
1988 05 12	046	(0.8+	4.1−)	1997 12 29	691	0.3+	1.0−	1999 04 10	699	1.5+	1.2−
1992 07 31	675	0.2−	0.4−	1998 01 05	327	0.3−	0.1+	1999 04 10	699	0.8+	0.1+
1992 07 31	675	0.0	0.1−	1998 01 05	327	0.3−	0.3+	1999 04 10	699	1.2+	0.8−
1992 08 02	675	0.1+	0.2+	1998 01 05	327	0.0	0.3−	1999 04 14	704	0.2+	0.1+
1992 08 02	675	0.3+	0.2−	1999 03 20	704	0.0	0.0	1999 04 14	704	0.4−	0.4+
1992 08 06	675	0.1+	0.5−	1999 03 20	704	0.4−	0.2−	1999 04 14	704	0.6+	1.0−
1992 08 06	675	0.0	0.3+	1999 03 20	704	0.3+	0.3+	1999 04 14	704	0.2−	0.6−
1992 08 23	675	0.1+	0.6+	1999 03 20	704	0.5−	0.9+	1999 04 14	704	0.8−	0.3+
1992 08 23	675	0.4−	0.1+	1999 03 20	704	0.2−	1.0+	1999 04 15	704	0.6+	0.3−
1992 10 24	801	0.5+	0.2+	1999 03 23	704	0.5+	0.2+	1999 04 15	704	0.5−	0.1+
1992 10 24	801	0.4−	0.1+	1999 03 23	704	0.7+	0.3+	1999 04 15	704	0.1−	0.8+
1992 10 27	801	0.3−	0.4+	1999 03 23	704	0.2+	0.7+	1999 04 15	704	0.5−	0.1+
1992 10 28	801	0.0	0.2+	1999 03 23	704	0.2+	1.1+	1999 04 15	704	0.0	0.1+
1996 11 29	327	0.4−	0.6+	1999 03 24	699	0.2−	0.6+	1999 04 17	704	0.7−	0.2−
1996 11 29	327	0.4−	0.4+	1999 03 24	699	0.4+	0.3+	1999 04 17	704	0.3−	0.7+
1996 11 29	327	0.5−	0.5+	1999 03 24	699	1.6+	0.3−	1999 04 17	704	0.0	0.6+
1996 11 29	327	0.4+	0.6+	1999 04 06	704	0.1+	0.2−	1999 04 17	704	0.3−	0.4+
1997 12 06	691	0.0	0.7−	1999 04 06	704	0.1−	0.3+	1999 04 17	704	0.8−	1.1+

(10549)∗ 1992 RM$_2$ = 1988 RF$_2$

Discovered 1992 Sept. 2 by E. W. Elst at the European Southern Observatory.

Id. S. Nakano (*MPC* 21585)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	210.75675		(2000.0)		**P**		**Q**
n	0.24052955	ω	347.63542		+0.85363516		+0.51501554
a	2.5606905	Ω	340.75469		−0.45550369		+0.66559040
e	0.1683002	*i*	13.66771		−0.25263293		+0.54013739
P	4.10	*H*	14.2	*G*	0.15	*U*	2

Residuals in seconds of arc

1988 09 09	046	(1.7+	3.6−)	1992 09 02	809	(0.4+	2.7−)	1997 11 29	688	0.5+	0.1+
1988 09 09	046	(1.6+	4.5−)	1992 09 02	809	(0.0	2.7−)	1997 12 27	688	0.3−	0.5+
1988 09 09	046	(0.8+	3.9−)	1992 09 03	809	(0.2−	2.9−)	1997 12 27	688	0.1−	0.9+
1988 09 09	046	(2.0+	4.6−)	1992 09 22	809	0.6−	1.5+	1999 03 20	704	(3.1−	0.5+)
1988 09 10	046	(0.4+	2.9−)	1992 09 22	809	0.8−	1.6+	1999 03 20	704	0.2−	0.1+
1988 09 10	046	(4.5+	3.1−)	1992 09 22	809	0.9−	1.0+	1999 03 20	704	1.3−	0.7+
1988 09 13	675	1.2+	1.0−	1992 09 23	809	0.9−	1.2+	1999 03 23	704	0.6+	0.7+
1988 09 13	675	0.4+	0.7−	1992 09 23	809	0.4−	1.4+	1999 03 23	704	1.7+	0.1+
1988 09 14	675	0.1+	0.3−	1992 09 23	809	1.3−	0.9+	1999 03 23	704	0.5+	0.1+
1988 09 14	675	0.1+	0.5−	1992 09 28	399	(1.4+	3.1+)	1999 04 11	699	0.7−	1.3+
1988 09 16	675	0.1+	0.3−	1992 09 28	399	0.5+	1.1−	1999 04 11	699	1.2+	0.9+
1992 09 02	809	(1.9+	2.3−)	1997 11 29	688	0.3+	0.6+	1999 04 11	699	1.3+	0.1+

(10550)∗ 1992 RK$_7$ = 1989 YZ = 1991 JP$_6$

Discovered 1992 Sept. 2 by E. W. Elst at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 21586), A. Lowe (*ibid.*), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	304.18013		(2000.0)		**P**		**Q**
n	0.23119940	ω	110.27861		−0.73309487		+0.67601786
a	2.6291271	Ω	112.33598		−0.65023742		−0.66446635
e	0.0342052	*i*	4.62874		−0.19940715		−0.31856603
P	4.26	*H*	14.1	*G*	0.15	*U*	1

Residuals in seconds of arc

1989 12 30	413	1.2−	0.7+	1995 04 01	411	1.3−	0.0	1999 03 15	012	0.2−	0.8−
1989 12 30	413	1.9+	0.7−	1997 12 04	704	0.0	0.7+	1999 03 16	012	0.2−	0.6−
1989 12 31	413	0.0	1.3−	1997 12 04	704	0.6+	0.0	1999 03 16	012	0.1−	1.0−
1991 05 12	809	1.1−	1.6+	1997 12 04	704	0.2−	0.3+	1999 03 16	012	0.1−	1.0−
1991 05 12	809	(2.6−	1.4+)	1997 12 04	704	1.0−	0.1+	1999 03 16	012	0.1−	0.8−
1991 05 12	809	(2.7−	0.9+)	1997 12 04	704	0.1−	0.4−	1999 03 16	012	0.1+	0.7−
1992 09 02	809	0.0	0.1+	1997 12 05	704	0.3−	0.7+	1999 03 19	699	1.1+	0.7+
1992 09 02	809	0.6−	0.2+	1997 12 05	704	1.5−	0.8−	1999 03 19	699	0.4+	0.5+
1992 09 02	809	1.6−	0.3+	1997 12 05	704	1.0−	0.3+	1999 03 19	699	0.8+	0.5+
1992 09 03	809	0.1−	1.0+	1997 12 05	704	0.6−	1.2+	1999 04 12	704	0.2+	0.1−
1992 09 22	809	(3.6+	0.5+)	1997 12 05	704	(0.8+	2.3+)	1999 04 12	704	0.8+	1.2+
1992 09 22	809	(2.5+	0.8+)	1997 12 25	566	0.6+	0.4−	1999 04 12	704	0.1+	0.3+
1992 09 22	809	1.3+	0.8−	1997 12 25	566	0.8+	0.3−	1999 04 12	704	0.6+	0.2+
1992 09 23	809	1.8+	1.2−	1997 12 25	566	0.6+	0.6−	1999 04 12	704	(3.1−	1.2+)
1992 09 23	809	1.8+	0.5−	1997 12 30	566	0.4−	0.6+	1999 04 16	704	(3.7+	2.0+)
1992 09 23	809	(2.3+	1.5−)	1997 12 30	566	0.4−	0.2−	1999 04 16	704	(2.3+	0.0)
1995 04 01	411	0.2−	0.0	1997 12 30	566	0.6−	0.6+	1999 04 16	704	1.1−	0.1+

(10551)∗ 1992 YL$_2$ = 1931 AK = 1994 EB$_3$

Discovered 1992 Dec. 18 by E. W. Elst at Caussols.

Id. G. V. Williams (*MPC* 23341)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.17547		(2000.0)		**P**		**Q**
n	0.19021350	ω	13.65473		−0.28683359		−0.93749323
a	2.9943908	Ω	93.29128		+0.85935424		−0.34270844
e	0.0602462	*i*	11.38416		+0.42336366		+0.06047616
P	5.18	*H*	12.4	*G*	0.15	*U*	2

Residuals in seconds of arc

1931 01 10	690	1.6+	0.4−	1997 12 04	704	0.5−	0.1+	1999 04 14	704	2.0−	1.5+
1931 01 11	690	1.5−	1.7−	1997 12 04	704	1.1+	1.0−	1999 04 14	704	0.9+	1.7+
1931 01 12	690	(13.1+	5.4−)	1997 12 04	704	(1.4−	2.1+)	1999 04 15	704	1.7+	0.5−
1992 12 18	010	0.2+	0.9+	1998 01 14	012	0.3−	0.2−	1999 04 15	704	0.6−	0.9−
1992 12 19	010	0.2−	0.7+	1998 01 14	012	0.2+	0.4+	1999 04 15	704	0.5−	0.0
1992 12 19	010	0.5−	0.9+	1998 01 15	012	0.1+	0.5−	1999 04 15	704	0.1+	0.3−
1992 12 19	010	0.1−	0.4+	1999 03 15	704	0.7+	0.2+	1999 04 15	704	0.3−	0.7−
1992 12 19	010	0.3−	0.3+	1999 03 15	704	0.6+	0.1−	1999 04 16	704	1.2+	0.4+
1992 12 20	010	0.2−	0.1−	1999 03 15	704	0.3+	0.1−	1999 04 16	704	0.4−	0.4−
1993 01 16	010	(4.5+	1.6−)	1999 03 15	704	0.7+	0.4+	1999 04 16	704	(0.0	2.3−)
1993 01 16	010	(4.1+	1.3−)	1999 03 15	704	0.1+	0.0	1999 04 16	704	0.4+	0.3−
1993 01 16	010	(3.5+	1.8−)	1999 04 12	704	0.4+	0.2−	1999 04 16	704	(2.1−	0.2+)
1993 01 17	010	(3.8+	0.7−)	1999 04 12	704	0.2+	0.3−	1999 04 19	704	0.4+	0.1+
1993 01 17	010	(3.6+	1.2−)	1999 04 12	704	0.7+	0.3−	1999 04 19	704	0.6−	1.2+
1993 01 17	010	(4.4+	1.1−)	1999 04 12	704	1.1−	0.1−	1999 04 19	704	0.4+	1.2−
1994 03 11	098	0.1−	1.4+	1999 04 12	704	0.4−	0.7−	1999 04 19	704	1.5−	0.8+

1994 03 12	098	0.2+	1.0−	1999 04 14	704	0.1−	1.3−	1999 04 19	704	1.2−	0.2−
1994 03 12	098	0.5−	1.3+	1999 04 14	704	0.7+	0.2−				

(10552)∗ 1993 BH$_{13}$ = 1997 WO$_{36}$

Discovered 1993 Jan. 22 by E. W. Elst at the European Southern Observatory.

Id. A. Gnädig (*MPC* 31233)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	38.30223		(2000.0)		**P**		**Q**
n	0.17845464	ω	352.15999		−0.46119623		−0.88672350
a	3.1245260	Ω	125.29884		+0.81618816		−0.43807523
e	0.1981954	*i*	2.24208		+0.34804443		−0.14768723
P	5.52	*H*	13.8	*G*	0.15	*U*	1

Residuals in seconds of arc

1993 01 22	809	0.7+	0.9−	1997 11 29	704	0.6+	0.8−	1999 04 06	704	0.1+	1.2+
1993 01 22	809	0.2+	0.5+	1997 11 29	704	1.8−	1.5−	1999 04 06	704	0.8−	0.3−
1993 01 22	809	0.7+	0.5+	1997 12 04	704	1.4+	0.1−	1999 04 06	704	0.9−	0.7+
1993 01 28	809	1.5+	1.0+	1997 12 04	704	(2.4+	0.3+)	1999 04 07	699	0.0	0.5+
1993 01 28	809	0.6+	1.2+	1997 12 04	704	0.5−	1.5−	1999 04 07	699	1.0+	0.8+
1993 01 28	809	0.2+	0.9+	1997 12 04	704	(2.7+	0.5−)	1999 04 07	699	0.2−	0.3+
1993 02 10	399	0.8−	1.7+	1997 12 04	704	0.1+	0.9+	1999 04 12	704	0.7−	1.2−
1993 02 10	399	(3.9−	2.5+)	1998 03 16	327	0.4+	0.5+	1999 04 12	704	0.8−	1.2−
1993 02 17	809	0.7−	0.3−	1998 03 16	327	0.7+	0.4−	1999 04 12	704	0.4+	1.2−
1993 02 17	809	1.4−	0.4−	1998 03 16	327	0.0	0.5−	1999 04 12	704	0.5−	0.4−
1993 02 17	809	0.0	0.6+	1999 03 20	704	0.1−	0.1+	1999 04 12	704	0.5−	0.4−
1996 09 08	691	0.0	0.1−	1999 03 20	704	0.2+	0.1+	1999 04 16	704	0.2+	1.5−
1996 09 08	691	0.3+	0.3−	1999 03 20	704	0.5−	0.6+	1999 04 16	704	1.5+	0.2+
1996 09 08	691	0.2+	0.2−	1999 03 20	704	0.1−	1.2+	1999 04 16	704	0.1−	2.2−
1997 11 26	704	(4.4−	1.0+)	1999 03 23	704	0.4+	0.4−	1999 04 16	704	0.9+	0.1−
1997 11 26	704	(3.7−	1.8+)	1999 03 23	704	0.1−	0.2−	1999 04 16	704	2.4−	0.7−
1997 11 26	704	(4.4−	1.2+)	1999 03 23	704	0.3+	1.1−	1999 04 19	704	0.3+	0.1−
1997 11 29	704	0.4+	0.6−	1999 03 23	704	0.4+	1.0−	1999 04 19	704	0.3−	0.7+
1997 11 29	704	0.0	0.6−	1999 04 06	704	0.1−	1.0−	1999 04 19	704	0.5−	0.5+
1997 11 29	704	0.2+	1.3−	1999 04 06	704	0.1+	0.4−				

(10553)∗ 1993 FZ$_4$ = 1995 TE

Discovered 1993 Mar. 17 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. B. G. Marsden (*MPC* 25960)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	242.19163		(2000.0)		**P**		**Q**
n	0.17080379	ω	195.29622		+0.74386541		+0.66724819
a	3.2171480	Ω	122.78496		−0.60833932		+0.69954460
e	0.1401913	*i*	2.59075		−0.27674450		+0.25576788
P	5.77	*H*	14.0	*G*	0.15	*U*	1

Residuals in seconds of arc

1993 03 17	809	1.9−	0.5−	1995 10 05	046	0.1−	0.3−	1999 03 13	621	0.6+	1.1−
1993 03 18	809	0.2−	1.3−	1995 10 15	046	2.0+	1.4−	1999 03 13	621	0.5+	0.3−
1993 03 23	809	0.3−	0.1+	1995 10 15	046	(3.0+	0.2−)	1999 03 13	621	0.4−	1.3−
1993 04 16	413	1.4+	0.9−	1995 10 15	046	(2.8+	1.7−)	1999 03 13	621	0.1+	0.6−
1995 10 03	046	0.3+	0.7−	1995 10 22	046	0.1−	1.0−	1999 03 13	621	0.3+	1.1−
1995 10 03	046	0.5+	0.1+	1995 10 22	046	0.1−	0.8−	1999 03 13	621	1.0+	0.1+
1995 10 03	046	0.1−	0.6−	1995 10 22	046	0.0	0.6−	1999 03 16	621	0.8−	0.4−
1995 10 03	046	0.3+	0.0	1995 11 10	046	0.2+	1.1−	1999 03 16	621	0.0	1.0−
1995 10 03	046	0.1−	0.8−	1995 11 10	046	0.2+	1.1−	1999 03 18	621	0.4−	0.4+
1995 10 03	046	0.3−	0.1−	1995 11 10	046	0.5+	0.1−	1999 03 18	621	0.2−	0.4−
1995 10 04	046	0.1−	0.9+	1998 02 26	691	0.2+	0.1−	1999 04 12	704	1.1−	0.9−
1995 10 04	046	0.5−	0.1+	1998 02 26	691	0.3+	0.4−	1999 04 12	704	0.7−	0.9−
1995 10 04	046	0.1−	0.7+	1998 02 26	691	0.5+	0.2−	1999 04 12	704	0.4−	0.6+
1995 10 04	046	0.3+	0.0	1998 03 02	691	0.4−	0.3+	1999 04 12	704	0.2−	1.4+
1995 10 05	046	0.0	0.7−	1998 03 02	691	0.4−	0.0				
1995 10 05	046	0.3+	0.3−	1998 03 02	691	0.5−	0.1−				

(10554)∗ 1993 FO$_{34}$ = 1994 MA

Discovered 1993 Mar. 19 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. E. Bowell (*MPC* 28588), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	309.20526		(2000.0)		**P**		**Q**
n	0.17280300	ω	93.88511		−0.04434580		+0.99891139
a	3.1922865	Ω	173.51990		−0.95992761		−0.03859313
e	0.1655306	*i*	7.36841		−0.27671726		−0.02620333
P	5.70	*H*	13.5	*G*	0.15	*U*	1

Residuals in seconds of arc

1993 03 19	809	0.5−	0.6+	1994 06 16	691	0.3−	0.3−	1999 04 11	699	1.0+	0.2−
1993 03 20	809	0.3−	0.5+	1994 07 10	675	1.1+	0.3−	1999 04 12	704	0.3−	0.1−
1993 03 24	809	1.1−	0.7+	1994 07 10	675	0.2−	0.9−	1999 04 12	704	0.1−	0.6+
1993 04 18	413	(4.8+	1.9+)	1998 01 24	566	0.2+	0.6−	1999 04 12	704	0.2−	0.6+
1993 04 20	691	0.3+	0.5−	1998 01 24	566	0.1+	0.2−	1999 04 12	704	1.1−	0.3+
1993 04 20	691	0.1−	0.7−	1998 01 24	566	0.4−	0.2+	1999 04 12	704	0.7−	1.2+
1993 04 21	413	1.1+	0.7−	1999 03 24	732	1.1−	0.3+	1999 04 19	704	0.9+	0.4−
1993 04 29	691	0.2−	0.8−	1999 03 24	732	0.4+	0.4+	1999 04 19	704	0.1+	0.4−
1993 04 29	691	0.0	0.4−	1999 03 26	732	0.1−	0.5−	1999 04 19	704	0.1+	0.0
1993 04 29	691	0.4+	0.6−	1999 03 26	732	0.3+	0.3+	1999 04 19	704	0.3−	0.2−
1994 06 16	691	0.1+	0.1−	1999 04 11	699	0.6+	0.1−	1999 04 19	704	0.2+	0.1−
1994 06 16	691	0.6−	0.6+	1999 04 11	699	0.4+	0.4+				

(10555)∗ 1993 HH

Discovered 1993 Apr. 16 by K. Endate and K. Watanabe at Kitami.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	14.10662		(2000.0)		**P**		**Q**
n	0.17160218	ω	150.05908		−0.97758177		+0.11394787
a	3.2071617	Ω	37.79187		−0.19812253		−0.78249207
e	0.0737970	*i*	16.79428		+0.07128362		−0.61214544
P	5.74	*H*	12.1	*G*	0.15	*U*	1

Residuals in seconds of arc

1990 11 13	675	0.3−	0.1+	1997 11 29	688	1.0+	0.3+	1999 03 26	732	0.1+	0.5−
1990 11 13	675	0.4+	0.3−	1997 11 29	688	1.1+	0.4+	1999 03 26	732	0.8−	0.3−
1993 04 15	691	1.9−	1.8−	1997 12 27	688	0.4+	0.0	1999 04 17	704	0.2+	0.0
1993 04 15	691	0.3+	0.1+	1997 12 27	688	0.3+	0.1−	1999 04 17	704	0.6+	0.3−
1993 04 15	691	0.3+	0.3−	1998 04 18	699	0.3−	0.5−	1999 04 17	704	1.6−	0.0
1993 04 16	400	0.7+	1.2−	1998 04 18	699	0.8−	0.2−	1999 04 17	704	0.3−	0.1−
1993 04 16	400	(2.6−	0.2+)	1998 04 18	699	0.6−	0.2−	1999 04 20	704	0.2−	1.6−
1993 04 20	400	(0.7+	2.2−)	1998 04 19	699	0.5−	0.7+	1999 04 20	704	0.2−	0.3−
1993 04 20	400	1.7−	0.3+	1998 04 19	699	0.4−	0.1+	1999 04 20	704	1.3+	0.9+
1993 05 08	400	(0.3+	2.7+)	1998 04 19	699	0.2+	0.2+	1999 04 20	704	0.8+	1.2+
1993 05 08	400	0.4−	1.3+	1999 03 24	732	0.6+	1.0+	1999 04 20	704	0.6+	1.7+
1993 05 21	400	(0.8+	2.4−)	1999 03 24	732	0.2+	0.1−				
1993 05 21	400	1.7+	0.0	1999 03 24	732	0.2+	0.1+				

(10556)∗ 1993 QS

Discovered 1993 Aug. 19 by E. F. Helin at Palomar.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	143.60808		(2000.0)		**P**		**Q**
n	0.25737298	ω	176.16817		+0.94180628		+0.33022618
a	2.4477144	Ω	164.10585		−0.31419771		+0.93123526
e	0.2529994	*i*	13.26994		−0.11950205		+0.15411543
P	3.83	*H*	13.9	*G*	0.15	*U*	2

Residuals in seconds of arc

1993 08 19	675	(0.3−	2.8−)	1996 04 08	608	0.5−	0.8+	1999 02 12	704	0.8−	0.3−
1993 08 19	675	0.5+	0.8−	1996 04 09	608	0.4+	0.2+	1999 02 12	704	0.9−	0.7+
1993 08 22	675	0.5−	1.5−	1996 04 09	608	0.5+	0.5+	1999 02 16	704	0.9+	0.0
1993 08 22	675	0.3+	0.2+	1997 08 28	608	0.3−	0.1+	1999 02 16	704	0.1+	1.4+
1993 09 12	675	0.2−	0.1+	1997 08 28	608	0.2+	0.4+	1999 02 16	704	0.5−	0.1+

1993 09 12	675	(1.4+	2.2+)	1997 09 03	608	0.1−	0.4+	1999 02 16	704	0.5+	0.6−
1993 09 14	675	0.7+	0.1+	1997 09 03	608	0.0	0.3+	1999 03 10	704	1.1−	0.8−
1993 09 14	675	0.1−	0.9+	1997 09 04	608	0.2−	0.0	1999 03 10	704	(3.4−	0.3+)
1993 11 10	801	0.4−	0.3+	1999 02 12	704	0.4−	1.2+	1999 03 10	704	1.6+	1.6−
1993 11 11	801	0.4−	0.3+	1999 02 12	704	(3.0−	1.5+)	1999 03 10	704	(5.2−	0.4+)
1996 04 08	608	0.6−	0.7+	1999 02 12	704	1.2+	1.3−				

(10557)∗ 1993 RL_5 = 1979 YZ_1 = 1984 BX_1 = 1995 DM_3

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

Id. K. Kinoshita (*MPC* 25429)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	161.37781		(2000.0)		**P**	**Q**	
n	0.27424203	ω	70.91721		+0.94783002	−0.31675339	
a	2.3462811	Ω	307.53347		+0.27283531	+0.86425338	
e	0.0609719	i	2.59146		+0.16486102	+0.39081119	
P	3.59	H	14.3	G	0.15	U	1

Residuals in seconds of arc

1979 12 23	095	(4.7−	0.3−)	1995 02 27	098	1.9−	0.8+	1999 03 23	704	0.2+	1.8−
1984 01 25	675	0.9+	0.5+	1997 12 04	704	0.1+	0.4+	1999 04 07	704	0.8−	0.6+
1984 01 26	675	0.5+	0.3+	1997 12 04	704	0.8+	0.7−	1999 04 07	704	0.9+	0.0
1993 09 15	809	0.6−	1.2+	1997 12 04	704	0.6+	0.5−	1999 04 07	704	0.2+	0.2−
1993 09 15	809	0.6−	0.8+	1997 12 04	704	0.7+	0.8−	1999 04 07	704	1.0+	0.4−
1993 09 15	809	1.9−	1.1+	1997 12 04	704	0.4+	0.3+	1999 04 07	704	2.1+	0.0
1993 09 17	809	0.3−	0.9+	1997 12 24	426	0.2−	0.2+	1999 04 14	704	0.6+	0.5+
1993 09 17	809	1.0−	0.9+	1997 12 24	426	0.5−	0.1+	1999 04 14	704	1.1+	1.4+
1993 09 17	809	0.2−	1.0+	1997 12 24	426	0.6−	0.7+	1999 04 14	704	0.9+	1.6−
1993 09 18	809	(4.8+	5.1+)	1997 12 26	426	0.1+	0.3+	1999 04 14	704	1.1−	0.3−
1993 09 18	809	(4.8+	4.6+)	1997 12 26	426	0.1−	0.1−	1999 04 15	704	0.1−	0.2+
1993 09 18	809	(4.5+	4.1+)	1997 12 26	426	0.6−	0.1+	1999 04 15	704	0.6+	0.9+
1993 09 22	675	0.7+	0.6−	1998 01 07	699	0.4−	0.9+	1999 04 15	704	0.5−	0.1−
1993 09 22	675	1.2+	0.7−	1998 01 07	699	0.4−	0.3+	1999 04 15	704	0.1+	0.9+
1993 09 23	095	0.7−	0.9+	1998 01 07	699	0.9+	0.9+	1999 04 15	704	0.4−	1.7+
1993 09 23	095	(1.5−	2.5+)	1999 03 20	704	0.2+	0.9+	1999 04 17	704	0.2+	0.3+
1995 02 24	098	(3.2−	0.1+)	1999 03 20	704	0.8−	0.3−	1999 04 17	704	0.3+	0.7+
1995 02 24	098	1.6−	0.4−	1999 03 20	704	0.2−	0.3+	1999 04 17	704	0.2−	1.0+
1995 02 25	098	0.1−	0.7−	1999 03 23	704	0.2−	0.7+	1999 04 17	704	0.4−	0.4+
1995 02 26	098	0.9+	0.0	1999 03 23	704	(0.2+	2.5+)	1999 04 17	704	0.6−	0.9−
1995 02 27	098	0.8−	1.0+	1999 03 23	704	1.3+	1.2+				

(10558)∗ 1993 RB_7 = 1992 GH_1

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

Id. G. V. Williams (*MPC* 23982)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	213.90444		(2000.0)		**P**	**Q**	
n	0.27453688	ω	123.82260		+0.70038829	+0.71352891	
a	2.3446008	Ω	190.69553		−0.68304463	+0.66261090	
e	0.1289019	i	5.64057		−0.20713830	+0.22764731	
P	3.59	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1992 04 03	303	0.1−	0.2−	1993 09 24	809	(2.6+	1.6+)	1999 02 16	704	0.0	0.2−
1992 04 03	303	0.3−	0.1+	1995 02 19	104	0.2−	0.1+	1999 02 16	704	0.6+	0.6+
1992 04 03	303	1.0−	1.5+	1995 02 19	104	0.1+	0.1+	1999 02 16	704	1.0+	0.4−
1992 04 04	303	1.5+	0.6−	1995 02 19	104	0.0	0.6+	1999 02 16	704	0.0	0.3−
1992 04 04	303	(2.4+	1.7−)	1995 02 19	104	0.5+	0.3−	1999 02 16	704	0.8+	1.2−
1992 04 04	303	(3.5+	1.5−)	1995 02 20	104	0.8−	0.4+	1999 03 20	704	0.5−	0.6−
1993 09 15	809	1.8+	0.7+	1995 02 20	104	0.6−	0.1+	1999 03 20	704	0.3−	0.3+
1993 09 15	809	0.3−	0.4−	1995 02 20	104	0.1−	0.3−	1999 03 20	704	1.2−	0.5−
1993 09 15	809	0.9+	0.2+	1995 02 20	104	0.2+	0.3−	1999 03 20	704	0.4+	0.5+
1993 09 17	809	0.7−	0.7−	1995 02 21	691	0.2+	0.0	1999 03 20	704	0.4−	0.6+
1993 09 17	809	1.3−	0.9−	1995 02 21	691	0.1−	0.1−	1999 03 23	704	0.6−	0.9+
1993 09 17	809	1.7−	0.4−	1995 02 21	691	0.2−	0.2−	1999 03 23	704	0.1−	1.2−
1993 09 18	809	1.4+	0.7+	1995 02 21	104	0.5+	0.9−	1999 03 23	704	0.4−	0.6+
1993 09 18	809	0.8+	0.2+	1995 02 21	104	0.4+	0.8−	1999 03 23	704	2.0−	0.0
1993 09 18	809	0.6−	0.1−	1996 05 16	801	0.8−	0.4−	1999 04 07	699	1.3+	0.4−
1993 09 23	095	(1.1+	3.2−)	1996 05 16	801	0.5−	0.3−	1999 04 07	699	0.4+	0.2+
1993 09 24	809	(2.8+	3.9+)	1996 05 23	801	0.3−	0.8−	1999 04 07	699	1.1+	0.8+
1993 09 24	809	(1.9+	2.4+)	1996 05 23	801	1.7+	0.2+				

(10559)∗ 1993 SJ_1 = 1976 ST_2 = 1986 PP_5 = 1992 GO_5

Discovered 1993 Sept. 16 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 22692)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	241.01966		(2000.0)		**P**	**Q**	
n	0.29018328	ω	141.31543		+0.68732726	+0.72622093	
a	2.2595457	Ω	172.07046		−0.68848903	+0.65734537	
e	0.2069304	i	5.64895		−0.23143920	+0.20124667	
P	3.40	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1976 09 24	095	(3.0+	4.0+)	1996 05 23	801	0.8−	0.1−	1999 03 24	699	1.0−	1.3+
1976 09 29	095	(5.7+	3.5−)	1996 05 23	801	0.1+	0.4+	1999 03 24	699	0.4−	0.4+
1986 08 09	095	0.8+	0.1−	1996 07 12	801	0.0	0.4+	1999 04 10	699	1.1+	0.2+
1992 04 03	033	0.4−	0.5+	1996 07 12	801	0.3−	0.4−	1999 04 10	699	1.8+	0.5−
1992 04 03	033	1.6−	1.7+	1999 03 19	704	1.1−	0.7+	1999 04 10	699	0.8+	0.1+
1993 09 16	400	0.9+	1.8−	1999 03 19	704	1.4−	0.1+	1999 04 12	704	0.6+	0.7+
1993 09 16	400	(4.1+	2.8+)	1999 03 19	704	1.4−	0.6−	1999 04 12	704	0.1+	0.6−
1993 09 17	809	(1.1−	3.8+)	1999 03 19	704	0.1+	0.8−	1999 04 12	704	0.9+	0.8−
1993 09 17	809	(2.0−	3.4+)	1999 03 19	704	1.2+	0.4−	1999 04 12	704	0.9+	1.2−
1993 09 17	809	(2.2−	3.0+)	1999 03 20	704	1.2−	0.3−	1999 04 12	704	1.1+	0.5−
1993 09 18	809	(0.2+	3.3+)	1999 03 20	704	0.3−	0.3+	1999 04 15	704	(2.1−	0.5−)
1993 09 18	809	(0.3−	2.9+)	1999 03 20	704	0.6−	0.8+	1999 04 15	704	1.8+	0.5+
1993 09 18	809	(1.0−	2.4+)	1999 03 20	704	1.4−	0.1−	1999 04 15	704	0.7+	0.4−
1993 09 18	400	1.6+	0.9−	1999 03 20	704	1.7−	1.9+	1999 04 15	704	0.0	1.2−
1993 09 18	400	(2.6+	1.4+)	1999 03 23	703	1.1−	0.0	1999 04 16	704	0.6+	0.2+
1993 10 11	400	(2.5−	0.9−)	1999 03 23	703	0.1+	0.5+	1999 04 16	704	0.0	0.4−
1993 10 11	400	1.1+	0.4−	1999 03 23	704	0.9+	0.0	1999 04 16	704	1.1+	0.0
1993 10 15	010	0.5−	1.5+	1999 03 23	703	0.5−	0.2+	1999 04 16	704	0.9−	0.8+
1993 10 15	010	1.7−	1.1+	1999 03 23	704	0.2+	0.2−	1999 04 16	704	1.3−	0.9−
1993 10 15	010	1.4−	0.1−	1999 03 23	704	0.3−	0.0	1999 04 19	704	0.7+	0.9−
1996 05 16	801	0.4−	0.1−	1999 03 23	703	0.3+	0.2−	1999 04 19	704	0.3+	0.2−
1996 05 16	801	1.0−	0.3+	1999 03 23	704	0.3−	0.2−	1999 04 19	704	0.3+	1.5−
1996 05 18	400	0.6+	1.1+	1999 03 23	704	0.5−	0.0	1999 04 19	704	0.7+	0.7−
1996 05 18	400	0.0	0.6+	1999 03 24	699	0.1+	1.2+	1999 04 19	704	0.9+	1.7−

(10560)∗ 1993 TN = 1975 VT_9 = 1989 NN

Discovered 1993 Oct. 8 by K. Endate and K. Watanabe at Kitami.

Id. K. Ichikawa (*MPC* 22818)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	194.89108		(2000.0)		**P**	**Q**	
n	0.27286806	ω	253.23528		+0.94909738	+0.30871326	
a	2.3541506	Ω	88.74900		−0.25989699	+0.87968719	
e	0.1268498	i	3.58603		−0.17795425	+0.36172721	
P	3.61	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1975 11 09	381	0.5−	0.3+	1997 12 04	704	1.7−	0.3−	1999 04 07	699	0.3+	0.7+
1975 11 09	381	0.9−	0.4+	1997 12 04	704	0.6−	0.7−	1999 04 07	699	0.3−	0.7+
1989 07 02	675	0.6+	1.8−	1997 12 04	704	0.8−	0.8−	1999 04 12	704	0.3+	0.2+
1989 07 02	675	0.1+	2.2−	1997 12 04	704	0.7−	0.3+	1999 04 12	704	0.5+	0.2−
1989 07 04	675	(1.0+	3.8−)	1997 12 04	704	1.1−	0.6−	1999 04 12	704	0.1+	0.1−
1989 07 04	675	(2.8+	2.4−)	1997 12 05	704	0.0	1.5+	1999 04 12	704	1.0−	0.1−
1992 04 07	691	0.2−	0.1+	1997 12 05	704	1.5+	0.2−	1999 04 12	704	0.8+	0.2+
1992 04 07	691	0.2−	0.2−	1997 12 05	704	0.5−	0.5−	1999 04 15	704	1.4+	0.9+
1992 04 07	691	0.0	0.0	1997 12 05	704	1.1+	0.3−	1999 04 15	704	0.0	0.3−
1993 10 08	400	(3.3+	1.6+)	1997 12 05	704	0.7−	0.3−	1999 04 15	704	0.7+	0.7−
1993 10 08	400	0.4−	0.3+	1999 03 20	704	0.2−	0.5−	1999 04 15	704	0.5+	0.4−

1993 10 11	400	0.9+	0.0	1999 03 20	704	0.4−	0.1−	1999 04 15	704	0.5−	1.3+
1993 10 11	400	(4.1+	0.8+)	1999 03 20	704	0.0	0.4−	1999 04 16	704	0.5+	0.6−
1993 10 13	675	0.9+	0.2−	1999 03 20	704	0.6+	1.3+	1999 04 16	704	0.8+	1.2+
1993 10 13	675	0.9+	0.2−	1999 03 20	704	0.3+	0.8−	1999 04 16	704	0.3−	1.4+
1993 10 15	675	1.4+	0.5−	1999 03 23	704	0.3+	0.2−	1999 04 16	704	0.7−	0.5+
1993 10 19	400	(4.0+	0.3+)	1999 03 23	704	0.0	0.5−	1999 04 16	704	0.8−	0.9−
1993 10 19	400	0.2−	0.9−	1999 03 23	704	0.4−	0.8−	1999 04 17	703	1.1+	1.0+
1995 01 30	411	0.5+	0.6−	1999 03 23	704	0.4−	0.9−	1999 04 17	703	0.3+	0.6+
1995 01 30	411	0.6+	0.9−	1999 03 23	704	0.3−	1.1−	1999 04 17	703	0.4−	0.6+
1995 03 01	046	(3.7−	1.3−)	1999 03 23	699	0.1+	1.1+	1999 04 17	703	0.8−	0.8+
1995 03 01	046	1.1+	1.8−	1999 03 23	699	0.2+	1.2+	1999 04 19	704	0.5−	0.7−
1995 03 03	400	0.8+	0.9−	1999 04 06	704	0.4−	0.0	1999 04 19	704	0.4−	0.4+
1995 03 03	400	0.1+	0.6+	1999 04 06	704	0.6−	0.8−	1999 04 19	704	1.2−	0.3−
1995 03 03	046	0.5+	1.3−	1999 04 06	704	0.2−	0.2−	1999 04 19	704	0.1−	0.9−
1995 03 03	046	0.2+	0.4+	1999 04 06	704	0.5−	0.3−	1999 04 19	704	0.7−	0.9−
1995 03 03	046	0.7−	1.7−	1999 04 06	704	0.7−	0.6−				
1995 03 05	400	0.9+	0.2−	1999 04 07	699	0.0	0.7+				

(10561)∗ 1993 TE$_2$ = 1961 VE = 1979 SC$_4$ = 1998 XU$_{38}$

Discovered 1993 Oct. 15 by K. Endate and K. Watanabe at Kitami.

Id. G. V. Williams (*MPC* 33486)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	100.93199		(2000.0)		**P**	**Q**	
n	0.21577254	ω	314.73632		+0.89604525	+0.44026504	
a	2.7529940	Ω	19.36578		−0.34279235	+0.76793836	
e	0.1659213	i	9.92965		−0.28212818	+0.46522829	
P	4.57	H	12.9	G	0.15	U	1

Residuals in seconds of arc

1961 11 04	760	1.9−	0.2−	1993 11 11	400	(5.5+	0.6+)	1998 12 14	704	0.0	0.4+
1961 11 04	760	2.0+	0.6+	1996 03 20	566	0.5−	0.7−	1998 12 14	704	1.1−	0.8+
1979 09 24	095	0.8−	0.0	1996 03 20	566	0.3−	0.8−	1998 12 17	704	0.4−	0.4−
1993 10 13	095	0.7+	0.3+	1996 03 20	566	0.3−	0.3−	1998 12 17	704	0.2+	0.1+
1993 10 14	095	(0.8+	2.2−)	1996 04 21	566	0.0	0.3−	1998 12 17	704	0.3+	0.6−
1993 10 15	400	0.8−	0.3−	1996 04 21	566	0.0	0.1−	1998 12 17	704	(0.1+	2.7−)
1993 10 15	400	0.3−	0.9−	1996 04 21	566	0.0	0.1−	1999 01 16	704	0.4−	0.2+
1993 10 16	400	1.0+	0.9−	1998 12 14	704	0.1+	0.3−	1999 01 16	704	0.5−	1.6+
1993 10 16	400	0.3+	0.7+	1998 12 14	704	0.5−	0.8−	1999 01 16	704	0.3+	0.7+
1993 11 11	400	1.7+	1.4−	1998 12 14	704	0.3−	0.6−	1999 01 16	704	1.3+	0.3+

(10562)∗ 1993 UB$_1$ = 1954 UP$_1$ = 1961 UF = 1988 EW$_1$

Discovered 1993 Oct. 19 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 22820)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	194.29953		(2000.0)		**P**	**Q**	
n	0.27804460	ω	356.24943		+0.99574767	−0.07118442	
a	2.3248400	Ω	8.52214		+0.09140267	+0.68421035	
e	0.1549994	i	23.24056		+0.01149496	+0.72580230	
P	3.54	H	12.7	G	0.15	U	2

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

1954 10 24	760	0.4+	0.7−	1993 11 09	675	(0.03+	0.00−)	1999 03 25	704	0.2−	0.9−
1961 10 17	760	0.8+	0.4−	1993 11 10	675	0.9+	1.5−	1999 03 25	704	1.8−	1.7−
1961 10 17	760	(1.3+	3.4−)	1995 03 27	675	0.5+	0.1−	1999 04 17	704	0.5−	0.5−
1988 03 13	054	0.6+	0.3−	1995 04 02	801	0.3+	0.2+	1999 04 17	704	0.0	0.6−
1988 03 13	054	0.6−	0.1−	1995 04 02	801	0.2−	0.7−	1999 04 17	704	0.3−	0.0
1988 03 14	054	1.5+	1.3+	1995 04 03	801	0.1−	0.9−	1999 04 17	704	0.4−	0.8+
1988 03 18	675	0.1+	0.6+	1995 04 03	801	0.1+	1.0−	1999 04 17	704	0.5+	1.0+
1988 03 18	675	0.3−	0.6+	1995 04 27	801	0.1+	0.2−	1999 04 20	704	0.3−	0.4−
1988 03 18	054	0.5+	0.3+	1995 04 27	801	0.1+	0.3−	1999 04 20	704	0.2−	0.4−
1993 10 19	675	1.2+	0.3+	1995 05 02	801	0.2−	0.2−	1999 04 20	704	0.5−	0.7−
1993 10 19	675	0.1+	0.6−	1995 05 02	801	0.3−	0.0	1999 04 20	704	1.0−	1.2−
1993 10 21	675	0.9−	0.5−	1998 03 09	689	0.2−	0.1−	1999 04 20	704	1.0−	0.7−
1993 10 21	675	0.6+	0.2+	1999 03 25	704	(1.3−	3.5−)				
1993 11 09	675	1.5+	1.1−	1999 03 25	704	0.9−	0.0				

(10563)∗ 1993 WD = 1991 VJ$_{14}$

Discovered 1993 Nov. 19 by C. S. Shoemaker at Palomar.

Id. C. S. Shoemaker (*MPC* 22962)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	296.22239		(2000.0)		**P**	**Q**	
n	0.97574444	ω	132.26298		−0.64634558	−0.15672761	
a	1.0067276	Ω	56.58643		−0.61136495	−0.47924698	
e	0.2666086	i	63.46284		+0.45658546	−0.86357327	
P	1.01	H	16.9	G	0.15	U	2

Residuals in seconds of arc

1991 11 13	675	0.7−	0.4−	1994 08 16	413	0.1+	0.0	1995 12 10	360	0.5+	0.9−
1991 11 13	675	1.0+	1.7−	1994 08 16	413	0.1−	0.4−	1995 12 10	360	0.1+	0.5−
1993 11 19	675	(4.1−	0.5−)	1994 08 27	413	0.1−	0.2−	1995 12 10	360	0.1+	0.5−
1993 11 19	675	(1.8+	3.6−)	1994 08 27	413	0.2−	0.2−	1995 12 10	108	0.6−	0.0
1993 11 19	675	(3.0−	0.9−)	1994 08 28	413	0.1−	0.0	1995 12 10	108	(2.1+	0.1+)
1993 11 19	675	(0.5−	2.1−)	1994 08 28	413	0.0	0.2−	1995 12 10	108	0.3−	0.3−
1993 11 19	675	(2.0−	1.4−)	1994 11 11	385	0.1−	0.3+	1995 12 10	108	0.9+	0.3−
1993 11 19	675	1.4+	0.4+	1994 11 11	385	0.4−	0.2+	1995 12 10	108	0.0	0.2−
1993 11 20	675	(5.8−	1.9+)	1994 11 11	413	0.1−	0.3+	1995 12 23	658	0.5−	0.5+
1993 11 20	675	0.2+	1.1−	1994 11 11	385	0.4−	0.4+	1995 12 23	658	0.5−	0.5+
1993 11 20	675	(3.3−	1.3−)	1994 11 11	413	0.2−	0.2+	1995 12 23	658	0.2−	0.4+
1993 11 20	675	(0.8+	2.2−)	1994 11 11	385	0.0	0.2+	1995 12 24	658	0.5−	0.2+
1993 11 20	675	(3.0−	0.7−)	1994 11 12	292	0.4−	1.4−	1995 12 24	658	0.5−	0.2+
1993 11 20	675	1.0+	1.2−	1994 11 12	292	0.1+	0.5+	1995 12 24	658	0.7−	0.1+
1993 11 20	413	0.6+	0.4−	1994 11 12	385	0.2−	0.2+	1996 01 01	587	0.4−	0.4−
1993 11 20	413	0.4−	1.8+	1994 11 12	385	0.4−	0.0	1996 01 01	587	1.0−	0.4−
1993 11 22	413	1.4−	0.3+	1994 11 12	385	0.3−	0.1+	1996 01 12	658	0.0	1.0+
1993 11 22	413	1.5−	0.8−	1994 11 21	587	0.2−	0.0	1996 01 12	658	0.0	0.9+
1993 11 23	411	0.6+	0.2−	1994 11 21	587	0.3−	0.2−	1996 01 12	658	0.2+	0.8+
1993 11 23	411	0.4+	1.2+	1994 11 22	540	0.2+	0.2+	1996 10 30	689	0.1−	0.6−
1993 11 23	411	0.9+	0.1−	1994 11 22	540	0.1+	0.2+	1996 11 01	413	0.5+	0.4−
1993 11 23	385	0.3−	0.2+	1994 11 22	540	0.2+	0.3+	1996 11 01	413	0.5+	0.4−
1993 11 23	385	0.2−	0.0	1994 11 23	360	0.1+	0.2−	1996 11 02	413	0.6+	0.7−
1993 11 23	385	1.3−	0.9+	1994 11 23	360	0.3−	0.0	1996 11 02	413	0.4+	0.4−
1993 11 23	108	(2.8−	1.0+)	1994 11 23	360	0.0	0.2−	1996 11 11	689	0.3+	0.1−
1993 11 23	108	0.5+	0.1+	1994 11 25	587	1.3−	0.3+	1996 11 12	689	0.2+	0.1−
1993 11 23	108	(0.6−	4.0+)	1994 11 25	587	0.5−	1.6+	1996 11 17	711	0.3−	0.0
1993 11 23	108	1.5−	0.8+	1994 11 28	658	1.2−	0.0	1996 11 17	711	0.3−	0.0
1993 11 23	108	1.2+	0.1−	1994 11 28	658	1.5−	0.1+	1996 11 17	046	1.3+	1.0−
1993 11 23	108	0.5+	0.4+	1994 11 28	658	1.2−	0.3+	1996 11 17	046	1.4+	0.8−
1993 11 23	108	0.4+	1.1−	1994 11 28	658	1.4−	0.1+	1996 11 17	046	0.8+	0.9−
1993 11 24	670	(2.3−	1.1+)	1994 11 28	658	1.3−	0.1−	1996 11 18	711	0.0	0.1−
1993 11 24	670	1.1+	0.3+	1994 11 28	658	0.8−	0.3−	1996 11 18	711	0.0	0.0
1993 11 24	670	0.3+	0.2−	1994 12 01	540	0.8+	0.8+	1996 11 19	385	0.3+	0.4−
1993 11 24	670	0.8−	0.8+	1994 12 01	540	0.5+	0.8+	1996 11 19	385	1.2+	0.7−
1993 11 24	670	0.7−	1.3+	1994 12 01	540	0.7+	0.7+	1996 11 19	385	0.4−	0.5−
1993 11 24	670	1.1+	0.9+	1994 12 02	587	0.8+	0.5+	1996 11 19	540	0.2+	0.4−
1993 11 25	816	0.3−	0.3+	1994 12 02	587	0.6+	0.0	1996 11 19	540	0.9−	0.4+
1993 11 25	816	0.1−	0.2−	1994 12 02	587	0.4−	0.6+	1996 11 19	540	0.2−	0.2−
1993 11 26	816	0.1−	0.2−	1994 12 02	540	0.4−	0.0	1996 11 19	540	0.5+	0.2−
1993 11 26	816	0.0	0.0	1994 12 02	540	0.4−	0.1+	1996 11 19	046	0.1−	0.0
1993 11 26	816	0.0	0.3+	1994 12 02	540	0.3−	0.1+	1996 11 19	046	0.6−	0.5−
1993 11 26	816	0.4+	0.0	1994 12 02	816	0.3+	0.1+	1996 11 19	046	0.9−	0.9+
1993 11 26	816	0.5+	0.3−	1994 12 03	816	0.5+	0.0	1996 11 26	627	0.2−	0.0
1993 11 26	816	0.3+	0.6−	1994 12 03	816	0.1+	0.0	1996 11 26	627	0.7−	0.4+
1993 11 26	816	0.5+	0.3+	1994 12 03	816	1.3+	0.3+	1996 11 26	627	0.8−	0.6+
1993 11 26	816	0.5+	0.6−	1994 12 06	887	0.5+	0.4+	1996 11 26	627	0.3−	0.0
1993 11 26	816	0.4+	0.6−	1994 12 06	887	0.9+	0.2+	1996 11 26	627	0.1+	0.4−
1993 11 26	540	0.3−	0.5−	1994 12 06	540	0.1+	0.2−	1996 11 26	627	1.0+	0.4−
1993 11 26	540	1.2+	1.1−	1994 12 06	540	0.5+	0.4+	1996 11 26	627	0.0	0.1−
1993 11 26	540	0.1+	0.1+	1994 12 06	540	0.5+	0.3+	1996 11 26	627	0.8−	0.4+
1993 11 26	540	0.5−	0.9+	1995 09 07	413	0.2−	0.5+	1996 11 26	627	0.5−	0.3+
1993 11 26	540	1.2−	1.3−	1995 09 07	413	0.4−	0.9+	1996 11 28	360	0.2+	0.4−
1993 11 27	108	0.3−	0.5−	1995 10 20	413	0.2+	0.5+	1996 11 28	360	0.1+	0.3−
1993 11 27	108	1.5+	0.2+	1995 10 22	360	0.5−	0.6+	1996 11 28	360	0.0	0.3−

1993 11 27	108	0.1−	1.4+	1995 10 22	360	0.6−	0.3+	1996 12 04	711	0.0	0.2+
1993 11 27	108	0.9−	0.3+	1995 10 22	360	0.2−	0.5+	1996 12 04	711	0.0	0.5+
1993 11 27	108	0.2+	0.1−	1995 10 24	711	0.0	0.5−	1996 12 08	381	0.3+	0.2−
1993 11 27	108	1.4+	0.5+	1995 10 24	711	0.0	0.5−	1996 12 08	381	0.3+	0.0
1993 11 28	411	0.1+	0.2−	1995 10 25	711	0.1−	0.5−	1996 12 09	540	0.3+	0.3−
1993 11 28	411	0.1+	0.6−	1995 10 25	711	0.2−	0.6−	1996 12 09	540	0.2−	0.3−
1993 11 28	411	0.0	0.1−	1995 10 29	413	0.4−	0.8+	1996 12 09	540	0.8+	0.4−
1993 11 28	385	0.7−	0.0	1995 10 29	413	0.2−	0.9+	1996 12 09	801	0.1+	0.6−
1993 11 28	385	0.4−	0.0	1995 10 30	413	0.1−	0.9+	1996 12 10	540	0.6−	1.1−
1993 11 28	385	0.4−	0.1−	1995 10 30	413	0.1−	1.2+	1996 12 14	658	0.5−	1.8−
1993 11 28	385	0.5−	0.1−	1995 10 31	413	0.2−	1.4+	1996 12 14	658	0.5−	0.9−
1993 11 30	540	0.0	0.1+	1995 10 31	413	0.2+	1.6+	1996 12 14	658	0.3−	0.8−
1993 11 30	540	0.5−	0.2+	1995 11 03	385	1.2+	0.5+	1996 12 28	540	(3.4+	1.8−)
1993 11 30	540	0.1+	0.2+	1995 11 03	385	0.0	0.9+	1997 01 14	658	0.4+	0.3−
1993 11 30	540	0.4+	0.7+	1995 11 03	385	0.3+	0.2+	1997 01 14	658	0.4+	0.0
1993 12 01	670	1.7+	0.1−	1995 11 14	587	0.5+	0.3−	1997 01 14	658	0.3+	0.4−
1993 12 01	670	(0.4+	2.1−)	1995 11 14	587	0.5+	0.0	1997 11 06	422	0.4−	0.9−
1993 12 01	670	1.2+	0.5+	1995 11 14	587	0.4+	0.0	1997 11 06	422	0.8−	0.5−
1993 12 01	670	0.4+	0.1−	1995 11 14	587	0.4+	0.0	1997 11 06	422	0.4−	0.3−
1993 12 03	108	0.7+	0.1−	1995 11 16	385	0.0	0.4+	1997 11 23	360	0.4−	0.2−
1993 12 03	108	1.1+	0.7−	1995 11 16	385	0.1−	0.5+	1997 11 23	360	0.8−	0.1−
1993 12 03	108	(3.8+	1.1−)	1995 11 16	385	0.3−	0.4+	1997 11 23	360	0.4−	0.3−
1993 12 03	108	1.1+	0.2−	1995 11 17	360	0.3−	1.3+	1997 11 29	566	1.1−	0.5+
1993 12 04	540	0.1−	1.0−	1995 11 17	360	0.0	1.3+	1997 11 29	566	0.9−	0.4+
1993 12 04	540	0.8+	0.1−	1995 11 17	360	0.1−	1.1+	1997 11 29	566	1.2−	0.7+
1993 12 04	540	0.2−	0.5+	1995 11 18	801	0.4+	0.1−	1997 11 30	360	0.9−	0.2−
1993 12 04	540	0.5+	0.9−	1995 11 18	801	0.9+	0.4−	1997 11 30	360	0.9−	0.2−
1993 12 05	557	0.4+	0.1+	1995 11 19	104	0.5−	0.7−	1997 11 30	360	0.5−	0.5−
1993 12 05	557	0.5+	0.1+	1995 11 19	104	0.4−	0.5−	1997 12 24	360	0.6+	0.1−
1993 12 05	557	0.6+	0.0	1995 11 19	104	0.8−	0.5−	1997 12 24	360	0.5+	0.2+
1993 12 05	557	0.5+	0.1+	1995 11 20	887	1.4−	1.1−	1997 12 24	360	0.3+	0.0
1993 12 06	540	0.2−	0.8+	1995 11 20	887	0.4−	1.0−	1997 12 31	046	0.3+	0.1+
1993 12 06	540	0.1−	1.0−	1995 11 20	887	0.4−	1.3−	1997 12 31	046	0.5+	0.0
1993 12 06	540	1.1−	1.5−	1995 11 20	595	0.1−	1.1−	1997 12 31	046	0.4+	0.4+
1993 12 06	540	0.6+	0.3+	1995 11 20	595	0.4−	0.7−	1998 01 26	118	0.0	1.0+
1993 12 07	675	1.7−	0.5−	1995 11 21	595	1.1+	0.4+	1998 01 26	118	0.0	1.0+
1993 12 08	675	1.1−	0.4−	1995 11 21	540	0.8+	0.8+	1998 01 29	046	1.1+	0.5−
1993 12 09	675	0.0	1.9−	1995 11 21	595	0.8+	0.3+	1998 01 29	046	0.5+	1.0+
1993 12 10	675	(2.5−	0.2+)	1995 11 21	540	1.2+	0.5+	1998 11 20	360	0.1+	0.7−
1993 12 11	675	0.6−	1.2−	1995 11 21	540	1.2+	0.6+	1998 11 20	360	0.5+	1.0−
1993 12 11	557	0.0	0.2−	1995 11 21	540	1.2+	0.4+	1998 11 20	360	0.1−	0.3−
1993 12 11	557	0.1−	0.2−	1995 11 21	540	0.9+	0.6+	1998 12 08	704	0.4+	0.4−
1993 12 11	557	0.2−	0.2−	1995 11 21	540	1.1+	0.7+	1998 12 08	704	0.6+	0.1+
1993 12 11	557	0.0	0.3−	1995 11 21	108	(2.4+	0.2+)	1998 12 08	704	0.3+	0.2+
1993 12 12	801	0.0	0.1+	1995 11 21	108	(3.3+	0.5+)	1998 12 08	704	0.1−	0.8+
1993 12 12	801	0.5+	0.4−	1995 11 22	689	1.0+	0.2−	1998 12 08	704	0.5+	0.9+
1993 12 13	675	(3.6−	1.8−)	1995 11 22	540	0.1−	0.1−	1998 12 09	118	1.0−	0.6−
1993 12 13	540	1.8−	0.2−	1995 11 22	540	0.5−	0.2+	1998 12 09	118	0.7−	0.3−
1993 12 13	540	1.5−	0.1−	1995 11 22	540	0.3−	0.0	1998 12 11	360	0.4+	0.3−
1993 12 15	557	0.4−	0.0	1995 11 22	540	0.5−	0.6−	1998 12 11	360	0.4+	0.3−
1993 12 15	557	0.4−	0.1+	1995 11 23	801	1.0−	0.1−	1998 12 11	360	0.6+	0.6−
1993 12 15	557	0.5−	0.1−	1995 11 23	801	0.8−	0.5−	1998 12 15	046	0.4+	0.7+
1993 12 15	557	0.5−	0.1−	1995 11 24	540	0.1−	0.3−	1998 12 15	046	0.2+	0.4+
1993 12 17	801	0.2−	0.1−	1995 11 24	540	0.4−	0.1−	1998 12 15	046	0.2+	0.7+
1993 12 17	801	0.7−	0.1−	1995 11 24	540	0.2−	0.2−	1998 12 15	046	0.5+	0.7+
1993 12 18	385	0.6+	0.1+	1995 11 24	540	0.3−	0.0	1998 12 17	118	1.2+	0.5+
1993 12 18	385	0.4+	0.4−	1995 11 28	711	0.5+	0.8−	1998 12 17	118	1.0+	0.6+
1993 12 22	688	0.3+	0.2−	1995 11 28	711	1.3+	0.1+	1998 12 19	658	0.7+	0.1−
1993 12 22	688	0.5+	0.1−	1995 11 28	711	1.3−	0.2+	1998 12 19	658	0.1+	0.8+
1993 12 22	688	0.4+	0.1−	1995 11 28	587	1.0−	0.4+	1998 12 19	658	0.5+	0.1+
1993 12 22	688	0.3−	0.2−	1995 11 28	587	0.1−	0.2+	1999 04 15	693	0.7+	0.4−
1993 12 22	688	0.4+	0.3−	1995 11 29	711	0.8−	0.7+	1999 04 15	693	0.4+	0.3+
1993 12 22	688	0.3+	0.4−	1995 11 29	711	0.8−	0.7+	1999 04 15	693	0.2−	0.2−

(10564)∗ 1993 XQ$_2$

Discovered 1993 Dec. 14 at Palomar in the course of the Planet-Crossing Asteroid Survey.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	74.89907		(2000.0)		**P**	**Q**	
n	0.22744510	ω	314.28914		+0.11185263	−0.97656920	
a	2.6579797	Ω	128.38542		+0.96540264	+0.06293255	
e	0.1455684	i	13.56508		+0.23555620	+0.20579623	
P	4.33	H	12.9	G	0.15	U	1

Residuals in seconds of arc

1993 12 14	675	0.4+	0.2−	1998 01 28	566	0.6−	0.2+	1999 03 15	704	0.1+	0.8+
1993 12 14	675	0.3−	1.8−	1998 01 28	566	0.5−	0.1+	1999 03 19	744	0.2−	0.4+
1993 12 16	675	0.2+	0.7−	1999 02 20	704	0.1−	0.7−	1999 03 19	744	0.3−	0.1+
1993 12 16	675	0.1−	1.4−	1999 02 20	704	0.0	0.1−	1999 03 22	744	0.5−	0.1+
1994 01 11	675	(2.5+	0.9+)	1999 02 20	704	1.0−	0.2+	1999 03 22	744	0.3−	0.2+
1994 01 16	675	0.7+	0.6−	1999 02 20	704	(0.8−	2.6+)	1999 04 10	704	0.1−	0.1+
1994 01 16	675	0.5−	1.3+	1999 02 20	704	0.6−	1.8+	1999 04 10	704	0.0	0.5+
1996 08 09	566	0.1−	0.7+	1999 02 20	411	0.0	0.5+	1999 04 10	704	0.0	0.2+
1996 08 09	566	0.1+	0.1+	1999 02 20	411	0.3−	0.4+	1999 04 10	704	0.2−	0.5−
1996 08 09	566	0.3−	0.6+	1999 02 21	411	0.2−	0.3+	1999 04 10	704	0.3+	0.7−
1997 12 14	327	0.2−	1.3+	1999 02 21	411	0.1+	0.5+	1999 04 19	704	0.2−	0.3+
1997 12 14	327	0.1−	0.7+	1999 03 15	704	0.2+	0.4+	1999 04 19	704	0.8+	0.1+
1997 12 14	327	0.3−	1.2+	1999 03 15	704	1.1+	1.6−	1999 04 19	704	0.3−	0.9+
1997 12 14	327	0.0	2.3+	1999 03 15	704	0.2−	0.0	1999 04 19	704	1.6+	0.1−
1998 01 28	566	0.3−	0.2+	1999 03 15	704	0.2−	0.3−	1999 04 19	704	1.6+	0.6+

(10565)∗ 1994 AT$_1$ = 1933 DL = 1975 VV$_5$

Discovered 1994 Jan. 9 by H. Shiozawa and T. Urata at Fujieda.
Id. T. Urata (*MPC* 30760), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	135.33369		(2000.0)		**P**	**Q**	
n	0.22795125	ω	328.70217		+0.89736978	−0.39516829	
a	2.6540437	Ω	55.84050		+0.43778536	+0.74134289	
e	0.2243085	i	13.72943		+0.05542073	+0.54245068	
P	4.32	H	12.3	G	0.15	U	2

Residuals in seconds of arc

1933 02 18	754(15.9+		0.7+)	1997 10 12	385	0.1−	0.5+	1999 04 08	888	0.2−	0.2+
1975 11 05	095	(8.1+	0.4+)	1997 10 12	385	0.1−	0.4+	1999 04 10	699	0.4+	1.0+
1991 05 13	675	0.3+	0.1−	1997 12 05	385	0.0	0.2−	1999 04 10	699	0.5+	1.0+
1991 05 13	675	1.7−	1.1−	1997 12 05	385	0.4−	0.1+	1999 04 10	699	0.5+	0.5+
1991 05 15	675	0.0	0.1−	1998 01 10	631	0.1−	0.9+	1999 04 12	704	0.4+	0.7+
1991 05 15	675	0.1−	1.0−	1998 01 10	631	0.1−	0.4+	1999 04 12	704	0.6−	0.3+
1994 01 09	898	0.3−	0.2−	1998 01 11	631	0.3+	0.5+	1999 04 12	704	0.4−	0.1+
1994 01 09	898	0.0	0.3−	1998 01 11	631	0.4+	1.0+	1999 04 12	704	0.1−	0.1+
1994 01 11	385	0.5+	0.0	1998 02 01	689	0.0	0.4−	1999 04 12	704	0.3−	0.7+
1994 01 11	385	0.8+	0.2−	1999 02 09	888	0.4−	1.0+	1999 04 15	704	1.2+	0.1+
1994 01 11	385	0.1+	0.1−	1999 02 09	888	0.0	0.4+	1999 04 15	704	0.9−	1.0−
1994 01 14	385	0.3+	0.1+	1999 03 15	704	0.4+	0.7+	1999 04 15	704	1.0−	0.4−
1994 01 14	385	0.2−	0.1+	1999 03 15	704	0.8+	0.2−	1999 04 15	704	0.8−	0.2−
1994 01 14	385	0.2+	0.4−	1999 03 15	704	0.1−	0.6+	1999 04 15	704	0.0	0.9−
1994 01 19	385	0.2−	0.4−	1999 03 15	704	0.3+	1.6+	1999 04 16	704	0.5−	0.4+
1994 01 19	385	0.4−	0.4−	1999 03 15	704	0.5+	1.4+	1999 04 16	704	1.1+	0.8+
1994 01 19	385	0.1+	0.6−	1999 03 16	905	0.1−	1.0−	1999 04 16	704	0.6−	1.2−
1994 01 21	898	1.7−	0.7−	1999 04 05	744	1.2−	0.2+	1999 04 16	704	0.0	0.2+
1994 01 21	898	0.9−	1.9−	1999 04 05	744	0.4−	0.0	1999 04 16	704	1.9−	0.5−
1994 02 07	385	0.0	0.3−	1999 04 07	744	0.1+	1.0+	1999 04 19	704	0.5+	0.2−
1994 02 07	385	0.2−	0.5−	1999 04 07	744	0.5−	0.8+	1999 04 19	704	0.7+	0.7−
1994 02 07	385	0.1+	0.5−	1999 04 07	886	0.6+	0.1+	1999 04 19	704	1.8+	0.5−
1997 10 11	385	0.9−	0.4−	1999 04 07	886	2.2+	0.2+	1999 04 19	704	0.7+	1.6−
1997 10 12	385	0.1−	0.7+	1999 04 08	888	0.1−	0.2−	1999 04 19	704	0.9+	0.0

(10566)∗ 1994 AZ$_2$ = 1991 NZ$_5$

Discovered 1994 Jan. 14 by Y. Kushida and O. Muramatsu at the Yatsugatake South Base Observatory.
Id. S. Nakano (*MPC* 23128)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	37.88315		(2000.0)		**P**		**Q**
n	0.22332355	ω	211.21870		−0.77338193		−0.60794164
a	2.6905828	Ω	290.26072		+0.61394224		−0.64763627
e	0.2078069	i	11.04255		+0.15797249		−0.45931930
P	4.41	H	13.3	G	0.15	U	1

Residuals in seconds of arc

1991 07 10	809	1.3−	1.0+	1994 01 14	896	(3.5−	0.1+)	1997 12 06	704	0.1+	0.3+
1991 07 10	809	1.0−	0.9+	1994 01 15	896	0.6+	0.2+	1997 12 06	704	0.2+	0.5+
1991 07 10	809	0.8−	0.9+	1994 01 15	896	0.9+	0.7+	1997 12 15	327	0.4−	0.1+
1991 07 11	809	0.6−	0.5+	1994 01 19	896	0.3+	0.1−	1997 12 15	327	0.6−	0.3+
1991 07 11	809	0.4−	0.4+	1994 01 19	896	0.9+	0.8+	1997 12 15	327	0.3−	0.4+
1991 07 11	809	0.3−	0.5+	1994 01 22	886	0.1+	1.9+	1999 03 24	732	(2.3−	1.6+)
1991 07 12	809	0.6+	0.1+	1994 01 22	886	1.5−	1.2+	1999 03 24	732	0.1+	0.1+
1991 07 12	809	0.8+	0.2+	1994 02 02	896	1.6+	0.3+	1999 03 24	732	0.3−	0.3−
1991 07 12	809	1.2+	0.1+	1994 02 02	896	0.6+	0.0	1999 03 26	732	0.0	0.2−
1994 01 06	675	0.6+	0.7−	1994 02 07	896	0.4−	0.5−	1999 03 26	732	0.3−	0.3−
1994 01 06	675	0.2+	0.6−	1994 02 07	896	(3.3−	0.2−)	1999 03 26	732	0.5−	0.2−
1994 01 07	868	(4.3−	3.6+)	1997 10 30	688	0.1−	0.2+	1999 04 15	704	0.4−	2.0+
1994 01 07	868	(2.6+	0.7+)	1997 10 30	688	0.5+	0.2+	1999 04 15	704	1.0+	0.6+
1994 01 08	675	0.2−	1.0−	1997 10 31	688	0.6+	1.9−	1999 04 15	704	0.1+	1.4+
1994 01 08	868	(1.2+	2.0+)	1997 10 31	688	0.2+	0.2+	1999 04 20	704	0.3−	0.4+
1994 01 08	868	(1.8+	2.6+)	1997 12 05	689	0.6−	1.0+	1999 04 20	704	1.4+	0.1+
1994 01 14	868	0.6−	0.5+	1997 12 06	704	0.7+	1.6+	1999 04 20	704	0.4+	0.1+
1994 01 14	868	1.9−	1.2−	1997 12 06	704	(1.3+	2.8−)	1999 04 20	704	0.8−	1.1−
1994 01 14	896	0.3−	0.5+	1997 12 06	704	0.9−	0.8+	1999 04 20	704	0.1−	0.2−

(10567)∗ 1994 CV = 1976 SE$_3$

Discovered 1994 Feb. 7 at Farra d'Isonzo.

Id. S. Harada (*MPC* 23676)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	98.65907		(2000.0)		**P**		**Q**
n	0.23633251	ω	224.51795		+0.66447310		−0.74729928
a	2.5909184	Ω	183.84786		+0.70260167		+0.62670988
e	0.1894170	i	3.75182		+0.25461027		+0.22085858
P	4.17	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1976 09 24	095	0.7−	0.8+	1997 11 03	704	0.1−	1.0+	1999 03 10	691	0.7−	0.2+
1976 09 29	095	1.0+	1.9−	1997 11 03	704	0.6+	0.5+	1999 03 20	704	0.8−	0.2+
1994 02 07	595	0.4+	0.1−	1997 11 03	704	1.0−	1.5+	1999 03 20	704	0.2−	0.5−
1994 02 07	595	0.6−	0.2−	1997 11 04	595	0.1+	0.1−	1999 03 20	704	0.9+	0.0
1994 02 09	595	0.1+	0.0	1997 11 05	595	0.2−	0.0	1999 03 20	704	0.5−	0.7−
1994 02 09	595	0.3−	1.3−	1997 12 05	595	0.0	0.8−	1999 03 23	704	0.2−	1.3−
1994 02 14	595	0.4−	0.3+	1997 12 06	595	0.1+	0.7−	1999 03 23	704	0.2−	0.7+
1994 02 14	595	1.1−	0.9+	1997 12 27	566	0.2+	0.3−	1999 03 23	704	0.5+	0.8+
1994 03 04	595	1.3+	0.6+	1997 12 27	566	0.2−	0.9−	1999 03 23	704	0.3−	0.5−
1994 03 04	595	0.7+	0.4−	1997 12 27	566	0.1+	0.5−	1999 04 12	704	2.0+	0.1+
1997 09 23	595	0.4−	0.6−	1999 03 07	595	0.3+	0.8+	1999 04 12	704	0.2+	1.8−
1997 09 24	595	0.3−	0.2−	1999 03 08	595	0.7+	1.1+	1999 04 12	704	(2.1+	0.0)
1997 11 03	704	0.5+	0.2+	1999 03 10	691	0.8−	0.4+	1999 04 12	704	(1.0−	2.6+)
1997 11 03	704	0.3+	1.1+	1999 03 10	691	0.8−	0.2+				

(10568)∗ 1994 CF$_1$ = 1992 QF$_2$

Discovered 1994 Feb. 2 by S. Otomo at Kiyosato.

Id. T. Kobayashi (*MPC* 23982)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	104.85655		(2000.0)		**P**		**Q**
n	0.22295806	ω	116.90251		+0.54739336		−0.81818871
a	2.6935225	Ω	298.81358		+0.67885232		+0.55700880
e	0.1815227	i	11.57863		+0.48940784		+0.14250764
P	4.42	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1992 08 25	675	0.8+	0.3−	1998 01 01	127	0.3+	0.2+	1999 04 14	704	2.8−	1.1−
1992 08 25	675	1.1+	0.7−	1998 01 01	127	0.1−	0.1+	1999 04 15	704	1.8+	0.6−
1992 08 28	675	0.3+	1.5−	1998 02 01	689	0.4−	0.2+	1999 04 15	704	0.5−	0.1+
1992 08 28	675	0.2+	1.9−	1999 02 23	704	0.3−	0.1+	1999 04 15	704	0.1+	0.0
1994 02 02	894	1.3−	1.1+	1999 02 23	704	0.3−	1.6+	1999 04 15	704	0.5+	1.1+
1994 02 02	894	1.0−	0.6−	1999 02 23	704	0.1−	1.2−	1999 04 17	704	0.7+	0.2−
1994 02 03	894	0.4−	0.1−	1999 03 22	704	0.3+	0.3+	1999 04 17	704	0.9+	0.2+
1994 02 03	894	0.4−	0.1−	1999 03 22	704	1.3−	0.8+	1999 04 17	704	0.1−	0.3−
1994 02 10	691	0.4+	0.6+	1999 03 22	704	2.2−	0.5+	1999 04 17	704	1.2+	0.2+
1994 02 10	691	0.4+	0.1+	1999 03 22	704	(0.6−	2.6−)	1999 04 17	704	0.9−	0.0
1994 02 10	691	0.5+	0.0	1999 04 14	699	0.4−	0.4+	1999 04 20	704	1.2+	0.1+
1994 02 18	894	0.6+	1.6−	1999 04 14	699	0.0	1.3+	1999 04 20	704	1.0−	0.5−
1994 02 18	894	0.7+	0.8−	1999 04 14	699	0.2+	0.7+	1999 04 20	704	0.2+	1.3−
1997 12 16	127	0.1+	0.7−	1999 04 14	704	0.4+	0.8−	1999 04 20	704	0.1+	0.9−
1997 12 16	127	0.2+	1.2−	1999 04 14	704	0.2+	1.9−	1999 04 20	704	0.1−	0.5−
1998 01 01	127	0.1−	0.1−	1999 04 14	704	0.1−	2.1−				

(10569)∗ 1994 GQ

Discovered 1994 Apr. 8 by K. Endate and K. Watanabe at Kitami.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	27.20782		(2000.0)		**P**		**Q**
n	0.19832538	ω	111.29796		−0.86992179		−0.46843062
a	2.9121731	Ω	41.20042		+0.31895657		−0.77298316
e	0.0972699	i	13.54758		+0.37616856		−0.42786655
P	4.97	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1951 09 01	675	0.0	0.2−	1998 03 23	327	0.1+	0.1+	1999 04 12	704	0.3+	0.1−
1951 09 01	675	0.2+	0.0	1998 03 23	327	0.1−	0.1+	1999 04 12	704	0.3+	0.1−
1989 03 30	675	0.3+	0.7−	1998 03 23	327	0.1+	0.4+	1999 04 15	704	0.8+	0.2−
1989 03 30	675	0.5−	0.3+	1999 03 20	699	0.5+	0.1+	1999 04 15	704	0.1−	0.3+
1991 09 12	675	0.8−	0.8+	1999 03 20	699	0.3+	0.8+	1999 04 15	704	1.3+	1.8+
1991 09 12	675	0.9−	0.4−	1999 03 20	699	0.2+	0.8+	1999 04 15	704	0.3+	0.1−
1991 09 17	675	1.1+	0.9+	1999 03 23	704	1.2−	0.2+	1999 04 15	704	0.2−	0.1−
1991 09 17	675	0.4−	0.2−	1999 03 23	704	0.2−	0.0	1999 04 16	704	1.1−	0.5+
1994 04 05	400	0.0	0.5−	1999 03 23	704	0.5−	0.1−	1999 04 16	704	0.0	1.2−
1994 04 05	400	1.7+	0.9+	1999 03 23	704	1.0−	0.3−	1999 04 16	704	0.4+	0.4−
1994 04 08	400	(0.3−	2.1+)	1999 03 23	704	1.0−	1.1−	1999 04 16	704	1.3+	0.5+
1994 04 08	400	0.8+	0.2−	1999 04 07	704	0.6−	0.1−	1999 04 16	704	0.8−	0.7+
1994 04 15	400	0.8−	0.3−	1999 04 07	704	0.2+	0.2−	1999 04 19	704	0.0	0.2−
1994 04 15	400	(4.2−	0.9−)	1999 04 07	704	0.8−	0.6−	1999 04 19	704	0.3+	1.1+
1994 05 05	400	1.0−	0.4−	1999 04 07	704	0.9−	0.1−	1999 04 19	704	0.7+	0.2+
1994 05 05	400	0.3−	0.8+	1999 04 07	704	0.1+	0.7−	1999 04 19	704	0.3−	0.1−
1994 05 16	691	0.7+	0.3−	1999 04 12	704	0.4+	0.3+	1999 04 19	704	1.0+	0.9+
1994 05 16	691	0.7−	0.4−	1999 04 12	704	0.9+	0.3−				
1994 05 16	691	1.8−	0.5−	1999 04 12	704	1.3+	0.1−				

(10570)∗ 1994 GT = 1983 CT$_8$

Discovered 1994 Apr. 8 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 30873)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	342.19980		(2000.0)		**P**		**Q**
n	0.18655857	ω	111.01796		−0.99740552		+0.04439943
a	3.0333736	Ω	71.56162		−0.06395568		−0.90784484
e	0.1771828	i	3.42439		+0.03304385		−0.41694897
P	5.28	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1983 02 10	095	0.9−	2.4−	1997 11 29	704	0.4+	0.6−	1999 03 23	704	0.1−	0.7−
1994 04 08	400	0.4+	0.9+	1997 11 29	704	0.7−	0.4+	1999 03 23	704	0.4+	1.1−
1994 04 08	400	1.4+	1.0+	1999 02 08	678	0.1−	0.4+	1999 03 23	704	0.6−	0.5−
1994 04 09	400	0.8−	0.8+	1999 02 08	678	0.8−	0.5+	1999 03 24	610	0.3−	0.7−
1994 04 13	400	0.2+	0.1−	1999 02 09	678	0.0	0.8+	1999 03 24	610	0.1−	0.6−
1994 04 13	400	0.5+	1.4−	1999 02 09	678	1.0−	0.3+	1999 03 24	610	0.0	0.6−

1994 04 14	675	1.0−	0.8+	1999 02 18	699	0.6+	0.4+	1999 03 24	610	0.1+	0.5−
1994 04 14	675	0.9−	0.2−	1999 02 18	699	0.7+	0.4+	1999 03 24	610	0.3+	0.4−
1994 04 15	675	(2.7−	0.9+)	1999 02 18	699	0.7+	0.3+	1999 03 27	744	0.5+	0.6+
1994 04 15	675	(2.6−	0.6−)	1999 02 22	699	0.2+	1.1+	1999 03 27	744	0.2−	0.5+
1994 04 16	400	1.1−	0.1−	1999 02 22	699	0.1+	0.8+	1999 03 27	744	0.2+	0.8+
1994 04 16	400	0.6−	0.3−	1999 02 22	699	0.5+	0.7+	1999 04 05	744	0.3+	0.6+
1994 05 06	400	0.1−	0.1−	1999 03 20	704	0.2+	0.4−	1999 04 05	744	1.0−	0.2−
1994 05 06	400	1.8+	2.0−	1999 03 20	704	0.3+	0.1−	1999 04 07	699	0.3+	0.5+
1997 11 06	411	0.9+	1.1+	1999 03 20	704	0.0	0.8−	1999 04 07	744	0.1−	0.2+
1997 11 06	411	0.9+	0.3−	1999 03 20	704	0.3+	0.3−	1999 04 07	699	0.4+	0.2+
1997 11 29	704	0.5−	0.2+	1999 03 20	704	0.4−	0.5+	1999 04 07	699	0.3+	0.6+
1997 11 29	704	0.8−	0.6−	1999 03 23	704	0.4−	0.1+	1999 04 07	744	0.0	0.0
1997 11 29	704	0.1+	0.5−	1999 03 23	704	0.1+	0.3−				

(10571)∗ 1994 LA$_1$ = 1988 JZ$_1$

Discovered 1994 June 5 by C. W. Hergenrother at the University of Arizona's Catalina Station.

Id. G. V. Williams (*MPC* 25962)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	299.65743		(2000.0)		**P**	**Q**	
n	0.17611018	ω	109.02015		−0.28026062	+0.91956009	
a	3.1521950	Ω	141.07952		−0.95925337	−0.27901157	
e	0.2563679	i	26.00304		+0.03587415	−0.27669799	
P	5.60	H	14.1	G	0.15	U	1

Residuals in seconds of arc

1988 05 12	033	0.2−	0.0	1994 07 08	693	0.8+	1.2+	1999 02 28	734	0.9+	0.1−
1988 05 12	033	0.4+	0.5+	1994 07 09	693	0.4−	0.4+	1999 02 28	734	0.9+	0.6+
1989 09 04	675	0.1+	1.1+	1994 07 09	693	(0.1+	2.6+)	1999 03 15	704	1.1−	0.7+
1989 09 04	675	0.2−	0.2−	1994 08 27	413	1.0−	0.7−	1999 03 15	704	1.1+	0.6+
1994 06 02	675	0.6+	1.1−	1994 08 27	413	1.2−	0.3−	1999 03 15	704	1.1−	1.1+
1994 06 02	675	0.7+	0.2−	1995 08 30	608	0.7−	1.0+	1999 03 15	704	0.8+	1.2+
1994 06 04	675	0.1+	0.2−	1995 08 30	608	0.2−	0.5+	1999 04 10	704	0.1+	0.5−
1994 06 04	675	0.4−	0.7−	1995 10 14	695	0.9−	1.5+	1999 04 10	704	0.1+	0.4−
1994 06 05	693	(0.6−	2.4−)	1995 10 14	695	0.8+	1.4+	1999 04 10	704	0.5+	0.7+
1994 06 05	693	0.7−	1.3−	1995 10 14	695	0.2−	0.5+	1999 04 10	704	0.6−	0.1−
1994 06 06	693	0.9−	1.8+	1995 10 15	695	(2.9−	1.5−)	1999 04 14	693	0.4−	0.0
1994 06 06	693	1.1+	0.3+	1995 10 15	695	1.2+	1.3−	1999 04 14	693	0.4−	0.1−
1994 07 08	693	0.6+	1.0+	1999 02 28	734	0.5−	0.2−	1999 04 14	693	0.4−	0.0

(10572)∗ 1994 VO$_7$ = 1978 XJ$_1$

Discovered 1994 Nov. 8 by S. Otomo at Kiyosato.

Id. S. Nakano (*MPC* 24574)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	75.44790		(2000.0)		**P**	**Q**	
n	0.30672217	ω	221.31602		+0.06712593	−0.99739160	
a	2.1775724	Ω	224.85398		+0.92500919	+0.07217860	
e	0.0680583	i	2.15610		+0.37396805	+0.00049463	
P	3.21	H	14.6	G	0.15	U	1

Residuals in seconds of arc

1978 11 30	675	0.2+	0.0	1996 05 21	566	0.3+	0.2−	1999 03 23	704	0.3−	0.1−
1978 12 01	675	0.5+	0.3−	1996 05 21	566	0.6−	0.6−	1999 03 23	704	0.1+	0.5−
1978 12 05	675	0.9+	2.5−	1996 05 21	566	0.6−	0.6−	1999 03 23	704	0.5−	0.3−
1978 12 06	675	1.0−	0.9−	1996 05 22	809	0.2−	0.9−	1999 03 24	699	0.5+	0.9+
1978 12 06	675	(2.9−	2.3−)	1996 05 22	809	0.5+	1.3−	1999 03 24	699	0.1−	0.7+
1994 11 04	675	0.9+	1.1−	1996 05 22	809	0.2+	0.7−	1999 03 24	699	0.5+	0.8+
1994 11 04	675	0.3−	1.3−	1997 10 30	704	0.6−	0.6+	1999 04 06	704	0.3−	0.3+
1994 11 07	675	0.2−	0.5+	1997 10 30	704	0.5+	0.6+	1999 04 06	704	0.5−	0.3+
1994 11 07	675	0.2−	0.7+	1997 10 30	704	0.8−	0.9+	1999 04 06	704	0.4−	1.0+
1994 11 08	894	0.2−	0.5+	1997 10 30	704	0.7+	0.4+	1999 04 06	704	1.0−	0.5+
1994 11 10	894	0.3+	0.7+	1997 10 30	704	0.3+	0.5+	1999 04 06	704	0.3−	1.1+
1994 11 10	894	1.3−	0.3+	1997 10 30	704	0.2−	1.5+	1999 04 10	699	0.2+	1.5+
1994 11 25	894	0.0	0.8+	1997 10 30	704	1.4−	1.7+	1999 04 10	699	0.9+	0.5+
1994 11 25	894	0.9+	0.5+	1997 10 30	704	0.6−	1.5+	1999 04 10	699	0.5+	0.0
1994 11 30	691	0.9+	0.4−	1997 10 30	704	1.3−	0.9−	1999 04 14	704	0.9+	0.2+
1994 11 30	691	0.6+	0.3+	1997 10 30	704	0.6−	0.0	1999 04 14	704	0.6−	1.7+
1994 11 30	894	(2.3−	0.1+)	1997 10 30	566	0.7+	0.4−	1999 04 14	704	0.0	0.6+
1994 11 30	894	0.3+	0.7−	1997 10 30	566	0.2−	0.1+	1999 04 14	704	(2.1+	1.5+)
1994 12 03	675	0.9−	0.1−	1997 10 30	566	0.3+	0.0	1999 04 14	704	0.2−	0.8+
1994 12 03	675	0.0	1.0−	1999 03 20	704	1.1+	1.0+	1999 04 15	704	0.4+	0.4+
1996 04 18	809	(1.2+	5.0+)	1999 03 20	704	0.5+	0.5−	1999 04 15	704	0.3−	1.1−
1996 04 18	809	(1.8+	3.9+)	1999 03 20	704	0.5+	0.6−	1999 04 15	704	1.0+	0.4−
1996 04 18	809	(2.1+	4.4+)	1999 03 20	704	0.9+	1.0−	1999 04 15	704	0.4+	0.2−
1996 04 20	809	(3.1+	7.2+)	1999 03 20	704	0.2−	0.1−	1999 04 15	704	0.9+	1.7−
1996 04 20	809	(2.9+	6.0+)	1999 03 22	699	0.4−	1.3+	1999 04 17	704	0.6−	0.5−
1996 04 20	809	(3.3+	6.3+)	1999 03 22	699	0.5+	0.4+	1999 04 17	704	0.1−	0.2−
1996 05 19	809	(0.9+	4.0−)	1999 03 22	699	0.0	0.7+	1999 04 17	704	1.0−	0.3+
1996 05 19	809	(1.1+	3.6−)	1999 03 23	704	0.1−	0.1−	1999 04 17	704	0.1−	0.2−
1996 05 19	809	(0.6+	3.7−)	1999 03 23	704	0.2+	0.1+	1999 04 17	704	1.0−	0.2−

(10573)∗ 1994 WU$_1$

Discovered 1994 Nov. 29 at Stroncone.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	157.96466		(2000.0)		**P**	**Q**	
n	0.25771648	ω	123.22357		+0.44399672	+0.89547250	
a	2.4455390	Ω	172.91615		−0.88343590	+0.44336925	
e	0.1605357	i	14.82691		−0.14969278	+0.03940431	
P	3.82	H	14.5	G	0.15	U	1

Residuals in seconds of arc

1994 11 29	589	0.2+	0.1+	1996 03 11	589	1.1+	0.2+	1997 08 29	589	1.6+	0.7+
1994 11 29	589	1.5−	0.5−	1996 03 11	589	0.3+	0.2−	1997 08 29	589	0.1+	0.4−
1994 11 29	589	0.5−	0.0	1996 03 11	589	1.1+	0.4+	1997 08 29	589	0.4+	0.2−
1994 11 30	589	0.5+	0.3+	1996 03 12	589	0.7+	1.2−	1997 09 05	589	0.2+	0.0
1994 11 30	589	0.6+	0.7+	1996 03 12	589	0.9+	0.9−	1997 09 05	589	0.2+	0.0
1994 12 06	589	0.2+	0.7+	1996 03 12	589	0.0	1.1−	1997 09 05	589	0.3−	0.2+
1994 12 06	589	0.6+	0.4−	1996 03 12	589	0.0	0.6−	1997 09 09	910	0.5+	1.0+
1994 12 08	589	1.4+	0.9−	1996 03 21	589	0.1+	0.5−	1997 09 09	910	0.5+	1.0+
1994 12 08	589	0.1+	0.5−	1996 03 21	589	0.8+	0.8−	1997 09 09	910	0.3+	0.9+
1994 12 08	589	1.1+	0.3−	1996 03 21	589	0.4+	0.4−	1997 09 10	589	0.7−	0.9−
1994 12 10	589	0.4+	0.1+	1996 04 07	589	0.7−	0.5−	1997 09 10	589	0.4−	0.4−
1994 12 10	589	0.1+	0.2+	1996 04 07	589	0.5+	1.0−	1997 09 10	589	0.0	0.5−
1994 12 10	589	0.3−	0.1−	1996 05 05	589	0.5−	0.4−	1997 09 20	126	0.9−	0.4+
1995 01 05	589	0.2−	0.0	1996 05 05	589	0.2−	1.2−	1997 09 20	126	0.3−	1.7−
1995 01 05	589	0.1+	0.6+	1996 05 06	589	(2.2−	0.5+)	1997 09 20	126	1.7−	1.2+
1995 01 05	589	0.4+	0.6+	1996 05 06	589	0.4−	1.2+	1997 09 20	126	0.4+	1.0−
1995 01 08	589	0.4−	1.5+	1996 05 08	589	0.2−	0.9+	1997 09 24	589	0.6−	0.0
1995 01 08	589	0.1−	0.6+	1996 05 08	589	1.1−	0.7+	1997 09 24	589	0.0	0.1−
1995 01 08	589	0.2+	0.4−	1996 05 08	589	0.3+	1.6+	1997 09 24	589	0.0	1.3−
1995 01 08	589	0.3−	0.1−	1997 07 12	589	0.1−	1.0+	1997 09 26	589	0.5−	0.1−
1995 01 27	589	0.0	1.0−	1997 07 12	589	0.0	0.4−	1997 09 26	589	0.4−	0.5+
1995 01 27	589	0.2−	0.7−	1997 07 12	589	0.2−	0.4+	1997 09 26	589	0.0	0.0
1995 01 27	589	0.3−	0.6−	1997 07 12	589	0.1−	0.1+	1997 10 09	327	0.2−	0.0
1995 02 01	589	1.0−	0.5+	1997 08 03	126	0.5+	0.1−	1997 10 09	327	0.5−	0.4+
1995 02 01	589	0.3−	0.8+	1997 08 03	126	0.1−	0.3−	1997 10 09	327	0.1+	0.2−
1995 02 06	589	0.2−	0.5−	1997 08 03	126	0.1−	0.3+	1997 11 23	327	1.0+	0.5−
1995 02 06	589	1.5−	0.6+	1997 08 03	126	0.2+	0.4+	1997 11 23	327	0.7+	1.0−
1996 02 12	589	0.8−	0.7−	1997 08 03	126	0.0	0.6+	1997 11 23	327	0.3+	1.1−
1996 02 12	589	(1.0−	2.3−)	1997 08 08	589	0.3+	0.9−	1998 12 08	589	1.3−	1.6−
1996 02 12	589	0.6−	0.6−	1997 08 08	589	0.4+	1.2−	1998 12 08	589	1.4−	1.9−
1996 02 16	589	0.8−	1.0−	1997 08 08	589	0.1+	0.6−	1999 01 15	589	0.5−	0.9+
1996 02 16	589	0.5+	0.2−	1997 08 08	589	0.0	0.8−	1999 01 15	589	0.2+	0.4+
1996 02 16	589	0.0	0.6−	1997 08 25	589	0.2−	1.3−	1999 01 15	589	0.3+	0.2+
1996 02 22	589	0.8−	0.6−	1997 08 25	589	0.1−	0.6−	1999 01 16	589	1.6+	1.2+
1996 02 22	589	0.3−	0.9−	1997 08 25	589	0.4+	0.5−	1999 01 16	589	0.1−	0.5+
1996 02 22	589	0.5−	0.6−	1997 08 25	589	0.1+	0.7−	1999 01 16	589	0.4+	0.8−
1996 02 28	589	1.2−	0.8+	1997 08 28	589	0.1+	0.3+	1999 01 22	589	0.4+	0.5−
1996 02 28	589	0.6−	0.5+	1997 08 28	589	0.1−	0.4−	1999 01 22	589	0.5+	0.6−

(10574)∗ 1994 YH$_1$ = 1997 UN$_{22}$

Discovered 1994 Dec. 31 by T. Kobayashi at Oizumi.

Id. G. Forti (*MPC* 30982), G. V. Williams (*ibid.*)
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	80.92508		(2000.0)		**P**	**Q**	
n	0.30186555	ω	181.14585		+0.01152630	−0.99852515	
a	2.2008664	Ω	268.19534		+0.91784283	+0.03161834	
e	0.0253624	i	3.04268		+0.39677663	−0.04413406	
P	3.27	H	15.0	G	0.15	U	1

Residuals in seconds of arc

1994 11 27	010	(2.7+	3.6+)	1997 10 30	704	0.3+	0.7−	1999 03 20	704	0.9−	0.3−
1994 11 27	010	(2.3+	2.5+)	1997 10 30	704	0.3+	0.6+	1999 03 20	704	(0.6−	2.1−)
1994 11 28	010	(2.3+	2.9+)	1997 11 18	108	1.1+	1.3−	1999 03 20	704	(2.3−	1.2−)
1994 12 31	411	0.2+	0.2+	1997 11 18	108	0.6−	0.8−	1999 03 23	704	0.2−	0.1−
1994 12 31	411	0.5−	0.0	1997 12 20	327	0.4−	0.0	1999 03 23	704	1.1−	0.4+
1995 01 01	411	1.2+	1.0−	1997 12 20	327	0.1+	0.1−	1999 03 23	704	0.1−	0.9+
1995 01 01	411	0.2+	0.2−	1997 12 20	327	0.5−	0.5+	1999 03 23	704	1.2+	1.4+
1995 01 01	411	0.6+	1.1−	1997 12 21	327	0.4−	0.1+	1999 04 11	699	1.1+	0.1+
1995 01 05	411	0.0	0.3−	1997 12 21	327	0.1−	0.5+	1999 04 11	699	0.3+	0.5−
1995 01 05	411	0.2+	0.0	1997 12 21	327	0.3−	0.2−	1999 04 11	699	0.2−	0.2+
1995 01 05	411	0.1+	0.0	1997 12 24	327	0.4−	0.6+	1999 04 14	704	0.1−	0.7−
1995 01 07	411	0.1+	0.3−	1997 12 24	327	0.7−	1.1+	1999 04 14	704	0.7−	1.0−
1995 01 07	411	1.3−	0.2−	1997 12 24	327	0.6−	0.2+	1999 04 14	704	0.0	0.9+
1995 01 07	411	0.5−	0.2−	1997 12 30	327	0.2−	1.0+	1999 04 14	704	0.6−	0.3−
1996 06 15	566	0.1+	0.5−	1997 12 30	327	0.3+	0.9+	1999 04 15	704	0.8+	0.9−
1996 06 15	566	0.7−	1.0−	1997 12 30	327	0.1−	0.7+	1999 04 15	704	0.1+	0.1+
1996 06 15	566	0.2+	0.7+	1998 01 25	557	0.5−	0.6+	1999 04 15	704	0.4+	0.8−
1997 10 26	098	0.1−	0.1+	1998 01 25	557	0.3+	0.1+	1999 04 15	704	0.1+	0.6+
1997 10 26	098	0.2+	1.4−	1998 01 25	557	0.3−	1.0−	1999 04 15	704	0.3−	0.6+
1997 10 29	098	1.3−	1.8+	1999 03 15	428	(3.7+	0.5−)	1999 04 17	704	0.4+	0.5+
1997 10 29	098	0.3+	0.6+	1999 03 15	428	0.0	0.4−	1999 04 17	704	0.2+	0.3+
1997 10 30	704	0.0	0.3−	1999 03 17	428	0.1+	0.1+	1999 04 17	704	0.8−	0.8+
1997 10 30	704	0.2−	0.0	1999 03 17	428	0.9+	0.1+	1999 04 17	704	0.4−	0.6+
1997 10 30	704	1.5+	0.9+	1999 03 20	704	0.6−	0.6−	1999 04 17	704	1.3+	0.2+

(10575)∗ 1994 YV$_1$ = 1992 EG

Discovered 1994 Dec. 31 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 24753)
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	41.61107		(2000.0)		**P**	**Q**	
n	0.28255334	ω	50.01381		−0.56629644	−0.81486685	
a	2.3000419	Ω	74.90343		+0.71176106	−0.55917351	
e	0.0459974	i	7.36074		+0.41557735	−0.15269906	
P	3.49	H	14.2	G	0.15	U	1

Residuals in seconds of arc

1992 03 03	372	0.3+	1.0+	1995 01 01	411	0.1−	0.2+	1999 04 12	704	0.7+	0.7+
1992 03 03	372	(3.6−	3.6+)	1995 01 06	411	0.2+	0.3−	1999 04 12	704	1.0+	0.5+
1992 03 05	372	0.4+	0.6−	1995 01 06	411	0.7+	0.3+	1999 04 15	704	0.6−	0.7+
1992 03 05	372	(2.8−	0.5+)	1995 01 10	411	(2.2−	0.3−)	1999 04 15	704	0.9+	0.2−
1992 03 30	033	0.4−	0.1+	1995 01 10	411	0.3−	0.6−	1999 04 15	704	0.4+	0.6+
1992 03 31	033	0.6−	0.1−	1998 01 29	566	0.9−	0.7−	1999 04 15	704	0.8−	0.3+
1992 04 03	033	0.4−	0.1−	1998 01 29	566	0.6−	0.1+	1999 04 15	704	0.1+	0.0
1992 04 30	033	0.4+	0.2−	1998 01 29	566	1.4−	0.6−	1999 04 16	704	0.3−	1.9−
1992 04 30	033	0.7−	0.3−	1999 03 15	704	0.6+	0.2−	1999 04 16	704	0.2+	0.7−
1992 05 04	033	0.8−	0.2−	1999 03 15	704	0.3+	0.3+	1999 04 16	704	0.6−	0.2+
1993 07 21	675	0.1−	1.3−	1999 03 15	704	0.2+	1.6+	1999 04 16	704	0.6−	0.3−
1993 07 21	675	0.8+	0.6+	1999 03 20	699	0.4+	1.2+	1999 04 16	704	0.7−	0.3+
1993 08 15	675	0.5+	0.0	1999 03 20	699	0.2+	1.1+	1999 04 19	704	0.1−	1.0−
1993 08 15	675	0.1−	0.7+	1999 03 20	699	0.5−	0.3+	1999 04 19	704	0.3−	0.1+
1994 12 31	411	0.5+	0.8−	1999 04 12	704	1.8+	0.3−	1999 04 19	704	0.9−	0.6−
1994 12 31	411	0.8+	0.1−	1999 04 12	704	0.6+	1.2−	1999 04 19	704	1.7−	0.7−
1995 01 01	411	0.1−	0.1−	1999 04 12	704	0.7+	0.0				

(10576)∗ 1995 GF = 1985 YV = 1993 VM$_8$

Discovered 1995 Apr. 3 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 25335)
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	60.16273		(2000.0)		**P**	**Q**	
n	0.24201173	ω	45.53810		−0.38112765	−0.91828716	
a	2.5502246	Ω	67.14244		+0.81177990	−0.38788012	
e	0.0797489	i	6.68024		+0.44244222	−0.07935803	
P	4.07	H	13.6	G	0.15	U	2

Residuals in seconds of arc

1985 12 20	010	1.6−	0.5+	1997 11 29	704	0.4−	0.5−	1999 03 23	704	0.9−	1.2−
1985 12 20	010	(4.6+	3.0−)	1997 11 29	704	0.7+	0.3−	1999 03 24	699	1.5+	0.6+
1993 11 13	033	0.5+	0.6+	1997 11 29	704	0.0	0.2−	1999 03 24	699	1.5+	1.5+
1993 11 13	033	0.3+	0.4+	1997 11 29	704	0.2+	0.2−	1999 03 24	699	0.3−	1.4+
1993 12 08	691	1.0+	0.6+	1997 12 04	704	0.2−	0.5−	1999 04 07	704	0.4−	0.1+
1993 12 08	691	0.9+	0.8+	1997 12 04	704	0.2+	0.4−	1999 04 07	704	0.6−	0.4−
1993 12 08	691	1.2+	0.7+	1997 12 04	704	0.8+	1.1−	1999 04 07	704	1.4+	0.7−
1995 04 03	411	1.6−	0.0	1997 12 04	704	0.3+	0.2+	1999 04 07	704	1.9−	0.8+
1995 04 03	411	0.3+	0.4−	1997 12 05	704	0.1−	0.3−	1999 04 07	704	0.4−	0.2−
1995 04 04	411	0.9−	1.1−	1997 12 05	704	1.2+	1.5−	1999 04 10	699	0.8+	1.1+
1995 04 04	411	(2.4+	0.3+)	1997 12 05	704	0.3+	0.9−	1999 04 10	699	0.5+	1.4+
1995 04 04	411	0.4+	1.5−	1997 12 05	704	1.4−	0.2−	1999 04 10	699	1.2+	0.7+
1995 04 07	411	0.1−	0.4−	1997 12 05	704	0.8+	0.4−	1999 04 12	704	0.1+	1.0−
1995 04 07	411	1.1−	1.3+	1997 12 05	367	0.2−	0.5−	1999 04 12	704	0.6+	0.5−
1995 04 08	411	0.2−	0.2−	1997 12 05	367	0.3−	0.7−	1999 04 12	704	0.0	0.6−
1995 04 08	411	0.8−	0.3+	1997 12 28	566	0.3−	0.6+	1999 04 12	704	0.4+	0.1−
1995 04 08	411	0.2+	1.2−	1997 12 28	566	0.1−	1.0+	1999 04 12	704	0.5+	0.1−
1995 04 12	411	1.2−	1.2+	1997 12 28	566	0.2−	0.8+	1999 04 15	704	0.4−	0.3−
1995 04 12	411	0.2−	0.3−	1999 03 19	704	1.0−	0.7−	1999 04 15	704	0.2+	0.9+
1995 04 12	411	0.8+	0.6+	1999 03 19	704	0.5+	1.4+	1999 04 15	704	1.7+	0.0
1995 04 19	411	0.4+	0.0	1999 03 19	704	0.7+	0.3−	1999 04 15	704	(0.4−	3.1+)
1995 04 19	411	0.4+	0.7−	1999 03 19	704	0.0	0.8−	1999 04 15	704	0.1+	1.0−
1995 04 26	411	0.9+	0.3−	1999 03 20	704	0.5−	0.3+	1999 04 16	704	0.0	1.5−
1995 04 26	411	1.2+	0.3−	1999 03 20	704	1.1−	1.0+	1999 04 16	704	0.0	0.7−
1995 05 18	411	0.2−	0.4+	1999 03 20	704	1.0−	1.7+	1999 04 16	704	0.2−	1.2−
1995 05 18	411	0.2−	1.2−	1999 03 20	704	0.3−	1.2+	1999 04 16	704	0.0	0.1+
1995 05 18	411	0.6+	0.0	1999 03 20	704	1.1−	1.6+	1999 04 16	704	0.5−	0.4−
1997 11 02	367	0.2−	0.3+	1999 03 22	699	0.5+	1.2+	1999 04 19	704	0.3−	0.5−
1997 11 02	367	0.6−	0.1+	1999 03 22	699	0.2+	1.4+	1999 04 19	704	0.3+	0.8−
1997 11 06	689	0.5−	0.1+	1999 03 22	699	0.4+	0.2+	1999 04 19	704	0.2−	0.3−
1997 11 06	411	0.9−	0.0	1999 03 23	704	0.1−	0.8−	1999 04 19	704	0.2−	0.4−
1997 11 06	411	0.8−	0.3−	1999 03 23	704	0.7−	0.1−	1999 04 19	704	0.1+	0.1+
1997 11 29	704	0.0	0.1+	1999 03 23	704	0.7−	1.8−				

(10577)∗ 1995 JC

Discovered 1995 May 2 by M. Tichý at Kleť.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	303.75388		(2000.0)		**P**	**Q**	
n	0.23809875	ω	209.09243		−0.24880760	+0.96690272	
a	2.5780894	Ω	46.56395		−0.87289882	−0.19856935	
e	0.2330712	i	4.46376		−0.41969324	−0.16021653	
P	4.14	H	14.7	G	0.15	U	1

Residuals in seconds of arc

1995 05 02	046	0.8−	0.9−	1996 10 14	046	0.4−	0.4+	1999 03 23	704	0.3+	0.9+
1995 05 02	046	(2.4+	0.6−)	1996 10 14	046	0.3−	0.4+	1999 03 23	704	0.4−	2.0+
1995 05 03	046	0.2+	0.0	1996 10 14	046	0.0	0.1+	1999 03 27	046	0.5+	0.1−
1995 05 03	046	0.2+	0.2+	1996 10 14	327	0.1+	0.0	1999 03 27	046	0.4+	0.1−
1995 05 03	046	0.3+	0.1+	1996 10 14	327	0.3−	0.6+	1999 03 27	046	0.4+	0.0
1995 05 04	046	0.0	0.2+	1996 10 14	327	0.5−	0.5+	1999 04 07	704	0.8−	0.4−
1995 05 05	046	0.5+	0.0	1996 10 14	327	0.2−	0.7+	1999 04 07	704	1.0−	0.3+
1995 05 05	046	0.2+	0.0	1996 10 14	327	0.1−	0.2−	1999 04 07	704	1.3−	0.4+
1995 05 05	046	0.4+	0.6+	1996 10 14	327	0.2+	0.4+	1999 04 07	704	1.5−	0.8+
1995 05 06	046	0.2−	0.0	1997 12 23	046	0.2+	0.5−	1999 04 07	704	1.1−	1.8+
1995 05 06	046	0.5+	0.2−	1997 12 23	046	0.6+	0.4−	1999 04 07	699	1.3+	0.1−
1995 05 06	046	0.6+	0.2+	1997 12 23	046	0.3+	0.4−	1999 04 07	699	0.3+	0.4+
1995 05 15	046	0.4−	0.4+	1997 12 26	046	0.0	0.6+	1999 04 07	699	0.4+	0.1+

1995 05 15	046	0.7−	0.8+	1997 12 26	046	0.4+	0.2−	1999 04 12	704	0.1−	0.1+
1995 05 23	046	0.5−	0.2−	1997 12 26	046	0.4+	0.9−	1999 04 12	704	0.5−	0.0
1995 05 23	046	0.8−	0.0	1997 12 27	046	0.1−	0.4−	1999 04 12	704	0.1+	0.7−
1995 05 23	046	0.5−	0.1−	1997 12 27	046	0.2−	0.0	1999 04 12	704	0.6−	0.1−
1995 05 25	046	0.3−	0.0	1997 12 27	046	0.4−	0.4−	1999 04 12	704	0.5−	0.1+
1995 05 25	046	0.8−	0.0	1997 12 28	046	0.1−	0.6+	1999 04 15	704	0.4+	1.1−
1995 05 25	046	0.7−	0.2+	1997 12 28	046	0.1−	0.3−	1999 04 15	704	0.7+	1.2−
1995 05 29	046	0.7+	0.3+	1997 12 29	046	0.1−	0.3+	1999 04 15	704	0.0	1.0−
1995 05 29	046	0.3+	0.6+	1999 03 13	046	0.8+	0.3+	1999 04 15	704	0.2−	0.5+
1995 05 29	046	1.3−	0.0	1999 03 13	046	0.7+	0.2+	1999 04 15	704	0.1+	0.1+
1995 06 20	046	0.1+	0.0	1999 03 13	046	1.0+	0.3+	1999 04 16	704	0.1−	1.1−
1995 06 20	046	0.2+	0.3+	1999 03 13	046	0.5+	0.2+	1999 04 16	704	0.6+	0.3−
1995 06 20	046	1.2+	0.1+	1999 03 13	046	0.5−	0.2−	1999 04 16	704	0.8+	0.1−
1995 06 27	046	0.3+	0.1−	1999 03 13	046	0.4+	0.1−	1999 04 16	704	0.5+	0.6−
1995 06 27	046	0.2+	0.8−	1999 03 19	704	1.1+	0.0	1999 04 16	704	0.3−	0.8−
1995 06 27	046	0.8+	0.6−	1999 03 19	704	0.7+	0.3−	1999 04 17	046	0.2+	0.0
1995 07 13	046	0.1−	1.5−	1999 03 19	704	0.2+	0.2+	1999 04 17	046	0.2+	0.1+
1995 07 13	046	0.4+	0.6−	1999 03 19	704	0.7+	0.1+	1999 04 17	046	0.5+	0.2+
1995 07 13	046	0.5+	0.4−	1999 03 20	704	0.1+	0.1−	1999 04 19	704	0.4−	0.1+
1995 07 16	046	0.6+	0.5+	1999 03 20	704	0.6−	0.1−	1999 04 19	704	0.6−	0.8−
1995 07 16	046	0.7+	0.5+	1999 03 20	704	1.1−	0.6+	1999 04 19	704	0.7−	0.2+
1995 07 16	046	0.4−	0.3+	1999 03 20	704	0.2−	0.6+	1999 04 19	704	0.6−	0.2−
1996 10 11	566	0.1−	0.2+	1999 03 20	704	0.6−	0.0	1999 04 19	704	0.1−	0.3−
1996 10 11	566	0.7−	0.3+	1999 03 22	699	1.1+	0.6+	1999 04 20	046	0.4+	0.2+
1996 10 11	566	0.2−	0.3+	1999 03 22	699	0.3+	0.1−	1999 04 20	046	0.4+	0.2+
1996 10 13	046	0.3+	0.3+	1999 03 22	699	0.9−	1.4+	1999 04 20	046	0.3+	0.3+
1996 10 13	046	0.6−	0.6+	1999 03 23	704	0.7+	0.4−				
1996 10 13	046	0.2−	0.4+	1999 03 23	704	0.3−	0.9+				

(10578)∗ 1995 LH

Discovered 1995 June 5 by G. J. Garradd at Siding Spring.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	279.70330		(2000.0)		**P**		**Q**
n	0.22281459	ω	266.05475		+0.70049450		+0.69744225
a	2.6946786	Ω	49.63961		−0.55027252		+0.66281890
e	0.4077616	i	11.45025		−0.45443108		+0.27248013
P	4.42	H	14.3	G	0.15	U	1

Residuals in seconds of arc

1995 06 05	413	0.8+	1.9−	1995 10 30	413	0.2−	0.3−	1996 12 16	658	1.6−	0.7−
1995 06 05	413	1.4−	0.4−	1995 10 30	413	0.1+	0.0	1996 12 16	658	1.3−	1.3−
1995 06 08	413	0.0	0.7−	1995 10 31	413	0.0	0.0	1996 12 16	658	0.2−	0.3+
1995 06 08	413	0.1+	0.7−	1995 10 31	413	0.1−	0.2−	1997 12 31	711	0.1−	0.1+
1995 06 18	422	0.6−	0.9+	1995 12 08	413	0.4−	0.6+	1997 12 31	711	0.1+	0.2+
1995 06 18	422	0.5−	0.4+	1995 12 08	413	0.4+	0.3−	1998 01 01	711	0.2−	0.1−
1995 06 18	422	1.4−	0.5−	1995 12 24	658	0.2+	0.4+	1998 01 01	711	0.6−	0.3+
1995 06 19	413	0.2−	0.0	1995 12 24	658	0.5−	0.1+	1999 03 13	118	0.7−	0.3−
1995 06 19	413	0.1−	0.2+	1995 12 24	658	0.3−	0.2−	1999 03 13	118	0.6−	0.0
1995 06 20	413	0.1−	0.2+	1996 01 03	413	0.6−	0.0	1999 03 22	360	0.1−	0.4+
1995 06 20	413	0.2−	0.2+	1996 01 03	413	0.8−	0.2−	1999 03 22	360	0.4−	0.6+
1995 07 06	413	0.2+	0.1−	1996 01 26	413	0.8−	0.2+	1999 03 22	360	0.3−	0.4+
1995 07 06	413	0.2+	0.1+	1996 01 26	413	0.5−	0.1+	1999 03 25	118	0.8−	0.5+
1995 07 20	413	0.4+	0.4+	1996 11 04	709	0.5−	0.2+	1999 03 25	118	0.9−	0.2−
1995 07 20	413	0.6+	0.4+	1996 11 04	709	0.2−	0.1+	1999 03 27	118	1.5−	0.4+
1995 07 23	323	0.1+	0.5−	1996 11 04	709	0.4−	0.2+	1999 03 27	118	0.8−	0.2−
1995 08 05	413	0.5+	0.4+	1996 11 04	709	0.2+	0.5+	1999 04 08	360	0.5−	0.5+
1995 08 05	413	0.5+	0.3+	1996 11 04	709	0.4−	0.0	1999 04 08	360	0.5−	0.4+
1995 08 14	323	1.0+	0.7−	1996 11 19	709	0.7+	0.5−	1999 04 08	360	0.7−	0.4+
1995 09 07	413	0.2−	0.4+	1996 11 19	709	0.2+	0.6−	1999 04 09	118	0.6−	0.6−
1995 09 07	413	0.3−	0.4+	1996 11 19	709	0.9+	0.3−	1999 04 09	118	0.3−	0.1−
1995 09 12	413	0.3+	0.4+	1996 11 19	709	0.4+	0.1+	1999 04 11	422	0.1+	0.2+
1995 09 12	413	0.3+	0.1+	1996 11 19	709	1.2+	0.4+	1999 04 11	422	0.3−	0.2−
1995 09 26	360	0.1−	0.7+	1996 11 19	709	0.8+	0.3−	1999 04 11	422	0.1−	0.4−
1995 09 26	360	0.1−	1.0+	1996 11 19	696	0.5+	0.3−	1999 04 12	704	1.9+	1.3−
1995 09 26	360	0.1−	1.1+	1996 11 19	696	0.2+	0.5−	1999 04 12	704	1.5+	0.3−
1995 09 30	670	1.3+	0.1+	1996 11 23	658	0.7−	0.3−	1999 04 12	704	0.2−	0.9−
1995 09 30	670	0.2+	0.9−	1996 11 23	658	1.6−	0.3+	1999 04 12	704	1.0+	0.8−
1995 09 30	670	0.4−	0.4−	1996 11 23	658	1.2−	0.2+	1999 04 16	704	0.1+	0.7−
1995 10 01	670	0.6−	1.1−	1996 12 04	711	0.8+	0.3+	1999 04 16	704	1.1+	0.8+
1995 10 01	670	0.6+	0.4+	1996 12 04	711	0.9+	0.5+	1999 04 16	704	0.4−	0.7−
1995 10 01	670	0.7−	0.3+	1996 12 05	711	1.0+	0.3+	1999 04 16	704	0.8+	1.5+
1995 10 20	360	0.4+	0.4−	1996 12 05	711	0.8+	0.3+	1999 04 16	704	(4.6−	0.6+)
1995 10 20	360	0.1+	0.4−	1996 12 06	381	0.6+	0.0	1999 04 19	704	1.0+	0.4+
1995 10 20	360	0.2+	0.3−	1996 12 06	381	0.8+	0.1−	1999 04 19	704	0.1+	0.5−
1995 10 25	360	0.1−	0.4−	1996 12 08	381	0.4+	0.2−	1999 04 19	704	1.3+	0.8+
1995 10 25	360	0.4+	0.4−	1996 12 08	381	0.4+	0.8−	1999 04 19	704	0.8+	0.3+
1995 10 25	360	0.2−	0.6−	1996 12 12	046	0.3−	0.4−	1999 04 19	704	0.1−	0.1+
1995 10 29	413	0.0	0.4−	1996 12 12	046	0.5−	0.2+				
1995 10 29	413	0.0	0.1−	1996 12 12	046	0.4−	0.5+				

(10579)∗ 1995 OE

Discovered 1995 July 20 at the Osservatorio S. Vittore, Bologna.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	63.17637		(2000.0)		**P**		**Q**
n	0.18392288	ω	217.22155		−0.38385922		−0.91113989
a	3.0622846	Ω	255.78984		+0.88004806		−0.31182805
e	0.0574504	i	8.89666		+0.27958453		−0.26942042
P	5.36	H	12.7	G	0.15	U	1

Residuals in seconds of arc

1995 07 20	552	0.2+	0.7+	1996 11 08	552	0.2+	1.2−	1999 03 22	704	0.2+	0.7+
1995 07 20	552	0.2+	0.2+	1996 11 08	552	0.4+	0.2+	1999 03 22	704	1.2−	1.1−
1995 07 20	552	0.0	0.2−	1996 11 08	552	0.5+	1.4−	1999 04 10	552	0.3+	0.2−
1995 07 21	552	0.4+	0.2+	1996 11 08	552	0.6+	0.9−	1999 04 10	552	0.0	0.1−
1995 07 21	552	0.1+	0.1+	1996 11 12	552	0.4−	0.6−	1999 04 10	552	0.1+	0.2−
1995 07 21	552	0.2+	0.1−	1996 11 12	552	0.3+	0.4−	1999 04 14	704	0.7+	0.6−
1995 07 22	552	0.5+	1.6−	1996 11 12	552	0.1−	0.1−	1999 04 14	704	0.9+	0.6+
1995 07 22	552	0.3+	0.2+	1996 11 14	709	0.1−	0.2−	1999 04 14	704	0.1+	1.1−
1995 07 25	552	0.8−	0.3−	1996 11 14	709	0.0	0.1−	1999 04 14	704	(0.2+	2.0+)
1995 07 25	552	0.3−	0.1−	1996 11 14	709	0.0	0.2−	1999 04 15	704	0.2−	0.3−
1995 07 25	552	0.5+	0.6+	1996 11 14	709	0.2+	0.2−	1999 04 15	704	0.1+	0.9−
1995 07 30	552	0.6−	0.1−	1996 11 14	709	0.0	0.1−	1999 04 15	704	0.8+	0.6+
1995 07 30	552	0.1−	0.5−	1996 11 14	709	0.1+	0.1−	1999 04 15	704	0.1−	0.7−
1995 07 30	552	0.0	0.2+	1996 12 04	552	0.6+	0.0	1999 04 15	704	0.0	1.4+
1995 07 31	552	1.1−	0.1+	1996 12 04	552	0.7+	0.3+	1999 04 16	704	0.9−	0.8−
1995 07 31	552	0.4−	0.0	1997 01 12	552	0.4−	0.1+	1999 04 16	704	0.8−	0.5−
1995 07 31	552	0.2−	0.3−	1997 01 12	552	0.2+	0.3−	1999 04 16	704	(0.9−	2.2−)
1995 08 03	552	0.8−	0.5−	1997 01 12	552	0.6−	0.2+	1999 04 16	704	1.9−	1.4−
1995 08 03	552	0.3−	0.2−	1997 01 14	552	0.1+	1.5−	1999 04 17	704	0.1−	0.3−
1995 08 03	552	0.4−	0.4+	1997 01 14	552	0.8−	0.7−	1999 04 17	704	0.1−	0.0
1995 08 03	552	0.5−	0.4−	1997 01 14	552	0.3−	0.1+	1999 04 17	704	0.4+	0.2−
1995 08 26	552	0.2+	0.5+	1997 01 14	552	0.0	0.1+	1999 04 17	704	0.2−	0.8−
1995 08 26	552	0.3+	0.5+	1998 02 05	552	0.0	0.2+	1999 04 17	704	0.2+	0.3−
1995 08 26	552	0.2+	0.3−	1998 02 05	552	0.4+	0.1+	1999 04 20	704	0.2+	0.0
1995 08 26	552	1.2+	0.0	1998 02 05	552	0.7+	0.2+	1999 04 20	704	(2.3−	0.5+)
1995 08 31	552	0.5+	0.2+	1998 03 16	552	0.4−	0.1+	1999 04 20	704	0.4+	0.6+
1995 08 31	552	0.7+	0.2−	1998 03 16	552	0.4−	0.4−	1999 04 20	704	0.8−	0.5+
1995 08 31	552	0.4+	0.8+	1999 03 22	704	0.6−	0.9−				
1996 11 08	552	0.5+	0.4−	1999 03 22	704	0.1+	0.6−				

(10580)∗ 1995 OV = 1994 CW$_{10}$

Discovered 1995 July 24 by Y. Shimizu and T. Urata at Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 25535)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	292.01942		(2000.0)		**P**		**Q**
n	0.21900173	ω	297.09369		+0.23621153		+0.97118835
a	2.7258650	Ω	346.45709		−0.83693124		+0.18682990
e	0.2477313	i	7.75037		−0.49371066		+0.14794517
P	4.50	H	13.5	G	0.15	U	2

Residuals in seconds of arc

1994 02 07	809	0.1+	1.6−	1996 11 14	385	0.1+	0.5−	1999 04 15	704	0.8−	1.6+
1994 02 07	809	1.7−	1.4−	1996 12 01	385	1.7−	1.0−	1999 04 15	704	0.1+	0.7+
1994 02 07	809	(2.8−	2.9−)	1996 12 03	385	0.0	0.5+	1999 04 15	704	0.2−	1.5+
1994 02 09	809	(0.5−	3.2−)	1996 12 03	385	0.4+	0.4+	1999 04 15	886	1.4−	0.7+
1994 02 09	809	(1.0−	3.4−)	1996 12 03	385	0.4+	0.1+	1999 04 15	886	0.8−	0.8+
1994 02 09	809	(1.9−	4.4−)	1998 01 24	385	0.9+	0.9−	1999 04 15	888	0.1+	0.6+
1995 07 24	905	0.1−	0.4−	1998 01 24	385	0.0	0.4+	1999 04 15	888	0.3−	0.8+
1995 07 24	905	0.3−	0.4−	1998 01 30	385	1.4−	0.0	1999 04 17	704	0.5−	0.3+
1995 07 26	905	0.5+	0.2+	1999 02 20	888	0.4+	0.2−	1999 04 17	704	0.8+	0.9−
1995 07 26	905	0.3+	0.9−	1999 02 20	888	0.3+	0.2−	1999 04 17	704	0.9+	1.2−
1995 07 30	905	0.6+	0.2−	1999 03 25	704	0.8+	0.4−	1999 04 17	704	0.5+	0.4−
1995 07 30	905	0.3−	0.3−	1999 03 25	704	0.2−	2.0+	1999 04 17	704	0.6+	0.8−
1995 08 20	905	0.8+	0.2+	1999 03 25	704	0.8+	2.0−	1999 04 20	704	0.1+	0.7−
1995 08 20	905	0.3−	0.7−	1999 03 25	704	0.7+	1.1−	1999 04 20	704	0.6−	0.3−
1995 08 25	905	0.8+	0.4+	1999 04 08	888	0.3−	0.3+	1999 04 20	704	0.0	0.8−
1995 08 25	905	1.0−	0.3−	1999 04 08	888	0.3−	0.6+	1999 04 20	704	0.4+	0.4−
1996 11 14	385	0.5+	0.5+	1999 04 15	704	0.1+	0.2+	1999 04 20	704	0.3−	0.5−
1996 11 14	385	0.4+	0.4−	1999 04 15	704	0.0	0.7+				

(10581)∗ 1995 OD$_1$

Discovered 1995 July 30 by P. Pravec at Ondřejov.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	51.75253		(2000.0)		**P**		**Q**
n	0.18906372	ω	5.56384		−0.94000568		−0.32883250
a	3.0065187	Ω	154.64812		+0.30425182		−0.92853221
e	0.0874883	i	12.25368		+0.15433778		−0.17232854
P	5.21	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1995 07 30	557	0.2+	0.0	1996 10 13	557	0.0	0.4+	1998 02 27	566	1.3−	1.1−
1995 07 30	557	0.3+	0.3−	1996 11 06	557	0.2+	0.5+	1998 03 03	704	0.1+	0.5+
1995 07 31	557	0.3+	0.5−	1996 11 06	557	0.2−	0.9−	1998 03 03	704	0.1−	0.4+
1995 08 01	557	0.7+	0.5−	1996 11 06	557	0.6−	0.9−	1998 03 03	704	0.5−	0.3−
1995 08 01	557	0.4−	0.6−	1996 12 03	557	(1.1+	2.2+)	1998 03 03	704	0.2+	0.3−
1995 08 04	557	0.3+	0.4−	1996 12 03	557	0.5+	1.8+	1998 03 03	704	1.1−	0.2+
1995 08 04	557	0.0	0.9−	1996 12 03	557	0.5−	1.6+	1998 03 04	704	0.5+	0.2+
1995 08 04	557	0.5−	0.3−	1997 10 29	557	0.3−	0.2−	1998 03 04	704	0.2+	0.2−
1995 08 06	557	0.0	0.4−	1997 10 29	557	0.3+	0.7−	1998 03 04	704	0.2−	0.5−
1995 08 06	557	0.3+	0.7−	1997 11 01	557	0.0	0.2+	1998 03 04	704	0.1+	0.9−
1995 08 06	557	0.2+	0.0	1997 11 01	557	0.4+	0.7−	1998 03 04	704	0.1+	0.7−
1995 08 20	557	0.4−	0.9−	1997 12 31	557	0.1−	0.4+	1998 03 19	557	0.4+	0.3+
1995 08 20	557	0.0	0.3−	1997 12 31	557	0.4−	0.1+	1998 03 19	557	0.3+	0.1−
1995 08 20	557	0.3−	0.4−	1998 01 08	557	0.5−	0.2+	1999 03 18	557	0.3−	0.9+
1995 09 17	557	0.1+	0.1+	1998 01 08	557	0.3−	0.1+	1999 03 18	557	0.2+	0.4+
1995 09 17	557	0.2+	0.0	1998 01 26	566	0.7+	0.5+	1999 03 25	557	0.2+	0.0
1996 10 11	691	0.2−	0.2−	1998 01 26	566	0.5+	0.6+	1999 03 25	557	0.1+	0.2−
1996 10 11	691	0.2+	0.1−	1998 01 26	566	0.5+	0.5+	1999 04 18	557	0.0	0.1+
1996 10 11	691	0.1+	0.1+	1998 02 22	566	0.2+	1.2−	1999 04 19	557	0.1+	0.0
1996 10 12	557	0.3+	0.3+	1998 02 22	566	0.2+	1.0−	1999 04 20	557	0.3+	0.4+
1996 10 12	557	0.1+	0.1−	1998 02 22	566	0.3+	1.3−	1999 04 20	557	0.2−	0.4+
1996 10 12	557	0.1−	0.2−	1998 02 27	566	1.0−	1.4−				
1996 10 13	557	0.2−	0.3+	1998 02 27	566	(2.3−	1.5−)				

(10582)∗ 1995 TG = 1990 VL$_{14}$

Discovered 1995 Oct. 3 by Y. Ikari at Moriyama.

Id. S. Nakano (*MPC* 28076)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	227.68652		(2000.0)		**P**		**Q**
n	0.18008038	ω	301.41187		+0.98245997		−0.02842701
a	3.1056925	Ω	60.80497		+0.11576653		+0.86777129
e	0.1708028	i	12.18758		−0.14618656		+0.49615008
P	5.47	H	12.5	G	0.15	U	1

Residuals in seconds of arc

1990 11 14	095	(3.4+	3.5−)	1996 01 02	900	0.7−	0.9−	1998 03 17	402	0.4+	0.2+
1990 11 14	095	(1.5+	2.9+)	1996 01 02	900	0.3+	0.4+	1998 03 17	402	0.3+	0.0
1995 10 03	900	0.3−	1.5+	1996 01 02	900	0.8−	0.3−	1998 03 17	900	0.6−	0.4+
1995 10 03	900	0.7−	1.1+	1996 10 09	900	0.5−	0.6+	1998 03 17	900	0.1−	0.1+
1995 10 04	966	0.6−	0.5+	1996 10 09	900	0.6−	0.2+	1998 03 18	402	0.0	0.7+
1995 10 05	966	1.5−	1.0+	1996 10 09	900	0.1−	0.9+	1998 03 18	402	0.0	1.1+
1995 10 05	966	0.5−	0.9+	1996 10 16	900	0.5−	0.1−	1998 03 18	402	0.3+	1.4+
1995 10 06	900	0.3−	0.6+	1996 10 16	900	0.2−	0.1+	1998 03 24	704	0.1+	0.5+
1995 10 06	900	0.6−	0.7+	1996 11 06	900	1.1−	0.0	1998 03 24	704	1.0+	0.7+
1995 10 06	900	1.1−	0.5+	1996 11 06	900	0.3−	0.1−	1998 03 24	704	0.1−	1.2+
1995 10 09	900	0.2−	0.5+	1996 11 13	402	0.2+	0.5−	1998 03 24	704	0.5−	0.5+
1995 10 09	900	0.8−	0.2−	1996 11 13	402	0.3+	0.6−	1998 03 25	704	0.3−	0.2+
1995 10 09	900	0.6−	0.1−	1996 11 13	402	0.7−	0.2+	1998 03 25	704	1.2+	0.2+
1995 10 11	900	0.1+	0.0	1996 11 13	402	0.1−	0.2+	1998 03 25	704	1.7−	1.0+
1995 10 11	900	0.5−	0.2+	1996 11 13	900	0.9−	0.8+	1998 03 25	704	0.2+	0.5+
1995 10 13	900	0.2+	0.2−	1996 11 13	900	1.9−	0.4−	1998 03 25	704	0.4+	1.5+
1995 10 13	900	1.0−	0.2+	1996 11 16	402	0.2−	1.2−	1998 03 25	566	0.2+	0.1+
1995 10 17	900	0.7−	1.0+	1996 11 16	402	0.7−	1.0−	1998 03 25	566	0.1−	0.3+
1995 10 17	900	0.0	0.1−	1996 12 03	402	0.1+	1.4−	1998 03 25	566	0.1−	0.0
1995 10 18	900	0.1−	0.4+	1996 12 03	402	0.0	1.4−	1998 03 31	402	0.6+	0.5+
1995 10 18	900	0.1−	0.0	1996 12 03	402	0.0	1.6−	1998 03 31	402	0.6+	0.3+
1995 10 18	900	0.1−	0.1+	1996 12 03	900	0.3−	0.2−	1998 03 31	402	0.7+	0.3+
1995 10 19	966	0.1−	0.3+	1996 12 03	900	0.3+	0.4−	1998 04 04	900	0.4+	0.5+
1995 10 19	966	0.4+	0.1−	1996 12 14	402	0.3+	0.8−	1998 04 04	900	1.0+	0.3+
1995 10 25	900	0.0	0.3+	1996 12 14	402	0.3+	0.9−	1998 04 16	402	0.0	0.5+
1995 10 25	900	0.2−	0.1+	1996 12 14	402	0.3+	0.7−	1998 04 16	402	0.2+	0.3+
1995 10 27	900	0.4−	1.2+	1996 12 18	900	0.3−	0.8+	1998 04 16	402	0.0	0.4+
1995 10 27	900	0.5+	0.3+	1996 12 21	402	0.7+	0.8+	1998 04 28	402	0.2−	0.3+
1995 10 30	900	0.5−	0.7−	1996 12 21	402	0.8+	1.0+	1998 04 28	402	0.3−	0.4−
1995 11 02	900	0.0	0.3−	1996 12 21	402	0.7+	0.7+	1998 04 28	402	0.3+	0.4+
1995 11 02	900	0.3+	0.1+	1996 12 30	900	1.1−	0.3+	1998 05 22	402	0.1−	0.5−
1995 11 11	900	0.5+	0.1−	1996 12 30	900	(2.2−	0.2+)	1998 05 22	402	0.5−	0.8−
1995 11 15	900	0.7+	0.8−	1997 03 04	402	0.9+	0.1−	1998 05 22	402	0.6+	0.7−
1995 11 15	900	0.2+	1.0−	1997 03 04	402	1.5+	0.3+	1999 03 27	402	0.1+	0.2+
1995 11 18	900	0.5+	0.1+	1997 03 04	402	1.4+	0.4+	1999 03 27	402	0.9+	0.9+
1995 11 18	900	0.3+	0.1−	1997 03 05	402	0.5+	0.2−	1999 03 27	402	0.5−	0.5+
1995 11 24	900	0.3−	0.3−	1997 03 05	402	0.5+	0.0	1999 04 19	699	0.5+	0.6+
1995 11 24	900	0.5+	0.1+	1997 03 05	402	0.5+	0.3+	1999 04 19	699	0.4+	0.3+
1995 12 05	900	0.0	0.6+	1997 03 11	402	0.3+	0.1+	1999 04 19	699	0.2+	1.4+
1995 12 05	900	0.9+	1.7+	1997 03 11	402	0.4+	0.0	1999 04 20	704	0.3+	1.6−
1995 12 10	900	0.5+	0.4−	1997 03 11	402	0.5+	0.1+	1999 04 20	704	(1.2−	2.1−)
1995 12 10	900	0.1−	0.2+	1998 02 22	900	0.6−	0.5+	1999 04 20	704	0.8−	0.2−
1995 12 31	900	0.0	0.6+	1998 02 22	900	0.6+	0.2+	1999 04 20	704	0.0	1.3−
1995 12 31	900	0.7+	0.3−	1998 03 17	402	0.4+	0.0				

(10583)∗ 1995 WC$_4$ = 1973 YQ$_1$ = 1989 VR$_6$ = 1994 NA$_{13}$

Discovered 1995 Nov. 21 by T. Okuni at Nanyou.

Id. E. Bowell (*MPC* 28861), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	272.33200		(2000.0)		**P**		**Q**
n	0.17846626	ω	273.25330		+0.88160456		+0.41487449
a	3.1243904	Ω	62.33913		−0.26425540		+0.82895639
e	0.2133159	i	14.72040		−0.39107862		+0.37511394
P	5.52	H	11.9	G	0.15	U	1

Residuals in seconds of arc

1973 12 20	095	0.3+	0.5+	1995 12 13	358	1.3−	0.4−	1998 04 03	704	1.1−	0.9+
1989 11 06	675	0.7−	0.6+	1995 12 13	358	1.1+	0.3+	1998 04 03	704	1.2−	0.3+
1989 11 06	675	0.8−	0.7+	1998 02 27	566	0.1−	0.4+	1999 02 26	704	0.0	0.5+
1994 07 12	675	0.3−	0.9+	1998 02 27	566	0.5+	0.2+	1999 02 26	704	1.5+	1.3+
1994 07 12	675	0.8−	1.4+	1998 02 27	566	0.3−	0.6+	1999 02 26	704	0.2+	0.5+
1995 11 15	327	0.7−	0.1+	1998 04 02	704	0.3+	0.3+	1999 02 26	704	(2.3+	0.4−)
1995 11 15	327	0.4−	0.5+	1998 04 02	704	0.3+	0.2+	1999 02 26	704	0.3+	1.1−
1995 11 15	327	0.6−	0.3+	1998 04 02	704	0.9+	0.6+	1999 04 21	426	0.0	0.2−
1995 11 15	327	0.6+	0.7+	1998 04 02	704	0.7+	1.5−	1999 04 21	426	0.2−	0.1−

1995 11 21	358	1.8+	1.0−	1998 04 02	704	0.3+	0.5−	1999 04 21	426	0.1+	0.1−
1995 11 21	358	0.5+	0.0	1998 04 02	704	0.3+	0.4+	1999 04 22	426	0.1−	0.4−
1995 11 22	358	0.8−	1.0+	1998 04 02	704	0.3−	0.1−	1999 04 22	426	0.3+	0.3−
1995 11 22	358	1.0−	0.6+	1998 04 03	704	0.6−	0.9+	1999 04 22	426	0.0	0.2−
1995 11 29	358	0.0	1.2−	1998 04 03	704	0.1+	1.1+				
1995 11 29	358	1.1+	0.8+	1998 04 03	704	0.4+	0.5+				

(10584)∗ 1996 GJ$_2$ = 1993 RG$_{18}$

Discovered 1996 Apr. 14 by L. Tesi and A. Boattini at San Marcello Pistoiese.

Id. K. Ichikawa (*MPC* 27317)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	222.36000		(2000.0)		**P**	**Q**	
n	0.26682964	ω	86.43545		+0.02611638	+0.99963708	
a	2.3895347	Ω	185.07521		−0.94426652	+0.02249919	
e	0.2106907	i	4.28316		−0.32814430	+0.01481565	
P	3.69	H	15.2	G	0.15	U	1

Residuals in seconds of arc

1992 02 29	809	(2.4+	2.8+)	1996 04 16	104	0.0	0.6+	1997 10 19	104	0.9−	0.0
1992 03 03	809	0.4+	0.9−	1996 04 16	104	0.2−	0.2+	1997 10 19	104	1.2−	0.1−
1993 09 15	809	0.6+	0.3+	1996 04 18	104	0.5−	0.6+	1998 12 26	104	0.9+	0.5+
1993 09 15	809	1.0−	1.7−	1996 04 18	104	0.0	0.7+	1998 12 26	104	0.0	0.0
1993 09 15	809	1.3−	0.0	1996 04 18	104	0.2+	0.5+	1998 12 26	104	0.1+	0.0
1993 09 19	675	0.6−	0.2−	1997 09 27	104	0.4+	0.9+	1998 12 27	104	(3.5+	0.3+)
1993 09 19	675	1.0−	1.2+	1997 09 27	104	0.3+	1.1+	1998 12 27	104	(2.3+	0.1+)
1993 09 22	809	0.3+	1.7+	1997 09 27	104	0.2−	1.5+	1999 01 14	104	(2.9−	0.1−)
1993 09 22	809	(1.6+	2.2+)	1997 09 29	104	1.4+	0.9+	1999 01 14	104	(3.1−	0.0)
1993 09 22	809	0.5+	0.7+	1997 09 29	104	1.1+	1.1+	1999 01 14	104	(3.6−	0.4+)
1993 09 23	675	0.8+	0.5+	1997 09 29	104	1.3+	0.8+	1999 01 18	104	0.1−	0.5+
1996 04 14	104	1.7+	0.4+	1997 10 05	104	0.4−	0.7−	1999 01 18	104	0.5−	0.6+
1996 04 14	104	0.2+	0.5+	1997 10 05	104	0.3−	0.5−	1999 01 18	104	0.0	0.4+
1996 04 14	104	0.0	1.2+	1997 10 05	104	0.0	0.6−	1999 03 13	104	1.6−	0.3−
1996 04 16	104	0.5+	1.0+	1997 10 19	104	0.8−	0.4−				

(10585)∗ 1996 GD$_{21}$ = 1990 RM$_6$

Discovered 1996 Apr. 13 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 27561)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	260.93797		(2000.0)		**P**	**Q**	
n	0.29911661	ω	87.35537		−0.08005462	+0.99678854	
a	2.2143301	Ω	178.04966		−0.93595247	−0.07449010	
e	0.0886312	i	3.31081		−0.34290558	−0.02939099	
P	3.30	H	15.6	G	0.15	U	2

Residuals in seconds of arc

1990 09 10	809	0.7−	0.2−	1997 10 29	704	1.1+	1.3−	1999 03 16	691	0.7−	0.4+
1990 09 10	809	0.1−	0.5−	1997 10 29	704	0.6−	0.5−	1999 03 18	691	0.1+	0.1+
1990 09 10	809	0.5+	0.3−	1997 10 29	704	1.3−	0.4−	1999 03 18	691	0.1−	0.2+
1990 09 11	809	0.5−	0.4+	1997 10 29	704	0.2−	1.6+	1999 03 18	691	0.0	0.1+
1990 09 11	809	0.0	0.6+	1997 10 30	704	0.5+	0.3+	1999 03 20	704	0.2+	1.3+
1990 09 11	809	0.6+	0.4+	1997 10 30	704	0.1−	0.4−	1999 03 20	704	0.0	1.0−
1996 04 13	691	0.5−	0.2−	1997 10 30	704	0.2+	1.3−	1999 03 20	704	0.6+	1.2−
1996 04 13	691	0.4−	0.4−	1997 10 30	704	0.9+	0.2+	1999 03 20	704	0.5+	0.8−
1996 04 13	691	0.5−	0.4+	1999 02 16	704	1.8−	0.7−	1999 03 20	704	0.8+	0.2−
1996 04 18	809	0.9+	0.7+	1999 02 16	704	0.6+	1.1+	1999 03 23	704	0.4−	0.7−
1996 04 18	809	1.1+	0.3+	1999 02 16	704	1.2−	0.1+	1999 03 23	704	0.9−	1.3+
1996 04 18	809	1.1+	0.0	1999 02 16	704	1.1+	1.5−	1999 03 23	704	0.1+	0.3+
1996 05 20	566	1.0−	0.9−	1999 02 16	704	1.1−	0.3+	1999 03 23	704	1.4+	0.9−
1996 05 20	566	0.3−	1.0−	1999 03 09	691	0.4−	0.1+	1999 04 06	704	0.1−	0.9+
1996 05 20	566	1.0−	0.9−	1999 03 09	691	0.5−	0.1−	1999 04 06	704	1.6+	0.6−
1997 10 10	327	(2.7−	0.1−)	1999 03 09	691	0.4−	0.0	1999 04 06	704	0.2+	0.6+
1997 10 10	327	(2.9−	0.3−)	1999 03 16	691	0.8−	0.5+	1999 04 06	704	0.5+	0.4+
1997 10 10	327	(2.8−	0.1−)	1999 03 16	691	0.9−	0.1+	1999 04 06	704	1.5+	0.3+

(10586)∗ 1996 KY$_4$ = 1975 QQ = 1986 TN$_2$ = 1986 VD$_9$

Discovered 1996 May 22 by E. W. Elst at the European Southern Observatory.

Id. A. Doppler (*MPC* 32953)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	166.26542		(2000.0)		**P**	**Q**	
n	0.27506714	ω	279.56603		+0.99765066	−0.02035449	
a	2.3415867	Ω	81.62089		+0.04522824	+0.91286586	
e	0.2599716	i	3.79109		−0.05145444	+0.40775191	
P	3.58	H	14.1	G	0.15	U	2

Residuals in seconds of arc

1975 08 30	808	0.2−	0.4+	1996 05 21	691	(2.1−	0.7+)	1999 03 23	704	0.2−	0.5−
1975 08 30	808	0.1−	0.6+	1996 05 21	691	1.2−	0.3+	1999 04 12	704	(2.6−	1.6+)
1975 09 02	808	0.7−	0.3+	1996 05 21	691	1.2−	0.3+	1999 04 12	704	0.3+	1.8−
1975 09 02	808	1.0+	0.3−	1996 05 22	809	1.4+	1.0+	1999 04 12	704	0.4+	0.3+
1986 10 07	688	0.2−	1.0−	1996 05 22	809	1.0−	1.5+	1999 04 12	704	1.2−	0.5−
1986 10 07	688	0.3+	1.1−	1996 05 22	809	0.9−	0.2−	1999 04 16	704	1.7−	1.1+
1986 11 04	095	(5.2−	5.8−)	1996 05 24	809	0.4+	1.1−	1999 04 16	704	1.5+	1.3+
1986 11 05	688	0.8+	0.8+	1996 05 24	809	0.4+	0.8−	1999 04 16	704	0.2−	1.3+
1986 11 05	688	0.6−	0.8+	1996 05 24	809	0.9+	1.9−	1999 04 16	704	(1.2+	2.3+)
1996 05 13	691	(2.8+	0.3−)	1999 03 20	704	0.5−	1.1+	1999 04 19	704	0.3+	1.3+
1996 05 13	691	0.7+	0.0	1999 03 20	704	0.1+	0.0	1999 04 19	704	(1.1+	2.1+)
1996 05 13	691	0.2+	0.3+	1999 03 20	704	0.9+	0.9+	1999 04 19	704	0.7−	0.7+
1996 05 19	566	0.2+	0.2+	1999 03 23	704	1.2+	0.9−	1999 04 19	704	0.5+	0.9−
1996 05 19	566	0.3−	0.2+	1999 03 23	704	0.7+	1.1−	1999 04 19	704	1.4−	0.5−
1996 05 19	566	0.0	0.9−	1999 03 23	704	0.3−	0.9−				

(10587)∗ 1996 NF$_3$ = 1975 XD$_5$ = 1994 AN$_3$

Discovered 1996 July 14 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 27921)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	86.60552		(2000.0)		**P**	**Q**	
n	0.22281349	ω	299.06186		+0.13944975	−0.98446515	
a	2.6946874	Ω	142.44594		+0.95846713	+0.10712252	
e	0.0749393	i	10.08084		+0.24878610	+0.13911553	
P	4.42	H	13.2	G	0.15	U	1

Residuals in seconds of arc

1975 12 03	095	0.2−	0.1−	1996 09 08	809	0.2−	0.3+	1999 04 12	704	0.4−	0.1+
1994 01 08	868	0.1+	0.0	1996 09 08	809	0.6−	0.5+	1999 04 12	704	0.6−	0.1+
1994 01 08	868	1.3+	1.5+	1996 09 08	809	0.3−	0.9+	1999 04 12	704	0.0	0.3+
1994 01 14	868	(1.2−	2.2−)	1997 12 29	566	0.5−	0.7+	1999 04 12	704	0.2−	0.8+
1994 01 14	868	0.2−	0.4−	1997 12 29	566	0.3−	0.6+	1999 04 12	704	0.5+	0.5+
1996 07 14	809	0.1−	0.1−	1997 12 29	566	0.4−	0.9+	1999 04 15	704	1.1−	1.1+
1996 07 14	809	0.8−	0.8+	1998 02 18	127	0.1+	2.0+	1999 04 15	704	0.5+	1.5+
1996 07 14	809	1.3−	0.3+	1998 02 18	127	0.2−	1.6+	1999 04 15	704	0.6−	0.6+
1996 07 16	809	(2.9+	0.7−)	1999 03 11	012	0.1+	0.2+	1999 04 15	704	0.5+	0.2+
1996 07 16	809	(2.2+	1.6−)	1999 03 11	012	0.3+	0.2+	1999 04 16	704	0.6−	0.7−
1996 07 16	809	1.7+	1.7−	1999 03 11	012	0.1+	0.5−	1999 04 16	704	1.4−	0.6−
1996 08 08	809	0.6+	0.4+	1999 03 11	012	0.8+	0.3+	1999 04 16	704	1.2+	0.5+
1996 08 08	809	0.1−	0.8+	1999 03 11	012	0.0	0.7+	1999 04 16	704	0.2+	0.1−
1996 08 08	809	0.1+	0.4+	1999 03 20	699	0.0	0.6+	1999 04 16	704	0.6−	0.3+
1996 08 09	809	0.7+	1.6+	1999 03 20	699	0.1−	0.0	1999 04 19	704	0.1−	0.2+
1996 08 09	809	0.6+	1.5+	1999 03 20	699	0.5+	0.1−	1999 04 19	704	0.6+	0.2+
1996 08 09	809	0.4+	1.9+	1999 03 23	703	0.2−	1.1+	1999 04 19	704	0.3−	0.5−
1996 08 20	566	0.5−	0.1+	1999 03 23	703	0.4+	0.0	1999 04 19	704	0.3−	0.7+
1996 08 20	566	0.6−	0.0	1999 03 23	703	0.6+	0.9−	1999 04 19	704	0.5+	0.7+
1996 08 20	566	0.6−	0.1−	1999 03 23	703	0.8+	1.8−				

(10588)∗ 1996 OE = 1995 FV$_6$

Discovered 1996 July 18 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 27722)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	248.20596		(2000.0)		**P**	**Q**	
n	0.26363852	ω	242.53638		+0.49564004	+0.86767176	
a	2.4087782	Ω	57.22738		−0.77979894	+0.46411421	
e	0.0490971	i	2.62831		−0.38243243	+0.17816769	
P	3.74	H	16.0	G	0.15	U	1

Residuals in seconds of arc

1995 02 06	691	0.1+	0.0	1996 07 22	684	0.5−	0.5−	1998 01 18	684	0.1+	0.1−
1995 02 06	691	0.2−	0.1+	1996 07 23	684	0.1+	0.0	1999 03 14	684	0.4+	0.4+
1995 02 06	691	0.1−	0.5+	1996 07 23	684	0.3+	0.3−	1999 03 14	684	0.1−	0.2+
1995 03 23	691	0.1−	0.0	1996 07 23	684	0.8+	0.4−	1999 03 15	684	0.3−	0.8+
1995 03 23	691	0.2+	0.2−	1996 07 25	696	0.5−	0.6+	1999 03 15	684	0.0	0.9+
1995 03 23	691	0.0	0.4−	1996 07 25	696	0.3−	0.9+	1999 04 10	684	0.3+	0.6+
1995 04 04	691	0.0	0.2−	1996 08 06	684	0.1−	0.7+	1999 04 10	684	0.2+	0.3+
1995 04 04	691	0.2+	0.5+	1996 08 06	684	0.2−	0.9+	1999 04 11	684	0.3−	0.5+
1995 04 04	691	0.0	0.2+	1996 08 07	684	0.8−	0.2+	1999 04 11	684	0.4+	0.1+
1996 07 18	684	0.1+	0.2+	1996 08 07	684	0.3−	0.3+	1999 04 14	684	0.4−	0.1−
1996 07 18	684	0.6+	0.0	1997 12 26	684	0.2−	0.1−	1999 04 14	684	0.2−	0.2−
1996 07 19	684	0.2−	0.3−	1997 12 26	684	0.0	0.1−	1999 04 14	684	0.5−	0.3−
1996 07 19	684	0.3+	0.4−	1997 12 27	684	0.6−	0.2−	1999 04 19	704	0.3+	1.8−
1996 07 20	684	0.4+	0.7−	1998 01 17	684	0.5+	0.3−	1999 04 19	704	0.4−	1.7−
1996 07 20	684	0.4+	1.5−	1998 01 17	684	0.1+	0.4−	1999 04 19	704	0.3−	0.4+
1996 07 22	684	0.1+	0.5−	1998 01 18	684	0.4+	0.5−	1999 04 19	704	0.6+	0.4−

(10589)∗ 1996 OM$_2$

Discovered 1996 July 23 by A. Boattini and A. Di Paola at the Astronomical Observatory, Campo Imperatore.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	138.84247		(2000.0)		**P**	**Q**	
n	0.21763563	ω	126.76562		+0.87958499	−0.45580354	
a	2.7372600	Ω	260.71593		+0.38051583	+0.84598227	
e	0.2241114	i	7.93752		+0.28554850	+0.27668960	
P	4.53	H	14.3	G	0.15	U	1

Residuals in seconds of arc

1994 03 16	691	0.6−	0.9−	1996 08 23	658	1.5−	0.8−	1999 03 14	104	1.8+	0.7+
1994 03 16	691	0.1−	0.6−	1996 08 23	658	1.3−	0.6−	1999 03 14	104	0.0	0.1+
1994 03 16	691	0.0	0.4−	1996 08 24	658	0.7−	0.4+	1999 03 21	104	0.7−	0.5+
1996 07 23	599	0.7+	0.1+	1996 08 24	658	0.6−	0.4+	1999 03 21	104	0.1−	0.3+
1996 07 23	599	0.9+	0.6+	1996 08 24	658	0.7−	0.4+	1999 03 21	104	0.2−	1.3+
1996 07 24	599	0.8+	0.1−	1996 09 25	658	0.6+	0.6+	1999 04 05	104	0.6−	0.4−
1996 07 24	599	1.0+	0.1−	1997 10 27	104	0.3+	0.3+	1999 04 05	104	0.7−	0.6−
1996 08 04	104	0.9+	0.8+	1997 10 27	104	0.4+	0.8−	1999 04 05	104	0.3−	0.6−
1996 08 04	104	0.6+	0.0	1997 12 26	566	1.0−	0.4+	1999 04 05	104	0.1+	1.4+
1996 08 14	104	0.2−	0.8+	1997 12 26	566	0.6−	0.4+	1999 04 18	104	0.5+	0.1+
1996 08 14	104	0.1−	0.8+	1997 12 26	566	0.8−	0.6+	1999 04 18	104	0.7+	0.1+
1996 08 14	104	0.3−	0.7+	1998 01 28	104	0.5+	1.8+	1999 04 18	104	0.9+	0.1−
1996 08 14	104	0.4−	0.8+	1998 01 28	104	1.2+	1.2+				
1996 08 23	658	1.3−	0.8−	1998 01 28	104	1.1+	0.7+				

(10590)∗ 1996 OP$_2$ = 1985 TO$_1$

Discovered 1996 July 24 by A. Boattini and A. Di Paola at the Astronomical Observatory, Campo Imperatore.

Id. G. V. Williams (*MPC* 27723)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	230.16021		(2000.0)		**P**	**Q**	
n	0.26459362	ω	152.90588		+0.85486497	+0.51855810	
a	2.4029781	Ω	175.73506		−0.50829860	+0.84374330	
e	0.2417035	i	13.54516		−0.10410776	+0.13854506	
P	3.72	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1985 10 12	688	2.2+	1.2+	1996 09 14	108	1.8+	0.5−	1999 03 23	704	0.5−	0.3−
1985 10 15	688	0.8−	0.8−	1996 09 23	658	1.0−	0.3−	1999 04 05	104	0.6+	0.7−
1985 10 15	688	1.6−	0.9+	1996 09 23	658	0.8−	0.1−	1999 04 05	104	0.9+	0.8−
1996 07 24	599	(2.1−	1.1+)	1996 09 23	658	0.8−	0.2−	1999 04 05	104	0.1+	0.1−
1996 07 24	599	1.4−	0.6+	1998 02 15	104	0.2−	0.4+	1999 04 05	360	0.1+	0.7+
1996 07 24	599	0.9−	0.0	1998 02 15	104	0.2−	0.4+	1999 04 05	360	0.1+	0.8+
1996 07 25	599	0.4−	0.4−	1998 02 15	104	0.4−	0.3+	1999 04 05	360	0.2+	1.0+
1996 07 25	599	0.5−	0.0	1998 02 16	104	0.1+	0.5+	1999 04 05	104	0.9+	0.4−
1996 07 31	610	0.2+	0.4−	1998 02 16	104	0.0	0.2+	1999 04 06	104	0.1+	0.3−
1996 07 31	610	0.2+	0.2−	1999 03 14	104	0.8+	0.3+	1999 04 10	699	1.5+	0.2+
1996 08 01	610	0.3+	0.3−	1999 03 14	104	0.8+	0.1+	1999 04 12	704	1.0+	0.7−
1996 08 01	610	0.5+	0.4+	1999 03 14	104	0.3+	0.6+	1999 04 12	704	0.8−	0.6−
1996 08 01	610	0.5+	0.5+	1999 03 14	104	0.4+	0.7+	1999 04 12	704	0.2+	0.0
1996 08 05	104	0.8−	1.3+	1999 03 19	704	0.2+	0.5−	1999 04 12	704	0.2−	0.6−
1996 08 05	104	1.3−	1.4+	1999 03 19	704	0.2−	1.5−	1999 04 12	704	0.8+	0.7−
1996 08 15	104	0.1+	0.2+	1999 03 19	704	0.3−	0.8+	1999 04 16	704	(2.3+	0.7+)
1996 08 15	104	0.1+	0.6+	1999 03 20	704	1.2−	0.3+	1999 04 16	704	0.2+	1.3+
1996 08 15	104	0.5+	0.5+	1999 03 20	704	0.7+	0.8−	1999 04 16	704	1.3+	0.0
1996 09 06	108	0.4+	0.2−	1999 03 20	704	1.0−	0.8−	1999 04 16	704	0.7−	1.0−
1996 09 06	108	0.1+	0.3+	1999 03 20	704	0.3−	0.0	1999 04 16	704	(5.0−	0.1+)
1996 09 08	104	0.1−	0.3−	1999 03 21	104	1.1−	0.7+	1999 04 19	704	0.7+	0.2−
1996 09 08	104	0.0	0.3−	1999 03 21	104	1.4−	0.2+	1999 04 19	704	0.4−	0.1+
1996 09 08	104	0.1−	0.2−	1999 03 21	104	0.4−	0.2−	1999 04 19	704	0.0	0.6+
1996 09 10	108	0.2+	0.2−	1999 03 23	704	0.4−	0.3−	1999 04 19	704	0.0	1.2+
1996 09 10	108	0.1−	0.8−	1999 03 23	704	1.5−	0.1−	1999 04 19	704	1.4+	1.0+
1996 09 14	108	1.4+	0.7−	1999 03 23	704	0.5−	0.6−				
1996 09 14	108	1.6+	1.1−	1999 03 23	704	1.5−	0.0				

(10591)∗ 1996 PD$_3$

Discovered 1996 Aug. 13 by M. Tombelli and G. Forti at Montelupo.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	148.53705		(2000.0)		**P**	**Q**	
n	0.23171407	ω	308.99170		+0.83833563	−0.54082882	
a	2.6252326	Ω	83.84981		+0.51906048	+0.75344390	
e	0.0139772	i	3.95285		+0.16664213	+0.37393378	
P	4.25	H	14.1	G	0.15	U	1

Residuals in seconds of arc

1995 05 30	691	1.1+	0.7+	1996 09 08	104	0.2−	0.4+	1999 03 23	704	1.4+	0.7−
1995 05 30	691	0.2+	1.7+	1996 09 08	104	0.4+	0.2+	1999 03 23	704	1.4+	0.3−
1995 05 30	691	0.2+	1.4+	1996 09 14	108	2.0+	0.1−	1999 03 23	108	0.3+	0.5−
1996 08 13	108	0.7−	0.3+	1996 09 14	108	1.2+	0.6+	1999 03 23	108	(0.3−	3.0+)
1996 08 13	108	0.2−	0.9−	1996 10 06	104	0.2−	0.2+	1999 03 23	108	0.7+	0.4−
1996 08 13	108	0.1+	1.1−	1996 10 06	104	0.0	0.0	1999 04 04	108	(0.3−	2.3+)
1996 08 13	108	(1.4+	2.9−)	1996 10 06	104	0.0	0.0	1999 04 04	108	1.3−	0.5−
1996 08 14	108	0.7−	1.5−	1997 09 30	104	(0.7−	2.0+)	1999 04 04	108	0.7−	1.7+
1996 08 14	108	(2.5+	0.3+)	1997 09 30	104	0.8−	1.5+	1999 04 05	104	0.3−	0.8+
1996 08 15	108	0.9+	0.8−	1997 09 30	104	0.6−	0.3+	1999 04 07	704	0.0	0.2−
1996 08 15	104	0.3+	0.2−	1997 10 27	104	0.2−	1.0−	1999 04 07	704	0.7−	0.5+
1996 08 15	104	0.1+	0.5−	1997 10 27	104	0.7+	0.6−	1999 04 07	704	0.4−	0.1−
1996 08 15	104	0.4+	0.6−	1997 12 07	108	1.5+	0.6−	1999 04 07	704	0.4−	0.3+
1996 08 15	108	0.1−	0.1+	1997 12 07	108	0.3−	0.0	1999 04 07	704	(0.6−	2.7+)
1996 08 15	108	1.5+	0.2+	1997 12 24	104	0.4−	0.8+	1999 04 12	704	0.4−	0.4−
1996 08 15	108	(0.5+	3.1−)	1997 12 24	104	0.4−	0.4+	1999 04 12	704	0.2+	0.3−
1996 08 16	108	(1.0+	3.2−)	1999 03 19	704	0.6−	1.1−	1999 04 12	704	0.6+	0.3+
1996 08 19	104	0.3−	1.1+	1999 03 19	704	1.2+	0.5+	1999 04 12	704	1.1−	0.8+
1996 08 19	104	0.0	1.3+	1999 03 19	704	0.3+	0.6−	1999 04 12	704	1.1−	0.7−
1996 08 19	104	0.5−	1.0+	1999 03 20	108	(2.3+	0.2+)	1999 04 16	704	0.2+	0.2−
1996 08 23	108	1.3+	1.7−	1999 03 20	108	0.2+	0.6−	1999 04 16	704	0.7−	0.3−
1996 08 24	108	0.1−	1.2−	1999 03 20	108	1.6−	1.0+	1999 04 16	704	0.2+	1.8−
1996 09 04	596	0.2+	0.1+	1999 03 21	108	(2.7+	0.7+)	1999 04 16	704	0.7−	1.5−
1996 09 04	596	0.1−	0.9+	1999 03 21	108	1.0+	0.7−	1999 04 16	704	1.6−	0.3−
1996 09 04	596	0.8−	0.5+	1999 03 21	108	0.2+	1.3−	1999 04 19	104	1.9−	0.6+
1996 09 07	108	(0.7−	3.6−)	1999 03 21	104	1.6+	0.3+	1999 04 19	104	0.7+	0.5−
1996 09 07	108	1.9−	0.3−	1999 03 21	104	1.5+	0.1+	1999 04 19	704	1.3−	1.0+
1996 09 08	104	0.3−	0.1+	1999 03 21	104	1.7+	0.1−	1999 04 19	704	1.4−	0.6+

1996 09 08	104	0.6−	0.4+	1999 03 23	704	1.3+	0.7+	1999 04 19	704	0.5−	0.4+
1996 09 08	104	1.0−	0.2+	1999 03 23	704	2.0+	0.2+	1999 04 19	704	0.9−	0.1−

(10592)∗ 1996 PN_5 = 1992 UR_{10}

Discovered 1996 Aug. 10 at Haleakala by the JPL Near-Earth Asteroid Tracking program.

Id. G. V. Williams (*MPC* 30986)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	165.08748		(2000.0)		**P**	**Q**	
n	0.21634088	ω	272.86907		+0.99282985	+0.11078018	
a	2.7481704	Ω	80.77359		−0.08336532	+0.91092668	
e	0.1019244	i	2.60761		−0.08566863	+0.39741709	
P	4.56	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1992 10 20	675	0.7+	1.0+	1996 08 10	566	0.1−	0.4+	1999 03 20	704	0.5−	0.0
1992 10 23	010	1.6+	0.1+	1996 08 10	566	0.0	0.6+	1999 03 20	704	0.2+	0.4−
1992 10 23	010	0.3−	0.4−	1996 08 19	566	0.4+	0.2−	1999 03 20	704	0.2−	1.2−
1992 11 03	010	0.5+	1.2−	1996 08 19	566	0.1−	0.0	1999 03 23	704	0.5−	1.6−
1992 11 03	010	0.9−	0.2−	1996 08 19	566	0.1−	0.2−	1999 03 23	704	0.1−	1.0−
1992 11 03	010	1.3−	0.4−	1997 10 17	327	0.5−	0.9−	1999 03 23	704	0.0	0.2−
1996 07 21	566	0.3+	0.3−	1997 10 17	327	0.1−	0.3+	1999 03 23	704	0.3−	1.2−
1996 07 21	566	0.2−	0.0	1997 10 17	327	0.2+	0.2+	1999 04 06	704	1.1+	0.0
1996 07 21	566	0.4+	0.6−	1997 10 17	327	0.4+	0.2−	1999 04 06	704	0.6−	0.3+
1996 07 21	566	0.3−	0.4−	1999 02 18	699	0.2−	1.0+	1999 04 06	704	0.7−	0.8+
1996 07 21	566	0.6+	1.1−	1999 02 18	699	0.5−	0.5+	1999 04 06	704	0.9+	0.2+
1996 07 21	566	0.0	0.4−	1999 02 18	699	0.5+	0.4+				
1996 08 10	566	0.1−	0.4+	1999 03 20	704	0.2+	0.4+				

(10593)∗ 1996 QQ_1 = 1991 XH_2

Discovered 1996 Aug. 25 by R. G. Sandness at King City.

Id. B. G. Marsden (*MPC* 27924)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	137.40158		(2000.0)		**P**	**Q**	
n	0.17797678	ω	273.18658		+0.92629354	−0.37514583	
a	3.1301163	Ω	108.84900		+0.35883026	+0.84964768	
e	0.2020064	i	2.13747		+0.11498313	+0.37062708	
P	5.54	H	13.4	G	0.15	U	1

Residuals in seconds of arc

1991 12 01	675	0.2−	0.4−	1996 10 07	763	0.5−	0.1−	1998 01 20	704	0.0	0.7+
1991 12 01	675	1.8+	0.3+	1996 10 07	763	0.4−	0.3−	1998 01 22	704	0.1+	0.1−
1991 12 02	675	0.9−	1.4−	1996 10 07	763	0.0	0.5−	1998 01 22	704	0.2−	0.0
1991 12 02	675	0.4−	0.8−	1996 10 08	809	(1.3+	2.9+)	1998 01 22	704	0.1+	0.5+
1996 08 25	763	0.3+	0.9+	1996 10 08	809	(1.0+	3.0+)	1998 01 22	704	0.2−	0.1+
1996 08 25	763	0.6+	0.9+	1996 10 08	809	1.2+	2.0+	1998 01 23	691	0.3−	0.3+
1996 08 25	763	0.3+	0.7+	1996 10 10	809	(0.9+	3.5+)	1998 01 23	691	0.2−	0.0
1996 08 25	763	0.4+	1.2+	1996 10 10	809	(0.7+	3.2+)	1998 01 23	691	0.2−	0.0
1996 08 25	763	1.2+	1.4+	1996 10 10	809	(0.0	3.3+)	1998 01 26	566	0.1−	0.5+
1996 08 25	763	0.5+	1.3+	1996 10 12	292	(2.6−	0.3−)	1998 01 26	566	0.0	0.2−
1996 08 26	763	1.2+	0.6−	1996 10 12	292	1.4−	0.6−	1998 01 26	566	0.0	0.6+
1996 08 26	763	0.3+	0.3+	1996 10 25	763	0.0	0.5−	1998 01 29	691	0.8−	0.0
1996 08 26	763	0.1+	0.5+	1996 10 26	763	1.3−	0.2+	1998 01 29	691	0.8−	0.1−
1996 08 26	763	0.9+	0.3+	1996 10 26	763	0.8−	0.3−	1998 01 29	691	0.7−	0.0
1996 08 26	763	0.1−	0.5+	1996 11 16	763	0.2−	0.5+	1999 03 15	763	1.2−	0.4−
1996 08 26	763	0.6+	0.4+	1996 11 17	763	1.1−	0.1+	1999 03 15	763	0.5−	0.8−
1996 08 26	763	0.0	0.4+	1996 11 17	763	0.8−	0.9+	1999 03 15	763	0.5−	0.7−
1996 08 26	763	0.3−	0.1+	1997 12 03	763	0.6+	1.0−	1999 03 16	763	0.4−	0.9−
1996 08 30	763	0.1+	0.1+	1997 12 03	763	0.9+	1.0−	1999 03 16	763	0.2+	0.3+
1996 08 30	763	0.5+	0.1+	1997 12 03	763	0.8+	0.9−	1999 03 16	763	0.2−	0.5−
1996 09 02	763	0.1+	0.3+	1997 12 03	763	1.1+	0.1−	1999 03 16	763	0.1+	0.1−
1996 09 05	763	(2.5+	0.2−)	1997 12 21	763	0.7−	0.6−	1999 03 17	763	0.3+	1.1+
1996 09 05	763	(2.4+	0.4−)	1997 12 21	763	0.6−	0.2−	1999 03 17	763	0.9−	0.4−
1996 09 05	763	(2.4+	1.1−)	1997 12 21	763	0.4−	0.0	1999 03 20	704	0.2−	0.0
1996 09 05	763	(2.1+	1.7−)	1997 12 21	763	0.4−	0.8−	1999 03 20	704	1.3+	0.5−
1996 09 05	763	1.9+	1.5−	1997 12 25	411	0.6−	0.0	1999 03 20	704	0.2−	1.1−
1996 09 11	763	0.2+	0.2−	1997 12 25	411	0.5−	0.4−	1999 03 20	704	1.1+	1.3+
1996 09 11	763	0.2−	0.0	1997 12 28	763	0.2−	0.1−	1999 03 23	763	0.2+	0.2+
1996 09 11	763	0.3+	0.0	1997 12 28	763	0.2+	0.4−	1999 03 23	763	0.0	0.0
1996 09 11	763	0.1+	0.3+	1997 12 28	763	0.0	0.3−	1999 03 23	704	0.0	0.4+
1996 09 11	763	0.3−	0.1+	1997 12 28	763	0.5+	0.2−	1999 03 23	704	0.4−	1.2+
1996 09 11	763	0.0	0.1+	1997 12 30	566	0.7−	0.8+	1999 03 23	704	0.3+	0.6+
1996 09 13	763	1.3−	0.3+	1997 12 30	566	0.5−	0.9+	1999 03 23	704	(0.3+	2.4+)
1996 09 13	763	1.0−	0.2+	1997 12 30	566	0.8−	1.2+	1999 04 06	763	0.3+	0.1−
1996 09 13	763	1.0−	0.3+	1998 01 07	699	0.6+	0.6+	1999 04 06	763	0.6−	0.5+
1996 09 13	763	0.7−	0.3+	1998 01 07	699	0.8+	0.7+	1999 04 06	763	0.0	0.1+
1996 10 05	763	0.1−	0.6−	1998 01 07	699	0.4+	0.6+	1999 04 12	704	2.0−	1.8+
1996 10 05	763	0.3−	0.6−	1998 01 20	704	0.8+	0.5−	1999 04 12	704	1.4+	0.6−
1996 10 06	763	0.2−	0.5−	1998 01 20	704	0.4+	0.2+	1999 04 12	704	1.4+	1.4+
1996 10 06	763	0.3−	0.6−	1998 01 20	704	1.3+	0.5+	1999 04 12	704	2.5+	2.9+
1996 10 07	763	0.9−	0.1−	1998 01 20	704	0.4+	0.1+				
1996 10 07	763	0.6−	0.2−	1998 01 20	704	1.2+	1.4+				

(10594)∗ 1996 RE_4 = 1975 TL_5 = 1979 TL_1

Discovered 1996 Sept. 10 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 28305)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	240.00337		(2000.0)		**P**	**Q**	
n	0.23418070	ω	306.30252		+0.88197630	+0.46074652	
a	2.6067656	Ω	26.68494		−0.32962960	+0.75342057	
e	0.1696195	i	12.75483		−0.33684141	+0.46911628	
P	4.21	H	12.7	G	0.15	U	1

Residuals in seconds of arc

1975 10 14	095	0.4−	0.3+	1997 12 13	327	1.1−	0.5+	1998 05 28	327	0.5+	0.7−
1979 10 14	095	0.7+	0.8−	1997 12 13	327	0.4+	0.3+	1998 05 29	327	0.1−	0.1+
1996 09 10	327	0.4−	0.1−	1997 12 21	327	0.3−	0.3+	1998 05 29	327	0.0	0.2+
1996 09 10	327	0.4+	0.1−	1997 12 21	327	0.0	0.5+	1998 05 29	327	0.2−	0.5−
1996 09 10	327	0.7−	0.0	1997 12 21	327	0.0	0.6+	1999 03 25	704	0.6+	0.4+
1996 09 10	327	0.6−	0.1+	1998 01 18	327	0.0	0.1−	1999 03 25	704	0.6−	0.0
1996 09 15	327	0.2−	0.4+	1998 01 18	327	0.1+	0.0	1999 03 25	704	1.4−	0.1+
1996 09 15	327	0.5−	0.4+	1998 01 18	327	0.1+	0.1−	1999 03 25	704	1.7−	0.0
1996 09 15	327	0.1−	0.0	1998 01 18	327	0.2+	0.0	1999 04 15	704	0.5+	0.1−
1996 09 16	327	0.2+	0.5+	1998 02 17	327	0.2−	0.1−	1999 04 15	704	0.4−	0.3+
1996 09 16	327	0.3+	0.2−	1998 02 17	327	0.1−	0.2+	1999 04 15	704	0.4+	0.5−
1996 09 16	327	0.1−	0.0	1998 02 17	327	0.2−	0.2−	1999 04 15	704	0.2+	0.8+
1996 10 05	327	0.5+	0.2−	1998 03 24	327	0.6+	0.8−	1999 04 15	704	0.3−	0.7+
1996 10 05	327	0.4+	0.1+	1998 03 24	327	0.3+	0.1+	1999 04 17	704	0.1+	0.4−
1996 10 05	327	0.5+	0.6−	1998 03 24	327	0.6−	0.6−	1999 04 17	704	0.2+	0.8−
1996 11 15	801	(0.0	2.3−)	1998 03 24	327	0.7+	0.7+	1999 04 17	704	0.2+	0.4−
1996 11 15	801	(0.5−	3.2−)	1998 04 14	327	0.8+	0.3+	1999 04 17	704	0.2−	0.4−
1997 11 25	327	0.6−	0.4−	1998 04 14	327	0.0	0.1+	1999 04 17	704	0.4−	1.2+
1997 11 25	327	0.5−	0.6−	1998 04 14	327	0.4+	0.3+	1999 04 20	704	0.5+	0.0
1997 11 25	327	0.7+	0.8−	1998 04 17	327	1.3−	0.8+	1999 04 20	704	0.6+	1.0−
1997 11 30	327	0.2+	0.2−	1998 04 17	327	0.4+	0.2−	1999 04 20	704	0.4+	0.4−
1997 11 30	327	0.5+	0.2−	1998 04 17	327	0.3+	0.1+	1999 04 20	704	0.4+	0.3+
1997 11 30	327	0.3−	0.2−	1998 05 28	327	0.1−	0.6−	1999 04 20	704	0.0	0.3−
1997 12 13	327	0.7−	0.4+	1998 05 28	327	0.0	0.2+				

(10595)∗ 1996 SS_6 = 1981 US_{16} = 1991 VL_5

Discovered 1996 Sept. 21 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 28596)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	236.99290		(2000.0)			
n	0.19803155	ω	249.99098		+0.73635182	+0.67480115
a	2.9150530	Ω	67.53536		−0.59912661	+0.68415377
e	0.0535554	i	3.05740		−0.31437766	+0.27672554
P	4.98	H	13.2	G	0.15	U 1

Residuals in seconds of arc

1981 10 24	095	0.3−	1.0+	1997 12 01	327	0.6+	0.0	1998 03 23	327	0.4−	0.2+
1991 11 01	675	0.3+	1.6−	1997 12 15	327	0.5+	0.2+	1998 03 23	327	0.1+	0.2−
1991 11 01	675	1.9+	0.8−	1997 12 15	327	0.6+	1.0+	1998 05 28	327	1.2+	1.2−
1991 11 03	691	0.8−	0.5+	1997 12 15	327	0.1+	0.5−	1998 05 28	327	1.6−	0.1+
1991 11 03	691	0.6−	1.2+	1997 12 19	327	0.4−	0.5+	1998 05 28	327	1.7−	1.5−
1991 11 03	691	0.4−	0.5+	1997 12 19	327	0.1+	0.1+	1999 03 20	704	0.7+	0.3+
1991 11 03	675	(1.5−	2.5−)	1997 12 19	327	0.1−	0.3−	1999 03 20	704	0.6+	0.3+
1991 11 03	675	0.3+	1.8−	1997 12 20	327	0.1−	0.6+	1999 03 20	704	1.1+	0.2+
1996 09 21	327	0.3−	0.1−	1997 12 20	327	0.4+	0.3+	1999 03 20	704	0.0	0.0
1996 09 21	327	0.1−	0.1+	1997 12 20	327	0.2−	0.2−	1999 03 23	704	0.9+	0.2−
1996 09 21	327	0.3−	0.3+	1997 12 22	327	0.6+	0.3−	1999 03 23	704	0.4+	0.9+
1996 09 22	327	0.2−	0.1+	1997 12 22	327	0.1+	0.0	1999 03 23	704	0.2+	0.5+
1996 09 22	327	0.4−	0.9+	1997 12 22	327	0.3+	0.2−	1999 03 23	704	0.1−	1.0−
1996 09 22	327	0.0	0.2+	1997 12 24	327	0.1−	0.2+	1999 04 07	704	0.3+	0.3+
1996 11 20	327	0.3+	0.5+	1997 12 24	327	1.0−	0.4−	1999 04 07	704	0.2+	0.5+
1996 11 20	327	0.2+	0.4+	1997 12 24	327	0.5+	1.2−	1999 04 07	704	0.7−	1.0+
1996 11 20	327	0.8+	0.3+	1997 12 29	566	0.4−	0.5+	1999 04 07	704	1.0−	0.8+
1996 11 27	327	0.2−	0.8+	1997 12 29	566	0.2−	0.7+	1999 04 12	704	0.4+	0.3−
1996 11 27	327	0.1+	0.6+	1997 12 29	566	0.5−	0.9+	1999 04 12	704	0.0	0.7+
1996 11 27	327	0.7−	0.8+	1998 01 08	699	0.8+	1.2−	1999 04 12	704	0.5−	1.2+
1996 11 27	327	0.6−	1.1+	1998 01 08	699	0.8+	0.8−	1999 04 12	704	0.3−	1.2+
1996 11 27	327	0.1+	0.3+	1998 01 08	699	0.8+	0.0	1999 04 12	704	0.0	1.1+
1996 11 27	327	0.3−	0.9+	1998 01 17	327	0.5−	0.0	1999 04 15	704	0.8−	1.7+
1996 11 27	327	1.2−	0.6+	1998 01 17	327	0.7−	0.3+	1999 04 15	704	0.2+	0.4+
1996 11 27	327	0.2−	0.5+	1998 01 17	327	1.2−	0.2+	1999 04 15	704	(0.1−	2.3+)
1996 11 29	327	0.1−	0.8+	1998 01 25	566	0.7−	0.6−	1999 04 15	704	0.8+	1.8−
1996 11 29	327	0.9−	0.4+	1998 01 25	566	0.9−	0.7−	1999 04 16	704	0.4+	0.2+
1996 11 29	327	0.9−	1.1+	1998 01 25	566	0.5−	0.4−	1999 04 16	704	1.2+	0.7+
1997 01 29	327	0.8+	0.3+	1998 02 01	327	0.9−	0.2+	1999 04 16	704	0.2−	0.1−
1997 01 29	327	0.2+	0.1+	1998 02 01	327	0.5+	0.1+	1999 04 16	704	0.3−	0.8+
1997 01 29	327	0.5−	0.0	1998 02 01	327	1.3+	0.3−	1999 04 16	704	1.4+	0.5+
1997 11 25	327	0.1+	0.0	1998 03 01	327	0.1−	0.0	1999 04 19	704	0.1+	1.0−
1997 11 25	327	0.8+	0.4−	1998 03 01	327	0.1+	0.3−	1999 04 19	704	0.7−	0.5−
1997 11 25	327	0.1+	0.2−	1998 03 01	327	0.1+	0.1−	1999 04 19	704	0.1−	0.0
1997 12 01	327	0.6+	0.2−	1998 03 23	327	0.2−	0.3+	1999 04 19	704	0.0	0.8+
1997 12 01	327	0.9+	0.2+	1998 03 23	327	0.5−	0.1−	1999 04 19	704	0.4+	0.7+

(10596)∗ 1996 TS = 1982 XR

Discovered 1996 Oct. 4 by D. di Cicco at Sudbury.

Id. G. V. Williams (*MPC* 28306)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	257.26540		(2000.0)			
n	0.20494295	ω	75.68625		+0.23914523	+0.97090118
a	2.8491417	Ω	208.15956		−0.90088577	+0.21699507
e	0.0193505	i	1.53804		−0.36223526	+0.10131156
P	4.81	H	13.7	G	0.15	U 1

Residuals in seconds of arc

1982 12 13	381	0.7+	0.4+	1996 11 06	817	0.4+	0.2+	1999 04 06	691	1.1+	0.2+
1982 12 13	381	0.3+	0.5+	1996 11 06	817	0.8+	0.2−	1999 04 06	691	0.6+	0.2+
1982 12 14	381	0.6+	0.7−	1996 11 06	817	0.7−	0.6−	1999 04 06	691	0.1+	0.3+
1982 12 14	381	1.3−	1.3−	1996 11 06	709	0.5−	0.6+	1999 04 10	699	0.2−	1.8+
1991 09 13	691	0.0	0.2−	1996 11 06	709	0.3−	0.4+	1999 04 10	699	0.5+	0.4+
1991 09 13	691	0.1+	0.1−	1996 11 06	709	0.4−	0.4+	1999 04 10	699	0.1+	1.1+
1991 09 13	691	0.1+	0.1−	1996 11 06	709	0.5−	0.4+	1999 04 14	704	0.2−	0.0
1996 10 04	817	0.3−	0.1−	1999 02 18	120	(3.8+	0.7−)	1999 04 14	704	(0.2+	2.8−)
1996 10 04	817	0.1−	0.4+	1999 02 19	120	0.8+	1.7+	1999 04 14	704	0.7−	1.9−
1996 10 04	817	0.2−	0.4+	1999 02 24	120	0.5−	0.5+	1999 04 14	704	1.6−	1.1−
1996 10 04	817	0.2−	0.6+	1999 02 24	120	1.2−	0.3+	1999 04 15	704	0.5+	0.7−
1996 10 05	817	0.5−	0.3+	1999 03 19	704	(1.2+	2.7+)	1999 04 15	704	0.3−	0.2+
1996 10 05	817	0.1−	0.5+	1999 03 19	704	0.8−	0.3−	1999 04 15	704	0.3−	1.3−
1996 10 05	817	0.4−	0.3+	1999 03 19	704	1.9+	1.0+	1999 04 15	691	0.4−	0.4+
1996 10 05	817	0.3−	0.4+	1999 03 19	704	0.1+	0.4+	1999 04 15	704	(1.0+	2.3−)
1996 10 06	817	0.4+	0.5+	1999 03 19	704	0.1+	0.6−	1999 04 15	704	0.8−	0.2−
1996 10 06	817	0.0	0.4+	1999 03 20	704	1.5+	0.1−	1999 04 15	691	0.5−	0.2+
1996 10 06	817	0.3−	0.4+	1999 03 20	704	(0.5+	2.3+)	1999 04 15	691	0.5−	0.0
1996 10 08	817	0.1+	0.4+	1999 03 20	704	0.7−	0.3+	1999 04 17	704	0.8+	0.4−
1996 10 08	817	0.4−	0.0	1999 03 20	704	0.2+	0.7+	1999 04 17	704	0.8+	0.0
1996 10 12	817	0.4+	0.2−	1999 03 20	704	1.3+	0.0	1999 04 17	704	0.4−	1.5−
1996 10 12	817	0.0	0.1+	1999 03 23	704	0.2+	0.4+	1999 04 17	704	0.7−	0.1−
1996 11 05	817	0.4+	0.9+	1999 03 23	704	0.1−	0.3+	1999 04 17	704	0.1+	1.1+
1996 11 05	817	0.3−	0.5−	1999 03 23	704	0.3+	1.1+				
1996 11 05	817	1.0+	0.6−	1999 03 23	704	0.3+	0.0				

(10597)∗ 1996 TR_{10} = 1951 KX = 1981 SB_1 = 1991 DB_1

Discovered 1996 Oct. 9 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Ichikawa (*MPC* 29116)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	267.17653		(2000.0)			
n	0.26554343	ω	144.16775		+0.57286971	+0.81734759
a	2.3972446	Ω	160.54993		−0.78837257	+0.56994310
e	0.2539833	i	10.61610		−0.22425205	+0.08430768
P	3.71	H	13.4	G	0.15	U 1

Residuals in seconds of arc

1951 05 28	711	(6.3−	8.1−)Y	1996 10 16	399	0.1+	0.2+	1999 04 12	704	0.1−	0.3+
1981 09 26	688	0.0	2.6−	1996 10 16	399	0.7−	0.6−	1999 04 12	704	0.6−	0.3−
1981 09 26	688	1.4+	2.1−	1998 01 27	566	1.1+	0.7−	1999 04 15	704	0.6−	0.9−
1981 10 04	688	(1.0+	3.6−)	1998 01 27	566	0.0	1.1−	1999 04 15	704	0.2−	0.8−
1981 10 04	688	(0.4+	3.2−)	1998 01 27	566	0.7+	1.3−	1999 04 15	704	0.4−	0.4−
1991 02 10	675	0.0	0.4−	1998 02 01	689	0.5+	1.1+	1999 04 15	704	0.9−	1.5−
1991 02 10	675	1.0−	1.5−	1998 03 04	691	0.4−	0.5−	1999 04 15	704	0.9−	0.1+
1991 02 12	511	(0.3+	2.3−)	1998 03 04	691	0.1−	0.1+	1999 04 16	704	0.5+	1.0−
1991 02 12	511	(0.3−	2.4+)	1998 03 04	691	0.3−	0.4−	1999 04 16	704	0.4−	0.3−
1991 02 17	046	(2.8−	0.6−)	1999 03 20	699	0.3+	0.3−	1999 04 16	704	0.5−	0.2−
1991 02 17	046	(0.9+	4.6−)	1999 03 20	699	0.0	0.0	1999 04 16	704	0.1+	0.1−
1991 02 19	046	1.6−	1.1+	1999 03 20	699	0.4+	0.7−	1999 04 16	704	1.2−	0.2−
1991 02 19	046	(2.3+	5.2+)	1999 03 24	699	0.1−	0.4−	1999 04 19	704	0.5+	0.4+
1995 03 27	675	0.9−	0.7−	1999 03 24	699	0.5+	0.6−	1999 04 19	704	0.7+	1.3+
1996 10 09	399	0.2+	0.5−	1999 03 24	699	0.4+	0.6−	1999 04 19	704	0.7+	1.0+
1996 10 09	399	0.2+	1.3−	1999 04 12	704	0.4−	1.3−	1999 04 19	704	1.5+	0.5+
1996 10 10	399	0.1+	0.5−	1999 04 12	704	0.4−	1.4−	1999 04 19	704	1.0+	0.3+
1996 10 10	399	0.5+	1.7−	1999 04 12	704	0.1−	1.2−				

(10598)∗ 1996 TT_{11} = 1992 VB

Discovered 1996 Oct. 13 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 28081)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

					P	Q
M	214.80636		(2000.0)			
n	0.23358882	ω	150.14797		+0.98299279	+0.18341679
a	2.6111672	Ω	199.28958		−0.17349166	+0.91118925
e	0.1516464	i	1.58466		−0.06021475	+0.36890709
P	4.22	H	14.4	G	0.15	U 1

Residuals in seconds of arc

1992 10 28	400	0.5+	0.6+	1996 11 01	684	0.2+	0.1+	1999 03 19	684	0.5−	0.1+
1992 10 28	400	0.1−	1.4+	1996 11 01	684	0.0	0.0	1999 04 15	704	1.4+	0.5+
1992 10 28	399	1.0−	0.2−	1996 11 01	684	0.2+	0.1+	1999 04 15	704	1.7+	0.3+
1992 10 28	399	0.6−	0.4+	1996 11 10	684	0.1+	0.3+	1999 04 15	704	0.1+	0.5−
1992 11 02	399	0.6+	1.9+	1996 11 10	684	0.1+	0.4+	1999 04 15	684	0.3+	0.3+
1992 11 02	399	1.1−	0.3+	1996 12 01	684	0.0	0.0	1999 04 15	684	0.3+	0.3+
1992 11 27	675	0.4−	0.2−	1996 12 01	684	0.0	0.2+	1999 04 15	704	0.6+	1.0−
1992 11 27	675	1.2+	0.4−	1998 01 19	684	0.3+	0.7−	1999 04 16	684	0.3−	0.2+

1996 10 13	684	0.3+	0.1+	1998 01 19	684	0.3+	0.6−	1999 04 16	684	0.3−	0.1−
1996 10 13	684	0.3+	0.1−	1998 01 22	684	0.7+	0.4−	1999 04 17	704	1.3+	0.8+
1996 10 14	684	0.1−	0.1−	1998 01 22	684	0.7+	0.7−	1999 04 17	704	0.4−	1.0+
1996 10 14	684	0.0	0.1−	1998 02 26	684	0.4−	0.2+	1999 04 17	704	0.3+	0.5+
1996 10 15	684	0.1−	0.2+	1998 02 26	684	0.3−	0.3+	1999 04 17	704	1.6+	0.1+
1996 10 15	684	0.1−	0.2+	1998 02 27	684	0.6−	0.7+	1999 04 18	704	1.2−	0.3+
1996 10 15	684	0.1−	0.1+	1998 02 27	684	1.2−	0.2+	1999 04 18	704	(0.8−	2.9+)
1996 10 16	684	0.3−	0.4−	1999 03 18	684	0.8−	0.1−	1999 04 18	704	1.8−	1.3+
1996 10 16	684	0.3−	0.3−	1999 03 18	684	0.8−	0.1−				
1996 10 16	684	0.2−	0.2−	1999 03 19	684	0.5−	0.3+				

(10599)∗ 1996 TK$_{15}$ = 1975 XM$_6$

Discovered 1996 Oct. 9 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 28309)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	231.51422		(2000.0)		**P**	**Q**	
n	0.23270754	ω	132.92890		+0.85010942	+0.52276311	
a	2.6177555	Ω	195.89439		−0.52488711	+0.83141525	
e	0.1878850	i	13.40772		−0.04251467	+0.18832793	
P	4.24	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1975 12 06	809	0.3+	0.1−	1997 01 04	327	0.1+	0.6+	1999 04 07	704	1.0−	0.2−
1975 12 06	809	0.7+	0.2−	1999 03 14	691	0.4+	0.1+	1999 04 07	704	0.9−	0.1+
1975 12 07	809	0.2−	0.9−	1999 03 14	691	0.4+	0.2+	1999 04 07	704	0.5−	0.2+
1975 12 07	809	0.6−	0.7−	1999 03 14	691	(2.1−	1.3+)	1999 04 07	704	0.4−	0.2−
1992 10 26	675	0.5−	0.4+	1999 03 19	704	0.2−	0.5+	1999 04 07	704	1.2−	0.3−
1992 10 26	675	0.6+	0.0	1999 03 19	704	0.0	1.7−	1999 04 12	704	0.2+	0.2−
1992 11 27	675	0.1+	0.1+	1999 03 19	704	0.1−	0.4−	1999 04 12	704	0.7+	0.4+
1992 11 27	675	0.6−	0.5+	1999 03 19	704	0.3+	1.2−	1999 04 12	704	0.2+	0.5−
1996 09 13	566	1.0+	0.2+	1999 03 20	704	0.0	0.2+	1999 04 12	704	0.2+	0.3+
1996 09 13	566	1.0+	0.4+	1999 03 20	704	0.3+	0.9+	1999 04 12	704	0.8+	0.1−
1996 09 13	566	1.0+	0.5+	1999 03 20	704	0.9+	1.0−	1999 04 16	704	0.8−	0.2−
1996 10 09	399	0.2+	1.1−	1999 03 23	691	(0.6+	2.5+)	1999 04 16	704	1.1−	0.6−
1996 10 09	399	0.3−	1.1−	1999 03 23	691	1.6+	0.4+	1999 04 16	704	1.0−	0.2+
1996 10 10	399	0.0	0.6−	1999 03 23	704	0.9+	0.3−	1999 04 16	704	0.7−	0.7−
1996 10 10	399	0.5+	0.5−	1999 03 23	704	0.6+	1.1+	1999 04 16	704	(2.5−	0.2+)
1996 10 16	399	0.5−	1.1−	1999 03 23	691	0.8+	0.4+	1999 04 19	704	0.1−	1.2−
1996 10 16	399	1.0−	1.1−	1999 03 23	704	0.3+	0.6+	1999 04 19	704	0.4−	1.2−
1996 11 06	399	1.7−	0.6+	1999 03 23	704	0.0	0.5−	1999 04 19	704	0.3+	0.7−
1996 11 06	399	(2.3−	1.6−)	1999 03 23	704	0.9+	0.9−	1999 04 19	704	0.4−	0.4+
1997 01 04	327	0.2−	0.1+	1999 03 24	691	0.0	0.6+	1999 04 19	704	0.3−	0.0
1997 01 04	327	1.1+	0.5+	1999 03 24	691	0.4−	0.7+				
1997 01 04	327	0.1+	0.4+	1999 03 24	691	0.4−	0.9+				

(10600)∗ 1996 TK$_{48}$ = 1975 RC$_2$

Discovered 1996 Oct. 9 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 29631)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	231.32873		(2000.0)		**P**	**Q**	
n	0.23791612	ω	187.39537		+0.88649397	+0.46203507	
a	2.5794086	Ω	145.04964		−0.42224096	+0.83025130	
e	0.2244331	i	2.55474		−0.18931721	+0.31177936	
P	4.14	H	13.9	G	0.15	U	2

Residuals in seconds of arc

1975 09 04	808	0.2−	0.2−	1996 12 12	327	0.7+	0.7+	1999 04 13	426	1.2−	1.3+
1975 09 04	808	0.2+	0.8−	1998 01 26	691	0.8−	0.9−	1999 04 13	426	0.1−	0.4+
1992 10 21	675	1.5+	1.2−	1998 01 26	691	0.9−	0.3+	1999 04 14	426	0.5−	0.4+
1992 10 21	675	1.1+	0.3−	1999 03 23	704	0.6−	0.6+	1999 04 14	426	0.3−	0.3+
1992 11 27	675	0.3+	0.2+	1999 03 23	704	(0.4−	2.4+)	1999 04 14	426	0.6−	0.9+
1992 11 27	675	0.6−	0.4+	1999 03 23	704	(0.2−	2.6+)	1999 04 16	704	1.1+	1.5−
1992 11 28	675	0.2−	0.1−	1999 03 23	704	0.2−	0.2+	1999 04 16	704	1.0+	1.0−
1992 11 28	675	0.1+	0.4−	1999 04 05	120	0.8−	1.7−	1999 04 16	704	1.0−	0.6−
1996 10 09	399	0.6+	0.8+	1999 04 05	120	0.2−	0.2+	1999 04 16	704	0.6−	0.3−
1996 10 09	399	0.1−	0.7+	1999 04 07	704	0.3+	0.4+	1999 04 19	704	0.4+	0.1+
1996 10 10	399	1.6−	0.5−	1999 04 07	704	0.8+	0.9−	1999 04 19	704	0.3+	0.0
1996 10 10	399	1.9−	0.5−	1999 04 07	704	1.5+	0.4−	1999 04 19	704	0.4+	1.6+
1996 10 16	399	0.7+	0.2+	1999 04 07	704	(0.0	2.4−)	1999 04 19	704	1.7+	1.4−
1996 10 16	399	0.0	0.3−	1999 04 12	704	0.7+	0.3−	1999 04 19	426	0.5+	0.7+
1996 11 06	399	1.5−	1.1+	1999 04 12	704	0.9−	1.3+	1999 04 19	426	0.1+	0.4+
1996 11 06	399	(3.3−	1.6−)	1999 04 12	704	(2.2−	1.4−)	1999 04 19	426	0.5−	0.6+
1996 12 12	327	0.6+	0.6+	1999 04 12	704	(1.9−	2.7−)				
1996 12 12	327	1.1+	0.8+	1999 04 13	426	0.1−	0.1+				

(10601)∗ 1996 UC = 1974 VW = 1985 UZ$_3$ = 1985 VS$_3$ = 1987 BO = 1987 BW$_3$

Discovered 1996 Oct. 16 by A. Nakamura at Kuma Kogen.

Id. G. V. Williams (*MPC* 28310), N. S. Chernykh (d, *ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	150.98778		(2000.0)		**P**	**Q**	
n	0.17626688	ω	273.41223		+0.99242086	−0.11126829	
a	3.1503266	Ω	92.98088		+0.12283366	+0.91054393	
e	0.2477613	i	2.99370		−0.00356762	+0.39815716	
P	5.59	H	13.3	G	0.15	U	1

Residuals in seconds of arc

1974 11 12	095	0.4−	1.3−	1997 12 04	360	0.2+	0.9−	1998 02 21	360	0.1+	0.4−
1985 10 21	095	0.9+	1.4+	1997 12 24	360	0.7+	0.2+	1999 03 13	683	0.0	0.0
1985 11 11	095	(0.7−	2.6+)	1997 12 24	360	0.5+	0.1+	1999 03 13	683	0.4−	0.2+
1987 01 26	033	0.0	1.0+	1997 12 27	360	0.4+	0.3+	1999 03 13	683	0.4−	0.0
1987 01 27	033	0.8+	1.2+	1997 12 27	360	0.2+	0.2+	1999 03 16	360	1.1+	0.1+
1987 01 28	033	0.4+	0.9+	1997 12 27	360	0.4+	0.1+	1999 03 16	360	0.1+	0.1−
1996 10 16	360	0.1+	0.3−	1998 01 22	704	0.2+	0.9+	1999 03 20	704	(0.1−	2.4+)
1996 10 16	360	0.1+	0.2−	1998 01 22	704	0.9+	0.9+	1999 03 20	704	0.4+	0.1+
1996 10 17	360	0.2−	0.0	1998 01 22	704	1.1−	0.2+	1999 03 20	704	0.7−	1.4+
1996 10 17	360	0.4−	0.2+	1998 01 22	704	0.1−	1.3−	1999 03 20	704	1.2+	0.3−
1996 10 17	360	0.2−	0.0	1998 01 23	704	1.7−	0.8+	1999 03 20	704	1.1−	0.2−
1996 10 18	824	0.1−	0.2−	1998 01 23	704	0.1−	0.6−	1999 03 22	704	1.9−	1.3−
1996 10 18	824	0.0	0.2−	1998 01 23	704	0.4−	0.3−	1999 03 22	704	0.2−	0.2+
1996 10 18	824	0.1+	0.1−	1998 01 23	704	0.2−	0.0	1999 03 22	704	(0.7−	2.2+)
1996 10 18	824	0.0	0.3−	1998 01 23	704	0.6−	0.5−	1999 03 22	704	0.8+	0.7+
1996 10 19	360	0.1+	0.0	1998 01 24	704	1.1+	0.3−	1999 03 22	704	0.6+	1.2+
1996 10 19	360	0.0	0.1+	1998 01 24	704	0.3+	1.0−	1999 03 22	704	(2.3+	0.3−)
1996 10 19	360	0.1+	0.0	1998 01 24	704	0.4−	0.4−	1999 03 22	704	(2.0−	2.9+)
1996 10 27	824	0.2−	0.2+	1998 01 24	704	0.3−	0.7−	1999 03 22	704	1.3−	0.2+
1996 10 27	824	0.1−	0.3+	1998 01 25	704	0.5−	0.1−	1999 03 22	704	1.3−	1.0+
1996 10 27	824	0.1−	0.3+	1998 01 25	704	1.0−	0.5−	1999 03 22	360	0.6+	0.2+
1996 10 27	824	0.1−	0.3+	1998 01 25	704	1.2−	0.8−	1999 03 22	360	0.4+	0.4+
1996 11 06	360	0.5−	0.3+	1998 01 25	704	0.6−	0.7−	1999 03 23	704	0.2−	0.9−
1996 11 06	360	0.4−	0.5+	1998 01 27	360	0.5+	0.0	1999 03 23	704	0.1+	0.1−
1996 11 13	360	0.0	0.0	1998 01 27	360	0.1+	0.4+	1999 03 23	704	0.7+	0.1+
1996 11 13	360	0.1+	0.2+	1998 01 28	566	0.2−	0.5+	1999 03 23	704	0.6+	0.8−
1996 11 28	360	0.2+	0.0	1998 01 28	566	0.3+	0.4+	1999 04 05	360	0.5+	0.3+
1996 11 28	360	0.1+	0.3+	1998 01 28	566	0.1−	0.5+	1999 04 05	360	1.1+	0.4+
1996 12 06	360	0.0	0.2+	1998 02 15	360	0.6+	0.0	1999 04 07	360	0.1−	0.4−
1996 12 06	360	0.1+	0.2+	1998 02 15	360	0.3+	0.2−	1999 04 07	360	0.5+	0.5−
1997 12 04	360	0.1+	0.6−	1998 02 21	360	0.5+	0.1+				

(10602)∗ 1996 UG$_3$ = 1961 UR = 1987 RM$_3$

Discovered 1996 Oct. 16 by S. Otomo at Kiyosato.

Id. S. Nakano (*MPC* 30986)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	243.34502		(2000.0)		**P**	**Q**	
n	0.22574346	ω	286.51737		+0.68712234	+0.71851783	
a	2.6713201	Ω	27.84429		−0.54707266	+0.60920434	
e	0.1995024	i	13.32909		−0.47809454	+0.33556252	
P	4.37	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1961 10 18	760	1.3−	1.4−	1998 01 02	683	0.1−	0.2+	1999 04 05	650	1.1−	1.9+
1961 10 18	760	1.5+	1.0+	1998 01 02	683	0.4−	0.1+	1999 04 05	650	0.9+	0.6+
1987 09 03	095	(4.5+	0.6+)	1998 03 24	557	0.6−	0.6−	1999 04 10	699	1.0+	1.2+
1996 10 16	894	1.1+	0.5−	1998 03 24	557	0.6−	0.5+	1999 04 10	699	0.5+	2.0+
1996 10 16	894	0.2+	0.8−	1998 03 30	557	0.1−	0.0	1999 04 10	699	0.8+	1.6+
1996 10 18	566	0.1+	0.8−	1998 03 30	557	0.1−	0.3−	1999 04 12	704	1.0+	0.4+
1996 10 18	566	0.0	0.7−	1999 03 19	704	0.2+	0.9−	1999 04 12	704	0.7+	0.3−
1996 10 18	566	0.2+	0.6−	1999 03 19	704	0.5−	1.9−	1999 04 12	704	0.4−	0.8−
1996 10 20	894	0.5−	0.1+	1999 03 19	704	0.5−	0.8+	1999 04 12	704	0.4−	0.4+
1996 10 20	894	0.5+	1.2+	1999 03 19	704	0.9−	1.0−	1999 04 12	704	0.7+	0.1−
1996 11 07	894	0.2−	0.8+	1999 03 20	704	0.3−	0.1−	1999 04 15	704	0.2+	0.8−
1996 11 07	894	1.8−	0.6−	1999 03 20	704	0.8−	0.1−	1999 04 15	704	0.2+	0.6−
1996 11 13	894	(2.9−	0.6−)	1999 03 20	704	1.1−	0.1−	1999 04 15	704	1.4+	1.5−
1996 11 13	894	(3.5−	1.0+)	1999 03 20	704	1.4−	0.7−	1999 04 15	704	1.6−	0.1−
1997 01 25	327	0.7+	0.2+	1999 03 20	704	0.9−	0.7−	1999 04 15	704	0.1+	0.7−
1997 01 25	327	0.6+	0.2+	1999 03 23	703	1.3−	1.8+	1999 04 16	704	1.7+	0.7−
1997 01 25	327	0.4+	0.2+	1999 03 23	703	1.2−	0.9+	1999 04 16	704	1.1+	1.6−
1997 01 27	327	0.3+	0.4+	1999 03 23	703	0.9−	0.8+	1999 04 16	704	1.9+	1.1−
1997 01 27	327	0.3+	0.0	1999 03 23	703	0.6−	0.2−	1999 04 16	704	1.3+	0.9−
1997 01 27	327	0.4+	0.2+	1999 03 23	704	0.3−	0.2−	1999 04 16	704	0.4+	1.9−
1997 12 31	683	(2.5+	0.3−)	1999 03 23	704	0.3−	1.0−	1999 04 19	704	0.2+	0.0
1997 12 31	683	0.3+	0.3+	1999 03 23	704	0.3−	0.4+	1999 04 19	704	0.2−	0.0
1997 12 31	683	0.1−	0.5+	1999 03 23	704	0.4−	0.1+	1999 04 19	704	0.2+	0.2+
1997 12 31	683	1.7+	0.7+	1999 03 25	650	0.4+	0.6+	1999 04 19	704	0.7−	0.8+
1998 01 02	683	0.5−	0.0	1999 03 25	650	0.4+	0.9+	1999 04 19	704	0.7−	0.4+

(10603)∗ 1996 UF$_4$ = 1982 VD$_8$ = 1991 TT$_{14}$

Discovered 1996 Oct. 29 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. T. B. Spahr (*MPC* 30670), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	193.36430		(2000.0)		**P**	**Q**	
n	0.20858499	ω	315.35062		+0.99835267	−0.00080973	
a	2.8158792	Ω	44.79115		+0.02655316	+0.89289714	
e	0.1078401	i	4.67080		−0.05086139	+0.45025998	
P	4.73	H	13.7	G	0.15	U	1

Residuals in seconds of arc

1982 11 09	095	0.1−	1.0+	1996 11 10	046	0.0	0.4+	1999 03 20	704	0.8+	1.5+
1991 10 02	691	0.7−	0.5+	1996 11 10	046	0.8−	0.8+	1999 03 20	704	(0.8+	2.7+)
1991 10 02	691	0.6−	0.7+	1996 11 10	046	0.2−	0.2+	1999 03 20	704	1.9−	0.2+
1991 10 02	691	0.3−	0.7+	1996 11 10	046	0.2−	0.8+	1999 03 23	704	(2.9+	1.8+)
1996 10 29	327	0.9+	0.6−	1997 11 25	327	0.2−	0.2+	1999 03 23	704	1.3+	1.4+
1996 10 29	327	0.7+	0.1+	1997 11 25	327	0.7−	0.2−	1999 03 23	704	0.6+	0.9+
1996 10 29	327	0.9+	0.9−	1997 11 25	327	0.5−	0.1+	1999 04 07	704	0.6+	0.4+
1996 10 29	327	0.9+	0.2−	1997 12 23	327	0.1−	0.3+	1999 04 07	704	0.9+	0.4+
1996 11 01	327	0.1+	0.7+	1997 12 23	327	0.5+	0.1+	1999 04 07	704	0.0	0.9+
1996 11 01	327	0.3−	0.4+	1997 12 23	327	0.9−	0.3+	1999 04 07	704	0.8+	1.9+
1996 11 01	327	0.5−	0.5+	1997 12 29	688	0.3+	0.2+	1999 04 12	704	0.9+	1.6+
1996 11 02	327	0.3−	0.2+	1997 12 29	688	0.2+	0.5+	1999 04 12	704	1.2+	0.6−
1996 11 02	327	1.1−	0.9+	1997 12 29	327	0.5+	0.0	1999 04 12	704	1.7+	0.6−
1996 11 02	327	0.1−	0.4+	1997 12 29	327	0.3−	0.4−	1999 04 12	704	0.2−	0.3−
1996 11 02	327	1.0−	0.5+	1997 12 29	327	0.2−	0.1−	1999 04 12	704	0.7+	1.3+
1996 11 09	327	0.3−	0.7+	1998 02 06	327	0.0	0.2+	1999 04 16	704	0.0	1.6+
1996 11 09	327	0.3+	0.1+	1998 02 06	327	0.1−	0.1+	1999 04 16	704	0.5−	0.7−
1996 11 09	327	0.4−	0.8+	1998 02 06	327	0.1+	0.1+	1999 04 16	704	1.8−	1.2−
1996 11 09	046	0.2−	0.3+	1998 02 24	327	0.1+	0.6−	1999 04 16	704	1.4−	0.9−
1996 11 09	046	0.3−	0.5+	1998 02 24	327	0.6−	0.4−	1999 04 19	704	0.0	0.3−
1996 11 09	046	0.3−	0.4+	1998 02 24	327	0.0	0.5−	1999 04 19	704	0.6−	0.8+
1996 11 09	046	0.3−	0.4+	1998 03 01	327	0.6+	0.3−	1999 04 19	704	1.6+	2.0+
1996 11 09	046	0.3−	0.3+	1998 03 01	327	0.1+	0.5−	1999 04 19	704	0.4+	1.3+
1996 11 09	046	0.4−	0.3+	1998 03 01	327	0.5+	0.3+	1999 04 19	704	1.3+	0.3−
1996 11 09	046	0.4−	0.4+	1999 03 20	704	0.4−	1.2+				

(10604)∗ 1996 VJ

Discovered 1996 Nov. 3 by T. Urata at the Nihondaira Observatory.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	133.46302		(2000.0)		**P**	**Q**	
n	0.17366041	ω	355.58477		+0.68195150	−0.71582576	
a	3.1817704	Ω	51.33099		+0.67679436	+0.53978920	
e	0.1037209	i	11.08531		+0.27729323	+0.44296850	
P	5.68	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1992 02 05	675	0.1−	0.0	1996 11 30	385	0.3−	0.6−	1999 04 10	699	0.1−	1.0+
1992 02 05	675	0.3+	0.7−	1996 11 30	385	0.3−	1.2−	1999 04 10	699	1.4+	0.1+
1993 03 23	675	1.2+	0.4+	1997 01 09	385	0.4−	0.8−	1999 04 10	699	0.8+	1.1+
1993 03 23	675	0.0	1.9+	1997 01 09	385	0.1+	0.2−	1999 04 12	704	0.4−	1.5−
1996 11 03	385	0.3+	0.1+	1998 01 24	886	0.9−	0.3+	1999 04 12	704	1.1+	0.5+
1996 11 03	385	0.4+	0.2+	1998 01 24	886	1.4+	1.1−	1999 04 12	704	1.3−	0.9−
1996 11 03	385	0.4+	0.4+	1998 01 31	886	1.5−	2.0+	1999 04 12	704	0.7+	0.4−
1996 11 04	385	0.1+	0.1+	1998 01 31	886	0.5+	1.3+	1999 04 16	704	0.2+	0.6+
1996 11 04	385	0.4+	0.3+	1998 03 24	725	0.3+	0.3−	1999 04 16	704	2.4−	0.8−
1996 11 04	385	0.4+	0.2+	1998 03 24	725	0.2+	0.5−	1999 04 16	704	1.7−	1.6−
1996 11 09	385	0.1+	0.4+	1998 03 28	725	0.7+	0.9−	1999 04 16	704	0.3−	1.5−
1996 11 09	385	0.6+	0.0	1999 03 23	704	0.4+	0.0	1999 04 19	704	0.4+	0.0
1996 11 09	385	0.3−	0.2+	1999 03 23	704	0.4+	1.0+	1999 04 19	704	1.2−	0.1+
1996 11 14	385	0.3+	0.4−	1999 03 23	704	0.1+	0.7+	1999 04 19	704	1.3+	1.6−
1996 11 14	385	0.2+	0.3−	1999 03 23	704	0.1−	1.3−	1999 04 19	704	0.7−	0.4+
1996 11 14	385	0.0	0.6−	1999 04 08	888	0.6−	0.3−	1999 04 19	704	0.8−	0.3−
1996 11 30	385	0.4−	1.2−	1999 04 08	888	0.2−	0.3−				

(10605)∗ 1996 VC$_1$ = 1991 VC$_{17}$ = 1993 DH$_3$

Discovered 1996 Nov. 3 by V. Giuliani and F. Manca at Sormano.

Id. G. V. Williams (*MPC* 28866)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	187.83312		(2000.0)		**P**	**Q**	
n	0.19437593	ω	96.66769		+0.99031954	−0.13782537	
a	2.9514882	Ω	271.25526		+0.11995396	+0.90948546	
e	0.1078227	i	0.94414		+0.06984457	+0.39222490	
P	5.07	H	13.3	G	0.15	U	1

Residuals in seconds of arc

1991 11 11	691	0.1−	0.2−	1996 11 20	587	0.1+	0.2−	1999 03 23	704	0.9+	1.0+
1991 11 11	691	0.0	0.3−	1996 11 28	587	0.4−	0.8+	1999 03 23	704	0.3−	0.5−
1991 11 11	691	0.0	0.1+	1996 11 28	587	0.2−	0.8+	1999 03 23	704	0.2−	1.2−
1993 02 23	691	0.1+	0.1+	1996 12 14	587	0.0	0.0	1999 04 13	587	0.7+	0.7−
1993 02 23	691	0.1+	0.1+	1996 12 14	587	0.2+	0.2−	1999 04 15	704	0.4+	0.0
1993 02 23	691	0.1+	0.1+	1996 12 29	587	0.1−	0.7+	1999 04 15	704	1.9+	0.3+
1996 11 03	400	0.6+	0.1+	1996 12 29	587	0.2+	0.4+	1999 04 15	704	0.4+	0.1+
1996 11 03	400	(2.1+	1.6+)	1997 01 11	587	0.0	0.4+	1999 04 15	704	0.1+	1.0+
1996 11 03	587	0.5−	1.0−	1997 01 11	587	0.2+	1.4+	1999 04 15	704	0.2−	1.0+
1996 11 03	587	0.3+	0.4−	1998 01 30	587	0.6−	0.2−	1999 04 17	704	0.1+	0.8+
1996 11 03	587	1.0+	0.9−	1998 01 31	587	0.0	0.4−	1999 04 17	704	1.0+	0.8+
1996 11 06	587	0.4−	0.0	1998 02 02	727	0.5+	0.4+	1999 04 17	704	0.3+	1.1+
1996 11 06	587	0.4−	0.4+	1998 02 04	727	0.0	0.4−	1999 04 17	704	0.3+	1.1+
1996 11 07	400	0.1−	0.2+	1998 02 04	587	0.4+	0.1+	1999 04 17	704	0.7−	0.8+
1996 11 07	400	0.0	0.2−	1998 02 04	587	0.1+	0.4+	1999 04 18	704	0.9+	0.3−
1996 11 08	587	0.5−	0.3+	1998 02 24	566	0.5−	0.8−	1999 04 18	704	0.0	0.8+
1996 11 08	587	0.5−	1.0+	1998 02 24	566	0.8−	0.7−	1999 04 18	704	0.6−	0.9−
1996 11 08	587	0.8−	1.1+	1998 02 24	566	0.3−	1.0−	1999 04 18	704	2.2−	0.8+
1996 11 20	587	0.0	0.8+	1999 03 23	704	0.7−	0.9−				

(10606)∗ 1996 VD$_1$ = 1988 FC$_1$

Discovered 1996 Nov. 3 by V. Giuliani and F. Manca at Sormano.

Id. G. V. Williams (*MPC* 28599)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	237.44382		(2000.0)	**P**		**Q**	
n	0.17679685	ω	258.12807	+0.46535705		+0.86199682	
a	3.1440277	Ω	41.59784	−0.64737467		+0.48633629	
e	0.1081176	i	17.62403	−0.60361317		+0.14296326	
P	5.57	H	13.2	G	0.15	U	1

Residuals in seconds of arc

1988 03 17	033	0.7−	0.3+	1996 11 08	587	1.0+	0.0	1999 03 20	587	0.2+	0.5+
1988 03 18	033	0.1−	1.2−	1996 11 20	587	1.8+	0.2+	1999 04 10	587	0.4+	1.6+
1988 03 18	033	0.2−	0.1+	1996 11 20	587	0.0	1.1+	1999 04 10	587	0.4+	1.0−
1988 03 19	033	0.1+	0.4−	1996 11 28	587	1.6−	1.8−	1999 04 12	704	0.2+	0.1+
1996 11 03	587	(2.7−	0.6−)	1996 11 28	587	0.3+	0.6−	1999 04 12	704	0.3+	1.5+
1996 11 03	587	(4.3−	0.4+)	1998 01 06	587	0.1−	0.0	1999 04 12	704	1.2−	1.5−
1996 11 03	587	1.1−	0.6−	1998 01 06	587	0.5+	0.1+	1999 04 12	704	1.4−	0.0
1996 11 06	587	0.1−	0.5+	1998 01 17	587	0.3−	0.1−	1999 04 19	704	0.6+	0.5−
1996 11 06	587	0.5−	1.0+	1998 01 17	587	0.1−	0.8−	1999 04 19	704	1.0+	0.9+
1996 11 08	587	0.1−	0.6+	1999 03 20	587	0.9+	1.2+	1999 04 19	704	0.0	0.9−

(10607)∗ 1996 VQ$_6$ = 1990 HT$_1$

Discovered 1996 Nov. 13 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 28602)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	275.97804		(2000.0)	**P**		**Q**	
n	0.22840307	ω	229.64877	+0.49477983		+0.83884345	
a	2.6505424	Ω	71.40249	−0.70691333		+0.54044428	
e	0.1852047	i	13.85818	−0.50543689		+0.06528125	
P	4.32	H	13.2	G	0.15	U	1

Residuals in seconds of arc

1990 04 27	413	1.2−	0.4+	1998 01 23	684	0.0	0.0	1999 04 12	704	0.3−	0.3+
1990 04 27	413	1.6+	1.1+	1998 01 25	684	0.6−	0.6−	1999 04 12	704	0.4+	0.2−
1990 04 29	413	0.1−	0.9−	1998 01 25	684	0.6−	0.5−	1999 04 12	704	0.1+	1.2+
1996 11 13	684	0.2−	0.1−	1998 02 26	684	0.3+	0.1−	1999 04 15	704	0.9−	1.8−
1996 11 13	684	0.0	0.0	1998 02 26	684	0.4+	0.1−	1999 04 15	684	0.2+	0.3−
1996 11 13	684	0.0	0.1+	1998 02 28	684	0.4+	0.2−	1999 04 15	684	0.2+	0.2−
1996 11 16	684	0.2−	0.2−	1998 02 28	684	0.3+	0.2−	1999 04 15	704	0.2+	1.3−
1996 11 17	684	0.0	0.0	1998 03 19	684	0.2+	0.3+	1999 04 15	704	0.1+	0.6−
1996 11 17	684	0.0	0.0	1998 03 19	684	0.0	0.3−	1999 04 15	704	2.2−	2.6+
1996 11 17	684	0.1−	0.0	1998 03 19	684	0.2−	0.0	1999 04 15	426	0.4−	0.3+
1996 11 18	684	0.2−	0.4+	1998 03 20	684	0.3−	0.2−	1999 04 15	426	0.1+	0.4+
1996 11 18	684	0.1−	0.3+	1998 03 20	684	0.1−	0.3−	1999 04 15	426	0.3+	0.0
1996 12 04	684	0.0	0.1−	1999 03 04	758	0.4−	0.0	1999 04 16	684	0.1−	0.5−
1996 12 04	684	0.1+	0.1−	1999 03 04	758	0.2+	0.1−	1999 04 16	684	0.1−	0.3−
1996 12 04	684	0.1+	0.1−	1999 03 04	758	0.7−	0.1+	1999 04 16	426	0.2+	0.0
1996 12 13	684	0.1+	0.3+	1999 03 05	758	0.7+	0.4+	1999 04 16	426	0.1+	0.0
1996 12 13	684	0.2+	0.3+	1999 03 05	758	0.6−	0.2+	1999 04 16	426	0.1+	0.1+
1996 12 13	684	0.1+	0.3+	1999 03 05	758	0.5+	0.0	1999 04 19	704	0.2+	0.6+
1997 01 10	684	0.5−	0.3+	1999 03 05	758	0.6+	0.2−	1999 04 19	704	0.3+	0.1+
1997 01 10	684	0.5−	0.4+	1999 03 05	758	0.8+	0.8+	1999 04 19	704	0.1−	0.3+
1998 01 22	684	0.2+	0.4+	1999 03 05	758	0.1+	0.1+	1999 04 19	704	1.0+	0.3−
1998 01 22	684	0.1+	0.0	1999 04 12	704	0.1+	0.2−	1999 04 19	704	0.4+	0.2+
1998 01 23	684	0.0	0.2+	1999 04 12	704	0.1−	0.2−				

(10608)∗ 1996 VB$_9$ = 1990 DX$_5$ = 1995 SG$_{55}$

Discovered 1996 Nov. 7 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 28867)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	94.99857		(2000.0)	**P**		**Q**	
n	0.12313375	ω	259.49894	+0.50173995		−0.86461278	
a	4.0014553	Ω	160.31790	+0.82122364		+0.46649308	
e	0.2527433	i	4.51123	+0.27175126		+0.18662516	
P	8.00	H	11.9	G	0.15	U	1

Residuals in seconds of arc

1990 02 23	033	0.3+	0.5+	1997 01 01	400	1.3+	1.0+	1999 04 06	704	0.6−	1.2−
1990 02 23	033	0.0	0.4+	1998 01 28	566	0.4−	1.1−	1999 04 06	704	0.1+	0.0
1992 05 06	691	0.0	0.3−	1998 01 28	566	0.6−	1.4−	1999 04 06	704	0.5+	1.1+
1992 05 06	691	0.1−	0.0	1998 01 28	566	1.0−	1.8−	1999 04 06	704	2.0−	0.8+
1992 05 06	691	0.1+	0.6−	1998 02 19	699	0.6+	0.4+	1999 04 07	699	0.1−	1.5+
1995 09 27	327	0.4−	0.7+	1998 02 19	699	0.2−	1.2+	1999 04 07	699	0.7+	0.2+
1995 09 27	327	0.7−	0.3+	1998 02 19	699	0.4−	0.7−	1999 04 07	699	0.0	1.7+
1995 09 27	327	0.3−	0.4−	1998 03 02	372	1.1−	1.2+	1999 04 12	704	0.0	1.3−
1996 11 07	400	1.1−	1.0−	1998 03 02	372	0.7+	0.8+	1999 04 12	704	0.4−	1.4−
1996 11 07	400	0.5+	1.1−	1998 03 03	372	(0.2−	2.6+)	1999 04 12	704	0.3+	0.5−
1996 11 08	400	1.3+	0.5−	1998 03 05	372	0.2−	1.4+	1999 04 12	704	0.4+	0.1−
1996 11 15	400	0.5−	0.2+	1998 03 05	372	(3.1−	2.1+)	1999 04 12	704	0.7−	0.7+
1996 11 15	400	0.3−	0.6+	1999 03 20	704	0.1−	0.5−	1999 04 19	704	0.6−	0.9−
1996 11 16	400	0.1+	0.5+	1999 03 20	704	0.5+	0.9+	1999 04 19	704	0.5+	1.6−
1996 11 16	400	0.1+	0.8+	1999 03 20	704	0.2−	0.8+	1999 04 19	704	0.7+	0.3−
1997 01 01	400	0.3+	0.3−	1999 03 20	704	1.6+	0.7+	1999 04 19	704	1.4+	0.1−

(10609)∗ 1996 WC$_3$ = 1994 FB$_1$ = 1995 NP

Discovered 1996 Nov. 28 by A. Nakamura at Kuma Kogen.

Id. G. V. Williams (*MPC* 28605)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	215.47562		(2000.0)	**P**		**Q**	
n	0.22226169	ω	146.43254	+0.96770413		+0.24457043	
a	2.6991456	Ω	199.68601	−0.25208870		+0.93886752	
e	0.1991247	i	10.45118	+0.00002505		+0.24230782	
P	4.43	H	15.0	G	0.15	U	1

Residuals in seconds of arc

1994 03 16	691	0.4+	0.3−	1996 12 06	360	0.1+	0.2−	1999 03 16	360	0.2+	0.2−
1994 03 16	691	0.0	0.7−	1996 12 14	360	0.1−	0.4−	1999 03 17	910	0.9+	0.4−
1994 03 16	691	0.1+	0.5−	1996 12 14	360	0.1+	0.5−	1999 03 17	910	0.7+	0.4−
1995 07 04	691	0.4−	0.1−	1996 12 28	360	0.5+	0.5+	1999 03 17	910	0.2+	0.6−
1995 07 04	691	0.2−	0.2−	1996 12 28	360	0.3+	0.7+	1999 03 21	910	0.4+	0.5−
1995 07 04	691	0.2−	0.0	1998 01 29	360	0.2−	0.2−	1999 03 21	910	0.4+	0.2−
1996 10 18	566	0.0	0.6+	1998 01 29	360	0.1−	0.3+	1999 03 21	910	0.3+	0.2−
1996 10 18	566	0.0	0.3+	1998 01 29	360	0.1+	0.2+	1999 04 07	360	0.9−	0.4+
1996 10 18	566	0.1−	0.5+	1998 01 31	360	0.0	0.4+	1999 04 07	360	0.5−	0.9+
1996 11 28	360	0.2−	0.2+	1998 01 31	360	0.3+	0.4+	1999 04 12	704	0.8+	0.3−
1996 11 28	360	0.0	0.4+	1998 02 21	360	0.9−	0.2−	1999 04 12	704	0.0	0.0
1996 11 28	360	0.2−	0.0	1998 02 21	360	0.2+	0.2+	1999 04 14	360	0.2−	0.5+
1996 12 03	360	0.2+	0.0	1998 02 21	360	0.1−	0.0	1999 04 14	360	0.5−	0.6+
1996 12 03	360	0.2−	0.6−	1998 03 02	360	0.4−	0.1−	1999 04 19	704	0.8+	0.4+
1996 12 03	360	0.1+	0.1−	1998 03 02	360	0.1+	0.0	1999 04 19	704	0.8−	1.4+
1996 12 06	360	0.0	0.4−	1999 03 16	360	0.1+	0.3+	1999 04 19	704	(2.3−	0.4+)
1996 12 06	360	0.1+	0.4−	1999 03 16	360	0.6−	0.4−				

(10610)∗ 1996 XR$_1$ = 1971 SM$_2$ = 1987 SA$_{22}$ = 1995 UV$_{35}$

Discovered 1996 Dec. 2 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 28605)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	158.43456		(2000.0)	**P**		**Q**	
n	0.12461198	ω	285.90441	+0.96831724		−0.23637331	
a	3.9697472	Ω	87.82074	+0.24863449		+0.88246494	
e	0.2162930	i	4.62392	+0.02329420		+0.40667345	
P	7.91	H	12.1	G	0.15	U	1

Residuals in seconds of arc

1971 09 26	095	(9.4+	0.2−)	1996 12 28	327	0.6+	0.2−	1998 03 04	704	(3.8−	0.0)
1987 09 18	095	0.4+	0.8−	1996 12 28	327	0.1−	0.1−	1999 03 20	704	0.1−	0.6+
1995 10 21	691	0.5−	0.2+	1996 12 28	327	0.8−	0.1−	1999 03 20	704	0.3+	0.7−
1995 10 21	691	0.1+	0.1+	1996 12 29	411	0.1−	0.1−	1999 03 20	704	1.8−	1.5−
1995 10 21	691	0.1+	0.2+	1996 12 29	411	0.0	0.9+	1999 03 20	704	1.0+	1.0−
1995 10 26	691	0.1−	0.1−	1997 01 10	689	0.6+	0.1+	1999 03 20	704	1.2+	0.3−
1995 10 26	691	0.1−	0.2−	1998 01 28	566	0.3+	0.9+	1999 03 23	704	0.7+	0.0

1995 10 26	691	0.1−	0.1−	1998 01 28	566	0.2−	0.8+	1999 03 23	704	0.5−	0.5−
1996 12 02	411	0.3−	0.3−	1998 01 28	566	0.4+	0.8+	1999 03 23	704	(1.0−	2.2−)
1996 12 02	411	0.1+	0.1−	1998 02 25	566	0.4−	0.1+	1999 03 23	704	0.0	0.7+
1996 12 03	411	0.1−	0.3−	1998 02 25	566	0.1−	0.0	1999 04 12	704	1.0+	1.8−
1996 12 03	411	0.8−	0.9−	1998 02 25	566	0.1−	0.3+	1999 04 12	704	0.3+	0.1−
1996 12 08	369	0.1−	0.1+	1998 03 03	704	0.2+	0.3+	1999 04 12	704	0.3−	1.6+
1996 12 08	411	0.2+	0.4−	1998 03 03	704	1.9−	0.8−	1999 04 12	704	1.2−	1.2−
1996 12 08	369	0.1+	0.2−	1998 03 03	704	(2.2−	0.2+)	1999 04 12	704	2.0−	0.6+
1996 12 08	411	0.2+	0.2+	1998 03 03	704	0.8−	1.0+	1999 04 19	704	0.5−	1.0−
1996 12 14	369	0.6+	0.4−	1998 03 04	704	0.8+	1.1+	1999 04 19	704	0.8−	0.3−
1996 12 14	369	0.3+	0.1+	1998 03 04	704	0.4+	0.1−	1999 04 19	704	1.9+	2.0+
1996 12 14	369	0.4+	0.3+	1998 03 04	704	0.2−	1.4−	1999 04 19	704	0.8+	0.9−
1996 12 14	369	0.5+	0.5−	1998 03 04	704	0.2−	0.9+				

(10611)∗ 1997 BB_1 = 1973 UZ_3 = 1990 TL_8

Discovered 1997 Jan. 23 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. S. Nakano (*MPC* 31113)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	287.81195		(2000.0)		**P**		**Q**
n	0.17298920	ω	357.21261		−0.31417102		+0.92989747
a	3.1899953	Ω	254.42031		−0.86714039		−0.36309555
e	0.0878197	i	11.45358		−0.38647654		+0.05875643
P	5.70	H	11.7	G	0.15	U	1

Residuals in seconds of arc

1973 10 29	095	0.3−	1.0−	1998 01 17	327	0.5−	0.3+	1999 03 22	704	0.6+	0.5+
1990 10 12	046	1.7+	0.1+	1998 01 17	327	1.0−	0.4−	1999 03 22	704	0.5+	0.0
1990 10 12	046	0.5+	0.6+	1998 02 16	327	1.0+	1.9+	1999 03 22	704	0.2+	0.5−
1990 10 13	046	(2.8−	2.6−)	1998 02 16	327	1.5+	1.5+	1999 03 22	704	0.0	1.2+
1990 10 13	046	0.1+	0.9−	1998 02 16	327	0.1−	0.2−	1999 03 22	704	0.6−	0.2+
1997 01 23	327	0.8−	0.3−	1998 03 14	327	0.0	0.7−	1999 03 25	650	0.5+	0.9−
1997 01 23	327	0.7−	0.6−	1998 03 14	327	0.0	0.3−	1999 03 25	650	0.5+	0.8−
1997 01 23	327	0.1+	0.3−	1998 03 14	327	0.1+	0.4−	1999 04 05	650	0.1+	0.0
1997 01 25	327	0.5−	0.1−	1998 03 14	327	0.1+	0.5−	1999 04 05	650	0.2−	0.0
1997 01 25	327	0.5−	0.1−	1998 04 14	327	0.1+	0.0	1999 04 12	704	0.1+	1.5−
1997 01 25	327	0.0	0.2+	1998 04 14	327	0.2+	0.5−	1999 04 12	704	1.4−	1.0−
1997 02 06	327	0.2+	0.0	1998 04 14	327	0.5+	0.3−	1999 04 12	704	0.4−	0.6−
1997 02 06	327	0.3−	0.3+	1998 12 23	704	0.8−	1.0+	1999 04 12	704	0.7−	1.4+
1997 02 06	327	0.7−	0.3+	1998 12 23	704	0.6−	0.6−				
1998 01 17	327	0.2+	0.5−	1998 12 23	704	0.7+	0.5+				

(10612)∗ 1997 JR_{17} = 1997 LG_{14} = 1979 YW_1 = 1988 RX_5 = 1998 OT_{13} = 1998 QC_{22}

Discovered 1997 May 3 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 32681)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	47.51842		(2000.0)		**P**		**Q**
n	0.19646635	ω	151.34699		+0.68117732		+0.73200700
a	2.9305149	Ω	161.57903		−0.67918106		+0.63834174
e	0.0137628	i	2.31697		−0.27333229		+0.23808733
P	5.02	H	13.4	G	0.15	U	1

Residuals in seconds of arc

1979 12 23	095	0.1+	1.7+	1998 07 26	809	1.8+	1.2+	1998 09 13	699	0.1+	1.2+
1988 09 03	809	0.3+	0.0	1998 07 26	809	1.6+	1.8+	1998 09 13	699	0.3−	0.2+
1988 09 03	809	0.2−	0.2+	1998 07 26	699	0.1+	0.2−	1998 09 13	699	1.2−	1.5+
1988 09 03	809	0.9−	0.1+	1998 07 26	699	0.1−	0.6+	1998 09 14	704	0.4−	0.0
1996 02 20	566	0.1+	0.7+	1998 07 26	699	0.2+	0.4+	1998 09 14	704	0.9+	0.4−
1996 02 20	566	0.1+	0.6+	1998 07 27	809	(2.4+	3.2+)	1998 09 14	704	0.5−	0.3+
1996 02 20	566	0.2+	0.5+	1998 07 27	809	(1.5+	3.0+)	1998 09 14	704	1.1+	0.6−
1997 05 03	809	(2.4−	1.6−)	1998 07 27	809	(2.0+	3.6+)	1998 09 14	704	0.8+	0.8−
1997 05 03	809	1.5−	1.1−	1998 08 17	704	(1.9+	2.6−)	1998 09 18	704	0.1+	0.5−
1997 05 03	809	1.7−	0.5−	1998 08 17	704	0.4+	1.5−	1998 09 18	704	0.8+	0.2−
1997 05 04	809	0.4−	1.0+	1998 08 17	704	0.2−	0.5−	1998 09 18	704	1.0+	0.7+
1997 05 04	809	0.1+	0.3+	1998 08 17	704	0.5+	0.4−	1998 09 18	704	1.2−	0.4+
1997 05 04	809	0.8−	0.1+	1998 08 23	699	0.0	0.4−	1998 09 18	704	0.2−	1.6+
1997 06 08	809	1.6+	0.0	1998 08 23	704	0.3+	0.2−	1998 11 12	910	0.9−	0.2−
1997 06 08	809	0.8+	0.2+	1998 08 23	704	0.1−	0.1−	1998 11 12	910	1.1−	0.0
1997 06 08	809	0.8+	0.3+	1998 08 23	699	0.1−	0.3+	1998 11 12	910	0.4−	0.3−
1997 06 09	809	(2.2+	2.2+)	1998 08 23	704	0.0	1.1−	1998 11 17	910	1.0−	0.3+
1997 06 09	809	(1.5+	2.8+)	1998 08 23	704	0.3−	0.6−	1998 11 17	910	1.0−	0.1+
1997 06 09	809	1.5+	1.5+	1998 08 23	699	0.3−	0.4+	1998 11 17	910	1.7−	0.0
1998 07 26	809	(1.7+	2.3+)	1998 08 23	704	0.4−	1.1−				

(10613)∗ 1997 RO_3 = 1986 VQ_8 = 1993 PQ_3

Discovered 1997 Sept. 4 by Y. Shimizu and T. Urata at Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 30680)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	121.62447		(2000.0)		**P**		**Q**
n	0.26448631	ω	208.21462		+0.96649452		−0.25583824
a	2.4036280	Ω	166.55966		+0.24914396		+0.91543265
e	0.1122117	i	5.14904		+0.06177087		+0.31069254
P	3.73	H	14.5	G	0.15	U	1

Residuals in seconds of arc

1986 11 04	675	0.3−	1.3+	1997 09 11	385	0.1+	0.7−	1999 02 12	704	0.2−	0.3+
1986 11 04	675	0.2−	0.7+	1997 09 11	385	0.6+	0.1−	1999 02 14	385	0.3−	0.1+
1993 08 14	691	0.7−	0.2+	1997 09 29	905	0.3+	0.2−	1999 02 14	385	0.5−	0.4+
1993 08 14	691	0.5−	1.0+	1997 09 29	905	0.0	0.2−	1999 02 16	704	0.7−	0.7−
1993 08 14	691	0.2−	0.4+	1997 09 30	905	1.0+	0.3+	1999 02 16	704	0.2−	0.7−
1993 08 14	010	(0.9+	2.7−)	1997 09 30	905	0.7+	0.3+	1999 02 16	704	0.4−	0.4−
1993 08 14	010	(0.0	2.7−)	1997 10 30	704	1.5+	0.5−	1999 02 16	704	0.2−	0.5−
1993 08 14	010	(0.9+	2.5−)	1997 10 30	704	0.5−	0.3+	1999 02 16	704	0.1+	0.0
1993 08 15	010	(0.6+	4.9−)	1997 10 30	704	0.0	0.2+	1999 03 20	704	0.6+	0.9−
1993 08 18	010	0.6+	0.3−	1997 10 30	704	0.1−	0.2+	1999 03 20	704	(2.5−	2.3+)
1993 08 18	010	0.0	0.5−	1997 10 30	704	1.4−	1.3−	1999 03 20	704	(2.5+	2.5+)
1993 08 18	010	0.7+	0.4−	1999 02 12	699	0.3+	0.3+	1999 03 20	704	1.4−	0.1−
1997 09 04	905	0.5−	0.6−	1999 02 12	704	0.2−	0.3−	1999 04 14	699	1.9+	0.4+
1997 09 04	905	0.5−	0.2−	1999 02 12	704	0.3−	0.4+	1999 04 14	699	0.0	0.3+
1997 09 05	905	0.3+	0.3−	1999 02 12	699	1.2+	0.9+	1999 04 14	699	0.2+	0.1+
1997 09 05	905	0.8+	0.4−	1999 02 12	704	0.3−	0.6+	1999 04 19	691	0.4−	0.5−
1997 09 09	905	0.4−	0.3−	1999 02 12	704	0.6+	0.5+	1999 04 19	691	0.5−	0.2−
1997 09 09	905	0.8−	0.2−	1999 02 12	699	0.7+	1.8−	1999 04 19	691	0.5−	0.3−

(10614)∗ 1997 UH_1 = 1986 TB_1 = 1988 FK_2

Discovered 1997 Oct. 21 by Y. Shimizu and T. Urata at Nachi-Katsuura Observatory.

Id. G. V. Williams (*MPC* 30989)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	98.50196		(2000.0)		**P**		**Q**
n	0.27186834	ω	24.42244		+0.40388283		−0.91071966
a	2.3599182	Ω	41.90174		+0.81660420		+0.31633154
e	0.0835050	i	7.43485		+0.41235450		+0.26556365
P	3.63	H	14.0	G	0.15	U	2

Residuals in seconds of arc

1986 10 04	688	0.2+	1.8−	1997 10 31	886	0.7+	0.0	1999 03 20	704	0.5−	0.7−
1986 10 04	688	1.7+	0.9−	1997 10 31	886	0.2+	0.4−	1999 03 20	704	0.5−	0.4+
1986 10 04	046	1.2+	0.3−	1997 10 31	385	0.4+	0.0	1999 03 20	704	1.5−	0.7+
1986 10 05	046	(5.5+	1.7+)	1997 10 31	385	0.5+	0.1−	1999 03 23	704	0.4−	1.5−
1986 10 05	046	0.2+	0.4+	1997 11 03	704	0.4−	0.4−	1999 03 23	704	0.3−	0.5−
1986 10 05	046	0.5−	1.6+	1997 11 03	704	0.3−	0.1−	1999 03 23	704	0.2−	0.0
1986 10 09	046	(3.8+	0.3−)	1997 11 03	704	1.8−	0.3+	1999 03 23	704	0.4+	0.4−
1986 10 09	046	0.7+	0.4−	1997 11 03	704	1.1−	0.1+	1999 04 10	699	0.3+	1.7+
1986 10 10	046	(4.6−	0.8−)	1997 11 03	704	1.0−	0.8−	1999 04 10	699	0.1+	0.3+
1986 10 10	046	1.2−	1.1−	1997 11 05	886	0.4−	0.4−	1999 04 10	699	0.1−	1.2+
1988 03 16	399	1.9−	0.4+	1997 11 05	886	0.1+	0.6−	1999 04 12	704	0.5+	0.0
1988 03 16	399	0.8−	0.9+	1997 11 06	704	0.3+	1.1+	1999 04 12	704	0.6−	0.1−

1988 03 16	399	2.0+	0.3−	1997 11 06	704	0.5−	1.2+	1999 04 12	704	0.2+	0.1+
1997 10 21	905	0.2−	0.5+	1997 11 06	704	0.0	0.6+	1999 04 12	704	0.2−	0.9−
1997 10 21	905	1.0+	0.9−	1997 11 06	704	0.0	0.7+	1999 04 12	704	0.1−	0.1−
1997 10 22	704	0.0	0.1−	1997 11 06	704	0.0	0.1−	1999 04 14	888	0.1+	0.2+
1997 10 22	704	0.2−	0.2−	1997 11 21	691	0.6+	0.1−	1999 04 14	888	0.1+	0.1−
1997 10 22	704	0.9+	0.5−	1997 11 21	691	0.5+	0.1−	1999 04 15	704	0.2−	0.1−
1997 10 22	704	1.2+	0.3+	1997 11 21	691	0.6+	0.1+	1999 04 15	704	0.7+	0.5+
1997 10 22	704	0.3−	1.1−	1997 11 28	691	0.6+	0.3−	1999 04 15	704	0.5−	0.2−
1997 10 22	905	(3.0+	1.6−)	1997 11 28	691	0.7+	0.1−	1999 04 15	704	1.2+	0.0
1997 10 22	905	0.1+	0.1+	1997 11 28	691	0.1−	0.5+	1999 04 15	704	0.5−	0.4+
1997 10 29	704	0.2−	1.1−	1997 12 05	691	0.6−	0.9+	1999 04 16	704	0.4−	1.2−
1997 10 29	704	0.1+	0.8−	1997 12 05	691	1.0−	0.1+	1999 04 16	704	0.3−	0.8−
1997 10 29	704	0.7−	1.1−	1998 01 27	566	0.1+	1.1+	1999 04 16	704	0.7+	0.4−
1997 10 29	704	0.3−	1.1−	1998 01 27	566	0.3+	1.1+	1999 04 16	704	0.2−	0.6+
1997 10 29	704	0.1+	0.1+	1998 01 27	566	0.1+	0.9+	1999 04 16	704	1.2−	0.0
1997 10 30	704	(2.6+	1.5−)	1999 03 19	704	0.0	0.2−	1999 04 19	704	0.3+	0.8−
1997 10 30	704	(4.0+	0.0)	1999 03 19	704	0.2−	0.3−	1999 04 19	704	1.0+	0.1+
1997 10 30	704	(2.5+	0.8−)	1999 03 19	704	0.0	0.5−	1999 04 19	704	0.7+	1.1−
1997 10 30	704	(2.4+	1.7−)	1999 03 20	704	0.3−	0.8−	1999 04 19	704	0.5+	0.7−
1997 10 30	704	(2.6+	0.8−)	1999 03 20	704	0.1−	0.5−	1999 04 19	704	0.5−	0.4−

(10615)∗ 1997 UK$_3$ = 1964 VU$_2$ = 1964 WN$_1$ = 1975 WY = 1982 RG$_2$ = 1986 VZ$_6$ = 1993 SD$_4$

Discovered 1997 Oct. 26 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30885)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	117.63246		(2000.0)		**P**	**Q**	
n	0.26811981	ω	179.97512		+0.65811080	−0.75090041	
a	2.3818630	Ω	228.86886		+0.69077895	+0.63129930	
e	0.2539401	*i*	4.19706		+0.29952397	+0.19393239	
P	3.68	*H*	14.7	*G*	0.15	*U*	1

Residuals in seconds of arc

1964 11 12	330	1.1+	2.3+	1997 11 29	704	1.2+	0.3+	1998 01 22	691	0.4−	0.3−
1964 11 30	330	0.9−	0.3−	1997 11 29	704	0.3+	0.1+	1998 01 22	691	0.4−	0.7−
1975 11 28	095	(3.6+	0.5+)	1997 11 29	704	0.2+	0.3−	1998 01 26	691	0.5−	1.2−
1982 09 11	095	1.5−	0.7+	1997 11 29	704	1.0+	0.1+	1998 01 26	691	0.5−	0.9−
1986 11 06	688	(0.4−	4.2−)	1997 11 30	411	0.2+	0.1−	1998 01 26	691	0.4−	0.8−
1986 11 06	688	(2.6+	0.4−)	1997 11 30	411	0.2−	0.2−	1999 03 19	428	0.9+	0.6+
1993 09 16	691	0.1+	0.2−	1997 11 30	428	0.2−	0.1−	1999 03 19	428	0.9+	0.2+
1993 09 16	691	0.1+	0.1+	1997 11 30	428	0.2+	0.4−	1999 03 23	704	0.9+	0.7+
1993 09 16	691	0.5+	0.1−	1997 12 05	428	0.1+	0.7−	1999 03 23	704	(2.1+	1.0+)
1993 09 19	675	0.9+	1.2−	1997 12 05	910	0.1+	0.1+	1999 03 23	704	1.2−	1.4+
1993 09 19	675	0.1+	1.2−	1997 12 05	910	0.2+	0.1+	1999 03 23	704	0.4−	0.3+
1993 09 21	675	(2.4+	0.8−)	1997 12 05	910	0.1+	0.1+	1999 04 07	704	0.8−	0.3−
1993 09 21	675	0.5+	0.9−	1997 12 06	428	0.3−	0.1−	1999 04 07	704	0.5−	0.0
1997 10 26	411	1.2−	0.4−	1997 12 06	428	0.4−	0.1−	1999 04 07	704	0.6−	1.5−
1997 10 26	411	0.1−	0.2−	1997 12 07	910	0.1−	0.2+	1999 04 17	704	1.0−	0.9−
1997 10 27	411	0.1+	0.4−	1997 12 07	910	0.0	0.2+	1999 04 17	704	0.2−	1.1+
1997 10 27	411	0.2+	0.2+	1997 12 07	910	0.1−	0.3+	1999 04 17	704	0.5+	1.0−
1997 11 06	411	0.0	0.4−	1997 12 07	910	0.5+	0.3−	1999 04 17	704	0.1−	1.6−
1997 11 06	411	0.2+	0.4−	1997 12 07	910	0.7+	0.3−	1999 04 18	704	0.0	0.6−
1997 11 24	367	0.8−	0.3+	1997 12 07	910	0.5+	0.2−	1999 04 18	704	0.2+	0.8+
1997 11 24	367	0.8−	0.5+	1997 12 25	428	0.2−	0.1+	1999 04 18	704	0.6−	0.1−
1997 11 25	428	0.6−	1.0+	1997 12 25	428	0.0	0.1+	1999 04 18	704	(2.1−	1.9+)
1997 11 26	428	0.2−	0.6+	1998 01 02	428	0.2−	0.8−	1999 04 25	428	0.8+	1.5−
1997 11 26	428	0.1−	0.6+	1998 01 19	428	0.1−	0.3−	1999 04 25	428	0.4+	0.4−
1997 11 28	428	0.9+	0.2−	1998 01 19	428	0.2+	0.2−				
1997 11 29	704	0.9+	0.2+	1998 01 22	691	0.5−	0.7−				

(10616)∗ 1997 UW$_8$ = 1996 KD$_3$

Discovered 1997 Oct. 25 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 30990)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	177.98241		(2000.0)		**P**	**Q**	
n	0.23176691	ω	149.01205		+0.59279356	+0.80512345	
a	2.6248335	Ω	157.32576		−0.74876722	+0.55980247	
e	0.1921610	*i*	2.86798		−0.29655260	+0.19595261	
P	4.25	*H*	15.0	*G*	0.15	*U*	1

Residuals in seconds of arc

1994 01 12	691	1.2−	0.2+	1997 10 29	704	1.0−	0.1−	1997 11 06	704	1.0+	0.2+
1994 01 12	691	0.8−	0.2+	1997 10 29	704	1.0−	0.5+	1997 11 06	704	1.8+	1.1−
1994 01 12	691	1.4−	0.1+	1997 10 29	704	0.8−	0.0	1997 11 06	704	(2.0−	2.2+)
1995 02 21	691	0.6+	0.2−	1997 10 29	704	0.1−	0.2−	1997 11 09	400	0.1+	0.7−
1995 02 21	691	1.1+	0.3+	1997 10 30	704	0.2+	1.5−	1997 11 09	400	1.4−	1.0−
1995 02 21	691	0.9+	0.2−	1997 10 30	704	0.7+	1.5−	1997 11 25	400	0.9−	0.3−
1995 03 01	691	0.8+	0.8−	1997 10 30	704	(0.5−	2.1−)	1997 11 25	400	0.4+	1.5+
1995 03 01	691	0.9+	0.3+	1997 10 30	704	0.5+	1.0−	1997 11 28	400	0.8+	0.1+
1996 05 20	566	0.7−	0.5+	1997 10 30	704	(0.7−	2.3−)	1997 11 28	400	1.3+	0.3−
1996 05 20	566	0.6−	0.1+	1997 10 31	704	0.1+	0.6+	1999 01 14	691	0.7−	0.5+
1996 05 20	566	0.2+	0.3+	1997 10 31	704	0.4+	1.0+	1999 01 14	691	1.2−	0.5+
1996 05 22	566	0.2+	0.5−	1997 10 31	704	0.7+	0.0	1999 01 14	691	1.5−	0.4+
1996 05 22	566	0.2+	0.5−	1997 10 31	704	(0.0	2.2+)	1999 02 18	691	0.2+	0.1+
1996 05 22	566	0.0	0.2−	1997 10 31	704	1.1+	1.5+	1999 02 18	691	0.2+	0.3−
1997 10 25	400	1.3−	0.6−	1997 11 06	704	0.2−	0.6+	1999 02 18	691	0.3+	0.7−
1997 10 25	400	0.7−	1.6−	1997 11 06	704	0.3+	0.2+	1999 04 09	691	0.4−	0.7−
1997 10 28	400	0.2−	0.2−	1997 11 06	704	0.9+	0.7+	1999 04 09	691	0.0	0.6−
1997 10 28	400	0.5−	0.4+	1997 11 06	704	0.5+	0.2+	1999 04 09	691	0.4−	0.0
1997 10 29	704	0.5−	1.7+	1997 11 06	704	0.6+	0.3+				

(10617)∗ 1997 UK$_{24}$ = 1951 ST = 1953 GH$_2$ = 1954 OT = 1961 UG = 1977 QS$_4$ = 1987 SA$_{25}$ = 1989 EK$_{11}$

Discovered 1997 Oct. 25 by M. Hirasawa and S. Suzuki at Nyukasa.

Id. A. Doppler (*MPC* 31393), G. V. Williams (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	167.36248		(2000.0)		**P**	**Q**	
n	0.30136829	ω	67.08178		+0.98724606	−0.14404050	
a	2.2032867	Ω	301.13929		+0.10079577	+0.89520185	
e	0.0890599	*i*	4.54372		+0.12322914	+0.42174160	
P	3.27	*H*	13.4	*G*	0.15	*U*	2

Residuals in seconds of arc

1951 09 29	094(21.6−	10.4+)X		1997 11 09	408	0.7−	0.5−	1999 04 14	704	0.1+	0.3−
1953 04 05	760	(1.1−	3.3−)	1997 11 09	408	0.3+	0.0	1999 04 14	704	1.9+	0.2+
1953 04 05	760	(2.5−	5.1−)	1999 03 19	704	0.2+	0.3−	1999 04 14	704	0.9+	0.5+
1954 07 29	675	0.1−	0.4−	1999 03 19	704	0.1−	0.4−	1999 04 14	704	(0.1−	3.1+)
1954 07 29	675	0.1+	0.1+	1999 03 19	704	0.5+	0.3+	1999 04 15	704	0.1+	0.2−
1961 10 17	760	0.4−	0.1+	1999 03 19	704	0.1+	0.3−	1999 04 15	704	0.8−	0.7−
1961 10 17	760	0.6+	0.8−	1999 03 20	704	0.3−	0.2−	1999 04 15	704	0.2−	0.1−
1977 08 21	095	0.3−	0.3+	1999 03 20	704	0.5−	0.9+	1999 04 15	704	0.1+	0.2−
1987 09 23	095	0.1+	1.1+	1999 03 20	704	0.1+	0.8+	1999 04 15	704	0.3−	0.3−
1989 03 12	808	(2.0−	8.6−)	1999 03 20	704	0.2−	1.0+	1999 04 16	704	0.6−	0.2+
1989 03 12	808	(4.3−	2.2−)	1999 03 20	704	0.1+	1.1+	1999 04 16	704	1.3−	1.2+
1997 10 25	408	0.4+	0.1−	1999 03 23	704	0.7−	0.6−	1999 04 16	704	0.1+	0.7−
1997 10 25	408	0.4+	0.2−	1999 03 23	704	0.2+	0.6−	1999 04 16	704	1.3−	1.0−
1997 10 25	408	1.0−	0.1+	1999 03 23	704	0.3−	0.2−	1999 04 17	704	0.3+	0.2+
1997 10 27	408	0.3−	0.4+	1999 03 23	704	0.9−	0.2+	1999 04 17	704	0.6+	0.7−
1997 10 27	408	0.8+	0.1+	1999 03 23	704	1.0−	0.1−	1999 04 17	704	1.8+	1.0+
1997 10 27	408	0.5+	0.2−	1999 03 25	650	1.0−	0.3−	1999 04 17	704	0.0	1.6+
1997 10 29	566	0.3−	0.3+	1999 03 25	650	1.0+	0.8−	1999 04 17	704	0.0	0.9+
1997 10 29	566	0.3−	0.5+	1999 04 05	650	1.2+	0.5+				
1997 10 29	566	0.3−	0.5+	1999 04 05	650	0.9+	1.0−				

(10618)∗ 1997 VU$_3$ = 1973 AG$_3$ = 1986 RD$_8$ = 1993 RK$_3$

Discovered 1997 Nov. 6 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30994)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	131.94319		(2000.0)		**P**	**Q**	
n	0.27418783	ω	207.76753		+0.77347484	−0.63375431	
a	2.3465903	Ω	191.57518		+0.59003086	+0.72547869	
e	0.1899443	i	2.74206		+0.23151727	+0.26839550	
P	3.59	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1973 01 02	095	(1.3+	3.9−)	1997 11 29	704	0.2+	0.9−	1999 03 18	691	0.0	0.0
1986 09 07	095	0.7+	1.8−	1997 11 30	411	0.1+	0.2+	1999 03 18	691	0.0	0.2+
1993 09 12	675	0.5−	1.5+	1997 11 30	411	0.1−	0.0	1999 03 20	704	(0.1−	2.5+)
1993 09 12	675	0.1−	1.0+	1997 12 02	428	0.2−	0.3+	1999 03 20	704	0.1+	1.6+
1993 09 14	675	(1.2−	2.2+)	1997 12 02	428	0.0	0.3+	1999 03 20	704	0.2−	0.1−
1993 09 14	675	0.7−	1.2+	1997 12 04	704	0.4+	0.9+	1999 03 22	691	0.9+	0.2+
1997 08 31	910	(2.2−	0.5−)	1997 12 04	704	0.6−	0.6+	1999 03 22	691	1.0+	0.4+
1997 08 31	910	(2.2−	0.6−)	1997 12 04	704	0.4−	0.8−	1999 03 22	691	1.2+	0.2+
1997 08 31	910	(2.4−	0.5−)	1997 12 04	704	1.4−	0.6+	1999 03 23	691	0.6−	0.3+
1997 11 06	411	0.8+	0.2−	1997 12 04	704	0.3−	1.2+	1999 03 23	691	0.3−	0.2+
1997 11 06	411	0.7+	1.3−	1997 12 06	428	0.7+	0.8+	1999 03 23	691	0.1+	0.1+
1997 11 07	411	0.2−	0.1−	1997 12 06	428	0.6+	0.6+	1999 04 07	704	0.1+	0.1+
1997 11 07	411	0.3−	0.1−	1997 12 20	428	1.1−	0.4−	1999 04 07	704	0.1+	0.9−
1997 11 09	411	0.2+	0.0	1997 12 20	428	0.3−	0.3−	1999 04 07	704	1.5−	1.6−
1997 11 09	411	0.2+	0.0	1997 12 25	428	0.5+	0.1+	1999 04 07	704	0.5−	0.1−
1997 11 19	411	0.2−	0.1+	1997 12 25	428	1.0+	0.5+	1999 04 16	704	0.2+	0.6−
1997 11 19	411	0.1−	0.2+	1998 01 02	428	0.1+	0.0	1999 04 16	704	0.3+	0.3+
1997 11 24	372	0.8−	0.2−	1998 01 19	428	0.2−	0.6+	1999 04 16	704	2.4+	0.1+
1997 11 24	372	0.1−	0.1+	1998 01 19	428	0.4−	0.5+	1999 04 16	704	0.8−	0.0
1997 11 26	372	0.1+	0.4−	1999 03 09	691	0.2−	0.1+	1999 04 16	704	1.6−	1.7+
1997 11 27	372	0.5−	0.3+	1999 03 09	691	0.1−	0.1+	1999 04 19	704	0.3−	0.4+
1997 11 29	704	0.5+	0.2−	1999 03 09	691	0.1+	0.1+	1999 04 19	704	0.1+	1.2−
1997 11 29	704	0.3−	0.2−	1999 03 14	691	0.8+	0.0	1999 04 19	704	0.0	0.1+
1997 11 29	704	0.5−	0.3−	1999 03 14	691	0.6−	0.3−	1999 04 19	704	0.0	0.5+
1997 11 29	704	1.3+	0.4−	1999 03 18	691	0.1+	0.3+	1999 04 19	704	0.1−	0.0
1997 12 04	886	0.1+	0.1−	1999 03 24	699	0.4+	0.3−	1999 04 19	704	1.4−	0.7−
1997 12 04	886	0.6+	0.2+	1999 03 24	699	0.8+	0.4+	1999 04 19	704	0.6−	0.3−

(10619)∗ 1997 WO$_{13}$ = 1977 DG$_{11}$ = 1981 JN$_6$

Discovered 1997 Nov. 27 by T. Kagawa and T. Urata at the Gekko Observatory.

Id. S. Nakano (*MPC* 30999)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	348.08734		(2000.0)		**P**	**Q**	
n	0.27199186	ω	113.34598		−0.93450557	+0.32873611	
a	2.3592037	Ω	86.07181		−0.35553147	−0.84349370	
e	0.0623068	i	7.86388		−0.01722517	−0.42479518	
P	3.62	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1977 02 19	033	0.4−	0.3−	1997 12 25	566	0.5+	0.3+	1999 03 24	699	1.2+	0.1+
1977 02 19	033	0.2−	0.9−	1997 12 25	566	0.0	0.1+	1999 03 28	888	0.6+	0.7+
1981 05 08	675	1.3−	0.3+	1997 12 25	566	0.4+	1.2+	1999 03 28	888	0.5+	0.4−
1981 05 09	675	1.5+	0.0	1997 12 27	888	0.7+	0.1−	1999 04 07	888	0.1+	0.4+
1997 11 24	888	0.1+	0.0	1997 12 27	888	1.9+	0.7+	1999 04 07	888	0.4−	0.2+
1997 11 24	888	0.4−	1.2+	1998 01 02	704	0.4+	0.0	1999 04 12	704	0.6+	0.2+
1997 11 27	888	0.9−	0.0	1998 01 02	704	0.5−	0.8+	1999 04 12	704	0.5+	0.0
1997 11 27	888	0.5+	1.0+	1998 01 02	704	0.4+	0.1+	1999 04 12	704	0.1+	0.2−
1997 11 29	704	1.7−	0.0	1998 01 02	704	0.2+	0.4+	1999 04 12	704	0.0	0.3−
1997 11 29	704	1.7−	0.2−	1999 02 12	888	0.4−	0.3+	1999 04 12	704	0.1+	0.8−
1997 11 29	704	1.9−	0.5−	1999 02 12	888	0.8−	0.9+	1999 04 15	704	0.2−	1.2−
1997 11 29	704	0.9−	0.7−	1999 02 21	888	0.0	0.0	1999 04 15	704	1.2−	0.1+
1997 11 29	704	1.7−	0.2−	1999 02 21	888	0.0	0.1+	1999 04 15	704	0.7+	2.0+
1997 12 04	704	0.3−	0.0	1999 03 20	699	0.6+	0.1+	1999 04 15	704	0.1−	0.3+
1997 12 04	704	0.9+	0.9−	1999 03 20	699	0.9+	0.2+	1999 04 15	704	0.9−	0.1+
1997 12 04	704	1.1+	1.2−	1999 03 20	699	0.7+	0.0	1999 04 19	704	0.7−	0.2−
1997 12 04	704	1.1+	0.1−	1999 03 23	888	0.2+	0.3+	1999 04 19	704	0.2−	0.5−
1997 12 04	704	1.2+	1.2−	1999 03 23	888	0.6+	0.1−	1999 04 19	704	1.2−	0.0

(10620)∗ 1997 WQ$_{34}$ = 1981 JO$_6$

Discovered 1997 Nov. 29 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31394)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	195.01504		(2000.0)		**P**	**Q**	
n	0.26497693	ω	235.83288		+0.80462845	+0.58390325	
a	2.4006601	Ω	88.20996		−0.50307810	+0.76685886	
e	0.1060303	i	6.19401		−0.31541320	+0.26642914	
P	3.72	H	14.0	G	0.15	U	1

Residuals in seconds of arc

1981 05 08	675	0.3−	0.1−	1997 12 04	704	1.3+	0.6−	1998 02 20	910	1.5−	1.1−
1981 05 09	675	0.2+	0.5−	1997 12 05	704	1.8+	0.2+	1998 02 23	327	0.7−	0.3+
1996 06 14	566	0.4−	0.0	1997 12 05	704	0.8−	0.2−	1998 02 23	327	0.3+	0.2+
1996 06 14	566	0.2−	0.2+	1997 12 05	704	0.3+	0.3+	1998 02 23	327	0.7−	0.8−
1996 06 14	566	0.3−	0.1+	1997 12 05	704	0.0	0.1+	1999 02 13	704	0.8+	0.2−
1997 11 29	704	1.0+	1.0+	1997 12 05	704	1.8−	0.1+	1999 02 13	704	0.5+	0.6−
1997 11 29	704	0.9+	0.5+	1998 01 27	910	1.5−	0.5−	1999 02 13	704	1.8+	1.8+
1997 11 29	704	1.0+	1.7+	1998 01 27	910	1.1−	0.4−	1999 02 13	704	1.3+	0.7+
1997 11 29	704	0.9+	0.7+	1998 01 27	910	1.2−	0.6−	1999 02 13	704	1.7+	0.4−
1997 11 29	704	0.8+	0.8+	1998 02 19	910	1.1−	0.7−	1999 03 23	749	1.2−	0.2−
1997 12 04	704	0.8+	0.2−	1998 02 19	910	0.7−	0.4−	1999 03 23	749	1.0−	0.1+
1997 12 04	704	0.7+	0.1+	1998 02 19	910	0.5−	1.2−	1999 03 24	749	0.6−	0.6−
1997 12 04	704	0.9+	0.1+	1998 02 20	910	1.5−	0.7−	1999 03 24	749	0.6−	0.3−
1997 12 04	704	0.8−	1.4−	1998 02 20	910	1.7−	0.7−	1999 03 24	749	0.9−	0.2−

(10621)∗ 1997 XN = 1989 AB$_5$ = 1991 PZ$_8$ = 1996 TP$_{57}$

Discovered 1997 Dec. 3 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 31123)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	155.11533		(2000.0)		**P**	**Q**	
n	0.21250623	ω	90.79213		+0.89683598	−0.42791399	
a	2.7811320	Ω	294.54920		+0.34074994	+0.82991462	
e	0.0211429	i	7.08153		+0.28208988	+0.35795439	
P	4.64	H	13.4	G	0.15	U	1

Residuals in seconds of arc

1989 01 04	413	0.7+	0.5+	1996 10 03	809	1.2−	1.8−	1999 03 22	704	0.9−	1.2−
1989 01 04	413	1.1−	0.2−	1996 10 03	809	1.4−	0.9−	1999 04 15	704	0.6−	0.4−
1989 01 10	413	(5.0−	1.8+)	1997 12 03	411	1.1−	1.0−	1999 04 15	704	2.2+	0.4+
1989 01 10	413	0.1+	0.2+	1997 12 03	411	0.2+	0.9−	1999 04 15	704	0.2+	0.6−
1991 08 05	675	0.0	0.1−	1997 12 04	411	0.7+	0.9−	1999 04 15	704	0.5−	1.6−
1991 08 05	675	1.4+	0.2−	1997 12 04	411	0.3+	0.2+	1999 04 15	704	1.7−	0.5−
1991 08 08	675	0.1−	1.0−	1997 12 10	411	0.0	0.3−	1999 04 17	704	0.9−	0.9+
1991 08 08	675	0.7+	1.1−	1997 12 10	411	0.5+	0.6+	1999 04 17	704	0.4−	1.4−
1991 08 14	809	(4.8+	3.9+)	1997 12 27	411	0.5−	0.4−	1999 04 17	704	0.0	0.3+
1991 08 14	809	(7.5+	3.4+)	1997 12 27	411	0.4+	0.5−	1999 04 17	704	0.9+	1.6−
1991 08 14	809	(8.4+	3.4+)	1997 12 28	411	0.3+	0.2−	1999 04 17	704	0.8−	0.7−
1996 10 02	809	1.5+	0.0	1997 12 28	411	0.7−	1.0−	1999 04 20	704	1.2+	0.3+
1996 10 02	809	1.8+	0.1+	1999 03 22	704	0.5+	0.6−	1999 04 20	704	1.5−	0.4−
1996 10 02	809	1.6+	0.1−	1999 03 22	704	1.1−	0.5−	1999 04 20	704	1.6+	0.6+
1996 10 03	809	1.2−	1.7−	1999 03 22	704	(2.6−	1.0−)	1999 04 20	704	1.4−	1.2+

(10622)∗ 1997 XA$_{12}$ = 1990 QC$_{12}$ = 1990 SC$_{19}$ = 1992 DQ$_{12}$

Discovered 1997 Dec. 5 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31253)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	**Q**
M	173.03638		(2000.0)			
n	0.29560105	ω	331.52870		+0.99910711	+0.02517190
a	2.2318520	Ω	27.09268		−0.00686355	+0.88916903
e	0.1799877	i	4.27275		−0.04168780	+0.45688599
P	3.33	H	14.8	G	0.15	U 2

Residuals in seconds of arc

1990 08 26	675	(0.6+	3.7−)	1997 12 05	704	0.4−	0.6−	1999 03 23	704	1.2+	1.1−
1990 08 26	675	0.1−	1.3−	1997 12 05	704	0.4+	0.4−	1999 03 23	704	0.3+	1.4−
1990 09 16	675	0.7+	0.8−	1997 12 05	704	0.7+	0.2−	1999 03 23	704	0.4+	0.4−
1990 09 16	675	1.1+	1.5−	1997 12 05	704	1.2+	0.2−	1999 04 12	704	0.7−	1.6−
1992 02 27	691	0.1+	0.5+	1997 12 05	704	0.3+	0.3−	1999 04 12	704	0.6+	1.1−
1992 02 27	691	0.1+	0.4+	1997 12 06	704	1.7+	0.4−	1999 04 12	704	0.6−	0.7−
1992 02 27	691	0.0	0.1+	1997 12 06	704	0.5+	0.7−	1999 04 12	704	0.3+	0.3−
1992 03 04	809	1.1+	1.6+	1997 12 06	704	1.4+	1.4−	1999 04 12	704	0.6−	0.2+
1997 11 07	327	0.0	0.2+	1997 12 06	704	0.3−	1.0−	1999 04 17	691	0.8−	0.4+
1997 11 07	327	0.2−	0.5+	1997 12 06	704	0.5+	1.5−	1999 04 17	691	0.6−	0.2+
1997 11 07	327	0.0	0.5+	1997 12 09	327	0.6−	0.5−	1999 04 17	691	1.3−	0.1−
1997 11 20	327	0.2+	0.5+	1997 12 09	327	0.1+	1.0−	1999 04 19	704	1.4−	0.3−
1997 11 20	327	0.0	0.3+	1997 12 09	327	0.1−	0.5−	1999 04 19	704	1.0+	1.2+
1997 11 20	327	0.1−	0.4+	1999 03 20	704	0.0	0.2+	1999 04 19	704	0.5+	1.9−
1997 11 26	704	1.1−	1.0+	1999 03 20	704	1.4−	1.4+	1999 04 19	704	0.8−	1.5−
1997 11 26	704	1.8−	1.3+	1999 03 20	704	(2.4−	0.7+)				
1997 11 26	704	1.2−	0.7+	1999 03 23	704	0.2−	1.1−				

(10623)∗ 1997 YP_7 = 1979 VM_2 = 1990 WS_{14} = 1997 AD_{22}

Discovered 1997 Dec. 27 by T. Kobayashi at Oizumi.

Id. D. J. Asher (*MPC* 31256)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	**Q**
M	235.58769		(2000.0)			
n	0.17611633	ω	278.38925		+0.79911636	+0.59698295
a	3.1521217	Ω	44.99374		−0.50455806	+0.73011299
e	0.1458315	i	5.75384		−0.32685503	+0.33248516
P	5.60	H	12.5	G	0.15	U 1

Residuals in seconds of arc

1979 11 14	095	0.0	1.0+	1998 03 03	704	(1.4+	2.6+)	1999 04 07	699	1.0+	0.1−
1990 11 23	095	0.8−	1.6+	1998 03 03	704	0.0	1.3+	1999 04 07	699	0.5+	0.5+
1990 11 23	095	1.1−	1.4+	1998 03 03	704	0.0	1.1−	1999 04 12	704	0.0	0.7−
1997 01 13	012	0.1+	0.1−	1998 03 03	704	0.9+	0.2+	1999 04 12	704	1.0−	0.3+
1997 01 13	012	0.2+	0.2−	1998 03 03	704	(5.6−	2.3+)	1999 04 12	704	0.1+	0.6+
1997 01 14	012	0.2+	0.1−	1999 03 22	699	1.1+	1.1+	1999 04 12	704	0.4+	0.0
1997 01 14	012	0.3+	0.1−	1999 03 22	699	1.2+	0.3−	1999 04 12	704	0.7−	0.1−
1997 12 27	411	0.1+	0.9−	1999 03 22	699	0.6+	0.1−	1999 04 15	704	0.7−	0.5−
1997 12 27	411	0.8−	0.8−	1999 03 23	704	0.2+	0.4−	1999 04 15	704	0.9−	0.1+
1997 12 28	411	0.4−	0.9−	1999 03 23	704	0.4−	0.0	1999 04 15	704	1.2+	0.3+
1997 12 28	411	0.5+	0.3−	1999 03 23	704	0.2−	1.1+	1999 04 15	704	(1.5+	2.2+)
1998 01 05	411	0.7−	0.2−	1999 03 23	704	0.8−	0.5−	1999 04 15	704	1.4−	1.3−
1998 01 05	411	0.1+	0.4−	1999 03 23	704	1.2−	1.4−	1999 04 16	704	0.2+	0.5+
1998 01 28	566	0.2−	0.2+	1999 03 24	699	(2.4+	0.5−)	1999 04 16	704	0.9+	1.6+
1998 01 28	566	0.6−	0.1+	1999 03 24	699	1.5+	0.2+	1999 04 16	704	0.3+	0.6+
1998 01 28	566	0.4−	0.0	1999 03 24	699	1.1+	0.3+	1999 04 16	704	0.2−	1.3+
1998 01 28	411	0.2−	0.1−	1999 04 07	704	0.3+	0.4−	1999 04 16	704	1.2−	0.5+
1998 01 28	411	0.2−	0.5−	1999 04 07	704	0.6+	0.4+	1999 04 19	704	0.2−	0.0
1998 02 20	725	0.6+	1.1+	1999 04 07	704	0.1−	0.2+	1999 04 19	704	0.4+	1.3−
1998 03 01	327	0.2+	0.0	1999 04 07	704	0.0	0.4+	1999 04 19	704	0.2−	0.2+
1998 03 01	327	0.2−	0.1−	1999 04 07	704	0.0	0.5+	1999 04 19	704	0.3−	0.8−
1998 03 01	327	0.1+	0.0	1999 04 07	699	0.9+	0.4−	1999 04 19	704	0.9−	1.2+

(10624)∗ 1997 YR_{13} = 1990 TC_{16} = 1991 XX_6

Discovered 1997 Dec. 31 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 32255)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	**Q**
M	156.77612		(2000.0)			
n	0.17127684	ω	162.40469		+0.93840625	−0.34553226
a	3.2112217	Ω	217.80965		+0.31680878	+0.86163873
e	0.1293541	i	0.10104		+0.13793443	+0.37173399
P	5.75	H	12.8	G	0.15	U 1

Residuals in seconds of arc

1990 10 15	095	0.6−	0.3−	1998 01 24	411	0.9−	0.1+	1999 03 20	704	0.0	0.4+
1990 10 15	095	0.6+	0.1−	1998 01 28	566	0.5−	0.4+	1999 03 20	704	0.8−	0.3+
1991 12 14	691	0.2−	0.0	1998 01 28	566	0.6−	0.2+	1999 03 23	704	0.5+	0.2+
1991 12 14	691	0.0	0.2−	1998 01 28	566	0.5−	0.3+	1999 03 23	704	0.3−	0.8+
1992 01 01	691	0.0	0.7+	1998 01 30	411	1.0−	0.2+	1999 03 23	704	1.2−	0.1+
1992 01 01	691	0.7+	0.1−	1998 01 30	411	0.5−	0.1−	1999 03 23	704	0.9−	0.9−
1992 01 01	691	0.0	0.3+	1998 02 23	566	0.4+	0.2+	1999 04 15	704	0.2−	1.0−
1996 10 17	691	0.0	0.0	1998 02 23	566	0.3+	0.4+	1999 04 15	704	0.1+	0.9−
1996 10 17	691	0.1+	0.1+	1998 02 23	566	0.3+	0.0	1999 04 15	704	1.3+	0.7−
1996 10 17	691	0.0	0.2+	1998 02 28	910	0.7+	0.2−	1999 04 15	704	0.0	0.9+
1997 12 31	411	0.3−	0.3+	1998 02 28	910	0.8+	0.1−	1999 04 15	704	0.5−	0.4−
1997 12 31	411	0.0	0.3−	1998 02 28	910	0.7+	0.0	1999 04 17	704	0.2−	0.2+
1998 01 01	411	0.0	0.1+	1998 03 01	910	0.6+	0.3−	1999 04 17	704	0.1+	0.6+
1998 01 01	411	0.6−	0.3+	1998 03 01	910	0.7+	0.1−	1999 04 17	704	1.1+	0.0
1998 01 06	411	0.1−	1.0−	1998 03 01	910	1.0+	0.3−	1999 04 17	704	(2.3+	0.2+)
1998 01 06	411	0.6−	0.6−	1999 03 20	704	0.0	0.1+	1999 04 17	704	0.8+	0.4+
1998 01 24	411	0.2−	0.0	1999 03 20	704	0.4+	0.0				

(10625)∗ 1998 AC_8 = 1979 SW_6 = 1979 TX = 1981 AP_2 = 1996 TM_{52}

Discovered 1998 Jan. 2 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 31397)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	**Q**
M	88.21093		(2000.0)			
n	0.17272564	ω	230.50997		+0.34200164	−0.93969502
a	3.1932396	Ω	199.49173		+0.86476288	+0.31591624
e	0.1521676	i	0.49030		+0.36772276	+0.13103512
P	5.71	H	13.1	G	0.15	U 1

Residuals in seconds of arc

1979 09 23	095	0.0	1.4−	1998 01 08	704	0.4−	0.6+	1999 04 06	704	0.8−	0.3−
1979 10 14	095	1.3−	1.0−	1998 01 08	704	0.3−	0.8+	1999 04 06	704	1.0−	0.3+
1981 01 08	381	(4.5+	3.2−)	1998 01 26	704	0.1−	0.6+	1999 04 06	704	1.1−	1.0−
1981 01 08	381	2.3+	0.4−	1998 01 26	704	0.4−	0.4+	1999 04 06	704	0.1−	0.1−
1996 10 05	809	0.2+	0.2+	1998 01 26	704	0.0	0.1+	1999 04 12	704	0.6+	0.5+
1996 10 05	809	0.5−	0.3−	1998 01 26	704	0.3−	0.4+	1999 04 12	704	0.5−	0.2+
1996 10 05	809	0.6−	0.2+	1998 01 26	704	0.1−	0.1+	1999 04 12	704	0.4−	0.5−
1996 10 06	809	0.8+	1.5+	1999 03 20	704	0.6+	0.4−	1999 04 12	704	0.4+	1.2−
1996 10 06	809	0.7+	1.1+	1999 03 20	704	0.1+	0.5−	1999 04 12	704	1.0+	0.3−
1996 10 06	809	0.3+	1.2+	1999 03 20	704	0.2−	0.4−	1999 04 15	704	0.3+	1.2+
1998 01 02	704	0.0	0.4−	1999 03 20	704	0.5+	0.2−	1999 04 15	704	0.0	0.1−
1998 01 02	704	0.8−	0.2−	1999 03 22	699	0.5+	0.2+	1999 04 15	704	0.8−	0.1+
1998 01 02	704	0.2−	0.5−	1999 03 22	699	1.2+	0.7+	1999 04 15	704	0.3−	0.5+
1998 01 02	704	0.1−	0.4−	1999 03 22	699	1.2+	1.1+	1999 04 15	704	1.7−	0.2−
1998 01 02	704	0.1−	0.3−	1999 03 23	704	0.6−	0.3+	1999 04 17	704	0.1−	0.0
1998 01 06	704	0.1+	0.1−	1999 03 23	704	0.2−	0.3+	1999 04 17	704	0.2+	1.3+
1998 01 06	704	0.6+	0.1−	1999 03 23	704	0.4+	0.1−	1999 04 17	704	0.0	1.1−
1998 01 06	704	0.2+	0.3+	1999 03 23	704	0.3−	0.5+	1999 04 17	704	0.6−	1.1−
1998 01 08	704	0.3+	0.7−	1999 03 24	699	0.6+	1.7+	1999 04 18	691	1.0−	0.2−
1998 01 08	704	0.0	0.3+	1999 03 24	699	1.6+	0.7+	1999 04 18	691	0.5−	0.2−
1998 01 08	704	0.2+	0.3−	1999 03 24	699	0.5+	0.7+	1999 04 18	691	0.5−	0.2−
1998 01 08	704	0.2−	0.3−	1999 04 06	704	0.8+	1.0−				

(10626)∗ 1998 AP_8 = 1982 BH_{13} = 1985 YQ

Discovered 1998 Jan. 10 by L. Šarounová at Ondřejov.

Id. A. Gnädig (*MPC* 31555)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	47.10778		(2000.0)		**P**		**Q**
n	0.24004678	ω	327.22952		−0.66573701		−0.74611094
a	2.5641227	Ω	164.50060		+0.69288206		−0.62339788
e	0.2453759	i	2.27684		+0.27696334		−0.23386653
P	4.11	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1982 01 30	675	0.1+	0.0	1997 12 30	557	0.3−	0.6+	1999 03 25	557	0.2+	0.2−
1982 01 31	675	0.2−	0.1−	1997 12 30	557	0.3+	0.6+	1999 03 27	557	0.1+	0.0
1985 12 14	675	(49.1+	0.5−)	1997 12 30	557	0.2−	0.3+	1999 03 27	557	0.5+	0.0
1985 12 14	675	(54.8+	0.9+)	1998 01 10	557	0.9−	0.8+	1999 04 10	557	0.1−	0.4−
1985 12 18	688	0.8+	1.0−	1998 01 10	557	0.1−	0.5+	1999 04 10	557	0.3−	0.2+
1985 12 18	688	0.9−	0.3−	1998 01 10	557	0.0	0.1−	1999 04 14	557	0.4−	0.2−
1997 10 29	704	(3.7+	1.0+)	1998 01 11	557	0.1−	0.2−	1999 04 14	557	0.1−	0.4−
1997 10 29	704	1.3+	0.0	1998 01 11	557	0.3−	0.0	1999 04 19	699	0.2+	0.0
1997 10 29	704	0.5+	2.0+	1998 01 14	557	0.7+	0.1−	1999 04 19	699	0.2−	0.9−
1997 10 29	704	1.8+	0.1−	1998 01 14	557	0.4−	0.1−	1999 04 19	699	0.3−	0.3+
1997 10 29	704	0.4+	0.6+	1998 01 14	557	0.2+	0.0	1999 04 20	704	0.3+	0.6+
1997 10 30	704	1.6+	1.5−	1998 01 17	557	0.6−	0.3+	1999 04 20	704	1.2+	1.5+
1997 10 31	704	1.1−	1.4−	1998 02 01	557	0.6−	0.6+	1999 04 20	704	1.2−	1.0−
1997 10 31	704	1.5−	0.4−	1998 02 01	557	0.0	0.5−	1999 04 20	704	0.3−	0.1+
1997 10 31	704	0.7−	0.0	1998 02 01	557	0.3−	0.9+	1999 04 20	704	0.5+	1.5+
1997 10 31	704	1.3−	0.4−	1998 02 20	557	0.5+	1.1+				
1997 10 31	704	0.1−	0.1−	1999 03 25	557	0.1+	0.1−				

(10627)∗ 1998 BW_2 = 1977 CN_2 = 1982 BE_{10} = 1991 VO_5

Discovered 1998 Jan. 19 by Y. Shimizu and T. Urata at Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 31263)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	165.14574		(2000.0)		**P**		**Q**
n	0.18604997	ω	267.56742		+0.94824842		−0.28444920
a	3.0388993	Ω	108.93166		+0.31652580		+0.88208144
e	0.1074603	i	8.57973		−0.02522590		+0.37552761
P	5.30	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1977 02 11	675	0.6−	0.4+	1998 01 26	566	0.3−	0.2+	1999 04 12	704	0.4−	0.4−
1977 02 12	675	0.3+	0.1+	1998 01 29	886	0.2+	0.7−	1999 04 12	704	0.3−	0.2−
1982 01 19	095	0.5+	0.2+	1998 01 29	886	0.2+	0.4+	1999 04 12	704	0.3−	0.5+
1991 11 13	894	0.3+	0.2−	1998 02 06	886	1.6−	0.9+	1999 04 12	704	0.7−	0.9+
1991 11 13	894	0.1+	1.5+	1998 02 06	886	1.4−	1.0−	1999 04 12	704	0.9−	1.2+
1991 11 14	894	0.5−	1.0−	1998 02 25	566	0.3−	1.0−	1999 04 15	888	0.2+	0.3−
1997 12 30	566	1.0+	0.4+	1998 02 25	566	0.2−	0.9−	1999 04 15	888	0.2−	0.2+
1997 12 30	566	0.7+	0.6+	1998 02 25	566	0.4−	0.9−	1999 04 16	704	1.3−	0.2+
1997 12 30	566	0.7+	0.1+	1999 02 20	888	0.4+	0.1+	1999 04 16	704	0.3−	0.9−
1998 01 19	905	0.8+	0.6+	1999 02 20	888	0.8+	1.2−	1999 04 16	704	0.4−	1.0+
1998 01 19	905	(0.4+	2.3+)	1999 03 15	704	0.0	0.1+	1999 04 16	704	0.3+	1.1−
1998 01 20	905	0.1−	0.3−	1999 03 15	704	0.2−	0.4+	1999 04 19	704	1.0+	0.3−
1998 01 20	905	0.6−	1.9+	1999 03 15	704	0.7+	0.9−	1999 04 19	704	0.7−	1.8+
1998 01 23	385	0.7+	0.0	1999 03 15	704	1.1+	0.3−	1999 04 19	704	1.0+	0.0
1998 01 24	886	0.6+	1.9−	1999 04 07	905	1.0−	0.7+	1999 04 19	704	1.7+	0.1+
1998 01 24	886	0.2+	0.2+	1999 04 07	905	0.3−	0.2−	1999 04 19	704	0.6+	0.6−
1998 01 26	566	0.1−	0.0	1999 04 07	888	0.0	0.2−				
1998 01 26	566	0.2−	0.2+	1999 04 07	888	0.2−	0.2−				

(10628)∗ 1998 BD_5 = 1989 OV = 1995 QN_{10}

Discovered 1998 Jan. 18 by the OCA-DLR Asteroid Survey at Caussols.

Id. G. V. Williams (*MPC* 31397)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	294.42065		(2000.0)		**P**		**Q**
n	0.17973107	ω	115.84069		−0.08422439		+0.99510587
a	3.1097152	Ω	149.19260		−0.94654080		−0.06369134
e	0.1289059	i	5.79114		−0.31139486		−0.07554951
P	5.48	H	13.2	G	0.15	U	1

Residuals in seconds of arc

1989 07 29	675	(0.7+	3.7+)	1998 01 25	566	0.2+	0.2+	1999 04 07	704	0.4−	0.0
1989 07 29	675	0.1−	1.2+	1998 02 26	566	1.3−	1.1−	1999 04 07	704	0.4−	0.7+
1995 08 25	809	0.1+	0.2+	1998 02 26	566	1.3−	0.8−	1999 04 07	704	0.5−	0.4+
1995 08 26	809	0.7+	0.4−	1998 02 26	566	1.2−	1.0−	1999 04 12	704	0.4−	0.5−
1995 08 28	809	0.1+	1.1−	1999 03 19	704	0.8+	1.0+	1999 04 12	704	0.2−	0.3−
1995 08 29	809	0.6+	0.1−	1999 03 19	704	0.7−	0.3−	1999 04 12	704	0.5−	1.0−
1995 09 01	809	(2.9−	0.1+)	1999 03 19	704	0.1+	0.4+	1999 04 12	704	0.2−	0.7−
1995 09 19	809	0.6+	0.5+	1999 03 19	704	0.0	0.3+	1999 04 12	704	0.2−	0.6−
1995 09 23	809	0.8−	0.5−	1999 03 20	704	1.5+	0.0	1999 04 15	704	0.4−	0.9+
1995 09 23	809	(5.0+	2.3−)	1999 03 20	704	0.5+	0.6+	1999 04 15	704	0.4−	0.9−
1995 09 24	809	0.7−	0.4−	1999 03 20	704	1.4+	1.1+	1999 04 15	704	2.0−	0.7−
1997 12 29	566	0.1+	0.2+	1999 03 20	704	1.4+	0.7+	1999 04 15	704	0.3−	0.2+
1997 12 29	566	0.0	0.2+	1999 03 20	704	0.3+	0.5+	1999 04 15	704	1.0+	0.9+
1997 12 29	566	0.2−	0.3−	1999 03 22	699	0.3+	1.1+	1999 04 16	704	0.0	1.6−
1998 01 18	910	0.9+	0.2+	1999 03 22	699	0.3+	1.0+	1999 04 16	704	1.3−	1.1+
1998 01 18	910	1.1+	0.3+	1999 03 22	699	(0.4+	2.6+)	1999 04 16	704	1.4+	0.0
1998 01 18	910	0.7+	0.4+	1999 03 23	704	1.4+	0.1−	1999 04 16	704	1.3−	0.2−
1998 01 23	910	0.1+	0.1+	1999 03 23	704	1.1+	0.5+	1999 04 19	704	0.4−	0.8−
1998 01 23	910	0.1−	0.3+	1999 03 23	704	0.8+	0.2−	1999 04 19	704	0.8−	1.3−
1998 01 23	910	0.0	0.1+	1999 03 23	704	0.1−	0.0	1999 04 19	704	0.8−	0.1−
1998 01 25	566	0.5+	0.1+	1999 04 07	704	0.2+	0.1−	1999 04 19	704	0.4−	1.2−
1998 01 25	566	0.1+	0.2+	1999 04 07	704	0.1−	0.1−	1999 04 19	704	0.5−	1.2−

(10629)∗ 1998 BK_{11} = 1991 NR_7 = 1992 WS_8 = 1996 TZ_{52}

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

Id. G. V. Williams (*MPC* 31265)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	181.51660		(2000.0)		**P**		**Q**
n	0.21538888	ω	359.70796		+0.99944183		+0.03340553
a	2.7562622	Ω	358.37758		−0.03062710		+0.91234349
e	0.1074477	i	0.65771		−0.01334224		+0.40806056
P	4.58	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1991 07 15	809	0.3−	0.2−	1998 01 02	691	0.1+	0.1+	1999 03 19	704	1.1−	1.1+
1991 07 15	809	0.4+	0.2−	1998 01 02	691	0.2+	0.3−	1999 03 19	704	1.7−	1.9−
1991 07 15	809	0.5+	0.1−	1998 01 08	704	1.2+	0.2+	1999 03 19	704	0.8+	0.3−
1991 07 16	809	(0.4−	3.5−)	1998 01 08	704	1.4−	0.0	1999 03 19	704	0.6−	1.3+
1991 07 16	809	(0.0	3.6−)	1998 01 08	704	0.9−	0.1+	1999 03 20	704	0.5+	0.7−
1991 07 16	809	(0.2+	3.5−)	1998 01 08	704	0.1−	0.8+	1999 03 20	704	0.1−	0.0
1992 11 25	675	0.5−	1.6−	1998 01 23	704	0.1+	0.7−	1999 03 20	704	1.0−	1.6−
1992 11 25	675	0.2+	1.8−	1998 01 23	704	0.2+	0.2−	1999 03 20	704	1.8−	0.9+
1992 11 28	691	0.0	0.2+	1998 01 23	704	0.2+	0.4+	1999 03 20	704	0.1−	0.5+
1992 11 28	691	0.1−	0.1+	1998 01 23	704	0.1−	1.3−	1999 03 23	704	0.3+	0.4−
1992 11 28	675	(0.9+	2.4−)	1998 01 23	704	0.6−	0.9−	1999 03 23	704	0.5−	0.3+
1992 11 28	691	0.1+	0.0	1998 01 24	704	0.1+	0.3+	1999 03 23	704	0.5−	0.5−
1992 11 28	675	(0.8+	2.2−)	1998 01 24	704	0.1+	0.5+	1999 03 23	704	0.3−	1.0−
1996 10 05	809	0.0	0.7+	1998 01 24	704	0.5+	0.3+	1999 03 23	704	0.5−	0.7−
1996 10 05	809	0.5+	0.6+	1998 01 24	704	0.3−	0.9+	1999 04 10	699	1.4+	0.3−
1996 10 05	809	0.8−	0.7+	1998 01 25	704	0.6+	0.2+	1999 04 17	704	1.4+	0.2+
1996 10 06	809	0.4−	1.5+	1998 01 25	704	0.7+	1.0+	1999 04 17	704	0.2+	1.7+
1996 10 06	809	0.3−	1.2+	1998 01 25	704	0.7+	0.7+	1999 04 17	704	1.2+	1.2+
1996 10 06	809	1.0−	0.7−	1998 01 25	704	0.8+	1.0+	1999 04 17	704	0.9+	1.7+
1998 01 02	691	0.5−	0.2+	1999 03 19	704	0.8+	0.4−	1999 04 17	704	0.7+	1.4+

(10630)∗ 1998 BV_{12} = 1977 XN_2 = 1990 HP_5 = 1991 RL_{32}

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

Id. K. Ichikawa (*MPC* 31399)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	249.15172		(2000.0)		**P**	**Q**	
n	0.20258934	ω	324.11434		+0.53619471	+0.84405265	
a	2.8711661	Ω	338.30684		−0.76905419	+0.48440685	
e	0.0622384	i	1.30028		−0.34792366	+0.23005463	
P	4.87	H	12.9	G	0.15	U	1

Residuals in seconds of arc

1977 12 07	675	0.3+	0.6+	1998 01 24	704	0.9+	0.1+	1999 04 09	699	0.7+	0.1+
1977 12 08	675	0.4−	0.4−	1998 01 24	704	0.2+	0.0	1999 04 14	704	0.1+	0.6+
1990 04 29	413	0.3+	0.6−	1998 01 24	704	0.0	0.1−	1999 04 14	704	1.1+	0.5−
1990 05 01	413	0.6−	0.4−	1998 01 25	704	0.4+	0.1−	1999 04 14	704	0.7+	0.3+
1990 05 02	413	0.6+	0.4−	1998 01 25	704	0.2−	0.0	1999 04 14	704	0.3+	1.5+
1991 09 11	402	0.7−	0.7+	1998 01 25	704	0.2−	0.5−	1999 04 15	704	0.8+	0.3+
1991 09 11	402	0.1−	1.1+	1998 01 25	704	0.1−	0.7+	1999 04 15	704	0.6−	0.0
1998 01 20	704	0.0	0.2−	1998 01 30	691	1.1−	0.2+	1999 04 15	704	0.9−	0.4+
1998 01 20	704	0.7+	0.2−	1998 01 30	691	1.0−	0.1+	1999 04 15	704	1.1−	0.2−
1998 01 20	704	0.2+	0.7+	1998 01 30	691	0.7−	0.2−	1999 04 15	704	0.4−	0.8+
1998 01 20	704	0.2+	0.2−	1999 03 23	704	0.2−	0.3+	1999 04 17	704	0.4−	0.1−
1998 01 20	704	0.8−	1.2+	1999 03 23	704	0.2−	0.7−	1999 04 17	703	0.5−	0.7+
1998 01 20	704	0.0	0.3−	1999 03 23	704	0.1+	0.2+	1999 04 17	704	0.2+	0.8+
1998 01 23	704	0.1+	0.1−	1999 03 23	704	1.1+	1.4−	1999 04 17	703	0.0	0.3+
1998 01 23	691	0.2−	0.2−	1999 03 23	704	0.2+	0.7−	1999 04 17	704	0.2+	0.1−
1998 01 23	704	0.7+	0.0	1999 04 07	704	0.6−	0.5−	1999 04 17	703	0.4+	0.4−
1998 01 23	691	0.2−	0.2−	1999 04 07	704	0.0	0.8−	1999 04 17	704	0.4−	0.7+
1998 01 23	704	0.3+	0.1+	1999 04 07	704	0.3−	0.1+	1999 04 17	703	0.3−	0.6−
1998 01 23	691	0.3−	0.3−	1999 04 07	704	0.1+	0.7−	1999 04 17	704	0.5−	0.5+
1998 01 23	704	0.6+	0.4−	1999 04 07	704	0.7−	0.1+	1999 05 02	120	0.8+	0.2+
1998 01 23	704	0.5+	0.5−	1999 04 09	699	0.2+	0.6+	1999 05 02	120	0.3+	0.4−
1998 01 24	704	0.2−	0.4−	1999 04 09	699	0.5+	1.1+				

(10631)∗ 1998 BM_{15} = 1981 AW_1 = 1985 YR_1

Discovered 1998 Jan. 24 at Haleakala by the JPL Near-Earth Asteroid Tracking program.

Id. A. Gnädig (*MPC* 32482)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	256.10276		(2000.0)		**P**	**Q**	
n	0.17590107	ω	38.23679		+0.47186808	+0.88047295	
a	3.1546927	Ω	259.96192		−0.81996097	+0.41910762	
e	0.0460800	i	2.67242		−0.32404401	+0.22162172	
P	5.60	H	13.1	G	0.15	U	1

Residuals in seconds of arc

1981 01 08	381	(4.1−	0.8+)	1998 01 29	566	0.2−	0.5−	1999 03 25	704	0.4−	1.9−
1981 01 08	381	0.1−	0.4−	1998 01 29	566	0.0	0.2−	1999 03 25	704	0.0	0.9+
1985 12 17	010	(2.6+	2.6−)	1998 02 22	566	0.1+	0.3−	1999 04 14	704	1.2+	0.4+
1985 12 17	010	(4.5+	2.6−)	1998 02 22	566	0.0	0.2+	1999 04 14	704	0.9+	0.3+
1996 11 07	327	0.0	0.6+	1998 02 22	566	0.1−	0.8+	1999 04 14	704	0.1−	0.7+
1996 11 07	327	0.1+	0.8+	1998 02 23	566	0.0	0.3+	1999 04 14	704	1.2−	0.3−
1996 11 07	327	0.3−	1.0+	1998 02 23	566	0.0	0.4+	1999 04 15	704	0.7−	1.2+
1996 12 15	691	0.2−	0.2−	1998 02 23	566	0.2−	0.3+	1999 04 15	704	0.3+	0.6+
1996 12 15	691	0.3−	0.2−	1999 03 20	704	0.1−	1.1−	1999 04 15	704	0.3+	1.2+
1996 12 15	691	0.2−	0.3−	1999 03 20	704	0.5−	1.0−	1999 04 15	704	0.2−	0.9+
1997 02 06	691	0.0	0.4−	1999 03 20	704	0.7−	0.6+	1999 04 15	704	0.5+	1.0+
1997 02 06	691	0.6+	0.5+	1999 03 20	704	0.8−	0.1−	1999 04 17	704	0.0	0.1−
1997 02 06	691	0.6+	0.3−	1999 03 20	704	1.0+	0.6−	1999 04 17	704	0.4+	0.2−
1998 01 24	566	0.6+	0.9−	1999 03 23	704	0.6+	0.4−	1999 04 17	704	0.7+	0.7−
1998 01 24	566	0.6+	0.6−	1999 03 23	704	1.4+	0.2−	1999 04 17	704	1.6−	1.7+
1998 01 24	566	1.0+	0.7−	1999 03 23	704	1.3+	0.2−	1999 04 17	704	0.3+	0.5−
1998 01 28	566	0.6−	0.4+	1999 03 23	704	0.0	0.5−	1999 04 18	704	0.7+	0.7−
1998 01 28	566	0.7−	0.4+	1999 03 23	704	0.5−	1.3−	1999 04 18	704	1.2−	0.3−
1998 01 28	566	0.6−	0.7+	1999 03 25	704	0.5+	0.8+	1999 04 18	704	0.4−	1.1+
1998 01 29	566	0.1−	0.2−	1999 03 25	704	0.9−	0.3−	1999 04 18	704	(2.1−	0.8+)

(10632)∗ 1998 CV_1 = 1989 YQ_1 = 1990 BR_5 = 1994 NB_3

Discovered 1998 Feb. 1 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 31404)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	112.16898		(2000.0)		**P**	**Q**	
n	0.12677846	ω	296.69336		+0.65658275	−0.74195936	
a	3.9243923	Ω	111.58843		+0.73344436	+0.58611277	
e	0.2061783	i	8.38718		+0.17595018	+0.32552746	
P	7.77	H	12.2	G	0.15	U	1

Residuals in seconds of arc

1989 12 30	413	1.1−	1.8−	1998 01 28	566	0.3+	0.7+	1998 03 03	704	0.2+	1.4+
1989 12 30	413	1.2+	0.4−	1998 02 01	327	0.7+	0.3−	1998 03 03	704	0.9+	1.1+
1989 12 31	413	0.7−	0.3−	1998 02 01	327	0.8+	0.2−	1998 03 03	704	1.4+	0.3−
1989 12 31	413	1.1+	0.1+	1998 02 01	327	0.6+	0.1−	1998 03 03	704	0.2−	1.5+
1990 01 21	372	(3.1−	4.2−)	1998 02 13	327	0.1+	0.4−	1998 03 04	704	0.7+	0.1−
1990 01 21	372	1.1−	1.5−	1998 02 13	327	0.1−	0.5−	1998 03 04	704	1.0−	0.1−
1994 07 08	809	1.6−	0.3−	1998 02 13	327	0.5−	0.9−	1998 03 04	704	1.0−	1.8+
1994 07 08	809	1.2−	0.6+	1998 02 21	327	0.1−	0.1+	1998 03 04	704	0.0	1.0+
1994 07 08	809	(2.8−	0.4+)	1998 02 21	327	0.1+	0.1−	1998 03 04	704	0.3−	0.9+
1994 07 09	809	1.7+	0.9+	1998 02 21	327	0.1−	0.1−	1999 03 15	704	0.6−	0.3−
1994 07 09	809	1.2+	0.5+	1998 02 23	327	0.3−	0.0	1999 03 15	704	0.5−	0.9+
1994 07 09	809	(0.7+	2.1+)	1998 02 23	327	0.1−	0.2+	1999 03 15	704	0.7−	0.2−
1994 07 11	809	(1.9+	3.3+)	1998 02 23	327	0.3−	0.3+	1999 04 12	704	1.4+	0.5−
1994 07 11	809	(0.3−	2.5+)	1998 02 25	566	0.6−	0.5−	1999 04 12	704	1.0+	0.7−
1994 07 11	809	(0.4+	2.7+)	1998 02 25	566	(1.4−	2.2−)	1999 04 12	704	0.4+	0.1−
1994 07 12	809	(1.4+	4.2+)	1998 02 25	566	(0.2+	2.4−)	1999 04 19	704	0.8−	0.0
1994 07 12	809	(0.1+	3.2+)	1998 03 02	327	0.1−	0.5+	1999 04 19	704	1.7−	1.4−
1994 07 12	809	(0.1−	3.3+)	1998 03 02	327	0.1−	0.4+	1999 04 19	704	1.1+	0.0
1998 01 28	566	0.5+	0.7+	1998 03 02	327	0.2−	0.3+	1999 04 19	704	0.9−	0.8−
1998 01 28	566	0.2+	0.5+	1998 03 03	704	0.3−	0.3−				

(10633)∗ 1998 DP_1 = 1992 OH_3 = 1995 HF_5

Discovered 1998 Feb. 20 by P. Pravec at Ondřejov.

Id. G. V. Williams (*MPC* 31406)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	98.97139		(2000.0)		**P**	**Q**	
n	0.25594532	ω	344.18301		−0.29742296	−0.94889709	
a	2.4568082	Ω	123.01089		+0.88903938	−0.31554837	
e	0.0911714	i	7.22872		+0.34806402	−0.00485215	
P	3.85	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1992 07 24	809	1.5+	2.0−	1995 05 04	691	0.0	1.1−	1998 03 11	327	0.4+	0.3+
1992 07 24	809	(0.2−	2.9−)	1997 12 27	566	0.1+	1.3−	1998 03 11	327	0.2−	0.4−
1992 07 24	809	(2.4−	4.0−)	1997 12 27	566	0.0	1.4−	1998 03 22	557	0.5+	1.0+
1992 07 26	809	(0.0	2.2−)	1997 12 27	566	0.2−	1.5−	1998 04 09	557	0.6+	0.1+
1992 07 26	809	0.7+	1.7−	1998 02 20	557	0.3+	0.5+	1998 04 09	557	0.5−	0.1+
1992 07 26	809	(0.4−	2.5−)	1998 02 20	557	0.1+	0.6+	1999 03 18	557	1.0+	0.4+
1992 07 30	809	0.1+	1.4+	1998 02 21	557	0.1−	0.1−	1999 03 18	557	0.1−	0.1+
1992 07 30	809	1.8−	1.1+	1998 02 21	557	0.2−	0.0	1999 03 25	557	0.1+	0.1−
1992 07 30	809	(3.3−	1.0−)	1998 02 21	557	0.1−	0.2+	1999 03 25	557	0.1+	0.4+
1995 04 26	691	0.4−	0.3−	1998 02 21	557	0.2−	0.1+	1999 04 18	557	0.0	0.5+
1995 04 26	691	0.5−	0.7−	1998 03 02	327	0.0	0.3+	1999 04 18	557	0.5−	0.6+
1995 04 26	691	0.3−	0.4−	1998 03 02	327	0.2−	0.2+	1999 04 19	557	0.2+	0.5+
1995 05 04	691	0.2−	0.5−	1998 03 02	327	0.0	0.3+	1999 04 19	557	0.1+	0.0
1995 05 04	691	0.2−	0.9−	1998 03 11	327	0.7−	0.3+	1999 04 19	557	0.0	0.6+

(10634)∗ 1998 GM$_1$ = 1995 KX$_2$

Discovered 1998 Apr. 8 by L. Šarounová at Ondřejov.

Id. G. V. Williams (*MPC* 31771)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	245.88875		(2000.0)		**P**	**Q**	
n	0.25082156	ω	139.97144		+0.92631684	+0.37581922	
a	2.4901536	Ω	198.00706		−0.36381309	+0.87411744	
e	0.0144814	*i*	4.89924		−0.09786289	+0.30769890	
P	3.93	*H*	13.8	*G*	0.15	*U*	1

Residuals in seconds of arc

1992 10 03	675	0.5−	0.0	1998 04 08	557	0.0	0.4+	1998 05 15	557	0.9+	0.4+
1992 10 03	675	1.2−	0.4−	1998 04 08	557	0.6+	0.1+	1998 05 15	557	0.1−	0.0
1995 05 22	010	1.3+	1.0−	1998 04 08	557	0.1−	0.3+	1999 03 27	557	0.3+	1.1+
1995 05 22	010	0.2+	1.0−	1998 04 09	557	0.0	0.5+	1999 03 27	557	0.1+	0.4+
1995 05 22	010	0.6+	0.7−	1998 04 09	557	0.6+	0.3+	1999 03 27	557	1.5+	0.1+
1995 05 23	010	(2.5−	0.0)	1998 04 09	557	0.5+	0.7−	1999 04 10	557	0.4−	0.7+
1995 05 23	010	0.6−	0.8−	1998 04 09	557	0.0	0.4+	1999 04 10	557	1.0−	0.6+
1995 05 23	010	(3.2−	0.1−)	1998 04 13	557	0.5−	0.1−	1999 04 10	557	0.5−	0.4+
1996 10 19	910	0.4+	0.9+	1998 04 13	557	0.3−	0.6+	1999 04 21	557	0.6−	1.0+
1996 10 19	910	0.4+	1.0+	1998 04 13	557	0.8+	0.4+	1999 04 21	557	0.6−	1.3+
1996 10 19	910	0.4+	1.1+	1998 04 26	557	0.9−	0.8+	1999 04 21	557	0.5−	0.9+
1998 02 22	691	0.3−	0.2+	1998 04 26	557	0.2−	0.4−	1999 04 23	557	(0.4−	2.5+)
1998 02 22	691	0.3−	0.2+	1998 04 29	557	0.3−	0.4−	1999 04 23	557	(0.4−	2.5+)
1998 02 22	691	0.2−	0.1+	1998 05 13	557	0.1+	0.9−				

(10635)∗ 1998 QH$_8$ = 1993 SF$_5$

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

Id. G. V. Williams (*MPC* 32691)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	14.26270		(2000.0)		**P**	**Q**	
n	0.18532333	ω	168.92774		+0.90646478	+0.41907286	
a	3.0468377	Ω	165.94740		−0.40194309	+0.89397532	
e	0.1222110	*i*	12.35573		−0.12947338	+0.15870118	
P	5.32	*H*	13.6	*G*	0.15	*U*	2

Residuals in seconds of arc

1982 07 25	413	0.7−	0.2+	1993 09 20	010	1.5−	0.9−	1998 08 21	566	0.0	0.3+
1982 07 25	413	0.3+	1.4−	1993 09 20	010	0.1−	0.3−	1998 08 21	566	0.6−	0.2−
1982 09 16	413	0.3+	0.4−	1996 02 15	566	0.3+	0.1+	1998 08 23	704	0.8+	1.2−
1982 09 16	413	0.3+	0.4+	1996 02 15	566	0.7−	0.2+	1998 08 23	704	0.6−	1.0+
1993 08 18	010	(0.3−	2.7+)	1996 02 15	566	0.4+	0.3−	1998 08 23	704	0.6+	1.1−
1993 08 19	010	(1.0−	2.5+)	1998 08 17	704	0.0	0.6+	1998 08 23	704	1.0−	0.6+
1993 08 19	010	0.6−	1.9+	1998 08 17	704	1.5−	0.8−	1998 08 23	704	0.5+	0.2+
1993 08 19	010	(4.7−	2.5−)	1998 08 17	704	0.5−	0.2+	1998 09 14	699	1.1+	0.3+
1993 09 19	010	0.6+	0.7−	1998 08 17	704	0.1−	0.2+	1998 09 14	699	0.8+	0.4+
1993 09 19	010	1.4+	0.1+	1998 08 17	704	0.3+	0.1+	1998 09 14	699	1.1+	0.2−
1993 09 20	010	0.0	0.0	1998 08 21	566	0.6−	0.6+				

(10636)∗ 1998 QK$_{56}$ = 1986 EC = 1986 EY$_4$

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

Id. S. Nakano (*MPC* 34220)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	16.68529		(2000.0)		**P**	**Q**	
n	0.38111774	ω	285.75137		−0.16186486	−0.98644381	
a	1.8840682	Ω	173.38469		+0.97112094	−0.16408920	
e	0.5125767	*i*	13.54850		+0.17528234	−0.00182634	
P	2.59	*H*	17.5	*G*	0.15	*U*	1

Residuals in seconds of arc

1986 03 06	675	0.2+	0.0	1998 09 23	557	0.5−	0.1−	1999 01 15	422	0.5−	0.0
1986 03 06	675	0.2−	0.0	1998 09 23	557	0.2−	0.3+	1999 02 19	711	0.1−	0.6−
1986 03 11	809	(0.6+	12.3+)	1998 09 25	046	0.1−	0.2+	1999 02 19	711	0.4−	0.7+
1986 03 11	809	(0.7+	12.8−)	1998 09 25	046	0.3−	0.1+	1999 02 20	711	0.7−	0.1−
1998 08 28	704	0.0	0.6−	1998 09 25	046	0.4−	0.3+	1999 02 20	711	0.5−	0.2−
1998 08 28	704	0.7−	0.9+	1998 09 25	046	0.2−	0.1+	1999 03 12	118	0.0	0.0
1998 08 28	704	0.6−	0.9+	1998 09 27	071	(3.3+	0.2+)	1999 03 12	118	0.2+	0.1−
1998 08 28	704	1.5−	0.2−	1998 09 27	071	1.0+	0.2+	1999 03 12	691	1.2−	0.8+
1998 08 29	704	0.1−	0.7+	1998 09 27	071	0.9+	0.4−	1999 03 12	691	0.9−	0.7+
1998 08 29	704	0.2+	0.6+	1998 09 27	071	0.6+	0.3+	1999 03 12	691	1.1−	0.8+
1998 08 29	704	0.7+	0.9−	1998 09 27	071	0.3−	0.6+	1999 03 12	422	0.4−	0.3−
1998 08 29	704	1.0+	0.6+	1998 09 27	071	1.9+	0.1−	1999 03 12	422	0.8−	0.1+
1998 08 29	704	(3.1−	0.1−)	1998 09 28	670	1.5+	0.6+	1999 03 13	046	0.9+	0.2+
1998 08 29	658	0.1+	0.1+	1998 09 28	670	0.2−	0.4+	1999 03 13	046	1.0+	0.3−
1998 08 29	658	0.1−	0.1+	1998 09 28	670	0.9−	0.6+	1999 03 13	046	0.6+	0.4+
1998 08 29	658	0.2+	0.0	1998 09 30	046	0.0	0.3+	1999 03 13	046	0.6+	0.1+
1998 08 29	422	0.0	1.5+	1998 09 30	046	0.4+	0.1−	1999 03 16	360	0.1+	0.1+
1998 08 29	422	(2.5−	0.5+)	1998 09 30	046	0.1−	0.2−	1999 03 16	360	0.2+	0.3+
1998 08 29	422	(2.8−	1.3−)	1998 09 30	046	0.5−	0.3−	1999 03 16	360	0.0	0.0
1998 08 29	426	0.1+	0.4+	1998 10 01	422	0.5−	0.7+	1999 03 17	402	1.0+	0.1+
1998 08 29	426	0.9+	0.5+	1998 10 01	422	0.1+	0.0	1999 03 17	402	0.5+	0.4−
1998 08 29	426	0.4−	0.3+	1998 10 01	422	0.3+	0.0	1999 03 17	402	0.7+	0.6−
1998 08 30	658	0.0	0.2+	1998 10 15	758	1.2+	0.4−	1999 03 25	118	0.2−	1.0−
1998 08 30	658	0.2+	0.5−	1998 10 15	758	0.2−	0.7+	1999 03 25	118	1.7+	0.1−
1998 08 30	658	0.5+	0.2+	1998 10 15	758	1.3−	0.2+	1999 03 26	860	1.2−	1.2+
1998 08 30	422	0.4−	0.7+	1998 10 16	118	0.5−	0.6+	1999 03 26	860	0.3+	0.7+
1998 08 30	422	0.4−	0.0	1998 10 16	118	0.2−	0.6+	1999 03 27	118	0.9+	0.1−
1998 08 31	557	0.4−	0.0	1998 10 16	118	0.2−	0.7+	1999 03 27	118	1.2+	0.4+
1998 08 31	557	0.4−	0.5+	1998 10 18	844	0.8−	0.1−	1999 04 11	422	1.0+	0.7+
1998 09 01	046	0.5+	0.9+	1998 10 18	844	1.3+	1.1−	1999 04 11	422	0.1+	0.2−
1998 09 01	046	0.2+	0.5+	1998 10 18	844	0.3−	1.1−	1999 04 11	422	0.5+	0.9−
1998 09 01	046	0.5−	0.2+	1998 10 23	422	0.2+	0.3−	1999 04 12	704	0.0	1.0+
1998 09 01	422	1.7−	1.0−	1998 10 23	422	0.1−	0.3+	1999 04 12	704	1.9+	1.3+
1998 09 18	426	0.6+	0.7−	1998 10 23	422	0.3−	0.5−	1999 04 12	704	0.4+	1.3+
1998 09 18	426	0.3−	0.8−	1998 11 15	360	0.2+	0.5+	1999 04 12	704	0.6+	1.3+
1998 09 18	426	0.4−	0.1−	1998 11 15	360	0.9−	0.9+	1999 04 12	704	(4.9−	2.3−)
1998 09 19	557	0.1−	0.3+	1998 11 15	360	0.1−	1.2+	1999 04 19	704	2.1+	0.3−
1998 09 19	557	1.0−	0.4−	1998 12 23	422	0.4−	0.9+	1999 04 19	704	0.5−	0.2+
1998 09 20	046	0.2−	0.6−	1998 12 23	422	0.9+	0.2+	1999 04 19	704	0.0	0.5+
1998 09 20	046	0.4−	0.2−	1998 12 23	422	0.4+	0.7−	1999 04 19	704	0.3+	0.9+
1998 09 20	046	0.5−	0.5−	1999 01 15	422	0.4−	0.3+	1999 04 19	704	2.4−	1.3+
1998 09 20	046	0.0	0.4−	1999 01 15	422	0.2−	0.1+				

(10637)∗ 1998 QP$_{104}$ = 1976 US$_3$ = 1987 UL$_1$ = 1990 FY$_3$ = 1996 FM$_{17}$

Discovered 1998 Aug. 26 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 32722)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	273.48165		(2000.0)		**P**	**Q**	
n	0.17340448	ω	85.27361		−0.33288245	−0.93769582	
a	3.1849003	Ω	24.89530		+0.74390938	−0.32603696	
e	0.0224998	*i*	13.68299		+0.57947227	−0.12011019	
P	5.68	*H*	12.6	*G*	0.15	*U*	2

Residuals in seconds of arc

1976 10 26	095	0.5+	2.2+	1998 09 14	704	0.6+	1.2−	1998 09 27	704	0.4−	0.2−
1987 10 21	399	1.1−	1.4−	1998 09 14	704	0.4+	0.4−	1998 10 14	704	1.2−	1.7+
1987 10 21	399	1.5−	0.2+	1998 09 17	699	0.5+	0.1+	1998 10 14	704	1.3−	0.9+
1987 10 21	399	(1.4−	2.8+)	1998 09 17	699	0.5+	0.2−	1998 10 14	704	1.7−	0.6+
1990 03 30	095	0.2+	0.9+	1998 09 17	699	0.5+	0.2−	1998 10 14	704	0.4−	1.5+
1990 03 30	095	(2.9−	7.0−)	1998 09 18	704	0.1−	0.1−	1998 10 15	704	0.6−	1.4+
1996 03 22	809	1.0+	0.5+	1998 09 18	704	0.4−	0.1−	1998 10 15	704	0.4−	1.3+
1996 03 22	809	0.7+	1.5+	1998 09 18	704	0.7−	0.4+	1998 10 15	704	0.0	1.2+
1996 03 22	809	0.0	1.6+	1998 09 18	704	0.5+	0.3−	1998 10 15	704	0.7−	1.2+
1996 03 26	809	1.6+	0.1+	1998 09 18	704	0.2+	0.1−	1998 10 15	704	0.1−	1.2+

1996 03 26	809	1.3+	1.4+	1998 09 24	699	0.9+	0.5−	1998 10 15	704	1.6−	0.3+
1996 03 26	809	0.7+	0.6+	1998 09 24	699	0.9+	0.1−	1998 10 15	704	1.0−	0.0
1996 04 23	566	0.7−	0.1−	1998 09 24	699	0.6+	1.1−	1998 10 15	704	0.9−	0.8−
1996 04 23	566	0.3−	0.6−	1998 09 26	704	0.2+	0.4−	1998 10 15	704	0.4+	1.3+
1996 04 23	566	0.6−	0.2+	1998 09 26	704	0.0	0.6−	1998 10 17	699	0.1+	0.5+
1998 08 26	809	1.0+	1.3−	1998 09 26	704	0.4+	0.3−	1998 10 17	699	0.5+	0.9+
1998 08 26	809	0.2+	0.5−	1998 09 26	704	0.4+	0.3−	1998 10 17	699	1.2−	1.0+
1998 08 26	809	0.3+	0.4−	1998 09 26	704	0.1+	0.4−	1998 12 16	699	1.0+	0.6−
1998 08 27	809	1.1+	0.4+	1998 09 27	704	0.1+	0.4−	1998 12 16	699	0.4−	0.7−
1998 08 27	809	0.5+	0.8−	1998 09 27	704	0.5−	0.5+	1998 12 16	699	0.4−	0.1+
1998 08 27	809	0.7+	0.2+	1998 09 27	704	0.6−	0.8+				
1998 09 14	704	0.4+	0.2−	1998 09 27	704	0.2−	0.5−				

(10638)∗ 1998 SV_{54} = 1985 GE = 1990 DE_9 = 1991 KY

Discovered 1998 Sept. 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Id. G. V. Williams (*MPC* 33029)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	131.05338		(2000.0)		**P**	**Q**	
n	0.17444671	ω	70.01474		−0.52997278	+0.84770571	
a	3.1722022	Ω	167.90201		−0.81314372	−0.50033453	
e	0.1351002	i	6.26968		−0.24067849	−0.17623956	
P	5.65	H	13.2	G	0.15	U	1

Residuals in seconds of arc

1985 04 14	688	0.6+	0.8+	1996 04 20	566	0.1+	0.6−	1998 09 26	704	0.2−	0.0
1985 04 14	688	2.2+	0.6−	1998 09 14	704	0.7−	0.8+	1998 09 26	704	0.2+	0.4+
1985 04 23	688	0.7+	0.2−	1998 09 14	704	0.9−	1.1+	1998 09 27	704	0.5−	0.3−
1985 04 23	688	1.1−	1.0−	1998 09 14	704	0.4−	0.6+	1998 09 27	704	0.4−	0.0
1990 02 28	809	0.3−	0.4−	1998 09 16	699	0.6+	0.7+	1998 09 27	704	0.0	0.5+
1990 02 28	809	1.0−	0.1+	1998 09 16	699	0.5−	0.0	1998 09 27	704	0.3−	0.0
1990 02 28	809	1.8−	0.1+	1998 09 16	699	0.5+	0.2+	1998 09 27	704	0.8+	0.8−
1991 05 17	809	0.6−	0.1+	1998 09 18	704	1.0+	0.1+	1998 10 14	910	0.1−	0.8−
1991 05 17	809	0.9−	0.7+	1998 09 18	704	1.1+	0.2+	1998 10 14	910	0.1−	0.9−
1991 05 17	809	1.4−	0.1−	1998 09 18	704	0.8+	0.6+	1998 10 14	910	0.0	0.7−
1996 02 24	566	0.2−	1.3+	1998 09 18	704	0.2+	1.0+	1998 10 18	910	0.6−	0.3−
1996 02 24	566	0.5−	1.1+	1998 09 18	704	1.5+	1.5+	1998 10 18	910	0.5−	0.2−
1996 02 24	566	0.7−	1.4+	1998 09 25	699	0.6+	0.6−	1998 10 18	910	0.6−	0.4−
1996 03 21	566	1.2+	0.3−	1998 09 25	699	0.4+	0.0	1998 10 22	910	0.5−	0.2−
1996 03 21	566	1.4+	0.5−	1998 09 25	699	0.6+	0.3−	1998 10 22	910	0.4−	0.3−
1996 03 21	566	1.2+	0.1−	1998 09 26	704	0.5+	0.1−	1998 10 22	910	0.6−	0.1−
1996 04 20	566	0.3+	0.4−	1998 09 26	704	0.4−	1.2−				
1996 04 20	566	0.3+	0.3−	1998 09 26	704	1.2−	1.5+				

(10639)∗ 1998 VV_{41} = 1977 LY = 1993 FX_{77}

Discovered 1998 Nov. 14 by Spacewatch at Kitt Peak.

Id. G. V. Williams (*MPC* 33709)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	235.23771		(2000.0)		**P**	**Q**	
n	0.30286950	ω	4.10062		−0.28156740	+0.95848316	
a	2.1960001	Ω	249.55023		−0.88172414	−0.27696985	
e	0.1570090	i	2.75607		−0.37852655	−0.06780662	
P	3.25	H	14.1	G	0.15	U	1

Residuals in seconds of arc

1977 06 12	675	0.3−	1.6+	1998 11 14	691	0.2−	0.1−	1998 12 22	704	1.0+	0.2−
1977 06 13	675	0.3+	1.1+	1998 11 14	691	0.2−	0.4−	1998 12 22	704	0.0	0.2+
1993 03 21	809	0.1−	0.4−	1998 11 14	691	0.2−	0.2−	1998 12 22	704	0.2−	0.6+
1993 03 22	809	0.3+	0.6−	1998 11 18	691	0.7−	0.4−	1998 12 22	120	1.7+	1.1+
1993 03 26	809	0.6−	0.3−	1998 11 18	691	0.6−	0.2−	1998 12 22	120	1.4−	0.4−
1997 10 17	327	0.6−	0.4−	1998 11 18	691	0.5−	0.0	1998 12 22	120	1.2+	1.6+
1997 10 17	327	0.2+	0.4−	1998 12 16	120	0.3+	0.1−	1999 01 18	704	0.4+	1.8−
1997 10 17	327	0.1−	0.1−	1998 12 16	120	0.3−	0.1+	1999 01 18	704	0.2+	0.4+
1997 10 17	327	0.3−	0.2+	1998 12 16	120	0.0	0.5+	1999 01 18	704	(0.0	2.1−)
1997 11 02	327	0.1−	0.2+	1998 12 16	699	0.4+	0.8+	1999 01 18	704	0.6+	0.0
1997 11 02	327	0.4+	0.7+	1998 12 16	699	0.6−	0.5−	1999 01 18	704	(1.9−	2.1−)
1997 11 02	327	0.4+	0.3+	1998 12 16	699	0.6−	0.9+	1999 04 07	704	(1.1−	2.2−)
1998 11 14	699	0.4−	0.1+	1998 12 17	120	1.6+	1.0+	1999 04 07	704	1.1−	1.5+
1998 11 14	699	0.0	0.9+	1998 12 22	704	0.0	0.2−	1999 04 07	704	0.3+	0.5−
1998 11 14	699	0.1+	1.7−	1998 12 22	704	0.8−	0.6+				

(10640)∗ 1998 WU_{19} = 1941 UD = 1969 AB_1 = 1976 GS_1 = 1981 WA_8 = 1981 WP_8 = 1984 SU_6 = 1993 KA_3 = 1996 FY_{20}

Discovered 1998 Nov. 25 by the Lincoln Laboratory Near-Earth Asteroid Research Team at Socorro.

Id. G. V. Williams (*MPC* 34226)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	43.84215		(2000.0)		**P**	**Q**	
n	0.29716591	ω	285.44847		−0.00841650	−0.99983064	
a	2.2240099	Ω	165.00515		+0.93999519	−0.01349336	
e	0.1447274	i	3.62671		+0.34108387	+0.01251487	
P	3.32	H	14.0	G	0.15	U	1

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

1941 10 16	053	(0.03−	0.02−)X	1993 05 29	010	0.3−	1.8−	1998 12 01	704	0.3+	0.2−
1941 10 19	053	(60.0−	67.5−)X	1993 05 29	010	0.7−	0.6−	1998 12 01	704	0.9−	1.2−
1941 10 22	053	(17.6−	31.2+)X	1993 05 29	010	0.7+	1.2−	1998 12 01	704	0.4−	1.3−
1969 01 15	095	0.9−	0.1−	1996 03 24	809	0.5−	0.5+	1998 12 01	704	0.6+	0.2−
1976 04 01	095	(5.8−	4.8+)	1996 03 24	809	0.4−	1.2+	1999 03 19	704	0.1+	0.2−
1976 04 04	095	0.5+	1.4−	1996 03 24	809	1.0−	1.1+	1999 03 19	699	0.4+	0.2−
1981 11 25	095	(2.3+	3.8+)	1996 03 26	809	1.3+	1.1+	1999 03 19	704	0.4+	1.2−
1981 11 25	095	1.1+	1.6−	1996 03 26	809	0.2+	1.0+	1999 03 19	704	0.2−	0.4−
1984 09 28	809	(3.1−	0.9−)	1996 03 26	809	0.8+	0.9+	1999 03 19	699	0.4+	0.2−
1984 09 28	809	(2.8−	0.6−)	1998 10 29	699	0.2+	1.4+	1999 03 19	704	0.0	0.6−
1984 09 28	809	2.4−	0.6−	1998 10 29	699	1.1−	1.6+	1999 03 19	699	0.5+	0.2−
1984 09 29	809	0.3+	0.6−	1998 10 29	699	1.5−	0.6+	1999 03 20	704	0.4−	0.4+
1984 09 29	809	0.3+	0.4−	1998 11 24	699	0.4−	1.4+	1999 03 20	704	1.7+	0.9−
1984 09 29	809	0.4+	0.5−	1998 11 24	699	1.0−	0.7−	1999 03 20	704	(2.9−	2.2+)
1984 09 30	809	0.5+	0.6+	1998 11 24	699	0.4−	0.4−	1999 03 20	704	1.0−	0.1+
1984 09 30	809	0.5+	0.6+	1998 11 25	704	0.4+	0.1+	1999 03 20	704	(2.8−	2.3−)
1984 09 30	809	0.6+	0.5+	1998 11 25	704	0.3−	0.3−	1999 03 23	699	0.6+	0.3−
1993 05 27	010	1.2−	1.6−	1998 11 25	704	1.0−	0.3+	1999 03 23	699	0.5+	0.2+
1993 05 27	010	(0.2−	2.6−)	1998 11 25	704	0.3−	0.3+	1999 03 23	699	0.2+	0.3+
1993 05 28	010	(0.9+	2.2−)	1998 11 25	704	0.5−	0.1−				

(10641)∗ 1998 XS_{52} = 1969 TZ_5 = 1977 DE_{10} = 1990 HH_6

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

Id. G. V. Williams (*MPC* 33717)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	19.83117		(2000.0)		**P**	**Q**	
n	0.17472248	ω	48.80418		+0.10097551	−0.99481380	
a	3.1688635	Ω	35.40606		+0.90636098	+0.08691652	
e	0.1381934	i	1.20903		+0.41026056	+0.05283006	
P	5.64	H	13.4	G	0.15	U	1

Residuals in seconds of arc

1969 10 15	095	0.8−	0.4−	1997 09 30	327	0.2+	0.2+	1998 12 17	704	0.1−	0.6−
1969 10 17	095	(4.4+	0.7+)	1997 09 30	327	0.3+	0.5+	1998 12 17	704	0.2−	0.1−
1977 02 19	381	0.2+	0.3+	1997 12 11	327	0.1−	0.3+	1998 12 17	704	0.0	0.1+
1977 02 19	381	1.6+	0.5−	1997 12 11	327	0.8+	0.0	1998 12 17	704	0.4−	0.2+
1990 04 29	413	0.3−	1.1−	1997 12 11	327	0.9+	0.2−	1999 01 16	704	0.3+	0.4−
1990 05 01	413	0.5−	1.1−	1997 12 11	327	0.8+	0.8−	1999 01 16	704	0.5−	0.0
1990 05 02	413	0.5−	1.1−	1998 12 14	704	0.2+	0.6+	1999 01 16	704	1.7+	0.5−
1996 07 15	566	0.5−	0.3+	1998 12 14	704	1.3−	1.2−	1999 01 19	704	1.0+	1.8+
1996 07 15	566	0.2+	0.6+	1998 12 14	704	0.5−	0.1+	1999 01 19	704	0.4−	0.4+
1996 07 15	566	0.0	0.8+	1998 12 14	704	0.9−	0.6−	1999 01 19	704	0.2−	0.7+
1997 09 30	327	0.0	0.5+	1998 12 17	704	0.0	0.3+	1999 01 19	704	0.5−	1.1−

(10642)* 1999 BF_8 = 1978 JL_3 = 1996 RY_{24} = 1997 WX_{33}

Discovered 1999 Jan. 19 by A. Boattini and L. Tesi at San Marcello Pistoiese.

Id. G. V. Williams (*MPC* 33986)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	12.15562		(2000.0)			
n	0.18267439	ω	68.55619		−0.69868490	−0.71445725
a	3.0762215	Ω	65.82225		+0.64033283	−0.64774026
e	0.0730732	i	2.34241		+0.31908194	−0.26454375
P	5.40	H	13.2	G	0.15	U 1

Residuals in seconds of arc

1978 05 05	095	0.1+	0.3+	1999 02 07	104	1.0−	0.2+	1999 03 13	104	0.5−	0.1+
1996 09 11	691	0.6−	1.0+	1999 02 07	104	0.1+	0.8+	1999 03 14	104	0.2−	0.1−
1996 09 11	691	0.6−	0.9+	1999 02 07	104	0.4+	0.3+	1999 03 14	104	0.1+	0.0
1996 09 11	691	0.6−	0.5+	1999 02 10	704	0.0	0.2+	1999 03 14	104	0.0	0.1+
1996 09 16	566	0.0	0.1+	1999 02 10	704	0.3−	0.3−	1999 03 19	704	0.5−	0.3−
1996 09 16	566	0.1+	0.2−	1999 02 10	704	0.0	0.1−	1999 03 19	704	0.5−	0.7−
1996 09 16	566	0.6+	0.2+	1999 02 10	704	0.6+	1.0+	1999 03 19	704	0.4−	0.4+
1997 09 07	910	0.1−	1.0−	1999 02 10	704	0.4−	0.9+	1999 03 19	704	1.0−	0.4+
1997 09 07	910	0.2+	0.9−	1999 02 13	704	0.9+	0.2−	1999 03 19	704	0.8−	0.3+
1997 09 07	910	0.0	1.1−	1999 02 13	704	1.2+	0.5+	1999 03 19	104	0.9−	0.9+
1997 11 29	704	0.4−	0.1−	1999 02 13	704	0.2+	0.1+	1999 03 19	104	0.0	1.3+
1997 11 29	704	0.9+	0.6+	1999 02 13	704	0.5+	0.5−	1999 03 19	104	0.0	0.9+
1997 11 29	704	0.1−	0.7+	1999 02 13	704	0.9−	1.0−	1999 03 20	704	1.5+	0.8−
1997 11 29	704	0.5−	0.7+	1999 02 14	108	1.8+	0.3−	1999 03 20	704	(2.1−	1.0−)
1997 11 29	704	0.3+	0.6+	1999 02 14	108	0.9−	0.7−	1999 03 20	704	0.6−	0.7+
1997 12 04	704	0.1−	0.5−	1999 02 14	108	1.1+	0.7+	1999 03 20	704	0.7−	0.7+
1997 12 04	704	0.9+	0.2+	1999 02 14	108	0.8+	0.2−	1999 03 20	704	1.4−	0.2+
1997 12 04	704	(0.7−	2.2−)	1999 02 18	699	0.5+	0.4+	1999 03 20	699	0.4+	0.7−
1997 12 04	704	1.1−	0.1−	1999 02 18	699	0.1+	0.0	1999 03 20	699	0.7+	0.0
1999 01 19	104	0.3−	0.6−	1999 02 18	699	0.0	0.2−	1999 03 20	699	0.8+	1.7−
1999 01 20	104	0.1+	0.7−	1999 02 19	104	0.3+	0.6−	1999 04 04	104	0.0	0.6+
1999 01 20	104	0.4+	0.1+	1999 02 19	104	0.0	0.2−	1999 04 19	104	0.0	0.4+
1999 01 20	104	0.1+	0.2−	1999 03 13	104	0.0	0.1−				
1999 02 07	104	0.9−	0.5−	1999 03 13	104	0.1+	0.1−				

(10643)* 1999 CE_{78} = 1991 CG_6 = 1991 EZ_8 = 1992 QC_1 = 1993 XJ_2 = 1997 XO_7

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

Id. G. V. Williams (*MPC* 34251)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	283.62785		(2000.0)			
n	0.24188424	ω	11.74841		−0.60324306	+0.79568853
a	2.5511207	Ω	221.18219		−0.73829284	−0.58298989
e	0.0948875	i	4.75363		−0.30169768	−0.16432452
P	4.07	H	13.8	G	0.15	U 1

Residuals in seconds of arc

1991 02 10	675	0.2+	0.6−	1993 12 17	691	0.5−	0.0	1999 02 12	704	0.2−	0.4−
1991 02 10	675	0.4−	0.3−	1997 10 29	566	0.3−	0.0	1999 02 16	704	0.8−	0.3+
1991 03 13	675	0.7−	1.1−	1997 10 29	566	0.7−	0.1−	1999 02 16	704	0.4−	0.3−
1991 03 13	675	0.3+	0.8−	1997 10 29	566	0.3−	0.6−	1999 02 16	704	0.4−	0.3−
1992 08 29	675	1.2+	0.6−	1997 12 05	910	0.8+	0.2−	1999 02 16	704	0.6+	0.5−
1992 08 29	675	0.2−	1.0−	1997 12 05	910	0.9+	0.1−	1999 02 16	704	1.1−	1.0−
1992 09 01	675	0.2+	1.8−	1997 12 05	910	0.9+	0.2−	1999 02 21	699	0.5+	0.1−
1992 09 01	675	0.1−	0.9−	1997 12 07	910	0.1+	0.3−	1999 02 21	699	0.5+	0.7+
1993 12 14	691	0.2+	0.3−	1997 12 07	910	0.2+	0.4−	1999 02 21	699	0.1+	0.0
1993 12 14	691	0.5+	0.3+	1997 12 07	910	0.1+	0.4−	1999 03 22	699	0.1−	0.7+
1993 12 14	691	0.0	0.7+	1999 02 12	704	0.8+	0.5−	1999 03 22	699	0.1−	0.9+
1993 12 17	691	0.8−	0.1+	1999 02 12	704	0.8−	0.7−	1999 03 22	699	0.0	0.0
1993 12 17	691	0.5−	0.0	1999 02 12	704	0.4+	0.2−				

(10644)* 1999 DM_2 = 1963 VF = 1985 GY = 1992 ST_{14} = 1995 JP_1 = 1997 WC_{49}

Discovered 1999 Feb. 19 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 34260)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	84.94050		(2000.0)			
n	0.20270351	ω	352.37097		+0.60289985	−0.76592132
a	2.8700879	Ω	60.27217		+0.74489318	+0.44014649
e	0.1690716	i	14.90262		+0.28573750	+0.46865297
P	4.86	H	12.4	G	0.15	U 1

Residuals in seconds of arc

1963 11 11	760	0.1+	0.5+	1997 11 29	704	0.8+	0.6+	1999 02 20	411	0.7−	0.1−
1963 11 11	760	0.4−	0.5+	1997 11 29	704	0.5+	0.9+	1999 02 23	411	1.2−	0.1+
1985 04 15	688	(3.6−	0.8−)	1997 11 30	566	0.2+	0.9+	1999 02 23	411	0.1−	0.6+
1985 04 15	688	(2.7−	0.4−)	1997 11 30	566	0.4−	0.6+	1999 02 27	411	0.1−	0.4+
1985 04 24	688	0.3−	0.3+	1997 11 30	566	0.3+	0.1+	1999 02 27	411	0.7−	0.9+
1985 04 24	688	1.3+	2.1−	1999 02 11	704	0.6−	0.7−	1999 03 22	411	0.1+	0.5−
1992 09 30	675	0.4−	1.2−	1999 02 11	704	0.2+	0.6−	1999 03 22	411	0.5−	0.2+
1992 09 30	675	1.1−	0.8−	1999 02 11	704	0.5−	0.6−	1999 04 07	411	0.2−	1.1−
1992 10 03	675	1.5−	1.4−	1999 02 11	704	0.7−	0.2+	1999 04 07	411	0.5+	0.8−
1992 10 03	675	(2.1−	0.1−)	1999 02 11	704	0.9−	0.5+	1999 04 10	704	0.6+	0.9−
1992 10 04	675	(0.7+	2.1−)	1999 02 13	699	0.0	1.0+	1999 04 10	704	0.4+	0.3−
1992 10 04	675	0.7+	1.5−	1999 02 13	699	0.1−	0.8+	1999 04 10	704	0.1−	1.2+
1995 05 05	010	0.7+	0.4−	1999 02 13	699	0.0	0.1−	1999 04 10	704	0.1+	1.0+
1995 05 05	010	0.7+	0.8−	1999 02 18	704	0.5−	0.2−	1999 04 10	704	1.4−	0.2−
1995 05 05	010	1.2+	1.9+	1999 02 18	704	1.1−	0.3+	1999 04 14	411	0.3+	0.1−
1995 05 08	010	(0.5+	2.2+)	1999 02 18	704	0.2−	0.5+	1999 04 14	411	0.6+	0.2−
1995 05 08	010	0.4+	1.9+	1999 02 18	704	0.1−	0.1−	1999 04 19	704	(2.5+	0.2+)
1995 05 08	010	(1.2+	2.5+)	1999 02 18	704	0.3+	0.2−	1999 04 19	704	1.5+	1.2−
1997 11 29	704	0.0	0.3−	1999 02 19	411	0.8+	0.7+	1999 04 19	704	0.4+	0.3+
1997 11 29	704	0.6+	1.7+	1999 02 19	411	0.8+	0.5+	1999 04 19	704	0.2−	1.2−
1997 11 29	704	0.2+	0.6+	1999 02 20	411	0.5−	0.0	1999 04 19	704	0.8+	0.0

(10645)* 1999 ES_4 = 1962 TN = 1968 BF = 1975 TJ_1 = 1980 YK = 1986 EH_5 = 1988 SX_4

Discovered 1999 Mar. 14 by K. Korlević at Višnjan.

Id. G. V. Williams (*MPC* 34262)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	118.89332		(2000.0)			
n	0.22731989	ω	44.59508		+0.80300303	−0.59516364
a	2.6589557	Ω	351.75626		+0.46811183	+0.66214797
e	0.1806408	i	12.52152		+0.36885967	+0.45534637
P	4.34	H	12.5	G	0.15	U 2

Residuals in seconds of arc

1962 10 04	760	(2.3−	3.1+)	1999 03 15	120	0.1−	0.2−	1999 03 24	699	0.1+	1.7+
1962 10 04	760	0.1+	1.1+	1999 03 15	120	0.5+	1.0+	1999 04 06	704	0.8−	0.6+
1968 01 24	095	1.1−	1.7−	1999 03 15	120	0.1+	0.1+	1999 04 06	704	0.0	0.6−
1975 10 03	095	0.6−	0.1−	1999 03 16	120	0.1+	0.1−	1999 04 06	704	0.5+	1.2−
1980 12 29	046	1.3−	2.0−	1999 03 16	120	0.7+	0.3+	1999 04 06	704	0.2+	1.1−
1980 12 29	046	0.3−	2.0+	1999 03 16	120	0.1−	0.6+	1999 04 09	699	0.5+	1.4+
1981 01 01	688	2.4+	0.9+	1999 03 21	120	1.7+	0.4+	1999 04 09	699	0.5+	0.4+
1981 01 01	688	(3.2+	4.0−)	1999 03 21	120	0.1+	0.3+	1999 04 09	699	0.8+	0.9+
1986 03 05	809	0.7−	1.4−	1999 03 21	120	0.4+	0.5+	1999 04 12	704	1.3−	1.7−
1986 03 05	809	0.2−	0.2−	1999 03 22	699	0.6+	0.2+	1999 04 12	704	1.3+	0.1−
1986 03 13	809	0.6−	0.4−	1999 03 22	699	0.6+	0.2+	1999 04 12	704	0.0	1.2−
1986 03 13	809	1.3−	0.4+	1999 03 22	699	0.6+	0.1+	1999 04 15	704	0.2+	0.6−
1988 09 17	095	1.6−	1.9+	1999 03 23	120	0.0	0.5+	1999 04 15	704	0.1+	1.4−
1999 03 14	120	0.3−	1.3+	1999 03 23	120	0.0	0.8+	1999 04 15	704	0.1−	0.9−
1999 03 14	120	0.5+	1.3+	1999 03 23	120	0.3−	0.8+	1999 04 15	704	0.9−	0.8−
1999 03 15	120	0.5−	0.3+	1999 03 24	699	0.8+	1.2+	1999 04 15	704	1.4−	1.4−
1999 03 15	120	0.2+	0.2+	1999 03 24	699	0.4+	1.1+				

(10646)∗ 2077 P-L = 1999 CV_{82}

Discovered 1960 Sept. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 33995)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	229.94953			(2000.0)			**P**			**Q**		
n	0.29249807		ω	279.79377			−0.17250486			+0.98480667		
a	2.2476087		Ω	340.23898			−0.87902562			−0.16305051		
e	0.1346336		*i*	3.38237			−0.44447275			−0.05975250		
P	3.37		*H*	13.8	*G*	0.15		*U*	2			

Residuals in seconds of arc

1960 09 26	675	0.9+	0.1+	1997 09 30	327	0.1+	0.5+	1999 02 10	704	(0.2+	2.4−)	
1960 09 28	675	0.5−	0.5+	1997 09 30	327	0.3−	0.4+	1999 02 13	704	0.1+	0.3+	
1960 09 29	675	1.2+	0.3+	1997 09 30	327	0.5−	0.4+	1999 02 13	704	0.9+	0.6−	
1960 10 22	675	0.3−	0.6−	1999 01 06	699	0.5+	0.1+	1999 02 13	704	1.8−	0.1−	
1960 10 25	675	0.0	0.4−	1999 01 06	699	0.1+	0.5+	1999 02 13	704	1.2−	0.3−	
1960 10 26	675	1.1−	0.7−	1999 01 06	699	0.5+	0.5+	1999 02 13	704	1.1−	0.1−	
1996 02 12	327	0.2−	0.3+	1999 02 10	704	1.1+	0.3−	1999 04 06	704	1.8−	1.3−	
1996 02 12	327	0.5+	0.3+	1999 02 10	704	0.0	0.3+	1999 04 06	704	0.2−	0.8+	
1996 02 12	327	0.1+	0.3+	1999 02 10	704	1.3+	0.4+	1999 04 06	704	(2.2−	0.6−)	
1996 02 12	327	0.5+	0.7+	1999 02 10	704	0.9+	1.2−					

(10647)∗ 3074 P-L = 1981 UM_2 = 1988 CD_7

Discovered 1960 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 14628)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	355.87607			(2000.0)			**P**			**Q**		
n	0.19238776		ω	318.24434			−0.98954223			+0.08043119		
a	2.9717875		Ω	226.79375			−0.04273810			−0.95631767		
e	0.0513432		*i*	9.45497			−0.13776657			−0.28104685		
P	5.12		*H*	12.8	*G*	0.15		*U*	1			

Residuals in seconds of arc

1960 09 25	675	0.5−	1.3+	1991 09 15	675	0.2+	1.5−	1999 03 23	704	0.9+	0.9+	
1960 09 27	675	0.3−	0.1−	1994 05 15	801	0.4−	1.1−	1999 04 11	699	1.0+	0.1−	
1960 09 28	675	0.4−	0.9+	1994 05 15	801	0.3−	0.4+	1999 04 11	699	0.6+	0.3+	
1960 09 29	675	0.6−	0.8+	1996 10 12	689	0.1+	0.6+	1999 04 11	699	0.9+	0.7−	
1981 10 30	381	1.0+	2.0+	1996 10 13	689	0.2+	0.7−	1999 04 14	704	0.3−	0.7−	
1981 10 30	381	0.9+	1.5+	1999 03 19	704	0.8+	0.5−	1999 04 14	704	0.4+	0.4−	
1988 02 10	220	0.6+	1.9− Y	1999 03 19	704	0.1+	0.4+	1999 04 14	704	(2.1+	1.0+)	
1988 02 11	220	2.0−	2.2− Y	1999 03 19	704	0.2−	0.5−	1999 04 14	704	0.5+	1.5+	
1989 05 07	675	0.4−	0.2−	1999 03 19	704	1.6−	0.2+	1999 04 15	704	0.3−	0.2−	
1989 05 07	675	0.7+	0.9−	1999 03 19	704	0.1+	0.7+	1999 04 15	704	0.2−	0.7+	
1990 07 25	675	(0.5+	2.7−)	1999 03 20	704	0.7+	0.1−	1999 04 15	704	0.2+	0.7+	
1990 07 25	675	0.1+	1.6−	1999 03 20	704	0.6+	0.5+	1999 04 15	704	0.8−	0.8+	
1990 07 28	675	0.0	1.1−	1999 03 20	704	0.5−	0.3+	1999 04 15	704	0.7+	0.5+	
1990 07 28	675	1.1+	0.4−	1999 03 20	704	(0.5−	2.1−)	1999 04 17	704	0.0	0.2−	
1990 07 30	675	0.1+	0.8+	1999 03 23	704	0.1−	0.3−	1999 04 17	704	0.2+	0.2+	
1991 09 13	675	0.0	0.5−	1999 03 23	704	0.1−	0.4−	1999 04 17	704	0.9−	0.3−	
1991 09 14	675	0.8−	1.9−	1999 03 23	704	0.7−	0.9+	1999 04 17	704	0.1−	0.5−	
1991 09 15	675	0.5−	0.5−	1999 03 23	704	0.8−	0.6+	1999 04 17	704	0.3−	0.1−	

(10648)∗ 4089 P-L = 1987 QX_3 = 1987 SM_{20}

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Kaneda (*MPC* 15903)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	184.24419			(2000.0)			**P**			**Q**		
n	0.21877730		ω	161.91730			+0.99205728			−0.10928270		
a	2.7277289		Ω	204.61338			+0.08879722			+0.95916115		
e	0.1785122		*i*	8.60088			+0.08909211			+0.26089687		
P	4.51		*H*	13.8	*G*	0.15		*U*	2			

Residuals in seconds of arc

1960 09 24	675	0.6+	0.2−	1996 10 04	809	0.7+	0.2−	1999 04 07	704	0.4+	1.5−	
1960 09 25	675	0.1+	0.3+	1996 10 04	809	0.7+	0.4+	1999 04 07	704	1.4+	1.6+	
1960 09 26	675	0.6+	0.1−	1996 10 04	292	0.5−	0.7−	1999 04 07	704	1.1+	1.0−	
1960 09 28	675	0.2+	0.5+	1996 10 04	292	1.4−	0.8−	1999 04 07	704	0.4+	0.3+	
1960 10 17	675	0.3−	0.3−	1996 10 05	809	(0.9+	2.1−)	1999 04 09	120	0.1−	0.5−	
1960 10 22	675	0.7−	0.6−	1996 10 05	809	1.0+	0.7−	1999 04 09	120	0.5−	0.2−	
1960 10 24	675	0.1+	0.4+	1996 10 05	809	0.5+	1.0−	1999 04 15	704	1.2−	0.2+	
1960 10 26	675	0.2−	0.1+	1998 02 06	688	0.1−	0.5−	1999 04 15	704	0.4−	1.8−	
1987 08 31	010	(2.7−	0.7+)	1998 02 06	688	0.1−	0.2−	1999 04 15	704	0.8+	0.4+	
1987 08 31	010	1.1−	0.9+	1998 02 06	688	0.1−	0.2−	1999 04 15	704	1.3−	1.1−	
1987 08 31	010	0.8−	0.4−	1999 03 19	910	0.0	0.2−	1999 04 15	704	0.6−	0.1−	
1987 09 02	095	0.4+	0.8−	1999 03 19	910	0.1+	0.1−	1999 04 17	704	1.4−	0.5−	
1987 09 17	095	0.3−	0.1−	1999 03 19	910	0.1+	0.1+	1999 04 17	704	0.2+	0.1+	
1996 09 21	292	(2.2−	1.1+)	1999 03 23	704	(3.1−	1.3+)	1999 04 17	704	(0.3+	2.2+)	
1996 09 21	292	0.6−	0.1+	1999 03 23	704	(3.5−	0.3−)	1999 04 17	704	0.0	0.2−	
1996 10 04	809	1.6+	0.5+	1999 03 23	704	0.8−	0.7+	1999 04 17	704	1.1+	0.8+	

(10649)∗ 4098 P-L = 1991 HG_5 = 1996 HW_{24}

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* 27320), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	326.08903			(2000.0)			**P**			**Q**		
n	0.20885633		ω	248.75950			−0.11928733			−0.99046266		
a	2.8134398		Ω	208.36214			+0.95624897			−0.09592655		
e	0.1206863		*i*	8.34580			+0.26713000			−0.09890308		
P	4.72		*H*	14.3	*G*	0.15		*U*	2			

Residuals in seconds of arc

1960 09 24	675	0.3+	0.5−	1996 04 21	809	(3.0−	2.1−)	1998 10 28	704	0.7+	0.3+	
1960 09 25	675	0.0	0.4+	1998 09 27	691	0.9−	0.1−	1998 10 28	704	1.5+	1.2−	
1960 09 26	675	0.2−	1.1+	1998 09 27	691	0.9−	0.2−	1998 10 28	704	0.4+	0.4−	
1960 09 28	675	0.9−	1.1−	1998 09 27	691	0.9−	0.1+	1998 10 29	704	0.0	0.3+	
1960 10 17	675	0.7+	0.2−	1998 09 29	704	1.3+	0.3−	1998 10 29	704	0.2+	0.5+	
1960 10 22	675	0.1−	1.7−	1998 09 29	704	1.7+	0.8−	1998 10 29	704	0.3+	1.2+	
1960 10 26	675	0.7+	0.3+	1998 09 29	704	1.4−	0.9−	1998 10 29	704	0.3−	1.2−	
1991 04 19	809	1.0−	0.2−	1998 09 29	704	(0.6−	2.1+)	1998 10 29	704	0.4−	0.6−	
1991 04 19	809	0.9−	1.9−	1998 10 12	691	0.4−	0.3+	1998 11 11	704	1.5−	0.5−	
1991 04 19	809	1.0+	1.6−	1998 10 12	691	0.4−	0.2+	1998 11 11	704	0.6+	0.3−	
1996 04 20	809	1.4+	1.2+	1998 10 12	691	0.4−	0.2+	1998 11 11	704	0.8+	0.1−	
1996 04 20	809	0.7+	1.3+	1998 10 15	704	0.7−	0.3−	1998 11 11	704	0.3+	1.0+	
1996 04 20	809	0.4+	0.7+	1998 10 15	704	1.4−	0.2+	1998 11 14	699	0.4+	1.1+	
1996 04 21	809	0.7−	0.9−	1998 10 15	704	(3.2−	1.2+)	1998 11 14	699	0.4−	1.6+	
1996 04 21	809	1.6−	0.1−	1998 10 28	704	0.9+	0.5−	1998 11 14	699	0.5+	0.2+	

(10650)∗ 4110 P-L = 1996 HE_{26}

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* 27321)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	219.09828			(2000.0)			**P**			**Q**		
n	0.29569062		ω	119.18851			+0.71721284			+0.69669037		
a	2.2314013		Ω	196.66493			−0.65625276			+0.66797393		
e	0.1161973		*i*	3.02002			−0.23438871			+0.26159769		
P	3.33		*H*	15.2	*G*	0.15		*U*	1			

Residuals in seconds of arc

1960 09 24	675	0.8−	0.2−	1996 05 20	691	0.0	0.4+	1999 03 20	704	0.8+	1.0−
1960 09 24	675	0.5+	0.9+	1996 05 20	691	0.4−	0.4+	1999 03 20	704	0.2+	0.0
1960 09 26	675	0.1+	0.3−	1996 05 20	691	0.4−	0.0	1999 03 23	704	0.1−	0.7+
1960 09 27	675	0.8+	0.0	1996 05 22	809	1.3+	1.6−	1999 03 23	704	0.9+	0.9+
1960 09 28	675	0.5+	0.2−	1996 05 22	809	0.2+	0.8−	1999 03 23	704	1.0+	0.6+
1960 10 17	675	0.2−	0.9−	1996 05 22	809	0.8+	1.2−	1999 03 23	704	0.5−	1.1+
1960 10 22	675	0.2−	0.2+	1996 05 24	809	0.5+	1.2−	1999 04 07	691	1.5−	0.4−
1960 10 24	675	0.5−	0.3−	1996 05 24	809	0.1+	0.8−	1999 04 07	691	0.8−	0.4−
1996 04 20	809	(2.1−	2.6+)	1996 05 24	809	0.4−	1.4−	1999 04 07	691	0.9−	0.2−
1996 04 20	809	(2.4−	3.4+)	1997 11 29	704	0.7−	1.1−	1999 04 14	691	0.1+	0.6−
1996 04 20	809	(2.5−	2.9+)	1997 11 29	704	0.9−	0.5−	1999 04 14	691	0.3−	0.6−
1996 04 21	809	0.6−	0.1−	1997 11 29	704	0.4−	0.3−	1999 04 14	691	0.2+	0.4−
1996 04 21	809	0.6−	0.1+	1997 11 29	704	0.3−	0.5−	1999 04 15	704	0.8+	2.0−
1996 04 21	809	1.8−	1.1+	1997 11 29	704	0.4−	1.1−	1999 04 15	704	1.8−	1.4−
1996 05 13	691	0.3−	0.1+	1997 12 04	704	0.3+	0.6−	1999 04 15	704	0.1−	2.1+
1996 05 13	691	0.2−	0.2+	1997 12 04	704	1.6+	0.9−	1999 04 15	704	0.7+	0.8+
1996 05 13	691	0.2−	0.1+	1997 12 04	704	1.7+	0.6−	1999 04 17	704	0.2−	0.8−
1996 05 15	566	0.1+	0.3−	1997 12 04	704	0.7+	0.5+	1999 04 17	704	1.6+	0.4+
1996 05 15	566	0.2+	0.4−	1997 12 04	704	0.5−	0.8−	1999 04 17	704	0.6+	0.9+
1996 05 15	566	0.1+	0.8−	1999 03 20	704	0.9−	0.6+	1999 04 17	704	0.4+	0.1+

(10651)∗ 4522 P-L = 1996 RC$_{25}$

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 28082)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	185.26715		(2000.0)	**P**	**Q**	
n	0.21783672	ω	342.56218	+0.98085590	+0.19449060	
a	2.7355752	Ω	6.24725	−0.16627633	+0.86252827	
e	0.0690347	*i*	5.14150	−0.10136013	+0.46713852	
P	4.52	*H*	14.3	*G* 0.15	*U* 1	

Residuals in seconds of arc

1960 09 24	675	0.6+	1.2−	1998 01 07	688	0.0	0.1−	1999 04 12	704	1.2−	0.2+
1960 09 26	675	0.9+	0.2−	1998 01 07	688	0.0	0.1−	1999 04 12	704	0.4−	1.6+
1960 09 27	675	0.2+	0.5+	1998 01 07	688	0.2+	0.3+	1999 04 15	704	1.7−	0.0
1960 09 28	675	0.6−	0.2+	1999 03 20	704	1.6+	0.9−	1999 04 15	704	0.7+	1.5+
1960 10 17	675	1.2−	0.9+	1999 03 20	704	0.5+	0.8−	1999 04 15	704	0.9+	0.7+
1960 10 22	675	0.2−	0.6−	1999 03 20	704	0.5+	0.3−	1999 04 15	704	1.1+	0.0
1960 10 24	675	0.1−	0.1+	1999 03 23	704	0.5+	0.3−	1999 04 17	704	0.4+	0.1−
1960 10 26	675	0.2+	0.5+	1999 03 23	704	0.7+	0.1+	1999 04 17	704	1.1−	1.2+
1996 09 11	566	0.3−	0.0	1999 03 23	704	0.1−	0.5+	1999 04 17	704	0.6+	0.4+
1996 09 11	566	0.2−	0.1−	1999 03 23	704	0.2+	0.1−	1999 04 17	704	1.3−	0.6+
1996 09 11	566	0.0	0.1+	1999 04 06	704	0.1+	1.0−	1999 04 17	704	1.1−	1.1+
1996 09 17	691	0.5+	0.5+	1999 04 06	704	0.8+	0.9−	1999 04 18	691	0.4+	0.4−
1996 09 17	691	0.3−	0.6+	1999 04 06	704	0.6+	0.6+	1999 04 18	691	0.6−	0.4−
1996 09 17	691	0.4−	0.4+	1999 04 06	704	0.2−	0.2−	1999 04 18	691	0.7−	0.4−
1998 01 06	688	0.2+	0.3−	1999 04 12	704	(2.5−	2.3−)				
1998 01 06	688	0.4−	0.7+	1999 04 12	704	0.6−	1.1−				

(10652)∗ 4599 P-L = 1996 RM$_2$

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* 27926)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	142.38547		(2000.0)	**P**	**Q**	
n	0.21832007	ω	33.10739	+0.69879961	−0.71500324	
a	2.7315360	Ω	12.60697	+0.63337909	+0.60470780	
e	0.0985413	*i*	5.57413	+0.33243049	+0.35085444	
P	4.51	*H*	14.6	*G* 0.15	*U* 1	

Residuals in seconds of arc

1960 09 24	675	0.2+	0.3+	1996 09 10	566	0.3+	0.0	1999 03 13	684	0.9−	0.4+
1960 09 26	675	0.3+	0.5−	1996 09 14	566	0.2+	0.1+	1999 03 13	684	1.2−	0.4+
1960 09 27	675	0.1−	0.2−	1996 09 14	566	0.1+	0.1−	1999 03 14	684	0.4−	0.3+
1960 09 28	675	0.4+	0.2−	1996 09 14	566	0.2+	0.2−	1999 03 14	684	0.6−	0.4−
1960 10 17	675	0.3−	0.1−	1996 09 15	566	0.3+	0.3−	1999 04 11	699	0.7+	0.6+
1960 10 22	675	0.1+	0.0	1996 09 15	566	0.3+	0.4−	1999 04 11	699	1.4+	0.7+
1960 10 25	675	0.0	1.3−	1996 09 15	566	0.3+	0.4−	1999 04 11	699	0.2+	0.2+
1960 10 26	675	0.7+	0.6−	1996 10 05	809	0.4−	1.6+	1999 04 15	704	0.2+	0.9−
1992 12 01	691	0.2+	0.2−	1996 10 05	809	1.4−	0.6+	1999 04 15	704	1.2−	0.7−
1992 12 01	691	0.2+	0.1+	1996 10 05	809	1.6−	1.2+	1999 04 15	704	0.3+	1.0−
1992 12 01	691	0.4−	0.2+	1996 10 06	809	(0.9+	3.5+)	1999 04 15	704	0.7+	0.3−
1996 09 10	566	0.3+	0.0	1996 10 06	809	(0.2−	3.1+)				
1996 09 10	566	0.2+	0.1−	1996 10 06	809	(0.6+	2.3+)				

(10653)∗ 6030 P-L = 3146 T-1

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* 19318)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	138.42852		(2000.0)	**P**	**Q**	
n	0.14110474	ω	219.63261	+0.74471165	−0.66738257	
a	3.6540541	Ω	182.23661	+0.62602467	+0.69972317	
e	0.0156557	*i*	3.30817	+0.23129564	+0.25492742	
P	6.98	*H*	12.5	*G* 0.15	*U* 1	

Residuals in seconds of arc

1960 09 24	675	0.2+	0.2−	1971 05 16	675	0.2+	1.9−	1999 03 24	699	0.5+	0.7+
1960 09 25	675	0.1+	1.2+	1991 01 22	675	0.1−	1.6+	1999 04 12	704	0.1+	0.0
1960 09 26	675	0.4−	0.2+	1991 01 22	675	0.5−	0.2−	1999 04 12	704	0.5−	1.0−
1960 09 28	675	0.5+	0.6−	1991 02 08	675	0.8−	0.6−	1999 04 12	704	0.2−	0.0
1960 10 17	675	0.0	0.2−	1991 02 08	675	0.5−	1.3−	1999 04 12	704	0.7−	0.0
1960 10 22	675	1.0+	0.5−	1994 07 10	675	1.6−	0.5+	1999 04 12	704	0.3−	0.0
1960 10 25	675	0.1+	1.8−	1994 07 10	675	0.1+	0.1−	1999 04 15	704	1.1+	0.9−
1960 10 26	675	0.9+	1.2−	1998 01 29	566	0.4+	0.3+	1999 04 15	704	1.7+	0.3−
1971 03 24	675	0.5−	0.6−	1998 01 29	566	0.4+	0.6+	1999 04 15	704	0.9+	0.7−
1971 03 25	675	0.7+	1.5−	1998 01 29	566	0.3+	0.5+	1999 04 15	704	(0.9+	2.1−)
1971 03 26	675	1.2−	1.2−	1999 03 20	704	0.8−	0.1+	1999 04 15	704	1.6−	1.3−
1971 03 26	675	0.5+	0.3+	1999 03 20	704	0.3−	0.8−	1999 04 17	704	0.3+	0.6+
1971 03 27	675	1.0+	0.6−	1999 03 20	704	0.6−	0.0	1999 04 17	704	0.7+	0.8+
1971 04 02	675	1.2−	0.7+	1999 03 20	704	0.1−	1.3+	1999 04 17	704	0.7+	1.2+
1971 04 16	675	0.1−	0.2−	1999 03 20	704	0.3−	0.6+	1999 04 17	704	0.2−	0.2−
1971 04 16	675	0.2−	1.2+	1999 03 23	704	0.2+	1.2−	1999 04 17	704	0.8+	0.5+
1971 04 16	675	0.5−	0.6+	1999 03 23	704	0.1+	0.9+	1999 04 19	704	(2.1+	0.3+)
1971 04 16	675	1.3−	0.1+	1999 03 23	704	0.2−	0.6+	1999 04 19	704	(3.0−	0.7+)
1971 05 13	675	1.1+	0.0	1999 03 23	704	0.2−	0.4+	1999 04 19	704	0.8+	0.2−
1971 05 13	675	0.9−	1.4−	1999 03 23	704	0.9−	0.2+	1999 04 19	704	0.2+	0.4−
1971 05 14	675	0.6+	1.2+	1999 03 24	699	1.6+	0.2+	1999 04 19	704	0.0	1.3−
1971 05 14	675	0.4−	0.2−	1999 03 24	699	0.5−	0.1−				

(10654)∗ 6673 P-L = 1993 FO$_{55}$

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* 23680)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	160.14190		(2000.0)	**P**	**Q**	
n	0.16738996	ω	213.43065	+0.90929702	−0.41124093	
a	3.2607421	Ω	170.20429	+0.41364806	+0.90993463	
e	0.0211918	*i*	21.99372	−0.04554345	+0.05385044	
P	5.89	*H*	12.4	*G* 0.15	*U* 2	

Residuals in seconds of arc

1960 09 24	675	0.1+	0.2+	1999 03 15	704	0.4−	1.0+	1999 04 16	704	0.0	0.9−
1960 09 26	675	0.1−	0.5+	1999 03 15	704	0.2−	0.1−	1999 04 16	704	0.4+	0.6−

1960 09 27	675	0.0	1.2+	1999 03 15	704	1.0−	0.2+	1999 04 16	704	0.5−	0.6+
1960 09 28	675	0.6+	0.6+	1999 03 20	699	0.0	0.4+	1999 04 16	704	0.3+	0.9+
1960 10 17	675	0.7−	1.1−	1999 03 20	699	0.3+	0.9+	1999 04 16	704	0.2−	1.0+
1993 03 17	809	0.2+	0.6−	1999 03 20	699	1.7+	0.3+	1999 04 19	704	0.0	0.7+
1993 03 18	809	0.2−	0.5−	1999 04 12	704	0.2+	0.3−	1999 04 19	704	0.2−	0.9+
1993 03 24	675	0.2+	1.6−	1999 04 12	704	0.1−	0.3−	1999 04 19	704	1.3−	0.2+
1997 12 29	688	0.3−	0.4+	1999 04 12	704	0.8+	0.4−	1999 04 19	704	0.1+	0.9+
1997 12 29	688	0.2+	0.6+	1999 04 12	704	0.5+	0.7−	1999 04 19	704	1.1−	0.2+
1999 03 15	704	0.1+	0.2+	1999 04 12	704	0.5+	1.4−				

(10655)∗ 9535 P-L = 1978 RC$_{10}$

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 14631)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	156.39811		(2000.0)		**P**	**Q**	
n	0.21742292	ω	199.41951		+0.99137375	−0.12899381	
a	2.7390450	Ω	167.92159		+0.13006096	+0.94635089	
e	0.0689824	*i*	6.36819		+0.01619351	+0.29627789	
P	4.53	*H*	14.3	*G*	0.15	*U*	1

Residuals in seconds of arc

1960 10 17	675	0.2−	0.2+	1992 10 25	675	0.8−	0.8+	1999 03 20	704	0.4−	0.6+
1960 10 22	675	2.0−	0.7−	1994 02 11	691	0.3+	0.3−	1999 03 22	699	1.1+	1.0+
1960 10 24	675	0.2−	1.5+	1994 02 11	691	0.2+	0.1−	1999 03 22	699	0.8+	0.0
1960 10 26	675	0.6+	1.1+	1994 02 11	691	0.3+	0.2−	1999 03 22	699	1.2+	0.8+
1978 09 02	809	0.5+	0.7−	1994 02 12	691	0.2+	0.4−	1999 03 23	704	1.1−	0.6+
1978 09 02	809	0.6+	0.6−	1994 02 12	691	0.5−	0.7−	1999 03 23	704	0.5+	0.8−
1978 09 02	809	0.1+	1.7−	1994 02 12	691	0.1−	1.2−	1999 03 23	704	(2.0+	0.7−)
1978 09 02	809	0.7−	0.4−	1994 02 16	691	0.8+	0.9−	1999 03 23	704	0.6−	1.4−
1978 09 06	809	0.3+	0.2+	1994 02 16	691	0.1+	0.0	1999 03 23	704	0.8+	0.8−
1978 09 10	809	0.8+	0.3−	1994 02 16	691	0.2+	0.2+	1999 04 12	704	0.1+	0.7+
1978 09 10	809	1.2+	0.5+	1999 03 20	704	0.5−	0.3+	1999 04 12	704	1.5−	0.8+
1992 10 03	675	0.6+	1.2−	1999 03 20	704	0.7−	0.3+	1999 04 12	704	(2.7−	0.4+)
1992 10 03	675	0.5+	0.2+	1999 03 20	704	0.2−	0.4+	1999 04 12	704	0.1−	0.0
1992 10 25	675	1.6−	0.8+	1999 03 20	704	0.5−	0.0				

(10656)∗ 2213 T-1 = 1990 SZ$_{25}$ = 3011 T-2

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 21122)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	214.19947		(2000.0)		**P**	**Q**	
n	0.17442438	ω	310.26846		+0.71621139	+0.69773665	
a	3.1724729	Ω	5.54095		−0.58684682	+0.61323029	
e	0.0939947	*i*	8.52355		−0.37769308	+0.37028661	
P	5.65	*H*	12.7	*G*	0.15	*U*	1

Residuals in seconds of arc

1953 02 15	675	0.6−	0.6−	1973 09 24	675	0.4−	0.8−	1995 08 01	905	0.4+	0.9+
1953 02 15	675	0.2+	0.1−	1973 09 24	675	1.0−	0.7+	1996 10 13	689	0.8+	0.5−
1971 03 24	675	0.9−	1.1−	1973 09 25	675	1.3−	0.6+	1999 03 20	704	0.7+	0.1−
1971 03 25	675	0.0	0.4−	1973 09 25	675	0.1+	0.2−	1999 03 20	704	0.8+	0.5+
1971 03 25	675	1.8−	0.3−	1973 09 25	675	0.4−	0.1−	1999 03 20	704	0.3+	0.9−
1971 03 26	675	0.6−	2.0−	1973 09 25	675	0.5−	0.1−	1999 03 20	704	0.5+	0.3+
1971 03 27	675	1.0−	0.2−	1973 09 29	675	0.6+	0.0	1999 03 20	704	0.7−	0.6+
1971 04 02	675	0.4−	1.0−	1973 09 30	675	0.1−	0.3−	1999 03 23	704	0.6+	0.5+
1971 04 16	675	0.2−	0.8−	1973 09 30	675	0.3−	0.9+	1999 03 23	704	0.7+	0.9+
1971 04 16	675	0.3+	0.8−	1973 10 04	675	0.7+	0.3+	1999 03 23	704	0.1−	1.0+
1971 05 13	675	0.7+	0.0	1973 10 04	675	0.1−	0.2+	1999 03 23	704	0.4+	1.4+
1971 05 14	675	0.3+	1.7−	1973 10 04	675	1.7+	0.6−	1999 03 23	704	0.3−	1.1+
1973 09 19	675	(0.3−	2.5−)	1973 10 04	675	0.4+	0.0	1999 04 06	704	0.8+	0.4+
1973 09 19	675	0.1+	0.4+	1973 10 05	675	0.3+	0.8+	1999 04 06	704	0.3−	0.7+
1973 09 19	675	0.2−	1.4−	1973 10 05	675	0.0	0.7+	1999 04 06	704	0.4+	0.3+
1973 09 19	675	0.4+	0.9+	1973 10 05	675	0.4+	0.3+	1999 04 06	704	0.5−	0.2+
1973 09 20	675	0.9−	0.1+	1973 10 05	675	0.4−	0.4+	1999 04 06	704	0.2−	2.1+
1973 09 20	675	(2.7+	2.1−)	1990 09 21	372	(2.8+	0.1−)	1999 04 07	699	0.6+	0.2+
1973 09 24	675	0.4+	2.2−	1990 09 21	372	0.1−	0.6+	1999 04 07	699	0.3+	1.1+
1973 09 24	675	0.6−	0.1+	1995 08 01	905	0.7−	0.0	1999 04 07	699	0.9+	0.2−

(10657)∗ 2251 T-1 = 2250 T-2

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 21123)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	37.00036		(2000.0)		**P**	**Q**	
n	0.21082921	ω	109.57365		−0.58991180	−0.80726619	
a	2.7958607	Ω	16.61518		+0.71518493	−0.53273274	
e	0.0433239	*i*	3.61672		+0.37485274	−0.25400222	
P	4.67	*H*	14.5	*G*	0.15	*U*	1

Residuals in seconds of arc

1971 03 24	675	0.8−	0.2+	1973 09 25	675	1.0+	1.9−	1997 12 04	704	0.5−	0.2+
1971 03 25	675	1.8+	2.0−	1973 09 25	675	1.0+	1.9−	1997 12 04	704	0.8−	0.1−
1971 03 25	675	(2.9+	2.1−)	1973 09 29	675	0.8+	0.1+	1999 03 20	704	0.8−	1.8−
1971 03 26	675	(3.4−	0.3+)	1973 09 29	675	0.9−	0.7+	1999 03 20	704	0.8+	0.3−
1971 03 27	675	0.1+	0.3−	1973 09 30	675	1.4+	1.4−	1999 03 20	704	0.1+	1.6−
1971 04 16	675	0.9−	0.0	1973 09 30	675	(0.6+	2.8−)	1999 03 20	704	1.0−	0.9−
1971 04 16	675	0.6+	1.3−	1973 10 04	675	1.2−	0.5+	1999 03 23	704	0.0	0.7−
1971 05 13	675	(2.8−	1.4+)	1973 10 04	675	0.4−	0.8+	1999 03 23	704	0.2+	0.4+
1971 05 14	675	2.2−	0.5−	1973 10 05	675	0.3+	1.2−	1999 03 23	704	0.3+	0.1−
1971 05 16	675	0.7−	1.1+	1973 10 05	675	1.1+	1.1−	1999 03 23	704	0.2−	0.5−
1973 09 19	675	1.4−	0.4−	1997 11 29	704	0.9+	1.3−	1999 04 12	704	0.8+	0.8+
1973 09 19	675	0.0	0.6−	1997 11 29	704	0.0	1.2+	1999 04 12	704	1.0−	0.2−
1973 09 20	675	0.5+	1.6−	1997 11 29	704	0.8−	0.6−	1999 04 12	704	1.4−	0.4+
1973 09 24	675	0.9+	0.2+	1997 11 29	704	0.2−	0.5+				
1973 09 24	675	1.1+	0.1+	1997 12 04	704	1.1+	0.9+				

(10658)∗ 2281 T-1 = 1983 XV$_1$ = 1995 KM$_2$

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. B. G. Marsden (*MPC* 25436), G. V. Williams (*MPC* 29650)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	132.90754		(2000.0)		**P**	**Q**	
n	0.21176083	ω	235.64016		+0.77387191	−0.63291992	
a	2.7876546	Ω	163.58615		+0.60463540	+0.72743609	
e	0.0762123	*i*	4.69367		+0.18851605	+0.26504549	
P	4.65	*H*	13.6	*G*	0.15	*U*	2

Residuals in seconds of arc

1971 03 24	675	(2.3+	3.2−)	1995 05 22	010	1.0−	1.3−	1999 03 23	704	0.4+	0.7+
1971 03 25	675	2.2+	0.3−	1995 05 23	010	(1.4−	2.4+)	1999 03 23	704	0.5+	1.1+
1971 03 25	675	2.3+	1.3−	1995 05 23	010	(1.6+	3.7+)	1999 03 23	704	0.6+	1.5+
1971 03 26	675	0.2−	1.9−	1995 05 23	010	(1.5−	2.2+)	1999 04 12	704	0.6+	0.4−
1971 03 27	675	(2.7−	0.5+)	1996 08 09	566	0.4+	0.3+	1999 04 12	704	1.3+	0.6−
1971 04 02	675	0.0	0.9−	1996 08 09	566	0.5+	0.3+	1999 04 12	704	1.4+	0.2−
1971 04 16	675	1.6−	0.5−	1996 08 09	566	0.1−	0.7+	1999 04 12	704	0.4+	0.2+
1971 04 16	675	0.6−	1.1−	1999 03 19	704	0.1+	0.9+	1999 04 12	704	(2.4+	0.7−)
1971 05 13	675	0.7−	1.3+	1999 03 19	704	0.5−	1.0+	1999 04 16	704	0.8+	0.1+
1971 05 14	675	1.5−	0.4−	1999 03 19	704	1.1−	0.8−	1999 04 16	704	0.2−	0.9+
1971 05 16	675	1.2−	0.7+	1999 03 19	704	0.5−	0.5+	1999 04 16	704	(3.1+	1.7+)
1973 09 30	675	(1.0+	3.1−)	1999 03 20	704	0.6+	0.2+	1999 04 19	704	0.3+	0.4−
1973 09 30	675	(1.1+	2.9−)	1999 03 20	704	0.3+	0.2−	1999 04 19	704	0.5+	0.6−
1983 12 05	561	1.7−	1.5−	1999 03 20	704	1.0−	0.5+	1999 04 19	704	0.8−	0.8−
1983 12 05	561	0.5+	0.8−	1999 03 20	704	0.5+	0.4−	1999 04 19	704	0.3+	0.6+
1995 05 22	010	0.0	0.8−	1999 03 23	704	0.3−	0.1+	1999 04 19	704	0.9−	1.1+
1995 05 22	010	1.7−	1.5−	1999 03 23	704	0.1+	1.5+				

(10659)∗ 3266 T-1 = 1982 DG$_5$ = 1993 BT$_5$

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 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	349.08049		(2000.0)		**P**	**Q**	
n	0.17540127	ω	176.28218		−0.99999186	+0.00390733	
a	3.1606827	Ω	3.94211		−0.00397427	−0.91158598	
e	0.1218432	i	0.83604		−0.00069183	−0.41109091	
P	5.62	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1971 03 24	675	0.1−	1.6−	1993 01 27	010	0.0	0.4+	1999 03 20	704	0.7+	0.4+
1971 03 25	675	1.2−	1.2−	1993 01 27	010	0.2+	0.0	1999 03 20	704	0.3+	0.4−
1971 03 26	675	0.9−	1.9−	1993 01 27	010	(2.9+	0.6−)	1999 03 20	704	1.3−	0.7+
1971 03 26	675	(0.3−	3.2−)	1993 01 28	010	0.5−	0.8+	1999 03 20	704	1.3−	1.2+
1971 03 27	675	0.2−	0.9−	1993 01 28	010	0.2+	1.3+	1999 03 22	699	1.1+	1.2+
1971 04 02	675	0.8−	0.4+	1993 01 28	010	0.8+	0.8+	1999 03 22	699	0.8+	0.7+
1971 04 16	675	1.3+	1.5−	1993 02 20	010	0.9−	0.7−	1999 03 23	704	0.3−	0.2+
1971 04 16	675	0.2−	0.1−	1993 02 20	010	0.0	1.1−	1999 03 23	704	1.0+	0.3+
1971 05 14	675	1.3−	0.4−	1993 02 20	010	0.3−	0.8−	1999 03 23	704	0.7+	0.5+
1971 05 14	675	0.3−	0.2+	1993 02 22	010	0.1−	1.1−	1999 03 23	704	0.1−	0.1+
1971 05 16	675	0.7+	0.3+	1993 02 23	010	0.3+	1.8−	1999 03 23	704	0.7−	0.3+
1982 02 22	010	0.1−	0.8+	1999 03 10	691	0.0	0.1−	1999 04 07	699	1.0+	0.7+
1991 11 12	691	0.0	0.1−	1999 03 10	691	0.3+	0.0	1999 04 07	699	0.7+	1.2+
1991 11 12	691	0.0	0.2−	1999 03 10	691	0.1+	0.0	1999 04 07	699	0.8+	0.3+
1991 11 12	691	0.0	0.3+	1999 03 20	704	0.4−	0.3+				

(10660)∗ 4348 T-1

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	358.19370		(2000.0)		**P**	**Q**	
n	0.17551832	ω	125.02958		−0.96531471	−0.24918292	
a	3.1592773	Ω	40.69996		+0.18314199	−0.85901746	
e	0.1427961	i	6.86494		+0.18608204	−0.44721009	
P	5.62	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1971 03 24	675	(6.7+	7.0−)	1997 11 29	688	0.0	0.1−	1999 03 23	704	0.5−	0.4−
1971 03 26	675	1.2−	0.7−	1997 11 29	688	0.1+	0.1−	1999 04 06	704	0.7−	0.4+
1971 03 26	675	0.5−	1.7−	1999 02 22	699	0.4−	0.1−	1999 04 06	704	1.1−	1.5+
1971 03 27	675	(0.4+	4.2−)	1999 02 22	699	0.4+	0.2−	1999 04 06	704	0.0	0.5+
1971 04 02	675	0.0	1.0−	1999 02 22	699	0.5+	0.5+	1999 04 06	704	1.8−	0.0
1971 04 16	675	0.3−	0.6+	1999 03 20	704	0.8+	0.3−	1999 04 12	704	0.2+	0.7+
1971 04 16	675	0.5+	0.6−	1999 03 20	704	1.0+	1.1−	1999 04 12	704	1.1+	1.1+
1971 05 13	675	0.0	0.1−	1999 03 20	704	0.6+	0.5−	1999 04 12	704	0.3+	1.1+
1971 05 14	675	1.2+	1.0−	1999 03 20	704	0.3+	0.4−	1999 04 12	704	0.3−	1.1+
1971 05 16	675	1.5−	1.5+	1999 03 23	704	0.8+	0.9−	1999 04 12	704	0.3+	1.7+
1993 01 28	675	0.1+	0.6−	1999 03 23	704	1.3+	0.9−				
1993 01 28	675	0.2−	0.8+	1999 03 23	704	1.3−	0.5−				

(10661)∗ 1211 T-2 = 1975 EM$_4$ = 1992 EA$_{10}$

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* 23867)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	10.46250		(2000.0)		**P**	**Q**	
n	0.28908099	ω	166.11210		−0.90169135	−0.43173112	
a	2.2652860	Ω	348.22536		+0.38479563	−0.77627134	
e	0.1027594	i	6.66499		+0.19719286	−0.45935938	
P	3.41	H	15.2	G	0.15	U	2

Residuals in seconds of arc

1973 09 19	675	1.6−	0.1+	1992 03 07	809	0.4−	0.9+	1999 04 06	704	0.7+	0.1−
1973 09 19	675	0.3−	0.7+	1992 04 06	809	0.3−	0.1+	1999 04 06	704	0.1+	0.1+
1973 09 20	675	1.2−	0.5−	1997 09 28	691	0.1−	0.1+	1999 04 06	704	0.0	0.7+
1973 09 24	675	2.1−	0.0	1997 09 28	691	0.6−	0.3−	1999 04 06	704	0.3+	1.5+
1973 09 24	675	1.7−	0.2−	1997 09 28	691	0.0	0.1+	1999 04 06	704	0.3+	1.3−
1973 09 25	675	0.8−	0.4+	1997 09 30	691	0.3−	0.3+	1999 04 11	699	0.2+	0.4+
1973 09 25	675	2.2−	1.7+	1997 09 30	691	0.3−	0.2+	1999 04 11	699	0.3+	1.0+
1973 09 29	675	1.6+	0.1−	1997 09 30	691	0.1−	0.3+	1999 04 11	699	0.5+	0.9+
1973 09 29	675	0.9+	0.3+	1997 10 01	691	0.4+	0.1+	1999 04 14	704	0.7−	0.0
1973 09 30	675	0.1+	2.4+	1997 10 01	691	0.2+	0.1−	1999 04 14	704	0.5−	0.6−
1973 09 30	675	0.1−	2.1+	1997 10 01	691	0.2+	0.2−	1999 04 14	704	1.8+	0.2+
1973 10 04	675	2.2+	0.8−	1997 10 05	691	0.7+	0.2+	1999 04 14	704	0.5−	1.2−
1973 10 04	675	(1.7+	3.3−)	1997 10 05	691	0.6+	0.4−	1999 04 15	704	0.2−	0.3−
1973 10 05	675	1.3+	0.8−	1999 03 20	704	0.4−	0.5+	1999 04 15	704	0.8+	1.4+
1973 10 05	675	(2.7+	1.4−)	1999 03 20	704	0.6+	0.5+	1999 04 15	704	1.6+	0.5−
1975 03 15	095	0.6+	0.2−	1999 03 20	704	0.8+	0.2+	1999 04 15	704	0.2−	0.1−
1992 02 25	675	0.5−	0.0	1999 03 20	704	0.8−	0.8+	1999 04 15	704	0.8+	0.7−
1992 02 25	675	1.2+	0.7−	1999 03 23	704	0.1+	0.0	1999 04 17	704	0.1−	1.2−
1992 02 28	675	0.7−	0.4+	1999 03 23	704	0.7−	0.2+	1999 04 17	704	0.1−	0.4+
1992 02 28	675	0.0	0.8−	1999 03 23	704	0.2−	0.4+	1999 04 17	704	0.1+	1.4−
1992 03 02	809	0.7+	0.9+	1999 03 23	704	1.4−	1.0+	1999 04 17	704	0.6−	0.6+
1992 03 04	809	0.2−	0.8+	1999 03 23	704	0.0	0.0	1999 04 17	704	0.0	0.5+

(10662)∗ 3201 T-2 = 1987 UZ$_7$ = 1991 PE$_4$

Discovered 1973 Sept. 30 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. B. G. Marsden (*MPC* 18834)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	218.95737		(2000.0)		**P**	**Q**	
n	0.21459411	ω	191.60221		+0.78816966	+0.61295466	
a	2.7630634	Ω	130.45048		−0.55868177	+0.75034958	
e	0.0973189	i	4.17904		−0.25819230	+0.24751180	
P	4.59	H	13.7	G	0.15	U	1

Residuals in seconds of arc

1973 09 19	675	0.8+	0.8−	1991 09 04	809	(2.6+	3.1+)	1999 03 23	699	1.0−	0.7+
1973 09 19	675	1.4+	0.3−	1991 09 05	809	1.1+	1.5+	1999 03 23	704	0.2+	1.8−
1973 09 20	675	0.0	0.3−	1991 09 05	809	0.8+	1.5+	1999 03 23	699	0.2−	0.2+
1973 09 24	675	1.1−	0.4−	1991 09 05	809	(0.8+	2.2+)	1999 04 06	704	0.5−	0.2+
1973 09 24	675	1.3−	1.2−	1991 09 06	809	(2.3+	1.9+)	1999 04 06	704	0.3+	0.3−
1973 09 25	675	0.4−	1.1−	1991 09 06	809	(0.7−	2.4+)	1999 04 06	704	1.4+	0.0
1973 09 25	675	0.7−	1.2−	1991 09 06	809	(1.2−	2.6+)	1999 04 06	704	1.1+	0.5+
1973 09 29	675	1.0+	0.4−	1991 09 07	809	(2.5+	0.1−)	1999 04 06	704	0.8+	0.3+
1973 09 29	675	1.0+	1.1−	1991 09 07	809	0.2+	0.6+	1999 04 07	699	0.4+	0.7+
1973 09 30	675	1.4−	1.1−	1994 02 14	675	0.5−	1.2−	1999 04 07	699	0.6+	0.6+
1973 09 30	675	0.2+	0.6−	1994 02 15	691	0.3+	0.1−	1999 04 07	699	0.6+	1.4+
1973 10 04	675	1.5+	1.1+	1994 02 15	691	0.2+	0.1+	1999 04 12	704	0.2−	0.4+
1973 10 04	675	0.7+	0.6−	1994 02 15	675	1.2−	0.6−	1999 04 12	704	0.1−	0.1+
1973 10 05	675	0.0	0.4+	1994 02 15	691	0.1−	0.1−	1999 04 12	704	0.2−	1.0+
1973 10 05	675	1.2+	0.5+	1994 02 15	675	0.2+	1.1−	1999 04 12	704	0.3+	1.9+
1987 10 23	095	(3.1−	0.7−)	1998 01 03	426	0.2−	0.7−	1999 04 12	704	0.5+	1.2+
1990 04 01	675	(0.4+	2.2+)	1998 01 03	426	0.3−	0.3−	1999 04 16	704	1.1−	1.6−
1990 04 01	675	0.8−	1.4−	1998 01 03	426	0.2−	0.9−	1999 04 16	704	0.1−	0.3+
1991 08 03	809	0.5−	0.6−	1998 01 06	426	0.2+	0.6+	1999 04 16	704	1.3−	1.7−
1991 08 03	809	0.7−	0.8−	1998 01 06	426	0.1+	0.0	1999 04 16	704	1.1+	0.4−
1991 08 03	809	1.4−	0.2−	1998 01 06	426	0.0	0.1+	1999 04 16	704	1.7−	1.0−
1991 08 04	809	(3.0−	0.0)	1999 03 20	704	0.3−	1.8−	1999 04 17	703	1.0+	0.3+
1991 08 05	809	(1.6−	3.1−)	1999 03 20	704	0.1+	1.9−	1999 04 17	703	0.8+	0.3+
1991 08 05	809	(1.5−	3.0−)	1999 03 20	704	0.6+	2.0−	1999 04 17	703	0.1+	0.5+
1991 08 05	675	0.3−	0.6−	1999 03 20	704	(0.8+	2.3−)	1999 04 17	703	0.5−	0.3+
1991 08 05	809	(2.2−	2.2−)	1999 03 20	704	(1.3+	2.2−)	1999 04 19	704	0.2−	0.4+
1991 08 05	675	0.6+	0.2−	1999 03 23	704	0.1−	0.5−	1999 04 19	704	1.7−	0.5+
1991 08 07	675	1.0+	1.6−	1999 03 23	704	0.6+	0.6−	1999 04 19	704	0.9−	0.7−
1991 08 07	675	0.0	1.5−	1999 03 23	699	0.5−	0.0	1999 04 19	704	1.4−	0.5−

1991 09 04	809	(3.2+	4.4+)	1999 03 23	704	0.4−	0.8−
1991 09 04	809	(2.6+	4.1+)	1999 03 23	704	0.2+	1.3−

(10663)∗ 4283 T-2 = 1996 TU$_1$

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* 28083)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	50.82757		(2000.0)		**P**	**Q**	
n	0.17219164	ω	11.20006		−0.53652596	−0.84290716	
a	3.1998381	Ω	111.25906		+0.77084443	−0.50909496	
e	0.1570917	*i*	2.49614		+0.34342214	−0.17415463	
P	5.72	*H*	13.6	*G*	0.15	*U*	1

Residuals in seconds of arc

1973 09 19	675	0.2+	0.3−	1996 10 05	327	0.2−	0.1+	1999 04 07	704	1.3−	0.2+
1973 09 19	675	0.9+	1.0+	1996 10 05	327	0.1+	0.1−	1999 04 07	704	0.8−	0.1+
1973 09 19	675	0.7+	0.3−	1996 10 05	327	0.2−	0.1+	1999 04 07	704	1.4−	0.0
1973 09 19	675	0.0	0.8+	1996 10 14	327	0.7−	0.0	1999 04 07	704	0.6−	0.2−
1973 09 20	675	0.3−	0.0	1996 10 14	327	0.5+	0.2+	1999 04 12	704	0.5−	1.0+
1973 09 24	675	0.4−	0.6+	1996 10 14	327	0.2−	0.2+	1999 04 12	704	1.8−	1.5+
1973 09 24	675	0.7−	1.2+	1998 01 06	688	0.2+	0.3+	1999 04 12	704	0.1+	1.6+
1973 09 25	675	0.5−	1.5+	1998 01 06	688	0.2−	0.2+	1999 04 12	704	0.0	1.2+
1973 09 25	675	0.3−	0.0	1998 01 07	688	0.1+	0.2+	1999 04 12	704	0.4−	1.0+
1973 09 29	675	0.6−	2.1−	1998 01 07	688	0.1+	0.2+	1999 04 16	704	1.8+	0.1+
1973 09 29	675	0.1+	0.1−	1998 01 26	704	0.5+	0.7+	1999 04 16	704	1.2+	1.1−
1973 09 30	675	1.2+	0.3−	1998 01 26	704	0.3−	0.1−	1999 04 16	704	1.4+	0.9−
1973 10 04	675	1.6+	0.2+	1998 01 26	704	0.0	0.0	1999 04 19	704	0.3+	0.5+
1973 10 04	675	0.0	1.0+	1998 01 26	704	0.1−	0.2−	1999 04 19	704	0.7+	0.3+
1973 10 05	675	1.7−	0.4+	1998 01 26	704	0.2−	0.2−	1999 04 19	704	0.8+	0.0
1973 10 05	675	1.8−	0.5+	1999 03 23	704	0.4−	0.4−	1999 04 19	704	0.3−	0.2+
1996 10 03	327	0.3−	0.0	1999 03 23	704	0.7+	0.9+	1999 04 19	704	2.0+	1.0−
1996 10 03	327	0.5+	0.0	1999 03 23	704	(1.2+	2.2+)				
1996 10 03	327	0.4+	0.5−	1999 03 23	704	0.1−	1.0−				

(10664)∗ 5187 T-2 = 1989 ER$_2$ = 1990 EM

Discovered 1973 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Kaneda (*MPC* 16883)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	331.15761		(2000.0)		**P**	**Q**	
n	0.08475598	ω	230.74363		−0.34882697	−0.92817053	
a	5.1328176	Ω	240.13431		+0.89932583	−0.29257886	
e	0.0313549	*i*	8.60084		+0.26369071	−0.22999364	
P	11.63	*H*	11.1	*G*	0.15	*U*	1

Residuals in seconds of arc

1954 03 07	675	0.4+	0.4−	1990 03 02	809	1.3+	1.3−	1997 10 05	910	0.0	0.6+
1973 09 24	675	(4.5+	3.9−)	1990 03 02	809	0.8+	0.4−	1997 10 29	704	0.5−	0.5+
1973 09 24	675	(5.0+	4.6−)	1990 03 02	809	1.1+	0.2−	1997 10 29	704	0.2−	0.0
1973 09 25	675	(1.5+	4.1−)	1990 03 04	809	0.4−	0.7−	1997 10 29	704	0.1−	0.2−
1973 09 25	675	(1.6+	2.9−)	1990 03 04	809	1.6−	1.0−	1997 10 29	704	(6.4−	0.4−)
1973 09 29	675	(3.5+	4.0−)	1990 03 04	809	0.5−	1.4−	1997 10 30	704	0.2−	0.6−
1973 09 29	675	(1.8+	3.2−)	1995 10 17	608	0.7−	0.1−	1997 10 30	704	1.6+	0.8−
1973 09 30	675	(2.5+	3.5−)	1995 10 17	608	0.5−	0.1−	1997 10 30	704	0.8+	1.0−
1973 09 30	675	(2.2+	3.9−)	1995 10 18	608	0.1+	0.3−	1997 10 30	704	1.2+	1.2−
1989 03 02	809	0.6+	1.7+	1995 10 18	608	0.1−	0.1−	1998 11 28	327	0.7−	0.6−
1989 03 02	809	0.2−	0.4+	1996 09 10	809	0.7−	0.2+	1998 11 28	327	0.4−	0.4−
1989 03 02	809	1.1−	0.4+	1996 09 11	809	0.2+	1.5+	1998 11 28	327	0.5−	0.7−
1989 03 03	809	0.8+	1.3+	1996 09 14	809	0.2−	1.0+	1998 12 22	704	0.8+	0.7+
1989 03 03	809	0.3−	2.0+	1997 10 05	910	0.0	0.6+	1998 12 22	704	0.4+	0.3−
1989 03 03	809	0.5−	1.6+	1997 10 05	910	0.1−	0.6+	1998 12 22	704	0.4−	1.2−

(10665)∗ 3019 T-3 = 1986 RT

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. T. Kobayashi (*MPC* 12801)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	242.34077		(2000.0)		**P**	**Q**	
n	0.21036698	ω	129.16586		+0.77036631	+0.63690943	
a	2.7999547	Ω	191.37785		−0.62153234	+0.73974396	
e	0.1557715	*i*	8.65885		−0.14224378	+0.21708350	
P	4.69	*H*	13.3	*G*	0.15	*U*	1

Residuals in seconds of arc

1977 10 16	675	0.9+	1.8−	1995 08 01	801	0.1+	0.6−	1999 03 23	704	1.2−	0.2+
1977 10 16	675	1.1+	1.6−	1995 08 01	801	0.3−	1.2−	1999 03 23	691	0.6−	0.4+
1977 10 17	675	0.3−	0.1−	1995 08 26	801	0.4−	0.4+	1999 03 23	691	(0.1−	2.4−)
1977 10 17	675	1.1−	0.6−	1995 08 26	801	0.5+	0.1+	1999 04 12	704	0.1−	0.3−
1977 10 21	675	(1.5+	3.2−)	1995 08 30	801	0.0	0.1−	1999 04 12	704	0.1+	0.3−
1977 10 21	675	(2.4+	2.7−)	1995 08 30	801	0.3+	0.3+	1999 04 12	704	0.2−	0.8−
1977 10 22	675	(1.1+	3.5−)	1998 01 29	566	0.1−	0.0	1999 04 12	704	0.2+	0.7−
1977 10 22	675	(1.4+	4.3−)	1998 01 29	566	0.0	0.2−	1999 04 12	704	0.3−	0.4−
1986 08 29	095	1.5+	1.8−	1998 01 29	566	0.0	0.3−	1999 04 15	704	0.7+	1.9−
1986 09 05	071	2.0−	0.9−	1999 03 17	691	0.6+	0.4+	1999 04 15	704	(2.0+	0.4−)
1986 09 05	071	(3.2−	2.1−)	1999 03 17	691	1.1+	1.3+	1999 04 15	704	0.1−	0.1+
1986 09 06	095	0.4+	2.1+	1999 03 17	691	0.6+	0.2+	1999 04 15	704	0.9+	1.2+
1986 09 07	071	1.5−	0.2+	1999 03 19	691	0.7−	1.4+	1999 04 15	704	0.1+	0.6+
1986 09 07	071	1.9+	1.4+	1999 03 19	691	0.2−	0.5+	1999 04 16	704	0.0	0.6−
1991 09 10	675	1.8−	0.8+	1999 03 19	691	0.3−	0.5+	1999 04 16	704	0.3+	0.6−
1991 09 10	675	0.0	0.5+	1999 03 20	704	0.1+	0.5+	1999 04 16	704	0.5−	1.3−
1991 09 16	675	1.0+	0.0	1999 03 20	704	0.0	1.4+	1999 04 16	704	0.2+	0.9−
1991 09 16	675	0.9+	0.4−	1999 03 20	704	(0.1+	2.1+)	1999 04 16	704	1.8−	1.0−
1991 10 08	691	0.4−	0.4+	1999 03 20	704	(0.5+	2.8+)	1999 04 19	704	0.1−	0.3−
1991 10 08	691	0.1−	0.5+	1999 03 20	704	(0.6−	2.3+)	1999 04 19	704	0.4+	0.9−
1991 10 08	691	0.2−	0.4+	1999 03 23	704	0.1+	0.7+	1999 04 19	704	0.2−	0.4−
1991 11 06	801	0.1−	0.5+	1999 03 23	704	0.4+	0.5+	1999 04 19	704	0.3+	0.9−
1991 11 06	801	0.1−	0.3+	1999 03 23	704	0.5+	1.9+	1999 04 19	704	0.0	0.5−
1995 07 26	801	0.1−	0.2+	1999 03 23	704	(0.9+	2.6+)				
1995 07 26	801	0.1−	0.2+	1999 03 23	691	0.5−	0.5+				

(10666)∗ 4171 T-3 = 1964 VL$_2$

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. K. Hurukawa (*MPC* 12703), S. Nakano (*ibid.*)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	67.85105		(2000.0)		**P**	**Q**	
n	0.29753180	ω	52.28276		−0.35927961	−0.92903109	
a	2.2221862	Ω	58.99549		+0.82047929	−0.35960004	
e	0.0581154	*i*	5.92158		+0.44467055	−0.08711515	
P	3.31	*H*	14.2	*G*	0.15	*U*	1

Residuals in seconds of arc

1964 11 11	330	1.7+	0.6+	1997 10 30	704	1.0+	0.4−	1998 01 31	557	0.5−	0.1−
1964 11 27	330	(0.2+	3.7−)	1997 10 30	704	(3.5+	1.1−)	1999 03 24	704	1.0+	0.5+
1977 10 07	675	1.0−	0.1−	1997 10 30	704	0.0	0.9−	1999 03 24	704	0.0	0.9−
1977 10 11	675	1.0+	1.4−	1997 10 30	704	(2.6+	1.4−)	1999 03 24	704	0.2+	0.5−
1977 10 11	675	1.8+	0.9−	1997 10 30	704	0.1+	0.2+	1999 03 24	704	0.5+	1.4−
1977 10 12	675	0.4+	1.9−	1997 10 30	704	(2.2+	1.1−)	1999 03 24	704	0.4+	1.1+
1977 10 12	675	0.0	1.6−	1997 10 30	704	0.4+	0.1−	1999 04 11	699	0.3+	0.3−
1977 10 16	675	0.0	0.3+	1997 10 31	704	0.1−	0.0	1999 04 11	699	0.2+	0.0
1977 10 16	675	1.0−	1.2+	1997 10 31	704	1.0−	1.5+	1999 04 11	699	0.3−	0.2+
1977 10 17	675	0.3−	1.3−	1997 10 31	704	0.3+	0.2+	1999 04 12	704	0.6+	0.3−
1977 10 17	675	0.2−	1.6−	1997 10 31	704	0.5−	0.6+	1999 04 12	704	0.3+	0.7+
1977 10 21	675	0.0	0.9+	1997 10 31	704	0.2−	0.4+	1999 04 12	704	0.7+	0.8+
1977 10 21	675	0.6+	1.6+	1997 11 01	367	0.5−	0.8+	1999 04 12	704	0.4+	0.0
1977 10 22	675	2.2−	1.7−	1997 11 01	367	0.7−	0.8+	1999 04 15	704	1.1+	0.3−

1977 10 22	675	0.6+	1.2−	1997 11 03	704	0.2+	0.4+	1999 04 15	704	0.7−	0.5−
1990 05 29	413	(8.8+	1.6+)	1997 11 03	704	0.4−	1.1+	1999 04 15	704	1.5+	1.3−
1990 08 24	675	0.3+	0.0	1997 11 03	704	0.1+	1.3+	1999 04 16	704	0.2+	0.1−
1990 08 26	675	0.6+	0.6−	1997 11 03	704	0.2+	0.7+	1999 04 16	704	1.6−	0.7−
1990 08 26	675	0.6+	0.9−	1997 11 03	704	0.7−	1.1+	1999 04 16	704	1.2−	0.7+
1993 07 24	675	0.3+	1.9+	1997 11 09	900	1.1−	0.5+	1999 04 16	704	0.8−	0.4+
1993 07 24	675	0.3+	1.2+	1997 11 09	900	1.1−	0.6+	1999 04 16	704	1.7−	0.6+
1997 10 29	704	1.5+	0.7−	1998 01 27	566	0.1−	0.7−	1999 04 19	704	1.1−	0.3−
1997 10 29	704	1.9+	1.6−	1998 01 27	566	0.1+	0.9−	1999 04 19	704	1.1−	0.3−
1997 10 29	704	0.1+	0.5−	1998 01 27	566	0.3−	0.3−	1999 04 19	704	0.5−	1.1−
1997 10 30	704	0.8+	0.1−	1998 01 31	557	1.0−	0.8−	1999 04 19	704	0.3−	0.1−
1997 10 30	704	(2.5+	1.9−)	1998 01 31	557	0.2−	0.8−				

1931 UB = 1984 UF$_1$ = 1990 EZ$_9$ = 1998 HT$_{57}$

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	305.36589		(2000.0)		**P**	**Q**	
n	0.26093868	ω	116.66735		+0.98909426	+0.14599316	
a	2.4253648	Ω	234.94386		−0.14216647	+0.91184221	
e	0.2174959	i	1.36193		−0.03848684	+0.38370533	
P	3.78	H	14.4	G	0.15	U	2

Residuals in seconds of arc

1931 10 17	024	0.7−	1.8+	1998 03 25	704	0.6+	0.7−	1998 04 21	704	0.2−	1.2+
1931 10 20	024	(8.2−	1.5−)	1998 03 25	704	1.2+	0.6+	1998 04 21	704	0.3−	0.7+
1931 11 02	024	(9.2+	9.6+)	1998 03 25	704	0.1−	0.2−	1998 04 21	704	(2.2+	1.1+)
1984 10 28	046	1.4+	1.4−	1998 03 29	704	1.1+	1.0−	1998 04 22	704	0.1−	0.8+
1984 10 28	046	(1.2+	2.6−)	1998 03 29	704	0.4+	1.3−	1998 04 22	704	0.3+	0.7+
1984 10 29	046	0.8+	1.0−	1998 03 29	704	0.3−	1.6−	1998 04 22	704	0.3−	0.4+
1984 10 29	046	1.4+	1.0+	1998 03 29	704	1.7+	0.4+	1998 04 22	704	0.9−	0.5+
1984 10 30	046	1.8−	0.5+	1998 03 29	704	0.0	0.5+	1998 04 22	704	0.1+	0.4+
1984 10 30	046	1.8−	1.0+	1998 04 01	704	0.3−	1.8−	1998 05 16	704	1.2+	1.0+
1990 03 04	809	(3.0−	2.6+)	1998 04 01	704	(1.7−	2.8−)	1998 05 16	704	0.6−	0.6+
1990 03 04	809	0.5+	1.2+	1998 04 01	704	1.3−	0.1−	1998 05 16	704	0.3+	0.8+
1990 03 04	809	(2.8+	2.4+)	1998 04 01	704	0.4−	1.1−	1998 05 16	704	0.3−	0.4−
1998 03 25	704	0.3+	0.4+	1998 04 21	704	0.0	1.0+				
1998 03 25	704	0.1+	0.7−	1998 04 21	704	1.2−	0.6+				

1967 US = 1999 GX

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	153.44355		(2000.0)		**P**	**Q**	
n	0.26416622	ω	327.33186		+0.74853959	−0.65147678	
a	2.4055693	Ω	73.83050		+0.63264978	+0.64585902	
e	0.1676632	i	7.39139		+0.19860197	+0.39805042	
P	3.73	H	13.2	G	0.15	U	4

Residuals in seconds of arc

1967 10 13	029	0.1−	0.0	1999 04 05	120	0.3−	0.4+	1999 04 10	120	1.1+	0.4+
1967 10 14	029	0.0	0.1+	1999 04 05	120	0.1−	0.5−	1999 04 10	120	0.1−	0.0
1967 10 30	029	0.1+	0.2−	1999 04 05	120	(2.5−	0.2+)	1999 04 14	120	0.5−	0.0
1967 10 30	029	0.0	0.1−	1999 04 06	120	0.9−	0.7+	1999 04 14	120	0.2+	0.4−
1967 10 31	029	0.5+	0.3+	1999 04 06	120	0.7−	0.4+	1999 04 14	120	0.1−	0.1+
1967 10 31	029	0.6−	0.1−	1999 04 06	120	0.1+	0.1−	1999 04 19	120	0.7+	0.6+
1967 10 31	029	0.2+	0.1+	1999 04 10	120	0.8+	1.0−	1999 04 19	120	0.3+	0.1−
1999 04 05	120	0.3−	0.2−	1999 04 10	120	1.0−	0.1−	1999 04 19	120	0.6+	0.4−

1970 PU = 1993 PD$_7$ = 1999 FK$_{26}$

Id. G. V. Williams, T. Kobayashi; 1970 PU = 1976 GQ$_4$ (*NOC* 1040) is invalid

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	244.98058		(2000.0)		**P**	**Q**	
n	0.30003320	ω	344.15964		+0.71157165	+0.70169039	
a	2.2098180	Ω	331.17333		−0.63625608	+0.62178217	
e	0.2510324	i	4.28253		−0.29806707	+0.34787575	
P	3.28	H	14.8	G	0.15	U	3

Residuals in seconds of arc

1970 08 10	095	0.0	0.8−	1993 08 15	010	(0.6−	2.9−)	1999 03 19	704	(2.6−	0.8+)
1970 08 28	095	0.2−	0.8+	1993 08 17	010	(1.3−	4.2−)	1999 03 20	704	0.1+	0.6−
1970 08 29	095	(5.7−	3.9−)	1993 09 18	010	0.5+	0.5−	1999 03 20	704	0.1+	0.5+
1970 08 31	095	0.1−	0.6+	1993 09 18	010	0.4+	0.5−	1999 03 20	704	(2.4−	0.1+)
1993 08 13	675	0.5−	0.2+	1993 09 18	010	0.2+	0.6−	1999 04 11	699	1.3+	0.1+
1993 08 13	675	0.0	0.1+	1999 03 19	704	0.3−	1.1−	1999 04 11	699	0.8+	0.0
1993 08 15	010	(0.1+	3.5−)	1999 03 19	704	1.8−	0.2−	1999 04 11	699	1.2+	0.1−
1993 08 15	010	(0.9−	3.2−)	1999 03 19	704	1.9−	0.4+				

1974 OU$_1$ = 1974 QK$_3$ = 1975 TS$_1$ = 1999 CY$_{57}$

Id. B. G. Marsden (d, *MPC* 9064), G. V. Williams (*MPC* 33921, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	286.29526		(2000.0)		**P**	**Q**	
n	0.18744476	ω	235.08360		−0.56184344	+0.82724038	
a	3.0238055	Ω	0.74470		−0.68939941	−0.46668276	
e	0.0624512	i	10.20474		−0.45723124	−0.31285867	
P	5.26	H	12.5	G	0.15	U	4

Residuals in seconds of arc

1974 07 24	413	1.6−	2.1+	1999 02 10	704	0.0	0.0	1999 03 06	402	0.1+	0.6+
1974 07 26	808	1.2−	0.6−	1999 02 10	704	0.5−	0.1−	1999 03 06	402	0.2+	0.6+
1974 07 26	808	0.5−	0.4+	1999 02 10	704	0.8−	0.1−	1999 03 20	704	0.4+	0.2+
1974 08 18	809	3.9+	3.6−	1999 02 10	704	0.3−	0.5+	1999 03 20	704	0.4+	0.4+
1975 10 03	095	0.2−	0.2+	1999 02 13	704	0.1+	1.3−	1999 03 20	704	0.5+	1.1+
1998 12 17	699	1.2−	0.6−	1999 02 13	704	1.6+	0.4−	1999 03 20	704	0.3+	0.5+
1998 12 17	699	0.1−	0.5−	1999 02 13	704	1.0−	0.4−	1999 03 20	704	0.3+	0.3−
1998 12 17	699	0.7−	0.3−	1999 02 13	704	0.0	0.2−	1999 03 23	704	0.1+	0.4+
1999 01 23	699	0.1+	1.5−	1999 02 13	704	0.8−	0.1−	1999 03 23	704	0.7+	0.2+
1999 01 23	699	0.0	0.2−	1999 02 18	699	0.1+	0.6+	1999 03 23	704	0.8−	0.5+
1999 01 23	699	0.4−	0.5−	1999 02 18	699	0.5+	0.9+	1999 03 23	704	0.4+	0.6−
1999 02 10	704	0.2−	0.8−	1999 02 18	699	0.1+	0.6+	1999 03 23	704	0.3−	0.5−

1978 TR$_7$ = 1983 XQ$_1$ = 1999 GW$_{19}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	97.85302		(2000.0)		**P**	**Q**	
n	0.21091730	ω	339.27925		+0.37419366	−0.91310316	
a	2.7950821	Ω	88.45736		+0.87199928	+0.28702880	
e	0.2087290	i	9.32242		+0.31558890	+0.28958087	
P	4.67	H	12.7	G	0.15	U	5

Residuals in seconds of arc

1978 10 02	095	1.5−	0.7+	1999 04 15	704	2.6+	0.4+	1999 04 16	704	0.4−	1.1+
1978 10 08	095	1.3−	0.5−	1999 04 15	704	1.0+	1.0+	1999 04 16	704	1.4−	1.1+
1978 11 01	095	1.0+	2.9+	1999 04 15	704	0.6−	0.0	1999 04 16	704	1.2−	0.1−
1983 12 04	561	1.0+	0.7−	1999 04 15	704	0.0	0.5+	1999 04 16	704	0.3+	0.4−
1983 12 04	561	0.7−	0.1−	1999 04 16	704	1.2+	0.2−				

1978 UV$_7$ = 1991 KX$_1$ = 1992 SS$_{25}$

Id. E. Bowell (*MPC* 22947), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	153.47807		(2000.0)		**P**	**Q**	
n	0.20951548	ω	129.45089		+0.86017414	+0.50921159	
a	2.8075358	Ω	199.98761		−0.48969032	+0.80910756	
e	0.1033427	i	4.75836		−0.14249152	+0.29334027	
P	4.70	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1978 10 27	675	0.2−	0.6+	1997 10 30	704	1.1+	1.0−	1997 11 06	704	(3.5−	0.5−)
1978 10 28	675	0.1+	0.2+	1997 10 30	704	0.9+	1.2−	1997 11 06	704	(3.6−	0.6+)
1978 10 29	675	0.0	1.0+	1997 10 31	704	0.2+	0.0	1997 11 06	704	(3.3−	0.2−)
1991 05 17	809	0.6+	0.9+	1997 10 31	704	0.6+	0.4+	1997 11 06	704	(2.8−	0.3−)
1991 05 17	809	0.8−	0.1−	1997 10 31	704	0.2−	0.7+	1997 11 06	704	(3.5−	0.1+)
1991 05 17	809	1.2+	0.3+	1997 10 31	704	1.0+	1.0+	1999 02 12	704	0.1+	0.2−
1992 09 30	675	1.3−	0.2+	1997 10 31	704	1.2+	1.0+	1999 02 12	704	1.1−	0.2+
1992 09 30	675	(3.0−	1.6−)	1997 11 03	704	1.1−	1.0+	1999 02 12	704	1.7−	0.1+
1992 10 03	675	0.8−	1.2−	1997 11 03	704	0.7−	0.5+	1999 02 13	704	0.5−	0.0
1992 10 03	675	0.2−	0.4−	1997 11 03	704	0.7−	0.9+	1999 02 13	704	1.6+	0.4−
1997 10 30	704	1.2+	1.0−	1997 11 03	704	0.6−	0.3−	1999 02 13	704	0.2−	0.6+
1997 10 30	704	1.5+	0.5−	1997 11 03	704	1.9−	0.9−	1999 02 13	704	0.7+	0.6+

1978 VM_9 = 1998 FV_{87}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	146.31333		(2000.0)		**P**	**Q**	
n	0.26745417	ω	16.41172		−0.10355915	−0.99045257	
a	2.3858133	Ω	79.60109		+0.90183700	−0.13208716	
e	0.1118512	i	5.30800		+0.41948245	+0.03945496	
P	3.69	H	15.7	G	0.15	U	4

Residuals in seconds of arc

1950 03 21	675	0.5−	0.6−	1998 03 24	704	0.3−	0.2−	1998 04 02	809	(3.0+	5.8+)
1950 03 21	675	0.0	0.2+	1998 03 24	704	0.1+	0.2+	1998 04 02	809	(2.5+	5.6+)
1978 11 05	675	1.1−	0.7−	1998 03 24	704	0.2+	1.8−	1998 04 02	809	(3.1+	4.8+)
1978 11 06	675	1.6+	0.0	1998 03 25	704	0.1+	0.4+	1998 04 03	809	(2.6+	2.6+)
1978 11 07	675	0.9−	0.3+	1998 03 25	704	0.6−	1.2+	1998 04 03	809	(1.5+	2.9+)
1978 11 08	675	0.6−	0.8+	1998 03 25	704	0.2−	0.2+	1998 04 03	809	(1.6+	2.7+)
1978 11 29	675	0.7+	0.2−	1998 03 25	704	0.7+	0.5+				
1998 03 24	704	0.9+	0.7+	1998 03 25	704	0.7−	0.6−				

1979 MD_2 = 1976 SK_{11} = 1990 SA_{29} = 1990 UO_{12}

Id. S. Nakano (*MPC* 20922), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	93.17606		(2000.0)		**P**	**Q**	
n	0.28275069	ω	248.39107		+0.26586287	−0.96398979	
a	2.2989716	Ω	186.20110		+0.90484943	+0.25182173	
e	0.1804507	i	3.38247		+0.33251233	+0.08549560	
P	3.49	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1954 05 28	675	0.4−	0.6−	1997 10 01	124	0.2−	0.3+	1997 12 28	566	0.3−	0.3+
1976 09 28	095	(4.2+	0.5+)	1997 10 02	124	0.1+	1.2+	1997 12 28	566	0.3−	0.2+
1979 06 23	413	1.4−	0.6−	1997 10 02	124	1.0−	0.4+	1997 12 28	566	0.6−	0.2+
1979 06 24	413	1.4−	0.0	1997 10 10	886	1.8−	1.1+	1999 04 12	704	0.3−	0.6+
1979 06 25	413	(2.7−	0.0)	1997 10 10	886	1.2−	1.1+	1999 04 12	704	0.3−	0.5−
1979 06 29	413	1.1+	0.8−	1997 10 11	886	1.5−	0.5+	1999 04 12	704	0.7+	0.5−
1979 07 24	675	1.2+	1.0−	1997 10 11	886	1.0−	1.0+	1999 04 12	704	0.5+	1.5+
1979 07 24	413	0.9+	0.5−	1997 10 25	610	1.6+	1.2+	1999 04 12	704	1.4+	0.3+
1979 07 25	675	0.4+	0.1−	1997 10 25	610	1.5+	0.8+	1999 04 16	704	0.7+	1.8+
1990 09 29	095	0.2+	0.6+	1997 10 25	610	1.2+	0.4+	1999 04 16	704	1.1+	1.5+
1990 10 23	095	(1.3−	2.3+)	1997 10 30	704	0.7−	0.1+	1999 04 16	704	0.4+	0.9+
1993 07 23	675	0.9+	0.4+	1997 10 30	704	0.8−	0.1+	1999 04 16	704	(5.8−	1.7−)
1993 07 23	675	(0.1+	2.5−)	1997 10 30	704	1.0−	0.8+	1999 04 19	704	0.5+	1.3+
1996 06 06	104	0.3−	0.8+	1997 10 30	704	0.6−	0.2−	1999 04 19	704	0.0	1.1+
1996 06 06	104	1.7−	0.9+	1997 10 30	704	0.5−	1.0+	1999 04 19	704	0.8+	1.0+
1996 06 06	104	(2.4−	0.9+)	1997 11 08	610	(2.3+	0.9−)	1999 04 19	704	0.1+	1.3+
1997 10 01	124	0.4−	0.8+	1997 11 08	610	1.9+	1.1−	1999 04 19	704	0.5−	1.3+
1997 10 01	124	0.1+	1.1+	1997 11 08	610	1.4+	1.2−				

1980 FY_2 = 1988 VL_8 = 1995 BW_{15}

Id. G. V. Williams (*MPC* 25061), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	298.86200		(2000.0)		**P**	**Q**	
n	0.18891433	ω	90.52566		−0.05461378	−0.99850737	
a	3.0081035	Ω	2.60527		+0.91073451	−0.05006152	
e	0.0516986	i	0.76300		+0.40936534	−0.02183749	
P	5.22	H	14.1	G	0.15	U	1

Residuals in seconds of arc

1980 03 16	809	0.2−	0.5+	1995 01 30	033	0.5+	0.9+	1998 09 26	704	0.2−	0.9−
1980 03 16	809	0.4+	0.2−	1995 02 02	033	0.5−	0.3+	1998 09 26	704	1.0−	0.0
1980 03 16	809	0.1−	0.7−	1998 09 14	704	0.3−	1.0−	1998 09 26	704	(2.9−	0.0)
1980 03 16	809	0.5+	0.4+	1998 09 14	704	0.2−	1.0−	1998 09 27	704	0.2−	0.1+
1980 03 17	809	0.1+	0.2+	1998 09 14	704	0.1+	0.3−	1998 09 27	704	0.1−	0.4+
1980 03 17	809	0.3+	0.8+	1998 09 18	704	0.2+	0.1−	1998 09 27	704	0.7−	1.2+
1980 03 17	809	0.3−	0.3−	1998 09 18	704	0.3+	1.9+	1998 09 27	704	0.4+	1.7+
1980 03 17	809	0.5+	0.0	1998 09 18	704	(2.3+	0.2+)	1998 09 27	704	(1.9−	2.6+)
1980 03 23	809	1.0−	0.8−	1998 09 18	704	(2.6+	0.1−)	1998 10 28	691	0.5−	0.3−
1988 11 04	033	1.0−	1.0−	1998 09 18	704	1.4+	0.4−	1998 10 28	691	0.4−	0.3−
1988 11 04	033	1.5+	0.4−	1998 09 26	704	0.3+	0.8+	1998 10 28	691	0.3−	0.2−
1995 01 30	033	0.2+	0.2−	1998 09 26	704	0.5+	0.4−				

1980 PU = 1983 JC_1 = 1992 CO_6 = 1999 HK_8

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	272.90861		(2000.0)		**P**	**Q**	
n	0.30380805	ω	56.27199		+0.16095756	+0.98565405	
a	2.1914750	Ω	223.08177		−0.92833600	+0.13372730	
e	0.2053731	i	4.26365		−0.33508944	+0.10297135	
P	3.24	H	14.7	G	0.15	U	3

Residuals in seconds of arc

1980 08 04	675	0.7+	0.8+	1980 08 17	046	0.8+	0.3−	1999 04 10	699	0.2−	0.6+
1980 08 05	675	0.4+	1.0+	1980 08 18	046	1.3+	0.9−	1999 04 10	699	0.2−	0.8+
1980 08 06	046	1.5−	0.0	1983 05 14	095	0.0	0.0	1999 04 10	699	0.4+	0.3+
1980 08 06	046	(2.9−	1.6−)	1992 02 02	809	(10.9−	1.2−)	1999 04 16	704	0.5+	0.4−
1980 08 07	046	(1.9−	3.8−)	1992 02 02	809	(10.2−	0.6−)	1999 04 16	704	(2.6−	0.9−)
1980 08 07	046	1.5−	0.8−	1992 02 02	809	(9.7−	0.7−)	1999 04 16	704	1.2−	0.2−
1980 08 14	046	0.2+	0.8−	1999 04 06	704	0.1+	0.3−	1999 04 17	704	0.0	0.0
1980 08 14	046	0.5+	1.5+	1999 04 06	704	0.2+	0.3−	1999 04 17	704	0.0	0.1+
1980 08 15	046	0.4−	0.4+	1999 04 06	704	1.3+	1.1−	1999 04 17	704	0.4−	0.1+
1980 08 15	046	0.6−	0.2−	1999 04 06	704	0.2+	0.7−	1999 04 17	704	0.3−	0.3+
1980 08 17	046	0.2+	0.9−	1999 04 06	704	0.8−	0.0	1999 04 17	704	0.3+	0.5+

1981 EU_{16} = 1999 FN_{59}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	35.22735		(2000.0)		**P**	**Q**	
n	0.27314404	ω	141.11796		−0.29446015	−0.95459757	
a	2.3525646	Ω	325.93869		+0.85545581	−0.24223860	
e	0.1803231	i	4.62177		+0.42601477	−0.17338959	
P	3.61	H	16.3	G	0.15	U	5

Residuals in seconds of arc

1981 02 12	413	0.1−	0.4−	1981 04 09	413	0.2+	0.3+	1999 03 23	704	0.1−	0.4+
1981 02 12	413	1.3−	0.7+	1981 05 01	413	0.0	0.2−	1999 03 23	704	2.4+	0.1+
1981 03 06	413	1.3+	0.0	1981 05 03	413	0.5−	0.3−	1999 03 23	704	0.9−	0.2−
1981 03 08	413	2.4+	0.0	1999 03 20	704	0.9−	0.8−	1999 03 23	704	0.3+	0.8+
1981 03 12	413	(6.5−	2.5+)	1999 03 20	704	2.2−	0.5−	1999 03 23	704	0.9+	0.9−
1981 04 09	413	1.8−	1.0+	1999 03 20	704	0.0	0.1+				

1981 EQ$_{17}$ = 1999 FF$_{42}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	351.19310		(2000.0)		**P**		**Q**
n	0.27246529	ω	297.51937		−0.95406720		−0.29892262
a	2.3564700	Ω	225.09558		+0.28388067		−0.88064684
e	0.1006885	i	1.62019		+0.09574726		−0.36756825
P	3.62	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1981 02 12	413	1.2−	0.4−	1981 03 12	413	1.0+	0.2−	1999 03 20	704	1.1+	1.1−
1981 02 12	413	1.0+	0.2−	1981 03 15	413	0.5−	0.8−	1999 03 20	704	0.4−	0.2+
1981 03 01	413	1.3−	0.0	1981 04 05	413	2.8−	1.6+	1999 03 23	704	0.8−	0.7+
1981 03 01	413	0.1+	0.7−	1981 04 10	413	2.7+	1.1−	1999 03 23	704	0.3+	0.3+
1981 03 02	413	0.8+	2.0+	1981 05 01	413	0.1−	0.1+	1999 03 23	704	1.0+	0.1+
1981 03 08	413	1.5+	1.1−	1999 03 20	704	0.9+	0.9−	1999 03 23	704	2.0−	0.2−
1981 03 11	413	1.9−	0.2+	1999 03 20	704	0.0	1.8+				
1981 03 11	413	0.4+	0.3−	1999 03 20	704	0.1+	0.2−				

1981 EX$_{26}$ = 1985 GH$_1$ = 1993 QJ$_2$

Id. B. G. Marsden (*MPC* 22588), G. V. Williams, A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	194.99607		(2000.0)		**P**		**Q**
n	0.26132389	ω	79.03515		+0.14395320		+0.98943557
a	2.4229808	Ω	199.26692		−0.92703326		+0.12876374
e	0.2504689	i	2.98229		−0.34624676		+0.06661189
P	3.77	H	14.8	G	0.15	U	2

Residuals in seconds of arc

1981 02 12	413	0.3−	0.3+	1981 04 07	413	0.3+	0.3+	1993 09 18	010	0.0	0.3+
1981 02 12	413	0.4−	0.2−	1981 04 10	413	0.4+	1.1+	1993 09 20	675	0.1+	0.4−
1981 02 13	413	1.0+	0.3+	1981 04 10	413	1.9+	0.9−	1993 09 20	675	0.7−	0.9−
1981 03 02	413	0.7+	0.5+	1981 04 26	413	(2.7+	2.4−)	1997 09 30	684	0.1+	0.3+
1981 03 06	413	1.4−	0.8+	1981 05 01	413	0.6+	0.6−	1997 09 30	684	0.2+	0.4+
1981 03 06	413	0.9−	1.1+	1981 05 03	413	(0.2+	3.2−)	1997 09 30	684	0.3+	0.3+
1981 03 11	413	0.2−	0.0	1985 04 15	688	1.0−	0.2+	1997 10 01	684	0.3+	1.2−
1981 03 11	413	0.4−	0.0	1985 04 15	688	1.1+	0.4+	1997 10 01	684	0.2+	1.1−
1981 03 15	413	0.3−	0.1+	1993 08 16	010	0.4+	0.0	1997 10 01	684	0.3+	1.2−
1981 03 15	413	(2.4+	0.7−)	1993 08 16	010	0.2−	0.2+	1997 10 30	704	0.7+	0.4+
1981 04 05	413	(3.7+	2.3−)	1993 08 16	010	0.3−	0.2−	1997 10 30	704	1.0−	1.2+
1981 04 05	413	(3.5+	1.0−)	1993 08 17	010	1.0−	0.6+	1997 10 30	704	0.4+	1.0+
1981 04 06	413	0.9−	1.0+	1993 09 18	010	0.7+	1.4+	1997 10 30	704	0.8−	0.0
1981 04 06	413	1.5+	0.6−	1993 09 18	010	0.4+	1.1+	1997 10 30	704	1.5−	1.9+

1981 EP$_{27}$ = 1991 HQ$_1$

Id. G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	62.04981		(2000.0)		**P**		**Q**
n	0.19983233	ω	157.33052		+0.95703502		+0.28908832
a	2.8975141	Ω	186.00284		−0.28797584		+0.93840770
e	0.0417227	i	12.49474		−0.03396882		+0.18925889
P	4.93	H	14.4	G	0.15	U	3

Residuals in seconds of arc

1978 10 03	675	0.1+	0.2+	1993 10 09	809	1.5−	1.6−	1998 09 26	704	0.8+	0.6+
1978 10 04	675	0.3−	0.4+	1993 10 11	809	2.0+	0.1+	1998 09 26	704	0.1−	0.3+
1981 02 12	413	0.1−	0.3−	1993 10 11	809	1.7+	0.7−	1998 09 26	704	0.2+	0.9−
1981 02 12	413	0.1−	0.6−	1993 10 11	809	0.9+	0.4−	1998 09 26	704	1.3+	1.4+
1981 03 02	413	1.2+	1.0+	1993 10 20	809	(0.8+	2.7−)	1998 09 26	704	0.3−	0.3−
1981 03 06	413	1.0−	1.0+	1993 10 20	809	(0.8+	2.2−)	1998 10 11	699	0.3+	0.5+
1981 03 11	413	1.2−	0.1+	1993 10 20	809	(0.1+	2.2−)	1998 10 11	699	0.3−	0.2+
1981 03 15	413	0.2+	0.7−	1998 09 18	699	0.4+	0.4+	1998 10 29	704	0.2−	0.1+
1981 03 15	413	0.4+	0.6−	1998 09 18	699	0.8+	0.2−	1998 10 29	704	1.8−	0.2+
1981 04 05	413	(3.2+	4.7−)	1998 09 18	699	0.3+	0.1−	1998 10 29	704	1.3+	0.3+
1981 05 01	413	0.6+	0.2−	1998 09 20	809	(2.4+	3.4+)	1998 10 29	704	0.2+	0.5−
1991 04 19	809	(4.9+	3.8−)	1998 09 20	809	(1.9+	2.8+)	1998 10 29	704	1.7−	0.4−
1991 04 19	809	(3.4+	3.6−)	1998 09 20	809	(2.0+	2.7+)	1998 11 11	704	1.2−	0.8−
1991 04 19	809	(2.2+	4.1−)	1998 09 21	809	(1.8+	2.3+)	1998 11 11	704	(2.0−	0.2+)
1993 10 09	809	1.0−	1.3−	1998 09 21	809	1.0+	1.9+	1998 11 11	704	1.6−	1.0+
1993 10 09	809	0.8−	1.6−	1998 09 21	809	1.5+	1.7+	1998 11 11	704	1.2−	0.4−

1981 EO$_{28}$

Id. E. Bowell (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	176.23082		(2000.0)		**P**		**Q**
n	0.22082542	ω	7.57039		+0.99560068		−0.09361495
a	2.7108366	Ω	357.78971		+0.07972136		+0.86843577
e	0.0467158	i	5.86318		+0.04923195		+0.48688351
P	4.46	H	14.8	G	0.15	U	5

Residuals in seconds of arc

1981 02 12	413	1.0+	0.8−	1981 03 15	413	0.1−	0.1+	1999 04 09	699	0.5−	0.5+
1981 02 12	413	0.5+	0.4−	1981 03 15	413	1.4+	0.0	1999 04 09	699	0.1+	1.1−
1981 02 13	413	0.1−	0.0	1981 04 05	413	(3.0−	3.4+)	1999 04 11	699	0.3+	0.1+
1981 03 06	413	0.5+	0.2−	1981 04 10	413	2.4−	1.3−	1999 04 11	699	0.4+	1.1+
1981 03 06	413	2.0+	1.6+	1981 05 01	413	1.5−	0.6−	1999 04 11	699	0.6+	1.1+
1981 03 11	413	1.4−	0.2−	1981 05 03	413	1.0−	0.0				
1981 03 11	413	0.2+	0.2+	1999 04 09	699	0.0	0.1−				

1981 EZ$_{40}$ = 1972 TR$_2$ = 1996 SU$_7$

Id. G. V. Williams (*MPC* 28070, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	223.86994		(2000.0)		**P**		**Q**
n	0.28563457	ω	22.09901		+0.97814628		−0.20726408
a	2.2834712	Ω	349.82129		+0.17407506		+0.85969178
e	0.1780987	i	5.34959		+0.11370018		+0.46687433
P	3.45	H	15.3	G	0.15	U	2

Residuals in seconds of arc

1972 10 05	095	1.1−	2.1+	1996 09 18	327	0.2+	0.5−	1998 02 23	691	0.4−	0.5−
1981 02 09	413	0.2+	0.0	1996 09 18	327	0.1−	0.2−	1998 02 23	691	0.4−	0.4−
1981 03 02	413	1.3−	0.1−	1996 09 18	327	0.3+	0.3−	1998 03 02	691	0.2−	0.7−
1981 03 02	413	1.3+	1.1−	1996 09 21	327	0.2−	0.5−	1998 03 02	691	0.5+	0.2−
1981 03 06	413	1.4−	1.6+	1996 09 21	327	0.3−	0.5−	1998 03 02	691	0.1−	0.6−
1981 03 06	413	(4.4+	2.1−)	1996 09 21	327	0.1−	0.1−	1998 03 04	704	(2.3−	0.1+)
1981 03 11	413	1.6+	0.3−	1996 10 07	327	1.1+	0.9−	1998 03 04	704	(1.3−	2.2−)
1981 03 15	413	0.1−	1.4+	1996 10 07	327	1.1+	0.9−	1998 03 04	704	1.1−	1.4−
1981 05 02	413	(2.4+	0.6+)	1996 10 07	327	0.5+	0.7−	1998 03 04	704	(9.4−	0.8−)
1981 05 03	413	0.5+	0.1−	1998 02 23	691	0.4−	0.5−				

1981 EP$_{41}$ = 1983 VN$_2$ = 1996 EM$_3$

Id. G. V. Williams (*MPC* 27102), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	5.88020		(2000.0)		**P**		**Q**
n	0.26111247	ω	62.38065		+0.52819768		−0.84911539
a	2.4242886	Ω	355.73147		+0.76309253		+0.47633511
e	0.1713909	i	2.46760		+0.37242047		+0.22827160
P	3.77	H	16.1	G	0.15	U	2

Residuals in seconds of arc

1981 02 09	413	0.5−	1.0−	1996 03 11	691	0.5+	0.8+	1998 10 19	699	0.2−	0.3−
1981 03 02	413	(5.3−	0.3+)	1996 03 11	691	0.5+	0.6+	1998 10 19	699	0.3−	0.1−
1981 03 11	413	0.5−	1.0−	1996 03 18	691	0.1+	0.1+	1998 10 19	699	0.4+	0.2+
1981 03 15	413	(2.6+	3.4−)	1996 03 18	691	0.1−	0.5+	1998 10 20	910	1.3+	0.4−
1981 03 15	413	(4.4+	1.8−)	1996 03 18	691	0.3+	0.4+	1998 10 20	910	1.3+	0.5−
1981 05 01	413	0.3+	0.8+	1998 10 11	699	1.0+	0.9+	1998 10 20	910	1.4+	0.5−
1981 05 01	413	1.0−	1.7−	1998 10 11	699	0.4+	0.6−	1998 11 20	699	0.6−	0.4+
1981 05 03	413	0.6−	1.7−	1998 10 11	699	1.0−	0.1+	1998 11 20	699	1.0+	0.2−
1983 11 08	381	0.6+	0.2+	1998 10 15	691	1.3−	0.4+	1998 11 20	699	0.1−	0.1−

1983 11 08	381	0.4−	0.8−	1998 10 15	691	1.6−	0.3+
1996 03 11	691	0.4+	1.0+	1998 10 15	691	1.8−	0.1+

1981 QD = 1981 SR = 1996 PU$_8$ = 1998 BP$_{13}$

Id. B. G. Marsden (d, *MPC* 6630), G. V. Williams (*MPC* 31225), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	223.46299		(2000.0)		**P**	**Q**	
n	0.26053869	ω	7.91967		+0.91708054	+0.39795001	
a	2.4278465	Ω	328.59467		−0.36832806	+0.82211607	
e	0.2103686	i	2.69219		−0.15263590	+0.40713752	
P	3.78	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1981 08 30	688	0.7−	1.0−	1996 09 08	809	1.5−	1.1+	1999 03 23	704	0.2−	0.2+
1981 08 30	688	0.2+	0.4−	1998 01 24	704	0.7+	1.0−	1999 03 23	704	(4.0−	0.8+)
1981 09 02	095	1.6+	0.1−	1998 01 24	704	0.1−	0.2−	1999 04 07	704	0.1+	0.3+
1981 09 03	688	(6.1+	0.4−)	1998 01 24	704	0.3+	0.0	1999 04 07	704	1.8+	1.9−
1981 09 03	688	(4.1+	0.3+)	1998 01 24	704	(2.5−	1.5−)	1999 04 07	704	1.9+	1.1−
1981 09 25	688	0.7+	2.0−	1998 01 25	704	0.2−	0.4+	1999 04 07	704	(1.5+	2.0−)
1981 09 25	688	(2.9−	4.6−)	1998 01 25	704	0.9−	0.4−	1999 04 14	704	0.9−	0.1+
1981 09 25	046	0.1+	0.5−	1998 01 25	704	1.3−	0.7−	1999 04 14	704	1.2+	0.2−
1981 09 25	046	0.3+	1.4−	1998 01 25	704	0.4−	1.3−	1999 04 14	704	0.7−	1.4−
1981 09 25	095	1.2+	0.8+	1998 01 28	566	0.1+	0.3+	1999 04 14	704	0.9−	1.0+
1981 10 05	688	(1.2−	3.2−)	1998 01 28	566	0.5+	0.5+	1999 04 15	704	0.0	1.6−
1981 10 05	688	0.2−	2.2−	1998 01 28	566	0.3+	0.0	1999 04 15	704	0.3+	1.8−
1996 08 08	809	(0.6−	3.0−)	1998 01 30	691	0.2+	0.1−	1999 04 15	704	0.6−	0.1−
1996 08 08	809	(1.5−	4.0−)	1998 01 30	691	0.2+	0.3−	1999 04 15	704	0.5−	0.5+
1996 08 08	809	(1.4−	3.9−)	1998 01 30	691	0.0	0.2−	1999 04 17	704	0.4−	0.1−
1996 08 09	809	0.0	0.5−	1999 03 20	704	(2.6+	0.9+)	1999 04 17	704	1.2−	0.8−
1996 08 09	809	0.2+	0.5−	1999 03 20	704	(2.2+	1.1+)	1999 04 17	704	0.8−	0.9−
1996 08 09	809	0.0	0.3−	1999 03 20	704	0.7+	1.4+	1999 04 17	704	1.0−	0.3−
1996 09 08	809	0.0	0.4+	1999 03 23	704	0.5−	0.6+	1999 04 17	704	0.1+	0.5−
1996 09 08	809	0.7+	1.3+	1999 03 23	704	1.3−	0.7+				

1981 RQ$_1$ = 1962 WK$_2$ = 1982 YU$_3$ = 1991 RX$_{14}$

Id. K. Ichikawa (*MPC* 21253), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	182.08568		(2000.0)		**P**	**Q**	
n	0.19938567	ω	195.93863		+0.98525674	+0.16999550	
a	2.9018398	Ω	154.24995		−0.15172648	+0.92023279	
e	0.0924620	i	2.54000		−0.07904577	+0.35252395	
P	4.94	H	13.3	G	0.15	U	1

Residuals in seconds of arc

1955 04 16	675	0.7+	0.3−	1981 09 06	809	0.6+	0.4+	1999 03 23	704	0.6−	1.9−
1955 04 16	675	0.9−	0.3+	1981 09 07	809	0.9+	0.9−	1999 04 06	704	0.1−	1.4−
1962 11 30	760	1.4+	0.1+	1981 09 07	809	1.5+	0.5−	1999 04 06	704	0.6−	0.1+
1962 11 30	760	0.5−	1.4−	1981 09 07	809	2.0+	0.7−	1999 04 06	704	1.1−	1.8−
1981 09 01	809	2.4−	0.6−	1982 12 23	095	(4.4+	0.5−)	1999 04 06	704	1.1−	1.4−
1981 09 01	809	2.0−	0.0	1991 09 07	399	1.4−	0.1−	1999 04 07	699	1.6+	0.2+
1981 09 01	809	1.6−	0.4+	1991 09 07	399	0.6+	0.3+	1999 04 07	699	0.6+	0.6−
1981 09 02	809	1.5−	0.6−	1991 09 11	675	1.8+	0.6+	1999 04 07	699	0.1−	0.7+
1981 09 02	809	1.3−	0.6−	1991 09 11	675	0.1−	0.9−	1999 04 12	704	0.7−	0.9−
1981 09 02	809	1.2−	0.7−	1991 09 15	675	0.9+	0.6−	1999 04 12	704	0.4−	0.1−
1981 09 02	809	0.3−	0.2+	1991 09 15	675	0.1+	0.0	1999 04 12	704	0.3−	0.3+
1981 09 02	809	0.1+	0.2+	1997 12 20	411	0.1−	0.3−	1999 04 12	704	0.0	0.1−
1981 09 02	809	1.3+	0.4−	1997 12 20	411	1.4−	0.1+	1999 04 12	704	0.4−	0.7+
1981 09 03	809	1.0+	0.9−	1998 01 08	426	0.3+	0.3−	1999 04 16	704	0.1+	0.5−
1981 09 03	809	1.1+	0.6−	1998 01 08	426	0.1−	0.3−	1999 04 16	704	(1.1+	2.1+)
1981 09 03	809	1.7+	0.1−	1998 01 08	426	0.5−	0.9−	1999 04 16	704	0.1−	1.5+
1981 09 04	809	0.4−	1.7−	1998 01 19	426	0.4+	0.7−	1999 04 16	704	1.1−	0.9−
1981 09 04	809	0.3−	1.5−	1998 01 19	426	0.1+	0.1+	1999 04 16	704	(2.8−	2.0+)
1981 09 04	809	0.2−	1.4−	1998 01 19	426	0.4−	0.4+	1999 04 17	703	0.2+	0.2−
1981 09 05	809	0.4−	0.2+	1999 03 20	704	(0.2−	2.6−)	1999 04 17	703	0.3+	0.1+
1981 09 05	809	0.3−	0.0	1999 03 20	704	(0.2+	2.2−)	1999 04 17	703	0.5−	0.1−
1981 09 05	809	0.3+	0.8+	1999 03 20	704	0.1−	1.8−	1999 04 17	703	0.4+	0.5−
1981 09 05	095	(3.0−	4.6+)	1999 03 20	704	(0.1+	2.5−)	1999 04 19	704	0.6−	0.5−
1981 09 06	809	0.7+	0.1+	1999 03 22	699	1.8+	1.4+	1999 04 19	704	1.7−	0.7+
1981 09 06	809	0.6+	0.0	1999 03 22	699	0.9+	0.6−	1999 04 19	704	(2.5−	2.1−)
1981 09 06	809	0.2−	0.0	1999 03 23	704	0.2−	1.1−	1999 04 19	704	0.7+	0.9−
1981 09 06	809	0.4+	0.3+	1999 03 23	704	(0.1−	2.1−)	1999 04 19	704	0.2−	0.4+
1981 09 06	809	1.4+	0.3+	1999 03 23	704	0.2+	1.0−				

1981 UA$_{23}$ = 1981 WX$_2$ = 1986 ED$_4$ = 1998 US$_{15}$

Id. G. V. Williams (d, *MPC* 20484; *MPC* 33220; unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	4.11139		(2000.0)		**P**	**Q**	
n	0.28999447	ω	338.46127		+0.31650417	−0.94706726	
a	2.2605263	Ω	93.05499		+0.87798661	+0.27102578	
e	0.1606789	i	3.08533		+0.35911644	+0.17207159	
P	3.40	H	15.0	G	0.15	U	2

Residuals in seconds of arc

1981 10 24	675	0.3−	0.3−	1998 11 10	704	0.1−	0.2−	1998 12 22	682	0.0	0.2+
1981 10 24	675	0.2+	0.3+	1998 11 10	704	0.3+	0.8−	1998 12 22	682	0.2+	0.5+
1981 10 25	675	0.4−	0.8−	1998 11 10	704	0.4+	1.2−	1998 12 22	682	0.1+	0.4+
1981 10 25	675	0.5+	0.1+	1998 11 10	704	1.6+	1.3+	1999 01 06	699	0.9−	0.4+
1981 10 26	675	0.4−	0.6−	1998 11 11	704	0.5−	0.6+	1999 01 06	699	0.2+	0.5−
1981 11 24	033	0.5+	0.2+	1998 11 11	704	0.9+	0.1−	1999 01 06	699	0.4+	0.9−
1981 11 24	033	0.1−	0.0	1998 11 11	704	0.0	0.8−	1999 01 11	704	0.6−	1.0+
1986 03 12	809	0.1+	0.1+	1998 11 16	566	1.1−	0.7−	1999 01 11	704	(0.8−	2.2+)
1998 10 23	120	0.1+	0.0	1998 11 16	566	0.9−	0.8−	1999 01 11	704	1.3+	1.2+
1998 10 23	120	0.1+	0.4+	1998 11 16	566	1.1−	0.5−	1999 02 12	691	0.4+	0.6−
1998 10 24	120	0.2+	0.5−	1998 11 24	699	0.1+	0.9+	1999 02 12	691	0.6+	0.5−
1998 10 26	120	1.6+	0.1+	1998 11 24	699	0.0	1.0+	1999 02 12	691	1.2+	0.7−
1998 10 26	120	0.3−	0.1+	1998 11 24	699	0.2+	0.9+	1999 02 14	691	0.5−	0.5−
1998 10 28	120	0.1−	0.1−	1998 11 27	120	1.0−	0.7+	1999 02 14	691	0.7−	0.5−
1998 10 28	120	0.4−	0.2−	1998 11 27	120	0.9−	0.8+	1999 02 14	691	0.7−	0.5−

1981 UE$_{26}$ = 1981 SZ$_8$ = 1990 PN = 1991 VW

Id. S. Nakano (*MPC* 20630), A. Lowe (*ibid.*), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	185.25086		(2000.0)		**P**	**Q**	
n	0.19821198	ω	277.94937		+0.94444533	−0.32425467	
a	2.9132837	Ω	100.98336		+0.31896870	+0.86487427	
e	0.0732546	i	3.13480		+0.07925898	+0.38321195	
P	4.97	H	12.9	G	0.15	U	1

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

1981 09 24	033	0.1−	0.7+	1998 01 25	566	0.6+	0.1+	1998 03 04	704	0.4−	0.2−
1981 09 24	033	0.5−	1.0+	1998 01 29	595	0.6+	0.1+	1998 03 04	704	0.6−	0.4−
1981 10 25	675	0.1+	0.1+	1998 01 29	595	0.2+	0.3+	1998 03 04	704	0.4+	0.3−
1981 10 26	675	0.7+	0.3+	1998 01 29	595	0.4+	0.2−	1998 03 04	704	0.4−	0.4−
1990 08 13	808	0.2−	0.4−	1998 01 30	595	0.5+	0.2−	1998 04 21	910	0.6−	0.5−
1990 08 13	808	(0.00−	0.03+)	1998 01 30	595	0.3+	0.1−	1998 04 21	910	0.6−	0.4−
1991 11 02	400	1.0−	0.6−	1998 02 02	595	0.5−	0.3−	1998 04 21	910	0.8−	0.5−
1991 11 02	400	0.1−	0.6−	1998 02 02	595	0.7−	0.4+	1999 03 24	120	0.3+	0.7−
1991 11 04	691	0.1−	0.2+	1998 03 01	699	0.8+	0.0	1999 03 24	120	1.9+	0.4−
1991 11 04	691	0.5−	0.0	1998 03 01	699	1.4−	0.4+	1999 04 12	704	0.8−	1.7+
1991 11 04	400	(2.6+	1.9+)	1998 03 01	699	0.1+	0.2+	1999 04 12	704	0.2+	0.0
1991 11 04	691	0.3−	0.2+	1998 03 03	699	0.1−	0.6+	1999 04 12	704	0.0	0.1+
1991 11 04	400	0.2+	0.3−	1998 03 03	699	0.1+	0.1+	1999 04 12	704	0.2−	0.2+
1996 10 19	595	0.9+	0.3−	1998 03 03	699	0.4−	0.2+	1999 04 12	704	0.0	1.2−
1996 10 19	595	0.9+	0.5−	1998 03 03	704	0.1+	0.1−	1999 04 19	704	0.4+	0.4+
1998 01 08	699	0.7−	0.5+	1998 03 03	704	0.3+	0.5+	1999 04 19	704	0.3−	0.5−
1998 01 08	699	0.5+	0.4+	1998 03 03	704	0.4−	0.6−	1999 04 19	704	0.3−	0.1−
1998 01 08	699	0.4−	1.7+	1998 03 03	704	1.3+	1.6−	1999 04 19	704	0.3−	0.5+
1998 01 25	566	0.7+	0.1+	1998 03 03	704	0.3−	0.2−	1999 04 19	704	0.2−	0.5+
1998 01 25	566	0.7+	0.2+	1998 03 04	704	0.3+	0.3−				

1982 SN_3 = 1989 OO = 1999 FP_{34}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	220.68483		(2000.0)		**P**	**Q**	
n	0.27606756	ω	196.42314		+0.92184652	+0.38564741	
a	2.3359263	Ω	140.82330		−0.34838750	+0.86801595	
e	0.2472167	i	3.48560		−0.16977970	+0.31276890	
P	3.57	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1982 09 16	095	0.8+	0.1−	1989 07 29	474	0.1+	0.5+	1999 03 20	704	0.1−	0.3+
1982 09 20	095	1.8+	1.9+	1989 07 29	474	0.3−	0.1−	1999 03 20	704	1.1−	0.4−
1982 09 24	033	0.6−	1.7−	1999 03 19	704	2.5+	1.4−	1999 03 20	704	2.5−	0.2+
1982 09 24	033	0.5−	1.5−	1999 03 19	704	1.1+	0.8−				
1982 10 15	095	1.1−	0.3−	1999 03 19	704	0.6−	0.1−				

1982 UE_6 = 1991 DY_1 = 1993 TN_{21}

Id. E. Bowell (*MPC* 22950), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	104.80984		(2000.0)		**P**	**Q**	
n	0.26598801	ω	62.37316		+0.08040225	−0.99665119	
a	2.3945726	Ω	23.02960		+0.90056879	+0.06622979	
e	0.1692577	i	2.18213		+0.42721346	+0.04795849	
P	3.71	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1982 10 20	095	0.1−	0.2−	1993 10 12	809	(2.3+	0.4−)	1997 12 04	704	(1.4+	2.5−)
1982 10 25	095	0.2+	0.4+	1993 10 12	809	1.9+	0.2−	1997 12 04	355	0.3−	1.2−
1982 11 09	095	0.2−	1.3+	1993 10 13	675	0.2+	0.6−	1997 12 04	355	0.2+	1.3−
1982 11 14	095	0.9−	0.1−	1993 10 13	675	0.3+	0.6−	1997 12 04	355	0.5−	1.4−
1989 09 02	675	0.4+	0.4+	1993 10 22	809	1.4−	1.6+	1999 04 20	704	0.8−	1.2−
1989 09 02	675	0.1+	0.2−	1997 11 24	900	0.3−	0.3−	1999 04 20	704	0.2+	1.2+
1991 02 20	413	0.6+	0.2−	1997 11 24	900	0.5−	0.1−	1999 04 20	704	0.6+	0.3−
1993 10 10	675	0.1−	0.9−	1997 12 04	704	0.8−	0.0	1999 04 20	704	1.4−	1.7−
1993 10 10	675	0.1+	1.3−	1997 12 04	704	1.5+	1.4+				
1993 10 12	809	(3.4+	0.3+)	1997 12 04	704	0.5+	1.0+				

1983 CZ_2 = 1938 DO_1 = 1979 BN_1

Id. W. Landgraf (*MPC* 8138), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	98.15060		(2000.0)		**P**	**Q**	
n	0.26353772	ω	192.84049		−0.88531036	−0.45919000	
a	2.4093923	Ω	319.56319		+0.43599501	−0.76492597	
e	0.1755111	i	6.48724		+0.16165988	−0.45169990	
P	3.74	H	14.1	G	0.15	U	2

Residuals in seconds of arc

1938 02 20	024	1.2−	1.6−	1994 01 19	691	0.0	0.3−	1998 03 26	704	0.4−	0.0
1979 01 24	095	1.3+	0.5+	1998 01 25	566	0.3+	0.7+	1998 03 26	704	1.2−	0.7+
1983 02 15	688	1.5+	1.4−	1998 01 25	566	0.2+	0.6+	1998 03 31	704	0.0	0.2+
1983 02 15	688	(1.0+	3.0−)	1998 01 25	566	0.4+	0.8+	1998 03 31	704	0.1+	0.3−
1983 03 08	046	(2.2−	0.8+)	1998 02 24	566	1.2+	0.6−	1998 03 31	704	1.0−	0.3+
1983 03 08	046	0.2+	1.5+	1998 02 24	566	1.0+	0.5−	1998 03 31	704	(1.5−	3.8+)
1983 03 09	046	(0.7−	2.5−)	1998 02 24	566	1.0+	0.7−	1998 03 31	704	0.2−	0.0
1983 03 09	046	0.6−	0.3+	1998 03 03	704	0.9+	0.3+	1998 04 01	704	0.2+	0.6+
1983 03 10	688	1.6+	0.1−	1998 03 03	704	0.7+	0.8−	1998 04 01	704	0.1−	0.4−
1983 03 10	688	1.7+	0.6−	1998 03 03	704	0.9+	0.1−	1998 04 01	704	0.5+	0.6−
1983 03 10	046	(2.8−	1.9−)	1998 03 03	704	0.1+	0.2−	1998 04 01	704	0.3+	0.2+
1983 03 10	046	0.4+	0.3+	1998 03 03	704	0.5−	0.9−	1998 04 01	704	0.2−	0.6+
1983 03 12	046	1.4−	0.4+	1998 03 04	704	1.4−	0.3+	1998 05 02	566	0.3+	1.2−
1983 03 12	046	1.4−	0.2+	1998 03 04	704	1.4−	0.1+	1998 05 02	566	0.8+	0.5−
1983 03 13	046	(3.7+	1.9+)	1998 03 04	704	0.9−	0.2+	1998 05 02	566	1.5+	0.9−
1983 03 13	046	0.4+	1.2+	1998 03 04	704	1.4−	0.0	1998 05 14	704	0.2+	0.5−
1983 03 14	095	1.5−	0.5+	1998 03 04	704	(2.1−	0.2+)	1998 05 14	704	0.1−	0.2−
1983 03 16	688	(3.4+	0.0)	1998 03 24	566	0.3−	0.5+	1998 05 14	704	0.1+	0.3+
1983 03 16	688	(3.6+	0.7+)	1998 03 24	566	0.3−	0.5+	1998 05 14	704	(2.5−	1.8+)
1994 01 19	691	1.8−	0.2−	1998 03 24	566	0.2−	0.6+				
1994 01 19	691	0.5+	0.1−	1998 03 26	704	0.0	0.1+				

1984 DZ = 1977 FC_2 = 1991 EJ_5

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	26.04362		(2000.0)		**P**	**Q**	
n	0.27947218	ω	259.61092		−0.41360469	+0.90985123	
a	2.3169162	Ω	345.81768		−0.77332154	−0.37031595	
e	0.2084104	i	7.78668		−0.48052571	−0.18718132	
P	3.53	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1953 09 06	675	0.1−	0.1−	1984 03 08	809	0.4+	1.2+	1998 02 24	691	0.4+	0.1−
1953 09 06	675	0.7+	0.5−	1984 03 08	809	0.8+	1.2+	1998 02 24	691	0.5+	0.1−
1977 03 26	095	0.3−	2.2−	1984 03 09	809	0.2+	0.2−	1998 02 24	691	0.2+	0.2−
1984 02 26	809	0.8−	0.5−	1984 03 09	809	0.3+	0.4−	1998 03 02	691	0.0	0.2−
1984 02 26	809	0.7−	0.4−	1984 03 09	809	0.7+	0.4−	1998 03 02	691	0.1−	0.2−
1984 02 26	809	0.4−	0.3−	1984 03 10	809	1.2−	0.0	1998 03 02	691	0.0	0.5−
1984 02 27	809	1.0+	0.2−	1984 03 10	809	1.0−	0.1−	1998 03 03	704	0.1+	0.1−
1984 02 27	809	0.7+	0.3−	1984 03 10	809	1.1−	0.2−	1998 03 03	809	(2.3+	1.9−)
1984 02 27	809	0.5+	0.4−	1984 03 11	809	0.6−	0.5+	1998 03 03	704	0.5−	0.4−
1984 03 01	809	1.8−	0.1−	1984 03 11	809	0.5−	0.4+	1998 03 03	809	1.3+	1.6−
1984 03 01	809	1.1−	0.2−	1984 03 11	809	0.4−	0.3+	1998 03 03	809	(1.1+	2.8−)
1984 03 01	809	0.4−	0.2−	1991 02 13	675	0.7−	1.0+	1998 03 03	704	0.2−	0.5−
1984 03 03	809	0.5+	0.2−	1991 02 13	675	1.0+	0.5−	1998 03 03	704	0.5+	1.6−
1984 03 03	809	0.7+	0.2−	1991 02 20	898	(3.9−	0.6+)	1998 03 03	704	(2.3−	1.5−)
1984 03 03	809	0.5+	0.2−	1991 02 20	898	(2.5−	1.1+)	1998 03 04	809	(1.3+	2.8−)
1984 03 04	809	1.6+	0.4−	1991 03 12	675	0.6+	0.9−	1998 03 04	809	(2.1+	3.0−)
1984 03 04	809	(2.1+	0.6−)	1991 03 14	809	0.7+	0.5+	1998 03 04	809	(1.7+	3.0−)
1984 03 04	809	(2.4+	0.4−)	1991 03 14	809	0.9+	0.4+	1998 03 04	704	1.6−	0.2−
1984 03 05	809	1.1−	0.3+	1991 03 14	809	1.4+	0.5+	1998 03 04	704	1.0−	0.2−
1984 03 05	809	0.5−	0.3+	1991 03 17	809	0.2+	0.3+	1998 03 04	704	1.4−	0.3−
1984 03 05	809	0.0	0.1+	1991 03 17	809	0.8+	0.4+	1998 03 04	704	1.2−	0.2+
1984 03 06	809	0.0	0.2+	1991 03 17	809	1.2+	0.2+	1998 03 04	704	(2.4−	1.1+)
1984 03 06	809	0.6+	0.2−	1998 02 19	699	0.2−	0.3+	1998 04 27	699	0.7+	0.7+
1984 03 06	809	1.0+	0.4−	1998 02 19	699	1.0−	1.3+	1998 04 27	699	0.2−	0.7+
1984 03 08	809	0.3−	1.1+	1998 02 19	699	0.9+	1.8+	1998 04 27	699	0.2+	0.4+

1984 OG = 1999 GL_5

Id. B. G. Marsden

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	264.68509		(2000.0)		**P**	**Q**	
n	0.18118619	ω	130.97642		+0.26877013	+0.96294589	
a	3.0930432	Ω	154.58861		−0.89860348	+0.25901725	
e	0.1563458	i	2.98048		−0.34680601	+0.07513507	
P	5.44	H	12.2	G	0.15	U	5

Residuals in seconds of arc

1984 07 31	046	0.0	0.8−	1999 04 13	327	0.3+	0.0	1999 04 20	046	0.6+	0.0
1984 07 31	046	(3.6−	0.1+)	1999 04 14	327	0.4+	0.4−	1999 04 20	046	0.6+	0.1+
1984 08 01	046	1.8+	0.8−	1999 04 14	327	0.5+	0.5−	1999 04 20	046	0.7+	0.0
1984 08 01	046	0.4+	0.3−	1999 04 14	327	0.3+	0.4−	1999 04 23	327	0.3+	0.2−
1984 08 02	046	1.5−	0.7−	1999 04 15	704	0.1+	1.7−	1999 04 23	327	0.2+	0.2−
1984 08 02	046	1.2−	0.6−	1999 04 15	704	0.1+	0.2+	1999 04 23	327	0.1+	0.3−
1984 08 03	046	0.4−	2.1+	1999 04 15	704	0.2−	0.8+	1999 04 23	327	0.0	0.1+
1984 08 03	046	0.9+	1.2+	1999 04 15	704	0.7−	0.3+	1999 04 23	327	0.1+	0.2+
1999 04 08	327	0.0	0.2+	1999 04 15	704	1.2−	0.8+	1999 04 23	327	0.1−	0.3−
1999 04 08	327	0.1−	0.1+	1999 04 16	704	1.7+	0.3+	1999 04 23	046	0.9−	0.1+
1999 04 08	327	0.2+	0.2+	1999 04 16	704	1.0−	1.0+	1999 04 23	046	0.5−	0.2+
1999 04 08	327	0.2−	0.3+	1999 04 16	704	0.4+	0.2−	1999 04 23	046	1.0−	0.6+
1999 04 13	327	0.3+	0.1+	1999 04 16	704	0.2+	1.5−				
1999 04 13	327	0.3+	0.0	1999 04 16	704	1.2−	0.3+				

1984 SL_5 = 1999 FB_{43}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	75.01711			(2000.0)		**P**		**Q**			
n	0.22469478		ω	51.99345		+0.66437651		−0.74725088			
a	2.6796253		Ω	356.26851		+0.59421309		+0.54013983			
e	0.2852727		i	13.17293		+0.45333724		+0.38712411			
P	4.39		H	14.3	G	0.15	U	2			

Residuals in seconds of arc

1984 09 26	675	0.5−	1.1+	1997 11 26	566	0.8−	0.2+	1999 03 20	704	0.1−	0.9−
1984 09 27	675	0.2−	0.0	1997 11 26	566	1.1−	0.6+	1999 03 20	704	0.6+	0.4−
1984 10 20	095	0.9+	2.1−	1997 11 26	566	0.6−	0.4+	1999 03 20	704	0.7+	1.1+
1984 10 23	675	1.3+	0.0	1997 12 29	566	0.2−	0.4+	1999 03 23	704	0.3−	0.1+
1984 10 23	675	0.1−	0.7−	1997 12 29	566	0.4−	0.7+	1999 03 23	704	0.3+	0.6+
1997 10 01	566	0.1+	0.4+	1997 12 29	566	0.2−	0.7+	1999 03 23	704	0.6−	0.5+
1997 10 01	566	0.2+	0.3+	1999 03 20	704	0.6+	0.6+	1999 03 23	704	0.5−	0.3−
1997 10 01	566	0.5−	0.3+	1999 03 20	704	0.2+	0.0				

1986 EP_2 = 1999 CB_{38}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	0.76379			(2000.0)		**P**		**Q**			
n	0.22609155		ω	160.48290		−0.74355091		−0.66837228			
a	2.6685775		Ω	337.53649		+0.60623889		−0.66102410			
e	0.1609345		i	3.03971		+0.28214614		−0.34106545			
P	4.36		H	15.3	G	0.15	U	3			

Residuals in seconds of arc

1986 03 04	809	0.2+	0.2+	1999 02 07	691	0.1+	0.3−	1999 02 13	704	0.3+	0.1−
1986 03 04	809	0.6−	0.3−	1999 02 07	691	0.0	0.3−	1999 02 13	704	0.4+	0.7+
1986 03 05	809	0.4+	0.1+	1999 02 10	704	0.0	0.0	1999 02 13	704	0.1+	0.6+
1986 03 05	809	0.9−	0.4+	1999 02 10	704	0.4+	0.3−	1999 02 13	704	0.0	0.4−
1986 03 10	809	(3.1−	0.7−)	1999 02 10	704	0.4−	0.3+	1999 03 10	691	0.3−	0.3−
1986 03 10	809	1.1−	0.5−	1999 02 10	704	0.5+	0.5+	1999 03 10	691	0.1−	0.2−
1986 03 14	809	1.3+	0.9−	1999 02 10	704	0.6−	0.4−	1999 03 10	691	0.4−	0.2−
1986 03 14	809	0.3+	0.2+	1999 02 12	699	0.8+	0.5+	1999 03 15	691	0.3+	0.3−
1997 10 30	704	(3.8−	5.0−)	1999 02 12	699	0.4+	0.6+	1999 03 15	691	0.2+	0.3−
1997 10 30	704	(2.8+	0.8−)	1999 02 12	699	0.6+	0.8+	1999 03 15	691	0.1+	0.4−
1997 10 30	704	0.2+	0.4−	1999 02 12	691	0.7−	0.3−	1999 03 21	699	0.0	0.4−
1997 10 30	704	(2.9+	0.5−)	1999 02 12	691	0.7−	0.1−	1999 03 21	699	0.1−	1.0+
1997 10 30	704	(2.2−	0.0)	1999 02 12	691	0.2−	0.9−	1999 03 21	699	0.8−	0.7+
1999 02 07	691	0.0	0.3−	1999 02 13	704	0.2+	0.4+				

1986 QF_3 = 1978 VW_{12} = 1998 ML_{28}

Id. G. V. Williams (*MPC* 32217), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	345.99667			(2000.0)		**P**		**Q**			
n	0.24085963		ω	259.90084		+0.94567818		−0.31609891			
a	2.5583504		Ω	118.49148		+0.32173096		+0.87635884			
e	0.2512390		i	4.95998		+0.04671154		+0.36342355			
P	4.09		H	14.7	G	0.15	U	4			

Residuals in seconds of arc

1978 11 02	095	0.2−	0.8+	1986 09 02	809	1.2+	0.8−	1998 06 24	704	0.5+	0.9−
1986 08 29	809	1.1−	0.3−	1986 09 02	809	1.3+	0.7−	1998 06 24	704	0.1−	1.2−
1986 08 29	809	0.9−	0.1−	1986 09 06	809	0.8−	1.1+	1998 06 24	704	1.2−	1.8−
1986 08 29	809	0.4−	0.3−	1986 09 06	809	0.8−	1.0+	1998 06 24	704	0.6+	0.3+
1986 08 31	809	0.9−	0.2−	1986 09 06	809	0.7−	1.1+	1998 06 24	704	0.2+	0.2+
1986 08 31	809	0.7−	0.3−	1986 09 07	809	0.4−	1.0+	1998 06 26	704	0.5+	1.4+
1986 08 31	809	0.6−	0.5−	1986 09 07	809	0.4−	0.5+	1998 06 26	704	0.1−	1.4+
1986 09 01	809	1.0+	0.4−	1986 09 07	809	0.4−	0.5+	1998 06 26	704	0.8−	0.6+
1986 09 01	809	1.0+	0.4−	1986 09 09	809	1.1−	0.0	1998 06 26	704	0.6+	0.7+
1986 09 01	809	0.9+	0.6−	1986 09 09	809	1.0−	0.3−	1998 06 26	704	(2.4−	0.4+)
1986 09 01	809	0.3+	1.3−	1986 09 09	809	0.7−	0.5−	1998 07 21	704	0.6−	0.4+
1986 09 01	809	0.9+	1.5−	1986 09 11	809	0.5+	1.5+	1998 07 21	704	0.2+	0.4+
1986 09 01	809	1.5+	1.6−	1986 09 11	809	0.6+	1.4+	1998 07 21	704	(2.9+	0.5−)
1986 09 02	809	1.0+	1.0−	1986 09 11	809	1.0+	1.3+	1998 07 21	704	(0.5−	2.4+)

1986 QK_3 = 1999 FA_{49}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	165.56069			(2000.0)		**P**		**Q**			
n	0.27662045		ω	223.56149		+0.97889999		+0.18785021			
a	2.3328126		Ω	125.44293		−0.14972658		+0.92720842			
e	0.1644965		i	5.66488		−0.13905665		+0.32403217			
P	3.56		H	14.7	G	0.15	U	4			

Residuals in seconds of arc

1986 08 29	809	1.1+	0.3+	1986 09 04	809	0.3+	0.2−	1986 09 10	809	0.0	0.1−
1986 08 29	809	1.3+	0.1+	1986 09 06	809	0.3−	0.1+	1986 09 10	809	0.1−	0.2−
1986 08 29	809	1.5+	0.2+	1986 09 06	809	0.3−	0.1−	1986 09 11	809	0.0	0.2−
1986 08 31	809	0.1+	0.0	1986 09 06	809	0.3−	0.2−	1986 09 11	809	0.0	0.2−
1986 08 31	809	0.1+	0.0	1986 09 07	809	0.7−	0.0	1986 09 11	809	0.3+	0.3−
1986 08 31	809	0.4+	0.1−	1986 09 07	809	0.3−	0.0	1999 03 20	704	1.4+	0.5−
1986 09 01	809	0.1−	0.0	1986 09 07	809	0.2−	0.1+	1999 03 20	704	0.8−	0.1−
1986 09 01	809	0.1−	0.1−	1986 09 07	809	0.5−	0.1+	1999 03 20	704	0.1+	2.1−
1986 09 01	809	0.1−	0.1−	1986 09 07	809	0.4−	0.3+	1999 03 20	704	1.2+	0.2+
1986 09 02	809	0.7−	0.7+	1986 09 07	809	0.3−	0.2+	1999 03 23	704	0.1−	0.8+
1986 09 02	809	0.8−	0.6+	1986 09 09	809	0.3−	0.6−	1999 03 23	704	1.9−	0.3+
1986 09 02	809	0.3−	0.6+	1986 09 09	809	0.0	0.6−	1999 03 23	704	0.7+	0.3−
1986 09 04	809	0.3+	0.2−	1986 09 09	809	0.1+	0.5−	1999 03 23	704	1.0−	1.1+
1986 09 04	809	0.2+	0.2−	1986 09 10	809	0.3+	0.1−				

1986 TB = 1961 VA

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	162.77171			(2000.0)		**P**		**Q**			
n	0.27490074		ω	353.77567		+0.99613365		+0.08768159			
a	2.3425315		Ω	1.23414		−0.06566326		+0.78431855			
e	0.2215701		i	14.65280		−0.05836164		+0.61413057			
P	3.59		H	13.7	G	0.15	U	2			

Residuals in seconds of arc

1961 11 04	760	1.4−	2.0+	1986 10 06	026	(2.9+	0.7−)	1999 03 19	552	0.6+	0.4+
1961 11 04	760	(3.8−	2.1+)	1986 10 08	026	0.8+	1.1−	1999 03 19	552	0.9+	0.5−
1986 09 03	026	1.8−	1.0+	1986 10 10	095	1.4−	0.5−	1999 03 20	704	0.9−	0.7+
1986 09 08	026	(3.3−	0.3−)	1986 10 10	552	0.5−	0.1−	1999 03 20	704	1.5+	0.5+
1986 09 10	095	0.2+	2.4+	1986 10 10	552	0.7−	0.2−	1999 03 20	704	0.3+	0.8+
1986 09 14	095	(4.1−	4.7+)	1986 10 11	026	(2.6+	1.0−)	1999 03 20	704	0.5−	0.1+
1986 09 29	046	2.3−	1.2+	1986 10 11	552	0.8+	1.1−	1999 03 20	552	0.2−	0.3−
1986 09 29	046	2.0−	1.5−	1986 10 11	552	0.7+	0.4−	1999 03 20	552	0.1−	0.8−
1986 09 29	026	0.4+	0.2+	1986 10 23	026	1.4+	0.8+	1999 03 20	552	0.4−	0.1−
1986 09 30	046	1.6−	1.0−	1986 10 24	552	0.8+	0.3−	1999 03 23	704	0.4−	0.7+
1986 09 30	046	0.9−	0.1−	1986 10 24	552	0.7−	0.0	1999 03 23	704	0.2+	0.2+
1986 09 30	552	0.6+	0.7+	1986 10 30	552	0.2+	0.2+	1999 03 23	704	0.4+	0.7+
1986 10 01	552	1.6+	1.0+	1986 10 30	552	0.7−	0.3−	1999 03 23	704	1.2+	0.3+
1986 10 01	046	0.3−	1.1−	1986 11 03	026	0.1+	0.2+	1999 04 06	704	1.1+	1.0+
1986 10 01	552	0.4+	1.0+	1986 11 07	026	0.2+	2.3−	1999 04 06	704	0.5+	0.3+
1986 10 01	046	0.2+	1.0−	1997 11 20	552	0.0	0.5+	1999 04 06	704	0.1+	0.1−
1986 10 01	026	0.6−	0.3+	1997 11 21	552	0.5−	0.2+	1999 04 06	704	0.5−	0.7−
1986 10 02	552	0.8+	1.0+	1997 12 06	552	0.5+	0.1−	1999 04 06	704	0.8−	1.2+
1986 10 02	552	0.5+	1.2+	1997 12 06	552	0.0	0.0	1999 04 07	699	0.2+	1.5+
1986 10 03	552	0.1+	0.1−	1998 01 03	552	0.2+	0.0	1999 04 07	699	0.0	0.2−
1986 10 03	552	1.1+	0.6−	1998 01 03	552	0.3+	0.4−	1999 04 07	699	0.2+	1.2+
1986 10 04	026	0.9+	0.4+	1998 01 03	552	0.2−	0.4+	1999 04 10	552	0.7−	1.0−
1986 10 04	552	0.8+	0.3+	1998 01 17	552	0.3+	0.4−	1999 04 10	552	0.1−	1.3−
1986 10 04	552	(1.0+	3.5−)	1998 01 17	552	0.4+	0.5−	1999 04 16	552	0.4−	0.5−
1986 10 05	095	(9.7+	13.0−)	1999 03 19	552	0.7+	0.1+	1999 04 16	552	0.4−	0.1−

1986 TS_4 = 1986 VE_1 = 1999 FV_{58}

Id. S. Nakano (d, *MPC* 14752), P. Jensen (d), G.V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	136.54575		(2000.0)		**P**	**Q**	
n	0.26998593	ω	20.61413		+0.98046490	−0.19421467	
a	2.3708749	Ω	350.42408		+0.14382758	+0.81587100	
e	0.2956461	i	10.78634		+0.13417233	+0.54464224	
P	3.65	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1986 10 02	095	0.5+	0.4+	1999 03 20	704	1.3−	1.4+	1999 03 23	704	0.1+	1.8−
1986 10 08	095	0.7+	0.4−	1999 03 20	704	0.6+	0.3−	1999 03 23	704	0.1+	0.3−
1986 10 11	054	1.5−	0.2−	1999 03 20	704	0.7−	2.0+	1999 03 23	704	0.4−	2.8−
1986 11 06	054	0.3+	0.2+	1999 03 23	704	0.4+	0.7−				
1999 03 20	704	0.8+	1.5+	1999 03 23	704	0.3+	1.1+				

1986 VZ = 1999 FQ$_{55}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	159.06113		(2000.0)		**P**	**Q**	
n	0.27045593	ω	341.85958		+0.99701966	+0.07345910	
a	2.3681273	Ω	13.99060		−0.05299857	+0.87419326	
e	0.2091252	i	5.59485		−0.05606201	+0.47998948	
P	3.64	H	14.1	G	0.15	U	6

Residuals in seconds of arc

1986 11 03	046	1.7+	0.8−	1986 12 01	010	0.3−	0.8−	1999 03 20	704	0.4−	0.5+
1986 11 04	046	2.0+	0.8−	1986 12 01	010	1.3−	1.8−	1999 03 20	704	0.3−	1.1+
1986 11 07	046	2.4−	1.4−	1986 12 03	010	(5.2−	3.0+)	1999 03 23	704	0.2−	1.3−
1986 11 07	046	3.4+	1.8+	1986 12 03	010	0.1+	3.1+	1999 03 23	704	0.2+	0.0
1986 11 09	046	1.3−	0.7−	1986 12 03	010	0.6+	2.0+	1999 03 23	704	0.3+	0.3−
1986 11 09	046	1.6−	0.5−	1999 03 20	704	0.1−	0.1+	1999 03 23	704	0.0	0.4−
1986 12 01	010	1.2−	0.3−	1999 03 20	704	1.0−	0.6+	1999 03 23	704	1.2+	1.1−

1987 DG = 1990 DK$_5$ = 1998 VU$_{12}$

Id. G. V. Williams (*MPC* 33221), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	265.65626		(2000.0)		**P**	**Q**	
n	0.31155116	ω	351.38450		−0.98442590	−0.17579544	
a	2.1550125	Ω	178.48878		+0.16402726	−0.92107746	
e	0.1384770	i	2.76044		+0.06325114	−0.34743673	
P	3.16	H	15.3	G	0.15	U	3

Residuals in seconds of arc

1987 02 23	675	0.2+	0.7−	1987 03 02	809	0.6+	0.0	1998 08 31	910	1.2−	0.1+
1987 02 23	675	0.4+	2.3+	1987 03 03	809	0.5−	0.6+	1998 08 31	910	1.1−	0.2−
1987 02 24	809	0.0	0.2+	1987 03 03	809	0.0	0.4+	1998 08 31	910	0.9−	0.1+
1987 02 24	809	0.0	0.5+	1987 03 03	809	0.3+	0.5+	1998 09 17	910	0.0	0.4+
1987 02 24	809	0.3+	0.0	1987 03 04	809	0.5+	0.5−	1998 09 17	910	0.2−	0.2+
1987 02 25	809	0.1−	0.2−	1987 03 04	809	0.3+	0.4−	1998 09 17	910	0.3+	0.3−
1987 02 25	809	0.1−	0.1−	1987 03 04	809	0.3+	0.0	1998 10 14	699	0.1−	0.6+
1987 02 25	809	0.1+	0.3+	1987 03 05	809	0.5−	0.5−	1998 10 14	699	0.4+	0.1+
1987 02 26	809	0.3−	0.2+	1987 03 05	809	0.2−	0.4−	1998 10 14	699	0.5+	0.1−
1987 02 26	809	0.1−	0.2−	1987 03 05	809	0.1−	0.3−	1998 11 10	704	0.6+	0.4−
1987 02 26	809	0.1+	0.4−	1987 03 06	809	0.2+	0.5−	1998 11 10	704	0.5+	0.0
1987 02 27	809	0.1−	0.1−	1987 03 06	809	0.3+	0.3−	1998 11 10	704	0.6+	0.8−
1987 02 27	809	0.2+	0.1−	1987 03 06	809	0.1−	0.1−	1998 11 10	704	0.9−	0.5−
1987 02 27	809	0.1+	0.0	1987 03 07	809	0.4−	0.4−	1998 11 10	704	(1.5−	2.2+)
1987 02 27	675	1.5−	0.2+	1987 03 07	809	0.1+	0.4−	1998 11 11	704	0.7+	0.1+
1987 02 27	675	0.4+	0.4+	1987 03 07	809	0.7+	0.2−	1998 11 11	704	1.1+	0.5+
1987 02 28	809	0.3−	0.2+	1987 03 10	809	0.4−	0.2+	1998 11 11	704	0.2+	0.3+
1987 02 28	809	0.1+	0.1−	1987 03 10	809	0.5−	0.3+	1998 11 11	704	0.1+	1.0+
1987 02 28	809	0.4+	0.2−	1987 03 10	809	0.8−	0.3+	1998 11 11	704	0.3−	0.8+
1987 03 01	809	0.2+	0.0	1990 02 23	033	0.4−	0.7−	1998 11 15	566	0.8−	0.4−
1987 03 01	809	0.6+	0.4+	1990 02 23	033	0.5−	0.4−	1998 11 15	566	0.5−	0.4−
1987 03 01	809	0.6+	0.3+	1995 11 17	327	0.1+	0.2−	1998 11 15	566	0.7−	0.3−
1987 03 02	809	0.1−	0.1−	1995 11 17	327	0.1+	0.2−				
1987 03 02	809	0.2+	0.1+	1995 11 17	327	0.4+	0.3+				

1987 SP$_5$ = 1999 HA$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	86.95168		(2000.0)		**P**	**Q**	
n	0.28928595	ω	52.65583		+0.54816216	−0.83633594	
a	2.2642158	Ω	4.12608		+0.72913168	+0.47330216	
e	0.2265289	i	6.20255		+0.40973801	+0.27663561	
P	3.41	H	16.1	G	0.15	U	3

Residuals in seconds of arc

1987 09 29	054	0.9+	0.6−	1987 10 25	054	0.4+	0.4+	1999 04 18	691	0.6+	0.2+
1987 09 30	054	0.3−	0.2−	1992 03 06	809	0.1−	0.2−	1999 04 19	691	0.8−	0.4−
1987 09 30	054	0.3+	0.5−	1999 04 18	691	0.7+	0.0	1999 04 19	691	0.9−	0.1−
1987 10 25	054	0.8−	0.0	1999 04 18	691	0.9+	0.1−	1999 04 19	691	0.9−	0.3−

1988 CQ$_2$ = 1999 FN$_{36}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	22.35195		(2000.0)		**P**	**Q**	
n	0.18574644	ω	349.85214		−0.55579662	−0.83033259	
a	3.0422090	Ω	133.89965		+0.76660195	−0.53075321	
e	0.2426645	i	3.21979		+0.32157669	−0.16984939	
P	5.31	H	13.5	G	0.15	U	5

Residuals in seconds of arc

1988 01 19	071	1.3−	3.6−	1988 02 17	809	0.4+	1.3+	1999 03 23	704	0.1+	1.5+
1988 01 19	071	0.9+	3.2−	1988 02 17	809	0.6+	0.8+	1999 03 23	704	0.9+	0.5+
1988 01 19	071	0.2+	1.4−	1988 02 17	809	0.4+	0.4+	1999 03 23	704	1.1+	0.4+
1988 02 11	809	0.7+	0.5−	1988 02 21	809	1.1+	1.8−	1999 03 23	704	0.4−	0.1+
1988 02 14	809	0.9−	2.0+	1988 02 21	809	0.6−	1.5−	1999 03 23	704	0.5+	0.8+
1988 02 14	809	1.7−	2.1+	1988 02 21	809	1.2−	1.2−	1999 03 23	704	0.6−	0.1−
1988 02 14	809	1.4−	2.1+	1988 02 23	809	0.7−	0.1−	1999 03 23	704	0.6−	0.4−
1988 02 15	809	0.4−	0.5+	1988 02 23	809	1.1−	0.4−	1999 03 23	704	0.0	0.0
1988 02 15	809	1.5+	0.2+	1988 02 23	809	2.9−	0.0	1999 03 23	704	0.9−	0.6−
1988 02 15	809	3.1+	0.8+	1999 03 20	704	1.0+	0.2+	1999 03 23	704	0.1+	0.4+
1988 02 15	809	0.9+	1.4+	1999 03 20	704	0.4+	0.6−	1999 03 23	704	0.8−	0.2+
1988 02 16	809	0.5+	0.8+	1999 03 20	704	0.9+	0.4−	1999 03 23	704	0.6−	0.2+
1988 02 16	809	0.5+	1.6+	1999 03 20	704	1.0+	0.2+	1999 03 23	704	1.4−	0.1+
1988 02 16	809	1.6+	2.1+	1999 03 20	704	0.4+	0.1−	1999 03 23	704	0.0	1.1−
1988 02 16	809	1.0+	0.8−	1999 03 23	704	1.1+	1.0+	1999 03 23	704	1.8−	1.1−
1988 02 16	809	0.4−	0.8−	1999 03 23	704	0.2−	1.6−	1999 03 23	704	0.5−	1.9−
1988 02 16	809	1.1−	0.3+	1999 03 23	704	0.2−	0.8+				

1988 DE = 1990 UY$_{11}$

Id. A. Doppler; 1990 RP$_{17}$ = 1990 UY$_{11}$ (*MPC* 20913) is invalid

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	217.01787		(2000.0)		**P**	**Q**	
n	0.23734117	ω	173.58854		−0.97286867	−0.22962981	
a	2.5835725	Ω	352.94383		+0.20075115	−0.77721569	
e	0.0965544	i	13.28377		+0.11500232	−0.58583780	
P	4.15	H	13.4	G	0.15	U	3

Residuals in seconds of arc

1988 02 17	552	0.5+	0.8+	1998 09 14	704	0.6−	1.7+	1998 09 22	560	0.0	0.4+
1988 02 17	552	0.6+	0.7+	1998 09 14	704	1.1+	0.0	1998 09 22	560	0.9−	0.9+
1988 02 21	552	0.3+	0.6−	1998 09 14	704	0.6−	0.6+	1998 09 22	560	0.3+	1.2+
1988 02 21	552	1.3−	1.1−	1998 09 15	560	0.3−	0.3−	1998 10 10	552	0.7−	0.3−
1988 02 22	552	1.1+	0.5−	1998 09 15	560	1.0−	0.5−	1998 10 10	552	0.4−	0.5−
1988 02 22	552	0.5−	1.0+	1998 09 15	560	0.4−	0.4−	1998 10 20	120	0.4+	0.7−
1988 03 10	552	(0.6−	2.1+)	1998 09 18	704	(2.1−	3.4+)	1998 10 20	120	0.3+	0.0
1988 03 10	552	1.5−	1.0+	1998 09 18	704	0.5+	0.0	1998 10 20	120	0.1−	0.4+
1988 03 17	675	0.4+	1.4+	1998 09 18	704	0.5+	0.9+	1998 10 20	120	0.3+	0.2−
1988 03 17	552	0.5+	0.9−	1998 09 18	704	1.3+	0.1+	1998 10 24	552	0.1−	0.4−
1988 03 17	552	0.8+	0.8−	1998 09 18	704	0.1+	0.5+	1998 10 24	552	0.7−	0.3+
1988 03 20	552	0.4+	0.2−	1998 09 18	552	0.2−	0.9−	1998 11 10	699	0.1−	0.5+
1988 03 20	552	0.3+	1.4−	1998 09 18	552	0.1−	0.3−	1998 11 10	699	0.3+	0.1+
1988 03 21	675	0.2−	0.3+	1998 09 18	560	0.1+	0.3+	1998 11 10	699	0.9−	0.2+

1988 03 21	675	1.1−	0.0	1998 09 18	560	0.2−	0.8−	1998 12 09	704	0.0	1.3−
1988 03 22	675	0.3+	0.7+	1998 09 19	552	0.0	0.4−	1998 12 09	704	0.1−	0.6−
1988 03 22	675	0.4−	0.1−	1998 09 19	552	0.2−	0.6−	1998 12 09	704	1.3+	0.2−
1990 10 23	095	0.2+	0.2−	1998 09 19	552	0.4−	0.2+	1998 12 09	704	0.3−	0.5+
1998 09 14	704	1.2+	1.1−	1998 09 22	560	0.1+	0.1−	1998 12 09	704	0.5+	1.1+

1988 DB_5 = 1990 SZ_{17} = 1998 SE_{101}

Id. G. V. Williams (*MPC* 32920), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	181.59038		(2000.0)	**P**	**Q**	
n	0.23834522	ω	12.22357	−0.84290767	+0.53237651	
a	2.5763118	Ω	200.52547	−0.51049679	−0.83707969	
e	0.1052507	i	12.85136	−0.16999910	−0.12598743	
P	4.14	H	14.7	G 0.15	U 4	

Residuals in seconds of arc

1988 02 23	413	0.8+	0.2−	1998 09 26	704	0.0	1.2−	1998 09 27	704	0.3−	0.8+
1988 02 25	413	0.2−	0.5−	1998 09 26	704	0.1−	0.5−	1998 09 27	704	0.2+	1.4+
1988 02 25	413	0.3+	0.3+	1998 09 26	704	0.7+	0.5−	1998 10 14	699	1.1−	1.2+
1988 03 10	413	0.1−	0.7+	1998 09 26	704	0.7+	0.3−	1998 10 14	699	0.1+	0.2+
1988 03 10	413	0.8−	0.1+	1998 09 27	704	0.0	0.4+	1998 10 14	699	0.3−	0.1+
1990 09 27	413	0.1+	1.4−	1998 09 27	704	(3.7+	1.9+)				
1998 09 26	704	0.0	0.8−	1998 09 27	704	0.3−	0.9+				

1988 EP = 1999 GS_{19}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	338.91710		(2000.0)	**P**	**Q**	
n	0.27063704	ω	37.42565	−0.93013794	+0.36359434	
a	2.3670707	Ω	163.66423	−0.36530914	−0.90198381	
e	0.2426993	i	10.53093	−0.03731821	−0.23286124	
P	3.64	H	14.3	G 0.15	U 3	

Residuals in seconds of arc

1988 03 12	386	0.7−	1.9+	1988 04 09	386	0.1+	1.6−	1999 02 26	704	0.8−	0.9−
1988 03 12	386	0.6+	1.7+	1988 04 09	386	0.5+	0.1+	1999 02 26	704	0.6+	0.3−
1988 03 13	054	0.3−	0.4−	1988 04 09	386	0.2−	0.3+	1999 04 15	704	0.0	0.5+
1988 03 13	054	1.6−	0.1+	1988 04 11	399	2.2+	0.4−	1999 04 15	704	0.7−	0.1−
1988 03 14	054	1.6−	0.5+	1988 04 11	399	1.1+	0.2+	1999 04 15	704	0.3+	0.2+
1988 03 18	386	0.9−	0.3−	1998 12 23	704	(0.7−	2.3−)	1999 04 15	704	0.1−	0.2+
1988 03 18	386	0.4−	0.4−	1998 12 23	704	0.6+	0.2+	1999 04 15	704	0.2−	0.1+
1988 03 18	386	0.4+	0.4−	1998 12 23	704	1.1+	0.8+	1999 04 16	704	0.3−	1.2+
1988 03 18	054	(3.3+	4.0−)	1998 12 23	704	1.3−	1.5+	1999 04 16	704	0.2+	1.5+
1988 03 18	054	1.8+	2.2−	1998 12 23	704	0.1+	1.3+	1999 04 16	704	(2.5−	0.3−)
1988 04 07	399	0.3−	0.1−	1999 02 26	704	0.5−	0.1+	1999 04 16	704	(0.3−	2.4+)
1988 04 07	399	0.1+	1.7−	1999 02 26	704	1.4+	1.3−	1999 04 16	704	(0.8−	2.8+)
1988 04 07	399	1.0−	0.1+	1999 02 26	704	0.7+	0.9−				

1988 GG = 1999 GY_6

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	337.90866		(2000.0)	**P**	**Q**	
n	0.26718888	ω	166.10312	−0.96469917	+0.17819313	
a	2.3873923	Ω	26.66261	−0.26335223	−0.64978954	
e	0.2187297	i	25.60309	−0.00105455	−0.73893217	
P	3.69	H	13.8	G 0.15	U 3	

Residuals in seconds of arc

1988 04 11	399	0.2+	0.2+	1988 05 13	675	0.7−	0.7+	1999 04 14	704	0.5+	0.3+
1988 04 11	399	(3.2+	1.5+)	1999 02 24	704	(2.1+	1.1−)	1999 04 14	704	0.8+	1.1+
1988 04 11	399	2.0+	2.1+	1999 02 24	704	0.3−	0.3−	1999 04 15	704	0.3+	0.7−
1988 04 16	399	0.1−	1.1+	1999 02 24	704	0.0	1.0−	1999 04 15	704	0.1−	0.5−
1988 04 16	399	0.6−	0.0	1999 02 24	704	(3.0−	2.8−)	1999 04 15	704	0.4+	0.9−
1988 04 16	399	1.6+	1.1+	1999 03 15	704	0.9−	1.7+	1999 04 15	704	0.3+	0.5−
1988 04 17	392	1.5−	0.8− Y	1999 03 15	704	0.1+	0.9+	1999 04 15	704	0.2+	0.1−
1988 04 17	392	1.6−	0.2− Y	1999 03 15	704	(0.0	2.6+)	1999 04 16	704	0.3−	0.3+
1988 04 17	046	1.0−	0.6−	1999 03 15	704	(0.3+	2.8+)	1999 04 16	704	0.5+	0.2+
1988 04 17	046	0.5+	1.1−	1999 03 15	704	(1.0+	3.4+)	1999 04 16	704	0.3−	0.3+
1988 04 18	046	0.1−	0.4−	1999 04 12	704	0.6−	1.4−	1999 04 16	704	1.1−	0.5−
1988 04 18	046	(4.2+	0.1+)	1999 04 12	704	1.5−	0.6−	1999 04 16	704	0.0	0.1+
1988 04 19	046	0.3+	1.2−	1999 04 12	704	0.7−	0.5−	1999 04 19	704	1.7+	0.2+
1988 04 19	046	0.4+	1.8−	1999 04 12	704	0.0	0.2+	1999 04 19	704	0.6+	0.4+
1988 05 09	399	(3.0+	2.6+)	1999 04 12	704	0.5−	0.2−	1999 04 19	704	0.4+	0.7+
1988 05 09	399	(5.3+	5.4+)	1999 04 14	704	0.7−	0.4−	1999 04 19	704	0.9+	0.7+
1988 05 09	399	1.4+	0.3+	1999 04 14	704	0.3+	0.1−	1999 04 19	704	1.4+	0.4+
1988 05 13	675	1.3−	0.1+	1999 04 14	704	0.9−	0.5+				

1988 PL = 1985 UX_6 = 3045 T-1

Id. G. V. Williams (*MPC* 19300, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	72.27677		(2000.0)	**P**	**Q**	
n	0.30519536	ω	135.53985	+0.95014121	+0.31144857	
a	2.1848289	Ω	206.32484	−0.29479680	+0.88129994	
e	0.1389640	i	1.96606	−0.10161949	+0.35540147	
P	3.23	H	15.1	G 0.15	U 2	

Residuals in seconds of arc

1971 03 25	675	0.0	1.1−	1988 10 09	413	0.4+	1.2−	1998 11 10	704	0.4+	0.1+
1971 03 26	675	(0.5+	2.9−)	1988 10 09	413	(2.9−	0.6−)	1998 11 10	704	0.6+	0.3−
1971 03 26	675	0.4−	1.6−	1988 10 11	413	0.9−	0.4−	1998 11 10	704	0.1+	0.6+
1971 03 27	675	1.3+	0.9−	1995 12 22	566	1.2−	1.5−	1998 11 10	704	0.1+	0.0
1971 04 02	675	0.7−	1.2−	1995 12 22	566	1.1−	1.4−	1998 11 10	704	1.6−	1.5+
1981 05 08	675	0.8−	0.2−	1995 12 22	566	0.9−	1.6−	1998 11 11	704	0.9+	1.1+
1981 05 09	675	(3.9−	2.8+)	1998 10 14	691	0.9−	0.3−	1998 11 11	704	0.5+	1.1+
1985 10 18	095	(2.5+	3.4+)	1998 10 14	691	0.8−	0.0	1998 11 11	699	1.0+	0.5+
1988 08 11	413	0.2+	0.1+	1998 10 14	691	0.7−	0.1−	1998 11 11	699	1.6+	0.3+
1988 08 11	413	0.6+	0.0	1998 10 18	699	0.1+	0.1−	1998 11 11	699	1.5+	1.0+
1988 08 13	413	0.7+	0.5−	1998 10 18	699	0.2−	0.3+	1998 11 25	691	0.3+	0.4+
1988 08 14	413	0.6−	0.2+	1998 10 29	704	0.3+	0.3−	1998 11 25	691	0.1+	0.1−
1988 08 14	413	0.3+	1.4−	1998 10 29	704	1.0+	0.1−	1998 11 25	691	0.2+	0.0
1988 08 16	413	0.7+	0.9−	1998 10 29	704	0.6−	0.8−	1998 12 08	699	0.9−	0.1+
1988 08 19	413	0.7−	1.0−	1998 10 29	704	0.1+	0.2−	1998 12 08	699	0.0	1.3−
1988 08 20	413	(5.5−	3.5−)	1998 10 29	704	0.7−	1.4−	1998 12 08	699	0.1+	0.1+

1988 PG_2 = 1981 UR_{22} = 1995 OL_{10}

Id. S. J. Bus (*MPC* 20502), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	291.75559		(2000.0)	**P**	**Q**	
n	0.27403778	ω	255.48073	+0.87456307	−0.48338081	
a	2.3474468	Ω	133.40895	+0.46280918	+0.80836598	
e	0.2199668	i	3.03806	+0.14473111	+0.33598727	
P	3.60	H	15.5	G 0.15	U 1	

Residuals in seconds of arc

1981 10 24	675	0.4+	0.3−	1988 09 12	675	0.6+	0.8−	1995 07 23	033	0.8+	0.8−
1981 10 25	675	0.3+	0.2−	1988 09 16	675	0.0	1.5+	1995 07 26	033	0.3+	1.1−
1981 10 26	675	0.0	0.1+	1988 09 16	675	1.0−	1.4+	1997 02 03	691	0.4−	0.1−
1988 08 13	033	(1.2−	2.2−)	1988 10 07	675	0.2−	0.2+	1997 02 03	691	0.1+	0.4−
1988 08 14	033	1.7−	1.7−	1988 10 07	675	0.3+	1.5+	1997 02 03	691	0.0	0.5−
1988 08 14	033	0.1+	1.7−	1988 10 09	675	1.1+	0.3−	1997 02 07	691	0.2−	0.4−
1988 09 10	675	0.5+	0.2−	1988 10 09	675	0.1+	0.1+	1997 02 07	691	0.0	0.4−
1988 09 10	675	0.1+	1.1−	1992 12 29	033	0.8+	1.1−	1997 02 07	691	0.3−	0.3−
1988 09 11	675	0.4−	0.6+	1992 12 30	033	1.1−	0.2+	1997 02 11	691	0.4+	0.7+
1988 09 11	675	0.3−	0.1+	1993 01 01	033	0.4+	0.4−	1997 02 11	691	0.3−	0.3−
1988 09 12	675	0.2+	0.2−	1995 07 21	033(25.1+		11.7+)	1997 02 11	691	0.2−	0.2−

1988 RO_5 = 1999 GH

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	67.30072		(2000.0)		**P**	**Q**	
n	0.22584306	ω	104.74756		+0.28838313	−0.95243936	
a	2.6705347	Ω	327.95719		+0.79154617	+0.29499411	
e	0.1784780	i	10.69499		+0.53878552	+0.07640515	
P	4.36	H	13.7	G	0.15	U	5

Residuals in seconds of arc

1988 09 02	809	0.0	0.2+	1988 09 12	675	0.1+	0.3−	1999 03 23	704	0.2+	0.8−
1988 09 02	809	0.6+	0.2+	1988 09 16	675	1.0+	0.4−	1999 04 04	589	0.2−	1.1+
1988 09 02	809	0.8+	0.0	1988 09 16	675	0.4+	1.0−	1999 04 04	589	0.3−	0.2+
1988 09 05	809	1.8−	1.1+	1999 02 14	699	1.5+	1.6+	1999 04 04	589	0.2−	0.4+
1988 09 05	809	1.6−	1.1+	1999 02 14	699	1.3+	0.7+	1999 04 04	589	0.3+	0.7−
1988 09 05	809	1.4−	1.1+	1999 02 14	699	1.1+	1.7+	1999 04 06	589	0.6−	0.1−
1988 09 06	809	0.6−	0.5+	1999 03 20	704	0.8+	0.0	1999 04 06	589	0.8−	1.2+
1988 09 06	809	0.5−	0.5+	1999 03 20	704	0.0	0.3−	1999 04 06	589	0.9−	0.2−
1988 09 06	809	0.5−	0.5+	1999 03 20	704	0.9+	0.4−	1999 04 06	589	1.1−	1.2+
1988 09 09	809	0.1+	1.3+	1999 03 20	704	0.7+	0.4−	1999 04 06	589	0.1−	0.3−
1988 09 09	809	0.2+	1.3+	1999 03 20	704	0.7+	0.3−	1999 04 10	589	0.9−	0.3−
1988 09 09	809	0.4+	1.3+	1999 03 23	704	0.1+	0.1−	1999 04 10	589	0.9−	0.6+
1988 09 10	675	0.3−	2.3−	1999 03 23	704	0.8+	0.4−	1999 04 10	589	0.7−	0.0
1988 09 10	675	0.6+	1.3−	1999 03 23	704	0.1+	0.5−				
1988 09 12	675	0.5+	0.9−	1999 03 23	704	0.3−	0.6−				

1988 TK = 1995 KW_5 = 1998 XO_{49}

Id. A. Doppler (*MPC* 33927, unpublished), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	138.15868		(2000.0)		**P**	**Q**	
n	0.21606681	ω	308.27282		+0.65710237	+0.75375606	
a	2.7504939	Ω	2.84774		−0.62920798	+0.55449548	
e	0.2011511	i	9.57361		−0.41510696	+0.35268479	
P	4.56	H	13.7	G	0.15	U	4

Residuals in seconds of arc

1988 10 03	399	(5.8−	0.1+)	1988 10 16	399	0.5+	1.1+	1998 12 14	704	0.9+	1.3−
1988 10 03	399	(3.1−	2.7−)	1988 10 16	399	0.6−	0.2−	1998 12 14	704	0.5+	0.2−
1988 10 03	399	(2.5−	0.4−)	1988 10 18	399	0.3+	1.6−	1998 12 14	704	1.7−	0.8+
1988 10 03	399	(5.3−	2.2−)	1988 10 18	399	0.2−	0.2+	1998 12 14	704	(0.5+	2.5−)
1988 10 08	399	(0.5−	3.2+)	1995 05 23	104	0.4+	0.5+	1998 12 17	704	0.7+	0.6−
1988 10 13	399	0.4+	0.4+	1995 05 23	104	0.4−	0.2−	1998 12 17	704	1.0−	0.7+
1988 10 13	399	1.0+	1.2+	1995 05 23	104	0.7−	0.3+	1998 12 17	704	0.4+	0.5+
1988 10 13	399	(3.0−	0.4−)	1995 05 23	104	0.3+	0.1+	1998 12 17	704	(0.6−	2.1+)
1988 10 15	399	1.4−	0.9−	1995 05 23	104	0.6+	0.4−				

1988 TM_1 = 1973 UU_1 = 1982 BQ_{12}

Id. S. J. Bus (*MPC* 20016), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	245.21810		(2000.0)		**P**	**Q**	
n	0.26183479	ω	193.55116		+0.68258296	−0.73060395	
a	2.4198279	Ω	213.40801		+0.67339344	+0.63796456	
e	0.1880147	i	1.79778		+0.28393974	+0.24334970	
P	3.76	H	14.5	G	0.15	U	1

Residuals in seconds of arc

1973 10 26	095	(2.5−	4.5−)	1988 10 16	046	(2.8−	4.1−)	1997 02 15	327	0.7+	0.5−
1982 01 30	675	0.3−	0.3+	1988 10 16	046	(2.8−	1.2−)	1997 02 15	327	0.6+	0.7+
1982 01 31	675	0.7+	0.7+	1988 11 02	399	0.4+	0.4−	1997 02 15	327	0.3+	0.2−
1988 10 07	675	1.0−	1.5−	1988 11 02	399	0.0	1.4+	1998 04 22	704	0.2−	0.2−
1988 10 07	675	(0.1−	2.3−)	1988 11 02	399	0.0	1.0+	1998 04 22	704	1.4+	0.9+
1988 10 13	675	0.7−	0.1−	1988 11 03	033	0.1+	0.5+	1998 04 22	704	1.2−	0.2+
1988 10 13	675	0.4−	0.3−	1988 11 03	033	0.2−	0.8+	1998 04 22	704	0.0	0.1+
1988 10 13	399	1.2+	1.3−	1988 11 04	033	0.1+	0.3+	1998 05 01	704	1.2−	0.1−
1988 10 13	399	0.9+	0.3+	1996 12 04	691	0.2−	0.2−	1998 05 01	704	0.4+	0.7−
1988 10 13	399	1.5+	0.4−	1996 12 04	691	0.3−	0.5−	1998 05 01	704	0.4−	1.3−
1988 10 14	046	(4.1−	3.7−)	1996 12 04	691	0.5−	0.5−	1998 05 01	704	0.7+	0.6−
1988 10 14	046	(2.7−	3.4−)	1996 12 15	691	0.4−	0.5−	1998 05 01	704	(0.9−	2.0−)
1988 10 16	399	1.3−	0.4+	1996 12 15	691	0.4−	0.0				
1988 10 16	399	0.0	1.1−	1996 12 15	691	0.5−	0.4−				

1988 UF

Id. E. Bowell (1993, 1998 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	11.56164		(2000.0)		**P**	**Q**	
n	0.18653348	ω	326.08617		+0.98281447	+0.16640176	
a	3.0336457	Ω	24.70676		−0.09578805	+0.82978775	
e	0.1198704	i	11.02239		−0.15779852	+0.53269386	
P	5.28	H	12.1	G	0.15	U	4

Residuals in seconds of arc

1988 10 07	675	1.2+	1.0−	1988 10 19	400	(8.4−	2.5+)	1993 09 21	675	0.1+	0.8−
1988 10 07	675	1.5+	1.3−	1988 10 19	400	0.4−	0.9−	1993 09 21	675	0.2−	0.0
1988 10 16	400	2.2−	1.9+	1988 11 03	400	1.6+	0.1+	1998 11 20	699	0.1+	0.1−
1988 10 16	400	1.7+	1.5+	1988 11 03	400	1.5+	1.3−	1998 11 20	699	0.0	0.6−
1988 10 16	400	1.7−	0.9+	1988 11 03	400	1.7−	0.4−	1998 11 20	699	0.2+	0.9+
1988 10 18	400	1.4−	1.6+	1988 11 13	400	1.1+	1.4−				
1988 10 18	400	0.4+	2.3+	1988 11 13	400	1.4−	1.8−				

1989 AU_6 = 1999 HX_3

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	130.15166		(2000.0)		**P**	**Q**	
n	0.21793221	ω	117.80876		+0.35796461	−0.93177218	
a	2.7347760	Ω	311.08388		+0.82595725	+0.34620703	
e	0.0549231	i	4.60489		+0.43549508	+0.10927624	
P	4.52	H	14.7	G	0.15	U	5

Residuals in seconds of arc

1989 01 11	033	0.2−	0.4+	1998 01 26	566	0.3−	0.9−	1999 04 21	426	0.3+	0.1−
1989 01 11	033	0.1+	0.2+	1998 01 26	566	0.4−	0.7−	1999 04 22	426	0.2+	0.2+
1989 01 14	033	0.3+	0.6+	1998 01 26	566	0.2−	0.8−	1999 04 22	426	0.0	0.1−
1989 02 02	033	0.4+	0.2+	1999 04 21	426	0.0	0.1−	1999 04 22	426	0.1−	0.2+
1989 02 03	033	0.2+	1.0+	1999 04 21	426	0.5−	0.2−				

1989 CQ = 1998 XH_{64}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	266.35954		(2000.0)		**P**	**Q**	
n	0.28566969	ω	138.21542		−0.99830401	+0.03440210	
a	2.2832840	Ω	43.82422		−0.05164622	−0.89564774	
e	0.0774842	i	3.88894		+0.02686563	−0.44343164	
P	3.45	H	14.8	G	0.15	U	3

Residuals in seconds of arc

1989 02 02	372	1.6−	0.1+	1996 03 24	608	0.2+	0.1+	1998 12 14	704	0.0	0.2+
1989 02 02	372	0.7−	0.6−	1998 11 24	704	0.4+	0.1−	1998 12 14	704	1.3+	0.0
1989 02 04	372	0.5+	1.8+	1998 11 24	704	0.5+	0.4−	1998 12 14	704	1.0−	0.8−
1989 02 06	372	1.2+	0.0	1998 11 24	704	0.1+	0.2−	1998 12 14	704	(2.2+	0.7+)
1989 02 10	372	0.7+	0.9−	1998 11 24	704	0.4−	0.8−	1998 12 17	704	0.7−	1.0+
1991 11 12	691	0.2+	1.1+	1998 11 24	704	0.5−	1.8−	1998 12 17	704	0.9−	0.2+
1991 11 12	691	0.2−	0.7+	1998 12 11	699	0.0	1.1+	1998 12 17	704	0.8+	1.0−
1991 11 12	691	0.5−	0.3−	1998 12 11	699	0.5+	0.0	1998 12 17	704	0.2−	0.6−
1996 03 24	608	0.2−	0.1−	1998 12 11	699	0.5+	1.3+				

1989 CX_1 = 1999 FS_{29}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	31.88446		(2000.0)		**P**	**Q**	
n	0.20394525	ω	359.80951		−0.55752189	−0.82557036	
a	2.8584262	Ω	124.07402		+0.76179811	−0.55051916	
e	0.2417330	i	6.04259		+0.32989845	−0.12394448	
P	4.83	H	14.2	G	0.15	U	4

Residuals in seconds of arc

1989 02 07	046	(0.1−	3.1−)	1989 03 09	675	0.4−	0.0	1999 03 20	704	0.0	0.6−
1989 02 07	046	(0.3+	3.3−)	1989 03 09	675	0.2−	0.6+	1999 04 15	704	(2.2+	1.2−)
1989 02 13	372	0.9−	0.5+	1999 03 19	704	0.1+	1.1−	1999 04 15	704	1.0+	0.2+
1989 02 13	372	0.7+	1.2+	1999 03 19	704	0.2+	0.5−	1999 04 15	704	1.4+	1.0+
1989 02 14	372	0.5−	0.5+	1999 03 19	704	0.0	0.6−	1999 04 15	704	(3.6+	0.5+)
1989 02 26	372	1.1+	1.1−	1999 03 19	704	0.0	0.8−	1999 04 15	704	(0.9+	2.4+)
1989 02 26	372	1.3+	0.0	1999 03 19	704	0.3+	0.1+	1999 04 16	704	0.2−	0.6+
1989 03 01	372	0.9−	1.2−	1999 03 20	704	0.1−	0.9−	1999 04 16	704	0.2+	1.6+
1989 03 01	372	(2.9−	0.0)	1999 03 20	704	0.4−	0.1−	1999 04 16	704	0.4−	1.3−
1989 03 08	372	(1.2−	2.5+)	1999 03 20	704	0.2+	0.0	1999 04 16	704	1.0−	0.4+
1989 03 08	372	(4.1−	2.5+)	1999 03 20	704	0.8−	0.0	1999 04 16	704	0.7−	1.9+

1989 HC = 1991 TN$_1$ = 1998 XH$_{48}$ = 1999 BV$_{33}$

Id. A. Lowe (*MPC* 33476), G. V. Williams (*ibid.*, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	117.40202		(2000.0)		**P**	**Q**	
n	0.17189962	ω	263.09439		+0.89371054	+0.23647856	
a	3.2034609	Ω	82.68590		−0.06467075	+0.90883409	
e	0.0154284	i	22.60575		−0.44395852	+0.34365461	
P	5.73	H	12.2	G	0.15	U	3

Residuals in seconds of arc

1989 04 30	675	1.3+	1.2−	1998 12 14	704	0.7−	2.2−	1999 01 19	704	0.3−	1.0−
1989 04 30	675	0.9−	0.6−	1998 12 17	704	0.7+	0.3−	1999 01 19	704	0.6−	0.2+
1989 05 04	675	0.5−	0.9+	1998 12 17	704	0.7+	0.4−	1999 01 19	704	2.4−	0.1+
1989 05 04	675	0.8−	0.2−	1998 12 17	704	1.8+	1.3+	1999 01 19	704	0.3−	0.1+
1991 10 12	413	0.1−	0.4−	1998 12 17	704	0.9+	0.8−	1999 02 13	749	0.1−	0.5+
1991 10 12	413	0.9+	0.1−	1998 12 17	704	0.7+	0.4−	1999 02 13	749	0.1+	0.1+
1991 10 13	413	0.3−	0.2+	1999 01 16	704	0.5−	0.1+	1999 02 15	749	0.4+	0.4+
1998 12 14	704	0.2+	0.1−	1999 01 16	704	0.3+	1.4+	1999 02 15	749	0.6−	0.3+
1998 12 14	704	0.5−	0.4−	1999 01 16	704	2.0+	0.0	1999 02 15	749	0.8−	0.6+
1998 12 14	704	0.8+	1.1−	1999 01 16	704	1.0−	2.8+				
1998 12 14	704	0.4−	1.2−	1999 01 16	704	0.9−	0.4−				

1989 LT = 1970 GX

Id. G. V. Williams, M. E. Sansaturio, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	210.60223		(2000.0)		**P**	**Q**	
n	0.26330730	ω	247.60337		−0.36744173	+0.93004645	
a	2.4107978	Ω	0.83906		−0.84204391	−0.33247579	
e	0.1442265	i	1.69643		−0.39490332	−0.15643995	
P	3.74	H	14.3	G	0.15	U	1

Residuals in seconds of arc

1970 04 10	805	0.3+	0.9+	1994 11 28	675	0.5−	0.6−	1997 09 11	118	0.5+	0.4−
1970 04 10	805	0.4+	0.5+	1996 02 15	691	0.4−	0.2+	1997 09 11	118	0.4+	0.6−
1970 04 10	805	0.1+	0.3−	1996 02 15	691	0.3−	0.1+	1997 09 11	118	0.4−	0.5−
1989 06 03	675	(2.5−	1.8−)	1996 02 15	691	0.1−	0.1+	1997 09 11	118	0.4−	0.6−
1989 06 03	675	(3.0−	2.2−)	1996 02 19	411	0.3+	0.7−	1997 09 11	118	0.6−	0.7−
1989 06 05	675	(3.8−	2.1−)	1996 02 19	411	0.2+	0.8−	1997 09 23	327	0.3−	0.1−
1989 06 05	675	(1.8−	3.1−)	1996 03 15	608	0.9−	1.7−	1997 09 23	327	0.6−	0.0
1989 06 30	675	1.5−	1.0−	1996 03 15	608	0.5+	0.4−	1997 09 23	327	0.3−	0.2−
1989 06 30	675	1.2−	1.0−	1996 03 16	608	0.2+	0.2+	1998 12 14	704	1.8+	0.8−
1989 07 03	675	(0.4−	2.2−)	1996 03 16	608	0.2−	0.4+	1998 12 14	704	(2.2+	0.1+)
1989 07 03	675	0.1+	1.2−	1996 03 16	608	0.2+	0.2+	1998 12 14	704	0.3+	0.8−
1993 07 15	675	0.7+	1.5+	1996 03 16	608	0.2−	0.8+	1998 12 14	704	0.1−	0.6−
1993 07 15	675	0.1+	0.3+	1996 03 17	608	0.3+	0.3−	1998 12 14	704	0.6−	0.5+
1993 07 16	675	1.1+	0.4+	1996 03 17	608	0.3−	0.3+	1998 12 17	704	0.1−	0.1−
1993 07 16	675	1.0+	1.0+	1996 03 20	566	0.1−	0.3−	1998 12 17	704	0.4−	0.6+
1993 07 20	675	(1.2+	2.5+)	1996 03 20	566	0.2−	0.4−	1998 12 17	704	0.7+	0.2+
1993 07 20	675	(0.7+	2.4+)	1996 03 20	566	0.3−	0.2−	1998 12 17	704	0.2−	0.3+
1994 11 28	675	(2.4−	0.9−)	1997 09 11	118	0.4+	0.6−	1998 12 17	704	(0.3+	2.9+)

1989 TA$_6$ = 1998 MH$_{35}$

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	355.80778		(2000.0)		**P**	**Q**	
n	0.20245330	ω	228.28483		+0.96342132	+0.26308303	
a	2.8724522	Ω	116.40454		−0.22583286	+0.89956577	
e	0.0580579	i	3.26776		−0.14428747	+0.34866711	
P	4.87	H	14.0	G	0.15	U	6

Residuals in seconds of arc

1989 09 26	809	0.8−	0.8−	1998 06 16	691	0.3+	0.5+	1998 06 26	704	1.3−	0.9+
1989 09 26	809	0.4−	0.4−	1998 06 16	691	0.0	0.5+	1998 06 26	704	(2.3−	0.1−)
1989 09 26	809	1.3−	1.3−	1998 06 16	691	0.2−	0.5+	1998 06 28	809	0.8+	0.2−
1989 10 07	809	0.2−	0.6+	1998 06 24	704	1.7−	0.2+	1998 06 28	809	0.6−	0.5−
1989 10 07	809	0.4+	2.0+	1998 06 24	704	1.3−	1.1−	1998 06 28	809	0.2−	0.2−
1989 10 07	809	1.2−	1.4+	1998 06 24	704	(1.5+	2.0+)	1998 07 01	809	(2.2+	0.1+)
1989 10 08	809	0.4+	0.8−	1998 06 24	704	0.9+	0.5+	1998 07 01	809	1.6+	0.3+
1989 10 08	809	1.4+	0.1−	1998 06 24	704	0.2+	0.6−	1998 07 01	809	1.5+	0.1+
1989 10 08	809	1.7+	0.7−	1998 06 26	704	0.1−	0.8−				

1989 WU$_4$ = 1984 QP$_1$ = 1997 MK$_{10}$

Id. G. V. Williams (*MPC* 30273), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	14.81338		(2000.0)		**P**	**Q**	
n	0.22042870	ω	149.05648		+0.42662809	−0.90234913	
a	2.7140882	Ω	275.62824		+0.81669376	+0.41346658	
e	0.0699089	i	3.52999		+0.38858689	+0.12170228	
P	4.47	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1984 08 21	675	0.3+	0.4−	1998 11 22	113	0.1−	0.3−	1998 12 17	704	0.5+	0.5+
1989 11 28	033	(2.2−	1.9+)	1998 11 22	113	0.6−	0.4−	1998 12 17	704	0.1+	0.1+
1989 11 28	033	(1.9+	2.4+)	1998 11 24	704	0.0	0.7+	1998 12 17	704	0.6+	0.2+
1989 11 29	033	0.5−	0.7+	1998 11 24	704	0.1+	0.3−	1998 12 17	704	0.2−	0.5−
1989 11 29	033	0.0	1.5+	1998 11 24	704	(2.0−	2.6+)	1998 12 17	704	0.3−	0.6+
1989 12 03	033	(1.6+	2.8+)	1998 11 24	704	0.7−	0.1−	1998 12 17	113	0.1−	0.4−
1997 06 30	691	0.3+	0.1+	1998 12 08	113	0.6−	0.7+	1998 12 17	113	0.2−	0.3−
1997 06 30	691	0.2−	0.0	1998 12 08	113	0.8−	1.3+	1998 12 17	113	0.0	0.4−
1997 06 30	691	0.5+	0.1+	1998 12 10	113	0.1−	0.5−	1999 01 06	120	0.3+	0.3+
1997 07 11	691	0.0	0.0	1998 12 10	113	0.6+	0.4−	1999 01 06	120	0.2+	0.0
1997 07 11	691	0.0	0.3−	1998 12 14	704	0.5+	0.5−	1999 01 06	120	0.2+	0.0
1997 07 11	691	0.3−	0.1+	1998 12 14	704	1.3+	0.5−	1999 01 06	113	0.2−	0.0
1997 07 12	691	0.7−	0.1+	1998 12 14	704	1.0+	0.1−	1999 01 06	113	0.2−	0.5−
1997 07 12	691	0.1+	0.1−	1998 12 14	704	0.1+	0.2−	1999 01 17	113	0.1+	0.3−
1997 07 12	691	0.4+	0.1−	1998 12 14	704	1.2−	0.6−	1999 01 17	113	0.2+	0.5−

1990 BL$_1$ = 1999 FW$_9$

Id. A. Gnädig, M. E. Sansaturio, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	77.09131		(2000.0)		**P**	**Q**	
n	0.23239716	ω	258.61984		+0.24131286	−0.97039247	
a	2.6200857	Ω	177.34860		+0.95446776	+0.23540361	
e	0.1595414	i	12.89360		+0.17538356	+0.05407018	
P	4.24	H	13.4	G	0.15	U	2

Residuals in seconds of arc

1983 07 09	413	0.6+	0.1−	1999 02 26	704	(6.6−	0.3+)	1999 04 15	704	1.2−	0.2−
1988 10 09	413	0.1−	0.2−	1999 03 22	699	1.1+	0.3+	1999 04 15	704	0.1−	0.6+

1990 01 21	675	0.6+	0.9+	1999 03 22	699	0.8+	0.7−	1999 04 15	704	0.3+	0.1−
1990 01 21	675	0.3−	0.2−	1999 03 22	699	0.6−	0.6+	1999 04 15	704	0.1−	0.6+
1990 01 25	675	(2.4+	1.1+)	1999 03 23	699	0.5+	0.5−	1999 04 15	704	0.5−	0.5+
1990 01 25	675	0.3−	1.3−	1999 03 23	699	0.6+	0.1+	1999 04 16	704	1.1−	0.8+
1990 02 27	675	0.9−	1.1−	1999 03 23	699	0.8+	0.1−	1999 04 16	704	0.4+	0.3−
1990 02 27	675	0.8+	0.6+	1999 04 06	704	0.0	0.2−	1999 04 16	704	1.2−	0.5−
1995 04 08	691	0.9−	0.6−	1999 04 06	704	0.4+	0.2−	1999 04 16	704	1.3−	0.5+
1995 04 08	691	0.4−	0.7−	1999 04 06	704	1.6+	0.1+	1999 04 16	704	0.0	0.4+
1995 04 08	691	0.4−	1.0−	1999 04 06	704	0.1+	0.2−	1999 04 17	703	0.2+	0.3−
1999 02 26	704	0.2+	0.8+	1999 04 06	704	0.4+	0.2+	1999 04 17	703	0.7+	0.2+
1999 02 26	704	0.5−	0.8+	1999 04 07	699	0.6+	0.5+	1999 04 17	703	0.4−	0.2−
1999 02 26	704	0.6−	1.2−	1999 04 07	699	0.5+	0.2+	1999 04 17	703	0.5−	0.0
1999 02 26	704	0.3−	0.1−	1999 04 07	699	0.3+	0.1+				

1990 ET$_2$

Id. T. Kobayashi (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	310.52058		(2000.0)		**P**		**Q**
n	0.22718408	ω	64.40275		−0.26498939		+0.96340687
a	2.6600152	Ω	190.47375		−0.94503249		−0.26779267
e	0.1571979	i	12.82330		−0.19155734		−0.01158833
P	4.34	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1990 02 24	809	1.0+	0.1+	1990 04 04	809	0.1−	0.2+	1999 04 15	704	0.1−	0.3+
1990 02 24	809	0.7+	0.2+	1990 04 15	809	0.1+	0.3−	1999 04 15	704	0.2−	1.0−
1990 02 24	809	1.2+	0.2−	1990 04 16	809	0.1+	0.2−	1999 04 15	704	0.2+	0.3−
1990 03 02	809	0.8−	0.4+	1990 04 16	809	0.0	0.2−	1999 04 15	704	0.1+	0.2−
1990 03 02	809	0.8+	0.2−	1990 04 16	809	0.9+	0.8+	1999 04 15	704	1.0−	0.1+
1990 03 02	809	0.5−	0.2+	1990 04 17	809	0.5−	1.0+	1999 04 16	704	0.6+	0.5−
1990 03 04	809	1.0−	0.4−	1990 04 17	809	2.0−	0.3+	1999 04 16	704	0.1−	0.2+
1990 03 04	809	1.2−	0.1+	1999 04 07	411	0.3−	0.2−	1999 04 16	704	0.7+	1.6+
1990 03 04	809	1.7−	0.2+	1999 04 07	411	0.1−	0.5−	1999 04 16	704	0.6−	0.2+
1990 04 04	809	2.0+	1.4−	1999 04 08	411	0.1+	0.1+				
1990 04 04	809	1.1+	0.5−	1999 04 08	411	0.7+	0.2+				

1990 QL$_1$ = 1999 GC$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	140.99112		(2000.0)		**P**		**Q**
n	0.17698537	ω	241.55968		+0.71961965		−0.69227485
a	3.1417947	Ω	162.07136		+0.68244501		+0.69081192
e	0.2166496	i	10.08048		+0.12812636		+0.20864903
P	5.57	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1990 08 16	809	0.5−	0.9+	1990 08 27	675	0.0	0.7−	1990 09 19	675	0.4−	1.4−
1990 08 16	809	0.5−	0.0	1990 08 28	675	0.8+	1.4−	1990 09 19	675	0.6−	2.1−
1990 08 16	809	1.2−	0.2−	1990 08 28	675	1.7+	0.8−	1990 09 23	809	0.1+	0.1−
1990 08 20	809	1.1−	1.8+	1990 09 14	809	0.2−	0.7+	1990 09 23	809	0.6+	0.2+
1990 08 20	809	1.2−	2.8+	1990 09 14	809	0.3+	0.6+	1990 09 23	809	1.0+	0.2+
1990 08 20	809	1.4−	1.4+	1990 09 14	809	0.7+	0.6+	1990 09 24	809	0.8−	0.5+
1990 08 22	675	1.2+	0.7−	1990 09 14	675	0.3−	1.5−	1990 09 24	809	0.5−	0.6+
1990 08 22	675	0.3+	1.3−	1990 09 14	675	0.5−	0.8−	1990 09 24	809	0.3−	1.0+
1990 08 23	675	1.2−	1.0−	1990 09 15	809	0.0	0.0	1999 04 13	120	0.7+	1.1+
1990 08 23	675	0.5−	2.8−	1990 09 15	809	0.4+	0.2+	1999 04 13	120	0.3−	0.7−
1990 08 26	809	0.3+	0.9+	1990 09 15	809	1.0+	0.1+	1999 04 13	120	0.7−	0.0
1990 08 26	809	0.7+	1.0+	1990 09 16	809	0.0	1.4+	1999 04 19	120	1.1−	0.6+
1990 08 26	809	0.5+	0.1+	1990 09 16	809	0.3+	1.6+	1999 04 19	120	0.9+	0.8−
1990 08 27	675	0.6+	2.9−	1990 09 16	809	0.3+	1.1+	1999 04 19	120	0.6+	0.1−

1990 QS$_4$ = 1998 DN$_{32}$ = 1999 GB$_{18}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	211.84333		(2000.0)		**P**		**Q**
n	0.29852036	ω	211.41126		+0.75494368		+0.64936161
a	2.2172776	Ω	107.81069		−0.57996947		+0.72630801
e	0.1166418	i	5.52069		−0.30609712		+0.22540222
P	3.30	H	14.0	G	0.15	U	3

Residuals in seconds of arc

1990 08 24	675	0.3+	0.5+	1998 02 22	327	0.1−	0.2+	1999 04 15	704	0.9−	0.3+
1990 08 24	675	0.1−	0.5−	1998 02 26	327	0.2+	0.1+	1999 04 15	704	1.0−	0.4+
1990 08 26	675	0.6−	0.2+	1998 02 26	327	0.3−	0.2−	1999 04 16	704	1.0+	0.2−
1990 08 26	675	0.1−	0.6−	1998 02 26	327	0.4+	0.1−	1999 04 16	704	0.4−	1.5−
1990 08 26	675	0.6−	0.4−	1999 04 07	699	0.5+	0.3−	1999 04 16	704	0.3+	0.5−
1990 08 26	675	0.3+	0.3+	1999 04 07	699	1.2+	0.1−	1999 04 16	704	0.7+	0.9+
1990 08 29	675	0.7+	0.6+	1999 04 07	699	0.5+	0.0	1999 04 16	704	0.9−	1.2+
1998 02 22	327	0.0	0.2+	1999 04 15	704	(1.4−	2.2−)				
1998 02 22	327	0.3−	0.1−	1999 04 15	704	1.1−	0.2−				

1990 QA$_6$ = 1999 FE$_{44}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	136.36694		(2000.0)		**P**		**Q**
n	0.28624002	ω	18.54839		+0.98709557		−0.15968149
a	2.2802501	Ω	350.61566		+0.13602047		+0.87567230
e	0.1794364	i	4.22290		+0.08450312		+0.45574098
P	3.44	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1990 08 16	809	0.6+	1.7−	1990 09 13	809	0.9−	0.6+	1990 09 18	675	0.8+	0.0
1990 08 16	809	0.6+	1.5−	1990 09 13	675	0.7−	1.0+	1997 11 26	566	0.4+	0.8−
1990 08 16	809	0.9+	1.0−	1990 09 13	675	0.7−	0.6+	1997 11 26	566	0.4+	0.6−
1990 08 18	809	(2.5+	1.2−)	1990 09 13	809	0.6−	1.2+	1997 11 26	566	0.4+	0.8−
1990 08 18	809	0.9+	1.2−	1990 09 14	809	0.4−	1.2+	1999 02 20	699	0.2−	0.3−
1990 08 18	809	1.0+	1.4−	1990 09 14	809	0.0	1.3+	1999 02 20	699	0.7+	0.5−
1990 08 22	675	0.5+	0.4+	1990 09 15	809	1.7−	0.1+	1999 03 20	704	1.2−	0.4+
1990 08 22	675	0.5+	0.6+	1990 09 15	809	1.3−	0.1+	1999 03 20	704	0.1−	0.0
1990 08 24	809	(2.4+	1.0−)	1990 09 15	809	0.8−	0.1−	1999 03 20	704	1.4−	0.5−
1990 08 24	809	(2.5+	1.0−)	1990 09 16	809	1.0+	0.8−	1999 03 20	704	0.9+	0.4+
1990 08 24	809	(2.6+	0.9−)	1990 09 16	809	1.1+	0.6−	1999 03 20	704	1.1−	0.6+
1990 08 29	675	0.1+	0.4+	1990 09 16	809	1.0+	0.3−	1999 03 23	704	1.0+	1.7−
1990 08 29	675	0.3+	0.7+	1990 09 16	675	(0.3+	3.7−)	1999 03 23	704	0.3+	0.2−
1990 09 12	809	(2.2−	0.4+)	1990 09 16	675	(0.9−	3.2−)	1999 03 23	704	1.1+	0.3−
1990 09 13	809	1.7−	0.4+	1990 09 18	675	0.1−	0.4−	1999 03 23	704	1.0−	0.1+

1990 QR$_7$ = 1999 HS$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	160.64758		(2000.0)		**P**		**Q**
n	0.29355977	ω	3.44270		+0.99552525		−0.09448753
a	2.2421863	Ω	1.98044		+0.08580609		+0.89832397
e	0.1768949	i	2.08494		+0.03958267		+0.42905262
P	3.36	H	16.4	G	0.15	U	5

Residuals in seconds of arc

1990 08 16	809	0.4+	1.1+	1990 08 24	809	0.6−	0.8−	1999 04 06	691	0.2+	0.3−
1990 08 16	809	0.2+	0.9+	1990 08 24	809	0.0	0.5−	1999 04 19	691	0.5+	0.1−
1990 08 16	809	0.6−	0.2+	1990 08 26	809	0.1−	0.3−	1999 04 19	691	0.4+	0.1+
1990 08 18	809	0.4+	0.4+	1990 08 26	809	0.7+	0.5+	1999 04 19	691	0.7+	0.5+
1990 08 18	809	0.4−	0.3−	1990 08 26	809	0.0	0.2+	1999 04 20	691	0.8−	0.1+
1990 08 18	809	1.0−	0.4−	1999 04 06	691	0.4−	0.4−	1999 04 20	691	0.5−	0.0
1990 08 24	809	1.1+	1.1−	1999 04 06	691	0.1−	0.5−	1999 04 20	691	0.4−	0.3+

1990 QO$_8$ = 1980 DA$_4$ = 1988 CA$_7$ = 1988 EJ$_2$ = 1994 PG$_{28}$

Id. B. G. Marsden (*MPC* 24563), A. Milani (*MPC* 34178), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	303.15279			(2000.0)			**P**			**Q**			
n	0.24342779		ω	96.85513			+0.19084136			−0.97939176			
a	2.5403250		Ω	341.73397			+0.79657300			+0.19387339			
e	0.1439784		i	12.17770			+0.57362969			+0.05661169			
P	4.05		H	14.3	G	0.15		U	2				

Residuals in seconds of arc

1980 02 20	095	0.1+	1.2−	1994 09 05	809	(2.0+	4.8+)	1998 09 18	704	0.5+	0.1−
1988 02 13	054	1.7−	1.0−	1994 09 05	809	(1.9+	5.3+)	1998 09 18	704	0.0	1.0−
1988 02 13	054	1.5−	0.4−	1994 09 05	809	(1.8+	5.1+)	1998 09 18	704	0.5−	1.9+
1988 03 12	054	0.6+	0.7−	1994 09 06	809	(2.2+	5.4+)	1998 09 18	704	1.0−	0.3+
1988 03 12	054	0.0	0.9−	1994 09 06	809	(2.0+	5.3+)	1998 09 21	699	0.1+	0.4+
1990 08 16	809	0.5+	2.6−	1994 09 06	809	(1.5+	5.0+)	1998 09 21	699	0.6+	0.9+
1990 08 16	809	0.5−	2.3−	1998 07 31	699	0.1+	0.7−	1998 09 21	699	0.1+	0.6+
1990 08 16	809	1.0−	2.1−	1998 07 31	699	0.2−	0.3−	1998 10 14	910	0.6−	0.2−
1990 08 18	809	1.0+	0.9−	1998 07 31	699	1.2−	0.5−	1998 10 14	910	0.1+	0.2+
1990 08 18	809	1.3+	1.1−	1998 08 17	704	1.2−	0.1+	1998 10 14	910	0.5−	0.1−
1990 08 18	809	0.3+	1.4−	1998 08 17	704	2.0−	0.7+	1998 10 17	699	1.9−	0.5−
1990 08 24	809	0.3−	1.0−	1998 08 17	704	1.8−	0.5−	1998 10 17	699	0.4−	0.6+
1990 08 24	809	0.1+	0.7−	1998 08 17	704	0.9−	0.2−	1998 10 17	699	1.5−	1.0+
1990 08 24	809	0.9−	0.9−	1998 08 17	704	0.9−	0.7−	1998 10 20	699	1.4+	0.7+
1990 08 26	809	1.4−	0.8+	1998 08 23	704	0.7−	0.0	1998 10 20	699	0.0	0.9+
1990 08 26	809	0.6−	0.6+	1998 08 23	704	0.3−	0.9+	1998 10 20	699	1.3−	0.7+
1990 08 26	809	0.0	1.1+	1998 08 23	704	0.5−	1.6+	1998 10 20	910	0.1−	0.1−
1994 08 12	809	3.3+	0.6−	1998 08 23	704	0.4−	1.7+	1998 10 20	910	0.2−	0.1−
1994 08 12	809	3.2+	0.3−	1998 08 23	704	1.1+	1.5+	1998 10 20	910	0.3−	0.1−
1994 08 12	809	2.4+	0.1−	1998 08 27	699	0.2+	0.1−	1998 10 21	910	0.2−	0.1−
1994 08 13	809	2.9+	1.0−	1998 08 27	699	0.0	0.1+	1998 10 21	910	0.2−	0.0
1994 08 13	809	2.9+	0.0	1998 08 27	699	0.6+	0.2−	1998 10 21	910	0.3−	0.0
1994 08 13	809	2.9+	0.5−	1998 09 18	704	0.4+	0.5+				

1990 SR$_2$ = 1990 SX$_{28}$ = 1999 FX$_{30}$

Id. S. Nakano (d, *MPC* 20913), A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	244.47743			(2000.0)			**P**			**Q**			
n	0.30444368		ω	279.67303			+0.67155615			+0.73960959			
a	2.1884237		Ω	32.65521			−0.64326878			+0.61184141			
e	0.1955924		i	4.74227			−0.36771948			+0.28040639			
P	3.24		H	14.4	G	0.15		U	5				

Residuals in seconds of arc

1990 09 18	675	0.5−	0.4−	1999 03 19	704	0.6−	0.3+	1999 04 15	704	0.7+	0.7−
1990 09 18	675	0.7−	1.0+	1999 03 20	704	0.1−	1.4+	1999 04 15	704	0.6+	1.0+
1990 09 20	675	0.6−	0.3−	1999 03 20	704	0.4−	0.6−	1999 04 15	704	0.5+	0.2−
1990 09 20	675	0.1−	1.1−	1999 03 20	704	0.4+	0.5−	1999 04 15	704	0.7+	1.0−
1990 09 28	675	(2.4−	1.8+)	1999 03 20	704	1.6+	0.3−	1999 04 16	704	0.0	0.4−
1990 09 29	095	1.6+	1.6+	1999 04 12	704	1.1−	0.1+	1999 04 16	704	0.3+	0.8−
1999 03 19	704	1.1+	1.2−	1999 04 12	704	0.5−	0.3+	1999 04 16	704	0.3−	0.1−
1999 03 19	704	1.5+	0.9+	1999 04 12	704	0.7−	0.2−	1999 04 16	704	1.2−	0.0
1999 03 19	704	0.5+	0.5−	1999 04 12	704	0.1−	0.5+	1999 04 16	704	0.3−	1.0+
1999 03 19	704	0.8−	0.8+	1999 04 12	704	0.9−	1.1+				

1990 SA$_7$ = 1997 YJ$_1$ = 1999 FN$_{29}$

Id. A. Gnädig (*MPC* 31379), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	301.78994			(2000.0)			**P**			**Q**			
n	0.29594860		ω	195.28186			−0.55408591			+0.82821055			
a	2.2301044		Ω	41.16793			−0.74976441			−0.45265084			
e	0.0737200		i	7.33141			−0.36172108			−0.33041565			
P	3.33		H	15.4	G	0.15		U	4				

Residuals in seconds of arc

1990 09 15	809	0.4−	1.3+	1997 12 17	327	0.2−	0.3+	1999 03 20	704	0.5−	0.4+
1990 09 15	809	1.4−	1.6+	1997 12 17	327	0.1+	0.3−	1999 03 20	704	0.4+	0.6−
1990 09 15	809	1.4−	1.7+	1997 12 22	327	0.0	0.3+	1999 03 20	704	0.5−	0.1−
1990 09 22	809	0.2−	1.3+	1997 12 22	327	0.2+	0.3−	1999 03 20	704	0.5+	1.1+
1990 09 22	809	0.2−	0.0	1997 12 22	327	0.1+	0.2−	1999 03 20	704	1.2+	1.2+
1990 09 22	809	0.2−	0.3−	1999 03 19	704	0.3−	0.5−	1999 03 23	703	0.8−	1.3+
1990 09 25	809	1.1+	2.3−	1999 03 19	704	0.5−	0.3+	1999 03 23	703	0.8−	0.6−
1990 09 25	809	1.6+	1.2−	1999 03 19	704	0.0	0.1−	1999 03 23	703	0.4+	0.6−
1990 09 25	809	0.9+	2.1−	1999 03 19	704	0.6−	0.9−	1999 03 23	703	0.4+	1.7−
1997 12 17	327	0.3−	0.4+	1999 03 19	704	1.1+	0.7+				

1990 TC$_1$ = 1999 HE$_{11}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	177.45764			(2000.0)			**P**			**Q**			
n	0.29415406		ω	166.40661			+0.96823998			−0.24776298			
a	2.2391653		Ω	208.00751			+0.22219656			+0.91420475			
e	0.1968651		i	4.09564			+0.11462994			+0.32069172			
P	3.35		H	14.7	G	0.15		U	6				

Residuals in seconds of arc

1990 10 11	033	0.4−	0.0	1990 10 17	400	(2.7+	6.9+)	1999 04 17	704	0.6+	1.0−
1990 10 12	033	0.1+	0.2−	1990 10 17	400	(1.5+	4.8+)	1999 04 17	704	1.2+	0.5+
1990 10 12	033	0.1−	0.2−	1990 10 18	033	1.7−	0.2−	1999 04 17	704	1.8−	1.2−
1990 10 13	033	0.2+	0.5−	1990 11 11	400	0.1+	1.1−	1999 04 18	704	0.3+	0.5+
1990 10 14	033	0.9−	0.6−	1990 11 11	400	0.1+	0.9+	1999 04 18	704	0.4−	0.9−
1990 10 15	400	(4.6+	5.7+)	1999 04 17	704	0.0	0.7−	1999 04 18	704	0.6−	0.4+
1990 10 15	400	2.9+	1.1+	1999 04 17	704	0.2+	1.5+				

1990 TG$_4$ = 1978 PJ$_3$ = 1978 RM$_3$ = 1999 FO$_{42}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	240.10531			(2000.0)			**P**			**Q**			
n	0.17202233		ω	287.04989			+0.38671298			+0.92219944			
a	3.2019373		Ω	5.70061			−0.84174821			+0.35347324			
e	0.1563989		i	0.64723			−0.37671345			+0.15685935			
P	5.73		H	12.8	G	0.15		U	4				

Residuals in seconds of arc

1978 08 08	095	0.2+	0.1−	1990 10 14	033	0.4−	0.1+	1999 03 20	704	0.8+	0.8+
1978 09 03	095	0.2−	0.3+	1990 10 18	033	0.8+	0.9+	1999 03 23	704	1.3+	0.1+
1990 10 11	033	1.2−	0.6−	1999 03 20	704	0.6+	0.5−	1999 03 23	704	0.6+	0.2−
1990 10 12	033	1.3+	0.7−	1999 03 20	704	0.8−	0.3+	1999 03 23	704	0.0	1.1+
1990 10 12	033	0.3−	0.3−	1999 03 20	704	1.5−	0.9+	1999 03 23	704	0.4+	1.2−
1990 10 13	033	0.2−	0.6+	1999 03 20	704	0.1−	0.2−	1999 03 23	704	1.1−	0.9−

1990 UW$_2$ = 1999 FF$_{25}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	234.12110			(2000.0)			**P**			**Q**			
n	0.17340158		ω	231.92927			+0.70471413			+0.69868002			
a	3.1849358		Ω	83.36838			−0.60583401			+0.68309374			
e	0.1218685		i	7.13558			−0.36924672			+0.21267153			
P	5.68		H	12.9	G	0.15		U	2				

Residuals in seconds of arc

1990 10 16	801	1.4+	0.1−	1990 10 24	809	0.7+	0.3+	1999 03 19	704	1.7−	0.3+
1990 10 16	809	0.3−	0.1−	1990 10 24	809	0.4−	0.8+	1999 03 19	704	0.7−	0.3+
1990 10 16	809	2.0−	0.1+	1990 10 24	809	1.2+	0.3+	1999 03 19	704	0.1+	0.1+
1990 10 16	809	(4.0−	0.1−)	1993 02 22	691	0.2+	0.4−	1999 03 20	704	1.1+	1.5+
1990 10 16	801	1.4+	0.0	1993 02 22	691	0.2−	0.4−	1999 03 20	704	0.0	0.8+
1990 10 17	801	(3.2+	2.4−)	1993 02 22	691	0.5−	0.6−	1999 03 20	704	1.5+	0.5+
1990 10 17	801	1.5+	0.0	1998 02 06	327	0.9+	0.7−	1999 03 20	704	1.0+	1.1+
1990 10 20	809	1.6−	0.4−	1998 02 06	327	0.7+	0.8−	1999 03 20	704	(1.0+	2.8+)
1990 10 20	809	1.8−	0.8+	1998 02 06	327	1.7−	0.3+				
1990 10 20	809	1.2−	0.8+	1999 03 19	704	0.4+	0.7−				

1990 UB$_4$ = 1987 BS$_3$ = 1994 PH$_{31}$

Id. B. G. Marsden (*MPC* 24564), G. V. Williams, A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	279.02105		(2000.0)		**P**	**Q**	
n	0.21856136	ω	240.56536		+0.40114822	−0.91583582	
a	2.7295253	Ω	185.87180		+0.88958506	+0.39419143	
e	0.1299810	i	10.14723		+0.21844570	+0.07653665	
P	4.51	H	14.4	G	0.15	U	2

Residuals in seconds of arc

1987 01 30	010	0.4+	1.8+	1990 10 24	809	0.3−	0.2−	1994 09 05	809	(0.1−	3.1+)
1987 01 30	010	(0.2−	3.2+)	1990 10 24	809	1.1−	0.2+	1997 04 09	809	(0.8−	2.8−)
1987 01 31	010	(0.1+	2.8+)	1994 08 12	809	1.1−	0.2−	1997 04 09	809	1.5−	1.7−
1990 10 16	809	0.4+	0.3+	1994 08 12	809	1.5−	0.0	1997 04 09	809	(2.3−	2.7−)
1990 10 16	809	0.3−	0.8−	1994 08 12	809	1.4−	0.4+	1997 04 10	809	(2.4+	1.5+)
1990 10 16	809	1.6−	0.4−	1994 08 13	809	1.2+	1.8+	1997 04 10	809	1.0+	0.8+
1990 10 20	809	0.8+	1.7−	1994 08 13	809	0.8+	1.8+	1997 04 10	809	0.4+	1.0+
1990 10 20	809	0.4+	0.6−	1994 08 13	809	1.2+	1.3+	1998 06 25	704	0.4+	1.0−
1990 10 20	809	1.2+	0.4−	1994 09 05	809	(0.6+	3.5+)	1998 06 25	704	1.3−	0.7−
1990 10 24	809	0.6+	0.3+	1994 09 05	809	(1.0+	3.8+)	1998 06 25	704	1.1+	1.4−

1990 WK_2 = 1985 QH_1 = 1996 BZ_2

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

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	279.60795		(2000.0)		**P**	**Q**	
n	0.21950324	ω	138.71786		+0.37813001	−0.90223256	
a	2.7217115	Ω	288.12616		+0.78177217	+0.43117116	
e	0.1871051	i	12.60201		+0.49583259	+0.00823583	
P	4.49	H	13.5	G	0.15	U	2

Residuals in seconds of arc

1985 08 16	675	(55.9−	1.6+)	1990 12 17	675	(2.9+	1.9−)	1998 06 16	426	1.4−	1.2−
1985 08 16	675	(53.4−	2.8+)	1990 12 17	675	0.2−	0.9−	1998 06 16	426	0.5−	1.0−
1985 08 17	675	1.1−	0.2+	1996 01 18	399	0.1−	0.4+	1998 06 16	426	0.9−	0.2−
1985 08 17	675	0.1+	1.3+	1996 01 18	399	0.2−	0.1−	1998 06 17	426	0.1−	0.6+
1990 11 18	675	0.8+	0.2+	1996 01 21	399	0.8−	0.7+	1998 06 17	426	0.0	0.2+
1990 11 18	675	0.1+	0.1−	1996 01 21	399	0.1−	1.6+	1998 06 26	704	0.7+	1.7−
1990 11 19	675	0.2+	0.4−	1996 03 18	801	0.2+	1.6−	1998 06 26	704	1.4+	1.4+
1990 11 19	675	1.1−	0.6−	1996 03 18	801	(0.2+	2.0−)	1998 06 26	704	0.9+	0.2+
1990 12 15	675	(0.4−	3.3−)	1996 03 21	801	0.6+	1.3−	1998 06 26	704	0.9+	1.2−
1990 12 15	675	1.3+	0.3−	1996 03 21	801	0.7+	0.8−				

1990 WF_3 = 1979 WA_7 = 1986 PO_5 = 1999 CD_{133}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	129.62082		(2000.0)		**P**	**Q**	
n	0.27073597	ω	210.27970		+0.99501372	+0.09571169	
a	2.3664940	Ω	144.19456		−0.07916110	+0.92895108	
e	0.2335227	i	2.74845		−0.06067306	+0.35761595	
P	3.64	H	14.8	G	0.15	U	2

Residuals in seconds of arc

1979 11 17	095	0.6−	0.8+	1990 11 19	809	0.6+	0.3−	1999 01 19	104	1.2+	1.0+
1986 08 08	095	0.2+	0.9+	1990 11 19	809	0.4+	0.6+	1999 01 19	104	0.6+	0.2−
1990 11 12	364	0.6−	0.3−	1997 07 13	327	0.6−	0.6−	1999 02 07	691	0.2−	0.2+
1990 11 12	364	1.6+	0.2−	1997 07 13	327	0.2−	0.7−	1999 02 07	691	0.1−	0.1+
1990 11 18	809	1.2−	0.2−	1997 07 13	327	0.5−	0.7−	1999 02 07	691	0.2−	0.1−
1990 11 18	809	0.4−	0.6−	1997 10 30	566	0.1+	0.6+	1999 02 11	691	0.4−	0.3+
1990 11 18	809	1.0+	0.7−	1997 10 30	566	0.4+	0.9+	1999 02 11	691	0.4−	0.0
1990 11 19	809	0.8−	0.4−	1997 10 30	566	0.5+	0.8+				

1990 WO_3 = 1999 FH_{35}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	166.81161		(2000.0)		**P**	**Q**	
n	0.28716131	ω	208.72635		+0.96657138	−0.25556305	
a	2.2753704	Ω	166.03452		+0.24856347	+0.91421085	
e	0.1600830	i	4.91351		+0.06289641	+0.31449333	
P	3.43	H	13.9	G	0.15	U	6

Residuals in seconds of arc

1990 11 12	809	0.1+	0.5−	1990 11 17	809	0.8−	1.2+	1999 03 19	704	1.1+	0.7−
1990 11 12	809	0.1−	0.3−	1990 11 21	809	1.3+	3.8−	1999 03 19	704	1.3−	0.4−
1990 11 12	809	0.0	0.3+	1990 11 22	809	1.1−	0.0	1999 03 19	704	0.5+	0.2+
1990 11 14	809	0.4−	0.0	1990 11 23	809	0.9−	0.4+	1999 03 20	704	0.0	1.4+
1990 11 14	809	1.1+	0.1−	1990 11 23	809	1.2+	1.3+	1999 03 20	704	0.6+	0.1+
1990 11 14	809	0.5−	0.1+	1990 11 23	809	0.1−	0.9+	1999 03 20	704	0.9+	0.2−
1990 11 15	809	0.1−	0.7+	1999 03 19	704	1.0−	1.2−	1999 03 20	704	0.9−	0.9+

1991 GO = 1999 HC

Id. B. G. Marsden

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	349.42428		(2000.0)		**P**	**Q**	
n	0.36892697	ω	88.78036		−0.39407982	−0.91643604	
a	1.9253475	Ω	24.79141		+0.76334824	−0.36855036	
e	0.6530423	i	9.55634		+0.51185990	−0.15593462	
P	2.67	H	19.8	G	0.15	U	4

Residuals in seconds of arc

1991 04 11	400	(4.8−	1.3−)	1999 04 16	704	1.2−	1.1+	1999 04 19	104	1.1+	0.1−
1991 04 11	400	(2.1−	3.4−)	1999 04 17	703	1.2+	0.1−	1999 04 19	104	0.1−	0.6−
1991 04 11	400	1.3+	1.0+	1999 04 17	703	0.3+	0.1−	1999 04 20	860	(2.1+	2.7−)
1991 04 12	675	0.8−	0.3+	1999 04 17	703	0.9+	0.2−	1999 04 20	860	(2.8+	3.1−)
1991 04 12	675	0.3−	0.1−	1999 04 17	703	0.9+	0.1+	1999 04 20	719	1.2−	1.3+
1991 04 13	675	0.6−	0.9−	1999 04 17	703	1.0+	0.0	1999 04 20	719	0.1−	0.5+
1991 04 14	675	0.2+	1.1−	1999 04 17	703	0.6+	0.4−	1999 04 20	719	0.5−	0.6+
1991 04 14	675	1.2−	1.2−	1999 04 17	703	0.8+	0.2−	1999 04 20	719	0.2−	0.0
1991 04 18	413	0.3+	0.8−	1999 04 17	703	1.0+	0.3−	1999 04 20	360	0.4+	0.6+
1991 04 19	801	0.4+	0.4+	1999 04 17	703	0.6+	0.3−	1999 04 20	360	0.3+	0.5+
1991 04 19	801	0.4+	0.1+	1999 04 17	703	0.8+	0.6−	1999 04 20	360	0.1−	0.9+
1991 04 19	801	0.1+	1.0−	1999 04 17	046	0.1−	0.4+	1999 04 24	860	(1.7+	2.3−)
1991 04 19	801	0.5−	0.1+	1999 04 17	046	0.0	0.6+	1999 04 24	860	(1.6+	2.4−)
1991 04 19	675	1.7−	0.8−	1999 04 17	046	0.1−	0.3+	1999 04 24	860	(2.3+	3.0−)
1991 04 19	675	0.5+	0.3−	1999 04 17	046	0.2−	0.2+	1999 04 24	385	0.9+	0.2−
1991 04 20	413	0.2−	0.3+	1999 04 18	118	0.8−	0.2−	1999 04 24	385	0.6+	1.3+
1999 04 16	704	0.4−	0.0	1999 04 18	118	0.7−	0.1−	1999 04 25	385	0.3+	0.0
1999 04 16	704	0.9−	0.3+	1999 04 18	118	0.6−	0.0	1999 04 25	385	0.6+	0.1−
1999 04 16	704	1.0−	0.1−	1999 04 19	104	0.6−	0.7−				
1999 04 16	704	0.4−	0.2+	1999 04 19	104	0.0	0.3−				

1991 GP_7 = 1969 UK = 1992 RQ_1

Id. B. G. Marsden (*MPC* 21111), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	270.25438		(2000.0)		**P**	**Q**	
n	0.29564716	ω	81.29366		+0.64496859	−0.76389783	
a	2.2316200	Ω	328.50925		+0.68370899	+0.58954305	
e	0.0937138	i	2.39282		+0.34140523	+0.26248636	
P	3.33	H	14.9	G	0.15	U	2

Residuals in seconds of arc

1969 10 16	095	0.9−	3.5+	1992 09 02	809	0.8+	0.2−	1998 05 24	704	0.2+	0.6+
1991 04 08	809	1.1+	0.4+	1992 09 02	809	0.2−	0.5−	1998 05 24	704	0.0	1.3+
1991 04 08	809	0.4+	0.5+	1992 09 03	809	1.4+	0.0	1998 06 03	704	0.8−	0.9−
1991 04 08	809	0.7−	0.0	1992 09 22	809	0.2−	0.8−	1998 06 03	704	0.6−	0.8+
1991 04 10	809	0.4+	0.8+	1992 09 22	809	1.2−	1.1−	1998 06 03	704	(0.1−	3.1+)
1991 04 10	809	1.6+	0.5−	1992 09 22	809	0.9−	0.9−	1998 06 03	704	0.9−	0.8+
1991 04 10	809	0.5+	0.0	1992 09 23	809	0.4+	1.1+	1998 06 03	704	0.7+	1.7−

1991 04 19	809	0.6−	0.1−	1992 09 23	809	1.3−	0.9+	1998 06 18	704	0.6+	0.6+
1991 04 19	809	1.1−	0.1−	1992 09 23	809	0.6−	0.8+	1998 06 18	704	(0.5−	2.6+)
1991 04 19	809	1.3−	0.1+	1998 05 24	704	0.4+	0.4−	1998 06 18	704	0.7−	0.6+
1992 09 02	809	1.8+	0.1−	1998 05 24	704	0.7+	1.0+	1998 06 18	704	1.1+	0.0

1991 GO_8 = 1999 FL_{50}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	292.16165		(2000.0)		**P**	**Q**	
n	0.23803145	ω	271.56902		−0.55790774	+0.82945004	
a	2.5785753	Ω	324.47508		−0.74142999	−0.51300047	
e	0.0892944	i	2.70428		−0.37285455	−0.22100486	
P	4.14	H	15.1	G	0.15	U	6

Residuals in seconds of arc

1991 04 08	809	0.8−	1.4+	1991 04 15	675	0.4+	0.6−	1999 03 20	704	0.6−	0.1+
1991 04 08	809	0.7+	1.0+	1991 04 19	809	1.4−	0.7+	1999 03 20	704	0.2+	0.5−
1991 04 08	809	0.3+	1.4+	1991 04 19	809	0.0	0.7−	1999 03 23	704	0.3−	1.2+
1991 04 10	809	0.0	0.7−	1991 04 19	809	1.0−	0.0	1999 03 23	704	0.9−	0.6+
1991 04 10	809	0.6+	1.4−	1999 03 20	704	0.3+	0.2+	1999 03 23	704	1.6+	1.7−
1991 04 10	809	0.3+	1.8−	1999 03 20	704	0.2−	0.6+	1999 03 23	704	0.6−	0.9−
1991 04 15	675	1.0+	0.8+	1999 03 20	704	0.5+	0.2+				

1991 LL_2 = 1990 EF_9 = 1998 SP_{138}

Id. G. V. Williams (*MPC* 32924), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	86.34357		(2000.0)		**P**	**Q**	
n	0.17419646	ω	89.21461		+0.52002075	+0.85397998	
a	3.1752396	Ω	212.13774		−0.79598479	+0.47719460	
e	0.1367937	i	1.85533		−0.30981710	+0.20737288	
P	5.66	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1990 03 02	809	1.0−	0.3−	1991 06 08	809	1.3+	0.7+	1998 10 10	699	0.1+	1.2+
1990 03 02	809	0.3+	0.1+	1998 09 26	704	0.5−	1.1+	1998 10 10	699	0.8+	1.3+
1990 03 02	809	0.4+	0.2−	1998 09 26	704	0.9−	1.1−	1998 10 17	699	1.3+	0.2+
1991 05 18	809	0.1+	1.2−	1998 09 26	704	0.0	0.3−	1998 10 17	699	0.2−	1.5+
1991 05 18	809	1.0−	1.6−	1998 09 26	704	0.7−	1.6−	1998 10 17	699	0.1−	0.8+
1991 05 18	809	1.5−	0.7−	1998 09 27	704	0.3+	0.3−	1998 11 11	704	0.9+	0.5−
1991 06 06	809	0.5+	0.1+	1998 09 27	704	1.4−	0.8−	1998 11 11	704	1.7+	0.3+
1991 06 06	809	0.3−	0.6+	1998 09 27	704	0.5−	0.4−	1998 11 11	704	0.0	1.5−
1991 06 06	809	0.4−	0.5+	1998 09 27	704	1.2−	0.7−	1999 01 20	691	1.8+	0.4−
1991 06 08	809	0.7+	0.1−	1998 09 27	704	1.1−	0.4−	1999 01 20	691	0.9+	0.6−
1991 06 08	809	0.5+	0.1+	1998 10 10	699	0.3+	0.3+				

1991 NM = 1998 WJ_{21}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	129.77850		(2000.0)		**P**	**Q**	
n	0.17776535	ω	28.80898		+0.13041377	+0.95453865	
a	3.1325978	Ω	249.77480		−0.95559263	+0.04895511	
e	0.2090153	i	16.59822		−0.26426306	+0.29403973	
P	5.54	H	12.8	G	0.15	U	5

Residuals in seconds of arc

1991 07 10	675	0.4+	0.4−	1991 07 18	675	0.5−	0.6−	1998 11 20	699	0.6−	0.1+
1991 07 10	675	0.3+	0.6−	1998 11 18	704	0.5+	1.2+	1998 11 20	699	0.5−	0.9+
1991 07 11	675	0.8+	0.5−	1998 11 18	704	0.1+	0.2−	1998 11 21	704	0.7−	0.8+
1991 07 11	675	1.4+	0.2−	1998 11 18	704	1.4+	0.7−	1998 11 21	704	0.2+	0.4−
1991 07 14	675	0.4−	0.2+	1998 11 18	704	0.1−	1.6−	1998 11 21	704	0.6−	0.0
1991 07 14	675	1.6−	1.6+	1998 11 18	704	0.1−	0.7−	1998 11 21	704	(3.4−	1.2+)
1991 07 18	675	0.5−	0.3+	1998 11 20	699	0.4+	0.7+				

1991 PA_2 = 1976 YP_5 = 1988 AL_3 = 1989 CS_6 = 1989 EP_7 = 1998 YN_{10}

Id. B. G. Marsden (*MPC* 33679), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	11.18491		(2000.0)		**P**	**Q**	
n	0.18047706	ω	346.95865		+0.10042503	−0.99373757	
a	3.1011400	Ω	97.26197		+0.91721988	+0.07338697	
e	0.1456324	i	2.83103		+0.38551589	+0.08426148	
P	5.46	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1976 12 18	095	0.2+	0.9−	1998 12 15	704	1.0−	0.2−	1999 01 07	046	0.0	0.5+
1988 01 12	033	0.3+	0.5−	1998 12 28	046	0.5+	0.7−	1999 01 12	046	0.3−	0.6+
1988 01 12	033	0.2−	1.1−	1998 12 28	046	0.1−	0.5+	1999 01 12	046	0.6−	0.6+
1989 02 04	033	0.5+	1.5+	1998 12 28	046	0.2+	0.1−	1999 01 12	046	0.7−	0.2+
1989 02 04	033	0.2−	0.9+	1998 12 28	046	0.2+	0.5+	1999 01 14	046	0.0	0.2+
1989 03 06	033	0.1−	1.2−	1998 12 28	046	1.6+	0.7+	1999 01 14	046	0.2−	0.3+
1989 03 06	033	0.2−	1.0−	1998 12 28	046	0.4−	0.4−	1999 01 14	046	0.1+	0.0
1991 08 02	809	(2.5+	0.1+)	1998 12 28	046	0.1+	0.0	1999 01 16	704	0.6+	0.8−
1991 08 02	809	0.3−	0.7+	1998 12 28	046	0.3+	0.1+	1999 01 16	704	0.5−	0.3−
1991 08 02	809	0.9+	0.0	1998 12 28	046	0.1+	0.0	1999 01 16	704	0.3+	0.3+
1991 08 07	809	0.5+	1.6+	1998 12 28	046	0.4+	0.2+	1999 01 16	704	(3.1+	1.2+)
1991 08 07	809	1.5−	1.0+	1998 12 28	046	0.3+	0.2+	1999 01 16	704	(0.4+	2.1+)
1991 08 07	809	(4.8−	1.8−)	1998 12 29	046	0.4−	0.3+	1999 01 17	046	0.2−	0.7+
1991 08 14	809	0.7+	0.5−	1998 12 29	046	0.1+	0.2+	1999 01 17	046	0.1−	0.3+
1991 08 14	809	0.1+	0.8−	1998 12 29	046	0.0	0.0	1999 01 21	046	0.1+	0.1+
1991 08 14	809	0.6−	0.6−	1998 12 30	046	0.2+	0.1+	1999 01 21	046	0.2−	0.2+
1998 12 15	704	0.1+	0.5−	1998 12 30	046	0.1+	0.0	1999 01 21	046	0.2−	0.1+
1998 12 15	704	0.2+	1.1−	1998 12 30	046	0.0	0.1−	1999 01 23	046	0.1−	0.3+
1998 12 15	704	0.1+	0.9−	1999 01 07	046	0.2−	0.0	1999 01 23	046	0.1+	0.5+
1998 12 15	704	0.5−	0.0	1999 01 07	046	0.1+	0.6+	1999 01 23	046	0.3−	0.3+

1991 PQ_3 = 1999 FF_{44}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	255.27146		(2000.0)		**P**	**Q**	
n	0.21097965	ω	273.28280		−0.02093893	+0.99977026	
a	2.7945315	Ω	355.50972		−0.89248090	−0.02075626	
e	0.0585755	i	3.35394		−0.45059894	−0.00534743	
P	4.67	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1991 08 02	809	1.9+	0.7−	1991 08 14	809	0.6−	0.5+	1999 03 20	704	0.5−	0.4+
1991 08 02	809	0.2+	0.5−	1996 09 14	566	0.5−	0.3+	1999 03 23	704	0.1−	0.7+
1991 08 02	809	0.4+	0.4−	1996 09 14	566	0.1−	0.9+	1999 03 23	704	0.1+	1.2+
1991 08 07	809	0.1−	0.1+	1996 09 14	566	0.0	0.0	1999 03 23	704	1.6+	0.4−
1991 08 07	809	0.1+	1.0+	1999 03 20	704	0.1−	0.6+	1999 03 23	704	1.5+	0.5−
1991 08 07	809	0.6−	0.3+	1999 03 20	704	0.2+	1.2+	1999 03 23	704	0.0	0.9−
1991 08 14	809	0.5−	0.2+	1999 03 20	704	0.7−	0.6−				
1991 08 14	809	0.8−	0.5−	1999 03 20	704	1.2−	0.3−				

1991 PR_{16} = 1970 LL = 1997 GG

Id. G. V. Williams (*MPC* 29614, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	70.48385		(2000.0)		**P**	**Q**	
n	0.28782300	ω	187.47065		+0.82837427	+0.55993278	
a	2.2718817	Ω	138.46416		−0.51265719	+0.76963070	
e	0.1957712	i	1.42352		−0.22578458	+0.30682872	
P	3.42	H	14.9	G	0.15	U	2

Residuals in seconds of arc

1970 06 04	805	0.6+	1.4+	1998 09 14	699	0.3−	0.1−	1998 11 10	704	0.2+	0.5+
1991 08 07	675	1.5+	1.3−	1998 09 14	699	0.1+	0.4+	1998 11 10	704	0.0	0.7+
1991 08 08	675	0.4+	1.3−	1998 09 14	699	0.0	0.0	1998 11 10	704	0.9−	0.3+
1991 09 13	675	0.4+	0.5−	1998 09 20	809	(2.9+	3.1+)	1998 11 11	704	1.2−	1.7+
1991 09 13	675	1.3−	0.3−	1998 09 20	809	(1.9+	2.9+)	1998 11 11	704	0.4−	1.0+
1991 09 16	675	0.1−	0.4−	1998 09 20	809	(2.2+	2.8+)	1998 11 11	704	0.1−	0.6+
1991 09 16	675	0.2+	0.2−	1998 09 21	809	(2.7+	2.1+)	1998 11 11	704	1.0−	0.5+
1997 03 10	809	0.1+	1.9−	1998 09 21	809	(2.1+	2.2+)	1998 11 11	704	0.4−	0.1+

1997 03 10	809	0.4−	1.5−	1998 09 21	809	(1.4+	2.7+)	1998 11 16	566	0.9+	1.2−
1997 03 10	809	(0.2−	2.4−)	1998 10 28	704	0.2+	0.3−	1998 11 16	566	0.8+	0.7−
1997 03 11	809	(0.5+	3.4−)	1998 10 28	704	0.1+	0.7−	1998 11 16	566	1.4+	0.8−
1997 03 11	809	(0.6+	3.8−)	1998 10 28	704	0.2+	0.3−	1998 12 09	699	1.4+	0.2−
1997 03 11	809	(0.0	2.7−)	1998 10 28	704	0.2+	0.2+	1998 12 09	699	0.2+	0.6−
1997 04 04	566	0.5−	0.3−	1998 10 29	704	0.2+	0.5−	1998 12 09	699	0.1+	0.1−
1997 04 04	566	0.6−	0.2−	1998 10 29	704	0.7+	0.5−	1999 01 07	691	0.7−	0.7−
1997 04 04	566	0.4−	0.2−	1998 10 29	704	0.2−	0.3+	1999 01 07	691	0.5−	0.8−
1997 04 05	566	0.4−	0.4−	1998 10 29	704	0.0	0.2+	1999 01 07	691	0.7−	0.7−
1997 04 05	566	0.1+	0.0	1998 10 29	704	0.2+	0.2−				
1997 04 05	566	0.1−	0.6−	1998 11 10	704	0.1−	0.9+				

1991 RE$_2$ = 1957 WX = 1991 RH$_{19}$ = 1995 YB$_{20}$

Id. S. Nakano (d, *MPC* 19822), A. Doppler (*MPC* 31381), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	4.33388		(2000.0)		**P**	**Q**	
n	0.28724906	ω	149.59800		+0.56933249	−0.81817653	
a	2.2749070	Ω	265.58400		+0.73712923	+0.55128874	
e	0.1449867	i	4.61941		+0.36400689	+0.16330307	
P	3.43	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1957 11 26	760	0.3+	0.6−	1998 10 02	704	0.2+	1.2+	1998 11 17	699	0.1+	0.6+
1957 11 26	760	0.1−	0.3+	1998 10 02	704	1.3−	0.3−	1998 11 17	699	0.0	0.6+
1991 09 06	511	0.6+	1.6−	1998 10 02	704	0.6+	0.8+	1998 11 20	704	0.3−	2.3+
1991 09 07	511	1.9+	0.5+	1998 10 02	704	1.1−	0.7−	1998 11 20	704	0.4+	1.3+
1991 09 08	511	1.2+	0.3+	1998 10 12	699	0.7+	0.6+	1998 11 20	704	1.6−	0.6−
1991 09 14	675	0.7−	1.9−	1998 10 12	699	0.8+	0.1−	1998 11 20	704	0.7−	1.7−
1991 09 14	675	0.3−	1.4−	1998 10 12	699	0.7+	0.2+	1998 12 09	704	1.7−	0.7−
1991 09 17	675	0.1−	1.2−	1998 10 28	704	0.3−	0.4−	1998 12 09	704	0.3−	0.2−
1991 09 17	675	0.4−	1.5−	1998 10 28	704	0.4+	0.0	1998 12 09	704	1.2+	0.4−
1995 12 23	691	0.2+	1.0−	1998 10 28	704	0.1−	0.7+	1998 12 09	704	0.7−	0.4+
1995 12 23	691	1.3−	0.1+	1998 10 28	704	0.7+	0.7+	1998 12 09	704	0.9+	0.3−
1995 12 23	691	0.0	0.6−	1998 10 28	704	0.6−	0.1+	1999 01 08	704	0.2+	1.0+
1995 12 29	691	0.1−	1.0−	1998 11 10	704	0.0	0.1+	1999 01 08	704	1.5−	1.0+
1995 12 29	691	0.3−	1.1−	1998 11 10	704	0.5+	1.1+	1999 01 08	704	0.6−	0.8−
1995 12 29	691	0.0	1.0−	1998 11 10	704	0.6−	0.8+	1999 01 08	704	0.2+	0.4−
1998 10 02	704	1.1+	0.7−	1998 11 17	699	0.0	0.4+				

1991 RQ$_3$ = 1999 EH$_4$

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	89.18919		(2000.0)		**P**	**Q**	
n	0.18069888	ω	64.52534		+0.58634336	−0.80920962	
a	3.0986016	Ω	349.33559		+0.65224398	+0.49882122	
e	0.1483638	i	11.58560		+0.48039489	+0.31041453	
P	5.45	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1991 09 12	033	0.1+	0.0	1991 10 04	033	0.1−	0.3+	1999 03 12	691	0.8+	0.1+
1991 09 12	033	0.4+	0.8−	1991 10 05	033	0.5−	0.6−	1999 03 13	691	0.8−	0.1+
1991 09 14	033	0.2−	0.2−	1991 10 05	033	0.5+	0.3+	1999 03 13	691	0.8−	0.2−
1991 09 15	033	0.7−	0.5+	1999 03 12	691	0.9+	0.1−	1999 03 13	691	1.0−	0.1−
1991 09 15	033	0.6+	0.6+	1999 03 12	691	0.8+	0.1+				

1991 RC$_{11}$ = 1991 TL$_4$ = 1999 DH$_6$

Id. G. V. Williams (d, *MPC* 19983), A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	92.14495		(2000.0)		**P**	**Q**	
n	0.18028477	ω	206.66433		+0.66473292	−0.73228067	
a	3.1033447	Ω	202.68197		+0.73547427	+0.67621875	
e	0.1627393	i	22.56456		+0.13117828	−0.08058054	
P	5.47	H	13.6	G	0.15	U	5

Residuals in seconds of arc

1991 09 10	675	0.7+	1.1−	1991 09 17	675	0.6+	0.1+	1999 02 17	704	(5.8−	1.2+)
1991 09 10	675	0.2−	0.7+	1991 10 04	033	0.3−	0.4+	1999 02 19	704	0.0	0.3−
1991 09 13	675	0.6−	0.3+	1991 10 05	033	0.3−	0.3−	1999 02 19	704	1.0−	0.5+
1991 09 13	675	0.3−	1.0+	1991 10 05	033	0.6+	0.2−	1999 02 19	704	0.0	1.6−
1991 09 15	675	0.3−	1.0−	1999 02 17	704	1.0−	1.4+	1999 02 19	704	0.7+	0.1+
1991 09 15	675	0.2−	1.0−	1999 02 17	704	1.2+	0.8+	1999 02 19	704	0.5−	0.4+
1991 09 17	675	0.3+	1.2+	1999 02 17	704	0.6+	1.3−				

1991 RD$_{12}$ = 1979 BT$_2$ = 1989 EY$_9$

Id. G. V. Williams (*MPC* 20641, unpublished), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	121.35325		(2000.0)		**P**	**Q**	
n	0.20643748	ω	284.46055		+0.61970934	−0.78345026	
a	2.8353740	Ω	127.14835		+0.74068786	+0.56421659	
e	0.1167136	i	3.34735		+0.25950305	+0.26050973	
P	4.77	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1953 10 01	675	0.1+	1.0+	1994 03 12	691	0.0	0.1−	1999 03 20	704	0.9+	0.4+
1953 10 01	675	0.4+	0.4+	1998 01 01	104	0.5−	0.7+	1999 03 23	703	0.7−	1.4+
1979 01 27	675	1.7−	0.9+	1998 01 01	596	0.3+	1.0−	1999 03 23	703	0.5+	0.6−
1979 01 29	675	0.0	0.4+	1998 01 01	104	0.4+	0.4+	1999 03 23	703	0.2−	1.8−
1989 03 05	033	0.3+	0.4+	1998 01 01	596	(0.8−	3.2−)	1999 03 23	703	0.4+	2.0−
1989 03 05	033	0.2+	0.0	1998 01 01	108	1.4+	0.7−	1999 04 07	704	0.0	0.7−
1991 08 03	809	(4.1−	1.4+)	1998 01 01	108	0.0	0.8−	1999 04 07	704	1.3−	0.2+
1991 08 03	809	(3.2−	1.4+)	1998 01 01	104	0.1−	1.3−	1999 04 07	704	0.7−	0.5−
1991 08 03	809	(3.2−	2.0+)	1998 01 01	596	1.5−	0.9−	1999 04 07	704	0.9−	0.8−
1991 08 05	809	0.8−	1.5−	1998 01 01	108	0.7+	0.3−	1999 04 07	704	1.0−	1.2−
1991 08 05	809	1.1−	0.1−	1998 01 01	596	0.3+	1.1−	1999 04 12	704	0.8−	0.8−
1991 08 05	809	1.9−	0.0	1998 01 03	426	0.2+	0.8−	1999 04 12	704	(1.5+	2.6−)
1991 09 04	809	1.5+	0.3−	1998 01 03	426	0.1+	0.8−	1999 04 12	704	1.1+	1.0−
1991 09 04	809	0.8+	0.2−	1998 01 03	426	0.2+	1.0−	1999 04 12	704	0.4−	1.1+
1991 09 04	809	1.1+	0.5−	1998 01 06	426	0.1+	0.3−	1999 04 12	704	0.4+	0.3+
1991 09 05	809	0.5+	0.5−	1998 01 06	426	0.5−	0.3−	1999 04 16	704	(1.2−	2.2−)
1991 09 05	809	0.4+	1.9−	1998 01 06	426	0.4−	0.1+	1999 04 16	704	0.1+	1.2−
1991 09 05	809	(0.5+	2.5−)	1999 03 19	704	0.6+	0.6−	1999 04 16	704	0.5−	0.1+
1991 09 06	809	1.1+	1.7−	1999 03 19	704	0.2−	0.7+	1999 04 16	704	1.1−	0.8+
1991 09 06	809	0.2−	1.3−	1999 03 19	704	0.5+	1.9+	1999 04 16	704	(2.2−	2.0−)
1991 09 06	809	0.1+	1.6−	1999 03 19	704	0.5+	1.2−	1999 04 19	704	0.6−	0.8−
1991 09 07	809	(0.1−	2.4−)	1999 03 20	704	1.4+	1.0+	1999 04 19	704	0.5+	0.3+
1991 09 07	809	(2.2−	3.4−)	1999 03 20	704	0.6−	0.1−	1999 04 19	704	1.1+	1.0+
1994 03 12	691	0.2+	0.4−	1999 03 20	704	1.0+	0.6−	1999 04 19	704	0.4+	0.3−
1994 03 12	691	0.0	0.3−	1999 03 20	704	0.9−	0.7+	1999 04 19	704	1.2−	0.6−

1991 RT$_{14}$ = 1989 ER$_7$ = 1998 FS$_{22}$

Id. A. Doppler (*MPC* 33228, unpublished), G. V. Williams, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	151.45351		(2000.0)		**P**	**Q**	
n	0.21378104	ω	260.58732		+0.32628003	−0.94416766	
a	2.7700648	Ω	170.00293		+0.93720451	+0.31681296	
e	0.1048749	i	15.26413		+0.12324386	+0.09042659	
P	4.61	H	14.0	G	0.15	U	3

Residuals in seconds of arc

1989 03 06	033	0.4−	2.9−	1998 03 20	704	0.0	0.1+	1998 03 26	704	0.5−	0.1−
1989 03 06	033	0.4−	2.8−	1998 03 20	704	0.2−	0.7−	1998 03 26	704	(2.4−	1.3−)
1991 09 11	675	1.8+	0.1+	1998 03 20	704	0.3+	0.5−	1998 03 26	704	0.3−	0.7+
1991 09 11	675	1.0−	1.9−	1998 03 20	704	0.5+	0.5−	1998 04 18	704	0.7+	0.6−
1991 09 14	675	(0.7+	2.4−)	1998 03 20	704	1.0+	1.1−	1998 04 18	704	1.7−	0.3+
1991 09 14	675	0.1−	1.6−	1998 03 22	704	0.2−	0.4+	1998 04 18	704	0.2+	0.6−
1991 09 15	675	0.1−	0.8−	1998 03 22	704	0.6−	0.5−	1998 04 18	704	0.1−	1.4+
1991 09 15	675	0.5+	0.9−	1998 03 22	704	1.0+	1.4−	1998 04 29	566	0.3+	0.1−
1991 09 16	675	0.4+	1.4−	1998 03 22	704	(2.4−	1.5+)	1998 04 29	566	0.2+	0.2−
1991 09 16	675	0.3−	1.5−	1998 03 22	704	1.2−	0.2+	1998 04 29	566	0.2+	0.3+

1991 RD$_{16}$ = 1981 QF$_3$ = 1996 CT$_4$

Id. G. V. Williams (*MPC* 26902, unpublished), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

					P	Q
M	71.51592		(2000.0)			
n	0.29851974	ω	216.68502		+0.97991044	−0.19625615
a	2.2172807	Ω	154.56430		+0.19692167	+0.92393710
e	0.2002187	i	4.73891		+0.03158133	+0.32836529
P	3.30	H	15.8	G	0.15	U 1

Residuals in seconds of arc

1981 08 25	809	0.4+	1.0−	1991 09 17	675	0.5−	0.2−	1997 05 27	688	0.6+	0.2+
1981 08 25	809	0.6+	0.9−	1991 09 30	691	0.5−	0.7+	1997 05 27	688	0.4−	0.5+
1981 08 25	809	0.7+	0.0	1991 09 30	691	0.6−	1.0+	1997 05 27	688	0.3−	0.5+
1991 09 07	399	0.0	0.3−	1991 09 30	691	0.6−	0.7+	1997 05 27	688	0.7+	0.2−
1991 09 07	399	1.1−	0.0	1996 02 10	691	0.5−	0.4−	1997 06 08	809	0.1−	0.2−
1991 09 11	675	(3.1+	1.0+)	1996 02 10	691	0.6−	0.4−	1997 06 08	809	0.2+	0.8−
1991 09 11	675	1.2−	0.9+	1996 02 10	691	0.8−	0.4−	1997 06 08	809	0.4+	1.4−
1991 09 14	675	(0.7+	2.5−)	1996 02 16	691	1.0−	0.5−	1997 06 09	809	1.2+	0.0
1991 09 14	675	0.3−	1.5−	1996 02 16	691	1.0−	1.1−	1997 06 09	809	0.3−	0.3−
1991 09 15	675	0.3−	0.9−	1996 02 16	691	0.9−	0.4−	1997 06 09	809	0.1−	0.3+
1991 09 15	675	1.0−	0.6+	1997 05 13	688	0.1−	0.2+	1998 12 22	704	1.2+	0.7+
1991 09 16	675	1.2+	0.3−	1997 05 13	688	0.3−	0.2+	1998 12 22	704	0.3+	0.9−
1991 09 16	675	1.3+	0.7−	1997 05 13	688	0.4−	0.5+	1998 12 22	704	1.3+	0.3+
1991 09 17	675	1.8+	1.1−	1997 05 13	688	0.2−	0.2+	1998 12 22	704	0.8+	0.5+

1991 RR$_{16}$ = 1985 UC$_6$ = 1998 WF$_{20}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	102.79741		(2000.0)			
n	0.15717628	ω	289.02799		+0.67568805	+0.73501572
a	3.4005151	Ω	23.77315		−0.61257435	+0.60249030
e	0.0821601	i	8.06371		−0.41011988	+0.31105839
P	6.27	H	12.4	G	0.15	U 5

Residuals in seconds of arc

1985 10 18	095	0.0	0.0	1998 11 11	704	(3.8−	4.2−)	1998 11 20	699	0.5−	0.3+
1991 09 15	675	0.6+	0.4−	1998 11 18	704	0.6+	0.4+	1998 11 20	699	0.2−	0.1+
1991 09 15	675	0.4+	0.1+	1998 11 18	704	0.3−	0.0	1998 11 21	704	0.1−	1.1+
1991 09 17	675	0.9−	0.2+	1998 11 18	704	1.2−	0.6−	1998 11 21	704	1.3+	1.1−
1991 09 17	675	0.1−	0.1+	1998 11 18	704	0.8−	0.0	1998 11 21	704	(2.0+	1.3−)
1998 11 11	704	0.2+	0.8−	1998 11 18	704	(2.7−	0.4−)	1998 11 21	704	(2.2+	0.2+)
1998 11 11	704	0.4+	0.1+	1998 11 20	699	0.3−	0.4+	1998 11 21	704	0.9+	0.0

1991 RS$_{20}$ = 1999 FP$_{26}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	92.95344		(2000.0)			
n	0.19617970	ω	24.93832		+0.22189071	−0.97412815
a	2.9333688	Ω	52.27040		+0.88527121	+0.18282579
e	0.0965788	i	3.10802		+0.40872901	+0.13284984
P	5.02	H	13.0	G	0.15	U 7

Residuals in seconds of arc

1991 09 13	675	0.7+	1.6+	1991 09 17	675	0.1−	2.0−	1999 03 20	704	0.4−	0.8+
1991 09 13	675	1.1−	0.3−	1991 09 17	675	0.3+	1.7−	1999 03 20	704	0.1−	0.4+
1991 09 14	675	1.2+	0.9−	1999 03 19	704	0.0	0.1+	1999 03 20	704	0.4−	0.3+
1991 09 14	675	0.7−	0.1+	1999 03 19	704	0.6+	0.1−	1999 03 20	704	0.0	0.2−
1991 09 16	675	0.7−	1.6+	1999 03 19	704	0.5+	0.9−	1999 03 23	703	0.5−	0.6+
1991 09 16	675	0.4+	0.0	1999 03 19	704	0.3−	0.3−	1999 03 23	703	0.1+	0.3+
1991 09 16	675	0.4−	0.5+	1999 03 19	704	0.7−	1.3+	1999 03 23	703	0.7+	0.7−
1991 09 16	675	0.3+	0.9+	1999 03 20	704	0.2+	0.2+	1999 03 23	703	0.2+	1.7−

1991 TL$_6$ = 1999 FL$_{47}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	222.13643		(2000.0)			
n	0.20183376	ω	32.17686		+0.63733447	+0.76885593
a	2.8783273	Ω	277.46976		−0.71757187	+0.56773256
e	0.1435512	i	2.98467		−0.28088323	+0.29417733
P	4.88	H	13.6	G	0.15	U 5

Residuals in seconds of arc

1991 09 15	675	0.6−	0.1−	1991 10 08	033	0.3−	0.1+	1999 03 20	704	0.4−	1.1−
1991 09 15	675	0.2−	0.0	1991 10 09	033	0.8−	0.3−	1999 03 23	704	0.2−	0.4−
1991 10 02	033	0.3+	0.1+	1999 03 20	704	1.1+	0.1−	1999 03 23	704	1.3−	0.7+
1991 10 02	033	0.6+	0.4+	1999 03 20	704	0.5−	0.7+	1999 03 23	704	0.3−	1.0+
1991 10 03	033	1.0+	0.0	1999 03 20	704	0.7+	0.0				
1991 10 08	033	0.2−	0.1−	1999 03 20	704	0.9+	0.6−				

1991 UD$_2$ = 1999 FY$_{26}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	33.52382		(2000.0)			
n	0.18529410	ω	106.16305		−0.76274063	−0.63702225
a	3.0471581	Ω	34.49573		+0.49220626	−0.68364991
e	0.0544263	i	11.35304		+0.41947555	−0.35612561
P	5.32	H	12.8	G	0.15	U 4

Residuals in seconds of arc

1991 10 29	399	(2.8+	0.2−)	1999 03 19	704	0.5+	0.3−	1999 03 20	704	0.2−	0.0
1991 10 29	399	0.7+	0.3−	1999 03 19	704	1.9+	0.5+	1999 03 20	704	0.6−	0.0
1991 10 31	399	0.2+	0.6+	1999 03 19	704	0.3+	0.3−	1999 03 23	703	0.0	0.3+
1991 10 31	399	1.2−	0.2−	1999 03 19	704	0.6+	0.2+	1999 03 23	703	0.3+	0.0
1991 11 09	399	1.6+	0.2+	1999 03 19	704	1.3−	0.9+	1999 03 23	703	0.0	0.1+
1991 11 09	399	1.3−	0.4−	1999 03 20	704	0.4−	0.5−	1999 03 23	703	0.5−	0.5−
1995 06 05	413	0.0	1.1−	1999 03 20	704	0.5−	0.1−				
1995 06 05	413	0.0	1.0+	1999 03 20	704	0.2−	0.3−				

1992 CS = 1990 YE$_1$ = 1998 FU$_{13}$

Id. G. V. Williams (*MPC* 31533), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

					P	Q
M	223.45888		(2000.0)			
n	0.16922333	ω	211.66068		+0.96168457	+0.09730589
a	3.2371480	Ω	140.12848		−0.07838088	+0.99345653
e	0.0747207	i	23.56665		−0.26271509	+0.05979697
P	5.82	H	12.9	G	0.15	U 3

Residuals in seconds of arc

1990 12 22	413	0.8−	0.1+	1992 02 25	372	1.1−	0.7−	1998 03 25	704	0.6+	0.0
1990 12 22	413	0.9+	0.4−	1992 02 26	372	0.6−	0.4+	1998 03 25	704	0.3+	1.7+
1992 02 05	372	1.5+	0.8+	1992 02 27	372	0.3+	1.0−	1998 03 25	704	1.0+	0.5+
1992 02 05	372	0.2−	0.7+	1992 02 27	372	0.6−	0.6+	1998 03 25	704	0.6+	0.4−
1992 02 08	372	0.7−	0.2−	1998 01 24	566	0.8−	0.5−	1998 03 25	704	0.7+	1.0−
1992 02 08	372	(0.2+	2.6+)	1998 01 24	566	0.9−	0.2−	1998 03 26	566	0.1+	0.3+
1992 02 13	372	(2.3+	0.5−)	1998 01 24	566	0.8−	0.1−	1998 03 26	566	0.2+	0.4+
1992 02 13	372	(0.8+	2.4+)	1998 03 24	704	0.1+	0.5+	1998 03 26	566	0.2−	0.3+
1992 02 25	691	0.4+	0.2−	1998 03 24	704	0.2−	0.3−	1998 03 27	566	0.2+	0.3+
1992 02 25	691	0.5+	0.4−	1998 03 24	704	0.1−	0.6−	1998 03 27	566	0.0	0.3−
1992 02 25	691	0.9+	0.2−	1998 03 24	704	0.6−	1.2−	1998 03 27	566	0.2−	0.0
1992 02 25	372	0.5−	1.7+	1998 03 24	704	0.2−	0.6−				

1992 DM$_2$ = 1999 CD$_{52}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	287.34307		(2000.0)		**P**		**Q**
n	0.28008287	ω	203.79915		−0.56071061		+0.82535441
a	2.3135471	Ω	32.21135		−0.73832923		−0.46213898
e	0.1735376	i	7.14334		−0.37479803		−0.32437272
P	3.52	H	15.4	G	0.15	U	5

Residuals in seconds of arc

1992 02 25	691	0.1−	0.5+	1997 10 31	704	0.9+	0.3+	1999 02 10	704	1.5+	0.4−
1992 02 25	691	0.9−	0.2+	1997 11 06	704	(2.2−	2.0+)	1999 02 13	704	1.2−	0.4+
1992 02 25	691	0.7−	0.1+	1997 11 06	704	1.0−	0.8+	1999 02 13	704	0.1−	1.5+
1992 02 29	033	0.7+	0.6−	1997 11 06	704	0.2−	0.6−	1999 02 13	704	0.4+	0.4−
1992 02 29	033	0.7+	0.6−	1997 11 06	704	0.7−	1.9−	1999 02 13	704	0.1−	0.3+
1992 03 01	033	1.0+	0.2−	1997 11 06	704	1.0−	1.4+	1999 02 13	704	0.0	0.8+
1992 04 04	809	1.3−	0.4−	1999 02 10	704	0.0	0.6−	1999 02 19	566	0.0	0.5+
1997 10 31	704	1.3+	0.3−	1999 02 10	704	0.1−	0.5−	1999 02 19	566	0.5+	0.1−
1997 10 31	704	(1.1−	2.2−)	1999 02 10	704	0.2−	0.6−	1999 02 19	566	0.1−	0.3+
1997 10 31	704	0.9+	0.0	1999 02 10	704	0.2−	0.4−				

1992 EE_1 = 1999 GV_6

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	314.63759		(2000.0)		**P**		**Q**
n	0.27153726	ω	160.32816		−0.97104565		+0.10447504
a	2.3618361	Ω	28.45376		−0.22962803		−0.65622791
e	0.1841161	i	26.80237		+0.06588869		−0.74729505
P	3.63	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1992 03 10	402	0.5+	1.4−	1992 04 27	675	0.8−	0.1+	1999 02 09	704	0.7+	0.1+
1992 03 10	402	0.6+	0.6+	1992 04 27	675	1.3+	1.6+	1999 02 09	704	0.2−	0.1−
1992 03 11	402	0.7−	0.6−	1992 05 04	801	0.5−	1.1−	1999 02 09	704	0.1+	0.2−
1992 03 11	402	0.4+	0.4+	1992 05 04	801	0.2−	0.6+	1999 04 09	704	0.1+	0.4+
1992 03 12	402	(1.2+	2.7+)	1992 05 05	402	(1.2+	2.5+)	1999 04 09	704	1.5−	0.5+
1992 03 12	402	0.2−	1.1+	1992 05 05	402	(1.4+	2.4+)	1999 04 09	704	0.1+	0.3−
1992 03 12	402	1.6+	0.1+	1992 05 06	801	0.6−	0.1+	1999 04 09	704	(0.7+	2.8−)
1992 03 12	402	(1.2+	2.3+)	1992 05 06	801	0.5−	0.4+	1999 04 09	704	0.9+	0.4+
1992 04 05	402	0.2+	0.6+	1992 06 03	801	0.1−	0.3+	1999 04 10	704	1.2−	0.7+
1992 04 05	402	1.7+	0.9+	1992 06 03	801	0.1+	0.8+	1999 04 10	704	0.2+	0.1+
1992 04 07	675	0.1+	0.2+	1992 07 05	413	0.8−	0.1+	1999 04 10	704	0.1−	0.5+
1992 04 07	675	0.3−	0.8−	1992 07 05	413	0.8−	0.2+	1999 04 10	704	1.2−	0.3−
1992 04 07	402	0.3−	0.7+	1999 01 13	704	0.2+	0.6−	1999 04 10	704	0.1−	0.0
1992 04 07	402	1.5−	0.4−	1999 01 13	704	0.0	1.1+	1999 04 19	704	0.1+	0.9−
1992 04 21	402	0.7+	0.1−	1999 01 13	704	1.5+	1.0−	1999 04 19	704	0.5+	1.5−
1992 04 22	402	1.0−	1.3−	1999 01 13	704	0.8+	0.2−	1999 04 19	704	0.1−	1.8−
1992 04 22	402	2.0+	1.1+	1999 01 13	704	1.3−	0.8+	1999 04 19	704	0.4−	1.1−
1992 04 26	402	0.1+	1.8−	1999 02 09	704	0.0	0.3+	1999 04 19	704	0.9−	0.1+
1992 04 26	402	0.3−	0.7−	1999 02 09	704	0.1+	0.2−				

1992 EW_7 = 1982 VG_8 = 1989 ND

Id. G. V. Williams (*MPC* 23862, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	156.57904		(2000.0)		**P**		**Q**
n	0.25349033	ω	52.92733		+0.38205256		+0.92396917
a	2.4726451	Ω	239.54264		−0.85430107		+0.34576930
e	0.1616052	i	1.18317		−0.35242804		+0.16347650
P	3.89	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1982 11 09	095	0.2−	0.7+	1997 08 24	367	0.4+	0.0	1998 12 17	704	0.1+	0.5−
1989 07 01	675	(2.1+	2.6−)	1997 08 25	367	0.3+	0.2+	1998 12 17	704	0.0	0.2−
1989 07 01	675	(2.2+	2.8−)	1997 08 25	367	0.2+	0.1+	1998 12 17	704	0.1−	0.1−
1989 07 04	675	(4.8+	1.5−)	1997 08 25	367	0.4+	0.4+	1998 12 17	704	0.0	0.3+
1989 07 04	675	(3.6+	1.6−)	1997 08 25	629	0.4−	0.5−	1998 12 17	704	1.1−	0.0
1992 02 04	675	0.3+	0.4−	1997 08 26	629	1.3−	1.0+	1998 12 17	704	1.1+	0.1+
1992 02 25	675	0.1+	0.1−	1997 08 26	629	0.0	1.8−	1998 12 17	704	0.4+	0.3−
1992 02 25	675	0.9+	0.3+	1998 12 15	704	(1.2−	2.8+)	1998 12 17	704	0.2−	0.5+
1992 03 02	809	1.3−	0.8+	1998 12 15	704	0.3+	0.3−	1998 12 17	704	0.2+	1.2−
1992 03 04	809	0.7−	1.3+	1998 12 15	704	0.2−	0.3−	1998 12 17	704	0.4−	0.6−
1992 03 07	809	1.6+	1.0−	1998 12 15	704	0.0	0.2−	1998 12 22	704	1.1−	0.3+
1992 04 06	809	0.5−	0.0	1998 12 15	704	1.1+	0.2+	1998 12 22	704	1.2−	0.5+
1997 08 22	367	0.5−	0.3+	1998 12 16	704	0.2−	1.0+	1998 12 22	704	0.7−	0.1−
1997 08 22	367	0.2−	0.0	1998 12 16	704	1.4+	1.3−	1998 12 22	704	(0.5−	2.5+)
1997 08 23	367	0.5+	0.3+	1998 12 16	704	0.5+	1.0+	1998 12 22	704	1.4−	1.2−
1997 08 23	367	0.3+	0.2+	1998 12 16	704	1.0+	1.8+				
1997 08 24	367	0.3+	0.2+	1998 12 17	704	0.4+	0.2−				

1992 EL_8 = 1990 SN_{29} = 1999 AP_{23}

Id. G. V. Williams (*MPC* 33681), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	150.71490		(2000.0)		**P**		**Q**
n	0.28190249	ω	226.84702		+0.98766172		+0.11892295
a	2.3035808	Ω	126.06849		−0.07971945		+0.94182443
e	0.1444902	i	7.24158		−0.13479297		+0.31436297
P	3.50	H	13.9	G	0.15	U	4

Residuals in seconds of arc

1990 09 17	675	0.0	0.3−	1999 02 10	704	1.5+	0.2+	1999 03 19	704	0.5−	1.0+
1990 09 17	675	0.0	0.3+	1999 02 10	704	0.0	0.2+	1999 03 19	704	3.6−	0.0
1992 03 02	809	0.1+	0.1−	1999 02 10	704	1.9+	0.9+	1999 03 20	704	0.1−	0.4−
1992 03 05	809	0.7−	0.2+	1999 02 10	704	2.0+	2.1+	1999 03 20	704	0.3−	0.4−
1992 03 07	809	0.8+	0.4−	1999 02 13	704	0.6−	0.3−	1999 03 20	704	0.3−	0.2+
1992 04 04	809	0.5−	0.3−	1999 02 13	704	0.2−	0.5+	1999 03 20	704	0.9+	0.2+
1999 01 14	699	1.2−	1.1−	1999 02 13	704	0.1−	0.0	1999 03 20	704	0.6+	0.1+
1999 01 14	699	0.4−	0.5+	1999 02 13	704	0.6−	0.6+	1999 03 23	704	0.5+	0.6+
1999 01 14	699	0.4−	0.2−	1999 02 13	704	0.6+	1.1+	1999 03 23	704	1.5+	1.0−
1999 01 15	699	0.4−	1.3−	1999 02 18	699	0.5+	0.2+	1999 03 23	704	0.0	0.3−
1999 01 15	699	0.2+	0.3−	1999 02 18	699	0.1+	0.3+	1999 03 23	704	1.2−	0.5+
1999 01 15	699	0.4+	1.3−	1999 02 18	699	0.7+	0.2−				
1999 02 10	704	0.0	0.4−	1999 03 19	704	2.0−	2.1−				

1992 EU_{10} = 1999 FJ_{57}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	221.48891		(2000.0)		**P**		**Q**
n	0.28562950	ω	160.02448		+0.54243791		+0.83829883
a	2.2834982	Ω	142.76710		−0.78258199		+0.52799354
e	0.0752501	i	5.20779		−0.30549392		+0.13593341
P	3.45	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1992 02 09	691	1.0−	0.8+	1992 03 06	809	0.7+	0.9+	1999 03 20	704	0.1+	0.2+
1992 02 09	691	0.6−	0.2+	1992 03 08	809	1.9+	0.1−	1999 03 20	704	0.7−	0.7+
1992 02 09	691	0.4−	0.2+	1992 03 09	809	2.8+	1.2−	1999 03 23	704	0.4−	1.2−
1992 02 25	675	1.2+	0.8−	1992 04 06	809	0.6−	0.1−	1999 03 23	704	0.8−	0.6−
1992 02 29	691	1.8−	0.0	1999 03 20	704	0.6+	1.4+	1999 03 23	704	1.3+	0.4−
1992 02 29	691	1.4−	0.0	1999 03 20	704	0.4+	1.0+	1999 03 23	704	0.2−	0.0
1992 02 29	691	1.2−	0.0	1999 03 20	704	0.5−	0.2+	1999 03 23	704	0.3+	1.0−

1992 EU_{13} = 1990 MC_2 = 1999 FZ_{37}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	92.71898		(2000.0)		**P**		**Q**
n	0.28186465	ω	75.85526		+0.83506442		−0.54536659
a	2.3037869	Ω	317.12994		+0.45474370		+0.75831568
e	0.2616353	i	6.10940		+0.30963784		+0.35711708
P	3.50	H	13.1	G	0.15	U	4

Residuals in seconds of arc

1990 06 28	808	0.2−	0.2−	1992 04 04	691	0.1−	0.3−	1999 03 22	699	0.8+	0.2−
1990 06 28	808	0.2+	0.3+	1992 04 04	691	0.3−	0.2−	1999 03 22	699	0.6+	0.4+
1992 02 28	675	0.0	0.2−	1992 04 07	809	1.3−	0.1−	1999 03 23	704	0.1−	0.5−
1992 02 28	675	0.3+	0.9+	1999 03 20	704	0.7−	0.8+	1999 03 23	704	0.8+	0.2−

1992 03 02	809	0.5+	0.3+	1999 03 20	704	0.6−	0.0	1999 03 23	704	0.9−	0.3+
1992 03 05	809	0.5+	0.1−	1999 03 20	704	0.3+	0.1−	1999 03 23	704	0.6−	0.2+
1992 03 09	809	0.4−	1.4−	1999 03 20	704	(3.2−	0.3+)				
1992 04 04	691	0.1−	0.2−	1999 03 22	699	1.1+	0.4+				

1992 EG$_{22}$ = 1974 VY$_2$ = 1998 BJ$_{13}$
Id. G. V. Williams (*MPC* 31231), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5					Doppler
M	262.59169		(2000.0)	**P**	**Q**
n	0.30832517	ω	225.49884	+0.78884824	+0.60807029
a	2.1700183	Ω	96.84736	−0.53528716	+0.75114308
e	0.1749362	i	5.15846	−0.30197038	+0.25697199
P	3.20	H	14.7	G 0.15	U 3

Residuals in seconds of arc

1974 11 09	808	1.3−	0.6+	1998 01 06	691	0.7−	0.2+	1998 01 24	704	0.1−	0.2−
1974 11 09	808	1.2+	0.7−	1998 01 06	691	0.6−	0.1+	1998 01 25	704	1.2−	1.6−
1992 03 01	809	0.4−	0.8+	1998 01 24	704	0.6+	0.0	1998 01 25	704	0.7+	0.3+
1992 03 04	809	0.4−	0.0	1998 01 24	704	0.2+	0.3+	1998 01 25	704	0.8+	0.8+
1992 03 07	809	0.7+	1.0−	1998 01 24	704	0.2−	0.4−	1998 01 25	704	1.0+	0.3−
1998 01 06	691	0.7−	0.1+	1998 01 24	704	0.1+	0.7+	1998 01 25	704	(3.6+	1.9+)

1992 ET$_{23}$
Id. E. Bowell (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5					Williams
M	247.74652		(2000.0)	**P**	**Q**
n	0.28886257	ω	126.21773	+0.31253246	+0.94978058
a	2.2664277	Ω	161.97527	−0.88681132	+0.29758287
e	0.1221651	i	2.87172	−0.34042494	+0.09675377
P	3.41	H	15.0	G 0.15	U 4

Residuals in seconds of arc

1992 02 25	675	1.2+	0.2−	1997 11 29	704	0.4+	0.9−	1999 03 13	691	0.4−	0.8−
1992 02 28	675	0.5+	1.3+	1997 11 29	704	0.9+	0.8−	1999 03 13	691	0.2−	0.4−
1992 03 02	809	0.3−	0.1+	1997 12 05	704	0.9+	1.6+	1999 03 22	699	0.6+	1.1+
1992 03 04	809	0.5−	1.0−	1997 12 05	704	0.7−	0.1+	1999 03 22	699	0.3+	0.6+
1992 03 07	809	0.3−	0.1−	1997 12 05	704	0.7−	0.4+	1999 03 22	699	0.2+	0.3−
1992 04 06	809	0.5−	0.4+	1997 12 05	704	0.9−	0.5+	1999 04 07	699	0.5−	0.1−
1997 11 29	704	0.1+	1.0−	1997 12 05	704	(4.3−	0.4+)	1999 04 07	699	0.2+	0.3−
1997 11 29	704	(1.3+	2.4−)	1999 03 13	691	0.3−	0.5−	1999 04 07	699	0.0	0.2+

1992 EA$_{26}$ = 1998 RA$_{46}$
Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5					Doppler
M	252.81223		(2000.0)	**P**	**Q**
n	0.23790617	ω	156.96865	−0.80940420	−0.58580223
a	2.5794805	Ω	346.92468	+0.50643779	−0.66074547
e	0.1540302	i	10.50277	+0.29729716	−0.46930926
P	4.14	H	15.1	G 0.15	U 5

Residuals in seconds of arc

1992 02 29	809	0.4−	0.1+	1998 09 14	704	1.0−	0.6−	1998 09 26	704	1.2−	0.8−
1992 03 03	809	0.6+	0.1−	1998 09 18	704	0.4+	0.8+	1998 09 26	704	(2.4−	0.0)
1992 03 08	809	0.3−	0.1+	1998 09 18	704	1.7−	0.6−	1998 09 27	704	0.0	1.0−
1992 03 09	809	0.0	0.2−	1998 09 18	704	0.7+	1.7+	1998 09 27	704	1.5+	0.1+
1998 09 14	704	1.0+	0.7+	1998 09 18	704	1.1−	0.5−	1998 09 27	704	0.1−	0.2+
1998 09 14	704	0.0	0.3−	1998 09 26	704	1.0−	1.4+	1998 09 27	704	1.0+	0.6−
1998 09 14	704	1.4+	1.1−	1998 09 26	704	0.2+	0.6+				

1992 EU$_{30}$ = 1997 JH$_{11}$
Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5					Williams
M	223.58207		(2000.0)	**P**	**Q**
n	0.22265462	ω	255.75189	−0.76569910	−0.64191323
a	2.6959691	Ω	244.29660	+0.60615094	−0.69901411
e	0.0369720	i	2.58561	+0.21514163	−0.31516136
P	4.43	H	14.2	G 0.15	U 4

Residuals in seconds of arc

1992 03 01	809	0.6+	0.7+	1997 05 15	595	0.2−	0.1−	1998 08 17	704	(5.0−	2.1−)
1992 03 03	809	0.4+	0.0	1997 05 15	595	(1.5−	3.2−)	1998 08 23	699	0.6−	0.5−
1992 03 09	809	0.5−	0.8−	1998 08 17	704	0.2+	1.1−	1998 08 23	699	0.4+	0.4+
1992 04 07	809	0.8−	0.2−	1998 08 17	704	0.0	0.2−	1998 08 23	699	0.5+	1.0+
1997 05 14	595	0.1−	0.3−	1998 08 17	704	0.9+	0.6+				
1997 05 14	595	0.3+	0.7+	1998 08 17	704	1.3−	0.6−				

1992 GM$_4$ = 1982 VK$_6$ = 1993 TL$_{21}$
Id. E. Bowell (*MPC* 22955), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5					Williams
M	186.96131		(2000.0)	**P**	**Q**
n	0.26714518	ω	127.27557	+0.93935287	+0.33864190
a	2.3876527	Ω	213.02989	−0.33763785	+0.88545898
e	0.1352041	i	5.70688	−0.06014038	+0.31825158
P	3.69	H	14.0	G 0.15	U 2

Residuals in seconds of arc

1982 11 08	095	(2.5−	4.4+)	1993 10 13	675	0.5−	1.4−	1999 03 20	704	0.1+	0.7−
1992 04 04	809	0.0	0.6−	1993 10 22	809	(5.8+	1.2−)	1999 03 20	704	0.8−	0.3−
1992 04 04	809	0.4−	0.2+	1993 10 22	809	2.2+	1.1−	1999 03 20	704	0.8−	0.6−
1992 04 04	809	0.1+	0.4−	1993 10 22	809	2.1−	0.8+	1999 03 20	704	0.2+	0.6−
1992 04 06	809	0.7+	0.6−	1997 12 04	704	1.0+	0.2−	1999 03 23	704	0.5−	1.0−
1992 04 06	809	0.5−	0.7−	1997 12 04	704	1.0+	0.3−	1999 03 23	704	0.1−	0.9+
1992 04 06	809	0.3−	1.0−	1997 12 04	704	1.0+	0.2−	1999 03 23	704	0.5+	0.2+
1992 04 25	809	0.4+	0.2−	1997 12 04	704	0.4+	0.2−	1999 03 23	704	0.2+	0.6−
1992 04 25	809	0.3+	0.2+	1997 12 04	704	0.1+	0.7−	1999 04 06	704	1.2−	2.5−
1992 04 25	809	0.5−	0.3−	1997 12 05	704	0.7−	1.7+	1999 04 06	704	0.8−	1.1−
1993 09 25	095	0.7+	1.0−	1997 12 05	704	0.5−	0.3+	1999 04 06	704	0.2−	0.7−
1993 10 10	675	0.5−	0.9−	1997 12 05	704	0.0	0.0	1999 04 06	704	1.4−	0.4+
1993 10 10	675	0.1−	1.2−	1997 12 05	704	0.2−	0.3+	1999 04 09	699	0.0	0.3−
1993 10 12	809	1.3+	1.0−	1997 12 05	704	0.7−	0.2+	1999 04 09	699	0.9+	0.2−
1993 10 12	809	1.1+	1.4−	1997 12 07	132	0.7−	0.4+	1999 04 09	699	0.6+	0.4+
1993 10 12	809	0.6+	1.3−	1997 12 07	132	1.1+	0.4+				
1993 10 13	675	0.5−	1.2−	1997 12 07	132	1.0−	0.7+				

1992 HA = 1999 GQ$_{20}$
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	296.19515		(2000.0)	**P**	**Q**
n	0.28086226	ω	212.83198	−0.26647781	+0.96033882
a	2.3092651	Ω	41.87648	−0.85566633	−0.19650715
e	0.0775279	i	7.06399	−0.44364930	−0.19782389
P	3.51	H	14.0	G 0.15	U 5

Residuals in seconds of arc

1992 04 21	894	0.4−	0.3−	1992 05 05	894	1.9−	1.4−	1999 04 15	704	0.2−	0.2+
1992 04 21	894	0.8−	1.5−	1992 05 08	809	0.4+	0.4+	1999 04 15	704	0.8+	0.8+
1992 04 22	894	(0.6−	2.7−)	1992 05 08	809	0.1+	0.3+	1999 04 15	704	0.5−	0.8+
1992 04 27	894	1.1+	0.3−	1992 05 08	809	0.3−	0.5+	1999 04 15	704	1.1+	1.1+
1992 04 27	894	0.9−	0.2+	1992 05 10	809	0.0	0.4+	1999 04 15	704	0.6−	0.1−
1992 05 04	809	0.1+	0.2+	1992 05 10	809	0.0	0.4+	1999 04 16	704	1.1+	0.7+
1992 05 04	809	0.6+	0.2+	1992 05 10	809	0.1+	0.4+	1999 04 16	704	0.3−	0.5−
1992 05 04	809	1.4+	0.2−	1999 03 25	699	0.4−	0.1−	1999 04 16	704	0.4+	0.3−
1992 05 05	894	(3.9−	2.1−)	1999 03 25	699	0.6+	0.2+	1999 04 16	704	0.6−	0.8−
1992 05 05	894	(2.3−	0.1−)	1999 03 25	699	0.7−	0.4+	1999 04 16	704	0.3−	1.5−

1992 JR = 1999 GR$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Urata

M	336.31453		(2000.0)	**P**		**Q**	
n	0.27918299	ω	94.66268	−0.84934754		+0.51240867	
a	2.3185159	Ω	116.21048	−0.52272674		−0.78324435	
e	0.2551899	i	8.11676	−0.07324963		−0.35208755	
P	3.53	H	14.0	G 0.15		U 6	

Residuals in seconds of arc

1992 05 02	095	0.3+	0.8−	1992 05 10	372	0.5−	0.4+	1992 05 25	372	0.3−	0.5+
1992 05 03	095	0.5+	0.3−	1992 05 22	372	0.8+	0.3+	1999 04 07	905	0.2−	0.5−
1992 05 04	372	1.3−	0.2−	1992 05 24	372	1.0+	0.5−	1999 04 08	905	0.4+	1.1+
1992 05 04	372	0.4+	0.6−	1992 05 24	372	0.8+	0.1+				
1992 05 10	372	1.3−	0.1+	1992 05 25	372	0.5−	0.5+				

1992 JB$_2$ = 1970 EH$_2$ = 1993 RR$_3$

Id. G. V. Williams (*MPC* 22956, unpublished), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	57.74160		(2000.0)	**P**		**Q**	
n	0.22936945	ω	149.19256	+0.98518590		−0.12301858	
a	2.6430924	Ω	218.44871	+0.08971049		+0.96348133	
e	0.0635926	i	11.07802	+0.14615323		+0.23784482	
P	4.30	H	13.3	G 0.15		U 1	

Residuals in seconds of arc

1970 03 04	805	0.3−	0.9+	1998 08 31	704	0.4+	1.4−	1998 11 23	699	0.3−	0.6+
1970 03 04	805	0.6+	0.4+	1998 08 31	704	0.2+	1.2−	1998 11 23	699	0.2+	0.6+
1970 03 04	805	0.2+	0.7+	1998 10 29	704	0.2−	0.6+	1998 11 24	704	0.8−	0.1+
1992 04 04	809	(0.4−	5.5+)	1998 10 29	704	0.4+	0.0	1998 11 24	704	0.1+	0.5−
1992 04 04	809	(1.1−	4.8+)	1998 10 29	704	0.7−	0.3+	1998 11 24	704	0.4−	0.1+
1992 04 04	809	(1.3−	3.4+)	1998 10 29	704	0.7−	0.2+	1998 11 24	704	0.4+	0.5+
1992 05 02	809	0.8+	0.2+	1998 10 29	704	0.1+	0.1−	1998 11 24	704	1.6+	0.1−
1992 05 02	809	1.5+	0.1+	1998 11 10	704	0.6+	0.3−	1999 01 05	732	0.1+	0.7+
1992 05 02	809	(2.2+	0.1+)	1998 11 10	704	0.8+	1.0−	1999 01 05	732	0.2+	0.5+
1992 05 03	809	0.9−	0.3+	1998 11 10	704	1.1+	0.7−	1999 01 05	732	0.8+	0.9+
1992 05 03	809	0.7−	0.1+	1998 11 10	704	1.1+	1.2−	1999 01 05	732	0.2+	1.0+
1992 05 03	809	0.2−	0.3+	1998 11 10	704	1.2−	1.7−	1999 01 06	732	0.5−	0.7+
1993 08 21	675	1.0+	0.8+	1998 11 18	704	0.3+	0.1−	1999 01 10	699	0.6+	1.3+
1993 08 21	675	0.7−	1.7+	1998 11 18	704	1.0+	0.5−	1999 01 10	699	0.2−	0.5+
1993 08 23	675	1.6−	1.2+	1998 11 18	704	1.4−	1.1+	1999 01 10	699	0.1−	1.3+
1993 08 23	675	(3.6−	0.3−)	1998 11 18	704	0.2−	1.9+	1999 01 15	699	0.3−	0.6+
1993 09 12	675	0.7−	1.1+	1998 11 18	704	0.4+	1.7+	1999 01 15	699	0.2−	0.1+
1993 09 12	675	0.1−	0.3+	1998 11 21	704	0.3−	0.6−	1999 01 15	699	0.2+	0.4+
1993 09 14	675	0.9+	0.4−	1998 11 21	704	0.1−	1.0−	1999 02 04	704	1.3+	1.0−
1993 09 14	675	0.3−	0.4−	1998 11 21	704	0.1−	1.1−	1999 02 04	704	1.1−	1.5+
1998 08 31	704	0.2−	0.4−	1998 11 21	704	0.9−	0.6−	1999 02 04	704	0.2−	0.5−
1998 08 31	704	1.6−	0.4+	1998 11 21	704	0.8−	0.5−	1999 02 04	704	(0.3+	2.1+)
1998 08 31	704	0.6+	1.7−	1998 11 23	699	0.4−	0.6+				

1992 OM$_6$ = 1998 HP$_{20}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	355.61671		(2000.0)	**P**		**Q**	
n	0.29610461	ω	136.90623	+0.46680664		+0.88411566	
a	2.2293210	Ω	160.89181	−0.82764559		+0.44502206	
e	0.1345429	i	3.63641	−0.31159965		+0.14246007	
P	3.33	H	15.4	G 0.15		U 4	

Residuals in seconds of arc

1992 07 26	809	0.3−	0.6−	1998 03 20	704	0.2−	0.4+	1998 04 20	704	0.3+	0.3−
1992 07 26	809	1.6−	0.7+	1998 03 20	704	1.4+	0.8+	1998 04 20	691	0.4−	0.7−
1992 07 30	809	1.0+	0.3+	1998 03 20	704	0.8−	1.4−	1998 04 20	704	(2.9−	1.2−)
1992 07 30	809	0.5+	0.4−	1998 04 19	704	0.1+	0.1+	1998 04 20	691	0.6−	0.0
1992 07 30	809	0.2−	0.3−	1998 04 19	704	0.6−	0.7+	1998 04 20	691	0.4−	0.2−
1992 07 31	809	0.5+	0.2−	1998 04 19	704	0.5+	0.2+	1998 04 22	704	0.5−	0.8−
1992 07 31	809	0.6+	0.2+	1998 04 19	704	0.4−	0.8+	1998 04 22	704	0.2−	0.5+
1992 07 31	809	0.4−	0.1+	1998 04 20	704	0.1+	0.5+	1998 04 22	704	0.3−	0.5+
1998 03 20	704	1.0−	0.7−	1998 04 20	704	1.4+	0.4+	1998 04 22	704	1.0+	1.2−
1998 03 20	704	0.2−	0.3+	1998 04 20	704	0.7+	0.4−	1998 04 22	704	0.1+	0.4+

1992 OM$_8$ = 1991 EE$_8$ = 1999 CF$_{46}$

Id. A. Doppler (*MPC* 34185, unpublished), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	235.93969		(2000.0)	**P**		**Q**	
n	0.24206457	ω	106.19596	+0.11449458		+0.99342054	
a	2.5498535	Ω	170.37742	−0.91722799		+0.10670732	
e	0.0706497	i	0.88204	−0.38155446		+0.04158339	
P	4.07	H	14.5	G 0.15		U 1	

Residuals in seconds of arc

1991 03 09	675	0.3−	1.2−	1997 08 31	910	0.1−	0.1−	1999 02 12	699	0.6+	0.7+
1991 03 09	675	0.3−	0.4−	1997 08 31	910	0.6−	0.1−	1999 02 13	704	1.1+	1.2−
1992 07 22	809	0.0	0.3−	1997 10 30	566	0.4+	0.6+	1999 02 13	704	0.0	0.7+
1992 07 22	809	0.5+	0.2−	1997 10 30	566	0.7+	0.1−	1999 02 13	704	1.9+	0.5+
1992 07 22	809	0.6+	0.2+	1997 10 30	566	0.8+	0.0	1999 02 13	704	0.1−	0.0
1992 07 24	809	0.6−	0.4−	1998 01 27	910	1.1−	0.6+	1999 02 13	704	1.4+	1.8+
1992 07 24	809	0.2−	0.3−	1998 01 27	910	1.1−	0.7+	1999 03 19	704	0.6−	0.6+
1992 07 24	809	0.0	0.3−	1998 01 27	910	0.3−	1.0+	1999 03 19	704	0.9−	0.9+
1992 07 27	809	0.5−	0.6+	1999 02 10	704	1.0−	0.0	1999 03 19	704	0.7+	0.9−
1992 07 27	809	0.3−	0.9+	1999 02 10	704	0.0	0.1+	1999 03 19	704	(2.9−	1.7+)
1992 07 27	809	0.2+	0.9+	1999 02 10	704	1.1+	1.4−	1999 03 20	704	1.6−	1.7+
1992 07 31	809	0.6−	1.3+	1999 02 10	704	0.5−	0.1−	1999 03 20	704	0.6−	1.3+
1992 07 31	809	0.3−	1.1+	1999 02 10	704	1.0−	0.3−	1999 03 20	704	(0.4+	2.1+)
1992 07 31	809	0.0	1.2+	1999 02 12	699	0.7+	0.9+	1999 03 20	704	(2.4−	2.1+)
1997 08 31	910	0.3−	0.3+	1999 02 12	699	0.7+	0.5+	1999 03 20	704	(1.2−	2.2+)

1992 PC = 1989 VG$_2$ = 1995 LB$_1$

Id. G. V. Williams (*MPC* 25640, unpublished), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	324.84303		(2000.0)	**P**		**Q**	
n	0.30216472	ω	158.21289	+0.99587056		+0.08753085	
a	2.1994135	Ω	196.81917	−0.09061113		+0.94195249	
e	0.2163238	i	4.77510	−0.00560879		+0.32413556	
P	3.26	H	15.6	G 0.15		U 2	

Residuals in seconds of arc

1989 11 02	046	0.7+	2.6−	1992 09 30	801	0.1+	0.2+	1998 04 21	704	0.0	0.0
1989 11 02	046	0.3−	2.3−	1992 09 30	801	0.6+	0.7+	1998 04 21	704	0.9+	1.3−
1991 03 09	675	0.4+	0.1+	1992 10 02	801	0.1+	0.2+	1998 04 21	704	1.0+	0.5−
1991 03 09	675	0.7+	0.6+	1992 10 02	801	0.2+	0.2−	1998 04 21	704	0.2−	0.7−
1992 07 30	801	0.3−	0.4+	1995 06 05	327	1.6+	1.4−	1998 05 22	704	1.8−	0.3+
1992 07 30	801	0.1−	0.6+	1995 06 05	327	1.0+	1.2−	1998 05 22	704	0.7+	1.2−
1992 08 02	801	0.3−	0.5+	1995 06 05	327	(0.8+	2.3−)	1998 05 22	704	0.3+	1.7+
1992 08 02	801	0.4−	0.6+	1995 06 06	327	0.2−	1.0−	1998 05 22	704	(3.4−	0.0)
1992 08 03	801	(0.4−	2.2+)	1995 06 06	327	0.1−	0.5+	1998 05 24	704	0.1−	0.2+
1992 08 03	801	0.2−	0.1−	1995 06 06	327	0.4−	0.7−	1998 05 24	704	1.9−	0.4−
1992 08 03	801	0.3−	0.6+	1995 06 06	327	1.3−	0.9−	1998 05 24	704	0.8+	0.6−
1992 08 03	801	0.2−	0.6+	1995 06 06	327	1.1−	1.2−	1998 05 24	704	0.5−	0.9+
1992 09 01	801	0.9+	0.3+	1995 06 06	327	1.7−	1.3−	1998 05 24	704	0.1−	0.6+
1992 09 01	801	0.8+	0.2+	1998 04 21	704	1.2+	1.0+				

1992 RV = 1999 FQ$_{49}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	130.94764		(2000.0)	**P**		**Q**	
n	0.21696280	ω	1.13799	+0.95485190		−0.29411012	
a	2.7429161	Ω	16.15661	+0.27136374		+0.80603803	
e	0.1664199	i	8.66403	+0.12091143		+0.51361653	
P	4.54	H	13.5	G 0.15		U 4	

Residuals in seconds of arc

1992 09 02	033	1.3−	0.5+	1992 09 26	033	0.2−	0.4−	1999 02 18	699	1.7+	1.2+
1992 09 04	033	1.1+	1.3+	1992 09 27	033	0.6+	0.0	1999 02 18	699	0.4−	0.5+
1992 09 04	033	0.1−	0.0	1992 09 27	033	0.5−	0.4+	1999 03 20	704	0.7−	0.1+
1992 09 06	033	0.7+	0.7−	1992 09 28	033	0.4−	0.5−	1999 03 20	704	0.0	1.1−
1992 09 07	033	1.4+	0.5−	1992 09 28	033	0.7−	0.6+	1999 03 20	704	0.3+	1.1−
1992 09 21	033	0.7+	0.7−	1992 10 24	033	1.6+	1.4+	1999 03 20	704	0.8−	1.4−
1992 09 22	033	0.0	0.5−	1992 10 24	033	0.5+	1.1+	1999 03 23	704	0.5−	0.6−
1992 09 23	033	0.1+	1.0−	1992 10 31	033	0.7−	0.6−	1999 03 23	704	0.4+	0.4+
1992 09 24	033	0.1+	1.0−	1992 10 31	033	1.3−	0.1−	1999 03 23	704	1.4−	0.1+
1992 09 26	033	0.4+	0.1−	1992 11 01	033	1.2−	0.9−	1999 03 23	704	0.8−	0.1−
1992 09 26	033	0.3+	0.1−	1999 02 18	699	0.7+	0.7+	1999 03 23	704	0.1+	1.2−

1992 RS_5 = 1996 YP_2

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	222.66919		(2000.0)	**P**	**Q**	
n	0.27829692	ω	42.31437	+0.36028774	−0.93220037	
a	2.3234346	Ω	26.62297	+0.83387844	+0.30523233	
e	0.1140944	i	4.42470	+0.41813813	+0.19451399	
P	3.54	H	15.1	G 0.15	U 4	

Residuals in seconds of arc

1992 09 02	809	0.5+	1.3−	1992 09 23	809	0.1+	0.2+	1996 12 30	411	0.3−	0.4−
1992 09 02	809	1.0−	1.8−	1992 09 23	809	0.2−	0.5+	1997 01 03	411	0.1−	0.4−
1992 09 02	809	0.3−	0.9−	1992 09 23	809	0.1−	1.0+	1997 01 03	411	0.1−	0.2−
1992 09 03	809	(2.3−	2.5−)	1996 12 29	411	0.5+	0.4+	1998 05 01	704	1.1−	0.1−
1992 09 22	809	0.5+	0.9+	1996 12 29	411	0.2+	0.4+	1998 05 01	704	1.2+	1.5−
1992 09 22	809	0.4+	0.7+	1996 12 29	411	0.0	0.6+	1998 05 01	704	0.3+	0.0
1992 09 22	809	0.1+	0.7+	1996 12 30	411	0.1−	0.8−	1998 05 01	704	0.3−	1.5+

1992 RM_7 = 1993 YQ = 1998 XF_{12}

Id. G. V. Williams (*MPC* 22957), M. E. Sansaturio, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	18.44051		(2000.0)	**P**	**Q**	
n	0.18125377	ω	345.78085	+0.62626913	−0.77877624	
a	3.0922743	Ω	65.43089	+0.71908526	+0.55920699	
e	0.1569730	i	2.26732	+0.30117000	+0.28424482	
P	5.44	H	14.1	G 0.15	U 1	

Residuals in seconds of arc

1992 09 02	809	(3.2−	0.3−)	1994 01 12	589	0.0	0.2+	1998 11 24	704	0.2−	0.2−
1992 09 02	809	(3.2−	0.9−)	1994 01 12	589	0.1−	0.1+	1998 11 24	704	0.3+	0.6+
1992 09 02	809	(4.8−	1.2−)	1994 01 12	589	0.0	0.5+	1998 11 24	704	0.7+	0.3−
1992 09 03	809	(3.4−	0.4+)	1994 01 12	589	0.4−	0.1+	1998 11 25	699	0.4+	0.2+
1992 09 22	809	(0.3+	2.8+)	1994 01 12	589	0.0	0.1+	1998 11 25	699	0.5+	0.6−
1992 09 22	809	(0.5−	2.8+)	1994 01 15	589	0.3−	0.2+	1998 11 25	699	1.3+	0.3−
1992 09 22	809	(1.4−	2.0+)	1994 01 15	589	0.1+	0.1+	1998 12 04	327	1.6−	0.1−
1992 09 23	809	0.2−	1.7+	1994 01 15	589	0.4−	0.7+	1998 12 04	327	0.7−	0.7−
1992 09 23	809	0.5−	0.9+	1994 01 29	589	0.3−	0.3+	1998 12 04	327	0.9−	0.8−
1992 09 23	809	0.7−	0.5+	1994 01 29	589	0.5+	0.1−	1998 12 08	699	0.4−	0.2+
1993 12 18	589	0.8−	0.7+	1994 01 29	589	0.3−	0.5−	1998 12 08	699	0.1+	0.1+
1993 12 18	589	0.1−	0.9+	1994 01 30	589	0.2+	0.2+	1998 12 08	699	0.0	0.2−
1993 12 18	589	0.8−	0.9−	1994 01 30	589	0.1+	0.7+	1998 12 17	704	1.6+	0.3+
1993 12 19	589	0.3+	0.2+	1994 01 30	589	0.2−	1.2+	1998 12 17	704	0.6+	0.6+
1993 12 19	589	0.1−	0.6+	1997 08 01	688	0.0	0.0	1998 12 17	704	1.2−	0.0
1993 12 19	589	0.3+	0.8−	1997 08 01	688	0.1−	0.1+	1998 12 17	704	0.3−	1.1−
1993 12 22	589	0.2−	0.7−	1998 11 20	699	0.2+	1.5+	1998 12 19	691	0.6−	0.1−
1993 12 22	589	0.0	0.3+	1998 11 20	699	0.1+	0.6+	1998 12 19	691	0.5−	0.1+
1993 12 22	589	0.4+	0.1−	1998 11 20	699	0.5+	1.2+	1998 12 19	691	0.5−	0.2−
1993 12 27	589	0.3−	0.4−	1998 11 21	704	0.4+	0.3−	1998 12 25	327	0.1−	0.0
1993 12 27	589	0.7+	0.9−	1998 11 21	704	0.8+	0.7−	1998 12 25	327	0.1−	0.4−
1993 12 27	589	0.4−	0.0	1998 11 21	704	1.6+	1.1−	1998 12 25	327	(1.1−	2.1−)
1994 01 08	589	0.0	0.3+	1998 11 21	704	(2.3+	1.3−)	1999 01 04	327	0.2+	0.1+
1994 01 08	589	1.2+	0.5+	1998 11 21	704	(3.0+	1.5−)	1999 01 04	327	0.4−	0.2−
1994 01 08	589	1.5+	0.8+	1998 11 24	704	0.2+	0.2−	1999 01 04	327	1.7−	1.3−
1994 01 11	589	0.0	0.1+	1998 11 24	704	0.6+	1.1−				

1992 SG_2 = 1999 FR_{23}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	238.88682		(2000.0)	**P**	**Q**	
n	0.23476397	ω	119.20783	+0.34153164	+0.93913084	
a	2.6024462	Ω	170.53480	−0.92169099	+0.34242471	
e	0.1624780	i	13.10083	−0.18396155	+0.02790325	
P	4.20	H	12.8	G 0.15	U 5	

Residuals in seconds of arc

1992 09 21	033	0.5+	0.7−	1992 09 28	033	0.1−	0.3+	1999 03 20	704	0.5+	0.2−
1992 09 22	033	0.6−	1.1+	1999 03 19	704	0.2−	0.5−	1999 03 20	704	0.2−	0.4+
1992 09 23	033	0.3−	0.2+	1999 03 19	704	0.5−	0.1−	1999 03 20	704	0.2+	0.2+
1992 09 24	033	0.0	0.1−	1999 03 19	704	0.2−	0.5−	1999 03 20	704	0.5−	0.1+
1992 09 26	033	0.2+	0.0	1999 03 19	704	0.9−	0.1+				
1992 09 27	033	0.2+	0.8−	1999 03 20	704	1.7+	0.7+				

1992 UB_3 = 1979 VB = 1999 GB_{20}

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	198.48852		(2000.0)	**P**	**Q**	
n	0.22786495	ω	312.36722	+0.98439266	+0.07700788	
a	2.6547138	Ω	43.92414	+0.02056840	+0.84267331	
e	0.1205834	i	13.18599	−0.17477993	+0.53288974	
P	4.33	H	13.0	G 0.15	U 2	

Residuals in seconds of arc

1979 11 12	046	0.3+	0.6−	1992 10 30	877	0.4−	0.5−	1997 12 29	566	0.1−	0.0
1979 11 12	046	(6.0+	0.2+)	1992 11 17	877	1.9+	1.8−	1999 04 10	699	0.7+	0.2+
1992 10 21	675	0.8−	0.4+	1992 11 17	877	(0.4+	2.1−)	1999 04 10	699	0.8+	0.5+
1992 10 21	675	0.7−	0.4+	1992 11 18	877	0.2−	0.6+	1999 04 10	699	0.7−	1.0+
1992 10 25	675	1.6−	1.6+	1992 11 18	877	1.5−	0.7+	1999 04 15	704	0.4−	0.1−
1992 10 25	675	0.2−	1.0+	1992 11 21	877	1.1+	1.5+	1999 04 15	704	0.3+	0.6+
1992 10 25	877	1.7+	0.6−	1992 11 21	877	0.6−	1.3+	1999 04 15	704	1.9+	1.1+
1992 10 25	877	1.3−	0.9−	1992 11 27	877	0.9+	0.1−	1999 04 15	704	0.3−	0.7+
1992 10 27	877	1.7−	1.6−	1992 11 27	877	0.2+	0.2+	1999 04 15	704	1.8+	0.6−
1992 10 27	877	0.2+	0.7−	1992 11 29	877	0.2+	1.2+	1999 04 16	704	0.1−	0.3+
1992 10 28	399	0.1−	0.4−	1992 11 29	877	(0.9+	2.7−)	1999 04 16	704	1.2−	0.4−
1992 10 28	399	(3.4−	0.0)	1997 12 29	566	0.0	0.4−	1999 04 16	704	1.1−	1.9−
1992 10 30	877	1.5+	0.3+	1997 12 29	566	0.2−	0.6−	1999 04 16	704	0.5−	0.4+

1992 UL_4 = 1999 DA_7

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	282.67849		(2000.0)	**P**	**Q**	
n	0.23416591	ω	197.65222	+0.25051139	+0.95020391	
a	2.6068754	Ω	87.16715	−0.86433983	+0.30576179	
e	0.0357369	i	10.69507	−0.43607419	−0.06018515	
P	4.21	H	11.9	G 0.15	U 5	

Residuals in seconds of arc

1992 10 26	400	1.5+	1.5+	1999 02 23	704	0.4−	0.6−	1999 02 26	704	0.0	0.3+
1992 10 26	400	1.7−	0.4+	1999 02 23	704	1.4−	0.6+	1999 02 26	704	1.8−	0.1−
1992 10 28	400	0.9+	0.7−	1999 02 23	704	1.9+	0.4−	1999 02 26	704	1.0+	0.2−
1992 10 28	400	0.2−	0.9−	1999 02 23	704	1.4+	0.7+	1999 02 26	704	0.6+	0.5−
1992 11 16	400	1.0+	0.9−	1999 02 23	704	0.7−	0.3+				
1992 11 16	400	1.6−	0.7+	1999 02 26	704	0.7−	0.1−				

1992 WG = 1999 CC_{22}

Id. M. E. Sansaturio, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	67.15620		(2000.0)		**P**		**Q**
n	0.18680358	ω	351.08764		+0.70583280		−0.68695509
a	3.0307207	Ω	53.78014		+0.66241710		+0.55359134
e	0.1357276	i	12.37501		+0.25100527		+0.47077525
P	5.28	H	13.4	G	0.15	U	4

Residuals in seconds of arc

1992 10 25	675	2.3+	0.2−	1998 12 21	704	0.4+	1.4−	1999 02 10	704	0.9−	0.3−
1992 10 25	675	3.1+	0.4+	1998 12 21	704	1.6+	1.2−	1999 02 13	704	0.4+	0.3+
1992 10 27	372	3.7−	1.2−	1998 12 21	704	0.7+	1.3+	1999 02 13	704	0.7+	1.1+
1992 10 27	372	3.4−	0.5+	1999 01 19	704	1.8−	0.3+	1999 02 13	704	1.0+	0.0
1992 11 16	399	0.5−	1.4+	1999 01 19	704	1.3−	0.7−	1999 02 13	704	0.8+	0.2−
1992 11 16	399	0.6+	2.4+	1999 01 19	704	0.7−	0.0	1999 02 13	704	1.5+	0.4+
1992 11 17	400	1.4+	0.7+	1999 01 19	704	1.9−	0.4+	1999 02 18	699	0.3−	0.4+
1992 11 17	400	0.8+	0.8−	1999 02 10	704	0.3−	0.9−	1999 02 18	699	0.4+	1.6+
1992 11 18	399	0.3−	0.9−	1999 02 10	704	0.3+	0.5+	1999 02 18	699	0.8+	0.8+
1992 11 18	399	0.5−	1.7−	1999 02 10	704	0.7−	0.6−				
1998 12 21	704	0.2−	1.6−	1999 02 10	704	0.5−	0.3−				

1992 WN$_3$ = 1978 TV$_7$

Id. T. Urata, S.Nakano

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	136.79484		(2000.0)		**P**		**Q**
n	0.21454028	ω	339.62140		+0.62347077		−0.76565543
a	2.7635256	Ω	71.46819		+0.73846923		+0.51018667
e	0.2196170	i	9.61038		+0.25680223		+0.39176693
P	4.59	H	13.5	G	0.15	U	2

Residuals in seconds of arc

1978 10 02	095	0.5+	0.8−	1993 02 11	385	1.6−	0.4+	1999 03 23	888	0.8+	0.5−
1992 11 23	385	0.4−	0.3+	1998 01 23	385	0.1−	0.5+	1999 04 07	888	1.0+	0.5−
1992 11 23	385	0.8+	0.7+	1998 01 23	385	0.1−	0.4+	1999 04 07	888	0.8−	1.0−
1992 11 24	885	0.7+	0.1−	1998 01 25	886	0.6−	0.3+	1999 04 10	699	0.1−	0.7−
1992 11 24	885	0.6−	0.1+	1998 01 25	886	0.4−	0.8+	1999 04 10	699	0.0	0.2+
1992 11 26	885	0.7+	0.7+	1998 01 26	385	0.1−	0.8+	1999 04 10	699	0.6+	0.6−
1992 11 26	885	0.1−	0.0	1998 01 26	385	0.1+	0.9+	1999 04 12	704	0.4−	0.2−
1992 12 03	885	0.4−	1.1−	1998 02 22	566	0.4+	1.0−	1999 04 12	704	1.3−	0.3+
1992 12 03	885	0.9+	0.4+	1998 02 22	566	0.1−	0.4−	1999 04 12	704	0.3−	0.4−
1992 12 14	385	0.4+	0.1+	1998 02 22	566	0.3+	1.1−	1999 04 12	704	(1.5−	2.3+)
1992 12 14	385	0.0	0.8−	1998 02 23	566	0.2+	0.6−	1999 04 19	704	1.0+	0.7+
1992 12 26	885	1.2−	0.7−	1998 02 23	566	0.3+	0.7−	1999 04 19	704	(2.1−	3.6+)
1992 12 26	885	0.0	0.8−	1998 02 23	566	0.4+	0.8−	1999 04 19	704	0.6−	0.8+
1993 01 17	385	0.5+	0.4+	1998 02 28	699	0.2−	0.6+	1999 04 19	704	1.5−	0.4+
1993 01 17	385	0.1+	0.3−	1998 02 28	699	0.7+	0.3+	1999 04 19	704	0.6−	0.1−
1993 02 08	385	1.0+	1.1−	1998 02 28	699	0.1+	0.9+				
1993 02 11	385	0.9−	0.3+	1999 03 23	888	1.3+	0.2−				

1993 BB$_7$ = 1977 EK$_2$ = 1999 GO$_{17}$

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	40.43692		(2000.0)		**P**		**Q**
n	0.18304808	ω	340.27532		−0.68039291		−0.72808709
a	3.0720334	Ω	152.39967		+0.69422541		−0.67680307
e	0.0497410	i	10.36982		+0.23476918		−0.10875112
P	5.38	H	12.7	G	0.15	U	4

Residuals in seconds of arc

1977 03 12	381	0.4+	0.1−	1993 02 17	809	(3.1+	0.3−)	1999 04 15	704	0.1−	0.5−
1977 03 12	381	0.5−	0.5−	1993 02 17	809	(2.4+	0.1+)	1999 04 15	704	0.7−	0.1+
1993 01 23	809	0.9+	0.2+	1993 02 17	809	1.3+	0.5−	1999 04 15	704	0.4−	0.6−
1993 01 23	809	0.1+	0.3−	1999 03 20	699	0.6+	0.1−	1999 04 16	704	1.2+	0.2−
1993 01 23	809	0.7−	0.6−	1999 03 20	699	0.1+	0.2+	1999 04 16	704	0.0	0.3+
1993 01 28	809	0.0	0.6+	1999 03 20	699	0.2+	0.6+	1999 04 16	704	0.7+	0.1+
1993 01 28	809	0.9−	0.6+	1999 04 15	704	0.1+	0.5−	1999 04 16	704	0.2+	0.7−
1993 01 28	809	0.7−	0.2+	1999 04 15	704	0.3−	0.9+	1999 04 16	704	1.5−	0.6+

1993 FR$_1$ = 1999 GC$_{20}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	274.23279		(2000.0)		**P**		**Q**
n	0.17314653	ω	213.15757		+0.31786043		+0.94284545
a	3.1880627	Ω	75.54734		−0.84587791		+0.32965812
e	0.1005942	i	5.92953		−0.42831684		+0.04866195
P	5.69	H	12.2	G	0.15	U	7

Residuals in seconds of arc

1993 03 23	675	0.4+	1.1−	1993 03 29	399	0.3+	1.1−	1999 04 16	704	0.3−	0.6−
1993 03 23	675	0.6−	1.0+	1993 03 29	399	0.1−	0.7−	1999 04 16	704	0.3+	0.6+
1993 03 25	399	1.8+	0.0	1999 04 15	704	0.0	0.4+	1999 04 16	704	0.1−	0.5+
1993 03 25	399	0.5−	0.6+	1999 04 15	704	0.0	2.4−	1999 04 16	704	1.3−	0.8+
1993 03 26	399	0.4−	0.6+	1999 04 15	704	2.1+	0.2−	1999 04 16	704	0.4−	0.6+
1993 03 26	399	1.0−	0.7+	1999 04 15	704	0.2−	0.3+				

1993 FA$_2$ = 1987 DB$_5$ = 1998 BZ$_{10}$

Id. G. V. Williams (*MPC* 31233, unpublished), A. Gnädig, A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	9.83683		(2000.0)		**P**		**Q**
n	0.17284041	ω	84.46493		−0.99311699		+0.04930804
a	3.1918258	Ω	98.32970		−0.08648023		−0.92043649
e	0.1098078	i	6.16400		+0.07899250		−0.38776975
P	5.70	H	13.1	G	0.15	U	2

Residuals in seconds of arc

1987 02 23	010	1.2+	1.6−	1997 11 28	910	0.1+	0.6+	1998 01 25	704	0.6+	0.3+
1987 02 23	010	1.1−	0.7−	1997 12 31	691	0.0	0.0	1998 01 25	704	0.0	0.5−
1987 02 23	010	1.1−	0.4−	1997 12 31	691	0.2+	0.2−	1999 04 11	699	0.3+	0.1+
1993 02 26	691	0.1−	0.2+	1997 12 31	691	0.3+	0.3−	1999 04 11	699	1.0+	0.0
1993 02 26	691	0.1+	0.0	1998 01 23	704	0.1−	0.0	1999 04 11	699	0.7+	0.2+
1993 02 26	691	0.2+	0.0	1998 01 23	704	0.0	0.2+	1999 04 12	704	0.3−	1.4+
1993 03 23	010	0.7+	0.4+	1998 01 23	704	0.1−	0.2+	1999 04 12	704	0.4+	0.7+
1993 03 23	010	0.0	0.5−	1998 01 23	704	0.0	0.4+	1999 04 12	704	0.8+	1.1+
1993 03 23	010	0.2−	0.5−	1998 01 23	704	0.5−	0.2+	1999 04 16	704	0.2+	0.6−
1993 03 24	675	0.5−	0.4+	1998 01 24	704	0.2+	0.4−	1999 04 16	704	1.2−	1.7−
1993 03 24	675	0.1+	0.2−	1998 01 24	704	0.4+	0.2+	1999 04 16	704	0.3+	0.6−
1993 03 25	010	0.3−	0.1−	1998 01 24	704	0.0	0.4+	1999 04 16	704	0.1−	0.4+
1997 11 24	910	0.4−	0.1+	1998 01 24	704	0.2+	0.2−	1999 04 19	704	0.1+	0.3+
1997 11 24	910	0.4−	0.0	1998 01 24	704	0.4+	0.2−	1999 04 19	704	0.4−	0.3+
1997 11 24	910	0.4−	0.0	1998 01 25	704	0.5−	1.5+	1999 04 19	704	0.2−	0.0
1997 11 28	910	0.3−	0.6+	1998 01 25	704	0.2+	0.0	1999 04 19	704	0.3−	0.4+
1997 11 28	910	0.2−	0.3+	1998 01 25	704	0.4+	0.2−	1999 04 19	704	0.4−	0.1+

1993 FP$_{19}$ = 1998 FJ$_{134}$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	77.90965		(2000.0)		**P**		**Q**
n	0.18373952	ω	347.86665		−0.72940448		−0.68044921
a	3.0643215	Ω	148.88506		+0.63847565		−0.71411374
e	0.0911686	i	7.83145		+0.24559715		−0.16440936
P	5.36	H	14.8	G	0.15	U	3

Residuals in seconds of arc

1993 03 17	809	0.2−	0.1+	1996 12 05	691	0.1+	0.2−	1998 03 20	704	0.5−	0.2+
1993 03 18	809	0.8+	0.9+	1996 12 05	691	0.1+	0.0	1998 03 20	704	1.5+	0.2−
1993 03 23	809	0.6+	0.9+	1996 12 05	691	0.2+	0.2+	1998 03 20	704	0.1+	1.7−
1993 04 16	413	0.9−	0.7−	1998 02 24	566	0.4−	0.6+	1998 03 20	704	1.0+	0.2+
1996 11 18	691	0.0	0.2+	1998 02 24	566	0.0	0.0	1998 03 21	691	0.6−	0.1−
1996 11 18	691	0.1−	0.2+	1998 02 24	566	0.8−	0.4+	1998 03 21	691	0.7−	0.2−
1996 11 18	691	0.5−	0.2+	1998 03 20	704	1.3+	0.9−	1998 03 21	691	1.0−	0.6+

1993 FR$_{23}$ = 1977 TA$_4$ = 1984 WG$_2$

Id. G. V. Williams (*MPC* 23525, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	50.49310		(2000.0)		**P**	**Q**	
n	0.28389298	ω	23.27431		+0.91950271	−0.39308359	
a	2.2928006	Ω	359.87140		+0.34093343	+0.79782821	
e	0.2056784	i	6.37743		+0.19565062	+0.45711644	
P	3.47	H	14.1	G	0.15	U	2

Residuals in seconds of arc

1977 10 13	330	0.3+	1.0−	1996 04 08	327	0.5−	0.3+	1998 11 16	704	2.2+	0.8−
1984 11 20	675	0.3−	0.4+	1996 04 08	327	0.7−	0.3−	1998 11 16	704	0.6−	1.4+
1984 11 21	675	0.4+	1.0+	1996 04 08	327	1.0−	0.4−	1998 12 14	704	0.3+	0.6+
1989 03 09	675	1.6−	0.8−	1998 08 28	704	1.2+	0.1−	1998 12 14	704	0.4+	0.2+
1989 03 09	675	0.6−	0.6−	1998 08 28	704	1.9−	0.2−	1998 12 14	704	0.8+	0.6−
1993 03 21	809	0.2−	0.9−	1998 08 31	704	0.8−	0.6−	1998 12 14	704	0.2−	0.4+
1993 03 22	809	0.1+	0.3−	1998 08 31	704	0.8−	1.4−	1998 12 14	704	0.8−	0.1−
1993 03 26	809	0.9+	1.3−	1998 08 31	704	0.9+	0.7−	1998 12 17	704	0.4−	1.0+
1993 03 27	809	1.0+	1.3−	1998 08 31	704	0.5−	0.5−	1998 12 17	704	1.2−	2.0+
1993 04 16	413	0.3−	3.6+	1998 08 31	704	0.5−	0.2+	1998 12 17	704	0.7−	1.8−
1996 02 14	098	1.2−	0.9−	1998 09 29	704	0.1−	0.8−	1998 12 17	704	1.7−	0.7+
1996 02 14	098	0.5−	1.1−	1998 09 29	704	0.4+	1.0+	1998 12 17	704	1.1−	0.8+
1996 02 15	098	0.7−	1.1+	1998 09 29	704	0.6−	0.3−	1999 01 21	610	1.4+	0.6+
1996 02 15	098	0.5−	0.4+	1998 09 29	704	2.5+	2.2−	1999 01 21	610	1.1+	0.3+
1996 02 19	691	1.1+	0.7+	1998 09 29	704	0.6+	0.3+	1999 01 21	610	0.8+	0.1−
1996 02 19	691	0.7+	0.2+	1998 11 11	704	1.3−	1.4−	1999 01 21	610	0.6+	0.4−
1996 02 19	691	0.3+	0.1+	1998 11 11	704	1.4+	0.4−	1999 01 21	610	0.3+	0.8−
1996 02 24	098	1.0+	0.4+	1998 11 11	704	1.7−	1.0+	1999 03 11	704	0.7+	0.9+
1996 02 24	098	0.7+	0.0	1998 11 11	704	2.0−	1.0−	1999 03 11	704	2.1+	1.6−
1996 04 06	327	0.2−	0.1+	1998 11 16	704	1.6+	1.0+	1999 03 11	704	0.3−	0.2−
1996 04 06	327	0.2−	0.1+	1998 11 16	704	0.8+	1.3+	1999 03 11	704	0.6−	1.2−

1993 FH$_{27}$ = 1995 WR$_6$

Id. T. Kobayashi, A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	286.25462		(2000.0)		**P**	**Q**	
n	0.21713281	ω	22.50207		+0.99858628	−0.03967885	
a	2.7414842	Ω	339.67631		+0.01765929	+0.87526298	
e	0.1426125	i	5.84487		+0.05013567	+0.48201690	
P	4.54	H	13.4	G	0.15	U	5

Residuals in seconds of arc

1993 03 21	809	1.5−	2.2+	1995 11 24	595	0.3−	0.9+	1995 11 28	587	0.9−	0.8−
1993 03 22	809	1.4+	1.1+	1995 11 24	587	0.1+	0.8−	1995 11 29	587	0.2+	0.2+
1993 03 26	809	0.7+	1.3−	1995 11 24	587	0.5+	0.9−	1995 11 29	587	0.4+	0.1+
1993 04 17	413	0.7−	2.1−	1995 11 25	587	0.7−	1.3−	1995 12 10	587	0.7+	1.4−
1995 11 24	595	0.7+	0.3+	1995 11 28	587	1.6−	2.8+	1995 12 10	587	1.1+	0.7+

1993 FV$_{44}$ = 1994 LV$_7$ = 1999 GP$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	232.32147		(2000.0)		**P**	**Q**	
n	0.16892466	ω	279.11509		+0.79353815	+0.60840342	
a	3.2409626	Ω	43.41194		−0.55126315	+0.72704050	
e	0.1373522	i	0.99522		−0.25769389	+0.31820967	
P	5.83	H	13.3	G	0.15	U	6

Residuals in seconds of arc

1993 03 19	809	0.3−	0.2−	1999 03 23	703	0.1+	0.5+	1999 04 10	699	0.7+	0.1−
1993 03 20	809	0.7−	0.1+	1999 03 23	703	0.3+	0.4−	1999 04 10	699	0.4+	0.4−
1993 03 24	809	0.1−	1.0−	1999 03 23	703	0.5−	0.1+	1999 04 10	699	0.9+	1.2−
1993 04 17	413	1.4+	1.7+	1999 03 23	703	1.5−	0.4+	1999 04 11	691	0.7−	0.1+
1994 06 08	809	1.3−	0.0	1999 04 07	699	1.7+	0.4−	1999 04 11	691	0.6−	0.1+
1994 06 08	809	0.0	0.4+	1999 04 07	699	1.1+	0.3+	1999 04 11	691	0.7−	0.2+
1994 06 08	809	0.7−	0.4−	1999 04 07	691	0.3+	0.2−	1999 04 16	691	0.5−	0.1−
1994 06 09	809	1.1+	0.8+	1999 04 07	699	0.7−	0.3−	1999 04 16	691	0.5−	0.4+
1994 06 09	809	0.6+	0.4−	1999 04 07	691	0.1+	0.2+	1999 04 16	691	0.4−	0.5+
1994 06 09	809	0.3+	0.4−	1999 04 07	691	0.3+	0.2−				

1993 FK$_{81}$ = 1979 QQ$_8$ = 1995 SG$_{14}$

Id. K. Ichikawa (*MPC* 27916), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	33.75650		(2000.0)		**P**	**Q**	
n	0.18488339	ω	13.70406		−0.99396887	+0.10720298	
a	3.0516692	Ω	172.33722		−0.10962670	−0.96597026	
e	0.0420180	i	9.97419		−0.00280510	−0.23539111	
P	5.33	H	12.7	G	0.15	U	2

Residuals in seconds of arc

1979 08 20	095	0.3+	0.9−	1995 09 22	809	(1.8−	4.4−)	1998 03 03	704	0.3−	0.2+
1993 03 18	809	(1.7+	3.2+)	1995 09 22	691	0.2−	0.0	1998 03 03	704	0.2+	0.1+
1993 03 23	809	0.4−	0.5+	1995 09 22	691	0.1+	0.0	1998 03 03	704	0.3−	1.0+
1993 03 23	691	0.0	0.0	1995 09 22	691	0.3+	0.0	1998 03 03	699	0.4−	0.2−
1993 03 23	691	0.2+	0.5−	1995 09 23	809	(0.2−	2.5−)	1998 03 03	699	0.9+	0.4−
1993 03 23	691	0.0	0.6−	1995 09 23	809	(6.0+	1.6−)	1998 03 03	699	0.6+	0.4+
1993 04 16	413	(1.0−	2.2−)	1995 09 24	809	0.6−	1.6−	1998 03 04	704	(3.1−	0.4−)
1995 08 25	809	0.4−	0.5−	1995 09 27	691	0.0	0.3+	1998 03 04	704	(2.5−	1.0−)
1995 08 26	809	0.1+	0.1+	1995 09 27	691	0.3−	0.0	1998 03 04	704	(3.1−	1.4−)
1995 09 01	809	0.4−	0.6−	1995 09 27	691	0.1+	0.1+	1998 03 04	704	(2.6−	1.6−)
1995 09 18	691	0.3−	0.9+	1998 02 24	566	0.3−	0.9−	1998 03 04	704	(3.6−	1.5−)
1995 09 18	691	1.7−	1.6+	1998 02 24	566	0.1−	0.8−	1998 04 22	540	0.1+	0.3+
1995 09 18	691	0.2−	0.4+	1998 02 24	566	0.2−	1.2−	1998 04 22	540	0.3+	0.6+
1995 09 19	809	1.6+	0.1−	1998 03 03	704	0.4−	0.5+	1998 04 23	540	0.1−	0.2+
1995 09 20	809	1.5+	0.1+	1998 03 03	704	0.0	0.5+	1998 04 23	540	0.2+	0.2+

1993 FL$_{81}$ = 1998 SF$_{135}$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	144.90429		(2000.0)		**P**	**Q**	
n	0.26302379	ω	104.83509		−0.29972551	+0.95360947	
a	2.4125299	Ω	147.68067		−0.89431358	−0.27056086	
e	0.1214913	i	3.02038		−0.33221656	−0.13200679	
P	3.75	H	14.7	G	0.15	U	6

Residuals in seconds of arc

1993 03 18	809	(1.7+	3.3+)	1998 09 21	809	0.5−	0.1−	1998 09 27	704	0.2+	0.4+
1993 03 19	809	(2.8+	4.5−)	1998 09 21	809	0.7−	0.4−	1998 09 27	704	0.1+	0.2−
1993 03 23	809	0.1+	1.1+	1998 09 21	809	0.7−	0.2−	1998 09 27	704	0.9−	1.4+
1993 03 23	691	0.0	0.3−	1998 09 26	704	1.0+	0.6+	1998 09 27	704	1.3+	0.7+
1993 03 23	691	0.2+	0.5−	1998 09 26	704	0.2+	1.7−	1998 09 27	704	0.5−	0.1+
1993 03 23	691	0.2+	0.7−	1998 09 26	704	(2.5+	1.1−)				
1993 04 16	413	0.5−	0.7+	1998 09 26	704	0.3+	0.4−				

1993 FD$_{82}$ = 1994 PS$_{18}$ = 1998 QV$_{23}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	102.90036		(2000.0)		**P**	**Q**	
n	0.24228140	ω	91.59488		−0.31269878	+0.94956691	
a	2.5483320	Ω	160.13501		−0.89644962	−0.28692584	
e	0.1305500	i	3.92911		−0.31400248	−0.12647623	
P	4.07	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1993 03 19	809	0.4−	0.3+	1994 08 12	809	1.0−	1.4+	1998 08 17	704	0.1+	0.2−
1993 03 20	809	0.0	0.4−	1994 08 12	809	0.0	2.0+	1998 08 17	704	1.4+	1.4−
1993 03 23	809	(1.3+	2.2+)	1994 08 13	809	1.3+	1.9+	1998 08 17	704	(3.6+	1.1−)
1993 03 24	691	0.2+	0.3+	1994 08 13	809	0.3+	0.4+	1998 08 17	704	1.3+	1.5−
1993 03 24	691	0.4+	0.0	1994 08 13	809	0.1+	1.1+	1998 08 23	704	(1.0+	3.4−)
1993 03 24	691	0.6+	0.1+	1994 09 06	809	0.6−	1.1−	1998 08 23	704	0.7−	0.6−

1993 04 16	413	0.7−	0.2+	1994 09 06	809	0.9−	0.4−	1998 08 23	704	0.3+	0.1+
1994 08 12	809	(1.4+	2.3+)	1994 09 06	809	0.7−	0.1−	1998 08 23	704	1.0−	0.8−

1993 FF$_{82}$ = 1993 HY$_7$ = 1976 SZ$_2$ = 1986 WN$_{10}$

Id. G. V. Williams (*MPC* 24744; d, *MPC* 25961; unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	75.96601		(2000.0)		**P**	**Q**	
n	0.20959252	ω	167.73566		−0.96112947	+0.27333722	
a	2.8068478	Ω	28.22083		−0.25976538	−0.84743338	
e	0.0115590	*i*	4.72445		−0.09355260	−0.45513012	
P	4.70	*H*	13.8	*G*	0.15	*U*	1

Residuals in seconds of arc

1976 09 24	095	0.3+	0.4−	1998 04 21	704	0.4−	0.1+	1998 05 01	704	1.4−	0.3+
1986 11 30	381	(2.1+	0.1+)	1998 04 21	704	0.5−	0.4+	1998 05 01	704	0.5+	0.7−
1986 11 30	381	1.0−	0.6+	1998 04 21	704	1.0−	0.8+	1998 05 01	704	1.0+	1.0−
1986 12 01	381	0.1+	0.5−	1998 04 21	704	(1.0+	2.2+)	1998 05 01	704	0.3+	0.6−
1986 12 01	381	0.1+	0.3−	1998 04 21	120	0.6−	1.5+	1998 05 01	566	0.4+	0.2+
1993 03 19	809	(3.0−	1.5−)	1998 04 21	120	0.3−	1.2+	1998 05 01	566	0.4+	0.4−
1993 03 20	809	(1.5−	2.4−)	1998 04 21	120	0.9−	1.1+	1998 05 01	566	0.2−	0.1+
1993 03 23	809	0.1+	1.1+	1998 04 22	704	0.4+	0.0	1998 05 02	566	0.2+	0.1+
1993 03 24	691	0.1+	0.8−	1998 04 22	704	0.1−	0.1−	1998 05 02	566	0.1+	0.1−
1993 03 24	691	0.2+	0.8−	1998 04 22	704	0.0	0.1+	1998 05 02	566	0.4−	0.4−
1993 03 24	691	0.3+	0.8−	1998 04 22	704	0.1+	0.1−	1998 05 22	699	1.8+	1.5−
1993 04 16	413	(5.5−	11.1+)	1998 04 22	704	0.0	0.2+	1998 05 22	699	1.3+	0.5−
1993 04 17	413	(2.0−	1.9−)	1998 04 25	120	0.6−	0.2−	1998 05 22	699	0.6−	0.3−
1995 09 22	691	0.0	0.1−	1998 04 25	120	0.7+	0.2−	1998 05 26	691	0.3−	0.2+
1995 09 22	691	0.2+	0.1+	1998 04 29	120	0.4−	0.1+	1998 05 26	691	0.7−	0.4+
1995 09 22	691	0.1+	0.1−	1998 04 29	120	1.4+	0.1−	1998 05 26	691	1.0+	0.0
1995 09 27	691	0.2+	0.0	1998 04 30	699	0.9+	0.2−	1998 05 28	691	1.0−	0.5+
1995 09 27	691	0.1−	0.3+	1998 04 30	699	0.1+	0.7−	1998 05 28	691	0.8−	0.4+
1995 09 27	691	0.2+	0.3+	1998 04 30	699	0.4+	0.1−	1998 05 28	691	0.9−	0.6+
1998 04 21	704	0.7−	0.1−	1998 05 01	704	(3.0+	0.5+)				

1993 HJ$_3$ = 1981 YJ

Id. G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	149.16304		(2000.0)		**P**	**Q**	
n	0.19976574	ω	359.29617		−0.24146832	−0.96890267	
a	2.8981579	Ω	104.67595		+0.89060533	−0.24338335	
e	0.0327344	*i*	3.20255		+0.38537670	−0.04463370	
P	4.93	*H*	13.9	*G*	0.15	*U*	2

Residuals in seconds of arc

1981 12 20	801	0.1+	0.8−	1994 07 08	809	0.4+	0.2+	1998 04 20	704	0.6−	0.1−
1993 03 19	809	0.6+	0.7+	1994 07 09	809	0.5−	0.3−	1998 04 20	704	0.6−	1.5+
1993 03 20	809	0.5+	0.8+	1994 07 09	809	0.2−	0.3−	1998 04 20	704	1.2−	0.3+
1993 03 24	809	0.4−	1.5+	1994 07 09	809	0.5+	0.2−	1998 04 21	704	0.5+	0.1−
1993 04 18	413	0.7−	1.4+	1998 03 25	704	0.3+	0.5−	1998 04 21	704	0.2+	0.5+
1993 04 20	691	0.1+	0.3−	1998 03 25	704	0.4+	0.1−	1998 04 21	704	0.4+	0.8+
1993 04 20	691	0.2−	0.3−	1998 03 25	704	0.1+	1.0−	1998 04 21	704	1.2−	0.9+
1993 04 20	691	0.2−	0.1−	1998 03 25	704	0.5+	0.5−	1998 04 21	704	0.4+	1.2−
1993 04 24	691	0.5+	0.2−	1998 03 25	704	1.7−	1.6−	1998 04 22	704	0.5−	0.5−
1993 04 24	691	0.2+	0.3+	1998 03 29	704	0.5+	0.6−	1998 04 22	704	0.8+	1.1−
1993 04 24	691	0.8+	0.1+	1998 03 29	704	0.6+	0.2+	1998 04 22	704	0.3−	1.5−
1993 04 29	691	0.2+	0.6−	1998 03 29	704	0.6+	0.4−	1998 04 22	704	0.4+	1.1−
1993 04 29	691	0.1+	0.1+	1998 03 29	704	0.6−	0.9+	1998 04 22	704	0.3−	0.9−
1993 04 29	691	0.2−	0.0	1998 03 29	704	0.1+	0.3−	1998 05 16	704	(2.3+	1.1+)
1994 07 08	809	0.5−	0.0	1998 04 20	704	0.4−	0.1−	1998 05 16	704	0.1−	0.1−
1994 07 08	809	0.2+	0.1+	1998 04 20	704	1.3−	1.8+	1998 05 16	704	1.7+	1.4+

1993 JD = 1991 XD$_5$ = 1998 QM$_{69}$

Id. G. V. Williams (*MPC* 32454), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	136.30671		(2000.0)		**P**	**Q**	
n	0.23496463	ω	359.81243		−0.72671504	+0.67060814	
a	2.6009643	Ω	223.57142		−0.62997261	−0.73703019	
e	0.1101892	*i*	12.47557		−0.27389736	−0.08409060	
P	4.19	*H*	13.8	*G*	0.15	*U*	3

Residuals in seconds of arc

1991 12 01	809	0.6+	1.1+	1993 05 24	361	0.0	1.0−	1998 08 27	704	1.0−	0.2+
1991 12 01	809	0.6−	0.2+	1993 05 24	361	0.8−	1.8+	1998 08 27	704	0.3−	0.6+
1991 12 01	809	0.1+	0.1−	1993 05 24	361	0.2+	1.2+	1998 09 19	704	0.5+	0.6−
1993 05 14	400	(3.9+	1.0−)	1993 05 25	894	1.2−	0.8−	1998 09 19	704	0.4−	0.0
1993 05 14	400	(4.3+	2.3−)	1993 05 25	894	0.5−	0.8−	1998 09 19	704	0.1+	2.0+
1993 05 14	894	0.2−	0.1−	1993 05 27	361	1.1+	0.1−	1998 09 19	704	0.7−	0.6−
1993 05 14	894	1.1+	0.8−	1993 06 09	894	0.9−	0.2−	1998 09 19	704	1.1+	0.7−
1993 05 16	400	(3.4−	1.3+)	1993 06 09	894	1.2−	0.2−	1998 09 23	704	0.6+	0.4+
1993 05 16	894	0.4+	1.0+	1998 08 24	704	0.1−	0.0	1998 09 23	704	0.2+	0.2+
1993 05 16	894	1.6+	1.0+	1998 08 24	704	0.4+	0.3+	1998 09 23	704	0.2+	0.2−
1993 05 16	400	0.8−	0.6−	1998 08 24	704	0.2+	0.2−	1998 09 23	704	0.1+	0.3−
1993 05 17	675	0.0	0.5+	1998 08 24	704	0.4+	0.2−	1998 09 23	704	0.5−	0.2+
1993 05 17	675	0.7−	0.5−	1998 08 24	704	0.2−	0.9−	1998 12 09	704	1.8+	0.2+
1993 05 19	675	1.3+	0.6+	1998 08 27	704	0.7−	0.3−	1998 12 09	704	0.0	0.5+
1993 05 23	894	(0.1−	2.2+)	1998 08 27	704	0.1−	0.4+				
1993 05 23	894	0.4+	0.0	1998 08 27	704	1.1−	0.2+				

1993 NV = 1979 SQ$_5$ = 1997 EX$_{47}$

Id. G. V. Williams (*MPC* 29919, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	52.18550		(2000.0)		**P**	**Q**	
n	0.20210676	ω	42.39131		+0.30242280	+0.95309145	
a	2.8757347	Ω	245.21538		−0.87818099	+0.27349184	
e	0.0544050	*i*	0.79111		−0.37059223	+0.12968770	
P	4.88	*H*	13.8	*G*	0.15	*U*	1

Residuals in seconds of arc

1979 09 23	095	0.2−	0.1−	1994 10 11	691	0.9−	0.4+	1997 04 01	809	(2.8+	1.7−)
1993 07 12	809	0.2+	0.5−	1994 10 11	691	1.0−	0.5+	1997 04 01	809	(3.5+	2.5−)
1993 07 12	809	0.4+	0.0	1994 10 11	691	0.8−	0.4+	1998 06 20	691	0.7+	0.3+
1993 07 12	809	0.3+	0.2−	1995 12 20	566	1.1+	1.2−	1998 06 20	691	0.9+	0.3+
1993 07 19	809	1.2+	0.8−	1995 12 20	566	0.1+	1.3−	1998 06 20	691	0.7+	0.6+
1993 07 19	809	0.1+	1.0−	1995 12 20	566	0.9+	1.1−	1998 06 30	691	0.9−	0.5+
1993 07 19	809	0.1−	0.3−	1997 03 12	809	0.0	0.4+	1998 06 30	691	0.8−	0.6+
1993 07 23	809	(3.3+	1.4+)	1997 03 12	809	0.4−	1.0+	1998 06 30	691	0.8−	0.4+
1993 07 23	809	(3.3+	2.2+)	1997 03 12	809	0.1+	1.4+	1998 08 17	704	0.1+	0.2+
1993 07 23	809	(3.2+	1.9+)	1997 03 13	809	0.3−	0.4+	1998 08 17	704	0.1−	0.0
1993 07 26	809	(4.2+	0.4−)	1997 03 13	809	0.2−	0.9−	1998 08 17	704	0.4−	1.8−
1993 07 26	809	(3.1+	0.6−)	1997 03 13	809	0.9−	0.5+	1998 08 17	704	0.4−	0.6+
1993 07 26	809	(2.6+	0.1−)	1997 04 01	809	(3.9+	1.5−)	1998 08 17	704	1.3+	0.5−

1993 QS$_2$ = 1999 CE$_{134}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	199.53195		(2000.0)		**P**	**Q**	
n	0.27366797	ω	332.25097		+0.62732331	+0.77864233	
a	2.3495611	Ω	336.59411		−0.70806776	+0.56308955	
e	0.2309735	*i*	1.94399		−0.32419981	+0.27685063	
P	3.60	*H*	16.6	*G*	0.15	*U*	4

Residuals in seconds of arc

1993 08 13	675	0.2+	0.8+	1993 08 17	010	(2.7−	2.3−)	1999 02 07	691	0.0	0.1+
1993 08 13	675	0.5−	0.6+	1993 09 18	010	0.5+	0.0	1999 02 07	691	0.0	0.3−
1993 08 16	010	0.1−	0.7−	1993 09 18	010	0.5−	0.4−	1999 02 12	691	0.1−	0.4+
1993 08 16	010	0.1−	0.1−	1993 09 18	010	0.0	0.6+	1999 02 12	691	0.1+	0.1−
1993 08 16	010	0.4+	0.7−	1999 02 07	691	0.0	0.1−	1999 02 12	691	0.0	0.0

1993 QD$_4$ = 1094 T-1 = 1979 QZ$_3$ = 1986 RJ$_9$

Id. G. V. Williams (*MPC* 22959, unpublished), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	188.87407		(2000.0)		**P**	**Q**	
n	0.28334480	ω	7.96933		+0.99789939	+0.06408048	
a	2.2957568	Ω	348.34387		−0.06173133	+0.89604676	
e	0.1177118	i	2.69891		−0.01964830	+0.43931071	
P	3.48	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1971 03 24	675	0.3−	0.6−	1979 08 26	809	1.3+	0.1+	1993 08 20	809	1.5−	0.4+
1971 03 25	675	2.3−	0.3+	1979 08 30	809	3.0−	1.1+	1993 08 20	809	1.2−	0.3+
1971 03 25	675	1.1+	0.5−	1979 08 30	809	3.6−	0.6+	1993 08 24	809	0.3+	0.1−
1971 03 26	675	1.2+	0.6+	1986 09 08	095	2.4+	0.5+	1993 08 24	809	0.3+	0.4−
1971 03 27	675	0.9+	1.3+	1993 08 15	809	1.5+	1.2+	1993 08 24	809	0.1+	0.5−
1979 08 22	809	0.3−	0.6+	1993 08 15	809	2.0+	0.9+	1993 09 19	010	1.4−	0.5+
1979 08 22	809	0.8−	0.2−	1993 08 15	809	0.7+	0.6+	1993 09 19	010	1.1−	1.2+
1979 08 22	809	0.2+	0.5+	1993 08 18	010	0.6+	1.7−	1993 09 20	010	0.1+	0.5+
1979 08 23	809	0.5+	0.2−	1993 08 19	010	0.4+	1.3−	1993 09 20	010	0.3+	0.3−
1979 08 23	809	1.2+	0.1−	1993 08 19	010	0.1+	2.4−	1993 09 20	010	1.2−	0.9+
1979 08 26	809	(4.7+	1.0−)	1993 08 19	010	0.8+	2.0−				
1979 08 26	809	2.2+	0.2−	1993 08 20	809	1.2−	0.5+				

1993 RJ$_9$ = 1992 EL$_{15}$ = 1998 XE$_{21}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	208.72888		(2000.0)		**P**	**Q**	
n	0.26164486	ω	20.69340		+0.09771692	+0.99500532	
a	2.4209988	Ω	254.91869		−0.91603408	+0.08191441	
e	0.1885829	i	1.21013		−0.38901537	+0.05704777	
P	3.77	H	15.2	G	0.15	U	3

Residuals in seconds of arc

1992 03 01	809	0.1−	0.1−	1997 10 29	566	1.1−	0.4+	1998 10 27	691	0.7−	0.8+
1992 03 03	809	1.7−	0.2−	1997 10 29	566	0.8−	0.9+	1998 10 27	691	0.4−	0.0
1992 03 06	809	1.0+	0.5−	1997 10 29	566	0.6−	0.0	1998 12 10	691	1.0+	0.4−
1993 09 14	809	(3.6+	5.8+)	1997 10 30	704	0.8−	0.8+	1998 12 10	691	0.2+	0.4−
1993 09 14	809	(2.3+	5.0+)	1997 10 30	704	0.7+	1.3−	1998 12 10	691	0.8+	0.4−
1993 09 14	809	(1.7+	4.6+)	1997 10 30	704	1.4+	0.6−	1998 12 14	691	0.5+	0.1+
1993 09 19	809	(0.7+	5.0+)	1997 10 30	704	1.8+	0.8−	1998 12 14	691	0.6+	0.0
1993 09 19	809	(0.8+	3.2+)	1997 10 30	704	0.8−	0.9−	1998 12 14	691	0.7+	0.6+
1993 09 19	809	(1.8+	4.3+)	1998 10 24	691	0.0	0.1+	1998 12 24	691	0.8−	0.4+
1993 09 20	691	0.3+	0.1−	1998 10 24	691	0.2+	0.3−	1998 12 24	691	0.6−	0.4+
1993 09 20	691	0.3+	0.3+	1998 10 24	691	0.0	0.4−	1998 12 24	691	0.5−	0.4+
1993 09 20	691	0.3−	0.4+	1998 10 27	691	0.2−	0.1−				

1993 RB$_{11}$ = 1998 UB$_{29}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	17.38812		(2000.0)		**P**	**Q**	
n	0.21243563	ω	226.57523		+0.70538021	−0.70881819	
a	2.7817482	Ω	178.54641		+0.68693519	+0.68221069	
e	0.1546806	i	8.93982		+0.17481080	+0.17934702	
P	4.64	H	14.9	G	0.15	U	4

Residuals in seconds of arc

1993 09 14	809	1.9+	1.5+	1993 09 19	809	0.4−	1.0−	1998 10 18	809	0.8−	0.0
1993 09 14	809	1.1+	1.2+	1996 03 24	691	0.1+	0.1+	1998 10 18	809	1.6−	0.4−
1993 09 14	809	0.5+	1.1+	1996 03 24	691	0.2−	0.1−	1998 10 19	809	0.6−	1.0+
1993 09 15	691	1.2−	0.9−	1996 03 24	691	0.6−	0.2−	1998 10 19	809	0.4−	0.3+
1993 09 15	691	1.6−	0.6−	1996 05 17	691	0.3+	0.8+	1998 10 19	809	0.3−	1.4+
1993 09 15	691	1.6−	0.8−	1996 05 17	691	0.3+	0.6+	1998 11 14	699	1.7+	0.5−
1993 09 19	809	0.6+	0.1+	1996 05 17	691	0.4+	0.6+	1998 11 14	699	1.4+	0.2−
1993 09 19	809	0.7+	0.8−	1998 10 18	809	1.1−	0.1+	1998 11 14	699	1.1+	0.1+

1993 RM$_{16}$ = 1998 SQ$_{93}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	10.40089		(2000.0)		**P**	**Q**	
n	0.19842779	ω	213.54438		+0.90477646	−0.42575603	
a	2.9111710	Ω	171.63393		+0.40495177	+0.85236367	
e	0.2105262	i	4.15929		+0.13188487	+0.30365768	
P	4.97	H	16.2	G	0.15	U	6

Residuals in seconds of arc

1993 09 15	809	0.6−	0.4−	1993 09 22	809	0.7−	0.2+	1998 09 26	704	0.3−	1.5+
1993 09 15	809	0.2+	0.9−	1993 09 22	809	0.5+	0.7+	1998 09 26	704	0.3−	0.3−
1993 09 15	809	0.3+	0.1−	1993 09 23	675	0.3+	0.6−	1998 09 27	704	(2.0+	1.3+)
1993 09 20	691	0.3+	0.6+	1993 09 23	675	0.3+	0.6−	1998 09 27	704	1.0+	0.2−
1993 09 20	691	0.1+	0.2+	1998 09 26	704	(2.0−	0.5+)	1998 09 27	704	0.4+	1.4−
1993 09 20	691	0.2+	0.2+	1998 09 26	704	0.1+	0.6+	1998 09 27	704	0.3+	0.9+
1993 09 22	809	1.1−	0.9+	1998 09 26	704	1.1−	1.2−				

1993 SH$_7$ = 1990 WT$_4$ = 1999 FP$_{18}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	286.84998		(2000.0)		**P**	**Q**	
n	0.28005187	ω	82.54040		−0.28707805	+0.95783149	
a	2.3137179	Ω	170.74970		−0.90576536	−0.26733860	
e	0.1064830	i	4.29666		−0.31172955	−0.10530393	
P	3.52	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1990 11 16	809	(0.6−	2.2−)	1993 09 22	675	(3.3−	0.0)	1999 03 24	699	0.6−	0.9+
1990 11 17	809	0.1+	0.6−	1993 09 22	675	(3.1−	1.1+)	1999 03 24	699	0.5−	1.3+
1993 09 17	809	0.1+	0.7−	1997 11 29	704	0.2−	0.4−	1999 04 06	704	0.0	1.3−
1993 09 17	809	0.7−	0.0	1997 11 29	704	0.1+	0.0	1999 04 06	704	0.5−	0.1−
1993 09 17	809	0.8−	0.6+	1997 11 29	704	0.1−	0.5−	1999 04 06	704	0.6+	0.9−
1993 09 18	809	0.7−	0.6−	1997 11 29	704	0.2+	1.3+	1999 04 06	704	0.9+	0.7−
1993 09 18	809	0.4+	0.1−	1997 11 29	704	(1.6−	2.3+)	1999 04 06	704	0.8+	1.5−
1993 09 18	809	1.3−	0.0	1999 03 22	699	0.9−	0.5+	1999 04 07	699	(1.2−	2.2+)
1993 09 22	809	0.7+	1.5+	1999 03 22	699	0.2+	1.0+	1999 04 07	699	0.1−	1.6+
1993 09 22	809	1.4+	1.8+	1999 03 22	699	0.5+	0.6+	1999 04 07	699	0.5+	0.2+
1993 09 22	809	0.4−	1.2+	1999 03 24	699	0.3+	1.7+				

1993 TV$_{13}$ = 1999 CK$_{93}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	263.53373		(2000.0)		**P**	**Q**	
n	0.27156708	ω	233.04428		−0.22629703	+0.97391427	
a	2.3616633	Ω	23.89285		−0.88001927	−0.19704662	
e	0.1955604	i	2.37049		−0.41755926	−0.11253273	
P	3.63	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1993 10 09	809	0.2+	0.1+	1993 10 11	809	0.6+	1.8+	1999 02 10	704	0.9−	0.6−
1993 10 09	809	1.1+	0.9−	1993 10 11	809	0.4+	1.8+	1999 02 10	704	(2.9−	2.3+)
1993 10 09	809	0.7−	0.9−	1993 10 22	809	0.0	0.2−	1999 02 13	704	0.2+	0.5−
1993 10 10	809	(2.7+	0.4+)	1993 10 22	809	0.4−	0.6−	1999 02 13	704	0.4+	0.1−
1993 10 10	809	0.1+	0.3−	1993 10 22	809	(4.2−	1.1−)	1999 02 13	704	0.7+	0.4+
1993 10 10	809	1.2−	0.7−	1999 02 10	704	0.1−	0.6−	1999 02 13	704	0.5+	0.4+
1993 10 11	809	(1.9+	2.6+)	1999 02 10	704	0.9−	0.2+	1999 02 13	704	0.1+	0.7+

1993 TO$_{15}$ = 1988 QK = 1995 CR$_{10}$ = 1996 HF$_{16}$

Id. B. G. Marsden (*MPC* 27312), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	35.95932		(2000.0)		**P**	**Q**	
n	0.21501083	ω	204.54381		+0.76111933	−0.64852789	
a	2.7594922	Ω	195.90052		+0.60120758	+0.71143993	
e	0.0822349	i	2.18337		+0.24340669	+0.27067470	
P	4.58	H	14.6	G	0.15	U	1

Residuals in seconds of arc

1988 08 19	413	0.2−	0.4−	1993 10 11	809	(4.9−	2.0−)	1996 04 20	809	(1.4+	2.2+)
1988 08 20	413	(7.0−	3.1−)	1993 10 20	809	0.0	1.1+	1996 04 20	809	(0.1+	3.0+)
1993 10 09	809	0.3+	0.4−	1993 10 20	809	0.1+	0.6+	1996 04 20	809	(1.2+	3.1+)
1993 10 09	809	0.4−	0.1+	1993 10 20	809	1.0+	1.0+	1997 06 29	691	0.9−	0.4−
1993 10 09	809	(8.8+	4.6+)	1995 02 01	691	0.2−	0.1−	1997 06 29	691	0.9−	0.5−
1993 10 10	809	0.3−	0.4−	1995 02 01	691	0.5−	0.2−	1997 06 29	691	0.8−	0.1−
1993 10 10	809	0.2−	0.9−	1995 02 01	691	0.1−	0.0	1997 07 08	910	0.6+	0.1+
1993 10 10	809	(2.8−	1.0−)	1996 04 18	809	(0.3+	2.5+)	1997 07 08	910	0.6+	0.0
1993 10 11	809	(3.5−	1.7−)	1996 04 18	809	(0.8−	2.9+)	1997 07 08	910	0.8+	0.1+
1993 10 11	809	(5.6−	3.3−)	1996 04 18	809	1.1+	0.6+				

1993 TV$_{23}$ = 1999 EL$_8$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	77.91069		(2000.0)		**P**	**Q**	
n	0.23355549	ω	238.80268		+0.76017415	−0.64958122	
a	2.6114156	Ω	161.69620		+0.60968032	+0.70604967	
e	0.2109301	i	2.44501		+0.22455550	+0.28202499	
P	4.22	H	16.2	G	0.15	U	4

Residuals in seconds of arc

1993 10 09	809	0.6+	0.1+	1993 10 20	809	0.2−	0.9+	1999 02 09	691	0.5+	0.2+
1993 10 09	809	0.3+	0.2+	1993 10 20	809	0.1−	0.1+	1999 03 14	691	0.1−	0.3−
1993 10 09	809	0.2+	0.6+	1995 03 02	691	0.4+	0.5+	1999 03 14	691	0.0	0.2−
1993 10 11	809	0.4+	0.5−	1995 03 02	691	0.5+	0.2+	1999 03 14	691	0.5+	0.3−
1993 10 11	809	0.2+	0.3−	1995 03 02	691	0.5−	0.2+	1999 03 20	691	0.8−	0.5−
1993 10 11	809	0.8−	0.9−	1999 02 09	691	0.3+	0.3+	1999 03 20	691	0.5−	0.0
1993 10 20	809	0.6−	0.0	1999 02 09	691	0.0	0.0	1999 03 20	691	0.3−	0.1−

1993 TM$_{25}$ = 1959 CW = 1990 DF$_5$ = 1999 BA$_{10}$

Id. A. Doppler (*MPC* 33938), A. Milani, G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	22.68628		(2000.0)		**P**	**Q**	
n	0.22177247	ω	309.57997		−0.05093466	−0.99788855	
a	2.7031136	Ω	143.27951		+0.93571470	−0.06178716	
e	0.2699136	i	3.86474		+0.34906111	+0.02001951	
P	4.44	H	14.9	G	0.15	U	1

Residuals in seconds of arc

1959 02 07	760	0.6+	2.0+	1999 01 23	120	0.2+	0.1−	1999 02 13	704	0.1+	0.1+
1959 02 07	760	(9.0−	1.5+)	1999 01 23	120	0.5+	0.3−	1999 02 13	704	0.7−	1.0+
1990 02 23	033	0.2−	0.9+	1999 01 24	120	0.7+	0.1−	1999 02 13	704	0.6+	0.5−
1990 02 23	033	0.2−	1.1+	1999 01 24	120	0.4+	0.2−	1999 02 14	691	0.0	0.2−
1993 10 09	809	0.2−	2.3−	1999 01 25	120	1.0+	0.2−	1999 02 14	691	0.0	0.2−
1993 10 09	809	0.5−	2.5−	1999 01 25	120	0.7+	0.3−	1999 02 14	691	0.2−	0.1−
1993 10 09	809	0.6−	2.1−	1999 02 10	704	0.5−	0.7−	1999 02 15	120	0.5−	0.2+
1993 10 11	809	1.0+	0.8+	1999 02 10	704	0.9−	0.3−	1999 02 15	120	0.3−	0.0
1993 10 11	809	0.2+	0.5+	1999 02 10	704	0.8−	0.2−	1999 02 16	691	1.4−	0.5−
1993 10 11	809	0.1−	0.5+	1999 02 10	704	0.1−	0.3−	1999 02 16	691	0.7−	0.1−
1993 10 20	809	0.4+	1.9+	1999 02 10	704	0.3+	0.5−	1999 02 16	691	1.0−	0.1+
1993 10 20	809	0.6+	1.7+	1999 02 12	699	0.1+	0.5+	1999 02 24	691	0.1−	0.4−
1993 10 20	809	0.4−	1.0+	1999 02 12	699	0.3+	0.2+	1999 02 24	691	0.1−	0.5−
1997 07 27	910	0.3+	0.2−	1999 02 12	699	0.7+	0.2−	1999 02 24	691	0.6+	0.5−
1997 07 27	910	0.0	0.0	1999 02 13	704	0.1+	0.6−				
1997 07 27	910	0.3−	0.1+	1999 02 13	704	0.3+	0.1+				

1993 TD$_{27}$ = 1999 FT$_{49}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	192.78527		(2000.0)		**P**	**Q**	
n	0.27018977	ω	276.61522		+0.88128809	+0.47055911	
a	2.3696822	Ω	55.32285		−0.40990272	+0.80710547	
e	0.2307661	i	3.04267		−0.23518304	+0.35658785	
P	3.65	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1993 10 09	809	0.9−	0.8−	1993 10 20	809	(1.8+	4.0+)	1999 03 20	704	0.8−	0.4−
1993 10 09	809	0.8−	0.3−	1993 10 20	809	(1.4+	4.5+)	1999 03 20	704	0.1−	1.3−
1993 10 09	809	1.2−	0.2−	1996 05 21	566	0.0	0.0	1999 03 23	704	0.2+	1.4+
1993 10 11	809	1.2+	0.5+	1996 05 21	566	0.3+	0.2+	1999 03 23	704	0.9+	0.3−
1993 10 11	809	0.6+	0.6+	1996 05 21	566	0.1−	0.4+	1999 03 23	704	0.6−	0.2+
1993 10 11	809	0.7+	1.1+	1999 03 20	704	0.5−	1.1+				
1993 10 20	809	(2.3+	4.1+)	1999 03 20	704	1.2+	0.3+				

1993 UT$_6$ = 1982 FS$_2$ = 1984 SS$_7$

Id. G. V. Williams (*MPC* 23784, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	2.56139		(2000.0)		**P**	**Q**	
n	0.22715534	ω	307.18798		−0.58949395	−0.80776448	
a	2.6602396	Ω	178.91296		+0.78874060	−0.57657731	
e	0.1772220	i	11.13223		+0.17431336	−0.12278086	
P	4.34	H	13.7	G	0.15	U	2

Residuals in seconds of arc

1982 03 27	046	0.9+	1.6−	1997 09 11	012	0.2−	0.5−	1999 02 12	704	0.6+	0.1+
1982 03 27	046	0.5−	2.1−	1997 09 13	012	0.2−	0.7−	1999 02 16	704	0.1−	0.1+
1982 03 27	046	0.7+	0.6−	1997 09 13	012	0.4+	0.7−	1999 02 16	704	0.5−	0.4+
1982 03 27	046	0.8−	1.0+	1997 09 13	012	0.0	0.6−	1999 02 16	704	0.8−	0.0
1982 03 28	046	0.9−	0.3−	1997 09 13	012	0.2−	0.9−	1999 02 16	704	0.0	0.7−
1984 09 21	010	1.1−	0.4+	1998 11 23	704	0.3−	0.1−	1999 02 16	704	0.2−	1.0−
1993 10 10	809	1.0−	1.5+	1998 11 23	704	1.6−	0.4+	1999 03 10	704	1.3+	0.6+
1993 10 10	809	1.0−	1.3+	1998 11 23	704	0.2−	0.3+	1999 03 10	704	(2.4+	1.0+)
1993 10 10	809	1.8−	1.2+	1998 11 23	704	0.7−	0.4−	1999 03 10	704	(2.6−	0.1+)
1993 10 20	809	1.7+	0.3+	1998 11 23	704	1.3−	1.1−	1999 03 10	704	1.7−	0.8−
1993 10 20	809	1.7+	0.3−	1999 01 17	699	0.3−	0.4−	1999 03 10	704	(0.8+	2.5+)
1993 10 20	809	0.8+	0.5−	1999 01 17	699	0.3−	0.5−	1999 04 07	704	0.1−	0.3+
1993 10 21	809	1.1+	0.7−	1999 01 17	699	0.0	0.5−	1999 04 07	704	0.4+	1.5+
1993 10 21	809	0.4+	1.2−	1999 02 12	704	0.6+	0.0	1999 04 07	704	0.7+	1.4+
1993 10 21	809	0.1−	0.3−	1999 02 12	704	0.8+	0.4−	1999 04 07	704	(0.1−	3.1+)
1997 09 10	012	0.3+	0.7−	1999 02 12	704	1.1+	0.9+				
1997 09 11	012	0.4+	0.5−	1999 02 12	704	0.7+	0.3+				

1994 AM = 1998 XV$_{32}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Kobayashi

M	220.86603		(2000.0)		**P**	**Q**	
n	0.17860298	ω	313.89311		−0.60305054	+0.75728423	
a	3.1227957	Ω	277.33214		−0.64008568	−0.64692810	
e	0.2018739	i	14.64132		−0.47604660	−0.08946865	
P	5.52	H	12.7	G	0.15	U	6

Residuals in seconds of arc

1994 01 02	411	0.6−	1.6−	1994 01 08	411	0.2+	0.2−	1998 12 14	704	0.4+	0.8−
1994 01 02	411	0.5+	0.0	1994 01 15	411	1.0−	1.3−	1998 12 17	704	1.0+	0.0
1994 01 04	411	0.0	0.7+	1994 01 15	411	1.1+	0.1−	1998 12 17	704	0.9−	1.5−
1994 01 04	411	0.4+	0.9+	1994 01 15	411	0.2+	0.7+	1998 12 17	704	1.3+	0.4−
1994 01 04	411	0.3+	0.3+	1998 12 14	704	0.7−	0.5−	1998 12 17	704	0.4+	1.7+
1994 01 08	411	0.3−	0.4−	1998 12 14	704	1.3−	0.9+				
1994 01 08	411	0.8−	1.0+	1998 12 14	704	0.2−	0.6+				

1994 BC$_1$ = 1996 QM$_2$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	212.50964		(2000.0)		**P**	**Q**	
n	0.17393517	ω	300.54231		−0.25045365	+0.95573896	
a	3.1784187	Ω	314.09579		−0.79819908	−0.29409501	
e	0.1853841	i	12.41398		−0.54786056	−0.00843635	
P	5.67	H	12.6	G	0.15	U	2

Residuals in seconds of arc

1994 01 16	411	0.6−	0.9−	1994 02 08	303	0.8−	0.8+	1996 08 20	010	(2.9+	2.9+)
1994 01 16	411	0.6−	0.1−	1994 02 08	303	0.3−	0.2+	1996 08 20	010	(3.0+	2.9+)
1994 01 16	411	1.4+	0.9−	1994 02 08	303	0.2+	0.3+	1996 08 20	010	(1.8+	3.0+)
1994 01 19	411	0.8−	0.7−	1994 02 13	411	0.8+	1.7+	1997 10 29	566	0.0	0.3−
1994 01 19	411	0.8−	0.7+	1994 02 13	411	0.9−	0.2−	1997 10 29	566	0.2+	0.4−
1994 01 19	411	0.5+	0.7−	1994 02 13	411	0.4+	1.0+	1997 10 29	566	0.1+	0.4−
1994 01 23	411	0.6+	0.1+	1996 08 09	010	1.5+	0.4−	1998 12 14	704	(2.2+	0.3+)
1994 01 23	411	0.6+	0.1+	1996 08 09	010	0.4−	0.1+	1998 12 14	704	0.9−	0.7+
1994 01 23	411	0.8−	1.2−	1996 08 09	010	(2.1−	0.4+)	1998 12 14	704	1.3+	1.2+
1994 02 02	411	0.3+	1.3−	1996 08 18	010	1.2−	0.5+	1998 12 14	704	(3.8−	1.6+)
1994 02 02	411	0.1−	0.0	1996 08 18	010	(2.2−	0.4+)				
1994 02 02	411	0.3+	0.0	1996 08 18	010	(2.7−	0.1+)				

1994 BE_2 = 1999 CH_{135}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	223.44822		(2000.0)		**P**	**Q**	
n	0.21934408	ω	14.36332		+0.44363411	+0.89610273	
a	2.7230280	Ω	281.97419		−0.82363410	+0.40161939	
e	0.0433062	i	0.80453		−0.35329258	+0.18894910	
P	4.49	H	15.7	G	0.15	U	7

Residuals in seconds of arc

1994 01 18	691	0.1−	0.4−	1994 01 19	691	0.1−	0.2+	1999 02 08	691	0.0	0.5−
1994 01 18	691	0.2+	0.1−	1994 01 19	691	0.5−	0.1+	1999 02 08	691	0.1−	0.3−
1994 01 18	691	0.8+	0.3+	1994 01 21	691	0.7−	0.2−	1999 02 12	691	0.4+	0.3+
1994 01 19	691	0.2−	0.2+	1994 01 21	691	0.1+	0.0	1999 02 12	691	0.2+	0.3+
1994 01 19	691	0.1−	0.1+	1994 01 21	691	0.5+	0.0	1999 02 12	691	0.1+	0.6+
1994 01 19	691	0.1−	0.1−	1999 02 08	691	0.6−	0.4−				

1994 CR = 1999 FE_{27}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	73.74722		(2000.0)		**P**	**Q**	
n	0.22218416	ω	325.90805		−0.06757257	−0.99530742	
a	2.6997735	Ω	127.86854		+0.93383433	−0.08753416	
e	0.0893348	i	5.03340		+0.35126541	+0.04124210	
P	4.44	H	13.9	G	0.15	U	6

Residuals in seconds of arc

1994 02 04	399	0.8+	1.1+	1994 02 11	399	1.6−	0.6+	1999 03 20	704	0.6−	0.4+
1994 02 04	399	0.4+	0.6+	1999 03 19	704	0.7+	0.1+	1999 03 20	704	0.4−	0.9+
1994 02 05	399	0.9−	0.1−	1999 03 19	704	0.3+	0.0	1999 03 20	704	0.3+	0.6−
1994 02 05	399	1.0−	0.6−	1999 03 19	704	0.0	0.4−	1999 03 23	703	0.4+	0.2+
1994 02 11	675	1.7+	0.7−	1999 03 19	704	0.7+	0.8−	1999 03 23	703	0.3−	0.0
1994 02 11	675	1.6+	0.7−	1999 03 19	704	0.6−	1.0−	1999 03 23	703	0.2−	1.2+
1994 02 11	399	0.7−	0.1−	1999 03 20	704	0.3+	0.2−	1999 03 23	703	0.7−	0.2+

1994 CB_{17} = 1998 HH_6

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	100.01895		(2000.0)		**P**	**Q**	
n	0.26106213	ω	74.46597		−0.98579173	−0.15911868	
a	2.4246002	Ω	96.35563		+0.12573889	−0.91146329	
e	0.1478606	i	3.10388		+0.11137500	−0.37936251	
P	3.78	H	15.7	G	0.15	U	4

Residuals in seconds of arc

1994 02 08	809	(0.1+	2.6−)	1998 03 25	691	0.3−	0.1−	1998 04 22	910	0.8+	0.2−
1994 02 08	809	(1.7−	2.8−)	1998 03 25	691	0.0	0.3+	1998 04 22	910	0.4+	0.4−
1994 02 08	809	(1.6−	3.2−)	1998 03 29	704	0.1−	0.4+	1998 04 22	704	0.8−	0.3+
1994 02 10	809	(1.5−	3.4−)	1998 03 29	704	0.3−	0.1−	1998 04 22	704	0.1+	0.1−
1994 02 10	809	(2.2−	4.2−)	1998 03 29	704	0.2+	0.2−	1998 04 22	704	1.1−	0.0
1994 02 10	809	(2.1−	3.7−)	1998 03 29	704	0.6+	0.9+	1998 04 22	704	1.2−	0.4−
1994 02 13	809	1.1+	0.0	1998 03 29	704	0.3+	0.4+	1998 04 22	704	1.5−	0.2+
1994 02 13	809	0.3+	0.2−	1998 04 21	704	0.4−	0.5−	1998 04 24	910	1.0+	0.4−
1994 02 13	809	0.4−	0.3−	1998 04 21	704	0.8−	0.1+	1998 04 24	910	0.8+	0.7−
1994 02 15	691	0.6−	0.1−	1998 04 21	704	0.1−	0.9−	1998 04 24	910	1.0+	0.3−
1994 02 15	691	0.3−	0.3+	1998 04 21	704	0.4−	0.4+	1998 05 19	910	0.2+	0.4+
1994 02 15	691	0.1−	0.1+	1998 04 21	704	0.3+	0.0	1998 05 19	910	0.2+	0.4+
1998 03 25	691	0.4+	0.5+	1998 04 21	910	0.8+	0.1−	1998 05 19	910	0.1+	0.3+

1994 DF = 1999 GR_9

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Urata

M	102.82884		(2000.0)		**P**	**Q**	
n	0.22816940	ω	275.69279		+0.23504781	−0.96906185	
a	2.6523517	Ω	160.21460		+0.95640033	+0.21676543	
e	0.1641181	i	12.85498		+0.17335208	+0.11803341	
P	4.32	H	13.5	G	0.15	U	5

Residuals in seconds of arc

1994 02 12	675	0.1−	0.9−	1994 02 18	385	0.6+	0.6+	1999 04 14	905	0.1−	0.6−
1994 02 12	675	0.1−	0.4−	1994 02 19	385	0.1+	0.7+	1999 04 20	385	0.1+	0.5+
1994 02 15	675	0.1−	0.7−	1994 02 19	385	0.4+	1.1+	1999 04 20	385	0.1−	0.8+
1994 02 15	675	0.5−	1.1−	1994 03 05	887	0.5−	0.4−	1999 04 20	385	0.2−	0.6+
1994 02 18	385	0.2+	0.9+	1994 03 05	887	0.3−	0.3−				
1994 02 18	385	0.3+	0.6+	1999 04 14	905	0.4+	1.3−				

1994 DG = 1999 FV_{52}

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	195.27345		(2000.0)		**P**	**Q**	
n	0.21474720	ω	183.54527		+0.87090735	+0.48218450	
a	2.7617500	Ω	147.07932		−0.44648694	+0.85706359	
e	0.1543257	i	10.06336		−0.20535285	+0.18149407	
P	4.59	H	13.3	G	0.15	U	4

Residuals in seconds of arc

1994 02 12	675	0.0	0.2+	1994 03 05	104	0.7+	0.3+	1999 03 20	704	0.0	0.5−
1994 02 12	675	0.4+	0.6−	1994 03 05	104	0.5+	0.7+	1999 03 20	704	0.2+	0.1+
1994 02 17	104	0.8−	0.5+	1994 03 05	104	0.4+	0.2+	1999 03 20	704	0.9+	0.4−
1994 02 17	104	0.8+	0.4−	1994 03 06	104	0.4−	0.2+	1999 03 20	704	0.2−	0.8−
1994 02 17	104	0.1+	0.6−	1994 03 06	104	0.3−	0.5+	1999 03 23	704	0.6+	0.3−
1994 02 17	104	0.0	0.1−	1994 03 06	104	0.4−	0.3+	1999 03 23	704	0.6−	1.5+
1994 02 19	104	0.3+	0.8−	1994 03 06	104	1.1−	0.7+	1999 03 23	704	1.0−	1.0+
1994 02 19	104	0.1−	0.9−	1994 03 08	104	0.0	0.3+	1999 03 23	704	1.2+	0.2+
1994 02 19	104	0.4−	0.5+	1994 03 08	104	0.3+	0.0	1999 03 23	704	0.2−	0.8−
1994 02 19	104	(2.2−	0.1+)	1994 03 08	104	0.3−	0.4−	1999 04 13	104	0.0	0.5+
1994 02 19	104	1.9+	1.7−	1994 03 11	104	0.1−	0.3+	1999 04 13	104	0.0	0.4+
1994 02 19	104	0.5−	0.2+	1994 03 11	104	0.1−	0.6+	1999 04 13	104	0.0	0.4+
1994 03 04	104	0.0	0.2+	1994 03 11	104	0.0	0.2−	1999 04 18	703	0.7+	1.2−
1994 03 04	104	0.3+	0.5−	1994 03 11	104	0.1+	0.3+	1999 04 18	703	0.1+	0.2−
1994 03 04	104	0.1−	0.4+	1994 03 11	104	0.2−	0.3−	1999 04 18	703	1.1−	1.0−
1994 03 04	104	0.0	0.4−	1994 03 11	104	0.2−	0.1−	1999 04 18	703	1.1−	0.3+
1994 03 04	104	0.9+	0.1+	1994 03 11	104	0.3−	0.8−				
1994 03 05	104	1.2−	1.6+	1999 03 20	704	0.2+	0.6+				

1994 GN$_1$ = 1983 CT$_2$ = 1999 HT$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	358.73701		(2000.0)	**P**		**Q**	
n	0.18819020	ω	45.15216	−0.98625364		−0.08953813	
a	3.0158151	Ω	129.20162	+0.04638232		−0.95668311	
e	0.1222595	i	10.32389	+0.15859518		−0.27702049	
P	5.24	H	12.7	G	0.15	U	4

Residuals in seconds of arc

1983 02 15	688	1.3+	0.4−	1999 04 15	704	0.0	0.1+	1999 04 18	703	0.7+	1.2+
1983 02 15	688	1.3−	0.4+	1999 04 15	704	0.0	0.2+	1999 04 18	703	0.1−	0.2+
1994 04 15	400	0.7−	0.1−	1999 04 15	704	0.1+	1.0+	1999 04 18	703	0.1+	0.3+
1994 04 15	400	0.2−	0.5−	1999 04 15	704	0.4+	0.6−	1999 04 18	703	0.6−	0.8−
1994 04 16	400	0.2+	0.4−	1999 04 16	704	(2.5+	0.0)	1999 04 19	703	0.0	1.1+
1994 04 16	400	0.7+	1.2−	1999 04 16	704	0.6+	1.2−	1999 04 19	703	0.3+	0.5+
1994 05 05	400	0.9+	1.0+	1999 04 16	704	0.7+	0.1+	1999 04 19	703	0.6−	0.2−
1994 05 05	400	1.0−	0.8+	1999 04 16	704	0.1−	0.2+	1999 04 19	703	1.3−	0.8−
1999 04 15	704	0.6+	0.4−	1999 04 16	704	0.7−	0.4−				

1994 GM$_3$ = 1999 FO$_{52}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	265.14464		(2000.0)	**P**		**Q**	
n	0.18397832	ω	233.99090	−0.11732999		+0.99301152	
a	3.0616693	Ω	29.27878	−0.90257159		−0.10128382	
e	0.0598087	i	1.49037	−0.41424412		−0.06057814	
P	5.36	H	13.8	G	0.15	U	7

Residuals in seconds of arc

1994 04 06	691	0.2+	0.2+	1994 04 16	691	0.5−	0.2+	1999 03 23	704	0.9+	0.5+
1994 04 06	691	0.3+	0.0	1994 04 16	691	0.4−	0.0	1999 03 23	704	2.0+	1.2+
1994 04 06	691	0.4+	0.2−	1999 03 20	704	0.8−	0.3+	1999 03 23	704	1.5−	2.1−
1994 04 11	691	0.1−	0.2−	1999 03 20	704	1.1−	1.4+	1999 03 23	704	0.6+	1.2−
1994 04 11	691	0.6+	0.2+	1999 03 20	704	1.2−	0.4+	1999 03 23	704	0.6+	0.3−
1994 04 11	691	0.1−	0.1−	1999 03 20	704	0.5+	0.6−				
1994 04 16	691	0.5−	0.1−	1999 03 20	704	0.1+	0.4+				

1994 GG$_4$ = 1999 CP$_{149}$ = 1999 FU$_{11}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	68.66937		(2000.0)	**P**		**Q**	
n	0.18488068	ω	262.42374	+0.11828455		−0.99297974	
a	3.0516990	Ω	180.78317	+0.91391491		+0.10890585	
e	0.1076018	i	0.42116	+0.38828895		+0.04616017	
P	5.33	H	15.7	G	0.15	U	4

Residuals in seconds of arc

1994 04 06	691	0.4+	0.7+	1994 04 16	691	0.2+	0.1+	1999 03 18	691	0.3−	0.0
1994 04 06	691	0.0	0.3+	1999 02 13	691	0.1−	0.7−	1999 03 18	691	0.1+	0.0
1994 04 11	691	0.2−	1.6−	1999 02 13	691	0.3+	0.0	1999 03 18	691	0.1+	0.1−
1994 04 11	691	0.0	0.0	1999 02 13	691	0.4−	0.2+	1999 03 23	691	0.2+	0.2+
1994 04 11	691	0.2−	0.4+	1999 02 14	691	0.2−	0.1+	1999 03 23	691	0.1−	0.1−
1994 04 16	691	0.3−	0.1+	1999 02 14	691	0.4+	0.0	1999 03 23	691	0.0	0.0
1994 04 16	691	0.1+	0.0	1999 02 14	691	0.1−	0.2+				

1994 NR$_1$ = 1981 AH = 1997 BQ$_3$

Id. G. V. Williams (*MPC* 29105, unpublished), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	194.37203		(2000.0)	**P**		**Q**	
n	0.19040395	ω	302.68063	+0.23445958		−0.96123068	
a	2.9923938	Ω	133.03646	+0.94510880		+0.19043580	
e	0.1907015	i	11.45308	+0.22759186		+0.19942363	
P	5.18	H	12.4	G	0.15	U	1

Residuals in seconds of arc

1981 01 01	688	1.3−	1.0−	1997 02 01	411	0.0	0.3+	1998 04 19	688	0.1−	0.2−
1981 01 01	688	1.3+	0.8−	1997 02 10	124	0.7+	0.6+	1998 04 19	688	0.0	0.1−
1994 07 04	010	0.4−	2.0−	1997 02 10	124	0.8−	0.4+	1998 04 19	688	0.1−	0.2−
1994 07 04	010	(0.9−	2.7−)	1997 02 10	124	0.8−	0.6+	1998 05 22	688	0.3+	0.3−
1994 07 04	010	(0.8+	3.3−)	1997 02 10	124	0.1+	0.5+	1998 05 22	688	0.1+	0.3−
1994 07 05	010	1.9+	0.5−	1997 02 12	411	0.8−	0.1+	1998 05 22	688	0.2+	0.2−
1994 07 05	010	(1.3+	2.2−)	1997 02 12	411	0.6+	0.7+	1998 05 22	691	0.2−	0.4−
1994 07 05	010	(3.2+	0.7−)	1997 02 16	124	0.7+	0.5−	1998 05 22	691	0.2−	0.4−
1994 07 08	010	1.3+	1.0+	1997 02 16	124	0.6−	0.4−	1998 05 22	691	0.2−	0.2−
1994 07 08	010	1.1+	0.2+	1997 02 16	124	0.0	0.2−	1998 05 23	704	0.5+	0.0
1994 07 08	010	0.8+	0.7+	1997 02 16	124	1.1−	0.2−	1998 05 23	704	0.8−	1.0+
1994 07 14	010	1.7−	1.5+	1997 02 16	124	0.8+	0.0	1998 05 23	704	0.1+	0.5−
1994 07 14	010	1.4−	0.7+	1997 02 16	124	0.2−	0.0	1998 05 23	704	1.2+	0.1−
1994 07 14	010	1.4−	0.5+	1997 02 16	124	0.3+	0.1−	1998 05 23	704	0.4+	0.1+
1997 01 31	411	0.8−	0.2+	1997 02 18	910	0.6+	0.2+	1998 05 28	691	0.8−	0.4−
1997 01 31	411	0.2+	0.4+	1997 02 18	910	0.6+	0.1+	1998 05 28	691	0.6−	0.2−
1997 02 01	411	0.5+	0.5+	1997 02 18	910	0.6+	0.2+	1998 05 28	691	0.8−	0.3−

1994 PC$_7$ = 1992 CA$_7$ = 1997 CW$_2$

Id. G. V. Williams (*MPC* 29105, unpublished), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	119.15220		(2000.0)	**P**		**Q**	
n	0.21239645	ω	43.42997	−0.97827931		+0.18534671	
a	2.7820903	Ω	146.91494	−0.20355874		−0.94355844	
e	0.0872070	i	9.79029	+0.03915904		−0.27448875	
P	4.64	H	13.7	G	0.15	U	4

Residuals in seconds of arc

1992 02 06	809	0.5+	0.0	1994 08 13	809	0.8−	1.4+	1997 02 03	411	1.0+	1.9+
1992 02 06	809	0.0	0.7−	1994 08 13	809	0.4−	1.6+	1997 02 03	411	(0.1−	2.3+)
1992 02 06	809	0.6−	0.4−	1994 09 05	809	0.7+	0.9+	1997 02 04	411	0.3+	1.5+
1994 08 10	809	0.4−	1.9−	1994 09 05	809	0.4+	1.6+	1997 02 04	411	1.4+	1.4+
1994 08 10	809	0.5−	1.6−	1994 09 05	809	0.8+	1.7+	1997 02 07	098	0.4+	0.1+
1994 08 10	809	0.6−	1.2−	1994 09 06	809	0.1+	1.3+	1997 02 07	098	1.6−	1.6+
1994 08 11	809	0.9−	0.5+	1994 09 06	809	0.1−	1.1+	1997 02 08	098	0.5+	0.6+
1994 08 11	809	0.1−	0.0	1994 09 06	809	0.2+	1.1+	1997 02 08	098	0.2−	1.7+
1994 08 11	809	0.9−	1.5+	1997 01 31	098	0.7+	1.6+				
1994 08 13	809	0.5+	1.9+	1997 01 31	098	(4.6+	1.4−)				

1994 PP$_{18}$ = 1993 FK$_{69}$ = 1998 RT$_{48}$

Id. M. E. Sansaturio, G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	121.58463		(2000.0)	**P**		**Q**	
n	0.25460940	ω	281.39410	−0.19903245		+0.97954104	
a	2.4653945	Ω	337.06031	−0.86673047		−0.19011839	
e	0.0768802	i	4.37850	−0.45734493		−0.06598750	
P	3.87	H	15.2	G	0.15	U	3

Residuals in seconds of arc

1993 03 21	809	0.0	0.1−	1994 09 03	809	0.5−	1.5−	1998 09 14	704	0.6+	1.6−
1993 03 22	809	0.0	0.0	1994 09 03	809	1.5−	0.7−	1998 09 14	704	1.7+	0.7−
1994 08 12	809	0.3+	0.5+	1994 09 04	809	1.0+	1.2+	1998 09 14	704	0.1−	0.3+
1994 08 12	809	0.5−	0.9−	1994 09 04	809	1.0+	0.7+	1998 09 14	704	0.8−	1.2+
1994 08 12	809	0.2+	0.4+	1994 09 04	809	0.4−	1.3+	1998 09 18	704	1.7−	0.8+
1994 08 13	809	(2.6+	4.5+)	1998 09 01	327	0.6+	0.6−	1998 09 18	704	(0.1−	3.0+)
1994 08 13	809	(3.2+	4.5+)	1998 09 01	327	0.2−	0.6+	1998 09 18	704	0.3+	0.2−
1994 08 13	809	(3.1+	3.6+)	1998 09 01	327	0.2−	0.1−	1998 09 18	704	(1.9+	2.3−)
1994 09 03	809	0.3+	0.8−	1998 09 14	704	(0.3−	2.5−)				

1994 PG$_{27}$ = 1992 EF$_{17}$ = 1997 BY

Id. K. Ichikawa (*MPC* 26905), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	112.35837		(2000.0)	**P**		**Q**	
n	0.18573811	ω	27.06192	−0.93281552		−0.35989636	
a	3.0423000	Ω	131.83214	+0.32605107		−0.86440590	
e	0.1455323	i	1.39666	+0.15344677		−0.35110831	
P	5.31	H	13.2	G 0.15		U 5	

Residuals in seconds of arc

1992 03 01	809	0.6−	0.3+	1994 08 13	809	0.7−	1.0+	1997 01 16	012	0.9−	0.8+
1992 03 03	809	0.6−	0.7−	1994 08 13	809	0.6−	0.5+	1997 01 16	012	0.1−	1.7−
1992 03 06	809	0.8+	0.2−	1994 08 13	809	0.2−	0.6+	1997 01 18	327	0.8+	0.1−
1994 08 11	809	(2.4−	0.6−)	1994 09 03	809	0.9+	0.1−	1997 01 18	327	1.0+	0.2+
1994 08 11	809	0.7−	1.1−	1994 09 03	809	0.7+	0.2−	1997 01 18	327	0.4−	0.2−
1994 08 11	809	1.1−	0.7−	1994 09 03	809	0.6−	0.9−	1997 01 25	327	0.1−	0.4+
1994 08 12	809	(5.3−	1.9−)	1994 09 04	809	(2.0+	0.6+)	1997 01 25	327	0.0	0.2+
1994 08 12	809	(4.1−	1.7−)	1994 09 04	809	1.0+	0.3+	1997 01 25	327	0.2−	0.1+
1994 08 12	809	(4.4−	0.5−)	1994 09 04	809	1.4+	0.4−				

1994 PO_{32} = 1979 OS_5 = 1987 SB_{27}

Id. G. V. Williams (*MPC* 24902, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	242.88113		(2000.0)	**P**		**Q**	
n	0.26912038	ω	223.68229	−0.97548375		−0.20287656	
a	2.3759556	Ω	304.42538	+0.21939113		−0.86603923	
e	0.0750267	i	5.93418	+0.01729118		−0.45696516	
P	3.66	H	13.8	G 0.15		U 2	

Residuals in seconds of arc

1979 07 24	675	0.7−	0.5−	1994 09 05	809	0.5−	0.3+	1998 10 28	704	0.1−	0.4+
1979 07 25	675	0.9+	0.1−	1994 09 06	809	0.1−	0.1−	1998 10 28	704	0.2−	0.2+
1987 09 26	095	0.2+	0.4−	1994 09 06	809	0.0	0.0	1998 10 28	704	0.3+	0.2−
1994 08 12	809	(3.4+	1.4−)	1994 09 06	809	0.1+	0.2+	1998 10 28	704	1.0−	0.1+
1994 08 12	809	(3.0+	0.8−)	1998 10 12	699	0.5+	0.3−	1998 10 29	713	0.7−	0.1−
1994 08 12	809	(3.4+	1.1−)	1998 10 12	699	0.2+	0.9+	1998 10 29	713	0.0	1.0−
1994 08 13	809	(3.9+	1.3−)	1998 10 12	699	0.5+	0.5+	1998 11 16	566	0.2−	0.8−
1994 08 13	809	(3.1+	1.1−)	1998 10 22	713	0.9+	0.1−	1998 11 16	566	0.2−	0.8−
1994 08 13	809	(3.2+	1.1−)	1998 10 22	713	0.9+	0.6+	1998 11 16	566	0.2−	0.3−
1994 09 05	809	0.2−	0.6+	1998 10 22	713	0.7+	0.3+				
1994 09 05	809	0.2+	0.1−	1998 10 28	704	1.2−	0.2+				

1994 RU_1 = 1977 SK = 1998 HT_{115}

Id. G. V. Williams (*MPC* 31966, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	270.33569		(2000.0)	**P**		**Q**	
n	0.17571060	ω	194.62854	+0.99105176		−0.12774249	
a	3.1569721	Ω	172.38759	+0.13139984		+0.98467195	
e	0.2378571	i	16.98944	−0.02346256		+0.11875609	
P	5.61	H	13.1	G 0.15		U 2	

Residuals in seconds of arc

1977 09 18	095	0.3−	2.2+	1994 10 07	675	1.1+	0.8+	1998 04 23	704	0.4−	0.7−
1994 08 31	691	0.4−	0.6−	1994 10 07	675	0.7+	1.6+	1998 04 23	704	0.1+	0.5+
1994 08 31	691	0.2−	0.7−	1994 10 09	675	(0.1+	3.3−)	1998 04 23	704	0.5−	1.4−
1994 08 31	691	0.3−	0.5−	1994 10 09	675	0.4+	1.0−	1998 04 23	704	0.1+	0.4−
1994 09 01	675	0.3+	1.5−	1997 04 29	704	0.2+	0.2+	1998 04 23	704	0.5+	1.2−
1994 09 01	675	0.1+	1.2−	1997 04 29	704	0.2+	0.7−	1998 04 24	704	1.1+	0.2−
1994 09 01	033	0.1−	0.2−	1997 04 29	704	0.3+	0.5−	1998 04 24	704	0.2−	2.0+
1994 09 02	033	0.6+	0.2+	1997 04 29	704	0.3−	0.3−	1998 04 24	704	0.7+	0.1−
1994 09 04	033	0.0	0.0	1997 04 29	704	0.3−	0.6−	1998 04 24	704	0.3+	0.3−
1994 09 04	675	0.5+	1.2−	1998 03 24	704	(0.8−	2.7−)	1998 04 24	704	1.2−	0.1+
1994 09 04	675	0.5−	0.1+	1998 03 24	704	0.7−	0.6+	1998 05 23	704	1.2+	0.1+
1994 09 11	691	0.5−	0.5+	1998 03 24	704	0.3−	0.6−	1998 05 23	704	0.1+	0.5−
1994 09 11	691	0.6−	0.5+	1998 03 24	704	(2.0+	0.4+)	1998 05 23	704	1.0−	1.4+
1994 09 11	691	0.3−	0.2+	1998 03 24	704	0.2+	1.5+	1998 05 23	704	(1.3−	3.2+)

1994 SE_2 = 1975 VU_7 = 1999 FE_{57}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	93.43094		(2000.0)	**P**		**Q**	
n	0.30885641	ω	12.52784	+0.62636461		−0.77830690	
a	2.1675293	Ω	38.71406	+0.70904757		+0.54556675	
e	0.1124576	i	4.00246	+0.32391191		+0.31079783	
P	3.19	H	14.7	G 0.15		U 4	

Residuals in seconds of arc

1975 11 06	095	0.1+	0.2−	1994 10 06	691	0.5+	0.4+	1999 03 20	704	0.3+	1.3−
1994 09 11	675	0.2+	1.6−	1994 10 06	691	0.9+	0.1+	1999 03 23	704	1.0+	0.8+
1994 09 11	675	0.1+	0.4−	1994 10 12	691	(2.9−	1.6+)	1999 03 23	704	0.8−	1.8+
1994 09 27	691	0.5−	0.2+	1994 10 12	691	1.6−	0.1−	1999 03 23	704	1.3−	1.6+
1994 09 27	691	0.6−	0.2+	1994 10 12	691	0.4+	0.8−	1999 03 23	704	1.3−	0.2−
1994 09 27	691	0.5−	0.0	1999 03 20	704	0.1−	0.4−	1999 03 23	704	0.0	0.3+
1994 10 01	675	0.3+	1.6+	1999 03 20	704	0.3−	1.0−	1999 04 07	699	0.8+	1.2+
1994 10 01	675	0.3−	1.0+	1999 03 20	704	0.2−	0.9−	1999 04 07	699	0.6+	0.7+
1994 10 06	691	0.7+	0.0	1999 03 20	704	0.3+	1.3−	1999 04 07	699	1.4+	0.4−

1994 TQ_3 = 1970 WU

Id. T. B. Spahr, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	61.55167		(2000.0)	**P**		**Q**	
n	0.24457404	ω	322.67635	+0.94670105		+0.31339235	
a	2.5323816	Ω	19.46354	−0.21424204		+0.78520288	
e	0.1210893	i	12.91032	−0.24053579		+0.53408021	
P	4.03	H	13.6	G 0.15		U 3	

Residuals in seconds of arc

1970 11 26	095	0.2−	0.3−	1998 10 11	699	0.1−	0.3+	1998 10 29	704	0.3−	0.3−
1990 10 22	675	0.1+	0.1−	1998 10 11	699	0.0	0.1+	1998 10 29	704	0.5+	0.3−
1990 10 22	675	0.5+	0.2+	1998 10 14	704	0.7−	0.5+	1998 11 11	704	0.6+	0.4+
1994 10 03	675	0.1−	0.0	1998 10 14	704	1.2−	0.9+	1998 11 11	704	0.6+	0.3+
1994 10 03	675	0.1−	0.0	1998 10 14	704	(2.4−	0.7+)	1998 11 11	704	0.4−	0.8+
1994 10 05	400	0.4+	0.6−	1998 10 14	704	1.7−	0.0	1998 11 11	704	1.1−	1.0+
1994 10 05	400	1.3+	0.8−	1998 10 14	704	1.1−	0.3−	1998 11 11	704	0.0	1.4+
1994 10 06	400	0.8−	0.5−	1998 10 15	704	0.6+	0.8−	1998 11 14	327	0.0	0.5−
1994 10 06	400	1.4−	1.0+	1998 10 15	704	1.1+	0.6+	1998 11 14	327	0.1+	0.4−
1994 10 28	400	0.9+	0.8−	1998 10 15	704	0.8+	0.5+	1998 11 14	327	0.1+	0.5−
1994 10 28	400	0.0	1.6−	1998 10 15	704	0.1−	1.1+	1998 11 20	704	0.4+	0.3+
1994 11 03	400	1.7+	0.9+	1998 10 15	704	1.0+	1.1+	1998 11 20	704	(2.2−	1.3−)
1994 11 03	400	0.5+	0.6−	1998 10 28	704	0.1+	0.1−	1998 11 20	704	0.9−	0.7−
1998 09 14	699	0.1+	0.6−	1998 10 28	704	0.4+	0.1−	1998 11 20	704	(0.9−	2.4−)
1998 09 14	699	0.1−	0.5−	1998 10 28	704	0.6+	0.2−	1999 01 08	704	0.4+	0.4−
1998 09 14	699	0.2−	0.5−	1998 10 28	704	0.2+	0.2−	1999 01 08	704	1.5−	0.3+
1998 09 30	120	1.1−	0.0	1998 10 29	704	0.3+	0.4−	1999 01 08	704	1.1−	0.7+
1998 09 30	120	0.9−	0.1−	1998 10 29	704	0.1+	0.1−	1999 01 08	704	0.4+	0.1+
1998 10 11	699	0.1−	0.3+	1998 10 29	704	0.1+	0.4−				

1994 UY_1 = 1981 WM_3 = 1996 HH_{25}

Id. T. Kobayashi (*MPC* 27559), G. V. Williams, A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	76.86671		(2000.0)	**P**		**Q**	
n	0.30262600	ω	234.20094	+0.16161380		−0.98648199	
a	2.1971779	Ω	206.53721	+0.92386266		+0.16089372	
e	0.1459117	i	3.47712	+0.34692762		+0.03108832	
P	3.26	H	15.5	G 0.15		U 2	

Residuals in seconds of arc

1981 11 24	033	0.3+	0.1−	1996 05 22	809	(3.4+	1.7+)	1999 03 23	704	0.9+	0.8+
1981 11 24	033	0.8−	0.1−	1996 05 22	809	(1.7+	2.1+)	1999 03 23	704	0.6−	0.9+
1994 10 26	399	0.6−	0.8+	1996 05 22	809	1.1+	1.5+	1999 04 07	699	1.3+	0.8+
1994 10 26	399	(2.5+	2.5+)	1997 11 29	688	1.1+	0.5+	1999 04 07	699	(1.3−	2.1+)
1994 10 31	399	0.6+	0.6+	1997 11 29	688	0.9+	0.1+	1999 04 07	699	1.4+	0.0
1994 10 31	399	0.3+	1.3−	1997 12 05	910	0.7−	0.3−	1999 04 10	699	0.8+	1.1+

1994 11 04	675	1.0+	0.5−	1997 12 05	910	0.8−	0.2−	1999 04 10	699	0.4+	1.0−
1994 11 04	675	1.2+	1.2−	1997 12 05	910	0.7−	0.3−	1999 04 10	699	1.0+	0.0
1994 11 06	675	0.4+	1.3−	1997 12 06	910	0.9−	0.0	1999 04 15	704	0.0	0.7+
1994 11 07	399	0.0	1.3+	1997 12 06	910	0.8−	0.1−	1999 04 15	704	(2.8−	3.1−)
1994 11 07	399	0.9−	0.2+	1997 12 06	910	0.9−	0.0	1999 04 15	704	2.0−	0.4+
1996 04 20	809	(2.0+	2.7−)	1999 03 20	704	2.0−	1.2+	1999 04 15	704	(2.6−	1.1−)
1996 04 20	809	(0.9+	2.7−)	1999 03 20	704	1.0−	0.5−	1999 04 17	704	0.6+	1.0−
1996 04 20	809	(1.0+	3.1−)	1999 03 20	704	(0.1−	2.4+)	1999 04 17	704	0.5+	1.4−
1996 04 21	809	0.2+	1.3−	1999 03 20	704	0.3+	0.1−	1999 04 17	704	1.1−	0.1−
1996 04 21	809	0.1+	1.4−	1999 03 23	704	1.0−	0.6−	1999 04 17	704	0.0	0.9+
1996 04 21	809	0.1+	1.4−	1999 03 23	704	1.5−	0.3+	1999 04 17	704	0.3+	1.6−

1994 VY$_2$ = 1972 TF$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	336.50667		(2000.0)		**P**	**Q**	
n	0.22497635	ω	173.94608		+0.30284640	−0.94817227	
a	2.6773890	Ω	258.39525		+0.87022520	+0.31627185	
e	0.3558086	i	5.63564		+0.38857709	+0.03068329	
P	4.38	H	14.9	G	0.15	U	1

Residuals in seconds of arc

1972 10 06	095	0.4−	1.0+	1995 03 04	801	1.0+	0.1+	1998 08 23	704	1.1−	1.7−
1994 11 04	400	0.8+	0.1−	1995 03 04	801	0.2+	0.3−	1998 08 23	704	0.4−	1.2+
1994 11 04	400	0.7−	0.4−	1995 03 29	801	0.0	0.2−	1998 08 23	704	0.8−	0.5−
1994 11 06	400	0.8−	0.1−	1995 03 29	801	1.0+	1.0−	1998 09 14	704	1.1+	1.0+
1994 11 06	400	0.4−	0.9−	1996 04 19	118	0.4−	0.1+	1998 09 14	704	0.0	0.3+
1994 11 30	400	0.5−	0.3+	1996 04 19	118	0.3−	0.4+	1998 09 14	704	0.7+	0.6+
1994 11 30	400	0.8+	0.1+	1996 04 20	118	0.6+	0.4+	1998 09 14	704	0.6+	0.2+
1994 12 09	408	0.2+	0.9+	1998 08 17	704	0.4−	0.2+	1998 09 14	704	1.0+	0.4−
1994 12 09	408	0.6+	0.5+	1998 08 17	704	0.7−	0.3+	1998 09 18	704	0.9+	0.3−
1995 01 09	691	0.4−	0.2+	1998 08 17	704	0.3−	0.6−	1998 09 18	704	(2.4+	0.4−)
1995 01 09	691	0.4−	0.2+	1998 08 17	704	0.4+	0.7+	1998 09 18	704	1.4+	0.8−
1995 01 09	691	(2.2+	0.8+)	1998 08 17	704	0.6−	0.2+	1998 09 18	704	0.4+	1.0−
1995 02 03	801	(2.0−	0.9+)	1998 08 23	704	1.4−	0.1+				
1995 02 03	801	1.1−	0.3−	1998 08 23	704	(2.2−	0.0)				

1994 VH$_7$ = 1999 FH$_9$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	42.46046		(2000.0)		**P**	**Q**	
n	0.29023984	ω	67.68932		−0.38668381	−0.91797033	
a	2.2592521	Ω	45.37579		+0.79384445	−0.38008642	
e	0.1207029	i	7.13094		+0.46934702	−0.11342305	
P	3.40	H	15.0	G	0.15	U	3

Residuals in seconds of arc

1994 11 11	408	0.5+	0.4−	1997 10 28	704	(2.0+	4.7−)	1999 03 23	699	0.2+	0.2−
1994 11 11	408	(0.1−	3.7−)	1997 10 30	704	0.6+	0.1+	1999 03 23	699	0.6+	0.2−
1994 11 12	408	1.4−	1.6−	1997 10 30	704	0.7+	0.0	1999 03 23	699	0.1+	0.9+
1994 11 12	408	1.0−	0.5−	1997 10 30	704	0.4−	0.3+	1999 04 06	704	0.6−	0.1−
1994 11 27	400	1.4+	0.7+	1997 10 30	704	1.0−	0.8−	1999 04 06	704	1.1−	0.6−
1994 11 27	400	0.5+	1.3+	1997 10 30	704	0.2+	0.3+	1999 04 06	704	0.9−	0.4−
1997 10 28	704	(3.8+	2.9−)	1999 03 20	699	0.7+	0.4+	1999 04 06	704	0.7−	0.5−
1997 10 28	704	(2.2+	4.7−)	1999 03 20	699	0.6+	0.4+	1999 04 06	704	0.3+	0.9−
1997 10 28	704	(3.0+	3.8−)	1999 03 20	699	0.6+	0.6+				

1994 WN = 1999 FC$_{46}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	57.53623		(2000.0)		**P**	**Q**	
n	0.27865346	ω	166.76407		+0.23626111	−0.96829091	
a	2.3214523	Ω	269.52537		+0.88394901	+0.24887705	
e	0.2131257	i	4.65769		+0.40350321	+0.02174671	
P	3.54	H	14.3	G	0.15	U	4

Residuals in seconds of arc

1994 11 25	411	0.0	0.5−	1994 12 14	411	0.5+	0.6−	1999 03 20	704	1.1−	1.4+
1994 11 25	411	0.3+	0.3−	1994 12 22	411	0.2−	0.9−	1999 03 23	704	0.8−	1.2+
1994 11 26	411	0.4−	0.5+	1994 12 22	411	0.1−	0.3+	1999 03 23	704	2.0+	0.1−
1994 11 26	411	0.2+	0.5+	1999 03 20	704	0.8−	0.4−	1999 03 23	704	0.5+	1.5−
1994 12 04	411	0.2+	0.3+	1999 03 20	704	0.9−	0.4+	1999 03 23	704	0.9−	0.6−
1994 12 04	411	0.0	0.2+	1999 03 20	704	0.3+	0.8+	1999 03 23	704	1.3+	0.7−
1994 12 14	411	0.4−	0.5+	1999 03 20	704	0.5+	0.5−				

1994 WN$_3$ = 1986 XU$_4$ = 1998 QU$_{98}$

Id. G. V. Williams (*MPC* 32462, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	34.91218		(2000.0)		**P**	**Q**	
n	0.24570679	ω	258.70869		+0.84370940	−0.52983078	
a	2.5245925	Ω	133.21765		+0.52701385	+0.78704376	
e	0.2316301	i	6.79458		+0.10203354	+0.31597699	
P	4.01	H	13.3	G	0.15	U	4

Residuals in seconds of arc

1986 12 05	010	(6.2+	0.1−)	1998 08 31	704	0.1+	0.8−	1998 12 22	704	0.0	0.5−
1986 12 05	010	1.5+	0.5−	1998 08 31	704	0.6+	0.5−	1998 12 22	704	0.8+	1.0−
1986 12 05	010	(4.1−	0.0)	1998 10 24	761	1.2−	0.2+	1998 12 22	704	1.2+	0.8−
1994 11 28	399	0.3−	0.4−	1998 10 24	761	1.8−	0.3+	1998 12 22	704	2.1−	1.3−
1994 11 28	399	2.0−	0.1+	1998 12 01	758	0.4+	1.0+	1999 01 10	699	0.5−	0.2−
1994 11 29	399	0.2−	0.4+	1998 12 01	758	0.2+	1.0+	1999 01 10	699	0.3−	0.1−
1994 11 29	399	0.1+	0.5−	1998 12 01	758	0.7+	1.3+	1999 01 10	699	0.3−	0.2−
1994 12 10	399	0.9−	0.7+	1998 12 15	704	1.2+	0.4+	1999 01 11	704	0.4+	0.3−
1994 12 10	399	0.8−	0.2−	1998 12 15	704	0.6−	0.4+	1999 01 11	704	0.7−	0.1+
1998 08 28	704	0.2+	1.2−	1998 12 15	704	0.7+	0.6−	1999 01 11	704	0.3−	1.3+
1998 08 28	704	0.8+	1.9−	1998 12 15	704	0.6+	0.1+	1999 01 14	663	0.2−	0.2+
1998 08 28	704	0.4+	2.1+	1998 12 15	610	0.6+	0.2+	1999 01 14	663	0.0	0.5+
1998 08 28	704	0.2−	1.4+	1998 12 15	610	0.8+	0.1+	1999 01 15	663	0.1−	0.2+
1998 08 28	704	3.0−	0.0	1998 12 15	610	0.9+	0.1−	1999 01 15	663	0.6−	0.1−
1998 08 31	704	1.2+	0.2+	1998 12 15	610	1.1+	0.1−	1999 01 23	699	0.2−	0.1−
1998 08 31	704	1.9+	0.1−	1998 12 15	610	1.3+	0.3−	1999 01 23	699	0.2−	0.1−
1998 08 31	704	1.5−	0.4−	1998 12 22	704	0.0	0.6−	1999 01 23	699	0.1−	0.1+

1994 WG$_5$ = 1996 HL$_{10}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	46.24939		(2000.0)		**P**	**Q**	
n	0.28817151	ω	35.01321		+0.03086361	−0.99773680	
a	2.2700496	Ω	53.29146		+0.89919871	+0.00161823	
e	0.1230561	i	4.27343		+0.43645060	+0.06722100	
P	3.42	H	15.3	G	0.15	U	6

Residuals in seconds of arc

1994 11 28	691	0.1−	1.3−	1994 12 03	691	0.3+	0.1+	1996 04 17	809	0.7−	1.1+
1994 11 28	691	0.1+	0.6+	1994 12 03	691	0.0	0.2+	1996 04 17	809	0.7+	0.4−
1994 11 28	691	0.2+	0.3+	1994 12 03	691	0.1−	0.6+	1996 04 18	809	0.2+	0.3−
1994 12 01	691	0.2+	0.3+	1994 12 03	675	0.3+	0.2+	1996 04 18	809	0.6−	1.2−
1994 12 01	691	0.0	0.3+	1994 12 03	675	0.3+	1.8−	1996 04 18	809	0.5+	0.5−
1994 12 01	691	1.1−	0.4+	1996 04 17	809	0.1−	1.3+				

1994 WR$_5$ = 1999 FZ$_{58}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	113.08518		(2000.0)		**P**	**Q**	
n	0.30268050	ω	327.30933		+0.83748426	−0.54515643	
a	2.1969141	Ω	65.77098		+0.50984103	+0.75463657	
e	0.1397577	i	2.37212		+0.19667799	+0.36514121	
P	3.26	H	15.7	G	0.15	U	5

Residuals in seconds of arc

1994 11 04	675	0.5−	1.1+	1994 11 28	691	0.1−	0.3+	1999 03 20	704	1.2−	0.2−
1994 11 06	675	1.0+	1.9−	1994 12 03	691	0.1−	0.3+	1999 03 20	704	0.5−	1.5+
1994 11 06	675	0.1+	0.9−	1994 12 03	691	0.2−	0.5+	1999 03 20	704	1.3+	0.5+

1994 11 07	399	0.7−	0.8−	1994 12 03	691	0.1+	0.2+	1999 03 23	704	0.2−	0.8−
1994 11 07	399	0.8+	1.5+	1994 12 03	675	0.2−	0.8−	1999 03 23	704	0.3−	0.9−
1994 11 28	691	0.4−	0.5+	1999 03 20	704	0.5+	1.0+	1999 03 23	704	0.6−	0.9−
1994 11 28	691	0.0	0.0	1999 03 20	704	0.4−	0.3+	1999 03 23	704	1.3+	0.9−

1994 WJ$_{12}$ = 1983 AJ$_4$ = 1998 VB$_{31}$

Id. G. V. Williams (*MPC* 33247), T. Urata (*ibid.*, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	35.89482		(2000.0)		**P**	**Q**	
n	0.24414381	ω	121.54886		+0.82705691	−0.53973396	
a	2.5353558	Ω	271.55984		+0.44763467	+0.80137620	
e	0.2276472	i	9.03898		+0.34000011	+0.25784383	
P	4.04	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1983 01 06	095	2.3+	0.1+	1998 11 10	905	0.3+	0.5+	1998 12 14	704	1.2+	0.4+
1994 11 27	010	2.0−	0.7−	1998 11 10	905	0.1+	0.1−	1998 12 14	704	0.9+	0.8+
1994 11 27	010	2.1−	1.0−	1998 11 11	704	0.1−	0.4+	1998 12 17	704	0.9+	0.6−
1994 11 28	010	1.5−	0.3−	1998 11 11	704	0.0	0.2+	1998 12 17	704	0.9+	1.3−
1994 11 28	010	0.2−	0.2−	1998 11 11	704	0.1+	0.6−	1998 12 17	704	0.4+	1.2−
1994 11 28	010	0.4+	0.5−	1998 11 11	704	0.6−	0.2+	1998 12 17	704	0.1−	0.9−
1994 11 29	010	0.2+	1.0−	1998 11 13	888	0.2−	0.5+	1998 12 17	704	1.3−	0.6−
1994 12 22	399	0.6+	0.4−	1998 11 13	888	0.0	0.5+	1999 01 08	704	1.9+	1.0+
1994 12 22	399	0.1−	0.2+	1998 11 13	888	0.0	0.5+	1999 01 08	704	0.5+	0.8−
1994 12 25	399	1.6−	0.7+	1998 11 13	886	1.8+	1.5+	1999 01 08	704	1.5−	1.5+
1994 12 25	399	1.8−	0.4−	1998 11 13	886	2.1+	0.8+	1999 01 08	704	1.3−	0.9−
1998 11 10	704	0.3+	0.5+	1998 11 13	385	0.2+	0.2+	1999 01 13	761	0.1−	0.8+
1998 11 10	704	0.1−	0.2+	1998 11 13	385	0.4+	0.0	1999 01 13	761	0.2+	0.9+
1998 11 10	704	0.6−	0.3−	1998 11 13	385	0.3+	0.4+	1999 02 06	704	1.2+	1.0+
1998 11 10	704	1.1−	0.1+	1998 12 14	704	0.0	0.1+	1999 02 06	704	0.9−	0.3+
1998 11 10	905	0.1+	0.7+	1998 12 14	704	1.2+	0.1−	1999 02 06	704	0.4+	0.5−
1998 11 10	704	1.1−	1.6−	1998 12 14	704	0.6+	0.1−	1999 02 06	704	1.2−	0.1+

1994 XP = 1953 XX$_1$ = 1998 QJ$_{93}$

Id. G. V. Williams (*MPC* 32462, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	37.78748		(2000.0)		**P**	**Q**	
n	0.24097388	ω	156.41064		+0.92465071	−0.36986973	
a	2.5575418	Ω	225.62351		+0.32608684	+0.89195400	
e	0.2088852	i	7.28622		+0.19669377	+0.26002777	
P	4.09	H	13.7	G	0.15	U	3

Residuals in seconds of arc

1953 12 08	024	0.4−	2.3+	1998 08 31	704	0.0	0.3+	1998 11 21	704	1.0+	0.4+
1994 12 01	400	1.6+	0.2−	1998 08 31	704	0.8+	1.0−	1998 11 21	704	1.7+	0.1+
1994 12 01	400	0.0	0.7−	1998 09 29	704	0.1+	0.8+	1998 11 21	704	0.9+	1.0+
1994 12 03	400	0.1+	0.5−	1998 09 29	704	0.6+	3.7−	1998 11 21	704	0.7+	1.2+
1994 12 03	400	0.1+	0.7−	1998 09 29	704	1.5+	2.3+	1998 11 24	704	0.2−	1.5+
1994 12 04	391	0.8−	0.7+	1998 09 29	704	1.2+	0.3−	1998 11 24	704	0.1−	0.5+
1994 12 04	391	1.6−	0.0	1998 09 29	704	3.0+	0.9−	1998 11 24	704	0.5−	0.1+
1994 12 04	391	0.7−	0.1+	1998 10 29	704	1.0−	0.2−	1998 11 24	704	0.0	0.4−
1994 12 06	893	0.0	0.0	1998 10 29	704	0.4−	0.1−	1998 11 24	704	3.1−	0.8+
1994 12 06	893	0.4+	0.2+	1998 10 29	704	0.9−	0.7−	1998 11 25	360	0.2−	1.2+
1994 12 06	893	0.3+	0.6+	1998 10 29	704	1.4−	0.3−	1998 11 25	360	0.3−	1.2+
1994 12 07	893	0.7+	0.3+	1998 10 29	704	1.4−	0.0	1998 11 25	360	0.3−	1.2+
1994 12 07	893	0.8+	0.5+	1998 11 10	704	0.1−	0.3−	1998 12 13	716	0.6−	0.1−
1994 12 08	391	1.4+	1.0+	1998 11 10	704	0.1+	0.8−	1998 12 14	716	0.2+	0.2−
1994 12 08	391	1.5+	1.2+	1998 11 10	704	0.7−	0.5+	1998 12 14	716	0.8+	0.7−
1994 12 08	391	0.6+	1.5−	1998 11 10	704	0.2−	0.4−	1999 01 11	704	1.1−	1.0−
1994 12 10	893	0.1−	0.4−	1998 11 10	704	2.4−	1.4−	1999 01 11	704	0.5−	1.4+
1994 12 10	893	0.3−	0.5−	1998 11 11	704	0.2−	0.1−	1999 01 11	704	0.1−	0.2−
1994 12 20	893	0.9−	0.6+	1998 11 11	704	0.6−	0.1−	1999 01 11	704	2.3+	0.9+
1994 12 20	893	0.4−	0.2−	1998 11 11	704	0.5−	0.8−	1999 01 11	704	2.5+	0.1+
1994 12 21	893	0.6−	0.1+	1998 11 11	704	0.4+	0.9−	1999 01 15	699	0.7−	0.3+
1994 12 21	893	0.4−	0.1−	1998 11 11	704	0.0	1.4−	1999 01 15	699	0.4−	0.4−
1994 12 22	893	0.1−	0.1+	1998 11 15	691	0.4−	0.3+	1999 01 15	699	0.2+	0.7−
1994 12 22	893	0.4−	0.2+	1998 11 15	691	0.4−	0.1+	1999 02 04	704	0.4−	0.1+
1998 08 28	704	0.1−	0.6+	1998 11 15	691	0.3−	0.1+	1999 02 04	704	0.1+	0.0
1998 08 28	704	0.3−	0.9+	1998 11 18	704	0.0	0.1+	1999 02 04	704	0.3+	0.7−
1998 08 28	704	0.1+	0.5+	1998 11 18	704	0.4+	0.1+	1999 02 04	704	0.0	0.3−
1998 08 28	704	0.4−	1.0+	1998 11 18	704	1.2+	1.2−	1999 02 04	704	1.1+	0.2+
1998 08 31	704	0.6−	0.4−	1998 11 18	704	1.0+	0.7−	1999 02 15	699	0.9−	0.9−
1998 08 31	704	0.7−	0.3+	1998 11 18	704	0.5+	1.0−	1999 02 15	699	0.6−	0.4−
1998 08 31	704	0.1−	0.2−	1998 11 21	704	1.1+	0.6+	1999 02 15	699	0.7−	1.8−

1994 XX$_4$ = 1990 SB$_{28}$ = 1999 FB$_{36}$

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	117.13323		(2000.0)		**P**	**Q**	
n	0.27805243	ω	106.42196		+0.92132673	−0.37472920	
a	2.3247963	Ω	275.68014		+0.30500924	+0.86190926	
e	0.1294735	i	5.97655		+0.24109420	+0.34159984	
P	3.54	H	13.4	G	0.15	U	4

Residuals in seconds of arc

1990 09 23	095	0.1−	0.3+	1995 01 05	411	0.2+	0.2−	1999 03 23	704	1.4+	0.0
1994 12 09	411	0.7+	0.1−	1995 01 05	411	0.3+	0.4+	1999 03 23	704	0.8−	0.0
1994 12 09	411	0.3−	0.1−	1999 03 20	704	0.5−	0.2−	1999 03 23	704	0.6−	0.1+
1994 12 10	411	0.9−	0.5+	1999 03 20	704	0.1−	1.5+	1999 03 23	704	0.1−	0.3+
1994 12 10	411	0.5−	0.4−	1999 03 20	704	0.6−	0.2+	1999 03 23	704	0.1−	0.4+
1994 12 24	411	0.4+	0.4−	1999 03 20	704	0.8+	0.8−				
1994 12 24	411	0.1−	0.3+	1999 03 20	704	0.7+	1.1−				

1995 BQ = 1982 UB$_5$ = 1996 FF$_{22}$

Id. B. G. Marsden (*MPC* 28855), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	289.56656		(2000.0)		**P**	**Q**	
n	0.17498959	ω	310.51829		+0.18967833	−0.98169722	
a	3.1656379	Ω	128.53939		+0.90731137	+0.16859312	
e	0.2422082	i	1.25334		+0.37524420	+0.08858294	
P	5.63	H	13.7	G	0.15	U	1

Residuals in seconds of arc

1982 10 20	033	0.4−	1.4+	1995 01 30	411	0.4+	0.6+	1995 02 19	411	0.5−	1.3+
1993 09 20	691	0.4−	0.8+	1995 01 30	411	0.0	0.6+	1996 03 24	809	(2.6−	2.5+)
1993 09 20	691	0.8−	0.6+	1995 02 03	399	1.3−	0.3+	1996 03 24	809	(1.4−	3.1+)
1993 09 20	691	0.5−	0.6+	1995 02 03	399	0.6−	0.5−	1996 03 24	809	0.3+	1.2+
1995 01 23	411	0.5−	1.2+	1995 02 06	399	1.0+	0.7−	1996 03 27	809	1.2+	0.5+
1995 01 23	411	0.9+	0.0	1995 02 06	399	1.0+	1.8−	1996 03 27	809	0.2+	1.0+
1995 01 25	411	0.3−	0.0	1995 02 07	411	0.6−	0.5−	1996 03 27	809	1.0−	1.0+
1995 01 25	411	1.0+	0.1−	1995 02 08	411	0.4+	0.5−	1998 08 20	691	0.0	0.3−
1995 01 28	399	(0.5−	2.6+)	1995 02 08	411	1.2−	1.2−	1998 08 20	691	0.6+	0.1+
1995 01 28	399	(1.1−	2.2+)	1995 02 10	411	0.2+	0.9+	1998 08 20	691	0.3+	0.1−
1995 01 29	411	0.1+	0.8−	1995 02 10	411	0.2+	0.0				
1995 01 29	411	0.5+	0.5+	1995 02 19	411	0.2−	1.5+				

1995 BN$_1$ = 1999 HU$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	44.11282		(2000.0)		**P**	**Q**	
n	0.28193392	ω	60.79263		−0.74983806	−0.66035547	
a	2.3034096	Ω	77.84849		+0.59157073	−0.69685388	
e	0.1248332	i	2.39833		+0.29628863	−0.27986661	
P	3.50	H	15.7	G	0.15	U	3

Residuals in seconds of arc

1995 01 25	411	0.5+	1.1−	1997 10 29	704	0.6−	1.4−	1997 11 06	704	(0.8−	2.6+)
1995 01 25	411	0.1+	0.1+	1997 10 29	704	0.6−	1.3−	1997 11 06	704	0.5−	1.3+
1995 01 26	411	1.1+	0.1−	1997 10 29	704	(2.2−	1.2−)	1997 11 06	704	0.1−	0.8+
1995 01 26	411	0.4−	0.3+	1997 10 29	704	0.7−	1.1−	1997 11 06	704	0.5−	1.2+
1995 01 29	411	0.5+	0.3−	1997 10 29	704	1.4−	0.9−	1997 11 06	704	1.1−	0.0
1995 01 29	411	1.6+	0.2−	1997 10 30	704	(2.2+	1.5−)	1999 04 17	691	0.8−	0.2−

1995 02 06	411	0.5−	0.9+	1997 10 30	704	0.6+	1.0−	1999 04 17	691	0.7−	0.3−
1995 02 06	411	0.2−	0.6+	1997 10 30	704	1.5+	0.7−	1999 04 17	691	0.7−	0.4−
1995 02 10	411	0.3−	0.1+	1997 10 30	704	1.0+	0.3−	1999 04 19	699	0.8+	1.4+
1995 02 10	411	1.4−	0.7−	1997 10 31	704	(1.1+	2.7+)	1999 04 19	699	1.6+	0.9+
1995 02 17	411	0.4+	0.1+	1997 10 31	704	(1.0+	2.3+)	1999 04 19	699	0.5−	0.5+
1995 02 17	411	0.4+	0.3+	1997 10 31	704	1.3+	1.7+	1999 04 22	691	0.0	0.1−
1995 02 19	411	1.2−	0.6−	1997 10 31	704	1.1+	1.1+	1999 04 22	691	0.1+	0.2−
1995 02 19	411	0.7−	0.3+	1997 10 31	704	0.4−	1.2+	1999 04 22	691	0.3+	0.9−

1995 BE_7 = 1999 FX_8

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	319.47341		(2000.0)		**P**	**Q**	
n	0.25691958	ω	95.42397		−0.87301435	+0.48475274	
a	2.4505933	Ω	113.58198		−0.46737474	−0.80026655	
e	0.1450038	i	3.34565		−0.13930830	−0.35297057	
P	3.84	H	14.6	G	0.15	U	4

Residuals in seconds of arc

1995 01 28	691	0.1−	0.4−	1999 03 19	699	0.1−	0.3+	1999 03 23	704	0.2−	0.1+
1995 01 28	691	0.5−	0.4+	1999 03 20	704	1.5+	0.3+	1999 03 23	704	0.4−	0.1−
1995 01 28	691	0.7+	0.4−	1999 03 20	704	0.3+	0.3+	1999 04 06	704	0.8−	0.7−
1995 02 06	691	0.1−	0.4−	1999 03 20	704	0.3−	0.0	1999 04 06	704	1.0−	0.3−
1995 02 06	691	0.2−	0.4−	1999 03 20	704	0.9+	0.4+	1999 04 06	704	0.1−	0.4−
1995 02 06	691	0.2−	0.4−	1999 03 20	704	0.4+	0.2−	1999 04 06	704	0.6−	0.2−
1998 01 30	327	0.1−	1.5+	1999 03 23	699	0.2+	0.2+	1999 04 06	704	0.7−	0.3−
1998 01 30	327	0.3−	0.2+	1999 03 23	699	0.5+	1.0+	1999 04 07	699	0.4+	0.9+
1998 01 30	327	0.1−	0.6−	1999 03 23	699	0.4+	0.5−	1999 04 07	699	0.1−	0.2+
1998 01 30	327	0.1+	0.0	1999 03 23	704	0.2−	0.1+	1999 04 07	699	0.0	0.2+
1999 03 19	699	0.7+	0.2−	1999 03 23	704	0.0	0.4+				
1999 03 19	699	0.1−	0.2+	1999 03 23	704	0.7−	0.3−				

1995 CR_1

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	39.25489		(2000.0)		**P**	**Q**	
n	0.26559970	ω	267.93982		−0.35988890	−0.91992576	
a	2.3969060	Ω	204.98839		+0.93298952	−0.35426491	
e	0.2928127	i	21.61579		+0.00324720	−0.16802669	
P	3.71	H	16.1	G	0.15	U	3

Residuals in seconds of arc

1995 02 03	413	0.6+	0.2−	1995 03 07	413	0.6−	0.7−	1999 04 10	678	1.3−	0.1−
1995 02 03	413	0.3−	0.3+	1995 04 16	413	0.9+	0.0	1999 04 10	678	1.1+	0.1+
1995 02 09	413	0.2−	0.3+	1995 04 16	413	0.3+	0.6+	1999 04 12	704	0.9−	0.4−
1995 02 09	413	0.2−	0.3+	1995 06 02	413	0.4−	0.5−	1999 04 12	704	0.0	0.7−
1995 02 20	413	0.1+	0.2+	1995 06 02	413	0.0	0.5−	1999 04 12	704	1.4+	0.5+
1995 02 20	413	0.0	0.2+	1999 04 09	678	(2.1−	2.9−)	1999 04 12	704	1.0+	1.0+
1995 03 07	413	0.2−	0.6−	1999 04 09	678	1.2−	0.2+				

1995 DV = 1999 FA_{19}

Id. T. Kobayashi

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	298.31176		(2000.0)		**P**	**Q**	
n	0.25855200	ω	244.41479		−0.34650670	+0.93801388	
a	2.4402675	Ω	5.33014		−0.82705955	−0.30150330	
e	0.1523214	i	4.90396		−0.44261226	−0.17095530	
P	3.81	H	14.9	G	0.15	U	5

Residuals in seconds of arc

1995 02 20	411	0.4−	0.9−	1999 03 19	704	0.0	1.4−	1999 03 22	699	0.6+	0.2−
1995 02 20	411	0.9−	0.4−	1999 03 19	704	0.9−	0.0	1999 03 22	699	0.8+	0.2+
1995 02 22	411	1.3+	0.2−	1999 03 19	704	0.0	0.2+	1999 03 22	699	0.8+	1.1+
1995 02 22	411	0.9−	0.1−	1999 03 19	704	0.1+	1.1−	1999 03 24	699	0.4+	0.4+
1995 02 26	411	0.7−	0.3−	1999 03 19	704	0.1+	0.4+	1999 03 24	699	0.3+	0.9+
1995 02 26	411	0.5+	1.5+	1999 03 20	704	0.9−	0.3+	1999 03 24	699	0.1+	0.1+
1995 03 05	411	0.6−	0.3+	1999 03 20	704	0.1−	0.1+	1999 04 10	699	0.1−	0.5−
1995 03 05	411	0.4−	0.8+	1999 03 20	704	0.6−	0.7−	1999 04 10	699	0.4−	0.0
1995 03 11	411	1.1+	1.1−	1999 03 20	704	0.4−	0.1−	1999 04 10	699	0.4−	0.4−
1995 03 11	411	0.9+	0.4+	1999 03 20	704	0.7+	0.7+				

1995 DH_4 = 1999 FK_{58}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	264.64298		(2000.0)		**P**	**Q**	
n	0.26542537	ω	318.55597		+0.04117966	+0.99603555	
a	2.3979554	Ω	313.64059		−0.88562608	−0.00014893	
e	0.1384305	i	6.25521		−0.46256966	+0.08895591	
P	3.71	H	14.2	G	0.15	U	5

Residuals in seconds of arc

1995 02 21	691	0.7+	0.1+	1995 03 07	691	0.7−	0.4−	1999 03 23	704	0.1+	0.1+
1995 02 21	691	0.4+	0.1−	1995 03 07	691	0.7−	0.2+	1999 03 23	704	0.4−	1.0−
1995 02 21	691	0.5+	0.0	1999 03 20	704	0.1−	0.8−	1999 03 23	704	0.5+	1.5−
1995 03 01	691	0.0	0.0	1999 03 20	704	0.2−	0.6+	1999 04 09	699	0.3+	0.9+
1995 03 01	691	0.2+	0.1−	1999 03 20	704	0.5−	0.4+	1999 04 09	699	0.7+	0.4+
1995 03 01	691	0.3+	0.1+	1999 03 23	704	0.3−	0.4+	1999 04 09	699	0.4+	0.0
1995 03 07	691	0.7−	0.2+	1999 03 23	704	0.6−	0.4+				

1995 DH_5 = 1999 GM_5

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	274.39460		(2000.0)		**P**	**Q**	
n	0.28186205	ω	43.34440		+0.20645306	+0.97824800	
a	2.3038011	Ω	238.57978		−0.90405496	+0.18281787	
e	0.1146646	i	1.35629		−0.37424826	+0.09802288	
P	3.50	H	16.3	G	0.15	U	5

Residuals in seconds of arc

1995 02 08	691	0.3+	0.1+	1995 03 01	691	0.3−	0.3+	1999 04 16	684	0.1+	0.0
1995 02 08	691	0.7−	0.0	1995 03 01	691	0.1+	0.4−	1999 04 18	704	0.6+	1.0+
1995 02 08	691	0.0	0.2+	1995 03 01	691	0.3−	0.1+	1999 04 18	704	(2.7−	0.6+)
1995 02 22	691	0.6+	0.1−	1999 04 15	684	0.2−	0.0	1999 04 18	704	0.8−	1.1−
1995 02 22	691	0.3+	0.1−	1999 04 15	684	0.2+	0.2−	1999 04 18	704	(6.5−	1.4+)
1995 02 22	691	0.1−	0.2−	1999 04 16	684	0.1+	0.3+				

1995 FH_1 = 1953 FN = 1974 HN = 1978 ED_5 = 1999 DU_7

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	307.24365		(2000.0)		**P**	**Q**	
n	0.23518015	ω	211.97676		−0.78890363	+0.61405978	
a	2.5993750	Ω	6.07263		−0.50601033	−0.62723893	
e	0.0976099	i	12.94547		−0.34868986	−0.47906358	
P	4.19	H	13.4	G	0.15	U	4

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

1953 03 16	024	(1.3−	6.5−)	1995 04 20	399	1.2+	1.7−	1999 04 06	704	1.1−	1.1−
1953 03 20	024	(2.7+	5.2+)	1995 04 20	399	(0.7+	3.1−)	1999 04 06	704	0.2+	0.4−
1974 04 22	805	0.0	0.1−	1995 04 27	399	1.2+	1.6+	1999 04 06	704	0.5−	1.1+
1974 04 24	805	0.4+	0.7−	1995 04 27	399	0.7−	0.9+	1999 04 06	704	0.7−	0.6+
1974 04 25	805	(0.06−	0.00−)	1999 02 18	699	0.3+	0.1+	1999 04 06	704	0.8−	0.1+
1978 03 06	095	1.6−	0.8−	1999 02 18	699	0.6+	0.0	1999 04 06	699	0.8+	0.3+
1995 03 28	399	(2.3−	0.3+)	1999 02 18	699	0.4+	0.3+	1999 04 06	699	0.7+	1.3+
1995 03 28	399	1.0−	0.5+	1999 02 22	699	0.4+	0.6−	1999 04 06	699	0.9+	0.9+
1995 04 04	399	0.4−	1.2−	1999 02 22	699	0.6+	0.2−				
1995 04 04	399	1.1−	0.2−	1999 02 22	699	0.4+	0.4−				

1995 GV_2 = 1979 WN_3 = 1991 LQ_3

Id. G. V. Williams (*MPC* 25223, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	84.63449		(2000.0)		**P**	**Q**	
n	0.21554939	ω	267.19022		+0.67486915	−0.73594107	
a	2.7548938	Ω	140.18703		+0.70623706	+0.62281744	
e	0.0362371	i	4.85982		+0.21396457	+0.26549799	
P	4.57	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1979 11 16	095	(2.2+	7.2+)	1995 04 06	691	0.6+	0.5−	1999 01 15	691	0.3−	0.6−
1991 06 06	809	0.1−	1.4+	1995 04 06	691	0.6+	0.5−	1999 02 10	704	0.1+	0.7+
1991 06 06	809	1.4−	0.8+	1995 04 08	691	0.7+	0.6−	1999 02 10	704	0.3−	1.8+
1991 06 06	809	0.9−	1.8+	1995 04 08	691	0.5+	0.7−	1999 02 10	704	0.5−	1.9+
1991 06 08	809	0.2+	0.5+	1995 04 08	691	0.5+	0.6−	1999 02 10	704	0.5−	1.9+
1991 06 08	809	0.7−	0.2−	1995 04 22	691	0.5+	0.8−	1999 02 12	699	0.9+	0.2−
1991 06 08	809	1.8−	0.2+	1995 04 22	691	0.2+	0.3−	1999 02 12	699	1.3+	0.0
1992 09 26	691	0.3+	0.2+	1995 04 22	691	0.9+	0.8−	1999 02 13	704	0.9+	0.7+
1992 09 26	691	0.3+	0.1+	1997 10 27	688	0.0	0.4+	1999 02 13	704	1.0−	0.5+
1992 09 26	691	0.4+	0.1+	1997 10 27	688	0.3+	0.2+	1999 02 13	704	0.2+	0.3+
1995 04 02	691	0.9+	0.5−	1997 10 28	688	0.4+	0.1+	1999 02 13	704	2.5−	0.1+
1995 04 02	691	0.5+	0.3−	1997 10 28	688	0.3+	0.0	1999 02 24	691	0.0	0.4−
1995 04 02	691	0.3+	0.5−	1999 01 15	691	0.9−	0.6−	1999 02 24	691	0.1−	0.5−
1995 04 06	691	0.5+	0.5−	1999 01 15	691	0.8−	1.0−	1999 02 24	691	0.8−	0.4−

1995 GB$_7$ = 1979 MJ$_2$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	59.32715		(2000.0)		**P**	**Q**	
n	0.29342020	ω	43.13730		−0.96764517	−0.23746586	
a	2.2428973	Ω	122.93863		+0.19490750	−0.91813320	
e	0.0216509	i	5.83217		+0.16023074	−0.31724027	
P	3.36	H	15.7	G	0.15	U	6

Residuals in seconds of arc

1979 06 23	413	2.3+	1.3+	1995 04 03	327	0.5+	0.9+	1995 04 04	327	0.4−	0.3−
1979 06 24	413	1.0−	1.4−	1995 04 03	327	0.4+	0.2+	1995 04 04	327	0.2−	0.1−
1979 06 25	413	0.2+	1.0+	1995 04 03	327	0.1−	0.1−	1995 04 04	327	0.9+	0.0
1979 06 29	413	1.5−	0.7−	1995 04 03	327	0.4−	0.5−	1995 04 05	327	0.1−	0.1−
1995 03 27	675	1.5+	0.3+	1995 04 03	327	0.6−	0.0	1995 04 05	327	0.2+	0.3−
1995 04 03	327	0.6−	0.1−	1995 04 03	327	0.6−	0.2−	1995 04 05	327	0.0	0.3+
1995 04 03	327	0.3−	0.1+	1995 04 04	327	0.3−	0.1−				

1995 HB$_4$ = 1999 FU$_{49}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	48.63076		(2000.0)		**P**	**Q**	
n	0.21689928	ω	310.00676		+0.08675802	−0.99507339	
a	2.7434516	Ω	134.94439		+0.93343396	+0.06436687	
e	0.2250430	i	3.88688		+0.34810067	+0.07540456	
P	4.54	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1995 04 26	691	0.7+	0.2+	1995 05 09	691	0.9−	0.1−	1999 03 20	704	0.3−	1.4−
1995 04 26	691	0.3+	0.1+	1999 02 18	699	0.2+	0.4+	1999 03 23	704	0.4−	0.4+
1995 04 26	691	0.3+	0.1−	1999 02 18	699	0.3+	0.6−	1999 03 23	704	1.3−	0.2+
1995 05 04	691	0.1−	0.8+	1999 02 18	699	0.0	1.1+	1999 03 23	704	1.1+	1.2+
1995 05 04	691	0.6+	0.0	1999 03 20	704	0.3−	0.3−	1999 03 23	704	0.8+	0.4+
1995 05 04	691	0.3−	0.3−	1999 03 20	704	0.0	1.8−	1999 03 23	704	0.6−	0.8+
1995 05 09	691	0.4−	0.1+	1999 03 20	704	0.0	0.5−				
1995 05 09	691	0.1−	0.5−	1999 03 20	704	0.5+	0.0				

1995 KH$_1$

Id. E. Bowell (1991, 1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	233.56203		(2000.0)		**P**	**Q**	
n	0.21168984	ω	186.30607		+0.65050965	+0.74511758	
a	2.7882778	Ω	124.38355		−0.68880673	+0.66038616	
e	0.1452992	i	10.26712		−0.31997262	+0.09321970	
P	4.66	H	13.9	G	0.15	U	4

Residuals in seconds of arc

1991 09 15	675	0.2+	0.0	1995 06 02	358	0.1+	0.2+	1999 02 23	699	0.8+	0.1+
1991 09 15	675	0.2−	0.3+	1995 06 07	358	0.8−	0.9−	1999 04 10	699	0.3−	0.1−
1995 05 26	358	0.5−	0.4−	1995 06 07	358	0.4+	1.0+	1999 04 10	699	0.4+	0.6−
1995 05 26	358	(3.1−	0.1+)	1995 06 17	358	1.2+	0.3−	1999 04 10	699	0.4+	0.4−
1995 05 31	358	0.9+	0.7−	1995 06 17	358	1.0+	0.9−	1999 04 18	703	0.3−	0.1+
1995 05 31	358	1.6−	0.4+	1995 06 24	358	0.5+	0.3−	1999 04 18	703	0.5−	0.9+
1995 06 01	358	(2.9−	0.2−)	1995 06 24	358	0.6+	1.1+	1999 04 18	703	0.3−	0.3+
1995 06 01	358	0.8−	0.6−	1999 02 23	699	0.2+	0.6−	1999 04 18	703	0.2+	0.2+
1995 06 02	358	0.9−	1.1+	1999 02 23	699	0.4−	0.5+				

1995 KF$_4$ = 1991 JK$_4$ = 1999 FV$_{31}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	88.16074		(2000.0)		**P**	**Q**	
n	0.23267777	ω	220.04358		+0.14572115	−0.98014501	
a	2.6179788	Ω	222.08481		+0.95127389	+0.17614884	
e	0.1275585	i	11.57361		+0.27174131	−0.09103488	
P	4.24	H	13.0	G	0.15	U	3

Residuals in seconds of arc

1991 05 12	809	1.1+	0.5−	1995 05 27	691	0.0	0.4+	1999 03 19	704	0.2−	0.9−
1991 05 12	809	0.5+	1.4−	1995 05 27	691	0.1+	0.4+	1999 03 19	704	0.1−	0.5−
1991 05 12	809	(1.0+	2.3−)	1995 05 30	691	(2.2+	0.6+)	1999 03 19	704	0.4−	0.3+
1991 05 17	809	0.5−	0.6−	1995 05 30	691	1.9+	1.0+	1999 03 20	704	0.8+	1.0−
1991 05 17	809	0.4−	0.5−	1995 05 30	691	(2.9+	1.1+)	1999 03 20	704	0.5+	1.0+
1991 05 17	809	1.6−	0.1−	1997 12 26	566	0.1+	0.2−	1999 03 20	704	0.5−	0.0
1995 05 26	691	0.0	0.3+	1997 12 26	566	0.1−	0.0	1999 03 20	704	1.0−	1.2+
1995 05 26	691	0.0	0.3+	1997 12 26	566	0.1+	0.4−	1999 03 20	704	0.8−	0.2+
1995 05 26	691	0.1+	0.1+	1999 03 19	704	0.5+	0.4+				
1995 05 27	691	0.1−	0.4+	1999 03 19	704	0.4+	1.1−				

1995 LE

Id. C. W. Hergenrother (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	300.40693		(2000.0)		**P**	**Q**	
n	0.23743810	ω	75.32821		+0.88791341	+0.45455419	
a	2.5828694	Ω	257.59385		−0.44497369	+0.80975861	
e	0.5719555	i	4.14787		−0.11665416	+0.37104108	
P	4.15	H	17.4	G	0.15	U	1

Residuals in seconds of arc

1995 06 03	691	0.9−	0.4−	1995 08 21	658	1.5−	0.0	1995 10 31	658	0.3−	0.0
1995 06 03	691	0.6−	0.3−	1995 08 25	587	0.0	0.1+	1995 10 31	658	0.2−	0.0
1995 06 03	691	0.5−	0.1+	1995 08 26	587	0.1+	0.2+	1995 10 31	658	0.3−	0.0
1995 06 04	691	0.3−	0.3−	1995 08 27	658	0.5−	0.2−	1995 10 31	413	0.1+	0.1+
1995 06 04	691	0.6−	0.3+	1995 08 27	658	0.4−	0.3−	1995 10 31	413	0.2−	0.3−
1995 06 05	691	0.4+	0.8−	1995 08 27	658	0.4−	0.3−	1995 10 31	118	0.1−	0.3+
1995 06 05	691	0.6+	0.5−	1995 08 27	897	0.4−	0.9−	1995 11 01	897	1.4+	0.2+
1995 06 07	691	0.7+	0.3+	1995 08 27	897	0.8−	0.1+	1995 11 01	897	0.1−	0.5+
1995 06 07	691	0.0	0.3−	1995 08 30	816	0.0	0.3−	1995 11 01	897	0.5+	0.4+
1995 06 08	691	0.3−	0.6+	1995 08 30	816	0.0	0.4−	1995 11 03	897	0.6+	0.3+
1995 06 08	691	0.4−	0.8+	1995 08 30	816	0.2−	0.3−	1995 11 03	897	0.9+	0.4+
1995 06 08	691	0.2−	0.8+	1995 08 30	816	0.0	0.3−	1995 11 16	360	0.3−	0.0
1995 06 08	413	0.3−	0.1+	1995 09 03	816	0.1+	0.2−	1995 11 16	360	0.1−	0.1+
1995 06 08	413	0.1−	0.3+	1995 09 03	816	0.0	0.1−	1995 11 16	360	0.1−	0.1−
1995 06 13	568	0.2−	0.2+	1995 09 03	816	0.1−	0.1+	1995 11 17	608	0.1+	0.4+
1995 06 19	413	0.8+	0.2−	1995 09 03	816	0.0	0.1−	1995 11 17	608	0.0	0.7+

1995 06 19	413	0.9+	0.2−	1995 09 07	608	0.1+	0.5−	1995 11 17	360	0.3−	0.2−
1995 06 20	413	0.3−	0.3+	1995 09 07	608	0.6+	0.3+	1995 11 17	360	0.0	0.2+
1995 06 20	413	0.0	0.3+	1995 09 07	608	0.1+	0.5−	1995 11 17	360	0.1−	0.1+
1995 06 21	557	0.6−	0.5+	1995 09 07	608	0.1+	0.2+	1995 11 19	658	0.8−	0.1−
1995 06 21	557	0.2−	1.1+	1995 09 17	118	0.1+	0.0	1995 11 19	658	0.7−	0.0
1995 06 21	104	0.0	1.9+	1995 09 17	118	0.2+	0.0	1995 11 19	658	0.9−	0.0
1995 06 21	104	(0.0	2.2+)	1995 09 20	360	0.2+	0.1+	1995 11 19	587	0.8+	0.1−
1995 06 21	104	1.2+	0.3+	1995 09 20	360	0.0	0.2+	1995 11 19	587	0.1−	0.9−
1995 06 21	104	0.9+	0.5+	1995 09 20	360	0.4+	0.3+	1995 11 20	658	1.3−	0.3−
1995 06 23	658	1.5−	0.1−	1995 09 26	108	0.3−	0.8+	1995 11 20	658	1.2−	0.1−
1995 06 23	658	1.6−	0.0	1995 09 26	108	0.0	0.2−	1995 11 20	658	1.0−	0.4−
1995 06 23	658	1.2−	0.3+	1995 09 26	108	0.1−	0.4+	1995 11 20	608	0.0	0.0
1995 06 30	658	0.7+	0.3+	1995 09 27	108	1.8+	0.1−	1995 11 20	608	0.1+	0.2+
1995 06 30	658	0.6−	0.2−	1995 09 28	108	0.4+	0.3−	1995 11 21	587	0.1−	0.1−
1995 06 30	658	0.4+	0.5+	1995 09 28	108	0.1+	1.7−	1995 11 21	587	0.3+	1.2−
1995 07 01	658	(0.7−	2.9+)	1995 09 28	108	(1.2+	2.0−)	1995 11 23	118	0.2−	0.1−
1995 07 01	658	(0.9−	3.0+)	1995 10 06	118	0.4+	0.0	1995 11 27	711	0.4+	0.3+
1995 07 01	658	(0.6−	3.0+)	1995 10 16	118	0.4+	0.2+	1995 11 27	711	0.2−	0.0
1995 07 06	413	0.1−	0.2−	1995 10 18	587	0.3+	0.1+	1995 11 28	711	0.4−	0.0
1995 07 06	413	0.0	0.4−	1995 10 18	587	0.4+	0.0	1995 11 28	711	0.3−	0.0
1995 07 20	413	0.1−	0.3+	1995 10 19	413	0.7+	0.0	1995 12 07	568	0.3−	0.6+
1995 07 20	413	0.3−	0.3+	1995 10 19	413	0.6+	0.1+	1995 12 10	587	0.5+	0.6+
1995 07 20	413	0.1−	0.2+	1995 10 20	413	0.7+	0.1−	1995 12 10	587	0.5+	0.2−
1995 07 24	104	0.0	1.0+	1995 10 20	413	0.7+	0.1−	1996 01 13	691	0.3−	0.4+
1995 07 24	104	0.6+	0.6+	1995 10 22	360	1.0+	0.5+	1996 01 13	691	0.3+	0.0
1995 07 24	104	0.6+	0.2−	1995 10 22	360	1.0+	0.6+	1996 01 20	711	0.5−	0.0
1995 07 25	711	0.6+	0.8−	1995 10 22	360	0.8+	0.6+	1996 01 20	711	0.7−	0.4+
1995 07 25	711	0.5+	1.0−	1995 10 28	118	0.2+	0.4+	1996 01 21	711	0.1+	0.3+
1995 07 26	711	0.6+	1.2−	1995 10 28	658	0.0	1.3+	1996 01 21	711	0.9−	0.7+
1995 08 06	118	0.4+	0.2+	1995 10 28	658	0.1−	1.2+	1996 02 09	711	0.4+	0.2−
1995 08 06	118	0.7+	0.0	1995 10 28	658	0.1+	1.2+	1996 02 09	711	0.0	0.5−
1995 08 07	118	0.1+	0.0	1995 10 29	658	0.7−	0.4−	1996 02 10	711	0.6−	0.1−
1995 08 07	118	0.4+	0.1+	1995 10 29	658	0.8−	0.4−	1996 02 11	711	1.1+	1.4+
1995 08 07	360	0.2+	0.4−	1995 10 29	658	0.9−	0.4−	1996 02 11	711	0.7+	1.1+
1995 08 07	360	0.0	0.5−	1995 10 29	413	0.1−	0.4−	1999 04 14	693	0.3−	0.2−
1995 08 07	360	0.1−	0.2−	1995 10 29	413	0.0	0.4−	1999 04 14	693	0.4+	0.6−
1995 08 20	658	1.3−	0.3−	1995 10 30	658	0.6−	0.3−	1999 04 14	693	0.1+	0.2+
1995 08 20	658	0.9−	0.3−	1995 10 30	658	0.5−	0.4−	1999 04 15	693	0.8−	0.0
1995 08 20	658	1.2−	0.2−	1995 10 30	658	0.5−	0.3−	1999 04 15	693	0.2+	0.3+
1995 08 21	658	0.6+	0.0	1995 10 30	413	0.0	0.2−	1999 04 15	693	0.3+	0.0
1995 08 21	658	1.6−	0.1+	1995 10 30	413	0.7+	0.4+				

1995 SZ$_1$ = 1981 US$_8$

Id. M. E. Sansaturio, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	307.07592		(2000.0)		**P**	**Q**	
n	0.27764741	ω	120.82214		+0.67078758	−0.74028352	
a	2.3270567	Ω	286.97970		+0.66337008	+0.62600980	
e	0.1484891	i	2.69638		+0.33163860	+0.24513678	
P	3.55	H	14.7	G	0.15	U	2

Residuals in seconds of arc

1981 10 30	381	0.1−	0.1−	1995 10 05	046	0.3−	0.7−	1995 11 26	046	0.3−	0.2+
1981 10 30	381	0.1+	0.2−	1995 10 05	046	0.3−	0.7−	1995 11 26	046	0.4+	0.2+
1995 09 25	046	0.5+	1.2+	1995 10 05	046	0.3−	0.8−	1995 11 26	046	0.3−	0.1−
1995 09 25	046	0.6+	0.9+	1995 10 05	046	0.3−	0.4−	1995 12 17	046	0.3+	0.2−
1995 09 25	046	0.7+	0.9+	1995 10 05	046	0.2−	0.3−	1995 12 17	046	0.1+	0.1−
1995 09 25	046	0.6+	0.7+	1995 10 05	046	0.3−	0.3−	1995 12 17	046	0.2−	0.2+
1995 09 25	046	0.6+	0.9+	1995 10 12	046	0.0	0.5−	1997 03 05	046	0.5+	0.0
1995 09 25	046	0.5+	1.3+	1995 10 12	046	0.2−	0.6−	1997 03 05	046	0.4+	0.3−
1995 09 26	046	0.7+	0.7−	1995 10 12	046	0.2−	0.8−	1997 03 05	046	1.0+	0.0
1995 09 26	046	0.5−	0.1−	1995 10 21	046	0.1+	0.1−	1997 03 11	046	1.5−	0.1−
1995 09 26	046	0.5+	0.4−	1995 10 21	046	0.2+	0.1−	1997 03 11	046	0.1−	0.2+
1995 09 26	046	0.1−	0.0	1995 10 21	046	0.1+	0.1−	1997 03 11	046	0.0	0.1+
1995 09 26	046	0.2+	0.5−	1995 11 10	046	0.0	0.3+	1997 04 01	046	0.0	0.1−
1995 09 28	046	0.4−	0.3−	1995 11 10	046	0.2+	0.4+	1997 04 01	046	0.0	0.1−
1995 09 28	046	0.5−	0.3−	1995 11 10	046	0.2+	0.3+	1997 04 03	046	0.6−	0.2+
1995 10 03	046	0.6−	0.1+	1995 11 11	046	0.1−	0.4+	1997 04 03	046	0.4−	0.3+
1995 10 03	046	0.5−	0.2−	1995 11 11	046	0.2−	0.4+	1997 04 03	046	0.6+	0.4−
1995 10 03	046	0.6−	0.1−	1995 11 11	046	0.1−	0.5+				

1995 SW$_{19}$ = 1998 HM$_{39}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	88.39114		(2000.0)		**P**	**Q**	
n	0.17200803	ω	108.99059		−0.87708843	−0.48017389	
a	3.2021149	Ω	42.31500		+0.43359431	−0.80242615	
e	0.1473890	i	1.03868		+0.20666850	−0.35432373	
P	5.73	H	14.0	G	0.15	U	6

Residuals in seconds of arc

1995 09 18	691	0.6+	0.0	1995 09 27	691	0.2+	0.3+	1998 04 21	704	0.1+	0.0
1995 09 18	691	0.1+	0.1−	1998 04 20	704	0.1+	0.0	1998 04 21	704	0.1+	0.1+
1995 09 18	691	0.8−	0.1−	1998 04 20	704	0.6+	0.3−	1998 04 21	704	0.1+	0.2−
1995 09 22	691	0.0	0.2−	1998 04 20	704	0.7+	0.4−	1998 04 22	704	0.2+	0.3−
1995 09 22	691	0.0	0.0	1998 04 20	704	0.8−	0.5−	1998 04 22	704	0.7−	0.0
1995 09 22	691	0.2+	0.2−	1998 04 20	704	0.2−	0.8+	1998 04 22	704	0.2−	0.3+
1995 09 27	691	0.3−	0.1+	1998 04 21	704	0.1+	0.1+	1998 04 22	704	0.3−	0.5+
1995 09 27	691	0.0	0.3+	1998 04 21	704	0.2+	0.0	1998 04 22	704	(2.3−	0.3+)

1995 SY$_{29}$ = 1999 GK$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	257.58099		(2000.0)		**P**	**Q**	
n	0.17433050	ω	55.95513		+0.64005438	+0.76826133	
a	3.1736118	Ω	253.84412		−0.70839686	+0.58491326	
e	0.1730783	i	0.61102		−0.29749668	+0.26009807	
P	5.65	H	13.4	G	0.15	U	5

Residuals in seconds of arc

1995 09 25	112	0.3+	0.7−	1995 10 15	112	1.1+	0.1−	1995 10 19	112	0.9+	0.3+
1995 09 25	112	0.7−	0.3−	1995 10 15	112	1.6−	0.5−	1995 10 19	112	0.2+	0.1−
1995 09 25	112	0.5+	0.1−	1995 10 15	112	0.4−	0.9−	1995 10 19	112	0.9+	0.1−
1995 09 26	112	1.1−	0.6+	1995 10 15	112	0.5+	0.6+	1999 04 05	120	0.6−	0.0
1995 09 29	112	1.1+	0.2+	1995 10 15	112	0.3−	0.8−	1999 04 05	120	0.8−	0.4−
1995 09 30	112	1.3+	0.4+	1995 10 19	112	0.6+	0.6+	1999 04 05	120	0.4+	1.6+
1995 09 30	112	0.3+	0.0	1995 10 19	112	1.9−	0.5−	1999 04 09	120	0.6+	1.7−
1995 09 30	112	0.3+	0.9+	1995 10 19	112	0.5+	0.0	1999 04 09	120	0.1+	0.0
1995 09 30	112	1.7−	0.1+	1995 10 19	112	0.5−	0.1−				

1995 UT$_2$ = 1979 HL$_6$ = 1997 EW$_{33}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	100.02129		(2000.0)		**P**	**Q**	
n	0.26550597	ω	139.31431		−0.50489207	+0.85996318	
a	2.3974700	Ω	100.23929		−0.81028600	−0.44244304	
e	0.0805593	i	4.34063		−0.29752409	−0.25437668	
P	3.71	H	14.9	G	0.15	U	1

Residuals in seconds of arc

1979 04 30	095	0.6+	1.7+	1995 10 25	046	0.9−	0.1−	1997 03 05	704	0.7+	0.2−
1995 10 20	691	0.2−	0.3+	1995 10 25	046	1.0−	0.0	1997 03 05	704	0.1+	1.0+
1995 10 20	691	0.2−	0.3+	1995 10 25	046	0.8−	0.0	1998 07 01	809	0.1−	1.0−
1995 10 20	691	0.2−	0.3+	1995 10 25	046	0.8−	0.4−	1998 07 01	809	0.2+	1.1−
1995 10 24	046	1.0+	0.3+	1995 10 26	046	0.2−	0.3+	1998 07 01	809	0.2−	0.9−
1995 10 24	046	0.8+	0.4−	1995 10 26	046	0.2+	0.2+	1998 07 16	699	0.7+	0.3+
1995 10 24	046	0.9+	0.2+	1995 10 26	046	0.3+	0.9+	1998 07 16	699	0.7+	1.1+
1995 10 24	046	1.2+	0.5+	1997 03 04	704	0.2−	0.5−	1998 07 16	699	1.3−	1.2+
1995 10 25	046	0.7−	0.7−	1997 03 04	704	0.5−	0.1−				

1995 VD$_{19}$ = 1997 OF = 1998 WD$_{21}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	233.41606		(2000.0)		**P**	**Q**	
n	0.28596897	ω	296.67035		−0.87160637	+0.48257285	
a	2.2816907	Ω	272.29259		−0.41350767	−0.81819486	
e	0.1419981	i	4.94745		−0.26327505	−0.31253898	
P	3.45	H	14.9	G	0.15	U	4

Residuals in seconds of arc

1995 11 15	327	0.6−	0.1+	1997 07 26	910	0.7−	0.2−	1998 11 20	699	0.5+	0.7+
1995 11 15	327	0.8−	0.1−	1997 07 26	910	0.6−	0.0	1998 11 20	699	0.3+	0.5+
1995 11 15	327	0.6+	0.5−	1998 11 16	566	0.3−	1.2−	1998 11 20	699	0.3−	0.3−
1995 11 18	327	0.2−	0.5+	1998 11 16	566	0.0	0.6−	1998 11 21	704	0.8−	0.4−
1995 11 18	327	0.4+	0.7−	1998 11 16	566	0.7+	0.8−	1998 11 21	704	0.3−	0.2−
1995 11 18	327	0.1+	1.2−	1998 11 18	704	0.7+	0.2−	1998 11 21	704	0.2−	0.0
1997 07 25	910	0.8+	0.2−	1998 11 18	704	0.4−	0.3+	1998 11 21	704	0.3−	1.3−
1997 07 25	910	0.6+	0.2−	1998 11 18	704	0.6+	0.2+	1998 12 16	699	1.6−	1.1+
1997 07 25	910	0.7+	0.2−	1998 11 18	704	0.8+	1.7+	1998 12 16	699	1.1−	0.5+
1997 07 26	910	0.6−	0.0	1998 11 18	704	0.4+	1.0+	1998 12 16	699	0.9+	0.1−

1996 BM$_5$

Id. E. Bowell (1998 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	147.33174		(2000.0)		**P**	**Q**	
n	0.26887887	ω	276.89861		+0.07385200	+0.99726537	
a	2.3773781	Ω	357.33195		−0.88988288	+0.06464609	
e	0.0615236	i	3.40995		−0.45017146	+0.03581435	
P	3.67	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1996 01 12	691	0.3+	0.0	1996 01 18	691	0.1−	0.0	1998 10 19	699	0.5−	0.0
1996 01 12	691	0.0	0.1−	1996 01 25	691	0.1+	0.0	1998 10 19	699	0.3−	0.0
1996 01 12	691	0.1−	0.1−	1996 01 25	691	0.0	0.1+	1998 11 20	699	0.1+	0.1+
1996 01 18	691	0.1−	0.0	1996 01 25	691	0.1−	0.0	1998 11 20	699	0.1+	0.3+
1996 01 18	691	0.0	0.0	1998 10 19	699	0.8+	0.0	1998 11 20	699	0.1−	0.4−

1996 ES$_2$ =A905 SC = 1929 RU = 1998 YF$_1$

Id. S. Nakano (*MPC* 33493), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	99.64231		(2000.0)		**P**	**Q**	
n	0.28806179	ω	11.86498		+0.99653590	+0.07828662	
a	2.2706260	Ω	343.56646		−0.08208363	+0.87170806	
e	0.1952507	i	5.69245		−0.01335960	+0.48373160	
P	3.42	H	13.9	G	0.15	U	3

Residuals in seconds of arc

1905 09 19	024	1.0−	1.8+	1996 03 17	691	0.5−	0.7+	1998 12 16	888	0.0	0.2+
1929 09 09	024	1.0−	2.0+	1996 03 17	691	0.2−	0.5+	1998 12 16	888	0.3−	0.2+
1929 09 26	024	(8.6−	1.2+)	1996 03 17	691	0.4−	0.6+	1998 12 17	888	0.1−	0.0
1996 03 12	691	1.5+	1.2+	1996 03 21	566	0.2+	0.7+	1998 12 17	888	0.0	0.2+
1996 03 12	691	0.2+	0.5+	1996 03 21	566	0.7+	0.5+	1999 02 10	704	0.3+	0.5+
1996 03 12	691	0.3+	0.5+	1996 03 21	566	0.2+	0.6+	1999 02 10	704	1.1−	1.4+
1996 03 15	566	0.5+	0.3+	1998 10 15	699	0.5−	1.5−	1999 02 10	704	0.5−	0.2+
1996 03 15	566	0.2+	0.5−	1998 10 15	699	0.6+	0.5−	1999 02 10	704	0.7+	0.1−
1996 03 15	566	0.2+	0.0	1998 10 15	699	0.5−	1.0−	1999 02 10	704	0.8+	2.2−

1996 FR$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	349.93521		(2000.0)		**P**	**Q**	
n	0.30936655	ω	34.93469		+0.44653462	−0.89206368	
a	2.1651458	Ω	28.72878		+0.78447822	+0.35295830	
e	0.7955033	i	8.31274		+0.43034957	+0.28221060	
P	3.19	H	16.7	G	0.15	U	3

Residuals in seconds of arc

1996 03 26	566	0.6−	0.2+	1996 04 12	367	0.7−	0.3+	1996 04 21	557	0.4+	0.6−
1996 03 26	566	0.4−	0.3+	1996 04 12	587	0.8−	0.7−	1996 04 22	608	1.1+	0.2−
1996 03 26	566	0.4−	0.1+	1996 04 12	587	1.3−	0.4+	1996 04 22	608	0.8+	0.3−
1996 03 27	691	0.2+	0.3+	1996 04 13	400	0.9−	1.3−	1996 04 22	608	0.8+	0.0
1996 03 27	691	0.1+	0.0	1996 04 13	400	1.0−	0.1+	1996 04 22	360	0.4+	0.3−
1996 03 27	691	0.3+	0.0	1996 04 13	900	0.7−	0.1+	1996 04 22	360	0.4+	0.3−
1996 03 27	046	(3.0+	0.2+)	1996 04 13	360	0.8−	0.3−	1996 04 23	711	0.7−	0.3−
1996 03 27	046	1.2+	0.0	1996 04 13	360	0.9−	0.3−	1996 04 24	711	0.2−	0.4−
1996 03 27	046	1.1+	0.6−	1996 04 13	360	0.8−	0.2−	1996 04 24	711	0.2−	0.5−
1996 03 28	557	0.0	0.3−	1996 04 13	900	1.2−	0.2−	1996 05 05	658	0.1−	0.1−
1996 03 28	557	0.0	0.0	1996 04 16	608	(0.0	2.3−)	1996 05 05	658	0.5+	0.2+
1996 03 28	557	0.0	0.3−	1996 04 16	608	0.4+	1.2−	1996 05 05	658	1.4+	0.8+
1996 03 28	691	0.3−	0.2+	1996 04 17	118	1.2−	0.5+	1996 05 23	599	0.5−	0.3+
1996 03 28	691	0.1+	0.2+	1996 04 17	118	1.0−	0.0	1996 05 23	599	0.8+	1.4+
1996 03 28	691	0.2−	0.1+	1996 04 17	118	0.6−	0.0	1996 05 25	711	1.3+	0.6+
1996 03 28	691	0.1−	0.1+	1996 04 17	608	0.6−	0.6+	1996 05 25	711	0.5+	0.3−
1996 03 28	691	0.3−	0.1+	1996 04 17	566	0.2+	1.0+	1996 05 26	711	0.0	0.4−
1996 03 28	691	0.2−	0.1+	1996 04 17	608	0.5+	0.4+	1996 05 26	711	0.2−	0.2−
1996 03 28	691	0.2−	0.1−	1996 04 17	566	0.3+	0.6+	1996 05 26	413	0.2+	0.4−
1996 03 28	691	0.6−	0.1−	1996 04 17	566	0.3+	1.1+	1996 05 26	413	0.0	0.4−
1996 03 28	691	0.2+	0.1+	1996 04 17	118	0.1+	0.1−	1996 06 21	711	0.4−	0.2−
1996 03 28	413	0.2+	0.2−	1996 04 17	118	0.2+	0.4−	1996 06 21	711	0.3−	0.1+
1996 03 28	413	0.1−	0.1−	1996 04 17	118	0.0	0.4−	1999 04 04	104	1.5+	0.6+
1996 03 28	413	0.1−	0.1−	1996 04 18	608	0.7+	0.4−	1999 04 04	104	1.0−	0.1−
1996 03 28	413	0.1+	0.4−	1996 04 18	608	0.4+	0.5−	1999 04 04	104	0.0	0.2+
1996 03 28	413	0.0	0.2−	1996 04 19	566	0.2+	0.6−	1999 04 05	104	(2.2−	0.5−)
1996 04 06	557	1.1−	0.3+	1996 04 19	566	0.2+	0.6−	1999 04 05	104	(3.1−	0.4−)
1996 04 07	557	0.2+	0.0	1996 04 19	566	0.2−	0.3−	1999 04 05	104	0.5−	0.4−
1996 04 07	104	1.0+	1.2+	1996 04 19	557	0.8+	0.3−	1999 04 05	104	0.8+	0.4−
1996 04 07	104	0.4+	1.2+	1996 04 19	557	0.6+	0.3−	1999 04 05	104	1.9−	1.0−
1996 04 07	104	0.7+	1.2+	1996 04 19	557	0.7+	0.1−	1999 04 05	587	0.6−	0.3−
1996 04 07	104	0.8+	1.3+	1996 04 20	566	0.3+	0.5−	1999 04 05	587	0.4+	0.6+
1996 04 09	867	0.1+	0.4−	1996 04 20	566	0.1−	0.8−	1999 04 05	587	0.1−	0.1−
1996 04 09	867	0.6−	0.2+	1996 04 20	566	0.2+	0.8−	1999 04 08	360	0.4+	0.5+
1996 04 09	867	0.2−	0.0	1996 04 21	608	0.6+	0.7−	1999 04 08	360	0.5+	0.5+
1996 04 09	587	0.2+	0.2+	1996 04 21	608	0.2+	0.6−	1999 04 08	360	0.4+	0.5+
1996 04 09	587	0.3−	1.0+	1996 04 21	608	0.1+	0.6−	1999 04 09	118	0.3−	0.7−
1996 04 10	608	0.4+	0.1+	1996 04 21	608	1.0−	0.8+	1999 04 09	118	1.0−	0.6−
1996 04 10	608	0.8+	0.2+	1996 04 21	566	0.7+	0.8+	1999 04 09	118	0.1+	0.2+
1996 04 10	360	0.1+	0.1−	1996 04 21	566	1.1+	0.6+	1999 04 20	360	0.8+	0.2+
1996 04 10	360	0.3−	0.1+	1996 04 21	566	0.7+	0.6+	1999 04 20	360	0.4+	0.2−
1996 04 10	360	0.4−	0.3−	1996 04 21	118	0.4+	0.5+	1999 04 20	360	0.3+	0.1−
1996 04 12	897	1.8−	0.6+	1996 04 21	118	0.5+	0.1+	1999 04 20	118	0.4−	0.0
1996 04 12	897	1.3−	0.3+	1996 04 21	557	0.3−	1.0−	1999 04 20	118	0.3+	0.2+
1996 04 12	367	0.7−	0.3−	1996 04 21	557	0.5+	0.6−				

1996 HS$_{11}$ = 1996 KZ$_5$ = 1988 WJ = 1998 WS$_{17}$

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	108.52391		(2000.0)		**P**	**Q**	
n	0.19869698	ω	290.39226		+0.73495104	+0.67786420	
a	2.9085411	Ω	26.94118		−0.60582575	+0.66869351	
e	0.0679812	i	2.35667		−0.30466723	+0.30553089	
P	4.96	H	13.5	G	0.15	U	3

Residuals in seconds of arc

1988 11 17	399	1.1+	0.5−	1996 05 21	566	0.4−	0.3+	1998 11 24	704	0.5+	0.2−
1988 11 17	399	0.1−	0.8−	1996 05 22	809	(0.1+	4.7+)	1998 11 24	704	0.3−	0.7−
1988 11 17	399	1.3−	0.1+	1996 05 22	809	(0.4+	4.6+)	1998 11 24	704	0.8+	0.4+
1988 11 17	399	0.7+	0.2−	1996 05 22	809	(0.2+	4.5+)	1998 11 25	699	0.1−	1.3+
1996 04 17	809	0.1+	0.3+	1998 11 18	704	0.2−	0.1−	1998 11 25	699	0.1+	0.8+
1996 04 17	809	0.0	0.1−	1998 11 18	704	0.0	0.3−	1998 11 25	699	0.4+	1.1+
1996 04 17	809	0.4−	1.1−	1998 11 18	704	0.4+	0.3+	1998 12 14	704	0.3−	0.5+
1996 04 18	809	0.6−	1.2−	1998 11 18	704	1.5−	0.4+	1998 12 14	704	0.4+	1.1−
1996 04 18	809	0.4+	1.6−	1998 11 18	704	0.7+	1.4+	1998 12 14	704	0.3+	0.1+
1996 04 18	809	0.4+	1.6−	1998 11 21	704	0.2+	0.2+	1998 12 14	704	0.4−	0.1+

1996 05 19	809	0.3+	1.9+	1998 11 21	704	0.3+	0.8−	1998 12 14	704	1.0−	1.3+
1996 05 19	809	0.2+	1.9+	1998 11 21	704	(2.1+	1.4−)	1999 01 05	699	0.4−	0.1−
1996 05 19	809	0.2+	1.4+	1998 11 21	704	1.4+	1.1−	1999 01 05	699	1.0−	0.4−
1996 05 21	566	0.2+	0.2+	1998 11 21	704	0.4−	1.8−	1999 01 05	699	1.5−	0.2+
1996 05 21	566	0.1−	0.2+	1998 11 24	704	0.6+	0.4+				

1996 HN_{19} = 1986 RM_{10} = 1999 CK_{81}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	143.34915		(2000.0)		**P**	**Q**	
n	0.27206034	ω	153.12798		+0.99772531	−0.03965220	
a	2.3588078	Ω	209.30032		+0.02109552	+0.95174179	
e	0.1378704	i	6.39572		+0.06402480	+0.30432756	
P	3.62	H	14.1	G	0.15	U	2

Residuals in seconds of arc

1986 09 08	095	0.5+	1.5−	1996 05 22	809	(2.6+	5.3+)	1999 02 16	704	1.6−	0.5−
1996 03 17	566	0.5−	0.5+	1996 05 23	809	(2.1−	0.7+)	1999 02 16	704	0.7+	0.1+
1996 03 17	566	0.3+	0.3+	1996 05 23	809	(2.4−	1.2+)	1999 02 16	704	0.6−	1.6−
1996 03 17	566	0.4−	0.7+	1996 05 23	809	(2.2−	0.9+)	1999 02 16	704	0.3+	1.8−
1996 04 18	809	(3.6+	0.4−)	1997 10 30	566	0.3+	0.9−	1999 03 20	704	0.2+	1.4+
1996 04 18	809	(3.5+	0.1+)	1997 10 30	566	0.2+	0.9−	1999 03 20	704	0.1−	0.4+
1996 04 18	809	(3.1+	0.1+)	1997 10 30	566	0.3+	0.8−	1999 03 20	704	0.0	0.0
1996 04 20	809	1.3+	1.4−	1999 02 12	704	0.7+	0.2+	1999 03 20	704	0.7+	0.4+
1996 04 20	809	1.1+	1.5−	1999 02 12	704	1.3−	0.2−	1999 03 20	704	0.3+	0.6+
1996 04 20	809	0.4+	1.1−	1999 02 12	704	1.1−	0.6−	1999 03 23	704	1.7−	0.4+
1996 05 19	809	1.3−	0.1+	1999 02 12	704	0.5−	1.2−	1999 03 23	704	1.0+	1.3−
1996 05 19	809	1.7−	0.6−	1999 02 14	699	1.6+	1.6+	1999 03 23	704	0.7−	0.6−
1996 05 19	809	(2.7−	0.3+)	1999 02 14	699	0.0	0.8−	1999 03 23	704	0.3−	0.0
1996 05 22	809	(3.0+	5.5+)	1999 02 14	699	1.2+	0.8+				
1996 05 22	809	(3.7+	5.1+)	1999 02 16	704	0.4+	0.2+				

1996 HW_{22} = 1997 TW_{21}

Id. G. V. Williams, A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	237.42899		(2000.0)		**P**	**Q**	
n	0.26126526	ω	47.76961		−0.20921407	+0.97770735	
a	2.4233433	Ω	210.16782		−0.90730293	−0.20088402	
e	0.1850646	i	2.03300		−0.36473396	−0.06110609	
P	3.77	H	16.2	G	0.15	U	4

Residuals in seconds of arc

1996 04 20	809	(2.4+	3.8+)	1996 05 22	809	0.2−	0.5+	1997 10 10	691	0.3+	0.2−
1996 04 20	809	(1.8+	3.9+)	1996 05 22	809	0.0	0.0	1997 10 10	691	0.1+	0.2−
1996 04 20	809	(1.4+	3.2+)	1996 05 22	809	0.9−	1.4−	1997 10 10	691	0.1+	0.2−
1996 04 21	809	(2.1+	5.4+)	1996 05 23	809	0.8+	0.1+	1997 10 21	691	0.4−	0.2+
1996 04 21	809	(1.4+	4.6+)	1996 05 23	809	0.4+	0.2+	1997 10 21	691	0.3−	0.2−
1996 04 21	809	(0.7+	3.0+)	1996 05 23	809	0.3−	0.0	1997 10 21	691	0.1−	0.0
1996 05 19	809	(3.2−	2.8+)	1997 10 04	691	0.1−	0.2−	1999 01 13	691	0.5−	0.3−
1996 05 19	809	(3.5−	2.3+)	1997 10 04	691	0.2−	0.3+	1999 01 13	691	0.0	0.2+
1996 05 19	809	(5.1−	1.9+)	1997 10 04	691	0.7+	0.2−	1999 01 13	691	0.4+	0.2−

1996 HZ_{22} = 1999 HE_{8}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	30.61035		(2000.0)		**P**	**Q**	
n	0.30588776	ω	285.84776		−0.64501398	−0.76287673	
a	2.1815307	Ω	204.49159		+0.73572808	−0.60423168	
e	0.0709028	i	6.15563		+0.20654577	−0.23005037	
P	3.22	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1996 04 20	809	1.4−	1.6+	1996 05 23	809	0.7+	0.6+	1999 04 06	704	0.9−	0.1+
1996 04 20	809	0.1+	1.2+	1996 05 23	809	1.0+	0.5+	1999 04 06	704	1.2−	0.5−
1996 04 20	809	0.5−	1.2+	1996 05 23	809	0.4+	0.8+	1999 04 10	699	1.0+	0.3−
1996 04 21	809	0.3−	1.0+	1996 05 24	557	(1.6+	2.4−)	1999 04 10	699	1.0+	0.5−
1996 04 21	809	0.6−	0.5+	1996 05 24	557	(0.8+	2.4−)	1999 04 10	699	1.2+	0.2+
1996 04 21	809	1.5−	1.0+	1997 10 28	704	0.5−	1.0−	1999 04 16	704	0.1+	1.0−
1996 05 19	809	(1.7−	2.7−)	1997 10 28	704	(1.3+	3.1−)	1999 04 16	704	0.5+	1.1−
1996 05 19	809	(2.0−	2.5−)	1997 10 28	704	(0.6−	2.3−)	1999 04 16	704	0.4+	0.4+
1996 05 19	809	(2.1−	2.9−)	1997 10 28	704	(0.4−	3.2−)	1999 04 16	704	(2.2+	1.5−)
1996 05 22	809	1.6+	0.5−	1997 10 30	566	0.0	0.6+	1999 04 17	704	0.3+	0.3+
1996 05 22	809	0.1+	0.6−	1997 10 30	566	0.0	0.8+	1999 04 17	704	0.0	0.7+
1996 05 22	809	0.2+	1.1−	1997 10 30	566	0.2+	0.7+	1999 04 17	704	0.7+	0.7+
1996 05 22	557	0.0	1.8−	1999 04 06	704	1.0−	0.3+	1999 04 17	704	0.4+	0.5+
1996 05 22	557	0.2+	1.8−	1999 04 06	704	1.5−	0.1+				
1996 05 22	557	0.2+	1.7−	1999 04 06	704	1.2−	0.2−				

1996 JO = 1981 SL_{2} = 1998 VS_{23}

Id. A. Doppler (*MPC* 33495), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	141.03614		(2000.0)		**P**	**Q**	
n	0.17872574	ω	57.94031		+0.05528389	+0.99571679	
a	3.1213656	Ω	215.46000		−0.95374135	+0.03069595	
e	0.0432055	i	7.33902		−0.29550148	+0.08721144	
P	5.51	H	13.3	G	0.15	U	1

Residuals in seconds of arc

1981 09 25	046	0.6+	0.0	1997 09 01	566	0.1+	0.4+	1998 11 24	699	0.1−	0.4+
1981 09 25	046	0.2−	1.5−	1997 09 01	566	0.5−	0.3+	1998 11 24	699	0.4−	0.4+
1996 05 12	367	0.1−	0.1−	1998 11 10	704	0.3−	0.6−	1998 11 24	699	0.6+	0.4+
1996 05 12	367	0.0	0.2+	1998 11 10	704	0.3−	0.8−	1998 12 08	699	0.9−	1.0−
1996 05 12	367	0.0	0.2+	1998 11 10	704	0.2−	0.5−	1998 12 08	699	0.0	0.7+
1996 05 12	900	0.0	1.2+	1998 11 10	704	0.8+	0.2−	1998 12 08	699	0.1−	0.0
1996 05 12	900	0.2+	1.1−	1998 11 10	704	0.5+	0.8−	1999 01 06	699	0.9−	0.3+
1996 05 13	900	0.1−	0.6−	1998 11 11	704	0.1−	0.2+	1999 01 06	699	1.3−	0.3+
1996 05 13	900	0.1+	0.4−	1998 11 11	704	0.0	0.3+	1999 01 06	699	0.2−	0.8+
1996 05 15	900	0.4−	0.8−	1998 11 11	704	0.7+	0.3−	1999 01 30	402	2.4−	1.4+
1996 05 15	900	0.4−	0.6+	1998 11 11	704	0.5+	0.3+	1999 01 30	402	0.3+	0.0
1996 06 22	566	0.6+	0.6+	1998 11 11	699	0.1−	0.0	1999 02 06	402	0.3−	0.5+
1996 06 22	566	0.6+	0.6+	1998 11 11	704	2.2+	0.1−	1999 02 06	402	0.0	0.1−
1996 06 22	566	0.1−	0.7+	1998 11 11	699	0.1+	0.1−	1999 02 06	402	0.2+	1.1+
1997 09 01	566	0.3−	0.5+	1998 11 11	699	0.3+	0.6+				

1996 JU = 1990 RP_{6}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	317.70229		(2000.0)		**P**	**Q**	
n	0.27656849	ω	352.75824		−0.89066114	−0.43076441	
a	2.3331048	Ω	159.69473		+0.43534319	−0.90026449	
e	0.1820814	i	24.78582		+0.13114511	+0.06297526	
P	3.56	H	14.5	G	0.15	U	2

Residuals in seconds of arc

1990 09 11	809	0.6−	0.8−	1996 05 21	693	1.2+	2.8−	1996 09 20	696	0.5−	0.5+
1990 09 11	809	0.0	0.7−	1996 05 24	657	0.9+	0.6+	1996 09 20	696	0.5−	0.3+
1990 09 11	809	0.4+	0.2−	1996 05 24	657	1.5+	0.1+	1997 08 13	608	1.0+	0.5−
1990 09 15	809(10.4−		8.4+)	1996 05 27	658	1.1+	0.4+	1997 08 13	608	0.5+	1.0+
1990 09 15	809(10.2−		8.3+)	1996 05 27	658	1.4+	0.5+	1997 09 06	608	0.3−	0.6+
1990 09 15	809(10.2−		8.2+)	1996 05 27	658	1.2+	0.6+	1997 09 06	608	0.3−	0.7+
1996 05 11	693	0.8+	0.9−	1996 06 07	658	2.2−	0.1+	1998 12 22	703	0.5−	0.9−
1996 05 11	693	0.7−	0.8−	1996 06 07	658	1.5−	0.2+	1998 12 22	703	0.5−	0.7−
1996 05 13	693	1.2−	1.2+	1996 06 12	658	1.0−	0.2−	1999 02 28	734	0.3−	0.4+
1996 05 13	693	0.5−	0.1+	1996 06 12	658	1.0−	0.3−	1999 02 28	734	0.6+	0.5+
1996 05 21	693	0.5+	0.3+	1996 06 12	658	0.9−	0.2−	1999 02 28	734	0.5+	1.1+

1996 JW_{8} = 1999 EL_{11}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	88.22679		(2000.0)		**P**	**Q**	
n	0.26088368	ω	252.77189		+0.73839590	−0.67167655	
a	2.4257057	Ω	149.34311		+0.65485698	+0.69286000	
e	0.1140719	i	6.77852		+0.16103984	+0.26228922	
P	3.78	H	16.1	G	0.15	U	4

Residuals in seconds of arc

1993 07 24	691	0.0	0.7+	1996 05 15	691	0.3+	0.3+	1999 03 09	691	0.3−	0.4−
1993 07 24	691	0.1+	0.0	1996 05 15	691	0.2+	0.2+	1999 03 09	691	0.3−	0.4−
1993 07 24	691	0.1+	0.3+	1996 05 17	691	0.1+	0.3+	1999 03 15	691	0.1+	0.1−
1993 07 24	691	0.6−	0.7−	1996 05 17	691	0.1+	0.3+	1999 03 15	691	0.1−	0.0
1993 07 24	691	0.2+	0.1+	1996 05 17	691	0.1+	0.0	1999 03 15	691	0.2+	0.1+
1993 07 24	691	0.2+	0.3−	1999 02 18	566	0.1−	0.0	1999 03 24	691	0.1−	0.1+
1996 05 12	691	0.4−	0.2−	1999 02 18	566	0.2+	0.1+	1999 03 24	691	0.0	0.2+
1996 05 12	691	0.5−	0.3−	1999 02 18	566	0.5+	0.4+	1999 03 24	691	0.2+	0.2−
1996 05 15	691	0.1+	0.4−	1999 03 09	691	0.3−	0.0				

1996 NX_4 = 1990 DJ_2 = 1991 LS_6

Id. G. V. Williams (*MPC* 27922, unpublished), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	81.77131		(2000.0)		**P**	**Q**	
n	0.22849753	ω	308.70818		+0.03732477	−0.99725894	
a	2.6498119	Ω	139.01322		+0.94442137	+0.01430760	
e	0.0239710	i	5.58975		+0.32661159	+0.07259404	
P	4.31	H	14.1	G	0.15	U	1

Residuals in seconds of arc

1990 02 24	809	0.4+	0.9−	1996 08 09	809	1.0+	0.7−	1999 04 06	704	0.4+	1.1+
1990 02 24	809	0.8+	1.3−	1996 08 15	566	0.8−	0.6−	1999 04 07	699	1.1+	0.3+
1990 02 24	809	1.3+	1.5−	1996 08 15	566	1.3−	0.4−	1999 04 07	699	0.7+	0.2−
1990 02 25	809	0.1+	0.8−	1996 08 15	566	1.1−	0.4−	1999 04 07	699	0.3−	0.6+
1990 02 25	809	0.4+	0.7−	1996 09 08	809	1.6+	0.9−	1999 04 12	704	0.0	0.1−
1990 02 25	809	0.8+	0.6−	1996 09 08	809	0.8+	0.8−	1999 04 12	704	0.2−	0.3−
1990 02 28	809	1.5−	0.7−	1996 09 08	809	0.8+	0.2−	1999 04 12	704	0.0	0.1+
1990 02 28	809	1.5−	0.4−	1998 01 06	688	0.7−	0.7+	1999 04 12	704	0.8−	0.1−
1990 02 28	809	1.5−	0.4−	1998 01 06	688	0.7−	0.9+	1999 04 12	704	(2.3−	0.1−)
1991 06 06	809	(0.9−	2.8+)	1998 01 07	688	0.3−	0.8+	1999 04 16	704	0.2−	1.8−
1991 06 06	809	(1.9−	2.8+)	1998 01 07	688	0.3−	1.0+	1999 04 16	704	1.8+	0.1+
1991 06 06	809	1.3−	1.9+	1999 03 20	704	0.1−	0.3+	1999 04 16	704	(0.5−	2.5−)
1996 07 14	809	0.2−	0.3+	1999 03 20	704	0.5−	0.2+	1999 04 16	704	1.7−	0.8−
1996 07 14	809	0.2+	0.1+	1999 03 20	704	0.2+	0.0	1999 04 16	704	0.3−	0.7+
1996 07 14	809	0.7−	1.1+	1999 03 20	704	0.2−	0.6+	1999 04 17	703	1.9+	1.5−
1996 07 16	809	(5.5−	3.5+)	1999 03 23	704	0.2−	0.2−	1999 04 17	703	0.1−	0.2−
1996 07 16	809	(5.6−	3.3+)	1999 03 23	704	0.5−	0.1+	1999 04 17	703	0.2−	1.0+
1996 07 16	809	(5.8−	1.9+)	1999 03 23	704	0.0	0.3−	1999 04 17	703	0.1+	0.0
1996 08 08	809	(0.1−	2.6−)	1999 03 23	704	1.3−	0.1+	1999 04 19	704	0.3−	0.0
1996 08 08	809	(1.4−	3.1−)	1999 04 06	704	0.1+	0.8+	1999 04 19	704	0.3+	1.1+
1996 08 08	809	0.6−	1.8−	1999 04 06	704	0.7+	0.4+	1999 04 19	704	0.4+	0.3+
1996 08 09	809	1.3+	0.2+	1999 04 06	704	0.1+	0.1−	1999 04 19	704	1.4+	0.3−
1996 08 09	809	1.5+	0.2+	1999 04 06	704	0.4−	0.3−	1999 04 19	704	0.7−	0.6+

1996 PL = 1991 HS_4

Id. G. V. Williams, M. E. Sansaturio, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	242.36621		(2000.0)		**P**	**Q**	
n	0.23112561	ω	61.63599		+0.19059119	+0.97226453	
a	2.6296867	Ω	220.09328		−0.95816291	+0.15420653	
e	0.1873404	i	12.15088		−0.21353883	+0.17584662	
P	4.26	H	14.4	G	0.15	U	2

Residuals in seconds of arc

1991 04 19	809	0.5+	0.0	1996 08 20	596	0.9−	0.2−	1996 09 14	596	(0.2−	2.1+)
1991 04 19	809	0.2−	0.7+	1996 08 20	596	0.4−	0.8+	1996 09 14	596	0.4−	1.0+
1991 04 19	809	0.2−	0.6−	1996 08 22	596	0.7+	0.8−	1996 10 03	596	0.3+	0.1−
1996 08 08	596	0.3−	0.4+	1996 08 22	596	(3.1−	1.0−)	1996 10 03	596	0.1+	0.1+
1996 08 08	596	0.5+	0.1+	1996 08 23	596	0.6+	0.7−	1996 10 03	596	0.2+	0.2−
1996 08 08	596	0.5+	0.1+	1996 08 23	596	0.5+	0.7+	1999 02 18	589	0.5+	0.0
1996 08 09	596	0.4+	0.2+	1996 09 04	596	0.9−	0.9−	1999 02 18	589	0.6+	0.4−
1996 08 09	596	0.9+	0.3+	1996 09 04	596	0.8−	0.5−	1999 02 18	589	0.7+	0.3+
1996 08 09	596	0.4−	0.5+	1996 09 04	596	0.7−	0.8−	1999 03 07	595	0.5−	0.2+
1996 08 12	596	0.3+	0.9−	1996 09 09	596	0.4−	0.6+	1999 03 07	595	1.2−	0.3+
1996 08 12	596	0.4+	0.3+	1996 09 09	596	0.3−	0.6+				

1996 PX_4 = 1987 HF_1 = 1999 GN_2

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	13.26228		(2000.0)		**P**	**Q**	
n	0.24611812	ω	18.55847		−0.99544841	−0.08887418	
a	2.5217788	Ω	156.26235		+0.07297898	−0.94305371	
e	0.0541281	i	4.90321		+0.06129054	−0.32054810	
P	4.00	H	15.2	G	0.15	U	5

Residuals in seconds of arc

1987 04 23	046	0.9−	1.4−	1996 08 20	566	0.6−	0.0	1999 04 10	120	0.2−	0.5−
1987 04 23	046	0.8+	1.7+	1996 08 20	566	1.0−	0.3−	1999 04 10	120	0.1+	0.8+
1987 04 24	046	0.3+	0.6+	1999 04 06	120	0.0	0.0	1999 04 10	120	0.1+	0.3+
1987 04 25	046	(1.4−	3.1+)	1999 04 06	120	0.9+	1.4−	1999 04 11	699	0.1−	1.0+
1996 08 15	566	0.5+	0.2−	1999 04 06	120	1.0−	0.3−	1999 04 11	699	0.8+	0.1+
1996 08 15	566	0.7+	0.0	1999 04 09	120	0.2+	0.9−	1999 04 11	699	0.9+	0.0
1996 08 15	566	0.9+	0.5−	1999 04 10	120	0.4−	0.1+	1999 04 25	292	1.1−	1.1−
1996 08 17	566	0.5−	0.4+	1999 04 10	120	1.0−	0.0	1999 04 25	292	0.4−	1.0−
1996 08 17	566	0.2+	0.1−	1999 04 10	699	0.8+	0.1+	1999 04 25	292	0.1−	1.0+
1996 08 17	566	0.3−	0.4+	1999 04 10	699	0.5−	1.2+				
1996 08 20	566	0.2+	0.3+	1999 04 10	699	0.7+	0.0				

1996 PK_8 = 1999 HG

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	338.02063		(2000.0)		**P**	**Q**	
n	0.27514251	ω	343.36265		−0.84893236	+0.52811209	
a	2.3411591	Ω	228.53309		−0.48175552	−0.78905613	
e	0.1697801	i	1.55120		−0.21731420	−0.31382804	
P	3.58	H	15.5	G	0.15	U	7

Residuals in seconds of arc

1996 08 08	809	(3.5−	1.2−)	1996 08 09	809	0.7−	1.6+	1999 04 17	727	0.2−	0.8−
1996 08 08	809	0.1+	0.6−	1996 08 17	566	0.1−	0.4−	1999 04 17	727	0.4+	0.7+
1996 08 08	809	0.3−	1.4−	1996 08 17	566	0.3+	0.3−	1999 04 18	727	0.3−	0.1−
1996 08 09	809	0.8+	0.7+	1996 08 17	566	0.2+	0.3−	1999 04 18	727	0.0	0.0
1996 08 09	809	0.3−	0.7+	1999 04 17	727	0.1−	0.0	1999 04 18	727	0.2+	0.2+

1996 RC_5 = 1999 FM_{48}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	221.20939		(2000.0)		**P**	**Q**	
n	0.20620922	ω	264.92435		+0.54131832	+0.84042809	
a	2.8374660	Ω	37.88531		−0.75397981	+0.49866000	
e	0.0647277	i	2.38879		−0.37214100	+0.21217643	
P	4.78	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1996 09 10	566	0.6−	0.7−	1996 10 05	809	0.4−	0.1−	1999 03 20	704	0.6+	0.5−
1996 09 10	566	0.0	0.5−	1996 10 06	809	0.0	0.3−	1999 03 23	704	1.2+	0.5−
1996 09 10	566	0.1−	0.3−	1996 10 06	809	0.0	0.2−	1999 03 23	704	1.8−	0.7+
1996 09 18	566	0.7+	0.1−	1996 10 06	809	0.9−	0.6+	1999 03 23	704	0.6+	1.7+
1996 09 18	566	0.8+	0.9+	1999 03 20	704	0.4−	0.3+	1999 03 23	704	1.0+	0.8−
1996 09 18	566	0.1+	1.1+	1999 03 20	704	0.6−	1.0−	1999 03 23	704	0.4−	0.3+
1996 10 05	809	0.1+	0.9−	1999 03 20	704	0.8−	0.1−				
1996 10 05	809	0.3+	0.4+	1999 03 20	704	0.5+	0.1−				

1996 RA_{16} = 1999 EN_7

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	200.34103		(2000.0)			
n	0.18079564	ω	14.74695		+0.59117619	+0.80646666
a	3.0974959	Ω	291.49476		−0.74118617	+0.53781505
e	0.0485854	i	0.68083		−0.31804681	+0.24569593
P	5.45	H	14.5	G	0.15	U 5

Residuals in seconds of arc

1996 09 13	691	0.0	0.1+	1996 09 15	691	0.7+	0.2+	1999 02 23	699	0.6+	0.2+
1996 09 13	691	0.1+	0.1+	1996 09 21	691	0.8−	0.0	1999 02 23	699	0.5+	1.9+
1996 09 13	691	0.0	0.1+	1996 09 21	691	0.6−	0.1+	1999 03 12	691	0.4−	0.5−
1996 09 13	566	0.3+	0.2−	1996 09 21	691	0.7−	0.1−	1999 03 12	691	0.7−	0.6−
1996 09 13	566	0.1−	0.4−	1999 02 09	691	0.3−	0.3−	1999 03 12	691	0.7−	0.0
1996 09 13	566	0.3−	0.2−	1999 02 09	691	0.2−	0.4−	1999 03 20	691	0.4+	0.2−
1996 09 15	691	0.6+	0.0	1999 02 09	691	0.3−	0.4−	1999 03 20	691	0.5+	0.3−
1996 09 15	691	0.8+	0.1+	1999 02 23	699	0.1+	0.6+	1999 03 20	691	0.3+	0.1−

1996 RA$_{33}$ = 1998 WH$_{20}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	250.34324		(2000.0)			
n	0.08293748	ω	142.33761		−0.98600178	−0.14620825
a	5.2075744	Ω	29.55556		+0.08341184	−0.84875352
e	0.0119866	i	9.35105		+0.14437089	−0.50817381
P	11.88	H	11.1	G	0.15	U 5

Residuals in seconds of arc

1996 09 15	809	1.4−	1.0−	1997 11 03	704	0.8−	0.2+	1998 11 20	699	0.7−	0.2−
1996 09 15	809	0.7+	0.3−	1998 11 18	704	0.3+	0.5+	1998 11 20	699	0.6+	0.2−
1996 09 17	809	1.4+	0.2+	1998 11 18	704	0.3−	0.6−	1998 11 21	704	1.5−	0.3+
1997 11 03	704	0.5+	0.6−	1998 11 18	704	1.0−	1.6−	1998 11 21	704	0.2+	1.7+
1997 11 03	704	0.9−	1.3+	1998 11 18	704	0.6+	0.9−	1998 11 21	704	1.3+	0.5−
1997 11 03	704	0.1+	1.0+	1998 11 20	699	0.1+	0.2−	1998 11 21	704	0.9+	0.3+

1996 SN = 1977 DW$_3$ = 1999 GT$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	328.40912		(2000.0)			
n	0.22697119	ω	169.98974		−0.82101725	+0.56987157
a	2.6616782	Ω	44.80893		−0.52710212	−0.73357200
e	0.1391876	i	2.79038		−0.21930351	−0.37029518
P	4.34	H	15.4	G	0.15	U 4

Residuals in seconds of arc

1977 02 18	381	0.3−	0.5−	1996 09 18	684	0.1+	0.1−	1999 04 07	699	0.4−	0.0
1977 02 18	381	0.5+	0.6−	1996 09 18	684	0.2−	0.0	1999 04 07	699	1.3+	0.5−
1977 02 19	381	0.2−	1.1+	1996 09 18	684	0.2−	0.1−	1999 04 07	699	0.9−	1.0+
1996 09 16	684	0.5−	0.3+	1996 09 21	684	0.2+	0.5−	1999 04 10	699	0.1−	0.5−
1996 09 16	684	0.6+	0.0	1996 09 21	684	0.4+	0.6−	1999 04 10	699	0.1+	0.2+
1996 09 16	684	0.2+	1.1+	1996 09 21	684	0.5−	0.2−	1999 04 10	699	0.1−	0.3−

1996 SQ = 1999 FA$_{48}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	154.52160		(2000.0)			
n	0.18962796	ω	13.31584		+0.99693109	−0.07298129
a	3.0005518	Ω	350.72914		+0.04536465	+0.83342338
e	0.0332656	i	10.12531		+0.06380008	+0.54779486
P	5.20	H	14.2	G	0.15	U 5

Residuals in seconds of arc

1996 09 05	691	0.4+	0.1−	1996 09 21	817	0.4+	0.7−	1999 03 20	704	0.1−	1.3+
1996 09 05	691	0.3+	0.1−	1996 09 21	817	0.2+	0.3−	1999 03 20	704	2.4−	0.8−
1996 09 05	691	0.2+	0.1+	1996 09 21	817	0.4−	0.4−	1999 03 20	704	0.5+	1.5+
1996 09 13	691	0.4−	0.2+	1996 09 21	691	0.0	0.3+	1999 03 20	704	0.7+	0.6−
1996 09 13	691	0.3−	0.3+	1996 09 21	691	0.0	0.1−	1999 03 23	704	1.5+	1.7−
1996 09 13	691	1.0−	0.3+	1996 09 21	691	0.1−	0.2−	1999 03 23	704	0.9−	0.9+
1996 09 20	817	0.5−	0.1+	1996 10 02	817	0.5−	0.7+	1999 03 23	704	0.9+	0.8−
1996 09 20	817	0.2+	0.3−	1996 10 02	817	0.2−	0.1−	1999 03 23	704	0.5−	0.5+
1996 09 20	817	0.3+	0.1+	1996 10 02	817	0.9+	0.0				
1996 09 20	817	0.7+	0.2−	1999 03 20	704	0.3+	0.4−				

1996 TC$_9$ = 1999 FL$_{17}$

Id. A. Doppler, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

					P	Q
M	108.81900		(2000.0)			
n	0.17276966	ω	43.63669		+0.46332453	−0.88484280
a	3.1926972	Ω	18.92623		+0.76613926	+0.37226294
e	0.1782891	i	8.65721		+0.44537738	+0.28013125
P	5.70	H	14.7	G	0.15	U 6

Residuals in seconds of arc

1996 10 13	735	1.2+	1.2+	1996 10 19	735	0.3+	0.0	1999 03 24	691	1.7+	0.3−
1996 10 13	735	0.4+	0.2+	1996 10 19	735	1.1−	0.0	1999 03 24	691	0.3+	0.2−
1996 10 14	735	0.1−	0.7−	1996 10 19	735	0.6+	0.1−	1999 03 24	691	0.4−	0.2+
1996 10 14	735	0.5−	0.5−	1999 03 23	691	0.5−	0.1−				
1996 10 14	735	0.7−	0.3−	1999 03 23	691	1.2−	0.3+				

1996 TK$_{11}$ = 1999 FS$_{14}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	177.05264		(2000.0)			
n	0.20139445	ω	341.02357		+0.97719774	−0.21040834
a	2.8825116	Ω	31.16627		+0.20124162	+0.87494499
e	0.1903134	i	3.15815		+0.06772285	+0.43611878
P	4.89	H	15.1	G	0.15	U 2

Residuals in seconds of arc

1994 04 19	691	0.1−	0.2−	1996 10 21	400	0.4−	0.2+	1998 02 23	327	0.6−	0.5−
1994 04 19	691	0.2+	0.0	1996 10 21	400	0.7−	0.5+	1999 03 19	691	0.4+	1.0+
1994 04 19	691	0.0	0.3+	1996 11 19	691	0.1+	0.2+	1999 03 19	691	0.6+	0.5+
1996 10 11	400	0.4−	1.1+	1996 11 19	691	0.1+	0.4+	1999 03 19	691	0.4+	0.6+
1996 10 11	400	0.8−	1.3+	1996 11 19	691	0.3+	0.2+	1999 03 23	691	0.2+	1.2+
1996 10 14	400	(0.1−	2.3−)	1998 02 23	327	0.1+	0.0	1999 03 23	691	0.2−	0.2+
1996 10 14	400	0.8+	1.4−	1998 02 23	327	0.3+	0.2−				

1996 TS$_{14}$ = 1999 HG$_{10}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	179.12192		(2000.0)			
n	0.20227900	ω	19.05084		+0.97298181	−0.23086601
a	2.8741021	Ω	354.29518		+0.20814872	+0.88217808
e	0.0786199	i	1.55577		+0.09990251	+0.41044211
P	4.87	H	13.6	G	0.15	U 2

Residuals in seconds of arc

1991 10 08	691	0.2+	0.3−	1996 10 09	358	0.3+	1.8+	1996 11 19	691	0.3−	1.0+
1991 10 08	691	0.1+	0.3−	1996 10 10	358	0.6−	0.8−	1999 04 17	704	0.5+	0.8+
1994 04 06	691	0.3+	1.0−	1996 10 10	358	0.2+	0.6+	1999 04 17	704	0.3+	0.3+
1994 04 06	691	0.2−	0.5−	1996 10 22	358	0.1+	0.4−	1999 04 17	704	0.1+	0.5+
1994 04 06	691	0.2−	0.1−	1996 10 22	358	1.1+	1.8−	1999 04 17	704	0.2+	1.6+
1994 04 06	691	0.1−	0.2+	1996 11 03	358	0.5−	0.5−	1999 04 17	704	0.3+	0.6+
1994 04 06	691	0.1−	0.1+	1996 11 03	358	0.3+	0.2+	1999 04 18	704	0.1−	1.2−
1994 04 06	691	0.7−	0.6−	1996 11 19	691	0.3−	0.9+	1999 04 18	704	0.1+	0.4+
1996 10 09	358	1.5−	1.7+	1996 11 19	691	0.4−	1.0+	1999 04 18	704	0.7+	1.7+

1996 TB$_{20}$ = 1999 EG$_1$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	188.12441		(2000.0)		**P**	**Q**	
n	0.19091096	ω	353.25707		+0.87336551	+0.48310316	
a	2.9870935	Ω	337.52522		−0.43895715	+0.72553686	
e	0.0710415	i	9.33385		−0.21106709	+0.49010979	
P	5.16	H	14.6	G	0.15	U	4

Residuals in seconds of arc

1996 10 03	809	1.4+	0.4+	1996 10 12	691	1.1−	0.1+	1999 03 06	691	0.0	0.1−
1996 10 03	809	0.8+	0.6+	1996 10 12	691	1.2−	0.0	1999 03 11	691	0.9−	0.6−
1996 10 03	809	0.3+	0.5−	1999 02 08	691	0.1+	0.2+	1999 03 11	691	0.8−	0.2−
1996 10 04	809	(2.4+	0.5+)	1999 02 08	691	0.6+	0.3+	1999 03 11	691	0.5−	0.2+
1996 10 04	809	1.9+	1.0−	1999 02 08	691	0.5−	0.0	1999 03 16	691	0.2−	0.6−
1996 10 04	809	1.1+	0.0	1999 02 09	691	0.3−	0.2−	1999 03 16	691	0.0	0.1+
1996 10 05	691	0.8−	0.2+	1999 02 09	691	0.0	0.1+	1999 03 16	691	0.2+	0.1+
1996 10 05	691	0.8−	0.1+	1999 02 09	691	0.0	0.0	1999 03 18	691	1.3+	0.6+
1996 10 05	691	0.5−	0.4−	1999 03 06	691	0.2+	0.4−	1999 03 18	691	0.6+	0.6+
1996 10 12	691	1.2−	0.2+	1999 03 06	691	0.1+	0.0	1999 03 18	691	0.1+	0.3−

1996 TO$_{24}$ = 1999 GU$_{15}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	305.96268		(2000.0)		**P**	**Q**	
n	0.23277175	ω	46.34650		−0.20008921	+0.97148573	
a	2.6172740	Ω	212.75229		−0.95294261	−0.22313836	
e	0.1307159	i	13.59848		−0.22773819	+0.08015451	
P	4.23	H	16.3	G	0.15	U	4

Residuals in seconds of arc

1996 10 06	691	0.3+	0.7+	1996 11 06	691	0.0	0.1+	1999 04 15	691	0.3+	0.1−
1996 10 06	691	0.4+	0.3−	1996 11 06	691	0.2−	0.3+	1999 04 15	691	0.4+	0.2+
1996 10 06	691	0.3+	0.2−	1996 11 06	691	0.5−	0.5+	1999 04 16	691	0.3−	0.0
1996 10 08	691	0.5−	0.0	1996 11 07	691	0.3+	0.2−	1999 04 16	691	0.4−	0.3−
1996 10 08	691	0.1+	0.2+	1996 11 07	691	0.3−	0.4−	1999 04 16	691	0.0	0.2+
1996 10 08	691	0.7−	0.4−	1996 11 07	691	0.6+	0.2−				

1996 UN = 1991 BP$_4$

Id. M. E. Sansaturio, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	140.96452		(2000.0)		**P**	**Q**	
n	0.29728507	ω	304.06626		−0.80249603	−0.59601313	
a	2.2234156	Ω	199.39517		+0.57124045	−0.75406469	
e	0.1407202	i	4.78847		+0.17229178	−0.27596158	
P	3.32	H	15.4	G	0.15	U	2

Residuals in seconds of arc

1991 01 22	675	0.3−	0.3−	1996 12 12	046	0.3+	0.0	1998 04 29	566	0.9+	1.5−
1991 01 22	675	0.4+	0.7+	1996 12 12	046	0.2−	0.2−	1998 05 01	704	1.0+	0.1−
1996 10 18	046	0.4−	0.1+	1996 12 29	046	0.9+	0.7+	1998 05 01	704	0.8+	0.1−
1996 10 18	046	0.3−	0.2+	1997 01 08	046	0.0	0.6+	1998 05 01	704	0.5+	0.0
1996 10 18	046	0.2−	0.4−	1997 01 08	046	1.4+	1.3+	1998 05 01	704	0.8+	0.1−
1996 10 18	046	0.0	0.2+	1997 01 08	046	0.4+	0.8+	1998 05 01	704	0.3+	0.7−
1996 10 19	046	0.1−	0.0	1998 02 27	046	0.4−	0.3+	1998 05 05	699	0.9+	0.4+
1996 10 19	046	0.2−	0.1−	1998 02 27	046	0.7−	0.0	1998 05 05	699	0.7+	0.3−
1996 10 19	046	0.5−	0.7−	1998 02 27	046	0.2−	0.5+	1998 05 05	699	0.4+	0.2−
1996 10 19	046	1.0−	0.0	1998 03 24	046	0.7−	0.4−	1998 05 07	046	0.3−	0.6−
1996 10 19	046	0.9+	0.8−	1998 03 24	046	1.2−	0.2−	1998 05 07	046	0.3+	0.2−
1996 10 23	046	1.0+	0.6+	1998 03 24	046	0.3−	0.3−	1998 05 07	046	0.1−	0.2−
1996 10 23	046	0.4+	0.5+	1998 04 10	046	0.7−	0.5+	1998 05 08	046	0.2+	0.5−
1996 10 23	046	0.7+	0.0	1998 04 10	046	1.0−	0.5+	1998 05 08	046	0.4+	0.1−
1996 10 31	046	0.2+	0.2+	1998 04 10	046	0.6−	0.6+	1998 05 08	046	0.0	0.3−
1996 10 31	046	0.7+	0.5−	1998 04 21	046	0.1+	0.5+	1998 05 22	704	0.1−	0.3−
1996 10 31	046	0.9+	0.9+	1998 04 21	046	0.2−	0.6+	1998 05 22	704	1.5+	0.7+
1996 11 02	046	0.6−	0.9+	1998 04 21	046	0.2+	0.5+	1998 05 22	704	0.1−	1.0+
1996 11 02	046	0.5−	0.3+	1998 04 21	704	0.1+	0.1+	1998 05 22	704	0.3−	0.2+
1996 11 02	046	0.3−	0.2+	1998 04 21	704	0.2+	0.1+	1998 05 22	704	0.4−	1.9+
1996 11 16	046	0.9−	0.1+	1998 04 21	704	0.2+	0.8−	1998 05 24	704	0.7+	0.3+
1996 11 16	046	0.3−	0.3−	1998 04 21	704	0.0	0.6+	1998 05 24	704	0.1+	0.0
1996 11 16	046	0.8−	0.1+	1998 04 21	704	0.0	0.6+	1998 05 24	704	0.4−	1.0−
1996 11 17	046	0.3−	0.3+	1998 04 22	704	0.1+	0.2+	1998 05 24	704	1.3−	1.3−
1996 11 17	046	0.4−	0.3−	1998 04 22	704	0.3+	0.2+	1998 05 24	704	0.0	0.6+
1996 11 17	046	0.8−	0.1+	1998 04 22	704	0.6−	0.3+	1998 05 28	699	1.0−	1.1+
1996 12 11	046	0.3−	0.1+	1998 04 22	704	1.5−	0.5+	1998 05 28	699	0.5+	0.4+
1996 12 11	046	0.4+	0.1+	1998 04 22	704	0.8−	0.6−	1998 05 28	699	0.5−	0.2+
1996 12 11	046	0.4−	0.4−	1998 04 29	566	0.9+	0.2−				
1996 12 12	046	0.0	0.0	1998 04 29	566	1.2+	0.4−				

1996 UN$_1$

Id. F. B. Zoltowski (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	236.85527		(2000.0)		**P**	**Q**	
n	0.23438597	ω	65.62327		+0.81155454	+0.53753901	
a	2.6052434	Ω	261.10283		−0.58382277	+0.73061168	
e	0.1324511	i	13.40112		−0.02302616	+0.42102064	
P	4.21	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1996 10 29	908	0.1−	0.1−	1996 11 06	908	0.4−	0.7−	1996 12 13	908	0.3+	0.6+
1996 10 29	908	0.1+	0.1+	1996 11 06	908	0.8+	0.7−	1996 12 13	908	0.2−	0.6−
1996 10 29	908	1.1−	1.7+	1996 11 06	908	0.2+	0.5−	1996 12 13	908	0.4−	0.7−
1996 10 30	896	0.6+	0.3+	1996 11 13	908	0.0	0.1−	1999 04 15	426	0.1+	0.1+
1996 10 30	896	0.8−	1.0−	1996 11 13	908	0.3+	0.3+	1999 04 15	426	0.6−	0.1+
1996 10 30	896	0.5+	0.2+	1996 11 13	908	0.5+	0.3−	1999 04 16	426	0.3+	0.0
1996 11 03	908	0.4−	0.2−	1996 11 23	908	0.2+	1.0+	1999 04 16	426	0.2−	0.1−
1996 11 03	908	0.0	0.1+	1996 11 23	908	0.9+	0.1+	1999 04 16	426	0.4+	0.2−
1996 11 03	908	0.1−	0.4−	1996 11 23	908	0.8−	1.1+				

1996 VM$_1$ = 1990 DT$_6$ = 1998 FO$_{79}$

Id. A. Doppler, G. V. Williams, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	147.33285		(2000.0)		**P**	**Q**	
n	0.25758663	ω	62.89279		−0.45427702	−0.88522446	
a	2.4463608	Ω	54.47959		+0.76763355	−0.44595468	
e	0.1008418	i	7.06098		+0.45207424	−0.13229543	
P	3.83	H	13.4	G	0.15	U	3

Residuals in seconds of arc

1990 02 23	046	0.5+	1.3−	1998 03 24	704	0.2+	0.6+	1998 04 21	704	0.5+	0.9−
1990 02 23	046	1.8−	1.7−	1998 03 24	704	0.0	0.5+	1998 04 21	704	0.7+	0.3−
1996 11 03	901	0.7−	0.1+	1998 03 25	704	1.0+	0.9+	1998 04 22	704	0.2+	0.3+
1996 11 06	901	1.3−	0.1+	1998 03 25	704	0.7+	1.4+	1998 04 22	704	0.3−	0.0
1996 11 06	901	2.4−	0.6−	1998 03 25	704	0.6+	0.1−	1998 04 22	704	0.4−	0.7−
1996 11 07	400	0.2−	2.0+	1998 03 25	704	1.0+	0.3−	1998 04 22	704	0.2−	0.3+
1996 11 08	400	1.2+	1.3−	1998 03 25	704	1.5+	0.8+	1998 04 22	704	0.0	0.4−
1996 11 08	400	0.6+	0.1−	1998 04 20	704	0.7+	0.1−	1998 05 16	704	0.5−	0.4+
1996 11 15	400	0.3+	1.0+	1998 04 20	704	0.5−	0.3+	1998 05 16	704	0.6−	0.0
1996 11 15	400	0.8+	1.5+	1998 04 20	704	0.3+	0.2−	1998 05 16	704	1.0−	0.7+
1996 11 16	400	0.2−	0.7+	1998 04 20	704	0.3+	0.0	1998 05 16	704	0.9−	0.3−
1996 11 16	400	0.0	0.6+	1998 04 20	704	0.3−	0.2−	1998 05 16	704	1.0−	0.3−
1998 03 24	704	0.7+	0.7+	1998 04 21	704	0.1+	0.1−	1998 05 28	699	0.4−	0.6+
1998 03 24	704	0.5+	0.7+	1998 04 21	704	0.0	0.6+	1998 05 28	699	0.9−	1.0+
1998 03 24	704	0.1+	0.3+	1998 04 21	704	0.2+	0.3−	1998 05 28	699	0.1+	0.3+

1996 VW$_7$ = 1985 DQ$_2$ = 1989 AN$_9$ = 1989 CC$_2$ = 1998 HW$_{70}$

Id. G. V. Williams (*MPC* 31976, unpublished), A. Milani (*MPC* 34200)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	158.56413		(2000.0)		**P**	**Q**	
n	0.23516302	ω	259.51727		+0.02615906	−0.99947375	
a	2.5995013	Ω	189.04992		+0.95824390	+0.03053650	
e	0.2572284	i	7.00448		+0.28475311	−0.01094323	
P	4.19	H	13.9	G	0.15	U	2

Residuals in seconds of arc

1985 02 24	675	2.5−	1.0+	1996 11 06	399	1.2+	0.8+	1998 04 22	704	0.3+	0.1−
1985 02 24	675	2.0+	1.1−	1996 11 06	399	0.6+	1.2+	1998 04 22	704	0.3+	0.8+
1985 02 27	675	0.7−	0.5+	1996 11 15	399	1.2+	0.5+	1998 04 22	704	0.3+	0.1−
1985 02 27	675	0.9+	1.2−	1996 11 15	399	0.6+	0.5+	1998 04 22	704	0.4−	0.0
1989 01 05	675	0.2−	0.0	1998 04 21	704	0.8+	0.1−	1998 04 22	704	0.8+	1.0+
1989 01 05	675	0.1+	0.0	1998 04 21	704	0.3−	0.6−	1998 04 28	566	0.5−	0.1+
1989 02 06	675	0.2+	0.5+	1998 04 21	704	0.3−	0.6−	1998 04 28	566	0.6−	0.1+
1996 11 03	399	2.0−	0.1−	1998 04 21	704	0.0	0.3−	1998 04 28	566	0.0	0.4+
1996 11 03	399	1.6−	2.4−	1998 04 21	704	0.2−	0.5+				

1997 AS$_{19}$ = 1998 MM$_6$

Id. A. Doppler (*MPC* 33256); 1997 AS$_{19}$ = 1969 RB$_1$ (*ibid.*) is invalid

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	137.73683		(2000.0)		**P**	**Q**	
n	0.26825173	ω	292.41241		−0.93762334	+0.34570053	
a	2.3810821	Ω	267.82793		−0.30389376	−0.86640210	
e	0.1205545	i	2.10999		−0.16885215	−0.36033116	
P	3.67	H	16.6	G	0.15	U	5

Residuals in seconds of arc

1997 01 10	691	0.3−	0.0	1997 03 02	691	0.0	0.3+	1998 06 25	691	0.2+	0.4−
1997 01 10	691	0.4−	0.2−	1997 03 02	691	0.0	0.2+	1998 06 25	691	0.3+	0.1−
1997 01 17	691	0.3+	0.3−	1998 06 20	691	0.1−	0.2−	1998 06 25	691	0.1−	0.0
1997 01 17	691	0.0	0.2−	1998 06 20	691	0.1−	0.2−				
1997 01 17	691	0.2+	0.2−	1998 06 20	691	0.0	0.3+				

1997 CE$_8$ = 1981 PP = 1995 PT

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	331.86042		(2000.0)		**P**	**Q**	
n	0.28213509	ω	203.36424		+0.99792949	+0.04515070	
a	2.3023145	Ω	153.92193		−0.02878215	+0.95038447	
e	0.1382568	i	5.98104		−0.05751802	+0.30778364	
P	3.49	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1981 08 06	046	0.7−	0.7−	1995 08 04	372	1.4−	2.0+	1997 02 07	691	0.5+	0.2−
1981 08 06	046	0.7−	1.2−	1995 08 04	372	2.7+	2.2+	1997 02 07	691	0.4−	1.2−
1981 08 10	046	1.6+	0.3−	1995 08 05	372	2.6−	0.4+	1997 02 07	691	0.5+	0.1−
1981 08 11	046	0.0	0.4−	1997 02 01	691	0.2−	0.2+	1997 02 08	608	0.4−	0.6−
1981 08 12	046	0.4+	1.7−	1997 02 01	691	0.1+	0.2+	1997 02 08	608	0.3−	0.0
1981 08 12	046	0.8+	1.4−	1997 02 01	691	0.0	0.3+				

1997 SS$_{10}$ = 1992 GV$_5$ = 1999 FQ$_{45}$

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	33.55623		(2000.0)		**P**	**Q**	
n	0.28102549	ω	289.06378		−0.42086036	−0.90710302	
a	2.3083708	Ω	185.83709		+0.85406830	−0.39386568	
e	0.0793750	i	3.59518		+0.30568595	−0.14843834	
P	3.51	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1992 04 03	033	0.2+	0.2+	1997 10 09	327	0.5+	0.3−	1999 03 20	704	0.3+	0.2−
1992 04 03	033	0.1+	0.4+	1997 10 10	327	0.3+	0.0	1999 03 23	704	0.1−	0.2+
1997 09 26	327	0.2−	0.3+	1997 10 10	327	0.8+	0.4−	1999 03 23	704	0.5+	0.2−
1997 09 26	327	0.1−	0.6+	1997 10 10	327	0.8+	0.4−	1999 03 23	704	0.1−	0.0
1997 09 26	327	0.1−	0.2+	1997 10 28	704	(1.1−	4.2−)	1999 03 23	704	0.6+	0.4+
1997 09 29	327	0.7−	0.6+	1997 10 28	704	(1.1+	4.0−)	1999 03 23	704	0.0	0.4+
1997 09 29	327	0.1−	0.3+	1997 10 28	704	1.2−	1.9−	1999 03 23	699	0.9−	1.1+
1997 09 29	327	0.4−	0.4+	1997 10 28	704	(0.9+	6.7−)	1999 03 23	699	0.1+	0.7−
1997 09 30	327	0.6−	0.4+	1997 10 28	704	(1.5−	6.8−)	1999 03 23	699	0.6+	1.1+
1997 09 30	327	0.1−	0.1+	1999 03 20	704	0.0	0.5−	1999 04 06	699	0.2−	1.1+
1997 09 30	327	0.6−	1.4+	1999 03 20	704	0.2−	0.2−	1999 04 06	699	0.7−	0.5−
1997 10 09	327	0.6+	0.2−	1999 03 20	704	0.3−	0.4−	1999 04 06	699	0.8+	0.1+
1997 10 09	327	0.2+	0.4+	1999 03 20	704	0.0	0.5−				

1997 SX$_{15}$ = 1984 DG$_3$ = 1986 XZ$_2$ = 1993 TS$_{45}$

Id. G. V. Willliams (*MPC* 30987, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	315.94932		(2000.0)		**P**	**Q**	
n	0.26073796	ω	181.12533		−0.90564298	+0.41760841	
a	2.4266094	Ω	23.98247		−0.38762215	−0.74494817	
e	0.1805880	i	10.42962		−0.17192980	−0.52024556	
P	3.78	H	13.4	G	0.15	U	3

Residuals in seconds of arc

1984 02 27	095	0.2+	0.4−	1997 10 29	704	1.4−	0.9−	1999 02 10	704	1.7−	0.2−
1986 12 02	010	(2.7−	9.8−)	1997 10 29	704	2.0−	0.0	1999 02 13	699	1.0+	0.2+
1986 12 03	010	(0.9+	9.6−)	1997 10 29	704	2.1−	0.7−	1999 02 13	699	0.8+	0.2+
1986 12 03	010	(1.1+	10.5−)	1997 10 29	704	2.5−	0.1+	1999 02 13	699	0.6+	0.4+
1993 10 09	809	1.3−	0.5−	1997 10 29	704	1.5−	0.4−	1999 02 13	704	0.0	0.2−
1993 10 09	809	1.2−	0.6−	1997 11 03	704	0.1−	0.9−	1999 02 13	704	1.0+	0.8+
1993 10 09	809	1.6−	0.4+	1997 11 03	704	0.3+	0.2+	1999 02 13	704	0.3−	0.2−
1993 10 12	809	1.4+	0.6−	1997 11 03	704	1.1+	0.9+	1999 02 13	704	0.2+	0.3+
1993 10 12	809	1.1+	1.0−	1997 11 03	704	1.1+	0.1+	1999 02 13	704	0.6−	0.5+
1993 10 12	809	0.9+	0.1+	1998 12 01	704	0.9−	0.9+	1999 03 11	744	0.5+	0.1+
1993 10 22	809	(4.7+	2.8−)	1998 12 01	704	0.8−	0.7−	1999 03 11	744	0.2+	0.7+
1993 10 22	809	2.0+	1.5−	1998 12 01	704	0.1+	0.1−	1999 03 11	611	0.4+	0.1+
1993 10 22	809	2.6−	0.3+	1998 12 01	704	0.0	0.5−	1999 03 11	611	0.5+	0.0
1997 09 27	910	1.0+	0.7+	1998 12 01	704	0.2+	0.2−	1999 03 15	704	0.7+	0.0
1997 09 27	910	0.8+	0.7+	1998 12 21	704	2.3−	0.6+	1999 03 15	704	0.3+	1.1+
1997 09 27	910	1.2+	0.7+	1998 12 21	704	0.7−	0.9−	1999 03 15	704	1.1+	0.4−
1997 09 29	910	0.9+	0.9+	1998 12 21	704	1.5−	0.8−	1999 03 15	704	1.0+	0.6−
1997 09 30	910	1.1+	0.7+	1998 12 21	704	0.0	0.2−	1999 03 15	744	0.2+	0.0
1997 09 30	910	1.1+	0.9+	1999 02 10	704	0.5−	0.3−	1999 03 15	704	1.7+	1.7−
1997 09 30	910	1.1+	0.8+	1999 02 10	704	0.8−	0.5+	1999 03 15	744	0.3+	0.1+
1997 09 30	910	1.0+	0.8+	1999 02 10	704	2.3−	0.7+				
1997 10 01	910	1.1+	0.7+	1999 02 10	704	0.9−	0.1+				

1997 SS$_{17}$

Id. Y. Ikari (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Nakano

M	138.16678		(2000.0)		**P**	**Q**	
n	0.30374899	ω	316.82985		+0.87855837	−0.47163419	
a	2.1917591	Ω	71.45327		+0.45702828	+0.78417957	
e	0.1400625	i	4.56608		+0.13878161	+0.40326615	
P	3.24	H	16.2	G	0.15	U	4

Residuals in seconds of arc

1997 09 30	900	0.4+	0.7+	1997 10 08	355	1.0−	0.2−	1997 10 30	566	0.0	0.2+
1997 09 30	900	0.0	0.0	1997 10 08	355	0.4−	0.4−	1997 10 30	566	0.0	0.2+
1997 09 30	900	0.8+	0.0	1997 10 08	355	0.2+	0.1+	1997 10 30	566	0.0	0.0
1997 10 01	402	0.1−	0.3+	1997 10 11	900	0.7−	0.1−	1999 03 16	402	0.9−	0.1−
1997 10 01	402	0.1−	0.2+	1997 10 11	900	0.9−	0.3+	1999 03 16	402	0.6−	0.0
1997 10 01	402	0.1+	0.2+	1997 10 24	402	0.2−	0.2+	1999 04 08	402	0.4+	0.7+
1997 10 05	900	0.5+	1.9−	1997 10 24	402	0.1+	0.0	1999 04 08	402	0.9+	0.9−
1997 10 05	900	1.7+	0.2+	1997 10 24	402	0.0	0.0				

1997 SQ$_{18}$ = 1999 FD$_{44}$

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	33.97706		(2000.0)		**P**		**Q**
n	0.28797733	ω	112.93137		−0.35597972		−0.93448539
a	2.2710700	Ω	357.91010		+0.81297170		−0.30760800
e	0.1033428	i	6.19678		+0.46082041		−0.17920485
P	3.42	H	15.3	G	0.15	U	4

Residuals in seconds of arc

1997 09 28	691	0.1−	0.1+	1997 10 24	691	0.5+	0.3−	1999 03 20	704	0.8−	0.0
1997 09 28	691	0.1−	0.1−	1997 10 24	691	0.1+	0.3+	1999 03 20	704	0.5−	0.9−
1997 09 28	691	0.0	0.1+	1997 10 24	691	0.1+	0.1+	1999 03 20	704	0.7−	1.3+
1997 10 03	691	0.3−	0.2−	1999 02 18	699	0.4+	0.6+	1999 03 23	704	0.5+	0.5−
1997 10 03	691	0.3−	0.0	1999 02 18	699	0.5+	0.6−	1999 03 23	704	0.3+	0.8−
1997 10 03	691	0.1−	0.1+	1999 02 18	699	0.5−	0.1+	1999 03 23	704	0.9+	1.1−
1997 10 09	691	0.1+	0.1+	1999 03 20	704	0.1+	0.5−	1999 03 23	704	0.9+	0.8+
1997 10 09	691	0.3+	0.2−	1999 03 20	704	0.9−	1.5+				

1997 SQ$_{32}$ = 1975 SO = 1986 TX$_2$ = 1995 BF$_{10}$

Id. G. V. Williams (*MPC* 30881, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	122.25576		(2000.0)		**P**		**Q**
n	0.26820745	ω	19.00224		+0.96276698		−0.27032338
a	2.3813441	Ω	356.67884		+0.24275565		+0.86816548
e	0.2361269	i	2.21300		+0.11895137		+0.41618982
P	3.67	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1975 09 30	675	0.1−	0.6+	1997 09 30	327	0.4−	0.2+	1997 10 17	327	0.0	0.5−
1975 10 01	675	0.5−	0.7+	1997 09 30	327	0.3−	0.3+	1997 10 18	327	0.3+	0.0
1975 10 02	675	0.1−	0.3+	1997 09 30	327	0.2−	0.3+	1997 10 18	327	0.2−	0.3−
1986 10 03	046	(4.6+	0.6−)	1997 10 05	691	0.5−	0.4+	1997 10 18	327	0.2+	0.2−
1986 10 03	046	(4.9+	0.2+)	1997 10 05	691	0.4−	0.2+	1997 10 19	327	0.2+	0.3−
1995 01 29	691	0.8−	1.2−	1997 10 05	691	0.2−	0.4+	1997 10 19	327	0.5+	0.3−
1995 01 29	691	0.3+	0.1+	1997 10 10	327	0.4+	0.2+	1997 10 19	327	0.1+	0.2−
1995 01 29	691	0.2+	0.0	1997 10 10	327	0.3+	0.1+	1999 03 20	704	0.5+	1.6+
1995 02 05	691	0.3+	0.0	1997 10 10	327	0.4+	0.0	1999 03 20	704	0.6+	0.9+
1995 02 05	691	0.1−	0.0	1997 10 17	327	0.1+	0.2−	1999 03 20	704	0.1+	0.1+
1995 02 05	691	0.1−	0.1+	1997 10 17	327	0.1−	0.2−				

1997 SO$_{33}$ = 1997 YV$_1$

Id. G. V. Williams (d, *MPC* 31437)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	132.61427		(2000.0)		**P**		**Q**
n	0.28109705	ω	12.67500		+0.71022685		−0.70319608
a	2.3079790	Ω	32.09002		+0.64032912		+0.62579089
e	0.1158677	i	3.56808		+0.29250033		+0.33749229
P	3.51	H	14.9	G	0.15	U	3

Residuals in seconds of arc

1997 09 26	327	0.3+	0.0	1997 12 04	704	0.6−	0.3+	1998 02 09	327	0.1−	0.5+
1997 09 26	327	0.1+	0.5+	1997 12 04	704	0.9+	1.5+	1998 02 09	327	0.0	0.1−
1997 09 26	327	1.1+	0.5+	1997 12 17	327	0.2+	0.3−	1998 02 09	327	0.3+	0.2+
1997 09 30	327	0.2−	0.2−	1997 12 17	327	0.5+	0.1−	1999 03 21	910	0.1−	0.4−
1997 09 30	327	0.2−	0.7−	1997 12 17	327	0.0	0.0	1999 03 21	910	0.3−	0.3−
1997 09 30	327	0.8+	1.7−	1997 12 23	327	0.6+	0.3+	1999 03 21	910	0.0	0.1−
1997 10 23	327	0.6−	0.2+	1997 12 23	327	0.5+	0.3−	1999 04 09	699	0.7+	1.1+
1997 10 23	327	0.5−	0.2+	1997 12 23	327	0.3+	0.3+	1999 04 09	699	0.4−	0.9−
1997 10 23	327	0.3−	0.3−	1998 01 29	327	0.1+	0.0	1999 04 09	699	0.3−	0.2−
1997 12 04	704	0.5−	0.1+	1998 01 29	327	0.5−	0.1−				
1997 12 04	704	1.6−	1.5−	1998 01 29	327	0.1+	0.2−				

1997 TY$_{11}$ = 1984 UM = 1999 AV$_{25}$

Id. A. Doppler (*MPC* 33956), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	147.86448		(2000.0)		**P**		**Q**
n	0.30329984	ω	228.09799		+0.99334057		−0.11132532
a	2.1939224	Ω	138.26823		+0.11442918		+0.92321664
e	0.2019703	i	2.55598		+0.01343396		+0.36780119
P	3.25	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1984 10 23	688	0.0	2.0−	1997 10 09	327	0.6−	1.1+	1999 03 23	704	1.3+	1.5+
1984 10 23	688	0.2−	2.2−	1999 01 15	910	0.7+	1.1−	1999 03 23	704	0.5+	0.9+
1984 10 29	688	1.9+	1.7−	1999 01 15	910	0.5+	0.7−	1999 03 23	704	1.6+	0.3+
1984 10 29	688	1.2+	1.3−	1999 01 15	910	0.9+	0.7−	1999 04 06	704	0.2−	0.5+
1997 10 07	327	0.4−	1.3+	1999 01 20	910	0.4+	0.5−	1999 04 06	704	0.6+	0.4+
1997 10 07	327	0.2+	0.9+	1999 01 20	910	0.8+	0.6−	1999 04 06	704	1.8−	1.7+
1997 10 07	327	0.5−	1.3+	1999 01 20	910	0.9+	0.6−	1999 04 06	704	0.9−	1.6+
1997 10 08	327	0.4−	1.5+	1999 03 20	704	0.4+	0.1−	1999 04 12	704	2.0−	0.2−
1997 10 08	327	0.7−	1.3+	1999 03 20	704	0.5+	0.2−	1999 04 12	704	1.1−	0.3+
1997 10 08	327	0.6−	1.0+	1999 03 20	704	1.0+	0.2+	1999 04 12	704	0.0	0.7+
1997 10 09	327	0.5−	1.2+	1999 03 20	704	0.4+	0.2+	1999 04 12	704	(2.5−	1.1+)
1997 10 09	327	0.7−	1.1+	1999 03 23	704	0.0	1.0+	1999 04 12	704	1.6−	0.7+

1997 TV$_{17}$ = 1985 QT$_1$

Id. G. V. Williams, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	148.18791		(2000.0)		**P**		**Q**
n	0.17497469	ω	108.51374		+0.69244638		+0.71756278
a	3.1658177	Ω	205.80233		−0.70972106		+0.65880426
e	0.0575292	i	9.91905		−0.12966890		+0.22601016
P	5.63	H	13.7	G	0.15	U	3

Residuals in seconds of arc

1985 08 16	675	0.6−	0.2−	1997 10 30	704	0.0	0.4−	1997 11 03	704	0.2−	0.6−
1985 08 16	675	0.4+	1.0+	1997 10 30	704	1.0−	0.9+	1997 11 03	704	1.7−	0.9−
1985 08 17	675	(4.0+	1.5−)	1997 10 30	704	0.5+	0.4+	1997 12 06	910	0.4−	1.2+
1985 08 17	675	(6.7+	1.0+)	1997 10 30	704	0.7−	0.2−	1997 12 06	910	0.2−	1.5+
1997 10 06	400	(0.0	2.0+)	1997 10 30	704	0.2−	0.6−	1997 12 06	910	0.4−	1.3+
1997 10 06	400	0.7−	1.6+	1997 10 30	400	0.2+	0.0	1998 12 15	704	0.3−	0.1−
1997 10 09	400	0.9+	1.4−	1997 10 30	400	1.2+	0.1−	1998 12 15	704	0.1−	1.1+
1997 10 09	400	0.9+	0.8−	1997 11 03	704	0.1−	0.2−	1998 12 15	704	(2.8−	1.0+)
1997 10 25	400	0.7−	1.1−	1997 11 03	704	1.1+	0.1+	1998 12 15	704	0.5+	0.7−
1997 10 25	400	0.4+	0.1−	1997 11 03	704	0.8+	0.6−	1998 12 15	704	(3.8−	1.6−)

1997 TM$_{19}$ = 1999 FE$_{51}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	75.97877		(2000.0)		**P**		**Q**
n	0.22853263	ω	89.09666		+0.39519086		−0.91482932
a	2.6495406	Ω	337.06478		+0.73491008		+0.36916588
e	0.1548082	i	12.31799		+0.55111827		+0.16371887
P	4.31	H	15.1	G	0.15	U	4

Residuals in seconds of arc

1997 10 10	557	0.1−	0.1+	1997 10 22	557	0.1−	0.3−	1999 03 20	704	1.1+	0.5+
1997 10 11	557	0.1−	0.0	1997 11 04	557	0.0	0.2+	1999 03 20	704	(1.5+	3.0+)
1997 10 11	557	0.1+	0.2+	1997 11 04	557	0.3−	0.2+	1999 03 20	704	0.6−	1.0+
1997 10 12	557	0.6+	0.2−	1997 11 20	557	0.1−	0.0	1999 03 23	704	0.3−	0.4−
1997 10 12	557	0.4−	0.0	1997 11 20	557	0.1−	0.1+	1999 03 23	704	1.8+	1.3−
1997 10 12	557	0.1+	0.1−	1997 12 30	557	0.4−	0.1−	1999 03 23	704	0.5+	0.6−
1997 10 17	557	0.2+	0.3+	1997 12 30	557	0.4+	0.2+	1999 03 24	557	0.8−	0.5+
1997 10 17	557	0.1−	0.1−	1999 03 20	704	1.7−	0.2+				
1997 10 22	557	0.3+	0.4−	1999 03 20	704	(0.7+	2.4+)				

1997 TM$_{26}$ = 1999 EA$_5$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	84.13612		(2000.0)		**P**	**Q**	
n	0.28417779	ω	13.74124		+0.39297436	−0.91728347	
a	2.2912684	Ω	53.15761		+0.83587011	+0.32709109	
e	0.1061545	i	4.62390		+0.38326532	+0.22716173	
P	3.47	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1997 10 07	966	0.7+	0.3−	1997 10 30	704	0.2−	0.9−	1999 03 23	699	0.7+	0.9+
1997 10 07	966	1.0+	0.5−	1997 10 30	704	1.0−	0.1−	1999 04 06	704	0.5−	1.4−
1997 10 21	966	0.1+	0.9+	1997 10 30	704	0.3+	0.7−	1999 04 06	704	0.2−	1.4−
1997 10 21	966	1.3+	0.5+	1997 10 30	704	1.2−	0.7−	1999 04 06	704	0.3+	1.5−
1997 10 23	966	0.9+	0.9+	1999 03 12	757	0.5+	0.4−	1999 04 06	704	0.9−	0.5−
1997 10 23	966	0.7−	0.7−	1999 03 12	757	0.1−	0.1+	1999 04 06	704	0.9−	0.6−
1997 10 28	704	(4.0+	3.2−)	1999 03 16	757	0.1−	0.4+	1999 04 15	704	1.1+	0.7−
1997 10 28	704	(2.5+	3.7−)	1999 03 16	757	0.6−	1.6+	1999 04 15	704	0.9+	0.1+
1997 10 28	704	(4.8+	4.1−)	1999 03 19	757	0.1+	0.3+	1999 04 15	704	0.5−	0.3+
1997 10 28	704	(3.5+	2.7−)	1999 03 19	757	0.6+	0.3−	1999 04 16	704	0.6−	1.5+
1997 10 28	704	(4.2+	6.1−)	1999 03 23	699	0.6+	0.0	1999 04 16	704	0.7−	0.5−
1997 10 30	704	0.7−	0.3−	1999 03 23	699	0.2−	0.0	1999 04 16	704	0.5−	0.3+

1997 UF = 1999 FX$_{37}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	316.08813		(2000.0)		**P**	**Q**	
n	0.27580442	ω	27.87395		−0.95006309	+0.31180832	
a	2.3374118	Ω	170.26971		−0.29828071	−0.89564223	
e	0.0435047	i	4.23391		−0.09169919	−0.31717592	
P	3.57	H	14.6	G	0.15	U	4

Residuals in seconds of arc

1997 10 19	557	0.2+	0.3−	1997 10 28	557	0.3−	0.1−	1999 03 23	704	0.8−	0.6+
1997 10 19	557	0.1+	0.1−	1997 11 09	557	0.2−	0.9+	1999 03 23	704	(0.9−	2.8+)
1997 10 21	557	0.6−	0.7−	1997 11 09	557	0.1+	0.5+	1999 03 23	704	0.8−	1.5+
1997 10 21	557	0.0	0.2+	1999 03 20	704	1.3+	1.2+	1999 04 14	557	0.2−	0.2−
1997 10 23	557	0.3+	0.2−	1999 03 20	704	0.3−	1.6−	1999 04 14	557	0.0	0.1+
1997 10 23	557	0.3−	0.5−	1999 03 20	704	0.4+	0.2−	1999 04 22	557	0.3+	0.4−
1997 10 27	557	0.6+	0.2+	1999 03 20	704	0.1+	1.5−	1999 04 22	557	0.1−	0.3+

1997 UG$_1$ = 1987 YE$_4$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	90.81627		(2000.0)		**P**	**Q**	
n	0.18996733	ω	357.37488		+0.85732436	−0.50559754	
a	2.9969772	Ω	33.56410		+0.47543013	+0.70558989	
e	0.0786015	i	10.08143		+0.19738577	+0.49650180	
P	5.19	H	13.3	G	0.15	U	3

Residuals in seconds of arc

1987 12 23	010	(6.6+	3.8−)	1997 11 06	385	0.5−	0.1+	1999 01 19	704	0.6−	3.2+
1987 12 23	010	(8.8+	4.2−)	1997 11 06	385	0.7−	0.1+	1999 01 19	704	0.5+	0.6+
1997 10 21	905	0.5+	0.1+	1997 11 20	557	0.1+	0.4+	1999 01 21	888	0.2−	0.3−
1997 10 21	905	1.5+	0.0	1997 11 20	557	0.0	0.5+	1999 01 21	888	0.0	0.4−
1997 10 22	704	0.2−	0.1−	1997 11 20	557	0.1−	0.3−	1999 02 07	886	0.7−	1.5−
1997 10 22	704	0.9−	0.4+	1997 12 05	385	1.1−	0.0	1999 02 07	886	0.1+	0.3−
1997 10 22	704	0.0	0.7+	1997 12 05	385	0.6−	0.2−	1999 02 10	704	0.4+	0.5−
1997 10 22	704	0.4−	0.5+	1998 01 02	385	0.2−	0.1+	1999 02 10	704	0.5−	0.8−
1997 10 22	704	0.7−	0.6+	1998 01 02	385	0.5+	0.3+	1999 02 10	704	0.5+	0.5−
1997 10 22	905	1.1+	0.6−	1998 12 27	699	0.5−	0.2+	1999 02 10	704	1.2+	0.9+
1997 10 22	905	0.3+	1.1+	1998 12 27	699	0.6−	0.6−	1999 02 10	704	0.0	0.6+
1997 10 25	905	2.7+	0.2−	1998 12 27	699	0.7−	0.5−	1999 02 13	704	0.9+	0.0
1997 10 25	905	0.0	0.2+	1998 12 29	385	0.1+	0.2−	1999 02 13	704	1.2+	1.4−
1997 10 31	886	0.9−	0.1−	1998 12 29	385	0.1−	0.9+	1999 02 13	704	0.9−	1.1+
1997 10 31	886	0.9−	0.6+	1999 01 09	699	0.4+	0.7−	1999 02 13	704	0.5−	0.0
1997 11 03	704	0.2+	0.8−	1999 01 09	699	0.5−	0.3−	1999 02 13	704	0.5−	1.2+
1997 11 03	704	0.3+	0.2−	1999 01 09	699	1.2+	0.7−	1999 02 18	699	0.6+	0.6−
1997 11 03	704	0.4+	0.7−	1999 01 13	888	0.1−	0.3−	1999 02 18	699	0.4+	0.1+
1997 11 03	704	0.1+	1.3−	1999 01 13	888	0.2+	0.3−	1999 02 18	699	0.5+	0.0
1997 11 03	704	1.0−	0.9−	1999 01 19	704	0.2+	0.0	1999 02 20	385	0.2+	0.2+
1997 11 05	886	0.1+	0.1+	1999 01 19	704	2.1−	0.1+				
1997 11 05	886	0.0	0.4−	1999 01 19	704	0.2−	0.6+				

1997 UP$_3$ = 1982 VB$_6$ = 1986 XY$_3$ = 1991 AV$_1$

Id. S. Nakano (*MPC* 30885, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	60.80047		(2000.0)		**P**	**Q**	
n	0.26522341	ω	187.58987		−0.32411088	−0.94503936	
a	2.3991725	Ω	281.32941		+0.87024565	−0.27999925	
e	0.0379099	i	2.51603		+0.37097797	−0.16882245	
P	3.72	H	13.8	G	0.15	U	3

Residuals in seconds of arc

1982 11 08	095	(10.8−	0.6−)	1997 11 29	704	0.3+	0.5−	1999 04 06	704	0.1+	0.0
1986 12 04	010	(9.3−	6.4−)	1997 11 29	704	1.4+	1.0−	1999 04 11	699	0.9+	0.7−
1986 12 05	010	(7.5+	5.9−)	1997 11 30	411	0.1−	0.5−	1999 04 11	699	0.7+	0.3−
1991 01 13	675	0.5−	0.2+	1997 11 30	411	0.7−	0.2−	1999 04 11	699	0.4+	0.1+
1991 01 13	675	1.2−	0.3+	1999 03 19	704	0.0	0.0	1999 04 14	704	0.5+	0.7−
1991 01 14	675	1.9+	0.5−	1999 03 19	704	1.5−	0.2−	1999 04 14	704	0.3+	0.5−
1991 01 14	675	0.5−	0.5+	1999 03 19	704	0.1−	0.4+	1999 04 14	704	0.2+	0.0
1991 01 15	675	0.4+	0.0	1999 03 19	704	0.6−	0.1+	1999 04 14	704	1.0+	1.0+
1997 10 26	411	0.5+	0.5+	1999 03 20	704	0.1−	0.2−	1999 04 14	704	0.2−	0.2+
1997 10 26	411	0.2−	0.6+	1999 03 20	704	0.8−	0.2−	1999 04 15	704	0.2−	0.2−
1997 10 27	411	0.1+	0.1+	1999 03 20	704	0.7+	0.6−	1999 04 15	704	0.3+	0.3−
1997 10 27	411	0.1+	1.2+	1999 03 20	704	0.5−	0.6+	1999 04 15	704	(0.6+	2.1−)
1997 10 27	411	0.5+	0.2+	1999 03 23	704	0.4+	0.4−	1999 04 15	704	1.0−	1.8+
1997 11 01	411	0.2−	0.3−	1999 03 23	704	0.6−	0.2−	1999 04 15	704	0.7+	0.1−
1997 11 01	411	0.2−	0.2+	1999 03 23	704	0.1−	0.1−	1999 04 17	704	0.5+	0.2−
1997 11 06	411	0.2−	0.4+	1999 03 23	704	0.0	0.5−	1999 04 17	704	0.0	0.6+
1997 11 06	411	0.3−	0.1+	1999 03 23	704	0.7−	1.4−	1999 04 17	704	0.3+	0.3+
1997 11 29	704	0.8−	0.6−	1999 04 06	704	0.3+	0.4+	1999 04 17	704	0.0	0.6+
1997 11 29	704	0.3−	0.2+	1999 04 06	704	0.7−	0.2+	1999 04 17	704	0.4−	0.1+
1997 11 29	704	0.1+	0.0	1999 04 06	704	0.2+	0.5+				

1997 UC$_7$ = 1999 CJ$_{126}$

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	267.50008		(2000.0)		**P**	**Q**	
n	0.23630468	ω	194.04663		−0.32254050	+0.92511491	
a	2.5911218	Ω	57.49100		−0.84390136	−0.18519262	
e	0.1422502	i	13.74179		−0.42871684	−0.33146054	
P	4.17	H	12.6	G	0.15	U	3

Residuals in seconds of arc

1984 08 07	413	0.3−	0.7+	1997 11 29	704	1.1+	0.3+	1999 02 11	704	0.4+	0.6−
1984 08 07	413	0.8−	0.8+	1997 11 29	704	0.8+	1.8+	1999 02 11	704	1.0+	0.4+
1997 10 26	596	0.9+	1.0−	1997 12 04	704	0.9−	0.6+	1999 02 11	704	1.3+	0.4+
1997 10 26	596	0.7−	1.0−	1997 12 04	704	1.5−	0.6+	1999 02 11	704	1.1+	0.0
1997 10 26	596	0.1+	1.3−	1997 12 04	704	1.9−	1.1+	1999 02 11	704	0.7+	0.1−
1997 10 26	596	0.9+	0.1+	1997 12 04	704	0.5−	0.4−	1999 02 18	704	0.9−	0.1+
1997 10 27	596	0.7−	0.7−	1997 12 04	704	(2.2−	0.7+)	1999 02 18	704	0.3−	1.0+
1997 10 27	596	0.3−	0.8−	1998 11 25	704	0.5−	0.2+	1999 02 18	704	1.7−	1.1+
1997 10 27	596	0.5−	0.7−	1998 11 25	704	1.1−	0.1−	1999 02 18	704	0.4−	0.1+
1997 11 29	704	0.9+	0.3−	1998 11 25	704	0.1+	0.5−	1999 02 18	704	1.1−	0.3−
1997 11 29	704	0.7+	0.6+	1998 11 25	704	0.4+	0.8−				
1997 11 29	704	1.4+	0.4+	1998 11 25	704	1.4+	1.2−				

1997 UP$_7$

Id. T. Kagawa (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Urata

					P	Q
M	77.67382		(2000.0)		+0.12118165	−0.99250112
n	0.23905352	ω	104.61501		+0.89314983	+0.11606342
a	2.5712203	Ω	338.40521		+0.43312631	+0.03835116
e	0.2319105	i	2.49425			
P	4.12	H	14.9	G 0.15	U 4	

Residuals in seconds of arc

1997 08 05	910	0.3−	0.1−	1997 10 30	566	0.3+	0.2−	1997 11 18	886	0.1−	0.3−
1997 08 05	910	0.5−	0.1+	1997 10 30	566	0.4+	0.2+	1997 11 24	886	0.1−	0.2−
1997 08 05	910	0.7−	0.3+	1997 10 30	566	0.5+	0.3−	1997 11 24	886	0.0	0.2+
1997 10 01	910	0.1+	0.2+	1997 10 31	886	0.1−	0.3+	1997 12 02	886	1.1−	0.3+
1997 10 01	910	0.2+	0.1+	1997 10 31	886	0.2+	0.4+	1997 12 02	886	0.2+	0.2+
1997 10 01	910	0.3+	0.2+	1997 11 03	886	0.7−	0.4+	1997 12 26	566	0.7−	0.1−
1997 10 26	886	0.2−	0.9−	1997 11 03	886	1.0+	1.1−	1997 12 26	566	0.5−	0.2+
1997 10 26	886	0.1−	1.1+	1997 11 05	886	1.2+	0.9−	1997 12 26	566	0.6−	0.2+
1997 10 28	886	0.7−	0.5−	1997 11 05	886	0.1+	0.3+	1999 04 14	888	0.5−	0.6−
1997 10 28	886	0.6+	1.1−	1997 11 09	886	0.2−	1.2+	1999 04 14	888	0.2+	0.0
1997 10 29	886	0.3−	0.1+	1997 11 09	886	0.8+	0.2−	1999 04 15	888	0.3+	0.1+
1997 10 29	886	0.9−	0.1+	1997 11 18	886	0.8+	0.1−	1999 04 15	888	0.1−	0.3+

1997 UV$_7$ = 1999 FU$_{38}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	56.51411		(2000.0)		+0.16418626	−0.98606920
n	0.23231189	ω	242.78244		+0.93303518	+0.16401153
a	2.6207268	Ω	197.82763		+0.32013781	+0.02770832
e	0.1548062	i	4.99443			
P	4.24	H	14.1	G 0.15	U 4	

Residuals in seconds of arc

1997 10 27	557	0.3+	0.1+	1997 11 04	557	0.5+	0.0	1999 03 23	704	(0.8−	2.4+)
1997 10 27	557	0.5−	0.1+	1997 11 04	557	0.5+	0.1−	1999 03 23	704	1.7+	1.1+
1997 10 28	557	0.2+	0.1−	1999 03 20	704	0.6+	1.3−	1999 03 23	704	0.7−	0.2+
1997 10 28	557	0.4−	0.5−	1999 03 20	704	0.3−	0.4+	1999 04 14	557	0.6+	0.4−
1997 10 30	557	0.5−	0.4−	1999 03 20	704	(1.9+	2.7−)	1999 04 14	557	0.4−	0.8+
1997 10 30	557	0.2−	0.2+	1999 03 20	704	0.3+	1.1−	1999 04 22	557	0.4−	0.2+
1997 11 04	557	0.1−	0.9+	1999 03 20	704	1.7−	0.5+	1999 04 22	557	0.3+	0.3−

1997 UY$_8$ = 1999 FJ$_{49}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	191.29064		(2000.0)		+0.87517618	+0.47786531
n	0.30098132	ω	273.82534		−0.40075314	+0.80355383
a	2.2051748	Ω	57.64332		−0.27104166	+0.35488870
e	0.2036313	i	5.13281			
P	3.27	H	14.6	G 0.15	U 4	

Residuals in seconds of arc

1997 10 29	411	0.8−	1.3−	1997 11 29	704	0.6+	0.1+	1999 03 20	704	1.0−	0.7+
1997 10 29	411	0.6−	0.4−	1997 11 29	704	0.6+	0.1+	1999 03 20	704	0.7−	0.1+
1997 10 30	411	1.7+	1.1+	1997 11 29	704	0.7+	0.1+	1999 03 20	704	1.3−	0.4−
1997 10 30	411	0.4+	0.5+	1997 12 04	704	0.7+	0.5+	1999 03 20	704	1.8+	1.0−
1997 11 06	411	0.4−	0.1+	1997 12 04	704	(2.1+	2.1+)	1999 03 23	704	0.7−	1.2+
1997 11 06	411	0.4−	0.6−	1997 12 04	704	1.4−	0.4+	1999 03 23	704	(2.6−	0.8−)
1997 11 23	411	0.4−	0.1−	1997 12 04	704	0.1−	0.7+	1999 03 23	704	1.4+	0.1−
1997 11 23	411	0.2−	0.1−	1997 12 04	704	0.3−	0.7−	1999 03 23	704	0.1−	0.7+
1997 11 23	411	0.0	0.8+	1997 12 04	905	0.5+	0.4−	1999 04 18	703	0.3+	1.0−
1997 11 23	905	0.2−	0.4+	1997 12 04	905	0.2+	0.5−	1999 04 18	703	0.7−	0.4−
1997 11 23	905	0.7−	0.3−	1997 12 05	886	0.7−	0.1+	1999 04 18	703	(1.0−	2.7+)
1997 11 29	704	0.3+	0.2+	1997 12 05	886	0.1−	0.5−	1999 04 18	703	(1.1−	3.7+)
1997 11 29	704	0.4+	0.4−	1999 03 20	704	0.9+	0.1+				

1997 UO$_9$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	94.47438		(2000.0)		+0.03437832	−0.99925402
n	0.30591200	ω	153.78016		+0.91351527	+0.03855883
a	2.1814154	Ω	294.24542		+0.40534920	−0.00214976
e	0.0906847	i	1.10563			
P	3.22	H	15.9	G 0.15	U 4	

Residuals in seconds of arc

1997 10 01	910	0.0	0.1+	1997 11 03	557	0.4+	0.1+	1999 04 17	557	0.1+	0.1+
1997 10 01	910	0.1−	0.1+	1997 11 10	557	0.2+	0.2+	1999 04 17	557	0.2−	0.1+
1997 10 01	910	0.1−	0.1−	1997 11 10	557	0.3+	0.7+	1999 04 17	557	0.9−	0.1−
1997 10 29	557	1.3+	0.5+	1997 11 20	557	0.0	0.2−	1999 04 17	557	0.3−	0.2+
1997 10 29	557	1.0+	0.4+	1997 11 20	557	0.2+	0.6−	1999 04 24	046	1.3+	0.8+
1997 10 30	557	0.1+	0.2−	1997 11 22	691	0.6−	0.0	1999 04 24	046	1.0+	0.6+
1997 10 30	557	0.2−	0.3−	1997 11 22	691	0.9−	0.0	1999 04 24	046	0.9+	0.9+
1997 11 01	557	0.8−	0.4+	1997 11 22	691	1.1−	0.2+	1999 04 24	046	0.2+	0.2+
1997 11 01	557	0.6−	0.3+	1999 04 14	557	1.2−	0.4−				
1997 11 03	557	0.1+	0.4+	1999 04 14	557	0.2−	0.1−				

1997 US$_{17}$ = 1999 GC$_{18}$

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	285.70788		(2000.0)		−0.44127980	+0.89328414
n	0.28028453	ω	172.84941		−0.82773643	−0.36837202
a	2.3124373	Ω	70.93419		−0.34658988	−0.25757621
e	0.0601263	i	5.19211			
P	3.52	H	14.7	G 0.15	U 4	

Residuals in seconds of arc

1997 10 25	691	0.0	0.3−	1997 11 23	327	0.3+	0.2+	1999 04 15	704	0.4+	0.7−
1997 10 25	691	0.3+	0.1+	1999 02 23	699	0.7−	0.4−	1999 04 15	704	0.9+	1.6+
1997 10 25	691	0.2+	0.2−	1999 02 23	699	0.2+	0.9−	1999 04 16	704	0.0	0.9+
1997 11 02	691	0.7−	0.1−	1999 02 23	699	0.7−	0.6−	1999 04 16	704	0.1−	0.1+
1997 11 02	691	0.0	0.1−	1999 04 07	699	0.4+	0.7+	1999 04 16	704	0.8−	0.9−
1997 11 02	691	0.0	0.2−	1999 04 07	699	0.4+	0.2+	1999 04 16	704	0.6−	0.3−
1997 11 23	327	0.3−	0.5+	1999 04 07	699	0.4−	0.5+				
1997 11 23	327	0.0	0.8+	1999 04 15	704	1.0+	0.2+				

1997 VH = 1999 FA$_{59}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	114.73596		(2000.0)		+0.86748932	−0.49584055
n	0.23467281	ω	6.84021		+0.45141682	+0.75081683
a	2.6031200	Ω	23.01981		+0.20900989	+0.43636709
e	0.2096147	i	5.87913			
P	4.20	H	14.5	G 0.15	U 4	

Residuals in seconds of arc

1997 10 29	704	1.6−	1.3−	1997 11 02	900	0.0	0.3+	1997 11 18	355	0.8+	0.5+
1997 10 29	704	0.0	0.4+	1997 11 02	900	0.5+	0.4+	1997 11 27	355	0.2−	0.3−
1997 10 29	704	0.1−	0.8+	1997 11 02	900	0.1−	0.5+	1997 11 27	355	0.2+	0.6−
1997 10 29	704	0.2+	0.3−	1997 11 03	355	0.7+	0.0	1997 11 27	355	0.9+	0.4−
1997 10 29	704	0.5+	0.1−	1997 11 03	355	0.5+	0.9+	1997 12 02	355	0.6+	0.8−
1997 10 30	704	0.4+	1.0−	1997 11 03	900	0.1−	0.9+	1997 12 02	355	0.3+	0.6−
1997 10 30	704	0.6+	1.4−	1997 11 03	900	0.8−	0.2+	1997 12 02	355	0.1−	1.0−
1997 10 30	704	0.7+	1.0−	1997 11 03	402	0.6+	0.5+	1997 12 25	355	0.7−	0.5+
1997 10 30	704	0.4+	0.8−	1997 11 03	402	0.5+	0.4+	1997 12 25	355	0.7−	0.5−
1997 11 01	355	0.5+	0.1+	1997 11 03	402	0.3+	0.4+	1997 12 25	355	1.5+	1.2+
1997 11 01	355	0.9+	0.7+	1997 11 06	704	3.5−	0.1+	1999 03 20	704	2.3+	1.6+
1997 11 01	355	0.9+	1.0+	1997 11 06	704	3.3−	0.4−	1999 03 20	704	0.4−	0.8+
1997 11 01	355	0.9+	0.2+	1997 11 06	704	3.2−	0.0	1999 03 20	704	2.5−	0.6−
1997 11 01	355	1.4+	0.3−	1997 11 06	704	3.0−	0.1−	1999 03 20	704	0.3+	0.5+
1997 11 02	355	0.4−	0.7−	1997 11 06	704	(4.7−	0.3+)	1999 03 23	704	0.8+	0.5−
1997 11 02	355	0.3+	0.2+	1997 11 07	355	0.4+	1.0+	1999 03 23	704	0.5+	0.3−

1997 11 02	355	0.7+	0.3+	1997 11 07	355	1.2+	0.6+	1999 03 23	704	0.8−	1.3−
1997 11 02	900	0.1+	0.7+	1997 11 18	355	0.3+	1.0−				

1997 VZ = 1981 UU$_{16}$ = 1999 FT$_{56}$

Id. G. V. Williams, S. Nakano, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	77.49898		(2000.0)		**P**	**Q**	
n	0.18726442	ω	18.43186		+0.44031433	−0.89358654	
a	3.0257465	Ω	45.55233		+0.80760578	+0.35168419	
e	0.1807164	i	7.02651		+0.39229606	+0.27896476	
P	5.26	H	13.1	G	0.15	U	3

Residuals in seconds of arc

1981 10 24	095	1.0−	1.9+	1997 12 04	704	0.8−	0.7−	1999 03 20	704	0.4+	1.1−
1997 11 01	411	0.1+	0.4−	1997 12 04	704	1.5−	0.5+	1999 03 23	704	0.7−	0.2+
1997 11 01	411	0.5+	0.1−	1997 12 04	704	1.6−	0.5−	1999 03 23	704	0.2−	0.1−
1997 11 03	411	0.2−	0.3+	1997 12 17	327	0.1+	0.0	1999 03 23	704	0.1−	1.4+
1997 11 03	411	1.0+	0.9−	1997 12 17	327	0.5+	0.2−	1999 03 23	704	0.7−	1.1+
1997 11 08	411	0.1−	0.2+	1997 12 17	327	0.2+	0.2+	1999 03 23	704	0.1−	0.5−
1997 11 08	411	0.4+	0.4−	1997 12 23	327	0.9+	0.1−	1999 04 06	699	0.2+	0.2+
1997 11 19	411	0.5+	0.5+	1997 12 23	327	0.8+	0.1−	1999 04 06	699	0.3+	0.1−
1997 11 19	411	0.7+	0.1+	1997 12 23	327	0.7+	0.2−	1999 04 06	699	1.5+	0.1−
1997 12 02	411	1.1−	0.7−	1999 03 20	704	0.2−	0.4−	1999 04 18	703	1.0+	1.0+
1997 12 02	411	0.2−	0.2+	1999 03 20	704	0.4+	0.5−	1999 04 18	703	0.2−	1.0+
1997 12 04	704	0.1−	0.1+	1999 03 20	704	1.4+	0.2+	1999 04 18	703	0.7−	0.5+
1997 12 04	704	0.2−	0.6+	1999 03 20	704	0.1−	1.4−	1999 04 18	703	1.6−	0.1+

1997 VJ$_3$ = 1999 FH$_{55}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	111.31256		(2000.0)		**P**	**Q**	
n	0.22423033	ω	174.20348		+0.73446952	−0.67716285	
a	2.6833242	Ω	228.52269		+0.62021593	+0.69655777	
e	0.0800331	i	3.42635		+0.27547546	+0.23718716	
P	4.40	H	13.7	G	0.15	U	4

Residuals in seconds of arc

1997 11 06	411	0.8+	1.1−	1997 11 30	411	0.2−	0.0	1998 01 30	327	0.0	0.3+
1997 11 06	411	0.5−	0.0	1997 11 30	411	0.4−	0.3−	1998 01 30	327	0.2−	0.1+
1997 11 07	411	0.1+	0.3−	1997 12 04	704	0.8+	0.1−	1998 01 30	327	0.3+	0.3−
1997 11 07	411	0.4−	0.7−	1997 12 04	704	0.6+	0.2+	1999 03 20	704	0.1+	0.0
1997 11 09	411	0.7−	0.5−	1997 12 04	704	1.4+	1.8+	1999 03 20	704	0.1−	0.1−
1997 11 09	411	0.1+	0.7−	1997 12 04	704	1.2−	1.2+	1999 03 20	704	0.4+	0.5−
1997 11 19	411	0.4+	0.4+	1997 12 04	704	0.5−	1.4+	1999 03 20	704	0.6+	0.7−
1997 11 19	411	0.0	0.1−	1997 12 05	704	0.9+	0.5+	1999 03 20	704	0.9+	0.8−
1997 11 28	566	0.3−	0.2+	1997 12 05	704	1.2+	0.5+	1999 03 23	704	0.3−	0.1−
1997 11 28	566	0.3+	0.1−	1997 12 05	704	1.6−	0.6+	1999 03 23	704	0.2+	0.3+
1997 11 28	566	0.7+	0.0	1997 12 05	704	1.5−	0.7+	1999 03 23	704	0.5+	0.5−
1997 11 29	704	0.1+	0.1−	1997 12 05	704	1.0−	1.0+	1999 03 23	704	0.9−	0.4+
1997 11 29	704	0.4+	0.9−	1998 01 02	704	1.8+	0.1−	1999 03 23	704	0.1−	1.0−
1997 11 29	704	0.1−	0.8−	1998 01 02	704	0.0	0.6+	1999 04 09	699	1.3−	0.3−
1997 11 29	704	0.6−	1.1−	1998 01 02	704	0.6−	0.6−	1999 04 09	699	0.5+	1.0+
1997 11 29	704	0.0	1.4−	1998 01 02	704	(3.0−	1.3−)	1999 04 09	699	0.6−	2.0+

1997 VK$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	47.08698		(2000.0)		**P**	**Q**	
n	0.18906846	ω	293.38457		−0.41200750	−0.91118017	
a	3.0064684	Ω	180.94732		+0.85098764	−0.38450958	
e	0.1964242	i	2.47863		+0.32568367	−0.14799686	
P	5.21	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1997 11 06	411	0.8−	0.7+	1997 12 04	704	(0.4−	3.1+)	1999 04 07	699	1.1+	0.6+
1997 11 06	411	0.2+	0.2+	1997 12 05	900	0.3+	0.5−	1999 04 07	699	0.6+	1.1+
1997 11 07	411	0.4+	0.4+	1997 12 05	900	0.0	0.3−	1999 04 07	699	0.4−	1.7+
1997 11 07	411	0.2+	0.2−	1997 12 05	900	0.1+	0.0	1999 04 10	118	1.4−	0.2−
1997 11 09	411	0.8−	0.3+	1997 12 05	900	0.0	0.8+	1999 04 10	118	1.1−	0.1−
1997 11 09	411	0.6+	0.2−	1997 12 25	118	0.0	0.0	1999 04 10	118	0.7−	0.5−
1997 11 19	411	0.0	0.0	1997 12 25	118	0.0	0.2−	1999 04 10	426	0.6+	0.6−
1997 11 19	411	0.3+	0.3−	1997 12 25	118	0.6+	0.3−	1999 04 10	426	0.0	0.2+
1997 11 30	411	0.2−	0.2−	1997 12 27	118	0.2−	0.5+	1999 04 10	426	0.2−	0.1+
1997 11 30	411	0.4−	0.4−	1997 12 27	118	0.1−	0.1+	1999 04 12	426	0.4+	0.6−
1997 12 04	704	0.5+	0.7−	1999 03 23	703	0.8+	0.8−	1999 04 12	426	1.3+	0.2−
1997 12 04	704	0.2+	0.3−	1999 03 23	703	0.3−	0.6−	1999 04 12	426	0.1+	0.4+
1997 12 04	704	1.1−	1.4+	1999 03 23	703	0.1−	0.1−				
1997 12 04	704	0.1+	0.5−	1999 03 23	703	0.7−	0.1−				

1997 VM$_3$

Id. E. Bowell (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	349.77471		(2000.0)		**P**	**Q**	
n	0.21696599	ω	90.60623		−0.97656004	−0.17651914	
a	2.7428893	Ω	79.23147		+0.11065451	−0.90254653	
e	0.0539010	i	7.20273		+0.18462411	−0.39274771	
P	4.54	H	13.4	G	0.15	U	4

Residuals in seconds of arc

1997 11 06	411	0.7+	0.3−	1997 11 28	566	1.1+	0.1−	1997 12 05	704	0.1+	0.2−
1997 11 06	411	1.3+	1.3−	1997 11 29	704	0.4+	0.4−	1997 12 05	704	0.7+	0.3−
1997 11 07	411	0.1−	0.6+	1997 11 29	704	0.1−	0.2−	1997 12 05	704	1.2+	0.4+
1997 11 07	411	0.3+	0.5+	1997 11 29	704	0.6−	0.1−	1997 12 05	704	0.5−	0.4+
1997 11 09	411	1.3−	1.4+	1997 11 29	704	1.5+	1.3−	1997 12 05	704	0.2−	0.6+
1997 11 09	411	0.2−	0.0	1997 11 29	704	1.5−	0.1−	1999 02 18	699	0.0	0.6+
1997 11 19	411	0.2−	0.0	1997 11 30	411	0.2−	0.4−	1999 02 18	699	0.5−	0.1−
1997 11 19	411	0.8−	0.1+	1997 11 30	411	0.5−	0.0	1999 02 18	699	0.6+	0.1+
1997 11 26	704	0.4−	0.0	1997 12 04	704	0.5+	0.2+	1999 04 06	699	0.4−	0.1+
1997 11 26	704	1.1+	1.0+	1997 12 04	704	0.3−	0.6+	1999 04 06	699	0.1+	0.4+
1997 11 26	704	0.4−	0.3−	1997 12 04	704	1.6−	0.2+	1999 04 06	699	0.2+	1.2−
1997 11 28	566	0.2+	0.6−	1997 12 04	704	(2.8−	2.0+)				
1997 11 28	566	0.2−	0.3−	1997 12 04	704	(4.1−	0.3+)				

1997 VF$_5$ = 1999 GE

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	124.33478		(2000.0)		**P**	**Q**	
n	0.26696859	ω	8.22893		+0.81288529	−0.57469836	
a	2.3887055	Ω	27.52966		+0.52204170	+0.64696711	
e	0.1474920	i	11.80358		+0.25824402	+0.50115402	
P	3.69	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1997 10 29	704	0.4+	0.9−	1997 11 06	704	1.1−	0.8+	1999 04 04	159	0.0	0.1−
1997 10 29	704	1.6−	0.3−	1997 11 24	399	1.3+	1.1+	1999 04 04	159	1.0−	0.3−
1997 10 29	704	1.3−	0.6+	1997 11 24	399	0.5+	0.1−	1999 04 05	159	0.0	0.6+
1997 10 29	704	1.5−	0.9+	1997 11 27	399	0.9+	0.4+	1999 04 05	159	0.5−	0.6+
1997 10 29	704	0.4−	0.9+	1997 11 27	399	1.5−	0.8−	1999 04 05	159	0.6+	0.1+
1997 10 30	566	1.0+	0.2+	1999 04 02	159	0.8+	0.8+	1999 04 05	159	0.0	0.1+
1997 10 30	566	1.0+	0.4+	1999 04 02	159	0.9+	0.2+	1999 04 05	159	0.0	0.5+
1997 10 30	566	1.3+	0.2+	1999 04 02	159	1.5−	0.6−	1999 04 05	159	0.2−	0.5+
1997 11 01	399	(2.2+	0.2−)	1999 04 02	159	1.7+	1.1−	1999 04 07	699	0.4+	0.0
1997 11 01	399	1.7+	1.2−	1999 04 02	159	0.4+	0.7−	1999 04 07	699	0.1+	0.1+
1997 11 02	399	1.2+	0.2−	1999 04 04	159	1.4−	0.1−	1999 04 07	699	0.2+	0.2−
1997 11 02	399	1.6+	1.2+	1999 04 04	159	0.4+	0.1+	1999 04 17	703	(2.4+	1.0−)
1997 11 06	704	1.1−	0.2−	1999 04 04	159	0.2−	0.3−	1999 04 17	703	1.4+	1.5−
1997 11 06	704	0.4−	1.0−	1999 04 04	159	0.1+	0.4−	1999 04 17	703	0.6−	1.2+
1997 11 06	704	0.9−	1.0−	1999 04 04	159	0.5−	0.2+	1999 04 17	703	1.4−	0.2+
1997 11 06	704	1.0−	0.9−	1999 04 04	159	0.2+	0.2+				

1997 VF$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	24.91020		(2000.0)	**P**	**Q**	
n	0.23773773	ω	272.44078	−0.94203700	−0.27630460	
a	2.5806987	Ω	251.56841	+0.32658560	−0.88512812	
e	0.1286234	i	11.57275	−0.07686433	−0.37443822	
P	4.15	H	13.6	G 0.15	U 3	

Residuals in seconds of arc

1997 11 09	411	0.4−	0.1−	1997 12 03	411	0.4+	0.3+	1997 12 29	566	0.7−	0.4−
1997 11 09	411	0.3−	0.2−	1997 12 04	704	0.2−	0.1−	1997 12 29	566	0.5−	0.4−
1997 11 10	411	0.4−	0.4−	1997 12 04	704	(0.4−	2.5+)	1999 04 21	426	0.2−	0.0
1997 11 10	411	0.4−	0.2−	1997 12 04	704	0.4+	0.4+	1999 04 21	426	0.0	0.0
1997 11 23	411	0.0	0.3−	1997 12 04	704	1.1+	0.2+	1999 04 22	426	0.1+	0.1−
1997 11 23	411	0.1−	0.2−	1997 12 04	704	1.5+	1.2+	1999 04 22	426	0.1+	0.1+
1997 12 03	411	0.1+	0.2+	1997 12 29	566	0.7−	0.2−				

1997 VP$_6$ = 1977 VU = 1981 UM$_{14}$ = 1989 UR$_9$ = 1999 CU$_{154}$

Id. S. Nakano (*MPC* 30996), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	138.77080		(2000.0)	**P**	**Q**	
n	0.24694406	ω	138.44805	+0.99700502	−0.07622241	
a	2.5161527	Ω	225.92853	+0.06528068	+0.92014752	
e	0.1705463	i	1.04327	+0.04146586	+0.38408162	
P	3.99	H	14.1	G 0.15	U 4	

Residuals in seconds of arc

1977 11 11	805	1.0−	1.1−	1997 11 05	905	0.2−	1.0+	1999 02 15	557	0.2−	0.4+
1977 11 12	805	0.1−	0.2−	1997 11 05	905	0.2−	0.8+	1999 02 15	557	0.5+	0.4+
1981 10 23	095	2.4+	1.3−	1997 11 08	905	0.3−	0.2+	1999 02 16	704	0.8−	0.4+
1989 10 29	399	0.5−	0.5+	1997 11 08	905	0.3−	0.5−	1999 02 16	704	0.8+	0.1+
1989 10 29	399	1.5−	0.7−	1997 11 18	905	0.3−	1.6+	1999 02 16	704	(2.8+	2.7+)
1989 10 29	399	1.8+	0.4−	1997 11 18	905	0.5−	0.9+	1999 02 16	704	0.7+	0.2+
1997 10 30	704	0.8+	0.2+	1997 11 23	905	0.1+	1.1+	1999 02 16	704	(3.7−	2.2+)
1997 10 30	704	0.6+	0.3+	1997 11 23	905	1.8+	1.1+	1999 03 19	704	0.3+	0.9−
1997 10 30	704	0.5−	0.0	1997 12 05	910	0.2+	0.6−	1999 03 19	704	(2.8+	1.7−)
1997 10 30	704	0.0	0.8+	1997 12 05	910	0.1+	0.5−	1999 03 19	704	(2.2+	2.4−)
1997 10 30	704	1.3−	0.3−	1997 12 05	910	0.2+	0.6−	1999 03 20	704	1.4−	0.7−
1997 10 31	704	0.4−	0.4−	1997 12 07	910	0.1+	0.3−	1999 03 20	704	(2.2−	1.2−)
1997 10 31	704	0.7+	0.1−	1997 12 07	910	0.1+	0.4−	1999 03 20	704	1.3+	0.6+
1997 10 31	704	0.7−	0.1−	1997 12 07	910	0.0	0.4−	1999 03 20	704	0.2+	0.6−
1997 10 31	704	0.4−	0.6−	1999 02 12	557	0.9+	0.5+	1999 03 20	704	0.9−	1.6−
1997 10 31	704	0.3+	1.0−	1999 02 12	557	1.3−	0.1−				
1997 11 04	905	0.6−	0.5+	1999 02 12	557	0.3−	0.7+				

1997 VS$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	298.97006		(2000.0)	**P**	**Q**	
n	0.27432310	ω	335.40272	−0.76762604	+0.63566281	
a	2.3458188	Ω	244.31764	−0.57197205	−0.73702007	
e	0.0095672	i	5.20453	−0.28913359	−0.22963932	
P	3.59	H	15.0	G 0.15	U 4	

Residuals in seconds of arc

1997 10 30	566	0.3+	0.4−	1997 12 06	691	1.3−	0.0	1999 03 23	704	0.7−	0.0
1997 10 30	566	0.2+	0.2−	1997 12 06	691	0.5−	0.5+	1999 03 23	704	0.7−	0.9−
1997 10 30	566	0.5+	0.2+	1997 12 07	589	0.3+	0.0	1999 03 23	589	0.3+	0.3+
1997 11 03	589	0.4−	0.3+	1997 12 07	589	0.0	0.3+	1999 03 23	589	0.3−	0.5+
1997 11 03	589	0.5−	0.1+	1997 12 07	589	0.6+	0.4−	1999 03 23	589	0.2+	0.1+
1997 11 03	589	0.1−	0.0	1997 12 24	589	0.7+	1.0−	1999 03 23	589	0.3+	0.4−
1997 11 03	589	0.3+	0.1+	1997 12 24	589	1.4−	0.7−	1999 04 03	589	0.5+	1.3+
1997 11 03	589	0.3+	0.5+	1997 12 24	589	0.1+	1.3+	1999 04 03	589	0.5−	0.1−
1997 11 10	589	0.2−	0.6−	1997 12 24	589	1.1+	0.3+	1999 04 03	589	1.0+	0.2−
1997 11 10	589	0.9+	0.4+	1997 12 24	589	0.3+	0.1−	1999 04 04	589	1.1−	1.0−
1997 11 15	589	0.2+	0.0	1999 03 20	704	1.0−	0.3−	1999 04 04	589	0.8−	0.1−
1997 11 15	589	0.9+	1.0−	1999 03 20	704	1.0+	0.5+	1999 04 04	589	0.5−	1.3−
1997 11 15	589	0.4+	0.2−	1999 03 20	704	0.7+	1.9+	1999 04 06	589	1.5+	0.2−
1997 11 15	589	1.5−	0.2−	1999 03 20	704	1.2+	0.5−	1999 04 06	589	1.0+	0.1+
1997 11 18	589	0.9−	0.5+	1999 03 20	704	0.5−	0.6−	1999 04 06	589	0.7−	1.0−
1997 11 18	589	0.3+	0.6+	1999 03 23	704	0.1−	0.3+	1999 04 10	589	0.2+	0.3+
1997 12 04	589	0.0	0.0	1999 03 23	704	1.2−	0.3−	1999 04 10	589	0.5+	0.3−
1997 12 04	589	0.5−	0.6−	1999 03 23	704	0.4+	1.6+	1999 04 10	589	0.6−	0.4+

1997 VA$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.62017		(2000.0)	**P**	**Q**	
n	0.21018808	ω	204.58516	+0.36365600	−0.90911655	
a	2.8015432	Ω	224.85273	+0.89522848	+0.40135657	
e	0.1073355	i	16.73880	+0.25752724	−0.11144509	
P	4.69	H	13.9	G 0.15	U 5	

Residuals in seconds of arc

1997 11 14	589	1.5−	0.9+	1997 11 18	589	0.1+	0.1−	1998 01 08	589	0.2−	0.5−
1997 11 14	589	0.5+	0.9+	1997 11 18	589	0.6−	0.6+	1998 01 08	589	0.4−	0.6−
1997 11 14	589	1.0+	0.4+	1997 12 07	589	0.9+	0.7−	1998 01 08	589	0.2−	0.2−
1997 11 15	589	0.2−	0.7+	1997 12 07	589	0.5+	0.5−	1999 04 04	589	0.3+	1.0−
1997 11 15	589	0.5+	0.5+	1997 12 07	589	0.3−	0.3+	1999 04 04	589	0.7−	0.6+
1997 11 15	589	0.0	0.2−	1997 12 24	589	0.9+	0.6−	1999 04 04	589	0.4+	0.4+
1997 11 17	589	0.1+	0.2+	1997 12 24	589	0.8−	1.6−	1999 04 10	589	0.1+	0.2−
1997 11 17	589	0.0	0.2−	1997 12 24	589	0.9−	0.3+	1999 04 10	589	1.1+	0.9+
1997 11 17	589	0.4−	0.8+	1997 12 24	589	0.4+	1.2−	1999 04 10	589	0.9−	0.2+

1997 WD = 1999 HO$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	90.65434		(2000.0)	**P**	**Q**	
n	0.23436428	ω	16.65261	+0.24756816	−0.94274494	
a	2.6054042	Ω	59.51280	+0.85674117	+0.10530124	
e	0.0618967	i	15.03040	+0.45244290	+0.31645479	
P	4.21	H	14.5	G 0.15	U 4	

Residuals in seconds of arc

1997 11 18	411	0.7+	0.1+	1997 11 29	704	0.4+	0.4−	1999 04 18	703	0.6+	0.6−
1997 11 18	411	0.2+	1.4+	1997 11 29	704	1.5−	0.3−	1999 04 18	703	0.7−	1.1−
1997 11 19	411	0.1+	0.3+	1997 11 29	704	1.1−	0.4−	1999 04 19	703	1.1+	0.5+
1997 11 19	411	0.5+	0.7+	1997 12 04	411	0.8+	0.1−	1999 04 19	703	0.3−	0.2+
1997 11 24	411	0.8+	0.5−	1997 12 04	411	0.6+	0.5+	1999 04 19	703	0.4+	0.1+
1997 11 24	411	0.0	0.7−	1997 12 21	411	0.5+	0.8+	1999 04 19	703	0.2+	0.4−
1997 11 29	704	1.1−	0.8−	1999 04 18	703	0.7−	0.6+				
1997 11 29	704	1.0−	0.3−	1999 04 18	703	0.5−	0.7+				

1997 WF$_2$ = 1999 FN$_{28}$

Id. T. Kobayashi

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	64.00300		(2000.0)	**P**	**Q**	
n	0.19768492	ω	227.44653	−0.13451826	−0.98869466	
a	2.9184596	Ω	230.40575	+0.93247341	−0.10368537	
e	0.1791196	i	4.93131	+0.33525837	−0.10831537	
P	4.99	H	13.4	G 0.15	U 4	

Residuals in seconds of arc

1997 11 23	411	0.0	0.4+	1997 12 04	704	0.3+	0.4−	1999 03 19	704	0.1−	0.0
1997 11 23	411	0.2−	0.2−	1997 12 04	704	0.4+	0.5+	1999 03 19	704	1.4+	1.5+
1997 11 24	411	0.1−	0.3+	1997 12 04	704	0.3+	1.2+	1999 03 19	704	0.2+	0.1−
1997 11 24	411	0.0	0.0	1997 12 04	704	0.1+	1.4+	1999 03 20	704	0.1+	0.6−
1997 11 27	411	0.1+	0.3−	1997 12 04	704	0.2+	1.0+	1999 03 20	704	0.7−	0.2−
1997 11 27	411	1.0+	0.6−	1997 12 05	411	0.3−	0.0	1999 03 20	704	(1.2−	2.5+)
1997 11 29	704	(3.7−	0.4+)	1997 12 05	411	0.2+	0.2−	1999 03 20	704	0.4−	0.1+
1997 11 29	704	(2.8−	0.2−)	1997 12 21	411	0.2−	0.5−	1999 04 09	699	0.0	1.1−
1997 11 29	704	0.5+	1.3−	1997 12 21	411	0.4−	0.4−	1999 04 09	699	0.4−	0.1−

1997 11 29	704	1.9−	1.0−	1999 03 19	704	0.2+	0.3+	1999 04 09	699	0.3+	0.1+
1997 11 29	704	(3.4−	0.3−)	1999 03 19	704	0.7−	0.1+				

1997 WC$_3$
Id. E. Bowell (1999 observations)
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	185.83242		(2000.0)		**P**		**Q**
n	0.26453827	ω	251.94175		+0.94975352		+0.28276556
a	2.4033132	Ω	91.46527		−0.21143609		+0.89576397
e	0.1191484	i	7.71539		−0.23078787		+0.34300226
P	3.73	H	14.6	G	0.15	U	1

Residuals in seconds of arc

1992 04 08	691	0.5+	0.3−	1997 11 29	704	1.2−	0.1+	1997 12 28	566	1.3+	0.3−
1992 04 08	691	1.1+	0.1+	1997 11 29	704	1.4−	0.1−	1997 12 28	566	1.5+	0.0
1992 04 08	691	1.7−	0.0	1997 11 29	704	1.6−	0.9−	1999 02 23	699	0.1−	0.2+
1996 05 24	327	0.0	1.1−	1997 11 29	704	(3.4−	0.5−)	1999 02 23	699	1.0+	0.7−
1996 05 24	327	0.3−	0.3−	1997 12 04	704	0.5−	0.3+	1999 02 23	699	0.4−	0.8+
1996 05 24	327	0.2+	0.1+	1997 12 04	704	1.0+	0.4−	1999 04 10	699	0.6+	0.6−
1997 11 23	411	0.4+	0.4+	1997 12 04	704	(4.9−	0.2+)	1999 04 10	699	0.4−	0.3+
1997 11 23	411	1.9+	0.2+	1997 12 04	704	1.4−	0.3−	1999 04 10	699	0.1−	0.0
1997 11 24	411	0.1+	0.5+	1997 12 05	411	0.2+	0.3+	1999 04 18	703	0.5−	0.4−
1997 11 24	411	0.5+	0.5+	1997 12 05	411	0.4+	0.0	1999 04 18	703	0.1−	0.3+
1997 11 27	411	0.0	1.2−	1997 12 21	411	0.5−	0.1−	1999 04 18	703	0.4−	0.3+
1997 11 27	411	0.1+	0.0	1997 12 21	411	0.2−	0.2−	1999 04 18	703	0.6+	0.1+
1997 11 29	704	1.3−	0.2+	1997 12 28	566	1.5+	0.3−				

1997 WB$_6$ = 1999 GP$_{21}$
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	27.92344		(2000.0)		**P**		**Q**
n	0.27903621	ω	74.25282		−0.89588316		−0.43787495
a	2.3193289	Ω	79.72899		+0.37272966		−0.83288277
e	0.0599684	i	4.38458		+0.24179736		−0.33848460
P	3.53	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1997 11 23	691	0.4+	0.4+	1997 11 30	691	0.8−	0.2−	1998 01 17	910	0.6−	0.8+
1997 11 23	691	0.5+	0.3+	1997 11 30	691	0.7−	0.3−	1999 04 15	704	0.2−	1.0+
1997 11 23	691	0.5+	0.3+	1997 11 30	691	0.7−	0.3−	1999 04 15	704	0.2−	0.8−
1997 11 25	691	0.0	0.2+	1997 12 04	704	1.1+	0.8−	1999 04 15	704	2.2+	2.3−
1997 11 25	691	0.1+	0.1+	1997 12 04	704	0.0	0.2+	1999 04 15	704	0.3+	0.4+
1997 11 25	691	0.0	0.2+	1997 12 04	704	0.4−	0.0	1999 04 16	704	0.3−	0.6+
1997 11 29	704	1.1+	1.2−	1997 12 04	704	0.7+	0.3−	1999 04 16	704	1.1−	0.5−
1997 11 29	704	0.1−	0.6+	1997 12 04	704	0.3+	0.8−	1999 04 16	704	0.2−	0.1+
1997 11 29	704	0.6−	0.6−	1998 01 17	910	0.6−	0.6+	1999 04 16	704	0.5−	0.6+
1997 11 29	704	0.0	0.5−	1998 01 17	910	0.5−	0.8+	1999 04 16	704	0.4−	0.0

1997 WL$_8$ = 1999 FC$_{36}$
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	351.47201		(2000.0)		**P**		**Q**
n	0.21913824	ω	74.39570		−0.93502106		−0.34408321
a	2.7247329	Ω	85.41788		+0.28340593		−0.87039644
e	0.0345817	i	4.93136		+0.21311192		−0.35216017
P	4.50	H	14.1	G	0.15	U	5

Residuals in seconds of arc

1997 11 02	691	0.5+	0.1+	1997 11 28	691	0.9−	0.3−	1999 03 20	704	0.3−	0.5−
1997 11 02	691	0.1+	0.2+	1997 11 29	704	1.4−	0.7+	1999 03 20	704	0.0	0.8+
1997 11 02	691	0.1+	0.0	1997 11 29	704	1.5+	0.9−	1999 03 20	704	0.3+	1.5+
1997 11 20	691	0.3−	0.1+	1997 11 29	704	0.6−	0.6+	1999 03 20	704	1.6−	0.9+
1997 11 20	691	0.1−	0.1−	1997 11 29	704	0.5+	0.6−	1999 03 20	704	0.7+	0.2−
1997 11 20	691	0.0	0.1+	1997 12 04	704	0.6+	0.6−	1999 03 23	704	0.5+	0.3+
1997 11 28	691	1.0−	0.0	1997 12 04	704	1.1+	0.5−	1999 03 23	704	0.3+	1.5−
1997 11 28	691	0.9−	0.3−	1997 12 04	704	0.9+	1.4+	1999 03 23	704	0.0	1.4−

1997 WP$_{21}$
Id. T. Kobayashi (1999 observations)
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Nakano

M	42.38775		(2000.0)		**P**		**Q**
n	0.17353374	ω	37.61224		−0.60360154		−0.73532998
a	3.1833185	Ω	91.68280		+0.63599473		−0.67715467
e	0.0958941	i	17.95565		+0.48080754		−0.02741118
P	5.68	H	10.6	G	0.15	U	4

Residuals in seconds of arc

1997 11 30	411	0.4−	0.1+	1997 12 05	411	0.1−	0.3+	1999 04 09	411	0.0	0.3−
1997 11 30	411	0.2−	0.2+	1997 12 05	411	0.1+	0.1+	1999 04 09	411	0.2−	0.1−
1997 12 02	411	0.2−	0.1−	1997 12 27	411	0.1−	0.1−	1999 04 14	411	0.0	0.4+
1997 12 02	411	0.8+	0.5−	1997 12 27	411	0.0	0.0	1999 04 14	411	0.2+	0.1+

1997 WM$_{35}$ = 1999 FL$_{27}$
Id. A. Doppler
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	320.22729		(2000.0)		**P**		**Q**
n	0.26784792	ω	143.78520		−0.73609827		+0.67466058
a	2.3834746	Ω	78.73829		−0.63339227		−0.65805898
e	0.1573695	i	3.19746		−0.23869136		−0.33435234
P	3.68	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1997 11 26	704	0.9+	0.0	1998 01 02	704	0.1+	0.3−	1999 03 23	703	0.1+	0.2−
1997 11 26	704	0.8+	0.4−	1998 01 02	704	(2.7−	0.5+)	1999 03 23	703	0.0	0.2−
1997 11 26	704	0.5−	1.4−	1999 03 19	704	0.3+	0.3−	1999 04 15	704	0.1+	0.3+
1997 11 29	704	0.1+	1.1+	1999 03 19	704	0.6+	0.1+	1999 04 15	704	0.4+	0.6+
1997 11 29	704	0.3−	0.3−	1999 03 19	704	1.1+	0.1−	1999 04 15	704	0.8−	0.7+
1997 11 29	704	0.6−	0.4−	1999 03 19	704	0.2+	0.1−	1999 04 15	704	0.0	0.5−
1997 11 29	704	0.2+	0.1−	1999 03 19	704	0.5−	0.7+	1999 04 15	704	0.5+	0.5−
1997 11 29	704	0.4+	0.4−	1999 03 20	704	0.2−	0.4−	1999 04 16	704	0.5+	0.3−
1997 12 04	704	0.4+	0.1−	1999 03 20	704	0.2−	1.3+	1999 04 16	704	0.2−	0.1−
1997 12 04	704	1.2−	0.5+	1999 03 20	704	0.7−	0.3+	1999 04 16	704	0.0	0.2−
1997 12 04	704	0.2+	0.5−	1999 03 20	704	0.5−	0.7−	1999 04 16	704	0.4+	0.4−
1997 12 04	704	0.2+	0.8+	1999 03 20	704	1.0−	0.1−	1999 04 16	704	0.0	1.2+
1998 01 02	704	0.7−	1.4+	1999 03 23	703	0.2+	0.2−				
1998 01 02	704	0.3−	0.6+	1999 03 23	703	0.4−	1.1−				

1997 WV$_{35}$ = 1999 FE$_{22}$
Id. A. Doppler
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	64.46264		(2000.0)		**P**		**Q**
n	0.17205488	ω	147.01859		+0.26275424		−0.96287857
a	3.2015336	Ω	287.68289		+0.87059411		+0.26422917
e	0.1022429	i	3.72192		+0.41596406		+0.05520684
P	5.73	H	13.0	G	0.15	U	4

Residuals in seconds of arc

1996 08 12	566	0.4−	0.2+	1997 11 29	704	1.2+	1.0−	1999 03 19	704	0.0	1.0−
1996 08 12	566	0.1+	0.2+	1997 11 29	704	0.8+	0.2−	1999 03 19	704	0.6+	0.0
1996 08 12	566	0.2+	0.1−	1997 11 29	704	0.9+	0.2−	1999 03 19	704	1.1+	0.8+
1997 11 01	327	0.0	0.3+	1997 11 29	704	(0.2+	2.5−)	1999 03 19	704	0.4−	0.7−
1997 11 01	327	0.1+	0.6+	1997 11 29	704	0.8+	0.6+	1999 03 20	704	0.5+	0.7+
1997 11 01	327	0.2+	0.3+	1997 12 04	704	0.8+	1.0−	1999 03 20	704	0.9−	0.2+
1997 11 26	704	1.3−	1.1+	1997 12 04	704	1.3+	1.1−	1999 03 20	704	0.7−	0.5+
1997 11 26	704	0.8−	0.6+	1997 12 04	704	1.1−	0.1−	1999 03 20	704	0.1−	0.4−
1997 11 26	704	1.5−	0.3−	1997 12 04	704	1.5−	0.5+	1999 03 20	704	0.1+	0.4+

1997 WJ$_{36}$ = 1999 FG$_{52}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	203.52941		(2000.0)	**P**	**Q**		
n	0.30804619	ω	269.15212	+0.82717080	+0.56194755		
a	2.1713283	Ω	56.65729	−0.51469507	+0.75892930		
e	0.2187165	i	0.12684	−0.22556031	+0.32900041		
P	3.20	H	14.6	G 0.15	U 7		

Residuals in seconds of arc

1997 11 26	704	1.4+	0.1+	1997 12 04	704	0.2+	0.4+	1999 03 20	704	0.4−	0.2−
1997 11 26	704	0.3+	0.9−	1997 12 04	704	1.0+	0.0	1999 03 23	704	1.1−	2.0+
1997 11 26	704	0.0	0.2−	1997 12 04	704	1.1+	0.2+	1999 03 23	704	0.2+	1.2+
1997 11 29	704	0.4−	0.9−	1997 12 04	704	0.4+	0.9+	1999 03 23	704	1.9+	0.4+
1997 11 29	704	0.9−	1.3−	1997 12 04	704	1.1−	0.8+	1999 03 23	704	0.3−	0.4−
1997 11 29	704	0.2−	0.0	1999 03 20	704	1.1+	1.1+	1999 03 23	704	1.5−	1.1−
1997 11 29	704	1.3−	1.3+	1999 03 20	704	0.1−	0.4−				
1997 11 29	704	0.5−	0.2−	1999 03 20	704	0.0	2.6−				

1997 WF$_{43}$ = 1999 HT$_{2}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	277.31631		(2000.0)	**P**	**Q**		
n	0.28175257	ω	190.96757	−0.00564270	+0.99284562		
a	2.3043978	Ω	78.78846	−0.90802002	+0.04487598		
e	0.0777834	i	6.98400	−0.41888878	−0.11065136		
P	3.50	H	14.1	G 0.15	U 4		

Residuals in seconds of arc

1997 11 29	704	0.9−	0.1−	1997 12 31	704	0.4−	0.4−	1999 04 15	704	1.8+	0.6−
1997 11 29	704	0.7−	0.2−	1997 12 31	704	0.0	0.6−	1999 04 16	704	0.1−	0.6−
1997 11 29	704	1.2−	0.6−	1998 01 02	704	0.1−	0.3−	1999 04 16	704	0.2−	0.4−
1997 11 29	704	1.0−	1.0−	1998 01 02	704	0.3+	0.2−	1999 04 16	704	0.4−	0.1−
1997 11 29	704	0.2+	0.8+	1998 01 02	704	0.5−	0.0	1999 04 16	704	0.7+	0.1−
1997 12 04	704	0.1+	0.1−	1998 01 02	704	0.9−	0.6−	1999 04 16	704	0.5−	0.1+
1997 12 04	704	1.7+	1.0+	1998 01 07	699	1.2+	0.8+	1999 04 22	327	1.1−	0.2+
1997 12 04	704	(3.0+	0.7−)	1998 01 07	699	0.3+	0.2−	1999 04 22	327	0.5−	0.0
1997 12 04	704	0.2+	1.0+	1998 01 07	699	0.6+	0.9+	1999 04 22	327	0.3−	0.2+
1997 12 04	704	0.6+	0.3+	1999 04 15	704	1.9+	0.2−	1999 04 23	327	0.7−	0.2+
1997 12 31	704	0.1+	0.1+	1999 04 15	704	0.6+	0.1−	1999 04 23	327	0.7−	0.1+
1997 12 31	704	0.4+	0.3−	1999 04 15	704	0.4+	1.1+	1999 04 23	327	0.8−	0.3+

1997 WS$_{44}$ = 1999 FH$_{34}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	70.38966		(2000.0)	**P**	**Q**		
n	0.21920532	ω	12.16149	−0.16133146	−0.98392581		
a	2.7241770	Ω	87.15865	+0.89891813	−0.17852648		
e	0.0843932	i	4.39655	+0.40733077	+0.00427785		
P	4.50	H	14.2	G 0.15	U 4		

Residuals in seconds of arc

1997 11 29	704	0.9−	1.7+	1997 12 29	566	0.2+	0.2+	1999 03 19	704	(2.1+	2.2+)
1997 11 29	704	0.3−	0.5+	1997 12 29	566	0.1+	0.3+	1999 03 19	704	1.6−	0.5+
1997 11 29	704	0.8−	0.3+	1997 12 31	704	0.1−	0.1+	1999 03 19	704	0.9+	1.8+
1997 11 29	704	1.0−	0.1+	1997 12 31	704	0.1−	0.4+	1999 03 20	704	0.6+	0.1+
1997 11 29	704	0.6−	0.7−	1997 12 31	704	0.1−	0.1+	1999 03 20	704	0.4+	0.0
1997 12 04	704	1.9+	0.3−	1997 12 31	704	0.4−	0.1+	1999 03 20	704	0.7−	0.5−
1997 12 04	704	1.0+	1.2−	1998 01 02	704	0.1+	0.3+	1999 03 20	704	0.1−	1.3−
1997 12 04	704	(2.3+	0.1+)	1998 01 02	704	0.1+	0.1+	1999 03 23	703	0.1+	0.7+
1997 12 04	704	1.3+	0.2−	1998 01 02	704	0.1−	0.2−	1999 03 23	703	0.6+	0.3+
1997 12 04	704	0.6+	1.3−	1998 01 02	704	1.1−	0.1−	1999 03 23	703	0.1−	1.1−
1997 12 29	566	0.3+	0.2−	1999 03 19	704	0.1−	0.9+	1999 03 23	703	0.1−	1.6−

1997 WM$_{49}$ = 1990 BU$_{3}$ = 1999 FM$_{4}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	156.35902		(2000.0)	**P**	**Q**		
n	0.23527814	ω	185.72485	+0.99979820	+0.01808850		
a	2.5986532	Ω	173.22023	−0.01420371	+0.94413763		
e	0.0966753	i	4.24514	−0.01420615	+0.32905462		
P	4.19	H	14.3	G 0.15	U 2		

Residuals in seconds of arc

1979 06 24	413	0.4−	0.5+	1997 11 29	704	1.0−	0.8−	1999 03 20	704	0.3−	0.1−
1979 06 24	413	0.4+	0.4−	1997 11 30	566	0.9+	0.6+	1999 03 20	704	0.8−	0.9+
1990 01 24	033	0.0	0.3−	1997 11 30	566	1.0+	0.9+	1999 03 20	704	1.1−	0.0
1990 01 24	033	0.0	0.1+	1997 11 30	566	1.0+	0.9+	1999 03 20	704	(0.4+	2.2+)
1997 11 19	611	0.3+	0.7+	1999 03 16	691	0.5+	0.2+	1999 03 20	704	0.1−	0.8+
1997 11 19	611	0.5+	0.1+	1999 03 16	691	0.0	0.2+	1999 03 23	704	0.7+	1.0−
1997 11 29	704	0.7−	0.3+	1999 03 16	691	0.3+	0.2+	1999 03 23	704	0.8+	1.2−
1997 11 29	704	0.1+	0.1−	1999 03 19	691	0.5−	0.0	1999 03 23	704	0.6+	0.5+
1997 11 29	704	0.9−	1.0−	1999 03 19	691	0.2−	0.2+	1999 03 23	704	1.2+	0.9−
1997 11 29	704	1.2−	1.5−	1999 03 19	691	0.3−	0.1+	1999 03 23	704	0.8−	0.2+

1997 WT$_{52}$ = 1986 WC$_{9}$ = 1999 CK$_{126}$

Id. K. Ichikawa (*MPC* 31395), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	295.23548		(2000.0)	**P**	**Q**		
n	0.18451632	ω	153.64076	−0.76492882	+0.61334924		
a	3.0557151	Ω	65.60205	−0.62252207	−0.62557147		
e	0.0775507	i	12.47280	−0.16537885	−0.48214422		
P	5.34	H	13.1	G 0.15	U 5		

Residuals in seconds of arc

1986 11 30	381	0.3+	0.2+	1997 12 04	704	1.0+	1.1+	1999 02 11	704	1.2+	0.1+
1986 11 30	381	0.0	0.5+	1997 12 04	704	1.7+	0.8−	1999 02 11	704	0.6+	0.6+
1986 12 01	381	0.7+	0.8−	1997 12 04	704	1.4+	1.3−	1999 02 11	704	0.9+	0.2+
1986 12 01	381	0.6−	0.5−	1997 12 04	704	2.9−	1.1−	1999 02 11	704	0.1−	0.0
1997 11 29	704	0.5−	0.3+	1997 12 05	704	0.6+	0.3+	1999 02 18	704	0.4−	0.9−
1997 11 29	704	1.4−	0.7+	1997 12 05	704	1.5+	0.1+	1999 02 18	704	0.1−	0.2+
1997 11 29	704	2.1−	0.7−	1997 12 05	704	1.1+	0.0	1999 02 18	704	1.3−	0.1−
1997 11 29	704	2.1−	0.3+	1997 12 05	704	1.0+	1.2+	1999 02 18	704	0.9−	0.3−
1997 11 29	704	1.6−	0.3+	1997 12 05	704	0.2+	0.2+	1999 02 18	704	0.6−	0.6−
1997 12 04	704	2.0+	0.0	1999 02 11	704	0.8+	0.7+				

1997 WQ$_{54}$ = 1999 FD$_{41}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	47.77931		(2000.0)	**P**	**Q**		
n	0.17684900	ω	332.83495	−0.07544494	−0.99633350		
a	3.1434096	Ω	121.46679	+0.92324255	−0.08508184		
e	0.1401287	i	2.71106	+0.37673764	+0.00897934		
P	5.57	H	13.5	G 0.15	U 3		

Residuals in seconds of arc

1996 09 18	327	0.4+	0.5−	1998 02 22	327	0.4−	0.2+	1999 03 20	704	0.6−	1.0−
1996 09 18	327	0.2+	0.3−	1998 02 22	327	0.1−	0.0	1999 03 20	704	1.7+	1.2−
1996 09 18	327	0.1−	0.6−	1998 02 22	327	0.2−	0.1−	1999 03 20	704	0.4−	1.2−
1997 11 29	704	0.8+	0.5−	1998 02 24	327	0.1+	0.3+	1999 03 20	704	0.5+	1.2−
1997 11 29	704	0.7+	0.1−	1998 02 24	327	0.1+	0.4+	1999 03 23	704	0.4+	0.9+
1997 11 29	704	0.3−	0.6−	1998 02 24	327	0.3−	0.2+	1999 03 23	704	0.3−	1.4+
1997 12 06	691	0.3−	0.3−	1998 02 27	327	0.5−	0.4+	1999 03 23	704	0.9−	0.0
1997 12 06	691	0.1−	0.2−	1998 02 27	327	0.2+	0.3+	1999 03 23	704	1.2−	0.4+
1997 12 06	691	0.2−	0.1−	1998 02 27	327	0.4+	0.5+				

1997 XK = 1999 FC$_{59}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	149.75930		(2000.0)	**P**	**Q**		
n	0.22183435	ω	331.27595	+0.98944662	−0.13662405		
a	2.7026109	Ω	36.67567	+0.14352490	+0.87836421		
e	0.1156640	i	4.63473	+0.01989972	+0.45805042		
P	4.44	H	13.9	G 0.15	U 5		

Residuals in seconds of arc

1997 12 03	411	1.5+	2.0−	1997 12 21	411	0.4+	0.9+	1999 03 20	704	0.1−	0.3+
1997 12 03	411	0.6−	0.4−	1998 01 05	411	0.1−	0.4+	1999 03 23	704	1.1−	0.1+
1997 12 04	411	0.5−	1.1+	1998 01 05	411	0.7−	0.7−	1999 03 23	704	1.2+	0.3+
1997 12 04	411	0.2−	0.6+	1999 03 20	704	1.0+	0.3−	1999 03 23	704	1.4+	0.9−
1997 12 10	411	0.5−	1.0−	1999 03 20	704	0.1−	0.2−	1999 03 23	704	0.8−	0.4+
1997 12 10	411	0.3−	0.5+	1999 03 20	704	1.2−	0.1+				
1997 12 21	411	0.9+	0.7+	1999 03 20	704	0.2−	0.2+				

1997 XF$_1$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	210.20183		(2000.0)	**P**	**Q**		
n	0.36750509	ω	106.52795	+0.94179915	+0.07469186		
a	1.9303104	Ω	250.15166	−0.16730827	+0.94982067		
e	0.1041335	i	20.39405	+0.29158584	+0.30374630		
P	2.68	H	15.2	G 0.15	U 4		

Residuals in seconds of arc

1997 11 26	704	0.7+	0.1+	1997 12 05	704	0.5+	0.6−	1998 02 22	566	0.1+	0.4−
1997 11 26	704	0.3+	0.5−	1997 12 05	704	1.1+	0.0	1998 02 22	566	0.3+	0.6+
1997 11 26	704	0.1+	0.2−	1997 12 05	704	0.9+	0.0	1999 04 13	426	0.2−	0.1−
1997 11 29	704	0.1−	0.2+	1997 12 05	704	0.4−	0.2+	1999 04 13	426	0.2+	0.3+
1997 11 29	704	0.6+	0.2−	1997 12 15	327	0.1−	0.2−	1999 04 13	426	0.4+	0.1−
1997 11 29	704	0.1−	0.3+	1997 12 15	327	0.1−	0.1+	1999 04 14	426	0.6+	0.8−
1997 11 29	704	0.1−	0.4−	1997 12 15	327	0.2−	0.1+	1999 04 14	426	0.5−	0.2−
1997 11 29	704	0.2+	0.6−	1997 12 17	327	0.1−	0.2−	1999 04 18	426	0.2−	0.3−
1997 12 04	704	0.1+	0.9+	1997 12 17	327	0.0	0.0	1999 04 18	426	0.7−	0.0
1997 12 04	704	0.9−	0.9+	1997 12 17	327	0.2−	0.2−	1999 04 19	426	0.2+	0.6+
1997 12 04	704	0.6−	0.8+	1997 12 23	327	0.6−	0.1−	1999 04 19	426	0.7+	0.4+
1997 12 04	704	(2.0−	1.3+)	1997 12 23	327	0.3−	0.1+	1999 04 19	426	0.4−	0.2+
1997 12 04	704	1.9−	1.3+	1997 12 23	327	0.5−	0.0				
1997 12 05	704	1.0+	1.6−	1998 02 22	566	0.1−	0.2−				

1997 XR$_{10}$ = 1999 HQ$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.95338		(2000.0)	**P**	**Q**		
n	0.23344365	ω	84.14848	−0.45355248	−0.89086662		
a	2.6122496	Ω	32.86150	+0.79802035	−0.41865769		
e	0.1504470	i	2.68648	+0.39680433	−0.17630202		
P	4.22	H	14.6	G 0.15	U 4		

Residuals in seconds of arc

1997 11 29	704	0.2−	0.7+	1997 12 23	327	0.8+	0.0	1999 04 17	704	0.4+	0.1−
1997 11 29	704	1.8+	1.0+	1997 12 23	327	0.4+	0.3+	1999 04 17	691	0.3+	0.0
1997 11 29	704	0.1+	0.0	1997 12 23	327	0.3−	0.2−	1999 04 17	704	0.4−	0.1−
1997 11 29	704	0.2−	1.1−	1999 04 09	699	0.9+	0.2−	1999 04 18	691	0.3−	0.2+
1997 12 08	327	1.0−	0.4+	1999 04 09	699	0.1−	0.5+	1999 04 18	691	0.9−	0.1−
1997 12 08	327	0.6−	0.1+	1999 04 09	699	0.4+	0.8+	1999 04 18	691	0.9−	0.2−
1997 12 08	327	0.6−	0.1+	1999 04 11	691	1.0−	0.1−	1999 04 18	704	0.2+	0.2−
1997 12 15	327	0.6−	0.0	1999 04 11	691	0.7−	0.1−	1999 04 18	704	0.6−	0.9−
1997 12 15	327	0.1−	1.0−	1999 04 11	691	0.6−	0.1−	1999 04 18	704	1.6+	0.7+
1997 12 15	327	0.2−	0.3−	1999 04 17	691	0.5+	0.1−	1999 04 22	691	0.7+	0.3+
1997 12 20	327	0.6+	0.1−	1999 04 17	704	0.4+	0.0	1999 04 22	691	0.2+	0.1−
1997 12 20	327	0.1+	0.1+	1999 04 17	704	0.4−	0.2+	1999 04 22	691	0.1−	0.2−
1997 12 20	327	0.1−	0.1+	1999 04 17	691	0.4+	0.1−				

1997 YL$_3$ = 1999 GC$_{21}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	278.44947		(2000.0)	**P**	**Q**		
n	0.24024442	ω	195.04884	+0.27484883	+0.95037981		
a	2.5627162	Ω	91.06943	−0.86641066	+0.31052434		
e	0.1641230	i	8.38085	−0.41688210	−0.01878425		
P	4.10	H	14.4	G 0.15	U 4		

Residuals in seconds of arc

1994 01 15	033	0.4+	0.4+	1997 12 28	566	(1.3+	2.7−)	1999 04 15	704	0.7+	0.3−
1994 01 15	033	0.4−	0.2−	1997 12 28	566	(0.4+	2.5−)	1999 04 15	704	0.5+	0.6+
1997 12 20	327	0.4−	0.1−	1997 12 28	566	(0.6+	3.1−)	1999 04 15	704	1.1+	1.0−
1997 12 20	327	0.5−	0.4+	1997 12 29	327	0.1−	0.1−	1999 04 15	704	0.8−	0.6+
1997 12 20	327	0.7−	0.1−	1997 12 29	327	0.2+	0.1−	1999 04 16	704	0.5−	0.6+
1997 12 24	327	0.0	0.4+	1997 12 29	327	0.2+	0.0	1999 04 16	704	0.6+	0.2−
1997 12 24	327	0.3+	0.4+	1998 01 24	566	0.1−	0.1+	1999 04 16	704	1.0−	1.8−
1997 12 24	327	0.0	0.7−	1998 01 24	566	0.0	0.3+	1999 04 16	704	0.7−	1.6+
1997 12 24	327	0.3+	0.4−	1998 01 24	566	0.8+	0.4−				

1997 YP$_3$ = 1999 FO$_{20}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	171.70399		(2000.0)	**P**	**Q**		
n	0.20292064	ω	169.25772	+0.99826418	+0.05878219		
a	2.8680402	Ω	187.37528	−0.05592172	+0.92663420		
e	0.0279245	i	1.62704	−0.01847677	+0.37134043		
P	4.86	H	14.2	G 0.15	U 5		

Residuals in seconds of arc

1991 09 07	691	0.0	0.2−	1997 12 21	327	0.1+	0.2−	1999 03 19	691	0.1−	0.2−
1991 09 07	691	0.3+	0.7−	1997 12 24	327	0.1+	0.2+	1999 03 19	691	0.0	0.3−
1991 09 07	691	0.3+	0.7−	1997 12 24	327	0.3+	0.1+	1999 03 19	691	0.1+	0.3−
1997 12 21	327	0.0	0.1+	1997 12 24	327	0.1+	0.1−	1999 03 25	691	0.4−	0.6−
1997 12 21	327	0.1+	0.1−	1997 12 29	327	0.1+	0.1+	1999 03 25	691	0.2−	0.2−
1997 12 21	327	0.2+	0.4−	1997 12 29	327	0.9−	0.3−	1999 03 25	691	0.2−	0.1−

1997 YD$_4$ = 1999 FE

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	96.66276		(2000.0)	**P**	**Q**		
n	0.19615187	ω	313.60402	+0.34789175	−0.93585324		
a	2.9336463	Ω	115.95995	+0.87715146	+0.30376456		
e	0.0665450	i	3.57895	+0.33102364	+0.17862198		
P	5.02	H	14.5	G 0.15	U 5		

Residuals in seconds of arc

1997 12 23	327	0.9+	0.2+	1997 12 29	327	0.0	0.2+	1999 03 17	747	0.6+	0.2−
1997 12 23	327	0.2−	0.3−	1997 12 29	327	0.3−	0.1+	1999 03 23	747	0.2−	0.5−
1997 12 23	327	0.0	0.3−	1999 03 16	747	0.3−	0.2+	1999 03 23	747	0.1−	0.3−
1997 12 24	327	0.1+	0.1+	1999 03 16	747	0.1+	0.3+	1999 03 23	747	0.6+	0.4−
1997 12 24	327	0.2−	0.0	1999 03 16	747	0.4−	0.1−	1999 04 08	747	0.1+	0.5+
1997 12 24	327	0.2+	0.5−	1999 03 17	747	0.3−	0.1−	1999 04 08	747	0.4+	0.4+
1997 12 29	327	0.3−	0.4+	1999 03 17	747	0.4−	0.2+	1999 04 08	747	0.1−	0.1−

1997 YL$_4$ = 1999 EC$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	89.71125		(2000.0)	**P**	**Q**		
n	0.23688589	ω	305.41132	+0.62539766	−0.77752223		
a	2.5868818	Ω	105.74219	+0.73626834	+0.56004535		
e	0.1299223	i	3.92335	+0.25843122	+0.28602167		
P	4.16	H	14.1	G 0.15	U 4		

Residuals in seconds of arc

1997 12 24	327	0.1−	0.2+	1999 02 18	699	1.2+	1.2−	1999 03 15	012	0.1−	0.1−
1997 12 24	327	0.1−	0.3+	1999 02 22	699	0.2+	0.9+	1999 03 15	012	0.2−	0.0

1997 12 24	327	0.2−	0.7−	1999 02 22	699	0.5+	0.6+	1999 03 20	704	0.9+	0.8−
1997 12 25	327	0.0	0.6−	1999 02 22	699	1.1+	0.2−	1999 03 20	704	0.3+	0.5+
1997 12 25	327	0.4+	0.4−	1999 03 11	012	0.6−	0.1+	1999 03 20	704	0.4−	0.1−
1997 12 25	327	1.0+	0.1+	1999 03 11	012	1.0−	0.4+	1999 03 20	704	1.5+	0.2−
1998 01 03	327	0.5−	0.7+	1999 03 11	012	0.1−	0.4+	1999 03 20	704	0.0	0.2−
1998 01 03	327	0.3−	0.1−	1999 03 11	012	0.3+	0.3−	1999 03 23	704	0.9−	1.3−
1998 01 03	327	0.1−	0.1+	1999 03 11	012	0.5−	0.1−	1999 03 23	704	0.3+	0.5−
1999 02 18	699	0.5−	0.8+	1999 03 15	012	0.7−	0.0	1999 03 23	704	(1.3+	2.4−)
1999 02 18	699	0.6−	0.6+	1999 03 15	012	0.0	0.6−	1999 03 23	704	0.6−	1.2+

1997 YZ$_4$ = 1999 FZ$_{48}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	172.24612		(2000.0)		**P**		**Q**
n	0.24576445	ω	278.90109		+0.96278508		+0.26175908
a	2.5241976	Ω	65.94724		−0.20984693		+0.88089575
e	0.1786537	i	4.22545		−0.17032075		+0.39434106
P	4.01	H	14.7	G	0.15	U	5

Residuals in seconds of arc

1997 12 04	704	0.8+	0.2−	1997 12 26	817	0.6+	0.8+	1999 03 20	704	(3.1−	0.0)
1997 12 04	704	0.8−	0.8−	1997 12 27	817	0.9−	0.2−	1999 03 21	910	0.3+	0.6−
1997 12 04	704	0.1+	1.3+	1997 12 27	817	0.4+	0.1+	1999 03 21	910	0.2+	0.6−
1997 12 04	704	0.0	0.7−	1998 01 03	817	0.1+	0.9−	1999 03 21	910	0.0	0.5−
1997 12 25	402	0.2+	0.2+	1998 01 03	817	0.2+	0.5−	1999 03 23	704	0.1−	0.1−
1997 12 25	402	0.4+	0.2+	1999 03 20	704	0.9−	0.6+	1999 03 23	704	0.9+	0.5−
1997 12 25	402	0.3+	0.1−	1999 03 20	704	0.2−	0.3+	1999 03 23	704	0.5−	0.0
1997 12 26	817	0.5−	0.5+	1999 03 20	704	(2.7−	0.3+)	1999 03 23	704	0.6−	1.2+
1997 12 26	817	0.8−	0.3+	1999 03 20	704	1.0+	0.1+				

1997 YN$_7$ = 1981 AH$_2$

Id. T. Kobayashi (1999 observations), S. Nakano

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Nakano

M	181.23264		(2000.0)		**P**		**Q**
n	0.23473473	ω	274.93345		+0.86763172		−0.42907241
a	2.6026623	Ω	110.66282		+0.49093803		+0.81927864
e	0.1255406	i	15.57458		−0.07870865		+0.38036743
P	4.20	H	13.0	G	0.15	U	3

Residuals in seconds of arc

1981 01 08	381	(5.7+	3.6−)	1998 01 28	411	0.2+	0.4−	1998 04 14	327	0.2+	0.3−
1981 01 08	381	0.8+	0.3−	1998 01 28	411	0.2+	0.4−	1998 04 14	327	0.0	0.2+
1981 01 08	381	0.8−	1.2+	1998 02 26	699	0.4+	0.7+	1998 04 14	327	0.1+	0.2−
1997 12 27	411	0.0	0.4−	1998 02 26	699	0.2+	0.0	1999 04 08	411	0.6+	0.1−
1997 12 27	411	0.5+	0.5−	1998 02 26	699	0.6−	0.5−	1999 04 08	411	0.3−	0.3+
1997 12 28	411	1.5+	0.4−	1998 02 27	098	(1.1+	3.0−)	1999 04 09	411	0.4−	0.4−
1997 12 28	411	0.2−	0.4−	1998 02 27	098	0.5−	0.2+	1999 04 09	411	0.3+	0.5+
1998 01 05	411	0.4+	0.3+	1998 02 27	098	1.5−	1.0−				
1998 01 05	411	0.1+	0.6+	1998 02 27	098	0.8−	1.1+				

1997 YZ$_7$

Id. P. G. Comba (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	117.94432		(2000.0)		**P**		**Q**
n	0.24428960	ω	148.99445		+0.33402472		−0.92548328
a	2.5343469	Ω	280.97832		+0.82321547		+0.37874434
e	0.1939170	i	10.48386		+0.45906839		−0.00578107
P	4.03	H	15.0	G	0.15	U	3

Residuals in seconds of arc

1997 12 27	684	0.3−	0.5−	1998 01 02	684	0.2+	0.5+	1998 02 17	684	0.2+	0.2−
1997 12 27	684	0.6−	0.3−	1998 01 02	704	0.3+	0.6+	1998 02 17	684	0.2−	0.0
1997 12 28	684	0.3−	0.5−	1998 01 02	704	0.3+	0.2+	1998 02 19	684	0.2−	0.1−
1997 12 28	684	0.2−	0.4−	1998 01 02	704	0.4+	0.5+	1998 02 19	684	0.1+	0.4−
1997 12 28	684	0.3−	0.5−	1998 01 18	684	1.2−	0.2+	1998 02 19	684	0.2−	0.1−
1998 01 02	704	0.2+	0.1+	1998 01 18	684	0.8+	0.7+	1999 04 16	684	0.0	0.3+
1998 01 02	684	0.2+	0.3+	1998 01 19	684	0.1+	0.7−	1999 04 16	684	1.2−	0.7+
1998 01 02	704	0.3+	0.3+	1998 01 19	684	0.0	0.4−	1999 04 17	684	0.7+	0.1+
1998 01 02	684	0.1+	0.5+	1998 02 17	684	0.3−	0.3+	1999 04 17	684	0.4+	1.0−

1997 YG$_9$ = 1999 CT$_4$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	92.14625		(2000.0)		**P**		**Q**
n	0.19681984	ω	204.25717		+0.44784182		−0.89398887
a	2.9270050	Ω	219.14215		+0.82413819		+0.41919271
e	0.0468048	i	1.35132		+0.34674766		+0.15830785
P	5.01	H	13.8	G	0.15	U	5

Residuals in seconds of arc

1997 12 05	704	0.0	0.1−	1997 12 31	704	0.6+	0.4−	1999 03 20	704	0.4−	1.0−
1997 12 05	704	1.2+	0.5−	1997 12 31	704	0.4−	0.4−	1999 03 20	704	1.0+	0.8+
1997 12 05	704	0.1−	1.5+	1999 02 12	120	0.0	0.9+	1999 03 20	704	0.7+	0.9+
1997 12 05	704	1.0+	1.0+	1999 02 12	120	1.9+	1.9+	1999 03 20	704	1.0+	0.0
1997 12 05	704	0.0	1.1−	1999 02 12	120	0.1−	0.9+	1999 03 23	704	1.5+	1.8−
1997 12 26	966	0.4−	0.1+	1999 02 13	120	0.5−	1.5+	1999 03 23	704	1.0−	0.4−
1997 12 27	966	0.3−	1.0−	1999 02 17	120	1.3−	1.3−	1999 03 23	704	1.2−	0.6+
1997 12 27	966	0.3−	0.3+	1999 02 18	120	(5.9+	4.0−)	1999 03 23	704	0.1+	0.7−
1997 12 27	966	1.2−	0.4−	1999 03 14	120	(3.2−	0.1+)	1999 03 23	704	0.3+	0.3−
1997 12 31	704	0.2+	0.4+	1999 03 14	120	0.6−	0.5−				
1997 12 31	704	0.0	0.0	1999 03 20	704	1.4−	0.9−				

1997 YQ$_{10}$

Id. T. Kobayashi (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	75.49938		(2000.0)		**P**		**Q**
n	0.19642828	ω	36.96538		−0.41474069		−0.89490619
a	2.9308935	Ω	78.06753		+0.78939912		−0.44389425
e	0.0856759	i	9.69243		+0.45259164		−0.04583442
P	5.02	H	13.1	G	0.15	U	4

Residuals in seconds of arc

1997 12 26	566	0.2−	0.5+	1998 01 04	411	0.0	0.3−	1999 04 09	411	0.5−	0.3−
1997 12 26	566	0.3−	0.5+	1998 01 16	411	0.4−	0.3+	1999 04 15	426	0.5+	0.5+
1997 12 26	566	0.0	0.4+	1998 01 16	411	0.1+	0.2+	1999 04 15	426	0.2+	0.3+
1997 12 28	411	0.2+	0.0	1998 01 29	411	0.4+	0.3+	1999 04 15	426	0.4+	0.4+
1997 12 28	411	0.6+	0.6−	1998 01 29	411	0.3−	0.3−	1999 04 16	426	0.4−	0.5−
1997 12 30	411	0.1−	0.3−	1999 04 08	411	0.7−	0.4+	1999 04 16	426	0.2−	0.3−
1997 12 30	411	0.1−	0.2−	1999 04 08	411	0.2+	0.1+	1999 04 16	426	0.0	0.0
1998 01 04	411	0.1+	0.4−	1999 04 09	411	0.5+	0.6−				

1997 YV$_{11}$

Id. T. Kobayashi (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Nakano

M	123.69863		(2000.0)		**P**		**Q**
n	0.17284170	ω	315.08887		+0.13795690		−0.95923325
a	3.1918100	Ω	125.41721		+0.97230701		+0.08373119
e	0.0959865	i	17.61764		+0.18864508		+0.26992712
P	5.70	H	12.8	G	0.15	U	3

Residuals in seconds of arc

1997 12 30	411	0.7+	0.2+	1998 03 24	704	0.3+	0.7−	1998 03 25	704	0.4+	0.6+
1997 12 30	411	0.2−	0.4−	1998 03 24	704	0.3−	0.2+	1998 03 25	704	0.8−	2.0−
1997 12 31	411	0.2+	1.2−	1998 03 24	704	0.4+	0.9+	1998 03 25	704	1.0−	0.1+
1997 12 31	411	0.2−	0.2−	1998 03 24	704	0.3+	0.8+	1999 04 08	411	0.3−	0.3−
1998 01 09	411	0.1+	0.2+	1998 03 24	566	0.2−	0.2−	1999 04 08	411	0.0	0.1+
1998 01 09	411	0.4+	0.6+	1998 03 24	566	0.1−	0.2−	1999 04 09	411	0.5+	0.1+
1998 01 30	411	0.7−	0.5+	1998 03 24	566	0.2−	0.2−	1999 04 09	411	0.3−	0.1+
1998 01 30	411	0.7−	0.3+	1998 03 25	704	0.4+	0.2−				
1998 03 24	704	1.0+	0.4+	1998 03 25	704	0.4+	0.5+				

1997 YH$_{13}$ = 1999 HC$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	26.02066		(2000.0)	**P**		**Q**	
n	0.17492534	ω	287.25741	−0.99526732		−0.01403396	
a	3.1664130	Ω	252.02131	+0.04856607		−0.92890854	
e	0.1475649	i	5.80208	−0.08416827		−0.37004322	
P	5.63	H	14.7	G	0.15	U	3

Residuals in seconds of arc

1997 12 29	691	0.1+	0.1+	1998 01 01	691	0.1−	0.2−	1998 01 29	566	0.6−	0.3−
1997 12 29	691	0.1+	0.1−	1998 01 24	566	0.4+	0.6+	1998 01 29	566	0.0	0.3−
1997 12 29	691	0.0	0.2+	1998 01 24	566	0.5+	0.2+	1999 04 24	428	0.9+	0.2−
1998 01 01	691	0.3−	0.1−	1998 01 24	566	0.0	0.6+	1999 04 25	428	0.2−	0.1+
1998 01 01	691	0.0	0.2−	1998 01 29	566	0.2−	0.5−	1999 04 25	428	0.7−	0.1+

1997 YS$_{19}$

Id. K. Korlević (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	102.28456		(2000.0)	**P**		**Q**	
n	0.26088213	ω	355.69393	+0.27186282		−0.95384536	
a	2.4257153	Ω	78.49365	+0.88676822		+0.19681895	
e	0.0923272	i	7.47933	+0.37380841		+0.22680682	
P	3.78	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1997 11 26	704	0.8−	1.1+	1997 12 05	704	0.2+	0.4−	1999 04 10	120	(2.3+	0.1+)
1997 11 26	704	0.8−	0.8+	1997 12 05	704	0.8+	0.0	1999 04 10	120	0.4−	0.0
1997 11 26	704	0.8−	0.5−	1997 12 31	704	0.3+	0.0	1999 04 10	120	0.3−	1.6+
1997 12 04	704	0.2−	0.6+	1997 12 31	704	0.5−	0.1+	1999 04 13	120	0.7+	0.2−
1997 12 04	704	0.6+	1.3−	1997 12 31	704	0.9−	0.1−	1999 04 13	120	0.6−	0.3−
1997 12 04	704	0.9+	1.8−	1997 12 31	704	1.0−	0.6+	1999 04 13	120	0.1+	0.6−
1997 12 04	704	1.0+	0.5−	1998 01 02	704	0.9+	0.3−	1999 04 18	120	1.2−	0.3−
1997 12 05	704	0.3+	0.0	1998 01 02	704	0.6+	0.1−	1999 04 18	120	0.5−	0.2+
1997 12 05	704	0.4+	0.1−	1998 01 02	704	0.0	0.1+	1999 04 18	120	1.9+	0.8−
1997 12 05	704	0.7+	0.3+	1998 01 02	704	2.0−	1.3+				

1998 AV

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	310.54973		(2000.0)	**P**		**Q**	
n	0.17629853	ω	130.38110	−0.36598916		+0.86403021	
a	3.1499495	Ω	114.90177	−0.92669813		−0.30430635	
e	0.0076036	i	22.40345	−0.08533768		−0.40106040	
P	5.59	H	13.4	G	0.15	U	3

Residuals in seconds of arc

1997 11 08	910	0.5−	0.1+	1998 01 24	566	0.1+	0.2−	1998 02 26	098	0.4−	1.0+
1997 11 08	910	0.6−	0.2+	1998 01 24	566	0.1−	0.1−	1998 02 27	098	0.4−	0.2−
1997 11 08	910	0.4−	0.1+	1998 01 24	566	(1.4−	2.2−)	1998 02 27	098	(3.0−	0.1−)
1998 01 05	411	1.2+	0.7+	1998 01 24	566	0.8−	0.9−	1999 04 15	426	0.5−	0.3−
1998 01 05	411	0.5−	1.1+	1998 01 24	566	0.7−	1.8−	1999 04 15	426	0.5−	0.1−
1998 01 06	411	1.7+	0.7−	1998 01 26	411	0.2−	0.1+	1999 04 15	426	0.3−	0.1−
1998 01 06	411	0.3+	0.4+	1998 01 26	411	0.0	0.6−	1999 04 16	426	0.7+	0.1+
1998 01 09	411	0.2+	0.7+	1998 02 04	411	0.2+	0.1−	1999 04 16	426	0.4+	0.1+
1998 01 09	411	0.2+	0.7+	1998 02 04	411	0.5+	0.2+	1999 04 16	426	0.2+	0.4+
1998 01 24	566	0.1−	0.3−	1998 02 26	098	0.0	0.3−				

1998 AQ$_8$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	242.85264		(2000.0)	**P**		**Q**	
n	0.20837600	ω	94.91676	+0.88823433		+0.45506024	
a	2.8177616	Ω	238.02732	−0.44539131		+0.81948991	
e	0.0197344	i	4.25419	−0.11254494		+0.34836255	
P	4.73	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1995 07 02	691	0.0	0.0	1998 01 17	557	0.2+	0.0	1998 03 04	704	0.6+	1.4+
1995 07 02	691	0.0	0.0	1998 01 17	557	0.7−	0.3−	1998 03 04	704	0.1+	0.5−
1995 07 02	691	0.2−	0.3+	1998 01 26	566	0.2−	0.2+	1998 03 04	704	0.5+	0.3−
1996 11 08	691	0.1+	0.3−	1998 01 26	566	0.1−	0.4+	1998 03 04	557	1.5+	0.5+
1996 11 08	691	0.0	0.2−	1998 01 26	566	0.4−	0.3+	1998 03 04	557	0.3+	0.9+
1996 11 08	691	0.1+	0.1−	1998 02 19	557	0.3−	0.7−	1998 03 19	557	0.3−	0.1−
1997 12 31	557	0.6−	0.3+	1998 02 19	557	0.8+	1.0−	1998 03 19	557	0.0	0.3+
1997 12 31	557	0.3−	0.2−	1998 03 03	704	0.3+	0.5−	1999 04 10	557	0.5−	0.8−
1998 01 10	557	0.1+	0.5−	1998 03 03	704	(3.8+	0.2−)	1999 04 10	557	0.2+	0.3−
1998 01 10	557	0.7−	0.1+	1998 03 03	704	1.2+	1.8+	1999 04 10	557	0.0	0.5+
1998 01 10	557	0.1+	0.3−	1998 03 03	704	0.0	1.2−	1999 04 14	557	0.3+	0.4−
1998 01 12	557	0.7−	0.2−	1998 03 03	704	(0.2+	2.5−)	1999 04 14	557	0.1−	0.3−
1998 01 12	557	1.3−	0.4−	1998 03 04	704	0.1−	0.6+				

1998 AL$_{10}$ = 1990 DE$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	143.82743		(2000.0)	**P**		**Q**	
n	0.24590162	ω	264.84370	+0.68426055		−0.72730416	
a	2.5232587	Ω	141.80005	+0.69844788		+0.63270996	
e	0.1592722	i	4.92278	+0.20966176		+0.26590744	
P	4.01	H	14.8	G	0.15	U	3

Residuals in seconds of arc

1990 02 23	033	0.0	0.7+	1998 01 05	428	0.6+	0.7−	1999 04 10	120	(2.5−	2.0+)
1990 02 23	033	0.1+	1.0+	1998 01 19	428	0.3−	0.5−	1999 04 18	428	0.3−	0.2−
1997 12 25	566	0.1−	0.3−	1998 01 19	428	0.1+	0.4−	1999 04 18	428	0.8+	0.0
1997 12 25	566	0.3−	0.1−	1998 02 01	428	0.0	0.3+	1999 04 24	428	0.6−	0.0
1997 12 25	566	0.2+	0.0	1998 03 03	428	0.5+	0.3+	1999 04 25	428	0.2+	0.2−
1998 01 02	428	0.1+	0.3−	1998 03 19	428	1.1−	0.1−	1999 04 25	428	0.4−	0.8+
1998 01 03	428	0.1−	0.4+	1999 04 10	120	0.2+	0.9−				

1998 BR$_1$ = 1999 GY$_4$

Id. B. G. Marsden

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	198.40699		(2000.0)	**P**		**Q**	
n	0.27041287	ω	312.01072	+0.99486768		+0.07247665	
a	2.3683787	Ω	43.97141	−0.03168518		+0.88586241	
e	0.2566982	i	5.83685	−0.09609552		+0.45825203	
P	3.64	H	13.4	G	0.15	U	5

Residuals in seconds of arc

1998 01 19	411	0.7+	0.2−	1998 01 31	411	0.7−	0.4−	1999 04 14	426	0.1+	0.2−
1998 01 19	411	0.3+	0.3−	1998 02 17	411	1.2+	1.1+	1999 04 14	426	0.4−	0.1+
1998 01 20	411	0.3+	0.2−	1998 02 17	411	0.2+	0.3−	1999 04 19	426	0.7−	0.0
1998 01 20	411	0.5−	0.3+	1999 04 13	426	0.2−	0.1−	1999 04 19	426	0.6+	0.1−
1998 01 26	411	0.3−	0.1+	1999 04 13	426	1.3+	0.5+	1999 04 19	426	0.8−	0.6+
1998 01 26	411	0.1−	0.3+	1999 04 13	426	0.6+	0.2−				
1998 01 31	411	0.9−	0.2−	1999 04 14	426	0.5−	0.8−				

1998 BW$_8$ = 1999 HZ$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	348.61184		(2000.0)	**P**		**Q**	
n	0.17373017	ω	207.18622	−0.73350839		+0.67925964	
a	3.1809185	Ω	15.67327	−0.60640372		−0.63813353	
e	0.0982463	i	5.07804	−0.30698528		−0.36248025	
P	5.67	H	14.1	G	0.15	U	4

Residuals in seconds of arc

1998 01 18	327	0.7+	0.4+	1998 01 30	910	0.7+	0.3−	1998 03 02	327	0.3−	0.2+
1998 01 18	327	0.3−	0.1+	1998 01 31	910	1.0+	0.1+	1998 03 02	327	1.2+	0.2+
1998 01 18	327	0.0	0.6+	1998 01 31	910	1.2+	0.1+	1998 03 03	704	0.4−	1.1−
1998 01 19	327	0.5−	0.2+	1998 01 31	910	1.0+	0.3+	1998 03 03	704	(0.4−	2.6+)
1998 01 19	327	0.1+	1.4+	1998 02 13	327	0.1−	0.1−	1998 03 03	704	1.1−	0.4+
1998 01 19	327	0.6−	0.4+	1998 02 13	327	0.2−	0.2−	1998 03 03	704	0.1+	0.6+

1998 01 24	566	1.4−	1.2−	1998 02 13	327	0.2−	0.3+	1999 04 24	428	0.5−	0.0
1998 01 24	566	1.2−	0.8−	1998 02 21	327	0.1+	0.3−	1999 04 24	428	0.4+	0.6−
1998 01 24	566	0.9−	0.6−	1998 02 21	327	0.3+	0.3−	1999 04 25	428	0.1+	0.2+
1998 01 29	910	0.6+	0.2−	1998 02 21	327	0.0	0.1−	1999 04 25	428	0.0	0.4+
1998 01 30	910	0.7+	0.2−	1998 03 02	327	0.9−	0.1+				

1998 BH$_{10}$

Id. E. Bowell (1999 observations), K. Korlević (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	282.08468		(2000.0)		**P**	**Q**	
n	0.21505705	ω	232.32603		+0.16872439	+0.98139321	
a	2.7590967	Ω	47.65020		−0.86079015	+0.19200771	
e	0.0237948	i	7.12354		−0.48017955	+0.00063857	
P	4.58	H	13.9	G	0.15	U	4

Residuals in seconds of arc

1997 12 28	566	0.1−	0.2+	1998 01 27	104	0.5+	0.4−	1999 02 14	699	0.5+	0.8+
1997 12 28	566	0.1+	0.0	1998 01 27	104	1.2+	0.1−	1999 02 14	699	0.2+	0.3+
1997 12 28	566	0.1−	0.3+	1998 01 29	566	0.0	1.0−	1999 04 05	120	0.4+	0.3−
1998 01 24	104	0.6+	1.5−	1998 01 29	566	0.4−	2.0−	1999 04 05	120	0.3−	0.1−
1998 01 24	104	1.1−	1.1+	1998 01 29	566	0.2−	1.3−	1999 04 05	120	1.8−	0.8−
1998 01 24	104	0.2+	0.7−	1998 02 05	104	0.3−	1.7+	1999 04 14	699	0.2−	0.3+
1998 01 24	104	0.2+	1.6+	1998 02 05	104	0.6−	1.7+	1999 04 14	699	0.7+	0.5−
1998 01 24	104	0.0	0.5+	1998 02 05	104	1.0−	1.7+	1999 04 14	699	1.0+	0.5−
1998 01 24	104	0.1−	0.3+	1998 02 05	108	0.6+	0.8−	1999 04 21	691	0.6−	0.2−
1998 01 24	104	(3.9+	0.5+)	1998 02 05	108	0.1+	1.0−	1999 04 21	691	0.7−	0.3−
1998 01 24	104	(3.6+	0.7+)	1998 02 05	108	(3.2+	2.4−)	1999 04 21	691	0.9+	1.3+
1998 01 27	104	0.3+	0.5−	1999 02 14	699	0.1+	0.1+				

1998 BJ$_{10}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	322.90428		(2000.0)		**P**	**Q**	
n	0.22583494	ω	103.73667		−0.36790201	+0.92080506	
a	2.6705986	Ω	143.81410		−0.91518397	−0.33391941	
e	0.1256121	i	12.66871		−0.16457951	−0.20153381	
P	4.36	H	15.1	G	0.15	U	4

Residuals in seconds of arc

1998 01 24	426	0.1−	0.4−	1998 01 27	426	0.3+	0.2−	1999 04 12	426	0.3−	0.1−
1998 01 24	426	0.6+	0.1+	1998 01 31	691	0.7−	0.4−	1999 04 12	426	0.5+	0.5+
1998 01 24	426	0.8+	0.0	1998 01 31	691	0.7−	0.1−	1999 04 13	426	0.2−	0.3+
1998 01 26	426	0.6−	0.1−	1998 02 17	426	0.6+	0.3−	1999 04 13	426	0.6−	0.1+
1998 01 26	426	0.7−	0.6+	1998 02 17	426	0.1−	0.1−	1999 04 13	426	0.0	0.6−
1998 01 26	426	0.2−	0.3+	1998 02 17	426	0.1−	0.2+				
1998 01 27	426	0.9+	0.4+	1999 04 12	426	0.5+	0.3−				

1998 BT$_{14}$

Id. T. Kagawa (1999 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Urata

M	314.80579		(2000.0)		**P**	**Q**	
n	0.18650386	ω	316.26663		−0.42560360	+0.89288648	
a	3.0339668	Ω	288.04292		−0.78190608	−0.44464848	
e	0.0606484	i	8.89506		−0.45550462	−0.07100334	
P	5.28	H	12.5	G	0.15	U	4

Residuals in seconds of arc

1997 12 27	327	0.2+	0.1+	1998 01 30	886	0.4+	0.2−	1998 03 03	385	0.2+	0.3+
1997 12 27	327	0.3+	0.0	1998 01 30	385	0.6+	0.0	1998 03 03	385	0.1+	0.0
1997 12 27	327	0.5+	0.0	1998 01 30	385	0.1+	0.1−	1999 04 14	888	0.0	0.1+
1998 01 25	905	0.4+	1.3+	1998 02 02	886	1.3−	0.2−	1999 04 14	888	0.0	0.1−
1998 01 25	905	1.9−	0.7−	1998 02 02	886	0.4−	0.3+	1999 04 14	888	0.3+	0.5−
1998 01 26	905	0.6−	0.7−	1998 02 26	566	0.7+	0.2+	1999 04 25	888	0.1−	0.5+
1998 01 26	905	0.2−	0.3−	1998 02 26	566	0.4+	0.2+	1999 04 25	888	0.2−	0.1−
1998 01 30	886	0.2+	0.5−	1998 02 26	566	0.5+	0.4+				

1998 BV$_{24}$ = 1999 GH$_{21}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	262.18617		(2000.0)		**P**	**Q**	
n	0.17408512	ω	232.05294		+0.62468246	+0.77388756	
a	3.1765933	Ω	76.93045		−0.67867166	+0.60409674	
e	0.1639360	i	6.14420		−0.38623388	+0.19017142	
P	5.66	H	13.3	G	0.15	U	6

Residuals in seconds of arc

1998 01 28	411	0.3+	0.3+	1998 02 18	411	1.1−	0.0	1999 04 15	704	0.9−	1.2+
1998 01 28	411	0.1+	0.4+	1998 02 18	411	1.5−	0.3+	1999 04 15	704	1.3+	0.6−
1998 01 29	411	0.4+	0.7−	1998 02 22	566	0.7+	0.2−	1999 04 16	704	0.5−	1.0−
1998 01 29	411	0.0	0.3−	1998 02 22	566	0.9+	0.1−	1999 04 16	704	1.1+	1.1−
1998 02 02	411	0.1−	0.2+	1998 02 22	566	0.8+	0.1+	1999 04 16	704	0.2−	0.4+
1998 02 02	411	0.4−	0.1−	1999 04 15	704	0.4+	0.5−	1999 04 16	704	1.2−	1.5+

1998 BB$_{27}$ = 1981 UA$_{6}$ = 1999 FT

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	214.68245		(2000.0)		**P**	**Q**	
n	0.19618267	ω	28.29186		+0.93874337	+0.34430953	
a	2.9333392	Ω	311.56088		−0.31973394	+0.85442736	
e	0.1042907	i	1.11454		−0.12857329	+0.38910774	
P	5.02	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1981 10 30	381	0.4−	0.5−	1998 01 25	691	0.7−	0.3+	1999 03 17	910	0.1−	0.1−
1981 10 30	381	0.7+	0.7−	1998 01 30	691	0.2−	0.4−	1999 03 17	910	0.5+	0.0
1998 01 22	691	0.5−	0.2−	1998 01 30	691	0.8−	0.4+	1999 03 17	910	0.2+	0.4−
1998 01 22	691	0.5−	0.2+	1998 01 30	691	0.8−	0.4+	1999 03 19	910	0.6−	0.5−
1998 01 22	691	0.3−	0.1+	1998 03 01	910	1.2+	0.1+	1999 03 19	910	0.3−	0.3−
1998 01 25	691	0.3−	0.2+	1998 03 01	910	1.8+	0.1−	1999 03 19	910	0.3−	0.2−
1998 01 25	691	0.1−	0.0	1998 03 01	910	1.7+	0.2−				

1998 BD$_{41}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	83.13423		(2000.0)		**P**	**Q**	
n	0.23811286	ω	36.84975		+0.28350358	−0.95733454	
a	2.5779876	Ω	36.77487		+0.85601648	+0.22631051	
e	0.3155215	i	5.36757		+0.43227481	+0.17970570	
P	4.14	H	15.2	G	0.15	U	2

Residuals in seconds of arc

1990 01 22	675	0.0	0.6−	1997 10 26	894	0.9−	0.2−	1998 01 25	566	1.2−	1.1+
1990 01 22	675	0.6−	0.5−	1997 10 29	894	0.2+	1.3+	1998 01 25	566	0.9−	1.0+
1990 01 24	675	0.2−	0.7−	1997 10 29	894	0.7+	1.1+	1998 01 29	566	0.5−	0.4+
1990 01 24	675	0.4+	0.9−	1997 10 30	704	0.0	1.2−	1998 01 29	566	0.0	0.0
1990 01 24	675	0.6−	0.6−	1997 10 30	704	0.6+	0.6−	1998 01 29	566	0.6−	0.2+
1994 01 12	675	0.7+	0.1+	1997 10 30	704	0.2+	0.2−	1999 04 18	704	0.2+	0.4+
1994 01 12	675	0.4−	0.7+	1997 10 30	704	0.1−	0.8−	1999 04 18	691	0.1−	1.1+
1994 01 16	675	0.8+	1.7+	1997 10 30	704	0.0	0.3+	1999 04 18	704	(0.6+	3.1+)
1994 01 16	675	0.3−	0.2+	1997 11 01	894	1.1+	0.4−	1999 04 18	704	(0.2+	2.2+)
1997 10 12	894	0.4+	0.3+	1997 11 01	894	0.1+	0.9−	1999 04 18	691	0.9+	0.6+
1997 10 12	894	1.2−	0.1−	1997 12 27	566	(2.7+	1.7−)	1999 04 18	691	0.8+	0.6+
1997 10 25	894	0.0	0.6−	1997 12 27	566	(2.5+	1.8−)	1999 04 18	704	0.1+	0.6+
1997 10 25	894	1.3+	0.2+	1997 12 27	566	(2.4+	1.8−)	1999 04 18	704	(0.0	2.1+)
1997 10 26	894	1.6−	0.6+	1998 01 25	566	0.8−	1.1+	1999 04 18	704	0.8−	1.5−

1998 CB

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	276.00432		(2000.0)	**P**		**Q**	
n	0.20667663	ω	195.12284	+0.55814006		+0.81708642	
a	2.8331863	Ω	109.00447	−0.74455124		+0.56999873	
e	0.1422966	i	8.78445	−0.36622825		+0.08643627	
P	4.77	H	14.2	G 0.15		U 4	

Residuals in seconds of arc

1998 02 01	118	1.6+	0.0	1998 02 18	118	0.5−	0.4−	1999 04 21	118	0.4−	0.3+
1998 02 01	118	0.1+	0.2−	1998 02 18	118	0.4−	0.0	1999 04 21	118	0.1−	0.0
1998 02 01	118	0.0	0.1+	1998 02 18	118	0.8−	0.0	1999 04 21	118	0.3−	0.3−
1998 02 01	118	0.3−	0.2−	1998 02 20	118	0.0	0.0	1999 04 22	118	0.1+	0.1−
1998 02 01	118	0.2−	0.0	1998 02 20	118	0.1+	0.1+	1999 04 22	118	0.7+	0.3+
1998 02 01	118	0.2−	0.1+	1998 02 26	118	0.5+	0.2+	1999 04 22	118	0.3−	0.1+
1998 02 04	118	0.0	0.3+	1998 02 26	118	0.2+	0.2+	1999 04 22	118	0.3+	0.2+
1998 02 04	118	0.0	0.3+	1998 02 26	118	0.1−	0.0	1999 04 28	118	0.1−	0.0
1998 02 07	118	0.0	0.1−	1998 03 16	118	0.6+	0.6−	1999 04 28	118	0.2+	0.4−
1998 02 07	118	0.2−	0.2−	1998 03 16	118	0.3−	0.2+				

1998 DX

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	248.13420		(2000.0)	**P**		**Q**	
n	0.27775327	ω	229.37260	+0.75095568		+0.64790253	
a	2.3264654	Ω	89.84204	−0.56077905		+0.72775173	
e	0.1280194	i	7.33234	−0.34870105		+0.22494386	
P	3.55	H	14.2	G 0.15		U 4	

Residuals in seconds of arc

1997 12 27	566	0.0	0.8+	1998 02 26	589	0.2+	0.1−	1998 03 28	589	0.3−	0.9−
1997 12 27	566	0.2−	0.8+	1998 02 26	589	0.2−	0.4+	1998 03 28	589	0.3−	2.0−
1997 12 27	566	0.0	0.9+	1998 02 26	589	0.1−	0.6+	1998 03 28	589	1.6+	1.5−
1998 02 19	589	0.4+	0.0	1998 02 27	589	0.9−	0.5−	1998 04 19	589	0.1+	0.9+
1998 02 19	589	0.4−	0.0	1998 02 27	589	0.1−	0.2−	1998 04 19	589	1.1−	1.4−
1998 02 19	589	0.3−	0.1+	1998 02 27	589	1.0+	0.1+	1998 04 19	589	0.1+	0.6−
1998 02 20	589	1.2−	0.8+	1998 03 15	589	(2.1+	0.4+)	1998 04 20	589	0.3−	1.2+
1998 02 20	589	0.7−	0.2−	1998 03 15	589	1.8+	0.3−	1998 04 20	589	0.1+	0.0
1998 02 20	589	0.5−	0.7+	1998 03 15	589	(3.6+	1.1+)	1998 04 20	589	0.0	0.3+
1998 02 20	589	0.4+	0.0	1998 03 16	589	0.0	1.7−	1999 04 15	426	0.1−	0.2+
1998 02 21	589	0.1−	0.8+	1998 03 16	589	0.0	0.4−	1999 04 15	426	0.0	0.3+
1998 02 21	589	0.3−	0.2+	1998 03 16	589	1.7+	0.7−	1999 04 15	426	0.1−	0.2+
1998 02 21	589	0.2−	0.0	1998 03 17	589	0.4+	0.1+	1999 04 16	426	0.1+	0.1−
1998 02 21	589	0.1+	1.1+	1998 03 17	589	0.7+	0.5−	1999 04 16	426	0.5+	0.3+
1998 02 26	589	0.1+	0.1+	1998 03 17	589	0.8−	0.4−	1999 04 16	426	0.1−	0.1+

1998 DU$_{10}$ = 1999 EK$_{12}$

Id. G. V. Williams, E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	154.74674		(2000.0)	**P**		**Q**	
n	0.18009986	ω	324.64898	+0.98065824		−0.16223595	
a	3.1054686	Ω	45.09124	+0.19530770		+0.84774633	
e	0.1138451	i	8.89370	−0.01281904		+0.50498086	
P	5.47	H	13.2	G 0.15		U 4	

Residuals in seconds of arc

1998 02 21	589	0.0	0.4−	1998 03 02	589	0.2+	0.0	1999 03 15	704	0.6+	0.1+
1998 02 21	589	0.5−	0.2−	1998 03 02	589	0.1−	0.4+	1999 03 20	704	0.9−	0.5−
1998 02 21	589	0.0	0.2+	1998 03 02	589	0.3−	0.0	1999 03 20	704	0.9+	0.3+
1998 02 24	589	0.5−	0.1−	1998 03 03	589	0.1+	0.1−	1999 03 20	704	0.4−	1.0+
1998 02 24	589	0.4−	0.6−	1998 03 03	589	0.1+	1.6+	1999 03 20	704	1.5−	0.0
1998 02 24	589	0.6+	0.5−	1998 03 03	589	0.5−	0.5−	1999 03 20	704	1.0+	0.8−
1998 02 26	589	0.0	0.4+	1998 03 18	589	0.2−	0.3+	1999 04 07	699	0.6−	0.8+
1998 02 26	589	0.1+	0.6+	1998 03 18	589	0.3+	0.4−	1999 04 07	699	0.6+	0.3−
1998 02 26	589	1.1+	0.3−	1999 03 15	704	1.1+	0.1+	1999 04 07	699	0.1−	0.9−
1998 02 26	589	0.1−	0.3−	1999 03 15	704	0.6−	0.2−				
1998 03 02	589	0.1+	0.3−	1999 03 15	704	0.2−	0.5+				

1998 DD$_{12}$ = 1990 BR$_3$ = 1992 SJ$_8$

Id. G. V. Williams (*MPC* 31560), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	162.50452		(2000.0)	**P**		**Q**	
n	0.26144674	ω	291.97590	+0.09627704		−0.99369571	
a	2.4222217	Ω	152.30900	+0.95274048		+0.07529625	
e	0.0980058	i	7.10048	+0.28812552		+0.08306205	
P	3.77	H	15.2	G 0.15		U 3	

Residuals in seconds of arc

1990 01 24	033	0.1−	0.1+	1998 02 23	691	0.1+	0.2+	1998 03 03	691	0.3+	0.3−
1990 01 24	033	0.0	0.0	1998 02 26	691	0.1+	0.2−	1998 03 22	704	0.4−	0.7−
1992 09 26	691	0.1+	0.0	1998 02 26	691	0.2−	0.2+	1998 03 22	704	1.1−	0.9−
1992 09 26	691	0.2+	0.1−	1998 02 26	691	0.6+	0.1−	1998 03 22	704	0.2+	0.0
1992 09 26	691	0.3−	0.4+	1998 03 01	809	0.8+	2.0+	1998 03 22	704	0.2−	1.3−
1992 09 27	691	0.1−	0.2+	1998 03 01	809	1.3−	1.4+	1998 03 22	704	(1.8+	3.7−)
1992 09 27	691	0.1−	0.0	1998 03 01	809	(1.4−	2.9+)	1998 04 19	704	0.2+	1.3−
1992 09 27	691	0.0	0.0	1998 03 02	809	0.3+	0.4+	1998 04 19	704	0.9+	0.3−
1994 02 10	691	0.0	0.2−	1998 03 02	809	0.0	0.4+	1998 04 19	704	0.8+	0.6+
1994 02 10	691	0.0	0.3−	1998 03 02	809	0.0	0.0	1998 04 19	704	0.3−	1.6+
1994 02 10	691	0.1+	0.2−	1998 03 03	691	0.2−	0.1−	1998 04 19	704	0.2−	0.3−
1998 02 23	691	0.2+	0.1+	1998 03 03	691	0.2−	0.3−				

1998 DW$_{12}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	95.26096		(2000.0)	**P**		**Q**	
n	0.18305675	ω	300.08961	+0.29745587		−0.95324905	
a	3.0719364	Ω	132.50549	+0.89893676		+0.26084481	
e	0.3108356	i	4.14268	+0.32160955		+0.15256553	
P	5.38	H	13.5	G 0.15		U 3	

Residuals in seconds of arc

1997 12 24	910	0.5+	0.2+	1998 02 26	046	0.1−	0.1+	1998 03 19	046	0.2+	0.3+
1997 12 24	910	0.5+	0.2+	1998 02 26	046	0.1−	0.0	1998 03 19	046	0.0	0.1+
1997 12 24	910	0.5+	0.3+	1998 02 27	046	0.4−	0.1−	1998 03 23	046	0.3+	0.5−
1998 01 20	704	0.6−	0.2+	1998 02 27	046	0.1+	1.3−	1998 03 23	046	0.2+	0.4−
1998 01 20	704	0.1−	0.1+	1998 02 27	046	0.5−	1.4+	1998 03 23	046	0.4+	0.6−
1998 01 20	704	0.1−	0.3+	1998 02 27	046	0.2−	0.7−	1999 04 19	046	0.1−	0.9+
1998 01 20	704	0.2−	0.3+	1998 03 05	046	0.4−	0.4−	1999 04 20	046	0.3+	0.2−
1998 01 20	704	0.2−	0.6+	1998 03 05	046	0.1+	0.3−	1999 04 20	046	0.1+	0.8+
1998 01 20	704	0.0	0.4+	1998 03 05	046	0.0	0.3−	1999 04 21	046	0.1−	0.4−
1998 02 26	046	0.1−	0.0	1998 03 05	046	0.3+	0.4−	1999 04 21	046	0.1+	0.2−
1998 02 26	046	0.0	0.2−	1998 03 19	046	0.5+	0.1−				

1998 DF$_{20}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	179.57242		(2000.0)	**P**		**Q**	
n	0.22654544	ω	240.40934	+0.64331019		−0.76443412	
a	2.6650120	Ω	169.23446	+0.75715428		+0.62704131	
e	0.1730848	i	13.10040	+0.11344339		+0.14986547	
P	4.35	H	14.1	G 0.15		U 4	

Residuals in seconds of arc

1998 02 24	557	0.0	0.1−	1998 03 24	704	0.3+	0.2+	1998 03 24	566	0.2+	0.3+
1998 02 24	557	0.6−	0.3+	1998 03 24	704	0.3+	0.0	1998 03 24	566	0.2+	0.1+
1998 02 24	557	0.7−	0.0	1998 03 24	704	1.3+	0.8+	1998 03 24	566	0.0	0.3+
1998 02 24	566	1.5+	1.9−	1998 03 24	704	0.2−	0.2+	1998 03 28	704	0.9+	0.7−
1998 02 24	566	0.1−	2.0−	1998 03 24	704	0.2+	0.7−	1998 03 28	704	0.3−	1.1+
1998 02 24	566	1.0−	1.7−	1998 03 24	704	0.2+	0.3+	1998 03 28	704	(0.4+	2.0+)
1998 03 01	557	0.3−	0.4−	1998 03 24	704	0.2+	0.8+	1998 03 28	704	1.3+	0.7+
1998 03 01	557	0.2−	0.1+	1998 03 24	704	0.3+	1.1+	1998 03 28	704	1.1+	0.6−
1998 03 04	557	0.8−	0.2+	1998 03 24	704	0.2+	0.0	1998 03 29	704	0.7−	0.4−

1998 03 04	557	0.3−	0.2−	1998 03 24	704	0.2−	0.6+	1998 03 29	704	0.9+	0.5+
1998 03 04	557	0.5−	0.1+	1998 03 24	704	0.7+	0.3+	1998 03 29	704	0.5+	0.3+
1998 03 04	557	0.1+	0.2+	1998 03 24	704	0.5+	0.3+	1998 03 29	704	0.2−	0.2+
1998 03 06	557	0.2+	0.9+	1998 03 24	704	0.2−	0.6−	1998 03 29	704	0.2+	0.9+
1998 03 06	557	0.2+	0.8+	1998 03 24	704	0.2−	0.5+	1998 04 19	704	0.3+	0.2−
1998 03 06	557	0.1+	0.9+	1998 03 24	704	0.3−	0.1+	1998 04 19	704	1.9+	1.1+
1998 03 19	557	0.3−	0.3+	1998 03 24	704	0.1+	0.3−	1998 04 19	704	1.3−	0.1+
1998 03 19	557	0.2−	0.1+	1998 03 24	704	0.7+	0.9+	1998 04 19	704	1.4−	0.7−
1998 03 20	704	0.0	0.1+	1998 03 24	704	0.0	0.4−	1998 04 20	557	0.2+	0.3−
1998 03 20	704	0.2+	0.3+	1998 03 24	704	0.7+	0.6−	1998 04 20	557	0.1−	0.7−
1998 03 20	704	0.6−	0.8+	1998 03 24	704	0.1+	0.2+	1998 04 27	557	0.2−	0.5−
1998 03 20	704	0.2−	0.0	1998 03 24	704	0.6+	0.3−	1998 04 27	557	0.4−	1.0−
1998 03 20	704	0.3+	0.7+	1998 03 24	704	1.6−	0.3+	1998 05 13	557	0.9−	0.4−
1998 03 22	704	1.5−	0.1−	1998 03 24	704	0.2+	0.3−	1998 05 13	557	0.5−	0.2−
1998 03 22	704	0.9−	0.1−	1998 03 24	704	0.0	0.3+	1999 04 19	557	0.4+	0.2−
1998 03 22	704	0.1+	0.3+	1998 03 24	566	0.5+	1.3−	1999 04 19	557	0.0	1.0−
1998 03 22	704	(0.3−	2.5+)	1998 03 24	566	0.3+	0.9−	1999 04 20	557	0.0	1.0+
1998 03 22	704	1.3−	0.3+	1998 03 24	566	0.1−	1.8−	1999 04 20	557	0.3−	0.1+

1998 DT_{21} = 1999 HD_{11}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	224.46217		(2000.0)		**P**		**Q**
n	0.18544105	ω	295.88692		+0.97764017		+0.20842653
a	3.0455481	Ω	52.09554		−0.17806179		+0.89108104
e	0.2093873	i	2.02596		−0.11186467		+0.40315376
P	5.31	H	13.9	G	0.15	U	6

Residuals in seconds of arc

1998 02 22	691	0.0	0.1−	1998 03 04	704	1.8−	1.5+	1999 04 17	704	0.0	0.9−
1998 02 22	691	0.1+	0.2+	1998 03 04	704	0.4+	0.7−	1999 04 17	704	0.6−	0.1−
1998 02 22	691	0.0	0.2−	1998 03 04	704	(2.8−	2.8−)	1999 04 17	704	0.8+	0.8−
1998 03 01	691	0.3+	0.3−	1998 03 04	704	(2.8−	1.2+)	1999 04 17	704	0.4+	1.2−
1998 03 01	691	0.3+	0.2−	1998 03 21	691	0.4+	0.2+	1999 04 18	704	0.6−	0.5+
1998 03 01	691	0.3+	0.2−	1998 03 21	691	0.2+	0.3+	1999 04 18	704	0.8−	1.3+
1998 03 04	704	(3.6−	0.8−)	1998 03 21	691	0.1−	0.3−	1999 04 18	704	0.8+	1.3+

1998 DJ_{32} = 1997 WN_{32} = 1999 FF_4

Id. A. Doppler, G. V. Williams (d), E. Bowell

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	126.99361		(2000.0)		**P**		**Q**
n	0.23145267	ω	191.71582		+0.87807565		−0.47841670
a	2.6272088	Ω	196.87729		+0.44177858		+0.81852955
e	0.0018000	i	1.97989		+0.18388811		+0.31800445
P	4.26	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1997 11 29	704	0.9−	1.5+	1998 02 26	327	0.0	0.5+	1999 03 19	691	0.4−	0.1−
1997 11 29	704	0.9−	0.2−	1998 02 26	327	0.0	0.4−	1999 03 19	699	(1.0+	2.2+)
1997 11 29	704	0.7−	0.1+	1998 02 26	327	0.3−	0.0	1999 03 19	691	0.3−	0.2−
1997 11 29	704	1.2−	0.1−	1998 02 27	327	0.0	0.1−	1999 03 19	699	0.8+	0.7+
1997 11 29	704	0.5−	0.3+	1998 02 27	327	0.0	0.1−	1999 03 19	691	0.3−	0.1−
1997 12 04	704	1.3+	0.1−	1998 02 27	327	0.3+	0.1−	1999 03 20	704	0.1+	0.8−
1997 12 04	704	1.6+	1.0−	1999 02 11	691	0.3−	0.7−	1999 03 20	704	1.1−	0.9+
1997 12 04	704	1.1+	0.1+	1999 02 11	691	0.0	0.7−	1999 03 20	704	0.5−	0.8−
1997 12 04	704	0.1+	1.0−	1999 02 11	691	0.1−	0.6−	1999 03 20	704	0.2−	0.1−
1997 12 04	704	0.5+	1.1−	1999 03 06	691	0.4−	0.4−	1999 03 20	704	0.9−	0.1+
1998 02 22	327	0.3−	0.5+	1999 03 06	691	0.2−	0.3−	1999 03 23	704	0.8−	0.8−
1998 02 22	327	0.1+	0.4+	1999 03 06	691	0.4−	0.3−	1999 03 23	704	0.4−	1.1+
1998 02 22	327	0.3−	0.4+	1999 03 16	691	1.2+	0.4+	1999 03 23	704	1.5+	0.2−
1998 02 23	327	0.6−	0.2+	1999 03 16	691	0.5+	0.0	1999 03 23	704	0.9+	0.1+
1998 02 23	327	0.9+	1.3+	1999 03 16	691	0.4+	0.1+	1999 03 23	704	0.3−	0.3+
1998 02 23	327	0.5−	0.2+	1999 03 19	699	1.0+	1.9+				

1998 FV_8 = 1991 NF_9 = 1994 CG_{20}

Id. G. V. Williams (*MPC* 31746), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	26.63495		(2000.0)		**P**		**Q**
n	0.26503551	ω	184.97310		−0.05491016		+0.99764274
a	2.4003063	Ω	81.88346		−0.91465836		−0.03372501
e	0.1587505	i	2.38263		−0.40048092		−0.05976278
P	3.72	H	15.6	G	0.15	U	4

Residuals in seconds of arc

1991 07 13	809	0.5+	1.5−	1998 03 25	704	(2.2−	0.3−)	1998 04 20	704	1.2+	0.4−
1991 07 13	809	0.0	0.9−	1998 03 25	704	0.8−	1.1+	1998 04 20	704	0.2−	0.5+
1991 07 13	809	0.3−	0.3−	1998 03 25	691	0.8−	0.7+	1998 04 21	704	0.3+	0.1−
1994 02 10	809	1.2+	1.0−	1998 03 25	704	0.4−	0.1+	1998 04 21	704	0.2+	0.2−
1994 02 10	809	1.6−	0.4+	1998 03 25	691	0.7−	0.6+	1998 04 21	704	0.1−	0.8−
1994 02 10	809	0.1−	1.4−	1998 03 25	691	0.3−	0.3+	1998 04 21	704	(0.7−	2.4+)
1994 02 13	809	0.1+	0.8−	1998 03 29	704	0.0	0.6+	1998 04 21	704	0.5−	0.4−
1994 02 13	809	1.0−	0.8−	1998 03 29	704	0.4−	0.2−	1998 04 22	704	0.0	0.8−
1994 02 13	809	0.9−	1.9−	1998 03 29	704	0.2−	1.2+	1998 04 22	704	1.5+	1.8−
1998 03 22	691	0.2+	0.5+	1998 03 29	704	(0.3−	2.2+)	1998 04 22	704	0.4+	1.0−
1998 03 22	691	0.1+	0.7+	1998 03 29	704	0.8−	1.9+	1998 04 22	704	0.1+	0.5−
1998 03 22	691	0.2+	0.8+	1998 04 20	704	0.7+	0.2+	1998 04 22	704	0.5+	0.2−
1998 03 25	704	0.4−	0.5+	1998 04 20	704	(2.3+	0.7−)				
1998 03 25	704	1.1+	0.7+	1998 04 20	704	0.4+	0.0				

1998 FT_{11} = 1987 RS_4

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	215.11260		(2000.0)		**P**		**Q**
n	0.23373116	ω	48.07545		+0.87554536		−0.47188609
a	2.6101070	Ω	339.40530		+0.30778971		+0.71016278
e	0.1022633	i	17.13788		+0.37240543		+0.52248669
P	4.22	H	13.5	G	0.15	U	3

Residuals in seconds of arc

1987 09 02	095	2.1+	2.6−	1998 03 03	704	0.1+	0.1−	1998 03 31	704	(0.2−	4.4+)
1991 08 15	675	2.5−	0.6−	1998 03 04	704	1.2−	0.1+	1998 03 31	704	0.3−	0.8−
1991 08 15	675	0.1−	0.4+	1998 03 04	704	1.1−	0.5−	1998 04 01	704	0.2+	0.3+
1991 09 04	675	0.1−	0.6+	1998 03 04	704	1.4−	0.0	1998 04 01	704	0.3+	0.1+
1991 09 04	675	1.9+	0.4+	1998 03 04	704	0.9−	0.3−	1998 04 01	704	0.9+	0.4−
1991 09 07	675	0.3+	0.6−	1998 03 04	704	1.9−	1.4−	1998 04 01	704	1.0+	0.3−
1991 09 07	675	0.2+	0.5+	1998 03 24	566	0.2−	0.2+	1998 04 01	704	0.6+	0.0
1998 02 24	566	0.4+	0.6−	1998 03 24	566	0.4−	0.5+	1998 04 18	704	0.7+	0.4+
1998 02 24	566	0.5+	0.5−	1998 03 24	566	0.3−	0.1+	1998 04 18	704	0.4−	0.9+
1998 02 24	566	0.3+	0.7−	1998 03 25	566	0.1+	0.1−	1998 04 18	704	0.8−	0.1+
1998 03 03	704	0.8+	0.1−	1998 03 25	566	0.1+	0.0	1998 04 18	704	0.1−	0.1+
1998 03 03	704	0.3+	0.5+	1998 03 25	566	0.1−	0.0	1998 04 18	704	0.1+	0.5−
1998 03 03	704	0.8+	0.4−	1998 03 31	704	0.6−	0.0				
1998 03 03	704	0.9+	1.0+	1998 03 31	704	0.1−	0.0				

1998 FR_{74} = 1998 FU_{131} = 1992 SD_6

Id. S. Nakano (d, *MPC* 33590), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	90.72933		(2000.0)		**P**		**Q**
n	0.26666236	ω	56.92458		−0.92352240		−0.38256334
a	2.3905339	Ω	100.56993		+0.34194515		−0.85362792
e	0.1550046	i	1.59817		+0.17372361		−0.35350342
P	3.70	H	16.2	G	0.15	U	4

Residuals in seconds of arc

1992 09 26	691	0.4+	0.0	1998 03 20	704	0.2+	0.6−	1998 03 25	113	0.0	0.9+
1992 09 26	691	0.1+	0.0	1998 03 20	704	0.1+	0.7+	1998 03 26	704	1.2+	0.4+
1992 09 26	691	0.5+	0.5+	1998 03 20	704	0.0	0.1+	1998 03 26	704	0.6−	1.5−
1992 09 27	691	0.0	0.1−	1998 03 20	704	0.9+	0.1+	1998 03 26	704	0.5−	0.9−
1992 09 27	691	1.4+	0.2+	1998 03 24	113	0.3−	0.6−	1998 04 03	691	0.2+	0.0
1992 09 27	691	0.4−	0.1−	1998 03 24	113	0.5−	0.7−	1998 04 03	691	0.0	0.1+
1992 09 28	691	1.0−	0.0	1998 03 24	113	0.5−	0.5−	1998 04 03	691	0.1+	0.3+

1992 09 28	691	1.0−	0.5−	1998 03 25	113	0.2−	0.7+	
1998 03 20	704	0.5−	0.4+	1998 03 25	113	0.5+	1.0+	

1998 HY$_{44}$ = 1977 RG$_{16}$ = 1994 LM$_{8}$

Id. G. V. Williams (*MPC* 32266), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	333.52896		(2000.0)		**P**		**Q**
n	0.22161401	ω	39.17938		+0.53717049		+0.84343291
a	2.7044019	Ω	263.31334		−0.77595546		+0.49029220
e	0.0733813	i	0.47849		−0.33066750		+0.21962351
P	4.45	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1977 09 09	675	0.7+	1.5−	1998 03 25	704	0.9+	0.4+	1998 04 20	704	0.5−	1.3−
1977 09 10	675	0.5+	1.3−	1998 03 29	704	1.8+	0.5−	1998 04 20	704	1.0+	2.1−
1994 06 08	809	0.5−	0.6+	1998 03 29	704	0.1+	1.2−	1998 04 20	704	0.7−	0.3+
1994 06 08	809	0.8+	0.2−	1998 03 29	704	1.5+	2.3+	1998 04 21	704	1.3+	2.6−
1994 06 08	809	1.0−	0.1−	1998 03 29	704	1.2+	0.7+	1998 04 21	704	1.3−	0.6+
1994 06 09	809	1.8+	1.3+	1998 03 29	704	0.4+	0.5+	1998 04 21	704	0.7+	0.8−
1994 06 09	809	0.3−	0.8+	1998 04 01	704	0.3−	1.0−	1998 04 21	704	0.1−	2.1−
1994 06 09	809	0.6−	0.0	1998 04 01	704	0.8−	0.5+	1998 04 21	704	0.0	0.2−
1998 03 25	704	0.1−	0.4+	1998 04 01	704	0.2−	0.8+	1998 04 22	704	0.5−	1.2+
1998 03 25	704	1.7+	0.2−	1998 04 01	704	2.2−	0.1−	1998 04 22	704	0.1−	0.3+
1998 03 25	704	1.1+	0.5−	1998 04 01	704	1.6−	0.6−	1998 04 22	704	0.3+	1.3−
1998 03 25	704	0.7−	0.1−	1998 04 20	704	0.3−	1.3+	1998 04 22	704	3.9−	1.3+

1998 HS$_{100}$ = 1976 GD$_{1}$ = 1992 EX$_{34}$

Id. A. Gnädig (*MPC* 32270), G. V. Williams, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	158.48526		(2000.0)		**P**		**Q**
n	0.18460479	ω	301.49027		−0.24579141		−0.96920723
a	3.0547387	Ω	162.71933		+0.90554994		−0.23510031
e	0.0837787	i	2.88757		+0.34578302		−0.07324749
P	5.34	H	13.3	G	0.15	U	3

Residuals in seconds of arc

1976 04 01	095	0.1−	0.3−	1998 04 22	704	0.9−	1.3+	1998 05 18	699	0.3+	0.2−
1992 03 03	809	1.3−	0.1+	1998 04 22	704	1.4−	1.1−	1998 05 22	704	0.6+	0.8+
1992 03 06	809	1.3+	0.0	1998 04 22	704	0.6−	0.2−	1998 05 22	704	0.7−	0.9+
1997 01 17	691	0.1−	0.3−	1998 04 22	704	1.9−	0.2−	1998 05 22	704	0.2+	0.9+
1997 01 17	691	0.1−	0.4−	1998 04 30	566	0.0	0.6+	1998 05 22	704	(2.5+	0.0)
1997 01 17	691	0.1−	0.2−	1998 04 30	566	0.6+	0.7−	1998 05 24	704	0.4+	0.6+
1997 03 31	704	0.4+	1.4+	1998 04 30	566	0.5−	0.8+	1998 05 24	704	0.0	0.8−
1997 03 31	704	(2.5+	0.7−)	1998 05 01	704	0.2+	0.7+	1998 05 24	704	0.2+	0.6+
1998 04 21	704	0.0	0.3+	1998 05 01	704	0.5+	0.5+	1998 05 24	704	0.3−	1.4−
1998 04 21	704	0.2+	0.4−	1998 05 01	704	0.3+	0.0	1998 05 24	704	(5.6−	5.0+)
1998 04 21	704	0.5−	0.2−	1998 05 01	704	0.8+	0.6+	1998 05 28	699	0.3+	0.5+
1998 04 21	704	0.0	1.2−	1998 05 01	704	0.9+	1.4−	1998 05 28	699	1.0−	1.1−
1998 04 21	704	0.2+	0.6−	1998 05 18	699	0.7+	0.6+	1998 05 28	699	1.0+	0.2−
1998 04 22	704	0.0	0.1−	1998 05 18	699	0.2+	0.5−				

1998 HN$_{115}$ = 1985 SQ = 1986 XW$_{4}$ = 1989 LL$_{1}$ = 1996 XP$_{23}$

Id. G. V. Williams (*MPC* 32271, unpublished), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	3.88740		(2000.0)		**P**		**Q**
n	0.21133089	ω	151.29887		+0.18069933		+0.97392373
a	2.7914342	Ω	128.77149		−0.93265548		+0.21395882
e	0.1271811	i	10.13453		−0.31225230		−0.07545981
P	4.66	H	13.2	G	0.15	U	3

Residuals in seconds of arc

1985 09 17	801	0.4−	0.9+	1997 02 14	691	0.4+	0.1−	1998 05 23	704	0.6+	0.3+
1986 12 05	010	(7.3+	0.3−)	1997 02 14	691	0.6+	0.1−	1998 05 23	704	0.6+	1.0+
1986 12 05	010	(4.1+	0.5−)	1997 02 14	691	0.1+	0.3+	1998 05 23	704	0.0	0.1+
1986 12 05	010	0.4+	0.1+	1998 03 24	704	0.5+	0.5−	1998 05 23	704	0.9+	0.7+
1989 06 02	400	(3.3−	10.8−)	1998 03 24	704	0.3+	0.1−	1998 05 23	704	1.3−	0.7+
1989 06 02	400	(3.6−	9.1−)	1998 03 24	704	0.0	0.8−	1998 05 27	699	0.9+	0.2−
1989 06 02	400	(7.1−	7.7−)	1998 03 24	704	0.6−	1.1−	1998 05 27	699	0.6+	0.6+
1991 12 03	691	0.2+	0.6+	1998 03 24	704	1.0−	0.6+	1998 05 27	699	0.6+	0.2+
1991 12 03	691	0.3−	0.7+	1998 04 23	704	0.5−	0.2+	1998 05 28	704	0.8+	0.1−
1996 12 12	691	0.2+	0.3+	1998 04 23	704	0.3+	0.2+	1998 05 28	704	0.5+	0.1+
1996 12 12	691	0.2+	0.3+	1998 04 23	704	0.2+	0.1−	1998 05 28	704	0.7+	0.1+
1996 12 12	691	0.1+	0.3+	1998 04 23	704	0.4−	0.8−	1998 05 28	704	0.8+	1.0−
1996 12 13	691	0.2+	0.3+	1998 04 23	704	0.8−	1.0−	1998 05 28	704	0.7−	0.4+
1996 12 13	691	0.2+	0.3+	1998 04 24	704	0.0	0.5+	1998 06 17	704	(0.0	2.9+)
1996 12 13	691	0.0	0.3+	1998 04 24	704	0.3−	0.0	1998 06 17	704	1.7−	1.6+
1997 02 04	691	0.8−	0.4−	1998 04 24	704	0.2−	0.1−	1998 06 17	704	0.4−	0.1+
1997 02 04	691	0.6−	0.4−	1998 04 24	704	0.3−	0.1−	1998 06 17	704	(2.6−	0.5−)
1997 02 04	691	0.7−	0.3−	1998 04 24	704	0.4+	0.2+				

1998 KL$_{48}$ = 1991 JW$_{4}$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	336.41957		(2000.0)		**P**		**Q**
n	0.28720688	ω	244.86881		+0.99357607		−0.02694796
a	2.2751297	Ω	116.51046		+0.06350916		+0.93664862
e	0.1451617	i	7.05521		−0.09366525		+0.34923225
P	3.43	H	15.0	G	0.15	U	2

Residuals in seconds of arc

1991 05 13	809	0.6+	0.7−	1997 01 18	327	0.7+	0.3+	1998 06 24	704	(1.6−	2.3+)
1991 05 13	809	0.4−	1.3−	1997 01 18	327	0.2−	0.5+	1998 06 24	704	0.5+	0.6+
1991 05 13	809	1.0−	1.0−	1998 05 22	704	0.6−	0.4+	1998 06 24	704	(0.6−	3.4+)
1991 05 17	809	(4.9−	1.4−)	1998 05 22	704	(2.9−	0.1+)	1998 06 24	704	0.3+	0.6+
1991 05 17	809	(4.9−	1.5−)	1998 05 22	704	0.7−	0.4−	1998 06 24	704	1.0+	0.0
1991 05 17	809	(3.6−	1.8−)	1998 05 24	704	0.9+	0.2−	1998 06 26	704	0.1−	0.4+
1992 11 18	691	0.1+	0.0	1998 05 24	704	0.5−	0.3−	1998 06 26	704	1.3+	1.4+
1992 11 18	691	0.0	0.3−	1998 05 24	704	0.0	0.4−	1998 06 26	704	0.5+	0.4+
1992 11 18	691	0.1+	0.4−	1998 05 24	704	0.6+	0.5−	1998 06 26	704	0.6−	0.9+
1997 01 18	327	0.1−	1.0+	1998 05 24	704	1.6−	0.6−	1998 06 26	704	0.3−	0.4+

1998 OH$_{6}$ = 1985 DZ$_{1}$ = 1990 BM$_{3}$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	177.94962		(2000.0)		**P**		**Q**
n	0.17559214	ω	353.77891		−0.93836309		−0.34463156
a	3.1583918	Ω	165.97340		+0.32166010		−0.89875268
e	0.1011880	i	6.28399		+0.12652862		−0.27105849
P	5.61	H	12.6	G	0.15	U	4

Residuals in seconds of arc

1985 02 17	809	1.2+	0.4−	1985 02 23	809	1.0+	0.5+	1990 01 24	033	0.2+	0.2−
1985 02 17	809	1.2+	0.4−	1985 02 23	809	1.1+	0.4+	1998 07 27	910	0.1−	0.3+
1985 02 17	809	1.6+	0.3−	1985 02 23	809	1.0+	0.5+	1998 07 27	910	0.0	0.2−
1985 02 18	809	1.1−	0.1+	1985 02 24	809	0.9−	0.4−	1998 07 27	910	0.0	0.2+
1985 02 18	809	0.8−	0.0	1985 02 24	809	0.8−	0.5−	1998 07 31	120	0.2+	0.8+
1985 02 18	809	0.6−	0.0	1985 02 24	809	0.6−	0.5−	1998 07 31	120	0.7+	2.0+
1985 02 20	809	1.1−	0.6+	1985 02 26	809	2.6−	0.9−	1998 08 01	120	1.0+	1.2−
1985 02 20	809	0.9−	0.5+	1985 02 26	809	2.5−	0.9−	1998 08 01	120	0.1−	0.6−
1985 02 20	809	0.6−	0.6+	1985 02 26	809	2.3−	0.9−	1998 08 01	120	0.6+	0.1+
1985 02 21	809	0.3−	0.6−	1985 02 27	809	3.0+	0.4+	1998 08 01	120	0.7−	1.0−
1985 02 21	809	0.0	0.6−	1985 02 27	809	3.3+	0.4+	1998 08 01	120	0.5−	1.0+
1985 02 21	809	0.1+	0.7−	1985 02 27	809	3.4+	0.4+	1998 08 01	120	2.4−	0.5−
1985 02 22	809	0.3−	0.0	1985 02 28	809	0.8−	1.4+	1998 08 01	910	0.4+	0.3−
1985 02 22	809	0.0	0.1−	1985 02 28	809	0.7−	1.1+	1998 08 02	910	0.3+	0.4−
1985 02 22	809	0.1+	0.0	1990 01 24	033	0.2−	0.3+	1998 08 02	910	0.5+	0.2−

1998 OU$_{9}$ = 1979 TM$_{2}$ = 1979 WW$_{7}$ = 1996 DA$_{5}$

Id. G. V. Williams (*MPC* 32490), A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	251.18377		(2000.0)		**P**		**Q**
n	0.19932831	ω	203.98232		−0.27170138		−0.96225991
a	2.9023964	Ω	261.78608		+0.88544907		−0.24371975
e	0.0154495	i	0.88600		+0.37703887		−0.12106422
P	4.94	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1979 10 14	095	0.8−	0.7−	1998 07 26	809	1.4+	2.0−	1998 08 23	704	0.2+	0.8−
1979 11 22	095	1.1+	0.2+	1998 07 26	809	(1.2+	2.2−)	1998 08 23	704	(2.8−	1.8−)
1993 10 20	691	0.2−	0.3+	1998 07 27	809	(2.4+	1.9−)	1998 08 28	699	0.6−	1.3+
1993 10 20	691	0.9−	0.3+	1998 07 27	809	(2.6+	1.8−)	1998 08 28	699	0.1−	0.2−
1993 10 20	691	1.1+	1.0−	1998 07 27	809	(2.0+	2.2−)	1998 08 28	699	0.5+	0.6+
1996 02 16	010	0.1−	0.3−	1998 08 17	704	0.7+	0.3−	1998 09 18	958	0.5−	0.5−
1996 02 16	010	0.6−	0.7−	1998 08 17	704	0.9+	0.1−	1998 09 18	958	0.1+	0.3−
1996 02 16	010	0.2+	0.6−	1998 08 17	704	0.0	0.9+	1998 09 19	958	1.6−	0.1+
1996 02 17	010	(0.0	2.7−)	1998 08 17	704	0.2+	0.5−	1998 09 19	958	0.5−	1.8+
1996 02 17	010	(0.0	2.6−)	1998 08 17	704	0.0	0.0	1998 09 20	958	(2.1+	3.6+)
1996 02 17	010	(0.3−	2.7−)	1998 08 21	566	0.6+	0.7−	1998 09 21	699	0.0	0.3−
1996 04 18	566	0.1+	0.2−	1998 08 21	566	0.4+	0.8−	1998 09 21	699	0.3−	0.1−
1996 04 18	566	0.3+	0.0	1998 08 21	566	(0.6+	2.4−)	1998 09 21	699	0.5−	0.2+
1996 04 18	566	0.7−	0.8−	1998 08 23	704	0.3+	0.8−				
1998 07 26	809	(2.3+	1.8−)	1998 08 23	704	0.8−	0.7+				

1998 QZ = 1992 LG$_2$ = 1993 RH$_{12}$

Id. B. G. Marsden (*MPC* 32690), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	119.94900		(2000.0)		**P**		**Q**
n	0.20518851	ω	92.11190		−0.02929225		+0.99956884
a	2.8468682	Ω	176.20775		−0.92883800		−0.02647027
e	0.0668481	i	1.75588		−0.36932632		−0.01270699
P	4.80	H	13.6	G	0.15	U	1

Residuals in seconds of arc

1992 06 03	809	0.1+	0.1+	1998 09 16	684	0.2+	0.4+	1998 10 14	704	(1.2−	2.3+)
1992 06 03	809	0.0	0.0	1998 09 18	684	0.5+	0.2+	1998 10 14	699	0.2+	0.7+
1992 06 03	809	0.1−	0.3+	1998 09 18	684	0.2+	0.2+	1998 10 14	699	0.3−	0.4+
1993 09 14	809	(2.6+	0.8+)	1998 09 20	691	0.5−	0.3−	1998 10 14	699	1.4+	0.6+
1993 09 14	809	1.0+	0.5+	1998 09 20	691	0.8−	0.5−	1998 10 15	704	0.6+	0.1−
1993 09 14	809	0.3+	0.2−	1998 09 20	691	0.3+	0.4−	1998 10 15	704	1.2+	0.5−
1993 09 19	809	0.4+	1.2−	1998 09 21	691	0.4−	0.1+	1998 10 15	704	0.6+	0.4+
1993 09 19	809	(0.6+	2.4−)	1998 09 21	691	0.4−	0.2−	1998 10 15	704	1.3+	0.5+
1993 09 19	809	0.8−	1.5−	1998 09 21	691	0.8−	0.2−	1998 10 15	704	0.3−	0.3−
1996 02 15	566	0.0	0.0	1998 09 26	704	0.7−	0.1+	1998 10 17	327	0.0	0.3+
1996 02 15	566	0.0	0.1+	1998 09 26	704	0.0	0.1+	1998 10 17	327	0.2+	0.2+
1996 02 15	566	0.0	0.0	1998 09 26	704	0.9−	1.0+	1998 10 17	327	0.1−	0.7+
1998 08 19	684	0.1−	0.4+	1998 09 26	704	0.9−	0.1+	1998 10 19	699	0.1+	0.8+
1998 08 19	684	0.1−	0.2+	1998 09 26	704	0.5−	0.3−	1998 10 19	699	0.2−	0.7+
1998 08 19	684	0.0	0.3+	1998 09 27	704	0.2−	0.1−	1998 10 19	699	0.8+	0.2+
1998 08 20	684	0.0	0.2+	1998 09 27	704	0.1−	0.1−	1998 10 28	704	0.4+	0.7−
1998 08 20	684	0.1+	0.1−	1998 09 27	704	0.9−	0.1+	1998 10 28	704	0.4−	0.7−
1998 08 26	684	0.2+	0.1+	1998 09 27	691	0.6−	0.4−	1998 10 28	704	0.3+	1.4−
1998 08 26	684	0.0	0.2−	1998 09 27	704	0.4+	0.4+	1998 10 28	704	0.2−	0.4−
1998 08 27	684	0.1+	0.5+	1998 09 27	691	0.6−	0.3−	1998 10 29	704	0.7+	0.1−
1998 08 27	684	0.2+	0.5+	1998 09 27	704	0.3−	0.2+	1998 10 29	704	1.7−	0.3+
1998 09 15	684	0.1+	0.2+	1998 09 27	691	0.7−	0.2−	1998 10 29	704	0.1+	0.4+
1998 09 15	684	0.2+	0.2+	1998 10 11	684	0.0	0.3−	1998 10 29	704	1.8−	0.6−
1998 09 15	684	0.1+	0.2+	1998 10 11	684	0.1−	0.3−	1998 10 29	704	1.0−	0.1−
1998 09 15	699	1.0+	0.3+	1998 10 14	704	1.0+	1.2−	1998 11 11	699	0.5−	0.1+
1998 09 15	699	1.0+	0.4+	1998 10 14	704	1.0−	0.7+	1998 11 11	699	1.4+	0.5−
1998 09 15	699	0.6+	0.1+	1998 10 14	704	(2.1−	1.7−)	1998 11 11	699	0.1−	0.9−
1998 09 16	684	0.2+	0.4+	1998 10 14	704	0.7+	0.3+				

1998 QT$_{51}$ = 1935 QL = 1935 SP = 1987 KH = 1991 RV$_{18}$

Id. G. V. Williams (*MPC* 32715), A. Milani

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	66.43574		(2000.0)		**P**		**Q**
n	0.28159363	ω	355.66437		+0.67556737		+0.73326863
a	2.3052648	Ω	316.80835		−0.67303078		+0.57067746
e	0.1493507	i	6.45776		−0.30106194		+0.36965437
P	3.50	H	14.6	G	0.15	U	4

Residuals in seconds of arc

1935 08 31	024	(6.2−	0.4−)	1998 08 23	704	1.0−	0.3+	1998 10 11	699	0.4+	0.4+
1935 09 23	754	0.0	0.7−	1998 08 23	704	0.1+	0.5+	1998 10 11	699	0.1+	0.4+
1935 09 23	754	0.5+	0.8+	1998 08 23	704	0.2−	1.5−	1998 10 12	704	0.9+	1.2−
1987 05 22	675	(64.0+	0.2+)	1998 08 23	704	1.6−	0.2−	1998 10 12	704	0.1+	1.9+
1987 05 23	675	(69.7+	0.9−)	1998 09 14	704	0.4+	0.4+	1998 10 12	704	0.3−	1.1−
1991 09 14	675	0.0	0.7−	1998 09 14	704	0.2−	1.2+	1998 11 14	699	0.1−	1.3−
1991 09 14	675	0.5−	1.3−	1998 09 14	704	0.2+	0.8+	1998 11 14	699	0.6−	0.5−
1991 09 15	675	0.1+	1.8−	1998 09 14	704	0.5+	0.1−	1998 11 14	699	1.4+	0.4−
1991 09 15	675	0.7+	0.9−	1998 09 18	704	1.0+	0.3−	1998 12 09	704	0.2+	0.3−
1991 09 17	675	0.6−	1.1−	1998 09 18	704	0.6+	0.5+	1998 12 09	704	0.3−	0.6+
1991 09 17	675	0.8−	1.3−	1998 09 18	704	0.5+	0.2−	1998 12 09	704	0.7−	0.7+
1998 08 17	704	0.7−	0.7+	1998 09 18	704	0.4−	1.6+	1998 12 09	704	0.9−	2.1+
1998 08 17	704	0.5−	0.1−	1998 09 18	704	0.5−	1.0+	1998 12 09	704	1.1+	0.7+
1998 08 17	704	1.9−	0.2+	1998 09 27	699	0.9+	0.2+	1998 12 30	699	0.7−	0.1−
1998 08 17	704	0.4−	0.6−	1998 09 27	699	1.0+	0.4+	1998 12 30	699	0.6−	0.1−
1998 08 17	704	0.3−	0.4+	1998 09 27	699	1.4+	0.5+	1998 12 30	699	0.3−	0.3−
1998 08 23	704	0.8+	0.8+	1998 10 11	699	0.1+	0.2+				

1998 QJ$_{53}$ = 1996 DH$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	42.56561		(2000.0)		**P**		**Q**
n	0.23653873	ω	20.85408		+0.96467646		+0.25419146
a	2.5894123	Ω	324.19289		−0.25533786		+0.83758130
e	0.2199488	i	6.79091		−0.06482208		+0.48357447
P	4.17	H	15.0	G	0.15	U	4

Residuals in seconds of arc

1996 02 16	010	0.7+	2.2+	1998 08 27	699	0.0	0.0	1998 09 17	699	0.1+	0.5−
1996 02 16	010	0.5+	1.2+	1998 08 27	699	0.6+	0.0	1998 09 18	704	0.4−	0.1−
1996 02 16	010	1.8+	1.8+	1998 08 28	699	0.9−	0.0	1998 09 18	704	0.4−	0.3+
1996 02 17	010	1.5−	1.6−	1998 08 28	699	0.5+	0.5+	1998 09 18	704	0.0	0.0
1996 02 17	010	0.9−	1.6−	1998 08 28	699	0.0	0.2+	1998 09 18	704	0.9+	0.7−
1996 02 17	010	0.5−	1.9−	1998 09 14	704	0.2+	0.0	1998 09 18	704	0.8−	0.5−
1998 08 20	699	0.2+	0.1+	1998 09 14	704	0.1+	1.1+	1998 11 20	699	0.0	0.6−
1998 08 20	699	0.1−	0.1−	1998 09 14	704	0.3−	0.5+	1998 11 20	699	0.1+	0.2+
1998 08 20	699	0.3−	0.9−	1998 09 17	699	0.1−	0.5+	1998 11 20	699	0.1−	0.2+
1998 08 27	699	0.2+	0.1+	1998 09 17	699	0.3+	0.2−				

1998 QW$_{54}$ = 1964 WS = 1980 PW$_3$ = 1981 UA$_{17}$ = 1983 CQ$_7$ = 1986 RP$_4$ = 1996 HA$_8$ = 1996 JW$_{16}$

Id. G. V. Williams (*MPC* 32977, unpublished), A. Milani (*MPC* 34220)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	2.76673		(2000.0)		**P**		**Q**
n	0.17027086	ω	175.68869		+0.90100862		−0.43185891
a	3.2238575	Ω	210.00362		+0.39551258		+0.85663243
e	0.0366621	i	4.70349		+0.17819444		+0.28227427
P	5.79	H	12.7	G	0.15	U	1

Residuals in seconds of arc

1964 11 27	330	0.2−	1.2+	1998 08 27	699	0.8−	0.9+	1998 09 26	704	0.4−	1.2−
1964 12 03	330	(8.5−	10.9+)	1998 08 28	699	1.7+	0.8−	1998 09 27	704	0.8−	0.1+
1980 08 03	675	0.7+	0.9+	1998 08 28	699	1.2+	0.0	1998 09 27	704	0.3+	0.8+
1980 08 05	675	1.4+	1.3+	1998 08 28	699	1.4+	0.3+	1998 09 27	704	0.1+	1.3+
1981 10 24	095	2.5−	2.7+	1998 09 14	704	0.2−	0.1+	1998 09 27	704	0.4+	0.1+
1983 02 10	095	1.4+	0.6+	1998 09 14	704	0.6−	0.1−	1998 09 27	704	0.2−	0.2+
1986 09 06	071	(3.6−	0.2−)	1998 09 14	704	0.8−	0.6−	1998 10 19	699	0.1+	0.0
1986 09 06	071	2.1−	1.4−	1998 09 15	699	0.3−	0.4+	1998 10 19	699	0.2+	0.4+

1996 04 17	809	1.1+	2.8+	1998 09 15	699	0.0	0.2+	1998 10 19	699	0.3−	0.7+
1996 04 17	809	0.1+	1.7+	1998 09 15	699	0.3−	0.2+	1998 11 11	699	0.0	0.2−
1996 04 17	809	0.4−	1.5+	1998 09 18	704	0.2−	0.1−	1998 11 11	699	0.0	0.1+
1996 04 18	809	0.1+	0.7−	1998 09 18	704	0.7+	0.7−	1998 11 11	699	0.3−	1.3+
1996 04 18	809	0.1+	0.7−	1998 09 18	704	0.7−	0.6+	1998 12 08	699	0.7−	1.2+
1996 04 18	809	0.6−	1.3−	1998 09 18	704	0.7+	0.7−	1998 12 08	699	0.4+	1.2−
1996 05 13	566	0.0	0.7+	1998 09 18	704	0.3+	0.9−	1998 12 08	699	0.5+	1.0−
1996 05 13	566	0.3+	0.8+	1998 09 26	704	0.9−	0.5+	1998 12 15	699	0.0	0.0
1996 05 13	566	0.3−	0.4+	1998 09 26	704	0.0	0.5−	1998 12 15	699	0.2−	0.0
1998 08 27	699	0.7+	0.5+	1998 09 26	704	0.2+	0.1+	1998 12 15	699	0.3−	0.1−
1998 08 27	699	1.4+	0.7−	1998 09 26	704	0.8−	0.1−				

1998 QM$_{55}$ = 1982 UB$_{11}$ = 1982 VQ$_{8}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	354.96865		(2000.0)		**P**	**Q**	
n	0.30707266	ω	265.24523		+0.26942244	−0.96301967	
a	2.1759151	Ω	169.12414		+0.88802979	+0.24757398	
e	0.1013310	i	0.65567		+0.37257837	+0.10630259	
P	3.21	H	15.3	G	0.15	U	4

Residuals in seconds of arc

1982 10 25	095	1.5+	2.2+	1998 10 10	699	0.4−	0.8−	1998 11 11	704	0.2−	0.5+
1982 11 09	095	1.4−	2.1−	1998 10 20	699	0.4+	0.2+	1998 11 11	704	0.4+	1.2−
1998 08 26	910	0.3−	0.2+	1998 10 20	699	0.0	0.2+	1998 11 11	704	0.5+	0.0
1998 08 26	910	0.5−	0.1+	1998 10 20	699	0.1+	0.1+	1998 11 14	699	0.3−	1.4+
1998 08 26	910	0.4−	0.1+	1998 11 10	704	0.4−	1.3−	1998 11 14	699	0.6−	0.4+
1998 08 31	910	0.1+	0.0	1998 11 10	704	0.6+	0.1+	1998 11 14	699	0.3+	0.7+
1998 08 31	910	0.1+	0.1−	1998 11 10	704	0.7−	0.6−	1999 01 06	699	0.3−	0.2+
1998 08 31	910	0.3+	0.2+	1998 11 10	704	1.2+	1.0+	1999 01 06	699	0.2−	0.1+
1998 10 10	699	0.5+	0.5−	1998 11 11	704	0.5−	0.5−				
1998 10 10	699	0.0	0.3−	1998 11 11	704	0.1−	0.1−				

1998 QH$_{93}$ = 1972 VA$_{1}$ = 1985 WD

Id. A. Gnädig, G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	349.07119		(2000.0)		**P**	**Q**	
n	0.22682212	ω	212.20336		−0.11962079	−0.97702218	
a	2.6628443	Ω	245.19939		+0.94711955	−0.05901179	
e	0.2258485	i	11.20539		+0.29775061	−0.20480546	
P	4.35	H	13.5	G	0.15	U	2

Residuals in seconds of arc

1972 11 09	095	0.7−	1.5−	1998 08 31	704	0.9−	0.2−	1998 11 24	704	1.6+	0.4−
1978 02 18	413	0.7+	0.5+	1998 11 10	704	0.9+	0.2−	1998 12 08	699	0.2−	0.5+
1978 02 18	413	1.4−	1.5−	1998 11 10	704	0.9+	1.3−	1998 12 08	699	0.0	0.6+
1982 01 23	413	0.7+	0.7+	1998 11 10	704	1.9+	0.2−	1998 12 08	699	0.2+	0.8+
1982 01 23	413	0.2+	0.3+	1998 11 10	704	(1.1+	2.5−)	1998 12 08	327	0.1−	0.2+
1985 11 10	095	(2.0+	7.8+)	1998 11 10	704	1.6−	0.8−	1998 12 08	327	0.3−	0.1+
1985 11 17	054	0.6+	2.0+	1998 11 11	704	0.1+	0.2+	1998 12 08	327	0.1−	0.1−
1985 11 20	095	(1.0+	3.6+)	1998 11 11	704	0.2+	0.4−	1998 12 14	691	0.2−	0.0
1991 04 13	413	0.5−	0.3+	1998 11 11	704	1.2+	0.5−	1998 12 14	691	0.4−	0.0
1991 04 13	413	0.5+	0.8−	1998 11 11	704	1.4+	0.6+	1998 12 14	691	0.3−	0.0
1998 08 28	704	1.8−	1.9+	1998 11 21	704	0.3−	0.4+	1999 02 04	704	0.6−	0.6+
1998 08 28	704	0.4+	0.0	1998 11 21	704	0.9−	0.2−	1999 02 04	704	0.6−	0.1+
1998 08 28	704	0.3−	0.8+	1998 11 21	704	1.0−	0.3−	1999 02 04	704	0.2−	0.1+
1998 08 28	704	0.8−	0.6+	1998 11 21	704	0.7−	1.0−	1999 02 04	704	0.6−	0.4+
1998 08 28	704	(2.8−	0.3+)	1998 11 21	704	0.0	1.0−	1999 02 15	699	0.9−	0.3+
1998 08 31	704	0.4+	0.5−	1998 11 24	704	0.3−	0.2−	1999 02 15	699	0.1+	0.5+
1998 08 31	704	1.2+	0.8+	1998 11 24	704	1.0+	1.1−	1999 02 15	699	0.8−	0.4+
1998 08 31	704	0.6−	0.4+	1998 11 24	704	0.2+	0.8−				
1998 08 31	704	1.1−	0.1−	1998 11 24	704	0.5+	0.0				

1998 RK$_{47}$ = 1987 NO = 1987 OH = 1991 SP$_{5}$

Id. G. V. Williams (*MPC* 32993, unpublished), W. Landgraf (d, *MPC* 12432)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	77.66523		(2000.0)		**P**	**Q**	
n	0.27643162	ω	351.79283		+0.55280808	+0.82937381	
a	2.3338749	Ω	311.72390		−0.75826016	+0.46038987	
e	0.1364053	i	6.22148		−0.34560781	+0.31651265	
P	3.57	H	14.3	G	0.15	U	4

Residuals in seconds of arc

1987 06 24	809	(3.2+	0.1+)	1998 09 14	704	0.6+	0.5−	1998 09 27	704	1.5−	0.4−
1987 07 01	809	0.9+	0.6+	1998 09 18	704	0.1−	0.7−	1998 09 27	699	0.0	0.9−
1987 07 01	809	0.7+	1.1+	1998 09 18	704	0.4−	0.0	1998 09 27	704	1.2−	1.0−
1987 07 01	809	1.4+	0.3+	1998 09 18	699	1.0+	0.3−	1998 09 27	699	0.0	0.9−
1987 07 02	809	0.0	1.8+	1998 09 18	704	0.2+	0.4+	1998 09 27	699	0.6+	0.5−
1987 07 02	809	0.8−	0.4+	1998 09 18	704	0.1−	0.2−	1998 11 14	699	1.1−	0.3+
1987 07 02	809	(5.1−	2.8+)	1998 09 18	699	0.8+	0.4−	1998 11 14	699	0.6+	0.3−
1987 07 21	046	1.1−	1.1−	1998 09 18	704	0.7−	0.7+	1998 11 14	699	1.5+	0.6+
1987 07 21	046	1.6−	1.8−	1998 09 18	699	0.6+	0.3−	1998 11 16	566	1.0+	0.3−
1991 09 17	095	0.3−	1.9+	1998 09 26	704	0.4+	0.5−	1998 11 16	566	0.9+	0.8−
1998 08 27	699	0.6+	0.6+	1998 09 26	704	0.4−	0.7−	1998 11 16	566	0.9+	0.4−
1998 08 27	699	0.9+	0.5+	1998 09 26	704	0.3−	0.5+	1998 12 09	704	1.8−	0.1+
1998 08 27	699	1.0+	0.4+	1998 09 26	704	0.2+	0.6−	1998 12 09	704	1.6−	2.0+
1998 09 14	704	0.0	0.2+	1998 09 26	704	0.2−	0.0	1998 12 09	704	1.6−	0.3−
1998 09 14	704	0.4−	0.3+	1998 09 27	704	0.2−	0.4+	1998 12 09	704	1.2−	1.5+
1998 09 14	704	0.2+	0.4+	1998 09 27	704	0.5−	0.4+	1998 12 09	704	0.7+	0.1+
1998 09 14	704	0.9+	0.4−	1998 09 27	704	0.4−	0.2+				

1998 RG$_{49}$ = 1985 SF$_{4}$ = 1991 LX$_{5}$ = 1997 EY$_{18}$

Id. A. Doppler (*MPC* 33271, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	86.86144		(2000.0)		**P**	**Q**	
n	0.30350772	ω	108.63043		+0.38975352	+0.92091063	
a	2.1929205	Ω	184.31494		−0.86359780	+0.36399083	
e	0.1461943	i	3.02955		−0.31982970	+0.13940692	
P	3.25	H	15.5	G	0.15	U	2

Residuals in seconds of arc

1985 09 20	095	0.6−	2.2+	1998 09 14	704	0.0	0.1+	1998 09 26	704	0.3+	0.6−
1991 06 07	675	0.0	1.2−	1998 09 14	704	0.2+	0.2−	1998 09 26	704	0.5+	0.9−
1991 06 07	675	(6.8+	0.6−)	1998 09 14	704	0.6+	0.4+	1998 09 26	704	0.0	1.1−
1991 06 09	675	0.9−	1.1−	1998 09 14	704	0.3−	0.4+	1998 09 26	704	0.7−	1.8−
1997 02 06	566	0.1+	1.1−	1998 09 14	704	0.2+	0.7+	1998 09 26	704	0.4−	1.2−
1997 02 06	566	0.4+	0.9−	1998 09 18	704	0.3+	0.2+	1998 09 27	704	0.6+	0.2−
1997 02 06	566	0.5+	0.9−	1998 09 18	704	0.5−	0.1−	1998 09 27	704	1.4+	0.4+
1997 03 03	691	0.3−	0.8−	1998 09 18	704	0.1−	0.2−	1998 09 27	704	0.2+	0.5−
1997 03 03	691	0.2−	0.7−	1998 09 18	704	0.7+	0.6−	1998 09 27	704	0.4+	0.5−
1997 03 03	691	0.2−	0.7−	1998 09 18	704	0.4−	0.2+	1998 09 27	704	0.1−	0.1−
1997 03 11	691	0.3−	0.0	1998 09 25	699	0.8+	0.1+	1998 12 08	704	2.2−	0.4−
1997 03 11	691	0.6−	0.1−	1998 09 25	699	0.0	0.5−	1998 12 08	704	0.8−	1.4−
1997 03 11	691	0.7−	0.1−	1998 09 25	699	0.4+	0.1−				

1998 RL$_{59}$ = 1951 RW = 1989 UQ$_{7}$ = 1993 PP$_{4}$

Id. G. V. Williams (*MPC* 33000, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	327.94002		(2000.0)		**P**	**Q**	
n	0.21014437	ω	223.63677		+0.35148713	−0.93582971	
a	2.8019317	Ω	205.81790		+0.87453424	+0.33814873	
e	0.0827401	i	3.43159		+0.33413570	+0.09938912	
P	4.69	H	14.1	G	0.15	U	1

Residuals in seconds of arc

1951 09 04	024	(5.3+	3.2−)	1996 04 20	566	0.1−	0.3+	1998 09 26	704	0.3−	0.4+
1989 10 23	033	0.5+	0.0	1996 04 20	566	0.8+	0.3+	1998 09 26	704	0.0	0.2+
1989 10 23	033	0.6+	0.7−	1996 04 20	566	1.7−	0.1+	1998 09 26	704	0.6+	0.9−
1989 10 25	033	0.5−	0.7−	1998 09 14	704	0.1−	0.2+	1998 09 26	704	0.5−	0.3+
1989 10 25	033	0.1+	0.5−	1998 09 14	704	0.4+	0.0	1998 09 26	704	0.8−	0.6+

1989 10 27	033	0.1−	1.2−	1998 09 14	704	0.7−	1.4+	1998 09 27	704	0.2−	0.4+
1993 08 15	010	1.5+	1.2−	1998 09 16	699	1.2+	0.5+	1998 09 27	704	1.0−	0.6+
1993 08 15	010	0.4+	0.3−	1998 09 16	699	0.6+	0.5+	1998 09 27	704	0.6−	0.8+
1993 08 16	010	0.4−	0.6−	1998 09 16	699	1.5−	1.2+	1998 09 27	704	0.2−	0.3+
1993 08 16	010	0.0	0.2−	1998 09 18	704	0.8+	0.5−	1998 09 27	704	0.6−	0.4+
1993 08 16	010	0.2−	1.1−	1998 09 18	704	0.2−	1.4−	1998 10 14	699	0.2−	0.7+
1996 03 18	566	0.3+	0.0	1998 09 18	704	0.3+	0.5−	1998 10 14	699	0.3+	0.2+
1996 03 18	566	0.3+	0.3−	1998 09 18	704	0.1+	0.3−	1998 10 14	699	0.1+	0.4+
1996 03 18	566	0.3+	0.3−	1998 09 18	704	0.8+	0.4−				

1998 RH$_{71}$ = 1984 UH$_2$ = 1992 GP$_4$

Id. G. V. Williams (*MPC* 33007, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	24.07178		(2000.0)		**P**	**Q**	
n	0.21046923	ω	324.88411		+0.99483439	−0.08593660	
a	2.7990477	Ω	40.15246		+0.10113891	+0.88465777	
e	0.2175755	i	4.80663		−0.00868656	+0.45825269	
P	4.68	H	13.7	G	0.15	U	3

Residuals in seconds of arc

1984 10 19	801	0.7−	1.3+	1998 09 18	704	1.0+	1.3−	1998 10 17	699	0.3+	0.3−
1992 04 04	809	0.1+	1.3+	1998 09 18	704	0.4−	0.4+	1998 10 17	699	0.3+	0.5−
1992 04 04	809	0.8−	0.4+	1998 09 18	704	0.2+	1.2−	1998 10 17	699	0.4+	0.6−
1992 04 04	809	1.5−	0.3−	1998 09 18	704	0.1−	0.3+	1998 10 27	120	0.2+	0.1−
1992 04 06	809	0.4+	0.0	1998 09 26	704	1.1−	0.0	1998 10 27	120	0.4+	0.0
1992 04 06	809	1.0+	0.6+	1998 09 26	704	0.2−	1.1+	1998 10 27	120	0.9+	0.2−
1992 04 06	809	1.6+	0.1−	1998 09 26	704	0.7−	0.3+	1998 10 27	120	0.6+	0.3−
1998 09 14	704	1.0+	0.2+	1998 09 26	704	0.6−	0.9+	1998 11 15	699	0.2−	0.8+
1998 09 14	704	0.4+	0.3−	1998 09 26	704	0.4−	0.6+	1998 11 15	699	0.4−	0.1+
1998 09 14	704	0.3−	1.1−	1998 09 27	704	0.5−	0.8+	1998 11 15	699	0.3−	0.1+
1998 09 17	699	0.4−	0.2+	1998 09 27	704	0.2+	0.5−	1998 12 08	699	0.7−	0.5+
1998 09 17	699	0.4−	0.4+	1998 09 27	704	0.3−	0.4+	1998 12 08	699	1.1−	0.6+
1998 09 17	699	0.3−	0.2+	1998 09 27	704	0.3+	0.1−	1998 12 08	699	0.7+	0.0
1998 09 18	704	0.9+	0.2+	1998 09 27	704	0.1+	1.2−				

1998 RC$_{80}$ = 1987 RO = 1987 SD$_{16}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	358.58937		(2000.0)		**P**	**Q**	
n	0.18372986	ω	242.81668		+0.78143309	−0.61869159	
a	3.0644289	Ω	155.14110		+0.61869510	+0.75132390	
e	0.1157267	i	11.12814		+0.08110921	+0.22963693	
P	5.36	H	13.1	G	0.15	U	4

Residuals in seconds of arc

1982 10 13	413	0.5−	0.4+	1987 09 25	095	(0.6−	3.2+)	1998 09 24	910	0.9+	0.5+
1982 10 13	413	0.2−	1.0−	1998 09 14	704	0.1−	0.4−	1998 09 24	910	0.7+	0.4+
1982 11 06	413	0.1−	0.3+	1998 09 14	704	0.1+	0.5−	1998 09 24	910	0.7+	0.5+
1982 11 06	413	0.2+	0.1+	1998 09 14	704	1.1−	1.5+	1998 10 18	699	0.1−	0.2−
1982 11 19	413	0.9+	0.0	1998 09 18	704	0.1−	0.4−	1998 10 18	699	0.1−	0.2−
1982 11 19	413	0.3−	0.4+	1998 09 18	704	0.5+	0.3+	1998 10 18	699	0.4+	0.4+
1987 09 03	809	1.4−	0.0	1998 09 18	704	1.2−	0.3−	1998 12 18	699	(0.2−	2.5−)
1987 09 03	809	0.1+	0.6−	1998 09 18	704	1.0−	0.1−	1998 12 18	699	0.2+	0.8+
1987 09 03	809	1.4+	0.6+	1998 09 18	704	0.3+	1.4−	1998 12 18	699	0.0	1.2−

1998 SG$_{30}$ = 1977 ET$_2$ = 1991 PL$_{19}$ = 1997 EK$_{53}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	155.19836		(2000.0)		**P**	**Q**	
n	0.29866572	ω	223.61061		−0.50280841	+0.86432571	
a	2.2165582	Ω	16.21363		−0.78168942	−0.44914401	
e	0.1041376	i	2.29270		−0.36897880	−0.22629787	
P	3.30	H	16.1	G	0.15	U	1

Residuals in seconds of arc

1977 03 12	381	0.4−	1.0−	1997 03 08	809	0.3+	1.7+	1998 09 26	704	0.4+	0.8+
1977 03 12	381	(1.2+	2.4−)	1997 03 09	809	0.7+	1.5+	1998 09 26	691	0.4−	0.0
1991 08 02	809	0.5+	0.1−	1997 03 09	809	0.8+	0.8+	1998 09 26	691	0.6−	0.0
1991 08 02	809	0.8+	0.3+	1997 03 09	809	0.7+	1.4+	1998 09 26	691	0.4−	0.1−
1991 08 02	809	0.6+	0.4+	1998 09 19	691	0.5−	0.0	1998 09 27	704	0.8+	0.5+
1991 08 14	809	1.2−	0.1+	1998 09 19	691	0.0	0.1+	1998 09 27	704	1.0+	0.1−
1991 08 14	809	0.8−	0.3+	1998 09 19	691	0.3−	0.0	1998 09 27	704	0.8−	1.1+
1991 08 14	809	0.2−	0.6−	1998 09 26	704	1.6−	0.2−	1998 09 27	704	0.6+	0.1+
1997 03 08	809	(1.5+	2.1+)	1998 09 26	704	0.1+	0.5+	1998 09 27	704	1.0−	0.8+
1997 03 08	809	(1.0+	2.0+)	1998 09 26	704	0.6+	1.2+				

1998 SV$_{36}$ = 1994 RR$_{20}$ = 1997 JK$_{12}$

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	167.78957		(2000.0)		**P**	**Q**	
n	0.26570815	ω	35.49243		−0.73128839	+0.68203508	
a	2.3962537	Ω	187.52153		−0.63707697	−0.68654684	
e	0.1697571	i	2.95183		−0.24361901	−0.25195550	
P	3.71	H	15.6	G	0.15	U	5

Residuals in seconds of arc

1994 09 05	809	0.9+	1.1−	1997 05 04	809	0.3+	1.4+	1998 09 26	704	0.4+	0.2−
1994 09 05	809	0.9−	0.0	1997 05 04	809	0.1+	2.3+	1998 09 26	704	0.1+	0.1+
1994 09 05	809	2.2−	0.4+	1997 05 07	704	0.3+	1.7−	1998 09 27	704	1.6+	0.4−
1994 09 06	809	0.8+	0.8+	1997 05 07	704	0.7+	2.0−	1998 09 27	704	1.0+	2.0−
1994 09 06	809	0.1+	0.1+	1997 05 07	704	1.0+	2.1−	1998 09 27	704	0.5−	0.3−
1994 09 06	809	0.9+	0.8+	1997 05 07	704	0.9+	2.3−	1998 09 27	691	0.3−	0.4+
1997 05 03	809	2.1−	0.9+	1998 09 20	691	0.7+	0.7+	1998 09 27	691	0.7−	0.3+
1997 05 03	809	1.4−	1.1+	1998 09 20	691	0.2−	0.2+	1998 09 27	704	3.2−	0.5−
1997 05 03	809	0.4−	0.1−	1998 09 20	691	0.8+	0.1+	1998 09 27	691	0.2−	0.4+
1997 05 04	809	0.5+	2.1+	1998 09 26	704	0.8+	0.1−				

1998 SW$_{60}$ = 1958 TY = 1969 RS$_2$ = 1978 EO$_5$ = 1980 OM = 1981 TS$_1$ = 1984 DD$_3$ = 1984 GY = 1988 AM$_4$ = 1990 FW

Id. A. Milani (*MPC* 34222), M. E. Sansaturio, G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	65.86680		(2000.0)		**P**	**Q**	
n	0.16975647	ω	303.30145		+0.66306456	+0.74635419	
a	3.2303667	Ω	8.94076		−0.50265634	+0.50080465	
e	0.0647189	i	21.69571		−0.55469090	+0.43834932	
P	5.81	H	11.7	G	0.15	U	1

Residuals in seconds of arc

1958 10 15	760	1.1+	0.9−	1990 03 27	675	0.6−	0.9−	1998 09 25	699	0.1−	0.3+
1958 10 15	760	0.1−	0.1+	1990 03 27	675	0.9−	1.6−	1998 09 25	699	0.2+	0.2+
1969 09 13	805	0.6+	0.9−	1990 03 30	095	2.3−	1.8−	1998 09 25	699	0.0	0.1−
1978 03 06	095	2.4−	1.0−	1990 03 30	095	(3.7−	4.8−)	1998 09 26	704	0.3−	0.6−
1980 07 19	413	0.2−	0.8−	1990 04 02	896	0.1−	0.4+ Y	1998 09 26	704	1.0−	1.1−
1980 07 19	413	0.9+	1.5−	1998 09 14	704	0.4−	0.2+	1998 09 26	704	0.8−	1.0−
1981 10 03	095	1.3+	1.3−	1998 09 14	704	0.3−	1.2+	1998 09 26	704	0.9−	1.4−
1984 02 26	095	3.2+	0.8−	1998 09 14	704	0.3−	0.6+	1998 09 26	704	0.6−	0.2−
1984 04 03	095	2.8+	1.7−	1998 09 17	699	0.0	0.2+	1998 09 27	704	1.2+	0.0
1988 01 13	033	1.4−	0.7−	1998 09 17	699	0.2−	0.3+	1998 09 27	704	0.3+	0.3−
1988 01 13	033	1.1−	0.5−	1998 09 17	699	0.1−	0.3+	1998 09 27	704	0.3+	0.2+
1990 03 19	896	(5.3−	3.6+)Y	1998 09 18	704	0.2+	1.3+	1998 09 27	704	1.9+	0.5+
1990 03 20	896	2.1+	3.5+ Y	1998 09 18	704	0.1+	1.0+	1998 11 10	699	0.3−	0.0
1990 03 22	896	(9.7+	3.7+)Y	1998 09 18	704	0.4−	0.9+	1998 11 10	699	0.0	0.3−
1990 03 26	896	2.6−	1.3+ Y	1998 09 18	704	0.6+	1.2+	1998 11 10	699	0.4−	0.3−
1990 03 26	896	1.2+	1.5+	1998 09 18	704	0.3−	0.8+				

1998 SM_{62} = 1978 WF_{21}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	30.06988		(2000.0)	**P**		**Q**	
n	0.19603210	ω	135.15106	+0.99049260		+0.00821717	
a	2.9348411	Ω	224.92570	−0.04457575		+0.96352821	
e	0.0759039	i	11.21275	+0.13014382		+0.26748060	
P	5.03	H	14.4	G 0.15		U 6	

Residuals in seconds of arc

1978 11 28	675	0.0	0.8+	1998 09 19	699	1.0−	0.1+	1998 09 23	704	0.1−	0.9−
1978 11 29	675	0.0	0.8−	1998 09 19	699	0.4+	0.1+	1998 09 25	699	0.2−	0.1+
1998 09 19	704	0.6+	0.3+	1998 09 19	699	0.8+	0.6−	1998 09 25	699	0.3−	0.1−
1998 09 19	704	0.1−	0.4+	1998 09 23	704	0.6+	0.9+	1998 09 25	699	0.3+	0.2−
1998 09 19	704	0.9−	0.3−	1998 09 23	704	(2.7−	1.5−)				

1998 SQ_{145} = 1963 GB = 1981 TR_4 = 1991 RT_{13} = 1993 AF = 1997 JL_{18}

Id. G. V. Williams (*MPC* 33298, *MPC* 34223, unpublished), A. Milani (*MPC* 34223)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	194.85018		(2000.0)	**P**		**Q**	
n	0.29212202	ω	17.47142	−0.78050808		+0.62384328	
a	2.2495373	Ω	201.28327	−0.58601255		−0.75259317	
e	0.1204297	i	6.37958	−0.21770718		−0.21076786	
P	3.37	H	13.4	G 0.15		U 2	

Residuals in seconds of arc

1963 04 15	760	(2.5+	1.9+)X	1997 08 03	566	0.3+	0.0	1998 10 29	704	0.9−	1.3−
1981 10 04	688	1.4+	1.4+	1997 08 03	566	0.6+	0.2+	1998 10 29	704	0.0	0.2+
1981 10 04	688	1.2−	1.4−	1998 09 20	809	1.2+	2.3+	1998 10 29	704	0.4−	0.1+
1991 09 13	675	1.0+	1.4−	1998 09 20	809	0.3+	2.9+	1998 11 10	704	0.8−	0.4−
1991 09 13	675	0.1+	1.2−	1998 09 20	809	0.3−	2.6+	1998 11 10	704	0.0	2.6−
1991 09 15	675	0.0	0.9−	1998 09 21	809	1.7+	3.4+	1998 11 10	704	1.1−	0.1+
1991 09 15	675	0.5−	0.4−	1998 09 21	809	1.5+	3.2+	1998 11 10	704	1.5−	0.1+
1993 01 13	400	1.8−	1.7+	1998 09 21	809	1.4+	3.3+	1998 11 11	704	0.1−	0.2+
1993 01 14	400	2.6+	0.8+	1998 10 10	699	1.2+	0.0	1998 11 11	704	0.2−	0.3−
1993 01 14	400	(6.6+	2.0−)	1998 10 10	699	0.2−	0.5−	1998 11 11	704	0.8+	0.8−
1997 05 03	809	0.6+	0.4+	1998 10 10	699	0.1−	1.1+	1998 11 11	704	0.5+	0.9−
1997 05 03	809	0.1+	0.7+	1998 10 28	704	0.3−	0.3−	1998 11 11	704	0.5+	1.0−
1997 05 03	809	0.3−	0.7+	1998 10 28	704	0.6−	0.8−	1999 01 11	704	1.7−	0.7−
1997 05 04	809	0.1+	1.6+	1998 10 28	704	0.4−	0.3−	1999 01 11	704	0.9−	0.6+
1997 05 04	809	0.0	1.7+	1998 10 28	704	0.2−	0.1−	1999 01 11	704	1.3−	0.2+
1997 05 04	809	0.5−	2.0+	1998 10 29	704	0.6−	0.5−	1999 01 11	704	0.2+	2.4+
1997 08 03	566	0.5+	0.7−	1998 10 29	704	0.6−	0.7+				

1998 SG_{159} = 2661 P-L

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	299.97654		(2000.0)	**P**		**Q**	
n	0.18195106	ω	105.31601	−0.42070551		−0.90651683	
a	3.0843689	Ω	9.78686	+0.73271041		−0.36236686	
e	0.1224105	i	11.92708	+0.53492274		−0.21660447	
P	5.42	H	14.3	G 0.15		U 3	

Residuals in seconds of arc

1960 09 24	675	0.2−	1.1+	1998 09 26	704	0.7+	0.8−	1998 10 11	699	0.1+	0.2+
1960 09 24	675	1.0+	0.7−	1998 09 26	704	0.0	1.5+	1998 10 17	699	0.2+	0.0
1960 09 26	675	0.9−	1.1+	1998 09 26	704	0.9−	0.1−	1998 10 17	699	0.3+	0.6−
1960 09 26	675	0.2+	0.1+	1998 09 26	704	0.9−	1.3−	1998 10 17	699	0.4+	0.2+
1960 09 28	675	1.0−	0.5−	1998 09 27	704	0.4−	0.1−	1998 11 10	704	0.4−	1.0−
1995 04 04	691	0.1−	0.3+	1998 09 27	704	0.1−	1.5−	1998 11 10	704	1.4+	1.5+
1995 04 04	691	0.2+	0.5+	1998 09 27	704	0.2+	0.8+	1998 11 10	704	0.1+	0.7+
1995 04 04	691	0.3+	0.1−	1998 10 11	699	0.9−	0.6−	1998 11 10	704	(3.3−	0.2−)
1998 09 26	704	0.5−	0.8+	1998 10 11	699	1.0+	0.3−				

1998 UO_2 = 1992 GL_2

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	128.94959		(2000.0)	**P**		**Q**	
n	0.21714542	ω	243.00672	−0.01514448		+0.99475996	
a	2.7413780	Ω	26.71363	−0.81903644		+0.04566246	
e	0.1586467	i	12.99837	−0.57354160		−0.09147435	
P	4.54	H	14.4	G 0.15		U 4	

Residuals in seconds of arc

1992 04 04	809	0.4−	0.1+	1998 10 15	691	0.5−	0.3+	1998 10 21	910	0.5+	0.2+
1992 04 04	809	0.9−	0.0	1998 10 15	691	0.4−	0.1+	1998 10 21	910	0.3+	0.2+
1992 04 04	809	0.8−	0.4−	1998 10 15	691	0.5−	0.2+	1998 10 21	910	0.4+	0.2+
1992 04 06	809	1.5+	0.4+	1998 10 20	910	0.6+	0.3−	1998 11 11	704	0.7−	0.5+
1992 04 06	809	0.6+	0.4−	1998 10 20	910	0.7+	0.3−	1998 11 11	704	0.7−	0.7−
1992 04 06	809	0.1+	0.5+	1998 10 20	910	0.7+	0.1−	1998 11 11	704	0.9+	0.2+
1998 08 26	910	0.2−	0.3+	1998 10 20	691	0.4−	0.0	1998 11 11	704	0.5+	0.2−
1998 08 26	910	0.0	0.1−	1998 10 20	691	0.8−	0.3+				
1998 08 26	910	0.1+	0.3−	1998 10 20	691	0.5−	0.1−				

1998 UX_{15} = 1978 WP_3

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	344.20557		(2000.0)	**P**		**Q**	
n	0.24497304	ω	41.39710	+0.00399399		−0.99942963	
a	2.5296311	Ω	48.40256	+0.90527646		−0.01063154	
e	0.1186633	i	2.57004	+0.42480417		+0.03205288	
P	4.02	H	15.2	G 0.15		U 5	

Residuals in seconds of arc

1978 11 29	675	1.7+	0.0	1998 11 11	704	0.3+	0.2−	1998 11 27	691	0.6−	0.2+
1978 11 30	675	1.5−	1.0−	1998 11 11	704	1.4−	0.2−	1998 11 27	691	0.6−	0.2−
1998 10 24	120	0.6−	0.0	1998 11 15	691	0.1+	0.1−	1998 11 27	691	0.5−	0.2−
1998 10 24	120	(2.1+	0.9+)	1998 11 15	691	0.2+	0.1−	1998 12 08	699	0.6−	1.0−
1998 10 26	120	0.3+	0.1−	1998 11 15	691	0.2+	0.1−	1998 12 08	699	0.3+	0.6+
1998 10 26	120	1.6+	0.3+	1998 11 21	691	0.9−	0.3−	1998 12 08	699	0.5+	1.6+
1998 10 29	120	0.3−	0.2+	1998 11 21	691	1.0−	0.1−	1999 01 09	910	0.4−	0.0
1998 10 29	120	0.2+	0.1−	1998 11 21	691	1.4−	0.2+	1999 01 09	910	0.2+	0.1+
1998 11 11	704	1.1−	0.3+	1998 11 24	699	1.5+	0.3−	1999 01 09	910	0.1−	0.3+
1998 11 11	704	0.6+	0.8−	1998 11 24	699	1.9+	0.8+				
1998 11 11	704	0.7+	0.3−	1998 11 24	699	0.5+	0.8+				

1998 UY_{15} = 1998 SQ_{146} = 1976 SB_6 = 1976 UX_8

Id. A. Gnädig (*MPC* 34223), B. G. Marsden (d, *MPC* 9065), G. V. Williams (d)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	48.75199		(2000.0)	**P**		**Q**	
n	0.26902237	ω	328.17499	+0.98539664		+0.16437652	
a	2.3765327	Ω	22.49172	−0.12140944		+0.86121141	
e	0.2460490	i	6.66912	−0.11938678		+0.48093166	
P	3.66	H	15.4	G 0.15		U 4	

Residuals in seconds of arc

1976 09 24	095	0.0	0.4−	1998 10 21	910	1.2+	0.5−	1998 10 30	327	0.2−	0.2−
1976 10 22	381	0.4−	0.6+	1998 10 22	910	1.3+	0.4−	1998 10 30	327	0.1−	0.1−
1976 10 22	381	0.1−	0.6+	1998 10 26	910	0.9+	0.1−	1998 10 30	327	0.6−	0.2+
1976 10 24	381	0.2+	0.1−	1998 10 26	910	0.9+	0.1−	1998 11 10	704	0.8−	0.3+
1998 09 14	699	1.2−	0.3−	1998 10 26	910	0.9+	0.2−	1998 11 10	704	0.1+	1.5+
1998 09 14	699	0.9−	0.2+	1998 10 28	704	0.3−	0.8−	1998 11 10	704	0.7−	0.7−
1998 09 14	699	0.9−	0.2+	1998 10 28	704	0.7−	0.3−	1998 11 10	704	0.3−	0.9−
1998 09 20	809	(3.1+	2.9+)	1998 10 28	704	0.3−	0.5−	1998 11 11	704	0.2+	0.1−
1998 09 20	809	(1.6+	4.1+)	1998 10 28	704	0.1−	0.6−	1998 11 11	704	0.5+	0.8+
1998 09 20	809	(1.6+	3.2+)	1998 10 29	704	0.6−	0.3−	1998 11 11	704	0.6−	0.2+
1998 09 21	809	(2.9+	1.4+)	1998 10 29	704	1.1−	0.5−	1998 11 11	704	0.5+	1.3+
1998 09 21	809	1.4+	0.3+	1998 10 29	704	1.0−	0.2−	1998 11 11	704	0.9−	0.9+
1998 09 21	809	1.8+	1.9+	1998 10 29	704	0.8−	1.3−	1998 11 17	699	1.2+	0.8+
1998 10 21	910	1.3+	0.6−	1998 10 29	704	0.2−	0.8−	1998 11 17	699	0.4+	0.4+

1998 VM$_7$ = 1978 WQ$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	319.78739		(2000.0)	**P**		**Q**	
n	0.29216083	ω	35.96194	−0.22572979		−0.96866029	
a	2.2493380	Ω	67.28571	+0.86550142		−0.24824388	
e	0.1067295	i	6.45165	+0.44716145		−0.00849817	
P	3.37	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1978 11 29	675	0.2−	0.2+	1998 10 17	699	0.3−	0.2−	1998 11 11	704	0.4+	0.4−
1978 11 30	675	0.2+	0.0	1998 11 10	704	0.4+	0.4−	1998 11 11	704	0.0	0.3−
1998 09 24	699	0.4+	0.5+	1998 11 10	704	0.0	1.2−	1998 11 11	704	0.2−	0.8−
1998 09 24	699	0.9−	0.0	1998 11 10	704	0.5−	0.6−	1998 11 14	699	1.4+	1.0+
1998 09 24	699	0.2−	0.1−	1998 11 10	704	0.5−	0.7−	1998 11 14	699	0.5+	1.3+
1998 10 17	699	1.3+	0.1+	1998 11 10	704	0.1−	0.1+	1998 11 14	699	0.2−	0.2+
1998 10 17	699	0.6−	0.6+	1998 11 11	704	0.8−	0.6+				

1998 VJ$_8$ = 1998 UP$_{38}$ = 1979 OB$_7$

Id. A. Doppler (d, *MPC* 34061), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	0.56768		(2000.0)	**P**		**Q**	
n	0.21562742	ω	265.04521	+0.53065587		−0.84740481	
a	2.7542291	Ω	152.88214	+0.79213930		+0.48845093	
e	0.2067310	i	2.21169	+0.30152891		+0.20813645	
P	4.57	H	14.9	G	0.15	U	4

Residuals in seconds of arc

1979 07 24	675	1.4+	1.9+	1998 10 28	704	0.2−	0.0	1998 11 11	704	0.3+	1.3−
1979 07 24	413	(2.5−	2.9−)	1998 10 29	704	0.1−	0.1+	1998 11 11	704	1.0−	1.3−
1979 07 25	675	1.9−	0.5+	1998 10 29	704	0.7+	1.4+	1998 11 11	704	0.2−	1.3−
1993 08 15	691	0.1+	0.5−	1998 10 29	704	0.5+	0.6+	1998 11 14	699	0.7+	1.5+
1993 08 15	691	0.2+	0.7−	1998 10 29	704	0.8+	0.5+	1998 11 14	699	0.6−	1.2+
1993 08 15	691	0.3+	0.7−	1998 10 29	704	0.4−	0.2+	1998 11 14	699	1.3+	0.1+
1998 09 18	699	0.7−	0.6−	1998 11 10	704	0.3+	0.7−	1998 11 16	566	0.4−	0.4+
1998 09 18	699	0.2−	0.7−	1998 11 10	704	0.6−	0.4+	1998 11 16	566	0.1−	0.2+
1998 09 18	699	0.3−	0.2+	1998 11 10	704	0.2−	0.8−	1998 11 16	566	0.6−	0.3+
1998 10 28	704	0.6+	0.4−	1998 11 10	704	1.0−	0.4−	1998 11 23	699	0.5−	0.9+
1998 10 28	704	0.5+	0.0	1998 11 11	704	0.7+	0.7−	1998 11 23	699	1.5−	1.6+
1998 10 28	704	(3.2+	0.4+)	1998 11 11	704	1.0+	1.3−	1998 11 23	699	0.5+	0.8+

1998 VT$_{10}$ = 1971 FD$_1$ = 1974 DH = 1984 FS$_1$ = 1987 DH$_5$ = 1997 CA$_{27}$

Id. S. Nakano

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	148.00398		(2000.0)	**P**		**Q**	
n	0.30338292	ω	208.05219	−0.15323203		+0.98657845	
a	2.1935219	Ω	53.18780	−0.89295470		−0.11378514	
e	0.1328896	i	4.04089	−0.42326334		−0.11711490	
P	3.25	H	13.7	G	0.15	U	2

Residuals in seconds of arc

1971 03 19	095	0.4−	0.2+	1997 02 15	691	0.1−	0.4−	1998 11 10	704	0.6+	0.5−
1974 02 19	029	0.1+	0.5−	1997 02 16	691	0.1−	0.2−	1998 11 10	704	0.6+	0.8−
1974 02 20	029	0.5−	0.5−	1997 02 16	691	0.2−	0.1+	1998 11 11	704	0.0	0.3+
1984 03 29	095	(3.2+	1.2−)	1997 02 16	691	0.1−	0.1+	1998 11 11	704	0.2−	0.3−
1984 04 04	095	0.8+	0.1−	1998 10 14	699	0.1+	0.2+	1998 11 11	704	0.5−	0.7−
1987 02 23	010	0.6−	0.2+	1998 10 14	699	0.2+	0.2−	1998 11 11	704	0.1−	0.0
1987 02 23	010	1.3+	0.3+	1998 10 14	699	0.3−	0.0	1998 11 11	704	0.3−	0.0
1987 02 23	010	0.2−	0.7+	1998 11 10	704	0.2+	0.4+	1998 11 14	699	0.3−	0.3+
1997 02 15	691	0.0	0.2+	1998 11 10	704	0.7−	0.7+	1998 11 14	699	0.2−	0.2+
1997 02 15	691	0.1−	0.1+	1998 11 10	704	0.9+	0.0	1998 11 14	699	0.1−	0.5+

1998 VW$_{10}$ = 1996 DZ$_4$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	354.34740		(2000.0)	**P**		**Q**	
n	0.28521702	ω	64.40413	+0.21519327		−0.97656363	
a	2.2856993	Ω	13.17079	+0.88970696		+0.19439692	
e	0.1765028	i	0.98499	+0.40263306		+0.09237599	
P	3.46	H	16.2	G	0.15	U	6

Residuals in seconds of arc

1996 02 16	010	0.3+	1.5−	1998 10 19	699	0.5+	0.1+	1998 11 10	704	0.1−	0.5+
1996 02 16	010	1.6−	0.2−	1998 10 19	699	0.2+	0.7+	1998 11 11	704	1.0−	0.4+
1996 02 16	010	0.2−	0.0	1998 10 19	699	2.0+	0.3−	1998 11 11	704	0.6+	0.5−
1996 02 17	010	0.1+	0.1−	1998 10 27	691	0.3−	0.2−	1998 11 11	704	0.1−	0.9−
1996 02 17	010	1.2+	0.0	1998 10 27	691	0.3−	0.1−	1998 11 11	704	0.8−	0.2+
1996 02 17	010	0.1+	1.6+	1998 10 27	691	0.3−	0.0	1998 11 14	699	1.3+	0.5+
1998 10 19	691	0.5−	0.3−	1998 11 10	704	0.0	0.4−	1998 11 14	699	0.6+	0.3−
1998 10 19	691	0.4−	0.3−	1998 11 10	704	0.1−	0.2+	1998 11 14	699	0.0	0.4+
1998 10 19	691	0.4−	0.4−	1998 11 10	704	1.0−	0.5+				

1998 VR$_{17}$ = 1994 PS$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	75.55698		(2000.0)	**P**		**Q**	
n	0.26554364	ω	309.30016	+0.78909682		+0.61419327	
a	2.3972433	Ω	12.81614	−0.54936633		+0.71265279	
e	0.2247556	i	2.48943	−0.27481419		+0.33895815	
P	3.71	H	15.0	G	0.15	U	3

Residuals in seconds of arc

1994 08 09	675	0.8+	1.2−	1998 10 19	699	0.8+	0.1+	1998 11 11	704	0.1−	0.2−
1994 08 11	675	0.7−	0.8+	1998 10 19	699	0.3−	0.1+	1998 11 11	704	0.3+	0.4−
1994 08 11	675	0.1−	0.3+	1998 10 19	699	0.2−	0.8+	1998 11 11	704	0.4+	0.8−
1997 04 11	704	0.3−	0.2+	1998 11 10	704	0.3+	0.3+	1998 11 16	691	0.4−	0.0
1997 04 11	704	0.2+	0.4−	1998 11 10	704	1.8+	0.4+	1998 11 16	691	0.5−	0.2−
1998 08 31	704	0.8−	0.4−	1998 11 10	704	0.0	0.1−	1998 11 16	691	0.2−	0.0
1998 08 31	704	0.8−	0.1−	1998 11 10	704	0.2+	1.2−	1998 11 20	699	0.8−	0.7+
1998 08 31	704	0.9+	1.2+	1998 11 10	704	0.1+	1.2−	1998 11 20	699	0.4−	0.2+
1998 08 31	704	0.2+	0.4−	1998 11 11	704	0.0	0.2+	1998 11 20	699	0.6−	1.0+

1998 VX$_{18}$ = 1981 JV$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	93.51048		(2000.0)	**P**		**Q**	
n	0.30727796	ω	71.00975	+0.83427403		+0.54690087	
a	2.1749458	Ω	255.77937	−0.52909357		+0.75847768	
e	0.0612692	i	4.13529	−0.15507046		+0.35441649	
P	3.21	H	14.9	G	0.15	U	5

Residuals in seconds of arc

1981 05 08	675	1.5−	0.6−	1998 10 19	699	0.1+	1.2+	1998 11 11	704	0.7+	0.8−
1981 05 09	675	1.3+	0.3−	1998 11 10	704	1.8+	0.4−	1998 11 15	699	1.2−	1.2+
1998 08 31	704	1.4−	1.1−	1998 11 10	704	0.2+	1.2−	1998 11 15	699	0.3−	0.7+
1998 08 31	704	0.1+	1.0+	1998 11 10	704	0.2−	1.1−	1998 11 15	699	0.7−	0.6+
1998 08 31	704	1.2+	1.2−	1998 11 10	704	0.8+	0.9−	1998 11 25	691	0.0	0.5+
1998 08 31	704	0.1+	0.9+	1998 11 10	704	1.2+	1.1−	1998 11 25	691	0.2+	0.3+
1998 08 31	704	(3.7−	0.3+)	1998 11 11	704	0.9−	0.3+	1998 11 25	691	0.3+	0.2+
1998 10 19	699	0.4−	0.6+	1998 11 11	704	0.1−	0.8−				
1998 10 19	699	0.7−	0.3+	1998 11 11	704	0.3−	0.1−				

1998 VB$_{26}$ = 1996 FC$_{22}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.29968		(2000.0)	**P**		**Q**	
n	0.17376880	ω	338.75759	+0.99120043		+0.13225505	
a	3.1804471	Ω	13.64595	−0.11783584		+0.90055261	
e	0.1763351	i	1.33706	−0.06030271		+0.41414200	
P	5.67	H	13.8	G	0.15	U	5

Residuals in seconds of arc

1996 03 24	809	0.6−	0.1+	1998 10 18	699	0.1−	0.2+	1998 11 19	691	0.6−	0.3−
1996 03 24	809	1.2−	0.3−	1998 11 10	704	0.1+	0.1−	1998 11 19	691	0.6−	0.0
1996 03 24	809	0.3−	0.4−	1998 11 10	704	0.9−	1.5−	1998 11 20	699	0.0	1.1+
1996 03 27	809	0.2+	0.7−	1998 11 10	704	0.9+	0.2−	1998 11 20	699	0.1+	0.2+
1996 03 27	809	(1.4+	2.1−)	1998 11 10	704	0.8−	0.9−	1998 11 20	699	0.2−	0.6+
1996 03 27	809	1.1+	1.8−	1998 11 11	704	0.2+	0.2−	1998 11 24	699	0.7+	0.8+
1996 04 17	809	0.1−	1.5+	1998 11 11	704	0.5+	0.0	1998 11 24	699	1.2+	0.1+
1996 04 17	809	(1.0+	2.3+)	1998 11 11	704	1.1+	0.3+	1998 11 24	699	0.8+	0.2+
1996 04 17	809	0.9+	1.3+	1998 11 11	704	0.7−	0.1+	1998 12 08	699	0.3−	0.5−
1998 10 18	699	0.3+	0.5−	1998 11 11	704	0.4−	0.0	1998 12 08	699	0.0	0.4+
1998 10 18	699	0.3+	0.0	1998 11 19	691	0.7−	0.4−	1998 12 08	699	0.9−	0.4+

1998 VF_{26} = 1978 NL

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	74.77018		(2000.0)		**P**	**Q**	
n	0.30075581	ω	83.53704		+0.87573368	+0.47969532	
a	2.2062770	Ω	247.78560		−0.46299576	+0.80236649	
e	0.2152325	i	3.38212		−0.13684096	+0.35510621	
P	3.28	H	15.8	G	0.15	U	5

Residuals in seconds of arc

1978 07 12	675	0.3+	0.9−	1998 11 10	699	0.1+	0.7+	1998 11 18	691	0.4+	0.3+
1978 07 13	675	1.0−	0.9+	1998 11 10	699	1.0+	0.8+	1998 11 18	691	0.6+	0.1+
1978 07 14	675	0.6+	0.0	1998 11 10	699	0.2+	0.3+	1998 11 18	691	0.7+	0.1−
1998 10 19	699	0.1−	0.0	1998 11 11	704	0.6−	0.2+	1998 11 20	699	0.6−	0.9+
1998 10 19	699	0.2−	0.3+	1998 11 11	704	0.5−	0.3−	1998 11 20	699	0.1−	0.5+
1998 10 19	699	0.2+	0.1−	1998 11 11	704	0.7−	1.4−	1998 11 20	699	0.3−	0.8+
1998 11 10	704	0.5−	0.2+	1998 11 11	704	0.6−	0.5+	1998 11 25	691	0.0	0.2−
1998 11 10	704	0.3+	1.0−	1998 11 11	704	0.1+	0.0	1998 11 25	691	0.0	0.2−
1998 11 10	704	1.1−	1.4−	1998 11 12	910	0.8+	0.6+	1998 11 25	691	0.0	0.2−
1998 11 10	704	0.4−	0.7−	1998 11 12	910	0.9+	0.6+				
1998 11 10	704	0.4−	2.0−	1998 11 12	910	0.6+	0.6+				

1998 VG_{37} = 1994 WM_{10}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	2.86283		(2000.0)		**P**	**Q**	
n	0.23122992	ω	174.79826		+0.31462620	−0.94473067	
a	2.6288958	Ω	256.83957		+0.86743931	+0.32558834	
e	0.3202224	i	5.43121		+0.38543405	+0.03842133	
P	4.26	H	15.8	G	0.15	U	4

Residuals in seconds of arc

1994 11 30	691	0.7−	0.0	1998 11 10	704	0.3+	0.3−	1998 11 11	704	0.4−	0.1+
1994 11 30	691	0.1+	0.1−	1998 11 10	704	0.6−	0.1−	1998 11 15	699	0.4+	0.2+
1994 11 30	691	0.2−	0.7−	1998 11 10	704	0.1+	0.2+	1998 11 15	699	0.4+	0.6+
1994 12 01	691	0.1+	0.1+	1998 11 10	704	1.5+	1.6−	1998 11 15	699	0.4+	0.5+
1994 12 01	691	0.4+	0.3+	1998 11 11	704	0.3−	0.2+	1999 01 06	910	0.1+	0.2−
1994 12 01	691	0.3+	0.3+	1998 11 11	704	0.0	0.1−	1999 01 06	910	0.1−	0.1+
1998 11 10	704	1.0−	0.6+	1998 11 11	704	0.7−	0.1+	1999 01 06	910	0.0	0.0

1998 VL_{37} = 4831 T-1

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	115.06217		(2000.0)		**P**	**Q**	
n	0.23210252	ω	260.84900		+0.30968302	+0.94452252	
a	2.6223026	Ω	27.96305		−0.75473709	+0.31417676	
e	0.1506571	i	13.49512		−0.57833240	+0.09576107	
P	4.25	H	14.2	G	0.15	U	5

Residuals in seconds of arc

1971 04 16	675	1.0−	0.6+	1998 10 19	699	0.5+	0.3+	1998 11 11	704	0.9+	0.5+
1971 04 16	675	0.0	0.6−	1998 10 19	699	0.7+	0.4−	1998 11 11	704	0.0	0.1−
1971 05 13	675	0.5−	1.1+	1998 11 10	704	0.2+	0.4−	1998 11 11	704	0.7−	0.7−
1971 05 14	675	0.9+	0.2−	1998 11 10	704	0.0	0.2−	1998 11 11	704	3.1−	0.3+
1971 05 16	675	0.9+	0.9−	1998 11 10	704	1.4+	1.0−	1998 11 15	699	0.4+	1.4+
1998 10 10	699	0.6+	0.2+	1998 11 10	704	0.6−	1.5−	1998 11 15	699	0.6+	0.9+
1998 10 10	699	0.3−	1.0+	1998 11 10	704	1.4−	0.3−	1998 11 15	699	0.1−	0.2+
1998 10 19	699	0.8+	0.5+	1998 11 11	704	0.1+	0.5−				

1998 WT_{16} = 1994 WF_3

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	71.14021		(2000.0)		**P**	**Q**	
n	0.24438294	ω	111.01316		+0.95730157	+0.21405533	
a	2.5337016	Ω	237.10564		−0.26219494	+0.92598343	
e	0.1532817	i	13.37976		+0.12176826	+0.31102252	
P	4.03	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1994 11 28	399	0.3−	0.9+	1998 11 21	704	0.2−	0.4+	1998 11 25	699	0.4+	0.3−
1994 11 28	399	0.6−	0.7+	1998 11 21	704	0.9+	0.4+	1998 11 25	699	0.5+	0.4−
1994 11 29	399	1.9+	0.6−	1998 11 21	704	0.5+	0.6+	1998 12 08	691	0.4−	0.2+
1994 11 29	399	1.0−	1.1−	1998 11 24	704	0.2−	0.2−	1998 12 08	691	0.3−	0.3+
1998 11 20	699	0.3−	0.5+	1998 11 24	704	0.4+	0.8−	1998 12 08	691	0.4−	0.0
1998 11 20	699	0.5−	0.5+	1998 11 24	704	0.4+	1.3−	1998 12 08	699	0.5+	0.0
1998 11 20	699	0.1+	0.3+	1998 11 24	704	0.5−	1.0−	1998 12 08	699	0.7+	0.3−
1998 11 21	704	0.2−	0.2+	1998 11 24	704	(2.1−	2.5−)	1998 12 08	699	0.3−	0.8+
1998 11 21	704	0.8−	0.3−	1998 11 25	699	0.2−	0.3+				

1998 XN_{77} = 1992 GF_3

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	95.63314		(2000.0)		**P**	**Q**	
n	0.08290206	ω	117.93501		+0.83370483	+0.50468544	
a	5.2090578	Ω	213.23342		−0.52687233	+0.84852100	
e	0.0665927	i	24.13802		+0.16535356	+0.15907458	
P	11.89	H	9.4	G	0.15	U	1

Residuals in seconds of arc

1991 02 10	413	0.0	0.2+	1992 04 25	809	0.3+	1.4+	1998 12 15	704	(0.0	2.1+)
1991 05 07	413	0.6+	0.3−	1992 04 25	809	0.8+	0.4+	1998 12 15	704	1.5+	0.5−
1991 05 07	413	0.6−	0.2−	1992 05 30	413	0.2−	1.1−	1998 12 15	704	0.0	0.7−
1992 04 04	809	0.0	0.2−	1992 05 30	413	0.8−	0.4+	1998 12 15	704	0.2−	0.2+
1992 04 04	809	1.4−	0.0	1997 10 30	566	0.1+	0.1+	1998 12 22	704	0.2−	0.4−
1992 04 04	809	0.2+	0.0	1997 10 30	566	0.1−	0.0	1998 12 22	704	(0.0	2.4−)
1992 04 06	809	(2.8−	0.1+)	1997 10 30	566	0.0	0.2+	1998 12 22	704	0.9−	0.2+
1992 04 06	809	(2.5−	0.0)	1998 11 16	699	0.1−	0.1+	1998 12 22	704	0.4−	0.3+
1992 04 06	809	(2.6−	1.6−)	1998 11 16	699	0.7+	0.1−	1998 12 22	704	1.1−	1.2+
1992 04 25	809	1.0+	0.1−	1998 11 16	699	0.5+	0.1−				

1998 YJ_5 = 1991 JX_1

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	312.29210		(2000.0)		**P**	**Q**	
n	0.23688204	ω	169.31272		−0.73181747	+0.64678687	
a	2.5869099	Ω	53.18897		−0.64338212	−0.55179126	
e	0.0617415	i	15.55771		−0.22472791	−0.52649136	
P	4.16	H	13.6	G	0.15	U	3

Residuals in seconds of arc

1991 05 13	372	0.7+	0.1−	1998 12 22	703	1.0+	0.4+	1999 04 16	704	0.4+	0.2−
1991 05 13	372	0.7−	0.1+	1999 04 10	699	0.0	0.4−	1999 04 18	703	0.8−	0.2+
1991 05 16	372	(3.9−	2.8−)	1999 04 10	699	0.4+	0.1+	1999 04 18	703	0.8−	0.2+
1991 05 16	372	(4.5−	0.6−)	1999 04 10	699	0.2+	0.2−	1999 04 18	703	0.4−	0.3+
1997 12 06	704	0.0	0.2+	1999 04 15	704	0.1−	0.5−	1999 04 18	703	1.3+	0.1+
1997 12 06	704	0.2−	0.9+	1999 04 15	704	0.7−	1.3+	1999 04 23	658	0.0	0.3+
1997 12 06	704	0.3−	0.4−	1999 04 15	704	0.7+	0.5−	1999 04 23	658	0.0	0.4+
1997 12 06	704	0.4+	0.7−	1999 04 15	704	0.1−	0.1+	1999 04 23	658	0.1+	0.1+
1998 12 20	703	0.1+	0.6−	1999 04 15	704	0.7+	0.6−	1999 04 24	658	0.5−	0.3−
1998 12 20	703	1.7−	0.3−	1999 04 16	704	0.1+	0.3−	1999 04 24	658	0.4−	0.8+
1998 12 20	703	(2.0−	3.1−)	1999 04 16	704	1.2+	0.4−	1999 04 24	658	0.5−	0.7+

1998 12 22	703	0.2−	0.1+	1999 04 16	704	0.3−	0.3−
1998 12 22	703	0.5+	0.1+	1999 04 16	704	0.0	0.6−

1998 YV$_8$ = 1998 VO$_{44}$ = 1993 TE$_{21}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.31646		(2000.0)		**P**	**Q**	
n	0.20925016	ω	153.26911		+0.98913953	−0.14371514	
a	2.8099086	Ω	215.03654		+0.12342004	+0.92595546	
e	0.1658818	i	3.07587		+0.07981535	+0.34921690	
P	4.71	H	14.7	G	0.15	U	5

Residuals in seconds of arc

1993 10 10	675	0.2+	0.4−	1998 11 19	910	0.9+	0.8+	1998 12 22	327	0.0	0.4−
1993 10 10	675	0.2−	0.4−	1998 11 19	910	0.9+	0.8+	1998 12 22	327	0.1+	0.6−
1993 10 13	675	0.0	0.1+	1998 11 20	699	0.6−	0.4+	1998 12 22	327	0.3+	0.4−
1993 10 13	675	0.1+	0.4+	1998 11 20	699	0.6−	0.7+	1998 12 23	327	0.1+	0.4−
1998 11 01	327	0.2+	0.6−	1998 11 20	699	0.4−	0.4+	1998 12 23	327	0.1+	0.4−
1998 11 01	327	0.2−	0.8−	1998 11 25	699	0.3−	0.5+	1998 12 23	327	0.1−	0.2−
1998 11 01	327	0.4+	0.1−	1998 11 25	699	0.5−	0.4−				
1998 11 19	910	0.7+	0.7+	1998 11 25	699	0.9−	0.1−				

1998 YM$_{16}$

Id. A. Doppler (1997 observations)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	321.79484		(2000.0)		**P**	**Q**	
n	0.17852786	ω	7.45776		−0.99102232	−0.13359717	
a	3.1236717	Ω	164.86182		+0.12162285	−0.91686314	
e	0.1129695	i	1.13068		+0.05552154	−0.37618317	
P	5.52	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1997 09 07	910	0.5−	0.0	1998 12 27	691	0.3+	0.3−	1999 02 11	691	0.2−	0.5−
1997 09 07	910	0.3−	0.1−	1998 12 27	691	0.1+	0.2−	1999 02 11	691	0.6−	0.2−
1997 09 07	910	0.0	0.1+	1998 12 27	691	0.2+	0.2−	1999 02 11	691	0.5−	0.4+
1997 10 05	910	0.2+	0.2+	1999 01 08	691	0.0	0.3−	1999 02 23	699	0.1−	0.8+
1997 10 05	910	0.2+	0.2+	1999 01 08	691	0.1+	0.3−	1999 02 23	699	0.4+	0.8+
1997 10 05	910	0.2+	0.2+	1999 01 08	691	0.0	0.4−	1999 02 23	699	1.1+	1.8+
1998 12 22	691	0.2−	0.1+	1999 01 17	691	0.0	0.2−	1999 03 23	691	0.2−	0.0
1998 12 22	691	0.2−	0.2−	1999 01 17	691	0.2−	0.3−	1999 03 23	691	0.1−	0.2−
1998 12 22	691	0.3−	0.2−	1999 01 17	691	0.0	0.5−	1999 03 23	691	0.3+	0.0

1999 AM$_{24}$ = 1977 TY$_5$ = 1989 WB$_7$

Id. A. Gnädig, G. V. Willliams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	198.44420		(2000.0)		**P**	**Q**	
n	0.25206290	ω	163.63895		+0.68606744	+0.72412316	
a	2.4819713	Ω	149.57167		−0.68211226	+0.67387166	
e	0.2010815	i	7.99100		−0.25305008	+0.14677410	
P	3.91	H	14.4	G	0.15	U	3

Residuals in seconds of arc

1954 12 22	675	0.1−	0.5+	1999 01 15	910	0.2+	0.2−	1999 02 23	699	0.9+	0.4−
1977 10 08	095	(4.0−	4.8+)	1999 01 19	910	0.5+	0.0	1999 02 23	699	0.0	0.8−
1986 12 30	675	0.1−	0.7+	1999 01 19	910	0.5+	0.0	1999 02 23	699	0.1−	0.8+
1989 11 28	511	(3.4−	0.9−)	1999 01 19	910	0.6+	0.1−	1999 03 09	691	0.3−	0.2−
1989 11 28	511	1.1+	0.8−	1999 02 06	120	0.3+	0.2+	1999 03 09	691	0.2−	0.2−
1989 11 28	511	0.9−	0.3+	1999 02 06	120	0.6−	0.2+	1999 03 09	691	0.2−	0.1−
1989 11 28	511	0.0	0.2−	1999 02 07	120	0.8+	0.4+	1999 03 20	691	0.3+	0.2+
1999 01 15	910	0.0	0.8−	1999 02 18	566	0.1−	0.1+	1999 03 20	691	0.1−	0.2+
1999 01 15	910	0.4+	0.5−	1999 02 18	566	1.0−	0.4+	1999 03 20	691	0.4+	0.7+
1999 01 15	910	0.8+	0.7−	1999 02 18	566	0.4−	0.0	1999 03 23	691	0.8−	0.4−
1999 01 15	910	0.4+	0.0	1999 02 18	120	0.0	0.3+	1999 03 23	691	1.3−	0.3−
1999 01 15	910	0.5+	0.3−	1999 02 18	120	0.0	0.3+	1999 03 23	691	1.1−	0.0

1999 BS$_3$ = 1978 WO$_9$

Id. G. V. Williams, A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	28.91681		(2000.0)		**P**	**Q**	
n	0.20412045	ω	300.97936		−0.22372170	−0.97457138	
a	2.8567903	Ω	161.93542		+0.90753123	−0.21301843	
e	0.0265919	i	2.33215		+0.35543730	−0.06952532	
P	4.83	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1978 11 29	675	1.0−	0.3+	1999 01 23	120	0.1−	0.5−	1999 02 12	704	1.3+	0.9+
1978 11 30	675	1.0+	0.3−	1999 01 23	120	0.3−	0.6+	1999 02 12	704	0.3+	1.5+
1999 01 19	120	0.7−	0.0	1999 02 08	120	0.8−	0.7+	1999 02 12	704	(0.4−	3.3+)
1999 01 19	120	0.2+	0.8+	1999 02 08	120	0.4−	0.6+	1999 02 12	704	(0.6−	2.5+)
1999 01 20	120	0.5−	0.3−	1999 02 10	691	0.2−	0.5−	1999 02 14	691	1.1−	0.7−
1999 01 20	120	1.1+	0.4−	1999 02 10	691	0.2−	0.6−	1999 02 14	691	1.3−	0.7−
1999 01 20	120	0.4−	0.1+	1999 02 10	691	(0.1−	2.6−)	1999 02 14	691	1.3−	0.8−
1999 01 21	120	0.5−	0.5−	1999 02 12	699	0.6+	0.2−	1999 02 16	704	0.2+	0.4+
1999 01 21	120	0.4+	0.2−	1999 02 12	699	1.4+	0.3−	1999 02 16	704	0.8+	0.3−
1999 01 22	120	0.0	0.1+	1999 02 12	699	1.0+	0.1+	1999 02 16	704	0.2+	0.4+
1999 01 22	120	0.5+	0.0	1999 02 12	704	0.8−	0.6+	1999 02 16	704	0.7+	0.7−

1999 BL$_9$ = 1976 SM$_1$ = 1984 SX$_4$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	78.89232		(2000.0)		**P**	**Q**	
n	0.24031925	ω	266.78318		−0.04552593	−0.99859439	
a	2.5621842	Ω	186.03041		+0.98805321	−0.04100771	
e	0.1400264	i	14.97196		+0.14723534	−0.03357986	
P	4.10	H	12.9	G	0.15	U	3

Residuals in seconds of arc

1976 09 24	095	0.3−	1.4+	1999 02 12	120	0.1+	1.3+	1999 04 15	704	0.4−	0.5−
1976 09 28	095	(0.1−	8.6+)	1999 02 12	120	0.0	0.6+	1999 04 15	704	0.1+	0.0
1984 09 23	071	0.3−	0.5−	1999 02 12	120	(3.2−	0.2−)	1999 04 15	704	0.8−	0.4+
1984 09 23	071	0.6+	0.8−	1999 02 17	910	0.3+	0.4−	1999 04 15	704	0.7−	0.1+
1999 01 23	120	0.2+	0.2+	1999 02 17	910	0.2+	0.4−	1999 04 15	704	0.2−	1.0−
1999 01 23	120	0.1−	0.2−	1999 02 17	910	0.2+	0.5−	1999 04 16	704	0.0	0.0
1999 01 23	120	0.3−	0.2+	1999 02 18	910	0.3+	1.3−	1999 04 16	704	0.0	0.5+
1999 01 23	120	0.8−	0.4+	1999 02 18	910	0.2+	0.5−	1999 04 16	704	0.0	1.0+
1999 01 24	120	0.3−	0.0	1999 02 18	910	0.1+	0.6−	1999 04 16	704	0.4−	1.8+
1999 01 24	120	0.6+	0.1+	1999 04 10	120	0.8+	0.5−	1999 04 16	704	0.5−	0.5+
1999 01 24	120	0.3+	0.1−	1999 04 10	120	0.4+	0.5−				
1999 01 25	120	0.8+	0.1−	1999 04 10	120	0.3+	0.3−				

1999 BJ$_{14}$ = 1991 JO$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	131.61914		(2000.0)		**P**	**Q**	
n	0.23487794	ω	237.60273		+0.71399338	−0.69746181	
a	2.6016042	Ω	166.27660		+0.69718616	+0.70018261	
e	0.1036894	i	14.98045		+0.06438089	+0.15261500	
P	4.20	H	13.7	G	0.15	U	4

Residuals in seconds of arc

1991 05 08	413	1.1−	0.1+	1999 01 23	910	0.3−	0.1−	1999 04 15	704	0.6−	2.5+
1991 05 08	413	3.1+	1.2−	1999 01 26	910	0.1+	0.5+	1999 04 16	704	0.9+	0.0
1991 05 18	413	1.7−	0.7+	1999 01 26	910	0.2+	0.1−	1999 04 16	704	0.3−	0.5−
1991 05 18	413	0.4−	0.3+	1999 01 26	910	0.3+	0.0	1999 04 16	704	0.5−	0.9−
1999 01 23	910	0.1−	0.2−	1999 04 15	704	0.9−	0.2+	1999 04 16	704	1.1+	1.5−
1999 01 23	910	0.2−	0.2−	1999 04 15	704	0.3+	2.2+	1999 04 16	704	0.1+	2.0−

1999 BT_{24} = 1987 MK_1

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	302.79513		(2000.0)	**P**		**Q**	
n	0.22972793	ω	307.11870	−0.97339922		+0.18941462	
a	2.6403420	Ω	244.12694	−0.13677590		−0.93176404	
e	0.1297067	i	8.23674	−0.18381054		−0.30973839	
P	4.29	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1987 06 28	675	0.8−	0.0	1998 11 23	699	0.4+	0.5+	1999 01 18	704	1.5−	1.0−
1987 06 30	675	0.8+	0.1−	1998 11 23	699	0.3−	1.0−	1999 01 20	704	0.5+	0.5−
1998 11 17	699	0.0	0.2+	1999 01 18	704	0.5−	0.0	1999 01 20	704	0.2−	0.2+
1998 11 17	699	0.7+	0.3+	1999 01 18	704	0.7−	0.2−	1999 01 20	704	0.7+	0.4+
1998 11 17	699	0.4−	0.0	1999 01 18	704	0.2+	0.3−	1999 01 20	704	0.0	1.3+
1998 11 23	699	0.5−	0.0	1999 01 18	704	1.5+	0.1+				

1999 CU_9 = 1926 PF = 1937 OA = 1967 TN

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	185.44197		(2000.0)	**P**		**Q**	
n	0.26592802	ω	18.57534	+0.95216156		+0.28556224	
a	2.3949327	Ω	324.25187	−0.29864476		+0.79399210	
e	0.2655170	i	10.73522	−0.06480490		+0.53668496	
P	3.71	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1926 08 06	078	0.1+	3.4− Y	1999 03 05	428	0.7−	0.3−	1999 03 23	704	0.1+	0.6+
1926 08 07	078	10.9+	7.8− Y	1999 03 14	428	1.1−	0.2−	1999 03 23	704	0.2−	0.2−
1926 08 13	078	10.3−	10.3+ Y	1999 03 14	428	0.7−	0.0	1999 03 23	704	0.1−	0.1+
1937 07 16	078	(8.0+	26.7+)X	1999 03 20	704	0.6−	0.4−	1999 03 25	428	0.0	0.2+
1967 10 09	026	0.5+	1.6−	1999 03 20	704	1.7−	0.3−	1999 03 27	428	1.3−	0.4+
1999 02 14	428	1.1+	0.4−	1999 03 20	704	1.5−	0.5−	1999 03 27	428	0.4−	0.1−
1999 02 15	428	0.5−	0.9−	1999 03 20	704	0.7−	0.2−	1999 04 09	699	0.9+	1.0+
1999 02 15	428	0.5+	1.0−	1999 03 20	704	2.3−	0.3−	1999 04 09	699	1.0+	1.0+
1999 02 17	428	0.6−	0.2−	1999 03 22	699	2.5+	0.2+	1999 04 09	699	0.6+	0.5+
1999 02 17	428	0.2−	1.6−	1999 03 22	699	1.9+	0.3−	1999 04 12	428	0.6+	0.1−
1999 02 22	428	0.0	0.5+	1999 03 22	699	1.7+	0.5+	1999 04 12	428	0.3−	0.1+
1999 02 22	428	1.0−	0.2−	1999 03 23	704	0.4+	0.1+	1999 04 21	428	1.4+	0.1−
1999 03 05	428	0.8−	0.4−	1999 03 23	704	0.4+	0.2+	1999 04 21	428	0.6+	0.0

1999 CS_{14} = 1982 XS_1

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	150.57144		(2000.0)	**P**		**Q**	
n	0.20213537	ω	154.01576	+0.97601456		−0.21699187	
a	2.8754634	Ω	218.52979	+0.19449046		+0.90542634	
e	0.0698555	i	1.61994	+0.09782144		+0.36485294	
P	4.88	H	13.4	G	0.15	U	6

Residuals in seconds of arc

1982 12 13	381	0.6+	0.7+	1996 11 30	327	0.6+	0.7+	1999 02 23	120	0.1−	0.4+
1982 12 13	381	0.5+	0.7−	1999 02 15	120	0.6−	1.2−	1999 02 24	120	0.3−	0.2−
1982 12 14	381	0.4−	0.0	1999 02 15	120	0.8+	1.0+	1999 03 12	120	0.4−	0.5−
1982 12 14	381	0.6−	0.2−	1999 02 16	120	1.8−	0.1+	1999 03 12	120	0.3+	0.5+
1996 11 30	327	0.4−	0.7+	1999 02 18	120	1.1+	0.5−	1999 03 12	120	0.9+	0.4+
1996 11 30	327	0.6−	0.2−	1999 02 18	120	0.3+	0.7+				

1999 CU_{17} = 1977 RC_{12}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	59.06039		(2000.0)	**P**		**Q**	
n	0.19856358	ω	112.95037	+0.56568080		−0.82446609	
a	2.9098437	Ω	302.59014	+0.74938240		+0.52214180	
e	0.0778759	i	1.09849	+0.34413843		+0.21822835	
P	4.96	H	13.5	G	0.15	U	5

Residuals in seconds of arc

1977 09 09	675	0.5+	0.4+	1999 01 15	691	0.5−	0.2−	1999 02 10	704	0.6+	0.4+
1977 09 10	675	0.6−	0.1−	1999 01 20	704	1.0+	0.3−	1999 02 10	704	0.2−	1.1+
1998 12 21	704	0.5+	0.0	1999 01 20	704	0.8+	0.1−	1999 02 10	704	0.1−	0.0
1998 12 21	704	0.1−	0.6−	1999 01 20	704	1.2+	1.1−	1999 02 10	704	0.0	0.4+
1998 12 21	704	(2.7−	0.7+)	1999 01 20	704	0.2−	0.8−	1999 02 13	704	0.2+	0.6+
1998 12 21	704	0.8−	1.2+	1999 01 20	704	0.5−	1.6−	1999 02 13	704	0.3+	0.1+
1998 12 21	704	(5.7−	1.3+)	1999 01 25	725	1.5−	0.7+	1999 02 13	704	1.2+	1.1+
1999 01 15	691	0.4−	0.4−	1999 01 25	725	1.4−	0.6+	1999 02 13	704	0.2+	1.1−
1999 01 15	691	0.5−	0.0	1999 02 10	704	0.0	0.1+	1999 02 13	704	0.2+	0.2+

1999 CS_{18} = 1979 FB_4 = 1995 EF_9 = 1997 UF_{10}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	221.38961		(2000.0)	**P**		**Q**	
n	0.19005732	ω	160.66758	−0.13806909		+0.97268900	
a	2.9960311	Ω	101.05337	−0.93189278		−0.06378226	
e	0.0427390	i	10.95916	−0.33542924		−0.22317690	
P	5.19	H	12.6	G	0.15	U	1

Residuals in seconds of arc

1979 03 22	033	0.2+	0.6+	1998 10 01	699	0.5−	1.3−	1999 01 10	699	0.3+	0.3+
1979 03 22	033	0.3+	0.5+	1998 10 01	699	0.3−	0.8−	1999 01 10	699	0.1+	0.4+
1995 03 05	033	0.3+	0.1−	1998 11 14	699	0.1+	0.5−	1999 02 10	704	(2.0−	2.3−)
1995 03 05	033	0.1+	0.2−	1998 11 14	699	0.0	0.6+	1999 02 10	704	0.7−	1.4−
1995 03 07	033	0.3−	1.0+	1998 11 14	699	0.0	0.9+	1999 02 10	704	0.1−	0.9−
1997 10 29	566	0.1−	0.2+	1998 11 15	699	0.0	0.6+	1999 02 10	704	0.7+	1.5−
1997 10 29	566	0.2−	0.5+	1998 11 15	699	0.3+	1.0+	1999 02 13	704	0.8+	0.1+
1997 10 29	566	0.0	0.0	1998 11 15	699	0.5−	0.9+	1999 02 13	704	0.4+	0.6+
1997 10 30	566	0.0	0.3+	1998 12 16	699	0.7−	0.3−	1999 02 13	704	1.1+	1.0+
1997 10 30	566	0.1+	0.0	1998 12 16	699	0.1−	0.3+	1999 02 13	704	0.7+	0.8−
1997 10 30	566	0.2−	0.2+	1998 12 16	699	0.2−	0.1+	1999 02 13	704	0.5−	0.5−
1998 10 01	699	1.7−	0.4+	1999 01 10	699	0.0	0.1+				

1999 CJ_{19} = 1977 FW_2 = 1978 SJ_6 = 1991 XC_4 = 1994 TY_{14}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	210.83553		(2000.0)	**P**		**Q**	
n	0.30772403	ω	296.97769	+0.21263519		+0.97707500	
a	2.1728434	Ω	345.28774	−0.88117281		+0.18708845	
e	0.1387247	i	2.37461	−0.42228043		+0.10159902	
P	3.20	H	13.9	G	0.15	U	2

Residuals in seconds of arc

1977 03 26	095	0.5−	0.1−	1997 11 26	566	0.6−	0.2+	1999 02 10	704	1.4−	0.5+
1978 09 28	095	0.1+	1.0+	1997 11 26	566	0.5−	0.2+	1999 02 10	704	1.2−	0.1+
1978 10 04	095	0.1−	0.2−	1997 11 26	566	0.2−	0.2+	1999 02 10	704	1.1−	0.2+
1991 12 01	675	0.3−	0.5−	1998 11 18	699	0.8+	1.2+	1999 02 10	704	1.0−	1.0+
1991 12 01	675	(0.9+	3.1−)	1998 11 18	699	0.4+	0.2+	1999 02 11	699	0.6+	0.7+
1994 10 05	400	0.3−	1.2−	1998 11 18	699	0.2−	0.3+	1999 02 11	699	0.4+	0.9+
1994 10 05	400	(2.2−	0.9−)	1999 01 10	699	0.2+	0.2+	1999 02 11	699	0.9+	0.6+
1994 10 06	400	0.8+	1.0+	1999 01 10	699	0.3+	0.6−	1999 02 13	704	0.1+	0.0
1994 10 06	400	0.2+	0.1−	1999 01 10	699	0.6+	0.4−	1999 02 13	704	0.2+	0.2+
1994 10 28	691	0.1+	0.2−	1999 01 19	704	0.3+	0.8−	1999 02 13	704	0.7+	0.5−
1994 10 28	691	0.2−	0.3−	1999 01 19	704	0.0	0.1−	1999 02 13	704	0.1−	1.2−
1994 10 28	691	0.9+	0.3−	1999 01 19	704	0.4+	1.0−	1999 02 13	704	0.0	0.8−
1996 02 16	566	0.3+	0.2−	1999 01 19	704	0.5+	0.1−	1999 02 23	699	0.6−	0.9+
1996 02 16	566	0.5+	0.1−	1999 01 19	704	0.9−	1.0−	1999 02 23	699	0.3−	0.5+
1996 02 16	566	0.8+	0.2−	1999 02 10	704	0.8−	0.2−	1999 02 23	699	0.0	0.5+

1999 CS_{19} = 1981 SU = 1986 RN_{13} = 1991 PZ_{20}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	166.98860		(2000.0)		**P**	**Q**	
n	0.18980864	ω	6.25909		+0.77167650	+0.62435305	
a	2.9986474	Ω	314.34737		−0.59063846	+0.63277065	
e	0.0681681	i	9.76086		−0.23592707	+0.45802246	
P	5.19	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1981 09 25	801	(1.6+	5.5+)	1997 10 30	566	0.0	0.9−	1999 02 13	704	0.8−	0.5+
1981 09 29	801	(4.4−	1.3+)	1998 11 18	699	0.1−	1.5+	1999 02 13	704	0.4+	0.8+
1986 09 11	095	0.3+	1.9+	1998 11 18	699	0.6+	1.0+	1999 02 13	704	0.2−	0.4+
1990 04 29	413	0.3+	0.7−	1998 11 18	699	0.9−	0.4+	1999 02 13	704	0.2−	0.4−
1990 04 29	413	1.3−	0.3−	1999 02 10	704	0.0	0.9−	1999 02 13	704	0.5−	0.4−
1991 08 08	675	0.6−	0.4−	1999 02 10	704	0.4+	1.5−	1999 02 23	699	0.8+	0.0
1991 08 08	675	0.4−	0.7−	1999 02 10	704	0.5−	0.0	1999 02 23	699	0.8+	0.1+
1996 08 20	566	0.8+	0.5−	1999 02 10	704	0.5+	0.4−	1999 02 23	699	1.7+	0.3−
1996 08 20	566	0.2+	0.0	1999 02 10	704	0.9−	1.2−	1999 03 13	691	0.3−	0.0
1996 08 20	566	0.5+	0.2−	1999 02 11	699	0.2−	0.0	1999 03 13	691	0.5−	0.1−
1997 10 30	566	0.3−	0.8−	1999 02 11	699	0.6+	0.1+	1999 03 13	691	0.5−	0.2−
1997 10 30	566	0.2−	0.9−	1999 02 11	699	0.4+	0.4+				

1999 CN_{25} = 9566 P-L

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	59.67664		(2000.0)		**P**	**Q**	
n	0.26408008	ω	329.26749		+0.60331621	−0.79516159	
a	2.4060924	Ω	83.55577		+0.74361628	+0.53323683	
e	0.1803475	i	3.52260		+0.28817422	+0.28874995	
P	3.73	H	15.3	G	0.15	U	4

Residuals in seconds of arc

1960 10 17	675	0.1−	0.5+	1998 11 25	691	0.3−	0.2+	1999 02 10	704	0.8−	0.8+
1960 10 22	675	0.8−	0.3+	1999 01 19	704	1.0+	0.6−	1999 02 13	704	0.8+	1.3+
1960 10 24	675	0.2−	0.7+	1999 01 19	704	0.7−	1.6−	1999 02 13	704	1.2+	1.3−
1960 10 26	675	0.4+	0.3+	1999 01 19	704	0.1+	0.0	1999 02 13	704	0.7−	0.1−
1996 04 18	691	0.1−	0.3+	1999 01 19	704	1.6−	1.3−	1999 02 13	704	0.1+	0.7+
1996 04 18	691	0.2+	0.2+	1999 01 19	704	0.3+	0.2−	1999 02 24	699	0.0	0.5+
1996 04 18	691	0.3+	0.6+	1999 02 10	704	0.3−	0.7+	1999 02 24	699	0.9+	0.5+
1998 11 25	691	0.0	0.1+	1999 02 10	704	0.3−	1.0+	1999 02 24	699	0.5+	0.3+
1998 11 25	691	0.1−	0.0	1999 02 10	704	0.1+	0.0				

1999 CS_{26} = 1973 FL = 1988 GO_2

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	311.90761		(2000.0)		**P**	**Q**	
n	0.26184027	ω	111.48218		−0.97421402	+0.21757204	
a	2.4197941	Ω	81.12315		−0.22284932	−0.88646401	
e	0.1190971	i	3.46674		−0.03528777	−0.40846539	
P	3.76	H	15.1	G	0.15	U	2

Residuals in seconds of arc

1973 03 29	805	0.3+	0.6+	1999 01 19	704	(3.4−	0.2−)	1999 02 13	704	0.4−	0.1−
1988 04 15	054	1.4−	0.2−	1999 02 10	704	0.7+	0.5−	1999 02 13	704	1.2−	0.5+
1988 04 15	054	1.2+	0.0	1999 02 10	704	0.2−	0.2−	1999 02 13	704	0.0	0.4+
1997 10 30	704	0.8−	1.1−	1999 02 10	704	0.4−	0.6−	1999 02 13	704	0.3−	0.7+
1997 10 30	704	(0.6+	2.4+)	1999 02 10	704	0.8+	0.3−	1999 02 19	566	0.5−	0.6−
1997 10 30	704	1.1+	0.4+	1999 02 10	704	0.6+	0.5−	1999 02 19	566	0.7−	0.8−
1997 10 30	704	0.5−	1.0+	1999 02 12	699	1.4+	0.9+	1999 02 19	566	0.9−	0.3−
1999 01 19	704	(1.5−	2.3+)	1999 02 12	699	0.8+	0.1+	1999 02 24	699	0.4−	0.1−
1999 01 19	704	0.2−	0.4−	1999 02 12	699	1.4+	0.3+	1999 02 24	699	0.4−	0.4+
1999 01 19	704	0.1−	0.2+	1999 02 13	704	0.7−	1.1+	1999 02 24	699	0.6+	0.1−

1999 CJ_{27} = 1982 BD_6

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.64562		(2000.0)		**P**	**Q**	
n	0.23226749	ω	353.75756		+0.64323109	−0.76050431	
a	2.6210608	Ω	56.17051		+0.70703351	+0.54544438	
e	0.2631071	i	6.13713		+0.29386627	+0.35231181	
P	4.24	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1982 01 26	381	0.2−	0.4+	1999 01 19	704	0.2+	0.0	1999 02 13	704	0.2−	0.5−
1982 01 26	381	0.1−	1.1+	1999 01 19	704	0.0	0.0	1999 02 13	704	0.6+	1.0−
1982 01 28	381	0.8+	0.3+	1999 01 19	704	1.0−	1.0+	1999 02 13	704	0.2+	0.2+
1998 12 14	699	0.7+	0.4+	1999 02 10	704	0.3+	0.5−	1999 02 13	704	0.5−	0.0
1998 12 14	699	0.5−	0.1−	1999 02 10	704	0.4−	0.0	1999 02 13	704	0.2+	0.0
1998 12 14	699	0.2+	1.1−	1999 02 10	704	0.1+	0.2+	1999 02 19	566	0.7+	0.2−
1999 01 19	704	0.2−	0.9−	1999 02 10	704	0.7−	0.3+	1999 02 19	566	0.6+	0.1+
1999 01 19	704	0.7−	0.3−	1999 02 10	704	0.6−	0.5+	1999 02 19	566	0.7+	0.1+

1999 CQ_{27} = 1997 WC_{37}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	239.81675		(2000.0)		**P**	**Q**	
n	0.19143609	ω	176.94167		−0.18970121	+0.96233027	
a	2.9816283	Ω	82.06276		−0.90494426	−0.09441224	
e	0.0592330	i	11.34114		−0.38090593	−0.25496427	
P	5.15	H	13.4	G	0.15	U	4

Residuals in seconds of arc

1997 11 29	704	0.6+	0.0	1998 02 26	327	0.8+	0.1+	1999 02 10	704	0.7−	0.0
1997 11 29	704	0.4+	0.5−	1998 02 26	327	0.1+	0.1−	1999 02 10	704	0.2+	0.8−
1997 11 29	704	0.1−	1.0−	1998 02 26	327	0.3+	0.0	1999 02 10	704	0.5−	1.1+
1997 11 29	704	0.1−	0.8−	1998 12 27	699	1.5−	1.6−	1999 02 10	704	0.5−	0.4−
1997 11 29	704	1.7−	1.7−	1998 12 27	699	0.4+	1.1−	1999 02 13	704	1.1+	0.5+
1997 12 04	704	1.2−	1.1+	1998 12 27	699	0.1−	0.3−	1999 02 13	704	0.9−	1.3+
1997 12 04	704	1.1+	1.4+	1999 01 19	704	0.5+	0.2+	1999 02 13	704	0.6+	0.1−
1997 12 04	704	0.3+	1.0+	1999 01 19	704	0.4−	0.3+	1999 02 13	704	0.5−	0.3+
1997 12 04	704	1.1+	0.0	1999 01 19	704	1.1−	0.6−	1999 02 13	704	0.0	0.6+
1998 01 27	910	0.5−	0.4+	1999 01 19	704	(0.1+	2.1−)	1999 02 18	699	1.3+	0.2+
1998 01 27	910	1.0−	0.6+	1999 01 19	704	(2.8−	0.7+)	1999 02 18	699	0.5+	0.1−
1998 01 27	910	0.2−	0.3+	1999 02 10	704	0.7+	0.1−	1999 02 18	699	0.4+	0.0

1999 CG_{28} = 1993 TV_{41} = 1993 UG_9

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	267.15094		(2000.0)		**P**	**Q**	
n	0.25658812	ω	225.67630		−0.56097524	+0.82754228	
a	2.4527033	Ω	10.26740		−0.72022047	−0.47482537	
e	0.0931310	i	7.06459		−0.40815347	−0.29952403	
P	3.84	H	14.2	G	0.15	U	2

Residuals in seconds of arc

1984 03 29	413	1.3+	0.2−	1997 10 30	704	0.1+	0.0	1999 02 11	704	0.7−	0.1−
1984 03 29	413	0.8−	0.3−	1997 11 03	704	0.0	1.2+	1999 02 11	704	(2.1+	0.2−)
1984 05 23	413	1.0−	0.6−	1997 11 03	704	0.7+	0.0	1999 02 11	704	1.1+	0.8−
1984 05 23	413	0.1+	1.0+	1997 11 03	704	0.6+	0.8−	1999 02 11	704	(3.9−	2.8+)
1984 06 01	413	1.0+	0.3−	1997 11 03	704	0.8+	0.0	1999 02 11	704	(0.3+	4.5+)
1984 06 01	413	0.3−	1.0+	1997 11 22	691	0.2+	0.3−	1999 02 11	704	(3.1−	1.4+)
1992 04 09	413	0.7−	1.4−	1997 11 22	691	0.8−	0.2−	1999 02 11	704	2.0−	1.3+
1992 04 09	413	0.4+	0.1−	1997 11 22	691	0.8−	0.2−	1999 02 11	704	(2.2−	0.4−)
1993 10 10	809	(1.1+	2.2+)	1998 01 20	327	0.3+	0.3−	1999 02 11	704	(3.2−	0.1+)
1993 10 10	809	(0.4+	2.4+)	1998 01 20	327	0.1+	0.6−	1999 02 11	704	0.5−	0.0
1993 10 10	809	(2.3−	1.6+)	1998 01 20	327	0.3+	0.4−	1999 02 11	704	1.4−	1.0−
1993 10 22	809	(0.7−	2.5+)	1999 02 10	704	0.5−	0.2−	1999 02 11	704	0.1+	0.9+

1993 10 22	809	(2.1−	1.6+)	1999 02 10	704	0.6−	0.1−	1999 02 11	704	0.8−	0.8+
1993 10 22	809	1.5−	0.7+	1999 02 10	704	0.1−	0.1+	1999 02 13	704	0.2+	0.1+
1997 10 29	098	(2.4−	0.4+)	1999 02 10	704	0.7−	0.4+	1999 02 13	704	0.2+	1.0−
1997 10 29	098	(1.1+	2.8−)	1999 02 10	704	0.5−	0.6−	1999 02 13	704	1.9+	0.1−
1997 10 30	704	0.2+	1.2−	1999 02 11	704	0.8+	0.3−	1999 02 13	704	0.8−	1.5−
1997 10 30	704	0.4−	0.1−	1999 02 11	704	1.6+	0.1+	1999 02 20	699	1.0+	0.7+
1997 10 30	704	0.5+	0.4+	1999 02 11	704	0.8+	0.4−	1999 02 20	699	0.4+	1.1+
1997 10 30	704	0.3+	0.6+	1999 02 11	704	0.1+	0.2+	1999 02 20	699	0.2+	0.8+

1999 CJ$_{31}$ = 3086 T-1

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	56.58721		(2000.0)		**P**	**Q**	
n	0.27841793	ω	65.38907		+0.34136628	−0.93990882	
a	2.3227613	Ω	4.66460		+0.83160405	+0.29886246	
e	0.0871999	i	4.48704		+0.43806821	+0.16508376	
P	3.54	H	15.9	G	0.15	U	5

Residuals in seconds of arc

1971 03 25	675	1.1−	0.8−	1999 02 10	704	0.3+	0.1−	1999 02 13	704	0.7−	0.8−
1971 03 26	675	0.7−	0.3+	1999 02 10	704	1.3−	0.2+	1999 02 13	704	0.5+	0.1−
1971 03 26	675	0.0	0.3+	1999 02 12	699	0.2+	0.4+	1999 02 13	704	0.5+	1.1−
1971 03 27	675	1.7+	0.1−	1999 02 12	699	0.7+	0.5+	1999 02 18	566	0.5−	0.8−
1992 03 04	809	0.5+	0.9+	1999 02 12	699	1.2+	0.2+	1999 02 18	566	0.2+	0.5−
1999 02 10	704	0.4+	0.2+	1999 02 13	704	0.6−	0.2−	1999 02 18	566	0.0	0.1+
1999 02 10	704	0.7−	0.4−	1999 02 13	704	0.4−	1.7+				

1999 CM$_{31}$ = 1993 VH$_8$ = 1995 FQ$_8$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	60.78317		(2000.0)		**P**	**Q**	
n	0.21651597	ω	323.57807		+0.69589008	−0.71206892	
a	2.7466886	Ω	82.11501		+0.67912195	+0.61028211	
e	0.2606035	i	5.40160		+0.23351739	+0.34715068	
P	4.55	H	15.4	G	0.15	U	4

Residuals in seconds of arc

1993 11 11	033	0.7+	0.5+	1995 04 02	691	0.0	0.1−	1999 02 11	704	1.0+	1.4−
1993 11 12	033	(3.0−	0.1−)	1995 04 02	691	0.0	0.3+	1999 02 11	704	0.2+	0.4+
1993 11 12	033	0.1−	0.1−	1999 02 10	704	0.0	0.7+	1999 02 11	704	0.1−	1.5+
1993 11 13	033	0.5−	0.3−	1999 02 10	704	0.1+	1.2+	1999 02 13	704	0.7+	0.4−
1995 03 26	691	0.2+	0.6−	1999 02 10	704	1.2+	0.1−	1999 02 13	704	1.2−	0.6+
1995 03 26	691	0.4−	0.2+	1999 02 10	704	0.2−	1.1−	1999 02 13	704	1.0−	0.1+
1995 03 26	691	0.4+	0.1+	1999 02 11	704	0.8+	0.5−	1999 02 13	704	0.2+	0.1+
1995 04 02	691	0.0	0.2+	1999 02 11	704	1.6−	1.2−				

1999 CC$_{34}$ = 1996 KC$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	119.50788		(2000.0)		**P**	**Q**	
n	0.26482540	ω	232.66885		+0.97905062	−0.20085383	
a	2.4015758	Ω	138.88788		+0.19917686	+0.91060396	
e	0.1032837	i	2.91434		+0.04229030	+0.36118993	
P	3.72	H	15.7	G	0.15	U	7

Residuals in seconds of arc

1996 05 17	691	0.7−	0.2+	1999 02 10	704	1.2+	0.6+	1999 02 11	691	0.4−	0.0
1996 05 17	691	0.4−	0.1+	1999 02 10	704	0.1+	0.3−	1999 02 13	704	1.3−	0.3+
1996 05 17	691	0.6−	0.3+	1999 02 10	704	0.8−	0.3+	1999 02 13	704	0.3−	0.3−
1996 05 20	691	0.5+	0.4−	1999 02 10	704	1.4+	1.2+	1999 02 13	704	0.7+	0.9−
1996 05 20	691	0.6+	0.2−	1999 02 11	691	0.1+	0.2−	1999 02 13	704	0.7−	1.0−
1996 05 20	691	0.8+	0.0	1999 02 11	691	0.0	0.2+				

1999 CH$_{34}$ = 1996 TH$_{62}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	317.54364		(2000.0)		**P**	**Q**	
n	0.18164326	ω	67.59274		−0.97868184	+0.20217184	
a	3.0878524	Ω	124.05363		−0.20081510	−0.90502624	
e	0.0926170	i	2.50225		−0.04307146	−0.37423796	
P	5.43	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1996 10 06	809	0.5+	1.1+	1998 01 30	327	0.3−	0.3−	1999 02 13	704	1.5+	0.0
1996 10 06	809	0.4−	0.3+	1998 01 30	327	0.4+	0.7+	1999 02 13	704	0.1−	0.2+
1996 10 06	809	0.3+	0.1−	1999 02 10	704	0.2−	0.0	1999 02 13	691	0.6−	0.3−
1996 10 07	809	0.4−	0.0	1999 02 10	704	0.4+	0.8−	1999 02 13	704	1.4−	1.9+
1996 10 07	809	0.1−	1.2+	1999 02 10	704	0.6−	0.7+	1999 02 13	704	(0.6−	2.2+)
1996 10 07	809	1.0−	0.3+	1999 02 10	704	0.3−	0.2+	1999 02 13	691	0.4−	0.3−
1997 11 29	704	0.1+	0.1−	1999 02 10	704	0.6−	0.9−	1999 02 13	691	0.4−	0.2−
1997 11 29	704	0.5−	0.3+	1999 02 12	699	0.3+	0.5+	1999 02 23	699	0.5+	1.2+
1997 11 29	704	0.1+	1.8−	1999 02 12	699	0.9+	0.9−	1999 02 23	699	0.1−	0.8+
1997 11 29	704	0.7+	0.2+	1999 02 12	699	0.6+	0.1+	1999 02 23	699	0.5+	0.8+
1998 01 30	327	0.1−	0.7−	1999 02 13	704	0.6+	0.4−				

1999 CR$_{35}$ = 1997 VM$_1$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	336.65160		(2000.0)		**P**	**Q**	
n	0.19170483	ω	96.42429		−0.93424944	−0.31540294	
a	2.9788412	Ω	65.29440		+0.20893443	−0.86229496	
e	0.0467621	i	10.55613		+0.28900584	−0.39619236	
P	5.14	H	13.7	G	0.15	U	5

Residuals in seconds of arc

1997 10 29	358	(5.2+	2.6−)	1997 11 02	358	1.8+	0.5+	1999 02 13	704	0.1+	0.6−
1997 10 29	358	0.3+	0.7−	1997 11 02	358	1.1+	0.1−	1999 02 13	704	0.1−	0.4−
1997 10 31	566	0.1−	0.5+	1997 11 03	358	0.2+	1.2−	1999 02 13	704	0.1+	0.4−
1997 10 31	566	0.1+	0.5+	1997 11 03	358	(1.6+	2.5−)	1999 02 13	704	0.4−	0.2−
1997 10 31	566	0.3−	0.4+	1999 02 10	704	0.1−	0.0	1999 04 06	595	0.6+	1.2−
1997 10 31	566	0.4−	0.3+	1999 02 10	704	0.6+	0.8+	1999 04 06	595	0.2−	0.5−
1997 10 31	566	0.1+	1.1+	1999 02 10	704	0.9−	1.3+	1999 04 10	595	0.1−	0.5+
1997 10 31	566	0.4−	0.2−	1999 02 10	704	0.0	0.7+	1999 04 10	595	0.7−	0.3−
1997 11 01	358	1.7−	0.2−	1999 02 10	704	1.1+	0.6+				
1997 11 01	358	0.3−	1.2−	1999 02 13	704	0.1−	0.8−				

1999 CH$_{38}$ = 1991 RW$_7$ = 1997 WR$_{53}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	129.59865		(2000.0)		**P**	**Q**	
n	0.18061302	ω	228.89103		+0.99878809	−0.01477875	
a	3.0995836	Ω	131.89993		+0.03064961	+0.93308837	
e	0.1862850	i	3.61622		−0.03850902	+0.35934341	
P	5.46	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1991 09 12	675	1.0+	0.5−	1997 12 05	704	0.9−	0.9−	1999 02 10	704	0.2−	0.1+
1991 09 12	675	0.4+	0.7−	1997 12 05	704	0.3−	0.1+	1999 02 11	691	0.9+	0.9−
1991 09 14	675	0.9+	1.8−	1997 12 05	704	1.6−	0.7−	1999 02 11	691	0.4+	0.3−
1991 09 14	675	0.2−	0.7−	1997 12 05	704	1.1+	0.2+	1999 02 11	691	0.8+	0.4−
1991 10 04	691	0.2−	0.3+	1997 12 05	704	0.2+	1.2+	1999 02 12	691	1.0−	0.4−
1991 10 04	691	0.4−	0.3+	1997 12 30	566	1.5+	0.0	1999 02 12	691	1.0−	0.6−
1991 10 04	691	0.5−	0.3+	1997 12 30	566	1.8+	0.2+	1999 02 12	691	0.9−	0.4−
1997 11 29	704	1.0−	1.9+	1997 12 30	566	1.9+	0.3+	1999 02 13	704	0.6−	1.3−
1997 11 29	704	0.6+	0.8−	1999 02 10	704	1.4−	0.2+	1999 02 13	704	0.3−	0.7−
1997 11 29	704	1.7−	0.8−	1999 02 10	704	0.5−	0.3−	1999 02 13	704	1.5+	0.2−
1997 11 29	704	1.6−	1.3+	1999 02 10	704	0.3+	1.5+	1999 02 13	704	1.0+	0.4+

1999 CX$_{38}$ = 1992 CM = 1997 UW$_9$

Id. S. Nakano

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	331.80491		(2000.0)		**P**		**Q**
n	0.28385911	ω	137.88408		−0.98966189		−0.14165020
a	2.2929830	Ω	33.99195		+0.11852435		−0.89596393
e	0.0660662	i	2.30265		+0.08075473		−0.42093212
P	3.47	H	14.4	G	0.15	U	2

Residuals in seconds of arc

1992 02 05	372	1.2−	0.6−	1998 11 25	704	0.3−	1.0+	1999 02 11	704	0.1+	0.4+
1992 02 05	372	1.3+	0.0	1998 11 25	704	1.6−	0.4−	1999 02 11	704	0.4+	0.2−
1992 02 08	372	0.3+	1.6−	1998 11 25	704	(2.8−	1.8−)	1999 02 11	704	0.0	0.2+
1992 02 08	372	1.2−	0.1−	1998 11 25	704	(5.0−	0.8+)	1999 02 11	704	0.1−	0.0
1996 05 19	566	0.1−	0.1−	1998 12 17	699	0.0	0.9+	1999 02 11	704	0.5+	1.4−
1996 05 19	566	0.2−	0.4−	1998 12 17	699	0.3−	1.4+	1999 02 11	704	0.5+	0.7−
1996 05 19	566	0.2−	0.6−	1998 12 17	699	0.1+	1.1+	1999 02 11	704	1.0−	0.5−
1997 10 28	704	(2.7+	5.5−)	1999 01 22	699	0.2+	0.2−	1999 02 11	704	0.2−	0.5−
1997 10 28	704	(2.7+	3.3−)	1999 01 22	699	0.2−	0.7−	1999 02 11	704	1.3−	0.6−
1997 10 28	704	(3.1+	6.4−)	1999 01 22	699	1.0+	0.7−	1999 02 13	704	0.3−	0.2+
1997 10 28	704	(0.9+	4.8−)	1999 02 10	704	0.0	0.5+	1999 02 13	704	1.2−	0.6−
1997 10 28	704	(0.1−	6.1−)	1999 02 10	704	0.2+	1.5+	1999 02 13	704	0.6−	0.2+
1997 10 29	566	0.0	0.3−	1999 02 10	704	0.1−	0.7+	1999 02 13	704	1.0−	0.1−
1997 10 29	566	0.2−	0.7−	1999 02 10	704	0.4+	1.6+	1999 02 13	704	0.5−	0.7−
1997 10 29	566	0.1−	0.2−	1999 02 10	704	(0.3−	2.3+)	1999 02 23	699	0.3+	0.4+
1997 10 30	566	0.2−	0.2−	1999 02 11	704	1.1+	0.5+	1999 02 23	699	0.6+	0.5+
1997 10 30	566	0.2−	0.4−	1999 02 11	704	0.9+	0.2+	1999 02 23	699	0.5+	0.2+
1997 10 30	566	0.5−	0.3−	1999 02 11	704	0.4+	0.3+	1999 03 21	699	0.9+	0.3−
1997 12 11	327	0.2+	1.1−	1999 02 11	704	0.3−	0.4−	1999 03 21	699	0.5−	0.2−
1997 12 11	327	0.9+	0.4+	1999 02 11	704	0.4+	0.2−	1999 03 21	699	0.8+	0.3−
1997 12 11	327	1.9+	1.0+	1999 02 11	704	0.0	0.5−				

1999 CB$_{43}$ =A924 LB = 1974 SV$_1$ = 1983 HX$_1$ = 1990 QF$_{18}$ = 1990 RF$_{11}$

Id. G. V. Williams (*MPC* 34243, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	236.84404		(2000.0)		**P**		**Q**
n	0.18131109	ω	190.27312		+0.20451683		+0.97826088
a	3.0916226	Ω	91.53425		−0.89563551		+0.20116414
e	0.1440761	i	1.96803		−0.39498090		+0.05038487
P	5.44	H	13.1	G	0.15	U	1

Residuals in seconds of arc

1924 06 07	078	(0.0	14.7−)Y	1996 10 11	566	0.9−	0.2+	1999 02 10	704	0.2+	0.0
1924 06 07	078	(3.4−	16.9−)Y	1996 10 11	566	0.7−	0.7+	1999 02 10	704	0.3+	0.3−
1974 09 19	095	0.4−	0.8−	1996 10 11	566	0.4−	0.2+	1999 02 10	704	0.1+	0.6−
1974 09 21	095	0.9−	1.6+	1996 11 07	327	0.2+	0.1+	1999 02 13	704	0.5−	0.4+
1974 09 23	095	2.3+	2.5−	1996 11 07	327	0.6+	0.4+	1999 02 13	704	0.6−	0.4−
1983 04 16	033	0.3−	0.3+	1996 11 07	327	0.2+	0.2−	1999 02 13	704	0.5−	0.2−
1983 04 16	033	0.0	0.5+	1999 01 22	699	1.3−	0.4+	1999 02 13	704	0.5−	0.2+
1990 08 28	095	(0.5+	3.6−)	1999 01 22	699	0.4+	0.3−	1999 02 13	704	0.4−	0.4+
1990 08 28	095	(2.7−	2.8−)	1999 01 22	699	0.7+	0.1+	1999 02 23	699	1.0+	1.3−
1990 09 14	675	0.1−	0.3−	1999 02 10	704	0.1−	0.6−	1999 02 23	699	0.1+	0.2−
1990 09 14	675	0.5+	0.4−	1999 02 10	704	0.0	0.0	1999 02 23	699	0.9+	0.0

1999 CD$_{47}$ = 1986 PY$_5$ = 1992 GL$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	270.30125		(2000.0)		**P**		**Q**
n	0.27744342	ω	242.03610		−0.44431615		+0.89586451
a	2.3281972	Ω	1.59443		−0.77697977		−0.38359663
e	0.0802542	i	6.50750		−0.44596591		−0.22423294
P	3.55	H	14.8	G	0.15	U	4

Residuals in seconds of arc

1986 08 11	095	0.0	0.0	1999 02 10	704	0.7+	0.5−	1999 02 13	704	0.2−	1.7+
1992 04 03	033	0.2+	0.4−	1999 02 12	699	0.4+	0.1+	1999 02 13	704	1.9−	0.9+
1992 04 03	033	0.1+	0.9+	1999 02 12	699	0.3+	0.6+	1999 02 23	699	1.0−	1.2−
1999 02 10	704	1.7+	0.1−	1999 02 12	699	0.8+	0.7+	1999 02 23	699	0.8−	1.5−
1999 02 10	704	1.2+	0.8−	1999 02 13	704	1.1−	0.3+	1999 02 23	699	0.7−	1.4−
1999 02 10	704	0.8+	0.0	1999 02 13	704	0.6−	1.1+				
1999 02 10	704	1.1+	1.5−	1999 02 13	704	0.6−	1.2+				

1999 CP$_{48}$ = 1982 BL$_{13}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	45.95586		(2000.0)		**P**		**Q**
n	0.17729410	ω	341.92223		+0.10146250		−0.99362695
a	3.1381464	Ω	102.23232		+0.91883660		+0.07467659
e	0.1953612	i	2.87981		+0.38137208		+0.08443276
P	5.56	H	13.5	G	0.15	U	5

Residuals in seconds of arc

1982 01 30	675	0.3+	0.3+	1999 02 13	704	0.1−	0.4+	1999 03 20	704	0.1−	0.1−
1982 01 31	675	0.2−	0.1−	1999 02 13	704	0.0	0.5+	1999 03 20	704	0.2−	0.5−
1999 02 10	704	0.1+	0.3−	1999 02 13	704	0.9−	0.7+	1999 03 20	704	0.2−	0.8−
1999 02 10	704	0.4+	0.6−	1999 02 13	704	1.9−	0.9+	1999 03 20	704	0.8−	0.4−
1999 02 10	704	0.4−	0.6−	1999 02 18	699	0.3+	0.0	1999 03 23	704	0.6−	0.3+
1999 02 10	704	1.7+	2.1−	1999 02 18	699	0.7+	0.5+	1999 03 23	704	1.5+	2.5+
1999 02 10	704	0.9−	0.4+	1999 02 18	699	0.9+	0.0	1999 03 23	704	0.5−	0.6+
1999 02 13	704	0.2+	0.2+	1999 03 20	704	0.7+	1.5−				

1999 CC$_{50}$ = 1996 RP$_{13}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	353.90366		(2000.0)		**P**		**Q**
n	0.17344110	ω	162.79653		−0.91114505		−0.41119713
a	3.1844520	Ω	352.74726		+0.34837796		−0.73356298
e	0.1344170	i	12.37162		+0.22010793		−0.54111207
P	5.68	H	14.8	G	0.15	U	5

Residuals in seconds of arc

1996 09 08	691	0.1+	0.1−	1999 02 10	704	1.1+	0.2+	1999 02 18	699	0.4+	0.6−
1996 09 08	691	0.1+	0.3+	1999 02 10	704	0.0	0.1+	1999 02 18	699	1.0+	0.5+
1996 09 08	691	0.1+	0.1+	1999 02 10	704	0.9−	0.6+	1999 02 18	699	0.7+	0.4−
1996 09 19	691	0.1+	0.0	1999 02 10	704	0.2+	0.4+	1999 02 23	699	0.4+	0.3−
1996 09 19	691	0.1−	0.0	1999 02 13	704	1.0−	1.6−	1999 02 23	699	0.5−	0.2−
1996 09 19	691	0.2−	0.2−	1999 02 13	704	0.9−	0.3+	1999 02 23	699	0.4−	0.5+
1999 02 10	704	0.6−	1.4−	1999 02 13	704	0.7+	1.8+				

1999 CJ$_{50}$ = 1994 PH$_{28}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	22.12892		(2000.0)		**P**		**Q**
n	0.29214939	ω	107.32574		−0.11073540		−0.99363868
a	2.2493967	Ω	348.97140		+0.86632726		−0.08640257
e	0.3193786	i	6.14884		+0.48704697		−0.07222727
P	3.37	H	15.4	G	0.15	U	4

Residuals in seconds of arc

1994 08 12	809	1.3+	0.5+	1998 12 09	327	0.5+	0.4−	1999 03 19	704	0.6+	0.1+
1994 08 12	809	0.1+	1.1−	1998 12 09	327	0.3+	0.0	1999 03 19	704	0.6−	0.2−
1994 08 12	809	0.3+	0.1−	1999 02 10	704	0.2−	0.3−	1999 03 19	704	0.7+	0.2−
1994 08 13	809	(0.6−	2.4−)	1999 02 10	704	0.2−	0.3−	1999 03 19	704	0.6−	1.3+
1994 08 13	809	(1.6−	2.3−)	1999 02 10	704	0.7−	0.2−	1999 03 20	704	0.7+	0.3−
1994 08 13	809	(1.1−	2.3−)	1999 02 10	704	0.9−	0.2−	1999 03 20	704	0.0	0.9−
1994 09 05	809	(1.0−	2.9+)	1999 02 10	704	1.0−	0.1−	1999 03 20	704	0.4−	0.0
1994 09 05	809	(0.5−	2.6+)	1999 02 13	704	0.4−	0.3+	1999 03 20	704	0.0	0.1−
1994 09 05	809	(1.1−	2.5+)	1999 02 13	704	0.1+	0.5+	1999 03 20	704	0.1−	0.7−
1994 09 06	809	2.0−	1.4+	1999 02 13	704	0.6+	0.1−	1999 03 20	699	1.1+	0.0
1994 09 06	809	(1.6−	2.1+)	1999 02 13	704	0.3−	1.1+	1999 03 20	699	0.1+	0.1−
1994 09 06	809	(2.9−	0.8+)	1999 02 13	704	0.0	0.4+	1999 03 20	699	1.8+	0.1+
1998 12 09	327	0.1+	0.3+	1999 03 19	704	0.3−	0.5+				

1999 CL$_{50}$ = 1977 EA$_4$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	31.60643		(2000.0)		−0.18708552	−0.98173960
n	0.26652460	ω	324.56020		+0.91237056	−0.18664879
a	2.3913575	Ω	136.19355		+0.36411396	−0.03673684
e	0.1668236	i	2.85211			
P	3.70	H	14.8	G 0.15	U 3	

Residuals in seconds of arc

1977 03 15	381	0.6−	0.4+	1999 02 10	704	0.3+	0.3+	1999 03 19	704	0.5−	0.3+
1977 03 15	381	0.1−	0.7−	1999 02 10	704	0.4+	1.0+	1999 03 19	704	0.8+	0.1+
1982 07 20	413	0.8−	0.1+	1999 02 12	699	0.4+	0.5+	1999 03 19	704	0.1+	0.9−
1982 07 20	413	1.8+	0.9+	1999 02 12	699	0.7+	0.0	1999 03 19	704	1.4−	0.8−
1997 09 26	910	0.4−	0.1+	1999 02 12	699	(2.3+	0.1+)	1999 03 20	704	0.8−	0.8+
1997 09 26	910	0.3−	0.1+	1999 02 13	704	1.1+	0.6−	1999 03 20	704	0.5−	0.3−
1997 09 27	910	0.5−	0.0	1999 02 13	704	1.2+	1.7−	1999 03 20	704	0.3−	0.9+
1999 02 10	704	0.0	0.2+	1999 02 13	704	0.7+	0.3−	1999 03 20	704	0.6−	1.2+
1999 02 10	704	0.1−	0.3+	1999 02 13	704	0.1+	0.9−	1999 03 20	704	0.7−	1.5+
1999 02 10	704	0.2−	0.2+	1999 02 13	704	0.1−	0.4−				

1999 CM$_{51}$ = 1980 YJ = 1984 UA$_4$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	93.64801		(2000.0)		+0.81378971	−0.57843056
n	0.22774979	ω	47.83821		+0.42999714	+0.66440755
a	2.6556086	Ω	347.16148		+0.39095877	+0.47326600
e	0.2009310	i	14.66452			
P	4.33	H	13.1	G 0.15	U 3	

Residuals in seconds of arc

1980 12 31	688	0.1+	0.3−	1999 02 13	704	0.2−	0.7−	1999 03 20	704	1.2−	0.1+
1980 12 31	688	0.1−	0.3+	1999 02 13	704	0.1+	0.1+	1999 03 20	704	0.2−	0.4+
1984 10 20	095	0.0	0.0	1999 02 13	704	0.1−	0.0	1999 03 20	704	0.1+	0.4−
1999 02 10	704	0.5+	0.1+	1999 02 13	704	0.6+	0.3+	1999 03 20	704	0.8+	0.2+
1999 02 10	704	0.0	0.1+	1999 02 13	704	0.1−	0.7−	1999 03 20	704	0.7+	0.5−
1999 02 10	704	0.0	0.0	1999 03 19	704	0.5+	0.6+	1999 03 20	699	0.9−	0.5+
1999 02 10	704	0.6+	0.0	1999 03 19	704	0.1+	0.2+	1999 03 20	699	0.0	0.2−
1999 02 10	704	0.2−	0.0	1999 03 19	704	0.1+	0.1+	1999 03 20	699	1.2−	0.1−

1999 CY$_{53}$ = 1982 BR$_{15}$ = 1997 WK$_{54}$

Id. A. Doppler (*MPC* 34246), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	28.02986		(2000.0)		−0.41703495	−0.90771972
n	0.17752579	ω	20.28853		+0.82738138	−0.40014776
a	3.1354154	Ω	94.38233		+0.37619397	−0.12620097
e	0.1379312	i	2.65099			
P	5.55	H	13.5	G 0.15	U 4	

Residuals in seconds of arc

1982 01 30	675	0.1+	0.5−	1999 02 10	704	0.3−	0.2+	1999 02 22	699	0.4+	0.4−
1982 01 31	675	0.3−	0.2−	1999 02 10	704	0.4−	0.1−	1999 02 22	699	0.7+	0.1+
1997 11 29	704	0.1+	0.6−	1999 02 10	704	0.2+	0.6+	1999 02 22	699	1.6+	0.2−
1997 11 29	704	0.6+	0.4+	1999 02 10	704	0.4+	0.2+	1999 03 20	704	1.2−	1.6−
1997 11 29	704	1.2+	0.1+	1999 02 10	704	0.6−	0.4+	1999 03 20	704	0.7−	0.8−
1997 11 29	704	0.8+	0.2−	1999 02 13	704	0.6+	0.3+	1999 03 20	704	1.2−	0.1+
1997 11 29	704	1.8+	1.8+	1999 02 13	704	1.5−	0.8−	1999 03 20	704	0.3+	0.1+
1997 11 29	691	0.3−	0.0	1999 02 13	704	0.6+	0.6+	1999 03 20	704	0.2+	0.9−
1997 11 29	691	0.6+	0.1+	1999 02 13	704	1.6+	0.4−	1999 03 23	704	1.2+	0.4−
1997 11 29	691	0.7+	0.5+	1999 02 18	699	0.6+	0.4+	1999 03 23	704	0.3−	0.2−
1997 12 04	704	0.4−	0.8−	1999 02 18	699	0.5+	0.1+	1999 03 23	704	0.9−	0.0
1997 12 04	704	1.9−	1.2−	1999 02 18	699	0.4+	0.5+	1999 03 23	704	0.6−	1.4+
1997 12 04	704	0.8−	0.3−	1999 02 18	566	0.6−	0.2+	1999 03 23	704	0.4−	0.9+
1997 12 04	704	0.5+	1.4+	1999 02 18	566	0.1+	0.2+				
1997 12 04	704	2.9−	1.0−	1999 02 18	566	0.5−	0.1+				

1999 CJ$_{54}$ = 1996 TL$_{41}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	91.93428		(2000.0)		+0.53630434	−0.84176491
n	0.16891108	ω	261.68204		+0.82117717	+0.50349012
a	3.2411363	Ω	155.57387		+0.19505312	+0.19475506
e	0.0408141	i	8.58392			
P	5.84	H	13.4	G 0.15	U 4	

Residuals in seconds of arc

1996 10 07	809	1.3+	0.5+	1999 02 10	704	1.1−	1.6+	1999 03 20	704	1.1+	1.7+
1996 10 07	809	1.1+	1.0+	1999 02 10	704	0.9+	0.9−	1999 03 20	704	1.8+	0.6+
1996 10 07	809	0.6−	1.6−	1999 02 10	704	1.3−	0.5+	1999 03 20	704	2.0−	0.5−
1996 10 08	809	0.2−	0.8−	1999 02 13	704	0.2+	0.1+	1999 03 23	704	0.2+	2.1−
1996 10 08	809	1.1−	1.2−	1999 02 13	704	1.3−	0.4−	1999 03 23	704	0.4+	0.4+
1996 10 08	809	1.2+	1.1−	1999 02 13	704	1.9+	0.2+	1999 03 23	704	0.8−	0.6+
1996 10 10	809	0.6+	1.9+	1999 02 13	704	0.9+	1.2−	1999 03 23	704	0.5−	0.4+
1996 10 10	809	1.0−	0.9+	1999 03 20	704	0.3−	0.0				
1996 10 10	809	1.3−	0.2+	1999 03 20	704	0.0	1.1−				

1999 CP$_{54}$ = 1978 TS = 1991 XB$_4$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	113.44151		(2000.0)		+0.93165776	−0.36284260
n	0.30788923	ω	316.64309		+0.33882009	+0.84877674
a	2.1720662	Ω	64.64066		+0.13120507	+0.38460798
e	0.1560855	i	1.20157			
P	3.20	H	15.0	G 0.15	U 5	

Residuals in seconds of arc

1978 10 09	095	0.3−	0.7+	1999 02 13	704	1.7+	0.7+	1999 03 20	704	0.7+	0.1+
1991 12 01	675	0.2+	0.3−	1999 02 13	704	0.1+	0.5+	1999 03 20	704	0.1−	0.3+
1991 12 01	675	0.1−	0.0	1999 02 13	704	0.8−	0.2−	1999 03 20	704	0.4−	0.6+
1999 02 10	704	0.6+	0.3−	1999 02 18	566	0.2−	1.4−	1999 03 23	704	1.6−	0.0
1999 02 10	704	0.5−	0.1+	1999 02 18	566	0.3−	1.1−	1999 03 23	704	0.4−	1.3+
1999 02 10	704	0.4−	1.0−	1999 02 18	566	0.7−	1.0−	1999 03 23	704	0.0	0.1−
1999 02 10	704	0.9+	0.9+	1999 03 20	704	1.1+	0.1−	1999 03 23	704	0.1−	0.3+
1999 02 13	704	0.5+	1.1+	1999 03 20	704	0.0	0.2+				

1999 CV$_{54}$ = 1977 KA$_1$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

					P	Q
M	302.83784		(2000.0)		−0.76359459	+0.64338674
n	0.26386453	ω	155.37877		−0.60196038	−0.67875810
a	2.4074025	Ω	64.77820		−0.23359581	−0.35403523
e	0.1388628	i	3.45759			
P	3.74	H	15.0	G 0.15	U 5	

Residuals in seconds of arc

1977 05 18	675	0.4−	0.2+	1999 02 13	704	0.9+	0.1+	1999 03 20	704	0.2−	0.1+
1977 05 18	675	2.4+	0.4+	1999 02 13	704	0.1+	1.4+	1999 03 20	704	0.7−	1.4+
1977 05 19	675	2.8−	0.2−	1999 02 13	704	0.4+	0.7−	1999 03 20	704	1.0−	0.1−
1977 05 19	675	0.9+	0.2+	1999 02 13	704	0.2−	0.6−	1999 03 20	704	0.1−	0.4−
1999 02 10	704	0.3−	0.3+	1999 02 18	699	0.9+	0.3−	1999 03 20	704	0.6−	1.0+
1999 02 10	704	0.4−	0.7+	1999 02 18	699	0.6+	0.5−	1999 03 23	704	0.5+	2.0−
1999 02 10	704	0.9−	1.3+	1999 02 18	699	0.8+	0.4−	1999 03 23	704	1.1+	0.2+
1999 02 10	704	0.8+	1.1+	1999 02 18	566	0.7+	0.5−	1999 03 23	704	0.1−	1.5−
1999 02 10	704	1.0−	1.3+	1999 02 18	566	0.6+	0.5−	1999 03 23	704	0.0	0.5−
1999 02 13	704	0.8−	0.4+	1999 02 18	566	0.3+	0.5−	1999 03 23	704	1.5−	0.8−

1999 CN_{56} = 1996 KZ_6

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	100.21538		(2000.0)	**P**		**Q**	
n	0.27516911	ω	350.47105	+0.79426198		−0.60476884	
a	2.3410082	Ω	46.90690	+0.56256759		+0.69576451	
e	0.1255967	i	4.58163	+0.22948989		+0.38751309	
P	3.58	H	14.1	G	0.15	U	6

Residuals in seconds of arc

1996 05 19	809	0.7+	1.0+	1999 02 10	704	1.1+	1.0+	1999 03 20	704	0.0	0.3−
1996 05 19	809	0.1−	0.4+	1999 02 13	704	1.0−	0.6−	1999 03 20	704	0.1+	0.5+
1996 05 19	809	0.2+	0.8+	1999 02 13	704	0.6+	1.4+	1999 03 20	704	0.2+	0.4−
1996 05 22	809	0.8+	0.3−	1999 02 13	704	0.8+	1.0−	1999 03 20	704	0.4−	0.0
1996 05 22	809	0.4+	0.3−	1999 02 13	704	0.8−	1.2−	1999 03 23	704	0.6+	0.8+
1996 05 22	809	2.0−	1.5−	1999 02 18	699	0.4+	0.2−	1999 03 23	704	1.3+	1.1−
1999 02 10	704	0.4−	0.6+	1999 02 18	699	0.0	0.9+	1999 03 23	704	1.2−	1.8+
1999 02 10	704	0.5−	0.9−	1999 02 18	699	0.5−	0.5+				
1999 02 10	704	0.0	0.7+	1999 03 20	704	0.4−	2.4−				

1999 CU_{56} = 1990 SC_2

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	191.26115		(2000.0)	**P**		**Q**	
n	0.28874655	ω	192.80270	+0.81505395		+0.56979382	
a	2.2670348	Ω	131.95353	−0.51835660		+0.79807969	
e	0.1564488	i	8.11553	−0.25883101		+0.19596890	
P	3.41	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1990 09 17	675	0.3+	0.2−	1992 02 25	691	0.1+	0.2+	1999 02 13	704	0.7−	1.1+
1990 09 17	675	0.6−	0.2−	1999 02 10	704	0.8−	0.1−	1999 02 13	704	1.5+	0.0
1990 09 19	675	0.3+	0.1+	1999 02 10	704	0.8−	0.7−	1999 02 18	699	0.9+	0.6+
1990 09 19	675	0.0	0.2+	1999 02 10	704	(1.4−	2.3+)	1999 02 18	699	0.1+	0.2−
1992 02 25	691	0.4−	0.1+	1999 02 10	704	(1.6−	2.9−)	1999 02 18	699	0.1−	0.0
1992 02 25	691	0.4+	0.1+	1999 02 13	704	0.3−	1.2−				

1999 CZ_{56} = 1996 FQ_{22}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	11.04427		(2000.0)	**P**		**Q**	
n	0.29939475	ω	111.34713	−0.69128386		−0.72248938	
a	2.2129585	Ω	22.39785	+0.65111425		−0.62982110	
e	0.0935065	i	1.75213	+0.31333189		−0.28519201	
P	3.29	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1996 03 24	809	1.1−	0.4−	1999 02 10	704	(0.8−	2.1−)	1999 03 20	704	0.4−	0.1+
1996 03 24	809	0.0	1.1−	1999 02 13	704	1.0+	0.5−	1999 03 20	704	1.1+	1.4+
1996 03 24	809	0.2−	1.7−	1999 02 13	704	(0.1+	2.1+)	1999 03 20	704	(0.9+	2.6+)
1996 03 27	809	1.2+	0.7+	1999 02 13	704	1.1+	0.6+	1999 03 20	704	1.4+	0.3+
1996 03 27	809	0.3+	0.7+	1999 02 13	704	0.2+	0.2+	1999 03 23	704	0.5+	0.6−
1996 03 27	809	0.6−	0.9+	1999 02 18	699	0.5−	0.0	1999 03 23	704	1.4−	1.6+
1999 02 10	704	0.5−	0.6−	1999 02 18	699	0.5−	0.8+	1999 03 23	704	1.0+	0.1+
1999 02 10	704	1.6−	1.1−	1999 02 18	699	0.4−	1.0+				
1999 02 10	704	0.6−	1.4−	1999 03 20	704	0.4−	1.1−				

1999 CR_{57} = 1992 OJ_9 = 1997 WQ_{40}

Id. G. V. Williams; 1992 OJ_9 = 1997 SS_1 (*MPC* 33231) is invalid

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	157.32494		(2000.0)	**P**		**Q**	
n	0.23298285	ω	336.67374	+0.99253942		+0.12065103	
a	2.6156928	Ω	16.42556	−0.09977221		+0.88657284	
e	0.1535412	i	3.56315	−0.07007862		+0.44657802	
P	4.23	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1992 07 27	809	1.0−	1.4−	1997 11 29	704	(6.8−	3.6−)	1999 02 10	704	0.4+	1.3−
1992 07 27	809	0.7−	1.6−	1997 11 29	704	(6.7−	2.1−)	1999 02 13	704	0.7+	0.9+
1992 07 27	809	0.3−	1.2−	1997 11 29	704	(5.9−	1.9−)	1999 02 13	704	0.9+	1.9+
1992 07 28	809	0.6−	0.6+	1997 12 04	704	0.0	0.6+	1999 02 13	704	(5.3−	0.7+)
1992 07 28	809	0.2−	0.6+	1997 12 04	704	1.4+	1.5−	1999 03 20	704	0.7−	0.1−
1992 07 28	809	0.5+	0.5+	1997 12 04	704	0.6+	0.8+	1999 03 20	704	0.7−	2.1+
1992 07 30	809	0.2+	1.7+	1997 12 04	704	0.1−	0.8+	1999 03 20	704	0.1+	0.6−
1992 07 30	809	0.4+	1.7+	1997 12 04	704	2.1−	0.6+	1999 03 23	704	0.4−	0.0
1992 07 30	809	1.0+	1.5+	1999 02 10	704	1.2−	0.1+	1999 03 23	704	0.1−	1.1−
1997 11 29	704	(4.7−	1.6−)	1999 02 10	704	1.0+	0.3−	1999 03 23	704	2.2+	0.7−
1997 11 29	704	(6.1−	0.9−)	1999 02 10	704	1.2−	1.4+				

1999 CV_{57} = 1971 VX

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	83.47159		(2000.0)	**P**		**Q**	
n	0.29827402	ω	294.30074	+0.63008324		−0.77151342	
a	2.2184983	Ω	116.35043	+0.74333457		+0.56643809	
e	0.1422311	i	5.64237	+0.22460817		+0.28968073	
P	3.30	H	14.2	G	0.15	U	6

Residuals in seconds of arc

1971 11 10	805	0.8−	0.3+	1999 02 10	704	0.3−	0.7+	1999 03 20	704	0.4−	1.0+
1971 11 10	805	0.2−	0.2−	1999 02 13	704	1.2−	0.9−	1999 03 20	704	0.2−	0.4+
1971 11 10	805	0.5+	1.3−	1999 02 13	704	0.1+	0.2−	1999 03 20	704	0.4+	0.7+
1971 11 11	805	0.7−	0.0	1999 02 13	704	0.2−	0.5−	1999 03 20	704	0.3−	0.6+
1971 11 11	805	0.4+	0.4+	1999 02 13	704	0.3+	0.6−	1999 03 23	704	1.8+	1.9−
1971 11 11	805	0.9+	0.4+	1999 02 13	704	1.5−	0.2+	1999 03 23	704	2.8+	1.7−
1999 02 10	704	0.8−	0.2−	1999 02 18	699	0.8+	1.7+	1999 03 23	704	0.5−	0.9−
1999 02 10	704	0.6−	0.0	1999 02 18	699	1.2+	0.2+	1999 03 23	704	0.6+	0.0
1999 02 10	704	0.4+	0.3+	1999 02 18	699	1.2+	1.0+	1999 03 23	704	2.4−	1.5−
1999 02 10	704	0.7−	1.1+	1999 03 20	704	0.3−	0.1+				

1999 CD_{60} = 1987 GP

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	84.65815		(2000.0)	**P**		**Q**	
n	0.23903289	ω	222.06102	+0.89242586		−0.44615825	
a	2.5713683	Ω	164.04053	+0.45087511		+0.87624053	
e	0.1413687	i	14.15136	+0.01696217		+0.18205863	
P	4.12	H	14.6	G	0.15	U	6

Residuals in seconds of arc

1987 04 01	675	1.0−	0.6+	1999 02 12	704	1.3−	0.2+	1999 02 14	699	0.5−	0.4+
1987 04 01	675	0.9+	0.5−	1999 02 12	704	0.1+	1.1−	1999 02 16	704	0.1−	0.0
1987 04 03	675	1.0−	0.1+	1999 02 12	704	0.2−	0.6−	1999 02 16	704	1.4+	0.1−
1987 04 03	675	1.1+	0.2−	1999 02 14	699	0.4−	0.7+	1999 02 16	704	0.7−	0.5−
1999 02 12	704	1.7+	1.0+	1999 02 14	699	0.1+	0.1−	1999 02 16	704	(2.9−	0.3−)

1999 CP_{60} = 1994 WU_{11}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	135.02002		(2000.0)	**P**		**Q**	
n	0.28721610	ω	74.84975	+0.99074833		+0.12801481	
a	2.2750810	Ω	277.77988	−0.13528076		+0.90514050	
e	0.1929687	i	2.60635	−0.01081052		+0.40537992	
P	3.43	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1994 11 27	010	0.6+	0.3+	1996 03 23	566	0.1−	0.1+	1999 02 16	704	0.0	0.5−
1994 11 27	010	0.8+	0.1−	1996 03 23	566	0.0	0.0	1999 02 16	704	0.3−	1.1−
1994 11 28	010	0.4−	1.4−	1999 02 12	704	1.1−	1.1+	1999 02 16	704	0.2+	0.1−
1994 11 28	010	0.0	0.3+	1999 02 12	704	(0.4+	2.8+)	1999 02 16	704	0.9−	0.1−
1994 11 28	010	0.2−	1.1+	1999 02 12	704	0.5−	0.7+	1999 02 20	699	0.5+	0.2+
1994 11 29	010	0.9−	0.0	1999 02 12	704	1.0−	0.1+	1999 02 20	699	1.6+	0.6+
1996 03 23	566	0.1+	0.1−	1999 02 16	704	0.5+	1.5−	1999 02 20	699	0.9+	0.6+

1999 CP$_{61}$ = 1990 RM$_{13}$
Id. A. Doppler
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	18.29475		(2000.0)	**P**		**Q**	
n	0.15802357	ω	309.63126	−0.39237520		−0.91845836	
a	3.3883490	Ω	163.26347	+0.88796088		−0.39234745	
e	0.0992485	i	9.95013	+0.23993162		−0.04997715	
P	6.24	H	12.8	G	0.15	U	4

Residuals in seconds of arc

1990 09 14	809	0.9+	0.3+	1999 01 15	699	0.5+	0.4−	1999 02 16	704	0.3−	0.1−
1990 09 14	809	1.4+	0.6+	1999 02 12	704	0.1−	0.0	1999 02 16	704	0.6+	0.3−
1990 09 14	809	0.2−	0.2+	1999 02 12	704	0.0	0.6+	1999 02 16	704	0.1−	0.1−
1990 09 22	809	0.4−	0.4+	1999 02 12	704	0.2−	0.4+	1999 02 20	699	0.0	0.0
1990 09 22	809	1.0−	0.7−	1999 02 12	704	0.1−	0.6+	1999 02 20	699	0.0	0.4+
1990 09 22	809	0.8−	0.7−	1999 02 12	704	0.5−	0.2−	1999 02 20	699	0.0	0.2+
1999 01 15	699	0.3+	0.2+	1999 02 16	704	0.0	0.4−				
1999 01 15	699	0.2+	0.5−	1999 02 16	704	0.4−	0.5−				

1999 CC$_{63}$ = 1994 GW$_{8}$ = 1997 WF$_{44}$
Id. A. Doppler
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	270.64427		(2000.0)	**P**		**Q**	
n	0.17412711	ω	14.10755	−0.50007409		+0.86366466	
a	3.1760826	Ω	225.93261	−0.80282312		−0.48977249	
e	0.1364678	i	5.05566	−0.32465511		−0.11918999	
P	5.66	H	12.9	G	0.15	U	4

Residuals in seconds of arc

1994 04 11	399	0.6−	0.4−	1997 12 04	704	1.0+	1.0+	1999 02 12	704	0.2+	0.3+
1994 04 11	399	0.0	1.8−	1997 12 04	704	0.4−	0.7−	1999 02 16	704	0.3−	0.3+
1994 04 13	399	0.5−	0.7+	1997 12 04	704	1.8+	0.8+	1999 02 16	704	0.0	0.5+
1994 04 13	399	0.2+	1.2−	1999 01 15	699	0.3+	0.6−	1999 02 16	704	0.3−	0.3+
1997 11 29	704	0.7−	0.5−	1999 01 15	699	0.6−	0.5−	1999 02 16	704	0.6−	0.6+
1997 11 29	704	0.8−	0.2−	1999 01 15	699	0.4+	0.3−	1999 02 16	704	0.7−	1.0+
1997 11 29	704	0.7+	2.0−	1999 02 12	704	0.1−	0.3+	1999 02 20	699	0.2+	0.5+
1997 11 29	704	1.5−	0.3+	1999 02 12	704	0.9+	0.2−	1999 02 20	699	0.5+	0.9+
1997 11 29	704	0.0	1.5−	1999 02 12	704	0.0	0.6−	1999 02 20	699	0.3+	0.4+
1997 12 04	704	(0.9−	2.5−)	1999 02 12	704	0.8+	0.3−				

1999 CN$_{63}$ = 1992 UG$_{8}$
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	80.50713		(2000.0)	**P**		**Q**	
n	0.19844656	ω	197.51063	+0.67387815		−0.73183228	
a	2.9109874	Ω	210.36222	+0.69964475		+0.67623995	
e	0.0608906	i	11.58833	+0.23745625		+0.08438628	
P	4.97	H	14.2	G	0.15	U	5

Residuals in seconds of arc

1992 10 25	691	1.3−	0.4−	1999 02 12	704	0.5+	0.1+	1999 02 16	704	(0.2−	2.2−)
1992 10 25	691	0.1−	0.3−	1999 02 12	704	0.1+	0.5+	1999 02 16	704	0.2+	0.6−
1992 10 25	691	1.2−	0.4−	1999 02 12	704	0.2−	1.0+	1999 02 16	704	0.6−	0.5−
1992 11 02	010	0.4+	1.2+	1999 02 12	704	1.1−	0.7+	1999 02 21	699	0.3+	1.0−
1992 11 02	010	1.5+	0.1+	1999 02 12	704	(0.4−	2.4+)	1999 02 21	699	0.6+	0.4−
1992 11 02	010	0.7+	0.2−	1999 02 16	704	0.3+	0.7+	1999 02 21	699	0.1−	0.4−

1999 CR$_{64}$ = 1992 NC
Id. S. Nakano
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	159.69153		(2000.0)	**P**		**Q**	
n	0.23651472	ω	133.36727	+0.87587590		+0.47744123	
a	2.5895875	Ω	198.46382	−0.48135679		+0.85438034	
e	0.1646880	i	12.75771	−0.03372013		+0.20514413	
P	4.17	H	13.0	G	0.15	U	4

Residuals in seconds of arc

1992 07 02	675	1.0−	0.3+	1997 10 30	704	(6.4+	2.1−)	1999 02 12	704	1.0−	0.1−
1992 07 02	675	(2.5−	0.5−)	1997 10 30	704	(4.1+	1.1−)	1999 02 12	704	0.7−	0.1+
1992 07 05	675	1.0+	1.1+	1997 11 06	704	1.3−	0.5+	1999 02 12	704	0.5−	0.1−
1992 07 05	675	(2.1+	2.2+)	1997 11 06	704	(2.4−	1.8−)	1999 02 16	704	0.2+	0.3+
1997 10 29	704	1.1+	0.1−	1997 11 06	704	1.1−	0.4+	1999 02 16	704	0.5+	0.6+
1997 10 29	704	0.4+	0.4+	1997 11 06	704	0.6−	0.5−	1999 02 16	704	0.3−	0.0
1997 10 29	704	0.0	0.3+	1997 11 06	704	0.5−	0.3+	1999 02 16	704	0.7+	0.9+
1997 10 29	704	0.9+	0.3−	1999 01 17	699	0.6+	0.1−	1999 02 16	704	0.4+	0.2+
1997 10 29	704	0.8+	0.1−	1999 01 17	699	0.1−	0.6+	1999 02 21	699	0.3+	0.0
1997 10 30	704	(5.4+	2.1+)	1999 01 17	699	0.3+	0.8+	1999 02 21	699	0.8+	0.0
1997 10 30	704	(4.9+	0.8−)	1999 02 12	704	0.7−	0.8−	1999 02 21	699	0.9+	0.3−
1997 10 30	704	(5.7+	1.9−)	1999 02 12	704	1.1−	1.0−				

1999 CB$_{67}$ = 1955 SA = 1955 TA = 1989 YA$_{9}$
Id. A. Gnädig, G. V. Williams (d)
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	144.98039		(2000.0)	**P**		**Q**	
n	0.23622183	ω	85.17658	+0.93942039		+0.28388418	
a	2.5917276	Ω	258.23561	−0.33607602		+0.87304255	
e	0.2258154	i	11.31559	+0.06739613		+0.39649273	
P	4.17	H	12.6	G	0.15	U	3

Residuals in seconds of arc

1955 09 17	012	1.5+	0.2−	1989 12 31	399	0.7−	0.8−	1999 02 16	704	0.2−	0.4−
1955 10 10	760	1.5−	0.1+	1999 02 12	704	0.5−	0.5−	1999 02 16	704	0.3+	0.0
1955 10 10	760	(35.4−	1.3−)	1999 02 12	704	0.3−	0.4−	1999 02 16	704	0.2−	0.9−
1983 05 10	413	0.1−	0.2−	1999 02 12	704	0.5+	0.4+	1999 02 16	704	0.6−	0.8−
1983 05 10	413	0.9−	0.7−	1999 02 12	704	1.1−	1.2+	1999 02 23	699	1.4+	0.4+
1989 12 31	399	0.9−	1.6+	1999 02 12	704	0.2+	0.6+	1999 02 23	699	1.3+	0.9+
1989 12 31	399	1.0+	1.7−	1999 02 16	704	0.4−	0.6−	1999 02 23	699	1.1+	0.9+

1999 CE$_{67}$ = 1981 WM$_{1}$ = 1982 BU$_{8}$
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	44.72651		(2000.0)	**P**		**Q**	
n	0.23622677	ω	165.37763	+0.14646485		−0.96476473	
a	2.5916916	Ω	275.84463	+0.88409593		+0.22678823	
e	0.1388426	i	12.69270	+0.44375944		−0.13340208	
P	4.17	H	13.8	G	0.15	U	3

Residuals in seconds of arc

1981 11 24	688	(2.3−	1.0−)	1984 08 21	413	0.2+	1.4−	1999 02 16	704	0.4−	0.0
1981 11 24	688	(3.6+	0.1+)	1999 02 12	704	0.6−	0.9−	1999 02 16	704	1.5−	0.8+
1981 12 20	688	0.2+	1.1−	1999 02 12	704	0.6−	0.1+	1999 02 23	699	1.4+	0.1+
1981 12 20	688	0.6+	1.7−	1999 02 12	704	0.3+	0.3+	1999 02 23	699	1.4+	0.0
1982 01 19	095	0.1+	2.1+	1999 02 12	704	0.7−	0.3+	1999 02 23	699	1.1+	0.6−
1982 01 23	095	0.9−	0.7+	1999 02 16	704	0.4−	0.3−				
1984 08 21	413	0.3+	0.1−	1999 02 16	704	0.6−	1.0−				

1999 CW$_{69}$ = 1997 WK$_{16}$
Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	92.04048		(2000.0)	**P**		**Q**	
n	0.22428270	ω	157.04293	+0.81807884		−0.54894029	
a	2.6829065	Ω	237.37248	+0.49099986		+0.82192838	
e	0.1529549	i	11.74946	+0.29944307		+0.15198121	
P	4.39	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1997 11 26	566	0.1+	1.0+	1999 02 12	704	0.3+	0.1+	1999 02 16	704	0.8−	1.2+
1997 11 26	566	0.4−	0.0	1999 02 12	704	0.2−	0.3+	1999 02 16	704	0.2+	0.4+
1997 11 26	566	0.4+	0.2+	1999 02 12	704	0.4+	0.4+	1999 02 16	704	0.9−	0.8−
1997 11 29	566	0.0	0.3−	1999 02 12	704	0.8+	0.0	1999 02 23	699	0.3−	0.6−
1997 11 29	566	0.2+	0.0	1999 02 16	704	0.1−	0.4−	1999 02 23	699	0.4+	0.2+
1997 11 29	566	0.3−	0.9−	1999 02 16	704	0.3−	0.1−	1999 02 23	699	0.4+	0.7−

1999 CU_{70} = 1996 TP_{63}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	224.20544		(2000.0)		**P**		**Q**
n	0.18376605	ω	111.45612		+0.22828207		+0.97329076
a	3.0640266	Ω	171.62765		−0.94366159		+0.22734560
e	0.0730339	i	9.62258		−0.23956229		+0.03192287
P	5.36	H	12.7	G	0.15	U	4

Residuals in seconds of arc

1996 10 06	809	1.0+	0.2+	1999 01 18	704	0.4+	1.4−	1999 02 16	704	0.9−	0.5−
1996 10 06	809	1.1+	0.4−	1999 01 18	704	1.1+	1.2−	1999 02 16	704	0.1−	0.2+
1996 10 06	809	1.5+	0.5−	1999 01 18	704	1.0−	0.1+	1999 02 16	704	0.5−	0.7+
1996 10 07	809	1.4−	0.1+	1999 01 18	704	1.0−	0.5−	1999 02 16	704	0.5+	0.4+
1996 10 07	809	1.1−	0.0	1999 02 12	704	0.1−	0.1+	1999 02 16	704	0.6+	0.6+
1996 10 07	809	1.0−	0.5+	1999 02 12	704	0.2+	0.1−	1999 02 20	699	0.8+	0.2−
1999 01 15	699	0.2−	1.5+	1999 02 12	704	0.2+	0.2−	1999 02 20	699	0.5+	0.9+
1999 01 15	699	0.9+	1.2+	1999 02 12	704	0.8−	1.6−	1999 02 20	699	0.3+	0.2+
1999 01 15	699	0.3+	0.8+	1999 02 12	704	1.3−	1.0−				

1999 CF_{73} = 1992 HM_6 = 1997 TH_4

Id. A. Gnädig, G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	307.56187		(2000.0)		**P**		**Q**
n	0.26567284	ω	352.64133		−0.94439618		+0.32565341
a	2.3964660	Ω	206.50337		−0.29625061		−0.90268434
e	0.0588616	i	5.84566		−0.14265847		−0.28126649
P	3.71	H	15.2	G	0.15	U	5

Residuals in seconds of arc

1992 04 25	809	0.9−	0.7+	1997 10 30	704	0.3−	0.2−	1999 02 16	704	1.7−	1.3−
1992 04 25	809	0.3−	0.2−	1997 10 30	704	1.3−	1.4−	1999 02 16	704	1.0−	0.1+
1992 04 25	809	1.1+	0.8−	1997 10 30	704	(2.6−	1.5−)	1999 02 16	704	0.6−	0.5+
1997 10 03	910	0.6+	0.0	1997 10 30	704	(3.5−	0.4+)	1999 02 16	704	0.1+	0.1+
1997 10 03	910	0.5+	0.1+	1999 02 12	704	1.3+	0.4+	1999 02 21	699	1.1+	0.3+
1997 10 03	910	0.5+	0.0	1999 02 12	704	0.1−	0.0	1999 02 21	699	0.0	1.1+
1997 10 04	910	0.3+	0.3+	1999 02 12	704	0.2−	0.5−	1999 02 21	699	0.9+	0.0
1997 10 04	910	0.0	0.4+	1999 02 12	704	0.9+	0.1+				
1997 10 04	910	0.2−	0.4+	1999 02 16	704	0.6−	0.9−				

1999 CW_{73} = 1996 GD_9

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	37.28168		(2000.0)		**P**		**Q**
n	0.29531189	ω	254.08276		+0.02478707		−0.99958537
a	2.2333087	Ω	194.52052		+0.93810417		+0.02832244
e	0.1551082	i	3.35021		+0.34546515		−0.00518896
P	3.34	H	15.8	G	0.15	U	5

Residuals in seconds of arc

1996 04 13	691	0.4+	0.2+	1999 01 15	699	0.1+	0.0	1999 02 16	704	0.6−	0.9−
1996 04 13	691	0.2+	0.2+	1999 02 12	704	0.3+	0.6−	1999 02 16	704	0.3−	0.7−
1996 04 13	691	0.3+	0.1+	1999 02 12	704	0.7−	0.3+	1999 02 16	704	1.1−	0.7−
1996 04 19	691	0.1−	0.4−	1999 02 12	704	1.0+	0.9−	1999 02 20	699	0.6−	1.4+
1996 04 19	691	0.7−	0.0	1999 02 12	704	0.3+	0.8−	1999 02 20	699	0.2−	1.8+
1999 01 15	699	0.4−	0.0	1999 02 12	704	1.1+	0.2+	1999 02 20	699	0.3−	0.4+
1999 01 15	699	0.4+	1.1+	1999 02 16	704	0.9+	0.3−				

1999 CD_{76} = 1990 DT_4

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	45.32407		(2000.0)		**P**		**Q**
n	0.21943674	ω	268.94468		+0.30143697		−0.95278480
a	2.7222614	Ω	163.37043		+0.91773236		+0.27951775
e	0.2511484	i	7.34029		+0.25865627		+0.11862104
P	4.49	H	15.0	G	0.15	U	2

Residuals in seconds of arc

1990 02 28	809	(2.5−	2.1−)	1995 04 26	691	0.3−	0.0	1999 02 16	704	0.4+	0.7+
1990 02 28	809	(2.1−	2.2−)	1997 11 23	327	0.1+	0.5−	1999 02 16	704	0.1−	1.2+
1990 02 28	809	(1.6−	2.3−)	1997 11 23	327	0.1−	0.4−	1999 02 16	704	0.1+	1.1+
1990 03 01	809	1.1−	0.3+	1997 11 23	327	0.5+	0.9−	1999 04 16	691	0.2+	0.2−
1990 03 01	809	0.8−	0.4+	1999 02 12	704	0.1+	1.2−	1999 04 16	691	0.5+	0.5−
1990 03 01	809	0.3−	0.3+	1999 02 12	704	1.8−	1.2−	1999 04 16	691	0.7+	0.3−
1990 03 01	809	0.5+	0.0	1999 02 12	704	0.8−	0.5−	1999 04 20	691	0.8+	0.2−
1990 03 01	809	0.8+	0.1−	1999 02 12	704	0.9−	0.6−	1999 04 20	691	0.7+	0.3−
1990 03 01	809	1.2+	0.1−	1999 02 16	704	0.0	0.2−	1999 04 20	691	1.4+	0.0
1995 04 26	691	0.2−	0.8−	1999 02 16	704	0.2−	0.4+				

1999 CD_{79} = 1980 FE_5 = 1996 NM_4 = 1997 XC_{11}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	172.06558		(2000.0)		**P**		**Q**
n	0.20467026	ω	176.40893		+0.90962489		+0.41304699
a	2.8516718	Ω	159.02073		−0.38417572		+0.87706865
e	0.0500817	i	7.12983		−0.15808722		+0.24524021
P	4.82	H	13.8	G	0.15	U	1

Residuals in seconds of arc

1980 03 16	809	1.2+	1.1−	1996 08 15	566	0.9−	0.1−	1999 02 16	704	0.3−	0.5−
1980 03 16	809	0.6+	1.1−	1996 08 15	566	1.0−	0.2−	1999 02 16	704	0.5−	0.1+
1980 03 16	809	1.2−	1.0+	1996 08 15	566	1.0−	0.1−	1999 02 16	704	0.3+	0.1+
1980 03 16	809	1.6−	1.0+	1997 12 04	372	0.7−	1.0−	1999 02 16	704	0.6+	0.1−
1980 03 17	809	(2.6+	1.5−)	1997 12 04	372	1.0−	0.1+	1999 02 16	704	0.2−	0.5+
1980 03 17	809	(0.7+	3.5−)	1997 12 05	372	1.6+	0.6+	1999 03 19	704	0.7+	1.4−
1980 03 17	809	0.1−	0.1+	1997 12 25	566	0.2−	0.7−	1999 03 19	704	0.6+	0.2−
1980 03 17	809	0.5+	2.1−	1997 12 25	566	0.8+	0.1+	1999 03 19	704	1.5−	1.3−
1996 07 14	809	1.9+	0.0	1997 12 25	566	0.1−	0.5−	1999 03 20	704	1.5−	0.1−
1996 07 14	809	(2.2+	0.0)	1999 02 12	699	1.3+	0.2+	1999 03 20	704	1.3−	0.7−
1996 07 14	809	1.4+	0.3−	1999 02 12	699	0.0	1.1+	1999 03 20	704	1.1−	1.8+
1996 07 16	809	(3.8−	2.4−)	1999 02 12	704	0.4−	0.1−	1999 03 20	704	0.8−	1.4+
1996 07 16	809	(3.7−	3.1−)	1999 02 12	704	1.1+	0.5+	1999 04 07	691	0.2+	0.2−
1996 07 16	809	(3.9−	2.1−)	1999 02 12	699	1.5+	0.2−	1999 04 07	691	0.2+	0.2−
1996 08 09	809	0.5+	0.4−	1999 02 12	704	1.1+	1.1−	1999 04 07	691	0.1−	0.1−
1996 08 09	809	0.0	0.5+	1999 02 12	704	0.4+	0.8+				
1996 08 09	809	0.2−	0.4−	1999 02 12	704	0.3−	1.0+				

1999 CG_{79} = 1992 PS

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	62.60858		(2000.0)		**P**		**Q**
n	0.21138743	ω	261.02379		+0.49274236		−0.86878962
a	2.7909364	Ω	159.23292		+0.84284508		+0.46247970
e	0.2185054	i	7.95770		+0.21637269		+0.17696646
P	4.66	H	14.2	G	0.15	U	6

Residuals in seconds of arc

1992 08 08	010	1.7+	0.6+	1999 02 12	699	(1.1+	2.0+)	1999 02 17	704	0.1−	0.0
1992 08 08	010	0.4+	1.0+	1999 02 12	704	1.2−	1.0−	1999 02 17	704	0.2+	0.1+
1992 08 08	010	0.4−	0.9+	1999 02 12	704	1.1+	0.2−	1999 02 17	704	0.5+	0.8−
1992 08 09	010	0.5+	0.6−	1999 02 12	699	(2.9+	1.4−)	1999 02 17	704	0.1+	0.3−
1992 08 09	010	1.1−	1.0−	1999 02 12	704	0.4+	0.3−	1999 02 17	704	0.9+	0.2−

1992 08 09	010	1.1−	0.8−	1999 02 16	704	0.6−	0.1−	1999 02 17	704	0.4+	0.5−
1999 02 12	699	0.1−	0.5+	1999 02 16	704	0.3−	1.0+	1999 02 17	704	0.2−	0.4−
1999 02 12	704	0.5−	0.4+	1999 02 16	704	1.3−	0.1−	1999 02 17	704	0.1−	0.9+
1999 02 12	704	0.5+	0.1+	1999 02 16	704	0.5+	0.9+	1999 02 17	704	(0.9−	2.2+)

1999 CW$_{81}$ = 1990 BT$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	32.51981		(2000.0)		**P**	**Q**	
n	0.22330491	ω	140.91355		−0.05761107	−0.99356148	
a	2.6907325	Ω	312.15590		+0.87978667	−0.00434180	
e	0.2940023	i	7.56166		+0.47186479	−0.11321100	
P	4.41	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1990 01 29	046	2.4−	0.6+	1999 02 16	704	0.2−	0.2−	1999 03 20	704	0.4+	0.3+
1990 01 29	046	0.1−	0.2−	1999 02 16	704	0.1−	0.4−	1999 03 20	704	0.2−	1.0+
1990 01 30	046	1.7+	0.2+	1999 02 16	704	0.2+	0.2−	1999 03 23	704	1.5+	0.7−
1990 01 30	046	0.9+	0.3−	1999 02 16	704	0.2−	0.2−	1999 03 23	704	1.3+	0.1−
1999 02 12	704	0.1−	0.0	1999 02 16	704	0.3+	2.8−	1999 03 23	704	0.1+	0.5−
1999 02 12	704	0.6+	0.1−	1999 03 20	704	0.5−	1.0+	1999 03 23	704	0.3−	0.2−
1999 02 12	704	0.0	2.3+	1999 03 20	704	1.6−	0.2−	1999 03 23	704	0.6−	0.3+
1999 02 12	704	0.7−	0.4+	1999 03 20	704	0.1+	0.1+				

1999 CZ$_{81}$ = 4884 P-L

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	288.03063		(2000.0)		**P**	**Q**	
n	0.19164765	ω	46.51966		−0.57697946	+0.81638204	
a	2.9794337	Ω	188.35048		−0.78997715	−0.56551498	
e	0.0407768	i	9.83268		−0.20743870	−0.11710326	
P	5.14	H	13.9	G	0.15	U	5

Residuals in seconds of arc

1960 09 24	675	0.7+	0.5+	1960 09 28	675	0.7−	0.3+	1999 03 20	704	0.0	0.6+
1960 09 24	675	0.0	0.7−	1960 09 28	675	0.5−	1.1−	1999 03 20	704	0.5+	1.4+
1960 09 24	675	0.2+	1.1−	1960 09 28	675	0.9−	0.1+	1999 03 20	704	0.5−	0.7+
1960 09 25	675	0.5−	0.6+	1999 02 12	704	1.9+	0.3−	1999 03 20	704	0.3+	0.1+
1960 09 25	675	1.2+	1.1+	1999 02 12	704	1.2+	0.7−	1999 03 20	704	0.7−	0.6−
1960 09 26	675	0.1+	0.8+	1999 02 12	704	1.6−	1.2+	1999 03 23	704	0.5+	0.9+
1960 09 26	675	0.1+	0.4+	1999 02 12	704	1.3−	0.0	1999 03 23	704	1.0−	1.7−
1960 09 26	675	1.0+	1.1−	1999 02 16	704	0.6+	0.2−	1999 03 23	704	0.2+	0.1+
1960 09 26	675	0.9−	0.2−	1999 02 16	704	1.5−	1.3+	1999 03 23	704	0.6+	1.2−
1960 09 27	675	0.0	0.3+	1999 02 16	704	0.8+	1.0−				
1960 09 28	675	0.3+	0.0	1999 02 16	704	0.2+	0.7−				

1999 CA$_{82}$ = 1979 WQ$_2$ = 1982 QE$_1$ = 1982 RJ$_2$ = 1982 SW$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	254.76072		(2000.0)		**P**	**Q**	
n	0.27739683	ω	309.20516		+0.23476373	+0.96998671	
a	2.3284579	Ω	334.16130		−0.84104177	+0.17002098	
e	0.2206609	i	8.35613		−0.48737536	+0.17383512	
P	3.55	H	13.6	G	0.15	U	4

Residuals in seconds of arc

1979 11 16	095	0.7−	1.7+	1999 02 12	704	0.1−	0.6−	1999 03 22	699	0.3+	0.7+
1982 08 19	675	1.9−	1.0+	1999 02 16	704	0.4−	0.1+	1999 03 22	699	0.1−	0.6+
1982 08 19	675	1.3−	1.1+	1999 02 16	704	0.4+	0.7+	1999 03 22	699	0.4+	1.0+
1982 09 11	095	0.2−	1.3−	1999 02 16	704	0.6−	0.1+	1999 03 23	704	0.2+	1.6+
1982 09 19	095	2.1+	2.2+	1999 02 16	704	0.2+	0.5+	1999 03 23	704	0.6+	0.6+
1998 12 02	327	0.7+	0.2+	1999 02 16	704	0.0	0.8+	1999 03 23	704	0.2−	1.1+
1998 12 02	327	0.7−	0.2+	1999 03 20	704	0.2−	1.0−	1999 03 23	704	0.4+	0.5+
1998 12 02	327	0.1+	0.1−	1999 03 20	704	0.1−	0.9−	1999 03 23	704	0.1−	1.0+
1999 02 12	704	0.4−	1.1−	1999 03 20	704	0.1+	1.1−	1999 03 24	699	0.4+	1.2+
1999 02 12	704	0.4−	0.7−	1999 03 20	704	0.4+	1.1−	1999 03 24	699	0.6+	0.3−
1999 02 12	704	0.1+	0.1−	1999 03 20	704	0.4+	0.9−	1999 03 24	699	0.3+	1.0+

1999 CN$_{83}$ = 4160 P-L = 1985 SZ$_2$ = 1985 UP$_5$ = 1989 SZ$_8$

Id. A. Doppler (*MPC* 34252), G. V. Williams (*ibid.*, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	35.57581		(2000.0)		**P**	**Q**	
n	0.23707883	ω	78.93853		+0.38409695	−0.92257654	
a	2.5854781	Ω	348.27394		+0.76180142	+0.33891969	
e	0.1955589	i	10.30624		+0.52165901	+0.18435286	
P	4.16	H	14.0	G	0.15	U	2

Residuals in seconds of arc

1960 09 24	675	0.9+	0.3−	1989 09 25	809	0.6+	0.5−	1999 02 10	704	0.9+	0.2+
1960 09 25	675	0.5+	0.9−	1989 09 26	809	0.3−	0.1+	1999 02 10	704	0.5−	0.7−
1960 09 26	675	0.3−	0.3−	1989 09 26	809	0.1−	0.1+	1999 02 12	699	0.3−	0.4+
1985 09 19	095	1.0−	0.3+	1989 09 26	809	0.3+	0.1+	1999 02 12	699	0.4−	1.4+
1985 10 18	095	0.3+	0.3+	1998 12 17	699	0.5+	0.3−	1999 02 12	699	0.5−	0.1−
1989 09 24	809	0.9−	0.7+	1998 12 17	699	0.2+	1.4−	1999 02 13	704	1.3−	0.4−
1989 09 24	809	0.3−	0.7+	1998 12 17	699	0.2−	0.3+	1999 02 13	704	0.4+	0.1+
1989 09 24	809	0.2+	0.8+	1999 02 10	704	0.3+	0.1+	1999 02 13	704	0.2+	0.7+
1989 09 25	809	0.2−	0.4−	1999 02 10	704	0.2+	0.1+	1999 02 13	704	(2.6−	2.3−)
1989 09 25	809	0.1+	0.4−	1999 02 10	704	0.4+	0.3−				

1999 CC$_{84}$ = 1989 XY$_1$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	18.08020		(2000.0)		**P**	**Q**	
n	0.22859464	ω	7.43944		−0.02314358	−0.96469722	
a	2.6490614	Ω	84.14804		+0.90311882	−0.13271836	
e	0.2293610	i	15.29073		+0.42876658	+0.22747552	
P	4.31	H	14.7	G	0.15	U	4

Residuals in seconds of arc

1989 12 02	809	0.2+	0.7+	1998 12 21	704	0.3−	0.8+	1999 02 10	704	1.3−	1.1+
1989 12 02	809	0.7−	1.2+	1999 01 19	704	0.1−	0.1+	1999 02 13	704	0.1+	0.5−
1989 12 02	809	1.7−	1.0+	1999 01 19	704	0.8−	1.0−	1999 02 13	704	0.8+	0.3+
1989 12 03	809	1.8+	1.2−	1999 01 19	704	(1.6−	2.1−)	1999 02 13	704	0.7−	0.2+
1989 12 03	809	0.7+	0.9−	1999 01 19	704	1.2−	0.1−	1999 02 13	704	0.7+	0.7−
1989 12 03	809	0.1−	1.2−	1999 01 19	704	(5.5−	0.4−)	1999 02 13	704	0.0	0.9−
1998 12 21	704	1.0+	0.5+	1999 02 10	704	0.1−	0.3+	1999 02 18	699	0.4+	0.8+
1998 12 21	704	1.2−	0.3−	1999 02 10	704	0.3+	0.1+	1999 02 18	699	0.7+	0.1−
1998 12 21	704	0.4+	0.5+	1999 02 10	704	0.5+	0.0	1999 02 18	699	0.2−	0.1+
1998 12 21	704	(4.7−	0.5−)	1999 02 10	704	1.5+	0.7−				

1999 CD$_{86}$ = 1995 DD$_{14}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	2.99176		(2000.0)		**P**	**Q**	
n	0.21934021	ω	351.48400		−0.55454444	−0.82753952	
a	2.7230600	Ω	132.14251		+0.77027044	−0.55025587	
e	0.0344921	i	6.77826		+0.31490302	−0.11134097	
P	4.49	H	14.9	G	0.15	U	6

Residuals in seconds of arc

1995 02 25	691	0.3+	0.1−	1999 02 10	704	0.1−	2.0+	1999 02 11	691	(3.2+	0.1−)
1995 02 25	691	0.2+	0.7−	1999 02 10	704	0.3−	0.6−	1999 02 13	704	0.4+	0.6+
1995 02 25	691	0.2+	0.9−	1999 02 10	704	(2.4−	1.3+)	1999 02 13	704	0.8−	1.2−
1995 03 04	691	0.6−	0.9+	1999 02 10	704	0.4+	0.8+	1999 02 13	704	0.7−	1.4−
1995 03 04	691	0.0	0.8+	1999 02 11	691	0.7+	0.5−				
1999 02 10	704	0.1−	0.3+	1999 02 11	691	0.4+	0.0				

1999 CG$_{89}$ = 1980 BD$_6$ = 1982 QU$_1$ = 1986 TX$_9$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	84.06066		(2000.0)	**P**	**Q**		
n	0.26062301	ω	45.57726	+0.88928296	−0.45720645		
a	2.4273228	Ω	341.61985	+0.40831920	+0.80524565		
e	0.1831883	i	2.13568	+0.20603700	+0.37754695		
P	3.78	H	14.6	G 0.15	U 2		

Residuals in seconds of arc

1952 12 11	675	0.6+	1.4−	1998 12 22	910	0.4−	0.1−	1999 02 12	699	0.1+	0.6+
1980 01 23	095	(3.2−	0.5−)	1998 12 22	910	0.1−	0.2−	1999 02 12	699	0.1+	0.2+
1982 08 22	809	0.5+	0.4+	1999 01 14	699	0.2−	0.8+	1999 02 13	704	1.6+	1.2−
1982 08 22	809	0.5−	0.2−	1999 01 14	699	0.3+	0.4+	1999 02 13	704	0.4+	0.0
1982 08 22	809	0.1−	0.0	1999 01 14	699	0.1−	0.6−	1999 02 13	704	1.0+	0.3+
1986 10 03	095	(4.5−	2.4+)	1999 02 10	704	0.9−	0.2+	1999 02 13	704	0.6+	0.2+
1986 10 08	095	0.7−	1.5+	1999 02 10	704	0.3−	0.0	1999 02 13	704	0.1−	0.4+
1998 12 21	910	0.3−	0.3−	1999 02 10	704	0.8−	0.7+	1999 02 24	699	0.7+	1.0+
1998 12 22	910	0.2−	0.4−	1999 02 10	704	0.5−	0.2−	1999 02 24	699	0.8−	0.1−
1998 12 22	910	0.6−	0.4−	1999 02 10	704	(3.3−	0.2−)	1999 02 24	699	0.3+	0.0
1998 12 22	910	0.3−	0.3−	1999 02 12	699	0.5+	0.1+				

1999 CT$_{91}$ = 1997 RD$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	99.47160		(2000.0)	**P**	**Q**		
n	0.26679665	ω	56.55667	+0.88113565	−0.46972753		
a	2.3897316	Ω	331.34938	+0.38743160	+0.78307325		
e	0.0914843	i	6.51107	+0.27110279	+0.40761788		
P	3.69	H	15.8	G 0.15	U 5		

Residuals in seconds of arc

1997 09 08	910	0.2−	0.1+	1999 02 10	704	0.4−	0.4+	1999 02 13	704	0.1+	0.6+
1997 09 08	910	0.3−	0.0	1999 02 10	704	0.1+	0.4+	1999 02 13	704	0.2−	0.1+
1997 09 08	910	0.3−	0.0	1999 02 10	704	0.7+	0.8−	1999 02 13	704	1.2+	2.5+
1997 09 08	910	0.3+	0.0	1999 02 10	704	0.0	0.6+	1999 02 23	691	0.1+	0.2+
1997 09 08	910	0.2+	0.1−	1999 02 10	704	1.4−	2.2−	1999 02 23	691	0.2−	0.2−
1997 09 08	910	0.3+	0.1+	1999 02 13	704	0.3+	1.1−	1999 02 23	691	0.2−	0.5−

1999 CR$_{99}$ = 1990 EX$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	355.53245		(2000.0)	**P**	**Q**		
n	0.21658444	ω	97.17076	−0.89896905	−0.43568233		
a	2.7461097	Ω	57.01017	+0.37764512	−0.82313225		
e	0.0655722	i	3.08341	+0.22189818	−0.36418980		
P	4.55	H	13.7	G 0.15	U 5		

Residuals in seconds of arc

1990 03 03	809	1.0−	0.5−	1999 02 10	704	0.0	0.0	1999 03 20	704	0.5−	1.6+
1990 03 03	809	0.9−	0.7−	1999 02 10	704	0.3+	0.2+	1999 03 20	704	0.8+	0.1+
1990 03 03	809	0.9−	0.7−	1999 02 13	704	0.2−	0.3+	1999 03 20	704	0.7+	1.3+
1990 03 08	809	0.2+	0.1+	1999 02 13	704	0.6+	0.0	1999 03 23	704	0.4−	0.5−
1990 03 08	809	0.7+	0.1+	1999 02 13	704	0.3+	0.0	1999 03 23	704	1.0−	0.5−
1990 03 08	809	1.1+	0.1+	1999 02 13	704	0.5+	0.4+	1999 03 23	704	1.1+	0.0
1999 02 10	704	1.0−	0.5−	1999 02 13	704	0.2−	0.3−	1999 03 23	704	1.0+	1.3−
1999 02 10	704	0.6−	0.6−	1999 03 20	704	0.4−	0.4+				
1999 02 10	704	0.5−	0.1−	1999 03 20	704	0.0	1.3+				

1999 CK$_{100}$ = 1993 TN$_{48}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	27.59473		(2000.0)	**P**	**Q**		
n	0.23848519	ω	138.14110	−0.37027920	−0.92850355		
a	2.5753036	Ω	333.55592	+0.83482109	−0.31948189		
e	0.1423628	i	3.58286	+0.40739055	−0.18924183		
P	4.13	H	15.1	G 0.15	U 4		

Residuals in seconds of arc

1993 10 15	691	0.2−	0.1+	1999 02 13	704	1.4+	1.2−	1999 03 20	704	0.5+	0.9+
1993 10 15	691	0.1+	0.2−	1999 02 13	704	0.3−	0.0	1999 03 23	704	1.2+	0.5−
1993 10 15	691	0.1−	0.3−	1999 02 13	704	1.1+	0.6−	1999 03 23	704	(1.9+	2.8−)
1993 11 10	691	0.4+	0.1+	1999 02 13	704	1.3−	0.1+	1999 03 23	704	(2.5+	0.0)
1993 11 10	691	0.3−	0.2+	1999 02 13	704	1.4−	2.0+	1999 03 23	704	1.9+	1.6−
1993 11 10	691	0.1+	0.1+	1999 02 18	566	0.1+	0.0	1999 03 23	704	1.0+	1.1+
1999 02 10	704	0.2−	0.1+	1999 02 18	566	0.3+	0.2−	1999 04 15	693	0.3−	0.6−
1999 02 10	704	0.8−	1.1−	1999 02 18	566	0.1−	0.6−	1999 04 15	693	0.3−	0.5−
1999 02 10	704	0.7+	0.2−	1999 03 20	704	0.4−	1.8+	1999 04 15	693	0.4−	0.6−
1999 02 10	704	0.1+	0.8+	1999 03 20	704	1.4−	0.5−				
1999 02 10	704	(3.7−	0.2+)	1999 03 20	704	1.5−	1.1+				

1999 CM$_{100}$ = 1993 BT$_4$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	42.96323		(2000.0)	**P**	**Q**		
n	0.17156262	ω	358.95360	−0.04268351	−0.99812886		
a	3.2076547	Ω	93.49172	+0.91696425	−0.05653657		
e	0.1880384	i	2.51401	+0.39667957	+0.02328924		
P	5.74	H	13.5	G 0.15	U 5		

Residuals in seconds of arc

1993 01 27	010	0.1+	0.7+	1993 01 29	691	0.4+	0.7+	1999 02 18	699	0.2−	0.3+
1993 01 27	010	0.5−	0.2−	1999 02 10	704	0.5+	0.9−	1999 03 20	704	0.3−	1.2−
1993 01 27	010	1.6−	0.5+	1999 02 10	704	0.6+	0.6+	1999 03 20	704	0.1−	1.1−
1993 01 28	010	1.1+	1.9−	1999 02 10	704	0.8−	0.2−	1999 03 20	704	1.0−	0.2−
1993 01 28	010	1.2+	1.7−	1999 02 10	704	0.1−	1.3−	1999 03 20	704	1.3+	0.7+
1993 01 28	010	0.6−	1.9−	1999 02 13	704	0.2−	0.4−	1999 03 23	704	0.5−	1.7+
1993 01 29	691	0.3−	0.7+	1999 02 13	704	0.8−	0.2+	1999 03 23	704	1.0−	0.9−
1993 01 29	691	0.4−	0.7+	1999 02 13	704	0.8+	0.2+	1999 03 23	704	1.6+	1.0+
1993 01 29	691	0.3−	0.7+	1999 02 13	704	0.2+	1.2+	1999 03 23	704	0.1−	1.5−
1993 01 29	691	0.5+	0.8+	1999 02 18	699	0.1+	0.7+				
1993 01 29	691	0.4+	0.6+	1999 02 18	699	0.4+	1.2+				

1999 CD$_{101}$ = 1996 TM$_{41}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	190.27171		(2000.0)	**P**	**Q**		
n	0.18562371	ω	288.23043	+0.82542241	+0.56195925		
a	3.0435498	Ω	37.62936	−0.47903206	+0.74755230		
e	0.0570098	i	5.04232	−0.29867395	+0.35407252		
P	5.31	H	13.5	G 0.15	U 6		

Residuals in seconds of arc

1996 10 07	809	0.0	0.1−	1999 02 10	704	0.1−	0.3−	1999 03 20	704	0.5−	0.3−
1996 10 07	809	0.2+	0.4+	1999 02 10	704	0.2+	0.8−	1999 03 20	704	0.9−	1.1+
1996 10 07	809	0.2+	0.4+	1999 02 10	704	0.6−	0.8−	1999 03 20	704	0.5+	1.5−
1996 10 08	809	2.6+	0.9+	1999 02 10	704	1.4+	0.1+	1999 03 20	704	1.3+	0.2+
1996 10 08	809	1.8+	1.1+	1999 02 10	704	2.5−	1.8+	1999 03 23	704	0.4+	1.8+
1996 10 08	809	2.9+	0.9+	1999 02 13	704	1.0+	0.5−	1999 03 23	704	0.2+	0.2−
1996 10 10	809	2.0−	1.7−	1999 02 13	704	1.2+	0.7+	1999 03 23	704	0.1−	0.1+
1996 10 10	809	2.5−	1.1−	1999 02 13	704	0.2−	1.8+	1999 03 23	704	2.8−	1.7−
1996 10 10	809	2.9−	1.2−	1999 03 20	704	1.4+	2.0−				

1999 CL$_{102}$ = 1992 EZ$_{24}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	298.47072		(2000.0)	**P**	**Q**		
n	0.28147916	ω	181.15430	−0.73037351	+0.68066893		
a	2.3058898	Ω	41.93210	−0.62599927	−0.63367801		
e	0.0983904	i	4.88961	−0.27327541	−0.36761663		
P	3.50	H	15.4	G 0.15	U 6		

Residuals in seconds of arc

1992 03 04	809	1.5−	1.3+	1999 02 13	704	0.3+	0.0	1999 03 20	704	0.2−	0.2−
1992 03 09	809	1.4+	1.5−	1999 02 13	704	0.1+	1.6+	1999 03 20	704	1.6+	0.3−
1999 02 10	704	1.6−	0.8+	1999 02 13	704	0.8+	1.0−	1999 03 23	704	1.0−	1.0+

1999 02 10	704	0.8+	0.6−	1999 02 13	704	1.1−	1.2−	1999 03 23	704	0.7+	0.5−
1999 02 10	704	1.3+	0.3−	1999 03 20	704	0.5+	1.3−	1999 03 23	704	0.6−	1.1+
1999 02 10	704	0.6−	0.8+	1999 03 20	704	1.0−	0.4+				

1999 CR$_{109}$ = 1980 SW = 1996 TY$_{55}$

Id. B. G. Marsden (*MPC* 33994), G. V. Williams (*ibid.*, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	27.26438		(2000.0)		**P**	**Q**	
n	0.12429015	ω	180.74185		−0.14923060	−0.98136682	
a	3.9765970	Ω	277.84606		+0.90783656	−0.08747057	
e	0.2123284	i	7.01785		+0.39187116	−0.17107913	
P	7.93	H	12.9	G	0.15	U	4

Residuals in seconds of arc

1980 09 16	801	0.1+	0.3−	1999 02 16	704	0.4−	0.4+	1999 02 22	859	0.1+	0.5−
1996 09 16	809	0.4−	1.3−	1999 02 20	699	0.6+	1.9+	1999 02 22	719	1.9+	0.1+
1996 10 02	809	2.9+	1.6+	1999 02 20	699	0.6+	1.1+	1999 02 22	719	0.0	0.9+
1996 10 02	809	1.4+	0.7+	1999 02 20	699	1.5+	0.4−	1999 02 22	711	0.3−	0.1−
1996 10 02	809	0.2−	0.0	1999 02 20	097	0.0	0.0	1999 02 22	684	0.0	0.3−
1996 10 03	809	0.7−	0.5−	1999 02 20	557	0.3−	0.1−	1999 02 22	711	0.2−	0.2−
1996 10 03	809	1.2−	0.4−	1999 02 20	557	0.9−	0.1−	1999 02 22	684	0.1+	0.1−
1996 10 03	809	1.9−	0.2+	1999 02 20	097	0.1−	0.1−	1999 02 22	711	0.1−	0.1−
1999 02 12	704	0.1+	0.6−	1999 02 21	859	0.0	0.0	1999 02 22	557	0.8−	0.5+
1999 02 12	704	0.5−	0.6−	1999 02 21	859	0.1+	0.1+	1999 02 22	557	0.0	0.1−
1999 02 12	704	0.2−	0.2+	1999 02 21	859	0.1−	0.5+	1999 02 22	557	0.2−	0.0
1999 02 12	704	0.5−	1.1−	1999 02 21	711	0.3−	0.0	1999 02 23	684	0.2−	0.0
1999 02 16	704	0.5+	0.6−	1999 02 21	711	0.4−	0.1+	1999 02 23	684	0.1−	0.1−
1999 02 16	704	0.9+	0.1+	1999 02 21	711	0.6−	0.2+	1999 02 23	557	0.3−	0.4−
1999 02 16	704	0.0	0.1−	1999 02 22	859	0.2+	0.3−	1999 02 23	557	0.5−	0.3−
1999 02 16	704	0.3+	0.2−	1999 02 22	859	0.2−	0.1+				

1999 CO$_{116}$ = 1997 WU$_{12}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	298.37540		(2000.0)		**P**	**Q**	
n	0.26748821	ω	350.35131		−0.73952960	+0.66785217	
a	2.3856109	Ω	231.89302		−0.61023655	−0.71790530	
e	0.1322352	i	6.13406		−0.28409035	−0.19643184	
P	3.68	H	14.7	G	0.15	U	5

Residuals in seconds of arc

1997 11 23	691	0.1+	0.1−	1999 02 12	704	1.0+	0.8−	1999 03 19	704	0.3+	0.0
1997 11 23	691	0.5+	0.0	1999 02 12	704	0.7−	1.1+	1999 03 19	704	0.3+	0.7−
1997 11 23	691	0.3+	0.1−	1999 02 12	704	0.4+	1.0−	1999 03 19	704	0.6−	1.1−
1997 11 28	691	0.4−	0.0	1999 02 16	704	0.1−	0.2−	1999 03 20	704	0.4−	0.5−
1997 11 28	691	0.3−	0.1+	1999 02 16	704	0.4−	0.4+	1999 03 20	704	0.2−	0.2+
1997 11 28	691	0.2−	0.2+	1999 02 16	704	0.0	0.3+	1999 03 20	704	0.2−	0.2+
1999 02 12	704	0.4+	0.5−	1999 02 16	704	0.6−	0.5+	1999 03 20	704	0.6+	1.0+
1999 02 12	704	0.2−	0.3−	1999 02 16	704	0.3+	0.6+	1999 03 20	704	0.3+	0.6+

1999 CV$_{116}$ = 1980 PU$_{1}$ = 1993 SZ$_{12}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	60.09948		(2000.0)		**P**	**Q**	
n	0.22834049	ω	228.06241		+0.67102375	−0.74143537	
a	2.6510267	Ω	179.78582		+0.72964156	+0.66014514	
e	0.2975073	i	13.16198		+0.13172063	+0.12034117	
P	4.32	H	15.1	G	0.15	U	3

Residuals in seconds of arc

1980 08 06	809	0.3+	0.7−	1993 09 23	809	0.6+	1.7+	1999 02 16	704	0.7+	0.5−
1980 08 07	809	0.0	0.3+	1993 09 23	809	0.6+	1.7+	1999 02 16	704	1.0−	0.5−
1980 08 10	809	0.4−	1.1+	1999 02 12	704	(3.0−	0.8+)	1999 02 21	699	0.8+	0.8+
1993 09 16	809	0.2−	1.2−	1999 02 12	704	0.9−	0.0	1999 02 21	699	(2.7+	0.7+)
1993 09 16	809	0.5−	1.5−	1999 02 12	704	1.3−	0.6+	1999 02 21	699	0.3+	1.0+
1993 09 16	809	0.4−	1.2−	1999 02 16	704	1.1+	0.8+				
1993 09 23	809	(0.5+	2.9+)	1999 02 16	704	0.4+	1.9−				

1999 CD$_{117}$ = 1996 KQ$_{7}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	74.96445		(2000.0)		**P**	**Q**	
n	0.27972099	ω	197.93376		+0.44442372	−0.89208783	
a	2.3155421	Ω	225.77165		+0.83522166	+0.44559005	
e	0.0787780	i	6.54292		+0.32387086	+0.07502537	
P	3.52	H	15.1	G	0.15	U	6

Residuals in seconds of arc

1996 05 19	809	0.3−	0.3+	1996 05 23	809	0.7+	0.7−	1999 02 14	699	0.5+	0.6+
1996 05 19	809	0.7+	0.1−	1996 05 23	809	0.2−	0.8−	1999 02 14	699	0.9+	0.9+
1996 05 19	809	0.1−	0.5−	1999 02 12	704	0.4+	0.3+	1999 02 16	704	0.3−	1.1−
1996 05 22	809	0.2+	0.2+	1999 02 12	704	0.2−	0.3+	1999 02 16	704	0.3−	0.4+
1996 05 22	809	0.7−	0.4+	1999 02 12	704	0.5−	1.6−	1999 02 16	704	0.1+	1.4−
1996 05 22	809	0.9−	0.9+	1999 02 12	704	0.2−	0.2−	1999 02 16	704	0.3−	0.4+
1996 05 23	809	0.7+	0.4+	1999 02 14	699	0.0	1.1+	1999 02 16	704	0.2−	0.3+

1999 CK$_{118}$ = 1996 QA$_{3}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	325.14902		(2000.0)		**P**	**Q**	
n	0.22803244	ω	233.73259		−0.93088480	+0.34300309	
a	2.6534136	Ω	325.81428		−0.21970537	−0.80058065	
e	0.1137630	i	12.92807		−0.29186135	−0.49134460	
P	4.32	H	13.9	G	0.15	U	4

Residuals in seconds of arc

1996 08 18	010	1.4−	1.1−	1999 02 12	704	0.8−	1.3−	1999 03 23	704	0.1+	1.0−
1996 08 18	010	0.1−	0.6−	1999 02 16	704	0.8+	0.0	1999 03 23	704	0.8−	0.2−
1996 08 18	010	1.1+	1.8−	1999 02 16	704	0.2+	0.5+	1999 03 23	704	0.7−	0.6+
1996 08 19	566	0.0	1.1+	1999 02 16	704	0.6+	0.6+	1999 03 23	704	1.6−	0.6−
1996 08 19	566	0.6+	1.0+	1999 02 16	704	0.1+	0.1+	1999 04 11	699	0.6+	0.5+
1996 08 19	566	0.0	1.1+	1999 02 16	704	0.4+	0.7−	1999 04 11	699	0.1−	0.4+
1996 08 20	010	0.3−	0.7+	1999 03 20	704	0.6−	0.1−	1999 04 11	699	0.5+	0.6+
1996 08 20	010	(2.5−	0.7+)	1999 03 20	704	0.5−	0.3−	1999 04 16	699	1.2+	0.4−
1996 08 20	010	0.4+	0.7−	1999 03 20	704	0.3−	0.3−	1999 04 16	699	1.1−	0.2+
1999 02 12	704	0.0	0.1−	1999 03 20	704	0.2+	0.5−	1999 04 16	699	1.7+	0.8+
1999 02 12	704	0.2−	0.2+	1999 03 20	704	0.5−	0.1+				
1999 02 12	704	1.1+	0.5+	1999 03 23	704	0.2−	0.0				

1999 CT$_{123}$ = 1995 FC$_{8}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	29.67542		(2000.0)		**P**	**Q**	
n	0.22459699	ω	65.74260		−0.08435523	−0.99085659	
a	2.6804030	Ω	29.69016		+0.81965423	−0.12909110	
e	0.1573965	i	12.27405		+0.56661375	+0.03922625	
P	4.39	H	14.9	G	0.15	U	3

Residuals in seconds of arc

1979 08 19	413	0.6−	0.4−	1995 04 07	691	0.3+	0.1−	1999 02 18	704	0.0	0.4−
1979 08 19	413	0.7+	0.3+	1995 04 07	691	0.2−	0.1+	1999 02 18	704	0.1−	1.2−
1995 03 25	691	0.0	0.3+	1999 02 11	704	0.4+	2.0+	1999 02 18	704	0.3−	1.9−
1995 03 25	691	0.1−	0.4+	1999 02 11	704	0.1−	0.1+	1999 02 18	566	0.0	0.4+
1995 03 25	691	0.1−	0.0	1999 02 11	704	(3.5−	0.6+)	1999 02 18	566	0.3+	0.4−
1995 03 31	691	0.0	0.1−	1999 02 11	704	1.6−	0.9+	1999 02 18	566	0.1+	0.1−
1995 03 31	691	0.1+	0.3−	1999 02 11	704	0.3−	1.0−	1999 02 22	699	0.5+	0.4+
1995 03 31	691	0.0	0.2−	1999 02 18	704	0.0	0.1+	1999 02 22	699	0.3+	0.6+
1995 04 07	691	0.0	0.1−	1999 02 18	704	0.3+	0.0	1999 02 22	699	0.3+	0.4+

1999 CU$_{126}$ = 1997 YJ$_8$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	165.26329		(2000.0)	**P**	**Q**		
n	0.28383332	ω	259.28585	+0.84739769	+0.36407676		
a	2.2931218	Ω	78.45189	−0.17877802	+0.88103205		
e	0.2412653	i	23.23250	−0.49995558	+0.30204412		
P	3.47	H	14.6	G 0.15	U 5		

Residuals in seconds of arc

1997 12 28	566	0.3+	0.5+	1999 02 11	704	(3.3−	0.7−)	1999 03 12	704	0.3−	1.1−
1997 12 28	566	0.3+	0.0	1999 02 18	704	0.2+	0.4+	1999 03 12	704	0.6+	0.8+
1997 12 28	566	0.3+	0.4+	1999 02 18	704	0.1−	0.5+	1999 03 12	704	(1.5+	2.9+)
1997 12 29	566	0.3−	0.4−	1999 02 18	704	1.7+	1.0−	1999 03 12	704	1.6−	0.5+
1997 12 29	566	0.1−	0.3−	1999 02 18	704	1.2+	0.8+	1999 03 16	704	1.0−	0.6−
1997 12 29	566	0.3−	0.5−	1999 02 18	704	0.3+	1.0−	1999 03 16	704	0.6+	1.6−
1999 02 11	704	0.7−	1.0−	1999 02 19	566	0.4+	0.0	1999 03 16	704	0.7−	0.3+
1999 02 11	704	1.2−	0.7+	1999 02 19	566	0.4+	0.4+	1999 03 16	704	(3.1−	0.9−)
1999 02 11	704	0.1−	1.6+	1999 02 19	566	0.4+	0.3+				

1999 CP$_{130}$ = 1995 BY$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	38.05334		(2000.0)	**P**	**Q**		
n	0.24268970	ω	107.47987	+0.29774070	−0.95202279		
a	2.5454729	Ω	324.94771	+0.82248772	+0.29343046		
e	0.1524876	i	7.07439	+0.48462813	+0.08689751		
P	4.06	H	16.9	G 0.15	U 5		

Residuals in seconds of arc

1995 01 29	691	0.3−	0.1+	1995 02 04	691	0.2+	0.1−	1999 02 08	568	0.1−	0.1+
1995 01 29	691	0.1+	0.2−	1995 02 04	691	0.1−	0.5+	1999 02 08	568	0.0	0.4−
1995 01 29	691	0.3+	0.1+	1999 02 07	568	0.3+	0.0	1999 02 09	568	0.3−	0.2+
1995 02 04	691	0.1−	0.4−	1999 02 07	568	0.2+	0.1+	1999 02 09	568	0.2−	0.1−

1999 CP$_{132}$ = 1997 WN$_{48}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	191.04589		(2000.0)	**P**	**Q**		
n	0.27161869	ω	177.40828	+0.63628367	+0.77037387		
a	2.3613641	Ω	132.10320	−0.70878248	+0.60466949		
e	0.2405541	i	3.15476	−0.30458247	+0.20223478		
P	3.63	H	14.7	G 0.15	U 7		

Residuals in seconds of arc

1997 11 26	566	1.3+	0.8−	1999 02 08	691	1.4−	0.1−	1999 02 13	704	(2.8+	0.3+)
1997 11 26	566	0.9+	0.8−	1999 02 08	691	1.3−	0.0	1999 02 13	704	0.1−	0.4+
1997 11 26	566	1.6+	1.1−	1999 02 08	691	1.2−	0.7+	1999 02 13	704	(3.3+	0.4+)
1997 11 29	704	1.0−	0.3+	1999 02 10	691	0.8+	0.5−	1999 02 13	704	(4.9−	0.4−)
1997 11 29	704	1.3−	1.8+	1999 02 10	691	0.7+	1.0−	1999 02 16	691	0.0	1.0+
1997 11 29	704	1.6−	0.8+	1999 02 10	691	0.9+	0.5−	1999 02 16	691	0.1−	0.8+
1997 11 29	704	(2.9−	1.7+)	1999 02 13	704	1.8+	1.2−	1999 02 16	691	0.1−	0.5+

1999 CB$_{136}$ = 1992 DD$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	308.34919		(2000.0)	**P**	**Q**		
n	0.28270726	ω	64.07662	−0.76975984	+0.63694480		
a	2.2992070	Ω	155.41845	−0.61587251	−0.72372327		
e	0.1438279	i	5.80642	−0.16784171	−0.26556722		
P	3.49	H	16.2	G 0.15	U 6		

Residuals in seconds of arc

1992 02 29	809	1.1−	0.7+	1999 02 12	691	0.9+	0.1+	1999 03 20	704	0.3−	0.5+
1992 03 03	809	1.9−	1.4+	1999 02 14	691	0.4+	0.1+	1999 03 23	704	0.4+	0.2+
1992 03 07	809	2.6+	3.3−	1999 02 14	691	0.1+	0.0	1999 03 23	704	0.6+	1.7+
1999 02 08	691	0.6−	0.0	1999 02 14	691	0.3+	0.2+	1999 03 23	704	0.3−	1.0+
1999 02 08	691	0.7−	0.1+	1999 03 20	704	0.6−	0.3+	1999 03 23	704	1.7+	0.2+
1999 02 08	691	0.9−	0.2+	1999 03 20	704	1.3−	0.6−	1999 03 23	704	1.1−	1.4−
1999 02 12	691	0.5+	0.0	1999 03 20	704	0.2−	1.0−				
1999 02 12	691	0.8+	0.1+	1999 03 20	704	0.8+	0.4−				

1999 CJ$_{138}$ = 1997 UD$_9$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	199.40849		(2000.0)	**P**	**Q**		
n	0.31246225	ω	158.47806	+0.79885762	+0.60148239		
a	2.1508214	Ω	164.54011	−0.55550841	+0.74200311		
e	0.1698715	i	1.44900	−0.23073125	+0.29605794		
P	3.15	H	15.4	G 0.15	U 5		

Residuals in seconds of arc

1996 03 17	566	0.3+	0.1+	1997 10 29	566	0.9−	0.2−	1999 03 12	691	0.4+	0.4+
1996 03 17	566	0.4−	0.0	1997 10 30	704	0.4+	1.3−	1999 03 12	691	0.5+	0.2+
1996 03 17	566	0.1−	0.4−	1997 10 30	704	0.7+	0.9−	1999 03 13	691	0.7−	0.2+
1997 10 29	704	0.1−	0.3+	1997 10 30	704	1.0+	1.7−	1999 03 13	691	0.7−	0.3+
1997 10 29	704	0.1−	1.1−	1997 10 30	704	0.4+	1.0−	1999 03 13	691	0.9−	0.0
1997 10 29	704	0.8+	0.7+	1997 10 30	566	1.0−	1.2+	1999 03 20	704	0.6+	1.5−
1997 10 29	704	0.2+	0.3−	1997 10 30	566	0.6−	0.9+	1999 03 20	704	0.3+	0.4+
1997 10 29	704	0.1+	0.6+	1997 10 30	566	0.9−	1.0+	1999 03 20	704	1.2−	0.2−
1997 10 29	704	0.1−	0.1−	1999 02 11	691	0.6+	0.3−	1999 03 20	704	0.0	0.3+
1997 10 29	704	0.0	1.1+	1999 02 11	691	1.3+	0.0	1999 03 20	704	0.2−	1.4+
1997 10 29	704	0.8+	0.0	1999 02 11	691	0.0	0.1−	1999 03 23	704	0.7+	1.7−
1997 10 29	704	0.3+	1.2+	1999 02 12	691	1.2−	0.3−	1999 03 23	704	0.8+	0.4−
1997 10 29	704	0.6+	0.1−	1999 02 12	691	1.2−	0.2−	1999 03 23	704	0.3−	0.3+
1997 10 29	566	0.7−	0.2−	1999 02 12	691	1.1−	0.0	1999 03 23	704	1.5+	1.1+
1997 10 29	566	0.9−	0.0	1999 03 12	691	0.3+	0.1+	1999 03 23	704	0.6+	0.2+

1999 CB$_{154}$ = 1997 XD$_4$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	63.17709		(2000.0)	**P**	**Q**		
n	0.25580602	ω	229.93468	+0.32869610	−0.94393814		
a	2.4577000	Ω	200.93681	+0.89052150	+0.32057833		
e	0.1421917	i	4.92113	+0.31453193	+0.07880563		
P	3.85	H	15.2	G 0.15	U 4		

Residuals in seconds of arc

1997 12 05	910	0.0	0.2−	1999 02 14	699	0.3+	0.7+	1999 03 20	704	0.0	0.5−
1997 12 05	910	0.0	0.1+	1999 02 14	699	1.5−	0.7+	1999 03 20	704	0.2+	0.7+
1997 12 05	910	0.1+	0.0	1999 02 21	699	0.7+	0.1−	1999 03 23	704	1.3−	1.3+
1997 12 06	910	0.3+	0.1+	1999 02 21	699	0.6+	0.5−	1999 03 23	704	2.0+	0.4+
1997 12 06	910	0.1+	0.1+	1999 02 21	699	0.8+	1.6−	1999 03 23	704	1.0+	0.6−
1997 12 06	910	0.4−	0.2−	1999 03 20	704	1.0−	0.5+	1999 03 23	704	0.4−	1.5−
1999 02 14	699	0.4−	0.7+	1999 03 20	704	1.1−	0.1−				

1999 DC = 1972 TC$_3$ = 1976 GZ$_6$ = 1980 TD$_8$ = 1991 BR$_4$

Id. A. Doppler (*MPC* 34259), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	47.10630		(2000.0)	**P**	**Q**		
n	0.12364681	ω	252.31694	+0.02346649	−0.99932561		
a	3.9903787	Ω	196.41566	+0.95093423	+0.03103000		
e	0.1211130	i	5.73553	+0.30850189	−0.01963301		
P	7.97	H	12.0	G 0.15	U 2		

Residuals in seconds of arc

1972 10 05	095	1.1+	1.1−	1999 02 12	699	0.3+	0.2+	1999 02 16	910	0.7+	0.2−
1976 04 04	095	0.5−	2.7−	1999 02 12	704	0.2+	0.2+	1999 02 16	704	0.1−	0.3+
1980 10 10	095	1.1−	0.3−	1999 02 12	704	1.2−	0.8−	1999 02 16	704	0.3−	0.1+
1980 10 14	511	1.6+	1.3+	1999 02 12	699	0.2+	0.6+	1999 02 16	704	0.2+	0.0
1980 10 14	511	0.4+	0.4−	1999 02 12	704	0.9−	0.0	1999 02 16	704	0.0	1.2+
1980 10 14	511	1.0−	1.8−	1999 02 12	699	0.5+	0.5+	1999 02 16	704	0.2−	0.9+
1991 01 22	675	2.5−	1.2−	1999 02 12	704	1.2−	1.2+	1999 02 17	910	0.6+	0.6−

1991 01 22	675	0.3+	0.6−	1999 02 16	910	0.6+	0.3−	1999 02 17	910	0.6+	0.5−
1999 02 12	704	0.7+	0.1−	1999 02 16	910	0.6+	0.4−	1999 02 17	910	0.7+	0.6−

1999 DV = 4099 T-1

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	89.03166		(2000.0)		**P**		**Q**
n	0.27982012	ω	337.07346		+0.66564073		−0.74329316
a	2.3149952	Ω	71.12479		+0.69513806		+0.58508223
e	0.1391223	i	4.03707		+0.27148756		+0.32433634
P	3.52	H	14.6	G	0.15	U	5

Residuals in seconds of arc

1971 03 24	675	1.3+	2.6−	1999 02 17	888	0.8+	1.0−	1999 03 20	704	0.2+	1.3+
1971 03 26	675	0.3−	2.0+	1999 02 17	888	0.1+	0.3+	1999 03 20	704	0.4−	1.9+
1971 03 26	675	0.8+	1.1+	1999 02 20	888	0.2−	0.1−	1999 03 20	704	0.9+	0.3+
1971 03 27	675	2.5−	0.9−	1999 02 20	888	0.4−	0.1+	1999 03 23	704	2.8−	0.1−
1971 04 02	675	0.4+	0.3−	1999 02 20	888	0.0	0.0	1999 03 23	704	1.1+	0.2+
1999 02 16	888	0.4−	0.0	1999 02 20	888	0.1−	0.3−	1999 03 23	704	1.3+	2.4−
1999 02 16	888	0.1−	0.9−	1999 03 20	704	1.0+	0.2−	1999 03 23	704	0.4−	0.6−
1999 02 16	888	0.3−	0.3+	1999 03 20	704	0.1−	0.7+	1999 03 23	704	0.4+	1.0+

1999 DR$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	303.67725		(2000.0)		**P**		**Q**
n	0.18911240	ω	150.16888		−0.67719516		+0.70665502
a	3.0060028	Ω	76.35287		−0.70993467		−0.55425997
e	0.0562301	i	12.18137		−0.19338946		−0.43981197
P	5.21	H	12.0	G	0.15	U	4

Residuals in seconds of arc

1998 01 20	610	0.6+	0.4+	1999 02 25	385	0.1+	0.4+	1999 04 07	886	0.8+	0.6+
1998 01 20	610	0.0	0.2−	1999 02 25	385	0.0	0.3+	1999 04 07	886	0.6+	0.1−
1998 01 20	610	0.4−	0.8−	1999 02 25	888	0.1+	0.3+	1999 04 07	888	0.9+	0.2−
1999 02 18	699	0.3+	0.9+	1999 02 25	888	0.1−	0.2+	1999 04 07	888	0.7+	0.3−
1999 02 18	699	0.4+	0.8+	1999 02 27	888	0.2+	0.1−	1999 04 14	886	1.6−	0.4−
1999 02 18	699	0.5+	0.6+	1999 02 27	888	0.1+	0.2+	1999 04 14	886	1.4−	1.2−
1999 02 20	905	0.6+	0.1−	1999 03 22	886	0.7−	0.2−	1999 04 16	888	0.1−	0.7−
1999 02 20	905	0.1−	0.3−	1999 03 22	886	0.1−	0.2−	1999 04 16	888	0.1+	0.1−
1999 02 21	905	0.4+	0.2+	1999 03 23	888	0.2−	0.1−	1999 04 19	127	0.5−	0.6+
1999 02 25	886	0.5−	0.2+	1999 03 23	888	0.1−	0.3−	1999 04 19	127	0.5−	0.7+
1999 02 25	886	0.7−	0.4−	1999 04 07	905	0.6+	1.2−				
1999 02 25	385	0.2+	0.2+	1999 04 07	905	0.2−	0.1−				

1999 DZ$_4$ = 1997 WU$_{32}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	314.86357		(2000.0)		**P**		**Q**
n	0.19629174	ω	330.94283		−0.95534309		+0.23141623
a	2.9322525	Ω	223.72176		−0.19249664		−0.95917895
e	0.1110772	i	15.41845		−0.22419772		−0.16254928
P	5.02	H	13.6	G	0.15	U	4

Residuals in seconds of arc

1997 09 07	910	0.4−	0.2−	1997 12 04	704	(2.2−	0.1+)	1999 02 17	704	0.5−	0.7+
1997 09 07	910	0.2−	0.2−	1997 12 04	704	0.4−	1.5+	1999 02 17	704	0.5−	0.3−
1997 09 07	910	0.1−	0.1−	1999 01 23	704	0.5+	0.1−	1999 02 17	704	0.4−	0.3+
1997 11 29	704	1.0+	0.1+	1999 01 23	704	1.0+	0.2+	1999 02 17	704	0.3+	0.8−
1997 11 29	704	(0.7+	2.2−)	1999 01 23	704	0.6−	1.5−	1999 02 19	704	0.8−	0.4+
1997 11 29	704	0.8+	0.4−	1999 01 23	704	0.2−	1.6−	1999 02 19	704	0.3−	0.2−
1997 11 29	704	0.3+	0.1−	1999 02 14	699	1.1+	0.1−	1999 02 19	704	0.2−	0.2+
1997 11 29	704	0.0	0.7−	1999 02 14	699	1.1+	0.8+	1999 02 19	704	0.2+	0.8+
1997 12 04	704	(0.4+	2.4+)	1999 02 14	699	1.2+	1.1+	1999 02 19	704	0.8−	0.0
1997 12 04	704	1.2−	0.2+	1999 02 17	704	0.8−	0.4−				

1999 DN$_7$ = 1977 QZ$_1$ = 1993 VC$_8$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	217.72996		(2000.0)		**P**		**Q**
n	0.25552997	ω	221.70342		+0.64427254		+0.76121086
a	2.4594698	Ω	88.54444		−0.68065180		+0.61480211
e	0.1852504	i	4.24317		−0.34874923		+0.20634050
P	3.86	H	13.7	G	0.15	U	3

Residuals in seconds of arc

1977 08 19	095	0.2−	0.4+	1999 02 18	699	0.7+	0.8+	1999 03 20	704	1.4−	0.4−
1993 11 11	033	0.6−	0.2−	1999 02 22	699	0.5+	0.5−	1999 03 20	704	0.8−	0.2+
1993 11 12	033	0.1+	0.5+	1999 02 22	699	0.8+	0.2+	1999 03 23	704	0.8+	0.5+
1993 11 13	033	0.5+	0.5−	1999 02 22	699	1.1−	0.4+	1999 03 23	704	0.4+	1.0−
1999 02 18	699	0.5+	1.4+	1999 03 20	704	0.8−	0.0	1999 03 23	704	0.4+	1.0−
1999 02 18	699	0.4+	0.6+	1999 03 20	704	0.7−	0.0	1999 03 23	704	0.6+	0.7−

1999 DQ$_7$ = 1977 DG$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	14.74987		(2000.0)		**P**		**Q**
n	0.22538138	ω	17.58841		−0.71786217		−0.69067843
a	2.6741803	Ω	118.39818		+0.62620206		−0.69544463
e	0.1041861	i	5.70152		+0.30421191		−0.19829288
P	4.37	H	14.7	G	0.15	U	6

Residuals in seconds of arc

1977 02 18	381	0.5+	1.8−	1999 02 22	699	0.3−	0.2+	1999 03 23	704	0.8+	0.9−
1977 02 18	381	1.6+	0.1−	1999 02 22	699	1.0−	0.1−	1999 03 23	704	0.1+	0.9+
1977 02 19	381	0.8−	0.9+	1999 02 22	699	0.4−	2.1+	1999 03 23	704	0.4+	1.2−
1977 02 19	381	1.5−	0.3+	1999 03 20	704	0.5+	0.4−	1999 03 23	704	1.0+	1.0−
1999 02 18	699	0.4−	0.6+	1999 03 20	704	2.2−	2.2+	1999 03 23	704	0.4+	1.3−
1999 02 18	699	0.4+	0.1+	1999 03 20	704	0.5+	0.1−				
1999 02 18	699	0.8+	0.6−	1999 03 20	704	0.5−	0.3+				

1999 EK$_3$ = 1991 JE$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	10.94521		(2000.0)		**P**		**Q**
n	0.23799577	ω	335.59668		−0.85631936		−0.51582013
a	2.5788330	Ω	173.18301		+0.50202944		−0.84295835
e	0.1889282	i	12.37156		+0.12117587		−0.15280976
P	4.14	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1991 05 08	413	0.5−	1.1+	1999 03 17	159	0.9+	0.4+	1999 04 06	704	0.4+	0.6−
1991 05 08	413	(2.8+	1.4−)	1999 03 17	159	0.9+	0.2−	1999 04 06	704	0.1−	0.5−
1991 05 18	413	0.3−	0.3−	1999 03 17	159	0.4+	0.2+	1999 04 06	704	0.1−	1.7−
1991 05 18	413	0.7+	1.0−	1999 03 19	704	1.0+	0.6−	1999 04 06	704	(2.2−	1.6−)
1999 03 14	159	0.8+	1.0+	1999 03 19	704	0.1+	1.7−	1999 04 06	704	0.7−	0.1−
1999 03 14	159	0.6+	0.9+	1999 03 19	704	0.4−	1.7−	1999 04 07	699	0.5+	0.4−
1999 03 14	159	0.9+	1.0+	1999 03 19	704	0.1−	1.0+	1999 04 07	699	0.2+	0.1−
1999 03 14	159	0.8+	0.9+	1999 03 20	704	1.0+	1.5−	1999 04 07	699	0.2−	0.4+
1999 03 14	159	1.5+	1.7−	1999 03 20	704	(0.8+	2.1−)	1999 04 15	704	0.1−	0.5−
1999 03 14	159	0.7−	0.3−	1999 03 20	704	(0.4−	2.1+)	1999 04 15	704	0.4+	0.1+
1999 03 14	159	0.5+	0.1+	1999 03 20	704	0.3+	0.1−	1999 04 15	704	0.0	1.3+
1999 03 14	159	1.0−	0.6+	1999 03 20	704	0.3+	1.0−	1999 04 15	704	0.3−	0.8+
1999 03 15	159	0.7+	0.2+	1999 03 21	159	0.1−	0.2+	1999 04 15	704	0.7−	0.4+
1999 03 15	159	1.2−	1.2+	1999 03 21	159	0.5+	0.4+	1999 04 16	704	0.4+	0.9−
1999 03 15	159	0.9−	1.0+	1999 03 21	159	0.1−	0.4+	1999 04 16	704	0.6+	0.7+
1999 03 15	159	1.1−	0.9+	1999 03 21	159	0.3+	0.3+	1999 04 16	704	0.8+	0.6+
1999 03 15	159	1.6−	0.9−	1999 03 23	699	0.6+	0.1+	1999 04 16	704	0.3+	0.7−
1999 03 15	159	0.9−	0.9−	1999 03 23	699	0.4+	0.5+	1999 04 16	704	0.5−	0.2−
1999 03 16	159	1.3−	0.7−	1999 03 23	699	1.4−	0.5+	1999 04 30	159	0.1+	0.3+
1999 03 16	159	1.0−	0.0	1999 04 02	159	0.9−	0.4+	1999 04 30	159	0.0	0.4+
1999 03 16	159	0.2−	0.9−	1999 04 02	159	1.0−	0.3+	1999 04 30	159	0.3−	0.3+
1999 03 17	159	0.4+	0.0	1999 04 02	159	0.1+	0.2−	1999 04 30	159	0.3−	0.1+

1999 03 17	159	0.6+	0.0	1999 04 02	159	0.5−	0.1+	1999 04 30	159	0.0	0.3+
1999 03 17	159	0.6+	0.0	1999 04 02	159	0.1−	0.2+				

1999 EQ$_4$ = 1994 GP$_{10}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	76.94141		(2000.0)		**P**	**Q**	
n	0.18817559	ω	262.23936		−0.05315408	−0.99807486	
a	3.0159712	Ω	190.96135		+0.96959525	−0.04392937	
e	0.0650916	i	9.67514		+0.23887170	−0.04378101	
P	5.24	H	12.4	G	0.15	U	5

Residuals in seconds of arc

1994 04 14	675	1.2+	0.2+	1999 03 16	120	1.2−	0.4−	1999 04 09	120	0.0	0.3−
1994 04 14	675	0.4−	0.2+	1999 03 16	120	0.5−	0.7−	1999 04 09	120	0.0	0.3−
1994 04 15	675	0.5−	0.2+	1999 03 22	699	0.8+	0.0	1999 04 10	699	0.7+	1.1+
1994 04 15	675	0.3−	0.6−	1999 03 22	699	0.7+	0.1+	1999 04 10	699	0.5+	0.7+
1999 03 13	120	0.4+	1.3+	1999 03 22	699	0.0	0.6+	1999 04 10	699	0.8+	0.3+
1999 03 13	120	0.4−	0.9+	1999 04 03	120	0.5−	0.1+	1999 04 10	120	0.7−	0.3−
1999 03 13	120	0.2+	0.6+	1999 04 03	120	0.4−	0.1−	1999 04 10	120	0.3−	0.4−
1999 03 15	120	0.9+	1.0−	1999 04 03	120	0.5−	0.2−	1999 04 10	120	0.7−	0.5−
1999 03 15	120	0.2−	1.2−	1999 04 05	120	0.4−	0.2+	1999 04 10	120	1.0+	0.2−
1999 03 15	120	0.9+	0.4−	1999 04 05	120	0.1+	0.1+				
1999 03 16	120	0.9−	0.1+	1999 04 05	120	0.2−	0.1−				

1999 EZ$_4$ = 1998 BE$_3$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	140.22983		(2000.0)		**P**	**Q**	
n	0.27228699	ω	286.90717		+0.90905362	−0.38318754	
a	2.3574987	Ω	95.86889		+0.41658134	+0.82727942	
e	0.1757991	i	9.47024		+0.00902783	+0.41082365	
P	3.62	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1998 01 18	691	0.1−	0.0	1999 03 15	143	0.0	0.5−	1999 04 18	703	0.4−	1.1+
1998 01 18	691	0.3+	0.2+	1999 03 15	143	1.0−	0.0	1999 04 18	143	0.3+	0.2−
1998 01 18	691	0.3+	0.1−	1999 03 20	143	0.9+	0.6+	1999 04 18	143	0.9+	0.4+
1998 01 22	691	0.3−	0.3+	1999 03 20	143	(2.9+	0.8−)	1999 04 18	143	0.5+	0.3−
1998 01 22	691	0.2−	0.1−	1999 04 09	143	0.5−	1.7−	1999 04 19	703	0.3−	0.3+
1998 01 22	691	0.2−	0.1+	1999 04 09	143	0.1−	1.2−	1999 04 19	703	0.7+	0.1+
1999 03 14	143	0.1−	0.4−	1999 04 09	143	0.7−	0.1−	1999 04 19	703	0.4−	1.3+
1999 03 14	143	0.4+	0.1−	1999 04 18	703	1.0+	0.3−	1999 04 19	703	0.8−	0.3+
1999 03 14	143	0.2−	0.6−	1999 04 18	703	0.8+	0.4+				
1999 03 15	143	0.8−	0.5−	1999 04 18	703	0.4−	1.5+				

1999 EH$_5$ = 1975 TL$_1$ = 1983 FR = 1983 HG$_1$ = 1988 BV$_1$

Id. G. V. Williams, N. S. Chernykh

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	47.41450		(2000.0)		**P**	**Q**	
n	0.18871745	ω	136.52939		−0.68139804	−0.73183552	
a	3.0101953	Ω	356.37493		+0.61693322	−0.56646155	
e	0.0304049	i	9.69986		+0.39381483	−0.37886420	
P	5.22	H	12.5	G	0.15	U	1

Residuals in seconds of arc

1975 10 03	095	0.2+	1.7+	1999 03 19	704	0.5+	0.3−	1999 04 06	428	0.8+	0.3−
1983 03 20	095	(5.1+	0.1−)	1999 03 19	704	0.3−	0.8−	1999 04 16	704	0.5+	0.0
1983 04 16	033	2.1−	0.1+	1999 03 19	704	0.5+	0.2−	1999 04 16	704	0.9+	0.8+
1983 04 16	033	1.3−	0.2−	1999 03 19	704	0.6−	0.0	1999 04 16	704	0.4−	1.5+
1988 01 22	511	0.4+	0.2−	1999 03 19	704	1.4−	1.6+	1999 04 16	704	0.4+	0.5−
1988 01 22	511	1.6+	1.3−	1999 03 20	704	0.3−	0.2−	1999 04 17	704	0.3+	0.3+
1991 10 05	095	1.9−	1.2+	1999 03 20	704	0.7−	0.7+	1999 04 17	704	0.1+	0.8+
1991 10 05	095	1.3−	1.9+	1999 03 20	704	0.3−	1.0+	1999 04 17	704	0.0	0.5+
1999 03 15	428	0.7−	0.5+	1999 03 20	704	0.1+	0.2+	1999 04 17	704	1.1−	1.1+
1999 03 15	428	1.1−	0.0	1999 03 20	704	0.4−	0.3−	1999 04 17	704	0.6+	0.8+
1999 03 17	428	0.5−	0.2+	1999 03 21	428	0.4+	0.5−	1999 04 18	428	0.3+	0.2−
1999 03 17	428	0.0	0.2+	1999 03 21	428	0.1−	0.4−	1999 04 18	428	0.6+	0.1−
1999 03 18	428	0.8+	0.4+	1999 03 24	428	0.0	0.0	1999 04 24	428	0.7+	0.1−
1999 03 18	428	0.9+	0.2+	1999 03 24	428	0.1+	0.5−	1999 04 24	428	0.9+	0.2−
1999 03 18	428	1.0+	0.1+	1999 03 28	428	0.1−	0.5−				
1999 03 18	428	1.0+	0.0	1999 04 06	428	0.4+	0.3−				

1999 EL$_5$ = 1971 MK = 1977 RD$_{13}$

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Marsden

M	122.29559		(2000.0)		**P**	**Q**	
n	0.20583408	ω	120.92677		+0.67568251	−0.73703135	
a	2.8409125	Ω	286.55778		+0.67075128	+0.62333160	
e	0.0621163	i	0.92209		+0.30585270	+0.26123267	
P	4.79	H	14.4	G	0.15	U	5

Residuals in seconds of arc

1971 06 28	020	1.1−	1.0−	1999 03 13	557	1.0−	1.3+	1999 03 24	557	0.7+	1.6−
1971 06 28	020	1.1+	1.1+	1999 03 18	557	0.2+	0.4+	1999 03 25	557	1.0+	1.6−
1977 09 09	675	0.4+	0.7−	1999 03 18	557	0.6−	0.5+	1999 04 17	557	(0.2−	7.7−)
1977 09 10	675	0.4−	0.6+	1999 03 19	557	0.2+	0.1+	1999 04 17	557	(0.4−	7.9−)
1999 03 13	557	0.4−	1.0+	1999 03 19	557	0.3−	0.1−	1999 04 17	557	(0.4−	7.5−)

1999 EE$_6$ = 1952 BN$_2$ = 1997 RU$_7$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	54.48395		(2000.0)		**P**	**Q**	
n	0.27429717	ω	94.92036		−0.39828722	−0.91657879	
a	2.3459667	Ω	18.67277		+0.79171642	−0.36298748	
e	0.0961297	i	6.34162		+0.46319802	−0.16770034	
P	3.59	H	15.6	G	0.15	U	2

Residuals in seconds of arc

1952 01 30	675	0.8−	0.7−	1997 11 30	691	0.8−	0.6+	1999 03 20	704	1.7+	0.8+
1952 01 30	675	0.2−	1.2−	1997 11 30	691	0.5−	1.0+	1999 03 20	704	0.5−	0.5+
1997 09 09	910	0.1+	0.1−	1997 11 30	691	0.7−	0.2+	1999 03 23	691	0.6−	0.2+
1997 09 09	910	0.2+	0.5−	1999 03 12	691	0.4−	1.2+	1999 03 23	691	0.2−	0.4+
1997 09 09	910	0.2+	0.3−	1999 03 12	691	0.4−	0.2+	1999 03 23	691	0.1+	0.0
1997 09 12	910	0.3+	0.1−	1999 03 17	691	0.6−	0.2+	1999 04 16	703	0.7+	1.4+
1997 09 12	910	0.1+	0.1−	1999 03 17	691	0.6−	0.1+	1999 04 16	703	0.4+	0.6−
1997 09 12	910	0.4+	0.0	1999 03 17	691	0.1+	0.1−	1999 04 16	703	0.6+	0.1+
1997 10 02	691	0.1+	0.3+	1999 03 19	704	1.7+	0.9−	1999 04 16	703	0.1−	0.3−
1997 10 02	691	0.1−	0.4+	1999 03 19	704	0.8+	1.3−	1999 04 17	703	(0.7−	2.8+)
1997 10 02	691	0.1−	0.5+	1999 03 19	704	(0.5−	2.1−)	1999 04 17	703	0.2+	0.3+
1997 10 29	566	0.4−	0.2+	1999 03 19	704	1.6−	1.5+	1999 04 17	703	0.7+	0.2−
1997 10 29	566	0.1−	0.4+	1999 03 20	704	1.3−	0.1−	1999 04 17	703	0.3+	1.4−
1997 10 29	566	0.2−	0.3+	1999 03 20	704	0.9+	2.0+				

1999 EY$_6$ = 1985 RF$_2$ = 1989 TZ$_{14}$ = 1997 WX$_{41}$

Id. A. Doppler, G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	163.55358		(2000.0)		**P**	**Q**	
n	0.25628806	ω	178.23945		+0.99762300	+0.06888033	
a	2.4546174	Ω	177.80798		−0.06383301	+0.93450410	
e	0.1455098	i	2.94295		−0.02595579	+0.34922426	
P	3.85	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1985 09 13	675(12.7−	1.2−)		1997 12 05	704	0.3+	0.4−	1999 03 18	691	0.6−	0.5−
1985 09 14	675	0.6+	1.1−	1997 12 05	704	0.1−	0.6−	1999 03 19	552	0.1−	0.9−
1989 10 02	809	0.6−	0.5−	1997 12 05	704	1.0+	0.4+	1999 03 19	552	0.1−	0.1+
1989 10 02	809	0.2−	0.6−	1997 12 05	704	0.7+	0.2+	1999 03 20	704	0.4+	0.0
1989 10 02	809	0.2+	0.6−	1997 12 05	704	1.5−	0.4+	1999 03 20	704	0.9−	0.6−
1989 10 03	809	0.3+	1.7−	1997 12 06	704	0.5+	0.0	1999 03 20	704	0.0	0.2+
1989 10 03	809	0.9+	1.5−	1997 12 06	704	0.7+	0.1+	1999 03 20	704	0.7−	0.7−
1989 10 03	809	1.3+	1.4−	1997 12 06	704	1.0+	0.6−	1999 03 20	704	0.4+	0.2−

1997 11 29	704	(2.9−	0.3−)	1997 12 06	704	1.4+	0.6+	1999 03 20	552	0.5+	1.3−
1997 11 29	704	1.8−	0.0	1997 12 06	704	(2.4−	1.1+)	1999 03 20	552	0.7+	1.0−
1997 11 29	704	(3.1−	0.4+)	1999 02 10	691	0.7−	0.0	1999 03 20	552	0.6−	0.2+
1997 11 29	704	2.0−	0.7−	1999 02 10	691	0.5−	0.4−	1999 03 23	704	0.5+	0.3+
1997 11 29	704	(3.0−	0.7−)	1999 02 10	691	0.7−	1.1−	1999 03 23	704	0.3+	1.1+
1997 12 04	704	1.4−	0.6+	1999 03 14	691	0.4−	0.0	1999 03 23	704	0.9+	1.1+
1997 12 04	704	0.0	0.8+	1999 03 14	691	0.4−	0.0	1999 03 23	704	0.3−	0.9−
1997 12 04	704	1.1+	1.5+	1999 03 14	691	0.6−	0.3−	1999 03 23	704	0.8+	2.0−
1997 12 04	704	(2.0−	2.1+)	1999 03 18	691	0.3−	0.5−				
1997 12 04	704	(0.3−	3.0+)	1999 03 18	691	0.7−	0.4−				

1999 FF = 1996 TK$_{63}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	146.28216		(2000.0)		**P**	**Q**	
n	0.19566047	ω	343.66152		+0.91625057	−0.39976608	
a	2.9385561	Ω	39.93345		+0.37191960	+0.82481280	
e	0.1040731	i	2.31446		+0.14886468	+0.39983864	
P	5.04	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1996 10 06	809	1.1+	0.0	1999 03 16	747	0.5+	0.4−	1999 04 08	747	0.6+	0.6+
1996 10 06	809	0.6+	0.1−	1999 03 18	747	0.3−	0.4−	1999 04 08	747	1.0−	0.3+
1996 10 06	809	0.5+	0.7+	1999 03 18	747	0.1+	0.3−	1999 04 14	691	0.3−	0.4−
1996 10 07	809	1.0−	0.1−	1999 03 18	747	0.4−	0.5+	1999 04 14	691	0.1−	0.3−
1996 10 07	809	0.6−	0.2−	1999 03 18	747	0.3−	0.3−	1999 04 14	691	0.2−	0.7−
1996 10 07	809	0.5−	0.5−	1999 04 08	747	0.1+	0.5+	1999 04 24	691	0.2−	0.3−
1999 03 16	747	0.1+	0.7−	1999 04 08	747	0.1+	0.4+	1999 04 24	691	0.9+	0.3−
1999 03 16	747	0.1+	0.8+	1999 04 08	747	0.2+	0.2+	1999 04 24	691	0.1−	0.2+
1999 03 16	747	0.2+	0.2−	1999 04 08	747	0.1−	0.6+				

1999 FK = 1993 TU$_{12}$ = 1997 VC$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	177.99265		(2000.0)		**P**	**Q**	
n	0.26800368	ω	291.34837		+0.97946734	+0.17253234	
a	2.3825510	Ω	58.85158		−0.10772474	+0.88516069	
e	0.1594659	i	6.99933		−0.17040866	+0.43211474	
P	3.68	H	14.4	G	0.15	U	3

Residuals in seconds of arc

1993 10 13	675	0.1+	0.4+	1999 03 15	704	0.8+	0.3−	1999 03 18	595	0.8−	0.3−
1993 10 13	675	0.4−	0.3−	1999 03 15	704	1.2+	1.6−	1999 03 20	704	1.1−	0.3+
1993 10 15	675	0.3+	0.2−	1999 03 15	704	1.0−	1.1−	1999 03 20	704	0.5−	1.0+
1997 11 09	411	0.2−	0.2+	1999 03 15	704	0.1+	0.4−	1999 03 20	704	0.5−	1.3+
1997 11 09	411	0.3−	0.4−	1999 03 17	595	0.8−	0.5+	1999 03 20	704	0.2+	0.5−
1997 11 10	411	0.2−	0.1+	1999 03 17	595	0.9+	0.4−	1999 03 24	595	0.4+	0.7+
1997 11 10	411	0.7+	0.2+	1999 03 18	595	0.6+	0.1−	1999 03 24	595	0.2+	1.0+

1999 FU = 1989 GA$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	63.34392		(2000.0)		**P**	**Q**	
n	0.19628193	ω	140.43252		−0.42319374	−0.90598612	
a	2.9323502	Ω	334.59935		+0.82537323	−0.38102813	
e	0.0668838	i	1.31031		+0.37371927	−0.18440911	
P	5.02	H	14.3	G	0.15	U	5

Residuals in seconds of arc

1989 04 08	809	1.1−	0.6−	1999 03 17	910	0.8+	0.3+	1999 04 17	704	0.1+	0.3+
1989 04 08	809	1.4−	0.4−	1999 03 17	910	1.0+	0.3+	1999 04 17	704	0.4+	0.5+
1989 04 08	809	2.2−	1.2−	1999 03 17	910	0.8+	0.1+	1999 04 18	704	(0.5−	2.3−)
1989 04 10	809	1.3+	0.8−	1999 03 19	910	0.1+	0.2+	1999 04 18	704	1.7−	0.3+
1989 04 10	809	1.4+	0.3−	1999 03 19	910	0.2+	0.1+	1999 04 18	704	1.4−	1.5−
1989 04 10	809	0.8+	0.0	1999 03 19	910	0.2+	0.0	1999 04 18	704	0.7−	1.1+
1996 09 13	566	0.8+	0.2−	1999 04 09	699	1.1+	0.2−	1999 04 18	704	1.8−	0.7−
1996 09 13	566	0.2+	0.2−	1999 04 09	699	0.8+	0.0	1999 04 18	704	0.6+	0.8−
1996 09 13	566	0.6−	0.1+	1999 04 09	699	0.3+	0.5+	1999 04 18	704	0.9+	1.0+
1996 09 13	566	0.1+	0.3+	1999 04 17	704	0.1−	1.1−	1999 04 18	704	0.9+	0.5−
1996 09 13	566	0.9−	0.5+	1999 04 17	704	0.1−	1.3+	1999 04 18	704	1.3−	1.0+
1996 09 13	566	0.1+	0.4+	1999 04 17	704	1.0+	1.7+				

1999 FE$_1$ = 1981 TB = 1996 TH$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	98.37137		(2000.0)		**P**	**Q**	
n	0.19881675	ω	66.34448		+0.08478834	−0.99633378	
a	2.9073729	Ω	18.80228		+0.90080845	+0.07175948	
e	0.0445605	i	2.02685		+0.42585804	+0.04657877	
P	4.96	H	14.2	G	0.15	U	1

Residuals in seconds of arc

1981 09 30	801	(4.8+	0.1−)	1998 01 17	327	0.3+	0.5+	1999 04 09	699	0.1−	0.8+
1981 10 01	801	1.3+	0.2+	1998 01 17	327	0.5+	0.3+	1999 04 12	691	1.9−	1.2−
1991 10 05	691	1.1−	0.2−	1999 03 17	910	0.4+	0.1−	1999 04 12	691	0.8−	1.4+
1991 10 05	691	1.3−	0.5−	1999 03 17	910	0.6+	0.2−	1999 04 12	691	0.9−	0.8+
1991 10 05	691	1.0−	0.6−	1999 03 17	910	0.7+	0.3−	1999 04 17	704	0.7−	0.5+
1996 10 03	327	0.7+	0.3+	1999 03 19	910	0.8+	0.2−	1999 04 17	704	0.5−	0.2+
1996 10 03	327	1.1+	0.4+	1999 03 19	910	0.8+	0.2+	1999 04 17	704	0.1−	0.3+
1996 10 03	327	0.7+	0.2+	1999 03 19	910	0.9+	0.1−	1999 04 17	704	0.4+	1.0+
1996 10 05	327	1.1−	1.3+	1999 03 21	910	1.4+	0.4+	1999 04 17	704	1.5−	1.4+
1996 10 05	327	0.3−	0.8+	1999 03 21	910	1.4+	0.2+	1999 04 18	704	0.1+	0.3−
1996 10 05	327	0.6−	1.4+	1999 03 21	910	1.3+	0.2+	1999 04 18	704	1.0+	2.0−
1998 01 07	691	0.0	0.2−	1999 04 09	699	0.5+	0.6−	1999 04 18	704	1.0+	0.8+
1998 01 17	327	0.7−	0.1−	1999 04 09	699	1.1−	1.4+	1999 04 18	704	1.9−	0.9−

1999 FG$_3$ = 1995 ED$_3$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	326.65938		(2000.0)		**P**	**Q**	
n	0.26821516	ω	36.07986		−0.77228045	+0.63527519	
a	2.3812985	Ω	183.36480		−0.59378134	−0.72343940	
e	0.1672817	i	2.82088		−0.22584649	−0.27029773	
P	3.67	H	16.4	G	0.15	U	4

Residuals in seconds of arc

1995 03 02	691	0.5−	0.2+	1999 03 14	691	1.2+	0.0	1999 03 18	691	0.3−	0.1+
1995 03 02	691	0.4+	0.2+	1999 03 14	691	0.7−	0.5−	1999 03 18	691	0.2−	0.1−
1995 03 02	691	0.1+	0.3+	1999 03 17	691	0.2−	0.1+	1999 03 22	691	0.1+	0.1+
1995 03 08	691	0.0	0.3−	1999 03 17	691	0.2+	0.0	1999 03 22	691	0.3+	0.1+
1995 03 08	691	0.3−	0.1−	1999 03 17	691	0.5−	0.2−	1999 03 22	691	0.2+	0.1+
1995 03 08	691	0.3+	0.3−	1999 03 18	691	0.3−	0.3+				

1999 FH$_3$ = 1997 UL$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	43.38976		(2000.0)		**P**	**Q**	
n	0.23970444	ω	308.69610		−0.56027205	−0.82830164	
a	2.5665634	Ω	175.37462		+0.77247867	−0.52398925	
e	0.1446278	i	2.42270		+0.29895140	−0.19837250	
P	4.11	H	16.0	G	0.15	U	6

Residuals in seconds of arc

1997 10 24	691	0.1−	1.0−	1999 03 17	691	0.2+	0.5−	1999 03 19	691	0.9−	0.2+
1997 10 24	691	0.1−	0.2+	1999 03 17	691	0.5+	0.1−	1999 03 19	691	0.9−	0.3+
1997 10 24	691	0.4+	0.4+	1999 03 17	691	0.0	0.5−	1999 03 19	691	0.9−	0.1+
1997 10 25	691	0.2−	0.3+	1999 03 18	691	0.4+	0.5+	1999 03 23	691	1.1+	0.3+
1997 10 25	691	0.2−	0.1−	1999 03 18	691	0.3+	0.3−	1999 03 23	691	0.1−	0.1−
1997 10 25	691	0.2+	0.2+	1999 03 18	691	0.5+	0.2+	1999 03 23	691	0.3−	0.0

1999 FW$_4$ = 1997 VY$_7$

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	325.43497		(2000.0)		**P**	**Q**	
n	0.29406787	ω	197.52488		−0.82792059	+0.56060101	
a	2.2396028	Ω	16.60416		−0.50737820	−0.73608930	
e	0.0892447	i	3.32083		−0.23898716	−0.37934029	
P	3.35	H	14.9	G	0.15	U	4

Residuals in seconds of arc

1997 10 29	704	(2.5+	0.8−)	1997 11 07	327	0.9+	0.2+	1999 03 23	691	0.2−	0.2+
1997 10 29	704	(4.2+	0.6+)	1997 11 07	327	1.0+	0.7+	1999 03 23	691	0.0	0.0
1997 10 29	704	(4.4+	0.5+)	1997 11 07	327	1.2+	0.5+	1999 03 23	691	0.1+	0.1+
1997 10 29	704	0.9+	0.1−	1999 03 10	691	0.8+	0.1+	1999 04 16	703	0.0	0.1−
1997 11 03	327	0.9−	0.7+	1999 03 10	691	0.8+	0.1−	1999 04 16	703	0.0	0.1−
1997 11 03	327	1.2+	0.5+	1999 03 10	691	0.8+	0.2+	1999 04 16	703	0.2−	0.4+
1997 11 03	327	1.3+	0.7+	1999 03 17	691	0.4−	0.2+	1999 04 16	703	0.2+	0.2−
1997 11 06	704	0.5−	0.1−	1999 03 17	691	0.4−	0.0	1999 04 17	703	1.1−	0.2+
1997 11 06	704	0.6−	0.6−	1999 03 17	691	0.4−	0.1−	1999 04 17	703	0.0	0.1−
1997 11 06	704	1.7−	0.9−	1999 03 19	691	0.4−	0.0	1999 04 17	703	1.2+	0.5−
1997 11 06	704	1.8−	1.0−	1999 03 19	691	0.5−	0.0	1999 04 17	703	0.1+	0.4−
1997 11 06	704	0.8−	1.0−	1999 03 19	691	0.3−	0.1+				

1999 FY$_6$ = 1978 WK$_{15}$ = 1984 SH$_2$ = 1994 WW$_9$ = 1996 HS$_{10}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	208.01771		(2000.0)		**P**	**Q**	
n	0.31331441	ω	73.52624		+0.95060403	+0.31013175	
a	2.1469197	Ω	268.40513		−0.28953995	+0.87076517	
e	0.1737431	i	0.74798		−0.11188656	+0.38155776	
P	3.15	H	15.5	G	0.15	U	1

Residuals in seconds of arc

1978 11 30	675	0.5−	1.0−	1996 04 17	809	(2.7−	0.0)	1999 04 09	699	1.2+	1.9+
1978 12 01	675	0.3−	0.1+	1996 04 18	809	1.4−	0.3+	1999 04 09	699	0.6+	0.3+
1984 09 01	046	1.5+	1.1−	1996 04 18	809	0.9−	0.1+	1999 04 09	699	0.1+	0.1−
1984 09 01	046	(3.6+	1.5−)	1996 04 18	809	1.1−	0.6−	1999 04 16	703	0.1+	0.2+
1984 09 25	688	(2.3+	3.0−)	1996 05 13	566	1.0+	0.8−	1999 04 16	703	0.3+	0.4+
1984 09 25	688	(0.5−	3.4−)	1996 05 13	566	0.3+	0.6−	1999 04 16	703	0.2−	0.2+
1992 02 09	691	0.7+	0.6−	1996 05 13	566	0.3+	0.6−	1999 04 16	703	0.4−	0.9−
1992 02 09	691	0.2+	0.4−	1997 12 04	704	0.4+	0.8−	1999 04 17	704	0.8−	0.6+
1992 02 09	691	0.4+	0.5−	1997 12 04	704	0.2−	1.3−	1999 04 17	703	0.5−	0.6+
1994 11 29	691	0.5+	0.1+	1997 12 04	704	1.0−	0.0	1999 04 17	704	0.2−	0.7−
1994 11 29	691	0.0	0.3+	1997 12 04	704	0.2−	0.4−	1999 04 17	703	0.6+	0.3+
1994 11 29	691	0.0	0.2+	1999 03 20	910	1.4+	0.2−	1999 04 17	704	0.3+	1.9+
1994 12 04	691	0.2−	0.3+	1999 03 20	910	0.0	0.2+	1999 04 17	703	0.3+	0.5−
1994 12 04	691	0.0	0.0	1999 03 20	910	0.2−	0.4−	1999 04 17	704	1.3−	0.5+
1994 12 04	691	0.1+	0.1−	1999 03 21	910	0.6+	0.6−	1999 04 17	703	0.4+	0.8−
1996 04 17	809	1.4−	1.6−	1999 03 21	910	0.8+	0.8−	1999 04 17	704	(3.2−	2.4+)
1996 04 17	809	2.0−	1.4−	1999 03 21	910	0.7+	0.5−				

1999 FG$_7$ = 1997 WW$_{52}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	45.45682		(2000.0)		**P**	**Q**	
n	0.17897871	ω	108.12483		−0.34375963	−0.93905748	
a	3.1184237	Ω	1.98157		+0.85483348	−0.31319384	
e	0.1313141	i	1.00043		+0.38870173	−0.14170626	
P	5.51	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1997 11 29	704	0.8−	0.5+	1997 12 05	704	1.2+	0.5+	1999 03 25	678	1.3+	1.2−
1997 11 29	704	0.0	0.8−	1999 03 10	691	0.5−	0.4−	1999 03 25	678	2.1+	0.5+
1997 11 29	704	2.1−	0.7+	1999 03 10	691	0.6−	0.1+	1999 03 25	678	1.9−	0.3+
1997 11 29	704	2.0−	0.8−	1999 03 10	691	0.3−	0.2−	1999 04 14	678	0.2+	1.1+
1997 11 29	704	0.1−	0.4−	1999 03 22	678	0.6+	1.0+	1999 04 14	678	0.5−	1.9−
1997 12 05	704	1.6+	0.7+	1999 03 22	678	0.8+	1.6+	1999 04 19	678	3.0−	2.3−
1997 12 05	704	0.5+	0.2−	1999 03 22	678	1.1+	0.3+	1999 04 19	678	0.0	0.2+
1997 12 05	704	2.4+	0.7+	1999 03 23	678	0.1−	1.2+				
1997 12 05	704	0.6−	1.2−	1999 03 23	678	0.5+	0.6−				

1999 FV$_8$ = 1993 SR$_{14}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	319.26316		(2000.0)		**P**	**Q**	
n	0.26607092	ω	177.80174		−0.92055407	+0.39045040	
a	2.3940751	Ω	25.19019		−0.35878785	−0.83370809	
e	0.1314047	i	1.52731		−0.15443926	−0.39048600	
P	3.70	H	14.7	G	0.15	U	6

Residuals in seconds of arc

1993 09 17	809	0.0	0.3−	1999 03 20	704	0.7−	0.4−	1999 03 23	704	0.6−	0.4+
1993 09 17	809	0.0	0.2−	1999 03 20	704	0.6−	0.8−	1999 03 23	704	0.2−	0.3+
1993 09 17	809	1.0−	0.4−	1999 03 20	704	0.8−	1.3−	1999 04 06	699	0.7−	0.2+
1993 09 18	809	1.9+	0.7+	1999 03 20	704	0.9−	0.7−	1999 04 06	699	0.0	1.4−
1993 09 18	809	0.0	0.4−	1999 03 23	699	1.3+	1.2+	1999 04 06	699	0.7+	0.0
1993 09 18	809	0.7−	0.0	1999 03 23	699	1.2+	1.5+	1999 04 14	699	0.8−	0.6−
1999 03 19	699	0.1+	0.6+	1999 03 23	699	0.2+	1.7+	1999 04 14	699	0.1−	0.2+
1999 03 19	699	1.7+	0.0	1999 03 23	704	0.6+	0.9−	1999 04 14	699	0.4+	0.1−
1999 03 19	699	0.5+	0.6+	1999 03 23	704	0.0	0.2−				
1999 03 20	704	0.7−	0.2−	1999 03 23	704	0.7−	0.5−				

1999 FY$_8$ = 1980 PN$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	76.18219		(2000.0)		**P**	**Q**	
n	0.18892430	ω	285.87325		+0.18557069	−0.97901840	
a	3.0079977	Ω	152.99060		+0.95750356	+0.16091086	
e	0.0865542	i	10.68245		+0.22079507	+0.12502270	
P	5.22	H	12.7	G	0.15	U	5

Residuals in seconds of arc

1980 08 03	675	0.6−	0.2−	1999 03 23	699	0.2−	0.1−	1999 04 06	704	1.0−	0.5+
1980 08 05	675	0.6+	0.2+	1999 03 23	699	0.3−	0.6+	1999 04 07	699	0.3+	0.1−
1999 03 19	699	0.4+	0.1+	1999 04 06	704	0.5+	0.8−	1999 04 07	699	0.2−	0.2−
1999 03 19	699	0.1+	0.3−	1999 04 06	704	0.1−	0.5−	1999 04 07	699	0.4+	0.2+
1999 03 19	699	0.3+	0.1−	1999 04 06	704	0.3+	0.0				
1999 03 23	699	0.0	0.0	1999 04 06	704	0.6−	0.8+				

1999 FA$_9$ = 1977 DC$_7$ = 1994 JT$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	310.66622		(2000.0)		**P**	**Q**	
n	0.18135002	ω	168.55630		−0.66735477	+0.74393258	
a	3.0911801	Ω	59.56983		−0.68641959	−0.59636890	
e	0.1566516	i	2.30435		−0.28890443	−0.30151029	
P	5.43	H	14.2	G	0.15	U	4

Residuals in seconds of arc

1977 02 19	381	0.5+	0.2+	1999 03 20	704	0.1−	0.3+	1999 03 23	704	0.8−	0.1+
1977 02 19	381	0.4−	0.1+	1999 03 20	704	0.4+	0.3+	1999 03 23	704	0.1+	0.5+
1994 05 04	691	0.2+	0.1+	1999 03 20	704	0.3+	0.5+	1999 03 23	704	0.7−	0.1+
1994 05 04	691	0.0	0.1+	1999 03 20	704	0.1−	0.2+	1999 03 23	704	0.3−	0.2−
1994 05 04	691	0.3+	0.3+	1999 03 20	704	0.6+	0.2−	1999 03 23	704	0.3−	1.0−
1994 05 11	691	0.2−	0.3−	1999 03 23	699	0.5−	0.1−	1999 03 23	704	1.6−	0.6−
1994 05 11	691	0.1−	0.0	1999 03 23	699	0.3+	0.3−	1999 03 23	704	0.6−	0.8−
1994 05 11	691	0.1−	0.1−	1999 03 23	704	0.3+	0.6−	1999 04 07	699	0.2−	0.1+
1999 03 19	699	0.9+	0.4+	1999 03 23	699	1.2+	0.0	1999 04 07	699	0.1−	0.3+
1999 03 19	699	0.7+	0.1+	1999 03 23	704	0.5−	0.2+	1999 04 07	699	0.6+	0.2−
1999 03 19	699	0.0	0.6+	1999 03 23	704	0.3+	0.4−				

1999 FB$_9$ = 1997 WX$_{42}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	37.70853		(2000.0)	**P**		**Q**	
n	0.19626312	ω	70.23781	−0.52983660		−0.84719432	
a	2.9325375	Ω	51.81874	+0.75826703		−0.49390095	
e	0.0588971	i	2.85691	+0.37987406		−0.19576422	
P	5.02	H	13.2	G	0.15	U	4

Residuals in seconds of arc

1997 11 29	704	(2.3−	0.7−)	1999 03 20	704	0.7−	0.1+	1999 03 23	704	0.1−	0.1−
1997 11 29	704	0.5−	0.0	1999 03 20	704	0.7−	0.0	1999 03 23	704	0.4−	1.3+
1997 11 29	704	0.8+	0.6+	1999 03 23	704	0.3+	1.1−	1999 03 23	704	0.4−	0.6+
1997 11 29	704	0.9−	0.7−	1999 03 23	704	1.8+	1.0+	1999 03 23	704	0.4−	0.7−
1997 11 29	704	1.9−	1.3−	1999 03 23	704	0.2−	0.3−	1999 03 23	704	1.3−	0.6+
1997 12 04	704	1.0+	1.6+	1999 03 23	699	0.2+	0.4−	1999 03 23	704	1.5−	1.3−
1997 12 04	704	0.9+	0.3−	1999 03 23	704	(1.4+	2.1+)	1999 03 23	704	0.2−	0.9−
1997 12 04	704	1.2+	0.5−	1999 03 23	704	0.3+	1.0+	1999 03 23	704	1.5−	0.8−
1997 12 04	704	0.5−	0.8+	1999 03 23	704	1.3+	0.9+	1999 04 06	704	0.4−	0.5+
1997 12 04	704	0.1−	0.1−	1999 03 23	704	0.1+	1.3+	1999 04 06	704	1.4−	1.1−
1999 03 19	699	1.1+	0.2+	1999 03 23	699	0.9+	0.3−	1999 04 06	704	0.1+	1.7−
1999 03 19	699	1.3+	0.3+	1999 03 23	704	0.8+	0.3−	1999 04 06	704	0.7+	0.5+
1999 03 19	699	1.3+	0.8−	1999 03 23	704	0.3−	0.6+	1999 04 06	704	1.4−	0.5+
1999 03 20	704	0.3−	0.1+	1999 03 23	704	0.2−	0.1−	1999 04 07	699	1.0+	0.1−
1999 03 20	704	1.3−	0.1−	1999 03 23	699	1.1+	0.9−	1999 04 07	699	0.9+	0.8+
1999 03 20	704	0.0	0.1+	1999 03 23	704	0.5−	0.1−	1999 04 07	699	0.1+	0.8+

1999 FD$_9$ = 1988 HY = 1990 RH$_{15}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	334.08387		(2000.0)	**P**		**Q**	
n	0.17299589	ω	78.95004	−0.96537102		+0.25837871	
a	3.1899132	Ω	116.01562	−0.25227153		−0.88935762	
e	0.1173366	i	2.29870	−0.06646710		−0.37720481	
P	5.70	H	13.0	G	0.15	U	4

Residuals in seconds of arc

1988 04 23	808	0.3+	0.3+	1999 03 19	699	0.2+	0.1−	1999 03 23	704	0.0	0.7+
1988 04 23	808	0.5−	0.8−	1999 03 19	699	0.2+	0.0	1999 03 23	704	0.6−	0.2+
1990 09 15	809	0.2−	0.0	1999 03 20	704	0.5−	0.1−	1999 03 23	704	1.6−	0.3+
1990 09 15	809	0.8−	0.1+	1999 03 20	704	0.5−	0.2−	1999 04 06	704	0.9+	0.8+
1990 09 15	809	1.6−	0.4−	1999 03 20	704	0.2−	0.8−	1999 04 06	704	0.9+	0.0
1990 09 22	809	1.1+	0.7−	1999 03 20	704	0.2−	1.1−	1999 04 06	704	1.1+	0.4−
1990 09 22	809	0.6+	0.3−	1999 03 20	704	0.1−	1.1−	1999 04 06	704	1.0+	0.4+
1990 09 22	809	0.2+	0.5+	1999 03 23	699	0.7−	0.5+	1999 04 06	704	0.1−	1.2+
1990 09 25	809	(2.9+	0.7+)	1999 03 23	699	0.4−	0.2+	1999 04 07	699	0.1−	0.1+
1990 09 25	809	0.7+	0.3+	1999 03 23	704	0.5−	0.2−	1999 04 07	699	0.4+	0.2+
1990 09 25	809	0.2+	0.1−	1999 03 23	699	0.1−	0.2+	1999 04 07	699	0.1+	0.5+
1999 03 19	699	0.3+	0.4−	1999 03 23	704	0.6+	0.7−				

1999 FF$_9$ = 1979 PJ = 1992 FB$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	20.83471		(2000.0)	**P**		**Q**	
n	0.28176017	ω	58.24162	−0.74786535		−0.65596344	
a	2.3043564	Ω	80.55392	+0.56872111		−0.71235963	
e	0.1250266	i	5.93665	+0.34242331		−0.24951097	
P	3.50	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1979 08 14	808	0.1+	0.5+	1999 03 20	699	1.0+	0.2+	1999 04 15	704	0.2+	0.4−
1979 08 14	808	0.1−	0.3−	1999 03 20	699	0.5+	0.2+	1999 04 15	704	0.2+	0.4+
1992 03 28	399	1.3−	0.2−	1999 03 20	699	0.4+	0.6+	1999 04 15	704	0.2+	0.4−
1992 03 28	399	0.9−	1.3−	1999 03 23	699	0.3+	0.4+	1999 04 16	704	0.6+	0.0
1992 04 03	399	0.5+	0.5+	1999 03 23	699	0.2+	0.1+	1999 04 16	704	0.9−	0.4+
1992 04 03	399	0.0	1.4+	1999 03 23	699	0.6+	0.0	1999 04 16	704	0.5−	0.4+
1992 04 07	399	0.2−	1.8−	1999 04 15	704	1.1−	0.3+	1999 04 16	704	0.1+	0.1+
1992 04 07	399	0.6+	1.4−	1999 04 15	704	0.0	1.0+	1999 04 16	704	0.6−	0.6−

1999 FG$_9$ = 1988 FZ$_1$ = 1994 HS$_1$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	252.33646		(2000.0)	**P**		**Q**	
n	0.17923350	ω	270.56781	+0.57881713		+0.79777174	
a	3.1154678	Ω	36.53738	−0.58857695		+0.55208018	
e	0.2335676	i	16.48228	−0.56440048		+0.24242056	
P	5.50	H	12.2	G	0.15	U	4

Residuals in seconds of arc

1988 03 18	033	0.2+	0.2+	1999 03 20	699	0.1−	0.2−	1999 04 15	704	1.0+	1.9−
1988 03 19	033	0.1−	0.1−	1999 03 23	699	0.7+	0.7+	1999 04 15	704	1.5−	0.1−
1994 04 16	408	0.9+	0.2+	1999 03 23	699	0.0	0.0	1999 04 15	704	0.6+	0.6−
1994 04 16	408	0.2+	0.3+	1999 03 23	699	0.7+	0.0	1999 04 16	704	1.1+	0.3−
1994 04 17	408	(1.0+	19.3−)	1999 04 06	699	0.2−	0.3+	1999 04 16	704	0.1−	0.6+
1994 05 08	894	0.3−	0.2+	1999 04 06	699	0.0	0.7+	1999 04 16	704	1.2−	0.1+
1994 05 08	894	0.6−	0.4−	1999 04 06	699	0.1+	0.3+	1999 04 16	704	1.0−	0.2−
1999 03 20	699	0.3−	0.1+	1999 04 15	704	0.4−	1.2+	1999 04 16	704	0.2−	0.7−
1999 03 20	699	0.4+	0.3+	1999 04 15	704	0.0	1.0−				

1999 FK$_9$ = 1997 WN$_1$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	329.68609		(2000.0)	**P**		**Q**	
n	0.26337974	ω	157.62387	−0.92544469		+0.37647648	
a	2.4103557	Ω	44.56588	−0.35616976		−0.82606799	
e	0.1360008	i	3.48312	−0.12921000		−0.41937708	
P	3.74	H	15.1	G	0.15	U	4

Residuals in seconds of arc

1997 11 02	327	0.3+	0.0	1999 03 22	699	0.9+	0.4+	1999 04 07	699	0.1+	0.3+
1997 11 02	327	0.4+	0.4−	1999 03 22	699	0.6+	0.1−	1999 04 15	704	0.7+	1.0+
1997 11 02	327	0.3+	0.3−	1999 03 22	699	0.3+	0.1−	1999 04 15	704	0.6−	1.3+
1997 11 21	327	0.2+	0.4+	1999 03 23	699	0.2−	0.3−	1999 04 15	704	0.9−	0.6+
1997 11 21	327	0.3+	0.3+	1999 03 23	699	0.2+	0.7+	1999 04 15	704	0.6+	1.4+
1997 11 21	327	1.6−	0.4+	1999 03 23	699	0.5−	0.3−	1999 04 16	704	0.3+	1.9−
1997 11 22	327	0.1+	0.5−	1999 04 06	704	0.6−	0.6−	1999 04 16	704	1.8+	1.7−
1997 11 22	327	0.6−	0.9−	1999 04 06	704	1.6−	0.4+	1999 04 16	704	(0.0	2.9−)
1997 11 22	327	0.1−	0.0	1999 04 06	704	1.3−	0.4−	1999 04 16	704	0.1+	1.4−
1997 11 22	327	0.3+	0.1+	1999 04 06	704	0.0	0.8+	1999 04 17	703	0.2+	1.3−
1997 12 22	327	0.3+	0.2+	1999 04 06	704	0.2−	0.3−	1999 04 17	703	0.5+	0.0
1997 12 22	327	0.3+	0.7+	1999 04 07	699	0.2+	0.6+	1999 04 17	703	0.7−	0.3+
1997 12 22	327	0.2−	0.2−	1999 04 07	699	0.1−	0.1−	1999 04 17	703	0.0	0.4+

1999 FM$_9$ = 1996 TB$_{54}$ = 1997 WL$_{32}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	347.50579		(2000.0)	**P**		**Q**	
n	0.21240891	ω	92.71490	−0.99726297		+0.06176240	
a	2.7819814	Ω	90.82833	−0.07284187		−0.91496290	
e	0.2334453	i	2.32965	+0.01267417		−0.39878351	
P	4.64	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1996 10 05	809	1.1−	1.5+	1997 12 04	704	0.4−	0.1−	1999 04 15	704	0.0	0.3−
1996 10 05	809	1.2−	1.4+	1999 03 22	699	0.6+	0.6+	1999 04 15	704	0.0	0.0
1996 10 05	809	(0.1+	2.1+)	1999 03 22	699	1.1+	0.6+	1999 04 15	704	0.4−	1.1−
1996 10 06	809	0.9+	0.2+	1999 03 22	699	0.9+	0.8+	1999 04 15	704	0.1−	0.0
1996 10 06	809	0.8+	1.5−	1999 03 23	699	1.0+	0.6+	1999 04 15	704	0.4−	0.1+
1996 10 06	809	(1.4+	2.0−)	1999 03 23	699	1.1+	0.8+	1999 04 16	704	1.0+	0.7−
1997 11 29	704	1.3−	1.2−	1999 03 23	699	1.0+	0.6+	1999 04 16	704	0.3+	0.9−
1997 11 29	704	0.8+	0.8−	1999 04 06	704	0.0	0.2+	1999 04 16	704	1.6−	1.9−
1997 11 29	704	(2.4−	0.9+)	1999 04 06	704	0.3−	0.1+	1999 04 16	704	0.7−	1.9−
1997 11 29	704	0.7−	0.7+	1999 04 06	704	0.9−	0.5+	1999 04 16	704	1.8−	0.4+
1997 11 29	704	0.8−	0.3−	1999 04 06	704	0.0	0.6+	1999 04 17	703	0.6−	0.2−
1997 12 04	704	1.3+	0.2+	1999 04 06	704	0.7−	0.3+	1999 04 17	703	0.1−	0.6+
1997 12 04	704	(2.2+	0.9+)	1999 04 07	699	0.5+	0.5+	1999 04 17	703	0.4−	0.1+

1997 12 04	704	1.2+	1.1+	1999 04 07	699	0.7+	0.3+	1999 04 17	703	0.5−	0.3−
1997 12 04	704	0.2+	0.7−	1999 04 07	699	0.5+	0.1+				

1999 FN$_9$ = 1998 BJ$_{14}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	290.99998		(2000.0)		**P**		**Q**
n	0.28992416	ω	168.72379		−0.39475659		+0.91628831
a	2.2608918	Ω	77.99681		−0.84826127		−0.33515513
e	0.1185262	i	3.96866		−0.35301565		−0.21928698
P	3.40	H	15.3	G	0.15	U	4

Residuals in seconds of arc

1997 11 29	704	0.2+	0.0	1999 03 22	699	0.6+	1.2+	1999 04 06	704	0.5−	2.0−
1997 11 29	704	1.0+	2.0−	1999 03 22	699	0.1+	0.2+	1999 04 06	704	0.4+	1.3−
1997 11 29	704	0.0	0.1−	1999 03 23	699	0.7+	0.7+	1999 04 15	704	1.2−	1.9+
1997 11 29	704	0.9+	1.1−	1999 03 23	699	0.4−	1.4+	1999 04 15	704	1.0−	1.5+
1998 01 17	910	1.1−	0.9+	1999 03 23	699	0.1+	1.1+	1999 04 15	704	0.5−	1.0+
1998 01 17	910	0.9−	0.5+	1999 04 06	699	0.1+	0.2+	1999 04 15	704	0.4−	1.6−
1998 01 17	910	1.1−	1.3+	1999 04 06	699	0.0	0.4+	1999 04 15	704	0.0	0.2+
1998 01 27	910	0.0	0.2−	1999 04 06	699	0.0	0.7−	1999 04 16	704	1.4+	0.5−
1998 01 27	910	0.2+	0.1+	1999 04 06	704	0.3−	0.5−	1999 04 16	704	0.4+	0.4+
1998 01 27	910	0.3+	0.1+	1999 04 06	704	0.6−	1.0−	1999 04 16	704	0.4+	1.2−
1999 03 22	699	0.4+	0.0	1999 04 06	704	0.2−	0.4−	1999 04 16	704	0.2+	1.9−

1999 FJ$_{10}$ = 1978 QT$_2$ = 1997 AM$_{23}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	231.88049		(2000.0)		**P**		**Q**
n	0.17245404	ω	213.17167		+0.68776944		+0.72491561
a	3.1965915	Ω	100.31442		−0.65725629		+0.64426470
e	0.1701772	i	2.23382		−0.30820021		+0.24376289
P	5.72	H	13.1	G	0.15	U	3

Residuals in seconds of arc

1978 08 31	095	0.6+	1.4−	1999 01 20	910	0.1−	0.8−	1999 03 23	763	0.1+	0.2−
1997 01 09	327	0.1+	0.6+	1999 01 20	910	0.3−	1.0−	1999 03 26	763	0.1+	0.0
1997 01 09	327	0.4+	0.0	1999 01 20	910	0.0	1.1−	1999 03 26	763	0.4+	0.3+
1997 01 09	327	0.1−	0.1−	1999 03 20	763	0.2+	0.3−	1999 04 06	763	1.5−	0.1+
1997 01 15	327	0.2+	0.0	1999 03 20	763	0.4+	0.4−	1999 04 06	763	0.4+	0.5+
1997 01 15	327	0.1−	0.3+	1999 03 20	763	0.4+	0.3−	1999 04 06	763	0.7−	0.6+
1997 01 15	327	0.5−	0.8−	1999 03 23	763	0.1−	0.2+	1999 04 06	763	0.0	0.4+

1999 FM$_{10}$ = 1982 HK = 1986 EA$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.23896		(2000.0)		**P**		**Q**
n	0.22870732	ω	268.46117		−0.16196551		−0.98597754
a	2.6481912	Ω	191.10601		+0.96788113		−0.15079240
e	0.1428237	i	12.04376		+0.19228441		−0.07148388
P	4.31	H	13.2	G	0.15	U	4

Residuals in seconds of arc

1982 04 18	688	0.6−	0.7+	1999 04 03	120	0.2−	0.4−	1999 04 09	699	1.1+	0.1+
1982 04 18	688	0.7+	0.7−	1999 04 05	120	0.4−	0.2−	1999 04 09	120	0.9−	0.4−
1986 03 06	688	0.4−	0.5−	1999 04 05	120	0.3−	0.4−	1999 04 09	120	0.0	0.5−
1986 03 06	688	0.0	1.0−	1999 04 05	120	0.5−	0.2−	1999 04 09	120	0.4−	0.3−
1999 03 21	120	0.3−	0.8+	1999 04 06	704	0.1+	0.4−	1999 04 09	120	0.4−	0.2−
1999 03 21	120	0.0	0.6+	1999 04 06	704	0.3+	0.5−	1999 04 16	704	0.2+	0.8−
1999 03 21	120	0.1−	0.8+	1999 04 06	704	0.2+	1.1−	1999 04 16	704	0.0	0.1+
1999 03 23	120	0.6+	0.9+	1999 04 06	704	0.1−	0.6−	1999 04 16	704	1.4+	0.2−
1999 03 23	120	0.5+	1.0+	1999 04 06	704	0.3−	0.6−	1999 04 16	704	1.0−	0.5−
1999 03 23	120	0.3+	0.6+	1999 04 06	120	0.5−	0.7−	1999 04 17	704	0.1−	0.4+
1999 03 24	699	0.7+	0.9+	1999 04 06	120	0.6−	0.4−	1999 04 17	704	0.9+	0.1+
1999 03 24	699	0.1+	0.6+	1999 04 06	120	0.0	0.4−	1999 04 17	704	0.1+	0.3+
1999 03 24	699	0.3+	0.8+	1999 04 09	699	0.1+	0.6+	1999 04 17	704	0.4+	0.8+
1999 04 03	120	0.3−	0.5−	1999 04 09	699	0.3+	0.6+	1999 04 17	704	0.9−	0.6+

1999 FS$_{10}$ = 1997 SF$_{30}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	4.73410		(2000.0)		**P**		**Q**
n	0.18401930	ω	141.05440		−0.70009690		−0.71403666
a	3.0612148	Ω	353.37688		+0.64615853		−0.63114244
e	0.2062908	i	1.98548		+0.30388070		−0.30300308
P	5.36	H	15.6	G	0.15	U	4

Residuals in seconds of arc

1997 09 30	691	0.1−	0.0	1999 03 16	691	0.3−	0.1+	1999 04 12	691	0.5+	0.2−
1997 09 30	691	0.1+	0.2−	1999 03 16	691	0.3−	0.3−	1999 04 17	691	0.6−	0.1+
1997 09 30	691	0.0	0.1+	1999 03 24	691	0.3−	0.3−	1999 04 17	691	0.8−	0.2+
1997 10 06	691	0.2+	0.2+	1999 03 24	691	0.5−	0.1−	1999 04 17	691	0.3−	0.4+
1997 10 06	691	0.0	0.2+	1999 03 24	691	0.7−	0.4+	1999 04 20	691	0.5+	0.5+
1997 10 06	691	0.2−	0.1−	1999 04 12	691	0.3+	0.3−	1999 04 20	691	0.4+	0.3+
1999 03 16	691	1.3+	0.5−	1999 04 12	691	0.1+	0.2−	1999 04 20	691	0.8+	0.3+

1999 FM$_{18}$ = 1993 BG$_{14}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	336.91218		(2000.0)		**P**		**Q**
n	0.17537373	ω	319.38800		−0.93651335		+0.34471668
a	3.1610136	Ω	240.88577		−0.29968958		−0.88189472
e	0.1632467	i	4.20982		−0.18201348		−0.32160864
P	5.62	H	14.3	G	0.15	U	5

Residuals in seconds of arc

1993 01 23	809	2.7−	0.1+	1999 03 22	699	0.1+	0.1+	1999 04 06	704	0.3−	0.2+
1993 01 28	809	2.3+	0.3+	1999 03 24	699	0.6−	0.1−	1999 04 06	704	0.4−	0.6+
1993 01 28	809	0.4+	0.3−	1999 03 24	699	0.1−	0.1+	1999 04 06	704	0.2+	0.5+
1999 03 22	699	0.2+	0.2+	1999 03 24	699	0.5+	0.3−	1999 04 06	704	0.2+	0.4−
1999 03 22	699	0.2+	0.2−	1999 04 06	704	0.1−	0.6−				

1999 FN$_{18}$ = 1996 TD$_{50}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	62.36611		(2000.0)		**P**		**Q**
n	0.17141971	ω	127.99384		−0.15128070		−0.98615604
a	3.2094372	Ω	330.49256		+0.85821272		−0.09694775
e	0.1076443	i	7.92391		+0.49049472		−0.13452661
P	5.75	H	13.9	G	0.15	U	4

Residuals in seconds of arc

1996 10 04	809	0.8+	0.5+	1999 03 22	699	0.4+	0.9−	1999 04 06	704	0.3+	1.0+
1996 10 04	809	0.3−	0.5+	1999 03 22	699	0.6+	0.2+	1999 04 06	704	0.3−	0.8−
1996 10 04	809	0.7−	0.0	1999 03 24	699	0.8−	0.1−	1999 04 06	704	(1.2+	3.1+)
1996 10 05	809	1.8+	1.0−	1999 03 24	699	0.0	0.7−	1999 04 11	699	0.3−	0.0
1996 10 05	809	0.7−	0.3+	1999 03 24	699	0.4+	1.0+	1999 04 11	699	0.2−	0.8−
1996 10 05	809	1.0−	0.3−	1999 04 06	704	1.1+	0.8+	1999 04 11	699	0.3−	0.1−
1999 03 22	699	1.0−	0.3+	1999 04 06	704	(1.7+	2.3+)				

1999 FR$_{18}$ = 1995 EJ$_8$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	298.14241		(2000.0)		**P**		**Q**
n	0.25579883	ω	228.33794		−0.44759787		+0.89374383
a	2.4577461	Ω	15.15302		−0.78306821		−0.37573778
e	0.1126676	i	6.50927		−0.43181052		−0.24503692
P	3.85	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1995 03 04	033	0.1−	0.3−	1999 03 22	699	0.5+	0.3+	1999 04 06	704	0.0	0.6+
1995 03 05	033	0.0	0.3−	1999 03 24	699	0.6−	0.6+	1999 04 06	704	0.8+	0.8+
1995 03 07	033	0.1+	0.6+	1999 03 24	699	0.4−	0.6−	1999 04 06	704	0.4−	0.2+
1999 03 22	699	0.4−	0.2−	1999 03 24	699	0.2+	0.1+	1999 04 06	704	0.2+	0.7−
1999 03 22	699	0.4+	0.2−	1999 04 06	704	0.4−	0.9−				

1999 FY$_{18}$ = 1997 UJ$_{18}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	346.47778		(2000.0)	**P**	**Q**		
n	0.22572669	ω	345.87248	−0.99852844	+0.04966837		
a	2.6714524	Ω	197.01959	−0.03966263	−0.94264975		
e	0.2292999	i	4.26579	−0.03698430	−0.33006742		
P	4.37	H	15.6	G 0.15	U 4		

Residuals in seconds of arc

1997 10 28	691	0.2−	0.5−	1999 03 24	699	0.8+	0.7−	1999 04 11	952	0.4+	0.2−
1997 10 28	691	0.1−	0.3−	1999 03 24	699	0.2+	0.3−	1999 04 11	952	1.1+	0.9+
1997 10 28	691	0.2−	0.1+	1999 03 24	699	0.8+	0.5−	1999 04 12	691	0.0	0.1−
1997 11 02	691	0.2−	0.4+	1999 04 06	704	0.4−	0.1+	1999 04 12	691	0.5−	0.4−
1997 11 02	691	0.5+	0.2+	1999 04 06	704	0.2−	0.2+	1999 04 12	691	0.5−	0.4−
1997 11 02	691	0.2+	0.2+	1999 04 06	704	0.9−	1.7+	1999 04 19	691	0.4+	0.5−
1999 03 22	699	0.3+	0.2−	1999 04 06	704	1.5−	0.2+	1999 04 19	691	0.3+	0.5−
1999 03 22	699	0.3−	0.3+	1999 04 06	704	0.4−	0.2+	1999 04 19	691	0.2+	0.2−
1999 03 22	699	0.2−	0.2+	1999 04 11	952	0.3+	0.0				

1999 FB$_{19}$ = 1981 QR$_{4}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	236.04850		(2000.0)	**P**	**Q**		
n	0.31453376	ω	39.16481	+0.43889771	+0.89723531		
a	2.1413675	Ω	256.91713	−0.83635946	+0.38826641		
e	0.0541676	i	2.84517	−0.32843821	+0.21028077		
P	3.13	H	15.3	G 0.15	U 6		

Residuals in seconds of arc

1981 08 30	675	1.2+	0.4+	1999 03 24	699	0.3−	0.3+	1999 04 06	704	0.6+	0.3−
1981 08 31	675	1.2−	0.4−	1999 03 24	699	0.2−	0.9+	1999 04 06	704	0.8−	0.3+
1999 03 22	699	0.0	0.1−	1999 03 24	699	0.4−	0.1+	1999 04 06	704	0.2+	0.2−
1999 03 22	699	0.6+	0.5−	1999 04 06	704	0.1+	0.4+				
1999 03 22	699	0.5+	0.7−	1999 04 06	704	0.1−	0.2−				

1999 FK$_{19}$ = 1996 KH$_{7}$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	323.99206		(2000.0)	**P**	**Q**		
n	0.31512585	ω	125.58722	−0.85927540	+0.50946065		
a	2.1386844	Ω	85.08147	−0.48291360	−0.77847053		
e	0.0557649	i	2.63351	−0.16864234	−0.36665172		
P	3.13	H	15.1	G 0.15	U 4		

Residuals in seconds of arc

1993 05 23	809	0.6−	0.3−	1996 05 22	809	0.7+	0.5+	1999 03 24	699	0.4+	1.4+
1993 05 23	809	0.2−	0.5−	1999 03 19	704	0.5+	1.1−	1999 03 24	699	0.9+	0.7+
1993 05 23	809	0.4+	0.6−	1999 03 19	704	0.1+	0.5−	1999 03 24	699	0.7+	1.4+
1996 04 14	691	1.3−	0.1−	1999 03 19	704	0.8+	0.3−	1999 04 15	704	0.8−	1.3−
1996 04 14	691	1.2−	0.2+	1999 03 19	704	0.8+	0.8−	1999 04 15	704	(2.2−	1.1−)
1996 04 14	691	1.0−	0.1+	1999 03 19	704	0.8−	0.4−	1999 04 15	704	0.1−	0.6−
1996 04 18	809	(3.6+	2.7+)	1999 03 20	704	0.8−	0.1+	1999 04 15	704	1.8−	0.3+
1996 04 18	809	(2.2+	1.9+)	1999 03 20	704	0.3−	0.7+	1999 04 16	704	0.2−	1.7−
1996 04 18	809	(2.1+	2.6+)	1999 03 20	704	0.5+	0.9+	1999 04 16	704	1.2−	0.9+
1996 05 19	809	1.3+	0.9+	1999 03 20	704	0.6+	0.1+	1999 04 16	704	0.1−	0.4−
1996 05 19	809	0.6+	0.8+	1999 03 20	704	0.4+	1.0+	1999 04 16	704	1.1−	0.2−
1996 05 19	809	0.9+	0.0	1999 03 22	699	0.8+	0.2−	1999 04 16	704	1.3−	1.0−
1996 05 22	809	1.0+	0.3+	1999 03 22	699	0.8+	0.5−				
1996 05 22	809	0.3+	0.3+	1999 03 22	699	0.7+	0.1−				

1999 FO$_{19}$ = 1978 TL$_{6}$ = 1978 WX$_{19}$ = 1981 SB$_{6}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	266.66614		(2000.0)	**P**	**Q**		
n	0.32163950	ω	344.08350	+0.45308447	+0.89023607		
a	2.1097118	Ω	312.83186	−0.81077988	+0.38966149		
e	0.3503915	i	3.66223	−0.37060821	+0.23588910		
P	3.06	H	15.5	G 0.15	U 4		

Residuals in seconds of arc

1978 10 02	095	(3.0+	5.6+)	1999 03 23	557	0.2−	0.3+	1999 03 25	557	0.3−	0.2−
1978 11 28	675	0.0	0.2+	1999 03 23	557	0.2−	0.1+	1999 03 25	557	0.0	0.3+
1978 11 29	675	0.6−	0.1−	1999 03 24	422	0.1+	0.2+	1999 03 25	557	0.6−	0.2−
1981 09 28	095	0.8−	2.3+	1999 03 24	422	0.3−	0.2+	1999 03 25	118	1.0−	0.4+
1999 03 22	699	0.5+	0.2−	1999 03 24	422	0.4−	0.2−	1999 03 25	118	0.1+	0.2+
1999 03 22	699	0.4+	0.6+	1999 03 24	108	1.8+	1.6+	1999 03 25	118	0.6−	0.2+
1999 03 22	699	(0.1+	2.3+)	1999 03 24	108	1.9−	0.7+	1999 04 06	704	1.0−	0.2−
1999 03 23	704	0.1+	0.1+	1999 03 24	108	(2.0+	0.3+)	1999 04 06	704	0.8−	0.3−
1999 03 23	704	0.8+	0.3+	1999 03 24	046	0.2+	0.1+	1999 04 06	704	0.9−	0.1+
1999 03 23	704	0.4−	0.4−	1999 03 24	046	0.2−	0.0	1999 04 06	704	0.4+	0.3−
1999 03 23	704	0.6+	0.6−	1999 03 24	046	0.0	0.2−	1999 04 06	704	1.1+	1.1−
1999 03 23	704	0.2+	0.1+	1999 03 24	046	0.8−	0.2+	1999 04 09	699	0.7+	0.0
1999 03 23	422	0.2−	0.5+	1999 03 24	118	0.3+	0.4+	1999 04 09	699	1.3+	0.4−
1999 03 23	422	0.2−	0.5+	1999 03 24	118	0.1−	0.3+	1999 04 09	699	1.2+	0.7−
1999 03 23	422	0.2−	0.0	1999 03 24	118	0.0	0.2+	1999 04 11	699	0.6+	0.7+
1999 03 23	422	0.4−	0.2+	1999 03 24	557	0.3−	0.1+	1999 04 11	699	1.3+	0.3−
1999 03 23	422	0.3−	0.2+	1999 03 24	557	0.0	0.1−	1999 04 11	699	1.3+	0.1−

1999 FM$_{24}$ = 1985 DK$_{3}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	325.13038		(2000.0)	**P**	**Q**		
n	0.28609373	ω	248.63270	−0.84970490	+0.52534681		
a	2.2810273	Ω	323.01781	−0.45191274	−0.76946930		
e	0.1211361	i	4.27651	−0.27161822	−0.36321857		
P	3.45	H	14.0	G 0.15	U 4		

Residuals in seconds of arc

1985 02 20	675	0.3−	0.3−	1999 03 20	704	0.1−	0.0	1999 04 16	704	0.2−	0.7−
1985 02 22	675	0.3+	0.2+	1999 04 06	704	0.3+	0.2+	1999 04 16	704	0.4+	0.2−
1999 03 19	704	1.1+	0.2−	1999 04 06	704	0.5−	0.6+	1999 04 16	704	0.6+	0.5+
1999 03 19	704	1.6−	0.3+	1999 04 06	704	0.4−	0.0	1999 04 17	704	0.1−	0.1−
1999 03 19	704	1.2−	0.2−	1999 04 06	704	0.4−	0.2−	1999 04 17	704	0.1−	0.5+
1999 03 19	704	0.0	0.4−	1999 04 06	704	0.0	0.3−	1999 04 17	704	0.1−	0.1−
1999 03 20	704	0.2+	0.6+	1999 04 11	699	0.3+	0.1+	1999 04 17	704	0.0	0.3−
1999 03 20	704	1.2+	0.1−	1999 04 11	699	0.4+	0.5+	1999 04 17	704	0.5−	0.2+
1999 03 20	704	0.3+	0.0	1999 04 11	699	0.1−	0.3+				
1999 03 20	704	0.5+	0.0	1999 04 16	704	0.1−	0.9−				

1999 FN$_{25}$ = 1996 TD$_{63}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	60.67364		(2000.0)	**P**	**Q**		
n	0.17594275	ω	298.14397	−0.22817442	−0.97225530		
a	3.1541944	Ω	164.78070	+0.94790512	−0.23392177		
e	0.1396091	i	11.32190	+0.22228883	−0.00048650		
P	5.60	H	12.5	G 0.15	U 4		

Residuals in seconds of arc

1996 10 06	809	0.3−	0.4+	1999 03 19	704	0.2−	0.6+	1999 04 15	704	0.6+	0.3−
1996 10 06	809	0.3+	0.1−	1999 03 20	704	0.1+	0.0	1999 04 15	704	0.0	0.1−
1996 10 06	809	0.3+	0.0	1999 03 20	704	0.0	0.2+	1999 04 15	704	0.3+	0.1+
1996 10 07	809	0.0	0.5−	1999 03 20	704	0.8+	0.3−	1999 04 15	704	0.3+	0.8+
1996 10 07	809	0.1+	0.3+	1999 03 20	704	0.4−	0.1+	1999 04 16	704	0.6+	0.7−
1996 10 07	809	0.5−	0.1+	1999 03 23	703	0.3−	0.8−	1999 04 16	704	1.5−	0.5−
1999 03 19	704	0.4+	0.4−	1999 03 23	703	0.0	0.5−	1999 04 16	704	0.5−	0.3−
1999 03 19	704	0.2−	0.2+	1999 03 23	703	0.4−	0.3−	1999 04 16	704	0.0	1.1+

1999 03 19	704	0.0	0.9+	1999 03 23	703	0.2−	0.1+	1999 04 16	704	0.1−	0.1−
1999 03 19	704	0.7+	0.3+	1999 04 15	704	0.0	0.0				

1999 FJ$_{26}$ = 1926 GA$_1$ = 1932 WF = 1979 KA$_1$ = 1982 BY$_8$ = 1988 SH$_4$ = 1991 GV$_{11}$ = 1992 TB$_2$ = 1996 TO$_{50}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	306.13568		(2000.0)		**P**	**Q**	
n	0.24318952	ω	343.19879		−0.41799465	+0.90543929	
a	2.5419840	Ω	262.04283		−0.82467252	−0.41230756	
e	0.1731699	i	4.27889		−0.38104553	−0.10090675	
P	4.05	H	12.9	G	0.15	U	2

Residuals in seconds of arc

1926 04 02	024	2.4+	0.8+	1996 10 04	809	(2.8+	3.8+)	1999 03 20	704	0.2−	1.0+
1926 04 03	024	1.3−	1.3+	1996 10 04	809	(2.5+	3.6+)	1999 03 20	704	0.3−	0.1−
1932 11 30	024	(16.5−	7.3−)	1996 10 05	809	(2.5+	3.4+)	1999 03 20	704	0.0	0.1+
1979 05 28	330	(1.3+	5.0+)	1996 10 05	809	(2.1+	3.3+)	1999 03 20	704	1.3−	1.1−
1982 01 19	095	(3.4+	0.8−)	1996 10 05	809	(1.3+	3.0+)	1999 04 16	704	0.7+	1.3−
1988 09 16	095	(0.2+	2.7−)	1998 01 06	704	0.2−	0.7−	1999 04 16	704	0.4+	0.8−
1988 09 16	095	0.3−	0.7−	1998 01 06	704	0.2−	0.3+	1999 04 16	704	0.1+	0.7−
1991 04 12	033	0.4−	0.3+	1998 01 06	704	0.5−	0.6−	1999 04 16	704	0.6−	0.2+
1991 04 13	033	1.1−	0.0	1999 03 19	704	0.4+	1.3−	1999 04 17	704	0.5+	1.0−
1992 09 04	095	0.8+	0.8+	1999 03 19	704	0.9−	0.6+	1999 04 17	704	0.2+	0.3+
1992 10 04	675	1.2+	0.3−	1999 03 19	704	(0.1+	2.1−)	1999 04 17	704	0.1−	0.2+
1992 10 04	675	0.7−	1.0−	1999 03 19	704	(3.5−	0.1−)	1999 04 17	704	0.2+	0.1−
1996 10 04	809	(3.5+	4.5+)	1999 03 20	704	0.7+	0.0	1999 04 17	704	0.2+	0.1+

1999 FM$_{26}$ = 1990 WJ$_8$ = 1990 WD$_{11}$ = 1993 SP$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	311.84902		(2000.0)		**P**	**Q**	
n	0.27876244	ω	32.42090		−0.65341790	+0.75601068	
a	2.3208472	Ω	196.88398		−0.71981320	−0.63631215	
e	0.1051660	i	7.64503		−0.23433737	−0.15347539	
P	3.54	H	15.1	G	0.15	U	3

Residuals in seconds of arc

1990 11 17	809	(0.7−	3.5−)	1993 09 24	809	0.8+	1.4+	1999 03 23	703	0.3+	0.2−
1990 11 22	809	0.5+	0.4−	1993 09 24	809	0.1−	1.1+	1999 03 23	703	0.0	0.4+
1990 11 22	809	0.2+	0.2+	1993 09 24	809	1.1−	0.9+	1999 03 23	703	1.1−	1.0−
1990 11 22	809	0.7−	0.6+	1999 03 19	704	0.7+	0.3−	1999 04 07	699	0.1+	0.2+
1993 09 17	809	(4.4+	3.4+)	1999 03 19	704	0.9−	0.0	1999 04 07	699	0.7+	0.2+
1993 09 17	809	(4.7+	3.9+)	1999 03 19	704	0.6+	0.1−	1999 04 07	699	1.0+	0.2+
1993 09 17	809	(3.7+	3.1+)	1999 03 19	704	0.8−	1.4+	1999 04 10	699	1.0+	0.6+
1993 09 18	809	0.0	0.1−	1999 03 20	704	0.1−	0.3−	1999 04 10	699	0.8+	0.4+
1993 09 18	809	0.2+	0.3−	1999 03 20	704	0.5−	0.3+	1999 04 10	699	0.9+	0.0
1993 09 18	809	0.5−	0.2−	1999 03 20	704	0.5+	0.3+	1999 04 15	691	0.3−	0.2−
1993 09 22	809	(2.6−	0.8+)	1999 03 20	704	0.6−	0.8+	1999 04 15	691	0.1−	0.2−
1993 09 22	809	(3.8−	0.3+)	1999 03 20	704	0.0	0.1+	1999 04 15	691	0.1−	0.2−
1993 09 22	809	(4.3−	0.1−)	1999 03 23	703	1.4−	0.1+				

1999 FQ$_{26}$ = 1996 TU$_{34}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	290.00760		(2000.0)		**P**	**Q**	
n	0.21941432	ω	236.04957		−0.00729638	+0.99841085	
a	2.7224469	Ω	33.66657		−0.88098392	+0.02001943	
e	0.2106259	i	5.78528		−0.47308994	−0.05267831	
P	4.49	H	14.8	G	0.15	U	5

Residuals in seconds of arc

1996 10 10	691	0.5−	0.1−	1999 03 19	704	1.1+	1.9+	1999 03 23	703	0.5+	0.4−
1996 10 10	691	0.2−	0.7+	1999 03 20	704	0.2−	0.6+	1999 03 23	703	0.2−	0.1+
1996 10 17	691	0.2+	0.4−	1999 03 20	704	0.4−	1.1−	1999 04 07	699	0.2−	0.0
1996 10 17	691	0.1+	0.2−	1999 03 20	704	0.9+	0.6−	1999 04 07	699	0.0	1.0+
1996 10 17	691	0.4+	0.1+	1999 03 20	704	1.1−	0.3−	1999 04 07	699	0.1+	0.2+
1999 03 19	704	0.5−	1.7+	1999 03 20	704	2.9−	0.9−	1999 04 10	699	0.8+	0.1−
1999 03 19	704	0.3−	0.1−	1999 03 23	703	0.6+	0.5+	1999 04 10	699	0.8−	0.1−
1999 03 19	704	2.1+	2.2−	1999 03 23	703	0.7+	0.3+	1999 04 10	699	0.2−	0.4−

1999 FV$_{26}$ = 4881 T-1 = 1993 TS$_{12}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	250.04932		(2000.0)		**P**	**Q**	
n	0.28144662	ω	222.19308		+0.46105642	+0.88444857	
a	2.3060676	Ω	75.37847		−0.79298898	+0.44705286	
e	0.1339503	i	4.26471		−0.39824045	+0.13377019	
P	3.50	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1971 05 13	675	1.7−	0.2+	1999 03 19	704	0.6−	0.9−	1999 04 10	699	0.7+	0.3+
1971 05 14	675	0.2+	1.0−	1999 03 19	704	0.4+	0.7+	1999 04 10	699	0.5+	0.5+
1971 05 16	675	0.5+	1.5−	1999 03 19	704	0.3−	0.4+	1999 04 15	704	(0.6−	2.7+)
1992 03 26	691	0.2−	0.6−	1999 03 19	704	0.8−	0.4−	1999 04 15	704	0.6+	0.6+
1992 03 26	691	0.2−	1.0−	1999 03 20	704	1.0+	0.6+	1999 04 15	704	0.0	1.4+
1992 03 26	691	0.4−	0.4−	1999 03 20	704	0.2−	0.6−	1999 04 15	704	1.5+	0.1+
1992 04 26	691	0.1−	0.1−	1999 03 20	704	0.9−	0.0	1999 04 16	704	0.3−	0.1+
1992 04 26	691	0.0	0.0	1999 03 20	704	0.8−	0.8−	1999 04 16	704	0.8−	0.8+
1992 04 26	691	0.1−	0.0	1999 03 23	703	0.1+	1.1+	1999 04 16	704	0.4−	0.3+
1993 10 13	675	0.0	0.0	1999 03 23	703	0.9+	0.0	1999 04 16	704	0.0	0.4+
1993 10 13	675	0.5+	0.6−	1999 03 23	703	0.3−	0.3+	1999 04 16	704	0.3+	0.4−
1993 10 15	675	0.2−	0.1+	1999 03 23	703	0.3−	0.6−				
1999 03 19	704	0.1−	0.4−	1999 04 10	699	1.3+	0.2+				

1999 FZ$_{26}$ = 1995 OF$_{10}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	328.95697		(2000.0)		**P**	**Q**	
n	0.18801687	ω	74.49047		−0.83940204	+0.53698759	
a	3.0176683	Ω	137.89256		−0.53421206	−0.78668689	
e	0.0560600	i	7.19283		−0.10010836	−0.30457851	
P	5.24	H	13.1	G	0.15	U	1

Residuals in seconds of arc

1992 12 25	691	0.3+	0.5+	1999 03 19	704	1.1−	1.2−	1999 03 23	703	0.7−	0.7+
1992 12 25	691	0.0	0.3+	1999 03 19	704	0.3−	0.1−	1999 03 23	703	0.3−	0.3+
1992 12 25	691	0.2−	0.1+	1999 03 19	704	0.7+	0.4−	1999 04 15	704	0.6+	0.8+
1995 07 21	033	0.2−	1.6+	1999 03 19	704	0.4−	0.8−	1999 04 15	704	0.4−	0.4−
1995 07 22	033	0.8+	0.6+	1999 03 20	704	0.2−	0.1−	1999 04 15	704	0.1+	0.6−
1995 07 23	033	0.7−	1.4−	1999 03 20	704	0.6+	0.0	1999 04 15	704	0.6+	0.9+
1997 01 04	327	0.4+	0.5+	1999 03 20	704	0.5+	0.1−	1999 04 16	704	1.4+	1.0+
1997 01 04	327	0.3+	0.4+	1999 03 20	704	0.9+	0.1+	1999 04 16	704	0.5−	0.8+
1997 01 04	327	0.0	0.4−	1999 03 20	704	0.1+	0.9−	1999 04 16	704	0.9+	1.1+
1997 01 04	327	0.9−	0.1−	1999 03 23	703	(1.3−	2.4+)	1999 04 16	704	1.2−	1.7−
1999 03 19	704	0.0	0.1−	1999 03 23	703	0.9−	1.5+	1999 04 16	704	0.2−	0.3−

1999 FT$_{27}$ = 1993 PF$_6$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	75.32008		(2000.0)		**P**	**Q**	
n	0.27961606	ω	277.65488		−0.10554712	−0.99441209	
a	2.3161214	Ω	178.39930		+0.93941483	−0.10040141	
e	0.0269116	i	4.30872		+0.32612816	−0.03262142	
P	3.52	H	14.4	G	0.15	U	1

Residuals in seconds of arc

1992 04 23	691	0.0	0.4+	1997 11 06	704	1.3−	1.0+	1999 03 23	703	0.2−	0.2−
1992 04 23	691	0.1+	0.2+	1997 11 29	704	0.4+	1.5−	1999 03 23	703	0.6−	0.1−
1992 04 23	691	0.2+	0.0	1997 11 29	704	0.3−	0.4−	1999 03 23	703	1.1−	0.7+
1993 08 15	010	0.1+	0.4−	1997 11 29	704	1.4+	1.3+	1999 03 23	703	1.5−	1.0+
1993 08 15	010	0.0	1.1+	1997 11 29	704	1.0+	0.2−	1999 04 10	699	0.8+	0.3+
1993 08 15	010	0.8−	1.0+	1997 11 29	704	0.7+	0.3+	1999 04 10	699	0.9+	0.3+
1993 08 17	010	(7.6+	4.1+)	1999 03 19	704	0.3+	0.5−	1999 04 10	699	0.6+	0.2+
1997 10 29	704	0.6−	0.2+	1999 03 19	704	0.2−	0.8−	1999 04 15	704	0.9+	1.5+
1997 10 29	704	0.4+	0.8+	1999 03 19	704	0.1−	1.1−	1999 04 15	704	0.6+	0.3+

1997 10 29	704	0.2−	0.4+	1999 03 19	704	0.2+	0.7−	1999 04 15	704	0.9−	0.9+
1997 10 29	704	0.4+	0.2−	1999 03 19	704	0.8+	0.4−	1999 04 15	704	(1.6+	2.4−)
1997 10 29	704	0.6+	0.7−	1999 03 20	704	0.7+	0.5+	1999 04 16	704	0.3+	0.1−
1997 11 06	704	1.2−	0.7+	1999 03 20	704	0.3−	0.7+	1999 04 16	704	0.3+	0.0
1997 11 06	704	1.3−	0.5+	1999 03 20	704	0.4−	0.5+	1999 04 16	704	0.2+	0.7+
1997 11 06	704	0.8−	0.6+	1999 03 20	704	0.9−	0.1−	1999 04 16	704	0.1−	0.1−
1997 11 06	704	0.1+	0.7+	1999 03 20	704	0.4+	0.0	1999 04 16	704	0.6+	0.3+

1999 FS$_{28}$ = 1982 XV$_3$ = 1994 EA

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	299.33496		(2000.0)		**P**	**Q**	
n	0.20411154	ω	74.51129		−0.43211801	+0.90179426	
a	2.8568735	Ω	169.87949		−0.84076417	−0.40028092	
e	0.0223476	i	2.09196		−0.32617426	−0.16291808	
P	4.83	H	13.9	G	0.15	U	3

Residuals in seconds of arc

1982 12 13	381	1.1+	0.4−	1996 09 13	566	0.1−	0.4+	1999 03 20	704	1.3−	1.4+
1982 12 14	381	(5.8−	1.7+)	1996 09 13	566	0.2+	0.1−	1999 03 20	704	0.3+	0.6+
1982 12 14	381	1.2−	0.8+	1996 09 13	566	0.2−	0.0	1999 03 23	703	0.4−	0.0
1994 03 04	596	(0.4−	4.9−)	1999 03 19	704	0.8−	1.3−	1999 03 23	703	0.5−	0.2−
1994 03 04	596	1.9−	0.1−	1999 03 19	704	0.0	0.2+	1999 03 23	703	0.5+	0.6+
1994 03 04	596	(3.4−	2.8+)	1999 03 19	704	1.3−	0.7+	1999 03 23	703	0.4+	0.2+
1994 03 05	596	(2.2−	2.1−)	1999 03 19	704	0.2+	1.4+	1999 04 07	699	0.4+	1.1−
1994 03 05	596	0.6−	1.0−	1999 03 19	704	(2.6−	0.1+)	1999 04 07	699	1.1+	0.1+
1994 03 05	596	1.6+	0.2−	1999 03 20	704	0.7−	0.3−	1999 04 07	699	0.9+	0.1−
1994 03 05	596	0.8+	0.3+	1999 03 20	704	1.2+	0.8−				

1999 FU$_{28}$ = 1972 RZ$_1$ = 1972 TQ$_3$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	256.69382		(2000.0)		**P**	**Q**	
n	0.28472973	ω	122.09114		+0.61689516	+0.78689558	
a	2.2883064	Ω	186.06778		−0.76216594	+0.59241492	
e	0.2574854	i	8.35116		−0.19632483	+0.17274230	
P	3.46	H	13.9	G	0.15	U	4

Residuals in seconds of arc

1972 09 11	095	0.5−	0.4−	1999 03 20	704	0.1+	0.0	1999 04 21	046	0.3−	0.2+
1972 10 05	095	(2.0−	8.1−)	1999 03 20	704	1.7−	0.6+	1999 04 23	046	0.4+	0.1+
1972 10 13	095	0.5+	0.4+	1999 03 20	704	0.8+	0.0	1999 04 23	046	0.1+	0.2+
1999 03 19	704	0.4+	0.7−	1999 03 20	704	0.1+	0.4−	1999 04 23	046	0.2+	0.0
1999 03 19	704	0.5+	0.4−	1999 04 20	046	0.2−	0.2−	1999 04 23	046	0.2+	0.0
1999 03 19	704	0.1+	0.5−	1999 04 20	046	0.2−	0.3−	1999 04 23	046	0.1+	0.3+
1999 03 19	704	0.4−	0.1+	1999 04 20	046	0.3−	0.2−	1999 04 23	046	0.2+	0.1+
1999 03 19	704	0.2−	1.0+	1999 04 21	046	0.4−	0.2+	1999 04 23	046	0.1+	0.2+
1999 03 20	704	0.7+	0.3−	1999 04 21	046	0.3−	0.1−				

1999 FL$_{31}$ = 1992 NO

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	300.19715		(2000.0)		**P**	**Q**	
n	0.26593894	ω	195.81855		−0.27482925	+0.96035170	
a	2.3948672	Ω	58.25058		−0.87607309	−0.23004455	
e	0.1773530	i	3.15725		−0.39618786	−0.15749320	
P	3.71	H	14.3	G	0.15	U	5

Residuals in seconds of arc

1992 07 02	675	1.4−	0.6+	1999 03 20	704	0.3+	0.3−	1999 04 15	704	0.0	0.9−
1992 07 02	675	0.2−	1.7−	1999 03 20	704	0.2+	0.3−	1999 04 15	704	0.3+	0.2+
1992 07 05	675	0.2+	0.8+	1999 03 20	704	0.6+	0.0	1999 04 15	704	0.7−	0.2−
1992 07 05	675	1.3+	0.4+	1999 03 20	704	0.3−	0.4+	1999 04 15	704	0.1−	0.1−
1999 03 19	704	0.7+	0.2+	1999 03 20	704	0.2−	0.0	1999 04 16	704	0.9+	0.4−
1999 03 19	704	0.3−	1.2−	1999 03 22	699	0.3+	0.5+	1999 04 16	704	0.3−	0.3−
1999 03 19	704	1.2+	0.5+	1999 03 22	699	0.5+	1.1+	1999 04 16	704	0.1−	0.1+
1999 03 19	704	1.4−	1.3−	1999 03 22	699	0.4+	0.9+	1999 04 16	704	0.2−	1.2+
1999 03 19	704	1.0−	0.6+	1999 04 15	704	0.3−	0.6−	1999 04 16	704	0.3−	0.1−

1999 FM$_{31}$ = 1995 DB$_8$

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	316.46574		(2000.0)		**P**	**Q**	
n	0.25877534	ω	74.46066		−0.61761296	+0.78627322	
a	2.4388633	Ω	157.36731		−0.73843483	−0.57179480	
e	0.1460402	i	2.70017		−0.27068106	−0.23414766	
P	3.81	H	15.2	G	0.15	U	4

Residuals in seconds of arc

1995 02 24	691	0.1+	0.1+	1999 03 19	704	0.4+	0.7−	1999 03 23	120	0.5+	0.7−
1995 02 24	691	0.0	0.3+	1999 03 19	704	0.4−	0.4+	1999 03 23	120	(2.3−	0.1+)
1995 02 24	691	0.1−	0.2+	1999 03 19	704	0.3+	1.5+	1999 03 23	120	0.2−	0.8+
1995 03 02	691	0.0	0.6−	1999 03 20	704	1.0+	0.9−	1999 03 27	120	0.9−	1.0−
1995 03 02	691	0.3−	1.0−	1999 03 20	704	(0.7+	2.1+)	1999 03 27	120	(0.4−	3.6−)
1995 03 02	691	0.1−	0.2−	1999 03 20	704	0.1+	1.2+	1999 03 27	120	(1.7+	3.0−)
1996 08 09	608	0.1+	0.5−	1999 03 20	704	0.2+	0.7+				
1996 08 09	608	0.1+	0.3−	1999 03 20	704	0.8−	0.7−				

1999 FQ$_{32}$ = 1986 WP$_1$ = 1997 RA$_4$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	12.84382		(2000.0)		**P**	**Q**	
n	0.26242340	ω	104.30450		−0.92356855	−0.38116691	
a	2.4162082	Ω	53.30607		+0.32874154	−0.84303390	
e	0.1346905	i	2.97591		+0.19735786	−0.37948075	
P	3.76	H	15.8	G	0.15	U	4

Residuals in seconds of arc

1986 11 29	046	0.4+	0.6−	1997 09 09	910	0.2−	0.9−	1999 04 03	120	0.9+	0.0
1986 11 29	046	0.6−	1.5+	1999 03 23	120	2.2−	0.7−	1999 04 03	120	1.8+	0.7−
1997 09 01	910	0.6+	0.2+	1999 03 23	120	1.3−	1.1−	1999 04 05	120	0.4−	0.0
1997 09 01	910	0.7+	0.4+	1999 03 23	120	1.7−	0.4−	1999 04 05	120	0.3+	0.2+
1997 09 01	910	0.0	0.1+	1999 03 27	120	0.2−	0.9−	1999 04 10	120	0.6+	0.5+
1997 09 09	910	0.2−	1.0−	1999 03 27	120	1.3−	0.1+	1999 04 10	120	0.7+	0.9+
1997 09 09	910	0.0	1.0−	1999 03 27	120	0.7+	0.2+	1999 04 10	120	1.5+	0.7+

1999 FT$_{32}$ = 1971 VH = 1988 BH$_2$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	222.91676		(2000.0)		**P**	**Q**	
n	0.19880068	ω	180.52362		+0.97720589	+0.21211120	
a	2.9075295	Ω	167.22000		−0.19463079	+0.91168985	
e	0.0976966	i	2.28059		−0.08477914	+0.35189551	
P	4.96	H	12.4	G	0.15	U	5

Residuals in seconds of arc

1971 11 10	029	0.0	0.5+	1988 01 23	303	(6.1+	7.7−)	1999 04 09	120	0.2+	1.2−
1971 11 10	029	0.5−	1.2+	1988 01 23	303	(6.4+	6.1−)	1999 04 10	120	(2.5−	0.7+)
1988 01 20	809	0.2−	0.5−	1988 01 27	809	(20.8+	4.4−)	1999 04 10	120	0.5+	0.5−
1988 01 20	809	0.2−	0.6−	1988 01 27	809	(20.8+	4.4−)	1999 04 14	120	0.3−	0.0
1988 01 20	809	0.0	0.6−	1999 03 24	120	1.0+	0.0	1999 04 14	120	0.4−	0.4+
1988 01 21	809	0.3−	0.1+	1999 03 24	120	1.0−	0.5+	1999 04 18	691	(6.1+	4.2+)
1988 01 21	809	0.9−	0.3−	1999 03 28	120	0.3−	0.5+	1999 04 18	691	(2.8−	2.4−)
1988 01 22	303	0.9+	1.0+	1999 03 28	120	0.6−	0.6+	1999 04 18	691	0.2−	0.2+
1988 01 23	303	1.3+	1.3+	1999 04 05	120	1.2+	0.3+	1999 04 25	120	0.5+	0.2+
1988 01 23	809	0.6−	0.5−	1999 04 05	120	0.7−	0.2+	1999 04 25	120	1.6−	0.4−
1988 01 23	809	0.0	0.0	1999 04 05	120	0.7+	0.5+	1999 04 26	120	1.8+	0.5+

1999 FW$_{32}$ = 1987 BR

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	243.64860		(2000.0)	**P**	**Q**		
n	0.25470950	ω	329.47168	+0.30579498	+0.95050165		
a	2.4647486	Ω	318.26450	−0.85595559	+0.24911264		
e	0.1058438	i	4.74789	−0.41692859	+0.18571353		
P	3.87	H	14.0	G 0.15	U 3		

Residuals in seconds of arc

1987 01 26	033	0.5+	0.2+	1999 03 23	704	1.0−	0.5−	1999 03 24	704	0.6−	0.0
1987 01 27	033	0.3+	0.6+	1999 03 23	699	1.1+	0.6+	1999 03 24	704	(0.9−	2.2−)
1987 01 28	033	0.4−	0.1+	1999 03 24	704	0.1+	0.0	1999 03 24	704	(2.2−	0.8−)
1997 12 06	704	0.4+	1.6−	1999 03 24	704	0.6+	0.1−	1999 03 25	704	0.1+	0.1+
1997 12 06	704	0.0	0.3−	1999 03 24	704	0.9+	0.2+	1999 03 25	704	0.4+	0.0
1997 12 06	704	0.6−	0.1−	1999 03 24	704	0.1+	0.3+	1999 03 25	704	0.4−	0.6−
1997 12 06	704	0.3+	1.5+	1999 03 24	704	0.1−	0.5−	1999 03 25	704	1.4−	2.0−
1997 12 06	704	(3.1+	0.3+)	1999 03 24	704	0.2+	0.1+	1999 03 25	704	1.2−	0.0
1999 03 20	704	0.0	0.3+	1999 03 24	704	1.7+	0.2+	1999 03 25	704	(2.2−	2.1+)
1999 03 20	704	0.7−	0.0	1999 03 24	704	0.9−	0.4−	1999 03 25	704	(7.2−	1.7+)
1999 03 20	704	0.3−	0.2−	1999 03 24	704	(2.6+	0.6+)	1999 03 25	704	(2.4−	0.1−)
1999 03 20	704	0.1+	0.6−	1999 03 24	704	0.2−	1.1+	1999 04 06	704	0.3+	0.3+
1999 03 20	704	0.2−	0.0	1999 03 24	704	0.1+	1.1−	1999 04 06	704	0.4−	0.0
1999 03 23	704	0.1+	0.5−	1999 03 24	704	1.7+	0.3+	1999 04 06	704	0.4−	0.3+
1999 03 23	704	0.8−	0.2−	1999 03 24	704	(2.1−	2.1−)	1999 04 06	704	0.0	0.4+
1999 03 23	704	0.4−	0.2+	1999 03 24	704	0.4−	1.6−	1999 04 06	704	0.5−	0.1−
1999 03 23	699	1.2+	0.4+	1999 03 24	704	(2.1+	2.4−)	1999 04 09	699	1.7+	1.3+
1999 03 23	704	0.8−	0.2+	1999 03 24	704	1.4−	0.9−	1999 04 09	699	0.4+	1.2+
1999 03 23	699	1.3+	0.7+	1999 03 24	704	1.3−	0.3−	1999 04 09	699	1.1+	0.9+

1999 FD$_{34}$ = 1996 HW$_{19}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	204.25854		(2000.0)	**P**	**Q**		
n	0.30568052	ω	169.17664	+0.94794977	+0.31840484		
a	2.1825165	Ω	172.25476	−0.29383443	+0.87846432		
e	0.1662069	i	1.31693	−0.12268891	+0.35625664		
P	3.22	H	14.6	G 0.15	U 5		

Residuals in seconds of arc

1996 04 18	809	0.6−	0.4+	1996 05 19	809	0.3+	0.8+	1999 03 20	704	0.8−	0.8+
1996 04 18	809	0.3−	1.0−	1999 03 19	704	0.4−	0.8−	1999 03 23	703	0.2−	0.6−
1996 04 18	809	0.6−	1.7−	1999 03 19	704	1.1+	0.1+	1999 03 23	703	0.8−	0.1−
1996 04 20	809	0.7+	0.2−	1999 03 19	704	0.3+	1.0+	1999 03 23	703	0.7−	0.7+
1996 04 20	809	0.1−	0.3−	1999 03 19	704	0.4−	0.8+	1999 03 23	703	0.6−	0.9+
1996 04 20	809	0.1+	0.9−	1999 03 20	704	0.4−	0.1−	1999 04 07	699	2.0+	1.7−
1996 05 19	809	0.5+	1.2+	1999 03 20	704	0.4−	0.2−	1999 04 07	699	1.9+	0.3−
1996 05 19	809	0.1−	1.0+	1999 03 20	704	0.5−	0.5+	1999 04 07	699	(2.5+	0.4−)

1999 FL$_{34}$ = 1992 HO$_{4}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	335.70862		(2000.0)	**P**	**Q**		
n	0.27616462	ω	45.65456	−0.92637325	+0.37377595		
a	2.3353789	Ω	156.18024	−0.36978244	−0.87955890		
e	0.1689921	i	6.55283	−0.07136907	−0.29439375		
P	3.57	H	15.3	G 0.15	U 3		

Residuals in seconds of arc

1992 04 30	033	0.5−	0.1−	1999 03 19	704	0.0	0.4+	1999 04 15	704	0.1+	0.3+
1992 05 01	033	0.0	0.3+	1999 03 19	704	0.2−	0.5−	1999 04 15	704	0.5+	0.4+
1992 05 04	033	0.4+	0.5−	1999 03 20	704	0.6+	0.3−	1999 04 15	704	0.5+	0.2+
1997 11 06	704	0.3+	0.4−	1999 03 20	704	0.1+	0.6−	1999 04 15	704	1.2+	1.2+
1997 11 06	704	0.1+	1.4+	1999 03 20	699	1.5+	0.9+	1999 04 15	704	(0.1+	2.9+)
1997 11 06	704	0.1−	1.1−	1999 03 20	704	0.9−	0.3−	1999 04 16	704	0.5−	0.2−
1997 11 06	704	0.4−	0.7+	1999 03 20	704	1.5−	0.6−	1999 04 16	704	1.0−	0.8−
1998 12 27	104	0.2+	0.4+	1999 03 20	699	0.7+	0.0	1999 04 16	704	1.2−	0.2+
1998 12 27	104	0.4+	0.2+	1999 03 20	699	0.4+	0.4−	1999 04 16	704	0.1−	0.9+
1999 03 19	704	(0.4−	2.1−)	1999 04 10	699	0.6+	0.6+	1999 04 16	704	0.5−	0.8+
1999 03 19	704	1.2−	1.1−	1999 04 10	699	0.2+	0.1+				
1999 03 19	704	0.5−	1.4−	1999 04 10	699	0.8+	0.5+				

1999 FL$_{46}$ = 6734 P-L = 1984 BK$_{5}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	13.75357		(2000.0)	**P**	**Q**		
n	0.26707378	ω	2.39239	−0.72738070	−0.68586128		
a	2.3880782	Ω	134.27611	+0.62908181	−0.67960838		
e	0.1333400	i	1.81035	+0.27417766	−0.26024364		
P	3.69	H	15.5	G 0.15	U 4		

Residuals in seconds of arc

1960 09 24	675	0.2+	0.2−	1984 01 26	675	0.1−	0.1−	1999 03 23	704	0.2−	0.1−
1960 09 24	675	0.2+	0.2+	1999 02 20	699	1.0+	0.9+	1999 03 23	704	0.1+	0.6−
1960 09 26	675	0.2+	0.1−	1999 02 20	699	0.7+	0.2+	1999 03 23	704	0.7−	0.8+
1960 09 26	675	0.4+	0.0	1999 02 20	699	0.5+	0.3−	1999 03 23	704	1.0−	1.0−
1960 09 27	675	1.2−	0.8+	1999 03 20	704	0.2−	0.1−	1999 03 23	704	0.9−	0.5−
1960 09 27	675	1.4−	1.1−	1999 03 20	704	0.4−	0.0	1999 04 07	699	1.0+	0.3+
1960 09 28	675	0.2+	0.6+	1999 03 20	704	0.5−	0.2+	1999 04 07	699	1.3+	0.5+
1960 09 28	675	1.5+	0.2−	1999 03 20	704	0.2−	0.0	1999 04 07	699	0.2−	0.3−
1984 01 25	675	0.0	0.1−	1999 03 20	704	0.2+	0.2+				

1999 GB = 1999 FL$_{53}$ = 1994 YM$_{3}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	307.76724		(2000.0)	**P**	**Q**		
n	0.28330999	ω	292.62858	−0.62228193	+0.78070213		
a	2.2959449	Ω	298.76223	−0.69212338	−0.58285771		
e	0.0977149	i	3.73982	−0.36569171	−0.22534658		
P	3.48	H	15.5	G 0.15	U 5		

Residuals in seconds of arc

1994 12 31	691	0.4+	0.1+	1999 04 02	859	0.5+	0.2−	1999 04 06	704	0.7−	0.4−
1994 12 31	691	0.3+	0.3−	1999 04 02	859	0.6+	0.6−	1999 04 06	704	(2.3−	1.0+)
1995 01 07	691	0.5−	0.0	1999 04 02	859	0.1−	0.2−	1999 04 06	704	1.0+	0.9−
1995 01 07	691	0.1−	0.2+	1999 04 03	859	0.4−	0.5+	1999 04 11	699	0.0	0.1+
1995 01 07	691	0.1−	0.1+	1999 04 03	859	0.6−	0.2−	1999 04 11	699	0.5+	0.1+
1999 03 21	860	0.4−	0.1+	1999 04 03	859	0.6+	0.5−	1999 04 11	699	0.1+	0.4+
1999 03 21	860	0.1−	0.5−	1999 04 06	704	0.4−	1.2+				
1999 03 21	860	0.3+	0.4+	1999 04 06	704	0.8−	0.6+				

1999 GO = 1997 XQ$_{3}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	245.55029		(2000.0)	**P**	**Q**		
n	0.18107342	ω	273.19181	+0.54845363	+0.83614806		
a	3.0943273	Ω	30.07294	−0.76118128	+0.50291394		
e	0.1601410	i	0.84828	−0.34612378	+0.21893833		
P	5.44	H	13.7	G 0.15	U 6		

Residuals in seconds of arc

1997 12 03	910	0.2−	0.2−	1999 04 03	120	0.0	0.4+	1999 04 06	120	0.0	0.4+
1997 12 04	910	0.2−	0.0	1999 04 05	120	0.4−	0.9−	1999 04 06	120	0.1−	0.2+
1997 12 04	910	0.4−	0.1−	1999 04 05	120	0.3+	0.6+	1999 04 09	691	0.7+	0.1−
1997 12 06	910	0.5+	0.1+	1999 04 05	120	0.6+	0.5−	1999 04 09	691	1.0+	0.4−
1997 12 06	910	0.2+	0.0	1999 04 06	704	1.2+	0.1+	1999 04 09	691	1.1+	0.5−
1997 12 06	910	0.1+	0.2+	1999 04 06	704	0.4+	0.5−	1999 04 09	120	0.0	0.4−
1999 03 22	699	0.5−	0.5+	1999 04 06	704	1.5+	0.8+	1999 04 09	120	0.5−	1.4+
1999 03 22	699	1.6−	0.6−	1999 04 06	704	0.0	0.1+	1999 04 09	120	1.5−	0.1−
1999 03 22	699	0.3−	0.8−	1999 04 06	704	0.7+	0.4+	1999 04 19	120	1.4−	1.2−
1999 04 03	120	1.1−	0.2+	1999 04 06	120	0.7+	0.3+	1999 04 19	120	1.3−	0.7+

1999 GV = 1989 FA$_1$ = 1997 WH$_{32}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	11.33667		(2000.0)	**P**		**Q**	
n	0.30132044	ω	115.37732	−0.99250926		−0.04078912	
a	2.2035200	Ω	62.46953	−0.01544651		−0.89315615	
e	0.0167974	i	7.46175	+0.12118900		−0.44789323	
P	3.27	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1989 03 28	046	3.5+	0.5+	1997 12 04	704	0.2+	1.1+	1999 04 10	120	1.0−	0.3−
1989 03 28	046	(7.4+	0.5−)	1997 12 04	704	1.2−	1.7+	1999 04 10	120	2.4+	0.0
1989 03 30	675	2.0−	0.8−	1997 12 04	704	0.1+	2.1+	1999 04 14	120	0.2+	0.0
1989 03 30	675	1.8−	0.3−	1999 04 05	120	0.1+	0.5−	1999 04 14	120	0.2−	0.1+
1997 11 29	704	0.5+	0.7−	1999 04 05	120	0.3−	1.1−	1999 04 19	120	0.3−	0.5+
1997 11 29	704	0.5−	1.2−	1999 04 05	120	0.3+	0.1−	1999 04 19	120	0.8+	1.5+
1997 11 29	704	0.2−	0.7−	1999 04 05	120	0.5−	1.3+	1999 04 25	120	0.7+	0.7−
1997 11 29	704	0.5+	1.0−	1999 04 06	120	1.3−	0.4+	1999 04 25	120	0.5+	0.1+
1997 11 29	704	0.6+	1.0−	1999 04 06	120	0.5−	0.3+	1999 04 26	120	1.6+	0.7+
1997 12 04	704	0.1+	0.7+	1999 04 06	120	0.2−	0.7−				
1997 12 04	704	0.3−	0.1−	1999 04 10	120	2.2−	0.3−				

1999 GH$_1$ = 1995 AK$_3$

Id. S. Nakano, G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	345.53274		(2000.0)	**P**		**Q**	
n	0.29364250	ω	130.88743	−0.94002329		+0.32347348	
a	2.2417651	Ω	68.23684	−0.33739280		−0.83497560	
e	0.0903638	i	6.69436	−0.05022263		−0.44517485	
P	3.36	H	15.2	G	0.15	U	5

Residuals in seconds of arc

1995 01 04	010	0.5+	0.3+	1999 04 09	411	0.6+	0.0	1999 04 15	292	(2.8−	0.1−)
1995 01 04	010	0.5−	0.7+	1999 04 09	411	0.1−	0.6+	1999 04 15	292	0.1+	0.1−
1995 01 04	010	0.3+	1.0+	1999 04 11	699	0.4+	0.4+	1999 04 17	292	1.3+	1.0+
1995 01 04	010	0.4+	0.4−	1999 04 11	699	0.9+	0.1+	1999 04 17	292	0.9−	0.5+
1995 01 05	010	0.7−	1.8−	1999 04 11	699	1.0+	0.3+	1999 04 17	292	(4.0−	0.2+)
1995 01 05	010	(2.9−	0.9−)	1999 04 14	292	0.0	0.9−	1999 04 21	292	1.1−	1.2−
1999 04 07	411	0.0	0.4+	1999 04 14	292	0.3−	1.0−	1999 04 21	292	(2.3−	1.7−)
1999 04 07	411	0.5+	0.1−	1999 04 14	292	(1.5−	2.4−)	1999 04 21	292	0.2−	1.3−
1999 04 08	411	0.4−	0.4−	1999 04 14	411	1.1+	1.2+	1999 04 25	120	(2.5+	2.1+)
1999 04 08	411	0.5−	0.1−	1999 04 14	411	0.2−	0.2−	1999 04 25	120	1.0−	0.0
1999 04 09	411	0.7−	0.1−	1999 04 15	292	0.5−	1.3+				

1999 GO$_1$ = 1989 CP$_5$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	256.22390		(2000.0)	**P**		**Q**	
n	0.20649963	ω	297.49829	+0.13223126		+0.99119244	
a	2.8348050	Ω	340.09631	−0.90175592		+0.11726051	
e	0.0342549	i	1.21878	−0.41152298		+0.06154278	
P	4.77	H	14.4	G	0.15	U	6

Residuals in seconds of arc

1989 02 02	033	0.1+	0.1−	1999 04 06	691	0.3+	0.0	1999 04 14	691	0.3−	0.0
1989 02 04	033	0.5−	0.7−	1999 04 07	691	0.6−	0.4−	1999 04 14	691	0.3−	0.0
1989 02 10	033	0.9−	0.9+	1999 04 07	691	1.1−	0.1−	1999 04 14	691	0.6−	0.0
1989 02 10	033	1.3+	0.1−	1999 04 12	691	0.5+	0.1−	1999 04 20	691	0.2+	0.1−
1999 04 06	691	0.4+	0.1+	1999 04 12	691	0.6+	0.3+	1999 04 20	691	0.1−	0.3+
1999 04 06	691	0.4+	0.2+	1999 04 12	691	0.4+	0.1−	1999 04 20	691	0.2+	0.0

1999 GP$_3$ = 1978 ER$_{10}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	301.29286		(2000.0)	**P**		**Q**	
n	0.23472182	ω	54.25799	−0.60474077		+0.79639374	
a	2.6027577	Ω	178.48073	−0.78789474		−0.59700634	
e	0.0874224	i	14.75834	−0.11623460		−0.09664596	
P	4.20	H	13.8	G	0.15	U	4

Residuals in seconds of arc

1978 03 15	675	1.1−	0.1−	1999 04 06	704	0.7−	0.4+	1999 04 13	763	0.0	0.3−
1978 03 16	675	0.9+	1.4−	1999 04 06	704	0.0	0.4+	1999 04 13	763	0.3−	0.2−
1995 03 28	691	0.1+	0.7−	1999 04 06	704	0.3+	0.5+	1999 04 13	763	0.2−	0.2−
1995 03 28	691	0.1−	0.1−	1999 04 06	704	0.1−	0.4+	1999 04 14	763	0.5−	0.5−
1995 03 28	691	0.1−	0.2+	1999 04 06	704	1.1+	0.6−	1999 04 14	763	0.1−	0.3−
1999 02 21	699	0.3+	0.9−	1999 04 07	699	0.7+	0.2−	1999 04 14	763	0.5−	0.0
1999 02 21	699	0.5+	0.7+	1999 04 07	699	0.5+	0.2−	1999 04 14	763	0.3−	0.1−
1999 02 21	699	0.2+	0.4+	1999 04 07	699	0.6+	0.0	1999 04 15	763	0.1+	0.0
1999 03 22	699	0.8+	0.3−	1999 04 10	763	0.5−	0.1+	1999 04 15	763	0.6+	0.3−
1999 03 22	699	0.6+	0.5−	1999 04 10	763	0.5−	0.2−	1999 04 17	703	0.8+	0.9+
1999 03 22	699	0.2−	0.4+	1999 04 10	763	0.4−	0.1−	1999 04 17	703	0.5+	0.4+
1999 04 06	763	1.4−	0.4+	1999 04 11	763	0.8−	0.4−	1999 04 17	703	1.2+	0.7+
1999 04 06	763	0.5−	0.5+	1999 04 11	763	0.5−	0.3−	1999 04 17	703	1.1+	0.8+
1999 04 06	763	0.9−	0.6+	1999 04 11	763	0.2−	0.1+				
1999 04 06	763	0.7−	0.5+	1999 04 13	763	0.3−	0.5−				

1999 GZ$_3$ = 1998 DQ$_{36}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	67.69120		(2000.0)	**P**		**Q**	
n	0.29045007	ω	231.92567	−0.47411118		−0.87700324	
a	2.2581618	Ω	246.54614	+0.83209730		−0.41734662	
e	0.0881910	i	4.87740	+0.28780667		−0.23809055	
P	3.39	H	16.3	G	0.15	U	6

Residuals in seconds of arc

1998 02 22	327	1.0−	0.5−	1998 02 23	327	0.1+	0.1+	1999 04 19	426	0.1−	0.1+
1998 02 22	327	0.2+	0.7−	1999 04 10	426	0.1+	0.4−	1999 04 19	426	0.5−	0.3+
1998 02 22	327	0.3−	0.2+	1999 04 10	426	0.2+	0.5−	1999 04 19	426	0.2+	0.2+
1998 02 22	327	0.5+	0.2+	1999 04 13	426	0.4−	0.8+	1999 04 21	426	0.1+	0.8−
1998 02 23	327	0.5+	0.4+	1999 04 13	426	0.1−	0.3+	1999 04 21	426	0.3+	0.1+
1998 02 23	327	0.1+	0.4+	1999 04 13	426	0.3−	0.3−	1999 04 21	426	0.3+	0.3+

1999 GM$_4$ = 1996 TH$_{39}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	220.12143		(2000.0)	**P**		**Q**	
n	0.22367941	ω	294.05715	+0.79372409		+0.60539868	
a	2.6877284	Ω	28.79210	−0.50394775		+0.70889800	
e	0.1144142	i	7.05012	−0.34064458		+0.36187853	
P	4.41	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1996 10 07	809	1.6−	0.3+	1999 04 06	704	1.1−	0.5+	1999 04 13	108	0.3−	1.4−
1996 10 07	809	0.7+	0.9+	1999 04 07	699	0.1+	0.6+	1999 04 13	108	(2.1+	0.9−)
1996 10 07	809	0.0	0.2+	1999 04 07	699	1.6+	1.4+	1999 04 13	108	1.8+	1.2−
1996 10 08	809	0.1−	1.0−	1999 04 07	699	0.2−	1.3+	1999 04 18	104	1.0−	0.3+
1996 10 08	809	0.1−	0.1−	1999 04 10	108	1.6+	0.2+	1999 04 18	104	0.8+	0.6−
1996 10 08	809	1.1+	0.2−	1999 04 10	108	1.3+	0.4+	1999 04 18	104	0.1+	0.5−
1996 10 10	809	(2.8+	4.2+)	1999 04 10	108	0.2+	0.0	1999 05 01	108	0.3−	0.7−
1996 10 10	809	(1.9+	3.9+)	1999 04 10	108	0.9−	1.0+	1999 05 01	108	0.1+	0.0
1996 10 10	809	(2.0+	4.5+)	1999 04 10	108	(3.4+	1.5−)	1999 05 01	108	0.2+	0.8+
1999 04 06	704	0.5+	0.4−	1999 04 10	108	0.8−	0.4−	1999 05 01	108	0.4−	1.4+
1999 04 06	704	0.1−	0.6−	1999 04 13	108	1.0−	1.3−				
1999 04 06	704	1.3−	0.6+	1999 04 13	108	0.9−	1.1−				

1999 GS$_4$ = 1995 ED$_1$

Id. B. G. Marsden

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	279.78902		(2000.0)		**P**		**Q**
n	0.26691368	ω	111.21826		+0.29321238		+0.95602438
a	2.3890331	Ω	175.81528		−0.90737498		+0.28046089
e	0.1399143	i	5.20839		−0.30115968		+0.08578504
P	3.69	H	13.8	G	0.15	U	6

Residuals in seconds of arc

1995 03 05	033	1.0+	0.0	1999 04 10	120	0.3−	0.5+	1999 04 19	120	0.1+	0.3−
1995 03 05	033	0.7+	0.6+	1999 04 11	120	0.1+	0.5−	1999 04 20	120	0.1+	0.2+
1995 03 05	399	0.5−	0.8−	1999 04 14	120	0.4+	0.1−	1999 04 20	120	0.3−	0.1+
1995 03 05	399	1.0−	0.2−	1999 04 14	120	0.2+	0.1+	1999 04 23	120	0.2+	0.3+
1995 03 06	399	1.1+	0.6−	1999 04 14	120	0.1+	0.1+	1999 04 23	120	0.7−	0.2+
1995 03 06	399	0.9−	0.7+	1999 04 19	120	0.2+	0.3−	1999 04 23	120	1.6+	0.0
1995 03 07	033	0.4−	0.3+	1999 04 19	120	0.0	0.0				
1999 04 10	120	0.3+	0.3+	1999 04 19	120	1.9−	0.5−				

1999 GZ_4 = 1998 AZ_8

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	332.12882		(2000.0)		**P**		**Q**
n	0.27688442	ω	24.85754		−0.60648295		+0.79390637
a	2.3313297	Ω	207.86821		−0.74415980		−0.58604130
e	0.1443854	i	5.33806		−0.28000825		−0.16207488
P	3.56	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1998 01 06	688	0.2+	0.2+	1999 03 24	704	(3.1−	5.4+)	1999 04 14	426	0.3−	0.2−
1998 01 06	688	0.2+	0.1+	1999 03 29	699	0.3+	1.2−	1999 04 22	426	0.1+	0.1−
1998 01 07	688	0.2−	0.3+	1999 03 29	699	0.6+	0.1+	1999 04 22	426	0.3−	0.2−
1998 01 07	688	0.3−	0.2−	1999 03 29	699	0.7+	0.9+	1999 04 22	426	0.0	0.1−
1998 01 08	688	0.3+	0.3−	1999 04 13	426	0.1−	0.0	1999 04 26	426	0.1+	0.0
1998 01 08	688	0.2−	0.1−	1999 04 13	426	0.3−	0.3+	1999 04 26	426	0.1+	0.0
1999 03 24	704	0.0	0.7−	1999 04 13	426	0.0	0.3+	1999 04 26	426	0.1−	0.1+
1999 03 24	704	1.5−	1.1+	1999 04 14	426	0.1−	0.1−				
1999 03 24	704	0.2+	0.4−	1999 04 14	426	0.4+	0.1−				

1999 GB_5 = 1997 YV_8

Id. T. Urata

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Nakano

M	18.01646		(2000.0)		**P**		**Q**
n	0.18511422	ω	25.56448		−0.72454305		−0.65843081
a	3.0491318	Ω	111.68356		+0.58873604		−0.74493880
e	0.1710193	i	12.66468		+0.35836747		−0.10740134
P	5.32	H	13.3	G	0.15	U	5

Residuals in seconds of arc

1997 12 25	566	0.2−	0.2+	1997 12 30	566	0.4+	0.1−	1999 04 13	888	0.0	0.3+
1997 12 25	566	0.4−	0.1+	1997 12 30	566	0.4+	0.3−	1999 04 13	888	0.3+	0.2+
1997 12 25	566	0.6−	0.2+	1999 04 07	905	0.3+	0.8−	1999 04 14	888	0.3+	0.6+
1997 12 30	566	0.5+	0.1−	1999 04 07	905	0.7−	0.6−	1999 04 14	888	0.2−	0.4+

1999 GE_5 = 1994 CX_{14}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Nakano

M	144.71831		(2000.0)		**P**		**Q**
n	0.21463980	ω	262.98640		+0.85275043		−0.50438876
a	2.7626713	Ω	127.21011		+0.52067161		+0.80026893
e	0.1726113	i	9.80875		+0.04144613		+0.32428633
P	4.59	H	12.9	G	0.15	U	6

Residuals in seconds of arc

1994 02 08	809	0.5+	0.1+	1994 02 13	809	1.2+	0.5+	1999 04 13	888	0.1−	0.2+
1994 02 08	809	0.8−	0.7+	1994 02 13	809	0.9−	0.2+	1999 04 13	888	0.3+	0.6+
1994 02 08	809	0.6−	0.2+	1994 02 13	809	0.9−	0.6+	1999 04 14	888	0.6+	0.4+
1994 02 10	809	1.0+	0.2−	1999 04 07	905	1.1−	0.8−	1999 04 14	888	1.1+	0.2−
1994 02 10	809	0.8+	1.2−	1999 04 07	905	0.2−	0.7−				
1994 02 10	809	0.2−	0.9−	1999 04 07	905	0.7−	0.4+				

1999 GX_5 = 1978 XB = 1998 AW_{10}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	175.06542		(2000.0)		**P**		**Q**
n	0.26196940	ω	109.05444		+0.92766987		−0.36838221
a	2.4189989	Ω	272.59897		+0.31550415		+0.86069534
e	0.0819348	i	3.50183		+0.19971413		+0.35142292
P	3.76	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1978 12 06	801	0.1+	0.0	1998 01 08	704	0.0	1.1−	1999 04 16	428	0.4+	0.2+
1978 12 07	801	0.1−	0.3−	1998 01 08	704	0.1+	0.7−	1999 04 18	428	0.9+	0.1−
1998 01 02	704	0.0	0.1+	1998 01 08	704	0.2+	0.2−	1999 04 18	428	0.5+	0.1+
1998 01 02	704	0.0	0.1+	1998 01 08	704	0.5+	0.1−	1999 04 23	428	0.6−	0.0
1998 01 02	704	0.2−	0.5+	1999 04 15	428	0.2−	0.1+	1999 04 23	428	0.2+	0.0
1998 01 02	704	0.3−	1.0+	1999 04 15	428	0.8−	0.3−				
1998 01 02	704	0.3−	0.6+	1999 04 16	428	0.5−	0.1−				

1999 GS_9 = 1988 FD_1 = 1998 BJ_{40}

Id. T. Urata

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	19.60733		(2000.0)		**P**		**Q**
n	0.18385981	ω	71.37927		−0.97818187		−0.10327770
a	3.0629849	Ω	102.38409		+0.03330485		−0.93441342
e	0.0441380	i	10.63519		+0.20506346		−0.34088895
P	5.36	H	13.0	G	0.15	U	4

Residuals in seconds of arc

1988 03 17	033	0.0	0.1+	1998 01 29	566	0.7−	0.5−	1999 04 16	704	1.1−	1.5−
1988 03 18	033	0.6−	0.1−	1998 01 29	566	0.3−	1.7−	1999 04 16	704	0.3+	0.7+
1988 03 19	033	0.2+	0.6+	1999 04 14	905	0.4−	0.5−	1999 04 16	704	0.4−	0.1−
1988 03 19	033	0.8+	0.3+	1999 04 14	905	0.3−	0.5−	1999 04 16	704	(2.3−	1.0−)
1998 01 24	566	0.5+	0.9+	1999 04 15	704	(2.2+	1.4+)	1999 04 20	385	0.1−	0.3+
1998 01 24	566	0.4+	0.6+	1999 04 15	704	1.3+	0.1−	1999 04 25	888	0.3−	0.1+
1998 01 24	566	0.2+	0.8+	1999 04 15	704	1.1+	1.1+	1999 04 25	888	0.1−	0.2+
1998 01 29	566	0.1−	0.7−	1999 04 16	704	0.3−	0.5−				

1999 GP_{11} = 1976 UA_{11} = 1995 FX_{13}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	204.99693		(2000.0)		**P**		**Q**
n	0.24214271	ω	315.57683		+0.92076604		+0.38938357
a	2.5493049	Ω	21.54156		−0.33736898		+0.82551751
e	0.1916533	i	3.72924		−0.19588791		+0.40853552
P	4.07	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1976 10 22	381	0.6−	0.4−	1999 04 09	691	0.5−	0.0	1999 04 14	691	0.1+	0.4+
1976 10 22	381	0.5+	0.5+	1999 04 09	691	0.7−	0.3−	1999 04 17	691	0.5−	0.3+
1995 03 27	691	0.2−	0.2−	1999 04 09	691	0.5−	0.1+	1999 04 17	691	0.4−	0.0
1995 03 27	691	0.1−	0.4+	1999 04 11	691	0.7+	0.5−	1999 04 17	691	0.6−	0.2−
1995 03 27	691	0.0	0.3+	1999 04 11	691	0.7+	0.4−	1999 04 24	691	0.2−	0.1−
1995 04 05	691	0.3+	0.3+	1999 04 11	691	0.3+	0.3−	1999 04 24	691	0.9+	0.3−
1995 04 05	691	0.4+	0.2+	1999 04 14	691	0.2+	0.1+				
1995 04 05	691	0.1+	0.0	1999 04 14	691	0.3+	0.2+				

1999 HH_2 = 1997 WP_{30}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	330.10087		(2000.0)	**P**		**Q**	
n	0.27420800	ω	148.26644	−0.88740267		+0.44335878	
a	2.3464752	Ω	58.56403	−0.44784766		−0.76415289	
e	0.0872938	i	8.51201	−0.10931139		−0.46851185	
P	3.59	H	14.4	G	0.15	U	4

Residuals in seconds of arc

1997 10 30	566	0.9−	0.3+	1997 12 04	704	1.5+	1.7+	1999 04 16	704	1.3−	0.3+
1997 10 30	566	0.4−	0.1+	1999 03 20	699	1.4+	0.1+	1999 04 16	704	0.3−	0.0
1997 10 30	566	0.5−	0.3−	1999 03 20	699	0.9+	0.0	1999 04 16	704	0.6−	0.3+
1997 11 29	704	0.3+	0.4−	1999 03 20	699	0.9+	0.3+	1999 04 19	620	0.3+	0.3+
1997 11 29	704	0.1+	1.0+	1999 04 15	704	0.4−	1.0−	1999 04 19	620	0.1+	0.2+
1997 11 29	704	0.8−	1.2+	1999 04 15	704	0.0	0.8+	1999 04 19	620	0.0	0.1+
1997 11 29	704	0.1+	1.2−	1999 04 15	704	(2.1+	0.6−)	1999 04 19	620	0.2−	0.0
1997 11 29	704	0.6+	1.4−	1999 04 15	704	(1.1−	2.7+)	1999 04 23	620	0.3+	0.7−
1997 12 04	704	0.6+	0.9−	1999 04 15	704	0.5−	0.1−	1999 04 23	620	0.1−	0.5−
1997 12 04	704	0.6−	0.1−	1999 04 16	704	0.2+	0.4−	1999 04 23	620	0.6−	0.4−
1997 12 04	704	0.1+	0.5−	1999 04 16	704	0.0	0.3+				

1999 HR_2 = 1968 UF_3 = 1991 RO_9 = 1992 UA_{10}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	47.45679		(2000.0)	**P**		**Q**	
n	0.20420622	ω	64.66251	−0.35391488		−0.91307655	
a	2.8559904	Ω	47.64025	+0.72888379		−0.40498732	
e	0.2158010	i	15.91095	+0.58606542		−0.04771256	
P	4.83	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1968 10 26	095	(5.7−	7.0−)	1997 11 06	704	0.7−	1.4+	1999 04 15	704	0.1−	0.2−
1991 09 04	413	0.9−	0.1+	1997 11 06	704	0.7−	0.7+	1999 04 16	704	0.2−	0.1−
1991 09 04	413	0.3−	0.0	1997 11 06	704	1.2−	0.4+	1999 04 16	704	0.5+	0.2+
1991 09 05	413	0.6−	0.8+	1997 11 06	704	1.0−	0.2+	1999 04 16	704	0.5+	0.5+
1991 09 07	413	1.5+	0.8−	1997 11 29	704	1.3+	0.0	1999 04 16	704	0.2+	0.3+
1991 09 07	413	(4.8−	1.5+)	1997 11 29	704	0.9+	0.1−	1999 04 16	704	0.2−	0.8+
1992 10 31	033	0.4−	0.2−	1997 11 29	704	0.2+	1.0−	1999 04 16	327	0.2+	0.4−
1992 10 31	033	0.1+	0.0	1997 11 29	704	1.2+	1.4−	1999 04 16	327	0.6−	0.3+
1992 11 01	033	0.3+	0.4+	1997 11 29	704	1.1+	0.5−	1999 04 16	327	0.1−	0.4+
1992 11 23	033	0.1−	0.5−	1999 04 15	704	0.3−	0.3−	1999 04 23	327	0.1+	0.3−
1992 11 23	033	0.5+	0.0	1999 04 15	704	0.5+	0.6−	1999 04 23	327	0.1−	0.1−
1997 11 06	704	1.5−	1.7+	1999 04 15	704	0.4+	0.5+	1999 04 23	327	0.0	0.3−

2061 P-L = 1984 BT_3 = 1988 GG_2

Id. G. V. Williams (*MPC* 25075, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	321.78367		(2000.0)	**P**		**Q**	
n	0.27104465	ω	267.96744	−0.65762408		+0.75135924	
a	2.3646970	Ω	320.73353	−0.65228460		−0.60421500	
e	0.1799749	i	4.95605	−0.37690234		−0.26529894	
P	3.64	H	14.8	G	0.15	U	2

Residuals in seconds of arc

1960 09 24	675	0.0	0.8+	1996 09 20	327	0.6+	0.5+	1999 04 15	704	1.5−	0.9−
1960 09 26	675	0.3−	1.2+	1999 03 23	704	1.6+	0.3+	1999 04 15	704	0.2+	1.0−
1960 09 28	675	0.6−	1.0−	1999 03 23	704	0.3+	0.5+	1999 04 17	704	0.6−	0.7−
1960 09 29	675	0.5+	0.1+	1999 03 23	704	1.2+	0.1+	1999 04 17	704	0.2+	0.2+
1960 10 17	675	1.1−	2.2+	1999 03 23	704	0.1+	0.3−	1999 04 17	704	0.5−	0.9+
1960 10 22	675	0.9−	0.2+	1999 03 25	704	1.9+	0.4−	1999 04 17	704	0.6−	0.4+
1960 10 25	675	0.9−	0.5+	1999 03 25	704	1.8+	0.7−	1999 04 17	704	0.1+	0.2−
1960 10 26	675	0.1+	0.1+	1999 03 25	704	0.1−	1.2+	1999 04 20	704	0.2+	0.5+
1984 01 25	675	0.8−	0.3+	1999 03 25	704	0.5−	1.2+	1999 04 20	704	0.1+	0.0
1984 01 26	675	0.4+	0.0	1999 03 25	704	0.9−	0.9+	1999 04 20	704	0.9−	0.1+
1988 04 13	054	2.2+	0.1−	1999 04 15	704	0.1−	0.2−	1999 04 20	704	0.4−	0.8+
1996 09 20	327	0.5+	0.0	1999 04 15	704	0.4−	0.4+	1999 04 20	704	1.1−	0.7+
1996 09 20	327	0.0	0.4+	1999 04 15	704	(1.1+	3.9−)				

2616 P-L = 1993 FE_5

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	301.27870		(2000.0)	**P**		**Q**	
n	0.25705395	ω	37.55773	+0.35761594		−0.93318169	
a	2.4497393	Ω	31.53432	+0.83934706		+0.30437010	
e	0.0125720	i	3.92671	+0.40939878		+0.19113027	
P	3.83	H	15.2	G	0.15	U	6

Residuals in seconds of arc

1960 09 24	675	0.2−	0.4−	1960 09 28	675	1.0−	0.1+	1993 03 23	809	0.4+	1.0+
1960 09 24	675	0.7+	0.9+	1960 09 29	675	0.4+	0.4+	1993 03 23	691	0.6−	0.6−
1960 09 26	675	0.9−	0.3−	1960 09 29	675	0.8+	0.2+	1993 03 23	691	0.1−	0.4−
1960 09 26	675	0.1+	0.2+	1993 03 17	809	1.4−	1.1+	1993 03 23	691	0.3+	0.7−
1960 09 28	675	0.1+	1.1−	1993 03 18	809	1.4+	0.5−				

2786 P-L = 1999 CF_{120}

Id. M. E. Sansaturio, A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	14.89443		(2000.0)	**P**		**Q**	
n	0.23811903	ω	86.38118	−0.21747169		−0.97399748	
a	2.5779430	Ω	16.59873	+0.78379669		−0.21304725	
e	0.1448988	i	12.84777	+0.58169477		−0.07706989	
P	4.14	H	15.0	G	0.15	U	4

Residuals in seconds of arc

1960 09 26	675	1.7+	0.3+	1999 01 14	704	0.6−	0.4+	1999 02 11	704	0.3+	0.5−
1960 09 28	675	0.9−	0.7−	1999 01 14	704	0.2−	0.1+	1999 02 11	704	0.0	0.2−
1960 09 29	675	0.5−	0.7+	1999 01 14	704	0.8+	0.1+	1999 02 18	704	0.8+	1.1+
1960 10 22	675	0.2+	0.2−	1999 01 14	704	0.6−	0.9−	1999 02 18	704	0.3−	0.6−
1960 10 26	675	0.6−	0.1−	1999 01 14	704	0.9−	1.4−	1999 02 18	704	0.0	0.0
1998 12 24	699	0.0	0.2−	1999 02 11	704	0.7+	0.8+	1999 02 18	704	0.5−	0.1−
1998 12 24	699	0.6+	0.1+	1999 02 11	704	0.2−	0.5+	1999 02 18	704	0.0	0.4−
1998 12 24	699	0.3−	1.6+	1999 02 11	704	0.3+	0.2−				

3021 P-L = 1998 MF_{34}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	132.17424		(2000.0)	**P**		**Q**	
n	0.17613708	ω	245.63326	−0.97461813		+0.13152062	
a	3.1518741	Ω	301.46039	−0.02639175		−0.87109625	
e	0.0938378	i	12.26238	−0.22231278		−0.47317401	
P	5.60	H	12.9	G	0.15	U	5

Residuals in seconds of arc

1960 09 24	675	0.5+	0.2−	1996 02 16	566	0.1−	0.6+	1998 06 26	704	0.8+	0.1−
1960 09 24	675	0.1−	0.4+	1996 02 16	566	0.3−	0.8+	1998 06 26	704	1.1+	0.6+
1960 09 25	675	1.5−	0.3+	1998 06 24	704	0.4−	1.4−	1998 06 28	809	0.2−	1.7+
1960 09 25	675	(2.9−	0.7−)	1998 06 24	704	0.4+	1.7−	1998 06 28	809	0.7−	1.9+
1960 09 26	675	0.9+	0.3+	1998 06 24	704	0.6−	0.7+	1998 06 28	809	1.5−	1.3+
1960 09 26	675	0.1+	0.7+	1998 06 24	704	0.9−	1.0−	1998 07 01	809	0.2+	1.4−
1960 09 28	675	0.4+	0.2−	1998 06 24	704	0.4+	1.1+	1998 07 01	809	0.2+	1.2−
1960 09 28	675	0.3−	1.1−	1998 06 26	704	1.2+	1.2+	1998 07 01	809	0.2−	1.5−
1996 02 16	566	0.7+	0.5−	1998 06 26	704	0.2−	0.3+				

3050 P-L = 1999 FW_5

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	85.84760		(2000.0)	**P**		**Q**	
n	0.18702981	ω	71.09348	+0.88567906		−0.45226933	
a	3.0282763	Ω	315.63099	+0.34905137		+0.79771320	
e	0.1239294	i	8.63593	+0.30616292		+0.39888107	
P	5.27	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1960 09 24	675	0.6+	0.4−	1960 09 28	675	1.9−	0.0	1997 10 30	566	0.2−	0.6+
1960 09 24	675	0.7−	0.4+	1960 09 28	675	0.2−	0.0	1999 03 16	910	0.2−	0.2−
1960 09 25	675	1.5+	0.2−	1960 09 28	675	0.5+	0.2+	1999 03 16	910	0.4−	0.1−
1960 09 25	675	1.8+	0.2−	1960 09 29	675	0.2−	0.2−	1999 03 16	910	0.3+	0.3+
1960 09 25	675	0.2+	1.1−	1960 09 29	675	2.2−	0.3−	1999 03 19	910	0.2−	0.2−
1960 09 26	675	0.1−	0.6+	1960 10 24	675	1.2+	0.1−	1999 03 19	910	0.1+	0.3−
1960 09 26	675	0.8+	0.3−	1960 10 26	675	1.2+	0.1+	1999 03 19	910	0.1+	0.1+
1960 09 27	675	1.0−	0.1+	1997 10 30	566	0.4−	0.1+				
1960 09 27	675	0.6−	0.1+	1997 10 30	566	0.0	0.5+				

4050 P-L = 1981 UL_{21} = 1986 UL_2

Id. E. Bowell (*MPC* 20514), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	82.92502		(2000.0)	**P**		**Q**	
n	0.19093562	ω	241.31574	+0.09689591		−0.99309052	
a	2.9868362	Ω	203.40430	+0.96141611		+0.11059636	
e	0.0635471	i	9.59362	+0.25746892		−0.03923857	
P	5.16	H	13.6	G	0.15	U	2

Residuals in seconds of arc

1960 09 24	675	0.8−	0.1−	1986 10 27	010	(1.9−	5.9−)	1999 04 06	704	0.2+	0.0
1960 09 25	675	0.0	1.3+	1991 10 09	691	0.1−	0.2+	1999 04 15	704	1.1−	1.5−
1960 09 26	675	1.1+	0.3+	1991 10 09	691	0.0	0.3+	1999 04 15	704	0.8−	0.3+
1960 09 28	675	0.1+	0.5+	1991 10 09	691	0.1−	0.2+	1999 04 15	704	0.6+	1.0+
1960 10 17	675	0.8−	0.7+	1999 03 20	704	0.1−	0.4−	1999 04 15	704	0.1−	0.6−
1960 10 22	675	0.0	1.3−	1999 03 20	704	0.2+	0.5+	1999 04 15	704	0.2+	1.2+
1960 10 24	675	0.0	2.0+	1999 03 20	704	0.1−	0.1+	1999 04 17	704	0.0	1.0+
1960 10 26	675	0.5−	0.2−	1999 03 20	704	0.3−	1.1+	1999 04 17	704	0.1−	0.6+
1981 10 24	675	0.1+	0.6−	1999 04 06	704	0.3−	0.2−	1999 04 17	704	0.1+	1.9+
1981 10 25	675	0.2−	0.3+	1999 04 06	704	0.9+	0.3+	1999 04 17	704	(2.5−	0.8+)
1981 10 26	675	0.0	0.3+	1999 04 06	704	1.6+	0.3−	1999 04 17	704	0.6−	0.1+
1986 10 27	010	(5.0−	8.7−)	1999 04 06	704	0.8+	0.9−				

4128 P-L = 1994 JM_8 = 1999 FV_{25}

Id. G. V. Williams (*MPC* 34265), M. E. Sansaturio, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	22.29608		(2000.0)	**P**		**Q**	
n	0.19180323	ω	323.03112	−0.89335792		−0.44816674	
a	2.9778222	Ω	190.49264	+0.44304302		−0.86643327	
e	0.0563991	i	10.28992	+0.07499673		−0.22009082	
P	5.14	H	13.6	G	0.15	U	3

Residuals in seconds of arc

1960 09 24	675	0.7−	1.3+	1999 03 19	704	(2.3−	0.4+)	1999 04 12	704	1.2+	0.4−
1960 09 25	675	0.1−	0.4+	1999 03 20	704	0.4−	0.3+	1999 04 15	704	2.0−	0.6+
1960 09 26	675	0.1+	0.4−	1999 03 20	704	0.2−	0.2+	1999 04 15	704	0.4−	0.8−
1960 09 28	675	0.8+	0.5−	1999 03 20	704	0.1−	0.7−	1999 04 15	704	1.4−	0.6+
1960 10 17	675	0.4+	0.0	1999 03 20	704	1.0−	1.5−	1999 04 15	704	0.8+	0.1+
1960 10 22	675	1.0−	0.9−	1999 03 20	704	0.2+	0.5−	1999 04 16	704	(2.4−	0.7+)
1960 10 24	675	0.3+	1.0+	1999 04 07	699	0.5+	0.2−	1999 04 16	704	0.3+	0.2−
1994 05 07	104	0.6−	0.1−	1999 04 07	699	0.5+	0.0	1999 04 16	704	1.5−	1.2−
1994 05 07	104	1.1−	0.4+	1999 04 07	699	0.2+	0.7+	1999 04 19	704	0.8−	0.6−
1994 05 07	104	0.3+	0.2−	1999 04 10	699	0.1+	0.8−	1999 04 19	704	0.6+	0.2+
1994 05 07	104	1.3+	0.6−	1999 04 10	699	1.1+	0.0	1999 04 19	704	0.7+	1.3+
1999 03 19	704	0.5−	0.4+	1999 04 10	699	0.2+	0.1+	1999 04 19	704	0.4+	1.3+
1999 03 19	704	0.3−	1.6+	1999 04 12	704	0.5+	0.8+	1999 04 19	704	0.4+	0.5+
1999 03 19	704	0.2+	0.8+	1999 04 12	704	0.9+	1.3−				

4240 P-L = 1999 CO_{53}

Id. A. Gnädig, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	287.83195		(2000.0)	**P**		**Q**	
n	0.19109906	ω	231.11605	−0.65091221		+0.75913535	
a	2.9851330	Ω	358.24758	−0.63349212		−0.54691465	
e	0.0487829	i	9.74984	−0.41833125		−0.35298426	
P	5.16	H	15.2	G	0.15	U	6

Residuals in seconds of arc

1960 09 24	675	0.8+	0.4−	1960 10 26	675	0.9−	0.3+	1999 02 13	704	0.8−	0.9+
1960 09 25	675	0.2+	0.8+	1999 02 10	704	0.2+	0.1−	1999 02 13	704	0.1−	0.7−
1960 09 26	675	0.3+	0.3+	1999 02 10	704	0.2+	0.3−	1999 02 13	704	(2.1+	0.7+)
1960 09 28	675	0.2+	0.5+	1999 02 10	704	(3.9−	1.4−)				
1960 10 22	675	0.4−	1.3−	1999 02 10	704	0.6+	0.2+				

4644 P-L = 1999 FW_{51}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	46.60851		(2000.0)	**P**		**Q**	
n	0.21687735	ω	287.03043	−0.40679803		−0.91345693	
a	2.7436366	Ω	187.00098	+0.86766886		−0.38273413	
e	0.0031646	i	4.97675	+0.28577282		−0.13824264	
P	4.54	H	14.5	G	0.15	U	6

Residuals in seconds of arc

1960 09 24	675	0.5−	0.1+	1960 10 22	675	0.3+	0.2−	1999 03 20	704	0.4−	0.9−
1960 09 26	675	0.4+	0.5−	1960 10 25	675	0.1−	0.8−	1999 03 23	704	1.7+	0.6−
1960 09 26	675	0.1+	0.2+	1999 03 20	704	0.8+	1.1+	1999 03 23	704	0.3−	0.9+
1960 09 27	675	0.7+	0.6+	1999 03 20	704	0.2+	1.6−	1999 03 23	704	0.0	1.3+
1960 09 28	675	0.9−	0.7−	1999 03 20	704	0.5−	0.2+	1999 03 23	704	0.3+	0.1+
1960 10 17	675	0.0	1.3+	1999 03 20	704	0.5+	0.7+	1999 03 23	704	2.3−	1.2−

4861 P-L = 1998 FG_3

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	193.57117		(2000.0)	**P**		**Q**	
n	0.35325852	ω	269.05214	−0.00047728		−0.99997583	
a	1.9818660	Ω	181.05306	+0.99975418		−0.00032341	
e	0.1292313	i	22.17234	+0.02216635		−0.00694473	
P	2.79	H	15.9	G	0.15	U	5

Residuals in seconds of arc

1960 09 24	675	0.5−	0.2−	1998 03 20	704	1.1−	0.9+	1998 03 25	704	1.2+	0.7−
1960 09 26	675	0.2−	0.0	1998 03 24	704	0.9+	0.2−	1998 03 25	704	0.8+	0.7+
1960 09 27	675	0.6+	1.1+	1998 03 24	704	0.5−	0.5+	1998 04 24	704	0.8+	0.1−
1960 09 28	675	0.1+	0.7−	1998 03 24	704	0.9+	0.8+	1998 04 24	704	0.1−	0.4+
1998 03 20	704	1.2+	0.4−	1998 03 24	704	1.5−	0.5−	1998 04 24	704	0.8+	0.4+
1998 03 20	704	0.5+	0.6−	1998 03 24	704	1.2−	0.6−	1998 04 24	704	0.0	0.1+
1998 03 20	704	0.4−	0.1+	1998 03 25	704	0.0	0.2+	1998 04 24	704	1.4−	1.0−
1998 03 20	704	0.6−	0.5−	1998 03 25	704	0.2−	0.6+				

4868 P-L = 1962 CE_1 = 1997 TT_{11} = 1998 XT_{48} = 1999 BG_{21}

Id. A. Milani (*MPC* 34265), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	4.04426		(2000.0)	**P**		**Q**	
n	0.18533960	ω	79.95320	−0.18412042		−0.98283732	
a	3.0466593	Ω	20.66727	+0.88864634		−0.17141847	
e	0.1825888	i	1.85462	+0.42000876		−0.06816531	
P	5.32	H	14.8	G	0.15	U	2

Residuals in seconds of arc

1960 09 24	675	0.4+	0.5−	1997 10 08	691	0.0	0.1−	1998 12 14	704	0.4+	1.2−
1960 09 24	675	0.2−	0.3+	1997 10 08	691	0.1+	0.2+	1998 12 14	704	0.2−	0.3+

1960 09 26	675	0.2+	0.5+	1997 10 08	691	0.1+	0.0	1998 12 17	704	0.2−	0.5+
1960 09 26	675	0.0	0.9−	1997 10 09	691	0.3−	0.7+	1998 12 17	704	0.3+	0.5+
1960 09 28	675	0.2+	0.3−	1997 10 09	691	0.5−	0.2+	1998 12 17	704	0.0	0.6−
1960 09 28	675	0.0	0.4−	1997 10 09	691	0.3−	0.1+	1998 12 17	704	0.2+	0.7+
1962 02 10	033	1.1−	0.4+	1997 10 23	691	0.3+	0.4+	1998 12 17	704	1.3−	1.3−
1962 02 10	033	1.2+	0.4+	1997 10 23	691	0.1−	0.2−	1999 01 16	704	2.6+	0.2−
1997 10 07	691	0.1+	0.3+	1997 10 23	691	0.1−	0.2+	1999 01 16	704	1.5−	0.3−
1997 10 07	691	0.4−	0.1−	1998 12 14	704	0.1−	0.6+	1999 01 16	704	0.3+	0.1−
1997 10 07	691	0.3+	0.2+	1998 12 14	704	0.6−	0.8+	1999 01 16	704	(3.9−	1.0+)

6068 P-L = 1999 FM_{17}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	130.25568		(2000.0)		**P**	**Q**	
n	0.19199748	ω	215.82844		+0.66241983	−0.74888490	
a	2.9758134	Ω	192.72468		+0.70607949	+0.63273861	
e	0.1053044	i	5.01926		+0.25030327	+0.19701081	
P	5.13	H	14.3	G	0.15	U	2

Residuals in seconds of arc

1960 09 24	675	0.3+	0.1+	1991 10 01	691	0.2−	0.5+	1999 03 12	691	0.6−	0.3+
1960 09 25	675	0.9+	0.6+	1991 10 01	691	0.0	0.6+	1999 03 12	691	0.7−	0.7+
1960 09 26	675	0.0	0.4+	1998 01 31	691	0.1+	0.3+	1999 03 23	691	0.0	0.1+
1960 09 28	675	0.1+	0.2+	1998 01 31	691	0.1+	0.2+	1999 03 23	691	0.3+	0.5+
1960 10 17	675	2.2−	0.3−	1998 01 31	691	0.1−	0.2+	1999 03 23	691	0.1+	1.5+
1960 10 22	675	0.7−	0.7+	1999 03 10	691	0.2+	0.3+	1999 03 24	691	1.2+	0.1+
1960 10 24	675	0.2+	1.4+	1999 03 10	691	0.4+	0.3+	1999 03 24	691	0.5+	0.4+
1960 10 26	675	0.0	0.8+	1999 03 10	691	0.3+	0.4+	1999 03 24	691	0.4+	0.6+
1991 10 01	691	0.2−	0.4+	1999 03 12	691	0.5−	0.4+				

6323 P-L = 1999 FG_{20}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	172.52831		(2000.0)		**P**	**Q**	
n	0.21751116	ω	2.00466		+0.99623911	+0.08604017	
a	2.7383042	Ω	353.03464		−0.08062474	+0.87725285	
e	0.1257010	i	4.84070		−0.03173774	+0.47225472	
P	4.53	H	16.0	G	0.15	U	4

Residuals in seconds of arc

1960 09 24	675	0.1+	0.7−	1960 10 26	675	0.3+	0.8−	1999 03 19	691	0.5−	0.2−
1960 09 25	675	0.4+	0.6−	1996 08 15	608	0.0	0.2−	1999 03 19	691	0.2+	0.2−
1960 09 26	675	0.7−	0.4+	1996 08 15	608	0.1−	0.2−	1999 03 19	691	0.0	0.2−
1960 09 28	675	0.2−	0.8−	1996 08 17	566	0.1−	0.1+	1999 03 25	691	0.2−	0.7−
1960 10 17	675	0.8+	0.4−	1996 08 17	566	0.2+	0.1−	1999 03 25	691	0.4−	0.3−
1960 10 22	675	0.4+	1.3+	1996 08 17	566	0.1+	0.0	1999 03 25	691	0.2−	0.7−

6750 P-L = 1992 GQ_3 = 1999 CV_{46}

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	309.98440		(2000.0)		**P**	**Q**	
n	0.26860837	ω	183.29584		−0.91173738	+0.41031617	
a	2.3789740	Ω	20.96182		−0.37562770	−0.81370568	
e	0.1121626	i	3.10542		−0.16624916	−0.41173256	
P	3.67	H	15.7	G	0.15	U	2

Residuals in seconds of arc

1960 09 24	675	0.2+	0.5−	1992 04 06	809	0.0	0.5−	1999 02 10	704	0.6+	0.5−
1960 09 24	675	0.4−	1.5−	1992 04 06	809	0.6+	1.1−	1999 02 13	704	1.0−	1.3−
1960 09 26	675	0.5+	0.7−	1992 04 06	809	0.4+	1.3−	1999 02 13	704	0.5+	1.2−
1960 09 26	675	0.3+	0.1+	1997 09 28	691	0.3+	0.5−	1999 02 13	704	0.8−	0.8−
1960 09 28	675	0.0	0.6−	1997 09 28	691	0.2+	0.5−	1999 02 13	704	0.3+	0.2−
1960 09 28	675	1.0+	0.0	1997 09 28	691	0.3+	0.7−	1999 02 13	704	1.4−	0.5+
1992 04 04	809	1.3−	0.1−	1999 02 10	704	0.2+	0.7−	1999 02 23	699	0.2−	0.4+
1992 04 04	809	0.7−	0.0	1999 02 10	704	0.5−	0.2−	1999 02 23	699	1.0+	1.4+
1992 04 04	809	0.1−	0.3−	1999 02 10	704	0.0	0.7+	1999 02 23	699	0.5+	0.4+

9516 P-L = 1992 ER_{14} = 1993 PR_6

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	262.70267		(2000.0)		**P**	**Q**	
n	0.29769918	ω	125.34041		+0.44770037	+0.89416182	
a	2.2213532	Ω	171.24913		−0.83314256	+0.41966455	
e	0.0725981	i	2.35279		−0.32471194	+0.15606505	
P	3.31	H	16.8	G	0.15	U	5

Residuals in seconds of arc

1960 10 22	675	0.9−	1.2−	1992 03 03	809	1.1−	0.0	1993 08 15	010	0.4−	0.3−
1960 10 24	675	0.9+	0.2+	1992 03 06	809	(3.0+	1.1−)	1993 08 15	010	0.6+	0.1+
1960 10 26	675	0.2+	0.7+	1992 03 09	809	(6.1−	2.1−)	1993 08 17	010	0.2−	0.7−
1992 03 01	809	0.7+	1.0−	1993 08 15	010	0.3+	0.2+				

9549 P-L = 1999 FN_{14}

Id. A. Doppler, M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	78.77322		(2000.0)		**P**	**Q**	
n	0.24214007	ω	69.71658		+0.08653955	−0.99301047	
a	2.5493235	Ω	15.96428		+0.76999295	+0.01555091	
e	0.1516856	i	16.96583		+0.63215644	+0.11699729	
P	4.07	H	13.9	G	0.15	U	3

Residuals in seconds of arc

1960 10 17	675	0.5−	0.7−	1999 03 19	704	0.0	0.8−	1999 04 09	699	1.2+	0.1+
1960 10 22	675	1.6−	1.4+	1999 03 19	691	0.0	0.7+	1999 04 09	699	0.6+	0.3−
1960 10 24	675	0.7+	0.2+	1999 03 19	691	0.0	0.7+	1999 04 16	703	0.3−	0.7−
1960 10 26	675	0.4+	0.5+	1999 03 20	704	0.2+	0.9+	1999 04 16	703	0.3+	0.0
1998 01 24	566	0.3−	0.1+	1999 03 20	704	0.0	0.1−	1999 04 16	703	0.7−	0.1+
1998 01 24	566	0.4+	0.0	1999 03 20	704	0.8+	0.4−	1999 04 16	703	0.1+	0.2+
1998 01 24	566	0.3−	0.2+	1999 03 20	704	0.2−	0.4+	1999 04 17	703	0.9−	0.4−
1999 03 19	704	0.1+	0.1−	1999 03 20	704	0.4−	0.1+	1999 04 17	703	0.2+	0.1+
1999 03 19	704	0.0	0.1+	1999 03 23	691	0.3−	0.9+	1999 04 17	703	0.5+	0.3−
1999 03 19	704	0.0	0.5−	1999 03 23	691	0.0	0.1+	1999 04 17	703	0.6−	0.3+
1999 03 19	704	0.3+	0.7−	1999 03 23	691	0.1−	0.5+				
1999 03 19	691	0.0	0.6+	1999 04 09	699	0.5+	0.2−				

1119 T-1 = 1992 SZ_{16}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	105.84609		(2000.0)		**P**	**Q**	
n	0.29690807	ω	228.30589		−0.78075989	+0.62476536	
a	2.2252973	Ω	350.34710		−0.55600927	−0.70131170	
e	0.0478550	i	3.10018		−0.28507487	−0.34326396	
P	3.32	H	16.3	G	0.15	U	6

Residuals in seconds of arc

1971 03 24	675	0.3+	0.9−	1971 04 02	675	0.2−	0.3+	1992 09 27	033	0.1+	0.2−
1971 03 25	675	1.2−	0.4+	1992 09 24	033	0.5+	0.6+	1992 09 28	033	0.9−	0.3+
1971 03 25	675	0.6+	0.3+	1992 09 24	033	0.6+	0.7−				
1971 03 26	675	0.6+	0.4−	1992 09 26	033	0.2−	0.2−				

2117 T-1 = 1996 UE_3

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	26.57814		(2000.0)		**P**	**Q**	
n	0.29022528	ω	216.57892		−0.56211323	+0.82683002	
a	2.2593277	Ω	19.24289		−0.74408562	−0.49527752	
e	0.1216967	i	3.39467		−0.36106136	−0.26655638	
P	3.40	H	15.0	G	0.15	U	6

Residuals in seconds of arc

1971 03 24	675	0.4+	1.2−	1996 10 30	589	1.8−	0.7+	1996 11 01	589	0.8−	0.2−
1971 03 25	675	0.2−	0.6+	1996 10 30	589	1.3+	1.3−	1996 11 01	589	0.3−	0.2+
1971 03 25	675	0.0	0.1+	1996 10 31	589	0.7−	1.0+	1996 11 04	589	0.5−	0.2+
1971 03 26	675	0.1−	0.7+	1996 10 31	589	0.8+	1.0−	1996 11 04	589	0.3+	0.2+
1971 03 27	675	(2.2−	0.7+)	1996 10 31	589	0.2−	0.2+	1996 11 06	589	1.3+	0.4−
1971 04 02	675	0.3+	0.5−	1996 11 01	589	0.0	0.1+	1996 11 06	589	0.8+	0.3−
1996 10 30	589	0.7+	0.0	1996 11 01	589	0.1−	1.2−	1996 11 06	589	0.5−	1.2+
1996 10 30	589	(3.3+	2.4−)	1996 11 01	589	0.3−	0.7+				

4025 T-1 = 1999 FM_{57}

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	325.53597		(2000.0)	**P**	**Q**	
n	0.24562412	ω	77.23169	−0.95335149	+0.29777468	
a	2.5251589	Ω	120.07350	−0.29437552	−0.88081428	
e	0.0641001	i	3.27973	−0.06681305	−0.36809842	
P	4.01	H	14.8	G 0.15	U 6	

Residuals in seconds of arc

1971 03 24	675	1.2+	1.1−	1971 04 16	675	1.7+	1.4+	1999 03 20	704	0.5−	0.7−
1971 03 25	675	1.2+	0.4−	1971 04 16	675	0.3−	1.5+	1999 03 20	704	0.6+	0.5−
1971 03 25	675	0.7+	0.2+	1971 05 13	675	1.1−	0.2+	1999 03 23	704	0.5+	0.7+
1971 03 26	675	3.0+	1.3−	1971 05 14	675	1.4+	1.1−	1999 03 23	704	0.5+	0.5+
1971 03 26	675	2.7−	0.7+	1971 05 16	675	0.8−	0.2+	1999 03 23	704	0.2−	1.3+
1971 03 26	675	1.4−	1.2+	1999 03 20	704	0.4−	1.0−	1999 03 23	704	0.4+	1.0+
1971 03 27	675	3.9−	1.0−	1999 03 20	704	1.1−	0.1+	1999 03 23	704	0.5+	0.5+
1971 04 02	675	0.4+	1.2−	1999 03 20	704	0.0	1.0−				

4827 T-1 = 1999 GC_2

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	71.25584		(2000.0)	**P**	**Q**	
n	0.21039770	ω	257.61560	+0.17889121	−0.98385349	
a	2.7996821	Ω	182.10279	+0.95086550	+0.17432331	
e	0.1517840	i	8.62002	+0.25269097	+0.04054248	
P	4.68	H	13.3	G 0.15	U 1	

Residuals in seconds of arc

1971 04 16	675	1.3−	0.7+	1999 03 22	699	1.3+	0.3+	1999 04 14	118	0.2+	0.1−
1971 04 16	675	0.1−	1.0+	1999 03 22	699	(2.4+	0.1−)	1999 04 15	704	1.9+	1.2+
1971 05 13	675	0.0	0.6−	1999 04 06	704	0.1+	0.1−	1999 04 15	704	1.5−	1.1+
1971 05 14	675	0.9+	1.2−	1999 04 06	704	0.0	0.8−	1999 04 15	704	0.8+	0.6+
1971 05 16	675	0.7+	0.7−	1999 04 06	704	0.1+	0.6−	1999 04 16	704	0.5−	0.4−
1992 09 29	691	0.6−	1.1−	1999 04 06	704	0.0	0.4−	1999 04 16	704	1.5+	1.4+
1992 09 29	691	0.2−	0.8+	1999 04 06	704	0.2−	0.1−	1999 04 16	704	0.1−	2.0−
1992 09 29	691	0.5−	0.1+	1999 04 08	118	0.1+	0.4−	1999 04 16	704	0.2−	1.7−
1995 05 29	691	2.0+	0.5+	1999 04 08	118	0.3+	0.3−	1999 04 17	118	1.1−	0.4+
1996 06 20	691	0.3−	0.3+	1999 04 08	118	0.7+	0.4−	1999 04 17	118	0.6−	0.1+
1996 06 20	691	0.0	0.0	1999 04 08	118	0.4+	0.0	1999 04 17	118	0.5−	0.3+
1996 06 20	691	0.2−	0.0	1999 04 09	118	0.5−	0.6−	1999 04 18	118	0.3−	0.8+
1997 10 29	566	0.5+	0.6+	1999 04 09	118	0.6−	0.5−	1999 04 18	118	1.3−	1.0+
1997 10 29	566	0.5+	0.7+	1999 04 09	118	0.6−	0.5−	1999 04 18	118	0.7−	0.4+
1997 10 29	566	0.3+	0.4+	1999 04 12	118	0.5+	0.2+	1999 04 19	118	0.2−	0.1−
1999 03 19	691	0.6−	0.3−	1999 04 12	118	0.2−	0.9+	1999 04 19	118	0.2+	0.3−
1999 03 19	691	0.7−	0.3−	1999 04 12	118	0.6−	0.6+	1999 04 29	118	0.3+	0.2+
1999 03 19	691	1.0−	0.3−	1999 04 14	118	0.0	0.2+	1999 04 29	118	0.4+	1.2+
1999 03 22	699	0.9+	0.1+	1999 04 14	118	0.0	0.3−	1999 04 29	118	0.9+	1.4+

1361 T-2 = 1999 FK_1

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	314.49560		(2000.0)	**P**	**Q**	
n	0.21110156	ω	347.45209	−0.91845752	+0.39504992	
a	2.7934555	Ω	215.83631	−0.35997843	−0.85511797	
e	0.0233826	i	1.88619	−0.16386371	−0.33572133	
P	4.67	H	14.4	G 0.15	U 6	

Residuals in seconds of arc

1973 09 19	675	0.4−	0.6+	1973 09 30	675	0.3+	0.7−	1999 03 18	691	0.2−	0.2−
1973 09 19	675	0.4+	0.4−	1973 10 04	675	2.0−	0.3+	1999 03 18	691	0.5−	0.0
1973 09 20	675	0.4+	1.4−	1973 10 04	675	0.2−	1.0−	1999 03 20	704	0.2+	0.3+
1973 09 24	675	0.5+	1.1−	1973 10 04	675	0.2−	0.4−	1999 03 20	704	0.1−	0.8−
1973 09 24	675	2.0+	0.9−	1973 10 04	675	1.6+	0.5+	1999 03 20	704	1.3+	1.0−
1973 09 25	675	0.2+	0.6−	1973 10 05	675	(2.7+	0.4+)	1999 03 20	704	0.1+	0.8+
1973 09 25	675	0.6−	0.1+	1973 10 05	675	0.8+	0.6−	1999 03 20	704	1.3−	0.3+
1973 09 29	675	0.5−	2.2+	1973 10 05	675	0.3+	0.3−	1999 03 23	704	0.0	0.4−
1973 09 29	675	0.2+	0.2−	1973 10 05	675	0.1−	2.2−	1999 03 23	704	0.3+	0.2−
1973 09 29	675	0.9−	1.8+	1999 03 16	691	0.2−	0.4−	1999 03 23	704	0.5+	0.5+
1973 09 29	675	0.5−	2.4+	1999 03 16	691	0.1−	0.2+	1999 03 23	704	0.6−	0.6+
1973 09 30	675	0.8−	0.1+	1999 03 16	691	0.3−	0.1−				
1973 09 30	675	0.5−	1.7+	1999 03 18	691	0.8+	0.4+				

1510 T-2 = 1283 T-1 = 1999 CF_{144}

Id. A. Milani (*MPC* 34271), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	331.52290		(2000.0)	**P**	**Q**	
n	0.17633431	ω	33.57960	−0.82108355	+0.57080531	
a	3.1495234	Ω	181.23099	−0.54007357	−0.77786748	
e	0.1282537	i	4.69793	−0.18477645	−0.26287541	
P	5.59	H	14.4	G 0.15	U 4	

Residuals in seconds of arc

1971 03 24	675	1.9−	0.8−	1973 09 30	675	1.1−	1.6+	1999 03 19	704	0.7−	1.6−
1971 03 24	675	1.8+	0.7+	1973 10 04	675	1.0+	1.5−	1999 03 20	704	0.3+	0.8+
1971 03 25	675	0.5−	1.3−	1973 10 05	675	0.9+	1.2−	1999 03 20	704	0.7−	0.2+
1971 03 25	675	1.3−	1.5−	1973 10 05	675	1.4+	0.6−	1999 03 20	704	0.6−	0.7+
1971 03 26	675	1.2+	1.1−	1999 02 08	568	0.1+	0.4+	1999 04 07	699	0.2−	0.1+
1971 03 27	675	0.5−	1.4−	1999 02 08	568	0.0	0.4+	1999 04 07	699	0.9+	0.3−
1971 04 02	675	1.0−	0.6−	1999 02 09	568	0.2−	0.3+	1999 04 07	699	1.1+	0.3−
1973 09 24	675	0.5−	0.7−	1999 02 09	568	0.1+	0.6+	1999 04 10	699	1.6+	0.4+
1973 09 24	675	1.0−	0.8−	1999 03 19	704	0.9−	0.3−	1999 04 10	699	0.1−	0.1−
1973 09 29	675	(0.6+	3.1−)	1999 03 19	704	0.9−	0.4+	1999 04 10	699	0.7+	0.1+
1973 09 30	675	1.1+	1.7−	1999 03 19	704	(2.0−	2.4−)				

2042 T-2 = 1999 FC_{11}

Id. A. Gnädig

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	171.29304		(2000.0)	**P**	**Q**	
n	0.21386736	ω	200.14005	+0.96105933	−0.27631808	
a	2.7693194	Ω	175.89534	+0.26000156	+0.89968399	
e	0.1567247	i	2.91846	+0.09361705	+0.33796011	
P	4.61	H	14.8	G 0.15	U 2	

Residuals in seconds of arc

1973 09 19	675	1.2+	0.7+	1973 09 29	675	2.4+	2.0−	1996 10 17	566	0.2−	0.1−
1973 09 19	675	0.7−	0.5−	1973 09 30	675	0.7+	1.0+	1996 10 17	566	0.3−	0.2+
1973 09 20	675	2.2+	0.1−	1973 09 30	675	0.2+	0.4+	1998 03 31	910	0.2−	0.5+
1973 09 24	675	1.0−	0.8−	1973 09 30	675	0.6+	0.5+	1998 03 31	910	0.0	0.0
1973 09 24	675	1.9−	0.9+	1973 09 30	675	0.4−	0.1+	1998 03 31	910	0.3+	0.1−
1973 09 24	675	0.4−	0.7−	1973 10 04	675	0.0	0.0	1999 03 10	691	0.0	0.6+
1973 09 24	675	0.7−	1.0+	1973 10 04	675	1.5−	1.7+	1999 03 10	691	0.1+	0.5+
1973 09 25	675	0.9+	1.8−	1973 10 04	675	0.1−	0.9+	1999 03 10	691	0.1+	0.7+
1973 09 25	675	1.0−	0.2−	1973 10 04	675	1.5−	2.2+	1999 03 17	691	0.1+	0.1+
1973 09 25	675	2.0+	2.2−	1973 10 05	675	0.7+	0.2−	1999 03 17	691	0.3+	0.3+
1973 09 25	675	1.2−	0.6+	1973 10 05	675	0.7−	0.6+	1999 03 17	691	0.4+	0.1−

1973 09 29	675	1.1−	1.1+	1973 10 05	675	0.0	0.2+	1999 03 24	691	0.2−	0.1+
1973 09 29	675	1.3+	2.3−	1973 10 05	675	1.1−	0.3−	1999 03 24	691	0.2+	0.3+
1973 09 29	675	0.3+	1.2+	1996 10 17	566	0.4+	0.3+	1999 03 24	691	0.2−	0.3+

2166 T-2 = 1999 FS$_{24}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Gnädig

M	40.23392		(2000.0)		**P**	**Q**	
n	0.17326144	ω	134.25683		−0.69894599	−0.71517445	
a	3.1866530	Ω	0.08595		+0.63094323	−0.61670602	
e	0.0632474	i	4.64224		+0.33672712	−0.32893646	
P	5.69	H	14.6	G	0.15	U	6

Residuals in seconds of arc

1973 09 19	675	1.0+	0.3+	1973 09 30	675	0.9−	0.2+	1999 03 19	704	(0.6+	3.0−)
1973 09 19	675	1.2+	1.8+	1973 09 30	675	0.3−	0.4−	1999 03 19	704	0.5−	1.1−
1973 09 20	675	0.3−	0.8−	1973 10 04	675	1.3+	0.9−	1999 03 20	704	0.3+	1.3+
1973 09 24	675	(2.5−	0.6+)	1973 10 04	675	0.5−	1.1−	1999 03 20	704	0.1+	0.4−
1973 09 25	675	0.6−	0.6−	1973 10 05	675	(0.9+	2.6−)	1999 03 20	704	0.1+	0.6+
1973 09 25	675	0.4+	0.9+	1973 10 05	675	0.3−	1.0−	1999 03 20	704	0.5+	1.3−
1973 09 29	675	(0.1−	4.1+)	1999 03 19	704	0.2−	0.0	1999 03 20	704	1.1−	0.5−

2225 T-2 = 3087 T-3 = 1991 FJ$_5$

Id. D. W. E. Green (*MPC* 14966), G. V. Williams

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	348.96300		(2000.0)		**P**	**Q**	
n	0.25580349	ω	200.83645		−0.79440509	+0.60729215	
a	2.4577162	Ω	16.57132		−0.55176941	−0.71410881	
e	0.1352308	i	2.17153		−0.25391152	−0.34820231	
P	3.85	H	14.6	G	0.15	U	2

Residuals in seconds of arc

1973 09 19	675	1.5+	2.0−	1973 10 05	675	1.2+	0.7−	1996 09 19	691	0.1+	0.3+
1973 09 19	675	2.4+	1.9−	1977 10 12	675	1.9−	0.9+	1996 09 19	691	0.2+	0.2+
1973 09 20	675	3.0+	3.0−	1977 10 12	675	1.3−	1.0+	1996 09 19	691	0.2+	0.4+
1973 09 24	675	1.2−	0.4+	1977 10 16	675	0.2−	1.4−	1996 10 06	809	1.8−	0.6+
1973 09 24	675	1.0−	1.8+	1977 10 16	675	0.1+	1.7−	1996 10 06	809	1.1−	0.1−
1973 09 25	675	1.5+	1.0−	1977 10 17	675	0.2+	0.5+	1996 10 06	809	1.5−	0.6+
1973 09 25	675	0.2−	2.4−	1977 10 17	675	1.2−	0.2+	1998 01 06	688	0.1+	0.2−
1973 09 29	675	0.3+	0.8+	1977 10 21	675	0.3−	0.9+	1998 01 06	688	0.3+	0.0
1973 09 29	675	1.1−	0.6+	1977 10 21	675	1.5−	1.9+	1998 01 07	688	0.5+	0.3−
1973 09 30	675	0.4+	0.6+	1991 03 21	808	2.6−	0.9−	1998 01 07	688	1.0+	0.3−
1973 09 30	675	0.3−	0.0	1991 03 21	808	(7.0−	1.1+)	1998 01 07	688	0.0	0.2+
1973 10 04	675	1.1+	0.4−	1996 09 15	691	0.3+	0.0	1999 02 26	704	0.2+	0.2−
1973 10 04	675	0.6+	0.4+	1996 09 15	691	0.0	0.5+	1999 02 26	704	2.5+	0.0
1973 10 05	675	1.0+	0.4−	1996 09 15	691	0.1+	0.4+				

3163 T-2 = 1990 RU$_{17}$ = 1996 TL$_8$

Id. G. V. Williams (*MPC* 28083, unpublished)

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	343.55804		(2000.0)		**P**	**Q**	
n	0.17395109	ω	110.68681		−0.99371047	+0.09471814	
a	3.1782248	Ω	74.78592		−0.11096959	−0.90443842	
e	0.1340029	i	3.54899		+0.01500821	−0.41595627	
P	5.67	H	13.8	G	0.15	U	3

Residuals in seconds of arc

1973 09 19	675	0.3+	0.8+	1996 10 09	566	0.4−	0.1+	1999 03 23	704	0.2−	0.9−
1973 09 19	675	0.4−	1.9+	1996 10 13	566	0.3+	0.3+	1999 04 06	704	0.4−	0.1+
1973 09 20	675	0.3+	0.7−	1996 10 13	566	0.6−	0.2+	1999 04 06	704	1.4−	0.1+
1973 09 24	675	1.7−	0.3−	1996 10 13	566	0.8−	0.7+	1999 04 06	704	0.5+	0.6−
1973 09 24	675	0.3+	0.7−	1999 01 13	699	1.6−	0.8+	1999 04 06	704	0.5−	0.9−
1973 09 25	675	0.3+	1.2−	1999 01 13	699	1.1−	0.7+	1999 04 06	704	0.2+	0.3+
1973 09 25	675	1.1−	0.5−	1999 01 13	699	0.7−	0.7+	1999 04 12	704	0.1+	0.1−
1973 09 29	675	1.0+	0.1−	1999 02 20	699	0.1−	0.3−	1999 04 12	704	1.0+	0.3+
1973 09 29	675	0.1−	0.9−	1999 02 20	699	0.1−	1.0+	1999 04 12	704	0.7+	0.2−
1973 09 30	675	1.9+	1.1−	1999 02 20	699	0.9+	0.1−	1999 04 12	704	0.0	0.6+
1973 09 30	675	0.5−	2.0−	1999 03 20	704	0.3−	0.4−	1999 04 12	704	1.0−	0.4−
1973 10 04	675	1.5+	0.9−	1999 03 20	704	0.9−	0.5−	1999 04 15	704	0.4+	0.9−
1973 10 04	675	(0.6+	2.8−)	1999 03 20	704	0.8−	0.5−	1999 04 15	704	0.5−	0.8−
1973 10 05	675	1.1+	1.6−	1999 03 20	704	0.3−	0.3−	1999 04 15	704	0.2+	0.6−
1973 10 05	675	1.1+	0.8−	1999 03 23	699	0.1+	0.1−	1999 04 15	704	1.1+	0.3−
1990 09 14	809	1.5−	1.9+	1999 03 23	699	0.4+	0.6−	1999 04 15	704	1.8+	1.2+
1990 09 14	809	(5.8−	2.4+)	1999 03 23	699	0.1+	0.6−	1999 04 16	704	(0.4+	2.1−)
1990 09 14	809	(7.1−	0.4+)	1999 03 23	704	0.2−	0.7−	1999 04 16	704	0.3+	1.9+
1996 10 09	566	1.4+	0.2+	1999 03 23	704	0.1−	0.5−	1999 04 16	704	(0.0	3.3−)
1996 10 09	566	0.2−	0.1+	1999 03 23	704	0.0	0.9−				

3178 T-2 = 2150 T-1 = 1988 VP$_{11}$

Id. G. V. Williams (*MPC* 19329, unpublished), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	52.56885		(2000.0)		**P**	**Q**	
n	0.20158917	ω	344.93104		+0.96667185	−0.25452962	
a	2.8806550	Ω	29.85839		+0.24024797	+0.86463536	
e	0.0681249	i	3.17472		+0.08846724	+0.43315167	
P	4.89	H	13.6	G	0.15	U	4

Residuals in seconds of arc

1971 03 24	675	1.4−	2.3−	1973 09 25	675	1.2−	1.2+	1998 11 18	704	0.7−	0.1−
1971 03 25	675	0.3+	1.0−	1973 09 29	675	0.4+	0.2−	1998 11 18	704	0.7−	0.1−
1971 03 25	675	0.1+	0.5−	1973 09 29	675	0.0	0.2−	1998 11 18	704	0.9+	0.2−
1971 03 26	675	0.3+	0.1+	1973 09 30	675	0.3+	0.9−	1998 11 18	704	0.2−	0.1+
1971 03 27	675	0.5−	1.4+	1973 09 30	675	0.3+	1.1−	1998 11 18	704	0.0	1.1+
1971 04 02	675	(2.9+	2.0−)	1973 10 04	675	0.7+	2.0−	1998 11 20	699	0.8−	0.2+
1973 09 19	675	1.7−	1.2+	1973 10 04	675	1.2+	1.6−	1998 11 20	699	1.0−	0.1+
1973 09 19	675	(0.4+	3.5+)	1973 10 04	675	(0.1−	2.7−)	1998 11 20	699	0.4−	1.0+
1973 09 19	675	0.2−	0.0	1973 10 04	675	1.7+	0.6−	1998 11 21	704	0.1+	0.1+
1973 09 19	675	1.1−	2.0+	1973 10 05	675	2.0+	1.1−	1998 11 21	704	0.1−	0.0
1973 09 20	675	(3.2−	0.3+)	1973 10 05	675	0.6+	2.1−	1998 11 21	704	0.8+	0.4−
1973 09 20	675	0.6+	0.9+	1988 11 03	327	0.6+	0.7−	1998 11 21	704	0.2−	1.0−
1973 09 24	675	0.6−	0.2−	1988 11 03	327	0.0	0.6−	1998 11 21	704	(0.9+	3.7−)
1973 09 24	675	1.1−	1.1+	1996 04 18	809(79.6+	24.6−)		1998 11 24	704	0.1−	0.1−
1973 09 24	675	0.4+	1.1−	1996 04 18	809(78.9+	24.7−)		1998 11 24	704	0.7+	0.1+
1973 09 24	675	0.3−	1.7+	1996 04 18	809(78.7+	24.5−)		1998 11 24	704	0.3+	1.5+
1973 09 25	675	(2.9−	1.5−)	1996 04 20	809(78.9+	22.0−)		1998 11 24	704	0.0	0.3−
1973 09 25	675	0.5−	1.3+	1996 04 20	809(80.2+	21.8−)		1998 11 24	704	0.9+	0.3−
1973 09 25	675	0.7−	0.4−	1996 04 20	809(78.8+	22.2−)					

3276 T-2 = 1990 SL$_6$ = 1992 AN$_2$

Id. R. Nagata (*MPC* 17654), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	231.50519		(2000.0)		**P**	**Q**	
n	0.23200112	ω	356.50088		−0.50816780	−0.85770308	
a	2.6230667	Ω	124.02598		+0.79246110	−0.50119246	
e	0.0099672	i	5.41228		+0.33729941	−0.11468018	
P	4.25	H	15.2	G	0.15	U	6

Residuals in seconds of arc

1973 09 29	675	1.1+	0.9+	1990 09 15	809	2.1+	0.2−	1990 09 25	809	1.1−	2.0−
1973 09 29	675	1.2+	0.3−	1990 09 15	809	1.3+	0.3−	1992 01 02	691	1.0+	1.9+
1973 09 30	675	1.3−	0.8+	1990 09 15	809	0.1−	1.3+	1992 01 02	691	1.5+	1.1+
1973 09 30	675	2.0−	0.5−	1990 09 22	809	0.9+	1.7−	1992 01 02	691	1.1+	1.2+
1973 10 04	675	0.5+	2.7+	1990 09 22	809	1.8+	0.5−	1992 01 09	691	1.2−	1.4−
1973 10 04	675	0.2−	2.3+	1990 09 22	809	0.8+	1.9−	1992 01 09	691	0.9−	1.1−
1973 10 05	675	1.4−	1.0+	1990 09 25	809	0.6−	2.1−	1992 01 09	691	1.4−	1.9−
1973 10 05	675	1.5−	2.9+	1990 09 25	809	1.2−	2.5−				

4117 T-2 = 1984 SE$_7$ = 1999 GG$_{17}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	256.48468		(2000.0)	**P**		**Q**	
n	0.17723339	ω	166.89312	+0.46254252		+0.88613515	
a	3.1388629	Ω	130.65026	−0.81680138		+0.43846047	
e	0.1430038	i	2.16160	−0.34480418		+0.15005638	
P	5.56	H	13.2	G	0.15	U	3

Residuals in seconds of arc

1973 09 19	675	0.4+	0.8−	1973 10 05	675	0.5−	1.6−	1999 04 10	699	0.5+	0.3+
1973 09 19	675	0.4+	0.7−	1973 10 05	675	0.6+	1.3−	1999 04 10	699	0.2−	0.8+
1973 09 20	675	0.2−	0.2−	1984 09 23	071	0.2−	0.1+	1999 04 10	699	0.3−	0.2+
1973 09 24	675	1.2−	0.7+	1984 09 24	071	0.8−	0.2−	1999 04 15	704	0.6−	1.7−
1973 09 24	675	0.3−	1.2+	1995 08 19	809	0.8+	0.3+	1999 04 15	704	0.0	0.1−
1973 09 25	675	0.3−	0.1−	1995 08 20	809	0.3+	0.3+	1999 04 15	704	1.0+	0.7−
1973 09 25	675	0.6−	0.4−	1995 08 22	809	0.9−	0.3+	1999 04 15	704	0.7−	0.9−
1973 09 29	675	(2.4+	3.4−)	1995 08 26	809	0.5−	0.7+	1999 04 15	704	0.6+	1.5−
1973 09 29	675	(1.9+	3.3−)	1995 08 27	809	0.6−	0.3+	1999 04 16	704	0.5+	0.4−
1973 09 30	675	0.8+	0.9−	1995 08 29	809	0.2+	1.1−	1999 04 16	704	1.8−	0.1−
1973 09 30	675	2.0+	0.9−	1995 08 30	809	0.8+	0.6−	1999 04 16	704	0.4−	1.3+
1973 10 04	675	1.2+	0.4−	1995 09 20	809	0.3−	0.4+	1999 04 16	704	0.4−	1.5−
1973 10 04	675	0.4+	0.0	1995 09 22	809	0.2+	0.6+				

5205 T-2 = 1993 BF$_{13}$ = 1998 OH$_8$

Id. B. G. Marsden (*MPC* 32505), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	216.11510		(2000.0)	**P**		**Q**	
n	0.27174687	ω	215.77643	−0.86400293		−0.49500650	
a	2.3606215	Ω	294.30391	+0.48223440		−0.76105576	
e	0.0341647	i	5.79487	+0.14473740		−0.41924060	
P	3.63	H	14.6	G	0.15	U	5

Residuals in seconds of arc

1973 09 25	675	3.0+	2.2−	1973 10 05	675	2.4−	1.0+	1998 07 26	809	0.8+	1.2+
1973 09 25	675	2.3+	1.3−	1973 10 05	675	2.8−	1.7+	1998 07 26	809	0.5+	0.1−
1973 09 29	675	0.4+	1.3−	1993 01 22	809	0.9+	0.5+	1998 07 26	809	0.1+	0.8+
1973 09 29	675	1.5+	0.0	1993 01 22	809	0.7+	0.4+	1998 07 27	809	0.4−	0.0
1973 09 30	675	1.0+	0.8−	1993 01 22	809	0.5+	0.5+	1998 07 27	809	0.9−	0.1+
1973 09 30	675	1.8+	0.1+	1993 01 28	809	0.5+	0.1+	1998 07 27	809	0.7−	0.4−
1973 10 04	675	2.1−	0.1+	1993 01 28	809	0.8−	0.6−				
1973 10 04	675	2.5−	2.1+	1993 01 28	809	1.3−	0.1+				

2216 T-3 = 1984 WL$_3$ = 1999 FT$_{58}$

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	269.85401		(2000.0)	**P**		**Q**	
n	0.29906807	ω	297.67148	−0.13813264		+0.98994728	
a	2.2145697	Ω	324.34808	−0.88932868		−0.13748228	
e	0.1136751	i	2.98906	−0.43590581		−0.03321154	
P	3.30	H	14.8	G	0.15	U	6

Residuals in seconds of arc

1977 10 07	675	1.2+	0.2−	1977 10 17	675	0.2−	0.1+	1999 03 20	704	0.4+	0.2+
1977 10 11	675	0.2+	1.1+	1977 10 21	675	0.4+	1.5−	1999 03 20	704	0.3+	0.3−
1977 10 11	675	0.0	0.4+	1977 10 21	675	1.5+	1.5−	1999 03 20	704	0.5+	0.6+
1977 10 12	675	1.0−	0.2+	1977 10 22	675	0.9+	1.2+	1999 03 20	704	0.2−	0.3+
1977 10 12	675	2.1−	0.1−	1977 10 22	675	0.7+	0.9+	1999 03 23	704	0.5−	0.3−
1977 10 16	675	0.0	2.5−	1984 11 27	010	1.1−	1.0+	1999 03 23	704	0.2−	0.6−
1977 10 16	675	0.5−	2.2−	1984 11 28	010	1.0+	0.0	1999 03 23	704	0.2+	0.6−
1977 10 17	675	0.2−	2.1+	1999 03 20	704	0.1+	0.5+	1999 03 23	704	1.3−	1.2−

2247 T-3 = 1987 HG$_2$ = 1991 NV$_2$

Id. G. V. Williams (*MPC* 19883, unpublished), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Doppler

M	41.29692		(2000.0)	**P**		**Q**	
n	0.27157405	ω	319.95424	−0.06308925		+0.99633823	
a	2.3616228	Ω	306.35215	−0.89634000		−0.08199288	
e	0.2109539	i	4.10868	−0.43885572		+0.02423408	
P	3.63	H	14.8	G	0.15	U	1

Residuals in seconds of arc

1977 10 07	675	0.4+	0.6+	1977 10 22	675	0.8+	0.2+	1991 07 05	809	0.2−	0.5−
1977 10 11	675	1.0−	0.9+	1977 10 22	675	1.5+	1.0−	1991 07 05	809	0.3+	0.2−
1977 10 11	675	1.3−	1.1+	1987 04 23	010	1.2−	0.0	1991 07 05	809	0.7+	0.0
1977 10 12	675	1.1−	0.0	1987 04 23	010	0.9−	1.0−	1994 02 15	675	0.2+	0.7−
1977 10 12	675	1.0−	0.6−	1987 04 23	010	0.5+	1.8−	1994 02 15	675	0.9+	0.4−
1977 10 16	675	0.2+	2.0−	1991 07 03	809	1.8−	0.1+	1998 05 22	704	0.3+	0.3+
1977 10 16	675	0.6+	1.6−	1991 07 03	809	1.1−	0.5+	1998 05 22	704	0.2−	0.0
1977 10 17	675	0.1+	0.9+	1991 07 03	809	0.5−	0.7+	1998 05 22	704	0.2−	0.7+
1977 10 17	675	0.2+	0.1−	1991 07 04	809	0.7+	0.6−	1998 05 22	704	0.1−	0.2+
1977 10 21	675	1.5+	0.7−	1991 07 04	809	1.2+	0.3−	1998 05 22	704	0.6−	0.6+
1977 10 21	675	0.0	0.3−	1991 07 04	809	1.7+	0.3−				

2349 T-3 = 1990 DO$_8$ = 1998 VX$_{20}$

Id. G. V. Williams (*MPC* 33328), A. Milani, A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	8.25847		(2000.0)	**P**		**Q**	
n	0.18961850	ω	187.49768	+0.63114982		−0.76737148	
a	3.0006516	Ω	223.45749	+0.71991729		+0.63380746	
e	0.0681966	i	9.46407	+0.28873691		+0.09710368	
P	5.20	H	13.6	G	0.15	U	2

Residuals in seconds of arc

1977 10 07	675	(2.7+	0.4+)	1996 05 14	566	0.3+	0.5+	1998 11 11	704	0.9−	0.1−
1977 10 11	675	0.7−	1.3+	1996 05 14	566	0.1+	0.9+	1998 11 11	699	0.3+	0.3−
1977 10 11	675	0.5−	1.1+	1998 10 18	699	1.1−	1.2+	1998 11 11	699	0.3+	0.1−
1977 10 12	675	0.2+	0.2+	1998 10 18	699	0.3−	1.1+	1998 11 24	699	0.5+	0.3+
1977 10 12	675	1.8−	0.7−	1998 10 18	699	0.4−	0.7+	1998 11 24	699	0.1−	0.0
1977 10 16	675	0.6+	0.0	1998 10 19	691	0.1+	0.2+	1998 11 24	699	0.3−	0.9−
1977 10 16	675	0.5+	0.7−	1998 10 19	691	0.2+	0.3+	1998 11 25	691	0.3+	0.5−
1977 10 17	675	0.7−	1.8+	1998 10 19	691	0.2+	0.4+	1998 11 25	691	0.4+	0.6−
1977 10 17	675	1.3−	1.3+	1998 11 10	704	0.1+	0.2−	1998 11 25	691	0.2+	0.7−
1977 10 21	675	1.8+	0.1−	1998 11 10	704	0.1+	0.0	1998 12 08	699	0.9+	0.2+
1977 10 21	675	(2.6+	0.1+)	1998 11 10	704	0.8−	0.1−	1998 12 08	699	0.4+	0.9+
1977 10 22	675	0.8+	0.5+	1998 11 10	704	0.7+	0.8−	1998 12 08	699	0.4+	0.1−
1977 10 22	675	0.0	0.0	1998 11 11	704	0.1+	0.8−	1999 01 06	699	0.8−	0.5+
1990 02 24	809	1.0+	1.3+	1998 11 11	704	0.8−	0.6−	1999 01 06	699	0.3−	0.5+
1990 02 24	809	(0.1−	2.7+)	1998 11 11	704	0.0	0.8−	1999 01 06	699	0.8+	0.0
1990 02 24	809	0.3−	1.6+	1998 11 11	704	0.0	0.3−				
1996 05 14	566	0.0	0.0	1998 11 11	699	0.3+	0.2−				

3046 T-3 = 1999 FY$_{33}$

Id. S. Nakano, B. G. Marsden

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	357.65939		(2000.0)	**P**		**Q**	
n	0.29595139	ω	110.64736	−0.98264128		−0.17390862	
a	2.2300904	Ω	59.38728	+0.12960408		−0.89264827	
e	0.1022454	i	4.30410	+0.13273620		−0.41585436	
P	3.33	H	15.6	G	0.15	U	6

Residuals in seconds of arc

1977 10 16	675	0.4−	0.4−	1999 03 16	402	0.0	0.1−	1999 03 20	704	0.8+	1.1+
1977 10 16	675	0.9−	1.1+	1999 03 16	402	0.0	0.1+	1999 03 23	703	(1.8−	3.1+)
1977 10 16	675	0.2+	0.5−	1999 03 19	704	0.5−	1.6−	1999 03 23	703	0.6−	0.4−
1977 10 16	675	0.5+	1.0+	1999 03 19	704	0.4+	0.7−	1999 03 23	703	1.0−	1.9+
1977 10 17	675	0.7−	0.7+	1999 03 19	704	0.4+	0.8+	1999 03 23	703	0.1+	0.5−
1977 10 17	675	0.0	0.2−	1999 03 19	704	0.4+	0.3−	1999 03 23	703	0.9−	0.6+
1977 10 17	675	0.3+	0.2+	1999 03 19	704	0.3−	0.2+	1999 03 23	703	0.9+	0.1+

1977 10 17	675	1.7+	2.4−	1999 03 20	704	0.2−	0.1−	1999 03 23	703	0.3−	0.2−	
1977 10 22	675	0.7−	0.6+	1999 03 20	704	0.5−	0.6−	1999 03 23	703	1.8+	0.2−	
1999 03 16	402	0.1−	0.4−	1999 03 20	704	0.5−	0.3+					

3482 T-3 = 1994 WX_8 = 1998 MM_3

Id. G. V. Williams (*MPC* 32294), M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	308.64565		(2000.0)		**P**	**Q**	
n	0.18121185	ω	73.46686		+0.63802514	−0.77001192	
a	3.0927512	Ω	336.88792		+0.70416229	+0.58469776	
e	0.1774036	*i*	0.34458		+0.31157565	+0.25536284	
P	5.44	*H*	15.3	*G*	0.15	*U*	4

Residuals in seconds of arc

1977 10 07	675	1.0+	2.8−	1977 10 21	675	1.2−	1.0+	1994 12 03	691	0.0	0.3+
1977 10 11	675	0.4+	0.7+	1977 10 21	675	0.9−	1.8+	1998 06 17	691	0.1−	0.4+
1977 10 11	675	0.7−	0.0	1977 10 22	675	1.5+	1.5−	1998 06 17	691	0.4−	0.2+
1977 10 12	675	0.9+	0.8+	1977 10 22	675	1.2+	0.2−	1998 06 17	691	0.5−	0.0
1977 10 12	675	0.7+	1.9+	1994 11 28	691	0.2+	0.7+	1998 06 23	691	0.6+	0.8+
1977 10 16	675	0.2+	0.4−	1994 11 28	691	0.1−	0.3+	1998 06 23	691	0.1−	0.3+
1977 10 16	675	0.4−	1.4−	1994 11 28	691	0.2+	0.0	1998 06 23	691	0.0	0.2+
1977 10 17	675	1.2−	0.0	1994 12 03	691	0.1+	0.2+				
1977 10 17	675	1.2−	0.3−	1994 12 03	691	0.2−	0.1+				

3574 T-3 = 1993 SB_8

Id. M. E. Sansaturio

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	315.84711		(2000.0)		**P**	**Q**	
n	0.18321357	ω	231.56336		+0.54588551	−0.83768727	
a	3.0701832	Ω	185.43382		+0.81375556	+0.53490409	
e	0.0747811	*i*	10.34284		+0.19952667	+0.11026176	
P	5.38	*H*	14.1	*G*	0.15	*U*	4

Residuals in seconds of arc

1977 10 07	675	0.5−	0.9+	1993 09 17	809	1.2+	0.3+	1993 09 22	809	0.5−	0.6−
1977 10 11	675	0.2+	1.6+	1993 09 17	809	0.7+	0.6+	1993 09 22	809	(2.5−	0.2−)
1977 10 11	675	0.8+	0.2+	1993 09 17	809	0.2−	0.5+	1998 08 17	704	0.7+	0.1+
1977 10 12	675	0.8+	0.9−	1993 09 18	809	0.1−	0.2−	1998 08 17	704	0.3−	1.1+
1977 10 12	675	1.4−	0.7−	1993 09 18	809	0.2+	0.3−	1998 08 17	704	0.5+	0.9−
1977 10 12	675	1.0+	0.5−	1993 09 18	809	1.5−	0.8−	1998 08 17	704	0.9−	0.3−
1977 10 12	675	1.0−	0.3−	1993 09 22	809	0.3+	0.3+				

3761 T-3 = 1993 OO_{12} = 1999 CC_{30}

Id. A. Doppler

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Williams

M	299.46793		(2000.0)		**P**	**Q**	
n	0.29574117	ω	100.71727		−0.84090458	+0.54031344	
a	2.2311470	Ω	111.99414		−0.50855905	−0.76956028	
e	0.1431219	*i*	1.89575		−0.18505991	−0.34035035	
P	3.33	*H*	15.8	*G*	0.15	*U*	4

Residuals in seconds of arc

1977 10 11	675	1.1−	0.1+	1993 07 12	809	(0.4+	2.6+)	1999 02 10	704	0.1−	0.3−
1977 10 11	675	0.5−	1.7+	1993 07 12	809	(0.1−	2.4+)	1999 02 10	704	0.3+	0.1+
1977 10 12	675	(3.0+	1.5−)	1993 07 19	809	0.2+	1.1−	1999 02 10	704	0.2+	0.2+
1977 10 12	675	0.8+	0.6−	1993 07 19	809	0.3−	0.1−	1999 02 10	704	0.5−	0.3−
1977 10 16	675	2.2+	1.5−	1993 07 19	809	0.3+	0.5−	1999 02 12	699	0.2+	0.9+
1977 10 16	675	0.3+	0.8−	1993 07 26	809	(4.6−	1.1−)	1999 02 12	699	1.7+	0.1−
1977 10 17	675	0.1−	1.2−	1993 07 26	809	(3.1−	0.1+)	1999 02 12	699	0.2+	0.3+
1977 10 17	675	1.2−	1.2+	1993 07 26	809	0.2−	0.3−	1999 02 13	704	0.8−	0.3−
1993 07 12	809	0.5+	0.4+	1999 01 23	691	0.4−	0.8−	1999 02 13	704	0.2+	1.0−
1993 07 12	809	0.3−	0.7−	1999 01 23	691	0.6−	0.9−	1999 02 13	704	0.3+	0.0
1993 07 12	809	0.1+	0.3−	1999 01 23	691	0.7−	0.9−	1999 02 13	704	0.4−	0.6+
1993 07 12	809	(0.0	2.6+)	1999 02 10	704	0.0	0.2−	1999 02 13	704	0.8−	0.2−

5034 T-3 = 1999 GD_6

Epoch 1999 Jan. 22.0 TT = JDT 2451200.5 Urata

M	64.19104		(2000.0)		**P**	**Q**	
n	0.20484853	ω	308.88743		−0.49871474	−0.86572274	
a	2.8500172	Ω	170.73396		+0.85431778	−0.49924419	
e	0.0957795	*i*	15.31074		+0.14637189	−0.03576848	
P	4.81	*H*	13.0	*G*	0.15	*U*	6

Residuals in seconds of arc

1977 10 11	675	(0.5−	4.5+)	1977 10 17	675	0.1−	0.0	1999 04 14	905	0.2−	0.0
1977 10 11	675	(0.4−	3.7+)	1977 10 17	675	0.2−	0.1−	1999 04 14	905	0.2−	0.1−
1977 10 12	675	0.1+	0.4+	1977 10 21	675	0.1+	0.4+	1999 04 16	888	0.1−	0.3−
1977 10 12	675	0.1+	0.6+	1977 10 21	675	0.2−	1.3+	1999 04 16	888	0.6+	0.3−
1977 10 16	675	0.4+	0.8−	1977 10 22	675	(2.5−	0.8+)	1999 04 20	385	0.5−	0.2−
1977 10 16	675	0.5+	1.0−	1977 10 22	675	0.7−	0.8−	1999 04 20	385	0.5+	0.8+

Object	*H*	*G*	Epoch	*M*	ω	Ω	*i*	*e*	*a*	Obs.	Opp.	& Arc	rms	Perts	*U*	Computer	*MPC*	Object
(102)	9.26	0.15	19990122	11.43247	146.96618	211.01508	5.17028	0.2555896	2.6606007	318	51	1868–1999	0.56	M-v	0	Goffin	32297	(102)
(222)	9.13	0.15	19990122	295.57815	179.12802	80.44569	2.16003	0.1440445	3.1330975	325	48	1882–1999	0.54	M-v	0	Goffin	34172	(222)
(223)	9.68	0.15	19990122	233.86138	58.59791	48.36439	1.94438	0.1279525	3.0886852	156	39	1882–1998	0.56	M-v	0	Goffin	20806	(223)
(268)	8.28	0.15	19990122	222.58429	70.40147	121.00008	2.43617	0.1302857	3.0967733	307	52	1887–1998	0.55	M-v	0	Goffin	29315	(268)
(283)	8.72	0.15	19990122	18.61018	54.64108	304.57425	7.99107	0.1545883	3.0443701	206	54	1889–1998	0.56	M-v	0	Goffin	32738	(283)
(336)	9.76	0.15	19990122	258.10047	30.46580	235.25726	5.64855	0.0954154	2.2518623	186	46	1892–1999	0.56	M-v	0	Goffin	30778	(336)
(360)	8.48	0.15	19990122	214.69326	289.28521	132.72924	11.70469	0.1816952	2.9977674	150	47	1893–1998	0.56	M-v	0	Goffin	30779	(360)
(372)	7.2	0.15	19990122	224.07586	116.30557	327.52475	23.86879	0.2637971	3.1411593	358	50	1893–1996	0.56	M-v	0	Goffin	29315	(372)
(516)	8.27	0.15	19990122	28.86999	257.38243	329.38266	12.95466	0.2768036	2.6759522	258	45	1903–1998	0.55	M-v	0	Goffin	30779	(516)
(626)	9.00	0.15	19990122	189.80956	43.69999	341.85927	25.34259	0.2423853	2.5753214	139	36	1907–1998	0.55	M-v	0	Goffin	26916	(626)
(666)	10.9	0.15	19990122	192.15183	174.11808	215.70317	7.59317	0.2383404	2.5936195	149	18	1950–1999	0.67	M-v	0	Bowell	31946	(666)
(752)	10.1	0.15	19990122	163.87371	24.59919	85.29610	5.95290	0.0749652	2.4616124	124	30	1913–1998	0.56	M-v	0	Goffin	34002	(752)
(761)	10.83	0.15	19990122	253.01213	298.01230	24.14393	2.16383	0.0615759	2.8640234	124	26	1918–1999	0.87	M-v	1	Bowell	22429	(761)
(912)	8.4	0.15	19990122	227.00660	86.33656	34.79343	18.29922	0.1865012	3.1262966	76	23	1919–1996	0.56	M-v	0	Goffin	31710	(912)
(977)	9.67	0.15	19990122	20.25050	90.48437	76.08531	15.19795	0.0285714	3.1178701	71	17	1914–1999	0.69	M-v	1	Bowell	26920	(977)
(1179)	12.9	0.15	19990122	322.15049	233.92322	7.19206	8.70675	0.1756306	2.6167478	29	11	1931–1999	0.68	M-v	1	Bowell	26923	(1179)

(1200)	10.5	0.15	19990122	309.30099	46.06734	205.63172	4.60104	0.1129833	3.0595144	66	22	1929–1999	0.88	M-v	1	Bowell	32214	(1200)
(1573)	12.3	0.15	19990122	189.35125	173.42894	202.50450	24.56769	0.2320734	2.3708604	47	14	1949–1999	0.89	M-v	1	Bowell	33674	(1573)
(1681)	11.56	0.15	19990122	96.42138	0.99201	94.65519	7.22522	0.2070659	2.6962388	77	18	1914–1999	0.85	M-v	1	Bowell	32511	(1681)
(1711)	11.01	0.15	19990122	164.93250	251.47183	135.03286	11.08394	0.1072875	3.0175137	77	19	19 9–1999	0.85	M-v	1	Bowell	32300	(1711)
(1818)	14.7	0.15	19990122	249.28100	74.21393	249.70711	2.97663	0.1777013	2.1644373	28	9	19 4–1999	0.85	M-v	1	Bowell	29656	(1818)
(1859)	10.2	0.15	19990122	308.66990	248.70922	343.48385	7.71748	0.1061475	3.2081300	70	16	1915–1999	0.82	M-v	1	Bowell	32045	(1859)
(1896)	14.0	0.15	19990122	191.73700	179.93678	182.29888	2.21938	0.2217470	2.3685363	48	11	1949–1999	0.72	M-v	1	Bowell	32301	(1896)
(2050)	12.68	0.15	19990122	338.89100	170.19417	72.66536	26.57542	0.2375053	2.3255990	53	8	1974–1999	0.97	M-v	2	Williams	33543	(2050)
(2160)	12.1	0.15	19990122	206.99385	207.94298	134.49096	2.85372	0.0962221	2.9000522	88	16	1955–1999	0.81	M-v	1	Williams	32045	(2160)
(2167)	12.1	0.15	19990122	353.70209	274.28551	253.14978	6.03513	0.1822681	2.5444528	48	10	1971–1999	0.95	M-v	1	Bowell	33742	(2167)
(2278)	13.6	0.15	19990122	290.89029	205.27168	53.64210	4.22066	0.1505674	2.4523739	49	10	1953–1999	0.92	M-v	1	Bowell	33544	(2278)
(2345)	10.80	0.15	19990122	119.05587	140.44708	304.15594	9.14856	0.0755479	3.0174435	78	13	1935–1999	0.98	M-v	1	Williams	32046	(2345)
(2350)	13.4	0.15	19990122	110.21576	287.71254	141.22222	5.07390	0.1262894	2.2424406	29	7	1938–1999	0.74	M-v	1	Bowell	29658	(2350)
(2461)	11.4	0.15	19990122	243.59975	227.00469	116.26569	2.50452	0.1528582	3.1926019	168	15	1955–1999	0.79	M-v	1	Bowell	34286	(2461)
(2606)	11.3	0.15	19990122	351.23143	351.78735	197.71012	12.35690	0.2595176	2.7668614	50	14	1954–1999	0.77	M-v	1	Bowell	32742	(2606)
(2619)	12.8	0.15	19990122	299.52921	57.83263	204.89962	1.11260	0.0429167	3.0091537	60	11	1975–1999	0.81	M-v	1	Bowell	31137	(2619)
(2654)	12.5	0.15	19990122	323.63133	33.90458	207.11687	7.45294	0.0997485	3.0458435	57	10	1968–1999	0.78	M-v	1	Williams	20820	(2654)
(2996)	11.8	0.15	19990122	280.62721	301.35251	334.65406	3.66942	0.0317000	2.7827877	81	12	1949–1999	0.82	M-v	1	Bowell	26758	(2996)
(3246)	11.3	0.15	19990122	24.90490	340.05372	197.81349	21.74201	0.0350262	3.1954833	49	8	1971–1999	0.85	M-v	1	Williams	32048	(3246)
(3424)	12.7	0.15	19990122	165.92044	245.32457	150.19626	6.75230	0.0717685	2.5479825	56	9	1982–1999	0.88	M-v	1	Bowell	33070	(3424)
(3515)	12.1	0.15	19990122	329.13404	231.26942	342.07089	1.40165	0.0117655	2.8453365	56	11	1954–1999	0.78	M-v	1	Bowell	34288	(3515)
(3532)	11.9	0.15	19990122	147.44240	346.14702	56.65857	10.34775	0.0548296	2.9165820	59	11	1981–1999	0.84	M-v	1	Bowell	31720	(3532)
(3650)	11.9	0.15	19990122	279.23174	281.86679	38.10805	14.62954	0.2294578	3.1324529	71	8	1956–1999	0.96	M-v	1	Williams	31959	(3650)
(3805)	12.7	0.15	19990122	186.17131	64.39870	312.59669	11.82668	0.1878878	2.6846638	57	5	1981–1999	0.73	M-v	1	Williams	32306	(3805)
(3825)	13.0	0.15	19990122	326.41752	144.73325	75.36815	5.14695	0.0950033	2.2412023	44	12	1915–1999	0.78	M-v	1	Bowell	32050	(3825)
(3856)	12.0	0.15	19990122	144.17774	62.04451	348.66671	1.45317	0.0571529	2.8774007	72	10	1974–1999	0.80	M-v	1	Williams	32515	(3856)
(3893)	13.3	0.15	19990122	277.99496	107.57959	196.99067	23.10032	0.2616777	2.4236098	33	6	1977–1999	0.92	M-v	1	Bowell	32663	(3893)
(4061)	11.8	0.15	19990122	298.51510	244.02985	24.41286	1.68311	0.1411344	3.1120520	37	10	1951–1999	0.65	M-v	1	Bowell	32050	(4061)
(4069)	14.2	0.15	19990122	295.66963	5.36002	235.96202	2.17967	0.0744225	2.1716980	119	9	1962–1999	0.65	M-v	1	Williams	32050	(4069)
(4346)	12.4	0.15	19990122	256.44493	68.72240	225.15341	10.24252	0.0889220	3.0183411	58	12	1954–1999	0.75	M-v	1	Bowell	33938	(4346)
(4413)	13.7	0.15	19990122	165.47533	183.24621	212.55973	2.26075	0.0712898	2.3659454	28	7	1960–1999	0.62	M-v	2	Williams	34191	(4413)
(4433)	13.1	0.15	19990122	236.31980	249.97588	79.01247	9.34579	0.1350040	2.4327748	58	7	1954–1999	0.63	M-v	1	Williams	31539	(4433)
(4434)	13.2	0.15	19990122	186.70019	208.93338	166.08597	5.71079	0.1326198	2.4417894	40	8	1977–1999	0.63	M-v	1	Williams	34010	(4434)
(4578)	13.4	0.15	19990122	55.19067	3.56668	129.88061	5.26203	0.2445054	2.7164419	20	7	1954–1999	0.96	M-v	1	Williams	32307	(4578)
(4647)	12.6	0.15	19990122	280.43954	126.39043	181.52389	6.88782	0.2554277	2.8972710	38	9	1931–1999	0.99	M-v	1	Bowell	31789	(4647)
(4665)	12.4	0.15	19990122	259.70706	74.30631	237.71320	7.36375	0.1997061	2.9700182	89	7	1985–1999	0.64	M-v	1	Williams	26191	(4665)
(4795)	13.9	0.15	19990122	266.88919	131.66471	134.06318	5.10197	0.1527313	2.2000545	110	6	1974–1999	0.75	M-v	1	Sicoli	31239	(4795)
(4796)	13.2	0.15	19990122	181.64184	35.29071	296.76704	2.27134	0.1788543	2.3557872	56	9	1974–1999	0.98	M-v	1	Sicoli	32937	(4796)
(4811)	14.3	0.15	19990122	245.99982	274.69249	9.26680	5.06395	0.1825300	2.2467279	82	10	1955–1999	0.82	M-v	1	Sicoli	33747	(4811)
(4825)	14.1	0.15	19990122	183.74359	65.13013	306.34015	3.96204	0.1658468	2.2517413	37	7	1973–1999	0.82	M-v	2	Williams	33550	(4825)
(4844)	12.4	0.15	19990122	276.46702	355.48854	248.47795	5.97425	0.2219649	2.5521796	59	9	1963–1999	0.99	M-v	2	Sicoli	27448	(4844)
(4955)	11.3	0.15	19990122	206.25407	242.36239	90.43633	7.44258	0.1338984	3.1521108	61	7	1984–1999	0.80	M-v	1	Williams	33244	(4955)
(4982)	13.2	0.15	19990122	203.51069	128.44527	231.27939	4.62320	0.1777589	2.7826011	44	7	1977–1999	0.71	M-v	1	Bowell	34291	(4982)
(5033)	12.1	0.15	19990122	287.61542	137.57088	143.36497	2.50511	0.0509640	2.9219229	42	8	1955–1999	0.85	M-v	1	Williams	34291	(5033)
(5078)	13.6	0.15	19990122	215.94782	123.13851	225.16591	2.83796	0.2115945	2.6701710	38	8	1974–1999	0.91	M-v	2	Williams	29663	(5078)
(5277)	14.3	0.15	19990122	63.43587	188.36977	298.98612	8.57244	0.1411240	2.3050315	38	5	1978–1999	0.82	M-v	2	Williams	25431	(5277)
(5412)	14.3	0.15	19990122	245.14194	305.38547	26.70873	2.41292	0.1870296	2.4450822	51	7	1954–1999	0.87	M-v	2	Williams	34195	(5412)
(5683)	14.0	0.15	19990122	200.66280	296.81604	65.82559	4.78886	0.2160954	2.2124934	43	9	1934–1999	0.85	M-v	1	Bowell	28318	(5683)
(5723)	14.2	0.15	19990122	216.35279	193.93874	163.31918	5.58048	0.2444864	2.2731756	27	8	1969–1999	0.78	M-v	1	Bowell	32309	(5723)
(5746)	13.0	0.15	19990122	194.01182	15.82525	356.73035	5.06723	0.2154116	2.3303218	54	7	1975–1999	0.78	M-v	1	Williams	26570	(5746)
(5765)	12.9	0.15	19990122	37.83204	58.57241	81.68765	31.39386	0.2693745	2.6376717	43	5	1986–1999	0.80	M-v	1	Williams	32309	(5765)
(6234)	13.9	0.15	19990122	297.91834	280.05391	348.58139	4.01198	0.1822299	2.2621629	40	8	1975–1999	0.69	M-v	1	Bowell	33554	(6234)
(6253)	14.1	0.15	19990122	36.76584	292.68518	217.30335	4.22376	0.0929120	2.2652865	39	6	1982–1999	0.79	M-v	1	Williams	34294	(6253)

(6271)	13.0	0.15	19990122	287.62324	342.32455	285.96693	23.55168	0.0522236	1.9684911	31	5	1989–1999	0.94	M-v	2	Williams	34014	(6271)
(6280)	13.4	0.15	19990122	143.71157	49.49926	354.58577	6.56167	0.1442614	2.2228946	70	8	1954–1999	0.70	M-v	1	Bowell	33751	(6280)
(6294)	13.7	0.15	19990122	319.47246	306.94755	294.52402	2.57621	0.1045447	2.2808659	41	8	1954–1999	0.75	M-v	1	Bowell	33343	(6294)
(6303)	13.6	0.15	19990122	310.30394	223.56881	24.39496	4.49748	0.1031731	2.1889477	58	7	1989–1999	0.80	M-v	1	Williams	34014	(6303)
(6491)	18.5	0.15	19990122	328.30029	317.31879	306.56783	5.52177	0.5866660	2.5079135	124	3	1991–1999	0.58	M-v	0	Williams	29319	(6491)
(6911)	12.4	0.15	19990122	147.52732	168.33409	207.95437	22.89908	0.0897209	1.9320168	60	6	1991–1999	0.76	M-v	1	Bowell	32056	(6911)
(7059)	14.9	0.15	19990122	238.50419	243.97918	68.32409	3.81052	0.1692935	2.2038204	53	6	1951–1999	0.69	M-v	1	Williams	32955	(7059)
(7314)	12.2	0.15	19990122	47.00118	328.83039	163.79054	1.69501	0.1468558	3.1251060	74	7	1971–1999	0.71	M-v	1	Williams	32752	(7314)
(7347)	12.7	0.15	19990122	347.71208	13.63269	206.39324	0.49366	0.1232299	3.0810417	51	8	1977–1999	0.66	M-v	1	Williams	30462	(7347)
(7364)	15.7	0.15	19990122	229.56392	129.03520	182.89496	2.33429	0.1599970	2.2653037	52	6	1989–1999	0.84	M-v	2	Williams	32678	(7364)
(7499)	12.5	0.15	19990122	162.83553	70.72609	325.20963	9.97339	0.1296972	3.1561182	70	7	1973–1999	0.77	M-v	1	Williams	34296	(7499)
(7549)	12.6	0.15	19990122	153.17632	185.24525	226.01043	9.68501	0.0898508	3.0021324	25	5	1980–1999	0.79	M-v	1	Bowell	33556	(7549)
(7668)	14.3	0.15	19990122	312.98957	74.42766	166.53033	2.35794	0.1734721	2.3723491	51	5	1977–1999	0.67	M-v	1	Williams	33752	(7668)
(8031)	14.0	0.15	19990122	38.27505	116.73234	6.42061	7.61568	0.0629247	2.2932912	64	7	1954–1999	0.77	M-v	1	Williams	31280	(8031)
(8039)	15.4	0.15	19990122	53.02990	102.71510	10.04082	2.89371	0.1474594	2.4174135	41	5	1980–1999	0.64	M-v	1	Williams	34298	(8039)
(8139)	14.1	0.15	19990122	101.65586	174.89079	269.56391	4.83803	0.0984643	2.2512654	43	6	1953–1999	0.65	M-v	1	Bowell	34298	(8139)
(8244)	14.3	0.15	19990122	177.41872	186.92972	189.41825	5.24683	0.2086738	2.3448942	35	6	1975–1999	0.81	M-v	1	Bowell	33755	(8244)
(8269)	13.1	0.15	19990122	151.78540	240.28546	153.11887	9.19694	0.2093690	2.5569463	54	6	1980–1999	0.73	M-v	1	Williams	32058	(8269)
(8281)	13.0	0.15	19990122	133.43523	124.67605	296.08758	6.19455	0.0796835	2.8063804	52	6	1953–1999	0.70	M-v	1	Williams	31282	(8281)
(8288)	14.6	0.15	19990122	253.60424	262.01623	58.70135	0.64797	0.1648589	2.2010830	43	7	1970–1999	0.81	M-v	1	Bowell	34299	(8288)
(8361)	12.9	0.15	19990122	292.23538	29.13320	239.26710	1.21770	0.0166815	2.8305477	27	6	1953–1999	0.72	M-v	1	Bowell	32753	(8361)
(8363)	12.7	0.15	19990122	80.29771	353.67560	119.85610	2.66725	0.1436347	3.0818808	59	5	1990–1999	0.58	M-v	1	Williams	34300	(8363)
(8391)	12.4	0.15	19990122	106.92651	327.06227	124.09226	3.00917	0.1077350	3.1253040	60	5	1982–1999	0.61	M-v	1	Williams	31424	(8391)
(8393)	13.5	0.15	19990122	226.69359	316.67912	23.31476	6.01422	0.1918499	2.2744427	48	6	1955–1999	0.67	M-v	1	Williams	34300	(8393)
(8655)	14.1	0.15	19990122	165.17592	53.32144	323.81789	4.58915	0.1631243	2.2267393	39	7	1976–1999	0.86	M-v	1	Bowell	31798	(8655)
(8740)	13.4	0.15	19990122	135.41720	253.60936	180.42963	1.86509	0.0063945	2.8908017	62	5	1991–1999	0.56	M-v	1	Williams	34217	(8740)
(8743)	11.5	0.15	19990122	305.66530	135.52582	148.38375	16.64190	0.1585392	3.9385085	35	8	1967–1999	0.59	M-v	1	Bowell	32315	(8743)
(8919)	13.1	0.15	19990122	335.35513	206.22789	16.15868	12.99512	0.1368955	2.6218463	64	5	1969–1999	0.46	M-v	1	Bowell	31565	(8919)
1971 UW	14.8	0.15	19990122	90.66194	347.69357	37.78695	6.40565	0.1897674	2.2207270	20	2	1971–1999	0.50	M-v	4	Williams	34172	1971 UW
1972 RF_2	15.0	0.15	19990122	218.11665	148.28794	187.20025	3.85235	0.2468072	2.3000870	22	7	1971–1999	0.66	M-v	3	Williams	28610	1972 RF_2
1973 SY_1	11.9	0.15	19990122	13.31310	38.42855	358.42416	5.73319	0.0583177	5.1803622	31	3	1973–1998	0.73	M-v	4	Williams	33472	1973 SY_1
1973 SP_4	13.6	0.15	19990122	188.82837	346.98958	353.99884	8.80316	0.1791690	2.4903718	44	2	1973–1999	0.72	M-v	4	Williams	34280	1973 SP_4
1974 SE	14.0	0.15	19990122	110.59470	91.43972	283.34715	2.87405	0.1567022	2.2231232	34	4	1974–1999	0.72	M-v	2	Williams	34280	1974 SE
1976 GV_2	13.0	0.15	19990122	43.93094	41.69121	143.37812	2.77374	0.1315389	3.1451637	24	5	1976–1998	0.80	M-v	2	Williams	34172	1976 GV_2
1976 QS	14.5	0.15	19990122	236.09784	3.73613	331.81231	6.05159	0.2545402	2.2459665	24	3	1976–1999	0.73	M-v	3	Williams	31095	1976 QS
1976 UY	14.0	0.15	19990122	113.19772	153.34056	238.15989	11.15311	0.2104435	2.6433451	50	4	1976–1999	0.84	M-v	2	Williams	34280	1976 UY
1977 DC_4	13.5	0.15	19990122	15.15819	31.28454	94.59900	2.55034	0.1429929	3.1065776	37	3	1977–1999	0.66	M-v	5	Williams	34172	1977 DC_4
1977 FN	12.9	0.15	19990122	295.62070	354.09413	266.93668	12.35231	0.1369431	2.6745822	21	4	1977–1999	0.55	M-v	1	Williams	34280	1977 FN
1977 RD	14.2	0.15	19990122	250.18360	301.88127	343.59446	33.06690	0.2808046	2.7749698	28	4	1977–1999	0.81	M-v	3	Williams	34280	1977 RD
1977 RS_{17}	13.0	0.15	19990122	62.01805	204.40997	175.16133	1.92580	0.0274893	2.9392638	23	5	1977–1998	0.80	M-v	1	Williams	34172	1977 RS_{17}
1978 RN_5	13.6	0.15	19990122	189.83547	14.40873	356.39447	11.16131	0.3323223	2.7225171	40	6	1960–1999	0.90	M-v	2	Williams	31579	1978 RN_5
1978 SU_4	14.6	0.15	19990122	228.73590	127.45103	213.73664	6.08721	0.1276907	2.3729553	28	3	1978–1999	0.60	M-v	4	Williams	31223	1978 SU_4
1978 VO_4	14.5	0.15	19990122	268.04012	196.47320	89.46399	3.63921	0.1541258	2.4116486	60	4	1978–1999	0.77	M-v	2	Williams	34280	1978 VO_4
1978 VU_5	15.1	0.15	19990122	186.14691	169.00933	194.39962	2.09234	0.0370939	2.4220891	29	4	1978–1999	0.83	M-v	2	Williams	27708	1978 VU_5
1978 VM_7	15.0	0.15	19990122	59.75263	88.83506	241.25969	6.44966	0.2895933	2.5371558	29	4	1978–1998	0.52	M-v	4	Williams	33332	1978 VM_7
1978 VS_8	14.8	0.15	19990122	335.26556	276.33418	184.94260	1.87923	0.0499660	2.5281916	28	2	1978–1998	0.71	M-v	5	Williams	33472	1978 VS_8
1979 KJ	12.8	0.15	19990122	347.29113	56.66271	132.94903	11.33864	0.0497289	3.0082437	56	3	1979–1999	0.58	M-v	3	Williams	34281	1979 KJ
1979 MF_2	15.7	0.15	19990122	242.70776	135.09560	176.17923	1.06908	0.2071715	2.2719401	31	4	1979–1999	1.03	M-v	2	Williams	34281	1979 MF_2
1979 MN_3	14.6	0.15	19990122	40.01221	266.22130	235.55728	1.97509	0.0689163	2.2743857	48	6	1954–1999	0.94	M-v	1	Williams	31271	1979 MN_3
1979 MK_5	14.7	0.15	19990122	354.77552	321.15669	221.42547	2.63875	0.0872719	2.5877682	54	4	1979–1999	0.75	M-v	3	Williams	34281	1979 MK_5
1979 MG_6	15.0	0.15	19990122	258.82140	42.58060	254.89114	5.83910	0.1364977	2.2679903	32	4	1979–1999	0.69	M-v	2	Williams	34281	1979 MG_6
1979 MW_6	15.0	0.15	19990122	138.07433	74.28083	198.63102	2.59831	0.0384373	2.7344480	19	3	1979–1999	0.68	M-v	3	Williams	33739	1979 MW_6
1979 ME_8	15.1	0.15	19990122	65.77766	281.80686	193.38814	3.92211	0.1360633	2.2797409	37	5	1978–1999	0.87	M-v	1	Williams	30892	1979 ME_8

1979 PA	14.3	0.15	19990122	287.77232	65.53709	227.96965	12.10965	0.2622221	2.5583290	42	4	1979–1999	0.64	M-v	3	Williams	25338	1979 PA
1979 QV_1	15.0	0.15	19990122	2.33625	243.60803	315.02608	6.41472	0.1235141	2.2702500	33	6	1979–1999	0.69	M-v	1	Marsden	31134	1979 QV_1
1979 TH_2	13.3	0.15	19990122	119.62265	49.35698	25.41686	1.14623	0.1637129	3.1535254	62	4	1979–1999	0.76	M-v	1	Williams	31780	1979 TH_2
1979 WY_3	13.2	0.15	19990122	42.29967	342.41045	89.52054	10.30778	0.1357266	2.7890417	32	2	1979–1999	0.77	M-v	4	Williams	34002	1979 WY_3
1979 XL	13.4	0.15	19990122	20.21063	7.93265	95.48088	10.06225	0.1083375	2.7877327	65	2	1979–1999	0.69	M-v	3	Williams	34002	1979 XL
1980 KK	14.1	0.15	19990122	293.67652	142.87330	135.61398	1.00767	0.1697089	2.1556983	50	4	1980–1999	0.64	M-v	1	Williams	31375	1980 KK
1980 LY	14.6	0.15	19990122	289.89364	174.13231	101.37399	4.52575	0.1574221	2.1663373	42	9	1954–1999	0.70	M-v	1	Williams	31134	1980 LY
1980 PY_2	13.5	0.15	19990122	144.12140	340.60320	37.74760	15.68302	0.1309950	2.5458823	30	3	1980–1999	0.84	M-v	4	Williams	34281	1980 PY_2
1980 PE_3	13.6	0.15	19990122	216.42185	208.92187	65.20895	15.67644	0.1610240	2.5566775	28	3	1980–1999	0.72	M-v	2	Williams	34281	1980 PE_3
1980 RV_2	14.6	0.15	19990122	214.13664	11.66615	339.45945	2.69198	0.1878813	2.2119981	30	6	1980–1999	0.87	M-v	2	Williams	31579	1980 RV_2
1980 TZ_3	14.0	0.15	19990122	274.99180	101.70230	239.00175	1.55398	0.1463104	2.1759590	28	5	1980–1999	0.55	M-v	2	Williams	31780	1980 TZ_3
1980 VO	13.6	0.15	19990122	175.38799	348.09941	38.69007	9.92888	0.3207253	2.5521710	36	7	1980–1999	0.86	M-v	2	Williams	31579	1980 VO
1980 VA_3	14.2	0.15	19990122	169.14630	41.40633	349.66938	3.20239	0.1364363	2.2353350	28	5	1953–1999	0.71	M-v	2	Williams	31780	1980 VA_3
1981 CH	14.2	0.15	19990122	345.94632	186.48278	316.39489	24.67052	0.1895617	2.3528341	67	3	1981–1999	0.65	M-v	2	Williams	34281	1981 CH
1981 DA_1	13.7	0.15	19990122	296.03504	11.30093	234.91726	11.46927	0.0945298	2.7228182	46	4	1954–1999	0.97	M-v	4	Williams	34281	1981 DA_1
1981 DR_2	14.4	0.15	19990122	88.54813	138.29662	315.09821	10.95909	0.1565108	2.6881387	22	4	1981–1999	0.75	M-v	2	Williams	31271	1981 DR_2
1981 EV_3	15.5	0.15	19990122	114.04059	70.62237	254.02387	5.58657	0.0786263	2.4300183	30	3	1981–1998	0.73	M-v	4	Williams	33473	1981 EV_3
1981 EU_4	12.9	0.15	19990122	60.80368	31.64722	261.50368	8.99087	0.0729301	2.9892249	34	2	1981–1998	0.74	M-v	4	Williams	33065	1981 EU_4
1981 EB_{10}	15.1	0.15	19990122	349.84772	339.98777	204.14793	4.51158	0.1005365	2.3396514	65	4	1981–1999	0.85	M-v	2	Williams	34281	1981 EB_{10}
1981 ET_{10}	13.5	0.15	19990122	281.87844	310.84095	336.77065	12.83497	0.1700322	2.6969903	51	5	1981–1999	0.81	M-v	1	Williams	31415	1981 ET_{10}
1981 ER_{15}	15.4	0.15	19990122	302.34139	341.61273	258.02686	4.10620	0.1051165	2.3450086	28	3	1979–1999	0.89	M-v	4	Williams	34281	1981 ER_{15}
1981 EJ_{16}	16.3	0.15	19990122	295.55949	285.32672	343.80481	6.51100	0.1020278	2.3270875	16	3	1981–1999	0.79	M-v	3	Williams	27709	1981 EJ_{16}
1981 EK_{19}	14.9	0.15	19990122	286.49469	303.96486	335.84426	4.95789	0.1471735	2.3247061	45	5	1981–1999	0.57	M-v	1	Williams	27930	1981 EK_{19}
1981 ES_{20}	14.8	0.15	19990122	226.43303	353.91903	341.67064	2.08591	0.0536029	2.6820180	26	6	1977–1999	0.57	M-v	1	Williams	31580	1981 ES_{20}
1981 ER_{21}	13.4	0.15	19990122	180.44250	220.84961	155.98510	5.70717	0.1260588	3.2328878	45	8	1981–1999	0.98	M-v	1	Williams	31580	1981 ER_{21}
1981 ES_{21}	13.7	0.15	19990122	87.72150	99.89983	354.79198	13.01327	0.1629924	2.6808339	34	4	1981–1999	0.92	M-v	1	Williams	31271	1981 ES_{21}
1981 EO_{24}	14.4	0.15	19990122	214.75491	182.26867	162.64993	3.23926	0.0819807	2.3194903	35	8	1950–1999	0.94	M-v	2	Williams	32739	1981 EO_{24}
1981 EM_{25}	16.1	0.15	19990122	339.25237	350.63663	173.77014	3.39391	0.1098274	2.3633039	32	2	1981–1999	0.79	M-v	4	Williams	33923	1981 EM_{25}
1981 EV_{25}	13.6	0.15	19990122	134.28984	197.83581	173.99994	8.60728	0.1633517	2.7487065	23	2	1981–1999	0.77	M-v	5	Williams	34173	1981 EV_{25}
1981 ER_{26}	14.4	0.15	19990122	304.86344	208.58742	5.34288	7.35540	0.0533464	2.3563393	36	2	1981–1999	0.82	M-v	4	Williams	34173	1981 ER_{26}
1981 ER_{27}	14.9	0.15	19990122	146.96908	33.56456	1.74289	7.29897	0.1093464	2.3281730	37	6	1979–1999	0.81	M-v	2	Williams	31135	1981 ER_{27}
1981 ED_{28}	14.7	0.15	19990122	244.07250	144.03582	153.55631	2.81804	0.0878201	2.7221640	35	5	1951–1999	0.86	M-v	3	Williams	34281	1981 ED_{28}
1981 ES_{28}	14.7	0.15	19990122	306.51856	133.57806	4.41703	5.80072	0.1348563	2.4130786	37	3	1981–1999	0.85	M-v	3	Williams	33739	1981 ES_{28}
1981 EQ_{32}	13.8	0.15	19990122	243.05861	102.48331	229.02392	7.39668	0.2999587	2.6943931	17	4	1969–1999	0.98	M-v	3	Williams	28839	1981 EQ_{32}
1981 EW_{33}	14.7	0.15	19990122	190.89995	104.25220	252.59331	2.69910	0.1136874	2.6994032	18	5	1977–1999	0.91	M-v	2	Williams	28581	1981 EW_{33}
1981 ET_{34}	14.9	0.15	19990122	235.16161	129.49464	214.44686	11.61797	0.2918393	2.6728685	15	3	1981–1999	0.66	M-v	4	Williams	27909	1981 ET_{34}
1981 EH_{35}	15.8	0.15	19990122	82.21398	113.28643	325.48446	3.21922	0.2234617	2.3277943	18	4	1981–1999	0.82	M-v	3	Williams	30780	1981 EH_{35}
1981 EB_{37}	14.1	0.15	19990122	254.37654	302.12241	358.25922	8.21299	0.0299678	2.6886915	37	4	1981–1999	0.76	M-v	4	Williams	31272	1981 EB_{37}
1981 ED_{37}	14.3	0.15	19990122	254.97624	291.33324	28.95716	4.07918	0.2153312	2.3176315	37	7	1975–1999	0.90	M-v	2	Williams	28084	1981 ED_{37}
1981 EL_{38}	15.2	0.15	19990122	57.65183	279.76909	191.40152	12.14076	0.1489692	2.7053847	23	2	1981–1999	0.84	M-v	5	Williams	34173	1981 EL_{38}
1981 EV_{41}	14.5	0.15	19990122	62.83094	140.93158	327.30891	2.61307	0.0406013	2.7175227	20	4	1979–1999	0.88	M-v	3	Williams	34282	1981 EV_{41}
1981 ET_{47}	14.1	0.15	19990122	236.59946	351.49484	358.60978	5.18137	0.1974010	2.6636144	23	4	1981–1999	0.80	M-v	2	Williams	31781	1981 ET_{47}
1981 PF	14.4	0.15	19990122	247.34903	181.29854	147.45125	12.62391	0.2893179	2.3988384	37	4	1981–1999	0.87	M-v	2	Williams	28611	1981 PF
1981 QS	14.7	0.15	19990122	176.84096	227.10341	161.31083	5.00739	0.1952650	2.4300961	24	4	1981–1999	0.79	M-v	3	Williams	31781	1981 QS
1981 QU_3	14.3	0.15	19990122	262.04110	151.07253	151.68336	10.29213	0.1765182	2.3967595	57	5	1981–1999	0.84	M-v	1	Williams	31135	1981 QU_3
1981 SN	14.1	0.15	19990122	150.46863	156.04206	216.16516	5.17629	0.1570278	2.4843179	88	8	1981–1999	0.72	M-v	2	Williams	34282	1981 SN
1981 SE_2	14.3	0.15	19990122	204.75908	253.75800	106.25616	3.25000	0.2098681	2.4333945	28	7	1950–1999	1.04	M-v	2	Williams	27566	1981 SE_2
1981 US_{14}	13.9	0.15	19990122	204.13870	283.62093	78.73978	2.64167	0.1415301	2.4515272	26	5	1981–1999	0.69	M-v	3	Williams	28883	1981 US_{14}
1981 UP_{25}	13.3	0.15	19990122	292.96132	1.49887	201.52398	7.72224	0.1945265	2.5420728	16	2	1981–1999	0.75	M-v	5	Williams	34174	1981 UP_{25}
1982 BE_1	13.3	0.15	19990122	101.66806	303.01065	131.16244	6.49585	0.1886685	2.5550926	38	6	1982–1999	0.69	M-v	1	Williams	31003	1982 BE_1
1982 JE_1	14.1	0.15	19990122	214.69758	291.22963	72.98283	5.25965	0.1827390	2.2590042	36	8	1976–1999	1.01	M-v	2	Williams	31415	1982 JE_1
1982 JH_2	14.9	0.15	19990122	340.44700	150.03601	108.83886	3.69401	0.1274060	2.5907573	24	4	1982–1998	0.68	M-v	3	Williams	34174	1982 JH_2
1982 KH_1	13.0	0.15	19990122	194.34449	190.10063	76.68268	10.29387	0.1330335	2.7720213	28	3	1982–1999	0.84	M-v	4	Williams	33739	1982 KH_1

1982 SW_3	14.3	0.15	19990122	60.57026	176.38696	202.45378	5.82118	0.2202994	2.1585701	41	4	1982–1999	0.86	M-v	2	Williams	34282	1982 SW_3
1982 TT_2	12.5	0.15	19990122	249.50953	329.95715	12.41551	12.32984	0.2210212	2.7405202	26	5	1955–1999	0.82	M-v	2	Williams	31580	1982 TT_2
1982 UZ_9	13.3	0.15	19990122	196.38059	143.56369	224.72923	17.30539	0.2018082	2.7873117	25	4	1982–1999	0.64	M-v	2	Williams	31272	1982 UZ_9
1982 UC_{11}	14.6	0.15	19990122	38.32490	133.10934	243.94160	3.41982	0.2086801	2.5194211	70	6	1982–1999	0.73	M-v	2	Williams	33739	1982 UC_{11}
1982 YR_1	14.6	0.15	19990122	88.33934	46.86501	7.09113	5.93684	0.2176278	2.4580371	51	4	1982–1999	0.72	M-v	2	Williams	34282	1982 YR_1
1983 QG	13.2	0.15	19990122	211.64174	279.63901	80.76254	14.31248	0.3442245	2.6451174	28	4	1983–1999	0.78	M-v	2	Williams	28612	1983 QG
1983 XC	14.4	0.15	19990122	154.99521	309.14099	84.42942	7.63060	0.1716561	2.2919314	28	5	1983–1999	0.88	M-v	2	Williams	31135	1983 XC
1984 AJ_1	14.4	0.15	19990122	19.67986	137.70535	347.53568	6.71044	0.1912250	2.3928715	39	2	1984–1999	0.68	M-v	4	Williams	34174	1984 AJ_1
1984 EQ	12.3	0.15	19990122	333.72702	96.34999	346.58983	13.66837	0.1860092	3.0728524	22	3	1984–1998	1.07	M-v	3	Williams	32918	1984 EQ
1984 SL	12.7	0.15	19990122	49.52485	228.10160	157.37317	9.73397	0.3039345	2.7330048	47	3	1984–1999	0.83	M-v	3	Williams	34282	1984 SL
1984 SS_1	14.4	0.15	19990122	130.75822	196.40532	230.17156	3.04553	0.0704043	2.1630482	39	5	1981–1999	0.83	M-v	2	Williams	31272	1984 SS_1
1984 SR_5	12.7	0.15	19990122	154.25917	342.58400	17.53932	5.47491	0.1115407	3.2407029	61	4	1984–1999	0.69	M-v	3	Williams	28084	1984 SR_5
1984 SN_6	13.4	0.15	19990122	346.40976	129.13653	61.94365	3.29880	0.0880465	2.5621561	85	5	1984–1999	0.72	M-v	2	Williams	34282	1984 SN_6
1985 CD	13.4	0.15	19990122	88.79345	53.52715	152.05286	14.73772	0.1308172	2.5781203	71	3	1978–1998	0.66	M-v	3	Williams	33066	1985 CD
1985 CM_1	13.9	0.15	19990122	320.56507	69.63950	133.00169	4.87464	0.0966160	2.2968932	67	4	1954–1999	0.79	M-v	3	Williams	34282	1985 CM_1
1985 CU_1	14.5	0.15	19990122	10.87268	119.87971	324.19083	24.14902	0.2375210	2.3325974	79	3	1985–1999	0.74	M-v	2	Williams	34003	1985 CU_1
1985 QF_1	12.9	0.15	19990122	354.50999	156.81464	289.48462	12.43840	0.1309650	2.5630258	13	2	1985–1999	0.67	M-v	4	Williams	34174	1985 QF_1
1985 QM_5	13.5	0.15	19990122	245.86831	188.74293	149.42746	2.54247	0.1401044	2.9415675	47	5	1978–1999	0.80	M-v	2	Williams	31782	1985 QM_5
1985 RP_3	14.5	0.15	19990122	277.63340	282.32221	3.85984	2.11949	0.2019472	2.3749750	85	3	1985–1999	0.76	M-v	3	Williams	34282	1985 RP_3
1985 RR_3	13.0	0.15	19990122	234.85721	145.14012	170.48273	10.93543	0.0919712	3.0030389	70	6	1985–1999	0.58	M-v	1	Williams	34282	1985 RR_3
1985 RJ_5	15.1	0.15	19990122	166.23266	337.66500	52.66580	2.83309	0.2486666	2.4279421	28	4	1985–1999	0.72	M-v	3	Williams	32044	1985 RJ_5
1985 SX_2	13.6	0.15	19990122	27.17481	77.92353	323.70726	3.67484	0.1401685	2.6207331	57	3	1981–1999	0.67	M-v	2	Williams	33740	1985 SX_2
1985 TW	14.5	0.15	19990122	220.33043	344.86206	7.26850	1.30514	0.1936402	2.4062204	61	6	1985–1999	0.73	M-v	1	Williams	31272	1985 TW
1985 UF	14.0	0.15	19990122	219.06461	305.19940	25.68198	8.93854	0.1649917	2.4291933	50	4	1985–1999	0.75	M-v	3	Williams	34282	1985 UF
1986 EA_5	14.9	0.15	19990122	322.59852	199.31842	358.17719	0.40296	0.1823165	2.6755816	33	3	1986–1999	0.68	M-v	4	Williams	34282	1986 EA_5
1986 EL_5	13.6	0.15	19990122	164.05797	69.86122	2.53412	5.22351	0.0776277	2.5389812	27	3	1976–1998	0.67	M-v	4	Williams	33474	1986 EL_5
1986 GY	14.0	0.15	19990122	228.68923	318.66802	15.72262	3.14238	0.1424573	2.1791287	44	7	1982–1999	0.66	M-v	2	Williams	28612	1986 GY
1986 QG_1	14.6	0.15	19990122	321.31355	85.71112	111.77653	4.57234	0.0141420	2.3212953	60	4	1986–1999	0.70	M-v	2	Williams	34283	1986 QG_1
1986 QO_1	13.0	0.15	19990122	219.14336	193.88010	113.36732	4.27771	0.1420992	2.8740807	40	3	1986–1999	0.64	M-v	3	Williams	19674	1986 QO_1
1986 QO_4	14.1	0.15	19990122	213.97370	1.24268	3.14683	6.66566	0.1845885	2.2686533	17	5	1986–1999	0.77	M-v	2	Williams	31581	1986 QO_4
1986 RY_4	14.5	0.15	19990122	228.09172	338.42359	358.40689	4.36857	0.1861258	2.2612097	56	5	1986–1999	0.46	M-v	1	Williams	31272	1986 RY_4
1986 TS	13.4	0.15	19990122	143.37478	70.75003	334.94061	13.16699	0.2659386	2.9383172	33	4	1976–1999	0.80	M-v	2	Williams	34175	1986 TS
1986 TZ_3	14.2	0.15	19990122	257.51026	227.88893	60.52738	3.76566	0.2144300	2.2949109	52	3	1986–1999	0.66	M-v	3	Williams	34283	1986 TZ_3
1986 VQ_2	14.7	0.15	19990122	228.92503	75.32955	278.90949	5.36193	0.2005857	2.2757231	14	5	1986–1999	0.78	M-v	2	Williams	31272	1986 VQ_2
1986 VR_5	13.9	0.15	19990122	106.96329	177.26323	267.42818	5.76996	0.0930125	2.3529385	37	6	1986–1999	0.85	M-v	2	Williams	31136	1986 VR_5
1986 VM_6	14.6	0.15	19990122	156.86682	324.54698	43.13948	4.11395	0.2231374	2.3562166	54	5	1986–1999	0.76	M-v	2	Williams	34283	1986 VM_6
1987 DN	12.4	0.15	19990122	31.12577	217.27874	314.57954	5.71768	0.0321848	3.1331207	61	5	1987–1999	0.57	M-v	1	Williams	32740	1987 DN
1987 KG_5	13.6	0.15	19990122	244.95458	147.14350	142.73350	14.98654	0.1721532	2.6077544	21	2	1987–1999	0.61	M-v	4	Williams	34283	1987 KG_5
1987 ON	13.9	0.15	19990122	271.22520	153.18611	158.62894	13.88749	0.1959453	2.6002062	13	3	1987–1999	0.69	M-v	4	Marsden	25424	1987 ON
1987 QO_5	14.6	0.15	19990122	128.87186	63.61144	333.99977	3.99604	0.1395154	2.1933504	46	3	1987–1999	0.68	M-v	3	Williams	34283	1987 QO_5
1987 QZ_6	14.5	0.15	19990122	152.27346	14.76900	291.44195	5.02087	0.0675635	2.2582596	35	4	1987–1999	0.73	M-v	2	Williams	33740	1987 QZ_6
1987 QG_{10}	14.2	0.15	19990122	185.48349	221.24724	120.67281	4.30988	0.1897267	2.1887781	39	4	1986–1999	0.74	M-v	2	Williams	34283	1987 QG_{10}
1987 RN_3	13.4	0.15	19990122	149.10403	115.02560	288.45170	7.96150	0.1367104	2.7368213	32	3	1987–1999	0.69	M-v	4	Williams	31416	1987 RN_3
1987 RO_5	11.8	0.15	19990122	151.60681	216.93708	158.54687	6.81537	0.2912645	3.9488409	50	4	1987–1999	0.74	M-v	2	Williams	34283	1987 RO_5
1987 RT_5	14.9	0.15	19990122	262.80810	194.84365	119.51876	3.00449	0.1831930	2.1313456	48	7	1981–1999	0.62	M-v	2	Williams	31581	1987 RT_5
1987 RU_5	13.6	0.15	19990122	263.33978	309.99639	4.20746	8.72773	0.2098887	2.6374739	46	4	1987–1999	0.60	M-v	2	Williams	31581	1987 RU_5
1987 SU	14.1	0.15	19990122	193.54567	16.86251	349.98582	3.83279	0.1097184	2.1646230	43	8	1955–1999	0.84	M-v	1	Williams	31782	1987 SU
1987 SU_1	14.6	0.15	19990122	151.68114	122.25684	254.73439	6.02088	0.1331965	2.2097623	39	5	1954–1999	0.75	M-v	2	Williams	34283	1987 SU_1
1987 SF_5	15.4	0.15	19990122	134.34450	74.54527	325.57657	3.23581	0.1478651	2.2156464	35	4	1987–1999	0.61	M-v	2	Williams	31136	1987 SF_5
1987 UZ_1	14.6	0.15	19990122	91.49401	213.99580	224.26425	25.68681	0.1068476	1.8832642	33	3	1987–1999	0.63	M-v	3	Williams	23779	1987 UZ_1
1988 AH_5	13.8	0.15	19990122	297.27238	271.20630	270.06433	6.96806	0.0861574	2.4162421	32	2	1988–1999	0.82	M-v	5	Williams	34004	1988 AH_5
1988 BL_3	13.4	0.15	19990122	222.14407	83.02326	264.58455	6.05744	0.2057983	2.2567036	48	5	1959–1999	0.51	M-v	1	Williams	31416	1988 BL_3
1988 BM_3	14.3	0.15	19990122	3.97707	242.66121	298.09358	1.64053	0.1862245	2.3230481	40	4	1988–1999	0.76	M-v	2	Williams	30894	1988 BM_3

1988 BZ_3	13.7	0.15	19990122	255.28423	43.05971	258.31663	5.28582	0.1706338	2.2874698	44	4	1972–1999	0.67	M-v	2	Williams	34175	1988 BZ_3
1988 CP_1	13.7	0.15	19990122	124.86248	290.34860	135.42311	2.98080	0.0809695	2.9060332	56	5	1988–1999	0.73	M-v	1	Williams	31581	1988 CP_1
1988 CD_2	15.2	0.15	19990122	90.78933	287.15777	143.04483	1.99352	0.1283100	2.3056061	20	3	1988–1999	0.83	M-v	5	Williams	25339	1988 CD_2
1988 CE_2	13.9	0.15	19990122	167.33858	57.90495	307.69599	6.45252	0.1491706	2.2822569	46	5	1978–1999	0.68	M-v	2	Williams	34283	1988 CE_2
1988 CY_2	14.3	0.15	19990122	262.89080	315.25876	325.43095	3.46043	0.0909299	2.2966275	59	4	1988–1999	0.75	M-v	1	Williams	34283	1988 CY_2
1988 CZ_2	15.9	0.15	19990122	349.71880	40.07113	127.53914	4.02504	0.1723535	2.3446689	27	3	1988–1999	0.52	M-v	3	Williams	34283	1988 CZ_2
1988 CT_4	12.8	0.15	19990122	287.64836	62.58900	198.46347	9.40298	0.0562578	3.0194466	66	5	1980–1999	0.62	M-v	1	Williams	34283	1988 CT_4
1988 DK	13.6	0.15	19990122	19.81723	277.83767	218.12083	9.30437	0.1729244	3.0796511	29	4	1988–1999	0.89	M-v	2	Williams	34283	1988 DK
1988 DD_2	14.4	0.15	19990122	343.56026	32.17155	135.86774	9.02079	0.0522374	2.3382713	34	2	1988–1999	0.81	M-v	4	Williams	34175	1988 DD_2
1988 DD_3	13.7	0.15	19990122	33.57403	254.35729	271.62927	8.98453	0.0414601	2.9843216	21	5	1980–1999	0.62	M-v	2	Williams	25537	1988 DD_3
1988 EC	14.3	0.15	19990122	151.67918	33.10462	340.31275	19.29850	0.0996056	1.9336885	82	5	1988–1999	0.97	M-v	3	Williams	34283	1988 EC
1988 FE	14.4	0.15	19990122	314.10677	139.49970	47.69124	10.28694	0.1807129	2.4142238	58	3	1988–1999	0.80	M-v	2	Williams	34283	1988 FE
1988 FN	14.2	0.15	19990122	323.51259	204.12513	334.05774	23.61532	0.2431753	2.3996979	43	4	1978–1999	0.70	M-v	2	Williams	34283	1988 FN
1988 FM_1	11.9	0.15	19990122	126.62673	83.35975	327.45805	9.95323	0.1014088	3.0348552	68	4	1981–1999	0.63	M-v	2	Williams	34283	1988 FM_1
1988 FW_2	14.2	0.15	19990122	57.64120	289.20755	201.51736	6.11717	0.0662582	2.3311833	49	5	1988–1999	0.77	M-v	1	Williams	31136	1988 FW_2
1988 GZ	12.6	0.15	19990122	268.66591	258.69607	30.07266	5.66514	0.1187221	3.0999681	75	4	1988–1999	0.72	M-v	1	Williams	34283	1988 GZ
1988 MH	12.5	0.15	19990122	136.05470	36.27032	292.78136	13.02997	0.1937961	2.5940217	63	3	1988–1999	0.73	M-v	3	Williams	34284	1988 MH
1988 RE_1	13.3	0.15	19990122	128.88263	211.98738	195.64075	14.61519	0.1046405	2.5917096	54	4	1980–1999	0.70	M-v	3	Williams	34175	1988 RE_1
1988 RX_2	13.5	0.15	19990122	138.05456	235.71293	135.48235	0.40527	0.1093963	2.6667427	46	3	1988–1999	0.72	M-v	4	Williams	34284	1988 RX_2
1988 RM_5	13.5	0.15	19990122	110.78893	243.90494	159.91470	15.01806	0.0993321	2.6126376	55	2	1988–1999	0.69	M-v	4	Williams	34284	1988 RM_5
1988 RT_{11}	15.6	0.15	19990122	123.31798	46.49933	16.67541	1.37904	0.1306185	2.5679729	11	3	1978–1999	0.62	M-v	3	Williams	18114	1988 RT_{11}
1988 SL_1	16.4	0.15	19990122	51.05980	126.37492	216.06267	0.22654	0.1827411	2.2188344	32	3	1988–1998	0.72	M-v	4	Williams	34005	1988 SL_1
1988 SF_3	13.4	0.15	19990122	77.12743	44.93978	58.00570	16.02662	0.0940564	2.5774496	50	4	1988–1999	0.82	M-v	2	Williams	34284	1988 SF_3
1988 VB_1	13.9	0.15	19990122	215.58959	3.93881	2.01920	13.27143	0.1765294	2.5385809	42	5	1988–1999	0.66	M-v	2	Williams	31581	1988 VB_1
1988 VS_2	13.3	0.15	19990122	206.23998	154.22092	211.63713	13.13840	0.1895294	2.5761797	46	6	1988–1999	0.69	M-v	2	Williams	31783	1988 VS_2
1988 VQ_3	13.5	0.15	19990122	38.83756	269.67832	230.35099	11.71427	0.1173317	2.6996267	34	3	1988–1999	0.69	M-v	2	Williams	31136	1988 VQ_3
1988 VT_3	14.4	0.15	19990122	325.64032	216.71293	245.93454	3.98711	0.1144509	2.2520378	56	3	1988–1999	0.87	M-v	3	Williams	34284	1988 VT_3
1988 XL	14.0	0.15	19990122	283.98046	120.16978	220.68319	3.05727	0.1317213	2.4873107	56	4	1988–1999	0.66	M-v	2	Marsden	32301	1988 XL
1988 XO	12.9	0.15	19990122	221.66294	265.69010	90.58099	15.86984	0.1779364	2.5828666	32	6	1981–1999	0.74	M-v	1	Williams	25339	1988 XO
1988 XH_1	12.5	0.15	19990122	198.04119	247.91107	78.59704	13.95500	0.1885534	2.6759534	38	4	1988–1999	0.88	M-v	2	Williams	34284	1988 XH_1
1989 AV_6	13.7	0.15	19990122	199.69502	172.45573	116.44377	6.99674	0.1878797	2.2420886	66	3	1989–1999	0.67	M-v	3	Williams	34284	1989 AV_6
1989 CH	12.8	0.15	19990122	13.69886	18.91397	136.86333	16.12639	0.2053990	2.8467381	86	3	1989–1999	0.76	M-v	3	Williams	34284	1989 CH
1989 CR_1	14.7	0.15	19990122	228.61652	311.38398	262.36986	8.53106	0.1642408	2.3308044	30	2	1989–1998	0.85	M-v	5	Williams	33222	1989 CR_1
1989 CD_6	13.7	0.15	19990122	49.28769	330.39400	130.48010	2.95407	0.0348119	2.8837245	50	4	1989–1999	0.77	M-v	3	Williams	34284	1989 CD_6
1989 CE_8	13.0	0.15	19990122	132.89110	179.63549	254.33339	9.48545	0.0933597	2.7290136	56	4	1989–1999	0.46	M-v	1	Williams	31377	1989 CE_8
1989 EE_1	14.0	0.15	19990122	294.95702	195.21300	10.04468	6.64626	0.1390237	2.2672553	40	3	1989–1999	0.74	M-v	3	Williams	34284	1989 EE_1
1989 GV_1	14.6	0.15	19990122	243.07502	307.63435	343.98073	4.94401	0.1555365	2.2667861	48	4	1976–1999	0.83	M-v	3	Williams	34284	1989 GV_1
1989 MH	12.5	0.15	19990122	314.07254	156.95726	86.09472	11.45725	0.2267858	2.9939761	45	3	1989–1999	0.82	M-v	3	Williams	28613	1989 MH
1989 RT	14.0	0.15	19990122	255.69212	339.64522	323.41564	6.73982	0.1249225	2.3471631	47	3	1989–1999	0.71	M-v	3	Williams	33741	1989 RT
1989 RY_1	13.8	0.15	19990122	45.82073	147.98736	156.76394	15.25413	0.2790508	2.7628833	52	2	1989–1998	0.71	M-v	3	Williams	33543	1989 RY_1
1989 RN_2	13.1	0.15	19990122	271.81414	313.28395	350.30217	11.10186	0.2123211	3.1766482	43	3	1989–1999	0.87	M-v	4	Williams	34176	1989 RN_2
1989 SA	13.3	0.15	19990122	76.84427	298.86549	78.28558	13.92457	0.1879048	2.5882684	28	3	1976–1999	0.66	M-v	3	Williams	34005	1989 SA
1989 SD	14.4	0.15	19990122	337.97996	343.57940	30.22824	2.35972	0.1492826	2.1523479	14	3	1989–1997	0.92	M-v	4	Williams	33927	1989 SD
1989 SH_3	14.5	0.15	19990122	155.26709	272.55592	97.83368	1.90553	0.2286244	2.4542467	35	4	1989–1999	0.69	M-v	4	Williams	34284	1989 SH_3
1989 SK_3	13.4	0.15	19990122	283.72616	293.36561	179.28252	7.60435	0.1809776	2.8018714	40	4	1975–1998	0.72	M-v	2	Williams	34284	1989 SK_3
1989 ST_3	14.8	0.15	19990122	22.61065	307.15797	136.01593	3.03478	0.1105881	2.6060662	66	3	1989–1999	0.78	M-v	3	Williams	34005	1989 ST_3
1989 SX_5	14.2	0.15	19990122	13.46628	11.32693	94.62484	2.88823	0.1088102	2.5760199	46	2	1989–1999	0.65	M-v	4	Williams	34284	1989 SX_5
1989 SZ_9	13.5	0.15	19990122	320.54103	214.43724	2.59461	12.29860	0.1621813	2.3808483	60	3	1978–1999	0.65	M-v	3	Williams	34177	1989 SZ_9
1989 TU_1	13.4	0.15	19990122	30.24066	160.14792	260.62391	6.66177	0.2841286	2.6699487	84	3	1989–1999	0.71	M-v	2	Williams	34284	1989 TU_1
1989 TK_{16}	14.6	0.15	19990122	239.77300	121.09640	175.30001	2.12703	0.1874240	2.3916079	33	3	1989–1999	0.59	M-v	4	Williams	34284	1989 TK_{16}
1989 UA	13.0	0.15	19990122	87.34347	7.27217	45.59269	10.77189	0.0980847	2.5463259	70	6	1954–1999	0.71	M-v	2	Marsden	34284	1989 UA
1989 UK_1	14.1	0.15	19990122	68.39706	225.10742	217.76366	11.60848	0.2742068	2.5582476	53	4	1989–1999	0.81	M-v	3	Williams	34284	1989 UK_1
1989 UY_2	13.7	0.15	19990122	204.28656	281.25437	62.68153	3.57429	0.2131748	2.4170207	44	4	1985–1999	0.94	M-v	3	Williams	34177	1989 UY_2

1989 VP_1	14.1	0.15	19990122	32.51582	280.00267	192.10563	13.32452	0.1268583	2.5656828	39	4	1989–1999	0.73	M-v	1	Williams	34285	1989 VP_1
1989 WJ	13.7	0.15	19990122	59.80937	8.00163	67.10457	15.06505	0.1333152	2.6006336	24	2	1989–1999	0.59	M-v	4	Marsden	34177	1989 WJ
1989 WJ_1	13.7	0.15	19990122	162.03894	176.20649	218.34531	5.94820	0.1463649	2.4490396	39	7	1954–1999	0.94	M-v	2	Williams	31416	1989 WJ_1
1989 WC_2	13.6	0.15	19990122	77.07133	19.58733	64.91379	9.31249	0.1742094	2.5585334	56	6	1982–1999	0.86	M-v	2	Williams	31416	1989 WC_2
1989 WN_2	13.3	0.15	19990122	54.47690	164.16247	252.71169	11.90138	0.1398408	2.6522953	34	2	1989–1999	0.74	M-v	4	Williams	34005	1989 WN_2
1990 BA_1	13.8	0.15	19990122	336.09653	184.00330	4.58065	12.48906	0.0359840	2.6533344	28	3	1986–1999	0.65	M-v	4	Williams	34177	1990 BA_1
1990 BB_2	13.1	0.15	19990122	56.67709	189.24878	305.29172	11.13278	0.1091422	2.5937142	22	5	1954–1999	0.85	M-v	2	Williams	25649	1990 BB_2
1990 DV	13.7	0.15	19990122	353.60953	270.47895	248.19862	7.05072	0.2184982	2.7295895	38	3	1990–1999	0.60	M-v	2	Williams	34285	1990 DV
1990 DA_2	13.6	0.15	19990122	83.27787	233.61244	165.13632	6.13715	0.0545375	2.7571484	26	3	1988–1999	0.61	M-v	4	Williams	34177	1990 DA_2
1990 FM	12.9	0.15	19990122	310.02893	150.64703	82.74278	17.95747	0.2851567	2.7340864	27	2	1990–1999	0.53	M-v	4	Williams	34178	1990 FM
1990 OK	14.2	0.15	19990122	109.09589	95.43481	249.89868	6.77520	0.1980620	2.3366175	31	2	1990–1999	0.78	M-v	4	Williams	34005	1990 OK
1990 OM_2	14.7	0.15	19990122	189.32530	336.70578	350.23740	6.60386	0.2066332	2.2280174	30	3	1990–1999	0.77	M-v	3	Williams	34285	1990 OM_2
1990 QA	12.2	0.15	19990122	163.75131	334.92426	26.43662	19.94085	0.2069254	3.1036996	36	4	1990–1999	0.85	M-v	2	Williams	34285	1990 QA
1990 QG_1	14.2	0.15	19990122	118.74563	350.93958	344.39655	6.59593	0.1363930	2.3597205	50	2	1990–1999	0.75	M-v	4	Williams	33742	1990 QG_1
1990 QV_2	13.1	0.15	19990122	252.03209	133.77830	177.82630	10.37452	0.1008326	3.0045327	38	3	1990–1999	0.70	M-v	4	Williams	31378	1990 QV_2
1990 QG_3	16.5	0.15	19990122	174.56902	325.75650	32.48347	1.65472	0.3018718	2.2372343	26	4	1990–1999	0.73	M-v	2	Williams	31273	1990 QG_3
1990 QO_4	13.2	0.15	19990122	260.51853	303.04451	354.27444	9.63302	0.0762838	2.9998656	55	3	1990–1999	0.72	M-v	4	Williams	34285	1990 QO_4
1990 QW_4	14.1	0.15	19990122	73.26557	306.60778	123.35200	8.66089	0.1502868	2.3048964	27	2	1990–1999	0.55	M-v	5	Williams	34178	1990 QW_4
1990 QV_5	14.7	0.15	19990122	231.69903	165.80202	178.77746	1.89584	0.0933181	2.1521007	20	5	1987–1999	0.74	M-v	2	Williams	34285	1990 QV_5
1990 QT_7	13.3	0.15	19990122	80.52099	183.82788	241.53638	0.71345	0.1172185	3.2518474	39	2	1990–1999	0.80	M-v	5	Williams	34178	1990 QT_7
1990 QK_8	13.5	0.15	19990122	289.71014	139.58203	122.99318	2.21931	0.0766046	2.9990949	45	3	1990–1999	0.79	M-v	5	Williams	34285	1990 QK_8
1990 QQ_8	13.9	0.15	19990122	168.06882	302.02310	52.64459	2.16109	0.1581173	3.1537580	57	3	1990–1999	0.64	M-v	4	Williams	30686	1990 QQ_8
1990 QT_8	15.3	0.15	19990122	270.15083	139.95702	143.93368	4.10053	0.1615966	2.1637315	46	2	1990–1999	0.70	M-v	5	Williams	34179	1990 QT_8
1990 QN_9	14.2	0.15	19990122	64.52872	324.29528	129.25824	4.33366	0.1106561	2.2649871	51	4	1990–1999	0.76	M-v	2	Williams	34285	1990 QN_9
1990 RD_1	12.6	0.15	19990122	116.60178	245.44096	169.68906	9.57599	0.0719346	3.1694682	65	5	1985–1999	0.67	M-v	1	Williams	34285	1990 RD_1
1990 RH_2	14.9	0.15	19990122	102.41945	39.01640	344.22821	6.62772	0.1098902	2.3343240	25	4	1990–1999	0.74	M-v	2	Williams	34006	1990 RH_2
1990 RJ_3	15.1	0.15	19990122	216.51624	318.59217	352.27570	6.28856	0.0788898	2.2384101	45	2	1990–1999	0.58	M-v	4	Williams	34285	1990 RJ_3
1990 RM_3	14.8	0.15	19990122	245.90825	268.88584	354.89339	6.41373	0.1475442	2.2508499	35	3	1990–1999	0.64	M-v	4	Williams	34179	1990 RM_3
1990 RO_6	14.0	0.15	19990122	279.46160	302.71543	356.03337	1.69955	0.0852672	2.9245646	48	4	1990–1999	0.77	M-v	2	Williams	32302	1990 RO_6
1990 RO_8	14.8	0.15	19990122	337.52329	324.23637	159.47816	3.19080	0.1337028	2.3755707	30	3	1990–1999	0.54	M-v	2	Williams	34285	1990 RO_8
1990 RN_{17}	12.1	0.15	19990122	194.18231	29.39809	295.16763	6.77936	0.1798149	3.2244510	26	4	1990–1999	0.78	M-v	2	Williams	34285	1990 RN_{17}
1990 SK	14.2	0.15	19990122	129.92079	326.55078	47.16659	26.06452	0.2688884	2.2889803	25	5	1976–1999	0.56	M-v	2	Williams	30895	1990 SK
1990 SX	12.5	0.15	19990122	191.77202	14.47909	336.48436	11.22452	0.1769179	3.1362062	40	4	1990–1999	0.88	M-v	2	Williams	34285	1990 SX
1990 SA_2	14.3	0.15	19990122	161.64175	7.57270	359.37122	1.43157	0.1322502	2.2746457	53	7	1983–1999	0.93	M-v	2	Williams	34285	1990 SA_2
1990 SB_2	14.0	0.15	19990122	54.29353	268.06986	154.27790	20.09283	0.3500916	2.4050047	24	2	1990–1999	0.64	M-v	4	Williams	34285	1990 SB_2
1990 SJ_2	14.3	0.15	19990122	168.35516	318.72864	80.06320	4.74879	0.1637462	2.2165852	25	4	1980–1999	0.70	M-v	2	Williams	31529	1990 SJ_2
1990 ST_2	14.7	0.15	19990122	168.19983	309.32219	40.09019	2.07668	0.2350798	2.2691582	37	4	1973–1999	0.67	M-v	2	Williams	34285	1990 ST_2
1990 SF_3	13.8	0.15	19990122	114.55596	285.20786	119.04167	3.78383	0.0648324	2.2909646	59	4	1990–1999	0.67	M-v	2	Williams	34285	1990 SF_3
1990 SZ_5	13.1	0.15	19990122	279.66268	89.55791	166.99620	14.52880	0.0789443	3.1371442	44	2	1990–1999	0.68	M-v	4	Williams	34179	1990 SZ_5
1990 ST_6	14.0	0.15	19990122	220.33410	216.86530	105.12054	4.57163	0.1419252	3.1074891	24	4	1979–1999	0.75	M-v	2	Williams	31417	1990 ST_6
1990 SN_7	14.6	0.15	19990122	228.56580	276.68047	48.84744	4.23823	0.2051039	2.1885057	41	4	1977–1999	0.68	M-v	2	Williams	34285	1990 SN_7
1990 SP_8	13.5	0.15	19990122	36.40423	16.29189	150.60616	10.36729	0.0409653	3.0563289	19	3	1990–1999	0.48	M-v	4	Williams	31529	1990 SP_8
1990 SS_8	13.8	0.15	19990122	255.51420	160.09095	163.84294	10.47269	0.0921194	2.9757674	20	4	1990–1999	0.98	M-v	2	Williams	32302	1990 SS_8
1990 SU_9	14.8	0.15	19990122	46.53698	60.64109	52.83498	4.51739	0.1074598	2.2829954	67	3	1990–1999	0.55	M-v	2	Williams	34285	1990 SU_9
1990 SB_{11}	14.8	0.15	19990122	197.49369	82.04952	284.96975	4.45805	0.1744859	2.1957587	32	4	1990–1999	0.68	M-v	2	Williams	31137	1990 SB_{11}
1990 SV_{12}	13.3	0.15	19990122	150.05811	319.90707	63.40817	2.27612	0.1744044	3.1761660	33	6	1985–1999	0.68	M-v	1	Williams	31784	1990 SV_{12}
1990 SY_{15}	14.2	0.15	19990122	142.96839	161.61411	194.55230	5.96403	0.1327335	2.2835193	23	4	1990–1999	0.62	M-v	2	Williams	34179	1990 SY_{15}
1990 SX_{16}	12.8	0.15	19990122	215.20575	339.30684	11.69761	10.19435	0.1191690	2.9765555	40	8	1954–1999	0.72	M-v	1	Williams	31583	1990 SX_{16}
1990 SK_{28}	13.8	0.15	19990122	34.47976	19.14415	346.90734	2.50697	0.1564764	2.5233355	78	4	1990–1999	0.58	M-v	2	Williams	33742	1990 SK_{28}
1990 TQ_1	15.1	0.15	19990122	165.72821	242.99264	123.64211	5.96464	0.1781124	2.2602231	21	4	1980–1999	0.81	M-v	2	Williams	27325	1990 TQ_1
1990 TE_2	15.5	0.15	19990122	336.61779	271.73142	241.66573	3.96657	0.1389438	2.3669306	17	2	1990–1999	0.71	M-v	5	Williams	34180	1990 TE_2
1990 TK_4	15.1	0.15	19990122	57.09246	237.96804	228.76484	2.95266	0.1250855	2.3235015	54	4	1990–1999	0.74	M-v	1	Williams	34286	1990 TK_4
1990 TT_4	13.2	0.15	19990122	167.95621	235.01503	163.46544	10.82516	0.2259481	3.1519447	45	3	1990–1999	0.82	M-v	4	Williams	34286	1990 TT_4

1990 TX_4	13.3	0.15	19990122	260.04523	88.24185	213.18481	8.22278	0.1447250	2.9784477	19	3	1990–1999	0.45	M-v	4	Williams	31228	1990 TX_4
1990 TG_5	14.4	0.15	19990122	150.03771	83.90159	295.78121	3.75821	0.1850115	2.2510864	29	3	1990–1999	0.88	M-v	4	Williams	34286	1990 TG_5
1990 TY_7	14.5	0.15	19990122	342.28272	116.66995	26.62155	2.97674	0.1115399	2.4055029	40	3	1990–1999	0.51	M-v	2	Williams	34286	1990 TY_7
1990 TE_9	14.0	0.15	19990122	188.09835	344.44792	326.05789	4.36343	0.1476184	2.3031523	65	3	1990–1999	0.73	M-v	3	Williams	34286	1990 TE_9
1990 TO_9	15.2	0.15	19990122	126.86815	126.49601	277.21525	3.23149	0.1365476	2.2835442	31	3	1990–1999	0.43	M-v	4	Williams	31005	1990 TO_9
1990 TB_{13}	13.4	0.15	19990122	265.61621	187.08889	132.99430	10.63901	0.0748798	2.9925455	18	2	1990–1998	0.48	M-v	6	Williams	33225	1990 TB_{13}
1990 TG_{13}	14.7	0.15	19990122	18.55920	23.34585	65.09090	11.49945	0.2004635	2.4263858	57	4	1990–1999	0.73	M-v	3	Williams	34286	1990 TG_{13}
1990 TH_{13}	12.8	0.15	19990122	188.79732	307.87437	83.31056	10.82339	0.1024446	3.0467001	23	3	1990–1998	0.65	M-v	4	Williams	33225	1990 TH_{13}
1990 TK_{13}	13.6	0.15	19990122	209.72351	260.97637	99.19779	10.80623	0.1013515	3.0635697	35	4	1990–1999	0.66	M-v	1	Williams	31583	1990 TK_{13}
1990 UB_1	12.2	0.15	19990122	166.98950	15.48815	32.90349	14.76345	0.1503109	3.1480243	53	4	1990–1999	0.76	M-v	1	Williams	32046	1990 UB_1
1990 UF_1	13.7	0.15	19990122	216.94472	286.41241	58.71534	4.47304	0.1502837	2.2234760	32	4	1990–1999	0.78	M-v	2	Williams	31274	1990 UF_1
1990 UH_1	13.8	0.15	19990122	98.16685	306.50248	91.27190	9.54319	0.2444725	2.3639538	34	4	1990–1999	0.61	M-v	2	Williams	34286	1990 UH_1
1990 US_3	13.1	0.15	19990122	185.67680	283.28617	90.19230	7.30451	0.1478353	3.1653262	25	4	1990–1999	1.00	M-v	2	Williams	31784	1990 US_3
1990 UY_3	12.6	0.15	19990122	199.89131	294.42024	68.04904	9.97862	0.2240310	3.1253861	33	4	1990–1999	0.79	M-v	2	Williams	31583	1990 UY_3
1990 UE_4	13.7	0.15	19990122	145.66601	303.21689	132.04219	6.18494	0.1491976	3.1510673	27	5	1979–1998	0.72	M-v	1	Williams	34286	1990 UE_4
1990 UO_4	14.2	0.15	19990122	341.84039	133.80200	188.80452	12.09020	0.1416904	2.7730118	21	2	1990–1998	0.96	M-v	5	Williams	33225	1990 UO_4
1990 UR_4	14.8	0.15	19990122	7.27474	77.33794	80.76826	6.32351	0.0735270	2.3177755	38	3	1982–1999	0.85	M-v	3	Williams	34286	1990 UR_4
1990 UN_5	15.0	0.15	19990122	185.58327	304.32201	104.29369	6.78789	0.2632030	3.0669940	18	3	1990–1997	0.54	M-v	3	Williams	33225	1990 UN_5
1990 VM	13.1	0.15	19990122	168.72055	277.49296	115.32063	8.71765	0.1636478	3.1689829	27	3	1990–1999	0.87	M-v	4	Williams	31716	1990 VM
1990 VB_6	14.1	0.15	19990122	89.41976	298.07018	133.01796	7.54796	0.0823905	2.3488364	46	4	1990–1999	0.74	M-v	2	Williams	34286	1990 VB_6
1990 VC_6	13.8	0.15	19990122	148.86518	51.58284	204.41246	12.46955	0.1692145	2.5889322	30	3	1972–1998	0.67	M-v	3	Williams	34180	1990 VC_6
1990 WF	13.4	0.15	19990122	173.12697	255.37554	130.93755	4.52740	0.1441066	2.2540237	23	3	1990–1999	0.55	M-v	3	Williams	31784	1990 WF
1990 WD_1	13.7	0.15	19990122	47.51542	103.79232	85.44700	14.47550	0.1693201	3.1489581	29	3	1990–1998	0.73	M-v	3	Williams	33226	1990 WD_1
1990 WR_1	15.0	0.15	19990122	180.80877	222.91989	130.07731	6.20447	0.1582437	2.2835210	20	2	1990–1999	0.80	M-v	5	Williams	34180	1990 WR_1
1990 WV_1	14.8	0.15	19990122	24.30848	4.10125	131.80349	5.27854	0.0439210	2.3466050	44	4	1990–1999	0.77	M-v	2	Williams	34286	1990 WV_1
1990 WH_4	14.6	0.15	19990122	350.60505	84.23602	80.08322	11.22140	0.1548081	2.3968259	30	2	1990–1999	0.67	M-v	3	Williams	34180	1990 WH_4
1990 WA_5	13.0	0.15	19990122	93.63355	142.76528	119.35948	6.34666	0.0133685	2.7419899	34	6	1985–1998	0.82	M-v	1	Williams	33336	1990 WA_5
1990 XN	13.7	0.15	19990122	11.57539	17.41627	86.47610	6.33792	0.1584244	2.4656978	76	3	1990–1999	0.67	M-v	2	Williams	34286	1990 XN
1990 YM	12.5	0.15	19990122	48.10376	38.53029	103.86926	24.36641	0.2508477	2.3895386	49	6	1990–1999	0.69	M-v	2	Williams	31137	1990 YM
1991 AL	13.8	0.15	19990122	61.89091	339.17270	106.04258	5.51897	0.1877217	2.4369856	48	5	1982–1999	0.82	M-v	1	Williams	34286	1991 AL
1991 AQ_2	15.2	0.15	19990122	39.90901	179.54149	286.91265	0.06766	0.1749599	2.4597711	44	4	1991–1999	0.70	M-v	2	Williams	34286	1991 AQ_2
1991 AS_2	14.6	0.15	19990122	143.86923	85.37259	294.81237	4.82601	0.1647590	2.3991865	34	4	1989–1999	0.67	M-v	1	Williams	34286	1991 AS_2
1991 AV_2	14.7	0.15	19990122	29.86767	188.63216	319.61898	1.56909	0.1453111	2.4183241	58	4	1991–1999	0.70	M-v	2	Williams	31137	1991 AV_2
1991 CG_1	14.6	0.15	19990122	354.57843	133.10004	346.81828	4.61192	0.1974959	2.5546792	55	3	1991–1999	0.70	M-v	3	Williams	34007	1991 CG_1
1991 CP_1	14.4	0.15	19990122	51.47703	7.78358	112.53723	5.09109	0.1295455	2.4321777	46	4	1991–1999	0.68	M-v	1	Williams	31137	1991 CP_1
1991 CW_2	14.0	0.15	19990122	72.02313	79.82123	13.77740	8.04199	0.1273640	2.4850240	67	4	1981–1999	0.70	M-v	3	Williams	34286	1991 CW_2
1991 DW	13.0	0.15	19990122	239.07874	162.00261	91.40454	16.60654	0.1027109	2.5983740	47	2	1991–1999	0.56	M-v	4	Williams	34286	1991 DW
1991 EG_1	13.4	0.15	19990122	6.30569	313.64259	177.19606	14.89839	0.1285995	2.5800531	25	3	1991–1999	0.83	M-v	3	Williams	34286	1991 EG_1
1991 FK	14.5	0.15	19990122	334.42613	174.70205	358.95880	19.70284	0.0538231	1.9387005	40	2	1991–1999	0.84	M-v	3	Williams	34286	1991 FK
1991 FL_2	13.0	0.15	19990122	6.52267	46.88287	347.70998	11.07504	0.0924278	2.8136094	68	3	1984–1999	0.64	M-v	3	Williams	33743	1991 FL_2
1991 FX_2	13.1	0.15	19990122	126.39763	1.93965	18.28263	13.26312	0.1704242	2.5885853	39	4	1991–1999	0.76	M-v	4	Williams	34286	1991 FX_2
1991 GV	12.7	0.15	19990122	258.16120	232.55237	64.10361	9.18049	0.2080663	2.5331339	51	6	1979–1999	0.64	M-v	2	Williams	34286	1991 GV
1991 GZ_1	14.8	0.15	19990122	4.55796	106.25963	48.35231	23.79647	0.0547224	1.9276704	25	4	1991–1999	0.79	M-v	2	Williams	27120	1991 GZ_1
1991 GC_2	13.4	0.15	19990122	300.20085	75.91324	120.77395	12.26531	0.1995310	2.6572683	31	2	1991–1999	0.76	M-v	4	Williams	34286	1991 GC_2
1991 GZ_5	14.2	0.15	19990122	77.54714	143.89289	277.11213	1.47807	0.1412531	2.6063483	30	3	1991–1999	0.72	M-v	5	Williams	34181	1991 GZ_5
1991 GD_8	13.7	0.15	19990122	299.77153	208.69294	218.96635	9.28562	0.0469564	3.0595529	27	3	1991–1998	0.54	M-v	2	Williams	33336	1991 GD_8
1991 LQ	14.0	0.15	19990122	271.28412	204.33391	94.28436	15.22968	0.1498489	2.5789188	17	4	1991–1999	0.73	M-v	3	Williams	31274	1991 LQ
1991 LW	13.6	0.15	19990122	336.79405	116.38027	91.17438	12.13767	0.1813080	2.5703029	46	6	1954–1999	0.80	M-v	2	Williams	31138	1991 LW
1991 LY	13.1	0.15	19990122	250.59859	182.75749	117.64358	15.74694	0.1812097	2.6306060	25	5	1986–1999	0.73	M-v	2	Williams	34286	1991 LY
1991 LA_1	13.9	0.15	19990122	321.39694	100.00068	133.01270	14.50124	0.1327952	2.5824682	22	4	1991–1999	0.42	M-v	2	Williams	27728	1991 LA_1
1991 LF_2	13.6	0.15	19990122	24.28222	230.57154	186.74482	1.81384	0.0952822	2.9279761	17	4	1980–1998	0.64	M-v	3	Williams	34181	1991 LF_2
1991 NM_6	13.5	0.15	19990122	182.87034	208.72255	148.57059	5.79362	0.0669960	2.7402717	37	3	1987–1999	0.84	M-v	4	Williams	34287	1991 NM_6
1991 PU	13.7	0.15	19990122	198.67996	80.93083	290.00149	4.16239	0.1295939	2.7102890	42	4	1991–1999	0.81	M-v	2	Williams	34287	1991 PU

1991 PB_2	14.6	0.15	19990122	337.63460	114.00630	112.51951	6.36409	0.1995373	2.6150523	27	4	1991–1999	0.85	M-v	2	Williams	31274	1991 PB_2
1991 PV_5	16.5	0.15	19990122	62.20106	196.80879	133.24246	4.12203	0.2230404	2.2621129	32	2	1991–1998	0.71	M-v	4	Williams	34181	1991 PV_5
1991 PN_8	14.0	0.15	19990122	175.90334	212.94133	175.33066	1.95203	0.2312685	2.7672377	31	5	1982–1999	0.89	M-v	2	Williams	31785	1991 PN_8
1991 PP_8	13.9	0.15	19990122	116.64941	252.11810	78.84198	2.42824	0.1662836	3.1247530	19	3	1989–1997	0.41	M-v	4	Williams	33227	1991 PP_8
1991 PV_9	13.2	0.15	19990122	301.62937	107.07119	169.79513	14.11226	0.1784615	2.5943923	22	3	1991–1999	0.90	M-v	3	Williams	34182	1991 PV_9
1991 PE_{10}	13.9	0.15	19990122	186.43301	38.06029	338.43495	8.67511	0.1739734	2.7907954	35	7	1954–1999	0.80	M-v	1	Williams	31583	1991 PE_{10}
1991 PF_{11}	13.2	0.15	19990122	278.03171	346.24833	288.44519	8.39930	0.1335397	2.7530476	49	3	1991–1999	0.61	M-v	4	Williams	34287	1991 PF_{11}
1991 PT_{16}	12.8	0.15	19990122	203.63577	165.48639	152.59691	2.39567	0.0636342	2.9116738	31	3	1991–1999	0.63	M-v	3	Williams	34287	1991 PT_{16}
1991 PB_{20}	14.3	0.15	19990122	290.71686	344.45212	118.17570	5.90283	0.0862773	2.2730090	34	3	1991–1998	0.87	M-v	4	Williams	33545	1991 PB_{20}
1991 RE_1	13.7	0.15	19990122	290.21999	173.70300	312.88252	4.36213	0.0954251	2.2414925	40	3	1991–1999	0.75	M-v	4	Williams	33743	1991 RE_1
1991 RQ_2	16.4	0.15	19990122	13.05925	186.36647	203.51023	5.39977	0.2296843	2.3132050	18	3	1977–1998	0.57	M-v	4	Williams	34182	1991 RQ_2
1991 RX_4	13.2	0.15	19990122	172.16256	140.62144	203.95866	8.45897	0.0734619	2.9969428	30	3	1981–1999	0.63	M-v	3	Williams	34287	1991 RX_4
1991 RC_5	12.9	0.15	19990122	93.68042	72.16921	0.68849	10.88024	0.0914657	3.0084103	65	3	1991–1999	0.73	M-v	2	Williams	34287	1991 RC_5
1991 RS_7	14.1	0.15	19990122	276.05126	180.20741	108.42559	8.51522	0.1125435	2.7564672	47	3	1991–1999	0.64	M-v	3	Williams	31274	1991 RS_7
1991 RB_9	14.1	0.15	19990122	144.94552	232.89991	178.20749	1.95304	0.0624714	2.8656827	38	4	1991–1999	0.41	M-v	1	Williams	31584	1991 RB_9
1991 RA_{11}	12.2	0.15	19990122	8.39938	104.13998	20.06085	17.17946	0.1219780	3.1899290	27	2	1991–1999	0.66	M-v	3	Williams	34182	1991 RA_{11}
1991 RB_{12}	13.9	0.15	19990122	143.40006	83.25906	320.06126	12.74883	0.1701372	2.8102995	47	4	1991–1999	0.69	M-v	1	Williams	31785	1991 RB_{12}
1991 RB_{13}	13.7	0.15	19990122	208.75999	16.27958	344.11929	7.66290	0.2302059	2.7875165	32	4	1977–1999	0.71	M-v	2	Williams	32047	1991 RB_{13}
1991 RZ_{14}	13.0	0.15	19990122	119.68936	217.92740	196.13780	1.48842	0.0623338	2.9088510	51	2	1991–1999	0.71	M-v	4	Williams	34287	1991 RZ_{14}
1991 RK_{23}	14.1	0.15	19990122	114.48454	230.85634	92.02978	3.26973	0.0968203	2.2013137	26	4	1991–1998	0.51	M-v	3	Williams	33680	1991 RK_{23}
1991 RG_{25}	13.0	0.15	19990122	244.32084	223.03259	92.10641	9.12895	0.2167366	2.8003170	20	3	1991–1999	0.56	M-v	4	Marsden	31230	1991 RG_{25}
1991 RC_{28}	13.9	0.15	19990122	281.88761	55.14668	155.58103	12.79525	0.0846675	2.9904380	48	4	1985–1999	0.53	M-v	1	Williams	34287	1991 RC_{28}
1991 RS_{40}	14.2	0.15	19990122	212.12638	327.29075	31.04126	2.10619	0.0810521	2.7806895	27	3	1991–1999	0.55	M-v	4	Williams	31417	1991 RS_{40}
1991 SN	12.7	0.15	19990122	177.57187	198.19800	107.49295	11.00527	0.0851778	3.0219429	57	5	1990–1999	0.68	M-v	1	Williams	34287	1991 SN
1991 SY	13.2	0.15	19990122	338.19038	207.19009	29.12211	13.66172	0.1274533	2.6838658	24	6	1981–1999	0.59	M-v	1	Williams	29659	1991 SY
1991 TF_1	13.4	0.15	19990122	63.72170	274.86432	170.75502	17.70371	0.1284049	3.1850511	39	4	1991–1999	0.60	M-v	1	Williams	34182	1991 TF_1
1991 TD_6	14.9	0.15	19990122	303.31201	263.35064	266.78661	2.67976	0.0381054	2.1628322	35	4	1987–1999	0.66	M-v	2	Williams	33932	1991 TD_6
1991 UN_3	13.6	0.15	19990122	45.26330	304.66083	84.33897	4.56429	0.0970112	2.2940247	79	3	1991–1999	0.82	M-v	3	Williams	34007	1991 UN_3
1991 UZ_3	15.5	0.15	19990122	330.52801	291.01066	130.71769	1.77267	0.1717445	2.3852965	29	3	1991–1998	0.70	M-v	3	Williams	33070	1991 UZ_3
1991 VD_2	12.7	0.15	19990122	118.75032	301.23139	103.66709	3.01752	0.1812596	3.1092294	89	4	1985–1999	0.69	M-v	3	Williams	34287	1991 VD_2
1991 VN_4	12.2	0.15	19990122	165.79384	279.01727	93.36419	11.64629	0.1039992	3.0084587	44	3	1991–1999	0.75	M-v	3	Williams	34287	1991 VN_4
1991 VX_5	12.8	0.15	19990122	33.11202	82.23547	87.10288	10.86071	0.0496800	2.9851618	41	3	1991–1999	0.73	M-v	2	Williams	31786	1991 VX_5
1991 VP_7	13.3	0.15	19990122	230.60548	109.73075	212.91734	14.19577	0.0464964	2.9347471	44	4	1989–1999	0.80	M-v	2	Williams	34287	1991 VP_7
1991 VL_{10}	13.9	0.15	19990122	206.84870	186.73284	165.68714	2.17483	0.0840205	2.9090742	30	4	1976–1999	0.65	M-v	1	Williams	32304	1991 VL_{10}
1991 XL	14.2	0.15	19990122	120.06744	224.37560	78.21862	5.14937	0.1398554	2.3137991	53	3	1991–1999	0.69	M-v	3	Williams	33744	1991 XL
1991 XN	15.3	0.15	19990122	6.35648	17.23228	64.86624	8.60942	0.2875720	2.3201233	48	2	1991–1999	0.70	M-v	3	Williams	33744	1991 XN
1992 AU_1	14.0	0.15	19990122	6.59314	45.97930	87.74845	24.66870	0.2535643	2.2713066	48	3	1991–1999	0.71	M-v	2	Williams	34288	1992 AU_1
1992 BX	13.5	0.15	19990122	339.90329	175.73855	285.65628	9.92076	0.1939361	2.3972370	35	5	1977–1999	0.72	M-v	2	Williams	34008	1992 BX
1992 BC_2	13.6	0.15	19990122	138.01442	189.76639	269.93419	8.55456	0.1266867	3.0041138	22	2	1992–1998	0.59	M-v	6	Williams	32927	1992 BC_2
1992 BD_2	13.1	0.15	19990122	156.87394	235.04796	145.60383	10.88082	0.2209147	3.1687335	50	3	1992–1999	0.66	M-v	3	Williams	31786	1992 BD_2
1992 BP_2	14.8	0.15	19990122	302.23689	244.03871	217.11889	5.53679	0.0869758	2.4776178	35	3	1992–1998	0.67	M-v	3	Williams	33338	1992 BP_2
1992 CC_1	15.3	0.15	19990122	191.35527	21.90396	349.30717	36.89515	0.3750806	1.3915551	144	5	1992–1999	0.60	M-v	2	Marsden	30091	1992 CC_1
1992 CR_2	14.5	0.15	19990122	290.10526	54.98776	201.94318	4.07989	0.1066366	2.1912558	69	3	1992–1999	0.66	M-v	3	Williams	34288	1992 CR_2
1992 CU_2	12.8	0.15	19990122	181.45389	98.96971	277.11106	8.10980	0.0806216	3.1736564	46	5	1988–1999	0.63	M-v	1	Williams	31584	1992 CU_2
1992 CJ_3	15.2	0.15	19990122	66.53308	261.12110	173.89559	4.15086	0.1559900	2.2417576	48	3	1992–1999	0.65	M-v	4	Williams	34288	1992 CJ_3
1992 CK_3	13.7	0.15	19990122	63.07238	204.18591	228.95570	2.62232	0.1172911	2.2586946	27	2	1992–1999	0.47	M-v	5	Williams	34183	1992 CK_3
1992 DY	13.5	0.15	19990122	344.22571	110.31717	112.58177	5.90037	0.1056893	2.2110148	24	3	1992–1999	0.66	M-v	3	Williams	34008	1992 DY
1992 DC_1	14.4	0.15	19990122	17.49400	27.54033	114.80203	6.52597	0.1200893	2.2835444	32	2	1992–1999	0.65	M-v	5	Williams	34183	1992 DC_1
1992 DU_5	14.3	0.15	19990122	1.12296	233.74034	148.33864	10.18090	0.2168667	2.5823446	51	4	1990–1998	0.59	M-v	2	Williams	33070	1992 DU_5
1992 DW_5	12.9	0.15	19990122	255.56385	296.81725	42.31066	1.93200	0.2010476	3.2211610	36	6	1977–1999	0.68	M-v	1	Williams	32304	1992 DW_5
1992 DW_7	14.9	0.15	19990122	336.67187	37.33083	71.93238	2.64239	0.1014551	2.4385043	23	2	1992–1998	0.53	M-v	5	Williams	33744	1992 DW_7
1992 DF_{10}	14.4	0.15	19990122	112.91105	178.55151	214.54803	4.96140	0.1585464	2.2730489	34	5	1980–1999	0.81	M-v	3	Williams	34288	1992 DF_{10}
1992 DA_{12}	15.2	0.15	19990122	355.45515	326.96505	193.08625	0.36131	0.1059200	2.2898775	54	3	1979–1999	0.69	M-v	3	Williams	34183	1992 DA_{12}

1992 EB_5	11.9	0.15	19990122	48.71814	27.89146	151.50246	22.49319	0.0410398	3.2151770	34	4	1987–1999	0.72	M-v	2	Williams	32304	1992 EB_5
1992 EV_5	14.5	0.15	19990122	289.79298	101.39336	129.16064	6.86013	0.0865723	2.2983446	18	3	1986–1999	0.82	M-v	4	Williams	34184	1992 EV_5
1992 EB_8	15.2	0.15	19990122	147.61793	241.07327	165.28065	1.21378	0.1209100	2.1833924	29	5	1987–1999	0.81	M-v	2	Williams	31138	1992 EB_8
1992 ED_{13}	14.7	0.15	19990122	124.23867	148.21767	197.01905	6.33271	0.1417904	2.3954736	34	5	1990–1999	0.71	M-v	2	Williams	34008	1992 ED_{13}
1992 EC_{15}	14.4	0.15	19990122	6.18035	296.45536	164.83361	23.30478	0.2557575	2.3524099	22	2	1992–1999	0.87	M-v	3	Williams	34288	1992 EC_{15}
1992 ER_{17}	14.0	0.15	19990122	34.88980	100.63740	325.50860	1.77675	0.1884488	2.3706554	24	2	1992–1999	0.77	M-v	4	Williams	34008	1992 ER_{17}
1992 ER_{18}	14.5	0.15	19990122	241.23592	201.64939	357.58697	9.46409	0.1267994	2.4750664	12	3	1992–1999	0.36	M-v	4	Williams	34288	1992 ER_{18}
1992 EL_{35}	14.7	0.15	19990122	254.56548	114.40516	175.90783	5.48008	0.1597502	2.2680858	34	3	1992–1999	0.59	M-v	4	Williams	27935	1992 EL_{35}
1992 FG	13.8	0.15	19990122	302.61301	244.73358	15.39692	6.16464	0.1524987	2.2645638	21	3	1992–1999	0.77	M-v	4	Williams	25340	1992 FG
1992 FD_1	14.4	0.15	19990122	344.03148	175.05515	25.93897	4.21358	0.1200800	2.2778572	26	3	1992–1999	0.67	M-v	4	Williams	31138	1992 FD_1
1992 FK_1	14.7	0.15	19990122	3.73593	238.45150	274.12686	22.14479	0.2487385	2.2817961	13	3	1975–1999	0.55	M-v	3	Williams	21580	1992 FK_1
1992 FT_1	13.9	0.15	19990122	308.76569	194.21783	353.42026	4.94648	0.1687307	2.3794121	53	3	1987–1999	0.77	M-v	3	Williams	34288	1992 FT_1
1992 FA_2	12.8	0.15	19990122	306.15913	345.89230	74.09393	6.31826	0.0486544	2.7402982	46	4	1992–1998	0.80	M-v	3	Williams	33547	1992 FA_2
1992 GN_3	15.1	0.15	19990122	254.34740	288.07800	6.69504	2.23135	0.2358936	2.3628433	22	3	1992–1999	0.81	M-v	5	Williams	34288	1992 GN_3
1992 GW_4	14.9	0.15	19990122	332.21976	171.13387	38.90016	7.23526	0.1030837	2.3187622	52	3	1992–1999	0.80	M-v	3	Williams	34288	1992 GW_4
1992 GC_8	13.9	0.15	19990122	123.12596	205.17256	96.26660	5.82993	0.0501464	2.6225336	33	3	1992–1998	0.64	M-v	4	Williams	33547	1992 GC_8
1992 HH_5	14.9	0.15	19990122	286.84848	278.99124	345.31769	3.27497	0.2115545	2.3236010	43	2	1992–1999	0.60	M-v	5	Williams	34185	1992 HH_5
1992 JU_2	14.9	0.15	19990122	306.88854	125.64259	211.71709	5.19174	0.2299015	2.1855183	26	2	1992–1998	0.73	M-v	6	Williams	32928	1992 JU_2
1992 JF_3	14.2	0.15	19990122	290.26577	265.57992	352.08219	2.09364	0.1961810	2.3542712	56	4	1992–1999	0.69	M-v	1	Williams	34288	1992 JF_3
1992 JH_3	14.2	0.15	19990122	185.14609	60.78025	208.99555	3.51271	0.2226660	2.6110262	28	3	1992–1998	0.77	M-v	4	Williams	33682	1992 JH_3
1992 KA	14.1	0.15	19990122	104.70946	176.03715	206.53808	5.10954	0.0862749	2.4878828	34	4	1992–1999	0.54	M-v	2	Williams	34185	1992 KA
1992 LK	14.2	0.15	19990122	291.59075	224.84914	75.51761	6.46017	0.2263574	2.2932272	33	4	1982–1999	0.81	M-v	2	Williams	34008	1992 LK
1992 ME	13.7	0.15	19990122	318.02594	134.09485	120.57662	24.20434	0.2520638	2.2997277	45	3	1992–1999	0.65	M-v	2	Williams	34009	1992 ME
1992 OY_2	14.4	0.15	19990122	211.35235	227.65360	134.26802	4.56782	0.1941551	2.4614926	35	4	1989–1999	0.95	M-v	2	Williams	31584	1992 OY_2
1992 OL_3	14.0	0.15	19990122	40.08853	168.27892	153.30940	2.14205	0.1441207	3.2222671	24	2	1992–1998	0.78	M-v	5	Williams	34185	1992 OL_3
1992 PM	14.7	0.15	19990122	177.79767	190.59596	219.47748	2.32465	0.1688776	2.4378866	27	5	1977–1998	0.60	M-v	1	Williams	32928	1992 PM
1992 PU	14.8	0.15	19990122	259.09956	129.41391	219.50440	2.64084	0.1091868	2.3533728	28	3	1992–1998	0.74	M-v	4	Williams	33231	1992 PU
1992 PC_2	13.8	0.15	19990122	238.71336	80.66855	217.89552	7.27683	0.0952952	2.5182124	34	2	1992–1999	0.61	M-v	4	Williams	34186	1992 PC_2
1992 PV_3	14.9	0.15	19990122	322.34092	194.24449	106.23654	4.17293	0.1602259	2.2990343	15	4	1977–1998	0.55	M-v	2	Williams	34186	1992 PV_3
1992 PP_6	14.1	0.15	19990122	267.86273	218.41663	131.23875	8.98544	0.0649189	2.3257043	29	4	1985–1998	0.66	M-v	2	Williams	33232	1992 PP_6
1992 QB	14.1	0.15	19990122	278.90870	243.49068	55.75435	24.11503	0.2239872	2.3714768	25	3	1974–1999	0.65	M-v	2	Marsden	22432	1992 QB
1992 RC_4	13.8	0.15	19990122	142.85451	136.57640	231.08006	1.64314	0.0844313	2.6836717	29	4	1988–1999	0.93	M-v	2	Williams	34288	1992 RC_4
1992 SC_1	14.2	0.15	19990122	219.73783	209.88621	145.13327	5.09177	0.2073861	2.5208804	36	3	1992–1999	0.94	M-v	4	Williams	31721	1992 SC_1
1992 SY_9	16.7	0.15	19990122	100.34921	330.66022	164.78776	0.87470	0.0790710	2.4747128	18	2	1992–1998	1.41	M-v	7	Williams	33232	1992 SY_9
1992 SM_{16}	13.4	0.15	19990122	55.33545	308.09269	182.58906	10.47775	0.0576009	2.6100616	37	5	1978–1999	0.74	M-v	2	Williams	33483	1992 SM_{16}
1992 SF_{17}	15.4	0.15	19990122	155.53785	196.64248	204.09847	2.81392	0.1938611	2.6047136	16	3	1988–1999	0.57	M-v	5	Williams	34186	1992 SF_{17}
1992 SR_{25}	13.6	0.15	19990122	48.02886	52.71546	355.32084	9.90271	0.1101349	2.9811077	40	3	1992–1999	0.59	M-v	2	Williams	34009	1992 SR_{25}
1992 TJ_1	13.5	0.15	19990122	199.02447	179.17067	150.06906	14.45223	0.1819320	2.6514682	34	3	1992–1999	0.51	M-v	3	Williams	34186	1992 TJ_1
1992 UW	13.6	0.15	19990122	199.12491	19.16552	2.30884	2.88092	0.2358981	2.5504292	43	3	1992–1999	0.72	M-v	4	Williams	31721	1992 UW
1992 UT_1	13.6	0.15	19990122	284.25905	211.51915	83.10022	4.59559	0.1457876	2.5204569	28	6	1988–1999	0.83	M-v	2	Williams	31275	1992 UT_1
1992 UH_4	12.5	0.15	19990122	190.21237	269.90608	73.90704	13.68591	0.1904705	2.6743664	29	4	1991–1999	0.74	M-v	2	Williams	34289	1992 UH_4
1992 UX_4	12.9	0.15	19990122	99.28191	173.22109	239.62360	16.13711	0.3284628	2.8691332	35	4	1929–1999	0.94	M-v	2	Williams	34289	1992 UX_4
1992 UO_5	13.2	0.15	19990122	111.01828	353.44532	77.06413	9.73908	0.0735857	2.7298114	17	3	1992–1999	0.66	M-v	4	Williams	30979	1992 UO_5
1992 UL_6	13.8	0.15	19990122	109.52170	5.85668	74.93475	6.31262	0.1819131	2.7364463	30	4	1980–1999	0.70	M-v	1	Williams	31418	1992 UL_6
1992 UK_9	13.9	0.15	19990122	230.68950	233.45552	96.14162	3.97279	0.0325297	2.6297525	30	4	1977–1999	0.69	M-v	1	Williams	31232	1992 UK_9
1992 WB	13.0	0.15	19990122	171.58676	342.25082	22.23941	9.83711	0.1014031	2.6825639	40	3	1977–1999	0.72	M-v	4	Williams	34187	1992 WB
1992 WF_1	12.1	0.15	19990122	101.72803	262.49254	101.77746	11.06710	0.1010715	3.0287188	54	3	1992–1999	0.64	M-v	3	Williams	34289	1992 WF_1
1992 WK_1	12.4	0.15	19990122	49.29509	324.53118	76.38246	18.18068	0.2072310	3.1528320	54	3	1990–1999	0.70	M-v	3	Williams	33745	1992 WK_1
1992 WN_1	13.9	0.15	19990122	73.14323	306.84813	132.09800	5.52303	0.1646100	2.9142884	37	5	1991–1999	0.83	M-v	1	Williams	34289	1992 WN_1
1992 WS_1	13.2	0.15	19990122	13.17697	25.30210	76.49060	6.27274	0.1750831	3.1232324	35	2	1992–1999	0.71	M-v	4	Williams	34187	1992 WS_1
1992 WT_1	12.9	0.15	19990122	152.14703	291.48498	84.18638	7.52850	0.2591570	2.7621692	45	3	1992–1999	0.86	M-v	3	Williams	34289	1992 WT_1
1992 WB_2	13.4	0.15	19990122	237.69192	5.65234	335.16736	1.64363	0.1695533	2.5694909	45	5	1975–1999	0.68	M-v	1	Williams	31722	1992 WB_2
1992 WH_2	12.4	0.15	19990122	289.76188	326.96780	240.57541	12.42414	0.1015103	2.9769463	45	3	1992–1999	0.64	M-v	4	Williams	34009	1992 WH_2

1992 WD_3	13.7	0.15	19990122	291.43044	278.34742	148.87540	5.43480	0.1394571	2.2657789	24	5	1990–1998	0.75	M-v	2	Williams	34187	1992 WD_3
1992 WL_3	12.3	0.15	19990122	40.10714	200.61281	204.53973	10.91521	0.0443409	3.2187965	25	6	1975–1998	0.69	M-v	1	Williams	34187	1992 WL_3
1992 YU_1	13.3	0.15	19990122	199.36115	85.48331	286.56138	5.12240	0.0830351	2.7238608	36	4	1987–1999	0.84	M-v	2	Williams	31585	1992 YU_1
1993 BE_2	12.1	0.15	19990122	155.00546	270.31934	97.67729	11.99870	0.1140894	3.0119763	43	6	1965–1999	0.69	M-v	2	Williams	34289	1993 BE_2
1993 BG_6	15.7	0.15	19990122	345.55509	147.36819	312.04756	2.02502	0.0371275	2.1736973	18	2	1993–1998	0.60	M-v	7	Williams	34187	1993 BG_6
1993 DR_2	12.8	0.15	19990122	174.86545	34.15464	326.95688	8.90655	0.0964698	3.0226499	31	3	1993–1999	0.72	M-v	4	Williams	34289	1993 DR_2
1993 DU_2	14.0	0.15	19990122	17.45611	179.24869	339.52667	4.87259	0.1147795	3.0922976	23	2	1993–1999	0.79	M-v	5	Williams	34188	1993 DU_2
1993 EU	13.3	0.15	19990122	188.87971	135.92950	82.94400	3.14565	0.1670554	2.3734349	45	3	1993–1998	0.73	M-v	4	Williams	33338	1993 EU
1993 FT_4	12.8	0.15	19990122	334.45125	111.64005	123.39348	2.64721	0.1442995	3.1599803	38	6	1981–1999	0.71	M-v	1	Williams	31275	1993 FT_4
1993 FN_7	13.0	0.15	19990122	216.29060	218.37050	141.85335	6.32199	0.1507942	3.0597439	21	3	1993–1999	0.71	M-v	5	Williams	31960	1993 FN_7
1993 FN_9	15.0	0.15	19990122	309.29031	49.42157	47.12373	4.04995	0.0516082	2.3381601	48	3	1993–1998	0.74	M-v	4	Williams	33071	1993 FN_9
1993 FG_{12}	13.3	0.15	19990122	77.93478	296.01447	174.46070	14.53260	0.1493035	3.1466130	24	4	1993–1999	0.52	M-v	1	Williams	34289	1993 FG_{12}
1993 FS_{14}	12.7	0.15	19990122	148.93785	295.25937	105.03099	6.44226	0.1597758	3.1625302	52	5	1992–1999	0.68	M-v	1	Williams	33339	1993 FS_{14}
1993 FA_{20}	12.5	0.15	19990122	182.76592	339.67369	56.02479	10.63210	0.1500985	3.0410311	15	3	1993–1999	0.54	M-v	4	Williams	31723	1993 FA_{20}
1993 FB_{23}	13.6	0.15	19990122	288.31298	71.13638	206.60028	5.85960	0.0877736	3.2233233	26	3	1993–1999	0.40	M-v	2	Williams	26191	1993 FB_{23}
1993 FZ_{23}	12.9	0.15	19990122	287.60593	298.53945	11.80616	16.50055	0.2195605	3.1315132	20	3	1993–1999	0.46	M-v	4	Williams	32050	1993 FZ_{23}
1993 FO_{24}	14.0	0.15	19990122	88.85497	105.79062	349.12762	4.61343	0.1594541	3.1687406	15	3	1993–1999	0.63	M-v	4	Williams	32515	1993 FO_{24}
1993 FD_{28}	13.9	0.15	19990122	89.38205	144.52277	346.45766	7.63762	0.0230819	3.0460885	29	3	1993–1998	0.64	M-v	4	Williams	34289	1993 FD_{28}
1993 FG_{28}	15.2	0.15	19990122	75.95795	88.94469	239.12929	2.42229	0.2114792	2.4122924	19	2	1993–1998	0.78	M-v	5	Williams	34188	1993 FG_{28}
1993 FS_{28}	14.6	0.15	19990122	306.56813	222.26247	251.86145	2.87208	0.1198323	2.2886202	13	2	1993–1998	0.46	M-v	5	Williams	32930	1993 FS_{28}
1993 FE_{31}	12.2	0.15	19990122	288.07224	93.00125	181.65732	21.63791	0.0557506	3.2112718	35	4	1993–1999	0.62	M-v	1	Williams	34289	1993 FE_{31}
1993 FW_{31}	12.1	0.15	19990122	229.85162	306.66458	32.36371	10.94264	0.0890260	3.1774361	37	5	1989–1999	0.73	M-v	1	Williams	31585	1993 FW_{31}
1993 FS_{34}	13.0	0.15	19990122	231.65693	286.98598	55.08659	2.19369	0.1768720	3.1765132	28	5	1992–1999	0.80	M-v	1	Williams	31536	1993 FS_{34}
1993 FW_{34}	13.1	0.15	19990122	269.55650	166.91979	136.14662	2.69025	0.1493696	3.2113100	31	4	1989–1999	0.62	M-v	1	Williams	31788	1993 FW_{34}
1993 FZ_{35}	13.3	0.15	19990122	252.84786	212.35471	116.59230	2.64428	0.1366128	3.1412280	37	5	1989–1999	0.70	M-v	1	Williams	31585	1993 FZ_{35}
1993 FJ_{38}	13.8	0.15	19990122	58.04519	324.20768	173.56712	9.36427	0.0525555	3.1670700	22	3	1993–1999	0.62	M-v	4	Williams	32229	1993 FJ_{38}
1993 FS_{38}	13.6	0.15	19990122	154.15692	1.77970	31.97025	6.15997	0.0853840	3.2158855	16	2	1993–1999	0.55	M-v	5	Williams	34188	1993 FS_{38}
1993 FE_{43}	15.0	0.15	19990122	240.54830	236.74752	153.05349	3.14992	0.0923985	2.7959904	18	3	1993–1998	0.68	M-v	4	Williams	33685	1993 FE_{43}
1993 FR_{44}	12.2	0.15	19990122	86.62150	131.40661	334.03495	4.19986	0.1295448	3.1221953	45	6	1979–1999	0.65	M-v	1	Williams	31419	1993 FR_{44}
1993 FV_{45}	14.5	0.15	19990122	63.19559	139.21062	170.15393	5.62451	0.2732243	2.5415475	60	3	1993–1998	0.58	M-v	3	Williams	33071	1993 FV_{45}
1993 HW	14.0	0.15	19990122	168.90638	180.82647	82.65396	3.03444	0.1855803	2.3701994	24	4	1989–1999	0.74	M-v	2	Williams	33685	1993 HW
1993 JK	14.1	0.15	19990122	245.37368	49.15455	201.04259	4.49027	0.1396491	2.2199632	35	4	1964–1999	0.54	M-v	2	Williams	34289	1993 JK
1993 JW	12.9	0.15	19990122	7.05621	159.25210	68.92344	12.64649	0.0729865	3.2205116	27	3	1978–1998	0.44	M-v	4	Williams	33235	1993 JW
1993 KO	13.9	0.15	19990122	269.47094	25.38034	198.76002	5.73486	0.1188960	2.2212884	44	4	1993–1999	0.82	M-v	3	Williams	34009	1993 KO
1993 LS_1	13.5	0.15	19990122	63.15704	24.42365	301.40403	12.82204	0.1778312	2.5473798	29	3	1982–1999	0.69	M-v	2	Williams	33746	1993 LS_1
1993 LW_1	13.6	0.15	19990122	158.14037	205.24033	62.20412	12.33583	0.2418445	2.4263839	20	2	1993–1998	0.93	M-v	4	Williams	33485	1993 LW_1
1993 OY_3	15.3	0.15	19990122	65.35239	314.39937	135.23352	2.94010	0.0707343	2.2878500	23	3	1993–1999	0.57	M-v	2	Williams	34189	1993 OY_3
1993 OA_7	14.5	0.15	19990122	33.29843	332.42330	111.88032	3.39318	0.1289261	2.4137066	41	5	1979–1999	0.79	M-v	2	Williams	34289	1993 OA_7
1993 OJ_7	14.2	0.15	19990122	101.69876	117.76500	297.84025	5.85131	0.0952507	2.3029707	31	5	1979–1999	0.66	M-v	1	Williams	34289	1993 OJ_7
1993 OD_8	15.2	0.15	19990122	198.42481	64.15219	282.80987	2.85065	0.2200830	2.2394545	27	5	1990–1999	0.99	M-v	2	Williams	31139	1993 OD_8
1993 OG_9	14.5	0.15	19990122	65.24886	307.26938	125.80242	10.17317	0.2016512	2.3665556	22	4	1990–1999	0.77	M-v	4	Williams	24913	1993 OG_9
1993 OS_{12}	14.9	0.15	19990122	187.58867	124.41378	137.92183	3.26902	0.1658827	2.4235028	36	4	1993–1998	0.96	M-v	2	Williams	33549	1993 OS_{12}
1993 PZ_2	11.9	0.15	19990122	237.78951	120.16572	220.90222	4.85153	0.2638571	3.9411760	47	8	1978–1999	0.97	M-v	1	Williams	32050	1993 PZ_2
1993 PC_7	13.4	0.15	19990122	332.96250	240.92157	157.68504	6.97334	0.1138250	2.9632842	50	3	1993–1998	0.66	M-v	3	Williams	34289	1993 PC_7
1993 QS_1	15.3	0.15	19990122	289.64149	315.78020	323.27373	1.80340	0.1995431	2.1714050	36	4	1990–1999	0.70	M-v	3	Williams	28616	1993 QS_1
1993 QU_3	13.5	0.15	19990122	352.16334	216.11017	189.74987	1.70582	0.0691903	2.8424210	55	4	1979–1998	0.61	M-v	2	Williams	33072	1993 QU_3
1993 QN_4	14.5	0.15	19990122	109.41444	283.45173	143.06167	6.29398	0.1991418	2.3787383	32	4	1980–1999	0.89	M-v	1	Williams	31007	1993 QN_4
1993 QV_4	13.9	0.15	19990122	315.00701	62.35981	14.35298	1.85764	0.0214646	2.8587308	51	4	1988–1998	0.64	M-v	3	Williams	33072	1993 QV_4
1993 QH_{10}	13.0	0.15	19990122	230.11769	24.79720	276.92834	20.63113	0.1427303	2.3172303	20	4	1990–1999	0.78	M-v	2	Williams	31139	1993 QH_{10}
1993 RF_2	14.3	0.15	19990122	235.41015	325.76700	353.88868	4.80867	0.1826979	2.2590091	45	3	1976–1999	0.76	M-v	4	Williams	34290	1993 RF_2
1993 RZ_3	14.7	0.15	19990122	295.25174	258.86744	343.58461	3.70713	0.1431878	2.3002376	50	3	1992–1999	0.79	M-v	3	Williams	34290	1993 RZ_3
1993 RA_6	13.8	0.15	19930910	235.93912	215.04457	291.47314	1.00814	0.2581209	2.3734081	9	1	3 days	0.47		E	Williams		1993 RA_6
1993 RZ_6	14.4	0.15	19990122	125.00678	65.42111	354.59129	4.73612	0.1032418	2.3541865	41	4	1986–1999	0.78	M-v	2	Williams	31234	1993 RZ_6

1993 RH_9	16.4	0.15	19990122	87.00645	167.12782	274.60148	1.25013	0.1805560	2.4100089	22	3	1993–1999	0.50	M-v	4	Williams	31007	1993 RH_9
1993 SH_1	14.0	0.15	19990122	208.89461	163.19895	174.93888	6.74461	0.1477411	2.3053416	68	3	1993–1999	0.79	M-v	2	Williams	34290	1993 SH_1
1993 SK_1	13.7	0.15	19990122	231.18523	273.88558	57.70859	2.49162	0.0838957	2.2589053	47	6	1973–1999	0.78	M-v	2	Williams	30899	1993 SK_1
1993 SM_1	14.6	0.15	19990122	148.52232	272.96848	148.68807	4.45829	0.1596076	2.2981172	22	3	1993–1998	0.59	M-v	4	Williams	33236	1993 SM_1
1993 SD_2	12.0	0.15	19990122	262.83201	243.76853	227.30274	7.63948	0.1794468	3.0944396	36	3	1993–1998	0.65	M-v	3	Williams	33072	1993 SD_2
1993 SW_3	14.6	0.15	19990122	235.13939	279.61499	55.34401	6.21826	0.2006612	2.2357210	38	5	1973–1999	0.62	M-v	1	Williams	31276	1993 SW_3
1993 SF_4	14.5	0.15	19990122	199.01273	256.12327	105.77488	6.76538	0.1320389	2.2724916	41	3	1993–1999	0.53	M-v	2	Williams	34290	1993 SF_4
1993 SJ_5	13.5	0.15	19990122	80.65378	106.83233	348.21298	6.56193	0.0785657	2.3460256	32	4	1986–1999	0.69	M-v	2	Williams	25068	1993 SJ_5
1993 SQ_6	14.8	0.15	19930910	55.36868	284.36741	8.81186	3.60553	0.1318891	2.4086711	14	1	7 days	0.61			Williams	33236	1993 SQ_6
1993 SS_6	13.8	0.15	19990122	12.25809	260.18456	259.53214	1.40868	0.1546824	2.4018839	20	3	1993–1999	0.83	M-v	4	Williams	32455	1993 SS_6
1993 SB_{15}	12.9	0.15	19990122	36.72936	295.86470	126.80849	13.36716	0.1618036	2.6850906	39	3	1989–1999	0.67	M-v	2	Williams	33747	1993 SB_{15}
1993 SK_{16}	13.0	0.15	19990122	258.64054	32.41705	260.80763	7.65201	0.1484019	2.2749980	43	5	1981–1999	0.76	M-v	2	Williams	34290	1993 SK_{16}
1993 TC	13.5	0.15	19990122	200.03414	293.32574	23.81978	22.87385	0.3157319	2.3610095	34	3	1993–1999	0.66	M-v	3	Williams	34290	1993 TC
1993 TM	14.3	0.15	19990122	163.44541	354.59934	26.06036	7.14675	0.1208705	2.3562208	57	2	1993–1999	0.74	M-v	4	Williams	34290	1993 TM
1993 TN_2	13.4	0.15	19990122	201.74730	229.67056	38.70249	14.11302	0.1412532	2.5880049	38	5	1979–1999	0.68	M-v	1	Williams	34290	1993 TN_2
1993 TA_3	14.3	0.15	19990122	241.20881	159.64953	147.12991	3.96920	0.1565745	2.3064263	36	2	1993–1999	0.75	M-v	4	Williams	34190	1993 TA_3
1993 TE_3	13.5	0.15	19990122	210.23974	335.46020	11.87872	8.22207	0.1184521	2.3067064	36	5	1979–1999	0.73	M-v	2	Williams	31276	1993 TE_3
1993 TT_{12}	14.6	0.15	19990122	222.94679	239.79513	67.87540	4.20065	0.1755333	2.3462924	30	4	1986–1999	0.89	M-v	2	Williams	34290	1993 TT_{12}
1993 TJ_{15}	15.5	0.15	19990122	280.52824	256.05081	22.43405	6.64259	0.1916500	2.2507370	23	3	1992–1999	0.83	M-v	3	Williams	34290	1993 TJ_{15}
1993 TW_{16}	14.8	0.15	19990122	79.01032	142.34976	146.93662	2.88758	0.1571019	2.9901130	41	4	1993–1998	0.67	M-v	1	Williams	33072	1993 TW_{16}
1993 TN_{18}	13.8	0.15	19990122	162.46789	212.01379	61.57148	3.40964	0.0339537	2.7304879	32	3	1993–1999	0.75	M-v	4	Williams	33747	1993 TN_{18}
1993 TC_{20}	14.4	0.15	19990122	113.05873	267.38720	39.35724	4.25628	0.0849276	2.7837115	29	3	1993–1998	0.78	M-v	3	Williams	33550	1993 TC_{20}
1993 TS_{20}	15.2	0.15	19990122	293.19481	118.19137	147.08042	2.23384	0.1114696	2.2847238	30	4	1992–1999	0.79	M-v	1	Williams	27715	1993 TS_{20}
1993 TL_{25}	14.6	0.15	19990122	215.83792	150.50132	111.96765	3.20604	0.1081723	2.5438570	42	5	1993–1999	0.63	M-v	1	Williams	31139	1993 TL_{25}
1993 TP_{27}	14.6	0.15	19990122	1.35525	48.59267	97.85994	3.47955	0.1645836	2.5397840	36	2	1993–1999	0.65	M-v	4	Williams	34191	1993 TP_{27}
1993 TZ_{31}	14.9	0.15	19990122	302.87094	201.74709	48.94946	9.18610	0.1187778	2.3133834	34	3	1993–1999	0.69	M-v	5	Williams	27557	1993 TZ_{31}
1993 TO_{36}	13.4	0.15	19990122	114.14345	32.35128	321.09780	17.62646	0.2396229	2.5605238	33	3	1993–1999	0.46	M-v	3	Williams	34191	1993 TO_{36}
1993 TS_{36}	13.4	0.15	19990122	62.65792	357.80051	65.56514	14.21348	0.2296924	2.5878143	42	3	1989–1999	0.71	M-v	2	Williams	34290	1993 TS_{36}
1993 TP_{37}	14.3	0.15	19990122	83.06949	17.97137	78.10861	6.33156	0.0801150	2.4182847	28	3	1993–1999	0.72	M-v	3	Williams	31104	1993 TP_{37}
1993 TY_{38}	14.0	0.15	19990122	53.46011	270.43994	161.94310	7.78351	0.1471907	2.6224332	40	3	1978–1999	0.57	M-v	2	Williams	34010	1993 TY_{38}
1993 TJ_{39}	13.5	0.15	19990122	328.43879	33.91264	87.78835	7.59418	0.0634801	2.7572230	19	2	1993–1998	0.77	M-v	5	Williams	33687	1993 TJ_{39}
1993 UD_1	15.0	0.15	19990122	231.97003	238.42770	70.47887	6.10279	0.1720776	2.3349914	34	3	1993–1999	0.85	M-v	3	Williams	34290	1993 UD_1
1993 UQ_2	13.5	0.15	19990122	29.08325	168.35551	180.39646	9.75419	0.1048077	3.0567677	45	4	1982–1998	0.62	M-v	2	Williams	33072	1993 UQ_2
1993 UC_3	14.2	0.15	19990122	70.22260	90.96812	318.40901	1.20827	0.2154670	2.6644616	59	3	1980–1999	0.65	M-v	3	Williams	34290	1993 UC_3
1993 UD_3	13.2	0.15	19990122	183.86263	98.77374	256.34022	5.32261	0.1500725	2.4001196	44	3	1993–1999	0.68	M-v	3	Williams	34290	1993 UD_3
1993 VP	13.8	0.15	19990122	59.44142	36.68164	29.59134	13.44816	0.1486125	2.6492821	27	4	1980–1999	0.70	M-v	1	Williams	34192	1993 VP
1993 VS	14.9	0.15	19990122	115.49331	271.56414	126.08034	1.51832	0.1740621	2.5367889	55	3	1993–1999	0.65	M-v	2	Williams	34290	1993 VS
1993 VM_2	15.1	0.15	19990122	40.61196	114.01329	11.87479	1.39411	0.2295700	2.5960800	60	4	1976–1999	0.59	M-v	1	Williams	31007	1993 VM_2
1993 VS_4	13.4	0.15	19990122	163.02982	294.08250	74.56279	11.03590	0.1476728	2.4666199	51	4	1989–1999	0.87	M-v	3	Williams	34290	1993 VS_4
1993 VZ_4	14.0	0.15	19990122	164.69908	347.59642	29.76920	1.74731	0.1978204	2.4238780	39	3	1989–1999	0.64	M-v	4	Williams	34290	1993 VZ_4
1993 VA_5	14.4	0.15	19990122	63.40093	20.37265	58.53827	7.03039	0.2474881	2.6281229	35	3	1993–1999	0.62	M-v	3	Williams	34290	1993 VA_5
1993 VU_5	13.9	0.15	19990122	316.79461	236.24944	9.79700	5.74153	0.0667542	2.3246072	41	5	1986–1999	0.65	M-v	1	Williams	27730	1993 VU_5
1993 WQ	13.6	0.15	19990122	108.59124	359.70687	47.57830	5.06075	0.2232942	2.5541418	75	5	1985–1999	0.75	M-v	2	Williams	34290	1993 WQ
1993 XK	14.6	0.15	19990122	190.99208	258.80379	110.85093	5.40804	0.1125388	2.4007610	58	3	1993–1999	0.64	M-v	3	Williams	31236	1993 XK
1993 XN	12.9	0.15	19990122	347.94049	280.43691	268.49979	12.16510	0.1251016	2.6480441	52	3	1993–1999	0.63	M-v	2	Williams	34290	1993 XN
1993 XP	12.9	0.15	19990122	77.73008	206.48363	267.81324	12.28188	0.1142424	2.5454113	34	5	1986–1999	0.67	M-v	3	Williams	31140	1993 XP
1993 XN_1	12.6	0.15	19990122	267.20416	181.79855	95.03036	16.46308	0.1500967	2.5859003	63	5	1991–1999	0.69	M-v	2	Williams	34290	1993 XN_1
1994 AW	14.0	0.15	19990122	116.12988	244.56192	170.26261	1.25088	0.1373339	2.6091646	68	3	1994–1999	0.81	M-v	5	Williams	34290	1994 AW
1994 AA_1	14.4	0.15	19990122	130.62071	320.57303	148.25300	4.41625	0.1026988	2.3919747	34	4	1978–1998	0.77	M-v	2	Williams	32937	1994 AA_1
1994 AY_2	13.4	0.15	19990122	47.96896	180.10949	293.94765	6.10236	0.1150123	2.7091495	45	4	1988–1999	0.72	M-v	1	Williams	34291	1994 AY_2
1994 BM_4	13.6	0.15	19990122	35.83451	212.64782	257.01840	6.86816	0.1855760	2.8024220	33	5	1975–1999	0.82	M-v	3	Williams	34291	1994 BM_4
1994 CN	12.9	0.15	19990122	48.51389	19.66465	46.86300	9.79097	0.0508386	2.9847655	30	3	1973–1999	0.68	M-v	4	Williams	33940	1994 CN
1994 CW	13.0	0.15	19990122	152.84706	218.51580	158.64839	14.39653	0.1844409	2.5903661	32	3	1992–1999	0.59	M-v	4	Williams	34291	1994 CW

1994 CG_{1}	14.8	0.15	19990122	26.89756	286.35125	11.20643	5.00762	0.1980402	2.2531487	24	2	1994–1998	0.58	M-v	5	Williams	33239	1994 CG_{1}
1994 CF_{2}	13.2	0.15	19990122	339.16120	357.09658	122.29248	2.24399	0.1550223	3.1753724	40	3	1994–1998	0.66	M-v	4	Williams	33550	1994 CF_{2}
1994 CA_{5}	14.5	0.15	19990122	202.46226	29.04794	327.42659	3.87264	0.2103432	2.5980287	25	3	1994–1998	0.41	M-v	4	Williams	33239	1994 CA_{5}
1994 CJ_{11}	14.2	0.15	19990122	92.31467	301.57518	148.25797	22.08922	0.0982085	2.7172175	23	5	1985–1999	0.77	M-v	1	Williams	27730	1994 CJ_{11}
1994 CT_{11}	13.9	0.15	19990122	185.31088	278.83372	92.03472	3.09694	0.0872543	2.6723271	30	3	1994–1999	0.62	M-v	4	Williams	31238	1994 CT_{11}
1994 CQ_{13}	12.4	0.15	19990122	148.72887	285.51515	49.46834	5.89728	0.1488857	3.1432500	34	3	1994–1999	0.79	M-v	4	Williams	34192	1994 CQ_{13}
1994 CD_{14}	15.5	0.15	19990122	46.00716	89.52851	102.11527	4.72622	0.1778799	2.5814725	21	2	1994–1998	0.73	M-v	5	Williams	33240	1994 CD_{14}
1994 CG_{14}	14.0	0.15	19990122	267.99124	313.64253	41.86731	6.85916	0.0919237	2.4405940	30	2	1994–1998	0.50	M-v	5	Williams	33240	1994 CG_{14}
1994 ED	14.1	0.15	19990122	335.35315	109.69223	118.40610	1.40832	0.0444459	2.7361226	36	3	1994–1999	0.72	M-v	4	Williams	31586	1994 ED
1994 EJ_{1}	12.5	0.15	19990122	135.68355	263.42980	179.82557	21.82332	0.0692267	2.6636165	44	5	1990–1999	0.78	M-v	1	Williams	34291	1994 EJ_{1}
1994 ET_{3}	14.9	0.15	19990122	91.34754	213.12541	161.86437	23.92429	0.1004716	1.9423630	21	2	1994–1999	0.91	M-v	5	Williams	34291	1994 ET_{3}
1994 EY_{5}	13.2	0.15	19990122	132.06546	296.80327	116.85076	6.27657	0.0498343	2.7399847	34	3	1994–1999	0.91	M-v	4	Williams	31238	1994 EY_{5}
1994 GD_{1}	13.6	0.15	19990122	343.95719	139.54054	68.07781	10.86899	0.2307768	2.9313541	38	3	1979–1999	0.76	M-v	4	Williams	34291	1994 GD_{1}
1994 GY_{9}	14.5	0.15	19990122	107.83949	262.85818	173.63870	10.42259	0.2124315	2.6994628	42	5	1952–1999	0.61	M-v	2	Williams	31420	1994 GY_{9}
1994 GF_{10}	13.8	0.15	19990122	317.87694	114.61737	107.29555	1.32026	0.0847172	2.8870966	37	3	1994–1999	0.62	M-v	4	Williams	34193	1994 GF_{10}
1994 JR_{1}	7.8	0.15	19990122	3.19079	103.41108	144.85674	3.80099	0.1152607	39.2827806	39	5	1994–1999	0.45	M-v	3	Williams	32307	1994 JR_{1}
1994 LR	12.0	0.15	19990122	329.62947	129.19533	95.00655	12.66561	0.0531246	3.0789741	44	5	1972–1999	0.57	M-v	1	Williams	31789	1994 LR
1994 NO_{1}	14.1	0.15	19990122	161.02732	337.92742	260.95852	4.99973	0.1778484	2.2606767	34	3	1991–1998	0.76	M-v	5	Williams	33340	1994 NO_{1}
1994 PS	13.7	0.15	19990122	231.53557	32.07105	154.48415	11.21370	0.1074018	2.3487559	33	4	1994–1998	0.58	M-v	1	Williams	33340	1994 PS
1994 PM_{1}	15.1	0.15	19990122	282.14316	83.10899	124.05666	24.75804	0.0607436	1.9461449	55	3	1994–1999	0.63	M-v	2	Williams	34291	1994 PM_{1}
1994 PP_{1}	15.2	0.15	19990122	296.24507	189.87547	60.12218	23.39372	0.0541522	1.9387236	29	5	1989–1999	0.57	M-v	1	Williams	30900	1994 PP_{1}
1994 PG_{11}	15.0	0.15	19990122	57.36838	189.38914	171.11043	1.28690	0.2298414	2.3767918	32	2	1994–1998	0.83	M-v	4	Williams	33747	1994 PG_{11}
1994 PH_{14}	15.2	0.15	19990122	47.56993	221.79978	204.01238	1.38200	0.2346690	2.2512265	31	2	1994–1999	0.56	M-v	5	Williams	34193	1994 PH_{14}
1994 PQ_{15}	14.9	0.15	19990122	79.00888	5.84630	312.22071	3.03041	0.2275399	2.3975259	29	4	1992–1998	0.61	M-v	2	Williams	34291	1994 PQ_{15}
1994 PV_{19}	14.8	0.15	19990122	330.76521	162.23503	290.15062	1.19858	0.1712583	2.4107891	63	3	1994–1998	0.72	M-v	3	Williams	32938	1994 PV_{19}
1994 PL_{26}	14.7	0.15	19990122	149.76033	162.23650	107.12325	1.91163	0.0514784	2.3103563	39	3	1994–1998	0.74	M-v	4	Williams	34291	1994 PL_{26}
1994 PW_{27}	14.1	0.15	19990122	106.08385	322.06213	357.53269	3.37397	0.0946432	2.2995594	52	5	1966–1998	0.84	M-v	2	Williams	33551	1994 PW_{27}
1994 PE_{29}	16.4	0.15	19990122	41.31331	298.18684	82.63853	1.57635	0.2133371	2.3801268	43	2	1994–1999	0.74	M-v	4	Williams	33747	1994 PE_{29}
1994 PS_{31}	15.9	0.15	19990122	76.86340	115.26142	191.43274	5.15459	0.1995590	2.4393949	29	3	1994–1998	0.74	M-v	4	Williams	33243	1994 PS_{31}
1994 SN_{9}	14.8	0.15	19990122	176.15274	119.06751	182.11969	6.82756	0.1137334	2.1852695	27	5	1981–1999	0.52	M-v	2	Williams	33748	1994 SN_{9}
1994 TF_{1}	13.2	0.15	19990122	305.66190	298.91423	56.29277	8.29461	0.1303304	3.0762290	18	4	1989–1998	0.65	M-v	2	Williams	33245	1994 TF_{1}
1994 TG_{1}	14.1	0.15	19990122	56.24059	11.67839	47.67278	5.52370	0.1263245	2.2863041	31	3	1993–1999	0.86	M-v	4	Williams	34291	1994 TG_{1}
1994 TM_{2}	14.4	0.15	19990122	79.60003	312.50915	120.43521	3.28645	0.0380623	2.1421774	40	5	1981–1999	0.68	M-v	2	Williams	34291	1994 TM_{2}
1994 UR_{6}	14.9	0.15	19990122	319.65118	262.27507	285.62495	2.30845	0.1532562	2.2026060	48	3	1989–1999	0.73	M-v	3	Williams	34011	1994 UR_{6}
1994 UY_{11}	14.6	0.15	19990122	25.59492	73.79730	17.11022	21.87454	0.3017013	2.3854186	23	2	1994–1999	0.68	M-v	3	Williams	34291	1994 UY_{11}
1994 VA	13.1	0.15	19990122	67.04998	90.17922	232.35694	11.97686	0.2531485	2.5403641	36	3	1981–1999	0.71	M-v	2	Williams	33748	1994 VA
1994 VC	15.3	0.15	19990122	124.96059	51.29225	345.13308	1.37921	0.1422023	2.1540887	35	3	1994–1999	0.72	M-v	3	Williams	34291	1994 VC
1994 VH	14.4	0.15	19990122	38.76894	332.09218	32.30323	7.56714	0.2691662	2.5340749	88	5	1986–1999	0.60	M-v	2	Williams	33748	1994 VH
1994 VW_{2}	13.9	0.15	19990122	356.69357	312.62694	78.10108	5.14843	0.2963982	2.6886320	27	3	1994–1998	0.81	M-v	3	Williams	33552	1994 VW_{2}
1994 VO_{6}	14.3	0.15	19990122	37.68565	25.91469	33.52324	10.04009	0.2206399	2.4176938	24	3	1979–1999	0.61	M-v	3	Williams	34292	1994 VO_{6}
1994 WW_{2}	13.7	0.15	19990122	87.55637	305.65400	14.56101	3.16145	0.0611367	2.6964064	45	3	1994–1998	0.55	M-v	3	Williams	34292	1994 WW_{2}
1994 WY_{2}	14.4	0.15	19990122	157.85099	105.18720	274.60356	4.49982	0.1065883	2.1567569	40	4	1992–1999	0.73	M-v	3	Williams	34292	1994 WY_{2}
1994 WR_{3}	12.5	0.15	19990122	12.24715	338.80264	78.69896	14.86203	0.1584705	2.5834720	55	3	1994–1999	0.82	M-v	2	Williams	34292	1994 WR_{3}
1994 WP_{13}	13.7	0.15	19990122	15.15854	248.48689	139.82464	12.71368	0.2111257	2.6006598	18	3	1994–1999	0.72	M-v	3	Williams	34194	1994 WP_{13}
1994 XF_{1}	13.8	0.15	19990122	300.49193	111.96558	82.86255	8.45100	0.1582334	2.4682337	31	2	1994–1999	0.71	M-v	4	Williams	34012	1994 XF_{1}
1994 YF_{2}	14.0	0.15	19990122	24.60770	96.84151	61.15938	4.04957	0.1270428	2.2830454	53	4	1978–1999	0.70	M-v	1	Williams	34292	1994 YF_{2}
1995 AG	14.2	0.15	19990122	106.60258	165.17273	278.48712	3.38089	0.0589508	2.2190692	41	4	1984–1999	0.59	M-v	2	Williams	31140	1995 AG
1995 AJ	13.7	0.15	19990122	210.70254	39.07234	286.29012	6.42151	0.2066622	2.2379634	36	5	1989–1999	0.77	M-v	2	Williams	34292	1995 AJ
1995 AA_{1}	15.0	0.15	19990122	120.91863	301.45147	116.66816	5.91156	0.0904807	2.2698069	24	4	1993–1999	0.54	M-v	1	Williams	30901	1995 AA_{1}
1995 AV_{2}	14.7	0.15	19990122	357.63406	79.35061	54.67478	4.19916	0.1548165	2.4737259	54	4	1968–1999	0.75	M-v	2	Williams	34292	1995 AV_{2}
1995 AW_{2}	13.6	0.15	19990122	358.43102	305.40319	248.15511	5.38957	0.1154870	2.2721610	72	5	1986–1999	0.67	M-v	1	Williams	31587	1995 AW_{2}
1995 BD_{1}	14.4	0.15	19990122	141.55814	298.12839	98.22279	4.15628	0.1537959	2.2547403	35	4	1980–1999	0.62	M-v	2	Williams	31105	1995 BD_{1}
1995 BP_{2}	15.1	0.15	19990122	40.38876	293.45047	187.53768	21.15340	0.2791402	2.3165121	36	3	1995–1999	0.56	M-v	2	Marsden	34292	1995 BP_{2}

1995 BL_4	13.7	0.15	19990122	34.10031	121.24270	313.93197	12.23168	0.1700120	2.5769252	53	4	1991–1999	0.61	M-v	2	Williams	34292	1995 BL_4
1995 BU_4	15.7	0.15	19990122	160.45188	11.57720	17.46208	8.38940	0.1900396	2.2122012	37	4	1995–1999	0.41	M-v	2	Marsden	31277	1995 BU_4
1995 CE	14.3	0.15	19990122	87.08258	4.56803	94.44683	5.39044	0.1135676	2.2995677	32	4	1988–1999	0.62	M-v	2	Williams	31727	1995 CE
1995 CK	14.7	0.15	19990122	109.60684	313.23013	114.42892	7.44893	0.0885324	2.3367764	39	4	1993–1999	0.63	M-v	1	Williams	32052	1995 CK
1995 CQ	14.4	0.15	19990122	50.27737	152.66928	331.40498	4.29916	0.1806674	2.3178292	63	3	1995–1999	0.76	M-v	2	Williams	31008	1995 CQ
1995 CW	14.5	0.15	19990122	314.33794	96.97380	137.52613	6.85555	0.0695218	2.3117487	33	3	1993–1999	0.57	M-v	2	Williams	30874	1995 CW
1995 CX	13.1	0.15	19990122	205.38733	208.59881	124.86951	13.01421	0.2165466	2.3741231	42	5	1975–1999	0.79	M-v	2	Williams	34292	1995 CX
1995 CF_1	14.1	0.15	19990122	2.84937	8.43675	104.53023	8.36930	0.1887701	2.5334289	46	3	1990–1999	0.69	M-v	3	Williams	34012	1995 CF_1
1995 CL_1	13.8	0.15	19990122	304.42250	52.97742	132.67175	13.41881	0.1511211	2.6338745	30	3	1982–1999	0.60	M-v	3	Williams	34012	1995 CL_1
1995 CH_2	16.2	0.15	19990122	8.93895	326.44791	209.96820	1.47421	0.1563491	2.3384712	29	3	1995–1999	0.56	M-v	5	Williams	30983	1995 CH_2
1995 DH	13.8	0.15	19990122	51.72676	250.54682	155.48620	28.17242	0.2439053	2.6683396	30	4	1993–1999	0.73	M-v	2	Williams	34012	1995 DH
1995 DL	12.7	0.15	19990122	222.75405	202.24826	348.83721	4.27956	0.0940151	3.1737784	36	2	1995–1998	0.60	M-v	4	Williams	33342	1995 DL
1995 DR	14.8	0.15	19990122	305.29912	84.74929	156.16423	6.94678	0.1425076	2.4387531	50	4	1991–1999	0.70	M-v	3	Williams	34292	1995 DR
1995 DO_1	14.4	0.15	19990122	341.75282	174.70813	33.31346	4.86126	0.1873268	2.4271306	55	5	1980–1999	0.60	M-v	1	Williams	31277	1995 DO_1
1995 DR_1	13.7	0.15	19990122	75.82058	337.85659	136.17101	8.38454	0.0654057	2.3500911	24	4	1993–1999	0.51	M-v	1	Williams	31277	1995 DR_1
1995 DR_2	12.8	0.15	19990122	193.05075	149.53041	73.99851	8.92420	0.0860766	3.1864601	21	3	1995–1998	0.81	M-v	3	Williams	33248	1995 DR_2
1995 DZ_8	15.2	0.15	19990122	64.15055	101.05979	5.90227	2.62489	0.1250735	2.4028364	37	5	1984–1999	0.74	M-v	1	Williams	30901	1995 DZ_8
1995 EM	14.6	0.15	19990122	77.24077	66.20995	21.46216	6.85143	0.0975725	2.4201215	62	3	1995–1999	0.72	M-v	3	Williams	34292	1995 EM
1995 EU	13.9	0.15	19990122	272.02168	106.67574	140.67520	5.35670	0.0250584	2.5362888	35	2	1995–1999	0.69	M-v	5	Williams	34195	1995 EU
1995 EY_7	13.2	0.15	19990122	5.31466	254.33713	206.77328	8.06189	0.0912609	2.8070295	41	3	1995–1999	0.72	M-v	3	Williams	33749	1995 EY_7
1995 EA_8	14.4	0.15	19990122	329.45408	283.95493	163.16679	0.65058	0.2033914	2.9959385	55	3	1995–1998	0.61	M-v	4	Williams	34012	1995 EA_8
1995 EG_8	12.7	0.15	19990122	129.54555	310.77573	354.33431	25.95016	0.2431043	3.1621892	25	4	1991–1999	0.40	M-v	1	Williams	33749	1995 EG_8
1995 EO_8	14.5	0.15	19990122	338.05569	176.37589	14.89368	7.03620	0.1007584	2.4798016	55	4	1991–1999	0.72	M-v	3	Williams	34195	1995 EO_8
1995 EZ_8	14.1	0.15	19990122	335.54807	64.70946	166.66006	2.54641	0.1651471	2.3833407	23	5	1988–1999	0.90	M-v	2	Williams	34012	1995 EZ_8
1995 FD	14.8	0.15	19990122	334.01659	169.64102	8.65092	3.56066	0.1436342	2.6090083	71	3	1995–1999	0.66	M-v	3	Williams	34292	1995 FD
1995 FM	14.1	0.15	19990122	273.08231	62.09200	177.96822	14.48731	0.0957037	2.6470046	38	4	1995–1999	0.75	M-v	1	Marsden	34293	1995 FM
1995 FN	13.9	0.15	19990122	295.74475	214.42858	13.30472	13.38405	0.1978718	2.6195027	46	3	1995–1999	0.72	M-v	3	Williams	34293	1995 FN
1995 FT	14.4	0.15	19990122	349.33016	68.72936	142.66188	3.58245	0.1452396	2.4345061	30	4	1995–1999	0.67	M-v	1	Williams	31277	1995 FT
1995 FQ_4	13.8	0.15	19990122	194.77778	262.33582	61.76079	2.43221	0.0861621	2.5365122	55	3	1995–1999	0.62	M-v	4	Marsden	34293	1995 FQ_4
1995 FB_{14}	15.7	0.15	19990122	183.55053	141.95404	207.66120	0.67894	0.2022217	2.5586591	14	3	1976–1999	0.37	M-v	5	Williams	25334	1995 FB_{14}
1995 FV_{14}	13.0	0.15	19990122	258.30404	135.95543	35.75282	8.67064	0.1015915	3.1720682	37	5	1978–1998	0.81	M-v	2	Williams	33342	1995 FV_{14}
1995 GC_7	13.1	0.15	19990122	4.97338	73.55636	3.33057	9.95214	0.0926777	3.0217880	17	4	1987–1998	0.65	M-v	1	Williams	34195	1995 GC_7
1995 GH_7	14.0	0.15	19990122	334.26336	79.17621	143.57681	7.63126	0.1436828	2.4831495	30	2	1995–1999	0.71	M-v	3	Williams	34195	1995 GH_7
1995 GJ_7	13.1	0.15	19990122	296.58497	200.78247	15.79893	9.20873	0.1564152	2.6594006	60	6	1982–1999	0.79	M-v	1	Williams	34293	1995 GJ_7
1995 KN	14.1	0.15	19990122	29.84517	84.23157	76.30219	4.99341	0.0743180	2.2580701	45	3	1995–1999	0.75	M-v	2	Williams	33553	1995 KN
1995 KJ_3	16.1	0.15	19990122	40.98274	171.13600	78.13363	1.05496	0.1285235	2.1622765	27	3	1995–1998	0.70	M-v	4	Williams	33249	1995 KJ_3
1995 MG_1	13.6	0.15	19990122	140.98108	244.16053	159.30212	9.00273	0.2924914	2.7173973	31	6	1971–1999	0.68	M-v	1	Williams	31587	1995 MG_1
1995 QE_2	13.6	0.15	19990122	207.13654	147.89397	225.60603	22.62314	0.2285465	3.0465485	35	4	1990–1999	0.57	M-v	1	Williams	32239	1995 QE_2
1995 QN_2	15.7	0.15	19990122	283.68370	254.32308	150.65487	6.78737	0.1004824	2.3273335	20	2	1995–1997	0.46	M-v	4	Williams	33249	1995 QN_2
1995 QS_3	12.2	0.15	19990122	188.79719	67.81245	305.60718	12.40141	0.1182706	3.1748211	46	6	1984–1999	0.66	M-v	1	Williams	33342	1995 QS_3
1995 SO_3	13.0	0.15	19990122	291.32455	324.43271	298.52818	11.94010	0.1793978	2.9172098	34	5	1975–1999	0.72	M-v	1	Williams	25966	1995 SO_3
1995 SQ_{29}	14.2	0.15	19990122	346.16467	291.98662	40.36172	3.85591	0.1914591	2.4294141	18	3	1971–1998	0.73	M-v	4	Williams	34195	1995 SQ_{29}
1995 SU_{32}	14.3	0.15	19990122	297.35249	82.96101	164.76049	14.02863	0.0269241	3.2598615	18	3	1993–1999	0.42	M-v	2	Williams	25967	1995 SU_{32}
1995 SO_{33}	12.8	0.15	19990122	351.70582	195.11064	11.40601	0.98173	0.1149429	3.0854619	60	4	1977–1999	0.57	M-v	1	Williams	31790	1995 SO_{33}
1995 SX_{48}	14.6	0.15	19990122	240.99080	308.44110	299.44005	21.99160	0.0227612	1.8439723	50	2	1995–1999	0.79	M-v	3	Williams	34293	1995 SX_{48}
1995 UG_5	15.1	0.15	19990122	16.78792	327.04888	30.51106	4.19105	0.1691054	2.2114713	23	3	1994–1998	0.73	M-v	5	Williams	32945	1995 UG_5
1995 UQ_5	12.7	0.15	19990122	271.91699	333.92207	318.61168	10.63088	0.1755706	3.0506261	49	5	1979–1999	0.71	M-v	1	Williams	34293	1995 UQ_5
1995 UB_{47}	13.2	0.15	19990122	204.29834	207.93948	212.13088	9.85337	0.0933000	2.9855713	18	3	1990–1998	0.85	M-v	4	Williams	34196	1995 UB_{47}
1995 XH_1	15.0	0.15	19990122	28.83597	92.14759	275.55841	4.12948	0.1607701	2.2555849	54	3	1988–1998	0.58	M-v	2	Williams	34293	1995 XH_1
1995 YF	14.4	0.15	19990122	31.51526	205.66358	127.82584	3.15370	0.2010336	2.3888413	37	3	1987–1998	0.64	M-v	2	Williams	33553	1995 YF
1996 AP_3	13.5	0.15	19990122	53.98152	65.76190	273.60044	6.82828	0.1934676	2.2872858	59	3	1988–1999	0.48	M-v	2	Williams	33750	1996 AP_3
1996 AP_{15}	15.1	0.15	19990122	175.88651	140.82639	135.91173	3.70767	0.1775103	2.3425546	18	5	1950–1998	0.53	M-v	2	Williams	33553	1996 AP_{15}
1996 BC_1	14.5	0.15	19990122	64.91884	37.18474	317.48829	3.13689	0.1719350	2.2907866	40	2	1996–1998	0.66	M-v	5	Williams	33553	1996 BC_1

1996 CE_3	13.2	0.15	19990122	323.50301	79.55115	358.36417	21.91985	0.0540512	2.6695561	91	2	1996–1998	0.64	M-v	3	Williams	33075	1996 CE_3
1996 CG_7	14.7	0.15	19990122	336.56166	261.21175	237.93733	0.35099	0.0843373	2.1522780	28	3	1994–1999	0.92	M-v	3	Williams	34196	1996 CG_7
1996 ED	14.2	0.15	19990122	20.84056	52.94411	19.95009	5.82472	0.1609172	2.2671969	43	3	1976–1999	0.81	M-v	3	Williams	34293	1996 ED
1996 EG_2	13.5	0.15	19990122	153.00278	114.05851	165.90494	12.32061	0.0398571	2.5380155	25	6	1976–1998	0.86	M-v	1	Williams	33343	1996 EG_2
1996 EK_6	14.0	0.15	19990122	116.33045	122.18114	173.63563	7.41799	0.1069859	2.7037398	26	3	1993–1998	0.83	M-v	4	Williams	34293	1996 EK_6
1996 FT_{11}	15.6	0.15	19990122	175.65022	240.13149	71.83472	1.89398	0.0608036	2.2849253	21	3	1996–1999	0.61	M-v	4	Williams	33945	1996 FT_{11}
1996 GR_{17}	14.3	0.15	19990122	111.08327	347.43840	27.67618	6.39041	0.1496678	2.3994186	24	3	1986–1999	0.69	M-v	4	Williams	34293	1996 GR_{17}
1996 GB_{18}	14.9	0.15	19990122	121.00807	359.79907	38.29619	5.29894	0.0535346	2.1869749	51	4	1981–1999	0.81	M-v	2	Williams	34293	1996 GB_{18}
1996 GO_{20}	14.3	0.15	19990122	329.55399	267.82649	197.91105	2.86346	0.1180078	2.6231503	44	3	1981–1999	0.68	M-v	3	Williams	33751	1996 GO_{20}
1996 HO	15.1	0.15	19990122	60.60393	298.25607	123.48015	7.88888	0.0941143	2.3761239	89	3	1996–1999	0.69	M-v	2	Marsden	34294	1996 HO
1996 HU	14.6	0.15	19990122	131.76552	192.57787	175.11009	4.96440	0.2022198	2.4318624	55	3	1996–1999	0.67	M-v	3	Marsden	34294	1996 HU
1996 HK_1	15.3	0.15	19990122	138.94779	342.91266	40.21870	6.87603	0.0937479	2.2241592	60	3	1996–1999	0.78	M-v	3	Williams	34294	1996 HK_1
1996 HN_1	14.6	0.15	19990122	234.76284	98.19210	189.58108	6.16750	0.1299866	2.2777499	27	2	1996–1999	0.72	M-v	5	Williams	34197	1996 HN_1
1996 HY_1	14.3	0.15	19990122	103.93922	356.17702	0.99987	12.18824	0.1746685	2.6113667	30	2	1996–1999	0.56	M-v	4	Marsden	34294	1996 HY_1
1996 HH_{10}	15.8	0.15	19990122	239.83435	100.91831	198.82630	3.27034	0.1130860	2.1677547	33	3	1996–1999	0.70	M-v	3	Williams	34294	1996 HH_{10}
1996 HY_{12}	15.3	0.15	19990122	254.02700	100.90944	197.30247	1.63118	0.1255095	2.1201717	55	3	1996–1999	0.76	M-v	4	Williams	34294	1996 HY_{12}
1996 HM_{18}	13.9	0.15	19990122	155.51666	277.85008	44.97351	15.55413	0.1608469	2.5793768	33	5	1979–1999	0.64	M-v	1	Williams	34197	1996 HM_{18}
1996 HP_{18}	13.2	0.15	19990122	36.90987	329.52055	46.58801	22.76811	0.2225085	3.1428204	39	3	1992–1999	0.74	M-v	2	Williams	34014	1996 HP_{18}
1996 HQ_{23}	15.1	0.15	19990122	114.48801	266.63529	139.29529	1.10319	0.1472102	2.2282545	32	5	1977–1999	0.76	M-v	2	Williams	30902	1996 HQ_{23}
1996 HW_{23}	15.0	0.15	19990122	341.34482	65.27956	69.58742	6.31241	0.1585030	2.3644164	35	3	1992–1999	0.78	M-v	3	Williams	34294	1996 HW_{23}
1996 HH_{24}	14.9	0.15	19990122	226.03967	257.40492	71.12833	4.27906	0.2079696	2.1770109	51	3	1990–1999	0.82	M-v	3	Williams	34294	1996 HH_{24}
1996 HU_{24}	14.6	0.15	19990122	78.19234	14.57671	56.15621	7.39205	0.0776245	2.2697162	20	4	1994–1999	0.65	M-v	2	Williams	31009	1996 HU_{24}
1996 HW_{25}	13.9	0.15	19990122	163.49248	285.43625	75.56560	6.32397	0.2115117	2.3174499	31	3	1996–1999	0.78	M-v	4	Marsden	31108	1996 HW_{25}
1996 JJ	14.6	0.15	19990122	285.43002	122.37880	108.60532	6.74948	0.2224212	2.2552996	33	4	1979–1999	0.57	M-v	2	Williams	34294	1996 JJ
1996 JZ	14.7	0.15	19990122	248.85648	97.92291	164.51487	11.36166	0.1322978	2.4021347	38	4	1977–1999	0.61	M-v	1	Williams	33947	1996 JZ
1996 JR_1	14.3	0.15	19990122	217.38457	251.76860	67.70518	23.28966	0.2274789	2.2861687	29	4	1989–1999	0.58	M-v	2	Williams	34294	1996 JR_1
1996 JC_5	14.6	0.15	19990122	341.45038	27.55983	115.63502	7.37641	0.0821589	2.3927969	41	2	1996–1999	0.51	M-v	4	Williams	34014	1996 JC_5
1996 KG	14.5	0.15	19990122	44.91664	280.13328	192.62247	2.90646	0.0535762	2.2658387	38	2	1996–1999	0.61	M-v	4	Williams	34197	1996 KG
1996 KN	13.7	0.15	19990122	22.45537	4.80312	38.71840	1.89599	0.1694156	3.1465790	38	2	1996–1998	0.64	M-v	4	Williams	33555	1996 KN
1996 KO	14.5	0.15	19990122	186.13398	276.92212	21.39357	0.97171	0.0652509	2.5675298	52	3	1996–1999	0.75	M-v	4	Williams	34294	1996 KO
1996 MN	15.6	0.15	19990122	249.20637	49.06200	263.70851	5.93533	0.1459612	2.2701909	59	3	1996–1999	0.60	M-v	3	Williams	34294	1996 MN
1996 NS_3	14.7	0.15	19990122	233.16141	166.10259	136.67444	2.53848	0.0896578	2.5385359	40	3	1996–1999	0.74	M-v	4	Williams	34294	1996 NS_3
1996 NB_4	14.5	0.15	19990122	2.84251	229.35796	311.67865	2.47351	0.1256519	2.4304226	40	5	1978–1999	0.90	M-v	2	Williams	31278	1996 NB_4
1996 NU_4	13.8	0.15	19990122	196.95202	30.88630	311.13595	7.93957	0.0760779	2.5729806	33	4	1988–1999	0.87	M-v	4	Williams	34294	1996 NU_4
1996 ON	15.6	0.15	19990122	224.40802	71.50731	269.69663	3.81131	0.2499968	2.3866414	77	5	1978–1999	0.45	M-v	1	Marsden	31278	1996 ON
1996 OE_2	14.0	0.15	19990122	270.14277	337.22897	295.18928	13.46617	0.1353481	2.6414013	46	3	1996–1999	0.49	M-v	3	Marsden	34294	1996 OE_2
1996 PN	15.4	0.15	19990122	283.78921	268.63297	349.56281	21.02961	0.2567127	2.3174768	31	2	1996–1999	0.71	M-v	4	Williams	34198	1996 PN
1996 PA_1	14.8	0.15	19990122	215.82469	213.46745	133.68674	7.40945	0.1343230	2.3780805	58	3	1996–1999	0.38	M-v	2	Williams	34295	1996 PA_1
1996 PB_1	16.0	0.15	19990122	245.23740	336.84744	343.59425	2.07493	0.2141790	2.3793970	48	3	1996–1999	0.50	M-v	3	Williams	34295	1996 PB_1
1996 PG_1	15.2	0.15	19990122	275.23581	296.99095	356.69541	3.35464	0.1501351	2.2842057	48	3	1996–1999	1.00	M-v	3	Williams	31109	1996 PG_1
1996 PH_1	15.9	0.15	19990122	249.87862	152.20137	129.20134	2.88161	0.0599947	2.5459566	22	2	1996–1999	0.47	M-v	5	Williams	34198	1996 PH_1
1996 PM_3	14.1	0.15	19990122	64.26890	333.04959	149.46068	13.13101	0.1320868	2.6096938	32	3	1990–1999	0.63	M-v	3	Williams	27924	1996 PM_3
1996 PY_4	14.8	0.15	19990122	322.32186	68.79158	151.70239	23.90175	0.2649811	2.3596829	39	3	1988–1999	0.56	M-v	2	Williams	34295	1996 PY_4
1996 PY_6	14.7	0.15	19990122	258.93934	283.59537	30.21091	23.21271	0.2325516	2.3105262	53	3	1992–1999	0.65	M-v	2	Williams	28319	1996 PY_6
1996 PS_8	14.6	0.15	19990122	350.70556	211.97699	325.88125	3.25441	0.1062402	2.5759046	42	3	1996–1999	0.66	M-v	4	Williams	34198	1996 PS_8
1996 QE	14.2	0.15	19990122	214.19681	167.88691	174.91457	14.40328	0.1477937	2.5770112	56	3	1996–1999	0.69	M-v	3	Williams	31243	1996 QE
1996 QL	13.7	0.15	19990122	340.24362	230.98104	314.75660	4.82843	0.1671589	2.6334983	57	5	1969–1999	0.75	M-v	2	Williams	34295	1996 QL
1996 QD_1	14.8	0.15	19990122	2.55410	321.53225	238.51556	3.09929	0.0856322	2.2929688	34	3	1996–1999	0.53	M-v	4	Williams	31278	1996 QD_1
1996 QP_1	14.8	0.15	19990122	227.93518	176.25148	162.92732	2.69054	0.2389626	2.4175526	25	3	1996–1999	0.65	M-v	3	Williams	32054	1996 QP_1
1996 QX_1	13.2	0.15	19990122	148.90587	85.00631	312.45728	12.17384	0.1750451	2.6963227	33	4	1979–1999	0.66	M-v	1	Williams	31791	1996 QX_1
1996 RM	13.9	0.15	19990122	149.50302	36.20703	355.38253	16.69688	0.0899995	2.9364383	36	3	1996–1999	0.64	M-v	3	Williams	31278	1996 RM
1996 RE_1	15.0	0.15	19990122	148.07505	330.41552	76.71103	4.64794	0.2679069	2.5901288	46	3	1996–1999	0.59	M-v	3	Marsden	31588	1996 RE_1
1996 RK_3	15.3	0.15	19990122	271.40104	183.70243	100.94058	5.12175	0.2072703	2.2971219	46	2	1996–1999	0.67	M-v	4	Williams	34198	1996 RK_3

1996 RT_3	14.5	0.15	19990122	282.80559	262.16587	357.79652	14.09367	0.0807932	2.6431728	42	2	1996–1999	0.60	M-v	4	Williams	34199	1996 RT_3
1996 RD_4	13.4	0.15	19990122	271.58834	252.52271	48.90951	13.36100	0.1615750	2.7169343	79	3	1996–1999	0.59	M-v	3	Williams	31421	1996 RD_4
1996 RJ_4	14.7	0.15	19990122	296.92883	101.44293	142.37410	2.46214	0.0911507	2.6384625	56	3	1995–1999	0.81	M-v	4	Williams	34295	1996 RJ_4
1996 RA_5	14.1	0.15	19990122	122.48007	85.60220	326.08868	8.56224	0.1433129	2.9850708	24	3	1996–1999	0.60	M-v	4	Williams	31244	1996 RA_5
1996 RF_5	14.5	0.15	19990122	272.34305	189.26477	117.21386	7.16295	0.1271025	2.3137724	31	4	1984–1999	0.57	M-v	1	Marsden	31278	1996 RF_5
1996 RL_5	15.2	0.15	19990122	220.78065	41.99552	342.56910	7.13058	0.1794236	2.2587595	31	3	1971–1998	0.82	M-v	4	Williams	32953	1996 RL_5
1996 SC_6	13.5	0.15	19990122	246.00907	114.19351	185.41775	5.86083	0.0367021	2.7961145	55	2	1996–1999	0.61	M-v	4	Williams	34199	1996 SC_6
1996 SF_6	14.9	0.15	19990122	275.90566	85.83246	190.97919	8.47500	0.1827876	2.5646138	45	2	1996–1999	0.70	M-v	4	Williams	34199	1996 SF_6
1996 SF_8	15.3	0.15	19990122	210.70701	170.68223	195.01664	0.97981	0.2718255	2.5563826	31	3	1992–1999	0.67	M-v	3	Williams	29630	1996 SF_8
1996 TE	14.3	0.15	19990122	175.93303	313.22338	55.56873	2.88729	0.0898349	2.8289875	62	3	1996–1999	0.62	M-v	3	Williams	34295	1996 TE
1996 TB_6	13.1	0.15	19990122	189.04875	345.75253	31.79170	12.21938	0.3081368	2.7309280	74	5	1978–1999	0.53	M-v	2	Williams	32054	1996 TB_6
1996 TG_7	14.6	0.15	19990122	247.90079	298.36254	27.00900	2.59538	0.1967352	2.4306976	41	4	1991–1999	0.69	M-v	1	Williams	31421	1996 TG_7
1996 TH_7	14.0	0.15	19990122	168.24247	6.99296	21.48484	2.75394	0.0807250	2.7181602	44	3	1996–1999	0.57	M-v	3	Williams	31245	1996 TH_7
1996 TK_7	15.2	0.15	19990122	182.77640	215.72152	152.03685	1.31192	0.0451790	2.9802376	31	3	1996–1999	0.46	M-v	3	Marsden	31245	1996 TK_7
1996 TZ_7	14.5	0.15	19990122	210.87142	286.99990	24.49106	2.55579	0.0604202	3.1067962	31	4	1993–1999	0.57	M-v	1	Williams	34295	1996 TZ_7
1996 TE_8	14.6	0.15	19990122	192.77476	193.06305	171.89610	12.22704	0.1796992	2.6654730	23	3	1995–1999	0.67	M-v	3	Williams	28307	1996 TE_8
1996 TZ_9	14.7	0.15	19990122	168.30265	170.60524	201.17080	8.46999	0.0955072	2.9667251	22	3	1994–1999	0.45	M-v	4	Williams	28307	1996 TZ_9
1996 TF_{11}	14.2	0.15	19990122	270.00378	36.33871	274.59100	2.31809	0.2091845	2.4128233	26	4	1992–1999	0.62	M-v	1	Williams	31588	1996 TF_{11}
1996 TS_{11}	16.3	0.15	19990122	266.63389	307.05068	9.67149	2.22577	0.2343125	2.3531848	24	3	1996–1999	0.35	M-v	4	Marsden	31246	1996 TS_{11}
1996 TJ_{14}	13.5	0.15	19990122	168.75809	32.89825	339.30856	9.29218	0.0958369	2.9869362	32	3	1996–1999	0.75	M-v	4	Williams	34295	1996 TJ_{14}
1996 TV_{14}	13.7	0.15	19990122	230.98009	334.68123	341.20617	1.49616	0.0659457	2.8700198	23	3	1996–1999	0.67	M-v	4	Williams	31246	1996 TV_{14}
1996 TF_{15}	13.5	0.15	19990122	123.40578	3.77816	38.90887	1.32038	0.1655316	3.2287131	37	3	1996–1999	0.64	M-v	3	Williams	34295	1996 TF_{15}
1996 TL_{15}	12.3	0.15	19990122	318.93088	2.98189	207.84693	21.19912	0.0255569	3.1999014	20	3	1976–1999	0.75	M-v	4	Williams	34295	1996 TL_{15}
1996 TV_{17}	16.5	0.15	19990122	225.52730	314.85236	22.18655	5.45067	0.1672087	2.7135641	23	3	1960–1999	0.60	M-v	4	Williams	30279	1996 TV_{17}
1996 TS_{32}	13.6	0.15	19990122	323.00033	9.88577	209.18199	12.77993	0.1162917	2.6600448	34	2	1996–1999	0.51	M-v	4	Williams	34199	1996 TS_{32}
1996 TM_{36}	14.3	0.15	19990122	277.57463	292.93798	346.18473	12.49548	0.2133588	2.4449423	44	3	1995–1999	0.55	M-v	2	Williams	34295	1996 TM_{36}
1996 TN_{41}	13.7	0.15	19990122	168.65208	284.23719	86.26744	3.15154	0.0830626	2.8316616	22	3	1996–1999	0.51	M-v	5	Williams	33496	1996 TN_{41}
1996 UA	13.8	0.15	19990122	230.14164	313.01068	18.16202	12.25395	0.1091382	2.6256858	68	3	1996–1999	0.44	M-v	3	Williams	34295	1996 UA
1996 UB	13.3	0.15	19990122	226.65554	91.45154	247.77468	1.00649	0.0123181	2.8690292	52	5	1991–1999	0.67	M-v	1	Williams	31792	1996 UB
1996 US	14.1	0.15	19990122	222.89584	321.10513	20.59070	5.21106	0.2595806	2.6034421	44	3	1996–1999	0.68	M-v	4	Williams	34295	1996 US
1996 UL_1	13.7	0.15	19990122	192.41493	141.10998	206.03260	11.67193	0.0700880	3.0400096	72	3	1996–1999	0.75	M-v	3	Williams	34295	1996 UL_1
1996 UP_1	13.9	0.15	19990122	272.01380	67.32275	215.78880	15.52283	0.1807458	2.6101666	41	3	1991–1999	0.72	M-v	2	Williams	34295	1996 UP_1
1996 UU_1	13.8	0.15	19990122	76.11797	90.77986	10.60798	4.96039	0.1396554	3.1695895	58	3	1996–1999	0.52	M-v	3	Williams	34295	1996 UU_1
1996 UD_3	13.9	0.15	19990122	299.20416	290.14012	348.22343	4.80806	0.0065458	2.7492608	58	3	1996–1999	0.72	M-v	4	Williams	31589	1996 UD_3
1996 UQ_3	13.2	0.15	19990122	297.85916	248.52420	14.40190	11.41302	0.1730133	2.6736141	51	3	1977–1999	0.71	M-v	2	Williams	34200	1996 UQ_3
1996 VV	13.5	0.15	19990122	290.36500	233.99168	57.07004	4.13968	0.1360638	2.5225173	48	4	1992–1999	0.55	M-v	1	Marsden	31792	1996 VV
1996 VP_1	12.9	0.15	19990122	223.35879	83.01989	269.20598	13.36860	0.2880318	2.6490164	36	3	1996–1999	0.63	M-v	3	Williams	31248	1996 VP_1
1996 VM_2	14.3	0.15	19990122	229.34953	274.61713	69.11118	12.29353	0.2156841	2.6689587	50	3	1996–1999	0.48	M-v	3	Williams	34295	1996 VM_2
1996 VU_2	14.2	0.15	19990122	135.18590	234.28576	169.08980	2.35713	0.2245889	3.1090494	55	3	1996–1999	0.78	M-v	2	Marsden	34295	1996 VU_2
1996 VM_3	13.5	0.15	19990122	211.47475	93.50193	266.29317	1.18828	0.0653638	2.9160802	41	4	1981–1999	0.60	M-v	1	Williams	32245	1996 VM_3
1996 VJ_4	13.2	0.15	19990122	221.97125	87.36205	236.51742	14.14192	0.0707389	3.2030704	31	3	1996–1999	0.68	M-v	4	Marsden	31112	1996 VJ_4
1996 VA_5	13.6	0.15	19990122	326.64804	47.98863	207.19499	11.82941	0.1533064	2.5726398	31	4	1992–1999	0.70	M-v	2	Williams	31279	1996 VA_5
1996 VG_5	13.2	0.15	19990122	240.75561	283.86135	38.76514	5.40914	0.1462413	2.7609386	19	3	1991–1999	0.73	M-v	3	Williams	31976	1996 VG_5
1996 VJ_5	12.3	0.15	19990122	154.41613	8.15407	40.91652	20.77341	0.2643957	2.9839215	26	4	1934–1999	0.87	M-v	2	Williams	31732	1996 VJ_5
1996 VN_5	12.9	0.15	19990122	181.38902	216.02170	122.45220	3.23130	0.1860707	3.2082768	36	4	1990–1999	0.56	M-v	2	Marsden	34295	1996 VN_5
1996 VU_5	13.4	0.15	19990122	148.15204	279.96508	137.04733	2.21048	0.1699999	3.1364343	44	5	1990–1999	0.67	M-v	1	Williams	32055	1996 VU_5
1996 VK_8	14.2	0.15	19990122	195.76372	69.87010	296.66800	3.60052	0.3283944	2.7391292	14	3	1984–1999	0.68	M-v	4	Marsden	28602	1996 VK_8
1996 VT_8	13.8	0.15	19990122	223.69650	281.40622	62.87919	13.47545	0.1881575	2.6901420	27	3	1996–1999	0.64	M-v	4	Williams	31249	1996 VT_8
1996 VV_8	12.3	0.15	19990122	186.50401	294.03538	57.49082	18.04718	0.0991428	3.1828336	36	4	1990–1999	0.67	M-v	2	Williams	34295	1996 VV_8
1996 VA_{27}	15.8	0.15	19990122	344.47504	55.00398	152.59229	1.07491	0.1202618	3.2100168	22	3	1996–1999	0.51	M-v	4	Williams	32751	1996 VA_{27}
1996 VR_{30}	12.6	0.15	19990122	17.39765	277.28870	268.70425	6.65227	0.0242575	3.1777321	37	5	1989–1999	0.73	M-v	1	Williams	31279	1996 VR_{30}
1996 VO_{38}	13.9	0.15	19990122	256.87610	174.13932	134.77780	2.85731	0.0608411	2.8513061	25	3	1996–1999	0.57	M-v	4	Williams	31391	1996 VO_{38}
1996 WZ_1	11.9	0.15	19990122	81.43762	347.11756	99.34483	10.60269	0.0891877	3.2268907	20	3	1993–1999	0.75	M-v	3	Williams	31589	1996 WZ_1

1996 XV	14.7	0.15	19990122	81.75362	87.23623	49.18407	1.41629	0.0955102	3.0957677	28	3	1971–1998	0.76	M-v	5	Williams	33496	1996 XV
1996 XO_2	13.9	0.15	19990122	262.75783	127.07120	180.18476	1.87369	0.0202997	2.9128940	34	3	1996–1999	0.49	M-v	4	Williams	31249	1996 XO_2
1996 XY_5	12.2	0.15	19990122	141.40956	302.00782	86.78086	6.48264	0.2312632	3.9479287	22	4	1980–1999	0.58	M-v	2	Williams	32056	1996 XY_5
1996 XH_6	13.6	0.15	19990122	223.40618	244.55868	109.83962	3.20534	0.1073184	2.9011685	27	3	1996–1999	0.72	M-v	4	Williams	32311	1996 XH_6
1996 XE_{19}	12.9	0.15	19990122	237.97487	159.92865	179.33322	3.82343	0.2238335	2.9912372	34	4	1949–1999	0.67	M-v	1	Williams	31793	1996 XE_{19}
1996 XY_{25}	13.9	0.15	19990122	198.12412	207.24199	144.79300	13.70780	0.1730283	2.6309005	45	3	1996–1999	0.79	M-v	3	Williams	34295	1996 XY_{25}
1996 XA_{27}	12.2	0.15	19990122	168.84230	65.20820	310.37600	15.25931	0.2336457	3.1227464	39	4	1981–1999	0.69	M-v	2	Williams	34295	1996 XA_{27}
1996 XT_{30}	12.4	0.15	19990122	348.84005	148.75563	80.72187	18.18526	0.0933209	3.1783864	35	4	1982–1999	0.67	M-v	1	Williams	34295	1996 XT_{30}
1996 XJ_{32}	13.8	0.15	19990122	142.14458	347.05233	77.34104	1.44988	0.1530433	3.1721095	15	2	1996–1998	0.62	M-v	7	Williams	34200	1996 XJ_{32}
1997 AO_1	11.8	0.15	19990122	276.81344	187.76331	112.83330	5.17711	0.0710554	3.9499413	53	5	1986–1999	0.59	M-v	1	Williams	31794	1997 AO_1
1997 AY_2	12.3	0.15	19990122	216.79047	280.04472	88.65551	10.46376	0.2295518	3.1675189	26	5	1984–1999	0.82	M-v	2	Williams	31590	1997 AY_2
1997 AU_3	13.3	0.15	19990122	204.22160	23.99536	336.72268	10.28654	0.1451971	2.9346753	37	3	1997–1999	0.62	M-v	4	Williams	31590	1997 AU_3
1997 AP_{10}	17.0	0.15	19990122	265.83912	356.00519	293.25959	6.65044	0.6432026	1.4430021	92	2	1997–1999	0.74	M-v	5	Green	34296	1997 AP_{10}
1997 AH_{21}	12.5	0.15	19990122	158.12556	321.99144	115.99440	18.53424	0.2023569	3.1194958	16	2	1997–1998	0.53	M-v	5	Williams	32955	1997 AH_{21}
1997 CT_{29}	6.3	0.15	19990122	206.90340	215.89801	74.68418	1.01512	0.0322520	43.5925358	18	3	1997–1999	0.48	M-v	5	Williams	33752	1997 CT_{29}
1997 EF_{41}	15.4	0.15	19990122	40.61350	129.77683	196.21119	4.78213	0.1051794	2.2011150	34	3	1982–1998	0.58	M-v	3	Williams	34201	1997 EF_{41}
1997 GC_{15}	15.9	0.15	19990122	93.81575	304.43980	355.45827	4.02359	0.1235002	2.3207430	32	2	1997–1998	0.71	M-v	4	Williams	32960	1997 GC_{15}
1997 HQ	14.3	0.15	19990122	302.82548	217.11445	210.87150	5.93114	0.0943380	2.4656883	20	2	1997–1998	0.46	M-v	5	Williams	33497	1997 HQ
1997 JA_{11}	13.3	0.15	19990122	354.27501	233.27336	149.92457	14.97274	0.3096024	3.1405365	46	2	1997–1998	0.53	M-v	3	Williams	33556	1997 JA_{11}
1997 JT_{15}	13.2	0.15	19990122	32.20902	210.26042	116.13615	3.09868	0.0346678	2.9195246	41	2	1997–1998	0.72	M-v	3	Williams	32753	1997 JT_{15}
1997 MC_3	13.6	0.15	19990122	178.61517	252.65624	337.65623	4.07622	0.0936369	2.5650241	31	3	1996–1998	0.49	M-v	4	Williams	34015	1997 MC_3
1997 OF_1	15.8	0.15	19990122	112.57190	67.64221	295.16608	1.59028	0.2105182	2.4018301	39	4	1992–1999	0.24	M-v	1	Williams	34016	1997 OF_1
1997 OY_1	13.9	0.15	19990122	57.44648	231.32106	178.15857	9.38954	0.1979067	2.5284541	30	2	1997–1999	0.69	M-v	4	Williams	34296	1997 OY_1
1997 OZ_1	13.4	0.15	19990122	193.07704	88.81128	155.69600	14.85236	0.0861504	2.5753029	34	4	1992–1999	0.80	M-v	1	Williams	33752	1997 OZ_1
1997 PX	15.6	0.15	19990122	53.92229	263.52527	169.42026	3.40285	0.1536482	2.3137489	38	4	1992–1999	0.58	M-v	1	Williams	34296	1997 PX
1997 PD_3	15.6	0.15	19990122	118.20090	247.24025	144.14253	2.53887	0.0948240	2.1463033	51	3	1996–1999	0.44	M-v	3	Marsden	34202	1997 PD_3
1997 PR_4	14.4	0.15	19990122	50.48179	130.27386	295.23922	5.78047	0.0840704	2.3777135	56	2	1997–1999	0.63	M-v	3	Williams	34016	1997 PR_4
1997 QH_1	14.0	0.15	19990122	215.56444	349.69997	277.29193	5.11889	0.1412758	2.2050815	49	3	1974–1999	0.65	M-v	3	Williams	34296	1997 QH_1
1997 QK_1	20.1	0.15	19990122	110.53150	2.54442	307.15081	2.88942	0.6422662	2.7925005	157	1	158 days	0.66	M-v	3	Marsden	31145	1997 QK_1
1997 QU_1	14.4	0.15	19990122	259.79561	7.38930	162.72342	2.46655	0.0641337	2.9169612	31	4	1995–1998	0.54	M-v	1	Williams	33557	1997 QU_1
1997 QR_3	16.1	0.15	19990122	98.58584	245.52123	190.13142	5.08621	0.1246092	2.2904642	50	5	1976–1999	0.80	M-v	2	Williams	31010	1997 QR_3
1997 QU_4	15.0	0.15	19990122	103.37726	52.27100	329.67263	6.87273	0.2104594	2.3989663	22	4	1960–1999	0.64	M-v	2	Williams	34203	1997 QU_4
1997 RV_2	14.6	0.15	19990122	58.82930	268.61186	172.16737	12.32519	0.1334024	2.3919838	42	2	1997–1999	0.51	M-v	3	Williams	34296	1997 RV_2
1997 RA_9	14.9	0.15	19990122	143.19757	194.85413	179.33303	5.66911	0.0949928	2.2622242	63	3	1990–1999	0.58	M-v	3	Williams	34296	1997 RA_9
1997 RK_9	15.2	0.15	19990122	49.07215	112.93447	345.65040	6.32959	0.1712783	2.4356817	35	2	1997–1999	0.65	M-v	4	Williams	34203	1997 RK_9
1997 SU	13.9	0.15	19990122	130.20896	178.74031	211.66127	5.48057	0.1273599	2.4031009	58	3	1993–1999	0.63	M-v	3	Williams	34297	1997 SU
1997 SV	14.1	0.15	19990122	148.35446	343.44460	32.84148	7.15008	0.1201147	2.3672829	34	2	1997–1999	0.55	M-v	4	Williams	31011	1997 SV
1997 SL_1	15.3	0.15	19990122	40.67177	282.71420	176.33034	3.58929	0.0268498	2.2920534	74	3	1996–1999	0.60	M-v	2	Williams	34017	1997 SL_1
1997 SX_1	14.0	0.15	19990122	54.38948	248.51887	209.36115	4.41541	0.1465712	2.6375096	79	2	1997–1999	0.48	M-v	3	Williams	34297	1997 SX_1
1997 SB_2	15.9	0.15	19990122	34.47900	122.86761	19.14254	3.68820	0.0534548	2.1849300	49	2	1997–1999	0.47	M-v	4	Williams	34203	1997 SB_2
1997 SC_2	15.2	0.15	19990122	111.83545	194.97017	205.29867	3.17675	0.1058968	2.4336561	46	3	1993–1999	0.68	M-v	4	Marsden	34297	1997 SC_2
1997 SG_2	14.2	0.15	19990122	155.82468	13.38389	338.29961	7.56954	0.0745842	2.2219958	52	2	1997–1999	0.57	M-v	3	Williams	34297	1997 SG_2
1997 SX_2	14.7	0.15	19990122	18.64929	161.33832	341.44336	3.48472	0.1495972	2.2587421	50	5	1975–1999	0.62	M-v	2	Williams	34297	1997 SX_2
1997 SZ_2	13.7	0.15	19990122	16.96036	131.26108	323.84747	1.25319	0.1405879	3.1341640	22	2	1997–1999	0.61	M-v	3	Williams	34203	1997 SZ_2
1997 SB_3	15.3	0.15	19990122	111.21306	205.20446	199.43793	4.80881	0.1399314	2.2708713	31	3	1996–1999	0.63	M-v	3	Williams	34297	1997 SB_3
1997 SR_8	13.4	0.15	19990122	255.56778	182.02706	357.13773	5.24791	0.0966165	3.1605561	38	4	1989–1998	0.76	M-v	2	Williams	33345	1997 SR_8
1997 SB_{10}	13.8	0.15	19990122	56.07848	250.17862	233.07576	4.36783	0.1637344	2.5641176	49	4	1978–1999	0.60	M-v	2	Williams	31423	1997 SB_{10}
1997 ST_{10}	14.2	0.15	19990122	144.85510	353.57259	32.71009	6.65661	0.1511750	2.3124124	44	2	1997–1999	0.79	M-v	4	Williams	34204	1997 ST_{10}
1997 SD_{11}	14.3	0.15	19990122	354.81999	269.61910	242.34157	3.04417	0.0260860	2.1630081	71	4	1980–1999	0.66	M-v	3	Williams	34297	1997 SD_{11}
1997 SL_{17}	15.0	0.15	19990122	74.77006	79.25031	351.17410	10.17461	0.2329527	2.4220781	45	2	1997–1999	0.62	M-v	4	Williams	34204	1997 SL_{17}
1997 SV_{23}	15.5	0.15	19990122	66.70821	78.45050	17.55435	2.69301	0.1449822	2.4517628	27	2	1997–1999	0.64	M-v	4	Williams	34204	1997 SV_{23}
1997 SH_{25}	14.8	0.15	19990122	80.14451	343.79425	85.45379	2.52129	0.1582439	2.4158877	20	3	1980–1999	0.58	M-v	3	Williams	30881	1997 SH_{25}
1997 SK_{25}	13.5	0.15	19990122	80.36008	210.77702	172.42774	9.96926	0.0922306	2.9820080	27	2	1997–1999	0.49	M-v	3	Williams	34017	1997 SK_{25}

1997 SO_{25}	15.5	0.15	19990122	49.15639	208.25804	276.26476	2.78598	0.0962233	2.2342270	36	2	1997–1999	0.54	M-v	4	Williams	34205	1997 SO_{25}
1997 SK_{31}	16.6	0.15	19990122	30.99768	105.45935	351.94324	2.91298	0.1787227	2.5815274	34	2	1997–1999	0.48	M-v	4	Williams	34297	1997 SK_{31}
1997 SN_{31}	14.5	0.15	19990122	264.90625	221.98594	358.79813	5.37928	0.0899506	2.2745442	36	3	1996–1999	0.48	M-v	3	Williams	34017	1997 SN_{31}
1997 SA_{34}	13.9	0.15	19990122	65.16695	51.21647	37.35090	9.75672	0.2112385	2.9156255	52	3	1964–1999	0.64	M-v	3	Williams	34205	1997 SA_{34}
1997 SB_{34}	13.8	0.15	19990122	167.98899	339.92161	32.07701	5.51923	0.1647104	2.1699553	67	5	1981–1999	0.65	M-v	2	Williams	34205	1997 SB_{34}
1997 TE	13.7	0.15	19990122	78.38382	35.56098	27.06103	9.44990	0.1894869	2.6262764	41	2	1997–1999	0.53	M-v	3	Williams	34205	1997 TE
1997 TB_{10}	14.7	0.15	19990122	67.56071	213.40082	219.74278	0.87456	0.2818758	3.0283235	42	3	1994–1999	0.50	M-v	2	Williams	34297	1997 TB_{10}
1997 TD_{17}	14.7	0.15	19990122	115.17301	276.58258	126.64090	5.57031	0.1678291	2.3034084	34	2	1997–1999	0.86	M-v	4	Williams	34206	1997 TD_{17}
1997 TC_{18}	13.8	0.15	19990122	63.58270	61.84845	55.40868	5.14688	0.0735875	2.2643580	48	4	1973–1999	0.65	M-v	2	Williams	31423	1997 TC_{18}
1997 TU_{18}	14.9	0.15	19990122	67.84079	262.75664	177.21446	5.69015	0.1923265	2.2344107	54	3	1992–1999	0.51	M-v	2	Williams	34297	1997 TU_{18}
1997 TV_{22}	16.1	0.15	19990122	75.83899	76.94431	13.19686	6.58919	0.1324052	2.3675674	25	2	1997–1999	0.58	M-v	4	Williams	34206	1997 TV_{22}
1997 TR_{25}	13.0	0.15	19990122	110.21259	13.52658	34.27757	7.05269	0.2825434	2.5631616	64	2	1997–1999	0.66	M-v	3	Williams	34206	1997 TR_{25}
1997 TW_{25}	15.3	0.15	19990122	53.90285	339.44745	128.61220	4.31028	0.1048274	2.2794050	61	3	1990–1999	0.78	M-v	2	Williams	34297	1997 TW_{25}
1997 TV_{26}	14.7	0.15	19990122	6.15187	80.12971	73.03419	1.94388	0.1483496	2.4582123	62	4	1989–1999	0.60	M-v	2	Williams	34297	1997 TV_{26}
1997 UT	15.2	0.15	19990122	111.90044	200.02114	216.97929	6.26055	0.0768288	2.2491895	50	2	1997–1999	0.51	M-v	4	Williams	34297	1997 UT
1997 UV	14.2	0.15	19990122	354.18759	357.79305	145.29610	0.85841	0.1214462	3.1479393	37	2	1997–1999	0.52	M-v	4	Marsden	34206	1997 UV
1997 UV_2	14.5	0.15	19990122	8.28827	238.20499	264.92404	1.22914	0.1381172	2.6995776	45	4	1948–1999	0.54	M-v	2	Williams	34298	1997 UV_2
1997 UY_2	15.2	0.15	19990122	126.88382	181.04839	222.65050	10.43528	0.2389664	2.3083035	51	2	1997–1999	0.46	M-v	3	Williams	34207	1997 UY_2
1997 UM_3	13.7	0.15	19990122	115.84066	62.79071	349.09886	2.02630	0.1998919	2.3806096	40	4	1980–1999	0.68	M-v	1	Williams	31146	1997 UM_3
1997 UN_3	15.6	0.15	19990122	89.33998	204.56320	227.72219	4.11628	0.2040205	2.5772700	24	3	1989–1999	0.66	M-v	3	Williams	31146	1997 UN_3
1997 UQ_3	13.7	0.15	19990122	70.20978	61.62189	44.66711	1.54944	0.1374925	2.4225879	26	3	1993–1999	0.56	M-v	4	Green	31146	1997 UQ_3
1997 UV_3	14.4	0.15	19990122	127.73176	0.42516	27.45716	2.55446	0.1896047	2.4494619	42	4	1974–1999	0.60	M-v	3	Williams	34298	1997 UV_3
1997 UY_3	13.9	0.15	19990122	85.55008	200.23617	235.89924	2.72871	0.1522859	2.5847024	69	3	1989–1999	0.65	M-v	2	Williams	34298	1997 UY_3
1997 UA_4	14.5	0.15	19990122	320.14051	315.84167	254.06803	3.59241	0.0578122	2.3111516	111	2	1997–1999	0.74	M-v	3	Williams	34298	1997 UA_4
1997 UC_4	16.0	0.15	19970929	276.86858	234.36022	195.54894	3.94025	0.0329353	2.2349464	10	1	21 days	0.34			Williams		1997 UC_4
1997 UT_6	14.1	0.15	19990122	351.41437	341.05866	208.64869	3.07016	0.1339892	2.1831992	23	4	1981–1999	0.51	M-v	2	Williams	34298	1997 UT_6
1997 UB_7	12.8	0.15	19990122	122.97275	306.68738	48.54688	16.47832	0.2849226	2.7765213	31	3	1996–1999	0.49	M-v	3	Williams	34207	1997 UB_7
1997 UL_7	13.9	0.15	19990122	327.03326	84.58348	103.93388	3.76235	0.0521952	2.4005221	31	3	1988–1999	0.73	M-v	3	Williams	34298	1997 UL_7
1997 UU_7	14.4	0.15	19990122	192.93888	122.58705	162.57644	6.59842	0.1443376	2.3080544	32	4	1972–1999	0.60	M-v	2	Williams	33754	1997 UU_7
1997 UX_7	13.6	0.15	19990122	59.45477	222.45080	226.25435	7.09243	0.1959679	2.7930071	90	3	1971–1999	0.62	M-v	2	Williams	34298	1997 UX_7
1997 UB_8	15.1	0.15	19990122	106.74346	221.45125	202.86362	22.75611	0.3117023	2.3329537	31	3	1990–1999	0.50	M-v	2	Williams	31147	1997 UB_8
1997 UU_8	14.4	0.15	19990122	18.05289	22.99376	96.16936	2.71481	0.1496235	3.1829810	37	2	1997–1999	0.75	M-v	4	Williams	34208	1997 UU_8
1997 UA_9	12.7	0.15	19990122	333.08271	131.33748	59.01102	11.06985	0.0226730	2.5593459	74	4	1970–1999	0.64	M-v	3	Williams	34298	1997 UA_9
1997 UE_9	14.5	0.15	19990122	150.58220	60.70626	301.35451	6.63869	0.1622965	2.2440435	42	3	1960–1999	0.73	M-v	4	Williams	30990	1997 UE_9
1997 UL_9	15.1	0.15	19990122	55.70438	73.06276	37.21593	14.29819	0.2181111	2.6071398	57	2	1997–1999	0.71	M-v	4	Williams	34208	1997 UL_9
1997 UU_{10}	14.9	0.15	19990122	36.17195	112.86096	22.09891	4.03009	0.1473083	2.4313455	48	2	1997–1999	0.69	M-v	4	Williams	34208	1997 UU_{10}
1997 UZ_{14}	14.7	0.15	19990122	43.67057	87.49788	48.34867	4.35194	0.1313954	2.3512196	53	4	1981–1999	0.77	M-v	1	Williams	32969	1997 UZ_{14}
1997 UB_{15}	14.8	0.15	19990122	96.96957	14.39380	54.75594	1.57772	0.0631157	2.3767357	48	2	1997–1999	0.92	M-v	4	Williams	34208	1997 UB_{15}
1997 UE_{15}	14.8	0.15	19990122	340.01546	309.56910	227.04684	10.56279	0.0849943	2.5216493	44	2	1997–1999	0.52	M-v	4	Marsden	34208	1997 UE_{15}
1997 UK_{21}	14.0	0.15	19990122	72.72040	71.70436	23.80888	4.05785	0.1676479	2.5881173	45	3	1976–1999	0.64	M-v	3	Williams	34298	1997 UK_{21}
1997 UM_{21}	15.4	0.15	19990122	352.50356	141.80976	27.26773	5.26452	0.0741648	2.2186066	39	2	1997–1999	0.53	M-v	4	Williams	34208	1997 UM_{21}
1997 UV_{21}	14.0	0.15	19990122	56.95095	67.30016	53.36090	13.15554	0.2126045	2.5391786	39	3	1993–1999	0.70	M-v	3	Williams	31148	1997 UV_{21}
1997 UD_{22}	16.5	0.15	19971019	6.04819	263.32979	123.81065	8.63064	0.2021664	2.5587126	11	1	5 days	0.44			Williams		1997 UD_{22}
1997 UG_{22}	14.9	0.15	19990122	87.61017	15.70980	60.12144	7.56632	0.0819016	2.3652089	39	2	1997–1999	0.73	M-v	4	Williams	34209	1997 UG_{22}
1997 VP_1	14.4	0.15	19990122	84.17114	325.42185	101.35252	0.87769	0.1090479	2.6091784	41	2	1997–1999	0.81	M-v	4	Williams	34209	1997 VP_1
1997 VP_2	14.7	0.15	19990122	48.31100	264.22190	205.71147	14.68558	0.1658912	2.5816955	51	2	1997–1999	0.56	M-v	4	Williams	34210	1997 VP_2
1997 VT_2	14.7	0.15	19990122	305.86969	221.33074	10.47687	3.43585	0.0533030	2.3943694	35	2	1997–1999	0.74	M-v	4	Williams	34210	1997 VT_2
1997 VA_3	14.4	0.15	19990122	240.93922	16.45722	271.06539	2.85955	0.0882444	2.2683847	65	3	1993–1999	0.58	M-v	3	Marsden	34298	1997 VA_3
1997 VS_3	14.5	0.15	19990122	128.11884	329.46015	72.20153	3.45422	0.2020470	2.3705009	34	4	1982–1999	0.61	M-v	2	Williams	32969	1997 VS_3
1997 VA_4	14.5	0.15	19990122	77.31223	282.98503	176.01937	7.48076	0.2094393	3.0497261	41	3	1996–1999	0.54	M-v	3	Marsden	34298	1997 VA_4
1997 VG_4	13.5	0.15	19990122	11.28955	11.34942	136.20555	2.03220	0.1734046	3.1906118	69	3	1991–1999	0.77	M-v	3	Williams	34298	1997 VG_4
1997 VW_4	13.8	0.15	19990122	340.52906	129.83184	49.70907	14.14068	0.1139418	2.5721193	61	2	1997–1999	0.66	M-v	4	Marsden	34298	1997 VW_4
1997 VD_6	12.8	0.15	19990122	346.82492	91.20980	80.47246	10.62536	0.0481865	3.0471277	23	2	1997–1999	0.42	M-v	3	Williams	34298	1997 VD_6

1997 VJ_6	14.1	0.15	19990122	82.91753	83.92028	6.32831	4.36796	0.1124244	2.5590571	58	2	1997–1999	0.50	M-v	3	Williams	34210	1997 VJ_6
1997 VE_7	14.4	0.15	19990122	5.14310	259.11037	255.84338	4.93575	0.1499693	2.4284576	39	3	1978–1999	0.55	M-v	3	Williams	34299	1997 VE_7
1997 VM_7	14.5	0.15	19990122	245.22505	232.47001	51.23613	4.99451	0.1258432	2.3149752	34	3	1971–1999	0.64	M-v	3	Williams	34299	1997 VM_7
1997 WK	13.6	0.15	19990122	259.12372	8.67835	256.40955	1.82445	0.0086570	2.6295588	39	3	1989–1999	0.74	M-v	4	Williams	34299	1997 WK
1997 WJ_2	14.4	0.15	19990122	17.67515	109.26622	73.31277	3.90851	0.0502591	2.2873713	38	4	1971–1999	0.74	M-v	1	Marsden	31423	1997 WJ_2
1997 WP_2	13.1	0.15	19990122	63.44660	28.86280	82.27299	11.18064	0.0958413	2.6271408	40	3	1977–1999	0.65	M-v	3	Williams	31118	1997 WP_2
1997 WQ_2	14.8	0.15	19990122	143.28813	309.66739	85.66690	6.69788	0.0880488	2.3627027	36	2	1997–1999	0.75	M-v	4	Williams	34299	1997 WQ_2
1997 WU_2	13.0	0.15	19990122	7.24789	65.44112	78.96941	22.83383	0.0684494	3.1767672	30	2	1997–1999	0.87	M-v	3	Williams	34211	1997 WU_2
1997 WV_2	13.1	0.15	19990122	129.82944	144.72730	268.54917	5.18547	0.0842954	2.3961828	31	3	1993–1999	0.52	M-v	4	Williams	31151	1997 WV_2
1997 WD_3	13.1	0.15	19990122	280.56149	161.22119	82.51205	3.19633	0.0160746	2.8363176	45	3	1991–1999	0.62	M-v	4	Williams	34299	1997 WD_3
1997 WA_7	12.6	0.15	19990122	282.11843	190.32265	96.17344	15.22298	0.1959541	2.5887795	29	4	1991–1999	0.71	M-v	3	Williams	34299	1997 WA_7
1997 WK_7	13.8	0.15	19990122	38.89256	108.55336	43.08484	4.38138	0.0903519	2.2691555	41	3	1985–1999	0.73	M-v	2	Williams	34299	1997 WK_7
1997 WL_7	13.7	0.15	19990122	57.91352	213.65415	250.59761	3.48428	0.0905386	2.6459228	58	3	1991–1999	0.74	M-v	2	Williams	34299	1997 WL_7
1997 WQ_7	14.7	0.15	19990122	195.71481	80.21418	259.42254	1.59865	0.1242729	2.1900039	29	3	1996–1999	0.65	M-v	4	Williams	31151	1997 WQ_7
1997 WU_7	13.2	0.15	19990122	97.79440	34.39525	32.88228	13.47797	0.2441275	2.5433189	49	3	1989–1999	0.50	M-v	3	Williams	34299	1997 WU_7
1997 WW_7	10.2	0.15	19990122	50.63853	162.67374	249.85941	5.66462	0.0716336	5.1801774	41	2	1997–1999	0.66	M-v	4	Williams	34018	1997 WW_7
1997 WF_{21}	14.5	0.15	19990122	111.03840	242.57570	188.46957	3.34185	0.1725059	2.4192590	32	5	1978–1999	0.76	M-v	2	Williams	31152	1997 WF_{21}
1997 WT_{21}	14.1	0.15	19990122	182.72232	286.92335	60.54106	3.12605	0.0729177	2.8504686	23	4	1994–1999	0.78	M-v	1	Williams	34299	1997 WT_{21}
1997 WU_{21}	12.9	0.15	19990122	210.53195	233.00117	82.30955	9.62088	0.0729264	3.0457133	21	3	1986–1999	0.65	M-v	3	Williams	34299	1997 WU_{21}
1997 WX_{21}	12.9	0.15	19990122	315.17230	241.25144	354.16094	12.79765	0.1315232	2.7017260	55	3	1990–1999	0.64	M-v	3	Williams	34299	1997 WX_{21}
1997 WP_{22}	13.1	0.15	19990122	201.09262	228.66544	114.74200	2.33640	0.1693934	3.1736446	48	3	1984–1999	0.66	M-v	3	Williams	34299	1997 WP_{22}
1997 WM_{24}	14.8	0.15	19990122	142.06868	343.27441	32.34468	6.18512	0.1728695	2.2763835	40	3	1990–1999	0.68	M-v	4	Williams	34212	1997 WM_{24}
1997 WQ_{28}	13.3	0.15	19990122	59.96975	89.28500	8.78766	11.26946	0.1586649	2.6466329	59	2	1997–1999	0.67	M-v	3	Williams	34212	1997 WQ_{28}
1997 WA_{30}	13.8	0.15	19990122	55.99582	244.47890	235.38943	11.77044	0.1605219	2.6354995	46	4	1976–1999	0.69	M-v	1	Williams	34212	1997 WA_{30}
1997 WR_{31}	14.4	0.15	19990122	83.02219	288.19149	168.02954	1.32120	0.1489040	2.4049933	51	4	1980–1999	0.68	M-v	2	Williams	32753	1997 WR_{31}
1997 WP_{32}	13.5	0.15	19990122	36.26031	324.66033	146.26731	1.92246	0.1445428	3.0860987	40	2	1997–1999	0.49	M-v	3	Williams	34212	1997 WP_{32}
1997 WT_{33}	14.6	0.15	19990122	132.15626	352.75713	37.71229	2.14479	0.1456573	2.4669855	28	3	1989–1999	0.76	M-v	5	Williams	31121	1997 WT_{33}
1997 WK_{35}	13.8	0.15	19990122	19.78435	308.42655	186.47560	1.87545	0.1826176	3.1864126	25	3	1993–1999	0.90	M-v	3	Williams	34299	1997 WK_{35}
1997 WN_{36}	12.8	0.15	19990122	85.09322	342.94859	68.87335	23.37007	0.0324394	3.1455923	35	2	1997–1999	0.67	M-v	3	Williams	34213	1997 WN_{36}
1997 WZ_{36}	15.6	0.15	19990122	143.17328	203.56434	177.49458	2.77186	0.1767848	2.3794973	26	3	1993–1999	0.72	M-v	5	Williams	32683	1997 WZ_{36}
1997 WL_{37}	15.9	0.15	19990122	122.98404	210.66481	197.32785	2.67947	0.1686841	2.4013659	35	4	1978–1999	0.91	M-v	2	Williams	34213	1997 WL_{37}
1997 WT_{37}	13.9	0.15	19990122	194.96180	337.90238	351.09673	2.47023	0.1118627	2.3969043	44	3	1993–1999	0.81	M-v	3	Williams	34299	1997 WT_{37}
1997 WB_{38}	14.5	0.15	19990122	276.42508	170.14993	100.74244	2.43599	0.1276593	2.1733517	57	4	1980–1999	0.69	M-v	2	Williams	34299	1997 WB_{38}
1997 WO_{44}	13.8	0.15	19990122	356.28356	306.12126	253.14013	5.38929	0.1956320	2.5389418	39	5	1991–1999	0.78	M-v	2	Williams	31282	1997 WO_{44}
1997 WC_{45}	13.5	0.15	19990122	152.18950	106.64541	234.04888	9.32391	0.1142920	2.9739030	29	2	1997–1999	0.83	M-v	5	Williams	34213	1997 WC_{45}
1997 XA	14.0	0.15	19990122	68.88044	202.35476	246.44977	8.97291	0.1947433	2.7825220	38	2	1997–1999	0.75	M-v	4	Williams	34299	1997 XA
1997 XB	15.0	0.15	19990122	65.23736	18.13140	99.22408	9.04514	0.1046788	2.5619357	21	3	1995–1999	0.61	M-v	3	Williams	31123	1997 XB
1997 XV	13.6	0.15	19990122	341.61043	193.30723	351.79643	4.76883	0.0270999	2.8678463	42	3	1996–1999	0.72	M-v	4	Williams	34300	1997 XV
1997 XU_1	13.3	0.15	19990122	132.53065	270.73764	96.21106	11.66068	0.1396783	2.9638549	19	2	1997–1999	0.59	M-v	4	Williams	33966	1997 XU_1
1997 XL_5	13.9	0.15	19990122	108.53864	291.31520	132.29722	5.44497	0.0923024	2.6064036	53	3	1996–1999	0.66	M-v	3	Williams	34300	1997 XL_5
1997 XY_9	13.7	0.15	19990122	242.08982	11.59944	277.31553	1.60001	0.2020033	2.4042532	50	4	1974–1999	0.59	M-v	1	Williams	34300	1997 XY_9
1997 XZ_9	13.4	0.15	19990122	76.09815	211.88634	259.01769	5.04409	0.0563839	2.4425455	13	3	1983–1999	0.51	M-v	4	Williams	31125	1997 XZ_9
1997 XA_{10}	14.2	0.15	19990122	334.68750	139.58283	69.39599	3.10754	0.1387744	2.6848983	55	3	1996–1999	0.77	M-v	4	Williams	34300	1997 XA_{10}
1997 XB_{10}	13.6	0.15	19990122	31.23048	106.57701	67.17965	12.90008	0.1388857	2.3491283	44	5	1959–1999	0.77	M-v	2	Williams	31283	1997 XB_{10}
1997 XK_{10}	13.5	0.15	19990122	117.62409	152.45323	257.84913	14.94258	0.1816039	2.5931868	70	3	1951–1999	0.64	M-v	3	Williams	31424	1997 XK_{10}
1997 XL_{10}	13.0	0.15	19990122	104.64219	330.77371	72.00904	11.46618	0.1073931	2.9793565	57	2	1997–1999	0.86	M-v	4	Williams	34214	1997 XL_{10}
1997 XM_{10}	14.9	0.15	19990122	138.68084	30.10449	13.41699	2.32742	0.2053626	2.4046396	18	4	1993–1999	0.66	M-v	2	Williams	31283	1997 XM_{10}
1997 XS_{11}	13.6	0.15	19990122	61.28033	182.13009	264.26278	8.20334	0.0478529	3.0494474	29	2	1997–1999	0.69	M-v	3	Williams	34300	1997 XS_{11}
1997 YO	12.0	0.15	19990122	46.16248	28.88405	107.15628	17.62887	0.1697246	3.1399344	28	2	1997–1999	0.50	M-v	3	Williams	33705	1997 YO
1997 YQ	14.8	0.15	19990122	172.57193	171.71249	198.73366	2.35904	0.2085469	2.3964920	39	4	1989–1999	0.79	M-v	3	Williams	34300	1997 YQ
1997 YT	13.9	0.15	19990122	240.70201	35.92410	273.08046	3.86313	0.0752481	2.6459439	35	3	1996–1999	0.64	M-v	4	Williams	34300	1997 YT
1997 YZ	12.5	0.15	19990122	312.86819	301.44915	237.23927	17.13618	0.0954060	3.1118939	65	3	1986–1999	0.76	M-v	3	Williams	33755	1997 YZ
1997 YC_1	14.1	0.15	19990122	194.99724	282.54284	72.22614	3.64667	0.2145033	2.3672850	51	4	1971–1999	0.62	M-v	2	Williams	34300	1997 YC_1

1997 YG_1	14.5	0.15	19990122	48.68697	53.31687	62.21504	2.94838	0.1443831	2.4490645	77	3	1978–1999	0.53	M-v	1	Williams	34300	1997 YG_1
1997 YQ_1	15.0	0.15	19990122	60.66088	84.16654	20.40476	4.34339	0.1569900	2.4331868	51	2	1997–1999	0.67	M-v	4	Williams	34214	1997 YQ_1
1997 YS_1	14.9	0.15	19990122	172.85623	292.87534	99.51512	7.18586	0.1208839	2.4147428	28	3	1989–1999	0.63	M-v	3	Williams	31284	1997 YS_1
1997 YY_1	13.5	0.15	19990122	114.42492	325.52876	91.69695	3.74106	0.1427246	2.8367144	41	4	1987–1999	0.75	M-v	2	Williams	34300	1997 YY_1
1997 YP_2	14.1	0.15	19990122	179.10858	168.32896	207.95075	4.12560	0.1866390	2.2592450	40	3	1995–1999	0.58	M-v	3	Williams	31796	1997 YP_2
1997 YX_2	14.4	0.15	19990122	60.72735	126.95534	355.81988	1.22948	0.0617595	2.9746933	25	3	1960–1999	0.68	M-v	5	Williams	31254	1997 YX_2
1997 YZ_2	12.4	0.15	19990122	115.03404	164.71236	270.26135	12.18497	0.1204661	2.6031837	29	4	1983–1999	0.74	M-v	3	Williams	31254	1997 YZ_2
1997 YW_3	13.2	0.15	19990122	103.87638	73.84244	340.96326	7.90661	0.2347161	2.7603414	31	3	1992–1999	0.56	M-v	3	Williams	34300	1997 YW_3
1997 YH_4	13.8	0.15	19990122	144.90759	336.38905	59.53092	2.93034	0.0756394	2.8454742	48	3	1996–1999	0.61	M-v	3	Williams	34300	1997 YH_4
1997 YA_5	13.4	0.15	19990122	77.66181	180.23173	267.96319	16.48822	0.1498285	2.7602767	44	2	1997–1999	0.37	M-v	3	Marsden	34214	1997 YA_5
1997 YH_5	14.2	0.15	19990122	173.63899	60.63822	323.58913	3.58956	0.2395408	2.1889223	29	4	1974–1999	0.47	M-v	2	Williams	31591	1997 YH_5
1997 YS_5	13.2	0.15	19990122	82.41381	143.25371	307.40036	9.47266	0.2432504	3.0296289	28	3	1991–1999	0.63	M-v	2	Williams	31796	1997 YS_5
1997 YW_5	13.1	0.15	19990122	66.22350	63.35508	64.08156	6.10026	0.0972715	2.7996357	25	4	1985–1999	0.63	M-v	2	Williams	31284	1997 YW_5
1997 YY_5	11.7	0.15	19990122	217.95884	9.13482	311.87199	9.37797	0.0822022	3.0110478	43	4	1978–1999	0.59	M-v	2	Williams	34300	1997 YY_5
1997 YQ_7	13.1	0.15	19990122	134.49719	86.75629	336.60597	11.47543	0.1659528	2.6905523	21	5	1974–1999	0.97	M-v	2	Williams	31396	1997 YQ_7
1997 YE_8	14.9	0.15	19990122	177.43116	190.97441	181.17405	7.30667	0.1625403	2.4355216	28	2	1997–1999	0.40	M-v	4	Marsden	34214	1997 YE_8
1997 YN_8	14.3	0.15	19990122	269.72547	262.62962	14.22546	2.77485	0.1581092	2.2492221	84	2	1997–1999	0.70	M-v	4	Williams	34300	1997 YN_8
1997 YY_8	12.6	0.15	19990122	99.17016	332.07567	90.05334	15.45695	0.1656397	2.6508539	34	3	1994–1999	0.77	M-v	4	Williams	34300	1997 YY_8
1997 YB_{10}	13.4	0.15	19990122	107.76220	118.40189	313.30306	6.85284	0.2082311	2.7717377	37	4	1987–1999	0.78	M-v	2	Williams	31797	1997 YB_{10}
1997 YS_{10}	13.5	0.15	19990122	197.87612	166.06217	209.22814	2.88201	0.1262340	2.4082851	26	3	1989–1999	0.64	M-v	2	Williams	31285	1997 YS_{10}
1997 YW_{11}	13.5	0.15	19990122	203.47250	248.73461	93.32624	4.72449	0.0990573	2.8000426	43	2	1997–1999	0.74	M-v	4	Williams	34214	1997 YW_{11}
1997 YV_{13}	13.4	0.15	19990122	127.06655	131.74870	266.79998	4.98163	0.3873545	2.5982335	36	3	1977–1999	0.66	M-v	3	Williams	33706	1997 YV_{13}
1997 YE_{14}	13.2	0.15	19990122	298.88809	338.13793	298.46258	8.18442	0.1317733	2.7925114	49	5	1986–1999	0.60	M-v	2	Williams	31797	1997 YE_{14}
1997 YP_{14}	14.0	0.15	19990122	173.59276	47.99948	331.13343	1.14118	0.0735980	2.8962526	36	2	1997–1999	0.51	M-v	4	Williams	34215	1997 YP_{14}
1997 YQ_{14}	14.0	0.15	19990122	352.21018	209.30081	7.03228	0.55487	0.1447069	3.1724178	33	4	1993–1999	0.51	M-v	1	Williams	31396	1997 YQ_{14}
1997 YJ_{16}	13.6	0.15	19990122	111.29345	63.68741	17.84931	8.91936	0.1797815	2.3042800	19	4	1988–1999	0.61	M-v	2	Williams	31130	1997 YJ_{16}
1997 YU_{16}	14.2	0.15	19990122	341.50236	145.72928	73.27902	3.01721	0.0218024	2.6282518	35	4	1988–1999	0.50	M-v	1	Williams	31591	1997 YU_{16}
1997 YZ_{16}	14.4	0.15	19990122	139.53185	260.68940	150.00211	5.46760	0.1162009	2.4338317	28	6	1985–1999	0.81	M-v	2	Williams	31286	1997 YZ_{16}
1997 YB_{17}	13.1	0.15	19990122	305.32858	309.43307	306.77584	0.94727	0.0214441	2.8851871	44	4	1976–1999	0.47	M-v	1	Williams	31591	1997 YB_{17}
1998 AJ	12.9	0.15	19990122	102.44213	305.86528	118.67026	4.10832	0.1720121	3.1136795	94	4	1969–1999	0.73	M-v	3	Williams	34300	1998 AJ
1998 AS_1	13.8	0.15	19990122	52.50031	18.67757	114.75971	2.91412	0.1440190	3.1106986	48	4	1993–1999	0.67	M-v	1	Williams	31426	1998 AS_1
1998 AC_4	14.6	0.15	19990122	237.07305	221.62431	98.54983	3.62488	0.1969007	2.4489721	35	2	1997–1999	0.72	M-v	4	Williams	34215	1998 AC_4
1998 AG_6	13.7	0.15	19990122	198.80662	226.70698	163.22785	10.90326	0.1471074	2.8808647	26	1	73 days	0.95	M-v	5	D Williams		1998 AG_6
1998 AP_7	14.5	0.15	19990122	207.13929	242.51503	98.90445	4.30159	0.0930499	2.6882251	42	3	1996–1999	0.60	M-v	4	Williams	34300	1998 AP_7
1998 AW_8	15.6	0.15	19990122	112.14702	200.48654	223.57259	4.84075	0.1178843	2.2524283	50	2	1997–1999	0.83	M-v	4	Williams	34215	1998 AW_8
1998 AM_{10}	14.1	0.15	19990122	257.22397	174.33120	145.94401	7.88920	0.0898333	2.4535499	34	2	1997–1999	0.59	M-v	4	Williams	34300	1998 AM_{10}
1998 BE	13.4	0.15	19990122	229.92941	286.22732	39.91409	6.53384	0.0675361	2.7120108	40	4	1983–1999	0.57	M-v	2	Williams	34019	1998 BE
1998 BM	12.9	0.15	19990122	250.22335	311.75671	347.76310	8.38086	0.0808076	3.1421727	45	3	1954–1999	0.66	M-v	4	Williams	34215	1998 BM
1998 BQ	14.2	0.15	19990122	70.86032	356.87793	106.16835	7.41155	0.1402073	2.2848623	30	4	1987–1999	0.78	M-v	3	Williams	34300	1998 BQ
1998 BC_1	12.6	0.15	19990122	87.02137	282.56404	182.12427	0.29210	0.1429255	3.1856692	45	6	1979–1999	0.60	M-v	2	Williams	31592	1998 BC_1
1998 BH_1	15.0	0.15	19990122	203.18052	286.89225	69.18662	5.45287	0.2300437	2.3347690	19	3	1975–1999	0.74	M-v	3	Williams	31427	1998 BH_1
1998 BA_2	14.1	0.15	19990122	193.63861	303.87070	48.17225	4.18473	0.1847168	2.5620098	41	4	1955–1999	0.80	M-v	2	Williams	34300	1998 BA_2
1998 BB_2	12.4	0.15	19990122	292.79991	157.54466	102.38679	17.76385	0.1378999	3.1203657	71	4	1988–1999	0.66	M-v	2	Williams	34300	1998 BB_2
1998 BG_2	13.5	0.15	19990122	300.57122	200.71078	87.96567	1.19751	0.1839728	2.2126025	51	6	1982–1999	0.57	M-v	1	Williams	32753	1998 BG_2
1998 BK_2	15.1	0.15	19990122	182.18378	255.47439	140.57374	3.18134	0.0377956	2.2877071	24	2	1996–1998	0.53	M-v	4	Williams	33346	1998 BK_2
1998 BP_6	13.1	0.15	19990122	72.60792	340.62960	96.56532	11.98558	0.2335328	3.0525768	40	2	1998–1999	0.73	M-v	4	Williams	34215	1998 BP_6
1998 BV_6	13.7	0.15	19990122	303.13906	132.64041	126.99779	10.38862	0.0484495	3.1693704	28	3	1993–1999	0.56	M-v	4	Williams	31427	1998 BV_6
1998 BD_8	13.1	0.15	19990122	186.91480	48.40035	327.38093	12.89487	0.1880245	2.6250710	44	3	1983–1999	0.57	M-v	3	Williams	31797	1998 BD_8
1998 BG_8	13.8	0.15	19990122	177.53633	306.58023	84.86985	3.53600	0.1537785	2.5250297	41	4	1988–1999	0.55	M-v	1	Williams	31797	1998 BG_8
1998 BH_8	13.3	0.15	19990122	302.72437	163.64013	122.59622	11.02735	0.1273581	2.6737185	40	3	1982–1999	0.73	M-v	4	Williams	31798	1998 BH_8
1998 BA_9	12.8	0.15	19990122	154.68578	105.77991	285.26788	8.06812	0.0806798	3.1734377	38	4	1987–1999	0.71	M-v	1	Williams	34300	1998 BA_9
1998 BK_9	14.4	0.15	19990122	26.26896	343.88334	209.71395	2.38211	0.1763850	3.0373827	21	2	1993–1998	0.31	M-v	5	Williams	33266	1998 BK_9
1998 BK_{10}	14.3	0.15	19990122	205.62937	282.93148	57.05082	6.90863	0.2290484	2.5562620	60	3	1995–1999	0.66	M-v	3	Williams	34300	1998 BK_{10}

1998 BG_{11}	13.3	0.15	19990122	266.38371	177.17228	106.99273	6.43607	0.0312487	2.7292577	53	4	1987–1999	0.58	M-v	2	Williams	31265	1998 BG_{11}
1998 BC_{12}	12.4	0.15	19990122	74.31062	354.12763	110.90652	11.62191	0.0293867	3.0401365	54	4	1986–1999	0.66	M-v	2	Williams	34300	1998 BC_{12}
1998 BM_{12}	13.1	0.15	19990122	51.15424	261.98061	228.73826	0.44597	0.1715471	3.0909710	40	5	1971–1999	0.70	M-v	1	Williams	31266	1998 BM_{12}
1998 BZ_{12}	15.3	0.15	19990122	46.50752	122.12700	47.57590	1.34556	0.1107375	2.5839566	30	3	1992–1998	0.64	M-v	5	Williams	32970	1998 BZ_{12}
1998 BS_{13}	13.7	0.15	19990122	49.64210	254.40812	257.44167	3.07930	0.0455106	2.7856137	65	2	1997–1999	0.68	M-v	3	Williams	33967	1998 BS_{13}
1998 BB_{19}	12.7	0.15	19990122	199.38755	331.66421	6.41571	9.39923	0.1769694	3.1409098	30	2	1998–1999	0.67	M-v	4	Marsden	34216	1998 BB_{19}
1998 BA_{20}	14.5	0.15	19990122	191.08486	151.05980	206.32160	0.23174	0.0697062	2.7969440	26	3	1996–1999	0.71	M-v	4	Williams	34300	1998 BA_{20}
1998 BU_{25}	12.6	0.15	19990122	47.08501	13.92630	134.60489	10.60827	0.0509867	3.0440101	103	4	1977–1999	0.75	M-v	2	Williams	34300	1998 BU_{25}
1998 BC_{26}	13.2	0.15	19990122	192.81882	319.35529	64.53482	8.70039	0.1807373	2.4144638	22	4	1974–1999	0.61	M-v	2	Williams	31593	1998 BC_{26}
1998 BT_{26}	13.4	0.15	19990122	16.05048	138.71158	335.39007	15.54720	0.0723987	3.1758622	66	2	1998–1999	0.48	M-v	3	Marsden	34300	1998 BT_{26}
1998 BK_{30}	13.8	0.15	19990122	129.18079	137.63459	303.13009	2.46979	0.0598058	2.6202889	42	5	1979–1999	0.82	M-v	1	Williams	31593	1998 BK_{30}
1998 BA_{34}	13.4	0.15	19990122	155.70415	320.65224	71.09601	11.60644	0.0662640	3.0604578	33	4	1988–1999	0.64	M-v	2	Williams	31402	1998 BA_{34}
1998 BQ_{40}	14.1	0.15	19990122	217.24247	3.14204	340.48486	4.28819	0.0851598	2.7923176	18	3	1991–1999	0.72	M-v	4	Williams	31739	1998 BQ_{40}
1998 BF_{41}	13.7	0.15	19990122	111.11739	282.22529	147.71735	2.71500	0.1619702	3.0799930	35	5	1964–1999	0.53	M-v	1	Williams	31402	1998 BF_{41}
1998 BB_{42}	13.5	0.15	19990122	158.82681	34.14268	14.62592	6.70367	0.1309071	2.6024015	50	6	1981–1999	0.79	M-v	1	Williams	32315	1998 BB_{42}
1998 BG_{42}	14.1	0.15	19990122	125.14786	51.08555	349.68083	4.01934	0.1514000	2.1902869	52	2	1997–1999	0.57	M-v	4	Williams	34216	1998 BG_{42}
1998 BQ_{42}	16.1	0.15	19990122	74.83246	6.25458	150.70907	2.47540	0.1507569	2.3494958	15	1	86 days	0.64	M-v	5	Williams	33755	1998 BQ_{42}
1998 BW_{43}	13.2	0.15	19990122	140.93856	5.13275	35.70292	8.68056	0.2207531	2.7839260	29	4	1980–1999	0.80	M-v	2	Williams	31799	1998 BW_{43}
1998 CH	12.8	0.15	19990122	142.34514	293.61471	106.48820	22.76198	0.0686151	2.6912312	92	3	1997–1999	0.36	M-v	2	Williams	34301	1998 CH
1998 CR	13.0	0.15	19990122	168.35999	228.66085	162.99522	10.64571	0.1406437	3.0495188	64	3	1990–1999	0.59	M-v	3	Williams	31799	1998 CR
1998 CC_1	13.8	0.15	19990122	242.54889	180.13046	140.94885	9.94931	0.1462104	2.7838650	36	3	1990–1999	0.57	M-v	3	Williams	31430	1998 CC_1
1998 CF_1	13.2	0.15	19990122	341.98928	183.97666	34.30566	1.54081	0.1141109	3.1539938	38	4	1978–1999	0.86	M-v	1	Williams	31403	1998 CF_1
1998 CH_1	14.6	0.15	19990122	134.43351	232.27938	187.25078	1.91905	0.0739139	2.9092936	21	3	1996–1999	0.35	M-v	3	Williams	31404	1998 CH_1
1998 CL_2	15.3	0.15	19990122	85.38005	326.83970	106.80206	5.67865	0.2141632	2.5939292	34	2	1997–1999	0.60	M-v	4	Williams	34217	1998 CL_2
1998 CM_2	14.0	0.15	19990122	100.62160	287.32618	137.37789	3.15285	0.1505255	2.4314569	55	3	1991–1999	0.71	M-v	2	Williams	34301	1998 CM_2
1998 DP	12.0	0.15	19990122	222.64432	217.05317	112.90227	13.94707	0.1198908	3.1620313	62	2	1998–1999	0.34	M-v	3	Williams	34301	1998 DP
1998 DL_1	13.7	0.15	19990122	146.05699	251.86755	180.88997	12.69563	0.1606684	2.4314163	45	5	1981–1999	0.71	M-v	2	Williams	32315	1998 DL_1
1998 DN_1	12.7	0.15	19990122	301.59432	195.04972	85.22295	2.30170	0.1488220	3.1078629	28	3	1995–1999	0.61	M-v	5	Williams	31740	1998 DN_1
1998 DT_1	13.6	0.15	19990122	232.61948	183.64504	141.27952	3.09772	0.0366925	3.3579305	23	3	1994–1999	0.55	M-v	5	Williams	32970	1998 DT_1
1998 DZ_2	12.2	0.15	19990122	142.64684	275.72145	86.01963	15.89101	0.1424211	2.5708937	53	3	1982–1999	0.36	M-v	2	Williams	34217	1998 DZ_2
1998 DS_4	13.7	0.15	19990122	179.78060	229.29207	151.37623	15.96763	0.0943041	3.0281564	37	5	1977–1999	0.67	M-v	1	Marsden	31558	1998 DS_4
1998 DE_5	14.4	0.15	19990122	242.14848	327.82173	12.80669	4.76520	0.1836408	2.5218777	29	4	1980–1999	0.69	M-v	2	Williams	32684	1998 DE_5
1998 DC_6	13.1	0.15	19990122	138.52636	299.87706	108.11626	0.08204	0.2236084	3.1964764	43	5	1984–1999	0.59	M-v	1	Williams	33508	1998 DC_6
1998 DU_7	12.5	0.15	19990122	125.21401	347.18390	90.87561	12.23004	0.0854151	2.9975598	45	2	1998–1999	0.67	M-v	4	Williams	33706	1998 DU_7
1998 DV_9	18.1	0.15	19990122	141.94099	0.58633	130.51485	8.68864	0.4339941	1.7453578	122	1	214 days	0.59	M-v	3	Williams	32315	1998 DV_9
1998 DW_9	12.5	0.15	19990122	159.81271	163.11675	247.37569	7.47524	0.1001693	3.4326026	57	3	1993–1999	0.57	M-v	4	Williams	31801	1998 DW_9
1998 DH_{10}	13.2	0.15	19990122	200.57178	196.07892	178.59566	9.41912	0.1400767	3.0522399	18	3	1993–1999	0.58	M-v	3	Williams	32315	1998 DH_{10}
1998 DL_{13}	13.0	0.15	19990122	138.16601	296.20022	133.40528	7.40927	0.1345429	3.1465457	25	4	1988–1999	0.72	M-v	2	Williams	32970	1998 DL_{13}
1998 DP_{23}	14.2	0.15	19990122	302.26035	306.20423	317.55274	9.31329	0.0832346	3.0184061	18	1	83 days	0.29	M-v	4	Williams		1998 DP_{23}
1998 DY_{23}	14.8	0.15	19990122	10.13915	52.81355	144.94414	11.16399	0.0485776	2.9833361	22	3	1995–1999	0.32	M-v	3	Williams	31562	1998 DY_{23}
1998 DD_{36}	14.0	0.15	19990122	24.32030	188.58595	39.42833	6.11530	0.1878560	2.4427862	29	4	1983–1998	0.75	M-v	2	Williams	33266	1998 DD_{36}
1998 EE_9	13.3	0.15	19990122	88.67273	100.18132	2.29801	8.99503	0.0398674	3.0737165	25	3	1990–1999	0.49	M-v	3	Marsden	31744	1998 EE_9
1998 EK_9	12.9	0.15	19990122	138.37291	297.30138	125.57045	25.86361	0.1308575	2.3859738	44	3	1987–1999	0.65	M-v	3	Williams	34217	1998 EK_9
1998 FN_{11}	12.8	0.15	19990122	191.28794	156.20562	227.50476	13.80811	0.2767014	2.4310044	37	6	1951–1999	0.52	M-v	1	Williams	31568	1998 FN_{11}
1998 FM_{12}	14.3	0.15	19990122	338.90175	138.68483	159.41862	3.98868	0.2099722	2.5666062	24	2	1995–1998	0.50	M-v	5	Williams	32971	1998 FM_{12}
1998 FS_{13}	15.2	0.15	19990122	138.52272	43.02399	60.52363	6.56118	0.1312182	2.2834480	22	2	1993–1998	0.40	M-v	4	Williams	33267	1998 FS_{13}
1998 FR_{54}	16.2	0.15	19990122	120.73173	283.84310	185.27314	4.26882	0.2650640	2.5758586	26	2	1996–1998	0.77	M-v	5	Williams	33706	1998 FR_{54}
1998 FG_{88}	13.3	0.15	19990122	217.37012	219.98772	156.06950	14.21844	0.2149612	2.5702823	30	4	1975–1999	0.57	M-v	3	Williams	32324	1998 FG_{88}
1998 HW_{133}	15.0	0.15	19990122	112.71027	31.34421	95.35455	5.32340	0.2078364	2.6219111	22	2	1996–1998	0.45	M-v	5	Williams	32972	1998 HW_{133}
1998 HH_{151}	8.5	0.15	19980527	35.82972	303.69042	194.80585	8.87443	0.2346851	39.3765371	10	1	63 days	0.12		E	Marsden		1998 HH_{151}
1998 KL_4	13.4	0.15	19980507	42.66956	316.42714	228.67503	21.71072	0.0933864	3.1456057	33	1	52 days	0.85		D	Williams		1998 KL_4
1998 MJ_{14}	11.4	0.15	19990122	75.05596	34.09068	285.06901	19.52865	0.0119654	3.1641796	38	4	1983–1998	0.68	M-v	1	Williams	33078	1998 MJ_{14}
1998 OZ_8	15.0	0.15	19990122	72.34536	338.34862	309.85019	3.56694	0.1397359	2.2698546	24	2	1996–1998	0.39	M-v	4	Williams	33079	1998 OZ_8

1998 OH_{14}	13.7	0.15	19990122	299.71430	323.73873	131.72757	6.80859	0.2357538	2.3863163	42	4	1936–1998	0.81	M-v	2	Williams	33559	1998 OH_{14}
1998 OM_{14}	14.4	0.15	19990122	352.50517	249.89884	145.64240	11.53017	0.2309201	2.6571356	38	1	135 days	0.62	M-v	4	Williams	33559	1998 OM_{14}
1998 QP_{1}	15.7	0.15	19990122	62.36326	326.77669	338.63765	7.22672	0.1840793	2.2571575	48	2	1997–1998	0.64	M-v	4	Williams	33347	1998 QP_{1}
1998 QN_{6}	14.4	0.15	19990122	94.95803	283.33642	26.08229	6.77373	0.1207681	2.5664332	22	1	88 days	0.63	M-v	5	Williams	33347	1998 QN_{6}
1998 QR_{6}	15.7	0.15	19990122	57.45720	282.08184	62.79316	1.10376	0.1937431	2.6541614	32	1	107 days	0.56	M-v	5	Williams	34301	1998 QR_{6}
1998 QU_{7}	14.5	0.15	19980815	317.98866	229.53198	132.96480	12.02641	0.0933099	3.0379429	18	1	28 days	0.91			Williams		1998 QU_{7}
1998 QS_{9}	14.1	0.15	19990122	355.57959	46.87641	325.13893	12.01660	0.1672148	2.6539860	24	1	63 days	0.45	M-v	5	Williams		1998 QS_{9}
1998 QL_{11}	16.2	0.15	19980815	355.76969	162.09483	163.49258	0.29656	0.1540923	2.4320981	18	1	56 days	0.51			Williams		1998 QL_{11}
1998 QR_{11}	15.7	0.15	19980815	7.90836	28.22576	280.38184	3.54451	0.1994426	2.4069706	19	1	28 days	0.65			Williams		1998 QR_{11}
1998 QE_{13}	14.2	0.15	19990122	321.34985	297.82996	135.30245	5.71017	0.2623248	2.3282408	25	4	1977–1998	0.65	M-v	3	Williams	34219	1998 QE_{13}
1998 QY_{20}	16.2	0.15	19990122	38.65700	64.09886	268.76388	1.04946	0.2208233	2.4340833	34	2	1979–1998	0.81	M-v	5	Williams	33081	1998 QY_{20}
1998 QM_{32}	15.3	0.15	19980815	352.31745	9.01722	332.08463	12.09470	0.1223119	2.7565946	16	1	29 days	0.64			Williams		1998 QM_{32}
1998 QN_{34}	16.2	0.15	19990122	31.29472	4.90777	347.28461	4.73618	0.1921208	2.2489723	32	1	73 days	0.54	M-v	4	Williams	33082	1998 QN_{34}
1998 QZ_{35}	13.9	0.15	19990122	15.78213	21.26750	337.80888	8.31408	0.1591640	2.7503673	30	3	1980–1998	0.64	M-v	3	Williams	33560	1998 QZ_{35}
1998 QT_{39}	14.1	0.15	19990122	353.25660	255.45130	142.95114	7.69207	0.1937350	2.5533814	41	3	1992–1998	0.53	M-v	3	Williams	34301	1998 QT_{39}
1998 QZ_{39}	14.4	0.15	19990122	79.64348	307.36339	334.37477	6.13114	0.1070811	2.7970616	33	2	1996–1998	0.59	M-v	4	Williams	33082	1998 QZ_{39}
1998 QP_{40}	13.2	0.15	19990122	282.47972	147.30373	319.91857	12.43337	0.1140540	2.6090579	42	4	1975–1998	0.67	M-v	4	Williams	34301	1998 QP_{40}
1998 QX_{40}	16.0	0.15	19990122	51.33496	139.44761	183.06624	5.12372	0.2606436	2.3131938	42	3	1977–1998	0.83	M-v	4	Williams	33083	1998 QX_{40}
1998 QP_{41}	14.0	0.15	19990122	35.01674	322.87292	12.07578	1.96805	0.0755748	2.8454987	30	4	1951–1998	0.73	M-v	3	Williams	32976	1998 QP_{41}
1998 QM_{42}	15.4	0.15	19990122	135.12833	30.96528	212.33151	2.23057	0.0463072	2.2826337	31	3	1996–1999	0.80	M-v	2	Williams	33755	1998 QM_{42}
1998 QU_{43}	15.5	0.15	19990122	102.93922	144.45882	117.61150	6.97084	0.1475829	2.2731595	42	3	1991–1998	0.78	M-v	3	Williams	33083	1998 QU_{43}
1998 QD_{44}	15.7	0.15	19990122	38.82119	341.52269	2.83774	4.03877	0.1656466	2.2643110	56	2	1997–1998	0.41	M-v	4	Williams	33083	1998 QD_{44}
1998 QQ_{45}	12.4	0.15	19990122	223.29214	190.07318	324.34177	13.55894	0.0769879	3.1286714	52	3	1979–1998	0.65	M-v	3	Williams	33560	1998 QQ_{45}
1998 QK_{46}	15.0	0.15	19980815	356.20070	188.46714	156.55503	14.48963	0.2419161	3.0802223	24	1	32 days	0.62			Williams		1998 QK_{46}
1998 QA_{47}	13.3	0.15	19990122	62.18380	172.87591	120.82515	6.44491	0.1391827	3.1623980	37	5	1987–1998	0.80	M-v	1	Williams	33083	1998 QA_{47}
1998 QE_{47}	16.0	0.15	19990122	28.56682	304.03506	56.51709	3.21107	0.2158411	2.2701016	31	1	78 days	0.57	M-v	4	Williams	33083	1998 QE_{47}
1998 QE_{49}	14.1	0.15	19990122	352.15533	347.26497	41.22776	1.57774	0.0721320	2.7832171	36	3	1992–1998	0.64	M-v	4	Williams	33084	1998 QE_{49}
1998 QG_{49}	15.7	0.15	19990122	52.88086	297.60322	32.36254	2.05295	0.1283303	2.2022036	35	3	1971–1998	0.56	M-v	4	Williams	33084	1998 QG_{49}
1998 QB_{52}	14.2	0.15	19990122	39.37067	155.53712	183.01449	13.00270	0.1809465	2.6695526	62	4	1985–1998	0.64	M-v	2	Williams	34301	1998 QB_{52}
1998 QW_{53}	13.9	0.15	19990122	91.81041	116.81897	176.38236	6.40795	0.1176921	2.3283810	78	3	1993–1998	0.58	M-v	2	Williams	33561	1998 QW_{53}
1998 QQ_{54}	12.8	0.15	19990122	329.57103	189.82532	228.38198	4.82248	0.0106916	3.1612860	46	2	1996–1998	0.54	M-v	4	Williams	32976	1998 QQ_{54}
1998 QT_{60}	13.4	0.15	19990122	21.60518	127.07003	298.92037	21.89789	0.3495623	2.4467402	154	3	1984–1999	0.61	M-v	1	Williams	34301	1998 QT_{60}
1998 QA_{69}	15.1	0.15	19990122	4.79042	202.68509	179.70206	12.71599	0.2227046	2.5232423	28	1	137 days	0.71	M-v	4	Williams	33561	1998 QA_{69}
1998 QB_{69}	11.6	0.15	19990122	171.42736	248.42439	299.79162	14.03807	0.0228114	3.2099829	29	4	1967–1998	0.62	M-v	2	Williams	33349	1998 QB_{69}
1998 QD_{72}	15.1	0.15	19990122	50.49231	72.12819	238.12728	10.48518	0.2629367	2.6823255	31	1	149 days	0.50	M-v	4	Williams	33561	1998 QD_{72}
1998 QB_{73}	14.3	0.15	19990122	17.68698	138.97606	218.09895	9.15302	0.1922352	2.9949508	28	2	1997–1998	0.50	M-v	4	Williams	32980	1998 QB_{73}
1998 QE_{73}	12.9	0.15	19990122	60.42003	10.81972	294.77051	8.73385	0.0633237	3.0082003	39	3	1962–1998	0.59	M-v	4	Williams	34302	1998 QE_{73}
1998 QV_{74}	14.6	0.15	19990122	133.82148	11.74686	230.67663	14.41222	0.0495264	2.5484137	30	2	1997–1998	0.62	M-v	4	Williams	32982	1998 QV_{74}
1998 QZ_{76}	15.4	0.15	19990122	10.57407	190.07539	196.77341	13.52756	0.2528319	2.6311274	32	1	99 days	0.63	M-v	4	Williams	33561	1998 QZ_{76}
1998 QO_{92}	14.2	0.15	19990122	9.68728	262.84221	155.33968	2.42020	0.1182297	2.3142583	31	2	1996–1999	0.61	M-v	3	Williams	34020	1998 QO_{92}
1998 QB_{94}	16.0	0.15	19990122	26.48100	174.91440	188.43358	7.17204	0.2258187	2.2127691	37	1	68 days	0.48	M-v	4	Williams	33089	1998 QB_{94}
1998 QU_{96}	14.2	0.15	19990122	65.23396	75.40038	227.46013	10.59605	0.1689164	2.6851626	20	1	88 days	0.62	M-v	4	Williams	34302	1998 QU_{96}
1998 QU_{97}	15.1	0.15	19990122	103.75854	299.20979	324.94817	22.67905	0.2230699	2.3884988	29	2	1997–1998	0.59	M-v	3	Williams	33089	1998 QU_{97}
1998 QN_{105}	15.0	0.15	19990122	15.74746	337.60494	42.58193	5.00468	0.1528998	2.3156693	53	3	1991–1998	0.71	M-v	3	Williams	33563	1998 QN_{105}
1998 QO_{105}	14.1	0.15	19990122	186.87706	148.57803	48.91022	5.73863	0.0977438	2.2586094	51	2	1997–1998	0.56	M-v	3	Williams	33563	1998 QO_{105}
1998 RV	13.7	0.15	19990122	350.70031	4.62513	4.99422	9.85029	0.0972717	2.9891691	48	3	1991–1998	0.52	M-v	3	Williams	33350	1998 RV
1998 RD_{3}	15.5	0.15	19990122	31.84289	349.36080	11.44004	13.66617	0.3132577	2.5757729	48	1	66 days	0.66	M-v	4	Williams		1998 RD_{3}
1998 RU_{4}	15.1	0.15	19990122	338.67057	94.17790	0.23454	21.74060	0.3033323	2.3987150	48	1	67 days	0.67	M-v	5	Williams		1998 RU_{4}
1998 RN_{16}	16.0	0.15	19990122	50.72853	135.99280	182.46286	6.56793	0.2216449	2.2640389	24	2	1981–1998	0.60	M-v	4	Williams	32991	1998 RN_{16}
1998 RJ_{17}	14.4	0.15	19990122	318.51366	261.64807	179.00035	10.55621	0.2307012	2.4257824	32	3	1987–1998	0.62	M-v	3	Williams	33563	1998 RJ_{17}
1998 RX_{32}	14.5	0.15	19990122	323.39731	294.51266	144.35287	2.25002	0.1924037	2.5749875	24	4	1982–1998	0.59	M-v	2	Williams	34221	1998 RX_{32}
1998 RG_{37}	15.2	0.15	19990122	346.85575	184.97059	235.11308	4.84989	0.1935116	2.4204430	39	1	114 days	0.70	M-v	4	Williams		1998 RG_{37}
1998 RP_{42}	14.5	0.15	19990122	328.13164	165.68741	265.64986	4.47497	0.1208518	2.5515045	28	1	118 days	0.58	M-v	5	Williams		1998 RP_{42}

1998 RQ_{42}	15.6	0.15	19990122	55.18549	33.15980	297.83213	4.35932	0.1284419	2.2818571	18	2	1991–1998	0.57	M-v	5	Williams	33510	1998 RQ_{42}
1998 RT_{46}	15.0	0.15	19990122	50.75012	21.50377	311.37957	5.58887	0.1472394	2.4255438	25	1	61 days	0.57	M-v	5	Williams	34302	1998 RT_{46}
1998 RE_{47}	15.1	0.15	19990122	34.20389	143.24253	214.80204	6.30282	0.1529532	2.3233006	36	4	1984–1998	0.64	M-v	3	Williams	33564	1998 RE_{47}
1998 RZ_{48}	15.8	0.15	19990122	21.58623	170.33439	196.26698	2.80177	0.2497302	2.7183940	29	2	1989–1998	0.63	M-v	5	Williams	34221	1998 RZ_{48}
1998 RT_{50}	14.0	0.15	19990122	131.26806	251.30404	350.00687	8.11270	0.1673269	2.3794599	35	5	1975–1998	0.62	M-v	2	Williams	33564	1998 RT_{50}
1998 RW_{52}	12.7	0.15	19990122	205.06160	162.32953	13.64319	9.71335	0.0385777	3.0384315	43	5	1980–1998	0.57	M-v	2	Williams	33351	1998 RW_{52}
1998 RU_{56}	13.5	0.15	19990122	270.97430	272.32004	211.73569	3.26150	0.0665908	2.7001726	48	3	1980–1998	0.77	M-v	4	Williams	33351	1998 RU_{56}
1998 RX_{59}	15.0	0.15	19990122	125.43596	48.38934	211.31406	5.63630	0.1027400	2.3324851	23	2	1997–1998	0.91	M-v	5	Williams	34222	1998 RX_{59}
1998 RY_{60}	14.2	0.15	19990122	59.47023	336.71178	346.89241	13.65634	0.1773861	2.5456131	30	1	110 days	0.53	M-v	4	Williams		1998 RY_{60}
1998 RW_{65}	14.6	0.15	19990122	34.67680	74.48064	279.61728	0.99060	0.0628787	2.8811495	28	2	1993–1998	0.77	M-v	7	Williams	33004	1998 RW_{65}
1998 RP_{70}	13.3	0.15	19990122	196.22213	125.14443	58.97542	7.62285	0.1089078	3.4044478	25	2	1996–1998	0.76	M-v	4	Williams	33274	1998 RP_{70}
1998 RS_{72}	13.7	0.15	19990122	226.62692	12.88563	155.29117	4.21640	0.0321818	2.7895409	45	3	1992–1998	0.68	M-v	3	Williams	33352	1998 RS_{72}
1998 RJ_{75}	15.2	0.15	19990122	224.16652	120.09121	60.12482	1.86721	0.0827046	2.2480099	35	4	1980–1998	0.63	M-v	2	Williams	33352	1998 RJ_{75}
1998 RW_{75}	13.5	0.15	19990122	239.78976	77.78578	80.43486	2.56636	0.1238386	3.0491387	33	2	1996–1998	0.68	M-v	4	Williams	33352	1998 RW_{75}
1998 RO_{78}	15.1	0.15	19990122	62.56930	228.42589	90.16416	3.47387	0.2185080	2.3789478	38	3	1994–1998	0.65	M-v	3	Williams	33352	1998 RO_{78}
1998 RL_{79}	14.4	0.15	19990122	49.23439	229.02071	115.21397	3.78079	0.1785229	2.3142164	52	6	1977–1998	0.70	M-v	2	Williams	34302	1998 RL_{79}
1998 SY	15.2	0.15	19990122	16.57634	6.85808	28.77197	4.51795	0.1474941	2.6020431	38	1	68 days	0.73	M-v	5	Williams		1998 SY
1998 ST_{2}	14.9	0.15	19990122	34.65960	71.10374	295.62691	12.64839	0.0787416	2.5539545	30	1	63 days	0.69	M-v	4	Williams	33353	1998 ST_{2}
1998 SU_{3}	15.9	0.15	19990122	18.62720	15.48392	22.97263	2.40511	0.2116547	2.3681124	29	1	66 days	0.60	M-v	5	Williams		1998 SU_{3}
1998 SG_{5}	13.6	0.15	19990122	23.44513	179.59434	183.27500	12.77888	0.1730556	2.6702644	69	2	1979–1998	0.58	M-v	2	Williams	33566	1998 SG_{5}
1998 SX_{7}	12.9	0.15	19990122	177.05741	153.21341	43.18217	0.77595	0.1263553	3.1217715	50	4	1990–1998	0.72	M-v	1	Williams	34303	1998 SX_{7}
1998 SU_{8}	16.2	0.15	19980904	59.84464	253.61860	25.05150	1.51344	0.2300689	2.3660347	18	1	52 days	0.36			Williams		1998 SU_{8}
1998 SH_{10}	13.4	0.15	19990122	3.38913	351.58318	60.33083	0.95107	0.0639390	2.7904187	45	3	1991–1998	0.54	M-v	4	Williams	34303	1998 SH_{10}
1998 SL_{12}	13.8	0.15	19990122	89.40641	146.53704	153.74554	2.29875	0.0727039	2.8428365	47	3	1993–1998	0.61	M-v	4	Williams	33354	1998 SL_{12}
1998 SR_{21}	15.1	0.15	19981014	293.43076	246.52109	213.43612	6.20256	0.0632501	2.3791178	27	1	54 days	0.61		D	Williams		1998 SR_{21}
1998 SX_{21}	14.7	0.15	19990122	56.70029	186.42676	148.89969	2.63022	0.1846716	2.4194458	45	2	1993–1998	0.52	M-v	4	Williams	33354	1998 SX_{21}
1998 SN_{22}	13.5	0.15	19990122	264.68967	309.34383	191.44843	13.05671	0.0992721	2.6868577	52	3	1992–1998	0.64	M-v	4	Williams	33019	1998 SN_{22}
1998 SH_{23}	13.3	0.15	19990122	53.28750	168.89188	142.77200	5.69008	0.2107457	3.1491272	114	3	1981–1998	0.65	M-v	3	Williams	34303	1998 SH_{23}
1998 SO_{25}	15.6	0.15	19990122	25.77581	335.59649	46.88329	6.32816	0.2385405	2.3926872	42	1	62 days	0.60	M-v	4	Williams		1998 SO_{25}
1998 SJ_{26}	12.9	0.15	19990122	332.50296	38.69923	46.34921	14.94812	0.1897928	3.1339469	31	1	64 days	0.62	M-v	5	Williams		1998 SJ_{26}
1998 SV_{26}	13.6	0.15	19990122	300.86546	294.25076	265.14490	12.23136	0.1473492	2.6329739	56	1	195 days	0.66	M-v	4	Williams	34303	1998 SV_{26}
1998 SD_{27}	16.8	0.15	19990122	29.36540	158.22613	215.58346	1.83845	0.2461194	2.4306963	26	1	108 days	0.53	M-v	4	Williams	33757	1998 SD_{27}
1998 SU_{27}	19.2	0.15	19990122	17.59532	169.34277	271.64132	7.08548	0.5928691	2.1246439	82	1	202 days	0.59	M-v	4	Williams	34022	1998 SU_{27}
1998 SQ_{35}	13.7	0.15	19990122	222.25900	160.61206	39.52269	15.97136	0.0897210	3.0681863	23	1	63 days	0.57	M-v	5	Williams	33355	1998 SQ_{35}
1998 SF_{37}	14.8	0.15	19990122	3.62906	199.09200	216.52349	5.04416	0.1442070	2.4195970	43	1	63 days	0.66	M-v	5	D Williams		1998 SF_{37}
1998 SM_{41}	14.4	0.15	19990122	305.35025	108.78353	359.43284	9.94736	0.1901891	2.4560657	46	1	60 days	0.65	M-v	5	Williams		1998 SM_{41}
1998 SA_{43}	13.1	0.15	19990122	17.87538	255.28597	126.23622	1.64912	0.0859635	2.7428098	87	4	1980–1999	0.61	M-v	3	Williams	33757	1998 SA_{43}
1998 ST_{43}	14.9	0.15	19990122	30.17333	233.76464	139.83043	2.87592	0.2285020	2.3945486	48	1	81 days	0.67	M-v	4	Williams		1998 ST_{43}
1998 SY_{45}	14.4	0.15	19981014	335.54796	207.19570	208.61182	10.28878	0.0719427	3.2097412	26	1	46 days	0.53			Williams		1998 SY_{45}
1998 SM_{46}	13.0	0.15	19990122	64.94639	25.26199	299.75652	0.26459	0.1751902	3.1054332	55	5	1976–1998	0.67	M-v	1	Williams	33567	1998 SM_{46}
1998 SJ_{48}	15.0	0.15	19990122	30.74509	20.66027	355.16084	1.60060	0.1097480	2.8726202	17	2	1993–1998	0.64	M-v	5	Williams	34222	1998 SJ_{48}
1998 SG_{49}	12.7	0.15	19990122	333.88910	234.26786	213.52365	8.14414	0.1224140	2.7903813	54	3	1989–1999	0.67	M-v	3	Williams	34303	1998 SG_{49}
1998 SO_{49}	13.6	0.15	19990122	105.39606	114.75494	180.32487	1.61447	0.0409303	2.8337758	73	4	1988–1998	0.69	M-v	1	Williams	33567	1998 SO_{49}
1998 SS_{49}	15.8	0.15	19990122	8.19884	102.25166	41.72866	10.76055	0.6393601	1.9242465	97	2	1998–1999	0.43	M-v	3	Marsden	33758	1998 SS_{49}
1998 SH_{54}	13.5	0.15	19990122	280.76857	274.15409	200.40090	5.03781	0.1055460	3.2074545	43	4	1978–1998	0.70	M-v	1	Williams	33028	1998 SH_{54}
1998 SV_{57}	15.0	0.15	19990122	299.80483	15.71992	99.32802	2.46434	0.1777974	2.3266704	32	4	1989–1998	0.79	M-v	2	Williams	33031	1998 SV_{57}
1998 SM_{58}	14.1	0.15	19990122	350.65262	239.19545	164.73745	2.25072	0.0601167	2.8410168	54	3	1993–1998	0.64	M-v	4	Williams	33032	1998 SM_{58}
1998 SQ_{59}	12.9	0.15	19990122	101.19953	178.15810	96.95928	2.43167	0.1539170	3.1011224	47	4	1976–1998	0.79	M-v	1	Williams	33357	1998 SQ_{59}
1998 SR_{60}	13.1	0.15	19990122	119.12450	145.20909	109.95457	2.69574	0.1261262	3.1805892	56	5	1990–1998	0.71	M-v	1	Williams	33357	1998 SR_{60}
1998 SV_{64}	14.7	0.15	19990122	275.82182	73.48174	76.77574	5.04107	0.1169085	2.2470277	29	3	1978–1998	0.85	M-v	5	Williams	33357	1998 SV_{64}
1998 SG_{65}	14.6	0.15	19990122	49.19331	219.45520	140.04268	2.86508	0.1009490	2.3454908	36	3	1993–1998	0.65	M-v	4	Williams	34304	1998 SG_{65}
1998 SN_{67}	14.3	0.15	19990122	318.08426	70.31698	40.65018	15.63698	0.1670078	2.6495210	35	2	1996–1998	0.91	M-v	4	Williams	34304	1998 SN_{67}
1998 SJ_{73}	14.6	0.15	19990122	26.40602	248.34195	132.76871	3.41612	0.1870700	2.4624098	46	3	1996–1998	0.64	M-v	3	Williams	33568	1998 SJ_{73}

1998 SV_{73}	15.2	0.15	19990122	66.53438	287.52869	43.04850	7.10447	0.1598426	2.2998986	53	3	1991–1998	0.72	M-v	3	Williams	33568	1998 SV_{73}
1998 SW_{75}	14.7	0.15	19990122	168.23169	101.26689	134.48004	3.09515	0.1293438	2.2065312	32	4	1978–1998	0.67	M-v	2	Williams	34023	1998 SW_{75}
1998 SD_{106}	14.4	0.15	19990122	346.94889	240.12190	182.57311	13.12273	0.1445908	2.6405586	21	1	61 days	0.56	M-v	5	Williams		1998 SD_{106}
1998 SK_{107}	15.9	0.15	19990122	18.42676	202.17119	192.84679	5.55629	0.2521790	2.2846868	35	2	1960–1998	0.54	M-v	4	Williams	33285	1998 SK_{107}
1998 SV_{110}	15.1	0.15	19980924	265.74936	114.16860	2.53825	6.87550	0.0825599	2.3005810	30	1	35 days	0.81		D	Williams		1998 SV_{110}
1998 SQ_{111}	16.4	0.15	19980924	358.99119	352.92220	17.83829	8.05939	0.1496556	2.2687759	39	1	44 days	0.70			Williams		1998 SQ_{111}
1998 SN_{114}	13.9	0.15	19990122	18.56783	260.35932	117.48627	3.66629	0.1766746	2.8790424	35	2	1978–1998	0.43	M-v	4	Williams	33360	1998 SN_{114}
1998 SJ_{115}	14.8	0.15	19980924	324.08480	102.87360	314.96474	1.01090	0.1029899	2.9479362	34	1	33 days	0.80			Williams		1998 SJ_{115}
1998 SK_{115}	13.3	0.15	19990122	296.31000	107.27287	12.93874	12.71198	0.1330618	2.6590810	46	1	118 days	0.58	M-v	4	Williams	33758	1998 SK_{115}
1998 SP_{115}	13.6	0.15	19990122	35.64643	68.25450	283.32793	1.47378	0.2303860	3.0555694	48	1	124 days	0.56	M-v	4	Williams	33758	1998 SP_{115}
1998 SR_{115}	13.3	0.15	19990122	348.84936	52.89771	5.92322	12.21950	0.1103305	2.8613791	36	1	140 days	0.57	M-v	4	Williams		1998 SR_{115}
1998 SX_{115}	15.1	0.15	19980924	234.80071	161.46588	343.13624	2.62651	0.0477543	2.5244320	28	1	33 days	0.91			Williams		1998 SX_{115}
1998 SZ_{115}	13.0	0.15	19990122	145.06590	18.32038	225.82451	4.65639	0.1001914	3.2097873	33	2	1996–1998	0.77	M-v	4	Williams	33285	1998 SZ_{115}
1998 SY_{117}	15.2	0.15	19990122	335.44615	139.20114	314.27418	1.87906	0.2002391	2.3743598	37	4	1991–1998	0.69	M-v	1	Williams	33360	1998 SY_{117}
1998 SZ_{118}	14.8	0.15	19990122	20.19592	7.15648	14.03915	5.78413	0.1844316	2.7584185	37	1	105 days	0.58	M-v	4	Williams		1998 SZ_{118}
1998 SB_{119}	15.0	0.15	19990122	185.52476	187.88082	26.66701	2.66080	0.1305410	2.4265126	25	2	1960–1998	0.63	M-v	5	Williams	33041	1998 SB_{119}
1998 SD_{122}	13.0	0.15	19990122	157.06413	23.96872	217.64470	8.85778	0.0385866	3.0524578	48	3	1991–1998	0.75	M-v	3	Williams	33569	1998 SD_{122}
1998 SW_{132}	13.1	0.15	19990122	4.74685	184.63551	217.72691	9.51448	0.1081072	3.0708853	55	3	1991–1999	0.82	M-v	3	Williams	33759	1998 SW_{132}
1998 SH_{135}	13.0	0.15	19990122	34.61769	180.38146	182.89748	10.74790	0.0632820	3.1096966	43	1	68 days	0.68	M-v	4	Williams		1998 SH_{135}
1998 SW_{135}	14.5	0.15	19990122	47.91707	285.99848	75.82819	3.94503	0.0153696	2.2589373	45	3	1995–1998	0.59	M-v	4	Williams	33511	1998 SW_{135}
1998 SF_{138}	12.6	0.15	19990122	121.29649	233.70747	32.91887	1.23743	0.1378861	3.1598156	46	4	1979–1999	0.68	M-v	1	Williams	34304	1998 SF_{138}
1998 SD_{139}	13.9	0.15	19990122	105.51077	328.19399	329.56768	4.68979	0.0393992	2.7466303	39	4	1993–1998	0.73	M-v	1	Williams	33295	1998 SD_{139}
1998 SG_{141}	16.3	0.15	19990122	34.86638	355.79947	14.73573	5.26684	0.2542209	2.3942778	20	1	64 days	0.56	M-v	4	Williams	34305	1998 SG_{141}
1998 SM_{144}	15.4	0.15	19990122	337.24662	243.46245	210.03664	2.23533	0.1793269	2.4052661	37	3	1992–1999	0.62	M-v	2	Williams	33760	1998 SM_{144}
1998 SX_{144}	14.8	0.15	19981014	40.85214	212.77565	116.32622	2.32288	0.1906489	3.1013639	29	1	59 days	0.82			Williams		1998 SX_{144}
1998 SH_{145}	16.0	0.15	19990122	25.12594	358.00285	30.34331	2.77474	0.2011921	2.4073995	30	2	1983–1998	0.74	M-v	4	Williams	34305	1998 SH_{145}
1998 SY_{145}	15.1	0.15	19990122	87.41117	271.69757	29.85856	2.36677	0.2165565	2.4177624	34	2	1997–1998	0.87	M-v	4	Williams	33365	1998 SY_{145}
1998 SF_{155}	14.4	0.15	19980924	354.04686	359.69491	19.19120	12.67763	0.0487774	3.0560437	17	1	20 days	0.65			Williams		1998 SF_{155}
1998 SE_{163}	14.8	0.15	19990122	112.47276	158.31392	120.12655	5.35350	0.1834601	2.2949868	38	3	1993–1998	0.63	M-v	3	Williams	33300	1998 SE_{163}
1998 ST_{163}	16.6	0.15	19990122	25.26995	350.55751	37.18041	8.30680	0.3131312	2.5636229	24	1	63 days	0.65	M-v	4	Williams		1998 ST_{163}
1998 SZ_{163}	13.5	0.15	19990122	270.04174	101.49253	55.37421	13.82769	0.1106022	2.5858700	34	2	1977–1999	0.78	M-v	4	Williams	33760	1998 SZ_{163}
1998 SL_{164}	16.3	0.15	19990122	42.29966	284.94975	71.68943	5.01689	0.2998198	2.6253028	21	1	54 days	0.95	M-v	6	D Williams		1998 SL_{164}
1998 TC	14.3	0.15	19990122	8.22898	198.47483	284.12283	11.87924	0.1232526	2.4020984	39	1	187 days	0.74	M-v	3	Williams	34305	1998 TC
1998 TN_3	15.3	0.15	19981103	10.26525	333.86627	41.64456	14.87488	0.1838379	2.5816220	33	1	59 days	0.59			Williams		1998 TN_3
1998 TU_3	15.0	0.15	19990122	286.48177	84.50030	102.40017	5.40923	0.4838810	0.7872338	173	4	1982–1999	0.55	M-v	5	Marsden	33970	1998 TU_3
1998 TD_{18}	13.6	0.15	19981014	59.88330	66.26965	230.41066	13.27076	0.2456560	3.1567648	33	1	58 days	0.63			Williams		1998 TD_{18}
1998 TZ_{18}	14.9	0.15	19990122	87.54085	99.71372	203.59109	3.84049	0.1795487	2.5904080	31	2	1997–1998	0.68	M-v	4	Williams	33512	1998 TZ_{18}
1998 TO_{19}	15.5	0.15	19990122	340.46380	225.13929	229.26995	3.12288	0.2110694	2.3566366	48	1	105 days	0.61	M-v	4	Williams		1998 TO_{19}
1998 TP_{19}	13.5	0.15	19981014	185.31410	349.22247	214.93459	16.31011	0.0650430	3.1972433	25	1	31 days	0.69			Williams		1998 TP_{19}
1998 TQ_{25}	15.5	0.15	19981103	79.16230	81.32708	232.33449	2.35932	0.0716507	2.6845048	27	1	56 days	0.42			Williams		1998 TQ_{25}
1998 TO_{28}	14.8	0.15	19981014	58.09787	278.41058	28.03137	10.33917	0.2462262	2.5521154	15	1	41 days	0.63			Williams		1998 TO_{28}
1998 TX_{28}	14.0	0.15	19990122	329.63143	60.08513	32.43285	7.34275	0.1036127	3.1996770	26	1	86 days	0.58	M-v	5	Williams	34026	1998 TX_{28}
1998 TH_{29}	13.6	0.15	19990122	330.73976	92.43100	355.12725	1.51789	0.0505542	2.9374146	29	2	1990–1998	0.73	M-v	5	Williams	34026	1998 TH_{29}
1998 TU_{30}	13.7	0.15	19990122	301.12676	97.99536	31.39880	11.45025	0.1120857	3.1455122	23	1	90 days	0.52	M-v	5	Williams	34306	1998 TU_{30}
1998 TV_{30}	14.6	0.15	19981014	52.56101	345.98253	345.02289	2.13064	0.1374344	2.5490670	21	1	41 days	0.77			Williams		1998 TV_{30}
1998 TC_{32}	14.3	0.15	19981014	247.05339	267.33438	245.95299	4.59405	0.0905150	2.2733185	18	1	40 days	0.47			Williams		1998 TC_{32}
1998 TG_{32}	14.7	0.15	19990122	17.77520	80.58355	323.99367	2.10345	0.0699493	2.2042200	22	3	1985–1998	0.54	M-v	4	Williams	33512	1998 TG_{32}
1998 TL_{32}	13.6	0.15	19990122	236.26801	167.10765	17.42393	7.41826	0.1572179	2.6793082	33	2	1976–1998	0.53	M-v	5	Williams	34306	1998 TL_{32}
1998 TN_{33}	13.8	0.15	19990122	29.50951	293.61349	89.97471	3.16699	0.0719992	2.8900073	30	3	1995–1998	0.67	M-v	4	Williams	34306	1998 TN_{33}
1998 TW_{34}	13.5	0.15	19990122	103.34316	102.23814	193.90002	10.12289	0.0950868	2.9744497	23	2	1996–1998	0.52	M-v	3	Williams	33307	1998 TW_{34}
1998 UZ	13.5	0.15	19990122	316.62238	266.75549	215.05628	12.07623	0.1989010	2.6214172	69	5	1953–1999	0.52	M-v	1	Williams	34306	1998 UZ
1998 UW_1	12.5	0.15	19990122	66.82639	243.04801	102.85121	14.03299	0.1954586	2.6682548	30	1	111 days	0.70	M-v	4	Williams	34026	1998 UW_1
1998 UX_1	12.9	0.15	19990122	67.58725	208.96657	142.95522	11.11860	0.1273440	3.0128609	27	1	89 days	0.58	M-v	4	Williams	33761	1998 UX_1

1998 UQ_{2}	15.4	0.15	19990122	36.98493	11.61153	0.75050	2.33754	0.2071922	2.4499924	36	1	67 days	0.52	M-v	5	Williams		1998 UQ_{2}
1998 UC_{3}	14.4	0.15	19981014	9.43617	55.24823	327.54389	1.27661	0.0688854	2.8615785	35	1	41 days	0.77			Williams		1998 UC_{3}
1998 UU_{6}	13.7	0.15	19990122	81.61067	299.13030	64.71058	14.23400	0.2225502	2.5396510	41	1	172 days	0.55	M-v	4	Williams	34026	1998 UU_{6}
1998 UD_{7}	14.1	0.15	19990122	85.95582	271.42158	34.11707	3.06622	0.2871783	2.5918103	45	4	1968–1999	0.73	M-v	3	Williams	33761	1998 UD_{7}
1998 UP_{7}	15.9	0.15	19981014	344.94753	13.86332	43.00146	7.58483	0.0955293	2.3417260	28	1	52 days	0.58			Williams		1998 UP_{7}
1998 UQ_{7}	14.6	0.15	19981103	304.42394	66.88291	42.76434	13.43441	0.1237951	2.5930563	24	1	28 days	0.68			Williams		1998 UQ_{7}
1998 UD_{8}	12.9	0.15	19990122	129.00390	212.61477	77.50670	3.10301	0.0428295	2.8902290	41	4	1981–1998	0.75	M-v	1	Williams	33572	1998 UD_{8}
1998 UH_{8}	15.2	0.15	19990122	58.65186	308.16553	44.74659	10.82532	0.2486284	2.3431381	45	2	1997–1998	0.61	M-v	4	Williams	33572	1998 UH_{8}
1998 UL_{8}	13.1	0.15	19990122	349.52895	2.58676	87.50740	2.55475	0.1454174	3.0993140	48	3	1986–1999	0.82	M-v	4	Williams	34026	1998 UL_{8}
1998 UM_{8}	14.3	0.15	19990122	157.04741	174.34879	95.33008	4.67797	0.1748836	2.2471782	39	4	1950–1999	0.64	M-v	3	Williams	33761	1998 UM_{8}
1998 UX_{8}	14.4	0.15	19990122	51.25385	122.60630	224.89501	8.29113	0.1470919	2.8445392	31	1	87 days	0.53	M-v	5	Williams		1998 UX_{8}
1998 UO_{15}	15.0	0.15	19990122	73.98164	51.32312	284.05881	0.34343	0.1776562	2.4773625	47	3	1986–1999	0.61	M-v	3	Williams	33761	1998 UO_{15}
1998 UW_{15}	14.8	0.15	19990122	71.70108	297.77801	44.25036	7.78086	0.1353755	2.3910354	33	1	130 days	0.59	M-v	4	Williams	33761	1998 UW_{15}
1998 UR_{16}	12.8	0.15	19990122	119.16883	204.76723	81.81134	2.68666	0.1424413	3.1181750	32	2	1996–1998	0.62	M-v	4	Williams	33573	1998 UR_{16}
1998 UQ_{17}	16.6	0.15	19981014	359.89236	70.21802	313.48663	5.88181	0.1649846	2.3270548	15	1	5 days	0.36			Williams		1998 UQ_{17}
1998 UF_{18}	15.3	0.15	19990122	307.42349	328.70454	164.54355	7.78338	0.1036285	2.3501964	30	3	1983–1998	0.63	M-v	4	Williams	34307	1998 UF_{18}
1998 UT_{18}	19.3	0.15	19990122	9.29803	49.83445	64.78141	13.59113	0.3296688	1.4056328	103	1	178 days	0.62	M-v	4	Williams	34307	1998 UT_{18}
1998 UO_{19}	15.6	0.15	19981103	326.04724	221.59983	223.48699	15.25549	0.2149566	2.5430998	27	1	50 days	0.57			Williams		1998 UO_{19}
1998 UW_{19}	13.9	0.15	19990122	37.23515	1.27316	20.53582	1.82458	0.0592822	3.1098417	39	2	1995–1999	0.72	M-v	4	Williams	34026	1998 UW_{19}
1998 UR_{20}	14.1	0.15	19990122	104.08913	25.49836	292.82720	0.98997	0.0094413	2.8531762	49	3	1978–1999	0.65	M-v	3	Williams	34026	1998 UR_{20}
1998 UU_{20}	15.1	0.15	19981103	61.07898	276.32192	48.22087	5.95049	0.1849168	2.2175082	36	1	44 days	0.72			Williams		1998 UU_{20}
1998 UY_{20}	15.2	0.15	19990122	355.62239	45.16405	34.51490	1.74849	0.1465154	2.4304701	31	1	82 days	0.67	M-v	5	Williams	34027	1998 UY_{20}
1998 UZ_{20}	15.7	0.15	19990122	59.24516	315.27048	43.15789	6.27247	0.1332312	2.3312743	36	2	1993–1998	0.68	M-v	5	Williams	34027	1998 UZ_{20}
1998 UU_{22}	13.9	0.15	19990122	32.46928	152.86528	234.31622	9.63950	0.0932764	2.9753657	44	1	82 days	0.51	M-v	4	Williams	33762	1998 UU_{22}
1998 UB_{23}	15.0	0.15	19990122	39.82499	343.14159	42.05034	4.93352	0.1669960	2.3097870	37	3	1993–1998	0.64	M-v	4	Williams	33573	1998 UB_{23}
1998 UL_{23}	14.9	0.15	19990122	5.83043	13.48450	59.94422	3.77214	0.1477608	2.4431764	50	2	1996–1998	0.71	M-v	4	Williams	33573	1998 UL_{23}
1998 UM_{23}	14.3	0.15	19990122	9.70847	200.10060	227.56902	6.06428	0.0866343	2.3939207	32	1	61 days	0.71	M-v	5	Williams	33573	1998 UM_{23}
1998 UX_{23}	14.3	0.15	19981014	41.64618	251.12212	71.68060	7.78607	0.2179715	2.5588524	26	1	51 days	0.57		D	Williams		1998 UX_{23}
1998 UX_{25}	13.5	0.15	19990122	131.03098	74.16630	198.22985	12.76661	0.1430482	3.0072107	26	3	1996–1998	0.77	M-v	4	Williams	33513	1998 UX_{25}
1998 UP_{26}	15.3	0.15	19981103	358.27278	353.50627	50.58525	14.92816	0.2589842	2.7566437	31	1	55 days	0.91			Williams		1998 UP_{26}
1998 UD_{28}	14.6	0.15	19990122	41.05624	330.90518	35.58017	28.64322	0.1527722	3.1232301	21	2	1996–1998	0.89	M-v	5	Williams	34224	1998 UD_{28}
1998 UU_{28}	13.6	0.15	19990122	60.48995	275.04366	75.21371	10.82941	0.1030884	3.0634447	23	2	1982–1999	0.62	M-v	4	Williams	33762	1998 UU_{28}
1998 UC_{30}	14.7	0.15	19990122	331.16852	318.11100	158.58887	7.56112	0.2330380	2.6634569	19	2	1995–1998	0.86	M-v	5	Williams	34224	1998 UC_{30}
1998 UT_{30}	14.1	0.15	19981103	66.06962	243.91419	90.70540	11.19830	0.0588128	3.0046384	21	1	31 days	0.78			Williams		1998 UT_{30}
1998 UH_{31}	12.4	0.15	19990122	30.54728	347.58018	62.13821	14.31072	0.1390729	2.6266827	38	4	1951–1999	0.81	M-v	2	Williams	34307	1998 UH_{31}
1998 UR_{31}	14.0	0.15	19990122	200.84372	177.04269	62.92373	8.18219	0.1703541	2.2214362	32	1	76 days	0.70	M-v	5	Williams	34027	1998 UR_{31}
1998 US_{31}	13.6	0.15	19990122	94.40632	264.18635	68.35084	3.92509	0.0848634	2.6427104	30	1	62 days	0.44	M-v	5	Williams	34027	1998 US_{31}
1998 UJ_{32}	14.2	0.15	19990122	46.03485	170.93437	226.11125	5.93355	0.1127183	2.1961992	22	1	133 days	0.51	M-v	5	Williams	34307	1998 UJ_{32}
1998 UN_{32}	13.7	0.15	19990122	345.27477	219.48522	276.54202	11.70940	0.1099366	2.6879189	45	2	1989–1999	0.62	M-v	3	Williams	34307	1998 UN_{32}
1998 UO_{32}	14.7	0.15	19981103	47.82085	111.39128	229.89878	10.36943	0.1035221	2.9834682	26	1	35 days	0.65			Williams		1998 UO_{32}
1998 UQ_{32}	14.1	0.15	19990122	41.40841	342.99705	85.43039	5.63341	0.1065641	2.2992581	50	2	1996–1999	0.53	M-v	4	Williams	34307	1998 UQ_{32}
1998 UF_{33}	13.2	0.15	19990122	82.06008	249.60785	46.43065	11.37460	0.1770599	2.5550016	16	1	78 days	0.54	M-v	5	Williams		1998 UF_{33}
1998 UE_{34}	13.9	0.15	19981014	340.36467	158.48490	245.97243	9.40522	0.0424953	3.0647561	16	1	36 days	0.74			Williams		1998 UE_{34}
1998 UA_{37}	14.1	0.15	19990122	84.86796	292.00482	6.85804	2.21784	0.2279711	2.6497867	32	5	1972–1998	0.64	M-v	2	Williams	34224	1998 UA_{37}
1998 UB_{39}	16.3	0.15	19981014	357.01070	356.46221	33.65802	7.66451	0.2085257	2.3307399	30	1	57 days	0.71		D	Williams		1998 UB_{39}
1998 UP_{39}	14.1	0.15	19990122	345.30952	232.31661	216.39826	11.85194	0.2643030	2.6428003	52	3	1981–1999	0.61	M-v	2	Williams	34307	1998 UP_{39}
1998 UB_{40}	14.7	0.15	19990122	331.91184	84.00188	14.90830	5.70714	0.1405683	2.3099594	37	1	64 days	0.59	M-v	5	D Williams		1998 UB_{40}
1998 UF_{40}	15.1	0.15	19990122	70.99522	332.88759	349.43757	4.11661	0.2358499	2.2967950	31	2	1991–1998	0.49	M-v	5	Williams	34224	1998 UF_{40}
1998 UH_{40}	15.7	0.15	19981103	346.07167	65.49672	355.12643	4.58247	0.2736284	2.5959239	20	1	20 days	0.47		D	Williams		1998 UH_{40}
1998 UJ_{40}	13.8	0.15	19981103	202.89070	320.73715	234.50864	11.14033	0.1122006	2.6116008	14	1	23 days	0.58			Williams		1998 UJ_{40}
1998 UC_{41}	14.3	0.15	19981103	146.19860	39.52399	202.42599	3.80501	0.0859941	2.4415402	22	1	26 days	0.79		D	Williams		1998 UC_{41}
1998 UK_{41}	16.7	0.15	19981014	6.44949	290.31794	82.51919	4.39547	0.2570301	2.2824833	28	1	51 days	0.63			Williams		1998 UK_{41}
1998 VC	14.0	0.15	19990122	217.82408	303.07544	272.55483	1.38508	0.1547806	2.3788846	58	3	1978–1999	0.50	M-v	4	Williams	33762	1998 VC

1998 VE	15.6	0.15	19990122	42.73549	99.24247	271.39229	1.12222	0.2259747	2.4621848	53	2	1990–1999	0.60	M-v	4	Williams	34027	1998 VE
1998 VF	14.7	0.15	19990122	76.42836	245.69407	51.40039	5.68340	0.1941624	2.1922002	43	4	1985–1998	0.73	M-v	2	Williams	33574	1998 VF
1998 VJ	14.1	0.15	19981123	338.54960	26.96821	65.95848	15.36489	0.1627330	2.6397110	78	1	59 days	0.52			Williams		1998 VJ
1998 VN	20.5	0.15	19990122	8.42054	245.72319	228.10121	12.03811	0.3448884	1.3878697	90	1	167 days	0.59	M-v	4	Williams	33374	1998 VN
1998 VM_1	16.3	0.15	19981103	42.32428	308.22475	31.15680	8.51807	0.2880716	2.3047804	14	1	10 days	0.59			Williams		1998 VM_1
1998 VS_1	16.0	0.15	19981103	345.78117	22.76699	42.51620	11.00900	0.1582220	2.5017135	13	1	10 days	0.59			Williams		1998 VS_1
1998 VH_2	15.7	0.15	19981103	224.83403	308.00503	240.82602	4.83152	0.0982304	2.2764083	15	1	10 days	0.39			Williams		1998 VH_2
1998 VJ_2	15.4	0.15	19981103	92.70780	262.86405	37.99541	6.56984	0.1165550	2.5367795	12	1	10 days	0.47			Williams		1998 VJ_2
1998 VK_2	15.9	0.15	19981103	14.39209	354.29403	31.18356	3.49958	0.1785006	2.7843612	12	1	10 days	0.20			Williams		1998 VK_2
1998 VB_3	14.0	0.15	19981123	89.33572	314.40270	332.87918	1.25979	0.3053057	2.9940503	28	1	30 days	1.75			Williams		1998 VB_3
1998 VX_3	16.2	0.15	19990122	16.68871	350.16143	71.77453	6.64930	0.1987746	2.4207761	30	3	1992–1998	0.73	M-v	4	Williams	34308	1998 VX_3
1998 VY_3	15.1	0.15	19981123	72.86207	239.31005	91.61590	3.55034	0.1800580	2.6319585	22	1	27 days	0.87			Williams		1998 VY_3
1998 VM_4	13.8	0.15	19981103	310.52145	52.34461	47.69328	12.11112	0.0281523	2.9986743	23	1	33 days	0.85			Williams		1998 VM_4
1998 VU_4	11.3	0.15	19990122	301.36856	282.11586	217.65556	8.16121	0.1101042	3.9497367	55	6	1982–1999	0.58	M-v	1	Williams	33762	1998 VU_4
1998 VH_5	14.0	0.15	19990122	212.17512	298.25130	281.02194	5.99976	0.0831791	2.2975298	49	4	1979–1999	0.75	M-v	3	Williams	34028	1998 VH_5
1998 VV_5	13.0	0.15	19990122	16.74523	352.84720	71.13719	6.60204	0.1109679	3.1592601	43	4	1975–1999	0.56	M-v	2	Williams	33763	1998 VV_5
1998 VN_6	15.6	0.15	19990122	356.14628	55.44240	29.65030	11.45939	0.2587763	2.6235877	28	1	83 days	0.68	M-v	4	Williams	34028	1998 VN_6
1998 VK_7	14.9	0.15	19990122	85.53755	46.13739	264.74966	5.37144	0.1680204	2.2811955	28	2	1960–1998	0.76	M-v	5	Williams	34224	1998 VK_7
1998 VN_8	14.7	0.15	19990122	57.15228	2.77644	341.25185	2.77271	0.1658812	2.4409795	40	3	1975–1998	0.54	M-v	3	Williams	34308	1998 VN_8
1998 VY_8	14.2	0.15	19990122	358.49197	189.20148	230.11274	16.56534	0.1835517	3.0376829	23	1	77 days	0.50	M-v	4	Williams	33763	1998 VY_8
1998 VD_9	13.1	0.15	19990122	49.76377	138.60002	211.63644	16.40255	0.1261540	2.8899088	26	2	1993–1998	0.55	M-v	4	Williams	34224	1998 VD_9
1998 VM_9	16.4	0.15	19981014	3.84922	206.92168	174.51157	1.06676	0.1940747	2.3911152	23	1	31 days	0.85			Williams		1998 VM_9
1998 VP_9	14.7	0.15	19981103	52.75234	52.12492	279.24206	3.37201	0.1302400	2.7328773	13	1	10 days	0.59			Williams		1998 VP_9
1998 VK_{11}	16.8	0.15	19981014	309.26389	41.00528	51.31988	6.19271	0.1162273	2.1287435	18	1	32 days	1.16			Williams		1998 VK_{11}
1998 VR_{12}	15.0	0.15	19981014	341.53260	300.76284	116.18177	2.44735	0.1521446	2.6859148	15	1	25 days	0.60			Williams		1998 VR_{12}
1998 VW_{12}	15.0	0.15	19981014	356.59219	261.56635	135.82732	1.96721	0.2006533	3.1122953	16	1	25 days	0.50			Williams		1998 VW_{12}
1998 VZ_{12}	14.2	0.15	19981014	87.19777	230.30472	51.51169	5.11179	0.2143476	2.3796434	16	1	25 days	0.48			Williams		1998 VZ_{12}
1998 VN_{13}	16.7	0.15	19981103	320.92603	205.18731	241.41229	4.91963	0.1093115	2.2517145	13	1	10 days	0.69			Williams		1998 VN_{13}
1998 VP_{13}	16.6	0.15	19981103	12.70760	129.07895	248.10693	3.57781	0.2488096	2.5794181	19	1	32 days	0.74			Williams		1998 VP_{13}
1998 VR_{13}	13.4	0.15	19981103	18.46443	1.90627	6.28492	4.92222	0.2377127	4.0058030	22	1	32 days	0.61			Williams		1998 VR_{13}
1998 VS_{13}	15.2	0.15	19981014	58.44324	279.91972	30.12873	11.70529	0.2272625	2.4492545	31	1	37 days	0.64			Williams		1998 VS_{13}
1998 VT_{13}	15.8	0.15	19990122	13.86703	39.92012	13.63095	4.60971	0.1410306	2.1959469	17	1	81 days	0.52	M-v	4	Williams		1998 VT_{13}
1998 VK_{14}	13.9	0.15	19990122	162.83374	228.74328	26.93325	15.35175	0.0409123	2.5333251	22	1	68 days	0.39	M-v	5	Williams		1998 VK_{14}
1998 VT_{14}	15.2	0.15	19981103	30.78489	129.50687	230.89366	11.91173	0.1261116	2.7850599	12	1	10 days	0.79			Williams		1998 VT_{14}
1998 VU_{14}	15.9	0.15	19981103	24.52759	128.95121	238.47481	6.15127	0.1436815	2.3773139	9	1	10 days	0.84			Williams		1998 VU_{14}
1998 VV_{14}	15.2	0.15	19981103	93.87339	304.57435	349.33107	1.85454	0.1066855	2.2532950	21	1	32 days	0.57			Williams		1998 VV_{14}
1998 VB_{15}	16.5	0.15	19981103	2.56869	4.05739	31.86167	2.71535	0.1774258	2.2854196	17	1	13 days	0.64			Williams		1998 VB_{15}
1998 VG_{15}	13.7	0.15	19990122	65.01378	1.82245	329.84624	0.47908	0.1722999	3.0859483	40	4	1976–1998	0.66	M-v	1	Williams	33318	1998 VG_{15}
1998 VH_{15}	15.4	0.15	19990122	33.99012	348.98809	32.97929	2.99403	0.1032117	2.5494465	27	1	92 days	0.60	M-v	5	Williams		1998 VH_{15}
1998 VQ_{15}	11.8	0.15	19981014	352.86471	1.00849	43.45770	9.91585	0.0425343	5.1693519	18	1	31 days	0.60			Williams		1998 VQ_{15}
1998 VT_{15}	15.2	0.15	19981014	343.91507	204.39238	212.25220	7.96556	0.1988774	2.5387165	16	1	26 days	0.45			Williams		1998 VT_{15}
1998 VB_{16}	14.5	0.15	19981014	312.98830	325.73425	129.63350	2.84485	0.1713464	2.4079279	19	1	36 days	0.39			Williams		1998 VB_{16}
1998 VD_{17}	14.1	0.15	19981014	313.05029	236.57096	212.96420	21.42665	0.0891470	2.6611818	30	1	40 days	0.55			Williams		1998 VD_{17}
1998 VL_{17}	16.5	0.15	19990122	39.97360	327.33310	45.48533	3.32937	0.1919236	2.3958752	30	1	64 days	0.60	M-v	5	Williams		1998 VL_{17}
1998 VO_{17}	14.9	0.15	19981103	357.27840	181.26161	223.31861	8.46641	0.1632246	2.7579637	24	1	50 days	0.46			Williams		1998 VO_{17}
1998 VS_{17}	14.4	0.15	19981103	29.09523	315.48912	39.23172	19.17179	0.2296779	3.1792235	13	1	10 days	0.39			Williams		1998 VS_{17}
1998 VM_{18}	13.4	0.15	19990122	171.18154	4.48638	242.70501	13.29073	0.0849247	2.4750864	24	1	77 days	0.68	M-v	5	Williams		1998 VM_{18}
1998 VS_{18}	15.4	0.15	19981103	11.55948	104.19533	282.17780	3.55441	0.1696773	2.7228589	10	1	10 days	0.73			Williams		1998 VS_{18}
1998 VB_{20}	15.3	0.15	19990122	100.97511	244.36626	61.15814	7.75244	0.1446983	2.3417248	22	2	1997–1998	0.78	M-v	5	Williams	34224	1998 VB_{20}
1998 VH_{21}	13.9	0.15	19990122	122.45782	272.34808	22.76907	5.45169	0.0285631	2.7486751	16	1	61 days	0.68	M-v	7	Williams	33763	1998 VH_{21}
1998 VK_{21}	13.1	0.15	19981103	179.24865	185.49930	39.16157	19.10726	0.2457478	2.9883001	12	1	10 days	0.78		E	Williams		1998 VK_{21}
1998 VN_{21}	15.9	0.15	19981103	20.85503	52.66840	314.33189	2.74240	0.2601839	2.5717777	17	1	32 days	0.74			Williams		1998 VN_{21}
1998 VQ_{21}	15.3	0.15	19981103	62.19716	75.60687	250.39425	6.90140	0.1414170	2.4062429	14	1	10 days	0.61			Williams		1998 VQ_{21}

1998 VS_{21}	14.7	0.15	19981103	142.59656	327.46047	291.76385	3.39942	0.0358596	2.6939783	18	1	32 days	0.78			Williams		1998 VS_{21}
1998 VU_{21}	15.8	0.15	19981014	6.61304	19.04824	8.48000	4.97311	0.1279448	2.2404543	16	1	27 days	0.73			Williams		1998 VU_{21}
1998 VH_{22}	16.4	0.15	19981103	7.65634	138.73534	252.66350	6.56098	0.2303539	2.7329140	13	1	10 days	0.63			Williams		1998 VH_{22}
1998 VO_{22}	16.3	0.15	19981103	11.57640	12.15299	15.63702	2.83614	0.1522553	2.1251604	16	1	10 days	0.59			Williams		1998 VO_{22}
1998 VH_{26}	14.5	0.15	19981103	330.06461	108.99563	334.14706	1.09853	0.1214597	2.9985211	11	1	10 days	0.98		E	Williams		1998 VH_{26}
1998 VJ_{26}	15.3	0.15	19990122	53.51024	56.90795	301.16855	1.57130	0.1834415	2.4422300	33	1	170 days	0.63	M-v	4	Williams		1998 VJ_{26}
1998 VO_{26}	16.5	0.15	19990122	11.55657	66.53459	352.74453	2.35708	0.1819242	2.3763821	22	3	1994–1998	0.73	M-v	4	Williams	33516	1998 VO_{26}
1998 VR_{26}	13.8	0.15	19981123	14.71297	148.98336	240.50350	13.73962	0.1892575	3.0614967	19	1	35 days	0.71			Williams		1998 VR_{26}
1998 VL_{27}	11.9	0.15	19990122	354.60494	129.63584	291.07384	3.35134	0.0525865	5.0964738	20	2	1996–1998	0.81	M-v	5	Williams	33971	1998 VL_{27}
1998 VQ_{27}	14.2	0.15	19990122	80.91634	340.95774	350.01785	1.60141	0.0916920	2.9027662	33	2	1971–1999	0.59	M-v	5	Williams	33971	1998 VQ_{27}
1998 VR_{27}	12.5	0.15	19981103	264.97581	271.86150	239.60671	5.33313	0.0901266	3.1470843	27	1	36 days	0.60			Williams		1998 VR_{27}
1998 VW_{28}	15.7	0.15	19981103	13.68139	91.13829	296.28021	4.36860	0.2264699	2.4285777	10	1	10 days	0.78			Williams		1998 VW_{28}
1998 VY_{28}	15.2	0.15	19981103	13.23722	51.46188	333.70533	2.61338	0.2809782	2.5859115	11	1	10 days	0.49			Williams		1998 VY_{28}
1998 VU_{29}	13.3	0.15	19990122	4.53961	169.22259	260.35922	9.10560	0.1445894	2.8058736	45	1	98 days	0.68	M-v	4	Williams	34309	1998 VU_{29}
1998 VX_{29}	14.9	0.15	19981103	4.12671	132.39426	270.30034	4.60738	0.2893163	2.5055134	18	1	10 days	0.97			Williams		1998 VX_{29}
1998 VY_{29}	10.6	0.15	19990122	3.60724	163.42585	258.43694	12.03479	0.2041708	5.1715974	28	2	1986–1998	0.73	M-v	4	Williams	33517	1998 VY_{29}
1998 VZ_{29}	14.8	0.15	19990122	31.53466	4.92362	32.75526	4.26062	0.1934089	2.2724619	41	3	1991–1998	0.81	M-v	3	Williams	34028	1998 VZ_{29}
1998 VN_{30}	14.7	0.15	19981103	39.08336	93.71638	265.20891	6.08873	0.1786721	2.3613077	20	1	14 days	0.63			Williams		1998 VN_{30}
1998 VU_{30}	9.2	0.15	19981123	348.55682	179.86473	253.47571	16.19790	0.0496024	5.2130029	29	1	37 days	0.64			Williams		1998 VU_{30}
1998 VW_{30}	16.0	0.15	19981103	32.55934	11.02830	359.76744	1.67034	0.1340369	2.2395566	20	1	14 days	0.77			Williams		1998 VW_{30}
1998 VH_{31}	14.9	0.15	19990122	45.63657	324.26362	62.18144	1.91267	0.2095486	2.3402192	25	3	1969–1998	0.75	M-v	3	Williams	33517	1998 VH_{31}
1998 VP_{31}	12.8	0.15	19981103	151.55704	350.26661	243.16084	8.22882	0.2155285	2.7380376	29	1	32 days	0.82			Williams		1998 VP_{31}
1998 VQ_{31}	13.6	0.15	19990122	34.42049	153.93624	243.46910	12.72735	0.1640089	2.6581020	23	1	97 days	0.54	M-v	4	Williams	34309	1998 VQ_{31}
1998 VY_{33}	13.8	0.15	19990122	22.80854	137.35413	270.00879	1.53718	0.2178368	2.6647138	55	5	1976–1999	0.69	M-v	1	Williams	33764	1998 VY_{33}
1998 VL_{35}	13.8	0.15	19990122	77.03185	114.49807	267.09941	11.24577	0.1653330	2.5936597	19	1	78 days	0.65	M-v	5	Williams		1998 VL_{35}
1998 VR_{36}	12.9	0.15	19990122	332.98467	206.99000	242.04069	12.07098	0.1315908	2.6816737	29	1	113 days	0.57	M-v	4	Williams		1998 VR_{36}
1998 VT_{37}	14.8	0.15	19981103	337.36273	47.10437	20.70569	8.12686	0.0352288	3.1379413	11	1	10 days	1.01		E	Williams		1998 VT_{37}
1998 VU_{37}	16.0	0.15	19981014	19.77899	353.61625	12.36077	5.52045	0.2072084	2.3564432	15	1	27 days	0.51			Williams		1998 VU_{37}
1998 VG_{38}	17.0	0.15	19981103	29.33548	77.84129	285.24055	1.51926	0.1735162	2.2851933	11	1	10 days	0.91			Williams		1998 VG_{38}
1998 VO_{38}	13.3	0.15	19990122	348.62746	201.34847	242.26344	7.60057	0.1902007	3.1502937	40	1	108 days	0.55	M-v	4	Williams	34310	1998 VO_{38}
1998 VC_{41}	16.4	0.15	19981123	336.59106	219.61918	226.14743	3.89789	0.1242077	2.7764043	12	1	24 days	0.23			Williams		1998 VC_{41}
1998 VU_{41}	14.5	0.15	19990122	185.98059	161.12273	129.21759	2.96010	0.0849546	2.2283923	42	3	1987–1999	0.76	M-v	4	Williams	34029	1998 VU_{41}
1998 WM	16.6	0.15	19990122	274.42033	172.42934	45.71857	22.51890	0.3154384	1.2245471	102	1	149 days	0.52	M-v	3	Marsden	34310	1998 WM
1998 WS	12.5	0.15	19990122	3.73983	94.89535	9.14481	27.49927	0.3954693	2.6536811	179	4	1976–1999	0.56	M-v	1	Williams	34310	1998 WS
1998 WZ_{1}	19.9	0.15	19990122	3.40672	137.13711	345.16427	4.30855	0.5563863	2.1631328	42	1	158 days	0.49	M-v	4	Williams	33764	1998 WZ_{1}
1998 WK_{2}	14.9	0.15	19990122	30.97203	184.36464	215.09912	2.16263	0.1780852	2.5370361	23	2	1994–1998	0.51	M-v	5	Williams	33521	1998 WK_{2}
1998 WR_{3}	13.8	0.15	19990122	143.33615	223.76188	58.45451	7.90046	0.1534323	2.2547969	39	3	1981–1998	0.67	M-v	4	Williams	34029	1998 WR_{3}
1998 WU_{3}	14.0	0.15	19990122	58.88077	308.12937	53.29154	7.06703	0.1820059	2.4460799	16	2	1990–1998	0.76	M-v	6	Williams	34225	1998 WU_{3}
1998 WV_{3}	15.6	0.15	19981103	33.42735	62.75689	305.37545	3.00149	0.1341066	2.0292446	13	1	3 days	0.66			Williams		1998 WV_{3}
1998 WF_{4}	13.9	0.15	19990122	44.13704	312.56562	56.42933	2.70730	0.2283257	3.0898087	40	1	114 days	0.73	M-v	5	Williams		1998 WF_{4}
1998 WP_{5}	18.7	0.15	19990122	347.32679	97.50228	36.22042	19.50458	0.1951033	1.3740506	66	1	161 days	0.67	M-v	3	Williams	33765	1998 WP_{5}
1998 WX_{5}	14.3	0.15	19990122	235.50527	134.85762	78.32469	3.08245	0.1045593	2.1525859	34	1	83 days	0.47	M-v	4	Williams	34029	1998 WX_{5}
1998 WD_{6}	13.8	0.15	19981103	1.45727	38.74104	11.40182	3.98632	0.2199344	2.9534161	17	1	3 days	0.79			Williams		1998 WD_{6}
1998 WE_{6}	17.4	0.15	19981103	28.59888	302.29509	57.91294	9.82779	0.2919720	2.2351378	11	1	4 days	0.68			Williams		1998 WE_{6}
1998 WX_{6}	13.8	0.15	19990122	357.38467	37.14840	72.99412	8.90322	0.1576324	2.7139208	27	1	137 days	0.75	M-v	4	Williams	34030	1998 WX_{6}
1998 WZ_{6}	17.3	0.15	19990122	332.12580	110.58382	68.86237	24.74775	0.4083304	1.4522553	222	1	157 days	0.49	M-v	3	Williams	34030	1998 WZ_{6}
1998 WE_{7}	13.9	0.15	19990122	206.87811	167.30271	66.92094	15.42518	0.1337374	2.5344999	34	1	78 days	0.54	M-v	4	Williams		1998 WE_{7}
1998 WL_{7}	14.6	0.15	19990122	42.03123	148.65165	269.84903	24.69202	0.2563688	2.3038421	20	1	67 days	0.64	M-v	5	D	Williams	1998 WL_{7}
1998 WA_{8}	12.4	0.15	19990122	130.08154	234.30645	60.17265	11.26117	0.0784150	3.0159488	36	1	101 days	0.74	M-v	5		Williams	1998 WA_{8}
1998 WB_{8}	14.3	0.15	19990122	287.16962	141.77627	25.45873	1.12536	0.1438586	2.3242324	31	2	1996–1998	0.58	M-v	3	Williams	34310	1998 WB_{8}
1998 WV_{8}	15.1	0.15	19981123	85.08860	249.56167	67.79488	2.27370	0.1809642	2.4147216	33	1	35 days	0.96			Williams		1998 WV_{8}
1998 WB_{10}	14.8	0.15	19990122	348.73800	201.31336	258.12423	1.56281	0.1644320	2.4274876	43	1	114 days	0.68	M-v	4	Williams	34030	1998 WB_{10}
1998 WH_{10}	14.9	0.15	19981103	154.26676	212.55658	45.33622	2.78224	0.0587936	2.2579607	21	1	7 days	0.68			Williams		1998 WH_{10}

1998 WT_{10}	16.6	0.15	19981123	343.41474	204.40116	240.83562	11.96977	0.2379612	2.6544418	28	1	29 days	0.85			Williams		1998 WT_{10}
1998 WV_{10}	14.8	0.15	19981123	120.55725	68.43916	225.57922	1.58015	0.0302070	2.3774956	40	1	34 days	0.70			Williams		1998 WV_{10}
1998 WQ_{11}	14.5	0.15	19990122	169.60652	85.41341	173.05196	3.23586	0.1553445	2.2157676	27	3	1990–1998	0.60	M-v	4	Williams	33711	1998 WQ_{11}
1998 WD_{12}	14.6	0.15	19990122	216.82033	56.32842	166.79255	2.34555	0.1643280	2.3816764	22	2	1997–1998	0.69	M-v	5	Williams	33711	1998 WD_{12}
1998 WF_{12}	15.7	0.15	19981123	11.92627	172.81613	229.50934	5.68312	0.1265282	2.4174771	33	1	27 days	0.85			Williams		1998 WF_{12}
1998 WA_{13}	14.2	0.15	19981103	309.31436	90.27618	30.57919	9.20531	0.1650915	2.7887187	12	1	4 days	0.61			Williams		1998 WA_{13}
1998 WB_{13}	16.3	0.15	19981103	350.75972	68.63923	357.35264	2.59495	0.2386599	2.4004570	12	1	4 days	0.40			Williams		1998 WB_{13}
1998 WG_{13}	13.0	0.15	19981103	275.98615	244.70888	269.79253	8.93466	0.1308663	3.0502719	13	1	4 days	0.90		E	Williams		1998 WG_{13}
1998 WH_{13}	14.6	0.15	19981103	319.46391	208.80847	262.17211	8.89256	0.1855661	2.7733128	12	1	4 days	0.60			Williams		1998 WH_{13}
1998 WQ_{13}	15.2	0.15	19990122	37.87089	11.99925	16.13118	3.37234	0.2196462	2.3456321	32	3	1987–1998	0.82	M-v	4	Williams	34310	1998 WQ_{13}
1998 WS_{13}	17.0	0.15	19981103	10.08543	353.11433	43.19087	8.18186	0.2274769	2.4402023	10	1	4 days	0.55			Williams		1998 WS_{13}
1998 WV_{13}	12.7	0.15	19981103	158.19333	202.23025	53.39250	18.14000	0.1123085	2.9391498	16	1	4 days	0.52			Williams		1998 WV_{13}
1998 WY_{13}	14.8	0.15	19990122	82.69682	305.78252	25.44559	2.32515	0.2033289	2.3096567	26	1	74 days	0.71	M-v	5	Williams		1998 WY_{13}
1998 WH_{14}	14.6	0.15	19981123	26.93785	154.89287	230.32723	5.32119	0.1165745	2.7999380	29	1	34 days	0.53			Williams		1998 WH_{14}
1998 WO_{14}	16.6	0.15	19981103	345.61263	345.22581	88.18645	2.49074	0.1906769	2.4854528	13	1	4 days	1.11		E	Williams		1998 WO_{14}
1998 WQ_{14}	13.7	0.15	19981123	246.73332	309.07110	229.90492	8.14023	0.0616344	3.0806754	22	1	32 days	0.76			Williams		1998 WQ_{14}
1998 WR_{14}	16.3	0.15	19981103	16.56926	297.84477	91.33734	2.13055	0.1532440	2.2551510	13	1	4 days	0.71			Williams		1998 WR_{14}
1998 WS_{14}	16.6	0.15	19981123	29.08427	207.69599	176.72179	1.50265	0.1004268	2.3664137	15	1	18 days	1.14			Williams		1998 WS_{14}
1998 WK_{16}	15.3	0.15	19981123	341.50856	219.45111	228.39453	7.58924	0.1867166	2.7030042	18	1	22 days	0.71			Williams		1998 WK_{16}
1998 WL_{16}	14.3	0.15	19981213	340.01767	21.08085	69.10206	11.81753	0.1149197	3.1160185	25	1	51 days	0.88			Williams		1998 WL_{16}
1998 WM_{16}	15.6	0.15	19990122	19.23001	219.41084	199.02998	2.11520	0.1010969	2.2628525	25	2	1993–1998	0.66	M-v	4	Williams	33766	1998 WM_{16}
1998 WP_{16}	15.7	0.15	19981103	10.81178	326.50095	70.48067	5.57457	0.2182370	3.0372333	10	1	4 days	0.95		E	Williams		1998 WP_{16}
1998 WQ_{16}	13.7	0.15	19981123	27.24877	319.21379	62.11477	8.28911	0.1735619	3.1874542	37	1	39 days	0.85			Williams		1998 WQ_{16}
1998 WR_{16}	15.9	0.15	19981123	30.50248	314.37868	62.86694	3.28954	0.1738962	2.5493235	27	1	38 days	0.82			Williams		1998 WR_{16}
1998 WS_{16}	13.7	0.15	19981123	115.13619	239.52154	59.39420	2.88864	0.0657380	2.8539244	18	1	21 days	0.49			Williams		1998 WS_{16}
1998 WW_{16}	14.6	0.15	19981123	331.86384	240.25398	226.58967	4.67381	0.2471936	2.6679301	36	1	37 days	0.63			Williams		1998 WW_{16}
1998 WA_{17}	14.0	0.15	19990122	308.37084	292.31808	200.87085	1.62951	0.0915587	3.1486689	26	1	85 days	0.57	M-v	6	Williams	34311	1998 WA_{17}
1998 WD_{17}	15.8	0.15	19981103	351.87321	0.85348	64.19752	4.82751	0.1732215	2.4183078	29	1	55 days	0.62			Williams		1998 WD_{17}
1998 WJ_{17}	12.3	0.15	19990122	87.25588	83.17100	234.18298	4.20892	0.2150671	3.9852548	24	1	84 days	0.58	M-v	6	Williams	34311	1998 WJ_{17}
1998 WY_{17}	14.0	0.15	19981103	262.10938	125.07149	49.53571	10.44222	0.1703932	2.5370500	12	1	4 days	0.87		E	Williams		1998 WY_{17}
1998 WP_{18}	14.2	0.15	19981103	269.57041	192.23763	335.89346	1.92070	0.1825887	2.3585335	13	1	4 days	0.48			Williams		1998 WP_{18}
1998 WV_{18}	11.8	0.15	19990122	248.58295	309.64751	243.79462	11.24995	0.1404259	3.9389323	26	1	83 days	0.81	M-v	5	Williams	34311	1998 WV_{18}
1998 WG_{19}	14.0	0.15	19981103	191.90930	237.63142	353.74496	2.79324	0.2869180	2.5606106	10	1	4 days	0.84		E	Williams		1998 WG_{19}
1998 WK_{19}	13.1	0.15	19990122	28.96623	163.98542	278.20252	12.92726	0.1235666	2.5758895	44	1	153 days	0.56	M-v	4	Williams	34311	1998 WK_{19}
1998 WM_{19}	14.4	0.15	19990122	29.89867	230.03927	209.35548	3.74788	0.2409685	2.5812926	34	2	1993–1999	0.69	M-v	4	Williams	33972	1998 WM_{19}
1998 WO_{19}	14.2	0.15	19990122	17.82938	214.86716	246.78819	11.12830	0.2029469	2.5565405	19	1	135 days	0.79	M-v	4	Williams	34031	1998 WO_{19}
1998 WR_{19}	14.1	0.15	19990122	317.24165	259.57548	280.42943	4.36444	0.0993157	2.2322109	33	2	1993–1999	0.69	M-v	4	Williams	34031	1998 WR_{19}
1998 WT_{19}	12.5	0.15	19990122	26.35537	185.04902	290.93729	13.29951	0.1124579	2.5762999	33	2	1992–1999	0.53	M-v	4	Williams	33972	1998 WT_{19}
1998 WV_{19}	12.7	0.15	19990122	30.21504	201.66427	271.11355	13.45078	0.1315506	2.6017047	22	1	143 days	0.53	M-v	4	Williams	34311	1998 WV_{19}
1998 WA_{20}	12.8	0.15	19990122	270.16576	81.08860	105.45941	10.88546	0.0303280	3.0198448	37	1	141 days	0.57	M-v	4	Williams	34311	1998 WA_{20}
1998 WG_{21}	14.2	0.15	19981103	33.81833	110.65265	257.67251	9.75440	0.1338846	3.2265189	12	1	3 days	0.74		E	Williams		1998 WG_{21}
1998 WL_{21}	15.8	0.15	19981103	351.24228	151.28677	270.72146	5.01136	0.1212881	2.3539837	13	1	3 days	0.42			Williams		1998 WL_{21}
1998 WP_{22}	14.5	0.15	19981123	294.77651	284.67405	223.35802	3.20810	0.2090318	2.6083655	27	1	34 days	0.71			Williams		1998 WP_{22}
1998 WR_{22}	15.4	0.15	19981123	356.67458	234.16248	190.46839	1.81757	0.1871181	2.8484626	21	1	25 days	0.81			Williams		1998 WR_{22}
1998 WW_{22}	15.1	0.15	19990122	13.07719	328.09125	88.57871	2.88355	0.1772624	3.1274555	16	1	66 days	0.75	M-v	5	Williams	33766	1998 WW_{22}
1998 WX_{22}	14.5	0.15	19990122	101.73979	95.74564	212.69623	2.10840	0.2156607	2.6790989	28	2	1993–1998	0.87	M-v	5	Williams	33527	1998 WX_{22}
1998 WY_{22}	17.0	0.15	19981103	347.56243	32.01236	39.81453	4.35503	0.2023904	2.3525134	11	1	3 days	0.45			Williams		1998 WY_{22}
1998 WF_{23}	15.7	0.15	19990122	15.18036	147.31588	272.19985	2.87489	0.1611822	2.3045191	20	1	115 days	0.64	M-v	4	Williams	34311	1998 WF_{23}
1998 WV_{23}	13.5	0.15	19990122	320.61176	198.10789	352.53687	13.36409	0.1062684	2.6989684	55	3	1986–1999	0.73	M-v	3	Williams	34311	1998 WV_{23}
1998 WW_{23}	12.7	0.15	19990122	329.18250	105.25674	91.62895	15.22144	0.2582822	2.9137411	25	1	145 days	0.63	M-v	4	Williams	34311	1998 WW_{23}
1998 WY_{23}	13.0	0.15	19990122	327.06354	102.09118	85.82103	14.07880	0.1226280	2.6867764	26	1	145 days	0.58	M-v	4	Williams	34311	1998 WY_{23}
1998 WC_{24}	13.1	0.15	19990122	293.95340	235.08986	350.40930	13.11379	0.1210558	2.6055517	60	2	1995–1999	0.71	M-v	4	Williams	34311	1998 WC_{24}
1998 WO_{27}	15.7	0.15	19981103	15.54600	151.49117	230.39686	3.73782	0.0990193	2.3331636	9	1	3 days	0.55		E	Williams		1998 WO_{27}

1998 WU_{30}	13.1	0.15	19981213	7.78029	295.08662	120.33297	14.57161	0.0768078	3.0679744	20	1	53 days	0.63			Williams		1998 WU_{30}
1998 WZ_{30}	13.3	0.15	19990122	82.23001	21.47675	335.34438	9.17392	0.2179825	2.4213411	54	3	1989–1999	0.64	M-v	3	Williams	34031	1998 WZ_{30}
1998 WA_{32}	13.5	0.15	19990122	119.65561	84.93670	226.93674	1.26207	0.0426867	2.9102630	21	3	1992–1999	0.66	M-v	5	Williams	34226	1998 WA_{32}
1998 XK_{1}	16.9	0.15	19981123	10.32755	319.63902	82.39276	4.64877	0.1966187	2.7416081	26	1	35 days	0.62			Williams		1998 XK_{1}
1998 XN_{3}	13.2	0.15	19990122	92.96238	299.26460	34.74698	1.76552	0.1947261	3.1940240	39	5	1969–1999	0.71	M-v	1	Williams	34311	1998 XN_{3}
1998 XA_{5}	18.8	0.15	19990122	358.61492	211.15985	274.26275	31.76650	0.3067113	1.5586043	177	1	122 days	0.67	M-v	4	Marsden	34032	1998 XA_{5}
1998 XJ_{5}	11.8	0.15	19981123	335.83685	22.66916	60.08999	8.77674	0.1835802	5.1583935	26	1	45 days	0.73			Williams		1998 XJ_{5}
1998 XD_{7}	15.6	0.15	19981123	32.19895	145.35154	231.11034	5.58978	0.1515376	2.4143667	18	1	32 days	0.52			Williams		1998 XD_{7}
1998 XW_{9}	13.6	0.15	19990122	35.08116	264.36627	175.02340	2.24927	0.0522375	2.8453298	52	1	154 days	0.54	M-v	4	Williams	34311	1998 XW_{9}
1998 XN_{10}	15.3	0.15	19990122	337.02393	33.44976	128.55444	2.99916	0.1599729	2.3587952	36	1	71 days	0.51	M-v	4	Williams	34312	1998 XN_{10}
1998 XH_{12}	14.4	0.15	19981123	233.81683	129.38237	69.56599	4.88532	0.1149957	2.5461249	27	1	56 days	0.51			Williams		1998 XH_{12}
1998 XN_{12}	13.2	0.15	19990122	353.60404	85.48287	73.58183	14.79440	0.1012699	2.6215258	30	1	125 days	0.45	M-v	3	Williams	34312	1998 XN_{12}
1998 XC_{14}	14.4	0.15	19981123	266.74321	79.65673	98.36606	5.18711	0.1804335	2.5494681	19	1	52 days	0.39			Williams		1998 XC_{14}
1998 XN_{16}	14.2	0.15	19990122	14.72141	162.59434	285.95579	24.84058	0.1860748	2.3286227	37	2	1992–1999	0.81	M-v	3	Williams	34312	1998 XN_{16}
1998 XR_{16}	18.6	0.15	19990122	351.41693	67.96394	92.12943	20.56716	0.5801272	2.2741397	136	1	121 days	0.56	M-v	4	Williams	33768	1998 XR_{16}
1998 XS_{16}	16.4	0.15	19990122	217.59937	358.17385	273.07100	26.54993	0.4965439	1.2122523	96	1	139 days	0.54	M-v	4	Williams	34032	1998 XS_{16}
1998 XJ_{19}	16.1	0.15	19990122	23.35020	332.62222	81.10417	2.26903	0.0851741	2.1755530	27	2	1995–1999	0.39	M-v	3	Williams	34032	1998 XJ_{19}
1998 XS_{20}	12.7	0.15	19990122	226.05716	338.87011	290.31433	15.84223	0.2496084	2.7467648	32	1	84 days	0.46	M-v	5	Williams	34312	1998 XS_{20}
1998 XG_{24}	12.2	0.15	19990122	82.55284	93.48876	290.48778	14.60717	0.0958282	3.1925814	41	5	1975–1999	0.75	M-v	1	Williams	34312	1998 XG_{24}
1998 XR_{28}	13.6	0.15	19990122	210.06191	337.09752	255.53495	5.67239	0.1258264	2.2922287	42	1	163 days	0.68	M-v	4	Williams		1998 XR_{28}
1998 XW_{28}	15.4	0.15	19981123	347.90476	201.47233	238.89697	2.23802	0.1560660	3.0301727	11	1	27 days	0.70			Williams		1998 XW_{28}
1998 XS_{30}	14.5	0.15	19990122	285.71990	276.11812	252.38387	12.21464	0.1348009	2.6189054	26	3	1981–1999	0.70	M-v	3	Williams	34226	1998 XS_{30}
1998 XA_{33}	13.1	0.15	19990122	57.42601	18.40257	359.73228	9.76720	0.1134544	2.9824592	21	4	1982–1999	0.74	M-v	3	Williams	33714	1998 XA_{33}
1998 XZ_{40}	13.2	0.15	19990122	50.87425	6.95068	16.37833	8.15381	0.2115578	3.1298017	25	4	1981–1999	0.81	M-v	1	Williams	33714	1998 XZ_{40}
1998 XY_{41}	14.3	0.15	19990122	34.05964	21.41000	31.49662	2.67673	0.1996400	2.3778524	24	3	1992–1999	0.64	M-v	4	Williams	33715	1998 XY_{41}
1998 XV_{44}	14.5	0.15	19990122	17.52502	68.61132	11.76853	6.82244	0.1395908	2.2824359	32	2	1996–1999	0.72	M-v	4	Williams	34033	1998 XV_{44}
1998 XX_{49}	13.1	0.15	19990122	0.04292	127.38900	339.04881	8.20287	0.1263551	2.6039635	40	4	1991–1999	0.67	M-v	2	Williams	33716	1998 XX_{49}
1998 XD_{51}	11.7	0.15	19990122	322.44045	196.73924	318.52526	7.76496	0.1298445	3.9612246	30	3	1992–1999	0.72	M-v	3	Williams	34312	1998 XD_{51}
1998 XU_{51}	12.2	0.15	19990122	196.30938	216.60706	57.07656	17.05191	0.1697812	3.1458511	31	1	74 days	0.67	M-v	5	Williams		1998 XU_{51}
1998 XA_{52}	15.2	0.15	19981213	9.70887	105.47411	332.39170	10.28568	0.2197255	2.4305419	22	1	59 days	0.60			Williams		1998 XA_{52}
1998 XB_{53}	13.2	0.15	19990122	28.02773	152.64077	282.85571	13.05121	0.1286613	2.6234942	46	3	1982–1999	0.76	M-v	2	Williams	34033	1998 XB_{53}
1998 XG_{53}	14.4	0.15	19990122	325.89331	58.00954	92.29849	7.17112	0.0519257	2.4194607	34	2	1992–1999	0.51	M-v	5	Williams	34033	1998 XG_{53}
1998 XE_{54}	14.5	0.15	19990122	334.51616	130.60300	16.96009	5.37214	0.1892541	2.5502959	39	3	1983–1999	0.83	M-v	3	Williams	34033	1998 XE_{54}
1998 XJ_{62}	14.7	0.15	19981123	349.22610	188.79780	229.26900	18.41244	0.1871485	2.7562420	12	1	21 days	0.68			Williams		1998 XJ_{62}
1998 XF_{63}	15.1	0.15	19990122	27.87523	343.47444	62.98877	7.81201	0.1889065	2.2529238	23	3	1981–1999	0.57	M-v	3	Williams	34226	1998 XF_{63}
1998 XO_{64}	14.4	0.15	19981123	26.46111	117.58017	264.37559	8.58043	0.2306760	3.1428322	24	1	50 days	0.49			Williams		1998 XO_{64}
1998 XK_{72}	13.7	0.15	19990122	50.40502	8.48210	26.15377	1.30399	0.1421869	3.0350187	44	4	1976–1999	0.56	M-v	1	Williams	34227	1998 XK_{72}
1998 XM_{73}	14.1	0.15	19990122	356.54796	75.69820	33.82252	7.84494	0.1321640	2.5491185	22	1	122 days	0.74	M-v	4	Williams		1998 XM_{73}
1998 XP_{73}	14.0	0.15	19990122	330.36706	120.67532	22.83118	7.86013	0.1458107	2.5781190	20	1	113 days	0.84	M-v	5	Williams		1998 XP_{73}
1998 XZ_{73}	13.0	0.15	19990122	89.65173	7.67748	352.46862	6.68902	0.1397425	2.7273431	27	4	1970–1999	0.87	M-v	3	Williams	33973	1998 XZ_{73}
1998 XJ_{74}	14.7	0.15	19981213	16.44942	22.25350	51.69443	13.44834	0.1526600	2.5673208	22	1	59 days	0.61		D	Williams		1998 XJ_{74}
1998 XZ_{77}	10.5	0.15	19990122	55.74663	176.89128	195.68077	12.58898	0.0644342	5.2026881	25	3	1992–1999	0.63	M-v	3	Williams	34227	1998 XZ_{77}
1998 XG_{79}	12.7	0.15	19990122	42.69689	262.90992	115.67649	12.91258	0.2375209	3.1526597	27	2	1980–1999	0.58	M-v	5	Williams	34228	1998 XG_{79}
1998 XO_{79}	9.8	0.15	19990122	108.67073	166.67245	157.13689	13.97640	0.0448753	5.2113516	18	3	1996–1999	0.78	M-v	4	Williams	34034	1998 XO_{79}
1998 XR_{92}	13.4	0.15	19990122	165.08692	58.00822	235.54821	12.15136	0.1587938	2.6342584	26	5	1975–1999	0.83	M-v	2	Williams	33720	1998 XR_{92}
1998 XX_{93}	10.0	0.15	19990122	48.63623	150.19402	261.26795	21.06178	0.0636876	5.1812736	31	2	1997–1999	0.61	M-v	3	Williams	33720	1998 XX_{93}
1998 XL_{94}	13.5	0.15	19990122	326.52656	307.38105	211.89682	7.93278	0.2077447	2.7458491	17	1	113 days	0.65	M-v	5	Williams		1998 XL_{94}
1998 XD_{96}	14.2	0.15	19990122	83.47369	282.73718	117.57443	3.13856	0.0766500	2.9098803	32	3	1984–1999	0.65	M-v	4	Williams	34312	1998 XD_{96}
1998 XN_{96}	12.2	0.15	19990122	17.35013	346.29402	115.79185	2.41736	0.1415537	3.2048764	49	3	1982–1999	0.78	M-v	3	Williams	34312	1998 XN_{96}
1998 YC	14.7	0.15	19990122	63.96441	119.85747	282.01531	3.05637	0.0951249	2.2347655	45	1	66 days	0.62	M-v	5	Williams	34312	1998 YC
1998 YU	15.9	0.15	19990122	30.20672	119.93078	311.21888	1.94327	0.1500295	2.1555924	32	2	1996–1999	0.70	M-v	5	Williams	34034	1998 YU
1998 YX	12.7	0.15	19990122	42.44313	320.74877	99.62855	11.68093	0.0805553	3.0116801	36	3	1982–1999	0.55	M-v	2	Williams	34312	1998 YX
1998 YC_{1}	13.4	0.15	19990122	306.02685	320.64044	194.53556	4.29753	0.0392098	3.1771358	35	1	114 days	0.39	M-v	5	Williams	34035	1998 YC_{1}

1998 YN_{1}	17.7	0.15	19990122	309.74308	147.38521	61.91594	6.29863	0.4648740	1.5563987	105	1	113 days	0.60	M-v	4	Williams	34313	1998 YN_{1}
1998 YG_{3}	12.7	0.15	19990122	127.34834	241.00435	94.58092	10.70479	0.0939942	2.9994190	34	1	65 days	0.62	M-v	5	Williams	34313	1998 YG_{3}
1998 YL_{4}	14.6	0.15	19990122	288.84926	268.53029	312.64250	6.53837	0.0662780	2.3221267	57	1	121 days	0.64	M-v	4	Marsden	34313	1998 YL_{4}
1998 YD_{5}	13.3	0.15	19990122	31.41054	328.15099	123.29062	19.12811	0.1273106	3.2158666	28	1	89 days	0.45	M-v	4	Williams	34313	1998 YD_{5}
1998 YL_{5}	15.0	0.15	19990122	310.20012	77.18185	69.81839	6.63405	0.1442475	2.2496827	27	1	61 days	0.54	M-v	5	Williams		1998 YL_{5}
1998 YS_{5}	12.6	0.15	19990122	71.97886	285.28268	110.73074	11.53801	0.1021095	2.9957206	39	1	143 days	0.65	M-v	4	Williams	34313	1998 YS_{5}
1998 YN_{7}	14.7	0.15	19990122	335.60214	260.60914	235.58756	10.79312	0.2397120	2.6506471	46	1	110 days	0.70	M-v	5	Williams		1998 YN_{7}
1998 YS_{7}	14.1	0.15	19990122	39.72351	80.92661	330.17873	23.20552	0.2651550	2.2992057	31	2	1994–1999	0.64	M-v	4	Williams	34036	1998 YS_{7}
1998 YF_{8}	13.4	0.15	19990122	15.76435	228.37326	232.62126	4.66205	0.1712396	3.1798254	36	1	141 days	0.63	M-v	4	Williams	34313	1998 YF_{8}
1998 YL_{8}	13.1	0.15	19990122	68.90182	277.06003	94.97618	12.17540	0.2524823	2.5177411	73	2	1991–1999	0.61	M-v	4	Williams	34313	1998 YL_{8}
1998 YO_{8}	14.1	0.15	19990122	295.46421	46.40053	143.73195	5.05146	0.0618065	2.2692272	29	4	1979–1999	0.61	M-v	2	Williams	34036	1998 YO_{8}
1998 YN_{9}	13.8	0.15	19990122	326.17068	218.92372	341.04560	8.26990	0.1384541	2.5596865	43	1	109 days	0.50	M-v	4	Williams	34313	1998 YN_{9}
1998 YO_{9}	13.5	0.15	19981213	46.41880	116.13368	257.86342	14.49091	0.1246461	2.5917663	11	1	15 days	0.42			Williams		1998 YO_{9}
1998 YS_{9}	13.5	0.15	19990122	328.94253	21.18305	137.51737	3.01033	0.1274783	3.2165012	23	2	1996–1999	0.67	M-v	4	Williams	34036	1998 YS_{9}
1998 YU_{9}	13.8	0.15	19990122	254.59504	109.75910	129.09543	12.82483	0.1359538	2.3633729	40	2	1992–1999	0.63	M-v	4	Williams	34313	1998 YU_{9}
1998 YP_{10}	14.2	0.15	19990122	68.35300	101.29916	348.54660	3.99650	0.1077588	2.5876099	33	1	112 days	0.63	M-v	5	Williams	34313	1998 YP_{10}
1998 YP_{11}	16.4	0.15	19990122	322.54063	74.23562	145.06508	15.03562	0.3891440	1.7207236	157	1	130 days	0.57	M-v	3	Williams	34313	1998 YP_{11}
1998 YQ_{11}	17.9	0.15	19990122	1.49095	245.49744	256.84191	11.94064	0.3961593	1.8739914	52	1	115 days	0.60	M-v	5	Marsden	34313	1998 YQ_{11}
1998 YL_{13}	13.9	0.15	19990122	65.60589	286.32117	106.32897	12.41538	0.1704995	2.5193164	22	1	90 days	0.60	M-v	5	Williams	34313	1998 YL_{13}
1998 YQ_{15}	15.0	0.15	19990122	343.85762	16.07341	124.95407	5.49122	0.0972172	2.2441666	34	1	111 days	0.58	M-v	4	Williams	34313	1998 YQ_{15}
1998 YY_{15}	14.1	0.15	19990122	24.55041	298.63341	152.71772	2.09999	0.1374440	3.1914229	43	2	1971–1999	0.66	M-v	4	Williams	34313	1998 YY_{15}
1998 YG_{17}	15.1	0.15	19990122	262.14918	315.68142	268.30915	0.76628	0.0172054	2.9143196	21	1	108 days	0.50	M-v	5	Williams		1998 YG_{17}
1998 YK_{22}	14.9	0.15	19990122	88.01041	108.98611	262.93836	6.57596	0.1623031	2.4270305	30	3	1988–1999	0.58	M-v	3	Williams	33727	1998 YK_{22}
1998 YN_{22}	13.3	0.15	19990122	352.59249	349.02386	136.60263	9.93405	0.0382549	2.7231173	34	2	1992–1999	0.61	M-v	3	Williams	34314	1998 YN_{22}
1998 YF_{27}	16.7	0.15	19990122	346.46691	32.52363	119.68688	46.29249	0.1960121	1.8854739	47	1	101 days	0.59	M-v	4	Williams	34037	1998 YF_{27}
1998 YL_{27}	13.2	0.15	19990122	153.73254	119.62679	202.55487	2.31086	0.0742650	2.7590889	25	3	1983–1999	0.84	M-v	3	Williams	33976	1998 YL_{27}
1998 YR_{27}	13.8	0.15	19990122	7.36801	339.75302	126.02909	10.02568	0.2485711	2.7204690	32	2	1990–1999	0.50	M-v	3	Williams	34037	1998 YR_{27}
1998 YX_{29}	13.8	0.15	19990122	279.99834	228.62323	8.62750	10.72805	0.2208145	2.3901220	33	2	1989–1999	0.72	M-v	4	Williams	34037	1998 YX_{29}
1999 AK	13.4	0.15	19990122	304.26495	303.72931	250.15299	7.59433	0.1364710	2.6690601	46	2	1997–1999	0.63	M-v	4	Williams	34314	1999 AK
1999 AR	12.5	0.15	19990122	232.79742	313.26350	305.93899	16.50133	0.1812714	2.5335719	16	1	90 days	0.53	M-v	5	Williams	34314	1999 AR
1999 AW	15.1	0.15	19990122	2.45402	32.01535	83.55135	6.14466	0.1571788	2.3581850	36	1	142 days	0.65	M-v	3	Williams	34314	1999 AW
1999 AF_{2}	14.2	0.15	19990122	337.46342	129.99640	16.95332	2.54771	0.1526585	2.3868788	44	3	1977–1999	0.56	M-v	2	Williams	34037	1999 AF_{2}
1999 AG_{2}	14.2	0.15	19990122	223.42892	236.48895	25.05707	4.26292	0.0441492	2.2066451	58	5	1989–1999	0.72	M-v	1	Williams	34314	1999 AG_{2}
1999 AU_{2}	14.0	0.15	19990122	75.70930	16.81947	34.69357	6.72965	0.1293426	2.6026221	36	2	1982–1999	0.51	M-v	4	Williams	34314	1999 AU_{2}
1999 AK_{3}	13.5	0.15	19990122	349.53144	175.92564	243.71046	13.50644	0.1642739	2.7526707	15	2	1991–1999	0.72	M-v	5	Williams	33977	1999 AK_{3}
1999 AM_{3}	15.0	0.15	19990122	151.05745	20.19348	302.83249	22.33487	0.0374551	1.9483034	27	1	95 days	0.50	M-v	4	Nakano		1999 AM_{3}
1999 AO_{3}	14.2	0.15	19990122	5.21229	210.63286	250.78145	14.46414	0.1971090	2.7985518	44	1	113 days	0.67	M-v	3	Williams		1999 AO_{3}
1999 AS_{3}	14.4	0.15	19990122	323.72501	72.40692	100.15800	7.82262	0.0674748	2.3845499	36	1	94 days	0.51	M-v	4	Williams		1999 AS_{3}
1999 AM_{4}	15.0	0.15	19990122	333.78988	70.77660	87.25855	4.26190	0.0519013	2.1516030	37	3	1993–1999	0.64	M-v	4	Williams	34314	1999 AM_{4}
1999 AH_{5}	13.9	0.15	19990122	327.38132	191.57585	333.40917	13.00072	0.1068019	2.3527632	40	3	1981–1999	0.56	M-v	3	Williams	34314	1999 AH_{5}
1999 AJ_{5}	13.4	0.15	19990122	50.94925	345.75473	67.89422	10.07122	0.2124385	2.6139760	47	5	1968–1999	0.68	M-v	2	Williams	34314	1999 AJ_{5}
1999 AK_{5}	12.9	0.15	19990122	48.10327	51.62152	17.77345	11.03116	0.1070979	2.9930009	29	1	88 days	0.65	M-v	5	Nakano		1999 AK_{5}
1999 AL_{5}	13.7	0.15	19990122	358.04047	160.18828	327.93832	21.92308	0.0320484	2.5835397	25	1	95 days	0.56	M-v	4	Nakano		1999 AL_{5}
1999 AM_{5}	14.9	0.15	19990122	12.99562	108.24119	1.29428	9.53808	0.1298637	2.2685888	19	1	95 days	0.53	M-v	4	Nakano		1999 AM_{5}
1999 AE_{6}	12.4	0.15	19990122	351.46920	178.10999	246.14213	14.14359	0.0685346	2.5917873	21	4	1981–1999	0.66	M-v	2	Williams	34229	1999 AE_{6}
1999 AM_{6}	13.4	0.15	19990122	23.18410	79.71289	323.40243	5.63473	0.0448247	2.3672316	18	3	1992–1999	0.84	M-v	4	Williams	34229	1999 AM_{6}
1999 AS_{6}	13.9	0.15	19990122	34.06659	312.47820	121.94237	16.81096	0.1869803	2.6892625	37	1	140 days	0.65	M-v	4	Williams	34314	1999 AS_{6}
1999 AT_{6}	15.8	0.15	19990102	22.98117	310.58271	130.00696	3.13494	0.2206982	2.6824540	16	1	14 days	0.43			Williams		1999 AT_{6}
1999 AV_{6}	14.4	0.15	19990122	328.35402	34.71047	124.84220	7.35075	0.0717857	2.4088094	30	2	1996–1999	0.56	M-v	4	Williams	33978	1999 AV_{6}
1999 AG_{7}	14.4	0.15	19990122	295.79929	324.58088	233.54065	3.45148	0.0747430	2.2568402	42	4	1980–1999	0.69	M-v	3	Williams	34315	1999 AG_{7}
1999 AU_{7}	14.8	0.15	19990122	257.42069	204.03359	43.82392	4.98256	0.0696952	2.1902860	35	2	1978–1999	0.55	M-v	4	Williams	34315	1999 AU_{7}
1999 AC_{8}	15.0	0.15	19990122	317.45307	159.13292	21.10949	5.88969	0.1079084	2.2152346	39	4	1986–1999	0.72	M-v	2	Williams	34315	1999 AC_{8}
1999 AE_{8}	13.5	0.15	19990122	306.34807	215.10571	338.84484	11.52807	0.0353832	2.5137231	26	1	87 days	0.47	M-v	4	Williams	34315	1999 AE_{8}

1999 AR_{9}	12.8	0.15	19990122	121.76805	35.11886	337.96541	25.55218	0.1471028	3.2011105	29	1	86 days	0.65	M-v	4	Green	34315	1999 AR_{9}
1999 AA_{10}	14.8	0.15	19990122	261.61968	60.90471	176.47172	3.00518	0.1212939	2.1733454	43	2	1996–1999	0.80	M-v	4	Williams	34039	1999 AA_{10}
1999 AA_{21}	13.2	0.15	19990122	98.00450	34.98203	333.30097	23.67974	0.2056615	2.4376782	32	1	83 days	0.50	M-v	4	Williams	34315	1999 AA_{21}
1999 AF_{21}	15.0	0.15	19990122	322.28861	315.91117	214.84452	1.95208	0.1050514	2.3639673	25	1	33 days	0.73		D	Williams		1999 AF_{21}
1999 AQ_{21}	14.5	0.15	19990122	308.38157	348.27946	201.85664	0.84236	0.1292698	2.3925866	28	3	1977–1999	0.63	M-v	2	Williams	34229	1999 AQ_{21}
1999 AT_{21}	14.8	0.15	19990122	114.08237	90.01571	282.63161	0.23069	0.0829323	2.1567247	29	4	1977–1999	0.72	M-v	3	Williams	34229	1999 AT_{21}
1999 AQ_{22}	15.2	0.15	19990122	343.19267	90.44172	82.58065	15.76596	0.3052319	2.6893176	40	1	60 days	0.41	M-v	4	Williams		1999 AQ_{22}
1999 AT_{22}	14.7	0.15	19990122	53.13004	176.73527	236.61039	3.87217	0.1215402	2.4408169	30	2	1996–1999	0.60	M-v	5	Williams	34040	1999 AT_{22}
1999 AY_{22}	13.9	0.15	19990122	14.97602	203.35943	292.29893	3.05335	0.1139485	2.3237614	40	1	83 days	0.45	M-v	4	Williams	34315	1999 AY_{22}
1999 AB_{24}	15.5	0.15	19990122	6.99878	128.51730	348.24566	24.12603	0.2863521	2.3472739	29	1	81 days	0.50	M-v	4	Williams		1999 AB_{24}
1999 AN_{24}	13.9	0.15	19990122	51.34796	299.69069	148.89527	2.41252	0.0693926	2.9502677	44	3	1996–1999	0.46	M-v	3	Williams	34315	1999 AN_{24}
1999 AA_{25}	15.1	0.15	19990122	358.78121	6.77728	151.88335	5.74315	0.0727183	2.2029292	55	2	1989–1999	0.73	M-v	4	Williams	34316	1999 AA_{25}
1999 AF_{25}	14.1	0.15	19990122	225.53127	315.75738	356.26985	4.97623	0.1986916	2.2522002	44	5	1973–1999	0.69	M-v	2	Williams	34316	1999 AF_{25}
1999 AN_{25}	15.7	0.15	19990122	69.66982	70.78148	331.48597	18.71007	0.1070436	1.9413075	31	1	85 days	0.64	M-v	4	Williams		1999 AN_{25}
1999 AQ_{25}	14.0	0.15	19990122	26.37617	331.02615	138.76949	2.25926	0.1661756	3.1729279	31	1	39 days	0.55			Williams		1999 AQ_{25}
1999 AR_{25}	15.1	0.15	19990122	265.17284	287.69351	335.78005	1.57309	0.2149570	2.3450394	40	3	1992–1999	0.62	M-v	4	Williams	34316	1999 AR_{25}
1999 AE_{28}	14.7	0.15	19990122	233.98608	138.22915	130.22665	7.09666	0.1368031	2.3770411	28	4	1986–1999	0.92	M-v	2	Williams	34230	1999 AE_{28}
1999 AT_{31}	13.9	0.15	19990122	215.49102	288.20423	356.71259	1.82300	0.0156774	2.9092376	41	5	1982–1999	0.48	M-v	2	Williams	34230	1999 AT_{31}
1999 AR_{34}	14.7	0.15	19990122	319.70784	24.20535	169.17343	2.20694	0.1599674	2.3022548	43	3	1978–1999	0.56	M-v	4	Williams	34316	1999 AR_{34}
1999 BN	13.8	0.15	19990122	345.68043	138.98075	5.25513	23.65304	0.1939824	2.7112787	57	1	94 days	0.43	M-v	3	Marsden		1999 BN
1999 BZ	13.4	0.15	19990122	3.12105	85.96387	73.26096	22.91908	0.0408526	2.6335037	22	3	1980–1999	0.50	M-v	3	Williams	34316	1999 BZ
1999 BN_{1}	14.1	0.15	19990102	167.95166	165.35953	139.40864	6.86614	0.0920226	2.3684965	9	1	5 days	0.79			Williams		1999 BN_{1}
1999 BW_{1}	13.5	0.15	19990122	310.92620	33.25779	162.20541	7.25863	0.0115268	2.7202176	43	2	1990–1999	0.53	M-v	4	Williams	34316	1999 BW_{1}
1999 BB_{2}	13.5	0.15	19990122	16.24675	116.76461	334.96922	12.15102	0.2687175	2.6499861	56	1	171 days	0.56	M-v	3	Williams	34316	1999 BB_{2}
1999 BC_{2}	14.7	0.15	19990122	187.90549	325.04680	336.89605	17.49769	0.0599423	1.9576313	35	1	101 days	0.65	M-v	4	Nakano		1999 BC_{2}
1999 BO_{3}	13.1	0.15	19990122	11.66476	50.03788	64.56851	19.22217	0.2258887	3.1063629	62	2	1992–1999	0.71	M-v	3	Williams	34316	1999 BO_{3}
1999 BR_{3}	13.5	0.15	19990122	36.86039	127.58835	309.60622	11.70429	0.1984606	2.4247122	34	2	1975–1999	0.55	M-v	4	Williams	34230	1999 BR_{3}
1999 BC_{4}	12.8	0.15	19990122	276.88341	88.28299	128.10861	11.25663	0.0378436	3.0696524	50	4	1987–1999	0.59	M-v	2	Williams	34316	1999 BC_{4}
1999 BR_{4}	15.8	0.15	19990122	24.10058	328.14515	145.53139	0.48880	0.1084898	2.6035049	21	1	86 days	0.30	M-v	4	Williams		1999 BR_{4}
1999 BX_{4}	13.7	0.15	19990122	80.05951	37.93909	16.93314	1.47584	0.1310154	3.1692979	36	3	1994–1999	0.59	M-v	3	Williams	34231	1999 BX_{4}
1999 BA_{5}	14.8	0.15	19990211	162.71834	299.13253	47.67409	1.27287	0.0893485	2.3675237	29	1	59 days	1.08			Williams		1999 BA_{5}
1999 BE_{5}	14.0	0.15	19990122	295.87319	78.21043	115.16713	12.75894	0.0774522	2.5846547	34	1	140 days	0.59	M-v	4	Williams	34317	1999 BE_{5}
1999 BM_{5}	14.6	0.15	19990102	98.54261	261.42402	104.39749	1.38139	0.2244662	2.3308205	29	1	4 days	0.34			Nakano		1999 BM_{5}
1999 BO_{5}	13.4	0.15	19990122	314.33727	202.44876	327.65549	7.72098	0.0097950	2.4125850	31	2	1986–1999	0.80	M-v	4	Williams	34317	1999 BO_{5}
1999 BP_{5}	14.5	0.15	19990122	19.56673	309.98506	182.08342	4.71566	0.1393043	2.3380037	30	1	81 days	0.63	M-v	5	Williams	34317	1999 BP_{5}
1999 BD_{6}	14.8	0.15	19990122	332.62703	28.17293	164.43710	13.19622	0.0174262	3.0233528	20	1	61 days	0.79	M-v	6	Williams		1999 BD_{6}
1999 BF_{6}	14.7	0.15	19990122	46.04661	321.96952	156.61595	2.82626	0.0053112	2.8654140	15	1	82 days	0.46	M-v	6	Williams	34317	1999 BF_{6}
1999 BG_{6}	14.8	0.15	19990122	343.09075	24.01965	156.55770	11.89455	0.1043818	2.4371439	33	2	1996–1999	0.55	M-v	3	Williams	34231	1999 BG_{6}
1999 BH_{6}	15.5	0.15	19990122	262.68094	113.89135	156.97274	6.96639	0.1086421	2.3021205	20	1	62 days	0.54	M-v	6	Williams		1999 BH_{6}
1999 BO_{6}	16.2	0.15	19990122	279.25278	254.59957	1.38474	3.69484	0.1164072	2.2359148	17	1	76 days	0.49	M-v	6	Williams	34317	1999 BO_{6}
1999 BR_{6}	14.2	0.15	19990122	63.17573	68.61625	41.50335	7.09564	0.0771777	2.8135991	15	1	85 days	0.45	M-v	6	Williams		1999 BR_{6}
1999 BT_{6}	14.9	0.15	19990122	247.81773	221.38659	73.95738	4.69108	0.0492187	2.2576118	35	2	1997–1999	0.72	M-v	4	Williams	34317	1999 BT_{6}
1999 BW_{6}	13.8	0.15	19990122	319.18418	151.29526	74.84395	5.70909	0.0272889	2.7245732	42	1	88 days	0.58	M-v	5	Williams	34317	1999 BW_{6}
1999 BK_{7}	15.8	0.15	19990122	39.54112	113.59960	338.15342	2.72657	0.1199078	2.3347791	51	1	87 days	0.43	M-v	4	Williams		1999 BK_{7}
1999 BQ_{7}	15.0	0.15	19990122	330.15019	235.47996	290.32252	2.54531	0.2607231	2.7363893	9	1	5 days	0.51		E	Williams		1999 BQ_{7}
1999 BS_{7}	15.2	0.15	19990102	257.51858	313.58541	274.48085	4.04838	0.0952852	2.2690125	14	1	18 days	0.67			Williams		1999 BS_{7}
1999 BV_{7}	14.5	0.15	19990122	45.06486	354.66033	59.53241	3.77968	0.2418867	2.8622968	18	1	20 days	0.73			Williams		1999 BV_{7}
1999 BE_{8}	16.4	0.15	19990122	11.86127	320.73837	147.87495	9.81880	0.4748993	2.5328825	116	1	113 days	0.56	M-v	3	Williams	34317	1999 BE_{8}
1999 BH_{8}	15.2	0.15	19990122	335.14312	50.93004	112.92638	3.71146	0.1723439	2.7088497	23	1	81 days	0.82	M-v	6	Williams		1999 BH_{8}
1999 BM_{9}	15.4	0.15	19990122	63.06473	358.86141	45.61882	3.51261	0.1434093	2.2976397	28	1	93 days	0.52	M-v	5	Williams		1999 BM_{9}
1999 BQ_{9}	14.7	0.15	19990122	348.44449	85.47530	63.80388	20.88360	0.3326858	2.4076012	38	1	146 days	0.67	M-v	3	Marsden	34043	1999 BQ_{9}
1999 BY_{9}	17.4	0.15	19990122	322.55581	286.89944	254.84670	0.94215	0.3024226	1.8299812	46	1	73 days	0.61	M-v	5	Williams	34317	1999 BY_{9}
1999 BH_{10}	13.6	0.15	19990122	199.04724	147.21442	154.49736	4.01634	0.1189801	2.8012188	29	4	1987–1999	0.73	M-v	2	Williams	34317	1999 BH_{10}

1999 BC_{11}	14.2	0.15	19990122	256.85607	291.88247	325.56950	7.56469	0.0961580	2.3138573	33	3	1985–1999	0.58	M-v	2	Williams	34231	1999 BC_{11}
1999 BG_{11}	14.5	0.15	19990122	92.95874	38.75463	3.14923	1.45929	0.1107862	2.8536417	29	3	1980–1999	0.62	M-v	3	Williams	34231	1999 BG_{11}
1999 BK_{12}	13.8	0.15	19990122	63.85468	304.80027	105.46478	14.96296	0.2052437	2.8619027	29	1	72 days	0.57	M-v	5	Williams		1999 BK_{12}
1999 BN_{12}	12.9	0.15	19990122	25.77898	49.40525	35.72966	6.26818	0.1802646	2.5284289	36	1	173 days	0.57	M-v	4	Williams	34317	1999 BN_{12}
1999 BT_{12}	13.4	0.15	19990122	90.22206	152.94432	238.30175	4.35986	0.1606382	3.1266045	44	5	1975–1999	0.77	M-v	2	Williams	34044	1999 BT_{12}
1999 BK_{13}	13.0	0.15	19990122	92.85873	249.61131	165.78270	15.73493	0.1298123	3.1921543	33	3	1979–1999	0.56	M-v	3	Williams	34231	1999 BK_{13}
1999 BL_{13}	14.0	0.15	19990122	95.08920	249.21839	163.49060	14.55957	0.1045615	2.6006695	24	1	83 days	0.68	M-v	4	Williams		1999 BL_{13}
1999 BN_{13}	15.1	0.15	19990122	332.85550	24.37223	166.23368	1.99717	0.1402686	2.3626160	56	4	1992–1999	0.66	M-v	3	Williams	34232	1999 BN_{13}
1999 BO_{13}	13.7	0.15	19990211	294.45373	83.98419	161.27988	11.46057	0.1277925	3.0756292	23	1	57 days	0.73			Williams		1999 BO_{13}
1999 BP_{13}	13.2	0.15	19990122	21.64074	141.53954	338.78842	6.65227	0.2359007	2.6882910	36	1	71 days	0.42	M-v	4	Williams		1999 BP_{13}
1999 BQ_{13}	14.8	0.15	19990122	61.69168	112.10552	331.88609	5.37387	0.0846068	2.1964390	32	1	69 days	0.60	M-v	5	Williams	34318	1999 BQ_{13}
1999 BA_{14}	14.9	0.15	19990122	350.06084	133.68581	52.39695	4.73103	0.1123397	2.2839970	41	2	1992–1999	0.70	M-v	4	Williams	34232	1999 BA_{14}
1999 BB_{14}	14.4	0.15	19990122	325.83176	218.12780	12.04914	16.02337	0.2434873	2.6585654	35	1	88 days	0.55	M-v	4	Williams		1999 BB_{14}
1999 BH_{14}	14.8	0.15	19990122	19.29741	99.29011	50.98524	4.75261	0.1039513	2.2342500	28	1	83 days	0.55	M-v	6	D Williams		1999 BH_{14}
1999 BQ_{14}	14.7	0.15	19990122	69.94259	240.31616	147.87561	6.56652	0.2211899	2.3271050	32	2	1994–1999	0.51	M-v	4	Williams	33989	1999 BQ_{14}
1999 BR_{14}	14.5	0.15	19990122	304.84965	151.87291	59.04786	6.80727	0.0644511	2.2931756	29	1	79 days	0.44	M-v	4	Williams		1999 BR_{14}
1999 BK_{15}	14.1	0.15	19990122	333.61617	210.58635	341.65416	11.76098	0.1302070	2.6541879	46	3	1996–1999	0.63	M-v	3	Williams	34318	1999 BK_{15}
1999 BM_{15}	14.7	0.15	19990122	40.33290	306.22448	159.82947	13.95928	0.1421268	2.5486734	31	2	1997–1999	0.73	M-v	3	Williams	34232	1999 BM_{15}
1999 BN_{15}	14.7	0.15	19990122	314.33876	60.40062	157.52728	8.93764	0.1666135	2.3258864	36	1	86 days	0.59	M-v	4	Williams	34318	1999 BN_{15}
1999 BO_{15}	13.2	0.15	19990122	154.97422	23.29719	338.38081	8.16684	0.1964386	2.5388792	17	1	73 days	0.46	M-v	6	Williams		1999 BO_{15}
1999 BP_{15}	14.0	0.15	19990122	3.95084	15.32344	107.77585	12.82256	0.1340853	2.6596109	41	1	161 days	0.68	M-v	3	Williams	34318	1999 BP_{15}
1999 BQ_{15}	12.2	0.15	19990122	54.65666	65.57923	0.56865	24.92576	0.1816057	3.2416866	23	2	1985–1999	0.57	M-v	4	Williams	34232	1999 BQ_{15}
1999 BJ_{21}	14.1	0.15	19981213	133.04752	347.59772	331.39145	14.37579	0.1172573	2.5978098	13	1	59 days	0.44			Williams		1999 BJ_{21}
1999 BL_{25}	14.6	0.15	19990122	192.59894	122.97913	169.11858	6.63351	0.1356365	2.4819207	24	5	1980–1999	0.64	M-v	3	Williams	34232	1999 BL_{25}
1999 BM_{25}	14.4	0.15	19990122	3.67697	315.52542	162.30550	8.28604	0.1412616	2.4385559	32	2	1997–1999	0.51	M-v	3	Williams	33990	1999 BM_{25}
1999 BP_{25}	13.7	0.15	19990122	183.43999	134.70353	165.25543	3.65569	0.0815889	2.6658854	16	3	1982–1999	0.76	M-v	5	Williams	34232	1999 BP_{25}
1999 BY_{25}	12.5	0.15	19990122	144.10719	7.54432	333.03170	15.91088	0.0608370	3.1412719	29	3	1977–1999	0.70	M-v	3	Marsden	34318	1999 BY_{25}
1999 BN_{33}	16.5	0.15	19990122	290.92275	119.43291	116.03517	39.99545	0.2188915	1.8254461	13	1	75 days	0.68	M-v	5	Williams		1999 BN_{33}
1999 CA	13.0	0.15	19990122	343.43976	82.23028	52.39709	2.78716	0.0442617	2.9440830	38	3	1992–1999	0.76	M-v	3	Williams	34233	1999 CA
1999 CC	15.0	0.15	19990122	49.15634	349.70414	66.51077	5.81230	0.2662617	2.3534770	33	1	94 days	0.49	M-v	5	Williams		1999 CC
1999 CJ	12.8	0.15	19990122	29.84479	91.36731	9.01788	10.53428	0.0859187	2.9799426	31	1	127 days	0.56	M-v	4	Williams	34318	1999 CJ
1999 CM	14.2	0.15	19990122	314.69497	109.83228	94.04967	16.56625	0.2879394	2.7995970	35	1	63 days	0.46	M-v	6	Nakano		1999 CM
1999 CP	14.1	0.15	19990122	306.40169	95.50809	135.89292	23.30449	0.3491140	2.5553569	42	1	85 days	0.62	M-v	4	Williams	34318	1999 CP
1999 CA_1	15.2	0.15	19990122	301.81988	123.38169	92.25892	9.99515	0.2036822	2.4178588	25	1	60 days	0.58	M-v	5	Williams		1999 CA_1
1999 CD_1	14.2	0.15	19990122	357.22047	136.59438	298.76053	11.21112	0.1564540	2.3664313	23	1	90 days	0.40	M-v	4	Williams		1999 CD_1
1999 CL_1	15.8	0.15	19990122	9.29944	127.72440	7.98952	5.79851	0.1400746	2.3190259	20	1	61 days	0.47	M-v	5	Nakano		1999 CL_1
1999 CT_1	14.6	0.15	19990211	20.40532	126.11985	355.40746	15.79743	0.1494881	3.1618341	35	1	44 days	0.71			Williams		1999 CT_1
1999 CU_1	14.3	0.15	19990122	37.81641	53.63749	36.51994	5.42430	0.1890641	2.6294153	44	2	1993–1999	0.63	M-v	4	Williams	34233	1999 CU_1
1999 CW_1	13.8	0.15	19990122	92.05424	43.45925	356.20220	14.96182	0.1138423	2.5506405	29	2	1993–1999	0.62	M-v	5	Williams	34318	1999 CW_1
1999 CX_1	13.0	0.15	19990122	125.36535	245.72175	120.96990	16.08347	0.1913170	2.5717433	26	1	111 days	0.49	M-v	4	Williams		1999 CX_1
1999 CZ_1	15.1	0.15	19990122	347.72578	177.04836	320.12910	17.02648	0.0854032	1.9529184	51	1	133 days	0.74	M-v	4	Williams	34318	1999 CZ_1
1999 CC_2	13.7	0.15	19990211	25.05278	63.98650	65.46954	4.64649	0.0435354	2.7854809	35	1	42 days	0.72			Williams		1999 CC_2
1999 CF_2	16.2	0.15	19990122	14.19917	71.76825	39.07257	6.41395	0.1574758	2.3107592	25	1	70 days	0.66	M-v	5	Williams		1999 CF_2
1999 CY_2	15.0	0.15	19990122	64.12869	116.16227	296.15496	1.46140	0.1960921	2.3886897	46	1	71 days	0.65	M-v	6	Williams		1999 CY_2
1999 CA_3	13.9	0.15	19990122	60.45355	335.58427	103.29844	7.15967	0.0717800	2.4284949	52	3	1982–1999	0.61	M-v	1	Williams	34319	1999 CA_3
1999 CE_3	16.0	0.15	19990122	346.15841	203.43651	312.81865	7.82554	0.2145460	2.7792090	29	1	68 days	0.57	M-v	5	Williams		1999 CE_3
1999 CH_3	15.2	0.15	19990122	18.33605	31.87657	66.21537	8.50909	0.3552317	2.6950273	37	1	66 days	0.65	M-v	5	Nakano		1999 CH_3
1999 CL_3	12.5	0.15	19990122	74.17493	310.82238	112.36423	10.99771	0.0601751	3.0408706	31	1	111 days	0.58	M-v	5	Williams		1999 CL_3
1999 CP_3	14.6	0.15	19990122	316.02658	189.23706	0.21193	23.94763	0.2050950	2.3024422	29	1	86 days	0.72	M-v	4	Williams		1999 CP_3
1999 CU_3	16.6	0.15	19990122	256.82807	305.46497	339.28318	11.39999	0.5241161	1.5765193	60	1	58 days	0.56	M-v	5	Williams	34319	1999 CU_3
1999 CV_3	15.0	0.15	19990122	299.64488	96.16604	141.45265	22.85758	0.3938882	1.4595023	529	2	1992–1999	0.45	M-v	2	Williams	34233	1999 CV_3
1999 CX_3	17.1	0.15	19990122	277.24005	79.45563	156.12544	23.78286	0.1043464	1.9067787	30	1	65 days	0.87	M-v	5	Williams		1999 CX_3
1999 CE_4	15.3	0.15	19990122	225.77513	154.22271	135.13366	2.55311	0.0193878	2.8898711	20	1	63 days	0.40	M-v	5	Williams		1999 CE_4

1999 CG_4	14.8	0.15	19990122	12.62948	148.44173	342.65980	5.52872	0.1184777	2.3372102	48	1	117 days	0.64	M-v	4	Williams		1999 CG_4
1999 CH_4	17.3	0.15	19990122	0.54553	158.60559	346.38425	3.57969	0.2270587	2.5653920	15	1	65 days	0.46	M-v	5	Williams		1999 CH_4
1999 CW_4	14.8	0.15	19990122	347.17947	330.26456	202.75454	0.67175	0.1576303	2.4207981	40	3	1993–1999	0.69	M-v	3	Williams	34235	1999 CW_4
1999 CC_5	12.5	0.15	19990122	204.62980	180.33908	109.00209	15.98490	0.1738543	2.5797700	34	1	87 days	0.55	M-v	5	Nakano		1999 CC_5
1999 CH_5	13.5	0.15	19990122	36.43946	99.88001	331.69944	8.24909	0.2026253	2.7962768	36	1	195 days	0.52	M-v	4	Williams		1999 CH_5
1999 CJ_5	12.9	0.15	19990323	91.17698	45.68170	19.31075	10.66356	0.1080332	2.9732187	25	1	55 days	0.62			Nakano		1999 CJ_5
1999 CK_5	14.3	0.15	19990122	230.97057	273.16335	11.84277	12.69535	0.2028277	2.4462267	15	1	61 days	0.43	M-v	5	Nakano		1999 CK_5
1999 CL_5	13.5	0.15	19990122	132.21674	18.88385	359.56398	14.03902	0.0826302	2.5946196	35	4	1976–1999	0.64	M-v	2	Williams	34319	1999 CL_5
1999 CO_5	14.3	0.15	19990122	359.61921	103.68648	23.15114	11.60970	0.2096424	2.6470364	34	1	74 days	0.54	M-v	4	Nakano		1999 CO_5
1999 CP_5	13.8	0.15	19990122	164.64676	339.18760	11.61013	9.43297	0.1299510	2.5920997	52	2	1984–1999	0.58	M-v	4	Williams	34235	1999 CP_5
1999 CQ_5	14.3	0.15	19990303	45.55057	86.76441	21.93736	6.63280	0.1211628	2.4221287	48	1	55 days	0.84			Williams		1999 CQ_5
1999 CR_5	14.1	0.15	19990323	37.80532	109.83505	15.20903	9.36035	0.0966222	2.6753301	25	1	55 days	0.56			Nakano		1999 CR_5
1999 CS_5	12.8	0.15	19990323	126.11263	299.56326	94.93190	6.31929	0.1112455	2.4169366	15	1	55 days	0.58			Nakano		1999 CS_5
1999 CT_5	14.0	0.15	19990122	119.49518	271.41493	116.65131	5.75133	0.1157037	2.5216455	30	1	64 days	0.72	M-v	5	Williams		1999 CT_5
1999 CU_5	14.0	0.15	19990122	354.75433	16.81487	143.67563	15.63273	0.1368353	2.5522990	21	1	75 days	0.43	M-v	4	Williams		1999 CU_5
1999 CV_5	12.6	0.15	19990122	122.79005	20.21596	3.65781	15.23078	0.1176948	2.5609880	57	2	1991–1999	0.89	M-v	5	Williams	34236	1999 CV_5
1999 CW_5	13.1	0.15	19990323	47.03325	52.62505	53.57529	5.72112	0.1835878	2.5475440	12	1	55 days	0.38			Nakano		1999 CW_5
1999 CN_7	14.3	0.15	19990122	21.59894	323.15600	146.78702	30.04249	0.1815601	2.6556750	23	1	39 days	0.70			Williams		1999 CN_7
1999 CW_7	16.5	0.15	19990122	11.54144	125.02906	345.04730	14.60087	0.2870324	1.8258132	64	1	64 days	0.55	M-v	4	Marsden	34319	1999 CW_7
1999 CH_8	12.5	0.15	19990323	308.44253	132.02311	101.04302	12.58492	0.1359473	2.6311867	23	1	55 days	0.56			Nakano		1999 CH_8
1999 CJ_8	13.2	0.15	19990303	261.13327	139.96482	132.77009	10.01271	0.0570379	2.9900133	26	1	54 days	0.64			Williams		1999 CJ_8
1999 CK_8	14.8	0.15	19990303	6.84880	94.60202	64.29283	2.74695	0.1301987	2.8748721	32	1	54 days	0.95			Williams		1999 CK_8
1999 CL_8	15.2	0.15	19990303	353.84154	29.30983	147.10218	14.53652	0.1880274	2.6575407	29	1	56 days	0.54			Williams		1999 CL_8
1999 CM_8	12.0	0.15	19990122	142.83535	326.77900	38.45445	16.01785	0.1552445	2.5365751	32	4	1954–1999	0.59	M-v	2	Williams	34236	1999 CM_8
1999 CN_8	13.5	0.15	19990122	42.05398	6.93003	99.91636	15.22968	0.1082058	2.5909897	36	3	1982–1999	0.70	M-v	2	Williams	34236	1999 CN_8
1999 CP_8	15.2	0.15	19990122	271.81085	321.12517	267.03327	2.05961	0.0540436	2.2110434	29	1	26 days	0.88			Williams		1999 CP_8
1999 CY_8	15.2	0.15	19990303	95.46649	43.23739	15.84493	8.09723	0.1459472	2.4655529	14	1	56 days	0.32			Marsden		1999 CY_8
1999 CZ_8	15.2	0.15	19990122	308.05650	89.38867	98.30279	6.27685	0.1204209	2.2141303	41	1	83 days	0.59	M-v	5	Williams		1999 CZ_8
1999 CC_9	15.0	0.15	19990122	227.84981	98.16597	208.83455	12.97303	0.1804016	2.5772745	15	1	67 days	0.50	M-v	5	Williams		1999 CC_9
1999 CL_9	14.5	0.15	19990122	327.90615	170.72910	10.88777	11.63537	0.1532608	2.6619416	30	1	63 days	0.61	M-v	5	Nakano		1999 CL_9
1999 CN_9	15.3	0.15	19990323	60.01838	64.93449	20.07861	9.45743	0.2329357	2.3848386	23	1	53 days	0.76			Nakano		1999 CN_9
1999 CO_9	13.4	0.15	19990323	75.96540	38.83729	48.94242	7.50449	0.0686838	2.3024841	13	1	53 days	0.66			Nakano		1999 CO_9
1999 CP_9	13.9	0.15	19990303	39.08658	83.57890	15.10382	14.22930	0.2897211	3.1329464	22	1	53 days	0.57			Williams		1999 CP_9
1999 CQ_9	13.8	0.15	19990323	0.52532	74.37264	97.95288	8.28125	0.1991548	2.5822622	13	1	54 days	0.30			Nakano		1999 CQ_9
1999 CR_9	14.7	0.15	19990122	260.21385	296.36988	328.69782	7.15885	0.1340096	2.2782443	25	1	62 days	0.55	M-v	5	Williams		1999 CR_9
1999 CV_9	15.0	0.15	19990122	280.99219	296.54270	329.04166	14.82554	0.2147882	2.5559074	27	1	67 days	0.61	M-v	5	Williams		1999 CV_9
1999 CX_9	13.1	0.15	19990122	335.36250	41.85088	143.95845	11.24409	0.0388074	2.9910354	51	1	122 days	0.43	M-v	3	Williams		1999 CX_9
1999 CA_{10}	16.0	0.15	19990122	2.19536	36.48784	123.19219	3.01817	0.1436513	2.3781956	28	1	61 days	0.41	M-v	5	Williams		1999 CA_{10}
1999 CC_{10}	14.0	0.15	19990122	355.19851	34.31448	134.33718	9.62106	0.1508074	2.2878998	62	4	1978–1999	0.75	M-v	3	Williams	34237	1999 CC_{10}
1999 CD_{10}	13.3	0.15	19990122	13.67794	51.45719	113.31399	10.71681	0.0636432	2.7625955	17	1	60 days	0.51	M-v	5	Williams		1999 CD_{10}
1999 CG_{10}	13.7	0.15	19990303	314.70831	187.40841	37.01274	7.04249	0.0827947	2.6138463	23	1	52 days	0.52			Williams		1999 CG_{10}
1999 CH_{10}	13.9	0.15	19990122	74.23778	340.91387	87.95942	4.16568	0.1671811	2.4497237	31	2	1964–1999	0.62	M-v	5	Williams	34237	1999 CH_{10}
1999 CJ_{10}	13.5	0.15	19990303	257.84045	274.52497	11.85490	14.62923	0.1149958	2.5684260	21	1	52 days	0.60			Williams		1999 CJ_{10}
1999 CN_{10}	14.4	0.15	19990122	41.52251	313.43729	136.25674	1.04593	0.1447932	3.0916583	64	2	1997–1999	0.57	M-v	3	Williams	34237	1999 CN_{10}
1999 CY_{11}	16.1	0.15	19990122	29.76169	144.79108	319.69582	19.61115	0.0875273	1.9134322	22	1	67 days	0.50	M-v	4	Williams		1999 CY_{11}
1999 CD_{12}	14.2	0.15	19990122	11.48388	331.46091	156.55272	13.52207	0.1206060	2.3580330	31	1	119 days	0.55	M-v	4	Williams		1999 CD_{12}
1999 CJ_{12}	15.5	0.15	19990303	96.17486	254.34506	160.31806	22.88492	0.1206962	1.9180502	22	1	39 days	0.52			Williams		1999 CJ_{12}
1999 CE_{14}	15.0	0.15	19990122	30.50479	257.22456	211.09494	5.07748	0.0766078	2.2211097	34	3	1989–1999	0.64	M-v	3	Marsden	34320	1999 CE_{14}
1999 CF_{14}	14.5	0.15	19990303	329.38591	50.76509	175.79007	18.94194	0.2041789	2.5827556	37	1	58 days	0.81			Marsden		1999 CF_{14}
1999 CG_{14}	12.8	0.15	19990122	266.39755	104.88954	177.31979	10.14856	0.0907844	3.0229761	58	4	1979–1999	0.72	M-v	2	Williams	34237	1999 CG_{14}
1999 CH_{14}	14.1	0.15	19990122	78.80241	76.63957	356.78530	5.10104	0.1654580	2.2893183	36	2	1987–1999	0.73	M-v	4	Williams	34237	1999 CH_{14}
1999 CJ_{14}	13.1	0.15	19990122	327.06852	37.47367	180.15645	17.60434	0.1555664	2.8996217	42	1	62 days	0.60	M-v	4	Williams		1999 CJ_{14}
1999 CQ_{14}	13.6	0.15	19990211	21.69963	321.87769	164.11490	13.41530	0.1136723	2.5912217	25	1	36 days	0.61			Williams		1999 CQ_{14}

1999 CR_{14}	13.8	0.15	19990303	220.40112	343.40789	325.92400	13.06183	0.1671739	2.6896321	18	1	35 days	1.14			Williams		1999 CR_{14}
1999 CT_{14}	14.1	0.15	19990122	24.49483	322.34178	165.88730	13.23725	0.1141937	2.4211518	37	1	105 days	0.65	M-v	4	Williams		1999 CT_{14}
1999 CV_{14}	13.3	0.15	19990122	36.68111	304.08283	170.75399	15.87793	0.1675557	3.1536242	29	2	1971–1999	0.82	M-v	4	Williams	34238	1999 CV_{14}
1999 CW_{14}	15.3	0.15	19990303	331.88823	38.62807	171.85905	2.59554	0.1638133	2.4167385	28	1	50 days	0.72			Williams		1999 CW_{14}
1999 CY_{14}	14.1	0.15	19990122	337.22285	41.47542	146.55359	3.75818	0.0626208	2.7722860	25	3	1996–1999	0.58	M-v	4	Williams	34238	1999 CY_{14}
1999 CZ_{15}	14.6	0.15	19990122	311.05305	111.15782	111.10231	21.70262	0.2684090	2.3018378	27	1	85 days	0.63	M-v	4	Williams		1999 CZ_{15}
1999 CA_{16}	15.4	0.15	19990211	48.44727	336.39357	110.91392	25.21427	0.1797658	2.3348297	15	1	33 days	0.98			Williams		1999 CA_{16}
1999 CM_{16}	14.2	0.15	19990122	270.02128	74.91997	166.45856	5.62722	0.0605405	2.5519393	27	1	124 days	0.64	M-v	4	Williams	34321	1999 CM_{16}
1999 CB_{17}	13.0	0.15	19990122	131.52899	221.34188	112.64877	14.38477	0.1902577	2.6729311	21	1	88 days	0.62	M-v	5	Williams		1999 CB_{17}
1999 CG_{17}	12.7	0.15	19990122	284.48751	87.37833	116.04824	11.46861	0.0486775	3.0162950	33	3	1995–1999	0.54	M-v	3	Williams	34238	1999 CG_{17}
1999 CD_{18}	12.8	0.15	19990122	352.73374	98.48619	32.32470	11.01163	0.1187768	3.2213210	22	1	186 days	0.54	M-v	4	Williams	34321	1999 CD_{18}
1999 CH_{18}	14.2	0.15	19990122	359.47779	138.97913	344.07850	13.81783	0.0758672	2.3841153	20	1	90 days	0.59	M-v	4	Williams		1999 CH_{18}
1999 CG_{19}	14.7	0.15	19990122	270.81333	277.66969	315.54626	2.30306	0.1702875	2.4183334	38	4	1988–1999	0.71	M-v	2	Williams	34238	1999 CG_{19}
1999 CV_{19}	14.4	0.15	19990122	119.70618	32.07486	321.38712	7.83506	0.1779095	2.2542007	27	1	68 days	0.53	M-v	5	Williams		1999 CV_{19}
1999 CU_{20}	14.4	0.15	19990122	188.84403	335.94028	325.31719	14.05549	0.1174069	2.5995541	24	1	35 days	0.77			Williams		1999 CU_{20}
1999 CB_{21}	13.8	0.15	19990122	350.61049	48.50425	93.08281	2.65151	0.1020110	3.1314463	26	2	1997–1999	0.38	M-v	4	Williams	34239	1999 CB_{21}
1999 CD_{21}	14.7	0.15	19990122	56.64503	79.91307	337.61640	1.99120	0.1374918	2.5152126	25	1	114 days	0.71	M-v	5	Williams		1999 CD_{21}
1999 CO_{24}	13.6	0.15	19990122	288.70784	131.16628	82.29487	7.25667	0.1080470	2.7132570	22	2	1995–1999	0.74	M-v	5	Williams	34240	1999 CO_{24}
1999 CE_{25}	15.9	0.15	19990122	349.82499	67.88783	76.55660	5.08237	0.1711625	2.4179368	20	1	32 days	0.82			Williams		1999 CE_{25}
1999 CU_{25}	13.7	0.15	19990122	87.29407	313.50898	85.02402	3.11454	0.0725947	2.8812966	30	3	1987–1999	0.48	M-v	3	Williams	34240	1999 CU_{25}
1999 CN_{27}	14.7	0.15	19990122	104.92682	350.65652	21.96910	6.99691	0.1275372	2.3079089	20	2	1994–1999	0.64	M-v	5	Williams	34240	1999 CN_{27}
1999 CE_{28}	12.3	0.15	19990122	170.66143	223.92059	97.03127	12.90475	0.1990952	2.6768951	18	1	87 days	0.63	M-v	5	Williams		1999 CE_{28}
1999 CU_{28}	14.5	0.15	19990122	13.59354	137.84336	333.98718	8.16616	0.2365166	2.7117327	27	1	123 days	0.57	M-v	4	Williams		1999 CU_{28}
1999 CM_{32}	15.3	0.15	19990122	255.60929	240.85701	17.07741	5.60673	0.1745416	2.2646361	27	3	1996–1999	0.56	M-v	3	Williams	34241	1999 CM_{32}
1999 CH_{37}	14.3	0.15	19990122	29.54042	324.92667	134.07940	14.44499	0.1677579	2.7397098	24	1	115 days	0.67	M-v	4	Williams		1999 CH_{37}
1999 CG_{38}	16.7	0.15	19990122	356.28948	185.80932	317.69321	1.72377	0.1534136	2.4254432	25	1	64 days	0.56	M-v	4	Williams		1999 CG_{38}
1999 CA_{39}	14.0	0.15	19990122	49.52807	22.03198	69.71617	2.98622	0.0240206	2.8667631	22	1	95 days	0.43	M-v	5	Williams		1999 CA_{39}
1999 CH_{40}	14.8	0.15	19990122	349.94684	37.48844	112.88073	13.87069	0.1169780	2.5730627	28	1	87 days	0.65	M-v	4	Williams		1999 CH_{40}
1999 CM_{40}	15.9	0.15	19990122	3.17354	84.04599	47.16571	6.44724	0.1293663	2.2191782	22	1	54 days	0.40			Williams		1999 CM_{40}
1999 CV_{40}	13.1	0.15	19990122	353.75843	103.96413	42.47072	10.87083	0.0533351	2.9903511	16	1	57 days	0.49			Williams		1999 CV_{40}
1999 CL_{42}	16.5	0.15	19990122	297.44546	239.63838	341.52050	7.32265	0.1542055	2.3882018	23	1	64 days	0.52	M-v	5	Williams		1999 CL_{42}
1999 CT_{42}	14.8	0.15	19990122	185.55520	307.97091	12.23577	1.87469	0.0682244	2.8861210	29	3	1984–1999	0.87	M-v	4	Williams	34243	1999 CT_{42}
1999 CO_{45}	14.1	0.15	19990122	126.01320	8.08533	3.21327	3.53987	0.0832326	2.4187604	34	3	1977–1999	0.60	M-v	4	Williams	34244	1999 CO_{45}
1999 CT_{45}	15.3	0.15	19990122	32.79647	82.03085	19.97518	2.61317	0.1108656	2.4155411	18	1	85 days	0.46	M-v	6	Williams		1999 CT_{45}
1999 CD_{46}	16.7	0.15	19990122	17.16496	98.32436	18.70688	0.51010	0.1525606	2.2988118	26	1	83 days	0.62	M-v	4	Williams		1999 CD_{46}
1999 CK_{46}	13.2	0.15	19990122	291.37073	258.55509	338.44959	7.61647	0.1832055	3.1297750	28	2	1977–1999	0.55	M-v	4	Williams	34244	1999 CK_{46}
1999 CL_{46}	14.2	0.15	19990122	149.81072	15.39036	338.45012	7.14466	0.0716141	2.7366975	34	4	1988–1999	0.65	M-v	1	Williams	34244	1999 CL_{46}
1999 CU_{46}	13.3	0.15	19990122	119.34549	30.10289	352.91665	6.32468	0.0630151	3.0851767	25	2	1991–1999	0.68	M-v	4	Williams	34244	1999 CU_{46}
1999 CX_{46}	14.1	0.15	19990122	237.95171	299.17838	343.95862	12.64047	0.1404179	3.0108936	14	2	1990–1999	0.68	M-v	4	Williams	34244	1999 CX_{46}
1999 CB_{47}	14.2	0.15	19990122	335.61574	88.67006	84.02096	3.45865	0.0290398	2.8560928	23	3	1994–1999	0.61	M-v	5	Williams	34244	1999 CB_{47}
1999 CK_{47}	13.5	0.15	19990303	271.72654	187.24793	73.96016	1.95382	0.1460573	3.1332474	27	1	41 days	1.04			Williams		1999 CK_{47}
1999 CN_{47}	15.2	0.15	19990122	30.59019	120.83087	343.15159	4.22010	0.1230577	2.2788785	49	3	1989–1999	0.74	M-v	3	Williams	34245	1999 CN_{47}
1999 CJ_{48}	15.2	0.15	19990303	325.15141	96.41365	113.09291	2.88255	0.2088410	2.3913186	19	1	41 days	0.60			Williams		1999 CJ_{48}
1999 CL_{48}	15.6	0.15	19990303	44.06696	53.23488	57.32688	2.12272	0.0310610	2.3278591	20	1	41 days	0.86			Williams		1999 CL_{48}
1999 CQ_{48}	15.4	0.15	19990122	280.02986	231.80929	4.97130	4.63454	0.1073869	2.1527935	27	1	69 days	0.72	M-v	5	Williams		1999 CQ_{48}
1999 CR_{48}	14.9	0.15	19990211	317.53292	119.56897	87.86392	3.18523	0.1553189	2.3578932	22	1	38 days	0.63			Williams		1999 CR_{48}
1999 CU_{48}	15.3	0.15	19990303	18.41167	53.34267	77.61634	3.32340	0.1699468	2.6020075	21	1	41 days	0.77			Williams		1999 CU_{48}
1999 CV_{48}	14.4	0.15	19990122	264.56397	248.69218	6.85533	5.35894	0.1366126	2.2037678	50	3	1996–1999	0.68	M-v	3	Williams	34245	1999 CV_{48}
1999 CB_{50}	13.9	0.15	19990122	278.01446	190.59235	41.32803	4.67373	0.0196430	2.7240464	33	2	1997–1999	0.70	M-v	4	Williams	34245	1999 CB_{50}
1999 CF_{50}	15.0	0.15	19990211	65.57639	80.38422	356.16452	9.22942	0.0979218	2.5240531	20	1	38 days	0.84			Williams		1999 CF_{50}
1999 CG_{50}	15.7	0.15	19990211	352.68889	166.46431	353.67189	6.21680	0.0932954	2.3224696	21	1	38 days	0.64			Williams		1999 CG_{50}
1999 CH_{50}	14.4	0.15	19990122	260.25261	270.72634	1.88009	4.96565	0.2382607	2.2998259	27	2	1992–1999	0.59	M-v	4	Williams	34246	1999 CH_{50}
1999 CN_{50}	14.3	0.15	19990122	67.45746	271.08235	149.63403	14.46725	0.1760266	2.5713747	25	1	64 days	0.58	M-v	5	Williams		1999 CN_{50}

1999 CU_{50}	14.6	0.15	19990122	61.53421	275.52637	150.87593	2.75843	0.1742545	2.4328122	25	1	67 days	0.60	M-v	6	Williams		1999 CU_{50}
1999 CV_{50}	14.4	0.15	19990122	132.31230	216.75478	146.20880	4.80366	0.1806291	2.1643429	35	6	1962–1999	0.66	M-v	2	Williams	34246	1999 CV_{50}
1999 CD_{51}	13.9	0.15	19990122	28.54166	353.75120	120.42457	3.12481	0.0890207	2.5903325	32	3	1991–1999	0.57	M-v	3	Williams	34246	1999 CD_{51}
1999 CK_{51}	14.4	0.15	19990303	316.23040	248.18696	352.10761	9.26563	0.3549470	3.0237466	18	1	41 days	0.72			Williams		1999 CK_{51}
1999 CQ_{51}	13.9	0.15	19990303	323.24090	215.73350	349.70406	13.52845	0.1282569	2.6919529	29	1	42 days	0.76			Williams		1999 CQ_{51}
1999 CR_{51}	13.6	0.15	19990303	335.18355	52.39582	134.06628	11.20811	0.0327398	2.9734945	26	1	41 days	0.69			Williams		1999 CR_{51}
1999 CS_{51}	14.6	0.15	19990303	38.54172	111.47898	4.39842	6.79815	0.0656317	2.4011023	19	1	41 days	0.70			Williams		1999 CS_{51}
1999 CA_{52}	14.2	0.15	19990211	318.77487	153.82561	51.00352	5.87437	0.1502104	2.6120974	24	1	38 days	0.56			Williams		1999 CA_{52}
1999 CL_{53}	13.6	0.15	19990303	228.88581	223.39907	84.78710	5.77923	0.2491831	2.5742687	20	1	41 days	0.66			Williams		1999 CL_{53}
1999 CM_{53}	14.5	0.15	19990303	288.55991	114.04763	122.06915	8.15330	0.0437234	2.7573433	20	1	41 days	0.75			Williams		1999 CM_{53}
1999 CN_{53}	14.9	0.15	19990303	69.79830	319.00014	120.16630	6.83741	0.0976249	2.4076944	21	1	41 days	0.66			Williams		1999 CN_{53}
1999 CP_{53}	15.0	0.15	19990303	59.63385	359.26713	82.59481	2.97505	0.1687057	2.2642019	22	1	41 days	0.66			Williams		1999 CP_{53}
1999 CC_{54}	14.1	0.15	19990303	268.42565	276.02967	343.13932	9.85507	0.0659977	3.0404689	21	1	41 days	0.62			Williams		1999 CC_{54}
1999 CH_{54}	16.0	0.15	19990303	268.75835	296.16663	331.97500	4.03173	0.1514864	2.2608264	21	1	41 days	0.97			Williams		1999 CH_{54}
1999 CO_{54}	13.3	0.15	19990122	146.59533	213.53016	147.98025	9.79209	0.1063907	2.9811655	24	2	1991–1999	0.76	M-v	4	Williams	34246	1999 CO_{54}
1999 CQ_{54}	15.4	0.15	19990303	53.66633	100.98577	353.02161	3.64520	0.1302869	2.4580250	23	1	41 days	0.82			Williams		1999 CQ_{54}
1999 CR_{54}	14.3	0.15	19990211	277.28378	141.01909	117.98956	3.20620	0.1822582	2.3776600	20	1	38 days	0.86			Williams		1999 CR_{54}
1999 CT_{54}	13.8	0.15	19990122	313.36674	208.46660	354.34898	6.08235	0.0707126	2.4724611	31	2	1997–1999	0.46	M-v	4	Williams	34247	1999 CT_{54}
1999 CU_{54}	15.0	0.15	19990303	318.45124	171.79632	45.85799	2.81177	0.1716849	2.3813317	19	1	41 days	0.95			Williams		1999 CU_{54}
1999 CX_{54}	12.9	0.15	19990122	136.32144	6.08881	7.35071	9.30775	0.0242635	2.7098828	33	3	1977–1999	0.54	M-v	3	Williams	34247	1999 CX_{54}
1999 CZ_{54}	13.1	0.15	19990303	86.67765	320.47475	103.23965	6.87582	0.0981334	3.4161569	29	1	41 days	0.86			Williams		1999 CZ_{54}
1999 CB_{55}	14.5	0.15	19990122	286.00988	145.92631	93.58379	5.55071	0.1432121	2.4552667	37	2	1997–1999	0.57	M-v	4	Williams	34247	1999 CB_{55}
1999 CJ_{55}	15.5	0.15	19990303	18.76205	71.16182	62.14251	4.99362	0.1638069	2.5775938	18	1	41 days	0.77			Williams		1999 CJ_{55}
1999 CL_{56}	15.6	0.15	19990303	14.50534	116.82282	24.31641	5.52374	0.1746073	2.5292372	17	1	41 days	1.07			Williams		1999 CL_{56}
1999 CQ_{56}	15.1	0.15	19990122	3.45456	23.30256	119.47976	6.71854	0.1963956	2.5614553	28	1	65 days	0.66	M-v	4	Williams	34325	1999 CQ_{56}
1999 CR_{56}	13.3	0.15	19990303	356.89750	24.07903	141.24795	10.98327	0.0484583	2.9775487	20	1	41 days	0.61			Williams		1999 CR_{56}
1999 CT_{56}	13.6	0.15	19990303	158.45605	229.04511	132.82271	8.09771	0.0414502	2.7402015	18	1	41 days	0.72			Williams		1999 CT_{56}
1999 CY_{56}	14.2	0.15	19990303	61.38243	95.51055	346.27827	7.80015	0.1655191	2.6390726	26	1	41 days	0.67			Williams		1999 CY_{56}
1999 CD_{57}	13.6	0.15	19990122	21.99771	113.12832	2.57191	2.08181	0.2327345	3.1029705	38	1	132 days	0.74	M-v	4	Williams		1999 CD_{57}
1999 CE_{57}	14.4	0.15	19990122	255.98467	288.51542	342.97307	5.32155	0.1536812	2.2755870	66	1	63 days	0.58	M-v	5	Williams		1999 CE_{57}
1999 CG_{57}	14.6	0.15	19990303	292.14040	262.10690	334.15886	6.85885	0.0627675	2.2663342	20	1	41 days	0.72			Williams		1999 CG_{57}
1999 CH_{57}	13.6	0.15	19990303	347.77510	13.24689	165.44344	1.44231	0.1322065	3.1287473	19	1	41 days	0.78			Williams		1999 CH_{57}
1999 CL_{57}	14.2	0.15	19990303	62.29671	287.28796	152.58963	8.04778	0.1870573	2.7751165	17	1	41 days	0.89			Williams		1999 CL_{57}
1999 CM_{57}	14.9	0.15	19990303	323.18133	58.34120	149.93749	6.08925	0.1132565	2.6822035	21	1	41 days	0.64			Williams		1999 CM_{57}
1999 CN_{57}	14.0	0.15	19990122	76.00750	316.81050	118.52107	1.39221	0.0119527	2.4971488	39	3	1991–1999	0.65	M-v	4	Williams	34247	1999 CN_{57}
1999 CO_{57}	14.7	0.15	19990211	55.47600	296.31026	149.46784	11.10859	0.1539695	2.5486951	28	1	38 days	0.83			Williams		1999 CO_{57}
1999 CS_{57}	15.9	0.15	19990303	324.53079	228.92155	346.70227	10.25194	0.2147142	2.3792059	23	1	55 days	1.06			Williams		1999 CS_{57}
1999 CT_{57}	15.4	0.15	19990303	352.56756	191.05690	346.82423	13.06411	0.3209623	3.0352292	22	1	55 days	0.65			Williams		1999 CT_{57}
1999 CS_{58}	14.5	0.15	19990211	300.89675	202.29824	34.06928	7.33482	0.1750993	2.6022691	16	1	38 days	0.87			Williams		1999 CS_{58}
1999 CV_{58}	15.7	0.15	19990303	0.14848	157.37296	5.85600	12.97786	0.1223011	2.6795470	20	1	41 days	0.71			Williams		1999 CV_{58}
1999 CX_{58}	16.0	0.15	19990303	331.47198	151.51702	48.08049	4.48836	0.1267796	2.3394040	21	1	41 days	0.86			Williams		1999 CX_{58}
1999 CY_{58}	14.3	0.15	19990303	58.49275	71.35184	21.75145	6.94799	0.1079719	2.4187393	19	1	41 days	0.54			Williams		1999 CY_{58}
1999 CC_{59}	15.4	0.15	19990122	121.08089	345.01634	29.59621	4.47919	0.0952770	2.2074403	17	1	44 days	0.55			Williams		1999 CC_{59}
1999 CF_{59}	16.5	0.15	19990303	323.59937	88.08300	131.80730	2.81289	0.2735440	2.2674374	10	1	41 days	1.82			Williams		1999 CF_{59}
1999 CK_{59}	14.9	0.15	19990303	24.99375	106.78420	25.02453	7.19795	0.0753738	2.3655229	17	1	41 days	0.84			Williams		1999 CK_{59}
1999 CX_{59}	13.4	0.15	19990122	32.43997	257.81314	181.87347	15.55669	0.2041325	3.1039877	19	1	60 days	0.80	M-v	5	Williams		1999 CX_{59}
1999 CF_{60}	14.6	0.15	19990122	59.09644	120.70064	307.52328	1.16287	0.1392894	2.5935077	31	1	87 days	0.34	M-v	4	Williams		1999 CF_{60}
1999 CG_{60}	14.7	0.15	19990122	166.94421	164.11137	170.26138	1.82149	0.1226858	2.5365629	25	2	1997–1999	0.50	M-v	4	Williams	34248	1999 CG_{60}
1999 CH_{60}	14.5	0.15	19990122	44.80212	274.03390	174.28760	1.36733	0.1267609	3.2226563	25	2	1997–1999	0.48	M-v	4	Williams	34248	1999 CH_{60}
1999 CJ_{60}	16.3	0.15	19990122	39.83361	284.37536	161.50112	1.91326	0.1852009	2.6433018	25	1	88 days	0.61	M-v	5	Williams	34325	1999 CJ_{60}
1999 CO_{60}	14.5	0.15	19990122	56.97046	273.40719	155.44454	4.98941	0.1323948	2.4266593	22	1	94 days	0.64	M-v	5	Williams		1999 CO_{60}
1999 CG_{62}	12.3	0.15	19990122	193.80329	122.04060	177.59552	16.63677	0.0195306	2.9428750	19	2	1986–1999	0.55	M-v	5	Williams	34248	1999 CG_{62}
1999 CD_{63}	13.4	0.15	19990122	170.30559	143.49892	177.50551	9.24092	0.1548304	2.7965496	21	2	1987–1999	0.73	M-v	5	Williams	34249	1999 CD_{63}

1999 CR_{63}	14.4	0.15	19990122	313.03841	327.56027	224.70391	7.90024	0.1139152	2.9318656	22	2	1997–1999	0.58	M-v	5	Williams	34249	1999 CR_{63}
1999 CD_{64}	13.8	0.15	19990122	95.50074	86.70669	300.34556	13.43057	0.1237274	2.6261656	16	1	29 days	0.36			Williams		1999 CD_{64}
1999 CL_{64}	13.8	0.15	19990122	42.64928	266.62115	177.63317	11.82839	0.1016675	2.9931976	19	1	56 days	0.48			Williams		1999 CL_{64}
1999 CS_{64}	12.8	0.15	19990122	10.39025	203.92813	281.77142	15.84248	0.0858779	3.1511695	26	1	88 days	0.67	M-v	4	Williams		1999 CS_{64}
1999 CG_{65}	14.2	0.15	19990122	20.56413	283.82570	189.65916	9.71870	0.0616438	2.9873130	16	1	36 days	0.38			Williams		1999 CG_{65}
1999 CH_{66}	14.5	0.15	19990122	44.82949	244.03114	194.27277	4.22366	0.1235652	2.2511030	25	5	1982–1999	0.59	M-v	2	Williams	34249	1999 CH_{66}
1999 CJ_{67}	12.8	0.15	19990122	146.47261	73.67598	278.06273	12.42572	0.0368393	2.5421550	24	5	1957–1999	0.83	M-v	4	Williams	34249	1999 CJ_{67}
1999 CS_{67}	14.0	0.15	19990122	359.57530	317.45429	181.48781	10.42294	0.0327871	3.0125212	16	1	36 days	0.53			Williams		1999 CS_{67}
1999 CW_{67}	14.2	0.15	19990122	335.91854	254.60502	276.42632	6.35391	0.1624923	2.7944925	27	4	1976–1999	0.56	M-v	2	Williams	34249	1999 CW_{67}
1999 CQ_{68}	15.5	0.15	19990122	314.41248	305.57332	252.26578	2.38309	0.1637041	2.4454851	16	1	29 days	0.51			Williams		1999 CQ_{68}
1999 CL_{69}	14.3	0.15	19990122	222.22082	9.40205	277.59010	6.52940	0.1378289	2.3843989	25	5	1988–1999	0.56	M-v	1	Williams	34250	1999 CL_{69}
1999 CR_{70}	14.2	0.15	19990122	31.01403	288.02875	165.69553	13.01269	0.1862111	2.7055001	25	1	87 days	0.32	M-v	4	Williams		1999 CR_{70}
1999 CH_{72}	15.1	0.15	19990122	14.83042	247.73734	228.69870	5.65620	0.1900846	2.5385863	18	1	86 days	0.56	M-v	4	Williams		1999 CH_{72}
1999 CY_{72}	13.6	0.15	19990122	274.99315	314.27949	280.28092	11.01512	0.0544162	2.5831293	16	1	59 days	0.34			Williams		1999 CY_{72}
1999 CB_{73}	15.7	0.15	19990211	95.05324	170.42841	229.73718	7.18222	0.1136664	2.3510917	15	1	11 days	0.65			Williams		1999 CB_{73}
1999 CD_{73}	14.6	0.15	19990122	105.38251	83.63278	300.23046	14.15434	0.1489707	2.6444546	16	1	37 days	0.81			Williams		1999 CD_{73}
1999 CX_{73}	16.4	0.15	19990122	355.33406	335.62741	168.64985	6.79425	0.1985431	2.3008673	19	1	64 days	0.49	M-v	5	Williams		1999 CX_{73}
1999 CF_{74}	16.3	0.15	19990122	28.59634	296.55269	168.47677	3.03874	0.1025466	2.3514750	22	1	64 days	0.55	M-v	5	Williams		1999 CF_{74}
1999 CA_{76}	15.1	0.15	19990122	213.68568	124.68986	174.92905	5.09764	0.1633474	2.2982226	28	3	1990–1999	0.94	M-v	4	Williams	34250	1999 CA_{76}
1999 CG_{76}	15.9	0.15	19990122	35.30107	191.88903	260.29577	1.48144	0.1728949	2.3893223	23	1	66 days	0.67	M-v	5	Williams		1999 CG_{76}
1999 CJ_{76}	15.5	0.15	19990122	42.86660	258.48573	183.43666	2.04632	0.1703818	2.3804817	19	1	94 days	0.56	M-v	5	Williams		1999 CJ_{76}
1999 CW_{76}	14.8	0.15	19990122	301.10835	273.01748	294.30391	6.10892	0.0556401	2.2316574	21	1	37 days	0.50			Williams		1999 CW_{76}
1999 CH_{79}	14.4	0.15	19990211	64.40667	209.49905	224.25354	1.97975	0.1188326	2.6179709	24	1	36 days	0.82			Williams		1999 CH_{79}
1999 CJ_{79}	16.0	0.15	19990211	328.95444	356.46823	194.55169	2.30482	0.1402469	2.4014110	23	1	36 days	0.83			Williams		1999 CJ_{79}
1999 CP_{79}	13.4	0.15	19990122	269.20910	86.50519	167.06842	12.67680	0.1364004	2.6705122	29	1	61 days	0.60	M-v	5	Williams		1999 CP_{79}
1999 CT_{79}	15.2	0.15	19990211	22.61550	233.37135	249.67824	4.00336	0.0965715	2.2852898	22	1	36 days	0.63			Williams		1999 CT_{79}
1999 CJ_{80}	14.1	0.15	19990211	115.31774	162.52873	229.74468	6.63398	0.0553800	2.5131410	18	1	36 days	0.59			Williams		1999 CJ_{80}
1999 CX_{80}	14.4	0.15	19990122	350.98437	263.31822	251.71493	4.66784	0.0948474	2.2262643	29	1	89 days	0.69	M-v	4	Williams		1999 CX_{80}
1999 CA_{81}	14.2	0.15	19990122	2.94919	332.62663	170.16909	15.59351	0.1116613	2.5983776	28	1	112 days	0.80	M-v	4	Williams		1999 CA_{81}
1999 CJ_{81}	14.1	0.15	19990122	62.39851	194.51073	221.70409	4.57895	0.2896965	2.5891538	32	3	1985–1999	0.83	M-v	2	Williams	34252	1999 CJ_{81}
1999 CL_{81}	13.3	0.15	19990122	42.91840	269.48711	192.76798	10.85675	0.1054265	3.0648333	25	2	1991–1999	0.76	M-v	5	Williams	34252	1999 CL_{81}
1999 CM_{81}	13.7	0.15	19990303	64.98385	246.25675	188.01400	12.90902	0.2068767	3.0612556	24	1	56 days	0.88			Williams		1999 CM_{81}
1999 CT_{81}	13.6	0.15	19990303	21.57384	266.80171	228.54548	5.37596	0.1428358	3.0764484	17	1	39 days	0.83			Williams		1999 CT_{81}
1999 CU_{81}	14.2	0.15	19990303	185.80696	82.48074	256.41288	4.38617	0.1306110	2.3564686	17	1	39 days	0.82			Williams		1999 CU_{81}
1999 CV_{81}	14.4	0.15	19990122	296.27587	255.06242	330.68695	2.93849	0.1180208	2.1912729	32	1	132 days	0.69	M-v	5	Williams		1999 CV_{81}
1999 CX_{81}	15.0	0.15	19990122	13.58470	191.31526	301.89640	5.06157	0.0996898	2.2765251	27	1	91 days	0.68	M-v	5	Williams		1999 CX_{81}
1999 CC_{82}	12.6	0.15	19990303	222.54198	359.65767	314.72742	8.60080	0.1422666	2.7634012	17	1	39 days	0.71			Williams		1999 CC_{82}
1999 CY_{82}	13.6	0.15	19990122	51.55025	51.45901	357.76197	8.45181	0.1650681	3.1050659	22	2	1994–1999	0.69	M-v	4	Williams	34252	1999 CY_{82}
1999 CO_{84}	14.2	0.15	19990122	338.09294	138.29939	15.15387	5.96328	0.1848495	2.5451483	27	3	1993–1999	0.63	M-v	3	Williams	34252	1999 CO_{84}
1999 CX_{84}	14.1	0.15	19990122	296.38073	120.26472	86.21382	9.56428	0.1776873	2.4241559	29	1	62 days	0.51	M-v	5	Williams		1999 CX_{84}
1999 CF_{85}	14.2	0.15	19990122	42.90685	316.51005	111.83485	4.75506	0.1508971	2.6440482	20	2	1989–1999	0.58	M-v	5	Williams	34252	1999 CF_{85}
1999 CW_{85}	14.0	0.15	19990122	161.56637	350.84219	327.15199	5.18954	0.2169590	2.2044959	38	4	1958–1999	0.75	M-v	3	Williams	34252	1999 CW_{85}
1999 CL_{87}	15.0	0.15	19990122	343.77155	150.19375	359.06491	3.27902	0.1247198	2.5748183	19	1	80 days	0.57	M-v	5	Marsden		1999 CL_{87}
1999 CN_{92}	14.3	0.15	19990122	12.84465	53.88583	64.08543	10.65469	0.1147543	2.9884763	15	1	57 days	0.60			Williams		1999 CN_{92}
1999 CP_{92}	14.8	0.15	19990122	299.18311	207.86179	0.28837	13.90605	0.1247781	2.6730386	18	1	57 days	0.59			Williams		1999 CP_{92}
1999 CV_{93}	14.9	0.15	19990122	273.56524	140.44919	97.91837	3.29315	0.1076986	2.5627204	24	2	1997–1999	0.47	M-v	4	Williams	34254	1999 CV_{93}
1999 CY_{93}	15.9	0.15	19990211	336.81787	71.60804	100.54241	6.05772	0.1113332	2.7189882	12	1	14 days	0.91			Williams		1999 CY_{93}
1999 CU_{95}	15.7	0.15	19990122	21.24292	130.80105	341.51988	11.79724	0.1358062	2.6587779	25	1	65 days	0.51	M-v	5	Williams		1999 CU_{95}
1999 CE_{97}	15.7	0.15	19990122	241.57163	151.80057	126.21968	2.16351	0.1703887	2.4149376	18	3	1992–1999	0.37	M-v	4	Williams	34254	1999 CE_{97}
1999 CA_{98}	14.6	0.15	19990122	16.25236	77.19623	44.28573	2.71911	0.1694173	3.1185049	23	4	1993–1999	0.58	M-v	1	Williams	34255	1999 CA_{98}
1999 CC_{98}	16.4	0.15	19990122	7.01251	128.00083	1.38630	2.01446	0.2360123	2.7111221	32	1	68 days	0.67	M-v	5	Williams		1999 CC_{98}
1999 CG_{98}	15.9	0.15	19990122	10.90110	62.61100	65.04396	0.96325	0.1687678	2.6950507	26	1	69 days	0.60	M-v	5	Williams		1999 CG_{98}
1999 CQ_{98}	14.8	0.15	19990122	57.44965	2.01495	66.93696	3.58594	0.1665877	2.2809191	33	3	1987–1999	0.74	M-v	4	Williams	34255	1999 CQ_{98}

1999 CO_{99}	13.4	0.15	19990122	295.45471	250.60242	339.20299	12.82361	0.1514541	2.6983446	37	1	134 days	0.47	M-v	4	Williams		1999 CO_{99}
1999 CS_{99}	13.6	0.15	19990303	219.69908	176.89043	131.44077	11.76001	0.1401376	3.0057874	19	1	41 days	0.78			Williams		1999 CS_{99}
1999 CG_{100}	14.7	0.15	19990303	239.44936	165.33937	121.72092	3.10650	0.0705922	2.9424619	21	1	41 days	0.79			Williams		1999 CG_{100}
1999 CP_{100}	15.5	0.15	19990303	306.77560	217.64679	13.96670	6.60481	0.1739358	2.4165981	25	1	41 days	0.76			Williams		1999 CP_{100}
1999 CC_{101}	16.1	0.15	19990303	36.59081	113.32819	358.30809	13.17349	0.1580762	2.5727997	22	1	41 days	0.97			Williams		1999 CC_{101}
1999 CJ_{101}	14.8	0.15	19990303	5.74667	100.17716	55.75755	2.04333	0.1267853	3.1188001	21	1	41 days	1.00			Williams		1999 CJ_{101}
1999 CK_{101}	14.3	0.15	19990303	74.32450	2.21502	73.46391	2.74816	0.1137159	2.8517111	23	1	41 days	0.73			Williams		1999 CK_{101}
1999 CL_{101}	13.9	0.15	19990122	227.48806	273.30297	15.08389	6.97049	0.0362940	2.4821694	26	1	81 days	0.66	M-v	5	Williams		1999 CL_{101}
1999 CT_{101}	12.8	0.15	19990122	222.12394	294.64641	7.14668	14.61592	0.1303760	2.5733080	37	3	1988–1999	0.68	M-v	3	Williams	34255	1999 CT_{101}
1999 CV_{101}	14.8	0.15	19990211	344.70353	112.15550	64.42577	5.46561	0.0963030	2.5368766	17	1	38 days	0.93			Williams		1999 CV_{101}
1999 CX_{101}	14.3	0.15	19990303	318.66612	184.31685	33.07531	5.50746	0.1489411	2.4250775	23	1	41 days	0.79			Williams		1999 CX_{101}
1999 CN_{102}	14.6	0.15	19990122	33.62863	152.06093	294.92312	4.56179	0.0538694	2.2338047	27	2	1989–1999	0.75	M-v	5	Williams	34256	1999 CN_{102}
1999 CA_{104}	14.6	0.15	19990122	206.58738	58.61564	228.57458	6.78814	0.2075546	2.2890468	20	4	1983–1999	0.74	M-v	2	Williams	34256	1999 CA_{104}
1999 CF_{104}	14.4	0.15	19990122	28.79477	183.32048	280.32573	1.16483	0.1410537	2.9214130	25	1	83 days	0.49	M-v	5	Williams		1999 CF_{104}
1999 CK_{104}	14.5	0.15	19990122	28.56168	193.93896	270.29866	0.62883	0.1508979	3.0968899	25	1	84 days	0.60	M-v	4	Williams		1999 CK_{104}
1999 CF_{106}	15.1	0.15	19990122	66.89841	241.68477	158.30763	13.60418	0.2312847	2.5232703	16	1	36 days	0.43			Williams		1999 CF_{106}
1999 CR_{106}	14.9	0.15	19990122	349.85688	298.31545	209.25922	10.43682	0.1812263	2.5904304	27	2	1991–1999	0.56	M-v	4	Williams	34256	1999 CR_{106}
1999 CK_{109}	14.7	0.15	19990122	356.37236	272.79909	227.60173	10.52416	0.1473766	2.6935280	30	2	1991–1999	0.70	M-v	4	Williams	34257	1999 CK_{109}
1999 CX_{110}	13.6	0.15	19990122	315.05864	242.88401	307.57827	15.19545	0.0460056	3.1035434	15	1	36 days	0.75			Williams		1999 CX_{110}
1999 CU_{111}	13.9	0.15	19990122	353.73310	303.81536	205.34029	8.50491	0.1148886	3.0464657	20	1	86 days	0.71	M-v	4	Williams	34329	1999 CU_{111}
1999 CE_{114}	15.8	0.15	19990122	26.45988	290.64499	167.57087	6.59905	0.2420067	2.8052877	25	2	1971–1999	0.71	M-v	5	Williams	34257	1999 CE_{114}
1999 CD_{116}	14.9	0.15	19990122	267.75031	77.09914	171.92358	1.39634	0.1006711	2.2935893	30	3	1996–1999	0.69	M-v	4	Williams	34257	1999 CD_{116}
1999 CG_{117}	14.3	0.15	19990211	52.66957	268.31924	173.26048	11.78782	0.1733618	2.4143704	23	1	36 days	0.96			Williams		1999 CG_{117}
1999 CM_{117}	14.8	0.15	19990122	17.23336	269.44898	213.64656	6.67517	0.1610620	2.2739094	30	1	107 days	0.71	M-v	5	Williams		1999 CM_{117}
1999 CN_{117}	14.4	0.15	19990122	274.14289	60.13622	187.69706	3.57760	0.1106732	2.2155018	41	4	1990–1999	0.68	M-v	2	Williams	34257	1999 CN_{117}
1999 CO_{117}	13.4	0.15	19990303	93.61004	86.31506	321.66940	12.54481	0.1831627	2.5597406	24	1	38 days	0.69			Williams		1999 CO_{117}
1999 CZ_{117}	13.9	0.15	19990303	313.72339	291.32278	290.08211	4.67540	0.1127666	2.6391038	27	1	56 days	0.56			Williams		1999 CZ_{117}
1999 CH_{118}	15.0	0.15	19990303	323.52060	349.92644	214.46068	2.67412	0.0489974	2.1653882	27	1	40 days	0.56			Williams		1999 CH_{118}
1999 CM_{118}	14.8	0.15	19990122	89.07555	191.21026	208.38987	3.07906	0.0542795	2.1586236	28	4	1991–1999	0.50	M-v	1	Williams	34258	1999 CM_{118}
1999 CX_{118}	7.1	0.15	19990303	180.06391	175.74760	175.71384	1.78353	0.0272548	43.6617459	6	1	62 days	0.11		E	Williams		1999 CX_{118}
1999 CY_{118}	8.3	0.15	19990211	67.65909	264.19278	163.25852	38.60471	0.2461940	39.3093015	6	1	34 days	0.43		E	Marsden		1999 CY_{118}
1999 CB_{119}	6.8	0.15	19990303	0.07107	358.27594	168.03574	9.16007	0.0562484	43.6446690	7	1	62 days	0.31		E	Williams		1999 CB_{119}
1999 CC_{119}	6.9	0.15	19990303	0.06654	338.19047	189.05467	0.48195	0.0293514	45.6237224	6	1	62 days	0.11		E	Williams		1999 CC_{119}
1999 CD_{119}	7.3	0.15	19990303	180.07489	183.86729	166.38149	2.39648	0.0265526	43.9932845	6	1	62 days	0.23		E	Williams		1999 CD_{119}
1999 CE_{119}	8.6	0.15	19990303	0.08272	1.04036	171.55658	1.42850	0.2446124	39.3321636	6	1	58 days	0.21		E	Williams		1999 CE_{119}
1999 CG_{119}	7.5	0.15	19990303	0.06837	178.30230	304.19707	17.28735	0.0125976	43.5844627	6	1	57 days	0.40		E	Williams		1999 CG_{119}
1999 CH_{119}	7.2	0.15	19990303	180.03455	181.32102	122.32715	19.59820	0.0607299	43.9591852	6	1	57 days	0.22		E	Williams		1999 CH_{119}
1999 CJ_{119}	7.3	0.15	19990303	0.06760	172.85245	313.05036	3.33436	0.0285296	43.8967678	6	1	59 days	0.24		E	Williams		1999 CJ_{119}
1999 CL_{119}	6.0	0.15	19990303	1.42542	0.10477	125.16159	23.35301	0.0000000	46.7419789	8	1	59 days	0.13		E	Williams		1999 CL_{119}
1999 CM_{119}	7.7	0.15	19990303	0.06583	9.11077	118.39812	2.71584	0.0606875	44.6673180	6	1	59 days	0.27		E	Williams		1999 CM_{119}
1999 CN_{125}	13.7	0.15	19990122	9.71714	52.37671	72.69367	12.37169	0.1527493	2.6736932	23	1	89 days	0.80	M-v	4	Williams		1999 CN_{125}
1999 CV_{126}	14.0	0.15	19990211	16.07803	29.11292	99.00515	25.36710	0.2200251	3.1074827	19	1	33 days	0.71			Williams		1999 CV_{126}
1999 CA_{132}	7.4	0.15	19990303	0.06694	0.52976	154.87098	12.07114	0.0979364	43.9657425	6	1	56 days	0.29		E	Williams		1999 CA_{132}
1999 CE_{133}	14.5	0.15	19990122	103.18734	72.22591	307.61459	0.43787	0.1878165	3.0915845	24	2	1997–1999	0.60	M-v	4	Williams	34258	1999 CE_{133}
1999 CP_{133}	7.5	0.15	19990303	8.16795	171.14050	334.02387	2.98433	0.1933509	39.2332357	11	1	60 days	0.67		E	Williams		1999 CP_{133}
1999 CQ_{133}	7.0	0.15	19990303	0.06308	358.59064	123.40753	12.24167	0.0285496	44.4759397	6	1	56 days	0.81		E	Williams		1999 CQ_{133}
1999 CG_{135}	15.0	0.15	19990303	52.03708	147.65885	309.32652	1.76594	0.1473788	2.4282226	30	1	57 days	0.45			Williams		1999 CG_{135}
1999 CK_{135}	15.4	0.15	19990211	171.42514	12.57432	334.63045	5.89414	0.1381358	2.4282773	20	1	43 days	0.62			Williams		1999 CK_{135}
1999 CW_{135}	14.6	0.15	19990211	158.82400	14.09989	344.90851	14.88942	0.1739905	2.5464713	13	1	43 days	0.65			Williams		1999 CW_{135}
1999 CH_{141}	15.3	0.15	19990303	33.78660	142.00050	301.41066	0.79707	0.2059569	3.1319142	14	1	58 days	0.26			Williams		1999 CH_{141}
1999 CX_{146}	17.6	0.15	19990211	59.09621	170.48258	271.52348	0.56876	0.1534495	2.3213725	9	1	6 days	0.19		E	Williams		1999 CX_{146}
1999 CH_{147}	15.3	0.15	19990211	246.25417	304.07757	341.39289	9.64174	0.1133566	2.2531682	15	1	42 days	0.91			Williams		1999 CH_{147}
1999 CK_{147}	15.1	0.15	19990211	258.44239	293.12828	344.95298	11.85828	0.1311045	2.6096337	13	1	42 days	0.59			Williams		1999 CK_{147}

1999 CE_{149}	15.4	0.15	19990303	256.63391	93.54582	190.50396	1.34604	0.1036756	2.5920037	21	1	56 days	0.65			Williams		1999 CE_{149}
1999 CK_{149}	17.1	0.15	19990303	35.16100	147.71413	331.08706	2.17550	0.1807655	2.3244595	14	1	38 days	0.87			Williams		1999 CK_{149}
1999 CS_{149}	16.0	0.15	19990303	281.77208	286.46507	346.24736	8.58322	0.2116800	2.2996644	22	1	52 days	0.86			Williams		1999 CS_{149}
1999 CY_{149}	15.7	0.15	19990303	1.78359	3.44315	165.74445	10.84416	0.0493403	2.5742132	21	1	37 days	0.86			Williams		1999 CY_{149}
1999 CA_{150}	15.6	0.15	19990122	79.96915	68.21990	358.93047	2.57705	0.1292813	2.5406741	15	1	63 days	0.17	M-v	5	Williams		1999 CA_{150}
1999 CD_{150}	15.0	0.15	19990122	101.58372	246.81862	153.28135	2.55706	0.2061670	2.3899497	23	4	1975–1999	0.54	M-v	4	Williams	34259	1999 CD_{150}
1999 CE_{150}	14.9	0.15	19990303	274.64130	101.91130	165.11710	9.60025	0.0807580	2.6284064	26	1	53 days	0.79			Williams		1999 CE_{150}
1999 CK_{150}	14.7	0.15	19990303	31.33082	322.37137	167.50326	26.96916	0.1404677	3.1609740	13	1	38 days	0.82			Williams		1999 CK_{150}
1999 CX_{150}	14.7	0.15	19990211	287.64889	102.77045	160.49701	10.59964	0.2309062	3.1030149	15	1	43 days	0.82			Williams		1999 CX_{150}
1999 CY_{150}	14.3	0.15	19990211	111.85103	58.84444	340.05270	8.34353	0.0985165	2.6246803	22	1	43 days	0.62			Williams		1999 CY_{150}
1999 CE_{151}	15.5	0.15	19990211	155.42300	12.02228	349.87517	6.64959	0.1157588	2.3377058	17	1	42 days	0.70			Williams		1999 CE_{151}
1999 CG_{152}	14.8	0.15	19990122	0.97935	355.05287	146.17667	0.35808	0.1302805	3.0819684	27	2	1997–1999	0.35	M-v	3	Williams	34259	1999 CG_{152}
1999 CM_{153}	7.6	0.15	19990303	0.06670	60.13867	87.87840	0.18957	0.0599382	44.1266114	6	1	57 days	0.34		E	Williams		1999 CM_{153}
1999 CN_{153}	7.7	0.15	19990303	180.05618	179.41748	153.04973	7.47967	0.0159916	42.5921190	6	1	56 days	0.21		E	Williams		1999 CN_{153}
1999 CO_{153}	7.4	0.15	19990303	0.06533	205.02197	277.15293	0.77619	0.0576636	43.4262523	6	1	56 days	0.09		E	Williams		1999 CO_{153}
1999 CX_{153}	15.4	0.15	19990303	82.40386	322.33813	99.12690	5.82049	0.1246249	2.2678281	13	1	35 days	0.68			Williams		1999 CX_{153}
1999 CY_{153}	14.1	0.15	19990122	359.34168	139.85620	10.48667	13.63056	0.1903784	2.6917354	12	1	69 days	0.37	M-v	5	Williams		1999 CY_{153}
1999 CA_{154}	16.4	0.15	19990303	5.88513	330.99397	181.38935	6.50320	0.1649946	2.4641879	13	1	37 days	0.61			Williams		1999 CA_{154}
1999 CC_{154}	12.7	0.15	19990303	170.49636	165.40617	191.43772	1.92519	0.0744712	3.0105578	21	1	51 days	0.61			Williams		1999 CC_{154}
1999 CD_{154}	13.6	0.15	19990303	45.16248	128.86157	342.21713	11.55894	0.1327931	3.2124649	24	1	54 days	0.89			Williams		1999 CD_{154}
1999 DA	7.9	0.15	19990303	0.06334	84.72086	55.27635	2.79549	0.0000000	45.9241391	18	1	35 days	0.18		E	Marsden		1999 DA
1999 DQ	14.9	0.15	19990122	35.28832	301.48959	161.76556	17.49140	0.0745929	3.1129369	23	1	63 days	0.64	M-v	5	Williams		1999 DQ
1999 DZ	15.2	0.15	19990303	27.61065	142.93522	0.52134	7.31819	0.1387203	2.2173752	26	1	51 days	0.63			Williams		1999 DZ
1999 DB_1	15.3	0.15	19990122	225.76883	52.31404	228.74394	2.10607	0.1345528	2.2495685	31	3	1996–1999	0.64	M-v	3	Williams	34333	1999 DB_1
1999 DM_1	14.8	0.15	19990303	1.17364	340.08597	178.63221	25.06439	0.2623918	2.3752147	35	1	56 days	0.65			Williams		1999 DM_1
1999 DP_1	13.3	0.15	19990122	291.03042	172.68273	58.28978	14.62373	0.1286357	2.5795497	49	2	1997–1999	0.56	M-v	4	Williams	34333	1999 DP_1
1999 DA_2	15.6	0.15	19990303	337.75537	119.58147	68.16802	5.30950	0.1032151	2.5743093	24	1	41 days	0.91			Williams		1999 DA_2
1999 DB_2	19.1	0.15	19990122	339.64556	251.57632	328.27458	11.61619	0.6207356	2.9986092	113	1	74 days	0.61	M-v	4	Williams	34333	1999 DB_2
1999 DC_2	14.8	0.15	19990122	324.79233	41.47730	160.34786	23.49953	0.2080891	2.4135289	38	1	105 days	0.47	M-v	4	Williams		1999 DC_2
1999 DE_2	13.9	0.15	19990122	99.75738	75.20888	329.36040	11.65438	0.1835241	2.6464821	33	1	64 days	0.69	M-v	5	Williams		1999 DE_2
1999 DF_2	13.8	0.15	19990122	86.06390	207.54602	214.91842	4.51886	0.1379698	2.7549759	48	3	1995–1999	0.63	M-v	4	Williams	34259	1999 DF_2
1999 DG_2	14.0	0.15	19990303	112.20824	25.45139	12.82710	13.63784	0.1722341	2.6040160	25	1	59 days	0.82			Williams		1999 DG_2
1999 DH_2	14.8	0.15	19990122	60.33229	332.65648	107.18591	6.22834	0.1424917	2.3259025	16	1	74 days	0.67	M-v	5	Williams		1999 DH_2
1999 DJ_2	12.9	0.15	19990323	34.64111	64.67093	65.05187	13.71854	0.0522664	3.1321418	24	1	57 days	0.62			Nakano		1999 DJ_2
1999 DK_2	13.0	0.15	19990122	16.85975	87.90614	43.94327	15.67869	0.0756089	2.5779656	34	3	1993–1999	0.59	M-v	3	Williams	34260	1999 DK_2
1999 DL_2	14.7	0.15	19990303	251.07253	171.42931	115.52284	8.76502	0.1000466	2.3687623	14	1	47 days	0.58			Williams		1999 DL_2
1999 DN_2	12.6	0.15	19990122	34.23845	107.19332	16.18471	14.71493	0.0449782	3.2441594	42	3	1990–1999	0.62	M-v	3	Williams	34333	1999 DN_2
1999 DO_2	12.5	0.15	19990323	30.23682	87.49874	46.43672	17.66336	0.0968973	3.2237309	21	1	55 days	0.55			Nakano		1999 DO_2
1999 DP_2	14.8	0.15	19990122	100.80150	305.92958	91.00293	4.96899	0.1988268	2.2004595	33	3	1981–1999	0.74	M-v	4	Williams	34260	1999 DP_2
1999 DQ_2	14.3	0.15	19990303	261.57273	256.50087	20.19756	10.56854	0.0879003	2.6906607	38	1	58 days	0.82			Williams		1999 DQ_2
1999 DR_2	15.2	0.15	19990303	293.15541	132.48693	110.26154	7.67810	0.0737713	2.3057526	18	1	47 days	0.72			Williams		1999 DR_2
1999 DS_2	13.9	0.15	19990122	347.97488	182.01377	344.11951	9.33235	0.1543852	2.7675401	69	1	110 days	0.49	M-v	3	Williams	34333	1999 DS_2
1999 DU_2	14.8	0.15	19990122	265.19975	210.25814	32.50014	3.71078	0.0728435	2.5217661	16	2	1997–1999	0.36	M-v	4	Williams	34260	1999 DU_2
1999 DX_2	14.3	0.15	19990122	85.88845	259.72091	153.01055	22.08885	0.0303227	2.6718724	27	1	82 days	0.29	M-v	4	Nakano		1999 DX_2
1999 DY_2	21.9	0.15	19990122	349.07849	160.98950	352.44251	7.60748	0.4624189	2.0398988	74	1	56 days	0.65	M-v	5	Marsden	34333	1999 DY_2
1999 DZ_2	15.0	0.15	19990323	76.83590	37.18053	57.66707	6.54775	0.1065266	2.2979004	15	1	45 days	0.60			Nakano		1999 DZ_2
1999 DA_3	13.9	0.15	19990303	287.36926	143.55324	114.05654	8.44255	0.0390504	2.8554966	18	1	45 days	0.68			Williams		1999 DA_3
1999 DB_3	13.4	0.15	19990122	272.29587	129.19168	147.99773	14.10081	0.1633295	2.5620300	39	2	1987–1999	0.54	M-v	4	Williams	34260	1999 DB_3
1999 DC_3	14.0	0.15	19990303	332.05386	150.23542	62.80620	7.68314	0.1396319	2.2663235	24	1	57 days	0.56			Williams		1999 DC_3
1999 DH_3	13.6	0.15	19990303	1.60539	54.27449	161.80712	4.67127	0.1242529	2.4603553	16	1	32 days	1.19			Williams		1999 DH_3
1999 DK_3	17.3	0.15	19990122	310.86701	102.91440	149.97603	43.11300	0.4438309	2.1159557	70	1	55 days	0.59	M-v	5	Marsden	34333	1999 DK_3
1999 DM_3	15.2	0.15	19990303	16.33599	358.03410	159.18289	2.81303	0.1623297	2.3325643	24	1	50 days	0.56			Williams		1999 DM_3
1999 DO_3	15.3	0.15	19990122	337.00179	204.90294	352.34628	3.85028	0.1546301	2.2729781	34	3	1992–1999	0.60	M-v	3	Williams	34260	1999 DO_3

1999 DQ_3	13.5	0.15	19990122	357.41984	64.61083	97.91792	13.09109	0.1021332	2.6015647	39	5	1978–1999	0.60	M-v	1	Williams	34260	1999 DQ_3
1999 DS_3	13.7	0.15	19990122	334.03616	123.75763	70.73175	11.20479	0.1572159	2.6585612	47	3	1982–1999	0.78	M-v	4	Williams	34261	1999 DS_3
1999 DU_3	14.4	0.15	19990122	338.70978	82.73138	111.15672	2.49431	0.1579989	3.1689819	32	2	1994–1999	0.68	M-v	5	Williams	34261	1999 DU_3
1999 DV_3	13.2	0.15	19990122	252.95950	211.62208	54.51661	15.03224	0.1496983	2.5815611	37	2	1997–1999	0.79	M-v	4	Williams	34261	1999 DV_3
1999 DA_4	16.2	0.15	19990303	6.47830	20.23334	123.89829	1.57072	0.2342811	2.9987443	21	1	56 days	0.49			Williams		1999 DA_4
1999 DH_4	13.3	0.15	19990122	275.16744	164.68596	132.44550	10.34433	0.1246420	2.7555262	49	3	1990–1999	0.67	M-v	3	Williams	34261	1999 DH_4
1999 DJ_4	18.1	0.15	19990122	328.15492	197.32350	20.14151	9.17691	0.4840819	1.8512655	101	1	51 days	0.65	M-v	6	Marsden	34333	1999 DJ_4
1999 DL_4	13.2	0.15	19990303	342.03982	198.43540	355.67151	10.89560	0.0439666	3.2130899	33	1	48 days	1.20			Williams		1999 DL_4
1999 DN_4	14.7	0.15	19990303	327.54817	201.74928	357.25221	17.18622	0.1888751	3.0109049	50	1	47 days	0.70			Marsden		1999 DN_4
1999 DW_6	13.8	0.15	19990122	82.36384	85.32192	344.02380	9.40764	0.2109734	2.3681969	53	5	1977–1999	0.78	M-v	2	Williams	34261	1999 DW_6
1999 DD_7	13.8	0.15	19990122	82.16925	68.97993	2.61247	11.83378	0.0213249	2.9477977	38	2	1991–1999	0.51	M-v	4	Marsden	34261	1999 DD_7
1999 DE_7	13.9	0.15	19990122	279.01352	144.38700	80.52795	2.69130	0.1142352	3.1374243	19	2	1996–1999	0.64	M-v	5	Williams	34262	1999 DE_7
1999 DP_7	14.9	0.15	19990303	9.83230	79.56391	71.40684	3.61257	0.1462615	2.4189813	15	1	33 days	0.56			Williams		1999 DP_7
1999 DR_7	14.9	0.15	19990303	341.79701	186.01313	2.62474	12.68028	0.1266600	2.6935452	19	1	47 days	0.50			Williams		1999 DR_7
1999 DS_7	14.2	0.15	19990303	134.33620	2.22886	21.10868	7.11443	0.1134515	2.3643185	19	1	33 days	0.61			Williams		1999 DS_7
1999 DT_7	15.3	0.15	19990303	51.35491	346.44973	126.79969	7.07653	0.0241438	2.4279748	16	1	33 days	0.98			Williams		1999 DT_7
1999 DV_7	14.9	0.15	19990122	349.72614	161.64879	4.18361	8.04328	0.1476236	2.3108191	38	1	133 days	0.65	M-v	3	Williams		1999 DV_7
1999 DW_7	14.7	0.15	19990303	288.34105	248.29922	359.29015	14.16417	0.0671150	2.6475703	16	1	33 days	0.45			Williams		1999 DW_7
1999 DX_7	13.6	0.15	19990303	103.00426	271.20344	148.43285	10.95152	0.0688719	2.9979210	23	1	59 days	0.68			Williams		1999 DX_7
1999 DZ_7	8.8	0.15	19990211	180.68753	348.38452	330.70704	14.33549	0.2673250	39.4120181	4	1	1 days	0.07		E	Marsden		1999 DZ_7
1999 DA_8	12.4	0.15	19990211	12.49168	338.31339	136.98915	40.00984	0.3285090	39.3163031	6	1	1 days	0.24		E	Marsden		1999 DA_8
1999 EA	14.1	0.15	19990122	263.69840	285.86973	352.84320	11.85143	0.2593385	2.5484090	27	2	1991–1999	0.75	M-v	4	Marsden	34262	1999 EA
1999 EB	14.7	0.15	19990303	33.86324	124.00555	356.02278	8.67494	0.1272046	2.5563780	33	1	56 days	0.67			Marsden		1999 EB
1999 ED	17.6	0.15	19990323	73.84188	283.63368	162.49319	23.37412	0.0795367	1.9397336	24	1	41 days	0.53			Marsden		1999 ED
1999 EE	15.9	0.15	19990323	90.47267	7.09196	59.10398	3.21746	0.1697727	2.2204969	15	1	29 days	0.25			Marsden		1999 EE
1999 EF	15.0	0.15	19990303	28.43105	318.07425	157.87405	7.27691	0.2277423	3.0770420	17	1	14 days	0.58			Williams		1999 EF
1999 EG	15.1	0.15	19990122	44.10401	186.75623	287.78955	1.85201	0.1211693	2.4171348	43	3	1993–1999	0.77	M-v	4	Williams	34262	1999 EG
1999 EH	15.9	0.15	19990323	60.03416	157.96631	319.29869	2.71343	0.0916860	2.3334216	21	1	47 days	0.66			Williams		1999 EH
1999 EJ	14.7	0.15	19990323	309.11435	286.23554	323.43273	2.81685	0.1228846	2.7724126	26	1	34 days	0.61			Williams		1999 EJ
1999 EK	14.9	0.15	19990323	72.43618	197.03366	253.28624	1.41184	0.1573465	2.3895645	24	1	31 days	0.53			Williams		1999 EK
1999 EL	12.6	0.15	19990122	310.79259	50.06210	183.74816	17.06667	0.1728279	3.1101255	48	1	116 days	0.46	M-v	4	Williams		1999 EL
1999 EM	16.2	0.15	19990303	348.44399	212.46200	323.67937	2.07816	0.0981884	2.3571783	16	1	14 days	0.77			Williams		1999 EM
1999 EN	17.4	0.15	19990303	26.04772	146.01468	333.72831	1.07033	0.1283146	2.4858010	21	1	59 days	0.42			Williams		1999 EN
1999 EG_2	15.9	0.15	19990323	220.16520	342.09194	337.24589	0.49161	0.0873423	2.6068969	13	1	32 days	0.36			Williams		1999 EG_2
1999 EJ_2	13.2	0.15	19990323	313.61208	55.32026	192.36730	14.84514	0.0823398	2.5852691	33	1	38 days	0.54			Williams		1999 EJ_2
1999 EL_2	14.0	0.15	19990303	152.84012	194.42500	179.97128	2.87410	0.0152454	3.1995526	15	1	13 days	1.04		E	Williams		1999 EL_2
1999 EV_2	14.8	0.15	19990122	343.07811	123.07878	50.78254	6.91416	0.0471026	2.2723558	26	1	85 days	0.62	M-v	4	Williams		1999 EV_2
1999 EZ_2	14.9	0.15	19990303	319.18600	239.85821	355.22081	10.08408	0.2340602	2.6463121	27	1	48 days	0.69			Williams		1999 EZ_2
1999 EA_3	12.9	0.15	19990122	29.08559	129.01175	6.44203	14.87923	0.0613022	3.2376263	38	2	1993–1999	0.84	M-v	5	Williams	34262	1999 EA_3
1999 EC_3	14.2	0.15	19990323	228.40302	332.83210	355.24482	10.57779	0.0950231	2.9907254	22	1	44 days	0.47			Williams		1999 EC_3
1999 EE_3	14.7	0.15	19990323	61.49769	268.04789	225.29668	9.72193	0.0592973	2.9796534	12	1	33 days	0.26			Marsden		1999 EE_3
1999 EF_3	14.3	0.15	19990323	339.42023	41.63912	178.39735	14.19696	0.1256854	3.1150234	43	1	41 days	0.69			Williams		1999 EF_3
1999 EG_3	13.6	0.15	19990122	302.06900	17.54045	227.75600	0.77829	0.1446616	3.1660304	46	3	1978–1999	0.54	M-v	4	Williams	34262	1999 EG_3
1999 EM_3	15.3	0.15	19990323	22.37887	141.03365	13.55910	15.18499	0.2433690	2.5675268	55	1	39 days	0.50			Williams		1999 EM_3
1999 EP_3	15.9	0.15	19990323	319.27675	251.71907	353.83482	7.74477	0.1077299	2.2024032	15	1	41 days	0.38			Williams		1999 EP_3
1999 EQ_3	15.5	0.15	19990323	259.86845	208.07517	90.06861	3.17054	0.2158337	2.3665529	15	1	26 days	0.33			Marsden		1999 EQ_3
1999 ET_3	14.0	0.15	19990323	93.44958	67.08735	31.29337	9.54282	0.0756302	3.0408980	20	1	32 days	0.66			Williams		1999 ET_3
1999 ED_4	14.7	0.15	19990303	130.06395	44.04165	340.80349	8.17597	0.1179770	2.8142250	14	1	11 days	0.92			Williams		1999 ED_4
1999 EJ_4	14.4	0.15	19990303	81.84605	69.38103	352.25440	4.65526	0.2026566	2.8328339	14	1	11 days	0.85			Williams		1999 EJ_4
1999 ER_4	13.4	0.15	19990323	212.24436	137.56668	197.64776	5.28510	0.1186004	2.7807681	23	1	26 days	0.69			Williams		1999 ER_4
1999 ET_4	15.6	0.15	19990323	261.65151	273.42164	24.38851	6.18977	0.1279935	2.3404351	29	1	28 days	0.87			Marsden		1999 ET_4
1999 EV_4	14.0	0.15	19990323	284.14283	85.20252	181.90667	12.11441	0.0387378	2.6905453	33	1	37 days	0.68			Williams		1999 EV_4
1999 EX_4	14.2	0.15	19990323	89.05953	69.16304	6.43074	21.19571	0.1823536	3.1400482	11	1	29 days	0.33			Williams		1999 EX_4

1999 EY_4	15.0	0.15	19990323	291.15283	139.09068	128.66008	9.87190	0.2084811	2.7703567	12	1	27 days	1.14			Williams		1999 EY_4
1999 EB_5	15.1	0.15	19990323	327.29356	127.96039	82.92756	3.26132	0.1284134	2.9671616	30	1	29 days	0.70			Marsden		1999 EB_5
1999 ED_5	19.8	0.15	19990122	295.64073	273.74877	5.80934	18.17889	0.4660411	1.7457762	46	1	49 days	0.50	M-v	5	Williams		1999 ED_5
1999 EE_5	18.5	0.15	19990122	326.09671	192.82081	355.57776	31.00789	0.2816336	1.6688667	153	1	47 days	0.69	M-v	5	Williams		1999 EE_5
1999 EF_5	19.8	0.15	19990122	341.35231	178.60375	6.33434	31.08567	0.4281768	2.2287748	61	1	38 days	0.64	M-v	6	Williams		1999 EF_5
1999 EG_5	12.4	0.15	19990323	174.09595	284.11027	81.20654	11.84150	0.1463279	3.0163109	19	1	32 days	0.69			Williams		1999 EG_5
1999 EJ_5	15.4	0.15	19990323	279.22003	312.31579	327.62432	5.33608	0.0663960	2.4326491	24	1	39 days	0.58			Williams		1999 EJ_5
1999 EK_5	15.7	0.15	19990323	87.76728	66.03139	20.42070	5.23114	0.0532526	2.4225964	21	1	33 days	0.58			Williams		1999 EK_5
1999 EO_5	16.7	0.15	19990323	345.36286	243.21871	324.85486	3.84032	0.0795085	2.2452927	9	1	39 days	0.36			Williams		1999 EO_5
1999 EP_5	14.0	0.15	19990303	259.22182	144.17048	147.14525	4.09135	0.2025703	2.7887549	13	1	10 days	0.93			Williams		1999 EP_5
1999 EQ_5	14.8	0.15	19990303	221.99783	160.91723	157.10941	7.34457	0.1524423	2.2766932	16	1	10 days	0.85			Williams		1999 EQ_5
1999 ER_5	14.0	0.15	19990303	258.01061	124.96349	159.11405	9.72606	0.1062751	3.0566578	14	1	10 days	0.60			Williams		1999 ER_5
1999 ES_5	14.0	0.15	19990323	251.26773	294.06610	8.55434	7.35560	0.2029218	2.5665115	17	1	30 days	0.46			Marsden		1999 ES_5
1999 ET_5	14.8	0.15	19990303	50.78600	325.76689	146.78863	4.66978	0.0695837	2.7544037	14	1	10 days	0.91			Williams		1999 ET_5
1999 EU_5	13.6	0.15	19990122	313.81848	83.98070	126.25291	2.98973	0.0229828	2.8998013	31	1	69 days	0.43	M-v	5	Williams		1999 EU_5
1999 EV_5	14.4	0.15	19990303	89.90924	24.99848	48.14341	2.46889	0.0628757	2.6757077	16	1	10 days	0.64			Williams		1999 EV_5
1999 EW_5	16.0	0.15	19990303	2.85508	39.16374	126.73404	3.01625	0.1409062	2.4052539	14	1	10 days	0.63			Williams		1999 EW_5
1999 EX_5	13.7	0.15	19990303	243.63740	289.79368	12.21618	8.91569	0.1460659	2.7732839	20	1	10 days	0.81			Williams		1999 EX_5
1999 EY_5	15.1	0.15	19990303	20.47349	10.74690	133.32002	3.75395	0.1315078	2.5524813	14	1	9 days	0.68			Williams		1999 EY_5
1999 EB_6	14.7	0.15	19990323	154.22158	21.23974	16.13009	14.81654	0.0944242	2.5246043	18	1	36 days	0.37			Williams		1999 EB_6
1999 ED_6	14.2	0.15	19990323	186.82827	354.36988	17.89802	28.68853	0.1245349	2.6859694	23	1	28 days	0.62			Williams		1999 ED_6
1999 EG_6	15.8	0.15	19990122	16.01696	137.47481	15.31473	13.27026	0.1635866	2.5554299	18	1	73 days	0.43	M-v	5	Williams		1999 EG_6
1999 EH_6	15.7	0.15	19990303	259.19557	300.56691	343.60184	6.86519	0.1570741	2.4209495	18	1	9 days	0.82			Williams		1999 EH_6
1999 EJ_6	15.2	0.15	19990303	37.90487	290.46230	182.35898	2.79869	0.1818546	2.6166569	15	1	9 days	0.32			Williams		1999 EJ_6
1999 EW_6	16.1	0.15	19990303	56.71233	274.19573	186.14942	1.87303	0.1209984	2.3538184	18	1	9 days	0.65			Williams		1999 EW_6
1999 ED_7	16.5	0.15	19990303	51.78051	103.99739	9.14686	22.09196	0.0735398	1.9092009	33	1	51 days	0.77			Williams		1999 ED_7
1999 EA_9	17.5	0.15	19990303	42.31220	119.85324	340.35672	4.04567	0.1222119	2.3057653	15	1	58 days	0.42			Williams		1999 EA_9
1999 ES_{10}	14.7	0.15	19990303	296.67987	58.87935	176.65732	9.66533	0.0174426	2.9713054	15	1	9 days	0.66			Williams		1999 ES_{10}
1999 ET_{10}	16.4	0.15	19990303	35.55113	297.55468	193.25053	1.16813	0.0445407	2.3460464	14	1	9 days	0.95		E	Williams		1999 ET_{10}
1999 EM_{11}	16.5	0.15	19990122	31.96880	110.96775	347.29816	5.57291	0.1528859	2.4113225	18	1	66 days	0.40	M-v	5	Williams		1999 EM_{11}
1999 FA	20.6	0.15	19990122	12.30262	294.89346	166.30453	11.99543	0.1315720	1.0736401	156	1	45 days	0.47	M-v	5	Williams	34335	1999 FA
1999 FB	17.9	0.15	19990122	25.63492	2.89725	37.21035	12.90461	0.6069636	1.1801066	89	1	30 days	0.54	M-v	6	Williams		1999 FB
1999 FD	14.3	0.15	19990323	312.19885	100.03638	151.49776	5.54968	0.1934251	2.5681218	42	1	32 days	0.62			Williams		1999 FD
1999 FG	13.7	0.15	19990323	16.44501	329.13062	195.43697	9.06327	0.0295777	3.1007536	24	1	32 days	0.83			Williams		1999 FG
1999 FH	14.3	0.15	19990323	272.26703	107.90049	193.56742	11.85733	0.2916115	2.3444685	36	1	24 days	0.65			Williams		1999 FH
1999 FJ	14.2	0.15	19990122	17.03491	293.23065	217.24131	1.67445	0.0953133	2.7330277	36	3	1978–1999	0.78	M-v	4	Williams	34263	1999 FJ
1999 FN	14.3	0.15	19990323	346.79922	13.18194	198.62811	13.40051	0.1185771	2.6817966	26	1	30 days	0.68			Williams		1999 FN
1999 FP	14.1	0.15	19990323	200.03751	357.58417	2.41754	5.17726	0.0760750	2.7561596	17	1	23 days	0.85			Williams		1999 FP
1999 FX	14.3	0.15	19990323	26.42981	155.63782	10.86029	5.18905	0.0993198	3.1786126	15	1	32 days	0.78			Williams		1999 FX
1999 FF_1	15.1	0.15	19990323	293.05448	283.73678	18.69085	12.64169	0.3140199	2.5775497	19	1	31 days	1.16			Marsden		1999 FF_1
1999 FH_1	15.0	0.15	19990323	357.77748	178.06848	25.67506	5.06688	0.1106083	3.1819003	24	1	32 days	0.66			Williams		1999 FH_1
1999 FU_1	14.7	0.15	19990303	295.20592	87.70152	171.89717	14.53714	0.2485171	3.2519666	14	1	7 days	0.72			Williams		1999 FU_1
1999 FW_1	15.2	0.15	19990303	308.28638	45.74666	181.15051	2.75401	0.0923540	2.4830632	15	1	7 days	0.57		E	Williams		1999 FW_1
1999 FY_1	17.4	0.15	19990303	333.81300	11.31344	195.52523	0.64421	0.2222715	2.3650813	13	1	7 days	1.02		E	Williams		1999 FY_1
1999 FE_2	15.6	0.15	19990303	9.24812	341.29401	172.13364	5.17264	0.1638513	2.3482181	37	1	51 days	0.62			Williams		1999 FE_2
1999 FM_3	16.1	0.15	19990323	324.62836	223.63538	15.88891	20.96049	0.2194597	2.4196146	30	1	28 days	0.95			Williams		1999 FM_3
1999 FN_3	16.0	0.15	19990323	204.24504	336.22237	13.49028	19.72279	0.0726095	1.9572109	36	1	29 days	1.36			Williams		1999 FN_3
1999 FO_3	15.3	0.15	19990323	35.85445	303.04265	184.37611	23.48798	0.3096975	2.6634890	34	1	28 days	1.24			Williams		1999 FO_3
1999 FP_3	15.8	0.15	19990323	41.54152	312.28838	180.45113	23.46275	0.1880803	2.3247419	29	1	31 days	1.05			Marsden		1999 FP_3
1999 FQ_3	13.3	0.15	19990323	51.31179	250.71632	148.72228	13.27214	0.1760103	2.5861201	27	1	36 days	0.52			Williams		1999 FQ_3
1999 FR_3	15.1	0.15	19990323	359.14515	306.28892	184.15820	3.65183	0.1741289	2.5816307	16	1	31 days	0.61			Marsden		1999 FR_3
1999 FV_3	14.2	0.15	19990323	104.70521	250.43885	177.63010	2.22491	0.0767515	2.9227694	35	1	30 days	0.50			Marsden		1999 FV_3
1999 FW_3	14.3	0.15	19990323	301.17046	56.44033	185.11215	1.66803	0.0730876	2.9506242	16	1	28 days	0.53			Marsden		1999 FW_3

1999 FZ_{3}	17.5	0.15	19990323	17.45933	101.57092	36.58444	1.04175	0.1626847	2.4377980	12	1	27 days	0.26			Williams		1999 FZ_{3}
1999 FH_{4}	13.4	0.15	19990303	204.80998	159.76269	170.33109	14.67624	0.2289167	3.2066476	14	1	7 days	0.72			Williams		1999 FH_{4}
1999 FS_{4}	13.9	0.15	19990303	198.72272	162.24608	195.55409	9.52830	0.0833437	3.0744491	22	1	16 days	1.19			Williams		1999 FS_{4}
1999 FJ_{5}	15.3	0.15	19990323	203.46207	344.90235	354.49414	4.55184	0.2080471	2.2247026	23	1	23 days	0.73			Marsden		1999 FJ_{5}
1999 FP_{5}	14.2	0.15	19990323	232.61148	296.00204	14.40976	10.35329	0.1046005	3.0119280	12	1	20 days	0.19			Marsden		1999 FP_{5}
1999 FQ_{5}	17.7	0.15	19990323	155.48974	198.41637	172.91916	25.78942	0.1608448	1.4940568	53	1	22 days	0.85			Williams		1999 FQ_{5}
1999 FS_{5}	15.4	0.15	19990323	336.92996	329.05834	248.09189	2.27348	0.0355722	2.6302198	10	1	23 days	0.46			Williams		1999 FS_{5}
1999 FT_{5}	15.1	0.15	19990323	344.01812	195.87424	9.12671	6.86957	0.0417484	2.3896450	20	1	16 days	0.73			Williams		1999 FT_{5}
1999 FE_{6}	15.7	0.15	19990303	41.88138	106.11588	332.96022	2.80653	0.2037489	2.5340437	12	1	33 days	0.47			Williams		1999 FE_{6}
1999 FZ_{6}	14.2	0.15	19990323	298.08295	79.69163	197.47140	8.90371	0.1485896	2.7485009	22	1	30 days	0.81			Williams		1999 FZ_{6}
1999 FC_{7}	14.2	0.15	19990122	198.95946	335.87768	23.49669	14.28606	0.1965285	2.6981760	17	1	60 days	0.56	M-v	6	Williams		1999 FC_{7}
1999 FE_{7}	16.4	0.15	19990323	296.27447	90.01151	173.71069	5.18533	0.1757398	2.4236674	13	1	21 days	1.46			Williams		1999 FE_{7}
1999 FF_{7}	16.1	0.15	19990122	301.37814	238.00736	354.51766	3.79558	0.0911167	2.1369302	32	2	1997–1999	0.79	M-v	4	Williams	34263	1999 FF_{7}
1999 FY_{7}	16.6	0.15	19990323	128.01414	228.58020	175.09637	22.69653	0.0909630	1.9448602	13	1	20 days	0.69			Marsden		1999 FY_{7}
1999 FF_{8}	17.0	0.15	19990323	19.44911	151.49431	6.20128	21.07379	0.0486400	1.9261420	18	1	18 days	0.44			Williams		1999 FF_{8}
1999 FH_{8}	15.7	0.15	19990323	23.15700	162.61411	355.84428	20.38105	0.0468338	1.9191341	15	1	25 days	0.73			Marsden		1999 FH_{8}
1999 FL_{8}	14.3	0.15	19990323	5.17839	4.28084	172.25324	16.18839	0.1234186	2.5903877	19	1	17 days	0.56			Williams		1999 FL_{8}
1999 FO_{8}	14.6	0.15	19990323	52.28858	287.81672	194.88443	28.98823	0.1253203	2.5617263	27	1	28 days	0.95			Williams		1999 FO_{8}
1999 FS_{8}	15.4	0.15	19990323	48.14083	293.86748	205.20163	20.93699	0.0724169	1.9596393	28	1	28 days	0.59			Williams		1999 FS_{8}
1999 FT_{8}	14.2	0.15	19990323	343.96922	44.31411	142.46595	2.76733	0.0669434	2.6743160	17	1	20 days	0.65		E	Marsden		1999 FT_{8}
1999 FU_{8}	15.5	0.15	19990303	320.81001	69.80725	145.83886	3.85679	0.1507981	2.2809143	16	1	4 days	0.39			Williams		1999 FU_{8}
1999 FW_{8}	15.3	0.15	19990122	347.60042	51.77743	119.08931	3.44176	0.1202276	2.4144680	25	1	84 days	0.55	M-v	4	Williams		1999 FW_{8}
1999 FC_{9}	13.4	0.15	19990303	291.64761	146.77975	103.28733	2.91348	0.1090035	3.2238203	16	1	4 days	0.51		E	Williams		1999 FC_{9}
1999 FJ_{9}	15.6	0.15	19990323	40.75418	4.24419	140.10567	5.53112	0.0196414	2.1674931	26	1	28 days	0.66			Williams		1999 FJ_{9}
1999 FQ_{9}	16.1	0.15	19990323	17.21896	79.31893	79.69094	2.59422	0.1363003	2.2162528	13	1	15 days	0.49			Williams		1999 FQ_{9}
1999 FU_{9}	14.5	0.15	19990323	23.76166	346.04850	165.10827	7.76557	0.0769187	2.5076771	14	1	16 days	0.66			Williams		1999 FU_{9}
1999 FY_{9}	15.9	0.15	19990323	323.49352	207.39036	25.18849	2.53048	0.1624264	2.4383270	30	1	30 days	0.69			Williams		1999 FY_{9}
1999 FC_{10}	14.1	0.15	19990323	173.53376	182.98505	179.99292	6.50210	0.1661304	2.4355855	11	1	15 days	0.56			Williams		1999 FC_{10}
1999 FD_{10}	14.2	0.15	19990323	52.71971	295.58503	181.37820	2.69720	0.0988812	2.5551992	10	1	15 days	0.75			Williams		1999 FD_{10}
1999 FG_{10}	15.8	0.15	19990323	25.35453	345.62997	168.82642	4.32765	0.1126808	2.5979644	20	1	25 days	0.86			Williams		1999 FG_{10}
1999 FH_{10}	14.9	0.15	19990323	296.85700	147.85625	88.57171	7.35839	0.0255131	2.3745530	18	1	15 days	0.65			Williams		1999 FH_{10}
1999 FL_{10}	14.8	0.15	19990323	309.83242	71.12191	192.71113	7.57757	0.2596496	2.7234660	20	1	24 days	0.86			Williams		1999 FL_{10}
1999 FO_{10}	14.7	0.15	19990323	20.39288	159.49872	359.40251	10.70736	0.1143217	3.1830006	14	1	28 days	0.68			Marsden		1999 FO_{10}
1999 FP_{10}	15.0	0.15	19990323	54.97046	344.79756	145.52907	4.39323	0.0906102	2.3319810	47	1	37 days	0.93			Williams		1999 FP_{10}
1999 FZ_{10}	16.0	0.15	19990323	249.28793	306.82451	18.67521	5.22721	0.1930190	2.2115367	17	1	38 days	0.56			Williams		1999 FZ_{10}
1999 FW_{12}	16.1	0.15	19990323	313.33991	81.76366	183.80836	3.99132	0.2167718	2.5956944	11	1	27 days	0.15			Marsden		1999 FW_{12}
1999 FM_{13}	15.0	0.15	19990303	322.06257	63.66685	166.90749	0.77873	0.2431542	3.3227006	15	1	5 days	0.71		E	Williams		1999 FM_{13}
1999 FJ_{17}	15.1	0.15	19990323	352.51452	14.91686	192.81423	17.82454	0.2442607	2.7002858	40	1	31 days	0.60			Marsden		1999 FJ_{17}
1999 FP_{17}	15.0	0.15	19990303	33.11309	320.79642	170.98731	1.03547	0.2906558	3.0173166	16	1	5 days	0.81			Williams		1999 FP_{17}
1999 FU_{17}	13.2	0.15	19990323	95.41150	262.84433	195.52312	17.21022	0.0454090	3.1512820	29	1	38 days	0.87			Williams		1999 FU_{17}
1999 FZ_{17}	15.9	0.15	19990323	347.94332	155.91533	55.56105	1.75774	0.1434807	2.2802560	15	1	24 days	0.58			Williams		1999 FZ_{17}
1999 FA_{18}	17.0	0.15	19990323	329.95547	103.38905	134.04131	1.31590	0.1683337	2.3267515	13	1	22 days	0.33			Marsden		1999 FA_{18}
1999 FQ_{18}	14.3	0.15	19990323	15.52745	150.71073	11.61441	8.82317	0.2111513	2.7616978	23	1	50 days	0.98			Williams		1999 FQ_{18}
1999 FU_{18}	15.1	0.15	19990323	2.12956	171.96002	10.49940	5.00256	0.1376761	3.0740813	14	1	16 days	0.91			Williams		1999 FU_{18}
1999 FX_{18}	15.1	0.15	19990323	48.30028	135.15963	350.45684	4.96643	0.0983220	3.1783537	10	1	15 days	0.56			Williams		1999 FX_{18}
1999 FF_{19}	15.4	0.15	19990303	327.77536	350.37548	229.84693	2.92410	0.1765415	2.2315290	20	1	49 days	0.60			Williams		1999 FF_{19}
1999 FJ_{19}	14.1	0.15	19990323	305.84141	92.25489	180.18636	13.28159	0.1792737	3.1816645	13	1	25 days	0.79			Williams		1999 FJ_{19}
1999 FL_{19}	13.5	0.15	19990122	37.82260	28.29942	104.48837	3.13227	0.1352870	3.0663746	37	2	1996–1999	0.79	M-v	4	Williams	34263	1999 FL_{19}
1999 FM_{19}	13.7	0.15	19990323	329.02967	87.45022	141.12237	3.16795	0.0679324	2.7919808	30	1	28 days	0.64			Williams		1999 FM_{19}
1999 FN_{19}	22.5	0.15	19990122	312.61028	35.08538	191.48742	2.33195	0.3928079	1.6512682	136	1	32 days	0.76	M-v	6	Marsden		1999 FN_{19}
1999 FP_{19}	20.2	0.15	19990122	310.08986	273.58850	347.36261	15.08812	0.5188132	1.9433644	44	1	31 days	0.75	M-v	6	Williams		1999 FP_{19}
1999 FQ_{19}	17.6	0.15	19990323	0.58181	251.27757	296.47055	8.38222	0.4638357	3.0088294	49	1	28 days	0.67			Marsden		1999 FQ_{19}
1999 FS_{19}	14.4	0.15	19990323	293.08601	326.48382	278.71206	0.77528	0.0315774	2.9015313	22	1	28 days	0.71			Marsden		1999 FS_{19}

1999 FT_{19}	14.9	0.15	19990323	79.83302	262.10163	179.59335	18.83440	0.2151140	2.7266208	13	1	18 days	1.10		E	Marsden	1999 FT_{19}
1999 FU_{19}	15.4	0.15	19990323	306.94227	203.10909	47.33779	4.14811	0.1206161	2.3967153	36	1	32 days	0.94			Williams	1999 FU_{19}
1999 FV_{19}	14.1	0.15	19990303	331.63723	209.09776	2.08952	9.18084	0.1264802	2.7443393	22	1	58 days	0.42			Williams	1999 FV_{19}
1999 FT_{20}	15.9	0.15	19990323	267.73618	297.26351	7.12518	4.36444	0.2838525	2.4374754	16	1	22 days	0.60			Marsden	1999 FT_{20}
1999 FV_{20}	15.6	0.15	19990323	34.03551	138.02752	4.97176	11.69263	0.0709882	3.1910005	12	1	26 days	0.13			Williams	1999 FV_{20}
1999 FX_{20}	16.3	0.15	19990323	10.52835	96.96829	79.19469	3.10480	0.1555835	2.3683687	34	1	29 days	0.67			Marsden	1999 FX_{20}
1999 FY_{20}	15.2	0.15	19990323	303.60407	157.40181	94.95258	3.44539	0.0389293	2.5767320	32	1	32 days	0.68			Williams	1999 FY_{20}
1999 FZ_{20}	13.8	0.15	19990323	154.11262	199.95185	164.75757	24.50563	0.2875141	2.4559310	17	1	5 days	1.20		E	Williams	1999 FZ_{20}
1999 FB_{21}	14.1	0.15	19990323	296.16306	119.68868	130.11124	3.00475	0.1486214	3.0253239	16	1	5 days	1.16		E	Williams	1999 FB_{21}
1999 FE_{21}	14.8	0.15	19990323	41.95534	125.07770	24.27707	13.87402	0.1566328	2.4090953	47	1	35 days	0.74			Williams	1999 FE_{21}
1999 FF_{21}	15.8	0.15	19990323	329.07503	21.54794	193.82826	7.47511	0.1319831	2.4549329	44	1	32 days	1.02			Marsden	1999 FF_{21}
1999 FH_{21}	15.6	0.15	19990323	70.51535	104.07661	345.99481	8.85482	0.1867261	2.2956989	13	1	12 days	0.36			Marsden	1999 FH_{21}
1999 FJ_{21}	20.4	0.15	19990323	72.87369	67.55669	19.56552	21.95560	0.2743313	1.2741300	33	1	28 days	0.84			Marsden	1999 FJ_{21}
1999 FK_{21}	18.9	0.15	19990323	260.12229	172.24176	180.66357	12.66938	0.7046257	0.7391192	61	1	3 days	0.51			Marsden	1999 FK_{21}
1999 FN_{21}	15.9	0.15	19990323	326.42750	296.40306	306.62772	3.31509	0.1212076	2.1689898	21	1	59 days	0.63			Williams	1999 FN_{21}
1999 FO_{21}	15.5	0.15	19990323	287.64734	38.74695	247.61283	5.95936	0.0869871	2.6218797	11	1	28 days	0.41			Williams	1999 FO_{21}
1999 FP_{21}	15.6	0.15	19990323	354.57508	25.41472	161.08242	6.20317	0.1089711	2.2885937	24	1	17 days	0.60			Williams	1999 FP_{21}
1999 FQ_{21}	15.6	0.15	19990323	42.74732	319.18963	177.20819	14.27825	0.0760700	2.5955130	17	1	18 days	1.06		E	Marsden	1999 FQ_{21}
1999 FR_{21}	14.5	0.15	19990323	180.84410	336.03568	28.84434	6.15107	0.0748801	2.9511224	14	1	18 days	0.65			Marsden	1999 FR_{21}
1999 FT_{21}	15.2	0.15	19990323	322.92237	129.11972	106.94174	2.39143	0.1642819	3.2173967	13	1	26 days	0.91			Marsden	1999 FT_{21}
1999 FU_{23}	15.4	0.15	19990323	301.61835	89.05054	153.32598	3.03937	0.1447422	2.2673238	14	1	25 days	0.64			Marsden	1999 FU_{23}
1999 FY_{23}	14.5	0.15	19990122	48.69753	91.10622	1.82759	3.61160	0.0900841	2.2344886	24	1	114 days	0.51	M-v	5	Williams	1999 FY_{23}
1999 FK_{24}	14.1	0.15	19990323	298.20005	293.18050	354.25971	14.06879	0.2996006	3.2358805	16	1	15 days	0.56			Williams	1999 FK_{24}
1999 FL_{24}	13.6	0.15	19990323	353.16795	264.35645	294.90805	3.96191	0.1100598	3.1298119	23	1	37 days	0.63		D	Williams	1999 FL_{24}
1999 FZ_{24}	12.8	0.15	19990323	267.59509	124.73042	164.46745	10.85156	0.0715751	3.0034201	18	1	28 days	0.77			Williams	1999 FZ_{24}
1999 FH_{25}	14.7	0.15	19990323	300.39259	137.49520	120.08714	6.03606	0.0952451	2.5255588	22	1	28 days	0.89			Williams	1999 FH_{25}
1999 FK_{25}	14.8	0.15	19990303	61.58409	49.14943	59.79342	7.39663	0.1256292	2.8066542	12	1	4 days	0.45			Williams	1999 FK_{25}
1999 FL_{25}	15.2	0.15	19990323	323.65376	125.10387	116.48709	4.54980	0.2111146	2.5515025	24	1	28 days	0.86			Williams	1999 FL_{25}
1999 FM_{25}	16.4	0.15	19990303	14.98265	108.38498	47.37034	5.89568	0.2125797	2.3853379	13	1	4 days	0.57			Williams	1999 FM_{25}
1999 FO_{25}	15.0	0.15	19990323	78.90365	40.85926	51.21981	5.91638	0.1500870	2.2946346	22	1	28 days	0.66			Williams	1999 FO_{25}
1999 FP_{25}	13.9	0.15	19990323	9.60407	351.41336	187.35040	5.28975	0.0959481	3.2027389	14	1	22 days	0.49			Williams	1999 FP_{25}
1999 FU_{25}	15.4	0.15	19990323	24.34699	327.80076	192.07955	4.98533	0.1067203	2.5330916	18	1	22 days	0.70			Williams	1999 FU_{25}
1999 FO_{26}	14.3	0.15	19990303	270.47760	276.35168	16.63893	6.75082	0.1557358	2.4672113	14	1	4 days	0.50		E	Williams	1999 FO_{26}
1999 FS_{26}	15.6	0.15	19990303	358.11255	136.99275	47.79748	4.28502	0.1436240	2.5178640	14	1	4 days	0.76		E	Williams	1999 FS_{26}
1999 FU_{26}	14.1	0.15	19990323	290.20627	211.19081	59.80541	4.57602	0.0999879	2.6263795	20	1	28 days	0.86			Williams	1999 FU_{26}
1999 FD_{27}	15.4	0.15	19990303	305.11287	103.87914	168.17581	14.80679	0.2806763	2.8017354	10	1	4 days	0.50		E	Williams	1999 FD_{27}
1999 FF_{27}	14.6	0.15	19990303	192.22619	218.06708	137.11545	5.55193	0.0750720	2.3045984	14	1	4 days	0.76		E	Williams	1999 FF_{27}
1999 FG_{27}	15.7	0.15	19990323	345.95972	159.38167	47.45079	5.35105	0.1006538	2.2993885	23	1	28 days	0.91			Williams	1999 FG_{27}
1999 FH_{27}	14.8	0.15	19990303	51.59911	309.26651	159.70991	8.69389	0.2471375	2.9281027	14	1	4 days	0.83		E	Williams	1999 FH_{27}
1999 FJ_{27}	15.4	0.15	19990303	108.12508	343.13057	79.96364	4.89201	0.1469540	2.3489653	11	1	4 days	0.84		E	Williams	1999 FJ_{27}
1999 FK_{27}	14.1	0.15	19990303	48.37719	80.43066	29.17767	10.37622	0.2602193	2.8551249	14	1	4 days	0.70		E	Williams	1999 FK_{27}
1999 FM_{27}	16.4	0.15	19990323	19.76024	100.58958	62.39731	2.83489	0.1551705	2.3548835	19	1	22 days	0.76			Williams	1999 FM_{27}
1999 FN_{27}	14.0	0.15	19990323	22.31901	5.11018	160.51787	5.96216	0.0793403	2.7239030	20	1	28 days	0.38			Williams	1999 FN_{27}
1999 FR_{27}	14.9	0.15	19990303	43.43492	324.96771	150.93540	2.08448	0.2568711	2.6599513	12	1	4 days	1.01		E	Williams	1999 FR_{27}
1999 FS_{27}	13.9	0.15	19990323	228.20970	158.48234	173.72409	4.59672	0.1032227	2.7513823	17	1	22 days	0.72			Williams	1999 FS_{27}
1999 FU_{27}	12.8	0.15	19990323	176.75040	1.39843	14.75539	27.14955	0.0557445	3.2565883	15	1	22 days	0.51			Williams	1999 FU_{27}
1999 FV_{27}	15.3	0.15	19990323	87.44908	272.80427	183.57962	6.58598	0.0672282	2.2857304	15	1	22 days	0.70			Williams	1999 FV_{27}
1999 FW_{27}	15.1	0.15	19990323	319.97803	228.06467	11.65740	3.87359	0.1047500	2.3384784	12	1	22 days	0.69			Williams	1999 FW_{27}
1999 FX_{27}	15.3	0.15	19990323	341.41354	196.52751	16.43913	2.78844	0.0656650	2.4417315	15	1	22 days	0.70			Williams	1999 FX_{27}
1999 FO_{28}	15.5	0.15	19990303	19.00099	145.59745	11.54449	8.99994	0.1874406	2.5077769	13	1	4 days	0.60			Williams	1999 FO_{28}
1999 FP_{28}	16.0	0.15	19990303	18.15491	345.74357	176.73096	3.63258	0.0845445	2.2171879	13	1	4 days	0.71		E	Williams	1999 FP_{28}
1999 FQ_{28}	13.0	0.15	19990323	24.52212	124.50451	40.76851	1.80356	0.0722703	3.0864597	20	1	19 days	0.76			Williams	1999 FQ_{28}
1999 FR_{28}	13.8	0.15	19990323	268.24739	300.44974	16.57910	13.59955	0.3009395	2.3634536	35	1	29 days	0.61			Williams	1999 FR_{28}

1999 FV_{28}	15.5	0.15	19990323	281.64466	112.90548	177.74887	5.37217	0.1816814	2.2045508	18	1	22 days	0.70			Williams	1999 FV_{28}
1999 FA_{29}	15.4	0.15	19990323	309.56438	237.87675	24.82190	9.37101	0.2061263	2.3946794	16	1	22 days	0.58			Williams	1999 FA_{29}
1999 FB_{29}	14.0	0.15	19990122	344.24465	15.26915	185.19206	19.92394	0.1298397	3.1324977	31	1	70 days	0.64	M-v	4	Williams	1999 FB_{29}
1999 FE_{29}	16.1	0.15	19990323	0.01774	62.42647	128.29195	3.39245	0.0865125	2.3195095	26	1	28 days	1.01			Williams	1999 FE_{29}
1999 FF_{29}	15.9	0.15	19990323	299.12469	127.32564	145.71362	3.68447	0.1904049	2.2423341	20	1	22 days	0.91			Williams	1999 FF_{29}
1999 FH_{29}	15.9	0.15	19990303	313.58688	79.64534	156.37335	6.45316	0.0543195	2.3016894	12	1	4 days	0.70			Williams	1999 FH_{29}
1999 FJ_{29}	15.5	0.15	19990303	9.72950	134.41377	36.72151	8.39978	0.1760781	2.8118125	13	1	4 days	0.89		E	Williams	1999 FJ_{29}
1999 FK_{29}	15.0	0.15	19990303	226.30219	260.96283	76.02227	4.33034	0.2163433	2.3011214	12	1	4 days	1.23		E	Williams	1999 FK_{29}
1999 FL_{29}	14.7	0.15	19990323	2.28602	11.62284	177.28356	18.15839	0.1676770	3.1355414	14	1	22 days	0.74			Williams	1999 FL_{29}
1999 FM_{29}	15.2	0.15	19990303	24.06841	28.75640	111.85974	4.36377	0.2891969	2.9338611	13	1	4 days	0.71		E	Williams	1999 FM_{29}
1999 FO_{29}	14.4	0.15	19990303	47.43406	82.01943	43.95030	9.24165	0.1597175	3.2267866	13	1	4 days	0.90		E	Williams	1999 FO_{29}
1999 FP_{29}	15.3	0.15	19990303	288.45516	185.72352	86.25681	4.60484	0.1415752	2.2183290	14	1	4 days	0.94		E	Williams	1999 FP_{29}
1999 FR_{29}	14.4	0.15	19990323	43.51289	73.66349	59.71384	7.49592	0.1551428	2.6409302	25	1	28 days	0.82			Williams	1999 FR_{29}
1999 FW_{29}	14.5	0.15	19990323	69.12722	11.89529	97.24162	5.31318	0.1174854	2.2449592	17	1	21 days	0.49			Marsden	1999 FW_{29}
1999 FZ_{29}	15.7	0.15	19990323	320.51139	183.77966	57.67138	3.84770	0.1268034	2.2550610	13	1	19 days	0.91			Williams	1999 FZ_{29}
1999 FC_{30}	15.4	0.15	19990412	341.38073	66.39865	157.71107	6.08857	0.1410788	2.3157788	11	1	25 days	0.49			Nakano	1999 FC_{30}
1999 FF_{30}	14.9	0.15	19990323	93.11051	53.35892	35.01758	7.78883	0.1009343	2.2130357	15	1	28 days	1.67			Marsden	1999 FF_{30}
1999 FJ_{30}	14.6	0.15	19990323	68.95692	80.96118	38.20802	2.85393	0.0368410	2.1665587	32	1	28 days	0.49			Williams	1999 FJ_{30}
1999 FK_{30}	14.7	0.15	19990323	184.44602	346.36291	24.41982	4.30807	0.0961386	2.4671680	34	1	26 days	0.66			Williams	1999 FK_{30}
1999 FO_{30}	15.4	0.15	19990323	348.16194	22.15070	186.81535	3.19301	0.1074344	2.6202413	18	1	26 days	0.72			Williams	1999 FO_{30}
1999 FQ_{30}	13.9	0.15	19990323	322.42256	263.79215	6.25824	23.66146	0.3609348	3.1554628	28	1	32 days	0.78			Williams	1999 FQ_{30}
1999 FW_{30}	14.9	0.15	19990323	83.14586	288.52062	169.44023	4.46393	0.1102003	2.2931372	12	1	19 days	0.84			Williams	1999 FW_{30}
1999 FY_{30}	15.1	0.15	19990323	322.09287	213.48394	29.41166	5.75548	0.1422571	2.3260618	25	1	28 days	0.80			Williams	1999 FY_{30}
1999 FZ_{30}	14.9	0.15	19990323	26.55148	135.84247	26.44959	7.88279	0.0647739	2.2738836	28	1	28 days	0.69			Williams	1999 FZ_{30}
1999 FC_{31}	14.3	0.15	19990323	351.74483	63.40029	140.53614	4.29099	0.0349527	2.7940941	21	1	28 days	0.76			Williams	1999 FC_{31}
1999 FD_{31}	16.3	0.15	19990303	19.66255	110.44070	48.43741	6.20106	0.1628196	2.4987481	10	1	6 days	0.74			Marsden	1999 FD_{31}
1999 FF_{31}	12.8	0.15	19990323	89.79523	288.15195	168.58685	10.87010	0.0815923	3.0244311	23	1	28 days	0.64			Williams	1999 FF_{31}
1999 FG_{31}	14.4	0.15	19990323	61.00406	72.73537	52.61781	7.45605	0.0571245	2.3822210	22	1	28 days	0.80			Williams	1999 FG_{31}
1999 FN_{31}	13.8	0.15	19990323	248.11229	272.21982	40.89405	6.48210	0.0395073	2.8635343	15	1	26 days	0.85			Marsden	1999 FN_{31}
1999 FO_{31}	13.3	0.15	19990323	139.75722	25.61107	21.75663	13.95501	0.1544498	2.5733977	23	1	28 days	0.65			Williams	1999 FO_{31}
1999 FU_{31}	13.5	0.15	19990323	50.13101	281.88884	208.19172	21.46200	0.1749324	3.1437540	18	1	30 days	0.81			Williams	1999 FU_{31}
1999 FA_{32}	13.6	0.15	19990323	305.61814	87.05559	188.37483	6.73001	0.2006481	3.0678900	21	1	28 days	0.81			Williams	1999 FA_{32}
1999 FC_{32}	14.6	0.15	19990323	30.67867	94.54883	53.07085	4.82545	0.1379856	2.4432696	19	1	28 days	0.64			Williams	1999 FC_{32}
1999 FD_{32}	15.3	0.15	19990323	331.74571	102.35991	125.99029	3.01609	0.1609830	2.4620230	21	1	28 days	0.94			Williams	1999 FD_{32}
1999 FJ_{32}	13.9	0.15	19990323	326.35482	214.69497	21.18596	9.98658	0.0376753	3.0454426	16	1	29 days	0.70			Williams	1999 FJ_{32}
1999 FK_{32}	14.7	0.15	19990323	297.90917	262.71311	26.84189	12.19763	0.2787738	2.4241691	34	1	31 days	0.86			Marsden	1999 FK_{32}
1999 FN_{32}	15.0	0.15	19990323	87.99430	99.26027	348.45424	3.66961	0.1490064	2.2561819	12	1	23 days	0.75			Williams	1999 FN_{32}
1999 FO_{32}	16.1	0.15	19990323	27.78784	92.27035	36.22441	4.88695	0.4093585	3.1193369	10	1	19 days	0.93			Williams	1999 FO_{32}
1999 FP_{32}	15.4	0.15	19990412	325.85832	253.21332	353.51490	1.33345	0.1505199	2.3999677	24	1	40 days	0.86			Williams	1999 FP_{32}
1999 FR_{32}	13.7	0.15	19990412	246.74718	305.39216	34.06992	8.42950	0.2719435	2.3958806	27	1	41 days	0.74			Williams	1999 FR_{32}
1999 FS_{32}	13.8	0.15	19990323	13.49019	37.55610	142.00950	1.97531	0.1527450	3.1974044	20	1	50 days	0.76			Williams	1999 FS_{32}
1999 FU_{32}	13.6	0.15	19990323	71.99788	305.08690	192.00782	8.20796	0.0229274	2.5699127	15	1	26 days	4.21			Marsden	1999 FU_{32}
1999 FV_{32}	14.2	0.15	19990323	208.90164	279.99918	73.11555	14.00974	0.2502359	2.4316064	13	1	28 days	0.45			Williams	1999 FV_{32}
1999 FX_{32}	12.4	0.15	19990323	278.53597	163.34376	128.83267	9.53178	0.0905206	2.7856829	16	1	23 days	0.59			Williams	1999 FX_{32}
1999 FK_{33}	15.0	0.15	19990303	186.07946	251.52496	108.52749	6.13031	0.1629887	2.2751668	12	1	4 days	0.94		E	Williams	1999 FK_{33}
1999 FL_{33}	15.9	0.15	19990323	338.05565	33.79029	188.61148	11.00192	0.2072103	2.6404136	21	1	35 days	0.64			Williams	1999 FL_{33}
1999 FP_{33}	14.5	0.15	19990303	42.07140	303.61387	177.47527	8.37655	0.2565929	3.3478190	10	1	4 days	0.72			Williams	1999 FP_{33}
1999 FQ_{33}	15.1	0.15	19990303	289.63988	255.55968	33.36973	5.54233	0.2840093	2.6305705	12	1	4 days	0.91		E	Williams	1999 FQ_{33}
1999 FS_{33}	14.6	0.15	19990303	58.40932	296.71920	159.98454	8.15790	0.2793822	3.0211006	12	1	4 days	0.85			Williams	1999 FS_{33}
1999 FU_{33}	15.9	0.15	19990323	319.04748	158.29068	90.01579	4.17213	0.2112812	2.3238166	25	1	38 days	1.03			Williams	1999 FU_{33}
1999 FV_{33}	13.5	0.15	19990303	239.85823	163.88256	159.99959	12.28587	0.1534027	3.2277742	11	1	4 days	0.99		E	Williams	1999 FV_{33}
1999 FW_{33}	13.5	0.15	19990303	165.25288	239.96476	140.80606	7.45374	0.1667087	3.1830084	11	1	4 days	0.67		E	Williams	1999 FW_{33}
1999 FX_{33}	13.9	0.15	19990303	105.62150	3.17358	72.28228	6.24076	0.0724671	3.2075312	11	1	4 days	0.99		E	Williams	1999 FX_{33}

1999 FZ_{33}	16.4	0.15	19990303	351.17669	116.60315	80.82464	2.96034	0.2935524	2.7107312	11	1	4 days	0.95		E	Williams	1999 FZ_{33}
1999 FA_{34}	13.6	0.15	19990323	61.40591	111.13855	19.18903	23.27213	0.0121114	3.1335997	26	1	28 days	0.66			Williams	1999 FA_{34}
1999 FE_{34}	16.1	0.15	19990323	301.96440	71.46115	186.21926	6.38874	0.0729935	2.3100180	15	1	19 days	0.78			Williams	1999 FE_{34}
1999 FG_{34}	16.4	0.15	19990323	27.93349	65.75014	86.37646	3.28660	0.1610122	2.3568854	17	1	22 days	0.76			Williams	1999 FG_{34}
1999 FK_{34}	14.9	0.15	19990323	345.27525	179.31161	30.53272	15.45919	0.0960408	3.0348072	14	1	22 days	1.40			Williams	1999 FK_{34}
1999 FA_{35}	14.1	0.15	19990323	49.79740	294.38388	208.32204	14.59528	0.0444722	2.6119985	22	1	30 days	0.72			Williams	1999 FA_{35}
1999 FB_{35}	14.6	0.15	19990303	285.67401	109.93800	169.25202	15.20404	0.1619796	2.7430575	11	1	4 days	0.83			Williams	1999 FB_{35}
1999 FD_{35}	14.5	0.15	19990323	4.76344	324.48684	223.20703	0.42085	0.1280844	3.1452075	18	1	21 days	0.89			Williams	1999 FD_{35}
1999 FE_{35}	13.5	0.15	19990323	140.11476	240.66047	164.03470	3.78475	0.1266025	2.7738573	19	1	22 days	1.19			Williams	1999 FE_{35}
1999 FT_{42}	14.8	0.15	19990323	134.93569	24.75151	357.01324	4.82178	0.1858897	2.2128405	13	1	17 days	0.67			Williams	1999 FT_{42}
1999 FX_{45}	14.6	0.15	19990323	210.56249	302.49690	25.93238	1.47098	0.1141365	2.2417099	14	1	17 days	0.75			Williams	1999 FX_{45}
1999 FQ_{48}	13.9	0.15	19990323	239.42438	295.64966	7.72727	6.33804	0.1242176	2.4616156	15	1	17 days	0.72			Williams	1999 FQ_{48}
1999 FK_{53}	14.2	0.15	19990412	119.17811	38.67705	52.36834	7.71989	0.0529582	2.3223164	14	1	29 days	1.14			Williams	1999 FK_{53}
1999 FM_{53}	15.0	0.15	19990323	325.95141	309.56954	287.31627	2.71213	0.1246522	2.9190800	15	1	17 days	0.48			Williams	1999 FM_{53}
1999 FN_{53}	18.3	0.15	19990122	308.39681	191.47926	50.71130	20.16163	0.4543492	1.7340374	78	1	32 days	0.56	M-v	6	Williams	1999 FN_{53}
1999 FP_{59}	18.5	0.15	19990122	227.73558	303.57487	19.81865	1.77572	0.2590831	1.6992639	20	1	31 days	0.55	M-v	7	Williams	1999 FP_{59}
1999 FQ_{59}	15.1	0.15	19990323	306.72428	140.14704	121.87642	5.78307	0.1644970	2.5763523	21	1	28 days	0.88			Williams	1999 FQ_{59}
1999 GC	17.5	0.15	19990323	336.82943	247.92710	330.70846	4.70481	0.1351929	2.1173902	9	1	3 days	0.35			Marsden	1999 GC
1999 GD	16.0	0.15	19990323	281.60449	296.85381	342.51546	7.51012	0.0973205	2.3124935	10	1	3 days	0.30			Marsden	1999 GD
1999 GF	13.1	0.15	19990323	210.85725	338.38724	358.86751	16.14632	0.1282488	2.5649134	18	1	6 days	0.58			Williams	1999 GF
1999 GG	13.4	0.15	19990412	281.46592	125.37035	163.05446	0.35956	0.1490246	3.1180258	16	1	16 days	0.85			Williams	1999 GG
1999 GJ	15.3	0.15	19990323	286.71210	263.48778	9.06394	2.43552	0.1557131	2.4486133	21	1	13 days	0.61			Marsden	1999 GJ
1999 GK	15.2	0.15	19990412	21.31711	337.20407	184.65638	13.19894	0.0816488	2.5566910	22	1	13 days	0.55			Marsden	1999 GK
1999 GL	15.9	0.15	19990412	343.64457	163.84544	41.58030	3.18583	0.1453823	2.3980298	8	1	11 days	0.34			Marsden	1999 GL
1999 GM	16.1	0.15	19990323	0.95502	201.32792	338.52514	1.95004	0.1630375	2.4069126	19	1	6 days	0.79			Williams	1999 GM
1999 GN	14.1	0.15	19990323	264.81005	111.92578	194.93942	8.38825	0.2832893	2.4597561	9	1	4 days	1.50		E	Williams	1999 GN
1999 GP	13.9	0.15	19990412	209.53620	355.88642	345.62978	1.19825	0.0153331	2.8794360	13	1	16 days	0.60			Williams	1999 GP
1999 GQ	15.8	0.15	19990412	31.52900	144.06816	5.25077	4.82981	0.1652740	2.3560792	11	1	16 days	1.06			Williams	1999 GQ
1999 GR	13.3	0.15	19990412	246.89855	305.56198	6.21304	8.85908	0.0878231	3.0410060	11	1	14 days	0.65			Williams	1999 GR
1999 GS	15.5	0.15	19990412	47.72636	119.66453	15.79255	3.57671	0.1198778	2.3880959	15	1	14 days	0.81			Williams	1999 GS
1999 GT	15.7	0.15	19990323	22.13234	321.18830	202.66508	3.81829	0.1652206	2.5587162	14	1	20 days	0.58			Williams	1999 GT
1999 GU	15.9	0.15	19990122	352.07126	173.60027	10.61163	0.89438	0.0436901	2.2308004	19	1	66 days	0.41	M-v	5	Williams	1999 GU
1999 GW	15.2	0.15	19990412	6.08486	70.55932	136.14204	3.57588	0.0962135	2.2050072	19	1	20 days	0.66			Williams	1999 GW
1999 GY	14.6	0.15	19990323	38.98458	303.87999	183.81720	7.62815	0.1680018	2.7809158	11	1	7 days	0.23			Marsden	1999 GY
1999 GZ	14.8	0.15	19990412	6.15188	161.65649	16.28165	12.25991	0.1214798	2.6045179	24	1	14 days	0.80			Williams	1999 GZ
1999 GA_1	15.2	0.15	19990323	342.31903	173.89712	35.67856	4.65952	0.1407415	2.4710792	29	1	33 days	0.77			Williams	1999 GA_1
1999 GB_1	13.4	0.15	19990412	219.43191	201.38797	131.92542	2.13157	0.0267907	3.0602325	11	1	14 days	1.12			Williams	1999 GB_1
1999 GC_1	13.4	0.15	19990323	254.96222	281.50737	15.06800	15.46447	0.0402782	3.0814526	22	1	27 days	0.58			Williams	1999 GC_1
1999 GD_1	15.4	0.15	19990122	279.59663	83.50032	183.79976	7.15176	0.0987840	2.3944256	21	1	60 days	0.71	M-v	6	Williams	1999 GD_1
1999 GE_1	14.6	0.15	19990303	284.28160	267.40045	7.60050	13.39356	0.2072517	2.6679652	29	1	58 days	0.84			Williams	1999 GE_1
1999 GF_1	15.4	0.15	19990323	58.54438	290.21561	167.42906	3.71917	0.2718851	2.5783874	11	1	2 days	0.68		E	Williams	1999 GF_1
1999 GG_1	14.7	0.15	19990323	309.42113	237.40860	16.34488	8.57536	0.1588947	3.1082869	10	1	9 days	0.74			Marsden	1999 GG_1
1999 GJ_1	14.2	0.15	19990323	304.75113	190.52480	77.88186	7.29391	0.0743311	2.5208414	12	1	7 days	0.63		E	Williams	1999 GJ_1
1999 GK_1	13.4	0.15	19990323	283.28352	269.63659	46.84015	20.18290	0.2785493	2.8174253	17	1	8 days	0.80		E	Williams	1999 GK_1
1999 GL_1	15.0	0.15	19990323	333.93753	133.76133	113.25932	4.14455	0.2598513	2.5528628	11	1	7 days	0.42			Williams	1999 GL_1
1999 GM_1	14.6	0.15	19990323	28.74017	84.77894	85.98564	5.67540	0.0733966	2.2058431	12	1	7 days	0.57			Williams	1999 GM_1
1999 GN_1	14.0	0.15	19990412	358.72700	32.62980	181.35992	12.45384	0.1255450	2.6924798	9	1	7 days	0.50			Nakano	1999 GN_1
1999 GQ_1	17.1	0.15	19990323	58.50622	90.42289	7.45586	2.38475	0.2432387	2.5639527	9	1	6 days	0.26		E	Williams	1999 GQ_1
1999 GY_1	15.8	0.15	19990323	187.42618	180.19302	189.74734	5.65231	0.2713187	2.6726962	9	1	9 days	0.35		E	Williams	1999 GY_1
1999 GZ_1	16.1	0.15	19990412	90.67146	50.87692	48.08129	7.41148	0.1049519	2.1763425	61	1	9 days	0.73			Williams	1999 GZ_1
1999 GA_2	15.0	0.15	19990323	241.44457	206.92805	108.79201	6.67397	0.1739289	2.1737326	20	1	4 days	0.85			Williams	1999 GA_2
1999 GB_2	14.5	0.15	19990412	202.42708	301.95908	57.38485	7.51238	0.0809062	2.4886890	11	1	16 days	0.71			Nakano	1999 GB_2
1999 GD_2	13.6	0.15	19990412	176.43793	1.43857	5.45606	9.97668	0.0967390	2.9860331	20	1	11 days	0.47			Marsden	1999 GD_2

1999 GE_2	15.0	0.15	19990412	337.81292	183.97066	45.52147	9.44556	0.1100970	2.5819943	35	1	11 days	0.60		Williams	1999 GE_2
1999 GF_2	15.8	0.15	19990412	319.11709	186.21542	58.58081	7.29363	0.1076049	2.3458362	6	1	6 days	0.06		Marsden	1999 GF_2
1999 GG_2	15.5	0.15	19990323	277.21599	169.03742	122.72581	3.81921	0.2299476	2.1773441	33	1	4 days	0.76		Williams	1999 GG_2
1999 GH_2	15.5	0.15	19990122	3.36747	111.95050	23.74355	14.10519	0.4461874	3.0137492	81	1	45 days	0.57	M-v 4	Williams	1999 GH_2
1999 GJ_2	16.7	0.15	19990122	196.09023	142.30015	196.34871	11.30164	0.1985558	1.5359865	114	1	32 days	0.64	M-v 6	Williams	1999 GJ_2
1999 GL_2	13.0	0.15	19990412	351.46958	356.70936	213.91784	1.22843	0.0197570	2.8455087	10	1	26 days	0.46		Williams	1999 GL_2
1999 GM_2	14.4	0.15	19990412	286.13752	160.85208	146.43739	4.50064	0.1939590	2.3939267	21	1	19 days	0.68		Williams	1999 GM_2
1999 GO_2	16.8	0.15	19990412	341.46094	160.00069	68.55765	5.35039	0.1993508	2.3000920	17	1	14 days	0.55		Marsden	1999 GO_2
1999 GP_2	15.1	0.15	19990412	249.48237	177.03173	148.13298	5.76977	0.1436995	3.1129135	24	1	14 days	0.29		Williams	1999 GP_2
1999 GQ_2	15.0	0.15	19990412	51.54235	202.57237	295.07064	9.26086	0.0607604	2.9809153	18	1	10 days	0.92		Marsden	1999 GQ_2
1999 GR_2	15.1	0.15	19990412	62.90189	51.14469	60.16202	3.51267	0.1408563	2.4100253	20	1	10 days	0.49		Marsden	1999 GR_2
1999 GS_2	13.4	0.15	19990412	192.50318	351.84611	28.90174	14.49719	0.2421285	2.9052394	18	1	10 days	0.95	E	Williams	1999 GS_2
1999 GE_3	15.8	0.15	19990323	284.53595	253.19312	13.62923	1.78770	0.0711837	2.8993904	9	1	7 days	0.35	E	Williams	1999 GE_3
1999 GF_3	15.0	0.15	19990412	42.72912	313.05302	185.37445	11.36602	0.0723331	3.2185879	9	1	10 days	0.10		Williams	1999 GF_3
1999 GG_3	16.8	0.15	19990412	312.45355	79.90111	182.28804	2.24375	0.2399144	2.4046472	9	1	10 days	0.13		Williams	1999 GG_3
1999 GH_3	17.0	0.15	19990323	319.93580	69.23197	178.91093	3.36717	0.2548770	3.2046095	12	1	7 days	0.69	E	Williams	1999 GH_3
1999 GJ_3	16.5	0.15	19990412	308.60468	92.44239	172.07845	1.79698	0.2132104	2.3180999	9	1	10 days	0.16		Williams	1999 GJ_3
1999 GK_3	15.4	0.15	19990323	120.43858	36.16090	13.13934	6.81574	0.1667338	2.9028444	15	1	7 days	0.70		Williams	1999 GK_3
1999 GL_3	15.7	0.15	19990323	115.50316	254.79386	170.56707	2.35818	0.0360702	2.9456182	12	1	7 days	0.39	E	Williams	1999 GL_3
1999 GM_3	16.8	0.15	19990412	265.55344	293.04220	14.88290	5.67337	0.2168176	2.2564502	12	1	13 days	0.47		Williams	1999 GM_3
1999 GO_3	12.7	0.15	19990412	116.40080	209.27233	202.88748	10.97263	0.2613913	3.1147557	11	1	10 days	0.76		Williams	1999 GO_3
1999 GQ_3	13.8	0.15	19990412	247.11448	134.45746	202.23353	7.84529	0.1650307	2.6199591	26	1	13 days	0.72		Williams	1999 GQ_3
1999 GS_3	16.4	0.15	19990412	11.92050	106.66037	45.22881	28.04648	0.4231819	2.6140397	77	1	21 days	0.69		Williams	1999 GS_3
1999 GT_3	17.9	0.15	19990412	41.12576	260.51816	157.95982	19.54379	0.8382096	1.3354641	62	1	13 days	0.81		Williams	1999 GT_3
1999 GU_3	19.6	0.15	19990122	333.07674	8.57180	195.75050	12.76593	0.5071356	2.0823254	210	1	19 days	0.60	M-v 5	Williams	1999 GU_3
1999 GW_3	14.6	0.15	19990412	235.49818	228.73927	110.78254	3.41694	0.1537795	2.2281491	12	1	13 days	1.01		Williams	1999 GW_3
1999 GX_3	14.5	0.15	19990412	282.81957	214.85012	113.04501	8.88111	0.1958128	2.5735059	10	1	12 days	0.25		Williams	1999 GX_3
1999 GY_3	14.6	0.15	19990412	331.27142	255.79323	8.89711	28.59614	0.3506753	2.6343394	22	1	9 days	1.09		Marsden	1999 GY_3
1999 GA_4	14.6	0.15	19990412	337.13382	104.32957	118.39868	3.95585	0.2516207	2.6360631	13	1	6 days	0.75	E	Marsden	1999 GA_4
1999 GC_4	15.7	0.15	19990412	33.59796	317.08310	198.89893	12.07518	0.2013429	2.6076335	10	1	14 days	0.24		Williams	1999 GC_4
1999 GE_4	15.0	0.15	19990412	94.45774	237.57439	234.28410	11.69004	0.1377590	2.6975941	10	1	11 days	0.38		Williams	1999 GE_4
1999 GF_4	14.9	0.15	19990412	351.17477	172.31550	28.35411	11.61627	0.1147646	2.6987474	11	1	6 days	0.27		Marsden	1999 GF_4
1999 GG_4	13.2	0.15	19990412	317.96734	120.82275	121.43841	2.34873	0.1749960	3.0968732	11	1	2 days	0.61	E	Marsden	1999 GG_4
1999 GJ_4	15.1	0.15	19990412	226.47127	211.80788	148.27909	34.50446	0.8073994	1.3391880	34	1	19 days	0.68		Williams	1999 GJ_4
1999 GK_4	16.1	0.15	19990122	280.26857	146.59835	168.47647	5.28196	0.4920961	1.9611102	141	1	74 days	0.49	M-v 5	Williams	1999 GK_4
1999 GL_4	19.5	0.15	19990412	25.41910	293.57603	178.78705	7.24563	0.6029422	2.1179388	41	1	10 days	0.66		Williams	1999 GL_4
1999 GN_4	14.6	0.15	19990412	126.91055	342.59898	90.86421	5.38399	0.0805270	2.2472588	9	1	8 days	0.45		Marsden	1999 GN_4
1999 GO_4	15.0	0.15	19990412	355.33820	51.81510	161.70954	6.77632	0.1216911	2.5893517	17	1	13 days	0.26		Williams	1999 GO_4
1999 GP_4	14.4	0.15	19990412	319.33535	200.44370	56.33834	9.93525	0.1061918	2.6069104	15	1	15 days	0.81		Williams	1999 GP_4
1999 GQ_4	12.6	0.15	19990412	345.67890	48.30670	175.50958	10.66255	0.0169816	3.1199226	21	1	15 days	0.40		Williams	1999 GQ_4
1999 GR_4	15.2	0.15	19990412	314.50783	194.14131	68.50590	7.23608	0.1093293	2.3952009	15	1	13 days	0.50		Williams	1999 GR_4
1999 GT_4	15.9	0.15	19990412	4.89667	145.18940	54.49338	1.31828	0.2062370	2.9743385	9	1	8 days	0.51		Williams	1999 GT_4
1999 GV_4	13.5	0.15	19990412	101.02761	254.99354	196.03749	8.74151	0.1722591	2.7224835	19	1	8 days	1.01		Williams	1999 GV_4
1999 GW_4	18.2	0.15	19990412	26.59712	116.77171	46.01528	4.43342	0.2533825	2.1704576	10	1	8 days	0.78		Williams	1999 GW_4
1999 GX_4	15.5	0.15	19990412	49.45347	343.26282	153.63856	2.55246	0.1515242	2.5420308	11	1	13 days	0.42		Williams	1999 GX_4
1999 GA_5	15.2	0.15	19990323	109.80452	67.76397	26.03406	14.95599	0.0702967	2.5760333	15	1	29 days	0.92		Williams	1999 GA_5
1999 GC_5	12.4	0.15	19990412	66.58467	332.14219	126.03753	15.33559	0.1551337	3.1998843	11	1	18 days	0.49		Nakano	1999 GC_5
1999 GD_5	14.1	0.15	19990323	37.37355	4.85354	133.92648	7.09822	0.1859156	2.5540962	26	1	36 days	0.67		Williams	1999 GD_5
1999 GH_5	16.0	0.15	19990323	98.84590	45.25711	23.35668	3.24318	0.1513796	2.2380661	9	1	8 days	0.33		Marsden	1999 GH_5
1999 GJ_5	16.1	0.15	19990323	329.08391	76.73692	151.52007	1.50704	0.1909676	2.4339700	13	1	6 days	0.20		Marsden	1999 GJ_5
1999 GK_5	15.5	0.15	19990323	326.88454	71.70297	161.42597	3.01483	0.2106453	2.8835592	15	1	6 days	0.39		Marsden	1999 GK_5
1999 GN_5	14.8	0.15	19990323	319.52057	9.36696	245.56270	1.14041	0.1613959	2.5588521	20	1	22 days	0.54		Williams	1999 GN_5
1999 GO_5	14.9	0.15	19990412	250.22608	15.81767	317.63622	6.88563	0.3152958	2.0997278	25	1	2 days	0.44		Marsden	1999 GO_5

1999 GP_5	12.7	0.15	19990412	155.80010	286.46813	95.06579	13.03118	0.0835543	2.9056872	6	1	7 days	0.47		Nakano	1999 GP_5
1999 GR_5	15.3	0.15	19990412	48.24906	270.69029	237.67205	7.53957	0.2204048	3.1953079	5	1	6 days	0.32	E	Marsden	1999 GR_5
1999 GS_5	15.7	0.15	19990323	42.97998	100.91647	34.99734	3.13910	0.1206712	2.4030780	16	1	27 days	0.72		Williams	1999 GS_5
1999 GT_5	15.2	0.15	19990412	332.94810	138.28918	107.40965	0.46670	0.2275071	3.2229500	7	1	4 days	0.71	E	Williams	1999 GT_5
1999 GU_5	15.5	0.15	19990412	241.00545	335.17705	12.88962	6.89501	0.1571432	2.2986500	7	1	8 days	0.45		Williams	1999 GU_5
1999 GV_5	16.1	0.15	19990412	34.05889	302.09297	230.14212	10.17253	0.1167696	2.7362270	11	1	10 days	0.54		Williams	1999 GV_5
1999 GY_5	20.0	0.15	19990412	53.71353	231.78378	203.56946	23.71490	0.6033369	1.1268255	82	1	6 days	0.77		Williams	1999 GY_5
1999 GZ_5	17.6	0.15	19990323	284.72131	267.39797	25.46094	1.05773	0.2875155	2.2232110	11	1	7 days	0.25		Marsden	1999 GZ_5
1999 GA_6	17.2	0.15	19990323	160.39050	5.38126	12.93824	10.29075	0.2061674	2.0015398	14	1	7 days	0.45		Marsden	1999 GA_6
1999 GC_6	12.7	0.15	19990323	308.24794	201.51397	61.07460	15.97674	0.0823838	2.5384217	23	1	32 days	0.80		Williams	1999 GC_6
1999 GE_6	13.4	0.15	19990122	318.56021	146.86420	103.78320	8.97380	0.2401386	2.8977489	25	1	60 days	0.59	M-v 5	Williams	1999 GE_6
1999 GF_6	14.0	0.15	19990412	136.54010	279.49827	141.94033	6.50640	0.1168111	2.4365170	12	1	10 days	0.58		Williams	1999 GF_6
1999 GG_6	14.2	0.15	19990412	36.10403	354.36599	171.53842	9.15981	0.0830908	2.7931208	12	1	10 days	0.70		Williams	1999 GG_6
1999 GH_6	15.9	0.15	19990412	1.78430	44.19693	159.96459	5.22001	0.1829665	2.3886012	11	1	10 days	0.30		Williams	1999 GH_6
1999 GK_6	15.8	0.15	19990412	92.28575	282.20957	174.53488	2.80094	0.1866225	2.2936678	8	1	10 days	0.31		Williams	1999 GK_6
1999 GL_6	15.1	0.15	19990412	312.72735	106.35055	193.01829	10.74947	0.2323257	2.2845687	14	1	10 days	0.87		Williams	1999 GL_6
1999 GO_6	15.4	0.15	19990412	77.48801	116.11198	7.30319	3.96721	0.1448248	2.6679611	8	1	12 days	0.29		Williams	1999 GO_6
1999 GQ_6	16.4	0.15	19990412	3.72202	65.18534	136.73099	7.34645	0.1769935	2.3934442	10	1	10 days	0.59		Williams	1999 GQ_6
1999 GR_6	19.8	0.15	19990412	323.63526	146.44662	181.00211	29.05133	0.7610842	1.3408560	23	1	14 days	1.00		Williams	1999 GR_6
1999 GS_6	19.6	0.15	19990412	56.11197	134.64271	314.78584	2.02135	0.4969198	1.1902383	86	1	10 days	0.61		Williams	1999 GS_6
1999 GT_6	17.3	0.15	19990412	333.63342	66.51198	217.61905	4.31893	0.5756248	2.8260735	104	1	6 days	0.92		Williams	1999 GT_6
1999 GU_6	17.3	0.15	19990412	243.25570	294.25510	50.05135	2.87057	0.2456172	2.1785305	10	1	7 days	0.34	E	Williams	1999 GU_6
1999 GD_7	17.0	0.15	19990412	137.70367	260.44383	159.61727	5.96847	0.0390294	2.4495087	8	1	4 days	0.31		Williams	1999 GD_7
1999 GE_7	14.1	0.15	19990412	159.78545	352.63266	50.85215	13.05708	0.1404987	2.4486504	8	1	10 days	0.83		Williams	1999 GE_7
1999 GH_7	14.5	0.15	19990412	295.02466	165.21973	97.08296	6.73078	0.0894244	2.4015915	20	1	12 days	0.74		Williams	1999 GH_7
1999 GN_8	14.4	0.15	19990412	19.93857	4.06291	179.13589	7.88699	0.0815005	2.4506181	15	1	6 days	0.80		Williams	1999 GN_8
1999 GT_8	14.5	0.15	19990412	277.04078	184.26748	132.15277	3.89997	0.2112791	2.2788086	16	1	6 days	0.65		Williams	1999 GT_8
1999 GW_9	15.7	0.15	19990323	174.34076	347.53830	347.82387	3.04904	0.1964926	2.1610455	6	1	2 days	0.74	E	Williams	1999 GW_9
1999 GX_9	15.7	0.15	19990323	174.55236	192.54763	143.03068	2.53222	0.1753108	2.2036480	6	1	2 days	0.59	E	Williams	1999 GX_9
1999 GR_{10}	13.5	0.15	19990412	67.94347	94.92551	17.43985	11.53789	0.1368915	2.8560772	18	1	9 days	0.78		Williams	1999 GR_{10}
1999 HA	16.5	0.15	19990412	12.21186	180.67148	12.10975	6.88760	0.0921814	2.2831531	7	1	4 days	0.13		Marsden	1999 HA
1999 HH	14.3	0.15	19990412	310.38020	256.01802	35.93002	15.38188	0.2301351	2.6272432	7	1	3 days	0.08		Marsden	1999 HH
1999 HL	15.8	0.15	19990412	341.24016	208.94165	6.76585	3.65732	0.1347968	2.3244548	12	1	5 days	0.20		Williams	1999 HL
1999 HN	17.0	0.15	19990412	5.10923	315.45336	242.27771	2.72155	0.1188032	2.3259857	8	1	6 days	0.26		Williams	1999 HN
1999 HO	15.4	0.15	19990412	29.37969	120.33184	49.45150	6.75652	0.0868792	2.4074044	15	1	5 days	0.78		Williams	1999 HO
1999 HR	16.3	0.15	19990412	299.55604	61.48183	235.44260	7.10900	0.2119716	2.3585390	6	1	5 days	0.60	E	Williams	1999 HR
1999 HW	14.1	0.15	19990412	210.37863	179.62905	186.47808	14.43985	0.1709643	2.7166879	8	1	5 days	0.10		Williams	1999 HW
1999 HX	15.6	0.15	19990412	305.16757	75.39701	227.61597	25.21984	0.2672644	2.4243806	19	1	6 days	1.03	E	Williams	1999 HX
1999 HA_1	14.8	0.15	19990323	320.44178	47.20797	186.97469	4.97625	0.1667805	2.4147427	22	1	29 days	0.87		Williams	1999 HA_1
1999 HC_1	24.5	0.15	19990412	3.56901	159.19508	28.55799	1.28752	0.5078925	2.0412454	11	1	5 days	0.51		Marsden	1999 HC_1
1999 HD_1	20.4	0.15	19990412	243.58044	147.97009	209.87620	17.67798	0.4103309	1.1261723	26	1	5 days	0.71		Marsden	1999 HD_1
1999 HE_1	17.6	0.15	19990412	329.96572	222.12876	65.98337	8.24250	0.5716021	2.3820807	53	1	5 days	0.68		Williams	1999 HE_1
1999 HF_1	14.4	0.15	19990412	97.40700	253.34584	155.97085	25.67352	0.4626714	0.8191849	161	1	13 days	0.45		Williams	1999 HF_1
1999 HG_1	14.2	0.15	19990412	31.57381	170.80168	16.87398	8.05657	0.0572361	3.2648893	10	1	6 days	0.54		Williams	1999 HG_1
1999 HH_1	16.9	0.15	19990412	13.76205	287.45026	268.03097	3.24295	0.2094855	2.3032156	8	1	6 days	0.27		Williams	1999 HH_1
1999 HS_1	13.1	0.15	19990412	53.97186	87.90449	55.71994	14.53882	0.1034660	3.3726778	16	1	7 days	0.71		Williams	1999 HS_1
1999 HT_1	13.7	0.15	19990412	177.21951	303.49510	97.27374	5.51809	0.1204971	2.6660244	9	1	5 days	0.98	E	Williams	1999 HT_1
1999 HU_1	15.0	0.15	19990412	59.91897	2.97707	134.89692	4.46652	0.0271027	2.7205460	11	1	3 days	0.58	E	Williams	1999 HU_1
1999 HV_1	17.7	0.15	19990412	306.48704	114.08515	207.33575	6.53011	0.5378169	2.5707071	16	1	6 days	0.42		Williams	1999 HV_1
1999 HW_1	19.8	0.15	19990412	8.49738	136.51800	37.93458	23.79594	0.4590463	2.3909882	32	1	5 days	0.56		Williams	1999 HW_1
1999 HX_1	19.9	0.15	19990412	342.30855	98.48744	171.24264	8.15720	0.5640631	2.5706895	43	1	5 days	0.62		Williams	1999 HX_1
1999 HY_1	19.0	0.15	19990412	272.94648	87.19555	216.05278	34.87304	0.1339316	1.4023941	46	1	6 days	0.84		Williams	1999 HY_1
1999 HZ_1	18.4	0.15	19990412	46.04729	200.40415	252.05799	8.78042	0.5795486	1.6133350	26	1	4 days	0.69		Williams	1999 HZ_1

1999 HA_2	17.8	0.15	19990412	12.20250	344.23762	147.26969	15.12743	0.7037005	2.8259573	113	1	10 days	0.55			Williams		1999 HA_2
1999 HB_2	15.4	0.15	19990412	112.38610	55.74689	29.86794	8.82050	0.1072421	2.3917968	19	1	6 days	0.63			Williams		1999 HB_2
1999 HC_2	14.9	0.15	19990412	256.65483	156.93933	169.54237	9.68162	0.2440196	2.2993251	13	1	3 days	0.37		E	Williams		1999 HC_2
1999 HE_2	14.4	0.15	19990412	262.68455	218.79926	108.59682	5.42776	0.2034188	2.2657237	13	1	6 days	0.61			Williams		1999 HE_2
1999 HF_2	14.5	0.15	19990412	281.32375	272.29761	46.88798	3.00160	0.1879383	2.5118954	8	1	6 days	1.11		E	Williams		1999 HF_2
1999 HG_2	15.3	0.15	19990412	317.23145	52.99028	221.32424	3.44022	0.1650649	2.2995137	8	1	6 days	0.22			Williams		1999 HG_2
1999 HJ_2	13.3	0.15	19990412	177.12375	335.03195	43.12726	15.23062	0.1494691	2.5653990	8	1	4 days	0.23		E	Williams		1999 HJ_2
1999 HL_2	15.0	0.15	19990412	137.93418	220.98029	201.65239	25.55758	0.1227660	1.9099329	10	1	2 days	0.51		E	Williams		1999 HL_2
1999 HN_2	14.0	0.15	19990412	176.27863	324.22376	66.71890	8.68316	0.0109281	2.4479780	6	1	7 days	1.01			Williams		1999 HN_2
1999 HS_2	14.9	0.15	19990323	12.54627	339.75249	185.86037	2.20363	0.1469723	2.4383891	32	1	32 days	0.76			Williams		1999 HS_2
1999 HU_2	12.6	0.15	19990412	35.22053	64.17646	112.30048	17.37001	0.0758925	3.2414837	10	1	2 days	0.17		E	Williams		1999 HU_2
1999 HV_2	15.1	0.15	19990412	307.70398	216.06620	54.22501	6.46785	0.1116399	2.3240545	23	1	15 days	0.66			Williams		1999 HV_2
1999 HW_2	16.0	0.15	19990412	341.32864	85.74663	180.54973	27.01916	0.4026168	2.5858901	52	1	7 days	0.71			Williams		1999 HW_2
1999 HX_2	14.8	0.15	19990412	343.67742	146.72092	142.81331	16.55923	0.5655704	3.2967177	58	1	7 days	0.50			Williams		1999 HX_2
1999 HY_2	14.4	0.15	19990412	141.38051	222.70471	202.97796	12.80623	0.0828526	2.3794007	9	1	8 days	0.39			Williams		1999 HY_2
1999 HB_3	16.5	0.15	19990412	290.04411	67.27402	232.12513	19.07456	0.0531813	1.8815748	7	1	3 days	0.24			Williams		1999 HB_3
1999 HD_3	14.7	0.15	19990412	53.85759	119.73409	43.63665	11.42400	0.1467141	3.1519014	5	1	3 days	0.23			Williams		1999 HD_3
1999 HE_3	15.4	0.15	19990412	247.30929	96.75451	267.18830	3.87168	0.2331966	2.2163672	6	1	4 days	0.26		E	Williams		1999 HE_3
1999 HF_3	15.2	0.15	19990412	292.53844	22.76136	305.12079	2.41321	0.2677390	2.6753234	7	1	4 days	0.19			Williams		1999 HF_3
1999 HG_3	14.7	0.15	19990502	28.83505	60.64734	115.99313	8.44386	0.1517290	2.5859119	7	1	5 days	0.43			Nakano		1999 HG_3
1999 HJ_4	14.9	0.15	19990412	240.76030	295.99740	51.82953	2.74540	0.1404821	2.9228282	14	1	15 days	0.19			Williams		1999 HJ_4
2022 P-L	13.4	0.15	19990122	198.17134	295.78147	352.21591	5.08592	0.0419582	2.7643642	21	3	1960–1999	0.70	M-v	4	Williams	34263	2022 P-L
2039 P-L	16.1	0.15	19990122	7.76751	188.29724	213.42728	4.80608	0.2993086	2.6142151	27	2	1960–1998	0.61	M-v	5	Williams	34263	2039 P-L
2048 P-L	14.6	0.15	19990122	137.33328	290.64614	321.13257	3.87731	0.2289944	2.6045615	42	3	1960–1998	0.70	M-v	5	Williams	33383	2048 P-L
2055 P-L	14.9	0.15	19990122	318.08368	245.71292	344.80811	8.81285	0.1380647	2.3663860	45	3	1960–1999	0.72	M-v	3	Williams	34337	2055 P-L
2078 P-L	13.8	0.15	19990122	76.68931	82.27721	354.44244	7.02424	0.1402285	2.5599762	44	3	1960–1999	0.75	M-v	3	Williams	34337	2078 P-L
2207 P-L	14.5	0.15	19990122	33.50266	177.28158	334.75452	6.15227	0.0495084	2.3732851	39	5	1960–1999	0.70	M-v	1	Williams	31160	2207 P-L
2503 P-L	13.4	0.15	19990122	97.46406	59.08807	7.72507	14.96829	0.1086043	2.5516032	47	4	1960–1999	0.58	M-v	2	Williams	34337	2503 P-L
2610 P-L	15.1	0.15	19990122	185.05443	200.28585	178.43960	3.03165	0.1832031	2.5283407	19	4	1960–1999	0.51	M-v	4	Williams	28891	2610 P-L
2654 P-L	15.1	0.15	19990122	353.52935	306.99752	140.05567	1.63232	0.1716470	3.0692055	24	2	1960–1998	0.44	M-v	5	Williams	34264	2654 P-L
2688 P-L	15.3	0.15	19990122	153.25542	196.52216	126.05893	1.63431	0.1024348	3.0130825	16	3	1960–1999	0.60	M-v	5	Williams	33735	2688 P-L
2722 P-L	15.0	0.15	19990122	8.47361	67.91216	181.49564	14.97946	0.1549443	2.6784267	22	2	1960–1998	0.63	M-v	5	Williams	33323	2722 P-L
2767 P-L	13.0	0.15	19990122	246.78791	228.82312	87.94769	2.43085	0.1368044	3.2478292	32	4	1960–1999	0.58	M-v	2	Williams	34337	2767 P-L
2827 P-L	15.2	0.15	19990122	306.96459	198.44029	27.95604	4.97423	0.1017304	2.3740880	50	4	1960–1999	0.76	M-v	2	Williams	34337	2827 P-L
3066 P-L	13.4	0.15	19990122	183.28795	172.38547	210.82260	12.63358	0.0305350	2.7180889	19	5	1954–1999	0.56	M-v	2	Williams	30293	3066 P-L
3087 P-L	12.5	0.15	19990122	67.70847	86.99548	261.44226	8.31221	0.1055929	3.0616316	54	3	1960–1999	0.60	M-v	2	Williams	34059	3087 P-L
4044 P-L	13.7	0.15	19990122	147.72416	38.13502	359.45861	9.29808	0.0745637	2.9726338	30	3	1960–1999	0.76	M-v	4	Williams	34337	4044 P-L
4049 P-L	13.6	0.15	19990122	158.13183	216.57523	194.56111	7.95521	0.1145323	3.2405736	34	5	1960–1999	0.75	M-v	1	Williams	31824	4049 P-L
4070 P-L	14.2	0.15	19990122	17.38609	190.43055	300.66525	3.03549	0.1208675	2.5585490	42	4	1960–1999	0.73	M-v	2	Williams	34337	4070 P-L
4075 P-L	15.6	0.15	19990122	352.37530	108.78901	326.73221	0.71558	0.0965146	2.4260906	40	4	1960–1998	0.69	M-v	3	Williams	33383	4075 P-L
4152 P-L	13.3	0.15	19990122	310.87243	99.05689	190.15389	12.76725	0.2266004	2.9096797	37	6	1960–1999	0.65	M-v	1	Williams	31824	4152 P-L
4186 P-L	15.6	0.15	19990122	224.19137	112.56436	213.68879	2.00995	0.1779026	2.5253317	28	5	1960–1999	0.67	M-v	3	Green	28892	4186 P-L
4269 P-L	14.2	0.15	19990122	97.45140	227.04922	205.44232	8.32519	0.0722011	2.9861845	24	4	1960–1999	0.55	M-v	3	Williams	34337	4269 P-L
4276 P-L	15.4	0.15	19990122	314.46481	254.46517	356.08923	5.51475	0.1831968	2.2175953	34	5	1960–1999	0.87	M-v	2	Williams	30914	4276 P-L
4285 P-L	15.0	0.15	19990122	122.76112	53.49180	349.19053	8.95467	0.0788206	2.9890095	18	3	1960–1999	0.45	M-v	3	Marsden	33324	4285 P-L
4555 P-L	15.8	0.15	19990122	116.87227	182.06587	168.08735	2.45253	0.2200545	2.4014110	16	4	1960–1999	0.42	M-v	2	Williams	34337	4555 P-L
4601 P-L	13.5	0.15	19990122	83.44599	11.68886	73.92702	2.96609	0.2284841	2.9973291	31	7	1960–1999	0.87	M-v	1	Williams	31161	4601 P-L
4637 P-L	15.8	0.15	19990122	147.83808	215.84584	162.81393	5.35792	0.1562992	2.2391136	24	4	1960–1999	0.67	M-v	2	Williams	31022	4637 P-L
4649 P-L	13.6	0.15	19990122	48.88474	256.12107	183.74218	10.84077	0.0265301	3.0092933	25	3	1960–1999	0.62	M-v	3	Williams	34338	4649 P-L
5011 P-L	14.5	0.15	19990122	200.17664	122.01828	243.17211	5.17587	0.0235209	2.7211486	14	4	1960–1999	0.36	M-v	1	Williams	31294	5011 P-L
6058 P-L	14.8	0.15	19990122	246.48360	318.99000	343.92572	6.74261	0.1900640	2.5217974	23	4	1960–1999	0.78	M-v	3	Williams	34338	6058 P-L
6109 P-L	14.8	0.15	19990122	286.45245	282.92870	339.71904	3.32213	0.1040725	2.5256714	39	3	1960–1999	0.69	M-v	3	Williams	34338	6109 P-L
6188 P-L	15.1	0.15	19990122	34.02359	281.95312	226.39741	2.19621	0.1129421	2.2332391	25	5	1960–1999	0.74	M-v	1	Williams	30914	6188 P-L

6579 P-L	14.1	0.15	19990122	97.07170	16.17343	66.59714	3.15286	0.0895810	2.3756403	58	4	1960–1999	0.71	M-v	2	Williams	31294	6579 P-L
6580 P-L	14.6	0.15	19990122	324.14396	155.07207	69.22650	3.92750	0.0992388	2.2253881	42	4	1960–1999	0.73	M-v	2	Williams	31161	6580 P-L
6599 P-L	14.5	0.15	19990122	332.27041	14.57765	110.39891	1.67760	0.0787056	2.5786160	30	3	1960–1998	0.62	M-v	4	Williams	33589	6599 P-L
6604 P-L	14.9	0.15	19990122	103.92415	281.56385	137.92993	2.93841	0.1908190	2.5519989	24	3	1960–1999	0.74	M-v	4	Williams	31268	6604 P-L
6667 P-L	14.6	0.15	19990122	187.58705	343.49698	3.44751	9.72954	0.0962730	2.9698863	29	3	1960–1999	0.63	M-v	4	Williams	34338	6667 P-L
6705 P-L	15.8	0.15	19990122	150.75101	76.42748	22.89326	7.21173	0.1662665	2.3483699	22	2	1960–1998	0.62	M-v	4	Williams	34267	6705 P-L
7622 P-L	14.2	0.15	19990122	186.40610	323.03597	43.01750	6.84053	0.1803562	2.2285318	25	4	1952–1999	0.58	M-v	3	Williams	23686	7622 P-L
9530 P-L	13.8	0.15	19990122	62.90778	290.17682	176.89068	9.70924	0.1652305	2.3826072	28	4	1960–1999	0.73	M-v	1	Williams	31294	9530 P-L
9609 P-L	15.5	0.15	19990122	6.43977	122.64681	187.91348	3.36083	0.1836577	2.1797462	21	2	1960–1998	0.59	M-v	5	Williams	34268	9609 P-L
1034 T-1	14.9	0.15	19990122	297.55365	262.17109	200.20829	4.21873	0.0592275	2.1840495	23	3	1971–1998	0.95	M-v	3	Williams	34268	1034 T-1
1056 T-1	14.6	0.15	19990122	153.99747	216.89794	346.31801	11.58783	0.1330502	2.6480507	22	3	1971–1998	0.87	M-v	4	Williams	34268	1056 T-1
1080 T-1	14.2	0.15	19990122	43.16210	241.21587	198.76115	8.98259	0.2314946	2.5324459	38	3	1971–1999	0.64	M-v	3	Williams	34268	1080 T-1
1143 T-1	15.3	0.15	19990122	157.97808	11.54215	304.61792	3.33974	0.1559905	2.1600161	15	3	1971–1999	0.48	M-v	5	Williams	33997	1143 T-1
2127 T-1	14.9	0.15	19990122	149.86557	256.44988	106.64059	1.44759	0.0905024	2.1353866	50	6	1971–1999	0.70	M-v	2	Williams	34268	2127 T-1
2149 T-1	13.1	0.15	19990122	92.71221	99.77580	4.18842	7.30166	0.1004781	3.1090520	45	4	1971–1999	0.69	M-v	3	Williams	31825	2149 T-1
2214 T-1	14.5	0.15	19990122	68.60613	150.16525	178.69064	4.13231	0.0945887	2.3803762	41	2	1971–1998	0.80	M-v	4	Williams	33384	2214 T-1
2289 T-1	13.3	0.15	19990122	55.16687	107.54118	20.66438	9.28069	0.1051561	2.7734866	31	4	1971–1999	0.72	M-v	2	Williams	22087	2289 T-1
3041 T-1	14.3	0.15	19990122	7.96219	338.28836	333.05330	5.43194	0.1983202	2.6898525	16	2	1971–1997	0.57	M-v	5	Williams	34269	3041 T-1
3075 T-1	12.9	0.15	19990122	88.22326	96.79766	345.39017	0.90369	0.1555806	3.1321420	60	3	1971–1999	0.63	M-v	3	Williams	34338	3075 T-1
3078 T-1	15.2	0.15	19990122	104.82190	229.27350	204.11456	4.04627	0.2420753	2.2861118	50	3	1971–1999	0.67	M-v	3	Williams	31161	3078 T-1
3119 T-1	15.9	0.15	19990122	202.42748	260.48850	252.01975	1.55225	0.1080899	2.4019210	28	4	1971–1998	0.69	M-v	2	Williams	34269	3119 T-1
3188 T-1	14.0	0.15	19990122	316.66221	56.96340	188.07572	27.04333	0.2151049	3.1514767	31	2	1971–1999	0.75	M-v	4	Williams	34269	3188 T-1
3222 T-1	14.8	0.15	19990122	242.84348	82.44583	231.12740	1.59994	0.2086374	2.1283581	41	3	1971–1999	0.86	M-v	4	Williams	34338	3222 T-1
3308 T-1	13.6	0.15	19990122	322.42963	85.53176	168.95244	1.40338	0.1136339	3.1258791	25	7	1971–1999	0.93	M-v	1	Williams	31608	3308 T-1
4104 T-1	13.9	0.15	19990122	157.27531	169.33620	168.29728	10.48709	0.0958866	2.5472400	33	3	1971–1999	0.81	M-v	3	Williams	34269	4104 T-1
4107 T-1	13.6	0.15	19990122	60.77752	84.36870	11.45864	9.28065	0.0585061	3.1662320	39	3	1971–1999	0.72	M-v	3	Williams	31268	4107 T-1
4109 T-1	12.9	0.15	19990122	246.81232	219.25575	79.77256	2.13596	0.1832889	3.1728938	25	3	1971–1999	0.92	M-v	4	Williams	34338	4109 T-1
4142 T-1	16.3	0.15	19990122	98.75306	233.47918	45.99352	4.88501	0.1294364	2.2057635	22	2	1971–1998	0.86	M-v	6	Williams	34269	4142 T-1
4166 T-1	13.7	0.15	19990122	238.50541	298.70668	20.33559	10.65851	0.1005378	3.1430670	47	3	1971–1999	0.93	M-v	3	Williams	34338	4166 T-1
4349 T-1	13.4	0.15	19990122	223.59112	191.14876	158.55297	8.97036	0.3078830	2.7734171	23	6	1971–1999	0.71	M-v	2	Williams	31825	4349 T-1
4371 T-1	16.3	0.15	19990122	326.07549	44.70438	152.24769	2.63951	0.1470576	2.3096403	27	2	1971–1999	0.80	M-v	4	Williams	34270	4371 T-1
4408 T-1	14.2	0.15	19990122	136.58160	310.51690	59.77816	4.59600	0.1969177	2.3165924	33	5	1971–1999	0.82	M-v	2	Williams	34338	4408 T-1
4409 T-1	14.8	0.15	19990122	19.73656	351.61895	141.05699	4.80693	0.0497560	2.3116538	18	3	1971–1999	0.74	M-v	4	Williams	29668	4409 T-1
4835 T-1	13.7	0.15	19990122	209.77643	324.17178	26.76226	18.60434	0.1010318	1.8544983	54	6	1953–1999	0.74	M-v	2	Marsden	31161	4835 T-1
4841 T-1	14.0	0.15	19990122	62.37304	295.36823	20.27402	13.27669	0.1786082	2.6439975	31	2	1971–1998	0.68	M-v	4	Williams	34270	4841 T-1
1052 T-2	14.6	0.15	19990122	275.14509	279.24034	2.63615	0.71892	0.1504050	3.1270727	27	3	1973–1999	0.97	M-v	5	Green	31436	1052 T-2
1079 T-2	13.7	0.15	19990122	265.64864	311.11803	7.07770	1.87368	0.1305321	2.7208240	46	6	1951–1999	0.74	M-v	1	Williams	31608	1079 T-2
1104 T-2	14.6	0.15	19990122	64.19728	60.70572	13.33414	3.27842	0.1212668	2.2829307	45	2	1973–1999	0.98	M-v	5	Williams	34270	1104 T-2
1107 T-2	14.3	0.15	19990122	237.41548	33.89736	276.92706	2.21113	0.1831567	2.7493905	30	4	1973–1999	0.94	M-v	3	Williams	34338	1107 T-2
1125 T-2	14.2	0.15	19990122	157.39612	179.56598	192.66948	0.96160	0.1728080	3.1884039	37	5	1973–1999	0.82	M-v	2	Williams	32092	1125 T-2
1144 T-2	15.2	0.15	19990122	306.09326	229.99721	282.55149	2.26235	0.0995260	2.3026450	25	3	1973–1998	0.91	M-v	5	Williams	33998	1144 T-2
1179 T-2	14.8	0.15	19990122	319.30987	33.62941	213.95360	1.76323	0.1637602	2.4482519	65	5	1973–1999	0.87	M-v	2	Williams	28892	1179 T-2
1210 T-2	14.2	0.15	19990122	331.25283	233.30318	348.30399	3.55382	0.0784044	2.2426713	60	5	1973–1999	0.84	M-v	1	Williams	31161	1210 T-2
1231 T-2	14.1	0.15	19990122	327.31819	45.22461	9.22040	1.88599	0.0522830	2.9373188	45	4	1973–1999	0.92	M-v	3	Williams	33785	1231 T-2
1277 T-2	14.3	0.15	19990122	209.27101	204.11943	162.39684	1.56676	0.1944006	3.1228556	46	4	1973–1999	0.66	M-v	1	Williams	31409	1277 T-2
1283 T-2	14.3	0.15	19990122	41.02446	298.73421	190.85634	0.93589	0.1599614	3.1976526	69	3	1973–1999	0.71	M-v	4	Williams	34270	1283 T-2
1317 T-2	15.8	0.15	19990122	264.20173	261.74870	15.86753	6.57628	0.1286427	2.4678693	32	4	1973–1999	0.88	M-v	2	Williams	34338	1317 T-2
1346 T-2	13.9	0.15	19990122	13.59843	101.53934	56.28122	1.75540	0.1716946	3.1917952	57	2	1973–1999	0.84	M-v	5	Williams	34271	1346 T-2
1353 T-2	15.0	0.15	19990122	51.25762	72.79548	7.91883	0.80850	0.1191054	2.5236582	74	5	1973–1999	0.81	M-v	2	Williams	34338	1353 T-2
2026 T-2	15.1	0.15	19990122	56.29095	243.78903	202.48773	6.04706	0.1116529	2.2823028	27	3	1973–1999	0.90	M-v	5	Williams	27927	2026 T-2
2056 T-2	15.3	0.15	19990122	156.09637	5.94966	351.11444	4.66058	0.0750178	2.2685116	37	4	1973–1999	0.87	M-v	2	Williams	34338	2056 T-2
2070 T-2	13.4	0.15	19990122	330.14277	217.73295	1.95116	19.47164	0.0886401	3.1548957	35	2	1973–1999	0.85	M-v	4	Williams	34271	2070 T-2
2141 T-2	13.8	0.15	19990122	173.11070	323.32209	9.73445	5.15276	0.0535378	2.8029106	31	4	1973–1999	0.86	M-v	2	Williams	34271	2141 T-2

2148 T-2	14.5	0.15	19990122	17.75920	193.76424	188.62231	11.81981	0.1920435	2.5881325	43	2	1973–1998	0.75	M-v	4	Williams	34271	2148 T-2
2281 T-2	13.5	0.15	19990122	242.97054	311.07194	347.12360	2.09163	0.0322725	2.7722090	35	4	1954–1999	0.88	M-v	2	Williams	34339	2281 T-2
3211 T-2	13.5	0.15	19990122	318.03742	131.43697	72.75614	2.67177	0.1535823	3.1819045	39	3	1973–1999	0.68	M-v	4	Williams	34339	3211 T-2
3222 T-2	15.9	0.15	19990122	63.66214	319.82577	30.90984	3.33940	0.1434065	2.3226969	40	2	1973–1998	0.85	M-v	5	Williams	34060	3222 T-2
3288 T-2	14.1	0.15	19990122	307.41881	159.94382	68.59265	2.06665	0.1411381	3.1612009	48	3	1973–1999	0.84	M-v	4	Williams	34339	3288 T-2
3311 T-2	16.6	0.15	19990122	36.21344	242.28520	124.21087	2.48742	0.2365853	2.3327332	34	2	1973–1998	0.83	M-v	4	Williams	34272	3311 T-2
3327 T-2	13.7	0.15	19990122	121.39677	324.11551	81.17347	3.21409	0.1790075	3.1922648	35	6	1973–1999	0.75	M-v	2	Williams	34339	3327 T-2
4171 T-2	15.2	0.15	19990122	304.72358	119.61990	138.59655	5.54855	0.0827898	2.4575100	26	4	1973–1999	0.79	M-v	2	Williams	25224	4171 T-2
4231 T-2	15.3	0.15	19990122	32.43683	323.62447	30.03350	7.37728	0.1343575	2.3419698	25	2	1973–1998	0.70	M-v	4	Williams	34273	4231 T-2
4294 T-2	14.3	0.15	19990122	116.04529	325.98859	106.44800	2.85140	0.1195217	2.2564893	32	5	1951–1999	0.90	M-v	1	Williams	31161	4294 T-2
4810 T-2	14.7	0.15	19990122	293.66294	47.21171	164.37629	9.54644	0.1008076	2.7989856	19	3	1973–1999	0.83	M-v	3	Williams	34273	4810 T-2
5155 T-2	14.5	0.15	19990122	356.82091	240.53431	267.54017	5.10231	0.1276776	2.2797047	18	2	1973–1999	0.70	M-v	5	Williams	34274	5155 T-2
5185 T-2	14.0	0.15	19990122	339.11871	266.68242	323.13477	8.18136	0.0577347	2.7445218	38	3	1973–1999	0.74	M-v	3	Williams	31410	5185 T-2
1080 T-3	13.1	0.15	19990122	165.13756	257.29833	332.56647	11.16274	0.1090006	2.6051225	40	4	1977–1998	0.85	M-v	2	Williams	33130	1080 T-3
1148 T-3	13.5	0.15	19990122	215.82632	81.00759	272.86977	6.18471	0.2401078	2.7964100	42	4	1977–1999	0.80	M-v	2	Williams	31609	1148 T-3
1189 T-3	15.3	0.15	19990122	259.48456	12.51839	292.01795	4.01100	0.2014881	2.4440600	44	5	1977–1999	0.85	M-v	2	Williams	31161	1189 T-3
2218 T-3	14.9	0.15	19990122	85.92063	69.52399	1.49355	6.00695	0.1695453	2.2412464	25	3	1977–1999	0.82	M-v	4	Williams	23867	2218 T-3
2370 T-3	13.7	0.15	19990122	234.80638	91.36287	221.44115	8.20475	0.1505825	2.8156921	25	3	1977–1999	0.87	M-v	3	Williams	34339	2370 T-3
2494 T-3	14.8	0.15	19990122	350.31689	205.80081	320.87670	3.13221	0.0950305	2.2365788	55	3	1977–1999	0.79	M-v	3	Williams	34339	2494 T-3
3229 T-3	15.8	0.15	19990122	30.38769	342.16202	51.51580	2.43590	0.2228383	2.5887993	26	2	1977–1998	0.86	M-v	4	Williams	33590	3229 T-3
3320 T-3	14.7	0.15	19990122	53.62191	293.39970	77.85169	2.05514	0.1270819	2.5801897	34	2	1977–1998	0.84	M-v	5	Williams	33590	3320 T-3
3393 T-3	13.8	0.15	19990122	67.16357	124.17260	195.67547	9.91452	0.1114383	3.0194508	28	3	1977–1998	0.93	M-v	4	Williams	33329	3393 T-3
3507 T-3	15.1	0.15	19990122	293.77338	81.75326	202.96289	5.88349	0.3263859	2.1699040	52	4	1977–1999	0.89	M-v	1	Williams	27939	3507 T-3
4052 T-3	14.7	0.15	19990122	233.38076	152.08870	55.02405	7.68810	0.0529421	2.2807444	39	3	1977–1998	0.67	M-v	3	Williams	33590	4052 T-3
4297 T-3	15.4	0.15	19990122	33.06305	288.91604	169.11393	6.44400	0.1276398	2.2592132	31	2	1977–1999	0.74	M-v	4	Williams	33999	4297 T-3
4313 T-3	14.5	0.15	19990122	113.48701	303.69157	116.81871	2.95252	0.1259561	2.2277314	50	8	1977–1999	0.87	M-v	2	Williams	30915	4313 T-3
5111 T-3	14.4	0.15	19990122	93.60215	278.67761	48.99391	14.99076	0.1341214	2.5749758	30	3	1977–1998	0.90	M-v	3	Williams	33385	5111 T-3

1998 AG_6 = 1998 FN_{33} (M. E. Sansaturio)
1998 KL_4 = 1998 HM_{148} (M. E. Sansaturio)
1998 SR_{21} = 1998 UD_{37} (A. Doppler, *MPC* 34061)
1998 SF_{37} = 1998 SP_{140} (G. V. Williams, *MPC* 33385)
1998 SV_{110} = 1998 SN_{164} (G. V. Williams, *MPC* 33130)
1998 SL_{164} = 1998 VE_{27} (M. E. Sansaturio)
1998 UX_{23} = 1998 UB_{38} (A. Doppler, *MPC* 33785)
1998 UB_{39} = 1998 VK_8 (A. Doppler, *MPC* 33785)
1998 UB_{40} = 1998 VO_8 (A. Doppler, *MPC* 33786)
1998 UH_{40} = 1998 VR_8 (G. V. Williams)
1998 UC_{41} = 1998 VC_9 (G. V. Williams, *MPC* 34339)
1998 WL_7 = 1999 BO_8 (G. V. Williams)
1998 XJ_{74} = 1999 BN_{17} (A. Doppler, *MPC* 34061)
1999 AF_{21} = 1999 CQ_{59} (M. E. Sansaturio)
1999 BH_{14} = 1999 FB_{32} (G. V. Williams)
1999 FL_{24} = 1999 EM_9 (G. V. Williams)

NEW NAMES OF MINOR PLANETS

(3109) Machin = 1974 DC

Discovered 1974 Feb. 19 by L. Kohoutek at Bergedorf.

Named in memory of renowned sculptor Arnold Machin (1911–1999). His sculpture of the effigy of queen Elizabeth II was used on British coinage from 1968 until 1984. Machin also sculpted the monarch's profile, and this formed the basis for the Machin definitive series of British definitive stamps, first issued in June 1967 and still in use today. Name suggested by B. G. Marsden, who made identifications for this object, following a prompting by G. V. Williams.

(3407) Jimmysimms = 1973 DT

Discovered 1973 Feb. 28 by L. Kohoutek at Bergedorf.

Named in honor of James A. C. Simms III (b. 1957), a system administrator in the AXAF Science Center at the Smithsonian Astrophysical Observatory. Beginning in 1980, as an operator in the observatory's central computing facility, he was always particularly helpful in expediting the Minor Planet Center's computing jobs. Name proposed by B. G. Marsden and C. M. Bardwell, who made the identifications involving this object.

(3475) Fichte = 1972 TD

Discovered 1972 Oct. 4 by L. Kohoutek at Bergedorf.

Named in memory of Hubert Fichte (1935–1986), German writer and an important presence in the post-World War II literature scene.

(3487) Edgeworth = 1978 UF

Discovered 1978 Oct. 28 by H. L. Giclas at the Anderson Mesa station of the Lowell Observatory.

Named in memory of Kenneth Essex Edgeworth (1880–1972), Irish engineer, economist, military man and independent theoretical astronomer, who reasoned that the solar system did not end with Neptune. As early as 1943 he pointed out the likely existence of a reservoir of potential comets near the invariable plane. This preceded the discovery of 1992 QB_1 by almost half a century.

(3513) Quqinyue = 1965 UZ

Discovered 1965 Oct. 16 at the Purple Mountain Observatory.

Named in honor of Qu Qinyue, professor of astronomy at Nanjing University, known for his research on x-ray and γ-ray sources and neutron stars, as well as for his contributions to the development of high-energy astrophysics in China. During his twelve years of service as president, he raised the academic standard and reputation of Nanjing University considerably.

(3542) Tanjiazhen = 1964 TN_2

Discovered 1964 Oct. 9 at the Purple Mountain Observatory.

Named in honor of Tan Jiazhen (b. 1909), professor at Fudan University and considered the founder of genetics in China. His creative work leading to the discovery of the mosaic-dominance phenomenon in the color-pattern inheritances of the ladybug and of the role of chromosomal rearrangements and gene changes in Drosophila speciation were recognized as outstanding contributions to the development of classical gene theory and the modern synthetic theory of evolution.

(3611) Dabu = 1981 YY_1

Discovered 1981 Dec. 20 at the Purple Mountain Observatory.

Named for a county in the northeastern part of Guangdong province. Often called "the land of ceramics and tea", it enjoys a high reputation for its beautiful scenery and unique Hakka culture. It is the birthplace of observer J.-x. Yang.

(3613) Kunlun = 1982 VJ_{11}

Discovered 1982 Nov. 10 at the Purple Mountain Observatory.

Named for a mountain range in the western part of China.

(3627) Sayers = 1973 DS

Discovered 1973 Feb. 28 by L. Kohoutek at Bergedorf.

Named in memory of Dorothy Leigh Sayers (1893–1957), British author of the Peter Wimsey detective stories, which she wrote during the 1920s and 1930s. In later life she tried hard to play down this notoriety, turning her considerable talents instead to the writing of theological plays and translating the works of Dante. Name suggested by B. G. Marsden, with whom she consulted extensively during the last year of her life in an attempt to rehabilitate the Roman poet Lucan, whose astronomy and geography had been condemned by other twentieth-century critics.

(3666) Holman = 1979 HP

Discovered 1979 Apr. 19 by J. C. Muzzio at Cerro Tololo.

Named in honor of Matthew J. Holman (b. 1967), astronomer in the planetary sciences division at the Harvard-Smithsonian Center for Astrophysics. He is particularly known for his long-term investigations on the stability of the outer solar system by means of the symplectic integrator he codeveloped, and he has studied the stability of planets around other stars. Recently, he has also become an active observer of centaurs and transneptunian objects.

(3728) IRAS = 1983 QF

Discovered 1983 Aug. 23 by IRAS.

Named for the Infrared Astronomical Satellite (IRAS), a joint U.S.-Netherlands-U.K. spaceborne all-sky infrared survey satellite launched on 1983 Jan. 26. Over its ten-month lifespan, IRAS made observations of more than 250 000 solar-system and extra-solar-system bodies at wavelengths of 12, 25, 60 and 100 μm. IRAS discovered (3200) Phaethon, parent body of the Geminid meteor stream, as well as four long-period and two short-period comets.

(3767) DiMaggio = 1986 LC

Discovered 1986 June 3 by E. F. Helin at Palomar.

Named in memory of the Yankee Clipper, Joe DiMaggio (1914–1999), U.S. baseball legend. DiMaggio's most enduring record was set during the 1941 season, when he had hits in 56 consecutive games.

(3768) Monroe = 1937 RB

Discovered 1937 Sept. 5 by C. Jackson at Johannesburg.

Named for Marilyn Monroe (1926–1962), née Norma Jean Mortensen (also known as Baker), renowned glamorous star of the movie screen.

(3919) Maryanning = 1984 DS

Discovered 1984 Feb. 23 by H. Debehogne at La Silla.

Named in memory of Mary Anning (1799–1847), whose discoveries from the age of 12 of marine fossils were catalytic to the recognition of dinosaurs as the giant extinct monsters of antiquity. From early childhood, she and her brother Joseph followed their father in searches for ammonite fossils in the cliffs around Lyme Regis, England. After the death of her father in 1810, fossil hunting became the means of support for the two surviving children and their mother. She discovered the first complete skeleton of the fish-lizard Ichthyosaurus, which aroused great interest as it passed into the hands of fossil collectors and then to the British Museum a few years later. Her other major discoveries include the Plesiosaurus, Pterodactylus and Squaloraja.

(3952) Russellmark = 1986 EM_2

Discovered 1986 Mar. 14 at Smolyan.

Named for the Russell Mark Group, of Albany, California, "Specialists in Written Communication", in grateful appreciation of their enormous assistance in editing the citations for the name proposals submitted to the Minor Planet Center. Over the past two years, the Group's president, Susan Russell, has taken a personal interest in this effort, thereby saving the Minor Planet Center about a day's work each month.

(3996) Fugaku = 1988 XG_1

Discovered 1988 Dec. 5 by M. Arai and H. Mori at Yorii.

One of the ancient names of Mt. Fuji, the highest mountain in Japan.

(4048) Samwestfall = 1964 UC

Discovered 1964 Oct. 30 at the Goethe Link Observatory, Indiana University.

Named in memory of Richard Samuel Westfall (1924–1996), distinguished professor of history and philosophy of science at Indiana University from 1976 to 1989. Westfall is regarded as the foremost scholar of the Scientific Revolution, primarily because of his extraordinary scholarship on Newton, exemplified in his 1971 treatise on the development of dynamics in the seventeenth century and his 1980 biography of Newton, *Never at Rest*, both of which won the coveted Pfizer Award of the History of Science Society. Name proposed by F. K. Edmondson. Citation prepared by E. Grant.

(4100) Sumiko = 1988 BF

Discovered 1988 Jan. 16 by T. Hioki and N. Kawasato at Okutama.

Named in honor of Sumiko Hioki (b. 1965), wife of the first discoverer.

(4299) WIYN = 1952 QX

Discovered 1952 Aug. 28 at the Goethe Link Observatory, Indiana University.

Named for the WIYN telescope, located at the Kitt Peak National Observatory. This 3.5-m telescope is jointly operated by the University of Wisconsin, Indiana University, Yale University and the National Optical Astronomy Observatories. Name proposed by F. K. Edmondson.

(4300) Marg Edmondson = 1955 SG_1

Discovered 1955 Sept. 18 at the Goethe Link Observatory, Indiana University.

Named in memory of Margaret Russell Edmondson (1914–1999), the youngest child of Henry Norris Russell and Lucy May (Cole) Russell. The breadth of her intellectual interests and the depth of her knowledge were the result of her genetic heritage and her close intellectual rapport with her father. Name proposed by F. K. Edmondson, her husband for 64 wonderful years.

(4311) Zguridi = 1978 SY_6

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

Named in memory of Aleksandr Mikhajlovich Zguridi (1904–1998), producer of popular scientific films and an actor who won public recognition, as well as official honor from the Soviet state.

(4323) Hortulus = 1981 QN

Discovered 1981 Aug. 27 by P. Wild at Zimmerwald.

The name is Latin for a small, cozy garden, sheltering those flowers that gave their names to minor planets. For (4323) there are at least eight different such flower arrangements, among them (4323) = (1056) Azalea + (1080) Orchis + (1092) Lilium + (1095) Tulipa.

(4405) Otava = 1987 QD_1

Discovered 1987 Aug. 21 by A. Mrkos at Kleť.

Named for a Czech river that has its confluence with the Vltava river near the Zvíkov castle. The Otava was considered to bear both gold and pearls in ancient and medieval times.

(4524) Barklajdetolli = 1981 RV_4

Discovered 1981 Sept. 8 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Mikhail Bogdanovich Barklaj de Tolli (Barclay de Tolly; 1761–1818), general field marshal, hero of Russian patriotic war of 1812. His family tree had roots in Scotland. During 1810–1812 he was military minister of Russia, and for two months during Napoleon's invasion he was commander-in-chief of the Russian armies.

(4729) Mikhailmil' = 1980 RO_2

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

Named in memory of Mikhail Leont'evich Mil' (1909–1970), scientist and designer of helicopters with which 60 official world records were set.

(4778) Fuss = 1978 TV_8

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

Named in honor of the mathematicians Nikolaj Ivanovich Fuss (1755–1825) and his son Pavel Nikolaevich Fuss (1798–1855). Nikolaj Fuss contributed greatly to the development of mathematical education in Russia. Pavel Fuss published a bibliography of the more than 800 scientific papers by Euler.

(4811) Semashko = 1973 SO_3

Discovered 1973 Sept. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Nikolaj Alekseevich Semashko (1874–1949), organizer of the health-service system in the U.S.S.R. in the 1920s. He took the lead in the organization of mother-and-child health institutions, developed the network of medical-research establishments and initiated the formation of the Central Medical Library and the House of Scientists in Moscow. During 1927–1936 he was editor-in-chief of the *Large Medical Encyclopaedia*.

(4823) Libenice = 1986 TO_3

Discovered 1986 Oct. 4 by A. Mrkos at Kleť.

Named for the site of remnants of an ancient Celtic sanctuary in central Bohemia that has astronomical significance and dates back to the fourth century B.C. Name suggested by M. Tichý.

(4824) Stradonice = 1986 WL_1

Discovered 1986 Nov. 25 by A. Mrkos at Kleť.

Named for the site of an ancient Celtic town in central Bohemia above the Berounka river. It was settled in the first century B.C. and is known for its treasures of gold and silver Celtic coins. Name suggested by M. Tichý.

(4936) Butakov = 1985 UY_4

Discovered 1985 Oct. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Grigorij Ivanovich Butakov (1820–1882), Russian admiral who drew up the first systematic directions for sailing in the Black Sea. In 1856 he became commander-in-chief of the Black Sea fleet and the military governor of Nikolaev and Sevastopol.

(5026) Martes = 1987 QL_1

Discovered 1987 Aug. 22 by A. Mrkos at Kleť.

Named for Martes martes and Martes foina, or pine marten and beech marten, delightful small animals of the Mustelidae family that live in the forests on Kleť Mountain. Name suggested by J. Tichá and M. Tichý.

(5085) Hippocrene = 1977 NN

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

Named for the ancient Greek mythological spring of inspiration. The name is given in connection with the discovery of many new minor planets at the Crimean Astrophysical Observatory during the second half of 1977.

(5096) Luzin = 1983 RC_5

Discovered 1983 Sept. 5 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of the mathematician Nikolaj Nikolaevich Luzin (1883–1950), professor at Moscow University, who made fundamental contributions to the theory of real functions.

(5101) Akhmerov = 1985 UB_5

Discovered 1985 Oct. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in honor of Vadim Zinov'evich Akhmerov (b. 1929), who has returned health to many people during his 45-year medical service. Since 1980 he has worked in the Alushta (Crimea) maternity hospital.

(5102) Benfranklin = 1986 RD$_1$

Discovered 1986 Sept. 2 by A. Mrkos at Kleť.

Named in memory of the American scientist, philosopher and statesman Benjamin Franklin (1706–1790), who was one of the brightest and most creative scholars of his time. He contributed in many areas of natural science: electricity, aurorae, earthquakes and atmospheric storms. Franklin proposed the two kinds of electric charge, positive and negative, and his famous experiments in 1752 with kites flown into storm clouds led to the invention of the lightning rod. Name suggested by J. Tichá and M. Šolc.

(5103) Diviš = 1986 RP$_1$

Discovered 1986 Sept. 4 by A. Mrkos at Kleť.

Named in memory of the Czech scientist, Praemonstrat monk and priest Prokop Václav Diviš (1698–1765), who was known for his experiments with electricity. On 1754 June 15 he erected his "meteorological machine" on the grounds of his vicarage near Znojmo in South Moravia. This was a kind of lightning rod consisting of some 400 iron peaks on plates on a high bar. Its aim was to exhaust the electricity from storm clouds and lead it groundward along chains, thus preventing lightning strikes. Diviš also used electricity in medical treatment. Named suggested by J. Tichá and M. Šolc on the tricentennial of his birth.

(5122) Mucha = 1989 AZ$_1$

Discovered 1989 Jan. 3 by A. Mrkos at Kleť.

Named in memory of Alfons Mucha (1860–1939), Czech painter, graphic artist and decorative artist, who also lived in Paris and the U.S. His work symbolizes the full flowering of the Art Nouveau style, as is evidenced by his posters of Sarah Bernhardt, illustrations and jewelry. Name suggested by J. Tichá.

(5154) Leonov = 1969 TL$_1$

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

Named in memory of Evgenij Pavlovich Leonov (1926–1994), prominent Soviet artist, an actor of the Moscow Lenin Komsomol Theatre. Well known for his many brilliant and impressive roles on stage and screen, he was a favorite actor of children and the public generally.

(5300) Sats = 1974 SX$_1$

Discovered 1974 Sept. 19 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Nataliya Il'inichna Sats (1903–1993). An outstanding figure in Soviet theater culture for children, she was the founder and art advisor of the Moscow Musical Children's Theater, the first institution of its type in the world. She was also the author of many plays, librettos, operas and ballets for children.

(5304) Bazhenov = 1978 TA$_7$

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

Named in memory of Vasilij Ivanovich Bazhenov (1738–1799), Russian architect, teacher and architectural theorist.

(5359) Markzakharov = 1974 QX$_1$

Discovered 1974 Aug. 24 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Mark Anatolievich Zakharov (b. 1933), chief producer of the Moscow Lenin Komsomol Theatre, People's Artist of the U.S.S.R. and Russian Federation State Prize laureate. He has produced many musical plays, performances in the genre of political drama and films for television.

(5363) Kupka = 1979 UQ

Discovered 1979 Oct. 19 by A. Mrkos at Kleť.

Named in memory of František Kupka (1871–1957), Czech painter and graphic artist, resident in France after 1906. He is considered one of the initiators of abstract art, as his *Stories of Black and White*, *Amorpha* or *Cosmic prime* show. Name suggested by J. Tichá.

(5412) Rou = 1973 SR$_3$

Discovered 1973 Sept. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Aleksandr Arturovich Rou (1906–1973), an actor and film producer specializing in Russian fairy tales.

(5418) Joyce = 1981 QG$_1$

Discovered 1981 Aug. 29 by A. Mrkos at Kleť.

Named in memory of James Joyce (1882–1941), Irish novelist noted for his experimental use of language and exploration of new literary methods in large works, such as *Ulysses*. Gell-Mann adopted the fanciful term 'quark' from a passage in his novel *Finnegans Wake*. Name suggested by J. Tichá.

(5419) Benua = 1981 SW$_7$

Discovered 1981 Sept. 29 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of the Russian architect Nikolaj Leont'evich Benua (Benois; 1813–1898), as well as of his sons, the architect Leontij Nikolaevich Benua (1856–1928) and the painter Aleksandr Nikolaevich Benua (1870–1960).

(5425) Vojtěch = 1984 SA$_1$

Discovered 1984 Sept. 20 by A. Mrkos at Kleť.

Named in memory of Václav Vojtěch (1901–1932), Czech traveler and Antarctic explorer. In 1929 he became the first Czechoslovak to step on the Antarctic continent. This minor planet commemorates the seventieth anniversary of his participation with the Byrd expedition. Name suggested by J. Tichá and M. Tichý.

(5533) Bagrov = 1935 SC

Discovered 1935 Sept. 1 by P. F. Shajn at Simeïs.

Named in honor of Nikolaj Vasil'evich Bagrov (b. 1937), geographer, professor at the Simferopol State University and author of research on geographical peculiarities of the Crimea. Name proposed by the Crimean Astrophysical Observatory.

(5544) Kazakov = 1978 TH$_6$

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

Named in memory of Matvej Fedorovich Kazakov (1738–1812), Russian architect, one of the founders of classicism in Russian architecture in the eighteenth century.

(5572) Bliskunov = 1978 SS$_2$

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

Named in memory of Aleksandr Ivanovich Bliskunov (1938–1996), well-known Crimean orthopedic surgeon and professor.

(5675) Evgenilebedev = 1986 RY_5

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

Named in honor Evgenij Alekseevich Lebedev (1917–1997), an actor at the Tovstonogov Bolshoi Dramatic Theater in St. Petersburg and a People's Artist of the U.S.S.R. The summit of his art was the unusual role of the horse in the performance *History of a horse*, after a story by Tolstoj.

(5681) Bakulev = 1990 RS_{17}

Discovered 1990 Sept. 15 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Aleksandr Nikolaevich Bakulev (1890–1967), one of the pioneers of neurosurgery in the U.S.S.R. He made advances in kidney surgery, bone surgery and a surgical treatment for stomach ulcers.

(5807) Mshatka = 1986 QA_4

Discovered 1986 Aug. 30 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named for the country estate of Nikolaj Yakovlevich Danilevskij (1822–1885), thinker, philosopher, sociologist, publicist and natural scientist, whose book *Russia and Europe* contains ideas that are still vital today. Many well-known Russian writers stayed at Mshatka, and Danilevskij is buried there.

(5809) Kulibin = 1987 RG_6

Discovered 1987 Sept. 4 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Ivan Petrovich Kulibin (1735–1818), brilliant Russian self-educated mechanical engineer. He designed original clockwork pieces, planned a bridge over the Neva river and constructed various labor-saving devices.

(5940) Feliksobolev = 1981 TJ_4

Discovered 1981 Oct. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of the Ukrainian film producer Feliks Mikhailovich Sobolev (1931–1984), great master of scientific films, Honored Artist of the Ukraine and U.S.S.R. State Prize Winner. His films, made at the Kiev studio for scientific films, provided a fresh outlook at popular science, obtained the appreciation of audience and critics alike and won awards at prestigious festivals in many countries.

(5988) Gorodnitskij = 1976 GN_2

Discovered 1976 Apr. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Aleksandr Moiseevich Gorodnitskij (b. 1933), Russian scientist and bard. A prominent geologist and oceanologist, who works at the Russian Academy of Science's Institute of Oceanology, he has participated in many nautical research expeditions. He is also well known as an author and performer of lyric songs, filled with the romance of voyages and the exploration of novel lands.

(5989) Sorin = 1976 QC_1

Discovered 1976 Aug. 26 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Sergej Ivanovich Sorin (1916–1995), astronomer and teacher who participated in the choice of a site for the astronomical observatory of the Azerbaijan Academy of Sciences and in equipping it with telescopes and other instruments. Head of the astronomical circle at the Baku Young Pioneers' Palace for some forty years, he was an outstanding educator of young amateur astronomers. Many of his pupils became prominent astronomers and are working now at various observatories in the former Soviet Union. Name proposed by the discoverer, following a suggestion by some of Sorin's former pupils.

(5990) Panticapaeon = 1977 EO

Discovered 1977 Mar. 9 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for an ancient town, the capital of a Bospor realm dating back to the sixth century B.C., located at the site of the present town of Kerch in the eastern Crimea. This minor planet is dedicated to the Kerch Historical-Archaeological Museum, the main repository of the Panticapaeon archaeological materials. Founded in 1826, the Kerch Museum makes a valuable contribution to the investigation of the ancient history of the region and acquaints the general public with the remote past of the region.

(5991) Ivavladis = 1979 HE_3

Discovered 1979 Apr. 25 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Vladislav Aleksandrovich Ivanov (b. 1936), professor at the St. Petersburg Institute of Fine Mechanics and Optics. An electromechanical engineer and metrologist, he discovered a new imaging technique on the basis of magnetic resonance and invented a number of instruments for space, air, marine and subterranean investigations.

(5994) Yakubovich = 1981 SZ_7

Discovered 1981 Sept. 29 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in honor of Leonid Arkad'evich Yakubovich (b. 1945), writer, dramatist and television journalist. His high professional skill and fine sense of humor led to his becoming director of the most popular all-Russian television programs, such as *Field of miracles* and *Wheel of history*.

(6082) Timiryazev = 1982 UH_8

Discovered 1982 Oct. 21 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Russian physiologist Kliment Arkad'evich Timiryazev (1843–1920), a corresponding member of the Imperial St. Petersburg Academy of Sciences and one of the founders of the Russian school of plant physiology.

(6162) Prokhorov = 1973 SR_6

Discovered 1973 Sept. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in honor of Yurij Vasil'evich Prokhorov (b. 1929), Russian mathematician noted for his work on probability theory and a member of the editorial board of the *Soviet Encyclopaedia*.

(6166) Univsima = 1978 SP_4

Discovered 1978 Sept. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named for the Simferopol State University on the eightieth anniversary of the establishment of this first institution of higher education in the Crimea. Academicians A. P. Pavlov, I. P. Pavlov, V. I. Vernadskij and N. I. Andrusov were founding faculty members. Academicians V. I. Obruchev, A. F. Ioffe, N. M. Krylov and V. I. Smirnov worked there. Among its 65 000 graduates are academicians I. V. Kurchatov and K. I. Shchelkin.

(6179) Brett = 1986 EN

Discovered 1986 Mar. 3 by C. S. and E. M. Shoemaker at Palomar.

Named in honor of Robin Brett (b. 1935), an Australian-born, Harvard-educated American citizen active in the planetary-science program from its early days. His research has included geochemical studies of meteoritic and lunar samples, modeling the cores of the terrestrial planets and geologic mapping of impact craters. He was responsible for much of the planning for the massive study of the Apollo lunar samples. A born organizer, Brett has directed his activities toward advancing international cooperation in research; the fact that he is known as a "nice guy" with a great sense of humor may have helped.

(6220) Stepanmakarov = 1978 SN_7

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

Named in memory of Stepan Osipovich Makarov (1848–1904), Russian vice-admiral and naval commander, oceanographer, polar researcher and ship builder.

(6233) Kimura = 1986 CG

Discovered 1986 Feb. 8 by S. Inoda and T. Urata at Karasuyama.

Named in memory of Hisashi Kimura (1870–1943), the first director of the International Latitude Observatory of Mizusawa. Serving in this capacity from 1899 to 1941, he was also director of the International Latitude Service from 1922 to 1934. In 1902 Kimura discovered the Z term of polar motion, the first astronomical clue for inferring physical states and processes in the earth's deep interior, in particular at the core-mantle boundary. Name proposed by the second discoverer, following a suggestion by K. Hurukawa and K. Yokoyama, and in commemoration of the Mizusawa Observatory's centennial. Citation prepared by K. Yokoyama.

(6246) Komurotoru = 1990 VX_2

Discovered 1990 Nov. 13 by T. Fujii and K. Watanabe at Kitami.

Named in memory of the sculptor Toru Komuro (1899–1953), on the hundredth anniversary of his birth. Komuro's work was first accepted for the Teiten (Imperial Art Exhibition, now known as Nitten) in 1924. His most important work is the equestrian statue of Datemasamune, placed in the ruins of the castle at Sendai as a symbol of the city.

(6269) Kawasaki = 1990 UJ

Discovered 1990 Oct. 20 by T. Urata at the Nihondaira Observatory.

Named in memory of Shun'ichi Kawasaki (1896–1943), the second director of the International Latitude Observatory of Mizusawa and brother-in-law of the astronomer Issei Yamamoto. He introduced the floating zenith telescope to supplement the visual zenith telescope for routine observations. Name proposed by the discoverer following a suggestion by K. Hurukawa and K. Yokoyama. Citation prepared by K. Yokoyama.

(6356) Tairov = 1976 QR

Discovered 1976 Aug. 26 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Vasilij Egorovich Tairov (1859–1938), Russian viticulturist and oenologist, author of a famous catalogue of wines (including counterfeits). He was founder and head of the first Russian research institute on viticulture, near Odessa (now the Ukrainian Tairov Reseach Institute of Viticulture).

(6357) Glushko = 1976 SK_3

Discovered 1976 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Valentin Petrovich Glushko (1908–1989), Soviet pioneer in liquid-fuel rocket-engine construction. The engines of many Soviet space rockets were designed under his leadership.

(6358) Chertok = 1977 AL_1

Discovered 1977 Jan. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Boris Evseevich Chertok (b. 1912), an authority on automation and control systems for space vehicles who has written several books on the history of Soviet rocketry and cosmonautics.

(6372) Walker = 1985 JW_1

Discovered 1985 May 13 by C. S. and E. M. Shoemaker at Palomar.

Named in honor of Robert M. Walker (b. 1929), a leading figure in the study of radiation damage in solids and in the investigation of interstellar grains recovered from meteorites. His work on fission tracks with others opened a new approach to the dating of rocks on the earth and the moon and led to new information on the energy spectrum, composition and flux of solar and galactic cosmic rays. He founded whole new methods of scientific study and created a premier center for research in these new fields at Washington University, where he has provided inspiring leadership to a host of students and post-doctoral fellows.

(6469) Armstrong = 1982 PC

Discovered 1982 Aug. 14 by A. Mrkos at Kleť.

Named in honor of Neil Alden Armstrong (b. 1930), U.S. astronaut, the first man to set foot on the moon. In 1966 he and David Scott aboard Gemini 8 conducted the first docking in space. In 1969, along with Aldrin and Collins, he blasted off in Apollo 11 toward the moon, and on July 20 the Eagle module landed on a plain near the southwestern edge of Mare Tranquillitatis. This minor planet commemorates the 30th anniversary of the first manned lunar-landing mission. Name suggested by J. Tichá, M. Tichý and Z. Moravec, who observed this minor planet at its 1995 opposition, just prior to numbering.

(6470) Aldrin = 1982 RO_1

Discovered 1982 Sept. 14 by A. Mrkos at Kleť.

Named in honor of Edwin Eugene (Buzz) Aldrin Jr. (b. 1930), U.S. astronaut, the second man to set foot on the moon. In 1966 he made a record 5.5-hour spacewalk in the course of the Gemini 12 mission. In 1969 he joined Armstrong on the surface of the moon. This minor planet commemorates the thirtieth anniversary of the first manned lunar-landing mission. Name suggested by J. Tichá, M. Tichý and Z. Moravec, who observed this minor planet at its 1995 opposition, just prior to numbering.

(6471) Collins = 1983 EB_1

Discovered 1983 Mar. 4 by A. Mrkos at Kleť.

Named in honor of Michael Collins (b. 1930), U.S. astronaut. In 1966 he served as pilot of the Gemini 10 mission. In 1969 he was assigned to Apollo 11 as the command-module pilot. While Armstrong and Aldrin took their first walk on the lunar surface, Collins flew a lonely lifeguard assignment for more than 24 hours, waiting for them to launch their lunar craft and rejoin him in lunar orbit. This minor planet commemorates the thirtieth anniversary of the first manned lunar-landing mission. Name suggested by J. Tichá, M. Tichý and Z. Moravec, who observed this minor planet at its 1995 opposition, just prior to its numbering.

(6475) Refugium = 1987 SZ_6

Discovered 1987 Sept. 29 by P. Wild at Zimmerwald.

The name is Latin for a refuge, such as might come from examining the prime factors of (6475): (5) Astraea, goddess of justice; (7) Iris, the rainbow; and (37) Fides, goddess of faith and honesty.

(6511) Furmanov = 1987 QR$_{11}$

Discovered 1987 Aug. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Rudol'f Davidovich Furmanov (b. 1938), artist, producer and impresario, founder and art manager of the Andrej Mironov Theater "Russian enterprise" in St. Petersburg, where many of the stars of the Russian theater perform. Furmanov is originator and author of the theater programs *Russian seasons*, which are widely popular even outside the country.

(6537) Adamovich = 1979 QK$_6$

Discovered 1979 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Aleksandr Mikhajlovich Adamovich (Ales' Adamovich; 1927–1994), Byelorussian-Russian writer, literary scholar and publicist. He exhibited a harmonious combination of talent and civic responsibility.

(6576) Kievtech = 1978 RK$_1$

Discovered 1978 Sept. 5 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for the Kiev Polytechnical Institute-National Technical University of Ukraine, on the hundredth anniversary of its founding in 1898 as the model for other institutions of higher education in Ukraine. Many famous people have taught there, including S. P. Korolev and B. E. Paton. The famous aircraft and helicopter designer I. I. Sikorskij was one of the 120 000 students who have graduated from the Institute. Name proposed by the discoverer following a suggestion by the Simferopol State University.

(6578) Zapesotskij = 1980 TQ$_{14}$

Discovered 1980 Oct. 13 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Named in honor of Alexander Sergeevich Zapesotskij (b. 1954), president of St. Petersburg University of Humanities and Social Sciences, Russian culturologist, known for his public activity as one of the leaders of the Congress of the Russian Intelligentsia. Name suggested by the Institute of Applied Astronomy.

(6631) Pyatnitskij = 1983 RQ$_4$

Discovered 1983 Sept. 4 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Mitrofan Efimovich Pyatnitskij (1864–1927), founder of the Russian National Chorus, performer and collector of Russian folk-songs, and Honored Artist of Russia (1925).

(6681) Prokopovich = 1972 RU$_3$

Discovered 1972 Sept. 6 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Feofan Prokopovich (1681–1736), Ukrainian and Russian writer, archbishop and associate of Peter the Great.

(6682) Makarij = 1973 ST$_3$

Discovered 1973 Sept. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Metropolitan Makarij (1482–1563), who had great influence on education, the church and politics in Russia. He promoted the creation of the first Russian printing-house and led a circle of educated booklovers.

(6730) Ikeda = 1992 BH

Discovered 1992 Jan. 24 by T. Urata at the Nihondaira Observatory.

Named in honor of Tetsuro Ikeda (1894–1981), the third director of the International Latitude Observatory of Mizusawa. During his tenure (1943–1963) he established a measurement system for understanding meteorological effects on observations of the variation of latitude. Name proposed by the discoverer following a suggestion by K. Hurukawa. Citation prepared by K. Yokoyama.

(6754) Burdenko = 1976 UD$_4$

Discovered 1976 Oct. 28 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Nikolaj Nilovich Burdenko (1876–1946), one of the founders of neurosurgery in the U.S.S.R. and from 1944 the first president of the Academy of Medical Sciences.

(6778) Tosamakoto = 1989 TX$_{10}$

Discovered 1989 Oct. 4 by A. Takahashi and K. Watanabe at Kitami.

Named in honor of Makoto Tosa (b. 1944), a professor at Tohoku University, known for his research on galaxies. He has served as vice president of Astronomical Society of Japan and as a member of the advisory councils of both the National Astronomical Observatory and the Sendai Astronomical Observatory. He encourages and assists the activities of amateur astronomers in the Sendai Astronomical Society and the volunteer group "Utyu-sen" (Space Ship), which popularizes astronomy for children and laymen.

(6779) Perrine = 1990 DM$_1$

Discovered 1990 Feb. 20 by A. Mrkos at Kleť.

Named in memory of Charles Dillon Perrine (1867–1951), American astronomer working at Lick Observatory from 1893, an enthusiastic observer, who discovered the satellites Jupiter VI (Himalia) and VII (Elara) and nine comets during 1895–1902. He was appointed director of the Córdoba Observatory in Argentina in 1909 and retired in 1936. The discoverer of this minor planet rediscovered Perrine's periodic comet, lost for six returns, visually at Lomnický Štít in 1955. After 1968 the comet was again lost. Name suggested J. Tichá, who searched unsuccessfully for this comet, now known as 18D/Perrine-Mrkos, at Kleť in 1995.

(6829) Charmawidor = 1991 BM$_1$

Discovered 1991 Jan. 18 by E. W. Elst at Haute Provence.

Named in memory of the famous French composer and organist Charles-Marie Widor (1845–1937). At the age of 19, by recommendation of Aristide Cavaillé-Coll, Widor went to Brussels to study organ and composition with N. J. Lemmens and F. J. Fétis. After returning from Belgium, and after having inaugurated many organs built by Cavaillé-Coll, he was finally appointed to St. Sulpice in Paris in 1869. There he had at his disposal the most magnificient organ ever built by Cavaillé-Coll. Widor, who remained there for more than sixty years, is especially remembered for his ten *Symphonies for organ*, a genre he created.

(6838) Okuda = 1995 UD$_9$

Discovered 1995 Oct. 30 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Named in honor of Toyozo Okuda (1908–1983), the fourth director of International Latitude Observatory at Mizusawa and a former director of the Geographical

Survey Institute of Japan. During his 1963–1976 tenure at Mizusawa he established a modern system of geophysical measurements of gravity and earth tides for research on the earth's rotation. Name proposed by the second discoverer following a suggestion by K. Hurukawa. Citation prepared by K. Yokoyama.

(6955) Ekaterina = 1987 SP_{15}

Discovered 1987 Sept. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in honor of the empress Ekaterina Vtoraya (Catherine II; Catherine the Great; 1729–1796), whose reign was noted for the strengthening of autocracy and the position of Russia in the world. Born the princess of Anhalt-Zerbst, she was an educated person who wrote historical and dramatic compositions, comic operas and fairy tales for children.

(6961) Ashitaka = 1989 KA

Discovered 1989 May 26 by M. Akiyama and T. Furuta at Mishima.

Named for a dormant volcano in Numazu-city, close to Mt. Fuji. Name proposed by the first discoverer following a suggestion by the Numazu Astronomical Association.

(7075) Sadovnichij = 1979 SN_4

Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Viktor Antonovich Sadovnichij (b. 1939), prominent mathematician, head of Moscow State University. An authority on differential equations, he has made valuable contributions to the study of mechanics and to mathematical methods for deciphering images.

(7104) Manyousyu = 1977 DU

Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at Kiso.

Named for the earliest collection of Japanese poetry, by many poets spanning about 400 years. Celestial phenomena are mentioned in several of the poems.

(7112) Ghislaine = 1986 GV

Discovered 1986 Apr. 3 by C. S. and E. M. Shoemaker at Palomar.

Named in honor of the cosmochemist Ghislaine Crozaz (b. 1939), who began her immensely productive career three decades ago, with studies of fission tracks in lunar samples and meteorites. Since then she has contributed significantly to our understanding of the early history of the solar system and to the formation histories of various meteorite types through innovative studies of trace element microdistributions and extinct radionuclides in these objects. As a professor in the Department of Earth and Planetary Sciences and McDonnell Center for the Space Sciences at Washington University, she actively participates in the training of the next generation of planetary scientists with her characteristic nurturing and enthusiastic spirit. Citation prepared by M. Wadhwa at the request of the first discoverer.

(7119) Hiera = 1989 AV_2

Discovered 1989 Jan. 11 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

A famous woman warrior and general of the Mysians, Hiera fought in the Trojan War but was edited from Homer's account because, Philostratus says, "this greatest and finest of women would have outshone his heroine Helen".

(7139) Tsubokawa = 1994 CV_2

Discovered 1994 Feb. 14 by T. Niijima and T. Urata at Ojima.

Named in memory of Ietsune Tsubokawa (1918–1994), the fifth director of the International Latitude Observatory of Mizusawa (1976–1986) and a former director of the Earthquake Research Institute of the University of Tokyo. He strove to automate the instruments used for the geodetic survey and astronomical observations. Name proposed by the second discoverer following a suggestion by K. Hurukawa and K. Yokoyama. Citation prepared by K. Yokoyama.

(7167) Laupheim = 1985 TD_3

Discovered 1985 Oct. 12 by C. S. and E. M. Shoemaker at Palomar.

Named in honor of Robert Clausen (b. 1951) and his team at the public observatory in Laupheim, a town in southern Germany. In 1975 Clausen founded an association of amateur astronomers Volkssternwarte Laupheim e.V. and became its president. By organizing traveling astronomical exhibitions and numerous international astrofests, he expanded Laupheim's reputation far beyond Germany. Since 1990 Clausen, assisted by his coworkers, has excelled in running, with great professionalism, a Zeiss planetarium and observatory that were mostly built through the members' own initiative. Citation provided by G. and D. Heinlein at the request of C. Shoemaker, who visited the Laupheim facilities in 1998.

(7224) Vesnina = 1982 TK_3

Discovered 1982 Oct. 15 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of the brothers Leonid Aleksandrovich Vesnin (1880–1933), Victor Aleksandrovich Vesnin (1882–1950) and Aleksandr Aleksandrovich Vesnin (1883–1959), Russian architects who worked in creative cooperation.

(7308) Hattori = 1995 BQ_4

Discovered 1995 Jan. 31 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Named in honor of Tadahiko Hattori (1908–1962), who worked at the Tokyo Astronomical Observatory and International Latitude Observatory and was appointed the first director of the central bureau of the International Polar Motion Service two months before his death. Name proposed by the second discoverer following a suggestion by K. Hurukawa. Citation prepared by K. Yokoyama.

(7319) Katterfeld = 1976 SA_6

Discovered 1976 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Gennadij Nikolaevich Katterfeld (b. 1927), geologist and planetologist in St. Petersburg, author of investigations on the earth, the moon, Mercury and Mars, as well as a specialist in the history of science and culture.

(7381) Mamontov = 1981 RG_5

Discovered 1981 Sept. 8 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Savva Ivanovich Mamontov (1841–1918), manufacturer and patron of the arts, a prominent figure in Russian art, theater and music.

(7440) Závist = 1995 EA

Discovered 1995 Mar. 1 by M. Tichý at Kleť.

Named for the site of the most important ancient Celtic town in Bohemia. Situated south of Prague on a hill above the Vltava river, it consists of two parts named Hradiště and Šance. It was founded in the sixth century B.C. and was destroyed five centuries later. The ramparts, stone walls, moats and an acropolis are the most impressive remnants showing the Celtic history of the discoverer's native country found up to this time.

(7483) Sekitakakazu = 1994 VO_2

Discovered 1994 Nov. 1 by K. Endate and K. Watanabe at Kitami.

Named in memory of Takakazu Seki (1642–1708), Japanese mathematician and calendar scientist in Japan. His many achievements include the formulation of determinants ten years before Leibniz. In 1674 he developed a theory of differential and integral calculus. Name proposed by the discoverers following a suggestion by T. Sato and A. Fujii.

(7525) Kiyohira = 1992 YE

Discovered 1992 Dec. 18 by A. Natori and T. Urata at the JCPM Yakiimo Station.

Named in memory of Kiyohira Fujiwara (1056–1128), founder of the Fujiwara clan in the northern part of Japan. He built a castle in Esashi, near Mizusawa, and accumulated the means to reign over the wider area. He then moved to Hiraizumi, about 30 km south of Esashi, which rapidly became one of the most prosperous independent realms in Japan during the eleventh and twelfth centuries. Unburnt temples and remains tell us that the cultural level of the realm was comparable with that of Kyoto. Name proposed by the second discoverer following a suggestion by the citizens of Esashi City, where there is a geophysical station operated by the Mizusawa Observatory. Citation prepared by K. Yokoyama.

(7530) Mizusawa = 1994 GO_1

Discovered 1994 Apr. 15 by K. Endate and K. Watanabe at Kitami.

Named in commemoration of the hundredth anniversary of the International Latitude Observatory of Mizusawa, established by the Japanese government according to a resolution adopted by the International Association of Geodesy in 1899 as one of the six stations of the International Latitude Service, at a latitude of $+39^{\circ}08'$. In 1988 the Observatory was transferred to the Division of Earth Rotation of the National Astronomical Observatory. The observations have never been interrupted, even during the two World Wars. Mizusawa is located about 500 km north of Tokyo, and its citizens show a strong interest in the observatory's astronomical and geophysical research. Name proposed by the discoverers following a suggestion by K. Hurukawa, who was an astronomer there during 1960–1969. Citation prepared by K. Yokoyama.

(7562) Kagiroino-Oka = 1986 WO_9

Discovered 1986 Nov. 30 by H. Kosai and K. Hurukawa at Kiso.

Named for a place in one of the poems in the collection Manyousyu. The place is said to be the present-day Ouda, Nara prefecture.

(7572) Znokai = 1989 SF

Discovered 1989 Sept. 23 by K. Endate and K. Watanabe at Kitami.

Named for the Z Society (Z-no-kai in Japanese), a cultural and social organization of the staff of the Mizusawa International Latitude Observatory. The name commemorates the Z-term in the latitude variation, discovered by Kimura, the first director. Name proposed by the discoverers following a suggestion of K. Hurukawa, who is a member of Z-no-kai. Citation prepared by K. Yokoyama.

(7596) Yumi = 1993 GH

Discovered 1993 Apr. 10 by K. Endate and K. Watanabe at Kitami.

Named in honor of Shigeru Yumi (b. 1916), the second director of the central bureau of the International Polar Motion Service. During his 1962–1980 tenure he directed and saw the completion of the comprehensive work of rereducing the complete set of latitude observations. Name proposed by the discoverers following a suggestion by K. Hurukawa. Citation prepared by K. Yokoyama.

(7603) Salopia = 1995 OA_2

Discovered 1995 July 25 by S. P. Laurie at Church Stretton.

Named for the English county of Shropshire (or Salop), where Church Stretton is located. Situated in the once-tumultuous borderland of the Welsh Marches, the earliest major settlement was the Roman garrison town of Uriconium built near the Wrekin, the county's prominent hill. The current county town of Shrewsbury is situated on a meandering bend of the river Severn and was the birthplace of the naturalist Charles Darwin. The other main town, Telford, includes the Coalbrookdale and Ironbridge areas that were the birthplace of the Industrial Revolution in the eighteenth century. The county was celebrated in A. E. Housman's *A Shropshire Lad* and is the original 'land of lost content'.

(7627) Wakenokiyomaro = 1977 DS_4

Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at Kiso.

Named for the person, born in Okayama prefecture in the Nara Era, who moved the Japanese capital from Nara to Kyoto.

(7629) Foros = 1977 QK_1

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

Named for the health resort on the south coast of the Crimea.

(7634) Shizutani-Kou = 1982 VO_3

Discovered 1982 Nov. 14 by H. Kosai and K. Hurukawa at Kiso.

Named for a school in Bizen-city, Okayama prefecture. Founded in 1668, it is the oldest Japanese school building in existence.

(7674) Kasuga = 1995 VO_1

Discovered 1995 Nov. 15 by K. Endate and K. Watanabe at Kitami.

Named in honor of Ryo Kasuga (b. 1950), Japanese Buddhist priest, opera singer, professional magician, television and radio personality. He is also an amateur astronomer, who operates a planetarium at his temple and is very active in the movement against light pollution. Name proposed by the discoverers following a suggestion by T. Sato and A. Fujii.

(7725) Sel'vinskij = 1972 RX_1

Discovered 1972 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Il'ya L'vovich Sel'vinskij (1899–1968), poet and publicist, born in the Crimea. As a journalist, he witnessed and participated in many events in the history of the U.S.S.R. and he depicted these events in his poetical works.

(7826) Kinugasa = 1991 VO

Discovered 1991 Nov. 2 by A. Takahashi and K. Watanabe at Kitami.

Named in honor of Sachio Kinugasa (b. 1947), Japanese professional baseball player who was called the "Iron Man". From 1970 to 1987, he played 2215 games without interruption—the world record until it was broken by Cal Ripken, Jr. of the Baltimore Orioles. Throughout his 22-year professional career for the Hiroshima Toyo Carp team he had 2543 hits, including 504 home runs. Kinugasa is now a television and newspaper commentator, as well as a guest professor at the Hiroshima prefectural university. Name proposed by the discoverers following a suggestion by T. Sato and A. Fujii.

(7831) François-Xavier = 1993 FQ

Discovered 1993 Mar. 21 by E. F. Helin at Palomar.

Named in memory of François-Xavier Bagnoud (1961–1986), whose passion for flying made him, at the age of 23, the youngest professional IFR pilot in Europe of

both fixed-wing airplanes and helicopters. That passion, combined with compassion for others in need, led him to join his father at Air Glaciers and to lead some 300 successful rescue missions in the Alps. On 1986 Jan. 14, François died in a tragic helicopter accident in Mali. The François-Xavier Bagnoud Foundation was born out of the desire of his family and close friends to continue the loving concern for others shown by François during his life. An observatory established in his name in Switzerland provides astronomers with many clear nights for observation. Name proposed by M. Wilson, a classmate of François at the American School in Paris.

(7950) Berezov = 1992 SS_{26}

Discovered 1992 Sept. 28 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named for a Siberian town, founded in 1593, situated on the Sos'va river in the Khanty-Mansi national district. In recent times a rich gas field was discovered that favored the growth of industry and the development of the town. Russian prince Aleksandr Danilovich Menshikov and his family were banished there in 1728.

(7991) Kaguyahime = 1981 UT_7

Discovered 1981 Oct. 30 by H. Kosai and K. Hurukawa at Kiso.

Named for the main female character in the old Japanese romance *Taketori-monogatari*.

(8005) Albinadubois = 1988 MJ

Discovered 1988 June 16 by E. F. Helin at Palomar.

Named in honor of Albina du Boisrouvray (b. 1939), daughter of count Guy du Boisrouvray and Luz Mila Patino. She was a journalist, publisher and film producer in Paris in the 1960s and 1970s. When her only son, François-Xavier Bagnoud, died in a helicopter accident in 1986, she sold most of her possessions and began to support and participate in projects to rescue children in need. This extended to 17 countries, and the rights of such children are championed through a major center she funded at Harvard University. She continues "hands-on" philanthropy through an endless schedule of visits to the projects and participation in advocacy forums. Named proposed by the discoverer, following a suggestion by M. Wilson.

(8181) Rossini = 1992 ST_{26}

Discovered 1992 Sept. 28 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of the famous Italian composer Gioacchino Antonio Rossini (1792–1868).

(8205) Van Dijck = 1994 PE_{10}

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern Observatory.

Named in memory of the Flemish painter Anthony Van Dijck (Van Dyck or Vandyke; 1599–1641), after Rubens the most prolific painter of the seventeenth century. His work embraces portraits of the European aristocracy, depictions of religious subjects and paintings of enchanting mythological stories. In contrast to Rubens, the lights and shades of Van Dijck are more abrupt, the figures less harmoniously proportioned and their expressions exaggerated. In 1632 Van Dijck was appointed court painter to king Charles I of England and was knighted the same year. His style influenced the great English portrait painters of the eighteenth century.

(8208) Volta = 1995 DL_2

Discovered 1995 Feb. 28 by P. Sicoli and P. Ghezzi at Sormano.

Named in memory of Alessandro Volta (1745–1827), physicist at the University of Livia. His discovery of the significance of separating silver-zinc disk pairs with disks of moist cardboard was the key to his invention of the battery, just 200 years ago. Volta also made important contributions to meteorology and the study of gases, notably with his discovery of methane.

(8269) Calandrelli = 1988 QB

Discovered 1988 Aug. 17 at Osservatorio San Vittore.

Named in memory of Ignazio Calandrelli (1792–1866), professor of optics and astronomy in Bologna and Rome. He served as director of the Bologna Observatory during 1845–1848 and of Campidoglio at Rome from 1848 to his death. He was an observer of the major planets, minor planets and comets, as well as an orbit computer.

(8332) Ivantsvetaev = 1982 TL_2

Discovered 1982 Oct. 14 by L. V. Zhuravleva and L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of Ivan Vladimirovich Tsvetaev (1847–1913), art critic, professor of philology at the universities in Warsaw, Kiev, Moscow and St. Petersburg. He was the founder and first director of the Moscow Museum of Fine Arts and the director of the Rumyantsev Museum.

(8421) Montanari = 1996 XA_9

Discovered 1996 Dec. 2 at Osservatorio San Vittore.

Named in memory of Geminiano Montanari (1633–1687), professor of mathematics at university of Bologna during 1664–1678. He invented and improved several astronomical instruments, discovered the variability of Algol and drew fine lunar maps.

(8430) Florey = 1997 YB_5

Discovered 1997 Dec. 25 by F. B. Zoltowski at Woomera.

Named in memory of Howard Walter Florey (1898–1968), celebrated pathologist, born and educated in South Australia. He and the biochemist Ernst Chain isolated penicillin and formulated procedures for its extraction and production, thereby enabling its large-scale production during the latter part of World War II. For his work, he shared the 1945 Nobel Prize in physiology and medicine with Chain and Fleming.

(8472) Tarroni = 1983 TC

Discovered 1983 Oct. 12 at Osservatorio San Vittore.

Named in memory of the Italian amateur astronomer Gino Tarroni (1958–1986), a member of the Sezione Astrofili dell'Università Popolare Sestrese. A fine observer of the sun, he was in charge of the solar section of the Unione Astrofili Italiani, and he served as secretary of the Unione for the four years preceding his tragic death in a road accident. Tarroni also had interests in speleology and mountain climbing.

(8556) Jana = 1995 NB

Discovered 1995 July 7 by Z. Moravec at Kleť.

Named in honor of Jana Moravcová, wife of the discoverer, on the occasion of her thirtieth birthday, 1999 July 7.

(8572) Nijo = 1996 UG_1

Discovered 1996 Oct. 19 by J. Tichá and M. Tichý at Kleť.

Named for Nijo Castle (Nijo-jo) in Kyoto, built in 1603 as the official residence of the first Tokugawa shogun, Ieyasu. The site is famous for its wooden architecture and the screen paintings of trees and birds of Ninomaru Palace, as well as for the beautiful Ninomaru garden, designed by the tea master and landscape architect Kobori Enshu. The discoverers visited and admired Ninomaru and several other famous gardens in Kyoto during the IAU General Assembly in 1997.

(8573) Ivanka = 1996 VQ

Discovered 1996 Nov. 4 by Z. Moravec at Kleť.

Named for Ivanka Moravcová (b. 1943), the discoverer's mother.

(8684) Reichwein = 1992 FO$_3$

Discovered 1992 Mar. 30 by F. Börngen at Tautenburg.

Named for the German reform pedagogue Adolf Reichwein (1898–1944), who ran the Adult Education Courses in Jena during 1925–1929 and became professor of history and civics in Halle in 1930. An early opponent of fascism, he was dismissed from Halle in 1933 and worked as teacher in an outlying village school. Reichwein took part in founding the illegal "Kreisauer Kreis", was among its closest advisors and designated to be the minister of education in a new liberated German State. He was arrested early in July 1944, condemned to death by the Volksgerichtshof three months later and executed the same day.

(8740) Václav = 1998 AS$_8$

Discovered 1998 Jan. 12 by M. Tichý and Z. Moravec at Kleť.

Named for Czech prince Václav (*c.* 908–*c.* 929), Czech kings Václav I (1205–1253), Václav II (1271–1305) and his son Václav III (1289–1306), all from royal dynasty of Přemyslids, and Czech king and Roman emperor Václav IV of Luxembourg (1361–1419), the son of Charles IV. Prince Václav was killed by his brother, Boleslav I. Later he was worshipped as a saint and from the eleventh century he became patron of the Czech lands and the symbol of Czech statehood. King Václav III was also killed, and he was the last male descendant of the Přemyslids dynasty. Václav is still the most common Slavonic name in the Czech Republic. Name endorsed by J. Tichá.

(8788) Labeyrie = 1978 VP$_2$

Discovered 1978 Nov. 1 by K. Tomita at Caussols.

Named in honor of Catherine and Antoine Labeyrie. Catherine was the hypersentitisation expert at the 0.9-m Schmidt telescope with which this object was discovered; in recent years, she has devoted her energy to the preservation of the ecology of the Provence region. Antoine is an optician as well as an astronomer; he participated in the invention of holographic diffraction and is the inventor of speckle interferometry. The speckle technique, which has given birth to optical multi-telescope interferometry, has been used to obtain images of several minor planets. Antoine currently holds the chair of observational astrophysics at the Collège de France and is currently director of the Observatoire de Haute Provence. Citation prepared by A. Morely.

(8822) Shuryanka = 1987 RQ$_2$

Discovered 1987 Sept. 1 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of Aleksandra Semenovna Morozova (b. 1917), mother of the discoverer. Shuryanka is a pet name used by her parents. Before her retirement she worked as a barley selector.

(8897) Defelice = 1995 SX

Discovered 1995 Sept. 22 at Stroncone.

Named in memory of Aurelio De Felice (1915–1996), Italian sculptor known for going "against the flow" in his creations, which appear in museums around the world.

(8986) Kineyayasuyo = 1978 VN$_2$

Discovered 1978 Nov. 1 by K. Tomita at Caussols.

Named in honor of Yasuyo Kineya, the stage name of Nobuko Shimamura (b. 1920), elder sister of the discoverer. Ever since her youth, she has devoted herself to Japanese traditional music, especially to Nagauta and Shamisen, and she is still active as a performer. The discoverer was inspired by her to become an astronomer.

(9000) Hal = 1981 JO

Discovered 1981 May 3 by E. Bowell at the Anderson Mesa station of the Lowell Observatory.

Named in honor of the computer Hal 9000 that is the central character of both Clarke's novel and Kubrick's movie *2001: A Space Odyssey*. Hal serves to this day, more than three decades later, as an icon for artificial intelligence and a beacon that has motivated an incalculable number of careers in computing, computer science, electrical engineering and space exploration.

(9006) Voytkevych = 1982 UA$_7$

Discovered 1982 Oct. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of Vanda Georgievna Voytkevych (b. 1949), a friend of the discoverer and specialist in analytical chemistry, particularly in its application to ecology and the metallurgy of welding. During 1971–1994 she was a researcher at the E. O. Paton Welding Institute. Now she lives in New Zealand with her family.

(9008) Bohšternberk = 1984 BS

Discovered 1984 Jan. 27 by A. Mrkos at Kleť.

Named in memory of Bohumil Šternberk (1897–1983), outstanding Czech astronomer and astrophysicist. He worked in a wide variety of fields, including photometry of variable stars, and he established the modern time service in Czechoslovakia. On the evening of 1930 Mar. 18, at the Stará Ďala Observatory (O'Gyalla, now Hurbanovo), he made the first deliberate astrometric observations of Pluto in Europe. Šternberk served as long-time director of the Astronomical Institute of the Czechoslovak Academy of Sciences (1954–1968) and as a vice-president of the IAU (1958–1964). Name suggested by J. Tichá, M. Tichý and Z. Moravec, who made observations of this minor planet at Kleť during its oppositions in 1997 and 1998.

(9038) Helensteel = 1990 VE$_1$

Discovered 1990 Nov. 12 by D. I. Steel at Siding Spring.

Named in honor of Helen Margaret Steel (née Pope; b. 1959), wife of the discoverer and a native of Adelaide, South Australia.

(9097) Davidschlag = 1996 AU$_1$

Discovered 1996 Jan. 14 at Linz.

Named for a small rural village, some 10 km to the north of Linz, at the entrance to a region known as "Sterngartl", or "small garden of stars". This object is the first minor planet discovered at the amateur astronomical observatory that is located in this village.

(9127) Brucekoehn = 1998 HX$_{51}$

Discovered 1998 Apr. 30 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Named in honor of Bruce W. Koehn (b. 1948), who has developed much of the software used in the operation of LONEOS, the Lowell Observatory Near-Earth Object Search program. Among his many contributions, he devised moving-object detection and field-sequencing algorithms and has been central to the increasingly automated operation of LONEOS. Koehn has also written much of the code used in the minor-planet services at the Lowell Observatory's website. Name suggested and citation written by E. Bowell.

(9137) Remo = 2114 T-2

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of John L. Remo (b. 1941), U.S. physicist who has contributed to laser resonator optics, quantum optics instrumentation, energy systems and materials interactions. He has also helped promote an international interest in policy toward the detection of earth-threatening minor planets and comets and their mitigation, notably with his organization of a conference on the subject at the United Nations in New York in 1995 and publication of the proceedings.

(9141) Kapur = 5174 T-3

Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of Shekhar Kapur (b. 1945), Indian actor and Bombay film director whose recent acclaim has put "Bollywood" on the international map. The 800 feature films produced annually in Bombay represent nearly 20 percent of the world's total—and are twice as many as come from Hollywood. Kapur's 1998 movie *Elizabeth* received seven Oscar and 12 British Academy nominations. The showing of his 1994 movie *The Bandit Queen*, a true story about a low-caste woman who fought back after being gang-raped and was eventually elected to the Indian parliament, was initially banned in India.

(9156) Malanin = 1982 TQ_2

Discovered 1982 Oct. 15 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in honor of Ivan Ivanovich Malanin (1897–1969), talented Russian accordionist, well known for his solo concerts throughout Siberia. He has also been an accompanist at performances of the Russian singers Lemeshev, Nezhdanova, Obukhova and Pantofel'-Nechetskaya.

(9193) Geoffreycopland = 1992 ED_1

Discovered 1992 Mar. 10 by D. I. Steel at Siding Spring.

Named for Geoffrey Malcolm Copland (b. 1942), rector and vice-chancellor of the University of Westminster. Copland, an Oxford-educated physicist, has dedicated his career to the benefit of the students under his care, initially within the University of London, but more recently at the above institution. Name proposed by the discoverer, who owes much to Copland's tutelage.

(9235) Shimanamikaido = 1997 CT_{21}

Discovered 1997 Feb. 9 by A. Nakamura at Kuma Kogen.

Named for a toll road, the Nishiseto Expressway, whose nickname is Shimanami Kaido. The third route connecting the islands of Honshu and Shikoku, Shimanami Kaido is 60 kilometers long and includes ten long-span bridges. Scheduled for use starting 1999 May 1, it is expected to encourage economic activity by increasing the interchange of goods and personnel in the Nishiseto area.

(9236) Obermair = 1997 EV_{32}

Discovered 1997 Mar. 12 by E. Meyer at Linz.

Named in honor of the Austrian amateur astronomer Erwin Obermair (b. 1946), who, together with the discoverer, is co-owner of the private observatory in Davidschlag, near Linz. A technician by profession, Obermair is also a well-known astrophotographer and popularizer of astronomy.

(9389) Condillac = 1994 ET_6

Discovered 1994 Mar. 9 by E. W. Elst at Caussols.

Named in memory of the philosopher and priest Etienne Bonnot de Condillac (1715–1780), the leading advocate in France of the ideas of John Locke. In 1740 he became acquainted with the Encyclopaedists, establishing his position there with his first book *Essai sur l'origine des connaissances humaines* in 1746. In his *Traité des sensations* (1754), which inspired Holbach and Diderot, he expressed his views on sensations: "Human knowledge is entirely and exclusively based on observations made by the sense perception".

(9421) Violilla = 1995 YM_2

Discovered 1995 Dec. 24 by S. P. Laurie at Church Stretton.

Named in memory of the discoverer's mother, Violet Lilian Laurie (1921–1995), who died the same year that (9421) was discovered.

(9428) Angelalouise = 1996 DW_2

Discovered 1996 Feb. 26 by S. P. Laurie at Church Stretton.

Named in honor of the discoverer's wife, Angela Louise Laurie (née Freeman; b. 1962). This naming is in recognition of the inspiration, encouragement and support she has given to her husband's astronomical endeavors.

(9446) Cicero = 1997 JT_{11}

Discovered 1997 May 3 by E. W. Elst at the European Southern Observatory.

Named in memory of Marcus Tullius Cicero (106–43 BC), Roman statesman, lawyer, scholar and writer. Perhaps the greatest orator of Roman times, he made his reputation in politics and in the law courts. He was trained by Molon of Rhodes. In his *Brutus* he gives a description of the equipment of an orator: a thorough knowledge of literature, a grounding of philosophy, legal expertise, a storehouse of history—as well as the capacity to tie up an opponent and reduce the jury to laughter. The more than 900 of his letters that have survived constitute a primary historical source of the ancient world. In his philosophical writings his aim was to provide Rome with a kind of philosophic encyclopedia.

(9470) Jussieu = 1998 OS_{10}

Discovered 1998 July 26 by E. W. Elst at the European Southern Observatory.

Named in memory of Bernard (1699–1777), Joseph (1704–1779), Antoine-Laurent (1748–1836) and Adrien-Laurent-Henri (1797–1853) de Jussieu, a family of French botanists. Bernard founded a method of plant classification based on the anatomical characters of the plant embryo, while Antoine-Laurent laid down the principles for a natural system of plant classification. Adrien-Laurent-Henri wrote a treatise on botany, and Joseph is well known from the voyage to Peru with de la Condamine to measure a meridional arc; Joseph remained in South America for 35 years, returning to Paris in 1771, when he introduced the common "garden heliotrope" into Europe.

(9471) Ostend = 1998 OU_{13}

Discovered 1998 July 26 by E. W. Elst at the European Southern Observatory.

Named for a town (Flemish Oostende, French Ostende) on the Belgian coast. A fishing village since the ninth century, it was fortified in 1583 as a Dutch stronghold in Belgium. However, in 1604, it fell to the Spanish troops after a three-year siege. With emperor Charles VI of Austria, who founded the "Ostend Company", Ostend entered into a period of prosperity. After Belgian independence in 1830 it became a fashionable seaside resort. Connected to England by sea and air services, Ostend is often called the "gateway to Europe".

(9472) Bruges = 1998 OD_{14}

Discovered 1998 July 26 by E. W. Elst at the European Southern Observatory.

Named for Bruges (or Brugge), a beautiful small town in West Flanders that was already mentioned in the seventh century as "Municipium Brug ense", the name being derived from a Roman bridge over the Reie river. In the thirteenth century, together with Ghent and Ypres, the town held a monopoly on English wool. During the fifteenth century the city began to decline when silt clogged the way to the port of Zeebrugge. However, the city remained a strong center for the Flemish school of painting, until the religious struggles of the sixteenth century completed its ruin.

(9473) Ghent = 1998 OO_{14}

Discovered 1998 July 26 by E. W. Elst at the European Southern Observatory.

Named for the Flemish city Ghent (or Gand), capital of the province of East Flanders. One of the oldest cities (seventh century) in Belgium, united in wealthy guilds, it was virtually independent until 1584. Its prosperity was and is still based on the cloth industry. The city will be always commemorated in the Pacification of Ghent (1576) and the Treaty of Ghent (1814). It is now the second largest Belgian port. It is also a horticultural center and every five years holds a great flower show known as "Les Floralies".

(9479) Madresplazamayo = 2175 P-L

Discovered 1960 Sept. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of the group of women who became a symbol of human rights activism and courage by denouncing the crimes and atrocities commited by the military junta that ruled Argentina during 1976–1983. Dressed in black, they demonstrated for years every Thursday afternoon in the famous Plaza de Mayo in Buenos Aires, demanding to know the fates of their disappeared sons and daughters. During the course of their movement, many Mothers became themselves victims of the military regime. The Mothers of Plaza de Mayo stand out as a shining example to the world that courage and dignity can still blossom in the hearts of many people, even under the most oppressive regimes.

(9532) Abramenko = 1981 RQ_2

Discovered 1981 Sept. 7 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of Aleksandr Nikolaevich Abramenko (b. 1921), chief engineer at the Crimean Astrophysical Observatory. He created a special television system that has been used for observations of astronomical objects since 1963. This has produced unique data on novae, supernovae, cataclysmic variables, minor planets and comets. Abramenko is one of the authors of a monograph on television astronomy (1974, 1984).

(9539) Prishvin = 1982 UE_7

Discovered 1982 Oct. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in memory of the writer Mikhail Mikhajlovich Prishvin (1873–1954), famous for his deep philosophical descriptions of Russian nature. His affecting stories about animals are thrilling, especially for children.

(9540) Mikhalkov = 1982 UJ_7

Discovered 1982 Oct. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of the Russian writer and poet Sergej Vladimirovich Mikhalkov (b. 1913), whose wonderful verses and fables are the best companion for any child.

(9633) Cotur = 1993 UP_8

Discovered 1993 Oct. 20 by E. W. Elst at the European Southern Observatory.

Named in honor of Peter Cotur (b. 1944), scientific journalist at the newspaper *Het Laatste Nieuws* in Brussels and a good friend of the discoverer. Educated in biology at the University of Ghent, he is especially interested in medicine, environmental problems, space technology and astronomy in general. Fascinated by history, he is currently occupied in discovering the earliest facts about technical and scientific inventions, as well as about peculiarities in the lives of the inventors.

(9638) Fuchs = 1994 PO_7

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern Observatory.

Named in memory of the German botanist and physician Leonhard Fuchs (1501–1566), whose botanical work *Historia Stirpium commentarii insignes* (1542) remains a landmark in the organized presentation of botanical observations. The book contains beautiful woodcuts and accurate descriptions (and a glossary) of more than 550 plants, most of them of medical use. His name is also commemorated in the Fuchsia genus of flowering plants.

(9639) Scherer = 1994 PS_{11}

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern Observatory.

Named in honor of Marc Scherer (b. 1944), a well-known scientist at the Belgian Institute for Space Aeronomy in Uccle. His main interest is the development of kinetic models for polar and solar winds, using the kinetic theory of gases. This naming also honors his sisters Elisabeth and Trixie Scherer, in sweet remembrance of a time at the Atheneum of Kapellen in Antwerp.

(9640) Lippens = 1994 PP_{26}

Discovered 1994 Aug. 12 by E. W. Elst at the European Southern Observatory.

Named in honor of Carlos Lippens (b. 1945), well known for his work on trace substances in the earth's atmosphere by means of infrared spectroscopy. Working at the Belgian Institute for Space Aeronomy, he he was responsible for the GRILLE spectrometer on board Spacelab 1 (1983) and Atlas 1 (1992). Lippens was also closely involved with the MIRAS instrumentation on board MIR. As a computer specialist he has frequently helped solve data-communication problems in connection with the discoverer's work on minor planets.

(9641) Demazière = 1994 PB_{30}

Discovered 1994 Aug. 12 by E. W. Elst at the European Southern Observatory.

Named in honor of Martine De Mazière (b. 1960), a scientist at the Belgian Institute for Space Aeronomy involved with the optical remote sensing of the lower atmosphere. Her main interest is in the atmospheric composition, including aerosols, and how it changes. She has also made a quantitative evaluation of the post-Pinatubo NO_2 reduction and recovery, based on ten years of ultraviolet and optical spectroscopic measurements at the Jungfraujoch station. She shares with the discoverer a great love for music.

(9658) Imabari = 1996 DD_3

Discovered 1996 Feb. 28 by A. Nakamura at Kuma Kogen.

Named for a city in eastern Ehime prefecture, famous for the shipbuilding and textile industries, especially the production of towels. Imabari is the terminal city on the Shikoku Island side of the Nishiseto Expressway (Shimanami Kaido) and expects to welcome many visitors after this road opens on 1999 May 1.

(9664) Brueghel = 1996 HT_{14}

Discovered 1996 Apr. 17 by E. W. Elst at the European Southern Observatory.

Named in memory of Pieter Brueghel (Bruegel, Breughel; *c.* 1525–1569), the greatest Flemish painter of the sixteenth century. He was apprenticed to Pieter Coecke, a leading Antwerp artist, whose daughter he married. Although Brueghel was little influenced by Coecke's italianate art, the apprenticeship provided an important contact with a humanistic milieu, sensitizing Brueghel for human life. Perhaps for this reason his landscapes show, not only trees, mountains and snow, but also humans suffering from one side and enjoying life from the other. Through his sons Jan and Pieter, Brueghel became the ancestor of a dynasty of painters that survived into the eighteenth century.

(9672) Rosenbergerezek = 1997 TA_{10}

Discovered 1997 Oct. 5 by P. Pravec at Ondřejov.

Named in honor of Kamila Rosenbergerová (b. 1976) and Tomáš Rezek (b. 1974). Tomáš, a friend of the discoverer, has worked as an research assistant at the Ondřejov Observatory for two years. His exceptional skill with various operating systems have often amazed his colleagues. This minor planet is being named on the occasion of the marriage of Kamila and Tomáš on 1999 June 19.

(9746) Kazukoichikawa = 1988 VS_1

Discovered 1988 Nov. 7 by Y. Kushida and M. Inoue at Yatsugatake South Base Observatory.

Named in honor of Kazuko Ichikawa, who has loved dolls since her childhood. While working for a toy company as a designer of "Jenny", she was charmed by the lovely figures and started making teddy bears in 1987. She now attracts attention as one of the leading teddy-bear artists in Japan, and she teaches students the joy of making teddy bears themselves. Her works are introduced at Teddy Bear Museum as well as through her books, the best known of which is *My Friend Teddy Bear*. Citation prepared by the second discoverer.

(9748) van Ostaijen = 1989 CS_2

Discovered 1989 Feb. 4 by E. W. Elst at the European Southern Observatory.

Named in memory of Paul van Ostaijen (1896–1928), Flemish poet who influenced Belgian and Dutch poetry with his avant-garde writings. His second volume of poetry, *Het Sienjaal* (1918), inspired the Humanitarian Expressionist movement in Flanders. However, compromised as a political activist, he had to leave the country. He went to Berlin, where he was very disappointed by the artistic and political climate. Soon he developed his own poetic system, aiming at "pure poetry", without any personal and humanitarian confessions. His *First book of Schmoll* (1928) contains his best and most original poems.

(9758) Dainty = 1991 GZ_9

Discovered 1991 Apr. 13 by D. I. Steel at Siding Spring.

Named in honor of J. Christopher Dainty (b. 1947), Pilkington Professor of Optics at Imperial College, London. Dainty has made numerous seminal contributions in the fields of stellar speckle interferometry, the characterisation of atmospheric turbulence, scattering and propagation of light, and adaptive optics. Name proposed by the discoverer in recognition of the inspiration and guidance afforded him by Dainty whilst an undergraduate at the University of London.

(9762) Hermannhesse = 1991 RA_5

Discovered 1991 Sept. 13 by F. Börngen and L. D. Schmadel at Tautenburg.

Named in memory of Hermann Hesse (1877–1962), born in Swabia and since 1923 a citizen of Switzerland. As a lyric poet, writer, essayist, critic and illustrator, he was strongly impressed by Indian philosophy. Translated into many languages, his books were well received in the U.S.A. Hesse received numerous honors, among them the Nobel Prize for Literature in 1946 and the Peace Prize of the German Buchhandel in 1955. Name proposed by the first discoverer.

(9764) Morgenstern = 1991 UE_5

Discovered 1991 Oct. 30 by F. Börngen at Tautenburg.

Named in memory of the German poet, writer and translater Christian Morgenstern (1871–1914). His most successful poems are the witty, grotesque and thoughtful *Galgenlieder*. His pensive contemplative poetry was influenced by Nietzsche, later by Buddhism and the anthroposophy of his friend R. Steiner.

(9767) Midsomer Norton = 1992 EB_1

Discovered 1992 Mar. 10 by D. I. Steel at Siding Spring.

Named for the small but historic English town where the discoverer was born and bred. Formerly a coal-mining center, Midsomer Norton lies on the fringe of the Mendip Hills, eight miles from the city of Bath, where William Herschel discovered Uranus in 1781, and on the Fosseway, the great Roman road stretching from central to southwestern England. The town was also a hiding place of king Charles II in the Civil War during the 1650s.

(9833) Rilke = 1982 DW_3

Discovered 1982 Feb. 21 by F. Börngen at Tautenburg.

Named for the Austrian poet Rainer Maria Rilke (1875–1926), husband of the sculptor Clara Westhoff. His monographs *Auguste Rodin* (1903) and *Das Marienleben* (1913), set to music by Hindemith, were written in Paris. *Duineser Elegien* was his greatest late work. In his lyric creations he always strove for sonorous language. Some of his work is strongly influenced by religious longings.

(9834) Kirsanov = 1982 TS_1

Discovered 1982 Oct. 14 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in memory of the brilliant Russian poet Semen Isaakovich Kirsanov (1906–1972). The innovative form of his verses and poems is a reflection of his deep lyrical-philosophical world outlook, while his popular verses are enriched by his peerless humor. He was given an enthusiastic welcome at the Crimean Astrophysical Observatory. Named by the discoverer, following a suggestion by R. E. Gershberg.

(9863) Reichardt = 1991 RJ_7

Discovered 1991 Sept. 13 by F. Börngen and L. D. Schmadel at Tautenburg.

Named in memory of the German composer Johann Friedrich Reichardt (1752–1814), who for 20 years was conductor of the orchestra of the Royal Prussian court in Potsdam. Dismissed because of his positive attitude towards the French revolution, he lived in Halle-Giebichenstein after 1794. For a time he was a collaborator of Goethe. Numerous young poets and artists received encouragement from him. His extensive compositions include some 1000 songs in 30 collections using words from nearly all the German poets. He is considered the precursor of Schubert. Name proposed by the first discoverer.

(9904) Mauratombelli = 1997 OC$_1$

Discovered 1997 July 29 by A. Boattini and L. Tesi at San Marcello Pistoiese.

Named in honor of Maura Tombelli (b. 1952). Initially trained as an observer of variable stars, in 1994 she started a five-year survey of minor planets at Asiago Astrophysical Observatory with Ulisse Munari and Giuseppe Forti in Arcetri. She has also shared a lot of observing with the discoverers, especially the follow-up of NEOs, and she contributed to the discovery of 1994 QC, the first NEA found from Italy. She is currently involved in a project to build a new observatory near the town of Montelupo, where she lives. She is still the only female astrometrist in Italy.

(9927) Tyutchev = 1981 TW$_1$

Discovered 1981 Oct. 3 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in memory of the Russian poet Fedor Ivanovich Tyutchev (1803–1873). One of the greatest representatives of Russian lyricism of the nineteenth century, he was a master of Russian poetry. Many of his verses were set to music and translated into other languages.

(9985) Akiko = 1996 JF

Discovered 1996 May 12 by R. H. McNaught and H. Abe at Yatsuka.

Named in honor of Akiko Yamamoto (b. 1963), a member of the Yatsuka Observatory and observing partner of the second discoverer.

(9987) Peano = 1997 OO$_1$

Discovered 1997 July 29 by P. G. Comba at Prescott.

Named for Giuseppe Peano (1858–1932), Italian mathematician, professor at the University of Turin and a founder of symbolic logic. Peano's *Formulario Mathematico* was intended to develop mathematics in its entirety from a set of basic postulates by use of a logic notation, and it had a profound influence on later studies in the foundations of mathamatics. Peano was also the creator of the artificial language "Latino sine flexione". Later renamed "Interlingua", it had a simple grammar and a lexicon based on the Latin roots of words common to the major European languages.

(9988) Erictemplebell = 1997 RX$_6$

Discovered 1997 Sept. 9 by P. G. Comba at Prescott.

Named for Eric Temple Bell (1883–1960), Scottish-American mathematician and professor at the California Institute of Technology, where the discoverer attended his algebra classes and was exposed to his acerbic wit. Bell wrote more than 250 scholarly papers, mainly in number theory, and several influential books of popularization, including *Mathematics, Queen and Servant of Science*. He also wrote several books of science fiction under the pseudonym John Taine.

(9991) Anežka = 1997 TY$_7$

Discovered 1997 Oct. 5 by Z. Moravec at Kleť.

Named in honor of Anežka Moravcová (b. 1924), the discoverer's grandmother, on the occasion of her 75th birthday.

(10000) Myriostos = 1951 SY

Discovered 1951 Sept. 30 by A. G. Wilson at Palomar.

The Greek word for ten-thousandth, Myriostos honors all the astronomers, past and present, from all around the world, professional and amateur, observer and orbit computer, who participated, over an interval of 198 years, in the achievement of accumulating 10 000 minor planets with orbit determinations of the highest quality.

(10055) Silcher = 1987 YC$_1$

Discovered 1987 Dec. 22 by F. Börngen at Tautenburg.

Named in memory of the German composer of popular songs Philipp Friedrich Silcher (1789–1860), musical director at the University of Tübingen from 1817. He was a famous music educator, promoter of music for the laity and founder of several choirs. Silcher published numerous collections of folk-songs and composed, transcribed and arranged music for male and mixed choirs. Among his best-known compositions, still very popular today, are *Aennchen von Tharau*, *Ich weiss nicht, was soll es bedeuten* and *Alle Jahre wieder*.

(10095) Johannlöwe = 1991 RP$_2$

Discovered 1991 Sept. 9 by F. Börngen and L. D. Schmadel at Tautenburg.

Named in memory of the German composer Johann Carl Gottfried Löwe (1796–1869), born in Luben, near Halle. At the age of 23 he visited Goethe in Weimar. From 1820 to 1866 he lived in Stettin and was organist, precentor, music teacher and director for music in the town. There he directed the Pomeranian music festivals. His compositional work includes about 400 ballads, for which he favored dramatic-epic and romantic words, particularly by Goethe, Uhland and Herder. This form of song owes its real popularity to him. He performed his ballads himself at concerts. Name proposed by the first discoverer.

(10116) Robertfranz = 1992 SJ$_2$

Discovered 1992 Sept. 21 by F. Börngen and L. D. Schmadel at Tautenburg.

Named in memory of Robert Franz (1815–1892), German composer of songs. An organist in his native city of Halle, he was also conductor of the Singakademie and the university director of music. Franz set more than 350 songs to music, using in particular the words by Heine (*Im Rhein, im heiligen Strome*, *Wie des Mondes Abbild*). His arrangements and editions of compositions of Bach and Handel were very important. He was appointed Knight of the Order of Maximilian for arts and sciences in 1878 by the king of Bavaria. Name proposed by the first discoverer.

(10163) Onomichi = 1995 BH$_1$

Discovered 1995 Jan. 26 by A. Nakamura at Kuma Kogen.

Named for a city in eastern Hiroshima prefecture. Blessed with abundant natural beauty, Onomichi has been artistically captured by many Japanese novelists and artists. It has also been featured on film, thanks to the *Onomichi Trilogy* directed by Nobuhiko Obayashi. Onomichi is the terminal city on the Honshu side of the new Nishiseto Expressway.

(10170) Petrjakeš = 1995 DA$_1$

Discovered 1995 Feb. 22 by M. Tichý and Z. Moravec at Kleť.

Named in honor of Petr Jakeš (b. 1940), Czech geologist, geochemist and lecturer at Charles University. He was a member of the team that made a preliminary analysis of the lunar rocks returned by Apollo 14 and 15. He also studies meteorites and has searched for them in desert regions. Name endorsed by J. Tichá.

(10195) Nebraska = 1996 RS$_5$

Discovered 1996 Sept. 13 by R. Linderholm at Lime Creek.

Named for the U.S. state of Nebraska, this is the first minor planet to be discovered from an observatory there.

(10203) Flinders = 1997 PQ

Discovered 1997 Aug. 1 by F. B. Zoltowski at Woomera.

Named in memory of Matthew Flinders (1774–1814), British navigator and explorer who charted the Australian coastline. A self-educated navigator, he explored the Bass Strait between Australia and Tasmania and circumnavigated Australia, charting large sections of its coast. His use of the term Australia led to its acceptance as the name of the continent.

(10204) Turing = 1997 PK$_1$

Discovered 1997 Aug. 1 by P. G. Comba at Prescott.

Named in memory of Alan Mathison Turing (1912–1954), English mathematician and logician, a pioneer in the study of computability. In a fundamental paper published in 1936, he introduced the concept of an abstract computing machine and showed how such a machine can be programed to simulate the behavior of any other computing device. This concept, now referred to as a "universal Turing machine", was introduced years before the advent of programable computers, and it was used to demonstrate the existence of noncomputable numbers and undecidable mathematical propositions.

(10205) Pokorný = 1997 PX$_1$

Discovered 1997 Aug. 7 by M. Tichý and Z. Moravec at Kleť.

Named in honor of Zdeněk Pokorný (b. 1947), Czech astronomer who works at the Nicolas Copernicus Observatory and Planetarium, as well as at Masaryk University in Brno. He started his career by studying the giant planets, but his main work consists of education and the popularization of astronomy. He created many programs for the Brno Planetarium and is the author of the first Czech astronomical multimedia CD-ROM "ASTRO 2001". In 1991 Pokorný founded and served as the first president of the Association of Observatories and Planetaria in Czechoslovakia. Name endorsed and citation prepared by J. Tichá.

(10213) Koukolík = 1997 RK$_7$

Discovered 1997 Sept. 10 by M. Tichý and Z. Moravec at Kleť.

Named in honor of František Koukolík (b. 1941), Czech neuropathologist who works on the relationship between the brain and human behavior. He is also known as an excellent popularizer of science, being the author of many articles and several books of essays, such as *An Ant and the Universe*. Name endorsed by J. Tichá.

(10220) Pigott = 1997 UG$_7$

Discovered 1997 Oct. 20 by R. A. Tucker at the Goodricke-Pigott Observatory, Tucson.

Named in memory of the English amateur astronomer Edward Pigott (1753–1825), discoverer of several comets and the variable stars η Aql, R Sct and R CrB. A skilled user of the transit instrument, he determined the proper motions of several stars. Pigott was a friend and observing collaborator of John Goodricke.

(10221) Kubrick = 1997 UM$_9$

Discovered 1997 Oct. 28 by P. Pravec at Ondřejov.

Named in memory of Stanley Kubrick (1928–1999), filmmaking genius, whose 1968 rendition of Arthur Clarke's novel, *2001: A Space Odyssey*, remains the definitive science-fiction movie. At least half of his 12 other feature films, from *The Killing* (1956) and *Paths of Glory* (1957), through Peter Sellers' performance in the brilliant *Dr. Strangelove* (1964), and on to *A Clockwork Orange* (1971), *The Shining* (1980) and *Full Metal Jacket* (1987), explored twentieth-century culture in a manner that was unprecedented in its artistry and its longevity.

(10233) Le Creusot = 1997 XQ$_2$

Discovered 1997 Dec. 5 by J.-C. Merlin at Le Creusot.

Named for the home city and observatory site of the discoverer. It is in the Burgundy region of France, some 75 km southwest of Dijon.

EPHEMERIDES

1998 SF$_{35}$ a, e, i = 1.69, 0.27, 35 Elements *MPC* 33355

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	06 58.80	−09 31.2	1.247	1.305	69.8	46.4	20.3
1999 05 12	07 36.59	−08 01.6	1.285	1.333	69.9	45.3	20.4
1999 05 22	08 14.07	−06 40.9	1.336	1.364	69.5	44.0	20.5
1999 06 01	08 50.65	−05 33.3	1.401	1.397	68.6	42.5	20.6
1999 06 11	09 25.88	−04 41.4	1.479	1.432	67.1	40.8	20.7
1999 06 21	09 59.52	−04 06.2	1.568	1.468	65.2	38.9	20.9
1999 07 01	10 31.43	−03 47.2	1.667	1.505	62.9	36.9	21.0
1999 07 11	11 01.65	−03 42.7	1.772	1.543	60.2	34.9	21.1
1999 07 21	11 30.33	−03 50.6	1.882	1.581	57.1	32.7	21.2
1999 07 31	11 57.61	−04 08.4	1.995	1.618	53.8	30.4	21.4
1999 08 10	12 23.70	−04 33.8	2.107	1.655	50.3	28.1	21.5
1999 08 20	12 48.79	−05 04.5	2.218	1.692	46.6	25.8	21.5
1999 08 30	13 13.07	−05 38.4	2.326	1.727	42.8	23.4	21.6
1999 09 09	13 36.69	−06 13.5	2.428	1.762	38.9	21.0	21.7
1999 09 19	13 59.81	−06 48.0	2.524	1.796	35.0	18.7	21.7
1999 09 29	14 22.53	−07 20.2	2.613	1.828	31.0	16.4	21.8

1998 VF$_{31}$ a, e, i = 1.52, 0.10, 31 Elements *MPC* 33763

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	07 04.70	−06 55.5	1.336	1.376	70.4	43.6	20.1
1999 05 12	07 35.56	−05 34.7	1.366	1.373	68.7	43.3	20.1
1999 05 22	08 07.33	−04 26.3	1.401	1.371	67.0	42.8	20.2
1999 06 01	08 39.68	−03 32.0	1.441	1.371	65.2	42.2	20.2
1999 06 11	09 12.27	−02 52.5	1.487	1.372	63.3	41.4	20.3
1999 06 21	09 44.83	−02 27.9	1.537	1.375	61.2	40.4	20.3
1999 07 01	10 17.08	−02 17.5	1.593	1.380	59.0	39.2	20.4
1999 07 11	10 48.85	−02 20.0	1.653	1.386	56.7	37.8	20.4
1999 07 21	11 20.06	−02 33.6	1.717	1.393	54.2	36.3	20.5
1999 07 31	11 50.63	−02 56.3	1.782	1.402	51.7	34.6	20.5
1999 08 10	12 20.60	−03 25.9	1.848	1.411	49.1	32.9	20.6
1999 08 20	12 50.02	−04 00.3	1.915	1.422	46.5	31.1	20.6
1999 08 30	13 18.98	−04 37.2	1.979	1.434	43.9	29.2	20.6
1999 09 09	13 47.58	−05 14.6	2.042	1.446	41.3	27.3	20.7
1999 09 19	14 15.92	−05 50.3	2.102	1.459	38.7	25.5	20.7
1999 09 29	14 44.09	−06 22.4	2.157	1.473	36.2	23.7	20.7
1999 10 09	15 12.17	−06 49.0	2.209	1.486	33.8	21.9	20.7
1999 10 19	15 40.24	−07 08.4	2.257	1.500	31.5	20.3	20.8

1998 WO$_7$ a, e, i = 2.13, 0.30, 46 Elements *MPC* 33765

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	07 37.09	+61 55.6	2.158	2.043	69.8	27.6	20.7
1999 05 12	08 11.83	+60 24.4	2.258	2.080	66.8	26.5	20.8
1999 05 22	08 44.92	+58 32.3	2.356	2.116	63.9	25.4	20.9
1999 06 01	09 16.01	+56 22.2	2.450	2.152	61.1	24.4	20.9
1999 06 11	09 45.01	+53 57.0	2.541	2.187	58.4	23.3	21.0
1999 06 21	10 12.03	+51 20.1	2.629	2.222	55.7	22.2	21.1
1999 07 01	10 37.23	+48 34.5	2.715	2.256	53.1	21.1	21.2
1999 07 11	11 00.82	+45 42.9	2.799	2.289	50.4	20.0	21.2
1999 07 21	11 23.05	+42 48.0	2.879	2.321	47.7	18.9	21.3
1999 07 31	11 44.11	+39 52.0	2.956	2.352	45.1	17.8	21.3

1999 08 10	12 04.19	+36 56.8	3.030	2.382	42.4	16.7	21.4
1999 08 20	12 23.46	+34 04.2	3.099	2.411	39.9	15.6	21.4
1999 08 30	12 42.03	+31 15.7	3.163	2.439	37.4	14.6	21.5
1999 09 09	13 00.03	+28 32.5	3.222	2.467	35.1	13.6	21.5
1999 09 19	13 17.56	+25 55.9	3.274	2.493	33.0	12.7	21.5
1999 09 29	13 34.66	+23 26.9	3.318	2.518	31.4	12.0	21.5
1999 10 09	13 51.41	+21 06.2	3.354	2.542	30.3	11.4	21.6

1999 DA$_8$ a, e, i = 39.32, 0.33, 40 Elements *MPC* 34608

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	09 27.51	+18 10.1	26.952	27.098	97.3	2.1	27.0
1999 05 12	09 27.72	+18 11.2	27.125	27.102	87.6	2.1	27.0
1999 05 22	09 28.16	+18 11.1	27.297	27.106	78.1	2.1	27.0
1999 06 01	09 28.84	+18 09.9	27.462	27.110	68.7	2.0	27.0
1999 06 11	09 29.73	+18 07.8	27.618	27.115	59.4	1.8	27.0
1999 06 21	09 30.81	+18 04.8	27.760	27.119	50.1	1.6	27.0
1999 07 01	09 32.07	+18 01.1	27.884	27.123	40.9	1.4	27.0
1999 07 11	09 33.47	+17 56.7	27.987	27.128	31.7	1.1	27.0

1999 DZ$_7$ a, e, i = 39.41, 0.27, 14 Elements *MPC* 34608

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	09 28.78	+17 44.8	49.802	49.947	97.7	1.1	25.9
1999 05 12	09 28.81	+17 43.7	49.971	49.947	88.0	1.2	26.0
1999 05 22	09 28.96	+17 42.1	50.140	49.947	78.4	1.1	26.0
1999 06 01	09 29.24	+17 39.8	50.302	49.947	68.9	1.1	26.0
1999 06 11	09 29.65	+17 37.0	50.454	49.946	59.5	1.0	26.0
1999 06 21	09 30.16	+17 33.8	50.593	49.946	50.1	0.9	26.0
1999 07 01	09 30.77	+17 30.1	50.712	49.946	40.7	0.8	25.9
1999 07 11	09 31.46	+17 26.1	50.811	49.946	31.4	0.6	25.9

C/1999 H1 (Lee) Elements *MPC* 34421

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 05 02	10 10.97	−50 03.5	0.728	1.486	116.9	37.2	8.0	
1999 05 07	09 36.63	−38 48.3	0.722	1.414	108.5	42.6	7.8	
1999 05 12	09 14.06	−27 30.8	0.750	1.342	98.3	48.2	7.7	
1999 05 17	08 58.78	−17 22.0	0.807	1.270	87.8	52.7	7.6	
1999 05 22	08 48.05	−08 49.3	0.885	1.198	78.0	55.7	7.5	
1999 05 27	08 40.19	−01 49.2	0.977	1.128	69.0	57.0	7.5	
1999 06 01	08 34.13	+03 54.3	1.075	1.059	60.8	56.7	7.4	
1999 06 06	08 29.18	+08 38.4	1.176	0.992	53.3	55.0	7.3	
1999 06 11	08 24.84	+12 38.0	1.275	0.929	46.1	52.0	7.2	
1999 06 16	08 20.77	+16 04.7	1.370	0.870	39.4	47.8	7.1	
1999 06 21	08 16.66	+19 07.1	1.457	0.817	32.8	42.4	6.9	

1999 HF$_1$ a, e, i = 0.82, 0.46, 26 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	10 18.28	+61 25.7	0.502	1.113	88.3	64.8	15.4
1999 05 12	10 54.98	+56 27.6	0.581	1.149	88.1	61.5	15.7
1999 05 22	11 21.24	+51 49.0	0.655	1.175	86.8	59.3	16.0
1999 06 01	11 42.69	+47 25.5	0.723	1.191	84.8	58.0	16.2
1999 06 11	12 01.74	+43 11.6	0.784	1.198	82.4	57.1	16.3
1999 06 21	12 19.65	+39 02.7	0.837	1.195	79.7	56.8	16.5
1999 07 01	12 37.00	+34 56.3	0.881	1.183	76.8	56.8	16.5
1999 07 11	12 54.14	+30 49.5	0.914	1.161	73.7	57.2	16.6
1999 07 21	13 11.29	+26 39.6	0.936	1.129	70.5	58.0	16.6
1999 07 31	13 28.53	+22 24.2	0.946	1.088	67.3	59.4	16.6
1999 08 10	13 45.84	+17 59.7	0.941	1.036	63.8	61.5	16.5
1999 08 20	14 03.11	+13 21.5	0.922	0.973	60.2	64.5	16.4

P/1999 D1 (Hermann) Elements *MPC* 34421

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 05 02	11 23.08	−20 34.9	0.994	1.843	134.2	23.1	17.6	
1999 05 12	11 27.78	−21 58.9	1.105	1.894	127.1	25.2	18.0	
1999 05 22	11 35.62	−23 12.0	1.227	1.948	120.6	26.6	18.3	
1999 06 01	11 45.99	−24 19.7	1.360	2.006	114.6	27.4	18.7	
1999 06 11	11 58.34	−25 24.8	1.501	2.066	108.9	27.7	19.0	
1999 06 21	12 12.25	−26 29.1	1.649	2.130	103.5	27.6	19.4	
1999 07 01	12 27.38	−27 33.5	1.805	2.195	98.3	27.3	19.7	
1999 07 11	12 43.46	−28 38.0	1.967	2.263	93.1	26.7	20.0	
1999 07 21	13 00.29	−29 42.4	2.133	2.331	88.0	25.8	20.3	
1999 07 31	13 17.72	−30 46.4	2.303	2.401	83.0	24.8	20.6	
1999 08 10	13 35.63	−31 49.3	2.477	2.472	77.9	23.6	20.9	
1999 08 20	13 53.95	−32 50.5	2.651	2.544	72.9	22.3	21.2	
1999 08 30	14 12.59	−33 49.5	2.826	2.616	67.7	20.9	21.4	
1999 09 09	14 31.49	−34 45.5	3.000	2.688	62.6	19.4	21.7	
1999 09 19	14 50.61	−35 38.1	3.171	2.761	57.3	17.8	21.9	

1999 GH$_2$ a, e, i = 3.01, 0.45, 14 Elements *MPC* 34614

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	11 31.63	+07 31.9	1.153	1.953	129.2	23.6	18.4
1999 05 12	11 35.25	+05 11.3	1.274	1.996	121.4	25.6	18.7
1999 05 22	11 41.40	+02 53.8	1.406	2.040	114.1	26.9	19.0
1999 06 01	11 49.58	+00 39.7	1.547	2.086	107.2	27.7	19.3
1999 06 11	11 59.36	−01 31.0	1.695	2.132	100.8	27.9	19.5
1999 06 21	12 10.44	−03 38.5	1.849	2.180	94.6	27.7	19.8
1999 07 01	12 22.54	−05 43.1	2.006	2.228	88.7	27.1	20.0
1999 07 11	12 35.47	−07 44.7	2.167	2.277	82.9	26.3	20.2
1999 07 21	12 49.09	−09 43.3	2.328	2.326	77.3	25.2	20.3
1999 07 31	13 03.28	−11 38.9	2.490	2.375	71.7	23.9	20.5
1999 08 10	13 17.95	−13 31.2	2.649	2.425	66.2	22.5	20.6
1999 08 20	13 33.07	−15 20.1	2.806	2.474	60.7	20.9	20.7

1999 GJ$_4$ a, e, i = 1.34, 0.81, 35 Elements *MPC* 34614

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	11 47.65	+36 53.8	1.623	2.240	114.7	24.1	19.0
1999 05 12	11 36.60	+36 23.2	1.703	2.198	105.3	26.3	19.2
1999 05 22	11 29.93	+35 23.9	1.788	2.151	96.4	27.9	19.3
1999 06 01	11 27.31	+34 05.3	1.871	2.099	88.2	28.9	19.3
1999 06 11	11 28.18	+32 33.8	1.948	2.042	80.4	29.4	19.4
1999 06 21	11 32.02	+30 53.2	2.017	1.979	73.2	29.4	19.4
1999 07 01	11 38.35	+29 06.1	2.073	1.911	66.5	29.2	19.4
1999 07 11	11 46.80	+27 13.4	2.115	1.836	60.3	28.7	19.3

1999 GS$_3$ a, e, i = 2.61, 0.42, 28 Elements *MPC* 34614

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	11 56.61	+29 45.6	0.871	1.637	121.0	31.8	18.5
1999 05 12	11 57.59	+22 58.3	0.951	1.672	117.0	32.6	18.8
1999 05 22	12 02.03	+16 40.3	1.048	1.711	112.3	33.2	19.1
1999 06 01	12 09.12	+10 57.3	1.159	1.751	107.2	33.6	19.3
1999 06 11	12 18.20	+05 49.3	1.282	1.795	102.1	33.6	19.6

1999 06 21	12 28.88	+01 13.0	1.416	1.839	96.9	33.3	19.9
1999 07 01	12 40.82	−02 55.7	1.557	1.886	91.8	32.6	20.1
1999 07 11	12 53.79	−06 40.8	1.704	1.933	86.7	31.7	20.3
1999 07 21	13 07.67	−10 05.9	1.856	1.982	81.6	30.5	20.5
1999 07 31	13 22.32	−13 14.1	2.009	2.031	76.6	29.1	20.7
1999 08 10	13 37.67	−16 07.4	2.164	2.080	71.6	27.6	20.9
1999 08 20	13 53.69	−18 47.8	2.318	2.130	66.6	25.9	21.0
1999 08 30	14 10.31	−21 16.5	2.469	2.179	61.7	24.1	21.2

1999 HE$_1$ a, e, i = 2.38, 0.57, 8 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	12 13.22	+13 11.2	0.608	1.500	134.9	28.4	18.7
1999 05 12	12 00.77	+12 25.8	0.590	1.424	123.5	36.3	18.7
1999 05 22	11 53.09	+10 48.1	0.577	1.349	113.3	43.6	18.7
1999 06 01	11 50.74	+08 22.5	0.566	1.277	104.3	50.3	18.8
1999 06 11	11 53.49	+05 13.1	0.551	1.211	96.7	56.4	18.8
1999 06 21	12 01.00	+01 20.3	0.531	1.150	90.5	62.1	18.7
1999 07 01	12 12.88	−03 18.2	0.504	1.099	85.5	67.3	18.7
1999 07 11	12 29.03	−08 47.4	0.472	1.059	81.9	71.9	18.6
1999 07 21	12 50.06	−15 15.5	0.436	1.032	79.8	75.7	18.5
1999 07 31	13 17.54	−22 49.8	0.399	1.021	79.5	77.9	18.4
1999 08 10	13 55.09	−31 28.4	0.365	1.026	81.5	77.9	18.2
1999 08 20	14 49.69	−40 36.1	0.341	1.046	86.2	74.8	18.0
1999 08 30	16 10.43	−48 18.3	0.332	1.081	93.3	68.8	17.8
1999 09 09	17 54.91	−51 22.1	0.344	1.128	101.6	61.0	17.7
1999 09 19	19 33.99	−48 32.4	0.380	1.185	109.2	53.2	17.8
1999 09 29	20 45.80	−42 22.1	0.440	1.250	114.4	46.9	18.1
1999 10 09	21 34.32	−35 34.4	0.520	1.319	117.0	42.4	18.4
1999 10 19	22 08.89	−29 19.6	0.620	1.393	117.2	39.5	18.8
1999 10 29	22 35.59	−23 53.3	0.735	1.469	115.5	37.6	19.3
1999 11 08	22 57.77	−19 11.4	0.865	1.546	112.6	36.3	19.7
1999 11 18	23 17.36	−15 05.7	1.008	1.623	108.8	35.2	20.1
1999 11 28	23 35.38	−11 28.5	1.162	1.701	104.3	34.2	20.5
1999 12 08	23 52.46	−08 13.6	1.327	1.778	99.5	33.1	20.9
1999 12 18	00 08.98	−05 16.1	1.499	1.854	94.3	32.0	21.2
1999 12 28	00 25.16	−02 32.7	1.677	1.929	89.0	30.7	21.5
2000 01 07	00 41.14	−00 01.0	1.859	2.002	83.5	29.2	21.7
2000 01 17	00 57.02	+02 20.7	2.044	2.074	77.9	27.6	22.0

1999 GT$_6$ a, e, i = 2.83, 0.58, 4 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	12 16.58	−03 55.6	0.771	1.694	144.1	20.4	18.9
1999 05 12	12 10.50	−02 21.6	0.761	1.624	132.5	27.3	19.0
1999 05 22	12 08.87	−01 14.1	0.761	1.556	122.0	33.5	19.1
1999 06 01	12 12.12	−00 38.5	0.767	1.491	112.9	38.8	19.1
1999 06 11	12 20.19	−00 35.6	0.774	1.429	105.2	43.3	19.2
1999 06 21	12 32.92	−01 04.1	0.780	1.372	98.7	47.1	19.2
1999 07 01	12 50.01	−02 01.5	0.783	1.321	93.5	50.2	19.2
1999 07 11	13 11.24	−03 24.3	0.783	1.277	89.4	52.8	19.2
1999 07 21	13 36.53	−05 09.2	0.780	1.242	86.4	54.8	19.2
1999 07 31	14 05.80	−07 11.0	0.776	1.216	84.4	56.2	19.2
1999 08 10	14 38.98	−09 23.5	0.774	1.202	83.4	56.9	19.2
1999 08 20	15 15.97	−11 38.2	0.776	1.200	83.2	56.9	19.2
1999 08 30	15 56.36	−13 44.2	0.785	1.209	83.7	56.1	19.2
1999 09 09	16 39.35	−15 29.5	0.806	1.230	84.6	54.6	19.3
1999 09 19	17 23.83	−16 43.6	0.841	1.261	85.7	52.6	19.4
1999 09 29	18 08.29	−17 19.6	0.892	1.301	86.6	50.2	19.5
1999 10 09	18 51.36	−17 16.6	0.960	1.350	87.1	47.7	19.7
1999 10 19	19 32.03	−16 38.6	1.045	1.404	86.9	45.1	19.9
1999 10 29	20 09.70	−15 32.4	1.146	1.464	86.1	42.6	20.1
1999 11 08	20 44.26	−14 05.3	1.261	1.528	84.6	40.2	20.3
1999 11 18	21 15.91	−12 23.8	1.390	1.595	82.4	37.9	20.6
1999 11 28	21 44.95	−10 32.8	1.530	1.665	79.6	35.7	20.8
1999 12 08	22 11.74	−08 36.3	1.679	1.735	76.4	33.5	21.0
1999 12 18	22 36.67	−06 36.8	1.836	1.807	72.7	31.3	21.2
1999 12 28	23 00.03	−04 36.4	1.999	1.879	68.6	29.2	21.4
2000 01 07	23 22.12	−02 36.5	2.164	1.951	64.3	27.0	21.6

1991 GO a, e, i = 1.93, 0.65, 10 Elements *MPC* 34492

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	12 24.31	−10 18.9	0.288	1.260	147.8	25.2	18.8
1999 05 12	12 37.26	−13 13.2	0.418	1.364	142.1	27.1	19.8
1999 05 22	12 48.45	−14 55.4	0.558	1.465	135.7	28.8	20.6
1999 06 01	12 59.56	−16 10.0	0.709	1.562	129.3	30.2	21.3
1999 06 11	13 11.05	−17 12.9	0.869	1.656	122.8	31.0	21.9
1999 06 21	13 23.13	−18 11.4	1.038	1.746	116.4	31.4	22.4

1999 GY$_5$ a, e, i = 1.13, 0.60, 24 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	12 33.22	+11 33.5	0.343	1.289	139.7	30.4	19.5
1999 05 12	12 36.31	+13 32.0	0.479	1.368	130.0	34.4	20.5
1999 05 22	12 42.01	+13 52.1	0.620	1.439	121.9	36.7	21.2
1999 06 01	12 49.62	+13 23.0	0.766	1.504	114.6	37.8	21.8
1999 06 11	12 58.65	+12 26.4	0.914	1.561	107.9	38.2	22.3
1999 06 21	13 08.89	+11 12.9	1.064	1.612	101.6	38.1	22.7
1999 07 01	13 20.13	+09 49.3	1.213	1.657	95.6	37.6	23.0
1999 07 11	13 32.21	+08 19.5	1.360	1.696	89.8	36.8	23.3
1999 07 21	13 45.06	+06 46.2	1.504	1.728	84.2	35.8	23.5
1999 07 31	13 58.61	+05 11.5	1.643	1.755	78.8	34.6	23.7
1999 08 10	14 12.82	+03 36.9	1.776	1.776	73.4	33.2	23.9
1999 08 20	14 27.67	+02 03.5	1.901	1.792	68.2	31.6	24.0
1999 08 30	14 43.14	+00 32.6	2.018	1.802	63.1	30.0	24.1

1999 FP$_{59}$ a, e, i = 1.70, 0.26, 2 Elements *MPC* 34613

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	12 35.43	−04 18.9	0.854	1.793	148.7	17.0	20.3
1999 05 12	12 26.93	−03 38.5	0.883	1.761	136.8	23.1	20.6
1999 05 22	12 22.77	−03 23.9	0.926	1.728	126.1	28.3	20.8
1999 06 01	12 23.07	−03 36.0	0.976	1.694	116.6	32.4	21.0
1999 06 11	12 27.44	−04 12.8	1.032	1.659	108.3	35.5	21.1
1999 06 21	12 35.48	−05 11.4	1.088	1.624	101.0	37.9	21.3
1999 07 01	12 46.69	−06 28.5	1.144	1.589	94.5	39.6	21.4
1999 07 11	13 00.67	−08 00.8	1.197	1.553	88.8	40.9	21.5
1999 07 21	13 17.17	−09 45.3	1.246	1.518	83.7	41.7	21.5
1999 07 31	13 35.98	−11 38.9	1.291	1.484	79.1	42.2	21.6
1999 08 10	13 56.96	−13 38.4	1.331	1.450	75.0	42.5	21.6
1999 08 20	14 20.12	−15 40.3	1.368	1.418	71.4	42.6	21.6
1999 08 30	14 45.40	−17 40.9	1.399	1.387	68.1	42.5	21.6

1999 09 09	15 12.83	−19 35.7	1.427	1.359	65.2	42.3	21.6
1999 09 19	15 42.44	−21 20.1	1.453	1.333	62.6	42.0	21.6
1999 09 29	16 14.14	−22 48.8	1.476	1.311	60.3	41.6	21.6

1999 HY$_1$ a, e, i = 1.40, 0.13, 35 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	12 39.37	−11 12.9	0.407	1.379	151.6	20.3	18.8
1999 05 12	12 37.79	+01 31.7	0.433	1.359	137.0	30.5	19.2
1999 05 22	12 41.38	+11 31.1	0.485	1.340	123.1	39.3	19.6
1999 06 01	12 49.40	+18 33.5	0.550	1.321	111.8	45.5	20.0
1999 06 11	13 00.90	+23 15.7	0.621	1.303	102.8	49.5	20.4
1999 06 21	13 15.17	+26 17.1	0.692	1.286	95.8	51.9	20.7
1999 07 01	13 31.65	+28 07.7	0.758	1.270	90.1	53.2	20.9
1999 07 11	13 49.93	+29 07.6	0.817	1.255	85.6	53.9	21.0
1999 07 21	14 09.86	+29 29.3	0.868	1.243	82.1	54.1	21.1
1999 07 31	14 31.34	+29 21.6	0.909	1.232	79.4	54.1	21.2
1999 08 10	14 54.38	+28 49.0	0.939	1.224	77.5	54.0	21.3
1999 08 20	15 19.12	+27 54.1	0.960	1.218	76.2	53.8	21.3
1999 08 30	15 45.69	+26 38.4	0.972	1.215	75.6	53.6	21.3
1999 09 09	16 14.24	+25 01.7	0.977	1.215	75.5	53.4	21.3
1999 09 19	16 44.98	+23 03.8	0.977	1.217	75.8	53.2	21.3
1999 09 29	17 17.94	+20 45.1	0.975	1.222	76.3	52.8	21.3
1999 10 09	17 53.08	+18 06.8	0.975	1.229	77.0	52.4	21.3
1999 10 19	18 30.17	+15 13.0	0.980	1.239	77.6	51.8	21.3
1999 10 29	19 08.70	+12 11.0	0.995	1.251	78.0	51.0	21.4
1999 11 08	19 48.03	+09 10.3	1.022	1.265	77.8	50.0	21.4
1999 11 18	20 27.41	+06 21.9	1.063	1.280	77.1	48.8	21.5
1999 11 28	21 06.08	+03 55.2	1.117	1.297	75.8	47.5	21.6
1999 12 08	21 43.47	+01 56.1	1.185	1.315	73.9	46.1	21.7
1999 12 18	22 19.26	+00 27.1	1.264	1.333	71.5	44.4	21.8
1999 12 28	22 53.28	−00 33.1	1.351	1.353	68.7	42.7	22.0

1999 GJ$_2$ a, e, i = 1.54, 0.20, 11 Elements *MPC* 34614

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	12 40.19	+01 00.0	0.759	1.697	147.3	18.7	18.2
1999 05 12	12 34.10	+03 10.0	0.798	1.675	135.4	25.1	18.5
1999 05 22	12 32.37	+04 34.1	0.850	1.652	124.8	30.2	18.7
1999 06 01	12 34.91	+05 14.9	0.909	1.628	115.5	34.2	19.0
1999 06 11	12 41.24	+05 18.7	0.972	1.602	107.5	37.2	19.2
1999 06 21	12 50.87	+04 51.7	1.035	1.576	100.4	39.4	19.3
1999 07 01	13 03.29	+03 59.9	1.097	1.549	94.2	40.9	19.5
1999 07 11	13 18.10	+02 48.5	1.156	1.521	88.7	41.9	19.6
1999 07 21	13 35.01	+01 21.5	1.211	1.494	83.7	42.6	19.6
1999 07 31	13 53.80	−00 17.3	1.261	1.465	79.3	42.9	19.7
1999 08 10	14 14.34	−02 04.6	1.307	1.437	75.4	43.0	19.7
1999 08 20	14 36.58	−03 57.5	1.347	1.410	71.8	43.0	19.8
1999 08 30	15 00.47	−05 52.6	1.383	1.383	68.6	42.8	19.8
1999 09 09	15 26.01	−07 46.9	1.414	1.357	65.7	42.6	19.8
1999 09 19	15 53.26	−09 36.8	1.441	1.332	63.1	42.2	19.8
1999 09 29	16 22.18	−11 18.8	1.465	1.310	60.7	41.9	19.7

C/1999 F1 (Catalina) Elements *MPC* 34421

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 05 02	13 01.71	−08 19.1	8.112	9.043	156.2	2.6		19.1
1999 05 12	12 56.94	−08 18.3	8.144	8.994	145.4	3.7		19.2
1999 05 22	12 52.67	−08 19.6	8.204	8.946	134.8	4.6		19.2
1999 06 01	12 49.01	−08 23.7	8.286	8.898	124.4	5.4		19.3
1999 06 11	12 46.03	−08 31.0	8.385	8.850	114.2	6.0		19.3
1999 06 21	12 43.79	−08 42.0	8.497	8.802	104.2	6.4		19.4
1999 07 01	12 42.29	−08 56.8	8.616	8.754	94.4	6.6		19.4
1999 07 11	12 41.53	−09 15.5	8.738	8.706	84.9	6.7		19.4
1999 07 21	12 41.48	−09 38.1	8.856	8.658	75.5	6.5		19.4
1999 07 31	12 42.08	−10 04.5	8.968	8.611	66.3	6.2		19.4
1999 08 10	12 43.27	−10 34.5	9.069	8.564	57.3	5.7		19.4
1999 08 20	12 45.00	−11 07.9	9.155	8.517	48.4	5.1		19.4
1999 08 30	12 47.18	−11 44.6	9.223	8.469	39.6	4.4		19.4
1999 09 09	12 49.75	−12 24.1	9.270	8.423	31.0	3.5		19.3

1999 GS$_6$ a, e, i = 1.19, 0.50, 2 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	13 09.79	−16 56.2	0.294	1.287	159.5	15.9	18.4
1999 05 12	13 01.76	−14 14.3	0.388	1.355	148.1	23.2	19.3
1999 05 22	13 01.26	−12 49.8	0.494	1.419	138.2	28.4	20.1
1999 06 01	13 05.51	−12 15.2	0.607	1.477	129.5	32.0	20.7
1999 06 11	13 12.92	−12 13.5	0.729	1.529	121.7	34.4	21.3
1999 06 21	13 22.66	−12 34.8	0.855	1.577	114.5	35.9	21.7
1999 07 01	13 34.15	−13 12.1	0.986	1.619	107.8	36.7	22.1
1999 07 11	13 47.01	−14 00.5	1.120	1.656	101.5	37.0	22.4
1999 07 21	14 01.04	−14 56.5	1.254	1.688	95.5	36.8	22.7
1999 07 31	14 16.05	−15 57.3	1.388	1.716	89.7	36.3	23.0
1999 08 10	14 31.93	−17 00.6	1.520	1.738	84.1	35.5	23.2
1999 08 20	14 48.65	−18 04.5	1.649	1.756	78.6	34.4	23.3
1999 08 30	15 06.13	−19 07.5	1.773	1.769	73.2	33.1	23.5
1999 09 09	15 24.37	−20 07.8	1.891	1.778	68.0	31.7	23.6
1999 09 19	15 43.35	−21 04.2	2.001	1.781	62.8	30.1	23.7

C/1999 G1 (LINEAR) Elements *MPC* 34421

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 05 02	13 10.57	−04 15.2	3.781	4.722	156.5	4.9	17.1	
1999 05 12	13 01.03	−05 00.2	3.895	4.759	145.1	7.0	17.2	
1999 05 22	12 52.93	−05 47.7	4.039	4.797	133.9	8.7	17.3	
1999 06 01	12 46.45	−06 37.8	4.206	4.836	123.1	10.1	17.5	
1999 06 11	12 41.63	−07 30.6	4.391	4.876	112.8	11.1	17.6	
1999 06 21	12 38.42	−08 26.2	4.589	4.916	102.9	11.6	17.7	
1999 07 01	12 36.71	−09 24.6	4.793	4.958	93.4	11.8	17.9	
1999 07 11	12 36.34	−10 25.7	5.000	5.000	84.2	11.7	18.0	
1999 07 21	12 37.16	−11 29.6	5.204	5.044	75.3	11.2	18.1	
1999 07 31	12 39.00	−12 36.1	5.402	5.088	66.8	10.6	18.2	
1999 08 10	12 41.71	−13 45.1	5.590	5.132	58.4	9.7	18.3	
1999 08 20	12 45.16	−14 56.5	5.765	5.178	50.3	8.6	18.4	
1999 08 30	12 49.20	−16 10.3	5.925	5.224	42.4	7.5	18.5	
1999 09 09	12 53.73	−17 26.3	6.067	5.271	34.8	6.3	18.6	

1999 HV$_1$ a, e, i = 2.57, 0.54, 7 Elements *MPC* 34615

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05	02	13 11.74	−07 19.0	1.341	2.306	158.1	9.4	20.8
1999 05	12	13 02.07	−05 48.2	1.335	2.243	145.7	14.7	20.9
1999 05	22	12 54.83	−04 32.7	1.351	2.178	133.9	19.6	21.0
1999 06	01	12 50.71	−03 38.4	1.382	2.112	123.0	23.8	21.1
1999 06	11	12 49.94	−03 07.8	1.423	2.045	113.0	27.2	21.2
1999 06	21	12 52.54	−03 00.8	1.469	1.978	104.0	29.9	21.3
1999 07	01	12 58.31	−03 15.8	1.516	1.910	95.9	32.0	21.4
1999 07	11	13 07.01	−03 50.3	1.560	1.842	88.6	33.5	21.4
1999 07	21	13 18.43	−04 42.0	1.601	1.773	82.1	34.6	21.4
1999 07	31	13 32.37	−05 48.3	1.634	1.705	76.2	35.3	21.4
1999 08	10	13 48.72	−07 06.7	1.661	1.638	70.9	35.8	21.3
1999 08	20	14 07.43	−08 34.6	1.679	1.572	66.1	36.1	21.3
1999 08	30	14 28.50	−10 09.3	1.690	1.508	62.0	36.2	21.2

1999 HW$_1$ a, e, i = 2.39, 0.46, 24 Elements *MPC* 34615

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05	02	13 15.23	−02 37.1	0.412	1.395	156.7	16.6	19.5
1999 05	12	13 04.17	−10 59.3	0.475	1.435	147.9	22.0	20.0
1999 05	22	12 59.74	−17 26.5	0.558	1.479	138.9	26.7	20.6
1999 06	01	13 01.14	−22 19.9	0.656	1.526	131.0	30.1	21.1
1999 06	11	13 07.22	−26 05.4	0.765	1.577	124.1	32.2	21.6
1999 06	21	13 17.06	−29 04.1	0.884	1.630	118.0	33.4	22.0
1999 07	01	13 29.89	−31 30.6	1.011	1.685	112.4	33.9	22.4
1999 07	11	13 45.06	−33 33.7	1.144	1.741	107.2	33.9	22.7
1999 07	21	14 02.18	−35 19.4	1.283	1.798	102.2	33.5	23.0
1999 07	31	14 20.88	−36 51.1	1.427	1.855	97.4	32.9	23.3
1999 08	10	14 40.89	−38 10.6	1.575	1.913	92.7	32.0	23.6
1999 08	20	15 02.02	−39 19.0	1.726	1.970	88.0	30.9	23.8
1999 08	30	15 24.06	−40 16.9	1.878	2.027	83.3	29.7	24.0
1999 09	09	15 46.83	−41 04.2	2.033	2.083	78.7	28.3	24.2
1999 09	19	16 10.22	−41 41.0	2.187	2.139	73.9	26.8	24.4
1999 09	29	16 34.02	−42 07.1	2.341	2.195	69.2	25.3	24.5
1999 10	09	16 58.10	−42 22.3	2.493	2.249	64.4	23.6	24.7

1999 GL$_4$ a, e, i = 2.12, 0.60, 7 Elements *MPC* 34614

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05	02	13 26.47	+03 16.0	0.553	1.527	154.9	16.2	20.0
1999 05	12	13 23.79	+03 04.9	0.676	1.614	145.7	20.7	20.7
1999 05	22	13 24.68	+02 24.6	0.811	1.699	137.1	23.9	21.3
1999 06	01	13 28.40	+01 25.4	0.959	1.782	129.1	26.2	21.9
1999 06	11	13 34.31	+00 14.4	1.117	1.862	121.6	27.7	22.3
1999 06	21	13 41.96	−01 03.9	1.285	1.940	114.5	28.5	22.7
1999 07	01	13 51.00	−02 26.3	1.460	2.016	107.7	28.7	23.1
1999 07	11	14 01.12	−03 50.4	1.640	2.090	101.1	28.5	23.4
1999 07	21	14 12.17	−05 14.7	1.825	2.161	94.8	27.9	23.7
1999 07	31	14 23.96	−06 37.9	2.011	2.229	88.5	27.1	24.0
1999 08	10	14 36.38	−07 58.9	2.199	2.296	82.4	26.0	24.2
1999 08	20	14 49.34	−09 17.0	2.385	2.360	76.3	24.6	24.4
1999 08	30	15 02.78	−10 31.3	2.569	2.421	70.2	23.1	24.6
1999 09	09	15 16.61	−11 41.4	2.748	2.481	64.2	21.4	24.7

1999 GT$_3$ a, e, i = 1.34, 0.84, 20 Elements *MPC* 34614

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05	02	13 31.06	+30 55.1	0.687	1.550	131.4	29.2	19.3
1999 05	12	13 11.75	+27 56.3	0.846	1.651	125.4	29.9	19.9
1999 05	22	13 02.09	+25 01.4	1.017	1.744	118.5	30.7	20.5
1999 06	01	12 58.65	+22 16.5	1.196	1.829	111.4	31.1	20.9
1999 06	11	12 59.34	+19 42.4	1.382	1.907	104.4	31.0	21.3
1999 06	21	13 02.93	+17 17.8	1.570	1.979	97.6	30.6	21.7
1999 07	01	13 08.61	+15 01.8	1.759	2.045	90.9	29.8	22.0

1999 HZ$_1$ a, e, i = 1.61, 0.58, 9 Elements *MPC* 34615

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05	02	13 33.33	−24 09.9	0.604	1.595	162.9	10.7	19.0
1999 05	12	13 22.60	−20 22.1	0.706	1.672	153.7	15.5	19.6
1999 05	22	13 18.01	−17 34.1	0.827	1.746	143.2	20.3	20.2
1999 06	01	13 18.13	−15 40.1	0.963	1.816	133.4	23.9	20.7
1999 06	11	13 21.72	−14 29.4	1.111	1.882	124.4	26.4	21.2
1999 06	21	13 27.95	−13 52.3	1.270	1.945	116.2	28.0	21.6
1999 07	01	13 36.18	−13 40.5	1.435	2.004	108.5	28.8	22.0
1999 07	11	13 45.92	−13 47.5	1.604	2.060	101.2	29.0	22.3
1999 07	21	13 56.89	−14 08.2	1.777	2.112	94.3	28.7	22.5
1999 07	31	14 08.83	−14 38.8	1.950	2.161	87.6	28.0	22.8
1999 08	10	14 21.59	−15 16.2	2.122	2.207	81.2	27.0	23.0
1999 08	20	14 35.05	−15 57.9	2.291	2.250	74.9	25.7	23.1
1999 08	30	14 49.10	−16 42.1	2.455	2.289	68.7	24.3	23.3
1999 09	09	15 03.69	−17 26.9	2.612	2.326	62.5	22.6	23.4

1999 GK$_4$ a, e, i = 1.96, 0.49, 5 Elements *MPC* 34614

Date	TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05	02	13 39.49	−00 08.7	0.655	1.638	159.6	12.4	17.0
1999 05	12	13 24.69	+02 10.3	0.624	1.569	146.4	20.8	17.1
1999 05	22	13 12.24	+03 58.5	0.610	1.500	133.6	29.2	17.2
1999 06	01	13 03.98	+05 04.7	0.606	1.430	122.0	37.0	17.3
1999 06	11	13 00.76	+05 27.1	0.606	1.361	111.7	43.8	17.4
1999 06	21	13 02.78	+05 08.6	0.605	1.294	103.0	49.9	17.4
1999 07	01	13 09.78	+04 14.4	0.600	1.229	95.6	55.4	17.5
1999 07	11	13 21.33	+02 49.1	0.587	1.169	89.4	60.4	17.4
1999 07	21	13 37.20	+00 55.8	0.567	1.114	84.4	65.2	17.4
1999 07	31	13 57.25	−01 23.8	0.538	1.068	80.5	69.7	17.3
1999 08	10	14 21.70	−04 09.6	0.501	1.031	77.7	73.9	17.3
1999 08	20	14 51.32	−07 23.6	0.459	1.007	76.2	77.5	17.1
1999 08	30	15 27.57	−11 07.4	0.415	0.996	76.3	79.9	17.0
1999 09	09	16 12.89	−15 18.4	0.373	1.001	78.3	80.3	16.8
1999 09	19	17 10.58	−19 36.5	0.339	1.019	82.7	78.0	16.5
1999 09	29	18 22.02	−23 04.7	0.322	1.050	89.6	72.5	16.3
1999 10	09	19 41.93	−24 21.4	0.327	1.093	97.8	64.9	16.2
1999 10	19	20 58.15	−22 56.4	0.359	1.144	105.2	57.1	16.2
1999 10	29	22 01.35	−19 44.8	0.416	1.203	110.2	50.8	16.5
1999 11	08	22 50.59	−15 57.1	0.494	1.266	112.5	46.3	16.8
1999 11	18	23 29.19	−12 12.0	0.590	1.332	112.6	43.2	17.2
1999 11	28	00 00.55	−08 42.7	0.700	1.400	111.1	41.1	17.7
1999 12	08	00 27.20	−05 31.3	0.822	1.469	108.4	39.5	18.1
1999 12	18	00 50.85	−02 35.8	0.956	1.539	104.9	38.2	18.5
1999 12	28	01 12.57	+00 05.4	1.100	1.608	100.9	36.9	18.8

2000 01 07	01 33.03	+02 34.2	1.251	1.676	96.4	35.7	19.2
2000 01 17	01 52.73	+04 51.7	1.409	1.743	91.7	34.3	19.5
2000 01 27	02 11.93	+06 58.6	1.572	1.808	86.8	32.9	19.8
2000 02 06	02 30.84	+08 55.6	1.739	1.872	81.8	31.4	20.0
2000 02 16	02 49.59	+10 42.8	1.907	1.934	76.7	29.8	20.2
2000 02 26	03 08.25	+12 20.3	2.075	1.995	71.5	28.1	20.4
2000 03 07	03 26.87	+13 48.3	2.242	2.053	66.2	26.3	20.6
2000 03 17	03 45.48	+15 06.6	2.405	2.110	61.0	24.4	20.8

1999 HD$_1$ a, e, i = 1.13, 0.41, 18 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	14 04.65	−01 59.7	0.361	1.359	164.8	11.2	19.5
1999 05 12	13 37.55	+07 21.0	0.345	1.309	145.3	26.1	19.9
1999 05 22	13 12.75	+15 46.1	0.351	1.254	126.6	40.4	20.2
1999 06 01	12 53.47	+22 22.1	0.370	1.194	110.4	52.7	20.6
1999 06 11	12 40.18	+27 18.7	0.391	1.130	96.7	63.2	20.9
1999 06 21	12 31.54	+31 10.4	0.408	1.062	85.0	72.5	21.1
1999 07 01	12 24.86	+34 34.2	0.416	0.990	74.5	81.6	21.3
1999 07 11	12 16.09	+37 57.4	0.415	0.918	64.5	91.4	21.5
1999 07 21	11 59.22	+41 31.4	0.405	0.846	54.2	102.9	21.8

1999 HX$_1$ a, e, i = 2.57, 0.56, 8 Elements *MPC* 34615

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	14 25.48	+12 46.5	0.313	1.292	151.9	21.5	19.0
1999 05 12	14 33.20	+18 41.9	0.276	1.239	142.0	30.1	18.9
1999 05 22	14 45.79	+24 19.3	0.248	1.194	132.5	38.7	18.8
1999 06 01	15 06.03	+29 05.3	0.226	1.158	124.7	46.0	18.7
1999 06 11	15 36.07	+32 29.6	0.209	1.134	119.6	51.1	18.7
1999 06 21	16 16.98	+33 52.9	0.196	1.122	118.0	53.1	18.6
1999 07 01	17 06.93	+32 31.8	0.188	1.123	120.2	51.5	18.4
1999 07 11	17 59.82	+27 58.9	0.187	1.138	126.3	46.1	18.3
1999 07 21	18 48.49	+20 41.9	0.197	1.164	135.2	38.0	18.2
1999 07 31	19 28.82	+12 15.5	0.221	1.202	144.8	29.2	18.3
1999 08 10	20 00.40	+04 20.4	0.259	1.249	152.3	22.2	18.5
1999 08 20	20 25.21	−02 06.2	0.314	1.304	155.4	18.9	18.9
1999 08 30	20 45.54	−06 51.0	0.384	1.365	153.6	19.2	19.5
1999 09 09	21 03.06	−10 05.7	0.470	1.430	148.7	21.5	20.1
1999 09 19	21 19.09	−12 08.0	0.571	1.499	142.6	24.0	20.7
1999 09 29	21 34.38	−13 14.8	0.685	1.570	136.2	26.2	21.2
1999 10 09	21 49.32	−13 39.7	0.813	1.642	129.6	28.0	21.8
1999 10 19	22 04.19	−13 32.9	0.954	1.715	123.1	29.1	22.2
1999 10 29	22 19.08	−13 02.4	1.106	1.788	116.7	29.7	22.7
1999 11 08	22 34.00	−12 13.9	1.267	1.861	110.4	29.9	23.1
1999 11 18	22 48.98	−11 11.6	1.438	1.934	104.1	29.7	23.4
1999 11 28	23 04.01	−09 59.0	1.615	2.006	97.9	29.2	23.7
1999 12 08	23 19.07	−08 38.8	1.798	2.077	91.8	28.3	24.0
1999 12 18	23 34.15	−07 12.8	1.985	2.147	85.6	27.2	24.3
1999 12 28	23 49.22	−05 43.1	2.173	2.215	79.5	25.9	24.5
2000 01 07	00 04.29	−04 10.8	2.360	2.283	73.4	24.4	24.7
2000 01 17	00 19.35	−02 37.4	2.546	2.349	67.3	22.7	24.9
2000 01 27	00 34.37	−01 03.8	2.728	2.414	61.2	21.0	25.0

1999 HA$_2$ a, e, i = 2.83, 0.70, 15 Elements *MPC* 34616

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	15 19.80	+28 00.0	0.505	1.413	135.5	30.0	18.4
1999 05 12	15 04.93	+24 19.8	0.606	1.514	137.6	26.7	18.8
1999 05 22	14 55.34	+20 37.1	0.721	1.615	136.7	25.4	19.3
1999 06 01	14 50.30	+17 00.7	0.850	1.714	133.5	25.4	19.8
1999 06 11	14 48.94	+13 36.2	0.993	1.812	128.8	25.9	20.3
1999 06 21	14 50.59	+10 25.8	1.150	1.907	123.3	26.4	20.7
1999 07 01	14 54.66	+07 30.1	1.318	2.001	117.4	26.8	21.1
1999 07 11	15 00.63	+04 48.9	1.496	2.092	111.3	26.9	21.5
1999 07 21	15 08.16	+02 21.3	1.683	2.181	105.1	26.7	21.8

1995 QX$_9$ a, e, i = 2.58, 0.44, 8 Elements *MPC* 26582

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	17 45.88	−14 20.3	1.266	2.095	133.9	20.3	20.6
1999 05 12	17 46.16	−14 16.2	1.142	2.043	143.3	17.2	20.2
1999 05 22	17 43.06	−14 20.9	1.034	1.991	153.2	13.3	19.8
1999 06 01	17 36.62	−14 37.8	0.945	1.939	163.4	8.6	19.4
1999 06 11	17 27.33	−15 09.8	0.878	1.888	171.6	4.5	19.0
1999 06 21	17 16.33	−15 58.1	0.832	1.838	167.9	6.6	18.9
1999 07 01	17 05.41	−17 02.1	0.807	1.789	157.4	12.6	19.0
1999 07 11	16 56.45	−18 19.4	0.801	1.741	146.4	18.9	19.2
1999 07 21	16 51.11	−19 47.0	0.811	1.696	135.9	24.6	19.3
1999 07 31	16 50.44	−21 21.7	0.833	1.652	126.4	29.6	19.5
1999 08 10	16 54.82	−22 59.7	0.864	1.612	118.1	33.7	19.6
1999 08 20	17 04.29	−24 37.1	0.900	1.575	110.8	36.9	19.8
1999 08 30	17 18.60	−26 09.2	0.939	1.542	104.5	39.4	19.9
1999 09 09	17 37.33	−27 30.8	0.981	1.513	99.0	41.1	20.0
1999 09 19	18 00.07	−28 36.2	1.025	1.489	94.4	42.3	20.1
1999 09 29	18 26.27	−29 19.8	1.070	1.470	90.3	43.0	20.1
1999 10 09	18 55.28	−29 36.4	1.117	1.457	86.8	43.2	20.2
1999 10 19	19 26.40	−29 21.8	1.167	1.450	83.8	43.1	20.3
1999 10 29	19 58.82	−28 33.9	1.221	1.449	81.0	42.6	20.4
1999 11 08	20 31.76	−27 12.4	1.280	1.454	78.5	41.9	20.5
1999 11 18	21 04.58	−25 19.7	1.344	1.466	76.1	40.9	20.6
1999 11 28	21 36.72	−22 59.7	1.415	1.483	73.8	39.7	20.7
1999 12 08	22 07.85	−20 17.7	1.492	1.505	71.5	38.4	20.8
1999 12 18	22 37.80	−17 19.5	1.577	1.533	69.1	36.9	20.9
1999 12 28	23 06.52	−14 11.0	1.668	1.565	66.6	35.2	21.0
2000 01 07	23 34.06	−10 57.3	1.767	1.601	64.0	33.5	21.2
2000 01 17	00 00.54	−07 43.1	1.871	1.640	61.1	31.7	21.3

1999 GU$_3$ a, e, i = 2.08, 0.51, 13 Elements *MPC* 34614

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	18 26.36	+36 39.3	0.130	1.049	104.8	68.3	17.7
1999 05 12	18 39.48	+35 09.2	0.181	1.079	107.9	63.0	18.3
1999 05 22	18 41.91	+33 28.8	0.228	1.121	112.9	56.3	18.7
1999 06 01	18 38.89	+31 17.3	0.275	1.172	118.9	49.3	19.0
1999 06 11	18 32.98	+28 24.9	0.321	1.229	125.2	42.4	19.2
1999 06 21	18 26.26	+24 48.6	0.372	1.292	131.2	36.3	19.5
1999 07 01	18 20.61	+20 38.0	0.428	1.358	136.0	31.3	19.8
1999 07 11	18 17.16	+16 10.2	0.495	1.426	138.7	28.0	20.1
1999 07 21	18 16.54	+11 42.6	0.573	1.496	138.9	26.5	20.5
1999 07 31	18 18.92	+07 30.8	0.664	1.566	136.8	26.4	20.9

1999 08 10	18 24.03	+03 44.4	0.768	1.636	132.8	27.0	21.3
1999 08 20	18 31.58	+00 27.7	0.886	1.706	127.8	27.9	21.7

C/1999 H3 (LINEAR) Elements *MPC* 34421

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 05 02	19 03.83	+47 44.3	3.441	3.641	93.3	16.0	15.3	
1999 05 12	18 44.22	+51 16.1	3.354	3.618	96.9	16.1	15.2	
1999 05 22	18 17.97	+54 21.3	3.293	3.596	99.2	16.1	15.1	
1999 06 01	17 45.20	+56 39.8	3.260	3.578	99.9	16.2	15.1	
1999 06 11	17 07.77	+57 54.5	3.257	3.561	99.0	16.4	15.1	
1999 06 21	16 29.36	+57 56.8	3.283	3.546	96.6	16.5	15.1	
1999 07 01	15 54.13	+56 52.3	3.334	3.534	92.9	16.7	15.1	
1999 07 11	15 24.77	+54 56.9	3.408	3.525	88.1	16.8	15.1	
1999 07 21	15 02.05	+52 29.5	3.497	3.517	82.8	16.7	15.2	
1999 07 31	14 45.41	+49 47.1	3.598	3.512	77.0	16.4	15.2	
1999 08 10	14 33.79	+47 01.6	3.704	3.509	71.1	15.9	15.3	
1999 08 20	14 26.11	+44 20.9	3.809	3.509	65.3	15.2	15.4	
1999 08 30	14 21.45	+41 50.1	3.909	3.511	59.8	14.4	15.4	
1999 09 09	14 19.09	+39 31.7	4.000	3.516	54.7	13.5	15.5	
1999 09 19	14 18.44	+37 27.4	4.078	3.523	50.3	12.7	15.5	
1999 09 29	14 19.06	+35 38.1	4.140	3.532	46.9	12.0	15.6	
1999 10 09	14 20.58	+34 04.0	4.182	3.544	44.8	11.5	15.6	
1999 10 19	14 22.70	+32 45.6	4.205	3.558	44.1	11.2	15.6	

1995 BC_2 a, e, i = 1.92, 0.43, 5 Elements *MPC* 31542

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	19 17.37	−28 17.9	1.827	2.419	114.0	22.4	21.8
1999 05 12	19 19.94	−28 32.7	1.678	2.385	123.1	20.8	21.5
1999 05 22	19 19.19	−28 53.4	1.540	2.348	132.8	18.4	21.2
1999 06 01	19 14.70	−29 18.9	1.417	2.310	143.2	15.2	20.9
1999 06 11	19 06.22	−29 46.1	1.312	2.270	154.3	11.2	20.6
1999 06 21	18 53.93	−30 09.5	1.230	2.229	165.6	6.5	20.2
1999 07 01	18 38.79	−30 22.2	1.173	2.185	172.8	3.4	19.9
1999 07 11	18 22.42	−30 18.8	1.142	2.140	164.9	7.1	20.0
1999 07 21	18 06.93	−29 58.1	1.136	2.093	152.9	12.8	20.1
1999 07 31	17 54.32	−29 23.9	1.153	2.044	141.0	18.2	20.3
1999 08 10	17 45.83	−28 42.6	1.187	1.994	129.7	23.0	20.5
1999 08 20	17 42.05	−28 00.0	1.234	1.942	119.4	27.0	20.6
1999 08 30	17 42.93	−27 19.8	1.288	1.888	109.9	30.2	20.7
1999 09 09	17 48.10	−26 42.8	1.345	1.833	101.4	32.6	20.8
1999 09 19	17 57.15	−26 08.0	1.402	1.777	93.7	34.3	20.9
1999 09 29	18 09.60	−25 32.9	1.456	1.720	86.7	35.6	21.0
1999 10 09	18 25.03	−24 54.6	1.504	1.662	80.4	36.4	21.0
1999 10 19	18 43.12	−24 09.6	1.546	1.603	74.7	36.8	21.0
1999 10 29	19 03.53	−23 14.6	1.581	1.544	69.4	37.1	20.9
1999 11 08	19 26.03	−22 06.4	1.607	1.485	64.7	37.1	20.9
1999 11 18	19 50.39	−20 41.7	1.625	1.426	60.5	37.1	20.8

1995 SC a, e, i = 2.76, 0.40, 28 Elements *MPC* 27123

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	19 27.74	−49 40.3	2.584	3.110	112.4	17.4	20.9
1999 05 12	19 28.59	−50 27.2	2.437	3.074	120.4	16.5	20.8
1999 05 22	19 25.77	−51 14.4	2.303	3.038	128.5	15.1	20.6
1999 06 01	19 18.98	−51 56.3	2.185	3.001	136.4	13.5	20.4
1999 06 11	19 08.25	−52 25.6	2.085	2.964	143.5	11.7	20.2
1999 06 21	18 54.13	−52 33.4	2.008	2.926	148.9	10.3	20.0
1999 07 01	18 37.97	−52 11.7	1.955	2.887	151.0	9.8	19.9
1999 07 11	18 21.61	−51 17.0	1.928	2.847	148.8	10.7	19.9
1999 07 21	18 06.97	−49 51.0	1.926	2.806	143.2	12.5	19.9
1999 07 31	17 55.56	−48 01.0	1.947	2.765	135.6	14.9	20.0
1999 08 10	17 48.10	−45 56.4	1.989	2.724	127.1	17.3	20.1
1999 08 20	17 44.76	−43 46.2	2.048	2.681	118.4	19.4	20.2
1999 08 30	17 45.27	−41 37.2	2.119	2.638	109.8	21.1	20.3
1999 09 09	17 49.16	−39 33.1	2.200	2.595	101.5	22.4	20.4
1999 09 19	17 55.97	−37 35.5	2.286	2.551	93.4	23.1	20.4
1999 09 29	18 05.22	−35 44.1	2.373	2.507	85.8	23.5	20.5
1999 10 09	18 16.51	−33 57.7	2.460	2.462	78.4	23.4	20.5
1999 10 19	18 29.52	−32 14.3	2.543	2.417	71.4	23.0	20.5
1999 10 29	18 43.92	−30 32.0	2.621	2.372	64.6	22.2	20.5

1995 LG a, e, i = 1.06, 0.79, 44 Elements *MPC* 27731

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	19 36.80	−54 37.8	1.166	1.790	110.7	31.8	21.4
1999 05 12	19 13.04	−56 31.2	1.084	1.827	121.4	28.2	21.2
1999 05 22	18 34.86	−57 51.4	1.017	1.856	132.3	23.8	21.0
1999 06 01	17 44.28	−57 42.1	0.972	1.878	142.0	19.4	20.8
1999 06 11	16 51.14	−55 21.0	0.958	1.894	147.4	16.8	20.7
1999 06 21	16 07.23	−51 02.5	0.978	1.904	145.3	17.7	20.8
1999 07 01	15 37.35	−45 49.5	1.031	1.907	137.2	21.2	21.0
1999 07 11	15 19.85	−40 42.7	1.111	1.903	126.8	25.3	21.3
1999 07 21	15 11.54	−36 15.1	1.211	1.893	116.2	28.8	21.6
1999 07 31	15 09.69	−32 36.7	1.323	1.877	106.0	31.3	21.8
1999 08 10	15 12.38	−29 44.1	1.439	1.854	96.6	32.9	22.0
1999 08 20	15 18.41	−27 29.9	1.555	1.824	87.9	33.7	22.2
1999 08 30	15 26.94	−25 45.7	1.666	1.787	79.7	33.8	22.3
1999 09 09	15 37.45	−24 23.9	1.767	1.743	72.0	33.3	22.3
1999 09 19	15 49.61	−23 18.3	1.856	1.691	64.7	32.5	22.4

1992 JG a, e, i = 2.27, 0.42, 6 Elements *MPC* 20826

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	20 18.95	−22 35.2	0.832	1.408	99.4	44.9	20.1
1999 05 12	20 54.62	−21 48.7	0.762	1.375	100.8	46.2	19.9
1999 05 22	21 30.55	−20 44.2	0.702	1.347	102.1	47.3	19.7
1999 06 01	22 06.05	−19 24.3	0.652	1.326	103.3	48.1	19.5
1999 06 11	22 40.29	−17 54.0	0.612	1.311	104.6	48.5	19.3
1999 06 21	23 12.33	−16 20.2	0.580	1.304	106.3	48.4	19.2
1999 07 01	23 41.34	−14 50.1	0.554	1.304	108.6	47.7	19.1
1999 07 11	00 06.54	−13 30.8	0.534	1.311	111.7	46.1	19.0
1999 07 21	00 27.13	−12 28.2	0.517	1.325	115.8	43.7	18.9
1999 07 31	00 42.51	−11 45.3	0.504	1.347	121.1	40.2	18.7
1999 08 10	00 52.12	−11 22.6	0.495	1.374	127.8	35.7	18.6
1999 08 20	00 55.60	−11 17.2	0.491	1.407	135.9	30.0	18.5
1999 08 30	00 53.21	−11 21.4	0.495	1.444	145.2	23.5	18.4
1999 09 09	00 45.94	−11 25.1	0.510	1.486	155.1	16.6	18.3
1999 09 19	00 35.68	−11 16.6	0.540	1.531	164.0	10.4	18.2
1999 09 29	00 24.95	−10 47.9	0.586	1.578	167.0	8.2	18.4
1999 10 09	00 15.89	−09 57.3	0.650	1.628	161.1	11.4	18.8
1999 10 19	00 09.95	−08 47.1	0.733	1.680	152.2	16.1	19.3

1999 10 29	00 07.65	−07 22.0	0.832	1.732	143.0	20.2	19.8
1999 11 08	00 08.82	−05 46.8	0.946	1.785	134.3	23.4	20.2
1999 11 18	00 13.05	−04 04.6	1.074	1.839	126.0	25.8	20.7
1999 11 28	00 19.81	−02 18.2	1.214	1.892	118.3	27.3	21.0
1999 12 08	00 28.59	−00 29.2	1.363	1.946	110.9	28.2	21.4
1999 12 18	00 39.00	+01 21.2	1.520	1.999	103.9	28.6	21.7
1999 12 28	00 50.70	+03 11.8	1.683	2.051	97.1	28.4	21.9

1998 VD$_{35}$ a, e, i = 1.56, 0.48, 7 Elements *MPC* 33577

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	20 34.40	−13 49.0	0.372	1.096	93.7	66.5	20.6
1999 05 12	20 25.14	−11 10.7	0.386	1.170	104.8	56.6	20.5
1999 05 22	20 11.02	−09 04.5	0.398	1.245	117.0	46.4	20.4
1999 06 01	19 51.66	−07 34.2	0.412	1.318	130.3	35.9	20.3
1999 06 11	19 28.23	−06 43.5	0.435	1.391	144.1	25.4	20.3
1999 06 21	19 03.46	−06 33.2	0.472	1.462	156.7	16.0	20.3
1999 07 01	18 40.88	−06 57.4	0.527	1.530	163.8	10.7	20.4
1999 07 11	18 23.03	−07 45.6	0.601	1.595	160.2	12.5	20.9
1999 07 21	18 10.99	−08 47.1	0.694	1.658	151.2	17.1	21.4
1999 07 31	18 04.68	−09 53.2	0.802	1.718	141.7	21.5	21.9

1995 YV$_3$ a, e, i = 2.79, 0.44, 30 Elements *MPC* 29665

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	21 10.84	−12 13.7	2.392	2.509	84.8	23.6	19.0
1999 05 12	21 22.78	−12 26.8	2.213	2.460	91.7	24.2	18.8
1999 05 22	21 33.88	−12 54.2	2.036	2.410	98.9	24.5	18.6
1999 06 01	21 43.97	−13 40.8	1.863	2.359	106.4	24.3	18.3
1999 06 11	21 52.84	−14 52.0	1.697	2.309	114.4	23.6	18.1
1999 06 21	22 00.20	−16 34.2	1.540	2.258	122.8	22.2	17.8
1999 07 01	22 05.71	−18 53.7	1.398	2.208	131.6	20.1	17.5
1999 07 11	22 09.00	−21 55.4	1.271	2.157	140.8	17.3	17.1
1999 07 21	22 09.64	−25 40.3	1.166	2.107	149.8	14.1	16.8
1999 07 31	22 07.34	−30 01.8	1.085	2.057	156.9	11.2	16.4
1999 08 10	22 02.05	−34 43.6	1.030	2.008	158.6	10.6	16.2
1999 08 20	21 54.24	−39 20.1	1.002	1.960	153.3	13.4	16.2
1999 08 30	21 45.21	−43 24.3	0.999	1.912	144.3	17.9	16.3
1999 09 09	21 36.78	−46 36.7	1.017	1.867	134.5	22.7	16.5
1999 09 19	21 31.06	−48 49.7	1.050	1.822	125.0	26.9	16.6
1999 09 29	21 29.75	−50 06.3	1.093	1.780	116.3	30.3	16.8
1999 10 09	21 33.62	−50 33.7	1.142	1.741	108.6	32.9	16.9
1999 10 19	21 42.76	−50 18.8	1.192	1.704	101.9	34.9	17.0
1999 10 29	21 56.60	−49 27.0	1.242	1.671	96.1	36.2	17.1
1999 11 08	22 14.29	−48 01.1	1.289	1.641	91.1	37.1	17.1
1999 11 18	22 34.95	−46 02.4	1.333	1.615	86.8	37.7	17.2
1999 11 28	22 57.68	−43 32.1	1.375	1.594	83.1	37.9	17.2
1999 12 08	23 21.75	−40 31.2	1.415	1.577	80.0	38.0	17.3
1999 12 18	23 46.62	−37 01.6	1.454	1.566	77.3	37.8	17.3
1999 12 28	00 11.84	−33 06.5	1.494	1.559	74.9	37.5	17.3
2000 01 07	00 37.15	−28 49.9	1.537	1.558	72.7	37.0	17.4
2000 01 17	01 02.42	−24 17.2	1.584	1.563	70.6	36.4	17.5
2000 01 27	01 27.56	−19 34.7	1.638	1.572	68.5	35.6	17.5
2000 02 06	01 52.55	−14 49.2	1.700	1.587	66.4	34.7	17.6
2000 02 16	02 17.43	−10 07.2	1.770	1.607	64.1	33.6	17.7
2000 02 26	02 42.21	−05 35.3	1.849	1.631	61.6	32.3	17.8

1998 QM$_{107}$ a, e, i = 20.13, 0.14, 9 Elements *MPC* 33349

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	21 22.63	−16 38.7	17.735	17.647	83.4	3.3	23.4
1999 05 12	21 23.33	−16 37.6	17.570	17.650	92.9	3.3	23.4
1999 05 22	21 23.66	−16 38.3	17.407	17.653	102.4	3.2	23.4
1999 06 01	21 23.63	−16 40.7	17.250	17.656	112.1	3.1	23.3
1999 06 11	21 23.24	−16 44.7	17.103	17.658	121.7	2.8	23.3
1999 06 21	21 22.51	−16 50.2	16.972	17.661	131.5	2.5	23.3
1999 07 01	21 21.48	−16 57.1	16.860	17.664	141.3	2.1	23.2
1999 07 11	21 20.19	−17 05.0	16.770	17.667	151.1	1.6	23.2
1999 07 21	21 18.70	−17 13.7	16.706	17.670	161.0	1.1	23.1
1999 07 31	21 17.06	−17 22.9	16.670	17.673	170.9	0.5	23.0
1999 08 10	21 15.36	−17 32.1	16.663	17.676	178.1	0.1	23.0
1999 08 20	21 13.65	−17 41.1	16.685	17.679	168.8	0.6	23.1
1999 08 30	21 12.03	−17 49.5	16.737	17.682	158.8	1.2	23.1
1999 09 09	21 10.55	−17 57.1	16.816	17.685	148.8	1.7	23.2
1999 09 19	21 09.29	−18 03.5	16.921	17.688	138.7	2.1	23.2
1999 09 29	21 08.31	−18 08.5	17.047	17.691	128.7	2.5	23.3
1999 10 09	21 07.64	−18 12.0	17.193	17.694	118.7	2.8	23.3
1999 10 19	21 07.33	−18 13.8	17.352	17.697	108.7	3.1	23.3
1999 10 29	21 07.40	−18 14.0	17.521	17.700	98.8	3.2	23.4
1999 11 08	21 07.85	−18 12.5	17.695	17.703	88.9	3.2	23.4
1999 11 18	21 08.68	−18 09.3	17.868	17.706	79.0	3.1	23.4
1999 11 28	21 09.87	−18 04.5	18.035	17.709	69.2	3.0	23.4
1999 12 08	21 11.40	−17 58.3	18.193	17.712	59.4	2.7	23.4
1999 12 18	21 13.24	−17 50.7	18.335	17.715	49.7	2.4	23.4
1999 12 28	21 15.33	−17 42.0	18.459	17.718	40.1	2.0	23.4
2000 01 07	21 17.64	−17 32.3	18.562	17.721	30.5	1.6	23.4

1998 WZ$_6$ a, e, i = 1.45, 0.41, 25 Elements *MPC* 34596

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	21 23.20	−10 43.0	0.422	1.033	81.4	74.7	18.1
1999 05 12	21 42.82	−19 47.5	0.426	1.093	89.5	67.6	18.0
1999 05 22	22 00.80	−28 47.7	0.433	1.155	98.1	60.2	17.9
1999 06 01	22 15.52	−37 39.6	0.446	1.219	106.7	52.8	17.9
1999 06 11	22 24.93	−46 12.0	0.466	1.283	114.9	45.9	17.9
1999 06 21	22 26.10	−54 04.6	0.495	1.345	122.0	39.9	18.0
1999 07 01	22 15.53	−60 47.9	0.535	1.406	127.2	35.2	18.1
1999 07 11	21 50.12	−65 50.1	0.587	1.465	130.1	32.0	18.3
1999 07 21	21 11.37	−68 42.9	0.650	1.522	130.6	30.5	18.6
1999 07 31	20 29.79	−69 22.1	0.725	1.576	129.0	30.0	18.9
1999 08 10	19 57.67	−68 17.7	0.810	1.627	125.9	30.3	19.2
1999 08 20	19 39.74	−66 11.7	0.904	1.675	121.8	30.9	19.5
1999 08 30	19 34.05	−63 37.1	1.006	1.720	117.2	31.5	19.8
1999 09 09	19 36.93	−60 51.5	1.115	1.763	112.2	31.9	20.1
1999 09 19	19 45.52	−58 03.2	1.230	1.802	107.1	32.2	20.4
1999 09 29	19 57.82	−55 15.6	1.350	1.839	101.8	32.2	20.6
1999 10 09	20 12.45	−52 29.5	1.473	1.872	96.6	32.0	20.9
1999 10 19	20 28.61	−49 44.7	1.598	1.902	91.3	31.6	21.1
1999 10 29	20 45.69	−47 01.0	1.724	1.930	86.1	30.9	21.2
1999 11 08	21 03.31	−44 17.7	1.850	1.954	80.8	30.0	21.4
1999 11 18	21 21.24	−41 34.4	1.974	1.976	75.6	29.0	21.5
1999 11 28	21 39.30	−38 51.1	2.095	1.994	70.4	27.8	21.6

1999 12 08	21 57.36	−36 07.3	2.212	2.010	65.3	26.4	21.7
1999 12 18	22 15.39	−33 23.2	2.324	2.023	60.2	25.0	21.8

1998 QS$_{52}$ a, e, i = 2.20, 0.86, 18 Elements *MPC* 34219

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	21 24.89	−09 00.4	1.214	1.444	80.5	43.5	17.1
1999 05 12	21 20.60	−07 23.3	1.203	1.579	90.6	39.8	17.2
1999 05 22	21 12.28	−06 02.5	1.184	1.707	101.7	35.5	17.2
1999 06 01	20 59.58	−05 00.4	1.166	1.827	113.7	30.5	17.2
1999 06 11	20 42.62	−04 19.5	1.157	1.942	126.6	24.8	17.1
1999 06 21	20 22.16	−04 02.0	1.167	2.051	139.9	18.6	17.0
1999 07 01	19 59.85	−04 07.9	1.201	2.155	152.6	12.5	17.0
1999 07 11	19 37.77	−04 33.9	1.266	2.254	161.8	8.1	17.0
1999 07 21	19 17.97	−05 14.6	1.363	2.349	161.6	7.8	17.3
1999 07 31	19 01.82	−06 03.5	1.491	2.440	153.2	10.8	17.7
1999 08 10	18 49.84	−06 55.2	1.645	2.528	142.8	14.0	18.1
1999 08 20	18 41.98	−07 45.8	1.821	2.611	132.3	16.7	18.5
1999 08 30	18 37.82	−08 32.8	2.014	2.691	122.2	18.5	18.8
1999 09 09	18 36.80	−09 14.7	2.219	2.768	112.7	19.6	19.1
1999 09 19	18 38.40	−09 50.9	2.432	2.842	103.7	20.1	19.4
1999 09 29	18 42.13	−10 20.7	2.649	2.913	95.1	20.0	19.6
1999 10 09	18 47.58	−10 43.9	2.866	2.982	86.8	19.5	19.8
1999 10 19	18 54.43	−11 00.4	3.081	3.047	78.7	18.7	20.0
1999 10 29	19 02.38	−11 10.0	3.290	3.110	70.9	17.6	20.2
1999 11 08	19 11.20	−11 12.9	3.491	3.171	63.2	16.2	20.3

1989 UR a, e, i = 1.08, 0.36, 10 Elements *MPC* 34284

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	22 18.36	−02 06.3	1.064	1.126	65.8	54.7	20.9
1999 05 12	22 38.28	+01 20.8	1.059	1.180	69.5	53.3	20.9
1999 05 22	22 56.60	+04 41.2	1.041	1.230	73.6	52.1	21.0
1999 06 01	23 13.28	+07 54.9	1.013	1.275	78.0	51.0	20.9
1999 06 11	23 28.27	+11 01.9	0.975	1.316	82.7	49.9	20.9
1999 06 21	23 41.33	+14 01.9	0.929	1.352	87.9	48.7	20.8
1999 07 01	23 52.13	+16 53.9	0.877	1.382	93.5	47.2	20.7
1999 07 11	00 00.18	+19 36.5	0.818	1.408	99.7	45.4	20.5
1999 07 21	00 04.72	+22 06.6	0.757	1.429	106.5	43.0	20.3
1999 07 31	00 04.82	+24 18.1	0.694	1.446	114.2	39.8	20.1
1999 08 10	23 59.38	+26 01.2	0.634	1.457	122.6	35.9	19.8
1999 08 20	23 47.39	+26 58.4	0.578	1.463	131.9	31.0	19.5
1999 08 30	23 28.79	+26 46.8	0.533	1.465	141.4	25.5	19.1
1999 09 09	23 05.26	+25 04.5	0.501	1.461	149.4	20.6	18.8
1999 09 19	22 40.62	+21 46.5	0.487	1.453	151.9	19.0	18.7
1999 09 29	22 19.49	+17 20.8	0.492	1.439	146.8	22.4	18.8
1999 10 09	22 04.89	+12 34.6	0.515	1.421	137.3	28.5	19.1
1999 10 19	21 57.81	+08 10.3	0.551	1.398	126.8	34.8	19.4
1999 10 29	21 57.64	+04 31.1	0.595	1.370	116.9	40.3	19.6
1999 11 08	22 03.20	+01 42.2	0.643	1.337	107.9	44.9	19.9
1999 11 18	22 13.39	−00 19.3	0.691	1.299	99.8	48.6	20.1
1999 11 28	22 27.19	−01 39.7	0.734	1.256	92.6	51.7	20.2
1999 12 08	22 43.86	−02 26.3	0.771	1.209	86.1	54.4	20.3
1999 12 18	23 02.90	−02 45.3	0.799	1.157	80.2	56.9	20.4
1999 12 28	23 23.86	−02 43.0	0.816	1.101	74.8	59.5	20.4
2000 01 07	23 46.45	−02 25.2	0.819	1.042	69.9	62.4	20.4
2000 01 17	00 10.42	−01 58.2	0.809	0.980	65.5	65.9	20.3
2000 01 27	00 35.39	−01 29.2	0.782	0.917	61.3	70.3	20.2

1993 PC a, e, i = 1.15, 0.47, 4 Elements *MPC* 32746

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	22 38.70	−20 35.6	0.348	0.936	68.2	91.6	19.3
1999 05 12	22 24.73	−22 42.7	0.358	1.020	81.5	78.2	19.0
1999 05 22	22 10.30	−24 43.7	0.360	1.102	94.7	66.3	18.8
1999 06 01	21 50.97	−26 58.7	0.357	1.179	108.9	54.5	18.6
1999 06 11	21 23.45	−29 26.7	0.354	1.250	124.6	42.0	18.4
1999 06 21	20 46.57	−31 40.9	0.359	1.317	141.7	28.6	18.1
1999 07 01	20 04.07	−32 58.1	0.380	1.377	158.7	15.5	17.9
1999 07 11	19 23.68	−32 57.5	0.422	1.433	169.2	7.6	18.0
1999 07 21	18 52.22	−31 58.6	0.485	1.483	161.1	12.8	18.5
1999 07 31	18 31.95	−30 37.3	0.566	1.528	148.7	20.2	19.2
1999 08 10	18 21.52	−29 17.4	0.662	1.567	137.4	26.0	19.8
1999 08 20	18 18.78	−28 07.9	0.770	1.601	127.4	30.1	20.3
1999 08 30	18 21.75	−27 09.3	0.885	1.630	118.6	33.0	20.7
1999 09 09	18 28.86	−26 18.8	1.005	1.654	110.5	34.8	21.0
1999 09 19	18 39.12	−25 32.8	1.129	1.673	103.2	35.8	21.3
1999 09 29	18 51.74	−24 48.1	1.253	1.688	96.3	36.2	21.6
1999 10 09	19 06.15	−24 01.8	1.375	1.697	89.8	36.1	21.8
1999 10 19	19 22.00	−23 11.6	1.495	1.701	83.6	35.6	22.0

1996 RR$_{20}$ a, e, i = 39.91, 0.18, 5 Elements *MPC* 30785

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	23 11.66	−05 24.1	44.200	43.621	54.4	1.1	23.6
1999 05 12	23 12.21	−05 20.9	44.059	43.625	63.9	1.2	23.6
1999 05 22	23 12.64	−05 18.4	43.906	43.629	73.5	1.3	23.6
1999 06 01	23 12.94	−05 16.8	43.745	43.632	83.0	1.3	23.6
1999 06 11	23 13.10	−05 16.0	43.580	43.636	92.5	1.3	23.6
1999 06 21	23 13.13	−05 16.1	43.416	43.640	102.1	1.3	23.6
1999 07 01	23 13.01	−05 17.0	43.259	43.644	111.6	1.2	23.6
1999 07 11	23 12.77	−05 18.8	43.112	43.648	121.2	1.1	23.5
1999 07 21	23 12.40	−05 21.4	42.980	43.651	130.9	1.0	23.5
1999 07 31	23 11.93	−05 24.6	42.866	43.655	140.5	0.8	23.5
1999 08 10	23 11.36	−05 28.4	42.776	43.659	150.3	0.7	23.5
1999 08 20	23 10.72	−05 32.7	42.710	43.663	160.1	0.5	23.4
1999 08 30	23 10.03	−05 37.3	42.672	43.666	169.9	0.2	23.4
1999 09 09	23 09.31	−05 42.0	42.663	43.670	179.7	0.0	23.4
1999 09 19	23 08.59	−05 46.7	42.683	43.674	170.3	0.2	23.4
1999 09 29	23 07.89	−05 51.2	42.733	43.678	160.3	0.4	23.4
1999 10 09	23 07.25	−05 55.4	42.811	43.681	150.3	0.6	23.5
1999 10 19	23 06.68	−05 59.2	42.915	43.685	140.2	0.8	23.5
1999 10 29	23 06.21	−06 02.3	43.042	43.689	130.2	1.0	23.5
1999 11 08	23 05.85	−06 04.6	43.188	43.693	120.0	1.1	23.5
1999 11 18	23 05.63	−06 06.2	43.350	43.696	109.9	1.2	23.6
1999 11 28	23 05.54	−06 06.9	43.521	43.700	99.8	1.3	23.6
1999 12 08	23 05.60	−06 06.6	43.698	43.704	89.7	1.3	23.6
1999 12 18	23 05.80	−06 05.4	43.875	43.707	79.6	1.3	23.6
1999 12 28	23 06.15	−06 03.4	44.046	43.711	69.5	1.2	23.6
2000 01 07	23 06.64	−06 00.5	44.207	43.715	59.4	1.1	23.6
2000 01 17	23 07.24	−05 56.8	44.353	43.719	49.4	1.0	23.6
2000 01 27	23 07.96	−05 52.5	44.479	43.722	39.4	0.8	23.6

1997 RX$_9$ a, e, i = 41.61, 0.03, 30 Elements *MPC* 32255

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	23 13.26	−06 09.4	42.733	42.154	54.3	1.1	24.4
1999 05 12	23 13.85	−06 07.0	42.588	42.153	63.9	1.2	24.4
1999 05 22	23 14.32	−06 05.5	42.430	42.152	73.4	1.3	24.4
1999 06 01	23 14.65	−06 04.8	42.265	42.151	82.9	1.4	24.4
1999 06 11	23 14.84	−06 05.1	42.095	42.150	92.4	1.4	24.4
1999 06 21	23 14.89	−06 06.3	41.927	42.150	102.0	1.4	24.4
1999 07 01	23 14.79	−06 08.3	41.765	42.149	111.5	1.3	24.4
1999 07 11	23 14.56	−06 11.2	41.613	42.148	121.1	1.2	24.4
1999 07 21	23 14.20	−06 14.9	41.476	42.147	130.8	1.0	24.4
1999 07 31	23 13.73	−06 19.3	41.358	42.146	140.5	0.9	24.3
1999 08 10	23 13.16	−06 24.3	41.263	42.146	150.2	0.7	24.3
1999 08 20	23 12.51	−06 29.7	41.192	42.145	160.0	0.5	24.3
1999 08 30	23 11.81	−06 35.4	41.150	42.144	169.8	0.2	24.3
1999 09 09	23 11.08	−06 41.2	41.136	42.143	178.6	0.0	24.2
1999 09 19	23 10.35	−06 47.0	41.152	42.142	170.2	0.2	24.3
1999 09 29	23 09.64	−06 52.5	41.197	42.141	160.3	0.5	24.3
1999 10 09	23 08.99	−06 57.7	41.270	42.141	150.3	0.7	24.3
1999 10 19	23 08.41	−07 02.3	41.370	42.140	140.2	0.9	24.3
1999 10 29	23 07.93	−07 06.2	41.492	42.139	130.1	1.0	24.4
1999 11 08	23 07.56	−07 09.3	41.634	42.138	120.0	1.2	24.4
1999 11 18	23 07.34	−07 11.5	41.791	42.137	109.9	1.3	24.4
1999 11 28	23 07.25	−07 12.9	41.958	42.136	99.8	1.3	24.4
1999 12 08	23 07.32	−07 13.2	42.130	42.136	89.6	1.3	24.4
1999 12 18	23 07.55	−07 12.6	42.303	42.135	79.5	1.3	24.4
1999 12 28	23 07.92	−07 11.0	42.469	42.134	69.4	1.3	24.4
2000 01 07	23 08.43	−07 08.6	42.625	42.133	59.4	1.2	24.4
2000 01 17	23 09.07	−07 05.4	42.766	42.132	49.4	1.0	24.4
2000 01 27	23 09.82	−07 01.6	42.888	42.131	39.4	0.9	24.4

1995 QY$_9$ a, e, i = 40.12, 0.27, 5 Elements *MPC* 33074

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	23 24.95	−03 08.3	30.153	29.522	50.5	1.5	22.4
1999 05 12	23 25.88	−03 01.8	30.014	29.520	59.9	1.7	22.5
1999 05 22	23 26.65	−02 56.3	29.860	29.518	69.3	1.8	22.5
1999 06 01	23 27.23	−02 52.0	29.696	29.515	78.8	1.9	22.4
1999 06 11	23 27.61	−02 48.9	29.527	29.513	88.2	2.0	22.4
1999 06 21	23 27.79	−02 47.1	29.357	29.511	97.7	2.0	22.4
1999 07 01	23 27.77	−02 46.7	29.191	29.508	107.3	1.9	22.4
1999 07 11	23 27.56	−02 47.4	29.033	29.506	116.8	1.8	22.4
1999 07 21	23 27.15	−02 49.5	28.888	29.504	126.5	1.6	22.4
1999 07 31	23 26.57	−02 52.6	28.761	29.502	136.2	1.4	22.3
1999 08 10	23 25.85	−02 56.7	28.654	29.499	146.0	1.1	22.3
1999 08 20	23 25.00	−03 01.6	28.571	29.497	155.8	0.8	22.3
1999 08 30	23 24.06	−03 07.2	28.515	29.495	165.7	0.5	22.2
1999 09 09	23 23.06	−03 13.1	28.488	29.493	175.6	0.2	22.2
1999 09 19	23 22.05	−03 19.2	28.490	29.490	174.3	0.2	22.2
1999 09 29	23 21.06	−03 25.2	28.522	29.488	164.3	0.5	22.2
1999 10 09	23 20.14	−03 30.8	28.583	29.486	154.2	0.8	22.3
1999 10 19	23 19.31	−03 35.8	28.671	29.484	144.1	1.1	22.3
1999 10 29	23 18.62	−03 40.0	28.784	29.482	133.9	1.4	22.3
1999 11 08	23 18.09	−03 43.2	28.917	29.479	123.8	1.6	22.4
1999 11 18	23 17.76	−03 45.2	29.067	29.477	113.6	1.8	22.4
1999 11 28	23 17.62	−03 46.0	29.229	29.475	103.5	1.9	22.4
1999 12 08	23 17.70	−03 45.4	29.399	29.473	93.4	1.9	22.4
1999 12 18	23 18.00	−03 43.4	29.570	29.471	83.3	1.9	22.4
1999 12 28	23 18.50	−03 40.1	29.737	29.469	73.2	1.8	22.4
2000 01 07	23 19.21	−03 35.4	29.896	29.466	63.2	1.7	22.4
2000 01 17	23 20.10	−03 29.6	30.042	29.464	53.3	1.5	22.4
2000 01 27	23 21.16	−03 22.8	30.170	29.462	43.4	1.3	22.4
2000 02 06	23 22.35	−03 15.0	30.276	29.460	33.6	1.1	22.4

1998 QR$_{52}$ a, e, i = 1.04, 0.29, 18 Elements *MPC* 33348

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	23 41.77	−37 45.5	0.498	0.931	66.7	83.8	19.8
1999 05 12	23 47.39	−34 55.0	0.512	0.982	72.1	78.2	19.7
1999 05 22	23 53.48	−31 57.6	0.513	1.032	77.6	73.4	19.7
1999 06 01	23 58.62	−29 00.4	0.501	1.079	83.6	69.0	19.6
1999 06 11	00 01.64	−26 06.4	0.478	1.124	90.3	64.6	19.4
1999 06 21	00 01.04	−23 16.1	0.446	1.166	98.1	59.6	19.2
1999 07 01	23 55.08	−20 26.3	0.409	1.204	107.4	53.7	18.9
1999 07 11	23 41.57	−17 31.3	0.370	1.237	118.6	46.2	18.6
1999 07 21	23 17.93	−14 21.9	0.334	1.266	132.5	36.3	18.1
1999 07 31	22 43.11	−10 49.5	0.310	1.291	149.1	23.8	17.6
1999 08 10	22 00.11	−07 02.5	0.304	1.311	166.4	10.4	17.2
1999 08 20	21 17.23	−03 34.5	0.321	1.326	166.9	9.9	17.3
1999 08 30	20 43.04	−00 57.1	0.359	1.337	151.7	21.0	17.9
1999 09 09	20 20.74	+00 45.6	0.414	1.343	137.8	30.3	18.5
1999 09 19	20 09.38	+01 49.4	0.478	1.344	126.2	37.1	19.0
1999 09 29	20 06.54	+02 32.5	0.548	1.341	116.7	41.9	19.5
1999 10 09	20 09.98	+03 07.4	0.619	1.333	108.6	45.3	19.8
1999 10 19	20 18.13	+03 42.4	0.687	1.320	101.7	47.7	20.1
1999 10 29	20 29.85	+04 23.1	0.752	1.302	95.5	49.4	20.3
1999 11 08	20 44.34	+05 12.2	0.811	1.280	89.9	50.7	20.5
1999 11 18	21 01.17	+06 11.8	0.863	1.254	84.9	51.8	20.6
1999 11 28	21 19.96	+07 22.8	0.906	1.222	80.3	52.7	20.7
1999 12 08	21 40.56	+08 45.0	0.939	1.187	76.2	53.7	20.7
1999 12 18	22 02.91	+10 18.0	0.960	1.148	72.3	54.8	20.7
1999 12 28	22 27.02	+12 00.0	0.970	1.104	68.9	56.1	20.7
2000 01 07	22 53.01	+13 48.0	0.967	1.058	65.7	57.9	20.6
2000 01 17	23 21.08	+15 37.5	0.952	1.009	62.8	60.1	20.6
2000 01 27	23 51.43	+17 21.4	0.923	0.959	60.3	63.1	20.5

1997 QH$_4$ a, e, i = 43.02, 0.04, 13 Elements *MPC* 32254

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	23 54.33	−00 07.2	42.152	41.415	42.5	0.9	23.4
1999 05 12	23 55.03	−00 02.0	42.029	41.415	52.0	1.1	23.4
1999 05 22	23 55.62	+00 02.5	41.888	41.415	61.5	1.2	23.4
1999 06 01	23 56.09	+00 06.3	41.734	41.415	71.0	1.3	23.4
1999 06 11	23 56.43	+00 09.1	41.571	41.415	80.4	1.4	23.4
1999 06 21	23 56.62	+00 11.1	41.403	41.414	89.9	1.4	23.4
1999 07 01	23 56.67	+00 12.1	41.235	41.414	99.4	1.4	23.4
1999 07 11	23 56.58	+00 12.2	41.072	41.414	109.0	1.3	23.3
1999 07 21	23 56.34	+00 11.4	40.918	41.414	118.6	1.2	23.3
1999 07 31	23 55.98	+00 09.7	40.778	41.414	128.2	1.1	23.3
1999 08 10	23 55.50	+00 07.2	40.656	41.414	137.9	0.9	23.3

1999 08 20	23 54.91	+00 04.1	40.555	41.414	147.7	0.7	23.3
1999 08 30	23 54.25	+00 00.4	40.479	41.414	157.5	0.5	23.2
1999 09 09	23 53.52	−00 03.7	40.430	41.414	167.4	0.3	23.2
1999 09 19	23 52.76	−00 08.1	40.410	41.414	177.3	0.1	23.1
1999 09 29	23 52.00	−00 12.5	40.420	41.414	172.6	0.2	23.2
1999 10 09	23 51.25	−00 16.8	40.459	41.413	162.6	0.4	23.2
1999 10 19	23 50.56	−00 20.8	40.527	41.413	152.5	0.6	23.2
1999 10 29	23 49.94	−00 24.3	40.622	41.413	142.4	0.8	23.3
1999 11 08	23 49.41	−00 27.3	40.740	41.413	132.2	1.0	23.3
1999 11 18	23 49.01	−00 29.5	40.880	41.413	122.1	1.2	23.3
1999 11 28	23 48.74	−00 30.8	41.035	41.413	111.9	1.3	23.3
1999 12 08	23 48.61	−00 31.3	41.201	41.413	101.7	1.3	23.3
1999 12 18	23 48.64	−00 30.7	41.374	41.413	91.6	1.4	23.4
1999 12 28	23 48.82	−00 29.1	41.547	41.413	81.5	1.3	23.4
2000 01 07	23 49.16	−00 26.6	41.716	41.413	71.4	1.3	23.4
2000 01 17	23 49.63	−00 23.1	41.876	41.412	61.3	1.2	23.4
2000 01 27	23 50.24	−00 18.8	42.021	41.412	51.3	1.1	23.4
2000 02 06	23 50.96	−00 13.7	42.147	41.412	41.3	0.9	23.4
2000 02 16	23 51.77	−00 08.0	42.252	41.412	31.4	0.7	23.3

1997 QJ$_4$ a, e, i = 39.67, 0.22, 17 Elements *MPC* 32520

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	23 54.52	+03 12.2	35.377	34.626	41.3	1.1	23.1
1999 05 12	23 55.37	+03 19.5	35.251	34.620	50.7	1.3	23.1
1999 05 22	23 56.09	+03 26.0	35.108	34.615	60.1	1.5	23.1
1999 06 01	23 56.66	+03 31.6	34.951	34.609	69.5	1.6	23.1
1999 06 11	23 57.08	+03 36.3	34.784	34.603	78.9	1.7	23.1
1999 06 21	23 57.33	+03 40.0	34.611	34.597	88.4	1.7	23.1
1999 07 01	23 57.40	+03 42.6	34.438	34.591	97.9	1.7	23.1
1999 07 11	23 57.31	+03 44.0	34.268	34.586	107.4	1.6	23.1
1999 07 21	23 57.04	+03 44.3	34.107	34.580	117.0	1.5	23.1
1999 07 31	23 56.62	+03 43.5	33.960	34.574	126.6	1.4	23.0
1999 08 10	23 56.05	+03 41.7	33.829	34.568	136.3	1.2	23.0
1999 08 20	23 55.36	+03 38.9	33.719	34.563	146.0	0.9	23.0
1999 08 30	23 54.57	+03 35.3	33.634	34.557	155.7	0.7	22.9
1999 09 09	23 53.71	+03 31.0	33.575	34.551	165.4	0.4	22.9
1999 09 19	23 52.81	+03 26.3	33.545	34.545	174.4	0.2	22.9
1999 09 29	23 51.89	+03 21.2	33.545	34.540	172.9	0.2	22.9
1999 10 09	23 51.01	+03 16.2	33.575	34.534	163.5	0.5	22.9
1999 10 19	23 50.18	+03 11.2	33.633	34.528	153.6	0.7	23.0
1999 10 29	23 49.44	+03 06.7	33.719	34.522	143.5	1.0	23.0
1999 11 08	23 48.82	+03 02.7	33.829	34.517	133.4	1.2	23.0
1999 11 18	23 48.35	+02 59.5	33.959	34.511	123.2	1.4	23.0
1999 11 28	23 48.04	+02 57.3	34.107	34.505	113.1	1.5	23.1
1999 12 08	23 47.90	+02 56.1	34.266	34.500	102.9	1.6	23.1
1999 12 18	23 47.95	+02 56.1	34.432	34.494	92.8	1.6	23.1
1999 12 28	23 48.18	+02 57.2	34.599	34.488	82.7	1.6	23.1
2000 01 07	23 48.59	+02 59.6	34.763	34.482	72.6	1.6	23.1
2000 01 17	23 49.18	+03 03.1	34.918	34.477	62.6	1.5	23.1
2000 01 27	23 49.92	+03 07.8	35.059	34.471	52.7	1.3	23.1
2000 02 06	23 50.79	+03 13.4	35.182	34.465	42.8	1.1	23.1
2000 02 16	23 51.78	+03 20.0	35.283	34.459	33.0	0.9	23.1

1994 TB a, e, i = 39.92, 0.32, 12 Elements *MPC* 30900

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	23 56.99	+08 44.1	30.731	29.956	39.1	1.2	22.0
1999 05 12	23 58.04	+08 53.5	30.611	29.949	48.3	1.4	22.0
1999 05 22	23 58.93	+09 02.4	30.473	29.941	57.5	1.6	22.0
1999 06 01	23 59.66	+09 10.4	30.319	29.934	66.8	1.8	22.0
1999 06 11	00 00.21	+09 17.5	30.155	29.926	76.1	1.9	22.0
1999 06 21	00 00.56	+09 23.5	29.984	29.919	85.4	1.9	22.0
1999 07 01	00 00.71	+09 28.2	29.810	29.912	94.8	1.9	22.0
1999 07 11	00 00.66	+09 31.7	29.639	29.904	104.2	1.9	22.0
1999 07 21	00 00.41	+09 33.8	29.475	29.897	113.6	1.8	21.9
1999 07 31	23 59.98	+09 34.5	29.323	29.889	123.1	1.6	21.9
1999 08 10	23 59.37	+09 33.8	29.186	29.882	132.6	1.4	21.9
1999 08 20	23 58.62	+09 31.8	29.069	29.875	142.2	1.2	21.9
1999 08 30	23 57.74	+09 28.5	28.975	29.867	151.6	0.9	21.8
1999 09 09	23 56.78	+09 24.1	28.907	29.860	160.7	0.6	21.8
1999 09 19	23 55.77	+09 18.9	28.867	29.852	168.6	0.4	21.8
1999 09 29	23 54.74	+09 12.9	28.856	29.845	170.6	0.3	21.8
1999 10 09	23 53.74	+09 06.5	28.875	29.838	164.2	0.5	21.8
1999 10 19	23 52.80	+08 59.9	28.923	29.830	155.2	0.8	21.8
1999 10 29	23 51.97	+08 53.5	28.998	29.823	145.6	1.1	21.8
1999 11 08	23 51.28	+08 47.5	29.099	29.816	135.7	1.3	21.9
1999 11 18	23 50.75	+08 42.1	29.221	29.808	125.7	1.5	21.9
1999 11 28	23 50.42	+08 37.6	29.361	29.801	115.6	1.7	21.9
1999 12 08	23 50.29	+08 34.2	29.514	29.794	105.6	1.8	21.9
1999 12 18	23 50.37	+08 32.1	29.675	29.786	95.5	1.9	22.0
1999 12 28	23 50.67	+08 31.4	29.839	29.779	85.5	1.9	22.0
2000 01 07	23 51.18	+08 32.1	30.001	29.772	75.6	1.8	22.0
2000 01 17	23 51.90	+08 34.3	30.156	29.764	65.7	1.7	22.0
2000 01 27	23 52.79	+08 37.9	30.298	29.757	55.9	1.6	22.0
2000 02 06	23 53.84	+08 42.8	30.424	29.750	46.2	1.4	22.0
2000 02 16	23 55.02	+08 49.1	30.529	29.743	36.7	1.1	22.0

1996 TO$_{66}$ a, e, i = 43.60, 0.11, 27 Elements *MPC* 33076

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 02.25	+03 30.8	46.686	45.911	39.4	0.8	21.3
1999 05 12	00 02.88	+03 36.3	46.572	45.913	48.8	0.9	21.3
1999 05 22	00 03.40	+03 41.2	46.440	45.916	58.3	1.1	21.3
1999 06 01	00 03.82	+03 45.5	46.293	45.918	67.8	1.2	21.3
1999 06 11	00 04.12	+03 49.0	46.135	45.921	77.2	1.2	21.3
1999 06 21	00 04.29	+03 51.8	45.970	45.923	86.7	1.3	21.3
1999 07 01	00 04.33	+03 53.7	45.805	45.926	96.2	1.3	21.3
1999 07 11	00 04.25	+03 54.8	45.642	45.928	105.7	1.2	21.3
1999 07 21	00 04.03	+03 55.0	45.487	45.931	115.3	1.1	21.3
1999 07 31	00 03.69	+03 54.5	45.345	45.933	124.9	1.0	21.3
1999 08 10	00 03.25	+03 53.1	45.218	45.936	134.6	0.9	21.2
1999 08 20	00 02.71	+03 51.0	45.113	45.938	144.3	0.7	21.2
1999 08 30	00 02.09	+03 48.3	45.031	45.941	154.0	0.6	21.2
1999 09 09	00 01.41	+03 45.1	44.975	45.943	163.7	0.4	21.2
1999 09 19	00 00.70	+03 41.6	44.948	45.946	173.1	0.1	21.1
1999 09 29	23 59.98	+03 37.8	44.950	45.948	174.8	0.1	21.1
1999 10 09	23 59.27	+03 34.0	44.982	45.950	165.6	0.3	21.2
1999 10 19	23 58.60	+03 30.3	45.043	45.953	155.7	0.5	21.2

1999 10 29	23 57.99	+03 26.8	45.132	45.955	145.6	0.7	21.2
1999 11 08	23 57.47	+03 23.8	45.245	45.958	135.5	0.9	21.2
1999 11 18	23 57.04	+03 21.4	45.381	45.960	125.4	1.0	21.3
1999 11 28	23 56.74	+03 19.6	45.533	45.963	115.2	1.1	21.3
1999 12 08	23 56.57	+03 18.6	45.699	45.965	105.1	1.2	21.3
1999 12 18	23 56.53	+03 18.4	45.873	45.968	94.9	1.2	21.3
1999 12 28	23 56.64	+03 19.2	46.049	45.970	84.8	1.2	21.3
2000 01 07	23 56.88	+03 20.8	46.223	45.972	74.7	1.2	21.3
2000 01 17	23 57.25	+03 23.4	46.388	45.975	64.6	1.1	21.3
2000 01 27	23 57.74	+03 26.8	46.541	45.977	54.6	1.0	21.3
2000 02 06	23 58.34	+03 30.9	46.676	45.980	44.6	0.9	21.3
2000 02 16	23 59.03	+03 35.8	46.790	45.982	34.7	0.7	21.3

(10563) 1993 WD a, e, i = 1.01, 0.27, 63 Elements *MPC* 34452

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 05.00	−18 06.5	0.380	0.815	49.7	109.4	18.5
1999 05 12	01 42.12	−35 10.2	0.438	0.858	57.4	97.1	18.3
1999 05 22	03 09.78	−41 34.3	0.556	0.904	62.6	84.2	18.4
1999 06 01	04 11.12	−42 20.9	0.694	0.951	64.5	74.3	18.6
1999 06 11	04 52.08	−41 19.8	0.829	0.998	64.6	66.8	18.8
1999 06 21	05 20.87	−39 56.9	0.951	1.043	63.9	61.1	19.1
1999 07 01	05 42.50	−38 39.7	1.054	1.085	63.2	56.7	19.2
1999 07 11	05 59.73	−37 37.0	1.136	1.124	62.7	53.5	19.4
1999 07 21	06 14.02	−36 52.1	1.194	1.159	62.6	51.2	19.5
1999 07 31	06 26.11	−36 25.4	1.227	1.189	63.2	49.6	19.6
1999 08 10	06 36.42	−36 17.4	1.237	1.215	64.5	48.8	19.6
1999 08 20	06 45.02	−36 28.8	1.222	1.237	66.5	48.6	19.6
1999 08 30	06 51.80	−37 00.0	1.184	1.254	69.2	48.9	19.6
1999 09 09	06 56.46	−37 52.5	1.123	1.266	72.6	49.4	19.5
1999 09 19	06 58.26	−39 08.7	1.043	1.273	76.8	50.2	19.4
1999 09 29	06 56.00	−40 50.8	0.945	1.275	81.8	51.0	19.2
1999 10 09	06 47.40	−43 02.3	0.833	1.273	87.5	51.7	18.9
1999 10 19	06 27.98	−45 41.9	0.711	1.265	94.2	51.7	18.6
1999 10 29	05 49.06	−48 27.1	0.587	1.253	101.8	50.9	18.1
1999 11 08	04 36.40	−49 31.3	0.473	1.236	110.1	48.8	17.6
1999 11 18	02 49.00	−43 46.5	0.392	1.214	116.4	46.8	17.1
1999 11 28	01 11.09	−27 41.8	0.372	1.188	114.2	49.2	17.0
1999 12 08	00 10.80	−09 05.6	0.423	1.157	103.2	56.0	17.4
1999 12 18	23 37.42	+04 55.7	0.521	1.123	91.2	61.2	17.9
1999 12 28	23 18.18	+14 30.7	0.635	1.084	81.0	63.7	18.3
2000 01 07	23 06.11	+21 21.2	0.750	1.041	72.4	64.2	18.6
2000 01 17	22 57.56	+26 35.0	0.852	0.996	65.3	63.7	18.8
2000 01 27	22 50.32	+30 46.9	0.935	0.949	59.2	63.0	18.9
2000 02 06	22 43.14	+34 13.0	0.993	0.902	54.2	62.5	18.9
2000 02 16	22 35.16	+36 57.5	1.019	0.856	50.5	62.9	18.8

1993 RO a, e, i = 39.64, 0.21, 4 Elements *MPC* 30688

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 14.08	+00 41.8	32.287	31.496	37.7	1.1	23.2
1999 05 12	00 15.14	+00 48.3	32.176	31.496	47.1	1.3	23.2
1999 05 22	00 16.07	+00 53.9	32.045	31.497	56.5	1.5	23.2
1999 06 01	00 16.85	+00 58.5	31.898	31.497	65.9	1.7	23.2
1999 06 11	00 17.46	+01 01.9	31.740	31.497	75.3	1.8	23.2
1999 06 21	00 17.90	+01 04.3	31.575	31.498	84.7	1.8	23.2
1999 07 01	00 18.15	+01 05.4	31.408	31.498	94.2	1.8	23.2
1999 07 11	00 18.21	+01 05.2	31.242	31.498	103.7	1.8	23.2
1999 07 21	00 18.09	+01 03.9	31.084	31.499	113.3	1.7	23.2
1999 07 31	00 17.78	+01 01.4	30.936	31.499	122.9	1.6	23.1
1999 08 10	00 17.31	+00 57.8	30.804	31.500	132.6	1.4	23.1
1999 08 20	00 16.69	+00 53.3	30.692	31.500	142.4	1.1	23.1
1999 08 30	00 15.94	+00 48.1	30.603	31.500	152.2	0.9	23.1
1999 09 09	00 15.09	+00 42.2	30.540	31.501	162.1	0.6	23.0
1999 09 19	00 14.18	+00 35.9	30.506	31.501	172.1	0.3	23.0
1999 09 29	00 13.24	+00 29.6	30.500	31.502	177.6	0.1	22.9
1999 10 09	00 12.30	+00 23.3	30.525	31.502	167.7	0.4	23.0
1999 10 19	00 11.41	+00 17.3	30.579	31.502	157.5	0.7	23.0
1999 10 29	00 10.60	+00 12.0	30.662	31.503	147.4	1.0	23.1
1999 11 08	00 09.90	+00 07.4	30.769	31.503	137.2	1.2	23.1
1999 11 18	00 09.35	+00 03.8	30.899	31.504	127.0	1.4	23.1
1999 11 28	00 08.97	+00 01.3	31.048	31.504	116.8	1.6	23.2
1999 12 08	00 08.77	+00 00.0	31.210	31.505	106.6	1.7	23.2
1999 12 18	00 08.77	+00 00.1	31.380	31.505	96.4	1.8	23.2
1999 12 28	00 08.97	+00 01.4	31.554	31.505	86.3	1.8	23.2
2000 01 07	00 09.36	+00 04.1	31.726	31.506	76.2	1.7	23.2
2000 01 17	00 09.96	+00 08.0	31.891	31.506	66.2	1.6	23.2
2000 01 27	00 10.72	+00 13.0	32.044	31.507	56.2	1.5	23.2
2000 02 06	00 11.65	+00 19.0	32.180	31.507	46.3	1.3	23.2
2000 02 16	00 12.72	+00 25.9	32.297	31.508	36.5	1.1	23.2

1996 TR$_{66}$ a, e, i = 47.37, 0.38, 12 Elements *MPC* 33752

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 20.73	+07 39.9	37.264	36.430	33.7	0.9	23.3
1999 05 12	00 21.63	+07 47.2	37.171	36.440	43.0	1.1	23.3
1999 05 22	00 22.42	+07 54.0	37.058	36.449	52.4	1.3	23.3
1999 06 01	00 23.08	+08 00.1	36.928	36.459	61.8	1.4	23.3
1999 06 11	00 23.60	+08 05.4	36.785	36.469	71.1	1.5	23.3
1999 06 21	00 23.97	+08 09.8	36.632	36.479	80.5	1.6	23.3
1999 07 01	00 24.17	+08 13.3	36.475	36.489	90.0	1.6	23.3
1999 07 11	00 24.20	+08 15.7	36.318	36.499	99.4	1.6	23.3
1999 07 21	00 24.07	+08 17.0	36.166	36.509	108.9	1.5	23.3
1999 07 31	00 23.79	+08 17.2	36.023	36.518	118.5	1.4	23.3
1999 08 10	00 23.35	+08 16.3	35.894	36.528	128.1	1.3	23.3
1999 08 20	00 22.79	+08 14.5	35.782	36.538	137.8	1.1	23.2
1999 08 30	00 22.11	+08 11.7	35.693	36.548	147.5	0.9	23.2
1999 09 09	00 21.34	+08 08.1	35.627	36.558	157.2	0.6	23.2
1999 09 19	00 20.51	+08 03.8	35.590	36.568	166.6	0.4	23.2
1999 09 29	00 19.65	+07 59.1	35.581	36.578	174.2	0.2	23.1
1999 10 09	00 18.79	+07 54.0	35.602	36.588	170.5	0.3	23.1
1999 10 19	00 17.96	+07 48.9	35.653	36.598	161.3	0.5	23.2
1999 10 29	00 17.20	+07 43.9	35.732	36.607	151.4	0.7	23.2
1999 11 08	00 16.53	+07 39.3	35.838	36.617	141.4	1.0	23.2
1999 11 18	00 15.99	+07 35.2	35.968	36.627	131.3	1.2	23.3
1999 11 28	00 15.58	+07 31.8	36.117	36.637	121.1	1.3	23.3
1999 12 08	00 15.33	+07 29.3	36.283	36.647	111.0	1.4	23.3
1999 12 18	00 15.26	+07 27.8	36.460	36.657	100.8	1.5	23.3
1999 12 28	00 15.36	+07 27.4	36.642	36.667	90.7	1.5	23.3
2000 01 07	00 15.63	+07 28.1	36.824	36.677	80.6	1.5	23.4

2000 01 17	00 16.07	+07 29.9	37.002	36.687	70.6	1.4	23.4
2000 01 27	00 16.67	+07 32.9	37.169	36.696	60.6	1.3	23.4
2000 02 06	00 17.41	+07 37.0	37.323	36.706	50.7	1.2	23.4
2000 02 16	00 18.28	+07 42.0	37.457	36.716	40.9	1.0	23.3
2000 02 26	00 19.24	+07 47.9	37.569	36.726	31.2	0.8	23.3

1999 AN$_{10}$ a, e, i = 1.46, 0.56, 40 Elements *MPC* 34039

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 26.96	−16 13.5	0.973	0.752	44.6	70.2	19.7
1999 05 12	00 30.68	−08 45.1	1.035	0.837	48.3	64.3	19.9
1999 05 22	00 36.79	−01 29.6	1.077	0.931	52.8	60.0	20.1
1999 06 01	00 43.71	+05 29.4	1.103	1.028	57.9	56.7	20.2
1999 06 11	00 50.42	+12 13.8	1.114	1.124	63.5	54.0	20.4
1999 06 21	00 56.03	+18 46.5	1.115	1.217	69.5	51.4	20.5
1999 07 01	00 59.72	+25 10.0	1.108	1.307	75.8	48.9	20.5
1999 07 11	01 00.53	+31 25.2	1.096	1.393	82.4	46.4	20.6
1999 07 21	00 57.18	+37 29.1	1.082	1.474	89.2	43.6	20.6
1999 07 31	00 48.08	+43 13.3	1.070	1.551	96.1	40.6	20.6
1999 08 10	00 31.43	+48 22.5	1.064	1.624	102.8	37.5	20.6
1999 08 20	00 05.81	+52 31.8	1.066	1.692	109.0	34.4	20.6
1999 08 30	23 31.96	+55 12.6	1.080	1.756	114.3	31.6	20.6
1999 09 09	22 54.16	+56 04.6	1.107	1.816	118.3	29.2	20.7
1999 09 19	22 19.24	+55 10.2	1.150	1.872	120.5	27.5	20.8
1999 09 29	21 52.48	+52 57.2	1.208	1.924	120.8	26.6	20.9
1999 10 09	21 35.34	+50 01.5	1.280	1.972	119.3	26.2	21.1
1999 10 19	21 26.83	+46 53.6	1.366	2.016	116.3	26.3	21.3
1999 10 29	21 25.12	+43 54.4	1.462	2.057	112.4	26.5	21.5
1999 11 08	21 28.51	+41 15.1	1.568	2.094	107.7	26.8	21.7
1999 11 18	21 35.74	+39 01.3	1.680	2.128	102.7	27.0	21.9

1996 TK$_{66}$ a, e, i = 42.96, 0.01, 3 Elements *MPC* 33076

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 34.72	+01 37.8	43.690	42.845	32.6	0.7	23.5
1999 05 12	00 35.52	+01 42.6	43.589	42.844	42.1	0.9	23.5
1999 05 22	00 36.22	+01 46.9	43.467	42.844	51.5	1.1	23.5
1999 06 01	00 36.82	+01 50.5	43.327	42.844	60.9	1.2	23.5
1999 06 11	00 37.30	+01 53.2	43.174	42.844	70.4	1.3	23.5
1999 06 21	00 37.66	+01 55.1	43.012	42.844	79.8	1.3	23.5
1999 07 01	00 37.88	+01 56.1	42.844	42.844	89.3	1.4	23.5
1999 07 11	00 37.96	+01 56.2	42.676	42.844	98.8	1.3	23.5
1999 07 21	00 37.90	+01 55.4	42.512	42.843	108.4	1.3	23.5
1999 07 31	00 37.70	+01 53.8	42.358	42.843	118.0	1.2	23.5
1999 08 10	00 37.38	+01 51.4	42.217	42.843	127.6	1.1	23.4
1999 08 20	00 36.94	+01 48.3	42.093	42.843	137.3	0.9	23.4
1999 08 30	00 36.39	+01 44.6	41.991	42.843	147.1	0.7	23.4
1999 09 09	00 35.77	+01 40.5	41.914	42.843	156.9	0.5	23.4
1999 09 19	00 35.08	+01 36.0	41.864	42.843	166.8	0.3	23.3
1999 09 29	00 34.35	+01 31.4	41.842	42.842	176.3	0.1	23.3
1999 10 09	00 33.62	+01 26.8	41.851	42.842	172.7	0.2	23.3
1999 10 19	00 32.90	+01 22.5	41.889	42.842	162.8	0.4	23.4
1999 10 29	00 32.23	+01 18.4	41.957	42.842	152.7	0.6	23.4
1999 11 08	00 31.62	+01 14.9	42.051	42.842	142.6	0.8	23.4
1999 11 18	00 31.11	+01 12.1	42.169	42.842	132.4	1.0	23.4
1999 11 28	00 30.71	+01 10.1	42.308	42.841	122.2	1.1	23.5
1999 12 08	00 30.44	+01 08.9	42.463	42.841	112.0	1.2	23.5
1999 12 18	00 30.31	+01 08.7	42.629	42.841	101.8	1.3	23.5
1999 12 28	00 30.32	+01 09.4	42.802	42.841	91.6	1.3	23.5
2000 01 07	00 30.49	+01 11.1	42.975	42.841	81.5	1.3	23.5
2000 01 17	00 30.80	+01 13.7	43.144	42.841	71.4	1.2	23.5
2000 01 27	00 31.25	+01 17.2	43.304	42.840	61.4	1.2	23.5
2000 02 06	00 31.83	+01 21.4	43.449	42.840	51.4	1.0	23.5
2000 02 16	00 32.52	+01 26.4	43.575	42.840	41.5	0.9	23.5
2000 02 26	00 33.31	+01 31.8	43.680	42.840	31.6	0.7	23.5

1993 SC a, e, i = 39.91, 0.19, 5 Elements *MPC* 33072

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 35.58	+05 13.8	35.594	34.733	31.0	0.9	22.6
1999 05 12	00 36.59	+05 20.7	35.501	34.738	40.4	1.1	22.6
1999 05 22	00 37.48	+05 26.9	35.387	34.742	49.8	1.3	22.6
1999 06 01	00 38.25	+05 32.4	35.256	34.747	59.2	1.4	22.6
1999 06 11	00 38.87	+05 37.1	35.109	34.751	68.5	1.6	22.6
1999 06 21	00 39.34	+05 40.7	34.953	34.755	78.0	1.6	22.6
1999 07 01	00 39.64	+05 43.3	34.791	34.760	87.4	1.7	22.6
1999 07 11	00 39.77	+05 44.9	34.627	34.764	96.9	1.7	22.6
1999 07 21	00 39.73	+05 45.3	34.467	34.768	106.4	1.6	22.6
1999 07 31	00 39.52	+05 44.6	34.315	34.773	116.0	1.5	22.6
1999 08 10	00 39.14	+05 42.9	34.176	34.777	125.7	1.4	22.6
1999 08 20	00 38.62	+05 40.2	34.053	34.782	135.5	1.2	22.5
1999 08 30	00 37.97	+05 36.7	33.951	34.786	145.3	0.9	22.5
1999 09 09	00 37.22	+05 32.4	33.874	34.790	155.1	0.7	22.5
1999 09 19	00 36.39	+05 27.6	33.823	34.795	165.1	0.4	22.4
1999 09 29	00 35.51	+05 22.3	33.801	34.799	174.9	0.1	22.4
1999 10 09	00 34.62	+05 16.9	33.809	34.803	174.6	0.2	22.4
1999 10 19	00 33.75	+05 11.6	33.847	34.808	164.6	0.4	22.4
1999 10 29	00 32.94	+05 06.5	33.914	34.812	154.4	0.7	22.5
1999 11 08	00 32.21	+05 01.8	34.008	34.817	144.2	1.0	22.5
1999 11 18	00 31.59	+04 57.9	34.127	34.821	134.0	1.2	22.5
1999 11 28	00 31.12	+04 54.7	34.267	34.825	123.8	1.3	22.6
1999 12 08	00 30.80	+04 52.6	34.424	34.830	113.5	1.5	22.6
1999 12 18	00 30.66	+04 51.5	34.594	34.834	103.3	1.6	22.6
1999 12 28	00 30.70	+04 51.6	34.770	34.839	93.2	1.6	22.6
2000 01 07	00 30.93	+04 52.9	34.948	34.843	83.0	1.6	22.6
2000 01 17	00 31.33	+04 55.3	35.123	34.847	73.0	1.5	22.6
2000 01 27	00 31.91	+04 58.9	35.288	34.852	63.0	1.4	22.6
2000 02 06	00 32.64	+05 03.4	35.441	34.856	53.0	1.3	22.6
2000 02 16	00 33.51	+05 08.9	35.575	34.860	43.1	1.1	22.6
2000 02 26	00 34.49	+05 15.2	35.688	34.865	33.3	0.9	22.6

1992 QB$_1$ a, e, i = 44.35, 0.08, 2 Elements *MPC* 30782

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 36.23	+04 18.2	41.772	40.913	31.2	0.7	23.3
1999 05 12	00 37.07	+04 23.8	41.675	40.914	40.6	0.9	23.3
1999 05 22	00 37.82	+04 28.7	41.556	40.914	50.1	1.1	23.3
1999 06 01	00 38.47	+04 33.0	41.420	40.914	59.5	1.2	23.3
1999 06 11	00 38.99	+04 36.5	41.269	40.914	68.9	1.3	23.3
1999 06 21	00 39.38	+04 39.2	41.108	40.915	78.4	1.4	23.3
1999 07 01	00 39.62	+04 40.9	40.941	40.915	87.8	1.4	23.3
1999 07 11	00 39.72	+04 41.8	40.773	40.915	97.3	1.4	23.3

1999 07 21	00 39.68	+04 41.7	40.609	40.915	106.9	1.4	23.3
1999 07 31	00 39.49	+04 40.7	40.453	40.915	116.5	1.3	23.3
1999 08 10	00 39.16	+04 38.8	40.310	40.916	126.1	1.1	23.3
1999 08 20	00 38.71	+04 36.1	40.183	40.916	135.9	1.0	23.2
1999 08 30	00 38.15	+04 32.7	40.078	40.916	145.7	0.8	23.2
1999 09 09	00 37.51	+04 28.7	39.997	40.916	155.5	0.6	23.2
1999 09 19	00 36.80	+04 24.3	39.943	40.917	165.4	0.4	23.1
1999 09 29	00 36.04	+04 19.6	39.918	40.917	175.4	0.1	23.1
1999 10 09	00 35.28	+04 14.8	39.922	40.917	174.5	0.1	23.1
1999 10 19	00 34.53	+04 10.1	39.957	40.917	164.4	0.4	23.2
1999 10 29	00 33.83	+04 05.7	40.020	40.917	154.3	0.6	23.2
1999 11 08	00 33.20	+04 01.7	40.111	40.918	144.1	0.8	23.2
1999 11 18	00 32.67	+03 58.3	40.227	40.918	133.9	1.0	23.2
1999 11 28	00 32.25	+03 55.6	40.363	40.918	123.7	1.2	23.3
1999 12 08	00 31.97	+03 53.8	40.516	40.918	113.4	1.3	23.3
1999 12 18	00 31.83	+03 52.9	40.682	40.918	103.2	1.3	23.3
1999 12 28	00 31.85	+03 53.0	40.855	40.919	93.1	1.4	23.3
2000 01 07	00 32.03	+03 54.2	41.029	40.919	82.9	1.4	23.3
2000 01 17	00 32.36	+03 56.3	41.199	40.919	72.8	1.3	23.3
2000 01 27	00 32.84	+03 59.3	41.361	40.919	62.8	1.2	23.3
2000 02 06	00 33.45	+04 03.2	41.508	40.920	52.8	1.1	23.3
2000 02 16	00 34.17	+04 07.9	41.638	40.920	42.9	0.9	23.3
2000 02 26	00 35.00	+04 13.2	41.747	40.920	33.0	0.8	23.3

1993 SB a, e, i = 39.75, 0.32, 2 Elements *MPC* 33072

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 02	00 40.34	+04 53.1	31.803	30.935	30.0	0.9	23.1
1999 05 12	00 41.49	+05 00.7	31.701	30.926	39.4	1.2	23.1
1999 05 22	00 42.54	+05 07.6	31.576	30.918	48.7	1.4	23.1
1999 06 01	00 43.45	+05 13.6	31.434	30.910	58.1	1.6	23.1
1999 06 11	00 44.20	+05 18.6	31.277	30.901	67.4	1.7	23.1
1999 06 21	00 44.78	+05 22.6	31.109	30.893	76.8	1.8	23.1
1999 07 01	00 45.17	+05 25.4	30.935	30.885	86.3	1.9	23.1
1999 07 11	00 45.37	+05 27.0	30.758	30.877	95.7	1.9	23.1
1999 07 21	00 45.38	+05 27.4	30.585	30.868	105.3	1.8	23.1
1999 07 31	00 45.19	+05 26.5	30.419	30.860	114.9	1.7	23.1
1999 08 10	00 44.83	+05 24.5	30.266	30.852	124.5	1.6	23.1
1999 08 20	00 44.29	+05 21.4	30.128	30.844	134.3	1.3	23.0
1999 08 30	00 43.60	+05 17.3	30.011	30.835	144.1	1.1	23.0
1999 09 09	00 42.79	+05 12.4	29.918	30.827	154.0	0.8	23.0
1999 09 19	00 41.88	+05 06.8	29.852	30.819	164.0	0.5	22.9
1999 09 29	00 40.92	+05 00.9	29.814	30.811	174.0	0.2	22.9
1999 10 09	00 39.93	+04 54.7	29.806	30.802	175.8	0.1	22.9
1999 10 19	00 38.96	+04 48.7	29.828	30.794	165.7	0.5	22.9
1999 10 29	00 38.05	+04 42.9	29.879	30.786	155.5	0.8	22.9
1999 11 08	00 37.23	+04 37.7	29.958	30.778	145.2	1.1	23.0
1999 11 18	00 36.53	+04 33.3	30.063	30.769	135.0	1.3	23.0
1999 11 28	00 36.00	+04 29.8	30.188	30.761	124.7	1.5	23.0
1999 12 08	00 35.64	+04 27.4	30.331	30.753	114.5	1.7	23.1
1999 12 18	00 35.47	+04 26.3	30.487	30.745	104.3	1.8	23.1
1999 12 28	00 35.51	+04 26.5	30.650	30.736	94.1	1.8	23.1
2000 01 07	00 35.76	+04 28.0	30.816	30.728	84.0	1.8	23.1
2000 01 17	00 36.22	+04 30.9	30.978	30.720	73.9	1.8	23.1
2000 01 27	00 36.87	+04 34.9	31.132	30.712	63.9	1.7	23.1
2000 02 06	00 37.69	+04 40.2	31.273	30.704	54.0	1.5	23.1
2000 02 16	00 38.68	+04 46.4	31.397	30.695	44.1	1.3	23.1
2000 02 26	00 39.80	+04 53.6	31.499	30.687	34.4	1.0	23.1

1999 FN$_{53}$ a, e, i = 1.73, 0.45, 20 Elements *MPC* 34613

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1999 05 22	03 26.17	−25 54.7	0.100	0.946	46.6	129.0	18.8
1999 06 01	03 08.96	−39 55.8	0.170	0.954	65.0	105.7	18.3
1999 06 11	03 02.50	−44 30.6	0.241	0.977	74.0	92.2	18.4
1999 06 21	03 00.30	−46 32.1	0.306	1.012	80.5	82.1	18.6
1999 07 01	02 58.81	−47 49.5	0.363	1.057	86.3	73.6	18.8
1999 07 11	02 55.65	−49 03.7	0.411	1.111	92.2	66.1	18.9
1999 07 21	02 48.40	−50 29.7	0.451	1.170	98.4	59.2	19.0
1999 07 31	02 34.87	−52 04.3	0.484	1.233	105.1	52.6	19.1
1999 08 10	02 13.26	−53 32.3	0.515	1.298	112.1	46.3	19.2
1999 08 20	01 42.91	−54 24.3	0.547	1.365	119.2	40.3	19.3
1999 08 30	01 06.52	−54 05.3	0.585	1.431	125.6	35.0	19.4
1999 09 09	00 29.80	−52 15.9	0.633	1.497	130.4	30.8	19.5
1999 09 19	23 58.69	−49 02.2	0.696	1.562	132.6	28.3	19.7
1999 09 29	23 36.24	−44 53.4	0.775	1.626	132.0	27.3	20.0
1999 10 09	23 22.26	−40 21.1	0.871	1.688	128.8	27.5	20.4
1999 10 19	23 15.32	−35 47.9	0.983	1.748	124.0	28.2	20.7
1999 10 29	23 13.74	−31 26.7	1.109	1.805	118.3	29.0	21.1
1999 11 08	23 16.10	−27 22.4	1.247	1.861	112.0	29.6	21.4
1999 11 18	23 21.39	−23 35.6	1.395	1.915	105.6	29.8	21.7
1999 11 28	23 28.85	−20 05.0	1.551	1.966	99.1	29.7	22.0

C/1997 BA$_6$ (Spacewatch) Elements *MPC* 34420

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 01	08 00.83	−44 51.4	3.823	3.812	81.8	15.3		16.7
1999 06 11	08 07.52	−44 59.1	3.842	3.774	78.5	15.3		16.7
1999 06 21	08 15.72	−45 23.7	3.855	3.737	75.8	15.3		16.6
1999 07 01	08 25.30	−46 06.1	3.863	3.702	73.4	15.3		16.6
1999 07 11	08 36.16	−47 06.3	3.864	3.670	71.4	15.2		16.6
1999 07 21	08 48.28	−48 24.7	3.861	3.639	69.9	15.2		16.6
1999 07 31	09 01.66	−50 00.9	3.854	3.609	68.6	15.2		16.6
1999 08 10	09 16.39	−51 54.4	3.843	3.582	67.7	15.2		16.5
1999 08 20	09 32.60	−54 04.4	3.831	3.558	66.9	15.2		16.5
1999 08 30	09 50.53	−56 29.4	3.818	3.535	66.3	15.2		16.5
1999 09 09	10 10.58	−59 07.4	3.807	3.514	65.7	15.1		16.5
1999 09 19	10 33.34	−61 55.8	3.799	3.496	65.1	15.1		16.5
1999 09 29	10 59.66	−64 50.5	3.795	3.480	64.3	15.0		16.4
1999 10 09	11 30.90	−67 46.4	3.797	3.467	63.4	14.9		16.4
1999 10 19	12 08.9	−70 36.2	3.805	3.456	62.3	14.8		16.4
1999 10 29	12 56.3	−73 09.5	3.819	3.447	60.9	14.6		16.4
1999 11 08	13 55.3	−75 11.8	3.840	3.441	59.3	14.3		16.4
1999 11 18	15 06.0	−76 26.1	3.867	3.437	57.5	14.0		16.4
1999 11 28	16 22.4	−76 38.9	3.898	3.436	55.5	13.7		16.4
1999 12 08	17 34.5	−75 50.0	3.933	3.438	53.4	13.3		16.4
1999 12 18	18 35.4	−74 13.5	3.969	3.442	51.4	12.9		16.4
1999 12 28	19 24.0	−72 07.2	4.004	3.448	49.5	12.5		16.4
2000 01 07	20 02.60	−69 45.7	4.037	3.457	47.9	12.2		16.5
2000 01 17	20 33.77	−67 19.1	4.065	3.468	46.9	11.9		16.5

2000 01 27	20 59.49	−64 53.5	4.087	3.482	46.4	11.8	16.5
2000 02 06	21 21.19	−62 33.1	4.100	3.498	46.7	11.8	16.5
2000 02 16	21 39.79	−60 20.6	4.103	3.516	47.8	12.0	16.5
2000 02 26	21 55.92	−58 17.8	4.094	3.537	49.8	12.3	16.5
2000 03 07	22 09.97	−56 26.0	4.074	3.559	52.6	12.8	16.6
2000 03 17	22 22.17	−54 46.3	4.040	3.585	56.3	13.3	16.6
2000 03 27	22 32.67	−53 19.3	3.995	3.612	60.6	13.9	16.6
2000 04 06	22 41.50	−52 05.7	3.937	3.641	65.7	14.5	16.6
2000 04 16	22 48.63	−51 06.0	3.868	3.672	71.3	15.0	16.6
2000 04 26	22 53.95	−50 20.3	3.790	3.705	77.5	15.4	16.6
2000 05 06	22 57.32	−49 48.5	3.705	3.740	84.2	15.6	16.6
2000 05 16	22 58.50	−49 30.3	3.615	3.777	91.4	15.5	16.5
2000 05 26	22 57.25	−49 24.1	3.524	3.815	99.0	15.2	16.5
2000 06 05	22 53.29	−49 27.9	3.435	3.855	107.0	14.6	16.4
2000 06 15	22 46.35	−49 38.0	3.354	3.897	115.2	13.6	16.4
2000 06 25	22 36.32	−49 49.4	3.285	3.940	123.6	12.4	16.3
2000 07 05	22 23.27	−49 55.6	3.234	3.984	131.8	11.0	16.2
2000 07 15	22 07.65	−49 49.4	3.205	4.030	139.3	9.5	16.2
2000 07 25	21 50.31	−49 24.4	3.203	4.077	145.0	8.2	16.2
2000 08 04	21 32.41	−48 36.3	3.231	4.126	147.8	7.5	16.2
2000 08 14	21 15.24	−47 24.5	3.292	4.175	146.7	7.7	16.2
2000 08 24	20 59.92	−45 52.0	3.384	4.226	141.9	8.5	16.4
2000 09 03	20 47.16	−44 03.8	3.506	4.277	134.8	9.6	16.5
2000 09 13	20 37.31	−42 06.2	3.655	4.330	126.5	10.8	16.7
2000 09 23	20 30.33	−40 04.6	3.828	4.383	117.6	11.7	16.8
2000 10 03	20 26.01	−38 03.3	4.018	4.438	108.5	12.3	17.0
2000 10 13	20 24.05	−36 05.1	4.222	4.493	99.3	12.7	17.1
2000 10 23	20 24.09	−34 11.4	4.434	4.549	90.3	12.6	17.3
2000 11 02	20 25.79	−32 22.8	4.650	4.606	81.3	12.3	17.4
2000 11 12	20 28.86	−30 39.3	4.864	4.663	72.5	11.7	17.5
2000 11 22	20 33.01	−29 00.5	5.074	4.721	63.8	10.8	17.6

C/1998 U1 (LINEAR) Elements *MPC* 33650

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 01	02 11.43	+12 24.2	5.973	5.178	35.2	6.5	20.5	
1999 06 11	02 13.42	+12 10.4	5.906	5.230	44.4	7.8	20.5	
1999 06 21	02 14.71	+11 52.0	5.818	5.282	53.8	8.9	20.6	
1999 07 01	02 15.16	+11 28.1	5.713	5.335	63.4	9.8	20.6	
1999 07 11	02 14.64	+10 57.9	5.594	5.388	73.2	10.4	20.6	
1999 07 21	02 13.00	+10 20.4	5.466	5.442	83.3	10.7	20.5	
1999 07 31	02 10.14	+09 34.8	5.335	5.496	93.8	10.6	20.5	
1999 08 10	02 05.95	+08 40.7	5.208	5.551	104.6	10.2	20.5	
1999 08 20	02 00.40	+07 37.7	5.091	5.606	115.8	9.4	20.5	
1999 08 30	01 53.50	+06 26.1	4.990	5.661	127.4	8.1	20.5	
1999 09 09	01 45.37	+05 06.9	4.915	5.716	139.3	6.6	20.5	
1999 09 19	01 36.20	+03 42.0	4.870	5.772	151.4	4.8	20.6	
1999 09 29	01 26.33	+02 13.9	4.861	5.829	163.4	2.8	20.6	
1999 10 09	01 16.13	+00 46.1	4.893	5.885	172.8	1.2	20.6	
1999 10 19	01 06.03	−00 38.2	4.965	5.942	167.6	2.1	20.7	
1999 10 29	00 56.45	−01 55.7	5.078	5.999	156.0	3.9	20.8	
1999 11 08	00 47.75	−03 04.1	5.227	6.057	143.9	5.5	20.9	

102P/Shoemaker 1 Elements *MPC* 27081

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 01	02 16.40	+28 46.4	2.871	2.078	31.7	14.8	15.1	21.7
1999 06 11	02 38.67	+31 38.0	2.845	2.104	35.6	16.3	15.2	21.8
1999 06 21	03 01.31	+34 19.5	2.816	2.133	39.6	17.7	15.3	21.8
1999 07 01	03 24.27	+36 49.9	2.783	2.164	43.6	18.9	15.4	21.9
1999 07 11	03 47.44	+39 08.8	2.747	2.198	47.9	20.1	15.5	21.9
1999 07 21	04 10.67	+41 16.2	2.706	2.233	52.2	21.1	15.6	21.9
1999 07 31	04 33.76	+43 12.1	2.662	2.270	56.8	22.0	15.7	22.0
1999 08 10	04 56.46	+44 57.6	2.613	2.309	61.5	22.7	15.9	22.0
1999 08 20	05 18.48	+46 33.8	2.560	2.349	66.6	23.3	16.0	22.0
1999 08 30	05 39.48	+48 02.2	2.504	2.391	71.9	23.7	16.1	22.0
1999 09 09	05 59.08	+49 25.2	2.444	2.433	77.5	23.8	16.2	22.0
1999 09 19	06 16.86	+50 44.7	2.381	2.477	83.5	23.8	16.3	22.0
1999 09 29	06 32.33	+52 03.0	2.318	2.522	89.8	23.4	16.4	21.9
1999 10 09	06 44.99	+53 22.0	2.254	2.567	96.5	22.8	16.5	21.9
1999 10 19	06 54.22	+54 42.4	2.193	2.613	103.6	21.8	16.5	21.8
1999 10 29	06 59.38	+56 03.6	2.136	2.659	111.0	20.4	16.6	21.8
1999 11 08	06 59.86	+57 22.9	2.088	2.706	118.6	18.8	16.7	21.7
1999 11 18	06 55.17	+58 34.3	2.052	2.753	126.1	16.9	16.9	21.7
1999 11 28	06 45.37	+59 29.5	2.031	2.800	133.2	14.9	17.0	21.6
1999 12 08	06 31.27	+59 59.1	2.028	2.847	139.1	13.1	17.1	21.6
1999 12 18	06 14.68	+59 55.3	2.048	2.895	143.0	11.8	17.3	21.6
1999 12 28	05 58.12	+59 15.6	2.091	2.942	143.7	11.4	17.5	21.6
2000 01 07	05 43.85	+58 04.0	2.159	2.990	141.2	11.9	17.7	21.8
2000 01 17	05 33.42	+56 29.4	2.250	3.037	136.1	13.0	17.9	21.9
2000 01 27	05 27.34	+54 42.1	2.364	3.084	129.5	14.3	18.2	22.1
2000 02 06	05 25.41	+52 50.7	2.496	3.132	122.0	15.5	18.4	22.3
2000 02 16	05 27.13	+51 01.7	2.644	3.178	114.2	16.5	18.7	22.5

117P/Helin-Roman-Alu 1 Elements *MPC* 27080

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 01	02 27.92	+08 52.5	5.380	4.563	33.0	6.9	19.3	21.5
1999 06 11	02 36.66	+09 36.5	5.306	4.577	40.1	8.2	19.3	21.5
1999 06 21	02 44.97	+10 16.0	5.217	4.592	47.5	9.4	19.3	21.5
1999 07 01	02 52.74	+10 50.8	5.114	4.606	54.9	10.4	19.3	21.5
1999 07 11	02 59.87	+11 20.9	4.999	4.620	62.6	11.3	19.3	21.5
1999 07 21	03 06.24	+11 46.0	4.873	4.634	70.5	11.9	19.3	21.5
1999 07 31	03 11.71	+12 06.1	4.741	4.648	78.6	12.4	19.2	21.5
1999 08 10	03 16.16	+12 21.1	4.603	4.662	87.0	12.5	19.2	21.4
1999 08 20	03 19.45	+12 30.9	4.464	4.676	95.8	12.4	19.1	21.3
1999 08 30	03 21.47	+12 35.6	4.328	4.689	104.9	12.0	19.1	21.3
1999 09 09	03 22.10	+12 35.5	4.197	4.703	114.3	11.3	19.1	21.2
1999 09 19	03 21.29	+12 30.6	4.078	4.716	124.2	10.1	19.0	21.1
1999 09 29	03 19.05	+12 21.5	3.973	4.730	134.5	8.7	19.0	21.0
1999 10 09	03 15.47	+12 09.0	3.889	4.743	145.1	6.9	19.0	20.8
1999 10 19	03 10.74	+11 53.8	3.829	4.756	156.0	4.9	19.0	20.7
1999 10 29	03 05.17	+11 37.4	3.797	4.769	166.8	2.7	19.0	20.6
1999 11 08	02 59.14	+11 21.4	3.795	4.782	174.6	1.1	19.0	20.5
1999 11 18	02 53.09	+11 07.3	3.824	4.795	167.8	2.5	19.0	20.6
1999 11 28	02 47.49	+10 56.9	3.884	4.807	157.0	4.6	19.1	20.8
1999 12 08	02 42.69	+10 51.4	3.972	4.820	145.9	6.6	19.2	20.9
1999 12 18	02 39.01	+10 52.0	4.086	4.832	135.0	8.3	19.2	21.1

1999 12 28	02 36.64	+10 59.0	4.221	4.844	124.4	9.6	19.3	21.2
2000 01 07	02 35.67	+11 12.5	4.372	4.856	114.1	10.7	19.4	21.3
2000 01 17	02 36.10	+11 32.1	4.534	4.868	104.1	11.3	19.5	21.4
2000 01 27	02 37.89	+11 57.3	4.703	4.880	94.5	11.6	19.6	21.5
2000 02 06	02 40.93	+12 27.3	4.874	4.891	85.2	11.6	19.7	21.6
2000 02 16	02 45.12	+13 01.2	5.043	4.903	76.3	11.3	19.8	21.7
2000 02 26	02 50.32	+13 38.1	5.206	4.914	67.6	10.7	19.9	21.7
2000 03 07	02 56.40	+14 17.3	5.360	4.925	59.2	10.0	20.0	21.8
2000 03 17	03 03.26	+14 57.9	5.502	4.936	51.0	9.0	20.1	21.8
2000 03 27	03 10.77	+15 39.2	5.630	4.947	43.0	7.9	20.1	21.8
2000 04 06	03 18.83	+16 20.5	5.742	4.958	35.2	6.7	20.2	21.8

C/1997 G2 (Montani) Elements *MPC* 31347

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 01	03 27.57	−18 01.3	5.594	4.903	43.2	8.1	19.1	
1999 06 11	03 34.35	−17 15.8	5.604	4.970	47.2	8.6	19.2	
1999 06 21	03 40.61	−16 40.4	5.597	5.037	52.1	9.2	19.3	
1999 07 01	03 46.24	−16 14.6	5.577	5.105	57.6	9.7	19.3	
1999 07 11	03 51.14	−15 58.0	5.542	5.172	63.7	10.1	19.4	
1999 07 21	03 55.21	−15 50.1	5.496	5.240	70.2	10.5	19.4	
1999 07 31	03 58.33	−15 50.1	5.441	5.308	77.1	10.7	19.4	
1999 08 10	04 00.39	−15 57.0	5.379	5.376	84.4	10.8	19.5	
1999 08 20	04 01.30	−16 09.8	5.313	5.444	92.1	10.7	19.5	
1999 08 30	04 00.96	−16 27.0	5.248	5.513	100.0	10.4	19.5	
1999 09 09	03 59.31	−16 46.8	5.186	5.581	108.0	9.9	19.5	
1999 09 19	03 56.33	−17 07.1	5.134	5.650	116.2	9.2	19.6	
1999 09 29	03 52.07	−17 25.4	5.095	5.718	124.2	8.3	19.6	
1999 10 09	03 46.63	−17 39.2	5.074	5.787	131.7	7.4	19.7	
1999 10 19	03 40.23	−17 46.0	5.074	5.856	138.3	6.5	19.7	
1999 10 29	03 33.13	−17 43.6	5.101	5.925	143.0	5.8	19.8	
1999 11 08	03 25.68	−17 30.4	5.155	5.994	145.0	5.4	19.8	
1999 11 18	03 18.25	−17 05.6	5.237	6.062	143.7	5.5	19.9	
1999 11 28	03 11.21	−16 29.4	5.349	6.131	139.3	6.0	20.0	
1999 12 08	03 04.86	−15 42.7	5.488	6.200	132.9	6.7	20.1	
1999 12 18	02 59.45	−14 46.9	5.651	6.269	125.1	7.4	20.2	
1999 12 28	02 55.14	−13 44.1	5.835	6.338	116.7	8.0	20.3	
2000 01 07	02 52.00	−12 36.2	6.036	6.407	107.9	8.4	20.5	
2000 01 17	02 50.04	−11 24.9	6.249	6.476	99.0	8.6	20.6	
2000 01 27	02 49.22	−10 12.0	6.469	6.544	90.1	8.7	20.7	
2000 02 06	02 49.46	−08 58.8	6.691	6.613	81.3	8.5	20.8	
2000 02 16	02 50.64	−07 46.5	6.910	6.682	72.6	8.1	20.9	

76P/West-Kohoutek-Ikemura Elements *MPC* 29881

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 11	23 44.43	−33 44.4	3.033	3.311	96.9	17.7		22.4
1999 06 21	23 53.39	−34 48.6	2.864	3.259	103.8	17.6		22.3
1999 07 01	00 01.07	−36 09.6	2.704	3.206	110.6	17.3		22.1
1999 07 11	00 07.18	−37 47.3	2.554	3.152	117.2	16.7		21.9
1999 07 21	00 11.33	−39 40.5	2.418	3.098	123.6	15.9		21.7
1999 07 31	00 13.16	−41 45.8	2.298	3.043	129.2	15.0		21.6
1999 08 10	00 12.27	−43 57.8	2.196	2.987	133.6	14.2		21.4
1999 08 20	00 08.34	−46 08.0	2.114	2.931	136.3	13.8		21.3
1999 08 30	00 01.35	−48 05.9	2.053	2.874	136.8	13.9		21.1
1999 09 09	23 51.66	−49 40.5	2.013	2.817	134.9	14.7		21.1
1999 09 19	23 40.18	−50 41.4	1.993	2.759	131.0	15.9		21.1
1999 09 29	23 28.32	−51 02.4	1.991	2.701	125.7	17.5		21.1
1999 10 09	23 17.64	−50 41.8	2.004	2.642	119.4	19.2		21.1
1999 10 19	23 09.49	−49 42.4	2.029	2.583	112.8	20.8		21.1
1999 10 29	23 04.68	−48 09.8	2.063	2.524	106.0	22.2		21.2
1999 11 08	23 03.46	−46 10.3	2.104	2.465	99.2	23.4		21.2
1999 11 18	23 05.73	−43 49.5	2.148	2.406	92.7	24.2	21.1	21.2
1999 11 28	23 11.11	−41 11.9	2.193	2.346	86.4	24.8	20.8	21.2
1999 12 08	23 19.16	−38 20.8	2.237	2.288	80.3	25.1	20.5	21.2
1999 12 18	23 29.48	−35 18.3	2.279	2.229	74.5	25.2	20.2	21.2
1999 12 28	23 41.68	−32 06.2	2.319	2.171	69.1	25.0	19.9	21.2
2000 01 07	23 55.44	−28 45.4	2.355	2.114	63.8	24.7	19.6	21.1
2000 01 17	00 10.53	−25 16.8	2.387	2.058	58.9	24.2	19.3	21.1
2000 01 27	00 26.75	−21 41.5	2.414	2.004	54.2	23.5	19.0	21.0
2000 02 06	00 43.97	−18 00.3	2.439	1.951	49.7	22.7	18.6	21.0
2000 02 16	01 02.12	−14 14.3	2.459	1.900	45.4	21.7	18.3	20.9
2000 02 26	01 21.13	−10 24.8	2.477	1.852	41.2	20.6	18.0	20.8
2000 03 07	01 40.98	−06 33.2	2.493	1.806	37.3	19.4	17.7	20.7
2000 03 17	02 01.70	−02 41.2	2.506	1.764	33.4	18.1	17.4	20.7

39P/Oterma Elements *MPC* 34423

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21	20 07.95	−21 32.5	5.996	6.892	149.7	4.3	21.5	22.5
1999 07 01	20 04.44	−21 42.8	5.911	6.876	160.0	2.9	21.4	22.3
1999 07 11	20 00.43	−21 53.9	5.855	6.859	170.5	1.4	21.4	22.2
1999 07 21	19 56.15	−22 04.9	5.827	6.843	178.3	0.3	21.4	22.1
1999 07 31	19 51.86	−22 15.1	5.830	6.827	168.3	1.7	21.3	22.2
1999 08 10	19 47.82	−22 23.9	5.861	6.811	157.8	3.2	21.3	22.3
1999 08 20	19 44.27	−22 30.7	5.920	6.795	147.4	4.6	21.3	22.4
1999 08 30	19 41.43	−22 35.3	6.004	6.778	137.1	5.8	21.4	22.5

88P/Howell Elements *MPC* 31205

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 06 21	03 39.21	+18 46.8	3.593	2.788	32.3	11.2	20.5	21.2
1999 07 01	03 53.26	+19 37.1	3.572	2.847	38.4	12.8	20.6	21.3
1999 07 11	04 06.53	+20 20.6	3.537	2.905	44.8	14.3	20.7	21.4
1999 07 21	04 18.90	+20 57.9	3.488	2.962	51.3	15.5	20.8	21.4
1999 07 31	04 30.25	+21 29.4	3.427	3.018	58.2	16.6	20.9	21.5
1999 08 10	04 40.43	+21 55.9	3.355	3.073	65.4	17.4	20.9	21.5
1999 08 20	04 49.26	+22 17.8	3.272	3.128	72.9	18.0	21.0	21.5
1999 08 30	04 56.55	+22 35.8	3.182	3.181	80.8	18.3	21.1	21.5
1999 09 09	05 02.10	+22 50.6	3.087	3.234	89.2	18.2	21.1	21.4
1999 09 19	05 05.68	+23 02.6	2.989	3.285	98.1	17.6	21.1	21.4
1999 09 29	05 07.10	+23 12.0	2.894	3.336	107.6	16.6	21.2	21.3
1999 10 09	05 06.21	+23 18.9	2.805	3.386	117.6	15.2	21.2	21.2
1999 10 19	05 02.92	+23 23.0	2.728	3.435	128.2	13.2		21.1
1999 10 29	04 57.34	+23 23.7	2.667	3.483	139.5	10.7		21.0
1999 11 08	04 49.77	+23 20.3	2.629	3.530	151.2	7.8		20.9
1999 11 18	04 40.73	+23 12.4	2.618	3.576	163.3	4.5		20.8
1999 11 28	04 30.95	+23 00.4	2.637	3.621	175.6	1.2		20.6
1999 12 08	04 21.26	+22 45.2	2.688	3.666	171.8	2.2		20.7
1999 12 18	04 12.46	+22 29.0	2.771	3.709	159.6	5.3		21.0
1999 12 28	04 05.18	+22 13.9	2.883	3.752	147.8	8.0		21.2
2000 01 07	03 59.80	+22 01.9	3.021	3.793	136.3	10.3		21.5

2000 01 17	03 56.53	+21 54.5	3.180	3.834	125.4	12.1		21.7
2000 01 27	03 55.36	+21 52.4	3.355	3.874	114.9	13.3		21.8
2000 02 06	03 56.16	+21 55.5	3.540	3.913	105.0	14.1		22.0
2000 02 16	03 58.75	+22 03.6	3.733	3.951	95.5	14.4		22.2
2000 02 26	04 02.93	+22 15.7	3.927	3.989	86.4	14.3		22.3
2000 03 07	04 08.48	+22 31.0	4.118	4.025	77.7	13.9		22.4
2000 03 17	04 15.19	+22 48.5	4.305	4.061	69.3	13.2		22.5

108P/Ciffréo Elements *MPC* 29881

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 01	22 04.12	−30 21.8	2.213	3.008	133.8	14.1		22.4
1999 07 11	22 02.38	−31 32.0	2.079	2.952	142.7	12.1		22.2
1999 07 21	21 58.05	−32 48.6	1.965	2.896	151.0	9.8		21.9
1999 07 31	21 51.25	−34 05.1	1.874	2.839	157.6	7.8		21.7
1999 08 10	21 42.40	−35 13.8	1.808	2.782	159.8	7.2		21.5
1999 08 20	21 32.33	−36 06.0	1.769	2.725	156.0	8.7		21.5
1999 08 30	21 22.21	−36 35.5	1.754	2.667	148.4	11.4		21.6
1999 09 09	21 13.28	−36 39.2	1.762	2.610	139.3	14.6		21.6
1999 09 19	21 06.65	−36 17.5	1.789	2.552	129.9	17.6	21.5	21.7
1999 09 29	21 03.04	−35 33.4	1.831	2.495	120.6	20.2	21.2	21.8
1999 10 09	21 02.74	−34 30.9	1.885	2.438	111.7	22.4	21.0	21.9
1999 10 19	21 05.77	−33 13.2	1.946	2.382	103.4	24.0	20.8	22.0
1999 10 29	21 11.86	−31 43.1	2.010	2.326	95.5	25.2	20.5	22.0
1999 11 08	21 20.68	−30 02.0	2.076	2.271	88.1	25.9	20.3	22.0
1999 11 18	21 31.87	−28 10.6	2.141	2.217	81.2	26.2	20.0	22.1
1999 11 28	21 45.05	−26 09.2	2.202	2.164	74.8	26.1	19.8	22.1
1999 12 08	21 59.91	−23 57.9	2.260	2.112	68.7	25.8	19.5	22.1
1999 12 18	22 16.18	−21 36.5	2.313	2.062	63.0	25.2	19.2	22.1
1999 12 28	22 33.63	−19 05.1	2.361	2.014	57.6	24.4	19.0	22.0
2000 01 07	22 52.08	−16 24.1	2.404	1.968	52.6	23.4	18.7	22.0
2000 01 17	23 11.40	−13 33.9	2.442	1.925	47.8	22.3	18.5	21.9
2000 01 27	23 31.47	−10 35.3	2.475	1.885	43.4	21.0	18.2	21.9
2000 02 06	23 52.26	−07 29.6	2.505	1.848	39.1	19.7	18.0	21.8
2000 02 16	00 13.73	−04 18.0	2.531	1.815	35.2	18.3	17.8	21.8
2000 02 26	00 35.86	−01 02.6	2.555	1.786	31.4	16.8	17.6	21.7

59P/Kearns-Kwee Elements *MPC* 27082

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1999 07 11	04 41.90	+29 09.1	3.144	2.396	36.0	14.4	15.2	22.2
1999 07 21	05 04.33	+29 44.4	3.061	2.381	40.5	16.1	15.1	22.2
1999 07 31	05 26.75	+30 08.1	2.973	2.368	45.0	17.7	15.0	22.2
1999 08 10	05 48.98	+30 20.0	2.882	2.357	49.7	19.2	14.9	22.1
1999 08 20	06 10.84	+30 20.5	2.787	2.349	54.5	20.5	14.8	22.1
1999 08 30	06 32.10	+30 10.2	2.688	2.343	59.5	21.8	14.7	22.1
1999 09 09	06 52.56	+29 50.0	2.587	2.340	64.6	22.9	14.6	22.0
1999 09 19	07 12.00	+29 21.5	2.483	2.339	70.0	23.8	14.5	21.9
1999 09 29	07 30.17	+28 46.1	2.377	2.341	75.7	24.5	14.4	21.9
1999 10 09	07 46.87	+28 06.0	2.270	2.346	81.8	24.9	14.3	21.8
1999 10 19	08 01.81	+27 23.1	2.162	2.353	88.2	25.0	14.2	21.7
1999 10 29	08 14.74	+26 39.7	2.056	2.362	95.2	24.8	14.2	21.6
1999 11 08	08 25.38	+25 58.0	1.952	2.374	102.6	24.0	14.1	21.5
1999 11 18	08 33.39	+25 20.0	1.853	2.389	110.7	22.8	14.0	21.3
1999 11 28	08 38.52	+24 47.3	1.761	2.406	119.5	20.9	13.9	21.2
1999 12 08	08 40.52	+24 20.6	1.680	2.424	129.0	18.4	13.9	21.0
1999 12 18	08 39.31	+23 59.8	1.614	2.446	139.3	15.2	13.9	20.8
1999 12 28	08 35.10	+23 43.2	1.566	2.469	150.3	11.4	13.9	20.6
2000 01 07	08 28.41	+23 28.4	1.541	2.494	161.8	7.1	13.9	20.4
2000 01 17	08 20.18	+23 12.2	1.541	2.521	173.2	2.6	14.0	20.2
2000 01 27	08 11.65	+22 52.3	1.569	2.549	173.1	2.6	14.1	20.3
2000 02 06	08 04.00	+22 27.6	1.624	2.579	161.8	6.8	14.2	20.6
2000 02 16	07 58.25	+21 58.3	1.705	2.611	150.6	10.7	14.4	20.9
2000 02 26	07 54.99	+21 25.3	1.809	2.644	139.9	14.0	14.6	21.2
2000 03 07	07 54.40	+20 49.4	1.932	2.679	129.8	16.5	14.8	21.5
2000 03 17	07 56.43	+20 11.1	2.071	2.714	120.5	18.4	15.1	21.7
2000 03 27	08 00.80	+19 30.4	2.222	2.751	111.7	19.7	15.3	21.9
2000 04 06	08 07.18	+18 47.2	2.381	2.789	103.4	20.4	15.6	22.1
2000 04 16	08 15.24	+18 00.9	2.546	2.827	95.6	20.7	15.8	22.3
2000 04 26	08 24.65	+17 11.2	2.715	2.867	88.3	20.5	16.0	22.5

OPPOSITION DATA

Planet	Opposition	α_{2000}	δ_{2000}	V	$\dot{\alpha}$	$\dot{\delta}$	$\phi_{\rm MIN}$	*MPC*
4128 P-L	1999 04 04.0	12 51.08	−04 31.7	17.3	−0.71	+ 8.2	0.3/03.7	34565
(10515)	1999 04 04.1	12 51.19	+01 41.4	17.6	−0.95	+ 4.3	2.5/02.0	34440
1999 FN_{25}	1999 04 04.1	12 51.38	+02 48.5	16.8	−0.69	+ 7.2	2.4/01.2	34558
1987 QO_5	1999 04 04.1	12 51.45	−10 17.9	17.6	−1.05	+ 5.1	1.8/05.6	34574
(10617)	1999 04 04.1	12 51.59	−13 40.1	16.4	−1.04	+ 5.5	3.1/06.7	34467
1997 VL_8	1999 04 04.1	12 51.60	−04 31.9	19.1	−0.89	+ 4.4	0.3/03.9	31150
(10559)	1999 04 04.2	12 51.65	−01 45.6	17.5	−0.95	+ 8.7	1.4/03.0	34451
1988 FM_1	1999 04 04.2	12 51.66	−17 25.0	16.6	−0.83	+ 3.1	3.3/07.9	34575
1999 FQ_{26}	1999 04 04.2	12 51.67	−01 50.6	17.8	−0.93	+ 3.3	1.4/03.1	34559
1990 TQ_{12}	1999 04 04.2	12 51.83	−12 44.3	17.3	−0.96	+ 6.9	2.6/06.6	17965
(8330)	1999 04 04.2	12 51.91	−05 49.4	15.8	−0.80	+ 3.1	0.1/04.4	31350
1993 FV_{44}	1999 04 04.3	12 52.19	−04 50.7	18.0	−0.72	+ 4.3	0.2/04.1	34501
(10647)	1999 04 04.4	12 52.39	−13 43.6	16.7	−0.74	+ 7.3	2.6/07.3	34475
1979 KJ	1999 04 04.4	12 52.47	+10 15.8	16.9	−0.73	+ 6.3	5.0/29.8	34572
1997 UY_3	1999 04 04.4	12 52.64	−08 41.9	17.4	−0.87	+ 6.2	1.0/05.5	34587
(10614)	1999 04 04.4	12 52.65	+00 59.8	17.1	−1.02	+ 3.3	2.5/02.6	34466
1997 SX_2	1999 04 04.4	12 52.69	−09 46.9	16.5	−1.01	+ 4.0	1.9/05.7	34586
(8369)	1999 04 04.5	12 52.89	−02 59.4	15.4	−1.03	+ 1.4	0.9/03.8	31358
1996 RM	1999 04 04.6	12 52.99	−15 38.5	18.4	−0.93	+ 1.3	2.9/07.4	34584
1997 SA_{34}	1999 04 04.6	12 53.05	+01 04.3	17.9	−0.89	+ 2.5	2.2/02.7	34587
1997 UG_{22}	1999 04 04.6	12 53.07	+04 40.5	18.0	−1.00	+ 3.5	4.0/01.6	34587
1981 ER_{30}	1999 04 04.6	12 53.14	−06 52.3	19.3	−0.82	+ 5.8	0.4/05.0	26920
1993 VS_4	1999 04 04.6	12 53.15	+10 56.4	17.5	−0.94	+ 3.8	5.4/30.5	34581
1996 YZ_2	1999 04 04.6	12 53.27	−10 04.2	18.3	−0.70	+ 6.7	1.2/06.2	34296
(10529)	1999 04 04.6	12 53.37	+00 25.5	17.1	−0.99	+ 7.3	2.4/02.7	34444
1999 FV_{26}	1999 04 04.7	12 53.70	+01 23.7	17.3	−0.99	+ 5.3	2.8/02.6	34559
(10262)	1999 04 04.7	12 53.74	+02 46.1	16.8	−0.96	+ 2.5	2.7/02.3	34127
1996 MR	1999 04 04.8	12 53.77	+00 23.6	20.3	−0.96	+ 6.9	2.0/02.8	31278
1989 UY_2	1999 04 04.8	12 53.78	−01 13.1	17.5	−0.94	+ 5.2	1.5/03.4	34575
1996 TV_{14}	1999 04 04.8	12 53.88	−07 07.8	17.6	−0.81	+ 4.6	0.4/05.3	34585
1991 UD_2	1999 04 04.8	12 53.90	+01 11.4	16.8	−0.86	+ 1.8	2.2/02.8	34495
1998 BN_{44}	1999 04 04.8	12 53.95	−18 57.9	18.3	−0.79	+ 4.1	3.7/09.2	31739
1996 VV_8	1999 04 04.8	12 54.08	+15 00.7	17.5	−0.82	+ 1.8	5.5/29.3	34585
(10516)	1999 04 04.9	12 54.27	−02 22.7	17.8	−0.92	+ 5.3	1.1/03.9	34441

1998 BP_{6}	1999 04 04.9	12 54.30	+13 02.5	17.8	−0.79	+ 3.8	5.4/29.9	34589
(10481)	1999 04 05.0	12 54.48	−09 01.9	17.5	−0.97	+ 5.3	1.1/06.0	34431
2212 T-2	1999 04 05.1	12 54.85	−05 00.9	18.4	−0.84	+ 4.5	0.3/04.8	28608
2218 T-3	1999 04 05.1	12 54.91	−08 34.8	17.7	−1.09	+ 3.9	1.1/05.9	34618
1996 WZ_{1}	1999 04 05.1	12 54.97	+10 36.1	16.7	−0.73	+ 4.0	4.6/30.6	34585
(10602)	1999 04 05.1	12 55.03	−00 17.7	16.7	−0.99	+ 2.0	1.8/03.6	34463
(10575)	1999 04 05.1	12 55.05	+06 48.9	16.9	−1.00	+ 3.8	5.2/01.4	34456
1996 RA_{5}	1999 04 05.1	12 55.18	−16 20.3	18.9	−0.82	+ 3.4	2.9/08.5	34585
1510 T-2	1999 04 05.2	12 55.27	−04 04.2	18.0	−0.71	+ 6.3	0.6/04.6	34567
1997 SS_{17}	1999 04 05.2	12 55.32	+01 06.6	19.3	−1.03	+ 5.3	2.6/03.1	34518
1996 TN_{41}	1999 04 05.2	12 55.34	−01 05.0	17.9	−0.80	+ 4.8	1.5/03.7	34585
(10564)	1999 04 05.2	12 55.35	+14 24.6	16.8	−0.82	+ 6.3	6.7/29.2	34453
1988 CD_{2}	1999 04 05.3	12 55.56	−03 05.0	18.1	−0.95	+ 6.5	1.1/04.4	34575
(10371)	1999 04 05.3	12 55.57	−05 43.3	17.4	−0.88	+ 5.2	0.1/05.2	34153
3046 T-3	1999 04 05.4	12 56.04	+00 36.0	17.5	−1.00	+ 3.7	3.0/03.5	34569
1999 FM_{26}	1999 04 05.4	12 56.20	−06 26.6	17.0	−0.82	+10.6	0.2/05.6	34559
1998 BA_{2}	1999 04 05.4	12 56.24	−02 12.2	18.1	−0.89	+ 4.6	1.2/04.3	34589
1346 T-2	1999 04 05.5	12 56.56	−04 03.4	17.4	−0.76	+ 4.2	0.7/04.9	34617
1996 RK_{3}	1999 04 05.5	12 56.69	+04 02.6	17.8	−0.99	+ 6.4	4.2/02.3	34584
1999 FZ_{26}	1999 04 05.6	12 56.81	+03 45.4	17.1	−0.73	+ 6.0	3.1/02.3	34559
1996 TO_{13}	1999 04 05.6	12 56.86	−08 24.4	18.9	−0.72	+ 7.2	0.7/06.5	31278
1991 NM_{6}	1999 04 05.6	12 56.95	+00 41.7	17.5	−0.79	+ 6.3	2.1/03.4	34577
1995 EM	1999 04 05.6	12 57.00	−04 42.3	17.5	−1.01	+ 3.1	0.5/05.3	34583
1994 UY_{1}	1999 04 05.7	12 57.12	−07 21.3	18.0	−0.98	+ 8.0	0.5/06.1	34507
1998 BG_{42}	1999 04 05.7	12 57.21	−09 22.9	17.1	−1.06	+ 4.9	1.2/06.7	34590
1999 FT_{27}	1999 04 05.7	12 57.22	−03 46.2	17.0	−0.90	+ 7.9	0.9/05.0	34559
(10587)	1999 04 05.7	12 57.23	+06 59.9	17.0	−0.79	+ 7.0	4.3/01.2	34459
1991 RS_{20}	1999 04 05.8	12 57.56	−03 05.8	17.1	−0.80	+ 4.2	0.9/04.9	34495
1981 ED_{36}	1999 04 05.8	12 57.59	−14 41.3	19.0	−1.04	+ 3.7	3.3/08.3	26921
(10259)	1999 04 05.8	12 57.62	−14 15.2	16.0	−0.71	+10.2	2.7/08.9	34126
1985 UF	1999 04 05.8	12 57.73	−03 15.8	17.4	−1.02	+ 3.1	1.0/05.1	34574
1999 EH_{5}	1999 04 05.8	12 57.73	−11 49.0	16.6	−0.87	+ 2.2	1.8/07.5	34553
1997 UT	1999 04 05.8	12 57.82	−10 16.8	18.0	−0.93	+ 8.7	1.6/07.3	34587
1996 SN	1999 04 05.9	12 57.90	−03 32.4	18.0	−0.87	+ 4.0	1.1/05.1	34516
1992 SP_{16}	1999 04 05.9	12 58.12	−08 17.4	20.3	−0.87	+ 4.7	0.6/06.6	32745
1998 BA_{21}	1999 04 06.0	12 58.39	−01 14.8	19.2	−0.79	+ 5.1	1.5/04.4	31266
6109 P-L	1999 04 06.1	12 58.55	−09 58.3	17.6	−0.93	+ 4.2	1.4/07.2	34616
1997 WX_{21}	1999 04 06.2	12 58.87	−16 04.2	15.9	−1.05	− 0.4	3.9/08.7	34588
1981 EO_{28}	1999 04 06.2	12 58.90	−09 29.5	18.5	−0.89	+ 3.5	1.1/07.2	34482
1995 DR	1999 04 06.2	12 59.01	+02 17.4	17.2	−0.81	+ 8.9	3.5/03.2	34583
1993 DU_{2}	1999 04 06.2	12 59.07	−11 20.2	17.7	−0.81	+ 3.4	1.7/07.8	34580
1994 CR	1999 04 06.2	12 59.21	+01 33.8	17.6	−0.82	+ 5.8	2.7/03.7	34505
1997 WF_{2}	1999 04 06.3	12 59.44	−10 48.3	17.3	−0.79	+ 6.2	1.4/07.9	34523
1977 FN	1999 04 06.3	12 59.56	−26 47.8	16.3	−0.87	+ 5.5	7.5/13.3	34572
1997 YY	1999 04 06.4	12 59.72	−12 57.5	18.4	−0.99	+ 6.4	2.3/08.5	31283
2070 T-2	1999 04 06.5	12 59.99	−16 01.4	17.4	−1.00	− 0.9	3.2/08.9	34617
1991 RG_{25}	1999 04 06.5	13 00.03	+08 04.7	17.4	−0.84	+ 4.7	4.4/01.7	34578
1997 UG_{9}	1999 04 06.6	13 00.71	−02 23.9	20.1	−0.90	+ 3.9	1.1/05.5	31423
1983 VQ_{1}	1999 04 06.7	13 00.78	+27 48.9	18.9	−1.25	− 1.3	11.3/28.9	34282
1990 SA_{7}	1999 04 06.7	13 01.00	+00 09.5	17.5	−1.08	+ 2.1	3.0/05.0	34491
1997 WM_{35}	1999 04 06.8	13 01.14	−00 27.0	15.9	−0.91	+ 4.6	2.8/05.0	34524
1997 ST_{10}	1999 04 06.8	13 01.29	−03 09.3	17.6	−1.02	+ 3.9	1.2/05.9	34586
1997 WD	1999 04 06.8	13 01.47	+12 44.0	18.3	−0.99	+ 1.3	6.7/01.4	34523
(8300)	1999 04 06.9	13 01.43	−24 15.5	19.2	−0.96	+ 3.9	5.5/12.5	31218
1999 FD_{34}	1999 04 06.9	13 01.45	−05 33.9	17.5	−1.01	+ 6.8	0.4/06.6	34561
1988 BZ_{3}	1999 04 06.9	13 01.53	−15 16.4	16.5	−0.98	+ 6.7	3.5/09.7	34575
1991 PO_{8}	1999 04 06.9	13 01.67	−14 45.5	19.9	−0.85	+ 3.8	2.2/09.5	22083
1997 YW_{11}	1999 04 06.9	13 01.74	+00 54.2	17.7	−0.81	+ 4.8	2.3/04.6	34589
1985 RR_{3}	1999 04 07.0	13 01.86	+00 40.0	17.4	−0.71	+ 7.3	2.1/04.5	34574
6199 P-L	1999 04 07.0	13 01.99	−07 50.8	19.2	−0.97	+ 7.0	0.4/07.4	31294
1981 EA_{31}	1999 04 07.1	13 02.16	−10 46.4	18.9	−0.93	+ 5.0	1.9/08.4	26920
1981 EB_{10}	1999 04 07.1	13 02.16	−07 46.2	17.0	−0.85	+ 8.5	0.5/07.5	34573
1993 RF_{2}	1999 04 07.1	13 02.47	−10 15.1	17.2	−1.07	+ 4.2	1.4/08.2	34580
1992 BD_{2}	1999 04 07.2	13 02.68	+05 10.7	18.6	−0.67	+ 5.3	2.8/03.2	34578
1998 BM_{9}	1999 04 07.2	13 02.71	−07 59.3	19.5	−0.80	+ 4.9	0.4/07.7	31265
(8227)	1999 04 07.2	13 02.72	−03 58.1	17.5	−0.74	+ 4.4	0.8/06.4	31092
1981 EP_{46}	1999 04 07.2	13 02.92	−10 59.1	19.5	−0.89	+ 4.0	1.2/08.6	26923
1997 TW_{25}	1999 04 07.3	13 02.86	+01 01.9	17.9	−0.94	+ 6.6	3.2/04.9	34587
1999 GD_{1}	1999 04 07.3	13 02.94	−03 41.7	18.0	−0.84	+ 9.3	1.2/06.3	34613
3222 T-1	1999 04 07.3	13 02.94	−08 26.5	17.2	−1.06	+ 7.1	0.7/07.9	34617
1988 CT_{4}	1999 04 07.3	13 03.11	−07 04.3	16.6	−0.71	+ 7.6	0.1/07.5	34575
(10590)	1999 04 07.4	13 03.28	+01 08.8	17.8	−0.86	+10.1	2.6/04.6	34460
1997 YT	1999 04 07.4	13 03.66	−13 10.1	17.5	−0.86	+ 5.4	2.2/09.5	34588
1979 MK_{5}	1999 04 07.5	13 03.71	−08 46.5	17.4	−0.84	+ 6.4	0.8/08.2	34572
1998 BA_{9}	1999 04 07.6	13 04.19	−19 05.2	17.8	−0.76	+ 4.3	3.3/11.7	34589
1991 VN_{4}	1999 04 07.7	13 04.46	+10 51.5	17.1	−0.77	+ 3.8	4.9/01.9	34578
1998 BF_{11}	1999 04 07.7	13 04.67	+11 26.0	18.8	−0.75	+ 4.3	5.2/01.7	32683
1995 SU_{32}	1999 04 07.8	13 04.70	+04 14.4	18.9	−0.66	+ 7.4	3.1/03.8	34583
(10446)	1999 04 07.8	13 04.74	−03 31.3	16.9	−1.07	+ 3.7	1.3/06.9	34170
1997 TR_{25}	1999 04 07.8	13 04.97	−03 30.1	17.2	−0.92	+ 3.9	1.0/06.9	34587
(10577)	1999 04 07.8	13 05.04	−02 27.7	17.0	−0.94	+ 3.4	1.9/06.6	34456
1981 EN_{41}	1999 04 07.8	13 05.12	−03 33.7	18.9	−0.81	+ 5.7	1.3/06.8	26922
(8354)	1999 04 07.9	13 05.21	−08 19.8	17.2	−0.72	+ 5.4	0.4/08.4	31355
1984 SN_{6}	1999 04 07.9	13 05.22	−02 30.4	16.1	−0.90	+ 4.2	1.8/06.6	34574
1979 MJ_{4}	1999 04 07.9	13 05.33	+13 04.6	18.6	−0.85	+ 6.5	6.4/31.9	30778
1996 TC_{12}	1999 04 07.9	13 05.35	−06 07.9	20.4	−0.81	+ 5.0	0.3/07.7	34199
(8126)	1999 04 07.9	13 05.41	−19 16.9	16.2	−0.89	+ 4.4	4.5/11.9	31070
(10431)	1999 04 08.0	13 05.44	−06 43.6	18.3	−0.80	+ 6.3	0.1/07.9	34167
1999 FU_{28}	1999 04 08.0	13 05.53	−03 56.8	16.6	−0.94	+10.2	1.2/07.0	34560
(10454)	1999 04 08.0	13 05.53	−17 01.8	17.6	−1.00	+ 5.0	3.5/11.1	34425
1993 SH_{1}	1999 04 08.0	13 05.59	−02 30.1	17.2	−0.91	+ 8.4	1.6/06.5	34581
1999 FS_{28}	1999 04 08.0	13 05.60	−05 21.4	17.5	−0.79	+ 5.6	0.5/07.5	34560
1997 CE_{18}	1999 04 08.0	13 05.82	+01 02.0	20.1	−0.55	+ 4.2	1.5/05.3	29928
1997 WS_{44}	1999 04 08.0	13 05.82	+00 05.7	17.9	−0.85	+ 4.6	2.4/05.9	34525
1978 VO_{4}	1999 04 08.1	13 06.20	−00 29.5	17.3	−0.95	+ 5.5	2.6/06.2	34572
1997 VK_{3}	1999 04 08.2	13 06.21	−05 50.9	18.1	−0.78	+ 5.6	0.4/07.8	34522
(8429)	1999 04 08.2	13 06.22	−08 10.7	16.6	−0.82	+ 3.2	0.3/08.6	31371
1993 VT_{2}	1999 04 08.2	13 06.40	+28 15.4	18.8	−1.00	+ 2.5	10.1/27.5	23342
1996 SC_{6}	1999 04 08.2	13 06.49	−05 00.3	17.2	−0.77	+ 6.9	0.7/07.6	34585
(8207)	1999 04 08.2	13 06.51	+03 01.3	18.3	−1.03	+ 4.9	3.6/05.3	31088
1998 AC_{4}	1999 04 08.2	13 06.54	−00 49.7	18.1	−0.93	+ 5.7	2.2/06.3	34589
1990 SN_{7}	1999 04 08.3	13 06.74	−02 57.8	17.5	−1.07	+ 5.1	1.6/07.1	34576

1998 ED_6	1999 04 08.3	13 06.93	−27 13.2	16.8	−0.81	+ 3.5	5.2/14.9	31803
(8392)	1999 04 08.4	13 07.08	−45 47.6	17.9	−1.24	+ 3.3	12.3/22.0	31364
1995 DX_8	1999 04 08.4	13 07.10	−04 08.4	19.2	−0.92	+ 6.0	1.0/07.5	25341
1991 RD_{12}	1999 04 08.4	13 07.19	−02 07.3	17.8	−0.79	+ 5.2	1.5/06.9	34494
1988 GZ	1999 04 08.4	13 07.25	−05 11.4	16.7	−0.80	+ 3.3	0.6/07.9	34575
1997 WB_{38}	1999 04 08.4	13 07.26	−02 04.1	16.5	−1.00	+ 6.2	2.3/06.9	34588
1990 TO_9	1999 04 08.4	13 07.26	−12 45.2	18.5	−0.98	+ 6.1	2.0/10.2	34577
(8191)	1999 04 08.5	13 07.39	−12 10.2	17.4	−1.00	+ 5.7	1.9/10.0	31084
1998 AJ	1999 04 08.5	13 07.50	−01 01.8	17.7	−0.73	+ 4.7	1.7/06.6	34589
1993 QY_9	1999 04 08.5	13 07.54	+01 06.0	18.1	−0.95	+ 7.7	3.4/05.8	29944
(10449)	1999 04 08.6	13 07.83	−05 06.7	18.0	−0.73	+ 4.9	0.5/08.0	34424
1996 LK_1	1999 04 08.6	13 08.06	+05 43.7	19.2	−1.02	+ 4.4	4.9/04.8	33255
1999 FK_{19}	1999 04 08.7	13 08.14	−02 01.6	17.0	−1.01	+ 5.4	2.4/07.2	34558
(8305)	1999 04 08.7	13 08.25	+02 28.7	17.8	−0.91	+ 5.7	3.4/05.7	31219
1989 CX_1	1999 04 08.7	13 08.30	+03 04.1	17.5	−0.81	+ 5.3	3.8/05.5	34488
1981 EW_{33}	1999 04 08.8	13 08.42	−10 47.2	18.7	−0.83	+ 5.5	1.1/09.9	34573
(10464)	1999 04 08.8	13 08.66	−04 43.0	16.3	−1.03	+ 3.3	1.1/08.1	34427
(10458)	1999 04 08.9	13 08.85	−09 14.5	16.8	−0.91	+ 6.3	11.5/20.0	34426
1997 UG_{15}	1999 04 08.9	13 08.89	−03 10.5	18.0	−0.91	+ 6.0	1.4/07.6	31423
1999 FB_{29}	1999 04 09.0	13 09.39	−00 06.8	17.7	−0.64	+11.8	2.3/06.2	34612
1997 UA_{15}	1999 04 09.1	13 09.53	−04 25.8	19.4	−1.01	+ 5.2	1.0/08.2	31147
(8430)	1999 04 09.1	13 09.77	−01 38.1	17.3	−0.83	+ 4.2	2.1/07.4	34280
(10539)	1999 04 09.2	13 10.10	+01 43.2	17.8	−0.76	+ 4.5	2.5/06.3	34446
1996 PO_8	1999 04 09.2	13 10.12	+05 45.1	18.0	−0.83	+ 8.6	5.0/04.6	30279
(10537)	1999 04 09.2	13 10.16	+01 35.7	16.5	−0.86	+ 3.1	3.2/06.6	34446
1997 SV_{23}	1999 04 09.3	13 10.46	−07 36.3	18.4	−0.96	+ 4.6	0.0/09.4	34586
1991 CW_2	1999 04 09.3	13 10.51	−08 53.7	17.1	−1.02	+ 2.6	0.5/09.8	34577
1982 SN_3	1999 04 09.3	13 10.54	−02 27.5	18.0	−0.95	+ 6.6	1.7/07.8	34484
1990 TX_4	1999 04 09.4	13 10.56	−10 34.1	17.4	−0.75	+ 6.9	0.9/10.5	34577
1999 HH_2	1999 04 09.4	13 10.60	+04 00.5	16.8	−1.03	+ 1.8	5.0/06.3	34564
9549 P-L	1999 04 09.4	13 10.80	−09 26.2	17.2	−1.12	+ 0.1	0.7/09.9	34566
1990 TK_4	1999 04 09.4	13 10.83	−10 15.2	17.7	−0.94	+ 7.2	1.1/10.3	34576
1990 SR_2	1999 04 09.5	13 10.99	−05 19.9	16.9	−1.10	+ 4.3	0.9/08.9	34491
1189 T-3	1999 04 09.5	13 11.18	−14 50.5	18.4	−0.97	+ 5.2	2.8/11.7	34618
6604 P-L	1999 04 09.5	13 11.18	−03 18.8	18.7	−0.87	+ 5.8	1.4/08.2	34617
(10526)	1999 04 09.5	13 11.21	−13 31.3	18.0	−0.98	+ 6.6	2.1/11.4	34443
(10623)	1999 04 09.5	13 11.28	−03 33.7	17.2	−0.77	+ 3.5	1.1/08.3	34469
1997 YQ	1999 04 09.5	13 11.34	−07 31.6	18.5	−0.91	+ 6.3	0.0/09.6	34588
1989 UK_1	1999 04 09.6	13 11.36	−13 27.8	17.7	−0.87	+ 9.3	2.0/11.7	34575
1989 MH	1999 04 09.6	13 11.44	+11 58.7	15.9	−0.84	+ 3.0	7.2/03.2	34575
(10331)	1999 04 09.6	13 11.44	−01 10.6	17.7	−0.58	+ 3.6	1.3/07.5	34144
1994 AW	1999 04 09.6	13 11.51	−06 34.9	17.7	−0.86	+ 5.6	0.3/09.3	34581
1999 FL_{34}	1999 04 09.6	13 11.56	+02 04.3	17.0	−0.77	+ 9.1	4.5/06.2	34561
(10654)	1999 04 09.6	13 11.59	+07 24.0	17.3	−0.65	+ 8.6	4.0/04.0	34476
(10466)	1999 04 09.7	13 11.74	−15 18.6	17.6	−0.99	+ 5.6	3.0/12.1	34428
1997 XA_{10}	1999 04 09.7	13 12.03	−03 02.7	16.9	−0.86	+ 4.1	1.8/08.4	34588
(8143)	1999 04 09.8	13 12.09	−04 42.3	17.2	−0.96	+ 4.8	1.0/08.9	31074
(8256)	1999 04 09.8	13 12.15	−02 36.1	17.0	−1.10	+ 3.9	1.9/08.5	31209
1997 YU_1	1999 04 09.8	13 12.26	−39 55.6	20.4	−1.16	+ 3.7	9.2/20.3	31424
(8194)	1999 04 09.8	13 12.43	−13 15.1	15.8	−1.04	+ 3.0	2.3/11.4	31085
(10535)	1999 04 09.9	13 12.46	−15 20.0	17.7	−0.80	+ 5.5	2.2/12.4	34445
1991 NE_3	1999 04 09.9	13 12.54	−00 05.0	16.5	−0.78	+ 6.7	2.4/07.4	20023
1996 TE	1999 04 09.9	13 12.69	−04 56.6	18.5	−0.82	+ 4.3	0.8/09.1	34585
1999 BR_6	1999 04 09.9	13 12.78	−03 01.6	17.9	−0.88	+ 2.9	1.6/08.6	34600
1997 UN_3	1999 04 09.9	13 12.80	−10 52.3	19.3	−0.87	+ 6.5	1.0/11.0	34587
(10627)	1999 04 10.0	13 12.82	+05 25.7	17.7	−0.74	+ 4.4	3.6/05.7	34470
1999 FL_{19}	1999 04 10.0	13 12.91	−02 31.4	17.3	−0.77	+ 4.6	1.7/08.4	34610
1999 EG_6	1999 04 10.0	13 13.12	−10 00.3	18.2	−1.13	− 1.5	1.0/10.6	34609
1996 TW_{59}	1999 04 10.1	13 13.14	−20 30.7	18.6	−0.93	+ 2.5	3.9/13.8	34295
1991 GZ_1	1999 04 10.1	13 13.24	+24 00.3	16.8	−1.74	−10.6	16.4/05.8	34577
1994 WY_2	1999 04 10.1	13 13.30	−15 45.5	17.3	−1.04	+ 6.5	3.1/12.6	34582
1989 ST_9	1999 04 10.1	13 13.35	−07 47.4	19.2	−0.99	+ 5.2	0.0/10.2	34176
1996 HH_{24}	1999 04 10.1	13 13.49	−01 29.3	17.8	−1.06	+ 5.5	2.4/08.3	34584
(10553)	1999 04 10.2	13 13.49	−03 55.5	18.7	−0.72	+ 4.6	1.1/09.0	34450
(10557)	1999 04 10.2	13 13.64	−12 17.0	17.4	−0.97	+ 5.4	1.7/11.6	34451
1997 YV_{13}	1999 04 10.2	13 13.74	−14 37.7	18.4	−0.85	+ 5.4	1.8/12.4	34589
1981 EH_{10}	1999 04 10.3	13 13.88	−17 02.5	18.9	−1.02	+ 4.5	3.3/13.0	26916
(8175)	1999 04 10.3	13 13.92	+09 10.2	16.8	−0.79	+ 3.5	5.1/04.8	31081
(10630)	1999 04 10.3	13 14.05	−09 16.6	16.7	−0.82	+ 4.6	0.5/10.8	34471
1996 TC_9	1999 04 10.3	13 14.16	−08 07.5	19.5	−0.78	+ 2.9	0.1/10.5	34516
1981 EA_{47}	1999 04 10.4	13 14.37	−13 12.8	20.0	−1.03	+ 4.0	1.9/12.0	26923
1997 YQ_{16}	1999 04 10.4	13 14.55	−04 42.1	18.5	−0.85	+ 4.6	0.9/09.5	31130
1998 CM_2	1999 04 10.4	13 14.57	−03 04.9	17.4	−0.91	+ 6.0	1.7/09.0	34590
(10459)	1999 04 10.5	13 14.88	−05 58.4	18.3	−0.97	+ 4.2	0.6/10.0	34426
6068 P-L	1999 04 10.6	13 15.04	−06 56.2	18.7	−0.74	+ 5.8	0.3/10.3	34566
1999 FW_4	1999 04 10.6	13 15.04	−08 24.1	16.6	−1.02	+ 3.5	0.2/10.7	34554
(10477)	1999 04 10.6	13 15.15	−01 49.3	18.2	−0.89	+ 8.3	2.1/08.6	34430
1998 BB_2	1999 04 10.6	13 15.21	+20 50.1	16.8	−0.79	+ 3.4	8.8/31.3	34589
1997 YH_4	1999 04 10.6	13 15.28	−04 56.2	17.9	−0.82	+ 4.3	0.9/09.7	34589
1997 XL_5	1999 04 10.7	13 15.34	+00 27.0	17.7	−0.84	+ 5.8	2.8/08.0	34588
1998 DV_1	1999 04 10.7	13 15.35	−26 19.2	17.1	−0.96	+ 3.6	5.4/16.3	31432
1997 YY_1	1999 04 10.7	13 15.46	−02 18.6	17.8	−0.81	+ 4.5	1.7/09.0	34589
1997 YC_1	1999 04 10.7	13 15.57	−03 06.2	17.8	−0.95	+ 5.1	1.6/09.3	34588
1981 EQ_{32}	1999 04 10.7	13 15.65	−13 27.9	18.0	−0.85	+ 6.7	1.7/12.5	34573
1999 GE_5	1999 04 10.7	13 15.75	+06 20.9	17.6	−0.79	+ 5.3	4.1/06.1	34563
6099 P-L	1999 04 10.7	13 15.76	−12 33.8	19.4	−0.94	+ 3.9	1.5/12.1	29649
1990 QK_8	1999 04 10.8	13 15.72	−04 26.0	17.3	−0.77	+ 4.9	1.1/09.7	34576
1999 FY_6	1999 04 10.8	13 15.77	−09 17.4	18.3	−1.05	+ 6.4	0.5/11.2	34555
1981 QD	1999 04 10.8	13 15.98	−11 41.5	17.8	−0.96	+ 5.0	1.3/12.0	34483
1999 EE_6	1999 04 10.8	13 15.99	−08 26.7	18.1	−1.05	+ 2.8	0.2/11.0	34553
(10599)	1999 04 10.9	13 16.18	−06 21.2	17.5	−0.80	+ 9.3	0.5/10.3	34463
(10508)	1999 04 11.0	13 16.44	−06 08.6	17.4	−0.90	+ 6.8	0.7/10.4	34438
1995 KF_4	1999 04 11.0	13 16.64	−14 48.9	16.7	−0.82	+ 8.8	2.2/13.4	34511
(10495)	1999 04 11.0	13 16.70	−10 23.5	17.1	−0.81	+ 6.9	0.7/11.8	34435
3075 T-1	1999 04 11.0	13 16.72	−08 55.2	17.4	−0.76	+ 4.4	0.2/11.3	34617
1993 QD_4	1999 04 11.0	13 16.78	−10 44.2	17.6	−1.01	+ 5.0	1.0/11.8	34503
(10468)	1999 04 11.1	13 16.84	−14 40.5	17.2	−0.91	+ 6.7	3.0/13.2	34428
1990 RH_7	1999 04 11.1	13 17.00	−05 15.4	19.2	−0.72	+ 4.1	0.7/10.2	23671
2055 P-L	1999 04 11.2	13 17.36	−19 37.1	17.1	−1.09	+ 0.2	5.3/14.0	34616
(10452)	1999 04 11.2	13 17.45	−07 38.7	16.5	−0.96	+ 7.9	0.2/11.1	34424
4166 T-1	1999 04 11.2	13 17.60	−08 23.6	18.1	−0.83	+ 2.2	0.1/11.4	34617
(10533)	1999 04 11.3	13 17.63	−07 19.8	17.5	−0.82	+ 4.7	0.3/11.1	34445

1283 T-2	1999 04 11.3	13 17.69	−07 56.2	18.2	−0.75	+ 4.8	0.1/11.3	34617
1996 VZ_{37}	1999 04 11.3	13 17.73	−06 49.2	19.9	−0.71	+ 4.2	0.4/10.9	34295
1999 FL_{31}	1999 04 11.3	13 17.85	−04 12.4	16.3	−0.95	+ 4.1	1.8/10.2	34560
3188 T-1	1999 04 11.4	13 17.99	+01 18.9	17.5	−0.64	+15.7	3.1/07.5	34617
1981 EO_{39}	1999 04 11.4	13 18.03	−05 57.1	18.9	−0.83	+ 5.5	0.7/10.7	28611
4044 P-L	1999 04 11.4	13 18.09	−14 02.1	18.1	−0.86	+ 2.6	1.7/13.1	34616
1996 US	1999 04 11.4	13 18.09	−08 19.4	18.1	−0.92	+ 4.0	0.0/11.5	34585
1998 AP_7	1999 04 11.4	13 18.15	−01 15.2	18.4	−0.84	+ 4.9	2.3/09.3	34589
1999 GU	1999 04 11.4	13 18.19	−08 35.2	17.9	−0.99	+ 5.3	0.1/11.6	34613
(10542)	1999 04 11.4	13 18.21	−09 46.8	16.2	−0.91	+ 7.9	0.7/12.0	34447
(10618)	1999 04 11.4	13 18.27	−07 30.2	18.1	−0.93	+ 6.5	0.3/11.2	34467
1999 FU	1999 04 11.5	13 18.44	−09 51.3	18.1	−0.81	+ 4.5	0.5/12.0	34554
1993 VZ_4	1999 04 11.5	13 18.45	−07 50.8	17.8	−0.93	+ 5.1	0.1/11.4	34581
1998 BB_{27}	1999 04 11.5	13 18.68	−09 57.7	18.7	−0.79	+ 4.6	0.5/12.1	34529
1996 SR	1999 04 11.6	13 18.63	−03 49.8	20.6	−0.84	+ 6.3	1.4/10.2	29947
1997 YY_8	1999 04 11.7	13 19.25	+15 57.3	16.9	−0.90	+ 2.7	7.7/04.3	34589
1988 CU_3	1999 04 11.7	13 19.30	−23 10.7	16.9	−0.82	+ 4.5	4.5/16.6	31273
1988 RE_1	1999 04 11.8	13 19.50	−06 05.0	17.0	−0.79	+ 9.7	0.7/11.0	34575
(8232)	1999 04 11.8	13 19.67	−09 29.2	17.7	−0.97	+ 4.7	0.4/12.2	31093
1996 TK_{11}	1999 04 11.8	13 19.70	−07 34.8	19.8	−0.80	+ 4.1	0.2/11.6	34516
1998 DP	1999 04 11.8	13 19.77	+12 36.9	17.1	−0.73	+ 4.2	5.6/04.7	34590
1995 SY_{29}	1999 04 11.8	13 19.77	−09 09.8	17.8	−0.75	+ 4.6	0.2/12.1	34512
(10471)	1999 04 11.9	13 20.12	−07 04.5	17.9	−0.82	+ 6.2	0.5/11.5	34429
1997 SB_{34}	1999 04 12.0	13 20.21	−06 35.8	16.8	−1.08	+ 4.2	0.7/11.5	34587
1997 TV_{22}	1999 04 12.0	13 20.43	−10 21.2	19.0	−1.05	+ 3.1	0.7/12.6	34587
1997 UM_3	1999 04 12.0	13 20.51	−10 21.3	17.3	−0.97	+ 5.1	0.6/12.6	34587
(10591)	1999 04 12.1	13 20.51	−02 22.2	17.6	−0.87	+ 4.5	2.1/10.3	34460
1992 CR_2	1999 04 12.1	13 20.71	−08 31.6	16.2	−0.92	+ 8.6	0.0/12.2	34578
(10484)	1999 04 12.1	13 20.83	−16 36.7	16.9	−0.95	+ 7.2	3.1/14.8	34432
1999 BB_{14}	1999 04 12.1	13 20.83	−15 07.7	16.4	−1.22	− 5.9	3.2/13.3	34601
1989 RN_2	1999 04 12.1	13 20.92	−18 27.0	17.6	−0.87	+ 1.9	3.0/15.0	34575
1998 BA_{20}	1999 04 12.2	13 20.93	−08 33.4	18.3	−0.82	+ 5.0	0.0/12.2	34590
4168 P-L	1999 04 12.2	13 21.02	−11 44.0	17.9	−0.84	+ 5.2	1.1/13.2	31161
1997 WL_{37}	1999 04 12.2	13 21.03	−08 10.9	19.3	−0.91	+ 6.4	0.1/12.1	34588
1993 TJ_{15}	1999 04 12.2	13 21.08	−08 24.3	17.3	−1.12	+ 1.8	0.1/12.2	34581
(10648)	1999 04 12.2	13 21.17	−09 09.2	18.1	−0.79	+ 6.9	0.2/12.5	34475
(10540)	1999 04 12.3	13 21.32	+01 39.2	18.0	−0.73	+ 4.3	2.7/09.1	34447
1996 UQ_3	1999 04 12.3	13 21.32	−11 38.7	16.0	−1.05	0.0	1.2/13.1	34585
1997 YG_1	1999 04 12.3	13 21.40	−04 57.7	17.3	−0.95	+ 4.5	1.4/11.3	34589
1976 UP_{18}	1999 04 12.3	13 21.41	−05 16.9	19.4	−0.92	+ 7.7	1.1/11.3	34280
1999 BJ_{14}	1999 04 12.3	13 21.51	+04 57.5	17.7	−0.79	+ 8.6	4.3/07.6	34539
(8655)	1999 04 12.3	13 21.61	−15 34.1	17.5	−1.05	+ 4.9	2.5/14.4	34572
1990 QO_4	1999 04 12.3	13 21.62	−16 22.3	17.4	−0.88	+ 2.2	2.4/14.6	34576
1998 CL_2	1999 04 12.3	13 21.64	+00 50.7	19.2	−0.88	+ 4.9	3.1/09.5	34590
1981 EL_{27}	1999 04 12.4	13 21.61	−07 30.6	19.2	−0.82	+ 5.9	0.4/12.1	26920
1999 FM_{31}	1999 04 12.4	13 21.74	−04 46.6	17.3	−0.85	+ 6.6	1.7/11.2	34560
(10600)	1999 04 12.4	13 21.78	−05 05.9	17.7	−0.88	+ 5.8	1.1/11.3	34463
1998 BR_1	1999 04 12.4	13 21.82	−04 52.3	17.3	−0.98	+ 4.3	1.2/11.4	34528
1997 VS_3	1999 04 12.4	13 21.95	−04 06.9	18.2	−0.95	+ 5.0	1.5/11.1	34587
1979 MG_6	1999 04 12.5	13 22.10	−17 27.2	17.6	−0.98	+ 7.1	3.6/15.3	34572
(8302)	1999 04 12.5	13 22.27	−00 26.7	17.4	−0.98	+ 4.9	2.9/10.1	31219
1997 UO_1	1999 04 12.5	13 22.27	−13 25.6	18.3	−1.01	+ 6.9	1.7/14.0	31280
1999 FQ_{32}	1999 04 12.5	13 22.27	−05 30.9	18.0	−0.95	+ 3.9	1.4/11.7	34560
(10545)	1999 04 12.5	13 22.39	−08 00.0	17.0	−0.97	+ 7.1	0.3/12.4	34448
1990 QT_8	1999 04 12.6	13 22.54	−01 30.1	17.4	−0.98	+ 7.8	3.2/10.3	34576
(10631)	1999 04 12.7	13 22.68	−12 13.5	17.4	−0.75	+ 4.7	1.0/13.8	34471
1998 BC_{12}	1999 04 12.7	13 22.78	+09 48.9	16.9	−0.76	+ 4.1	5.6/06.6	34590
1981 EG_7	1999 04 12.7	13 23.09	−20 40.7	18.6	−0.99	+ 4.6	5.0/16.4	26916
1996 XY_{25}	1999 04 12.8	13 23.06	+08 58.4	18.3	−0.80	+ 6.8	5.3/06.7	34586
1981 EU_{37}	1999 04 12.9	13 23.47	−15 04.5	20.3	−0.85	+ 5.7	2.1/14.9	22430
(8347)	1999 04 12.9	13 23.49	−10 32.4	16.6	−0.90	+ 5.1	0.6/13.4	31354
(10615)	1999 04 12.9	13 23.71	−11 47.5	18.5	−0.93	+ 6.6	1.0/14.0	34467
1999 BT_6	1999 04 13.0	13 23.80	−01 35.1	17.5	−1.01	+ 4.4	3.0/10.9	34600
1990 RX_8	1999 04 13.0	13 23.88	−14 50.5	17.8	−1.01	+ 7.1	2.2/14.9	25649
1987 SF_5	1999 04 13.2	13 24.56	−13 48.3	18.6	−1.04	+ 5.3	1.8/14.6	34574
2042 T-2	1999 04 13.2	13 24.95	−06 52.9	19.2	−0.80	+ 5.4	0.6/12.6	34567
1997 WN_{24}	1999 04 13.3	13 25.10	−07 30.3	19.4	−1.01	+ 4.1	0.5/12.9	34212
(10604)	1999 04 13.3	13 25.13	−00 19.2	17.7	−0.78	+ 2.4	2.3/10.8	34464
(8242)	1999 04 13.3	13 25.17	−07 53.0	16.9	−0.89	+ 1.6	0.3/13.1	31206
1978 RN_5	1999 04 13.4	13 25.27	−17 05.1	18.7	−0.89	+ 3.1	2.1/15.7	34572
1985 RP_3	1999 04 13.4	13 25.38	−10 21.3	16.8	−1.00	+ 4.6	0.6/13.8	34574
1993 RX_5	1999 04 13.4	13 25.57	−08 10.4	18.0	−0.98	+ 7.1	0.3/13.2	30980
1996 QX_1	1999 04 13.4	13 25.63	−27 28.5	17.9	−0.94	+ 3.5	5.4/19.1	34584
(10628)	1999 04 13.4	13 25.68	−01 28.1	17.2	−0.73	+ 5.7	2.4/11.0	34470
4843 T-1	1999 04 13.5	13 25.80	−06 41.8	17.9	−0.82	+ 2.5	0.8/12.9	21124
1989 WC_2	1999 04 13.5	13 25.89	+02 11.3	17.3	−0.96	+ 2.8	3.9/10.5	34576
1981 EZ_{44}	1999 04 13.5	13 25.90	−09 55.3	19.4	−0.91	+ 8.3	0.3/13.9	26923
1996 VK_8	1999 04 13.7	13 26.39	−14 27.7	19.2	−0.83	+ 4.6	1.4/15.4	34585
2767 P-L	1999 04 13.7	13 26.41	−05 41.0	17.7	−0.73	+ 4.1	0.9/12.6	34616
1999 FH_3	1999 04 13.7	13 26.41	−07 01.5	18.9	−0.87	+ 6.2	0.8/13.1	34554
1990 WO_3	1999 04 13.7	13 26.52	−04 02.2	17.3	−0.94	+ 7.1	1.8/12.2	34492
1989 CH_3	1999 04 13.7	13 26.61	−18 58.1	18.6	−0.85	+ 5.9	3.1/17.0	31416
1997 UY_2	1999 04 13.7	13 26.67	−14 32.0	19.0	−0.93	+ 8.5	1.8/15.5	34587
1996 ON	1999 04 13.8	13 26.90	−14 58.8	19.2	−0.97	+ 5.9	2.0/15.6	34584
9086 P-L	1999 04 13.8	13 27.03	−10 37.5	20.3	−0.97	+ 7.0	0.5/14.3	27328
1997 WP_{21}	1999 04 13.8	13 27.08	+18 26.3	15.2	−0.80	+ 1.8	8.3/05.1	34524
1994 CA_5	1999 04 13.9	13 27.32	−14 23.6	18.7	−0.90	+ 4.5	1.6/15.5	34582
(10517)	1999 04 13.9	13 27.45	−01 05.2	16.4	−0.90	+ 3.0	3.3/11.7	34441
1996 PB_1	1999 04 13.9	13 27.49	−11 35.6	19.0	−1.00	+ 5.0	0.9/14.7	34584
(10385)	1999 04 13.9	13 27.55	−03 52.3	16.8	−0.96	+ 1.9	1.7/12.6	34156
2061 P-L	1999 04 14.0	13 27.53	−19 00.1	16.6	−0.96	+ 2.8	4.7/16.8	34564
1999 FG_3	1999 04 14.1	13 28.17	−07 09.1	18.0	−0.82	+ 7.2	1.0/13.5	34554
1999 BH_{14}	1999 04 14.1	13 28.30	−04 35.9	16.8	−1.04	+ 3.0	2.1/13.0	34601
(8329)	1999 04 14.3	13 28.60	−06 33.4	15.9	−0.77	+ 3.9	0.9/13.5	31350
1997 SU_{10}	1999 04 14.3	13 28.79	−11 51.8	18.2	−0.98	+ 6.9	0.9/15.1	31145
(10576)	1999 04 14.3	13 28.80	−00 52.5	16.9	−0.94	+ 3.2	3.1/12.0	34456
(10467)	1999 04 14.4	13 29.05	−11 51.8	18.2	−0.83	+ 6.5	0.8/15.2	34428
1979 MQ_5	1999 04 14.4	13 29.16	−21 02.2	19.6	−0.78	+ 5.2	3.4/18.2	31223
1991 RB_{12}	1999 04 14.4	13 29.18	−27 42.9	18.7	−0.92	+ 3.1	5.2/20.0	34578
(10665)	1999 04 14.4	13 29.25	−06 23.6	17.2	−0.78	+ 7.4	0.9/13.5	34479
1999 BW_6	1999 04 14.4	13 29.25	−01 30.9	17.3	−0.87	+ 3.7	2.8/12.2	34600
1991 VP_7	1999 04 14.4	13 29.25	−12 37.5	17.3	−0.73	+ 8.6	1.0/15.6	34578

1996 VU_2	1999 04 14.5	13 29.63	−07 25.2	19.4	−0.72	+ 4.6	0.5/13.9	34585
1993 FS_{38}	1999 04 14.5	13 29.75	−08 04.7	18.4	−0.76	+ 3.1	0.4/14.2	34580
1999 BA_{14}	1999 04 14.6	13 29.82	−04 31.6	16.8	−1.01	+ 2.6	2.3/13.3	34601
(10488)	1999 04 14.6	13 29.82	−09 12.6	17.1	−0.98	+ 4.8	0.1/14.6	34433
1996 HY_{12}	1999 04 14.6	13 30.15	−09 01.9	17.2	−1.02	+ 7.1	0.2/14.6	34584
1997 UP_7	1999 04 14.7	13 30.22	−12 29.8	18.5	−0.94	+ 4.8	1.0/15.6	34520
(10609)	1999 04 14.7	13 30.32	−08 10.2	19.1	−0.80	+ 7.6	0.4/14.3	34465
(8696)	1999 04 14.7	13 30.37	−03 08.0	18.3	−0.73	+ 3.4	1.7/12.8	31686
(8426)	1999 04 14.7	13 30.44	−10 08.0	16.6	−0.95	+ 7.2	0.3/15.0	31371
1999 FE_1	1999 04 14.8	13 30.47	−09 47.6	18.1	−0.82	+ 4.1	0.1/14.9	34554
(10332)	1999 04 14.8	13 30.60	+01 41.5	16.0	−0.75	+12.7	4.2/10.6	34144
1999 CD_{10}	1999 04 14.9	13 31.00	+08 59.2	17.0	−0.82	+ 4.3	6.5/09.0	34602
1993 PZ_2	1999 04 14.9	13 31.00	−11 21.0	18.0	−0.60	+ 4.1	0.4/15.5	34580
1989 RT	1999 04 15.0	13 31.19	−20 51.6	16.9	−1.06	+ 3.5	4.6/18.1	34575
1997 VJ_6	1999 04 15.0	13 31.27	−11 59.3	17.5	−0.95	+ 3.8	0.9/15.7	34588
1997 YQ_1	1999 04 15.0	13 31.43	−10 09.9	17.8	−1.00	+ 3.7	0.2/15.2	34589
(10536)	1999 04 15.1	13 31.62	−10 54.2	16.5	−0.83	+ 4.4	0.4/15.5	34446
2252 T-2	1999 04 15.1	13 31.70	−15 30.4	18.5	−0.89	+ 2.9	1.7/16.8	19329
1981 ET_{10}	1999 04 15.1	13 31.71	−27 33.8	17.0	−1.06	+ 0.6	6.7/19.7	34573
1979 MW_2	1999 04 15.1	13 31.77	−06 21.1	18.8	−0.73	+ 5.0	0.9/14.1	28610
1999 HR_2	1999 04 15.2	13 32.23	+02 16.8	16.5	−1.00	− 0.2	4.2/12.4	34564
(10489)	1999 04 15.2	13 32.36	−09 04.5	16.5	−0.87	+ 1.9	0.2/15.1	34434
(10588)	1999 04 15.2	13 32.37	−07 01.4	18.8	−0.96	+ 4.5	1.0/14.5	34459
(8071)	1999 04 15.3	13 32.37	−05 12.9	16.4	−0.91	+ 6.8	1.8/13.9	30960
(10530)	1999 04 15.4	13 32.77	−16 35.3	16.5	−1.01	+ 2.9	2.8/17.3	34444
1997 WF_{43}	1999 04 15.4	13 32.82	+01 37.2	16.7	−1.00	+ 3.5	4.8/12.2	34525
1996 TT_{54}	1999 04 15.4	13 32.93	+17 01.4	18.0	−0.78	+ 8.9	8.7/05.2	31144
(10520)	1999 04 15.5	13 33.34	−13 16.7	17.2	−1.01	+ 5.8	1.3/16.6	34442
1981 EL_{38}	1999 04 15.6	13 33.48	−05 05.0	18.7	−0.78	+ 9.2	1.6/14.0	34573
1999 FC_7	1999 04 15.6	13 33.75	−10 34.3	18.4	−0.96	+ 1.8	0.2/15.9	34610
1996 TV_{17}	1999 04 15.7	13 33.83	−10 17.6	20.4	−0.90	+ 3.5	0.2/15.9	34585
(8409)	1999 04 15.7	13 33.85	−15 14.4	17.9	−0.73	+ 4.5	1.4/17.4	31367
1998 AO_9	1999 04 15.7	13 33.85	−08 29.7	18.7	−0.81	+ 4.0	0.4/15.3	31261
1993 SJ_5	1999 04 15.8	13 34.19	−17 25.0	16.5	−1.06	+ 3.2	3.0/17.9	34581
1996 TK_7	1999 04 15.8	13 34.20	−08 10.0	19.4	−0.77	+ 4.7	0.5/15.3	34585
1992 GW_4	1999 04 15.8	13 34.30	−06 08.6	16.9	−1.06	+ 1.0	1.7/14.9	34579
1981 EH_{35}	1999 04 15.9	13 34.61	−14 50.4	19.0	−1.03	+ 5.2	1.8/17.4	34573
(10294)	1999 04 16.0	13 34.96	−00 47.1	17.2	−1.00	+ 4.5	3.5/13.4	34135
1993 SS_6	1999 04 16.0	13 35.10	−12 13.4	15.8	−0.91	+ 5.8	1.0/16.8	34581
(10580)	1999 04 16.1	13 35.30	−19 20.5	16.5	−1.00	+ 1.7	3.7/18.5	34457
1992 SF_{14}	1999 04 16.1	13 35.37	−19 52.1	18.7	−0.85	+ 8.0	2.7/19.4	27914
1993 TM	1999 04 16.1	13 35.38	−09 51.7	17.5	−1.03	+ 3.2	0.0/16.1	34581
1997 VY_4	1999 04 16.2	13 35.80	−00 18.2	19.9	−1.03	+ 2.0	3.2/13.7	31149
1981 EV_{30}	1999 04 16.2	13 35.91	−14 36.9	19.0	−0.88	+ 4.3	1.5/17.6	26920
1996 UN_1	1999 04 16.3	13 36.01	−27 42.7	17.7	−0.91	+ 6.7	5.9/22.1	34517
(8211)	1999 04 16.3	13 36.17	−04 42.4	17.5	−0.95	+ 5.5	1.8/14.8	31089
1998 CC_4	1999 04 16.3	13 36.26	−24 14.9	17.8	−0.84	+ 3.6	4.0/20.7	31799
1997 SO_{33}	1999 04 16.3	13 36.36	−09 20.6	18.0	−1.01	+ 4.3	0.3/16.2	34519
1997 XY	1999 04 16.4	13 36.43	−15 03.5	19.2	−0.92	+ 4.7	1.6/17.9	31123
1188 T-3	1999 04 16.4	13 36.45	−20 38.0	18.4	−0.99	+ 4.4	3.8/19.5	31295
(9451)	1999 04 16.4	13 36.57	−07 32.9	16.3	−0.74	+ 4.7	0.8/15.7	34280
1978 TR_7	1999 04 16.4	13 36.65	+03 20.1	17.2	−0.84	+ 3.5	4.0/12.5	34480
(10603)	1999 04 16.5	13 36.85	−07 37.4	17.9	−0.84	+ 3.6	0.7/15.8	34464
1981 ER_{27}	1999 04 16.5	13 37.11	−15 40.3	18.2	−1.06	+ 3.1	2.0/18.1	34573
6102 P-L	1999 04 16.6	13 37.19	−09 54.0	19.6	−0.93	+ 6.0	0.1/16.6	31267
1997 WQ_2	1999 04 16.6	13 37.34	+00 15.1	18.2	−0.97	+ 4.2	3.8/13.7	34588
1981 EM_{40}	1999 04 16.7	13 37.71	−05 17.3	19.5	−0.83	+ 5.1	1.5/15.3	28611
(10595)	1999 04 16.8	13 37.84	−06 51.7	17.2	−0.81	+ 4.0	1.0/15.8	34461
(8320)	1999 04 16.8	13 37.90	−08 20.1	17.4	−0.91	+ 5.9	0.6/16.3	31348
1981 EH_{38}	1999 04 16.8	13 37.98	−10 55.2	18.0	−0.90	+ 8.0	0.3/17.1	26922
(10663)	1999 04 16.8	13 37.99	−06 13.2	17.8	−0.75	+ 4.3	1.2/15.6	34479
1996 VG_5	1999 04 16.8	13 38.16	−08 14.0	17.0	−0.89	+ 3.4	0.6/16.3	34585
(10352)	1999 04 16.8	13 38.18	−08 40.8	16.5	−1.03	+ 1.4	0.5/16.5	34148
1993 FW_{40}	1999 04 16.8	13 38.22	−07 08.0	17.4	−0.75	+ 4.1	0.9/15.9	33684
1988 EP	1999 04 16.9	13 38.28	+06 14.3	15.7	−0.59	+11.7	8.0/10.2	34487
(8149)	1999 04 16.9	13 38.55	+01 13.5	15.8	−0.98	+ 3.2	5.2/13.7	31075
(8274)	1999 04 16.9	13 38.60	−05 18.2	18.1	−0.99	+ 4.9	1.7/15.6	31213
1997 YX_2	1999 04 17.0	13 38.65	−11 17.1	18.3	−0.80	+ 4.2	0.3/17.3	34589
1997 UU	1999 04 17.1	13 39.09	−12 34.1	18.7	−0.93	+ 8.2	0.9/17.9	31146
4314 P-L	1999 04 17.1	13 39.13	−16 23.3	19.5	−0.86	+ 3.6	1.6/18.9	14629
(10475)	1999 04 17.1	13 39.23	−22 48.2	17.5	−1.00	+ 4.6	5.4/20.8	34430
1996 VA_{27}	1999 04 17.1	13 39.27	−08 52.2	19.5	−0.74	+ 4.5	0.5/16.7	34585
1996 VP_1	1999 04 17.2	13 39.74	−28 11.9	17.5	−0.93	+ 5.5	5.2/22.8	34585
1995 DE_9	1999 04 17.4	13 40.07	−11 19.7	20.6	−0.98	+ 4.7	0.3/17.7	32944
1996 QE	1999 04 17.4	13 40.17	+01 27.4	18.2	−0.80	+ 8.8	3.8/13.3	34584
(10569)	1999 04 17.4	13 40.18	−04 05.2	16.6	−0.95	+ 0.2	2.2/15.9	34454
1997 XR_8	1999 04 17.4	13 40.25	−07 25.4	19.9	−0.74	+ 4.0	0.8/16.5	32314
1997 UK_{21}	1999 04 17.4	13 40.30	−10 48.6	17.3	−0.94	+ 3.8	0.1/17.6	34587
1993 QO	1999 04 17.5	13 40.51	−44 57.2	18.6	−1.31	+ 2.1	10.5/27.9	31419
1981 EE_6	1999 04 17.5	13 40.65	−20 36.5	18.8	−0.83	+ 6.4	4.0/20.8	26915
1996 TS_{14}	1999 04 17.5	13 40.67	−11 47.8	17.7	−0.82	+ 4.2	0.4/18.0	34516
1981 EC_{40}	1999 04 17.5	13 40.70	−26 31.1	19.7	−0.92	+ 4.2	4.6/22.4	26922
4120 T-2	1999 04 17.6	13 40.93	−03 58.6	18.9	−0.97	+ 6.1	2.3/15.7	31132
1148 T-3	1999 04 17.6	13 40.98	−19 01.6	18.1	−0.84	+ 5.0	2.4/20.2	34618
1166 T-2	1999 04 17.6	13 41.13	−17 57.2	18.0	−1.07	+ 1.5	3.2/19.0	28088
(10453)	1999 04 17.6	13 41.20	−09 55.5	16.9	−0.81	+ 4.0	0.2/17.5	34425
1997 XR_{10}	1999 04 17.7	13 41.21	−10 01.5	17.6	−0.92	+ 4.1	0.2/17.6	34526
1989 CH	1999 04 17.8	13 41.92	+15 59.4	16.2	−0.74	+ 5.5	10.0/08.6	34575
1992 CU_2	1999 04 17.9	13 41.91	−21 51.3	17.7	−0.76	+ 4.5	3.1/21.5	34578
1995 QS_3	1999 04 17.9	13 41.98	−29 01.5	17.4	−0.82	+ 3.3	4.9/23.6	34583
1998 FT_{12}	1999 04 17.9	13 42.03	+03 59.1	19.2	−0.98	+ 4.8	5.0/13.7	32754
1996 QP_1	1999 04 17.9	13 42.09	−07 24.9	18.3	−0.94	+ 6.2	1.1/17.0	34584
(8146)	1999 04 18.0	13 42.36	+04 37.0	16.7	−0.91	+ 1.9	5.2/13.9	31074
(10605)	1999 04 18.0	13 42.50	−11 55.7	17.7	−0.79	+ 4.5	0.4/18.4	34464
(8268)	1999 04 18.0	13 42.57	−01 50.0	17.3	−0.82	+ 4.9	3.0/15.4	31212
1997 WU_7	1999 04 18.0	13 42.58	−08 21.7	17.1	−1.02	+ 1.8	0.7/17.5	34588
1998 AY_6	1999 04 18.0	13 42.61	−08 27.1	18.4	−0.80	+ 4.1	0.6/17.4	32314
1996 UU_1	1999 04 18.1	13 42.68	−12 58.3	18.2	−0.80	+ 3.2	0.7/18.8	34585
1997 YE_8	1999 04 18.1	13 42.73	−05 25.6	18.7	−0.87	+ 7.2	1.7/16.5	34589
2315 T-2	1999 04 18.1	13 42.85	−08 46.1	20.7	−0.81	+ 4.9	0.5/17.6	16883
6840 P-L	1999 04 18.1	13 42.96	−06 23.5	20.7	−0.90	+ 5.0	1.4/16.9	31294
1997 WU_{31}	1999 04 18.1	13 43.00	−13 12.3	18.7	−0.89	+ 6.0	0.8/19.0	31282

(10504)	1999 04 18.1	13 43.00	−06 20.8	17.4	−0.85	+ 3.6	1.3/16.9	34437
1998 BW_{43}	1999 04 18.2	13 43.12	−08 43.2	17.8	−0.86	+ 3.0	0.5/17.7	34590
1995 DZ_{8}	1999 04 18.2	13 43.42	−12 31.6	18.0	−0.99	+ 4.4	0.7/19.0	34583
(10597)	1999 04 18.3	13 43.72	+03 13.4	16.4	−0.90	+ 9.5	5.4/13.5	34462
1997 WB_{2}	1999 04 18.4	13 44.03	−07 48.2	18.8	−0.94	+ 5.9	1.0/17.6	31151
1995 BD_{1}	1999 04 18.5	13 44.23	−03 53.9	17.8	−0.99	+ 5.1	2.5/16.6	34582
(10562)	1999 04 18.5	13 44.38	−27 22.7	16.4	−1.37	− 2.0	6.1/21.9	34452
1998 BM_{7}	1999 04 18.5	13 44.44	+09 08.3	16.4	−0.73	+ 4.7	6.2/11.9	31264
1997 YP_{14}	1999 04 18.6	13 44.93	−12 22.2	18.2	−0.81	+ 4.3	0.5/19.1	34589
1997 SB_{2}	1999 04 18.6	13 44.96	−12 03.3	17.9	−1.08	+ 3.6	0.5/19.0	34586
1995 DH_{5}	1999 04 18.7	13 44.93	−12 11.2	18.5	−0.96	+ 6.1	0.6/19.0	34510
1998 BA_{34}	1999 04 18.7	13 45.05	+02 07.1	18.1	−0.80	+ 2.3	3.7/15.0	34590
(8356)	1999 04 18.7	13 45.06	−34 29.6	17.5	−1.23	+ 0.6	7.0/24.8	31356
1998 BD_{41}	1999 04 18.8	13 45.50	−09 35.1	19.1	−0.96	+ 3.8	0.4/18.5	34529
1976 QS	1999 04 18.8	13 45.51	−20 13.5	17.6	−1.13	+ 4.0	3.6/21.3	34572
1996 NY_{3}	1999 04 18.8	13 45.68	+03 16.5	18.2	−0.85	+ 6.6	4.9/14.3	28319
1997 VQ_{5}	1999 04 18.9	13 45.67	−07 44.3	19.0	−0.97	+ 4.4	1.1/18.0	31149
(10544)	1999 04 18.9	13 45.74	−16 04.0	16.6	−1.17	+ 1.7	2.2/20.1	34448
4349 T-1	1999 04 18.9	13 45.78	−00 48.2	18.2	−0.79	+ 6.0	2.8/15.7	34617
1993 FD_{42}	1999 04 18.9	13 45.98	−10 37.9	18.5	−0.73	+ 3.9	6.1/30.0	32230
(10506)	1999 04 18.9	13 46.07	−18 02.3	17.0	−0.78	+ 5.8	2.2/21.2	34438
1998 BG_{11}	1999 04 19.0	13 46.26	−00 11.8	17.0	−0.84	+ 4.3	3.7/15.8	34590
1993 OW_{6}	1999 04 19.0	13 46.31	−04 35.2	17.5	−0.97	+ 5.8	2.3/17.2	31139
1993 FR_{1}	1999 04 19.0	13 46.31	−03 56.3	16.5	−0.77	+ 3.3	2.1/17.0	34500
1998 BT_{14}	1999 04 19.0	13 46.36	−25 07.6	16.6	−0.83	+ 4.4	4.6/23.5	34529
1997 WV_{2}	1999 04 19.1	13 46.76	−18 44.1	16.5	−0.96	+ 6.1	2.8/21.5	34588
1997 AU_{3}	1999 04 19.2	13 46.83	−24 04.3	18.0	−0.89	+ 2.7	3.7/22.9	34586
1998 DT_{1}	1999 04 19.2	13 47.04	−06 44.5	18.4	−0.70	+ 4.3	1.2/17.9	34590
(10507)	1999 04 19.2	13 47.07	−11 25.4	16.0	−1.07	+ 1.5	0.2/19.4	34438
1996 MN	1999 04 19.2	13 47.08	−20 04.5	18.3	−1.01	+ 6.7	3.7/22.0	34584
1986 TS	1999 04 19.3	13 47.38	−27 32.8	18.8	−0.88	+ 2.8	4.2/24.2	34574
1990 UY_{3}	1999 04 19.3	13 47.48	−01 19.9	17.9	−0.76	+ 2.9	2.5/16.5	34577
1992 UB_{3}	1999 04 19.3	13 47.55	−04 53.9	17.0	−0.97	+ 1.5	2.0/17.8	34499
1998 BH_{1}	1999 04 19.3	13 47.58	−04 59.1	18.7	−1.00	+ 4.4	2.1/17.7	34589
1981 EB_{37}	1999 04 19.4	13 47.51	−18 37.3	17.7	−0.96	+ 2.2	2.7/21.4	34573
1998 BE	1999 04 19.4	13 47.53	−08 54.3	17.0	−0.91	+ 2.8	0.7/18.8	34589
1991 LW	1999 04 19.4	13 47.68	+11 20.2	16.2	−0.91	+ 0.6	10.0/13.1	34577
(8255)	1999 04 19.6	13 48.26	−13 47.9	17.0	−0.87	+ 4.9	0.9/20.4	31209
1997 YP_{8}	1999 04 19.6	13 48.30	+10 26.5	16.6	−0.76	+ 3.0	7.1/12.8	32314
1993 RH_{9}	1999 04 19.6	13 48.39	−13 08.2	19.7	−0.96	+ 5.6	0.7/20.2	34581
1996 UA	1999 04 19.6	13 48.55	−15 31.9	17.4	−1.03	+ 1.1	1.5/20.7	34585
5564 P-L	1999 04 19.6	13 48.64	−08 49.8	19.7	−0.97	+ 4.4	0.8/19.0	30914
2012 P-L	1999 04 19.7	13 48.86	−18 07.8	20.0	−0.88	+ 3.3	1.8/21.7	27938
1991 RB_{13}	1999 04 19.8	13 49.14	−19 55.9	18.4	−0.89	+ 3.2	2.5/22.3	34578
1979 MD_{2}	1999 04 19.8	13 49.18	−08 56.6	17.6	−0.97	+ 6.7	0.8/19.2	34481
1999 BL_{9}	1999 04 19.9	13 49.39	−01 47.3	16.5	−0.81	+ 9.7	3.2/16.7	34539
1998 CC_{1}	1999 04 20.0	13 49.79	+03 24.8	18.0	−0.80	+ 5.8	4.7/15.3	34590
4313 T-3	1999 04 20.0	13 49.88	−05 58.4	17.5	−1.00	+ 5.5	2.0/18.5	34618
1995 CR_{1}	1999 04 20.0	13 49.90	−08 18.7	18.6	−0.88	+16.8	1.2/18.9	34510
2716 P-L	1999 04 20.0	13 50.08	−07 49.3	19.6	−0.96	+ 6.3	1.3/19.0	27732
1997 UU_{10}	1999 04 20.0	13 50.18	−12 21.8	17.3	−1.00	+ 3.3	0.4/20.4	34587
1998 BV_{24}	1999 04 20.1	13 50.29	−04 06.4	17.8	−0.78	+ 3.3	2.1/18.0	34529
1988 VQ_{3}	1999 04 20.1	13 50.45	−18 13.1	16.8	−0.81	+ 9.2	2.4/22.5	34575
1998 EE_{9}	1999 04 20.1	13 50.47	−18 17.4	17.6	−0.86	+ 2.2	2.1/22.1	34590
1998 AW_{8}	1999 04 20.1	13 50.48	−13 24.5	18.5	−0.97	+ 7.5	0.8/20.8	34589
1997 SO_{25}	1999 04 20.2	13 50.57	−16 21.6	17.9	−1.01	+ 6.2	2.1/21.7	34587
1993 HV_{1}	1999 04 20.3	13 51.01	−06 53.1	18.8	−1.02	− 1.7	1.4/19.3	26191
(10652)	1999 04 20.3	13 51.06	−14 10.7	18.6	−0.90	+ 3.2	0.9/21.1	34476
1979 UR	1999 04 20.4	13 51.28	−14 17.2	17.6	−0.93	+ 3.2	0.9/21.2	23969
1994 EY_{5}	1999 04 20.4	13 51.29	−01 07.8	17.2	−0.83	+ 4.5	3.4/17.3	34582
1998 BD_{8}	1999 04 20.4	13 51.56	−30 13.2	17.6	−1.01	+ 2.7	5.7/25.7	34589
1997 YS_{19}	1999 04 20.5	13 51.92	−01 21.4	17.8	−0.97	+ 3.2	3.7/17.8	34528
(8118)	1999 04 20.5	13 51.98	−10 43.5	15.7	−0.77	+11.2	0.3/20.3	30970
7622 P-L	1999 04 20.5	13 52.04	−08 41.6	17.4	−1.08	+ 3.4	1.0/19.9	34617
1997 WP_{2}	1999 04 20.6	13 52.06	+04 26.0	16.7	−0.93	+ 2.0	5.7/16.4	34588
1993 BY_{2}	1999 04 20.6	13 52.10	−20 34.5	17.0	−0.83	+ 4.1	3.0/23.3	31103
1992 UO_{5}	1999 04 20.6	13 52.41	+00 40.8	17.2	−0.88	+ 2.6	4.0/17.3	34579
5069 T-2	1999 04 20.7	13 52.68	−16 38.1	18.2	−0.81	+ 5.7	1.4/22.3	31609
1993 FE_{78}	1999 04 20.8	13 52.81	−11 29.5	18.6	−0.75	+ 4.5	0.0/20.8	32664
1993 FU_{35}	1999 04 20.8	13 52.89	−08 10.1	17.4	−0.73	+ 3.9	0.9/19.8	31276
1990 QL_{1}	1999 04 20.9	13 53.48	−01 07.5	18.4	−0.69	+ 5.0	2.6/17.7	34490
1998 DP_{22}	1999 04 21.0	13 53.63	−27 26.0	20.7	−0.94	+ 3.6	4.6/25.6	32971
1992 HA	1999 04 21.0	13 53.80	−08 46.1	16.2	−1.07	+ 1.5	1.3/20.4	34497
1997 VA_{5}	1999 04 21.1	13 53.85	−06 22.3	18.5	−1.03	+ 3.5	1.9/19.7	31281
4601 P-L	1999 04 21.1	13 53.92	−08 29.7	18.0	−0.80	+ 3.9	0.9/20.2	34616
1981 ER_{21}	1999 04 21.1	13 53.94	−04 57.6	18.5	−0.70	+ 4.6	1.7/19.0	34573
1981 ET_{34}	1999 04 21.1	13 53.97	−12 51.2	19.0	−0.84	+ 7.7	0.4/21.5	34573
1996 TE_{8}	1999 04 21.1	13 54.17	−00 14.7	19.0	−0.79	+ 7.1	3.4/17.4	34585
1990 QV_{2}	1999 04 21.1	13 54.19	−03 10.8	17.4	−0.73	+ 6.8	2.6/18.4	34576
1981 EP_{8}	1999 04 21.1	13 54.24	−30 59.0	19.0	−1.01	− 0.4	8.6/26.0	26916
(8375)	1999 04 21.2	13 54.46	−12 45.3	17.0	−0.74	+ 4.1	0.3/21.6	31360
1998 BQ_{40}	1999 04 21.3	13 54.62	−17 11.5	18.1	−0.88	+ 3.7	1.8/22.8	34590
(8444)	1999 04 21.3	13 54.69	−13 52.2	16.8	−1.07	+ 5.0	0.8/21.9	31483
1990 TC_{1}	1999 04 21.3	13 54.92	−11 26.1	17.9	−0.98	+ 6.9	0.1/21.3	34491
1996 PY_{6}	1999 04 21.3	13 55.02	−12 22.9	17.2	−1.45	− 4.4	0.3/21.5	34584
1998 DC_{6}	1999 04 21.4	13 55.21	−11 41.0	18.3	−0.72	+ 3.9	0.0/21.4	34590
(8635)	1999 04 21.4	13 55.35	−08 19.4	17.8	−0.95	+ 4.2	1.2/20.5	31671
1986 RY_{4}	1999 04 21.5	13 55.34	−16 10.7	17.5	−1.08	+ 3.9	1.7/22.6	34574
1998 DT_{21}	1999 04 21.5	13 55.57	−10 43.1	18.6	−0.78	+ 3.9	0.3/21.2	34531
1981 ER_{28}	1999 04 21.5	13 55.70	−25 12.0	19.0	−1.07	+ 0.4	4.5/24.7	26920
1996 XF_{1}	1999 04 21.6	13 55.77	−04 43.9	18.2	−0.73	+ 3.4	1.8/19.5	31422
1988 BT_{3}	1999 04 21.6	13 55.89	−03 32.6	17.6	−0.94	+ 6.4	3.1/19.2	22079
1997 QR_{3}	1999 04 21.6	13 56.01	−08 41.4	19.1	−0.95	+ 7.3	1.2/20.7	34586
1981 QU_{3}	1999 04 21.6	13 56.02	+03 59.2	17.3	−0.89	+ 8.0	6.1/16.4	34573
(8570)	1999 04 21.7	13 56.08	−20 09.9	17.2	−0.88	+ 2.3	2.5/24.0	31513
1978 VU_{5}	1999 04 21.7	13 56.35	−10 50.2	18.1	−0.92	+ 6.0	0.4/21.4	34572
1992 RS_{7}	1999 04 21.7	13 56.41	−05 18.9	20.8	−0.84	+ 4.9	1.8/19.8	31382
1998 BF_{41}	1999 04 21.8	13 56.66	−08 17.4	18.5	−0.75	+ 4.4	1.0/20.8	34590
1993 TE_{3}	1999 04 21.8	13 56.78	−17 07.8	16.6	−1.11	+ 2.2	2.0/23.1	34581
1998 AZ_{5}	1999 04 21.8	13 56.81	−17 40.6	18.4	−0.78	+ 3.3	1.6/23.5	32314
1997 YL_{3}	1999 04 21.8	13 56.89	+01 35.9	17.5	−0.93	+ 3.4	5.3/18.0	34526
1997 XM_{10}	1999 04 21.9	13 56.90	−13 08.6	18.7	−0.96	+ 4.5	0.4/22.2	34588

1991 VL_{10}	1999 04 21.9	13 57.00	−09 31.6	18.1	−0.79	+ 4.8	0.7/21.2	34578
1993 FS_{14}	1999 04 21.9	13 57.25	−02 48.2	17.9	−0.72	+ 3.6	2.4/19.3	34580
(8154)	1999 04 22.0	13 57.54	−11 03.5	16.0	−0.94	+ 3.9	0.5/21.8	31076
(8269)	1999 04 22.0	13 57.62	−00 01.8	17.5	−0.84	+ 5.8	3.6/18.4	34572
1995 CK	1999 04 22.1	13 58.04	+01 09.5	18.0	−0.95	+ 4.6	5.0/18.5	34583
1998 BW_1	1999 04 22.3	13 58.35	−09 23.0	17.7	−0.77	+ 4.5	0.7/21.5	31427
1997 YS_5	1999 04 22.3	13 58.43	−26 31.8	18.0	−0.87	+ 4.0	4.1/26.7	34589
1981 PF	1999 04 22.4	13 58.81	+06 56.6	18.0	−0.93	+ 7.7	6.7/16.0	34573
1991 PE_{10}	1999 04 22.4	13 59.02	−23 16.2	18.5	−0.90	+ 3.1	3.2/25.5	34578
1993 FW_{34}	1999 04 22.5	13 59.13	−08 05.7	17.4	−0.75	+ 4.3	1.2/21.3	34580
1990 SX_{16}	1999 04 22.5	13 59.24	−18 02.9	17.3	−0.88	+ 2.0	1.7/24.0	34576
(8244)	1999 04 22.5	13 59.27	−08 55.3	18.0	−0.93	+ 6.7	1.1/21.6	34572
1982 UZ_9	1999 04 22.5	13 59.34	−17 36.3	17.9	−0.79	+ 8.1	1.5/24.3	34574
1991 CP_1	1999 04 22.5	13 59.47	−02 55.6	17.4	−0.93	+ 4.5	3.7/20.0	34577
1993 TZ_{31}	1999 04 22.6	13 59.53	−06 20.4	17.0	−1.10	− 0.2	2.7/21.3	34581
1990 VR_{14}	1999 04 22.6	13 59.81	−10 09.1	16.7	−1.02	+ 4.3	0.7/22.1	30976
1985 RN_4	1999 04 22.6	13 59.81	−10 43.0	19.4	−1.02	+ 4.8	0.5/22.3	31272
1997 UE_2	1999 04 22.6	13 59.83	−11 54.1	18.7	−0.97	+ 3.2	0.1/22.6	31146
1997 TA_{18}	1999 04 22.6	13 59.84	−05 06.2	18.8	−0.80	+ 7.3	2.2/20.4	31423
1987 RN_3	1999 04 22.8	14 00.41	−24 15.2	17.8	−0.88	+ 4.7	3.6/26.4	34574
1990 US_3	1999 04 22.8	14 00.45	−02 54.5	18.3	−0.74	+ 3.3	2.4/20.1	34577
(10403)	1999 04 22.9	14 00.92	−17 02.0	16.3	−0.95	+ 7.9	2.1/24.4	34161
(8540)	1999 04 22.9	14 00.93	−11 33.3	18.4	−0.76	+ 3.2	0.2/22.8	31505
1987 RU_5	1999 04 22.9	14 00.99	−19 51.1	17.0	−1.03	+ 1.8	2.8/24.8	34574
1994 AY_5	1999 04 23.0	14 01.13	−31 04.7	20.6	−1.01	+ 4.5	6.1/28.5	31237
(8167)	1999 04 23.0	14 01.23	−04 39.1	17.0	−0.92	+ 5.1	2.7/20.9	31079
2651 P-L	1999 04 23.0	14 01.33	−17 12.2	19.9	−0.97	+ 3.7	1.6/24.4	21977
1997 YB_{10}	1999 04 23.1	14 01.57	−22 54.2	17.9	−0.89	+ 4.1	3.1/26.2	34589
1995 AA_1	1999 04 23.2	14 01.71	−01 45.5	18.1	−0.98	+ 4.9	4.1/20.2	34582
1996 XE_{19}	1999 04 23.3	14 02.18	−09 15.6	17.4	−0.78	+ 5.0	0.9/22.4	34586
2177 P-L	1999 04 23.3	14 02.21	−13 31.2	19.5	−0.80	+ 4.5	0.3/23.7	31160
(10598)	1999 04 23.3	14 02.31	−11 50.3	18.1	−0.88	+ 5.2	0.2/23.2	34462
1994 BL_4	1999 04 23.4	14 02.58	−30 52.6	18.5	−1.06	+ 3.1	6.2/28.7	23686
1993 FS_{34}	1999 04 23.5	14 03.02	−11 14.7	17.7	−0.76	+ 3.6	0.3/23.2	34580
9085 P-L	1999 04 23.5	14 03.04	−16 13.5	19.1	−1.12	+ 3.8	1.6/24.0	24114
1993 FB_{23}	1999 04 23.5	14 03.15	−11 31.1	17.7	−0.72	+ 5.6	0.3/23.3	34580
1998 DP_{23}	1999 04 23.6	14 03.26	−27 30.7	18.2	−0.88	+ 3.0	5.0/27.8	34590
(8200)	1999 04 23.6	14 03.39	−10 19.8	16.9	−0.88	+ 5.0	0.8/23.0	31086
1997 UL_9	1999 04 23.7	14 03.60	−10 33.5	18.3	−1.09	− 0.1	0.7/23.3	34587
3282 T-2	1999 04 23.7	14 03.72	−12 19.7	18.2	−1.00	+ 2.6	0.1/23.7	15085
2207 P-L	1999 04 23.7	14 03.82	−22 36.1	17.3	−1.05	+ 3.3	4.1/26.4	34616
1987 UZ_1	1999 04 23.8	14 04.01	−22 06.3	16.6	−1.09	+23.2	4.0/27.5	34574
(8393)	1999 04 23.9	14 04.59	−14 35.9	16.4	−1.10	+ 3.0	0.8/24.0	34572
(8229)	1999 04 23.9	14 04.63	−04 16.8	17.7	−0.69	+ 6.1	2.1/21.3	31093
1997 WM_{23}	1999 04 23.9	14 04.68	−07 33.3	18.7	−0.81	+ 4.2	1.6/22.5	31282
1997 RH_4	1999 04 24.0	14 04.80	−16 30.2	20.7	−1.10	+ 3.8	1.3/25.0	30904
6579 P-L	1999 04 24.1	14 05.13	−09 34.4	17.1	−0.98	+ 4.1	1.2/23.3	34617
1993 SR_1	1999 04 24.1	14 05.18	−12 10.7	17.9	−1.03	+ 4.1	0.2/24.0	30899
1989 TH_3	1999 04 24.1	14 05.31	−06 34.4	20.1	−0.99	+ 5.8	2.4/22.4	25328
1995 BU_4	1999 04 24.1	14 05.40	−16 57.3	19.1	−1.13	+ 2.7	1.5/25.2	34583
(8152)	1999 04 24.1	14 05.45	−18 10.7	18.1	−1.01	+ 4.4	1.8/25.7	31076
(8284)	1999 04 24.1	14 05.53	−29 43.4	16.4	−0.83	+ 5.4	5.6/29.6	31215
1997 YQ_5	1999 04 24.2	14 05.46	−02 29.2	19.6	−0.85	+ 4.3	3.0/21.3	32058
1996 RE_{17}	1999 04 24.2	14 05.49	−15 14.6	17.8	−0.94	+ 3.4	1.2/24.9	32953
1993 TP_{37}	1999 04 24.2	14 05.64	−04 35.3	17.5	−0.98	+ 3.1	3.1/22.1	34581
(8331)	1999 04 24.2	14 05.78	−04 07.4	16.3	−1.00	+ 4.3	3.6/21.9	31350
1995 OG	1999 04 24.3	14 05.89	−28 11.6	19.3	−0.87	+ 3.4	4.4/28.7	31420
(8292)	1999 04 24.3	14 06.00	−28 41.4	16.6	−1.03	+ 1.5	5.0/28.4	31217
1996 TB_6	1999 04 24.3	14 06.18	−13 28.1	17.9	−0.90	+ 2.3	0.2/24.6	34585
1979 MJ_8	1999 04 24.4	14 06.35	−14 40.2	20.1	−0.85	+ 5.3	0.5/25.0	30779
1998 DW_{12}	1999 04 24.5	14 06.60	−06 49.8	18.6	−0.76	+ 4.1	1.6/22.8	34530
1994 LR	1999 04 24.5	14 06.81	+05 44.1	16.3	−0.80	+ 2.1	6.0/19.3	34582
4017 P-L	1999 04 24.5	14 06.93	−25 01.9	19.4	−0.96	+ 2.1	3.4/27.7	31608
1997 WK_{13}	1999 04 24.5	14 06.98	−09 52.5	18.6	−1.02	+ 3.6	1.1/23.8	31281
1994 GD_1	1999 04 24.5	14 07.03	−00 25.6	16.3	−0.90	− 1.0	5.3/21.7	34582
1983 QG	1999 04 24.6	14 06.98	+04 04.9	18.1	−0.90	+ 2.8	4.8/19.9	34574
1994 CT_{11}	1999 04 24.6	14 07.29	−08 33.0	17.8	−0.87	+ 4.1	1.4/23.5	34582
1993 VM_2	1999 04 24.6	14 07.42	−13 50.8	17.9	−0.95	+ 4.4	0.4/25.0	34581
2289 T-1	1999 04 24.7	14 07.43	−16 46.2	16.9	−0.96	+ 1.5	1.4/25.7	34617
(8251)	1999 04 24.8	14 07.92	−09 15.6	18.9	−0.98	+ 5.9	1.2/23.8	31208
1995 CW	1999 04 24.8	14 07.95	+00 06.5	17.0	−0.90	+ 5.9	5.6/21.0	34583
1995 SJ_4	1999 04 24.9	14 08.21	−32 46.1	18.5	−0.81	+ 6.4	5.4/01.4	29664
(10479)	1999 04 24.9	14 08.36	−05 38.8	15.1	−1.08	0.0	3.6/23.3	34431
1981 DR_2	1999 04 24.9	14 08.48	−30 37.3	18.6	−0.99	+ 3.7	5.7/30.1	34573
(10666)	1999 04 25.0	14 08.63	−08 04.3	16.7	−1.08	+ 2.5	2.1/23.8	34479
1997 VL_1	1999 04 25.0	14 08.78	−11 33.4	18.3	−1.06	+ 2.6	0.6/24.7	31148
1993 RZ_6	1999 04 25.0	14 08.81	−18 25.7	17.7	−1.04	+ 3.7	2.0/26.5	34580
1992 FD_1	1999 04 25.0	14 08.83	−14 22.2	16.0	−1.03	+ 2.0	0.7/25.4	34579
(8283)	1999 04 25.0	14 08.89	−02 40.4	16.3	−0.87	+ 2.3	3.2/22.4	34279
6706 P-L	1999 04 25.1	14 08.90	−14 40.4	20.0	−0.96	+ 3.4	0.5/25.5	31268
1993 TC_{25}	1999 04 25.1	14 09.18	−07 23.1	19.1	−0.94	+ 4.5	2.0/23.6	31276
1998 BP_7	1999 04 25.1	14 09.21	−10 58.9	19.4	−0.77	+ 4.3	0.6/24.6	32314
1998 CH	1999 04 25.2	14 09.29	+22 43.4	17.3	−0.90	+ 1.2	11.2/14.2	34590
1996 VT_8	1999 04 25.2	14 09.45	−01 53.0	18.0	−0.94	+ 1.7	3.6/22.4	34585
6570 P-L	1999 04 25.2	14 09.64	−10 52.0	18.6	−0.95	+ 5.6	0.8/24.7	31161
1992 SM_2	1999 04 25.3	14 09.86	−21 48.9	16.1	−1.15	− 1.9	3.8/27.1	33232
1997 WQ_9	1999 04 25.3	14 10.05	−10 49.1	18.8	−0.95	+ 5.6	0.8/24.8	33266
1997 WA_{30}	1999 04 25.4	14 10.24	−19 53.3	17.2	−0.86	+ 8.9	2.4/27.7	34588
1981 SE_2	1999 04 25.5	14 10.41	−08 02.1	18.1	−0.94	+ 4.7	1.7/24.1	34573
1997 YP_2	1999 04 25.5	14 10.51	−12 19.4	17.4	−0.98	+ 6.6	0.3/25.3	34589
1981 EG_{45}	1999 04 25.5	14 10.54	−19 48.3	18.8	−0.97	+ 5.4	2.9/27.4	26923
5008 P-L	1999 04 25.5	14 10.74	−21 18.4	19.0	−1.08	+ 2.3	3.2/27.6	25076
1996 NB_4	1999 04 25.6	14 10.72	−18 02.6	16.8	−0.95	+ 4.6	2.1/26.9	34584
1997 WB_6	1999 04 25.7	14 11.11	−07 09.9	16.9	−1.00	+ 3.3	2.6/24.2	34524
1995 MG_1	1999 04 25.7	14 11.42	−02 28.2	18.6	−0.79	+ 5.1	2.9/22.6	34583
1996 RL_4	1999 04 25.8	14 11.81	−25 47.6	19.2	−1.04	+ 2.0	4.0/29.0	28088
1992 SJ_{26}	1999 04 25.9	14 12.30	−12 15.1	19.2	−0.94	+ 2.6	0.3/25.7	25641
1996 TG_7	1999 04 26.0	14 12.47	−14 00.5	17.5	−1.01	+ 4.0	0.3/26.2	34585
(9121)	1999 04 26.0	14 12.49	−19 27.4	16.9	−0.67	+ 2.9	1.5/27.8	32201
1993 FO_{24}	1999 04 26.0	14 12.58	−18 28.8	18.7	−0.80	+ 3.2	1.5/27.5	34580
6580 P-L	1999 04 26.0	14 12.69	−08 36.0	16.4	−1.01	+ 2.7	2.3/24.9	34617
1996 TD_8	1999 04 26.1	14 12.61	−12 22.1	21.1	−0.79	+ 6.5	0.2/25.8	29116

1988 CP_{1}	1999 04 26.1	14 12.67	−08 45.1	18.0	−0.80	+ 4.3	1.4/24.8	34575
1996 OJ_{2}	1999 04 26.1	14 12.85	−28 52.3	18.8	−1.03	+ 4.7	4.9/30.4	31588
1997 VQ_{7}	1999 04 26.1	14 12.92	−16 52.8	18.1	−1.00	+ 5.0	1.3/27.1	31117
1993 FE_{31}	1999 04 26.1	14 12.96	+04 01.4	16.8	−0.67	+ 8.6	5.1/20.1	34580
1981 EW_{45}	1999 04 26.2	14 13.07	−11 57.1	18.6	−0.71	+ 4.7	0.4/25.8	17628
1979 PA	1999 04 26.2	14 13.08	−18 05.2	16.8	−0.86	+11.0	1.9/27.8	34573
1996 TZ_{20}	1999 04 26.2	14 13.19	−15 05.9	19.3	−0.81	+ 4.0	0.5/26.7	31279
9530 P-L	1999 04 26.2	14 13.33	−02 53.6	16.9	−0.89	+ 7.9	4.0/23.1	34617
(10510)	1999 04 26.2	14 13.38	−08 40.8	16.6	−0.89	+ 8.2	2.2/24.8	34439
(8281)	1999 04 26.3	14 13.49	−23 03.5	17.2	−0.87	+ 4.4	3.0/29.1	34572
(10594)	1999 04 26.3	14 13.53	−17 06.0	16.3	−1.06	+ 0.6	1.3/27.2	34461
1997 WA_{7}	1999 04 26.3	14 13.75	+11 38.6	15.9	−0.96	+ 1.6	9.8/19.0	34588
1998 BJ_{30}	1999 04 26.4	14 13.83	−16 48.7	17.4	−0.89	+ 4.7	1.1/27.4	31593
1981 EG_{40}	1999 04 26.4	14 13.86	−10 57.8	19.7	−0.72	+ 3.9	0.6/25.7	31781
1980 RV_{2}	1999 04 26.4	14 13.86	−17 30.1	17.6	−1.09	+ 4.6	1.6/27.5	34573
1995 QL_{5}	1999 04 26.4	14 14.09	−27 49.1	19.7	−0.85	+ 4.8	4.7/30.8	32239
1997 VG_{2}	1999 04 26.5	14 14.34	−16 52.2	18.6	−0.98	+ 5.3	1.2/27.5	31148
1991 RS_{7}	1999 04 26.5	14 14.38	+00 32.3	17.8	−0.85	+ 3.6	5.0/22.6	34578
1996 TH_{7}	1999 04 26.6	14 14.53	−14 37.8	17.9	−0.88	+ 3.6	0.4/26.9	34585
1997 WR_{21}	1999 04 26.6	14 14.54	−20 17.9	18.5	−1.03	+ 5.8	2.4/28.5	31424
(8324)	1999 04 26.6	14 14.56	−21 05.7	18.1	−0.99	+ 6.5	2.6/28.8	31348
1988 BL_{3}	1999 04 26.6	14 14.68	−21 23.8	16.6	−1.05	+ 6.4	3.0/28.8	34574
1981 ES_{21}	1999 04 26.6	14 14.87	−28 26.0	17.8	−1.05	+ 1.6	4.9/30.4	34573
1993 FW_{31}	1999 04 26.7	14 15.28	−14 44.8	16.6	−0.84	+ 1.5	0.3/27.1	34580
1988 SF_{3}	1999 04 26.9	14 15.74	−02 11.0	17.0	−1.04	− 0.6	4.2/24.5	34575
1992 SM_{16}	1999 04 26.9	14 15.74	−04 00.0	16.8	−0.81	+ 7.8	3.5/23.9	34579
1997 XL_{11}	1999 04 26.9	14 15.84	−03 11.6	16.9	−0.85	+ 3.2	3.5/24.1	31283
3212 T-2	1999 04 27.0	14 16.19	−05 45.1	19.4	−0.88	+ 6.0	2.6/24.8	31295
1997 WC_{10}	1999 04 27.0	14 16.38	−10 55.5	19.7	−0.94	+ 5.6	1.0/26.3	31281
1979 MN_{3}	1999 04 27.0	14 16.46	−14 54.5	16.9	−0.98	+ 6.1	0.5/27.4	34572
1988 RT_{11}	1999 04 27.1	14 16.43	−14 25.9	19.3	−0.92	+ 4.2	0.3/27.3	34575
1981 ES_{18}	1999 04 27.1	14 16.60	−13 00.2	18.2	−0.83	+ 6.1	0.3/26.9	26918
1982 BE_{1}	1999 04 27.1	14 16.84	−03 13.7	17.3	−0.88	+ 4.6	3.4/24.3	34573
(8422)	1999 04 27.2	14 16.96	−09 25.3	17.9	−0.81	+ 3.8	1.4/26.1	31370
1998 AL_{4}	1999 04 27.2	14 17.01	−15 26.5	17.3	−0.83	+ 3.9	0.6/27.7	31260
1986 GY	1999 04 27.3	14 17.34	−15 54.3	16.5	−1.11	+ 3.9	0.9/27.9	34574
2675 P-L	1999 04 27.3	14 17.44	−16 37.6	20.9	−0.89	+ 3.2	0.9/28.1	33995
1997 UF_{7}	1999 04 27.3	14 17.55	−11 08.4	17.0	−1.06	+ 2.2	1.0/26.8	31280
1998 CF_{1}	1999 04 27.3	14 17.56	−13 52.0	16.7	−0.79	+ 3.4	0.0/27.4	34590
1998 CH_{1}	1999 04 27.4	14 17.58	−12 17.8	18.8	−0.80	+ 4.6	0.4/27.0	34590
1990 UF_{1}	1999 04 27.4	14 17.67	−10 38.0	16.5	−1.08	+ 3.6	1.2/26.7	34577
1993 FL_{29}	1999 04 27.4	14 17.72	−19 09.7	18.0	−0.78	+ 4.0	1.4/29.0	31723
1996 VM_{2}	1999 04 27.4	14 17.78	−02 25.1	18.5	−0.94	+ 2.0	3.7/24.6	34585
1997 UQ_{3}	1999 04 27.4	14 17.97	−13 24.8	16.6	−0.98	+ 4.3	0.1/27.4	34587
1996 MU	1999 04 27.5	14 17.95	+31 45.1	20.2	−1.28	− 2.7	18.9/11.8	30785
(8919)	1999 04 27.5	14 17.95	−23 20.9	15.8	−1.13	− 2.2	4.1/29.4	34572
1997 UT_{6}	1999 04 27.5	14 17.97	−12 50.2	15.4	−0.91	+ 7.4	0.5/27.2	34587
1991 LA_{1}	1999 04 27.5	14 18.08	+12 48.4	17.0	−0.81	+ 4.6	10.8/18.8	34577
1999 GH_{1}	1999 04 27.5	14 18.29	−06 17.5	17.2	−1.05	+ 1.1	3.6/25.9	34562
1997 XZ_{9}	1999 04 27.5	14 18.29	−19 43.6	16.5	−0.94	+ 6.3	2.2/29.3	34588
1996 PX_{4}	1999 04 27.5	14 18.35	−06 11.7	18.2	−0.87	+ 5.7	3.0/25.4	34515
1996 VB_{15}	1999 04 27.7	14 18.67	−12 31.3	19.5	−0.78	+ 3.1	0.4/27.3	28603
1981 ED_{37}	1999 04 27.7	14 18.74	−14 57.4	16.8	−1.08	+ 3.2	0.5/28.0	34573
(8337)	1999 04 27.7	14 18.77	−10 05.0	18.5	−0.73	+ 3.6	1.0/26.7	31351
1980 VO	1999 04 27.7	14 18.79	−13 23.7	18.1	−0.94	+ 2.7	0.1/27.6	34573
5034 T-3	1999 04 27.7	14 18.90	+03 12.8	17.1	−0.75	+ 7.1	5.5/22.3	34570
1997 WF_{22}	1999 04 27.8	14 19.05	−13 06.2	18.3	−0.99	+ 3.9	0.3/27.6	31152
1993 QN_{4}	1999 04 27.9	14 19.43	−03 57.0	18.3	−0.93	+ 5.2	3.4/25.2	34580
1994 DF	1999 04 27.9	14 19.74	+02 39.5	17.8	−0.81	+ 6.0	5.3/23.0	34505
1990 QH_{8}	1999 04 28.0	14 19.80	−11 25.1	18.8	−1.02	+ 4.9	0.9/27.3	32922
1996 RD_{4}	1999 04 28.0	14 19.86	−08 50.5	16.8	−1.02	− 0.1	1.9/26.9	34585
3507 T-3	1999 04 28.0	14 19.88	−10 22.2	15.8	−0.86	+12.0	1.9/26.8	34618
1999 GE_{6}	1999 04 28.0	14 20.10	+01 46.9	16.3	−0.82	+ 2.4	6.5/23.7	34615
1981 ES_{20}	1999 04 28.1	14 20.35	−16 53.7	18.3	−0.90	+ 3.9	1.0/28.9	34573
1983 XC	1999 04 28.1	14 20.58	−04 16.4	18.0	−1.01	+ 3.3	3.5/25.7	34574
1981 EK_{19}	1999 04 28.2	14 20.89	−22 55.5	17.2	−1.06	+ 2.8	4.0/30.4	34573
1993 SW_{3}	1999 04 28.2	14 20.97	−10 24.8	17.4	−1.11	+ 2.9	1.5/27.4	34581
(8355)	1999 04 28.3	14 21.00	−02 40.6	17.4	−0.96	+ 6.5	4.0/25.0	31355
1997 YH_{5}	1999 04 28.3	14 21.02	−19 54.9	17.7	−1.09	+ 4.8	2.1/29.8	34589
1993 TS_{20}	1999 04 28.3	14 21.21	−09 48.7	17.2	−0.95	+ 5.5	1.9/27.2	34581
1985 RJ_{5}	1999 04 28.3	14 21.28	−12 53.3	19.1	−0.95	+ 4.1	0.4/28.1	34574
1993 FA_{2}	1999 04 28.4	14 21.35	−05 12.5	17.1	−0.77	+ 2.8	2.9/26.0	34500
1998 AA_{10}	1999 04 28.4	14 21.40	−37 54.0	17.3	−1.01	+ 4.9	9.2/05.7	31397
1989 SR_{3}	1999 04 28.4	14 21.55	−09 15.6	18.0	−0.71	+ 3.3	1.3/27.1	31582
1997 TC_{18}	1999 04 28.4	14 21.59	−11 02.5	16.3	−1.06	+ 2.6	1.3/27.7	34587
1991 RB_{9}	1999 04 28.5	14 22.00	−12 10.8	18.2	−0.81	+ 4.5	0.6/28.0	34578
(8428)	1999 04 28.6	14 22.24	−13 27.0	17.2	−0.97	+ 5.4	0.3/28.4	31371
(8262)	1999 04 28.7	14 22.49	−14 54.7	18.5	−0.96	+ 4.5	0.2/28.9	31210
1991 AV_{2}	1999 04 28.7	14 22.61	−17 07.1	17.1	−0.97	+ 4.6	1.2/29.5	34577
1997 YD_{14}	1999 04 28.7	14 22.83	−25 46.6	18.9	−0.83	+ 3.8	3.2/02.1	31425
(10619)	1999 04 28.8	14 22.94	−02 33.7	16.9	−0.99	+ 1.7	5.0/26.1	34468
4122 T-2	1999 04 28.8	14 22.99	−10 46.9	16.1	−0.86	+ 3.6	1.2/27.9	31132
1998 BD_{4}	1999 04 28.8	14 23.02	−33 25.4	18.4	−1.03	+ 3.4	6.0/04.1	31797
1999 GS_{9}	1999 04 28.8	14 23.10	+01 28.8	17.3	−0.79	+ 2.4	5.0/24.7	34563
1995 SO_{33}	1999 04 28.9	14 23.20	−14 58.4	16.2	−0.80	+ 3.6	0.3/29.1	34583
1999 GX_{5}	1999 04 28.9	14 23.41	−19 05.3	17.8	−0.96	+ 5.4	1.8/30.3	34563
1998 BX_{25}	1999 04 28.9	14 23.56	−31 44.2	16.9	−0.91	+ 4.4	5.4/04.1	31429
1995 DO_{1}	1999 04 29.0	14 23.84	−15 13.3	15.9	−0.97	+ 0.6	0.5/29.3	34583
1997 VA_{4}	1999 04 29.1	14 24.37	−06 49.3	19.1	−0.76	+ 5.1	2.2/27.0	34587
(8601)	1999 04 29.2	14 24.47	−04 39.1	17.5	−0.74	+ 4.0	2.9/26.5	31520
1357 T-2	1999 04 29.2	14 24.73	−17 14.2	20.3	−0.91	+ 3.0	1.0/30.0	32732
1992 WN_{3}	1999 04 29.3	14 24.97	−06 03.4	18.2	−0.86	+ 2.5	2.4/27.3	34500
1997 YZ_{2}	1999 04 29.4	14 25.17	−29 18.3	16.5	−0.94	+ 6.4	4.9/03.9	34589
1996 VP_{4}	1999 04 29.4	14 25.24	−14 23.6	18.3	−0.75	+ 4.2	0.0/29.4	31792
1994 CJ_{11}	1999 04 29.4	14 25.30	+17 28.4	18.6	−0.79	+ 5.1	10.1/19.0	34582
1996 PK_{8}	1999 04 29.4	14 25.41	−14 59.2	16.9	−0.87	+ 5.6	0.3/29.6	34515
1990 OV_{4}	1999 04 29.4	14 25.52	−35 51.8	18.3	−0.94	+ 4.8	6.2/05.6	29316
1997 UB_{8}	1999 04 29.5	14 25.66	−05 08.6	19.2	−0.91	+10.4	2.9/26.6	34587
6755 P-L	1999 04 29.6	14 26.18	−15 02.4	19.5	−0.80	+ 3.7	0.2/29.8	29314
1998 BA_{46}	1999 04 29.7	14 26.40	−15 03.0	18.5	−0.77	+ 3.8	0.2/29.9	31557
1998 CR	1999 04 29.7	14 26.44	−01 49.9	18.0	−0.72	+ 4.9	3.4/26.0	34590
1998 BM_{12}	1999 04 29.8	14 26.75	−14 38.4	17.0	−0.80	+ 4.1	0.0/29.9	34590

1990 ET_2	1999 04 29.8	14 26.79	−03 39.1	16.3	−0.75	+10.4	4.3/26.1	34490
(8366)	1999 04 29.9	14 27.06	−07 24.3	17.8	−1.01	+ 4.4	2.6/28.1	31358
1996 TO_{24}	1999 04 29.9	14 27.23	−11 54.3	18.9	−0.78	+11.4	1.0/29.1	34517
1996 PA_1	1999 04 29.9	14 27.37	−01 49.7	18.2	−0.94	+ 5.1	4.7/26.5	34584
1982 SV	1999 04 30.0	14 27.50	+01 25.3	18.8	−0.90	+ 8.9	5.0/25.2	8393
1997 VB_3	1999 04 30.0	14 27.60	−11 33.9	16.5	−1.01	+ 3.5	1.1/29.3	31281
(8492)	1999 04 30.0	14 27.61	−38 08.1	17.6	−1.10	+ 3.5	8.0/06.6	31494
1998 AL_{10}	1999 04 30.0	14 27.83	−06 55.7	18.8	−0.89	+ 4.7	2.5/28.0	34528
(8372)	1999 04 30.1	14 27.97	−12 25.9	17.3	−0.75	+ 6.1	0.6/29.5	31359
(8361)	1999 04 30.1	14 28.00	−15 18.1	16.5	−0.84	+ 4.5	0.2/30.3	34572
(8148)	1999 04 30.2	14 28.46	−15 35.7	16.8	−1.02	+ 5.1	0.4/30.5	31075
1997 YB_{12}	1999 04 30.3	14 28.60	−32 58.3	18.2	−0.97	+ 6.0	5.9/05.7	31285
1997 YB_{17}	1999 04 30.3	14 28.65	−16 13.4	16.8	−0.84	+ 4.0	0.5/30.7	34589
1996 SF_8	1999 04 30.3	14 28.65	−14 02.4	19.3	−0.91	+ 4.7	0.2/30.2	34585
1991 PN_8	1999 04 30.4	14 28.95	−12 40.3	18.6	−0.82	+ 4.3	0.6/29.9	34578
1996 UO_2	1999 04 30.5	14 29.29	−15 02.8	20.1	−0.78	+ 5.1	0.1/30.6	33255
1998 BV_6	1999 04 30.5	14 29.48	+01 30.5	18.1	−0.74	+ 3.5	5.0/25.9	34589
1998 BQ	1999 04 30.5	14 29.50	−02 09.5	17.2	−1.01	+ 3.2	5.1/27.5	34589
(8440)	1999 04 30.5	14 29.72	−26 13.5	17.5	−0.90	+ 4.8	4.0/03.7	31374
1981 EM_{22}	1999 04 30.6	14 29.80	−18 07.3	19.7	−1.04	+ 4.5	1.4/01.5	26919
1978 NK	1999 04 30.6	14 29.86	−17 39.6	18.6	−0.89	+ 4.9	0.9/01.4	28610
1998 DS_4	1999 04 30.6	14 29.87	+06 50.8	18.6	−0.73	+ 4.8	6.1/24.0	34590
(10487)	1999 04 30.6	14 29.96	+26 54.6	16.4	−1.15	− 1.5	16.5/17.6	34433
1979 MZ_4	1999 04 30.7	14 30.14	−00 02.8	18.5	−0.91	+ 4.5	5.4/26.6	30778
1999 GS_4	1999 04 30.7	14 30.27	−07 58.6	16.3	−0.90	+ 7.0	2.9/28.8	34562
1994 GA	1999 04 30.7	14 30.32	−22 02.8	17.4	−0.88	+12.6	2.3/03.2	24112
1996 VO_{38}	1999 04 30.7	14 30.34	−10 10.4	17.7	−0.82	+ 4.2	1.6/29.5	34585
1277 T-2	1999 04 30.8	14 30.59	−12 54.2	19.2	−0.75	+ 3.8	0.5/30.3	34617
1993 SN_2	1999 04 30.8	14 30.64	−17 06.8	19.9	−0.99	+ 5.2	0.8/01.4	31276
1997 WF_{21}	1999 04 30.8	14 30.76	−11 58.9	18.1	−0.94	+ 5.5	1.0/30.1	34588
1992 SF_{17}	1999 04 30.8	14 30.81	−13 39.6	19.6	−0.87	+ 4.9	0.4/30.6	34579
1985 TW	1999 04 30.8	14 30.81	−16 03.4	17.8	−1.00	+ 4.3	0.4/01.2	34574
3189 T-2	1999 04 30.8	14 30.84	−17 11.9	20.2	−1.00	+ 2.7	0.8/01.4	22701
1998 BP_5	1999 04 30.8	14 30.85	−25 06.7	18.3	−1.05	+ 4.6	3.9/03.5	31264
2610 P-L	1999 04 30.9	14 30.85	−11 40.1	19.1	−0.90	+ 5.1	1.0/30.0	34616
1996 PW_6	1999 04 30.9	14 30.87	−17 19.4	17.9	−0.99	+ 4.3	0.9/01.5	31243
1997 XM	1999 04 30.9	14 30.94	−15 57.9	17.9	−0.93	+ 3.7	0.4/01.2	31796
1990 VM	1999 04 30.9	14 31.10	−02 32.1	18.4	−0.72	+ 3.1	3.2/27.6	34577
1981 EO_{24}	1999 05 01.0	14 31.31	−10 00.4	17.3	−0.96	+ 5.6	1.9/29.7	34573
1989 WJ_1	1999 05 01.0	14 31.44	−14 35.1	17.3	−0.91	+ 6.4	0.1/31.0	34576
1997 XZ_{10}	1999 05 01.0	14 31.58	−18 21.6	18.5	−0.95	+ 4.8	1.2/02.0	31424
(10348)	1999 05 01.1	14 31.85	−20 06.7	15.3	−1.13	− 1.6	2.6/02.1	34147
1997 XK_{13}	1999 05 01.1	14 31.88	+10 50.5	17.8	−0.71	+ 5.2	7.4/22.7	31796
1979 MX_7	1999 05 01.1	14 32.03	−25 06.4	19.5	−0.95	+ 5.1	3.3/03.9	30779
1992 FG	1999 05 01.1	14 32.04	−20 44.0	15.5	−1.10	0.0	2.9/02.4	34579
6516 P-L	1999 05 01.2	14 32.36	−20 08.7	19.5	−1.13	+ 3.0	1.9/02.5	29141
(8151)	1999 05 01.3	14 32.38	−20 39.3	15.1	−0.90	+ 7.0	2.8/02.9	31076
(8293)	1999 05 01.3	14 32.39	−08 58.6	15.4	−0.87	+ 6.2	2.4/29.6	31217
1997 UO_9	1999 05 01.3	14 32.40	−16 57.5	18.4	−1.06	+ 5.2	0.8/01.8	34521
1988 DD_3	1999 05 01.3	14 32.55	−25 53.3	17.8	−0.83	+ 5.4	3.5/04.5	34575
1997 YZ_{16}	1999 05 01.3	14 32.66	−06 27.6	18.0	−0.91	+ 5.1	3.0/29.1	34589
2607 P-L	1999 05 01.3	14 32.78	−10 40.7	19.0	−0.81	+ 5.2	1.3/30.2	31294
1990 SB_{11}	1999 05 01.4	14 32.86	−22 02.6	17.9	−1.09	+ 5.5	2.7/03.2	34576
1996 PG_1	1999 05 01.5	14 33.35	−19 45.9	17.4	−1.07	+ 3.0	2.1/02.7	34584
9542 P-L	1999 05 01.5	14 33.40	−13 15.1	18.0	−0.83	+ 3.1	0.6/01.1	28607
1992 JR	1999 05 01.5	14 33.52	+04 36.7	15.3	−0.76	+ 0.5	10.8/26.4	34498
1989 UF_1	1999 05 01.7	14 33.87	−17 14.9	18.5	−0.96	+ 4.8	0.7/02.3	31228
1997 WR_{31}	1999 05 01.7	14 34.01	−13 17.3	17.5	−0.97	+ 4.9	0.7/01.3	34588
(8386)	1999 05 01.7	14 34.17	−16 54.0	17.4	−0.84	+ 3.5	0.6/02.2	31362
1992 UK_9	1999 05 01.7	14 34.17	−09 31.0	17.4	−0.90	+ 3.5	2.0/30.3	34579
(8321)	1999 05 01.7	14 34.28	−36 09.5	15.8	−1.02	+ 4.2	8.0/07.8	31348
1996 VR_{30}	1999 05 01.8	14 34.29	−22 35.6	17.0	−0.78	+ 4.8	2.3/03.9	34585
1993 FJ_{38}	1999 05 01.8	14 34.31	−04 47.6	18.3	−0.72	+ 5.3	3.1/28.8	34580
1981 EO_{25}	1999 05 01.8	14 34.47	+03 08.6	18.9	−0.68	+ 7.3	5.1/26.0	26919
1988 VO_3	1999 05 01.8	14 34.72	−18 34.6	18.7	−0.96	+ 3.2	1.1/02.7	31783
1988 VC_1	1999 05 01.9	14 34.88	−28 21.2	18.6	−0.93	+ 6.4	4.3/05.8	31273
1998 AS_1	1999 05 01.9	14 34.96	−10 44.9	17.9	−0.79	+ 3.5	1.4/30.8	34589
1997 YZ_7	1999 05 02.0	14 35.03	−29 11.9	19.2	−0.98	+ 5.6	4.5/05.9	34527
1993 QS_1	1999 05 02.0	14 35.34	−19 12.5	16.6	−1.03	+ 4.0	2.0/03.0	34580
1998 AV	1999 05 02.1	14 35.49	+18 26.3	18.3	−0.78	+ 1.3	9.8/22.3	34528
1210 T-2	1999 05 02.2	14 35.88	−21 08.9	16.2	−1.05	+ 3.1	2.7/03.6	34617
1997 UM_{24}	1999 05 02.2	14 35.88	−15 30.8	15.7	−1.08	+ 1.2	0.1/02.3	31281
1991 UC	1999 05 02.2	14 36.07	−16 58.2	17.4	−0.84	+ 3.9	0.6/02.7	31584
(8121)	1999 05 02.2	14 36.21	−18 00.6	17.2	−1.08	+ 3.7	1.2/02.9	30971
1997 XB	1999 05 02.3	14 36.37	−01 47.7	18.5	−0.93	+ 2.2	5.0/29.1	34588
(10493)	1999 05 02.4	14 36.61	−02 13.9	17.3	−0.97	+ 4.4	5.2/29.1	34435
(8643)	1999 05 02.4	14 36.95	−29 51.5	17.4	−1.09	+ 1.4	4.8/05.8	31673
1998 BH_{10}	1999 05 02.5	14 36.93	−14 02.2	17.3	−0.93	+ 1.7	0.5/02.2	34529
1998 DV_{12}	1999 05 02.5	14 37.16	+06 19.2	19.1	−0.87	+ 3.4	6.5/26.7	31801
1981 UE_{26}	1999 05 02.5	14 37.27	−11 08.0	17.2	−0.82	+ 3.5	1.3/01.5	34483
1979 MG_8	1999 05 02.5	14 37.32	+06 29.1	19.3	−0.74	+ 2.9	5.7/26.6	30779
1981 US_{14}	1999 05 02.6	14 37.54	−12 41.2	17.4	−0.97	+ 3.8	1.0/02.0	34573
1999 FT_{32}	1999 05 02.6	14 37.72	−12 30.2	16.5	−0.81	+ 4.3	0.9/01.9	34560
1987 DN	1999 05 02.7	14 37.81	−24 20.0	16.7	−0.83	+ 3.5	2.8/05.1	34574
1999 GV	1999 05 02.7	14 37.82	−10 02.1	16.7	−1.11	+ 0.9	2.4/01.6	34562
1995 CQ	1999 05 02.7	14 37.85	−23 00.6	17.1	−1.09	+ 4.2	3.2/04.6	34583
9516 P-L	1999 05 02.7	14 37.98	−11 52.6	19.0	−0.99	+ 5.7	1.6/01.8	34566
1993 SF_4	1999 05 02.8	14 38.25	−04 34.8	17.7	−1.01	+ 3.7	4.2/30.2	34581
1993 XK	1999 05 02.8	14 38.37	−06 45.9	18.1	−0.96	+ 3.9	3.2/30.7	34581
1993 TS_{33}	1999 05 02.9	14 38.58	−08 19.3	18.4	−0.96	+ 4.1	2.6/01.2	31007
1991 PU	1999 05 02.9	14 38.62	−21 31.0	17.8	−0.90	+ 4.4	1.9/04.5	34577
(8267)	1999 05 02.9	14 38.71	−11 49.4	17.9	−1.01	+ 3.9	1.3/02.1	31211
1996 TX_8	1999 05 02.9	14 38.97	−60 51.2	17.6	−1.92	− 5.5	20.0/08.9	29631
1997 SB_{10}	1999 05 03.0	14 38.86	−16 53.2	16.9	−0.91	+ 6.1	0.5/03.4	34586
(10566)	1999 05 03.0	14 38.89	−32 54.1	16.7	−0.99	+ 5.9	6.5/08.2	34453
1991 VD_6	1999 05 03.0	14 38.90	−03 48.1	18.8	−0.78	+ 3.3	3.3/29.9	31584
(8403)	1999 05 03.0	14 38.96	−09 12.9	17.6	−0.75	+ 6.0	1.9/01.2	31366
1997 UZ_{14}	1999 05 03.0	14 39.05	−14 35.9	17.1	−1.05	+ 2.4	0.4/02.8	34587
1992 SC_1	1999 05 03.0	14 39.08	−07 27.5	18.0	−0.91	+ 4.9	2.7/30.9	34579
1997 WA_8	1999 05 03.0	14 39.28	−13 42.1	18.8	−0.91	+ 3.4	0.6/02.6	31119
1988 VS_2	1999 05 03.1	14 39.57	−11 51.2	17.2	−0.85	+ 8.0	1.2/02.1	34575
1997 YQ_{10}	1999 05 03.2	14 39.66	−06 06.6	17.3	−0.86	+ 1.5	3.1/01.0	34527

1998 HL_{14}	1999 05 03.2	14 39.84	−09 27.7	17.2	−0.92	− 1.1	1.8/02.0	32264
1989 AU_{6}	1999 05 03.2	14 39.92	−23 00.0	18.6	−0.91	+ 3.9	2.5/05.2	34488
4790 P-L	1999 05 03.2	14 40.00	−18 04.6	19.9	−0.89	+ 3.6	0.8/03.9	28312
1992 RU_{1}	1999 05 03.3	14 40.02	−11 03.1	16.9	−0.86	+ 6.3	1.9/02.0	28299
1991 LQ	1999 05 03.3	14 40.14	+06 41.6	17.4	−0.97	+ 0.6	8.6/27.9	34577
1998 BG_{34}	1999 05 03.3	14 40.20	−14 57.4	18.7	−0.81	+ 3.4	0.2/03.2	31402
(8139)	1999 05 03.3	14 40.25	−21 52.3	17.0	−1.04	+ 6.2	2.5/05.0	34572
(8383)	1999 05 03.3	14 40.31	−15 21.7	17.2	−0.92	+ 3.0	0.1/03.3	31362
1993 FR_{44}	1999 05 03.3	14 40.36	−21 34.5	16.8	−0.82	+ 3.2	1.8/04.9	34580
1998 DH_{34}	1999 05 03.4	14 40.48	−13 02.5	16.9	−0.65	+ 2.6	0.6/02.7	32315
(10524)	1999 05 03.4	14 40.65	−16 04.5	15.8	−1.13	+ 1.1	0.2/03.6	34443
(8786)	1999 05 03.4	14 40.74	−13 27.2	18.5	−0.74	+ 3.5	0.6/02.9	31896
1992 RO_{1}	1999 05 03.5	14 40.81	+07 20.5	17.7	−0.95	+ 5.7	9.0/26.5	30782
1997 YV_{2}	1999 05 03.5	14 41.02	−12 30.1	16.9	−0.80	+ 3.4	1.0/02.8	31796
1998 DZ_{9}	1999 05 03.5	14 41.03	−05 15.9	19.1	−0.72	+ 4.7	2.8/30.7	31741
1987 SU	1999 05 03.5	14 41.13	−21 20.5	16.9	−1.13	+ 3.7	2.3/04.9	34574
(8795)	1999 05 03.6	14 41.15	−31 20.8	17.3	−0.87	+ 2.6	4.5/07.6	31898
1993 VO_{4}	1999 05 03.7	14 41.59	−09 30.9	17.9	−0.98	+ 3.3	2.1/02.2	31539
4251 T-3	1999 05 03.7	14 41.62	−12 07.6	18.2	−0.85	+ 3.0	1.1/02.8	31412
3109 P-L	1999 05 03.7	14 41.64	−31 12.7	18.3	−0.89	+ 4.5	5.0/08.0	14628
1967 US	1999 05 03.7	14 41.71	−09 13.9	17.0	−0.99	+ 2.6	2.2/02.2	34480
(8551)	1999 05 03.7	14 41.77	−11 56.5	16.3	−0.71	+ 0.8	0.9/02.9	31507
1995 SB_{4}	1999 05 03.7	14 41.77	−40 24.8	21.2	−0.88	+ 4.1	5.4/10.8	29922
(10607)	1999 05 03.7	14 41.88	−03 04.1	16.5	−1.02	− 0.4	4.9/01.1	34465
1997 YQ_{7}	1999 05 03.7	14 41.93	−32 21.9	17.6	−1.01	+ 2.6	5.1/07.9	34589
1998 DX	1999 05 03.8	14 41.95	−05 33.1	17.0	−1.03	+ 2.5	4.2/01.4	34530
(8556)	1999 05 03.8	14 42.01	−08 33.7	18.4	−0.82	+ 3.5	1.9/02.0	31509
1979 TH_{2}	1999 05 04.0	14 42.87	−16 18.3	18.1	−0.77	+ 3.3	0.1/04.2	34573
1998 BU_{25}	1999 05 04.2	14 43.65	+00 47.2	16.9	−0.76	+ 3.5	5.3/29.8	34590
(10554)	1999 05 04.2	14 43.68	−06 49.8	17.3	−0.73	+ 5.4	3.1/01.7	34450
1993 SK_{1}	1999 05 04.2	14 43.78	−14 41.6	16.2	−1.05	+ 3.5	0.5/04.0	34581
1996 RE_{1}	1999 05 04.2	14 43.83	−11 54.6	19.5	−0.90	+ 3.3	1.2/03.3	34584
(10555)	1999 05 04.3	14 44.07	−18 50.9	16.2	−0.95	− 1.1	1.0/04.9	34450
6799 P-L	1999 05 04.4	14 44.27	−12 22.9	20.5	−0.91	+ 4.1	1.1/03.5	34267
1981 EJ_{16}	1999 05 04.4	14 44.30	−27 11.1	18.7	−1.10	+ 1.9	5.1/06.9	34573
2149 T-1	1999 05 04.4	14 44.54	−23 11.9	17.7	−0.86	+ 2.2	2.2/06.2	34617
(8713)	1999 05 04.5	14 44.63	−12 21.3	16.6	−1.05	+ 3.4	1.4/03.7	31690
(8582)	1999 05 04.6	14 45.35	−13 50.7	16.8	−0.79	+ 2.8	0.6/04.2	31515
1989 WE_{4}	1999 05 04.6	14 45.40	−11 50.8	19.0	−0.95	+ 4.7	1.4/03.6	32220
(8517)	1999 05 04.7	14 45.48	−07 30.6	17.8	−0.73	+ 2.7	2.1/02.6	31500
1993 UT_{7}	1999 05 04.7	14 45.57	−08 50.3	20.3	−0.99	+ 4.9	2.7/02.9	32936
1991 YK_{1}	1999 05 04.7	14 45.77	−05 52.8	18.3	−0.78	+ 2.2	2.9/02.3	31584
(10480)	1999 05 04.7	14 45.81	−11 40.9	17.8	−1.02	+ 4.1	1.7/03.8	34431
1996 TF_{11}	1999 05 04.8	14 45.83	−19 21.6	16.7	−1.00	+ 5.0	1.4/05.6	34585
1981 EQ_{8}	1999 05 04.9	14 46.36	−17 08.3	18.8	−0.87	+ 4.8	0.3/05.2	31579
1998 BZ_{1}	1999 05 04.9	14 46.42	−11 59.5	18.5	−0.80	+ 3.7	1.2/03.9	31263
1997 AO_{1}	1999 05 04.9	14 46.43	−09 09.7	17.3	−0.64	+ 2.6	1.7/03.2	34586
1995 QE_{2}	1999 05 04.9	14 46.51	−16 53.8	18.5	−0.76	+ 7.7	0.2/05.2	34583
1997 YE_{14}	1999 05 04.9	14 46.52	−29 33.5	16.6	−0.92	+ 4.2	5.1/08.5	34589
1990 TK_{13}	1999 05 05.0	14 46.88	−02 15.5	18.4	−0.79	+ 2.2	4.0/01.7	34577
3078 T-1	1999 05 05.0	14 46.93	−13 50.2	18.7	−1.00	+ 5.8	0.8/04.5	34617
1993 VS_{1}	1999 05 05.0	14 46.99	−19 18.9	17.8	−0.98	+ 4.7	1.1/05.9	31276
1999 DH_{4}	1999 05 05.1	14 47.05	+01 18.4	17.0	−0.83	+ 3.9	6.3/30.4	34608
1269 T-1	1999 05 05.1	14 47.22	−27 45.8	19.2	−0.98	+ 2.3	3.8/07.9	31161
1992 WB_{2}	1999 05 05.2	14 47.45	−18 42.8	16.8	−0.96	+ 3.9	0.9/05.9	34579
1997 YC_{18}	1999 05 05.2	14 47.46	−26 43.7	21.4	−0.92	+ 4.2	3.3/08.0	31286
1998 CF	1999 05 05.2	14 47.62	+02 14.0	18.6	−0.84	+ 1.9	6.2/30.8	31430
1997 XP_{2}	1999 05 05.2	14 47.68	−18 26.1	19.3	−0.90	+ 5.0	0.7/05.9	31796
1996 TS_{11}	1999 05 05.3	14 47.81	−18 36.0	18.7	−1.07	+ 3.5	1.1/05.9	34585
1995 BP_{2}	1999 05 05.3	14 48.06	+06 02.0	18.1	−0.92	+11.2	9.0/28.5	34582
1978 SU_{4}	1999 05 05.4	14 48.12	−14 14.3	17.5	−0.95	+ 7.0	0.7/04.9	34572
4257 P-L	1999 05 05.4	14 48.15	−25 29.1	19.6	−1.08	+ 3.3	3.4/07.6	16035
1998 BR_{7}	1999 05 05.4	14 48.40	−51 16.8	18.6	−1.50	+ 0.9	10.9/13.8	33078
1979 MU_{7}	1999 05 05.4	14 48.47	−19 28.9	19.0	−1.04	+ 7.1	1.5/06.3	30779
1993 FR_{18}	1999 05 05.4	14 48.49	−17 14.5	17.2	−0.87	+ 1.0	0.3/05.7	31234
1998 BC_{1}	1999 05 05.6	14 48.87	−15 56.8	17.1	−0.77	+ 3.5	0.1/05.5	34589
1992 OY_{2}	1999 05 05.6	14 48.91	−08 44.6	18.1	−0.94	+ 4.4	2.6/03.7	34579
1995 AG	1999 05 05.6	14 48.97	−21 14.7	16.9	−1.06	+ 5.6	2.1/06.9	34582
1993 FN_{7}	1999 05 05.6	14 49.19	−06 56.9	17.8	−0.76	+ 3.7	2.7/03.2	34580
1993 QO_{8}	1999 05 05.7	14 49.29	−16 50.7	19.0	−1.02	+ 3.5	0.2/05.8	31419
1996 VJ_{5}	1999 05 05.7	14 49.30	−18 38.5	17.5	−0.90	+ 0.4	0.6/06.2	34585
1994 GY_{9}	1999 05 05.7	14 49.56	−04 10.6	19.0	−0.82	+ 5.3	3.7/02.5	34582
1993 FK_{38}	1999 05 05.7	14 49.57	−09 49.1	17.2	−0.76	+ 3.9	2.1/04.1	32515
3160 T-2	1999 05 05.7	14 49.64	−02 15.6	18.5	−0.72	+ 4.4	3.9/01.9	31609
1978 RK	1999 05 05.7	14 49.66	−35 41.0	17.9	−0.96	+ 0.6	5.1/10.1	32041
1996 RK_{1}	1999 05 05.8	14 49.79	−16 42.8	20.5	−0.86	+ 3.3	0.1/05.9	31421
1990 TT_{4}	1999 05 05.8	14 50.01	−03 14.0	18.8	−0.70	+ 4.1	3.2/02.3	34576
1996 PJ_{1}	1999 05 05.8	14 50.05	−15 49.1	19.5	−0.92	+ 4.1	0.2/05.8	31110
1997 VF_{6}	1999 05 05.9	14 50.08	−25 16.5	16.6	−0.90	+ 9.0	3.5/08.6	34523
1994 PP_{1}	1999 05 05.9	14 50.48	+00 24.9	16.8	−1.68	−12.9	9.0/05.3	34582
1998 CD_{2}	1999 05 06.0	14 50.54	+05 48.4	18.2	−0.85	+ 4.4	7.4/29.9	31594
1992 QB	1999 05 06.1	14 50.78	−05 41.9	16.5	−1.44	− 8.0	5.0/05.0	34579
1990 BB_{2}	1999 05 06.1	14 50.97	−34 50.6	16.7	−1.04	+ 4.5	6.8/11.1	34576
1996 VG_{7}	1999 05 06.1	14 50.99	−10 48.8	18.7	−0.80	+ 7.5	1.6/04.5	28602
1997 YA_{4}	1999 05 06.2	14 51.16	−26 06.9	18.0	−1.15	+ 4.2	3.9/08.4	32314
(8401)	1999 05 06.2	14 51.47	−02 22.9	17.8	−0.81	+ 5.6	5.4/02.4	31366
1991 RS_{40}	1999 05 06.3	14 51.57	−17 16.9	18.0	−0.88	+ 3.2	0.3/06.5	34578
1997 YU_{16}	1999 05 06.3	14 51.59	−13 58.5	17.4	−0.92	+ 2.9	0.9/05.7	34589
(8377)	1999 05 06.3	14 51.78	−15 35.9	16.8	−1.03	+ 0.7	0.3/06.2	31360
1981 ES_{3}	1999 05 06.3	14 51.86	−33 59.6	18.6	−1.00	+ 3.7	5.4/10.8	26915
1996 NZ_{3}	1999 05 06.3	14 51.90	−20 15.6	17.4	−0.97	+ 4.8	1.4/07.3	31278
2087 T-2	1999 05 06.3	14 51.97	−22 33.5	17.8	−0.93	+ 3.1	2.1/07.8	21978
1988 FW_{2}	1999 05 06.4	14 52.20	−12 01.8	16.9	−0.94	+ 7.1	1.8/05.3	34575
1993 HJ_{4}	1999 05 06.4	14 52.22	−16 46.7	19.2	−0.84	+ 1.0	0.1/06.5	33235
1997 UO_{3}	1999 05 06.4	14 52.27	−19 05.5	17.9	−0.99	+ 6.7	0.9/07.2	31280
1981 ED_{47}	1999 05 06.5	14 52.36	−19 54.3	19.9	−1.06	+ 4.2	1.4/07.3	26923
1993 FZ_{35}	1999 05 06.5	14 52.37	−12 39.6	17.7	−0.78	+ 3.3	1.2/05.6	34580
1996 OB	1999 05 06.5	14 52.37	−17 58.0	18.4	−0.99	+ 6.0	0.6/06.9	31242
5065 T-2	1999 05 06.5	14 52.46	−21 35.6	18.6	−0.92	+ 8.1	1.9/08.0	31295
1980 VA_{3}	1999 05 06.5	14 52.64	−21 10.5	17.3	−1.09	+ 3.8	1.8/07.6	34573
6188 P-L	1999 05 06.5	14 52.68	−16 34.9	17.1	−1.01	+ 5.8	0.0/06.6	34616
1981 EL_{40}	1999 05 06.5	14 52.72	−24 00.4	19.6	−0.95	+ 2.9	2.9/08.3	26922

1990 WF	1999 05 06.5	14 52.72	−08 44.3	16.7	−1.01	+ 4.5	2.9/04.7	34577
(8694)	1999 05 06.6	14 52.73	−16 41.3	16.0	−0.85	+ 3.0	0.1/06.6	31685
1997 UN_{24}	1999 05 06.6	14 52.83	−19 59.0	18.9	−0.99	+ 5.6	1.1/07.5	31148
4041 P-L	1999 05 06.6	14 52.90	−19 21.6	19.0	−1.01	+ 4.5	1.0/07.3	31294
1996 UB	1999 05 06.6	14 52.97	−17 08.9	17.0	−0.84	+ 4.0	0.2/06.8	34585
1993 TZ_{36}	1999 05 06.6	14 53.03	−08 35.1	18.8	−0.98	+ 5.8	3.0/04.6	25332
1994 AF	1999 05 06.6	14 53.03	−17 56.7	18.3	−0.95	+ 5.1	0.5/07.0	31586
1993 FG_{12}	1999 05 06.7	14 53.08	−00 09.8	18.1	−0.72	+ 5.3	4.7/02.1	34580
1997 YO	1999 05 06.7	14 53.27	+08 41.4	16.5	−0.81	+ 0.4	8.0/01.0	34588
1993 TK_{22}	1999 05 06.7	14 53.31	−17 03.0	17.3	−1.02	+ 3.3	0.2/06.9	31235
(9201)	1999 05 06.7	14 53.48	−16 01.8	16.7	−0.80	+ 3.2	0.2/06.7	32424
1982 UA_{11}	1999 05 06.7	14 53.50	−16 10.6	18.5	−0.97	+ 4.8	0.1/06.7	32216
1995 GH_7	1999 05 06.8	14 53.52	−01 45.3	16.4	−0.84	+ 4.4	6.6/02.9	34583
1994 YF_2	1999 05 06.8	14 53.68	−14 26.2	16.1	−1.06	+ 2.0	1.0/06.4	34582
1998 BX_8	1999 05 06.9	14 54.02	−32 01.7	19.0	−0.94	+ 2.1	4.8/10.6	32059
1999 GZ_3	1999 05 06.9	14 54.31	−19 45.1	18.9	−1.01	+ 6.8	1.3/07.8	34562
1980 LY	1999 05 07.2	14 55.05	−08 25.8	16.2	−1.02	+ 2.7	4.2/05.4	34573
1996 VM_3	1999 05 07.2	14 55.09	−17 53.1	17.5	−0.84	+ 3.8	0.4/07.5	34585
1993 FT_4	1999 05 07.2	14 55.20	−12 23.9	16.3	−0.78	+ 3.2	1.5/06.2	34580
1986 VR_5	1999 05 07.2	14 55.31	−23 10.9	17.1	−1.01	+ 6.0	2.5/09.0	34574
5011 P-L	1999 05 07.2	14 55.39	−19 07.8	18.1	−0.87	+ 5.5	0.8/07.9	34616
1984 SP_4	1999 05 07.3	14 55.72	−24 22.5	19.3	−0.97	+ 4.1	2.4/09.0	28582
4275 P-L	1999 05 07.3	14 55.75	−06 10.4	21.3	−0.86	+ 6.8	3.3/04.5	32729
1996 TC_{13}	1999 05 07.3	14 55.86	−09 46.2	20.4	−0.86	+ 4.2	2.1/05.7	31731
(9119)	1999 05 07.4	14 55.92	−17 35.7	18.1	−0.81	+ 3.6	0.3/07.6	32201
1981 QS	1999 05 07.4	14 55.97	−09 32.4	18.6	−0.93	+ 4.8	2.4/05.6	34573
1992 EB_8	1999 05 07.5	14 56.40	−14 54.3	18.1	−1.06	+ 4.9	0.7/07.1	34579
4294 T-2	1999 05 07.6	14 56.61	−12 27.0	17.4	−1.03	+ 3.9	1.7/06.6	34618
1998 CE_3	1999 05 07.6	14 56.69	−29 46.5	18.7	−0.91	+ 2.4	3.8/10.7	32315
4171 T-2	1999 05 07.6	14 56.91	−06 30.3	17.9	−0.91	+ 4.2	4.3/05.1	34618
1994 ED	1999 05 07.7	14 57.04	−14 33.5	17.4	−0.88	+ 3.6	0.8/07.2	34582
(8301)	1999 05 07.7	14 57.13	−10 01.7	17.3	−0.99	+ 3.9	2.9/06.2	31218
1998 DW_9	1999 05 07.7	14 57.26	−20 29.0	17.7	−0.71	+ 4.3	0.9/08.7	34590
1971 US	1999 05 07.7	14 57.42	−16 33.5	18.3	−1.00	+ 3.5	0.1/07.7	31271
1975 SP_1	1999 05 07.8	14 57.53	−09 21.7	19.6	−0.88	+ 7.1	2.7/05.8	25526
3140 T-3	1999 05 07.8	14 57.63	−17 11.9	18.7	−1.05	+ 4.6	0.1/07.9	33737
1987 DQ_6	1999 05 07.8	14 57.66	−37 24.6	16.9	−1.00	+ 0.7	6.0/12.4	31782
1979 ME_8	1999 05 07.9	14 57.87	−13 00.1	17.8	−1.00	+ 5.9	1.6/07.0	34572
1997 XW_4	1999 05 07.9	14 58.15	−18 13.4	19.2	−0.85	+ 3.6	0.4/08.3	31424
1998 DS_3	1999 05 08.0	14 58.22	−01 06.7	17.1	−0.76	+ 3.8	4.8/04.0	31800
1992 GB_2	1999 05 08.0	14 58.35	−14 50.1	17.2	−0.97	+ 6.3	0.9/07.5	31138
1998 FN_{11}	1999 05 08.1	14 58.51	−17 05.2	16.7	−0.93	+ 7.6	0.0/08.1	34590
1998 AH	1999 05 08.1	14 58.67	−20 28.7	18.3	−0.96	+ 3.2	1.1/09.0	31797
(8391)	1999 05 08.1	14 58.69	−12 33.7	17.0	−0.77	+ 3.2	1.3/07.1	34572
1951 SX	1999 05 08.1	14 58.86	+18 08.7	20.5	−1.17	+16.2	12.9/25.6	30972
1983 RF_2	1999 05 08.2	14 58.99	−10 52.4	18.4	−0.91	+ 2.5	1.9/06.8	31580
1982 TT_2	1999 05 08.3	14 59.28	−29 05.1	16.5	−1.08	+ 0.3	4.2/10.6	34574
1996 VD_6	1999 05 08.3	14 59.37	−15 10.6	18.0	−0.74	+ 3.9	0.5/07.9	31589
(8243)	1999 05 08.3	14 59.45	−21 55.3	15.9	−1.05	− 0.4	2.1/09.0	34279
(8382)	1999 05 08.3	14 59.48	−11 15.2	18.8	−0.90	+ 3.3	1.9/07.0	31362
1990 WV	1999 05 08.3	14 59.51	−08 30.1	18.9	−1.03	+ 3.5	3.2/06.4	31380
1995 BN_1	1999 05 08.3	14 59.59	−14 41.7	18.1	−1.04	+ 3.2	1.0/07.9	34509
(10532)	1999 05 08.3	14 59.61	−00 11.4	16.6	−0.84	+ 2.9	7.2/04.2	34445
1988 XE	1999 05 08.3	14 59.63	−24 45.9	18.3	−0.90	+ 5.9	2.2/10.4	31783
1992 PT	1999 05 08.3	14 59.70	−16 38.8	18.4	−1.00	+ 4.6	0.1/08.3	28317
1994 QL	1999 05 08.4	14 59.99	−18 56.7	17.0	−1.91	−12.4	1.0/08.5	25084
1998 DH_{10}	1999 05 08.4	15 00.06	−06 50.7	18.1	−0.74	+ 4.7	2.9/05.8	34590
1998 FT_{13}	1999 05 08.4	15 00.08	−18 35.6	17.5	−0.88	+ 1.1	0.5/08.8	32317
2711 P-L	1999 05 08.5	15 00.20	−12 16.1	18.9	−0.97	+ 4.6	1.9/07.4	32728
(8378)	1999 05 08.6	15 00.67	−31 55.2	17.2	−1.11	+ 0.6	4.7/11.6	31361
1992 YU_1	1999 05 08.6	15 00.75	−24 00.8	17.3	−0.91	+ 4.4	2.3/10.3	34580
1997 YD	1999 05 08.6	15 00.79	−16 48.6	18.0	−1.01	+ 3.8	0.1/08.6	31424
(8288)	1999 05 08.6	15 00.83	−16 51.5	16.6	−1.08	+ 4.2	10.6/19.0	34572
(10528)	1999 05 08.6	15 00.86	−18 04.6	16.0	−1.07	+ 2.5	10.6/29.0	34444
1998 DE_5	1999 05 08.6	15 00.91	−21 49.2	17.7	−1.03	+ 2.4	1.8/09.7	34590
4250 T-3	1999 05 08.7	15 00.84	−11 20.8	18.8	−0.95	+ 4.3	2.0/07.3	31826
1996 TR_5	1999 05 08.7	15 00.87	−57 54.0	18.3	−1.87	− 3.5	15.5/14.5	31791
1992 UL_6	1999 05 08.7	15 00.99	−12 31.0	18.1	−0.89	+ 2.3	1.4/07.7	34579
1996 VL	1999 05 08.7	15 01.17	−25 17.1	17.1	−1.17	+ 1.7	3.5/10.3	28866
1987 BU_1	1999 05 08.7	15 01.27	−18 27.7	18.3	−0.98	+ 5.3	0.5/09.1	31136
(8190)	1999 05 08.8	15 01.32	−21 42.8	16.8	−1.09	+ 5.2	1.9/09.9	31084
1998 DV_3	1999 05 08.8	15 01.33	−15 51.7	17.9	−0.80	+ 3.5	0.4/08.5	31407
1981 EQ_{16}	1999 05 08.8	15 01.50	−35 29.3	19.2	−0.91	+ 1.9	5.0/13.2	32042
1997 YW_5	1999 05 08.8	15 01.65	−14 17.8	16.8	−0.91	+ 1.8	1.0/08.3	34589
1993 XV	1999 05 08.9	15 01.93	−25 50.6	17.6	−0.99	+ 4.7	2.8/11.1	31586
(8473)	1999 05 08.9	15 01.99	−11 41.0	17.7	−0.79	+ 2.3	1.6/07.7	31489
1990 WT_6	1999 05 08.9	15 02.00	−10 47.8	18.9	−0.98	+ 5.2	2.3/07.4	27934
1988 VB_1	1999 05 09.0	15 02.17	−33 29.6	17.9	−1.16	+ 0.5	5.6/12.2	34575
1995 CH_2	1999 05 09.0	15 02.20	−16 16.8	18.0	−0.96	+ 5.0	0.4/08.8	34583
1992 DA_{10}	1999 05 09.2	15 02.78	−17 51.6	18.2	−0.77	+ 4.1	0.2/09.4	31786
1991 PP_9	1999 05 09.2	15 02.93	−27 21.2	18.2	−0.92	+ 3.2	2.9/11.6	31785
1978 TQ_5	1999 05 09.2	15 03.07	−23 59.4	18.6	−0.79	+ 3.0	1.6/10.9	32738
1996 XX_5	1999 05 09.2	15 03.11	−19 35.0	20.2	−0.74	+ 3.2	0.5/09.8	31010
1996 UR	1999 05 09.3	15 03.57	−12 20.2	17.7	−0.85	+ 5.0	1.5/08.1	31792
1998 DJ_{14}	1999 05 09.4	15 03.73	+05 11.5	18.3	−0.84	+ 3.4	7.3/03.7	31596
(8486)	1999 05 09.4	15 03.74	−33 24.4	18.2	−1.02	− 0.8	4.4/12.5	31493
1996 VU_5	1999 05 09.4	15 03.97	−14 08.6	18.5	−0.76	+ 3.2	0.8/08.7	34585
1997 AY_2	1999 05 09.5	15 04.02	−07 10.9	17.6	−0.77	+ 1.9	2.7/07.2	34586
1998 BH_{12}	1999 05 09.5	15 04.04	+06 14.6	18.7	−0.90	+ 1.7	7.9/04.1	31798
1996 UC_4	1999 05 09.5	15 04.22	−18 19.5	18.2	−0.93	+ 2.6	0.3/09.8	31279
1996 XN_2	1999 05 09.5	15 04.26	−20 55.3	19.5	−0.97	+ 4.2	1.2/10.4	30786
1981 EJ_3	1999 05 09.5	15 04.34	−33 46.9	18.9	−1.01	+ 3.9	5.2/13.6	26915
1997 UV_{21}	1999 05 09.5	15 04.42	−15 17.1	17.2	−1.10	− 0.8	0.8/09.2	34587
1995 CE	1999 05 09.5	15 04.42	−10 21.0	17.3	−1.04	+ 2.6	2.8/08.1	34583
1990 RF_6	1999 05 09.6	15 04.46	−11 31.8	19.3	−0.76	+ 3.6	1.5/08.2	23780
1996 TR_1	1999 05 09.6	15 04.60	−10 03.3	17.3	−0.84	+ 4.3	2.5/07.9	31278
1981 SG_3	1999 05 09.7	15 05.06	−22 18.1	17.4	−1.03	+ 4.8	1.8/10.9	31781
1996 TY_{27}	1999 05 09.8	15 05.15	−10 35.2	18.6	−0.81	+ 2.1	2.2/08.3	31279
4545 P-L	1999 05 09.8	15 05.32	−16 20.0	17.3	−0.83	+ 3.8	0.4/09.6	31436
(8141)	1999 05 09.8	15 05.36	−24 19.2	17.9	−1.07	+ 2.5	2.2/11.3	31073
(10291)	1999 05 09.8	15 05.36	−15 13.7	15.7	−0.89	+ 1.1	0.7/09.4	34134
1995 DR_1	1999 05 09.9	15 05.53	−02 28.3	16.8	−0.95	+ 3.6	6.0/06.5	34583

4835 T-1	1999 05 09.9	15 05.62	−34 28.6	15.6	−1.85	− 8.3	8.8/11.1	34617
1981 ET_{47}	1999 05 09.9	15 05.64	−23 58.0	17.9	−0.99	+ 2.5	2.2/11.3	34573
1996 XL_4	1999 05 09.9	15 05.69	−26 54.6	20.7	−0.95	+ 5.0	2.8/12.2	30786
1981 ES_5	1999 05 09.9	15 05.90	−31 56.9	18.4	−0.99	+ 4.1	4.6/13.4	31780
1981 EH_7	1999 05 09.9	15 05.90	−07 53.7	19.5	−0.82	+ 7.6	3.2/07.3	26916
1993 XP	1999 05 10.0	15 05.96	−29 53.1	16.5	−0.98	+ 7.3	4.5/13.4	34581
4066 P-L	1999 05 10.0	15 06.15	−23 07.8	19.4	−1.12	+ 3.2	2.1/11.2	25229
1988 BM_3	1999 05 10.0	15 06.23	−20 41.2	16.0	−0.98	+ 4.5	1.6/10.8	34574
1992 EN_{25}	1999 05 10.0	15 06.23	−16 12.2	19.2	−0.77	+ 2.9	0.4/09.8	24106
1979 SH	1999 05 10.0	15 06.34	−25 14.4	19.5	−0.97	+ 3.3	2.4/11.8	32738
1998 BS_{13}	1999 05 10.1	15 06.67	−19 52.4	17.2	−0.87	+ 4.5	0.8/10.8	34590
1998 CR_2	1999 05 10.1	15 06.74	−04 00.3	17.1	−0.75	+ 4.4	4.0/06.7	32315
1981 EC_{31}	1999 05 10.2	15 06.79	−35 39.0	19.0	−1.12	+ 0.9	6.2/14.0	31096
(8535)	1999 05 10.2	15 07.12	−17 02.8	16.7	−0.81	+ 3.4	0.2/10.2	31504
3355 T-3	1999 05 10.3	15 07.12	−11 12.5	18.4	−0.81	+ 6.7	2.3/08.6	20518
4049 P-L	1999 05 10.3	15 07.36	−11 11.9	18.7	−0.72	+ 4.3	1.7/08.8	34616
1996 XG_{20}	1999 05 10.3	15 07.48	−18 59.0	20.3	−0.86	+ 3.9	0.4/10.7	28873
5192 T-2	1999 05 10.3	15 07.51	−51 52.0	19.1	−1.91	− 2.5	16.0/16.8	30776
1993 FU_{32}	1999 05 10.4	15 07.47	−12 32.4	18.6	−0.80	+ 3.2	1.6/09.2	31585
(8296)	1999 05 10.4	15 07.52	−30 02.1	17.5	−0.94	+ 3.0	3.6/13.3	31217
(8423)	1999 05 10.4	15 07.65	−14 14.4	18.7	−0.75	+ 3.1	0.8/09.7	31370
(8436)	1999 05 10.4	15 07.67	−11 26.8	18.6	−0.77	+ 3.0	1.7/09.0	31373
1998 DN_1	1999 05 10.4	15 07.75	−15 21.3	16.3	−0.82	+ 2.7	0.8/10.0	34590
1998 BZ_{40}	1999 05 10.4	15 07.84	−18 09.0	17.4	−0.82	+ 3.0	0.2/10.6	31267
1981 ES_{43}	1999 05 10.5	15 07.95	−15 59.2	19.0	−0.76	+ 3.7	0.5/10.1	32510
3464 T-3	1999 05 10.5	15 08.06	−20 29.2	19.9	−1.03	+ 3.3	1.0/11.2	31295
1979 MP_3	1999 05 10.5	15 08.16	−17 00.9	18.7	−1.02	+ 5.2	0.2/10.4	28610
(8213)	1999 05 10.6	15 08.29	−51 05.9	16.5	−1.81	− 3.8	13.6/16.8	31089
3066 P-L	1999 05 10.6	15 08.30	−11 18.5	17.1	−0.82	+ 7.6	2.2/08.9	34616
1981 EY_{40}	1999 05 10.6	15 08.49	−17 10.8	19.1	−0.90	+ 4.2	0.2/10.5	22271
1993 FZ_{23}	1999 05 10.6	15 08.67	−35 13.1	17.0	−1.09	− 1.6	6.1/13.6	34580
1998 CB	1999 05 10.6	15 08.68	−04 48.9	17.9	−0.87	+ 2.1	4.6/07.8	34530
1996 XO_2	1999 05 10.7	15 09.06	−15 24.4	17.7	−0.83	+ 3.8	0.8/10.3	34586
1987 ON	1999 05 10.8	15 09.18	+04 40.3	17.3	−0.85	+ 6.1	8.5/04.4	34574
(8259)	1999 05 10.8	15 09.31	−13 00.9	17.5	−1.08	+ 2.7	1.7/09.9	31210
1997 XK_{11}	1999 05 10.9	15 09.52	−09 10.3	17.2	−0.97	+ 2.3	3.0/09.1	31283
(8248)	1999 05 10.9	15 09.60	−15 32.8	17.8	−1.01	+ 4.8	0.8/10.4	31207
1996 XH_6	1999 05 10.9	15 09.67	−13 22.1	17.8	−0.84	+ 3.0	1.4/10.0	34586
1997 WS_{21}	1999 05 11.0	15 09.81	−13 16.8	18.5	−1.03	+ 4.8	1.7/10.0	31282
1996 VL_4	1999 05 11.0	15 09.81	−17 18.6	18.0	−0.90	+ 2.3	0.1/10.9	29117
(8363)	1999 05 11.0	15 09.94	−13 55.0	17.1	−0.80	+ 3.0	1.2/10.2	34572
1179 T-2	1999 05 11.0	15 10.22	−16 45.6	16.6	−0.89	+ 4.9	0.5/10.9	34617
2024 T-2	1999 05 11.1	15 10.34	−28 57.3	18.5	−0.97	+ 2.2	3.5/13.5	32092
1997 YZ_8	1999 05 11.1	15 10.58	−10 01.6	18.9	−0.98	+ 2.6	2.9/09.6	31257
1993 FK_{33}	1999 05 11.2	15 10.62	−12 35.6	18.0	−0.80	+ 3.0	1.6/10.0	31234
1990 SP_8	1999 05 11.2	15 10.63	−02 02.1	17.8	−0.76	+ 3.6	5.0/07.4	34576
1993 VU_5	1999 05 11.3	15 10.98	−25 09.5	16.3	−1.10	+ 1.2	3.3/12.7	34581
(8726)	1999 05 11.3	15 10.99	−18 13.1	16.9	−0.76	+ 5.1	0.1/11.4	31693
(8212)	1999 05 11.3	15 11.06	−17 45.0	16.2	−1.04	+ 2.5	0.0/11.3	31089
1996 SY_4	1999 05 11.3	15 11.29	−16 05.1	18.5	−1.04	+ 3.0	0.7/11.0	31588
4276 P-L	1999 05 11.4	15 11.41	−28 19.4	16.7	−1.06	− 0.1	5.7/13.3	34616
1998 DC_1	1999 05 11.4	15 11.41	−35 58.4	19.3	−0.96	+ 1.7	5.4/15.5	31800
1998 BG_8	1999 05 11.4	15 11.43	−14 34.2	17.6	−0.95	+ 3.0	1.1/10.7	34589
(9230)	1999 05 11.4	15 11.69	−16 23.3	18.1	−0.79	+ 2.7	0.4/11.1	32430
(8431)	1999 05 11.4	15 11.71	−18 33.8	16.2	−0.87	+ 3.9	0.2/11.6	31372
1985 QM_5	1999 05 11.5	15 11.93	−13 56.8	17.6	−0.83	+ 3.5	1.3/10.6	34574
(8239)	1999 05 11.6	15 12.25	−16 06.1	17.2	−0.80	+ 3.3	0.6/11.2	31095
1992 DW_5	1999 05 11.6	15 12.29	−18 17.6	17.3	−0.81	+ 2.7	0.1/11.7	34578
1991 DC	1999 05 11.6	15 12.40	−21 07.1	17.7	−1.05	+ 3.0	1.2/12.3	17972
1991 VX_5	1999 05 11.7	15 12.56	−07 06.7	16.9	−0.86	+ 0.6	3.6/09.6	34578
1996 XJ_{32}	1999 05 11.7	15 12.79	−16 58.1	18.8	−0.77	+ 2.8	0.3/11.5	34586
1990 RO_6	1999 05 11.7	15 12.79	−20 09.7	17.7	−0.87	+ 3.0	0.8/12.3	34576
1996 PM_3	1999 05 11.8	15 13.05	+03 19.2	17.9	−0.86	+ 3.7	7.6/06.8	34584
1992 UW	1999 05 11.8	15 13.15	−21 19.0	17.7	−0.98	+ 3.1	1.1/12.6	34579
1995 AW_2	1999 05 11.9	15 13.59	−21 10.3	15.5	−0.96	+ 7.5	1.5/12.8	34582
1981 EY_{16}	1999 05 11.9	15 13.62	−18 40.2	19.0	−1.03	+ 5.3	0.3/12.1	26918
1995 KN	1999 05 11.9	15 13.67	−13 44.0	16.4	−1.07	+ 1.4	1.9/11.2	34583
5185 T-2	1999 05 12.0	15 13.94	−31 49.9	17.5	−0.99	+ 3.0	5.2/15.1	34618
1996 NA_2	1999 05 12.0	15 13.98	−27 52.1	18.5	−1.07	+ 4.6	3.6/14.3	32751
1996 WT_1	1999 05 12.1	15 14.19	−17 25.0	20.9	−0.78	+ 3.1	0.1/12.0	28869
(8122)	1999 05 12.1	15 14.29	−20 34.2	17.0	−1.04	+ 4.2	1.0/12.7	30971
(8123)	1999 05 12.1	15 14.50	−12 44.8	18.0	−1.01	+ 4.9	2.1/11.0	30972
1988 XO	1999 05 12.1	15 14.57	−00 34.3	17.0	−0.98	+ 0.2	6.0/08.8	34575
1981 EU_6	1999 05 12.1	15 14.59	−22 06.3	17.5	−1.04	+ 8.8	1.9/13.2	27303
1995 FH_5	1999 05 12.1	15 14.62	−54 41.0	18.5	−1.94	− 7.7	16.5/14.0	29946
1994 AS_2	1999 05 12.2	15 14.60	−20 29.5	18.8	−1.01	+ 3.5	0.8/12.7	32051
1998 BB_{42}	1999 05 12.2	15 14.78	−24 30.4	17.5	−1.00	+ 2.0	2.2/13.6	34590
1997 XS_3	1999 05 12.2	15 14.90	−10 39.2	17.4	−0.80	+ 1.6	2.8/10.7	31424
(8735)	1999 05 12.3	15 15.01	−18 02.7	17.8	−0.76	+ 2.6	0.0/12.3	31695
1990 UB_1	1999 05 12.3	15 15.24	−25 21.4	17.3	−0.89	+ 0.4	2.0/13.8	34577
(9312)	1999 05 12.4	15 15.42	−26 35.4	16.8	−0.90	+ 5.3	2.9/14.5	32608
1986 QO_4	1999 05 12.4	15 15.45	−26 54.1	17.3	−1.17	+ 2.0	3.5/14.0	34574
1997 WM_{39}	1999 05 12.4	15 15.50	−13 12.5	18.3	−1.00	+ 3.3	1.9/11.4	31395
1997 WN_{13}	1999 05 12.4	15 15.54	−15 19.6	18.4	−1.00	+ 4.3	1.0/11.9	31281
1982 UE_6	1999 05 12.4	15 15.65	−19 49.2	17.7	−1.03	+ 3.3	0.6/12.8	34484
1997 YH_{14}	1999 05 12.5	15 15.70	−19 46.7	17.7	−0.86	+ 3.3	0.6/12.9	31425
2655 P-L	1999 05 12.6	15 16.13	−31 17.1	20.4	−0.89	+ 1.0	3.4/15.3	25969
1997 YS_1	1999 05 12.6	15 16.29	−09 04.1	18.5	−0.99	+ 2.2	3.3/10.8	34589
1998 BW_8	1999 05 12.6	15 16.43	−22 59.7	18.0	−0.86	+ 1.7	1.7/13.7	34528
1997 YD_{15}	1999 05 12.6	15 16.54	−14 01.2	17.8	−0.92	+ 2.8	1.4/11.8	31797
1986 RV_5	1999 05 12.7	15 16.70	−19 42.1	18.1	−1.04	+ 5.7	0.6/13.1	31226
1996 VU_6	1999 05 12.7	15 16.72	−14 12.5	18.7	−0.98	+ 2.1	1.2/12.0	29308
(8376)	1999 05 12.7	15 16.92	−18 16.2	16.5	−0.71	+ 1.9	0.0/12.8	31360
6809 P-L	1999 05 12.8	15 17.11	−17 11.9	18.6	−1.02	+ 3.3	0.5/12.6	28319
1996 TO_{39}	1999 05 12.8	15 17.28	−15 06.8	19.0	−0.96	+ 3.1	1.0/12.2	34200
1998 DO	1999 05 12.9	15 17.39	−00 12.2	18.7	−0.80	+ 4.1	5.3/08.6	32059
1997 YN_7	1999 05 12.9	15 17.44	+03 39.6	17.3	−0.91	+ 1.1	7.2/08.3	34527
(8452)	1999 05 12.9	15 17.47	−17 55.9	18.2	−1.01	+ 3.1	0.1/12.9	31485
1997 YQ_{14}	1999 05 13.0	15 17.64	−18 52.0	17.4	−0.81	+ 2.9	0.2/13.1	34589
1997 AF_{22}	1999 05 13.1	15 18.05	−40 10.3	18.9	−0.92	+ 1.9	5.3/18.0	31794
1993 FY_{22}	1999 05 13.1	15 18.08	−28 33.6	18.8	−0.89	+ 1.9	3.0/15.3	31787
1997 WW_{36}	1999 05 13.1	15 18.09	−12 11.6	18.0	−1.05	+ 2.7	2.6/11.9	31424

(8998)	1999 05 13.1	15 18.12	−19 15.2	18.4	−0.79	+	2.9	0.3/13.3	32173
(8564)	1999 05 13.1	15 18.14	−31 29.8	16.9	−0.92	+	0.6	4.0/15.7	31511
1998 DD_2	1999 05 13.1	15 18.28	−29 17.2	21.6	−0.90	+	2.5	3.0/15.6	31800
3122 T-2	1999 05 13.2	15 18.42	−25 30.9	17.0	−1.04	−	0.2	3.5/14.5	31269
(8323)	1999 05 13.2	15 18.52	−03 50.6	18.2	−0.86	+	2.8	4.2/10.1	31348
1988 JB_1	1999 05 13.2	15 18.55	+22 26.2	16.5	−0.48	+	3.1	19.1/25.2	34004
1998 DR_2	1999 05 13.2	15 18.63	−31 20.8	17.4	−0.94	+	1.9	4.1/16.0	31800
1993 FG_6	1999 05 13.3	15 18.86	−19 01.2	17.4	−0.85	+	2.7	0.2/13.5	31787
(8628)	1999 05 13.3	15 19.05	−02 49.0	17.0	−0.84	+	5.5	5.0/09.4	31670
1998 DU_7	1999 05 13.3	15 19.25	−06 11.3	17.1	−0.84	+	0.8	3.7/11.0	34590
1998 BV_{33}	1999 05 13.4	15 19.25	−17 42.3	17.5	−0.81	+	1.6	0.2/13.3	31798
1998 BJ	1999 05 13.6	15 20.06	−26 35.2	17.9	−1.11	+	5.2	3.0/15.4	31592
1992 QC	1999 05 13.6	15 20.08	−37 36.7	17.8	−1.71	−	8.5	8.7/14.0	25215
(8740)	1999 05 13.6	15 20.44	−16 04.9	17.2	−0.84	+	3.6	0.8/13.2	34572
1990 SS_8	1999 05 13.7	15 20.53	−03 26.0	18.1	−0.78	+	4.3	4.8/10.1	34576
1997 XN_{10}	1999 05 13.7	15 20.63	−17 06.5	18.9	−1.02	+	2.7	0.5/13.5	31283
1992 UL_4	1999 05 13.7	15 20.64	−07 31.0	15.3	−0.97		0.0	4.2/11.8	34499
1998 EO_8	1999 05 13.7	15 20.66	−08 02.1	17.6	−0.77	+	4.3	3.1/11.3	31804
1981 EJ_{20}	1999 05 13.7	15 20.70	−30 13.6	18.9	−1.04	+	1.7	4.1/16.1	32739
1995 UX_6	1999 05 13.7	15 20.73	−18 56.7	19.5	−0.82	+	2.6	6.7/24.0	28889
3308 T-1	1999 05 13.8	15 20.91	−16 23.8	17.2	−0.80	+	3.3	0.7/13.4	34617
1993 VC_5	1999 05 13.8	15 20.93	+11 11.5	19.8	−0.90	+	4.5	8.8/06.3	31419
1998 BU_1	1999 05 13.8	15 21.12	−00 20.9	18.3	−0.93	+	0.7	6.0/10.4	31427
(8926)	1999 05 13.8	15 21.17	−17 58.0	17.3	−0.78	+	3.0	0.1/13.8	31929
1997 WK_7	1999 05 13.8	15 21.20	−19 51.6	16.1	−1.10	+	1.5	0.6/14.1	34588
1993 FF_4	1999 05 13.9	15 21.43	−19 07.7	18.5	−0.83	+	2.5	0.2/14.1	31585
(8467)	1999 05 14.0	15 21.61	−31 00.4	18.0	−0.90	+	1.2	3.8/16.5	31488
1997 YU_5	1999 05 14.0	15 21.75	−26 09.3	20.1	−0.92	+	4.4	2.3/15.8	31796
(8755)	1999 05 14.0	15 21.76	−18 02.1	17.7	−0.77	+	2.6	0.1/13.9	31700
1990 SR_8	1999 05 14.0	15 21.92	−14 24.6	18.2	−1.09	+	1.9	1.7/13.3	32923
1992 WU_1	1999 05 14.1	15 22.41	−18 18.7	19.1	−0.90	+	4.4	0.1/14.1	31585
(8306)	1999 05 14.2	15 22.47	−15 05.9	17.8	−1.05	+	6.2	1.4/13.4	31219
1994 CL_2	1999 05 14.2	15 22.73	−12 17.2	18.4	−0.92	+	2.9	2.1/13.0	31276
1994 CC_{18}	1999 05 14.3	15 22.91	−35 28.7	18.9	−1.12	+	1.2	5.5/17.5	31789
1996 SH_7	1999 05 14.3	15 23.06	−20 17.6	17.0	−1.08	+	2.4	0.7/14.7	28864
1986 VQ_2	1999 05 14.4	15 23.32	−25 15.3	17.7	−1.10	+	5.2	2.7/15.9	34574
1992 CS	1999 05 14.4	15 23.34	+15 28.0	18.1	−0.73	+	2.1	9.3/05.5	34495
1997 YJ_{16}	1999 05 14.4	15 23.44	−27 31.0	17.1	−1.17	+	1.4	3.3/16.1	34589
1992 UT_1	1999 05 14.5	15 23.57	−14 18.8	16.2	−0.98	+	1.6	1.8/13.7	34579
1987 RT_5	1999 05 14.5	15 23.57	−12 50.9	16.7	−1.09	+	3.6	2.8/13.3	34574
1995 AT_2	1999 05 14.6	15 23.98	−20 21.1	16.8	−1.11	+	2.5	0.8/14.9	31140
1981 EZ_{45}	1999 05 14.7	15 24.53	−10 34.3	18.2	−0.76	+	3.4	2.4/12.9	32214
1079 T-2	1999 05 14.7	15 24.71	−20 56.9	17.0	−0.94	+	2.8	0.8/15.2	34617
1990 SM_7	1999 05 14.8	15 24.77	−20 24.1	17.4	−1.15	+	0.8	0.8/15.1	31137
1997 YS_{10}	1999 05 14.8	15 24.79	−16 41.9	16.8	−0.98	+	4.7	0.7/14.4	34589
(10462)	1999 05 14.8	15 24.83	−03 15.8	16.4	−0.80	+	4.0	8.3/11.1	34427
1994 BA_1	1999 05 14.8	15 25.04	−26 28.6	18.4	−1.02	+	2.0	2.7/16.4	31419
1993 FN_8	1999 05 14.9	15 25.31	−08 32.5	18.1	−0.78	+	2.7	3.4/12.8	31419
1993 FA_{20}	1999 05 14.9	15 25.38	−18 02.4	17.2	−0.86	+	0.9	0.2/14.8	34580
1983 RL_4	1999 05 15.0	15 25.60	+04 57.9	18.3	−0.84	+	4.8	7.0/08.9	32044
1990 UJ_5	1999 05 15.0	15 25.63	−06 37.4	16.4	−0.76	+	4.4	3.8/12.1	31784
(8432)	1999 05 15.0	15 25.75	−16 41.8	16.8	−0.82	+	2.3	0.7/14.6	31372
4640 P-L	1999 05 15.0	15 25.83	−08 01.0	19.2	−0.74	+	3.8	3.2/12.6	26192
1989 SO_3	1999 05 15.1	15 26.31	−10 06.1	18.9	−0.95	+	4.5	3.0/13.3	31527
1981 EM_{23}	1999 05 15.1	15 26.38	−29 54.8	19.4	−0.86	+	1.6	2.9/17.4	32298
(8309)	1999 05 15.2	15 26.53	−23 38.2	16.6	−1.07	+	4.4	2.0/16.3	31220
1997 WN_{47}	1999 05 15.3	15 27.11	−21 41.4	18.2	−1.05	+	3.7	1.1/16.0	31123
1997 YN_1	1999 05 15.4	15 27.21	+00 34.9	19.1	−0.89	+	2.0	6.0/11.6	31424
(8743)	1999 05 15.4	15 27.37	+04 48.8	16.8	−0.64	+	2.7	6.4/09.6	34572
1990 VX_1	1999 05 15.5	15 27.72	−19 33.3	17.5	−1.10	+	4.5	0.3/15.7	22592
(10582)	1999 05 15.5	15 27.74	−16 39.5	17.1	−0.87	+	0.4	0.6/15.2	34458
1991 PB_2	1999 05 15.6	15 28.00	−07 57.8	16.8	−0.87	+	0.7	5.1/13.6	34578
1992 DD_{10}	1999 05 15.6	15 28.05	−16 46.8	17.3	−0.77	+	4.0	0.6/15.2	32304
1984 SS_1	1999 05 15.6	15 28.20	−18 28.2	16.8	−1.08	+	5.4	0.2/15.6	34574
(8408)	1999 05 15.6	15 28.28	−18 36.4	17.6	−0.83	+	3.1	0.1/15.6	31367
(8387)	1999 05 15.7	15 28.34	−03 13.9	17.3	−0.77	+	3.2	4.6/12.2	31363
1991 LM	1999 05 15.7	15 28.76	+03 57.0	16.5	−0.97	−	1.2	9.0/11.8	34286
1997 WO_{44}	1999 05 15.8	15 28.76	−22 14.9	15.8	−0.88	+	6.8	1.5/16.6	34588
1997 YX	1999 05 15.8	15 29.01	−17 15.5	18.2	−0.95	+	3.9	0.6/15.5	31283
(8439)	1999 05 15.9	15 29.27	−18 53.1	18.8	−0.81	+	2.6	0.0/15.9	31374
1988 XX_1	1999 05 15.9	15 29.40	−30 54.2	17.6	−1.14	−	0.5	4.1/17.8	31582
1998 DL_{13}	1999 05 16.0	15 29.55	−08 26.2	18.1	−0.75	+	2.5	2.9/13.8	34590
4537 P-L	1999 05 16.0	15 29.71	−28 01.3	19.8	−1.18	+	2.2	3.5/17.7	22086
1991 PV_9	1999 05 16.0	15 29.94	+04 11.5	16.1	−0.80	+	6.8	9.8/09.5	34578
1996 VR_1	1999 05 16.1	15 30.08	−17 08.7	17.9	−1.06	−	2.1	0.7/15.9	31422
1993 FL_{15}	1999 05 16.2	15 30.38	−15 43.8	17.7	−0.81	+	2.2	0.9/15.6	31787
1989 CE_8	1999 05 16.2	15 30.39	−23 46.7	17.0	−0.90	+	5.7	1.6/17.3	34575
(9278)	1999 05 16.2	15 30.42	−15 55.3	17.9	−0.78	+	2.6	0.9/15.6	32600
1997 YV_{11}	1999 05 16.2	15 30.51	+05 34.5	18.0	−0.75	+	1.2	6.8/11.1	34527
1997 VA_9	1999 05 16.2	15 30.53	−15 24.9	18.7	−1.00	+	4.9	1.4/15.5	31281
1982 JE_1	1999 05 16.2	15 30.63	−16 06.8	17.1	−1.11	+	1.9	1.2/15.8	34573
3207 T-2	1999 05 16.3	15 30.81	−23 00.8	16.3	−1.17		0.0	1.8/16.9	31132
1981 ES_{31}	1999 05 16.3	15 31.05	−00 56.8	18.7	−0.72	+	4.2	5.4/12.0	26921
1992 TM_1	1999 05 16.3	15 31.14	−30 21.1	15.4	−0.97	+	7.4	4.2/19.3	31382
(10626)	1999 05 16.4	15 31.06	−15 23.4	17.8	−0.98	+	3.7	1.4/15.7	34469
(8265)	1999 05 16.4	15 31.36	−09 07.9	16.2	−1.06	+	3.1	4.3/14.5	31211
1993 FD_{22}	1999 05 16.4	15 31.46	−18 25.7	18.9	−0.81	+	3.0	0.2/16.4	31787
(8578)	1999 05 16.5	15 31.64	−18 35.8	16.5	−0.89	+	0.3	0.1/16.5	31515
1998 BC_{26}	1999 05 16.5	15 31.78	−16 42.1	16.8	−1.06	+	0.9	0.9/16.2	34590
1989 TD	1999 05 16.6	15 32.29	−24 02.2	18.1	−1.12	+	3.9	1.9/17.6	31783
1994 CB_1	1999 05 16.6	15 32.31	−20 09.4	18.2	−0.95	+	4.0	0.3/16.9	31789
1997 XV_1	1999 05 16.7	15 32.28	−07 39.7	17.5	−1.01	+	2.0	4.7/14.6	31283
(10513)	1999 05 16.7	15 32.34	+11 04.0	16.8	−0.70	+	4.8	8.4/08.4	34440
1994 PO_1	1999 05 16.7	15 32.64	−11 18.9	16.6	−1.12	−	6.2	2.9/16.1	24763
1997 WQ_{22}	1999 05 16.7	15 32.73	−22 08.9	18.6	−1.09	+	3.8	1.2/17.4	31796
1981 EE_{42}	1999 05 16.8	15 32.74	−02 10.8	19.7	−0.71	+	3.8	4.6/12.9	32214
5112 T-2	1999 05 16.8	15 32.89	−25 04.0	19.0	−0.82	+	5.1	1.8/18.2	33059
1990 SH_8	1999 05 16.8	15 32.98	−08 18.5	17.9	−1.03	+	3.2	4.5/14.8	31228
1997 XX_3	1999 05 17.0	15 33.60	−11 40.6	17.2	−0.67	+	2.8	2.1/15.4	34213
1998 DY_{23}	1999 05 17.0	15 33.71	−01 34.0	18.9	−0.79	+	2.7	6.0/13.3	34590
1998 FK_{30}	1999 05 17.0	15 33.72	−27 38.6	18.5	−0.94	+	2.8	2.3/18.7	32685
1997 YL_{18}	1999 05 17.0	15 33.82	−17 45.7	17.4	−0.94	+	3.5	0.5/16.8	31130

1990 UQ_4	1999 05 17.2	15 34.27	−13 25.5	18.9	−1.07	+ 3.4	2.2/16.1	31229
(8484)	1999 05 17.2	15 34.69	−20 00.2	18.3	−0.99	+ 0.7	0.2/17.4	31492
1990 QW_3	1999 05 17.3	15 34.93	−23 01.5	17.1	−1.10	+ 3.6	1.9/18.1	29657
1990 SJ_2	1999 05 17.3	15 35.01	−15 54.9	17.5	−1.10	+ 2.2	1.3/16.8	34576
4128 T-2	1999 05 17.4	15 35.08	−13 14.1	19.2	−1.00	+ 3.2	2.3/16.2	31269
1998 FX_{123}	1999 05 17.4	15 35.51	−49 03.5	19.6	−1.50	− 0.6	9.5/22.2	32325
1996 TO_9	1999 05 17.4	15 35.53	−46 02.1	18.8	−1.37	− 2.0	9.1/21.6	31973
1981 EX_{11}	1999 05 17.5	15 35.86	−50 17.3	19.9	−1.20	− 1.2	12.4/24.1	26917
1991 NF_3	1999 05 17.7	15 36.23	−29 49.0	17.7	−0.98	+ 5.5	3.4/20.0	31274
(9099)	1999 05 17.7	15 36.44	−18 30.4	18.6	−0.77	+ 2.3	0.2/17.6	32196
1990 QJ_2	1999 05 17.7	15 36.51	−20 22.3	18.5	−1.12	+ 3.2	0.4/17.9	31273
1998 BJ_{10}	1999 05 17.7	15 36.66	+03 12.2	18.3	−0.83	+ 2.5	9.3/12.9	34529
1980 KK	1999 05 18.0	15 37.43	−17 10.7	15.3	−1.00	+ 3.4	1.2/17.6	34573
1995 QU_3	1999 05 18.1	15 38.17	−45 52.2	19.7	−0.98	+ 3.3	5.9/24.0	29623
1992 CQ_2	1999 05 18.2	15 38.62	−04 17.6	17.0	−0.77	+ 3.3	4.8/15.0	31786
1993 VJ_4	1999 05 18.3	15 38.68	−22 36.1	16.9	−1.14	+ 2.4	1.4/18.9	28087
1996 XA_6	1999 05 18.3	15 38.89	−28 28.8	16.2	−0.90	+ 3.5	2.9/20.2	32311
2037 P-L	1999 05 18.4	15 39.19	−44 41.1	17.6	−1.14	− 1.8	8.9/22.3	22086
(8741)	1999 05 18.4	15 39.40	−33 49.4	17.4	−0.95	+ 2.1	4.6/21.3	31697
1994 LD_1	1999 05 18.4	15 39.45	−42 34.4	18.5	−1.31	− 5.1	10.0/19.0	24409
1993 VN_2	1999 05 18.5	15 39.48	−14 41.1	17.5	−1.03	+ 3.8	1.9/17.6	31419
1993 SZ	1999 05 18.5	15 39.53	−17 39.9	17.6	−1.04	+ 4.7	0.7/18.2	31419
1996 TW_8	1999 05 18.5	15 39.77	−44 12.0	17.2	−1.13	+ 6.6	8.2/24.9	31142
4060 T-2	1999 05 18.6	15 39.82	−15 34.6	19.3	−0.88	+ 3.1	1.4/17.8	28609
(8722)	1999 05 18.6	15 40.13	−29 03.8	17.6	−1.14	+ 3.1	3.4/20.4	31692
(8379)	1999 05 18.6	15 40.20	−29 24.6	17.4	−1.05	+ 1.0	3.2/20.4	31361
1998 FY_{119}	1999 05 18.7	15 40.60	−34 14.7	17.7	−0.95	+ 1.9	4.4/21.5	32324
(10547)	1999 05 18.8	15 40.68	−19 47.0	15.3	−1.07	− 0.6	11.6/29.0	34448
1981 EW_{19}	1999 05 18.8	15 40.91	−34 59.1	18.3	−1.15	+ 1.3	7.3/21.5	26918
1998 BY_{24}	1999 05 18.8	15 40.96	−20 53.6	17.6	−0.88	+ 3.2	0.5/19.1	32314
6329 P-L	1999 05 18.8	15 41.01	−15 37.4	20.0	−0.75	+ 3.6	1.1/18.0	34266
1996 XR_6	1999 05 18.9	15 41.01	−29 35.6	17.8	−1.02	+ 1.4	4.2/20.6	28606
1981 EE_{29}	1999 05 18.9	15 41.15	−26 46.3	19.5	−1.09	+ 4.3	2.9/20.4	22271
1993 GM_1	1999 05 18.9	15 41.18	−18 44.6	16.5	−0.80	+ 3.9	0.3/18.8	28616
1992 SE	1999 05 19.0	15 41.46	−04 50.0	18.8	−0.86	+ 4.7	4.4/15.8	32305
1990 RK_5	1999 05 19.0	15 41.47	−15 53.4	16.9	−0.89	+ 4.7	1.4/18.2	26579
(8451)	1999 05 19.0	15 41.59	−31 10.9	17.8	−1.03	+ 1.0	3.8/21.0	31484
1992 SL_{23}	1999 05 19.0	15 41.61	−29 50.9	18.2	−1.10	− 0.3	3.4/20.6	24230
(8708)	1999 05 19.2	15 42.19	−15 02.0	17.2	−0.92	+ 2.8	1.7/18.3	31689
(8258)	1999 05 19.2	15 42.31	−26 16.4	17.8	−1.15	+ 1.7	2.7/20.3	31209
1995 WG_7	1999 05 19.2	15 42.45	−23 20.5	17.3	−0.82	+ 6.3	1.0/20.1	29112
1990 TH_{13}	1999 05 19.2	15 42.62	−12 29.7	17.5	−0.84	+ 0.5	2.1/18.1	34577
5133 T-2	1999 05 19.3	15 42.98	−33 46.7	19.6	−1.01	+ 3.0	4.8/22.1	31132
1998 AQ_8	1999 05 19.4	15 42.98	−19 43.1	17.3	−0.87	+ 4.3	0.0/19.4	34528
4269 T-1	1999 05 19.4	15 43.04	−17 41.8	18.1	−0.83	+ 1.9	0.7/19.0	32291
2246 T-2	1999 05 19.4	15 43.10	−14 44.5	17.6	−0.90	+ 4.3	2.0/18.4	31825
(8418)	1999 05 19.4	15 43.13	−24 41.6	16.3	−0.95	+ 2.4	1.9/20.3	31369
1998 FT_{42}	1999 05 19.4	15 43.18	−33 59.5	18.6	−0.93	+ 1.6	4.0/22.1	32064
(8412)	1999 05 19.4	15 43.37	−20 33.6	19.2	−1.05	+ 2.6	0.3/19.6	31368
1998 BJ_{42}	1999 05 19.5	15 43.46	−15 51.0	18.0	−1.04	+ 3.5	1.5/18.8	31402
1996 TC_{44}	1999 05 19.5	15 43.58	−25 25.6	21.0	−0.92	+ 2.4	1.7/20.6	32954
1996 TJ_7	1999 05 19.6	15 43.92	−15 26.8	19.9	−0.86	+ 3.7	1.3/18.8	31389
1998 FC_{35}	1999 05 19.6	15 44.01	−09 42.8	19.0	−0.73	+ 3.1	2.5/17.6	32257
1990 TS_1	1999 05 19.7	15 44.22	−27 30.9	18.5	−0.87	+ 2.2	2.1/21.1	32046
1985 SV_2	1999 05 19.8	15 44.79	−26 44.0	17.1	−1.05	+ 4.9	2.7/21.2	28295
1997 YG_{16}	1999 05 19.8	15 44.87	−13 51.2	18.9	−1.01	+ 2.9	2.3/18.8	31286
2332 T-3	1999 05 19.8	15 44.96	−16 00.6	16.7	−0.92	+ 5.9	1.6/19.1	31411
(8254)	1999 05 19.8	15 44.99	−12 24.7	17.9	−1.00	+ 4.7	2.9/18.4	31208
1998 CB_3	1999 05 19.8	15 45.04	−23 49.5	18.0	−1.05	+ 3.1	1.5/20.6	31739
1998 ER_{10}	1999 05 19.9	15 45.03	−15 55.3	19.6	−0.80	+ 2.1	1.1/19.2	32256
3088 T-2	1999 05 19.9	15 45.07	−19 13.5	19.7	−0.93	+ 2.0	0.2/19.8	15083
1997 XF_5	1999 05 19.9	15 45.10	−42 28.4	18.3	−1.00	+ 2.2	6.7/24.6	31796
2074 T-2	1999 05 19.9	15 45.26	−19 18.5	19.8	−0.82	+ 2.7	0.2/19.9	26416
(8166)	1999 05 19.9	15 45.38	−20 52.7	16.6	−1.02	+ 3.8	0.4/20.2	31079
(8364)	1999 05 20.0	15 45.50	−40 28.3	16.0	−1.04	+ 1.9	7.5/24.0	31357
(8590)	1999 05 20.2	15 46.28	−17 13.4	16.9	−0.80	+ 2.3	0.9/19.7	31517
1983 WQ	1999 05 20.2	15 46.38	−20 33.4	16.5	−1.01	− 0.3	0.2/20.3	31581
3295 T-2	1999 05 20.2	15 46.45	−08 25.7	18.2	−0.95	+ 4.0	4.5/17.9	29142
1981 EH_{21}	1999 05 20.2	15 46.59	+07 46.2	17.3	−0.71	+ 5.0	8.3/13.2	31580
4333 T-1	1999 05 20.2	15 46.63	−16 55.2	17.2	−0.83	+ 1.9	1.1/19.8	23533
1997 WJ_2	1999 05 20.3	15 46.73	−18 03.1	16.7	−1.07	+ 1.2	0.8/20.0	34588
2672 T-3	1999 05 20.3	15 46.84	−07 43.4	16.6	−0.77	+ 6.3	4.1/17.4	29949
1989 SE_8	1999 05 20.3	15 46.87	−30 56.5	16.6	−1.10	+ 2.9	4.5/22.4	28085
1996 VV	1999 05 20.4	15 47.05	−20 11.4	15.9	−1.01	+ 0.8	0.1/20.5	34585
1998 BG_{41}	1999 05 20.4	15 47.22	−07 50.8	18.5	−1.00	+ 3.0	4.5/18.2	31594
1998 BN_{16}	1999 05 20.4	15 47.37	−08 50.5	16.4	−0.79	− 0.5	3.2/18.8	31798
1991 XS	1999 05 20.5	15 47.45	−19 18.8	17.2	−0.82	+ 5.2	0.2/20.4	31786
1995 FT	1999 05 20.6	15 47.83	−12 58.1	16.6	−0.92	+ 2.6	3.3/19.4	34583
1992 SK_{26}	1999 05 20.6	15 47.94	−13 08.8	18.3	−0.93	+ 3.6	2.4/19.3	31787
1997 XG_5	1999 05 20.6	15 48.09	−21 30.1	18.6	−0.90	+ 2.2	0.5/20.9	31796
1997 YO_7	1999 05 20.6	15 48.25	−06 50.5	17.2	−0.85	+ 0.1	4.4/18.6	31425
1981 EF_8	1999 05 20.7	15 48.20	−15 40.1	18.1	−0.75	+ 3.7	1.2/19.8	32042
(8595)	1999 05 20.7	15 48.21	−29 23.5	18.4	−0.99	+ 1.7	3.1/22.3	31518
1993 SG_3	1999 05 20.7	15 48.55	−13 37.5	17.7	−1.01	+ 3.7	2.7/19.6	31276
1997 XH_9	1999 05 20.7	15 48.60	−20 26.8	18.3	−0.83	+ 1.8	0.1/20.9	32753
1998 DM_4	1999 05 20.7	15 48.64	−22 06.9	17.9	−0.94	+ 3.7	0.7/21.2	31740
1997 XF_1	1999 05 20.8	15 48.86	−27 36.9	17.1	−1.26	+17.6	3.5/23.0	34526
2206 T-3	1999 05 20.8	15 48.89	−21 21.8	18.6	−0.89	+ 3.4	0.4/21.1	31609
1996 VB_{30}	1999 05 20.9	15 49.08	−15 30.3	17.5	−1.03	+ 3.5	1.8/20.1	31793
1998 DN_{20}	1999 05 21.0	15 49.46	−03 36.4	17.4	−0.88	+ 1.8	4.8/18.0	31802
4207 T-3	1999 05 21.0	15 49.56	−12 43.0	18.0	−0.87	+ 2.3	2.5/19.8	31826
1979 MY_3	1999 05 21.0	15 49.66	−10 21.9	18.6	−0.95	+ 2.2	3.5/19.3	30778
4623 T-1	1999 05 21.0	15 49.66	−14 39.1	17.9	−0.87	+ 3.0	1.7/20.1	31575
1998 BL_9	1999 05 21.0	15 49.68	−02 21.5	18.2	−0.85	+ 2.3	5.4/17.8	32059
1998 AQ_{10}	1999 05 21.0	15 49.78	−12 55.8	18.3	−0.93	+ 1.6	2.8/19.9	34300
1978 VT_{10}	1999 05 21.1	15 49.83	−19 59.8	17.5	−1.02	+ 4.0	0.0/21.1	28314
1998 BK_{30}	1999 05 21.1	15 50.03	−23 38.3	17.4	−0.96	+ 3.3	1.3/21.8	34590
1998 AM_{10}	1999 05 21.1	15 50.19	−06 14.4	17.2	−0.94	+ 3.0	5.6/18.6	34589
(8561)	1999 05 21.2	15 50.49	−17 13.8	18.2	−0.80	+ 2.5	0.8/20.7	31510
1998 BC_2	1999 05 21.2	15 50.61	−27 56.5	18.4	−1.15	+ 2.7	3.0/22.6	31797
1992 GX_4	1999 05 21.3	15 51.02	−23 09.3	15.9	−1.09	+ 0.5	1.4/21.8	31006
1019 T-1	1999 05 21.4	15 51.10	−21 26.7	18.3	−0.90	+ 3.9	0.4/21.7	24403

1997 YH_{13}	1999 05 21.4	15 51.18	−22 01.2	18.5	−0.82	+	4.4	0.6/21.8	34528
1981 ER_{38}	1999 05 21.4	15 51.23	−06 45.9	19.3	−0.85	+	4.7	4.4/18.7	26922
1990 VN_{14}	1999 05 21.4	15 51.29	−17 13.8	18.1	−0.77	+	2.2	0.8/20.9	32046
1981 ET_{39}	1999 05 21.4	15 51.31	−26 11.0	19.5	−0.83	+	2.3	1.7/22.6	32739
1993 FR_{36}	1999 05 21.4	15 51.33	−17 29.6	17.8	−0.84	+	2.1	0.9/21.0	33684
(8519)	1999 05 21.4	15 51.43	−13 29.3	18.2	−0.76	+	3.6	2.1/20.2	31500
1998 BZ_8	1999 05 21.5	15 51.72	−17 50.8	17.3	−0.95	+	1.5	0.8/21.2	31593
1998 DU_{17}	1999 05 21.5	15 51.82	−21 13.5	20.9	−0.93	+	2.1	0.3/21.8	32971
1279 T-2	1999 05 21.6	15 51.97	−18 06.8	18.6	−1.08	+	3.6	0.8/21.3	31436
1995 SV_{52}	1999 05 21.7	15 52.24	−10 10.9	17.6	−0.76	+	2.2	2.8/19.9	31790
1992 ST	1999 05 21.7	15 52.46	−26 09.9	19.4	−1.01	+	1.5	1.7/22.7	31787
1996 WD	1999 05 21.7	15 52.50	−19 44.6	16.8	−1.01	−	0.2	0.2/21.7	31793
1992 SY_{16}	1999 05 21.8	15 52.73	−31 34.4	19.1	−1.08	+	1.5	3.9/23.7	27914
1981 ED_3	1999 05 21.9	15 53.01	−11 59.1	20.5	−0.75	+	4.4	2.3/20.2	30754
1999 GZ_4	1999 05 21.9	15 53.03	−14 22.7	16.3	−0.89	+	6.4	2.9/20.6	34563
(8803)	1999 05 21.9	15 53.14	−20 09.3	17.5	−0.82	+	2.8	0.0/21.9	31900
1993 FZ_{25}	1999 05 21.9	15 53.20	−20 50.5	17.5	−0.83	+	2.9	0.2/22.1	31787
1996 SJ_4	1999 05 22.0	15 53.63	−30 09.2	16.6	−1.19	+	1.6	4.7/23.5	32054
1993 XL	1999 05 22.0	15 53.72	−11 11.4	16.4	−1.10	+	0.7	4.2/20.7	31788
1991 SY	1999 05 22.0	15 53.83	−33 47.7	16.2	−1.16	−	3.4	5.8/23.5	34578
1993 HG	1999 05 22.1	15 53.93	−21 00.5	16.9	−0.84	+	2.0	0.3/22.3	31788
(8773)	1999 05 22.1	15 54.12	−31 33.8	18.3	−0.85	+	2.8	2.9/24.3	31704
1981 ES_{42}	1999 05 22.2	15 54.33	−22 22.9	18.5	−0.95	+	2.4	0.7/22.6	31781
1981 UV_{23}	1999 05 22.2	15 54.36	−20 41.3	16.5	−1.08	+	0.9	0.1/22.3	31781
1993 SX_6	1999 05 22.3	15 54.67	−27 29.3	17.3	−1.14	+	1.6	3.0/23.4	30899
1981 DB_2	1999 05 22.3	15 54.69	−27 45.6	18.3	−0.99	+	4.3	2.6/24.0	26914
1992 SF_2	1999 05 22.3	15 54.79	+02 44.5	16.7	−0.84	+	4.8	9.5/17.3	31139
1998 BJ_4	1999 05 22.4	15 55.01	−35 04.2	18.3	−1.02	+	3.3	4.4/25.2	31592
1996 XY_{12}	1999 05 22.4	15 55.03	−14 01.2	19.9	−0.88	−	0.2	2.0/21.5	30786
3216 T-1	1999 05 22.4	15 55.07	−18 25.1	17.4	−0.89	+	3.4	0.7/22.1	31825
1997 UX_4	1999 05 22.4	15 55.42	−24 18.7	18.2	−1.10	+	2.6	1.5/23.1	31147
(8434)	1999 05 22.5	15 55.51	−16 33.3	18.5	−0.83	+	2.1	1.1/21.9	31373
1997 WV_7	1999 05 22.5	15 55.63	−20 47.9	17.9	−1.05	+	2.8	0.2/22.6	31394
1981 DJ_1	1999 05 22.5	15 55.82	−26 17.9	18.4	−1.04	+	5.9	2.6/23.8	26914
1981 EN_{31}	1999 05 22.6	15 55.84	−12 46.6	18.7	−1.01	+	3.7	3.3/21.2	26921
1991 PV_{31}	1999 05 22.6	15 56.04	−12 58.4	17.0	−0.90	+	4.1	2.8/21.2	31785
1996 RF_5	1999 05 22.7	15 56.56	−08 54.1	17.0	−1.02	+	1.0	5.3/21.0	34585
1996 OC_1	1999 05 22.7	15 56.59	−11 43.1	17.6	−0.99	+	1.6	3.2/21.4	31242
1981 EP_{42}	1999 05 22.8	15 56.92	−16 28.5	17.9	−0.90	+	3.4	1.3/22.2	31580
(8164)	1999 05 22.9	15 57.03	−15 12.1	17.1	−1.07	+	1.1	2.3/22.2	31078
(9412)	1999 05 22.9	15 57.35	−13 17.0	17.2	−0.98	+	3.6	2.8/21.7	32633
(8081)	1999 05 22.9	15 57.47	+01 41.8	16.9	−0.99	−	0.5	10.0/20.1	30962
4023 T-1	1999 05 23.0	15 57.57	−10 29.3	18.6	−1.01	+	3.9	3.7/21.3	21952
(8461)	1999 05 23.0	15 57.57	−26 15.0	19.0	−0.99	+	1.9	1.9/24.0	31487
(8497)	1999 05 23.0	15 57.73	−34 25.5	17.8	−0.97	+	1.2	4.2/25.3	31495
1996 TY_7	1999 05 23.1	15 58.22	−23 55.4	19.3	−1.00	+	1.2	1.1/23.7	31389
4031 P-L	1999 05 23.2	15 58.44	−28 32.1	18.3	−1.10	+	2.6	2.8/24.6	31294
1998 AV_8	1999 05 23.2	15 58.61	−15 57.9	18.0	−1.05	+	4.6	1.8/22.5	31592
1998 AG_{11}	1999 05 23.2	15 58.61	−19 06.6	17.3	−1.00	+	1.3	0.6/23.1	32970
1998 FP_{123}	1999 05 23.3	15 58.70	−25 14.0	19.7	−0.84	+	2.1	1.3/24.1	32686
1997 WN_2	1999 05 23.3	15 58.80	−23 21.4	18.9	−1.06	+	3.1	1.1/24.0	31151
1992 UQ_2	1999 05 23.3	15 58.84	−34 36.8	16.1	−1.43	−	5.4	5.3/24.0	31383
1990 UM_2	1999 05 23.4	15 59.13	−20 08.4	16.5	−0.92	−	0.6	0.1/23.4	31716
1981 ET_{17}	1999 05 23.4	15 59.47	−21 35.7	18.9	−0.93	+	2.9	0.3/23.7	31780
(8721)	1999 05 23.5	15 59.61	−23 33.3	16.6	−0.69	+	2.8	0.8/24.1	31692
1990 VK_6	1999 05 23.5	15 59.62	−06 54.5	17.3	−0.79	+	5.0	4.4/20.6	32046
1998 ES_{14}	1999 05 23.6	16 00.06	−32 47.8	17.6	−0.97	+	0.5	3.8/25.4	32062
1995 SX_{51}	1999 05 23.6	16 00.17	−30 05.2	20.8	−0.92	+	0.9	2.8/25.1	26405
1993 UN_6	1999 05 23.6	16 00.20	−14 46.7	20.0	−1.05	+	1.1	2.2/22.8	31236
1981 EN_{23}	1999 05 23.7	16 00.31	−24 27.7	18.4	−0.95	+	2.3	2.0/24.4	24894
1991 AK_2	1999 05 23.7	16 00.36	−08 02.5	18.4	−0.74	+	6.4	3.6/20.9	26189
2763 P-L	1999 05 23.7	16 00.50	−18 45.1	18.7	−0.85	+	2.0	0.6/23.5	31824
1998 FM_{27}	1999 05 23.7	16 00.54	−20 10.9	17.6	−0.82	+	3.0	0.1/23.7	32317
1978 VA_5	1999 05 23.7	16 00.64	−18 24.8	19.3	−0.79	+	1.9	0.6/23.4	31223
6700 P-L	1999 05 23.7	16 00.67	−24 21.2	18.5	−0.95	+	2.0	1.3/24.4	28319
1981 ED_8	1999 05 23.7	16 00.70	−27 23.2	18.4	−1.10	+	3.8	2.8/25.0	31223
(8482)	1999 05 23.8	16 00.66	−16 39.7	17.7	−0.77	+	1.9	1.2/23.1	31492
1990 EK	1999 05 23.8	16 00.89	−11 29.6	18.2	−0.90	+	3.5	2.8/22.2	32046
1998 AK_5	1999 05 23.9	16 01.37	−35 22.5	18.0	−0.97	+	2.7	5.1/26.6	31797
1998 AB_2	1999 05 23.9	16 01.38	−11 46.2	18.1	−0.96	+	0.8	3.3/22.7	31797
1990 UZ_4	1999 05 23.9	16 01.49	−15 39.2	18.6	−0.79	+	0.8	1.4/23.2	31716
(8680)	1999 05 24.0	16 01.44	−24 20.0	18.1	−0.84	+	1.2	1.0/24.6	31682
(8866)	1999 05 24.0	16 01.45	−36 14.7	17.8	−0.91	+	2.6	4.2/26.8	31915
1978 VE_{15}	1999 05 24.0	16 01.56	−19 36.7	17.6	−1.05	+	2.0	0.4/23.9	31579
1993 FO	1999 05 24.1	16 01.89	−19 15.5	16.7	−0.85	+	2.7	0.5/23.9	32049
1996 VE_9	1999 05 24.1	16 01.99	−15 42.6	15.8	−0.89	−	0.8	1.7/23.5	34295
1992 BF_2	1999 05 24.1	16 02.00	−02 33.2	17.9	−0.76	+	1.7	5.3/21.1	31786
1996 UD_3	1999 05 24.1	16 02.05	−28 11.8	17.6	−0.97	+	2.0	2.7/25.4	34585
1997 YF_7	1999 05 24.1	16 02.22	−15 24.1	20.1	−1.03	+	1.9	1.9/23.4	31425
1995 DZ	1999 05 24.1	16 02.29	−23 04.2	17.3	−1.12	+	1.4	1.0/24.5	29623
1981 DZ_1	1999 05 24.2	16 02.43	−02 03.9	18.2	−0.73	+	6.5	5.6/20.0	21966
1998 BY_1	1999 05 24.2	16 02.66	−10 00.9	19.8	−0.92	+	1.4	3.5/22.7	31263
1981 ET_{12}	1999 05 24.3	16 02.68	−15 14.6	19.6	−0.95	+	6.5	2.5/23.2	26917
1992 YC_2	1999 05 24.3	16 02.73	−22 25.8	18.6	−0.96	+	2.9	0.6/24.6	32049
1996 SW_7	1999 05 24.3	16 02.82	−11 18.5	18.3	−0.94	+	4.8	4.0/22.5	32675
1995 SM_{29}	1999 05 24.3	16 02.87	−21 14.1	17.9	−0.80	+	1.7	0.1/24.4	32053
(8697)	1999 05 24.3	16 02.91	−21 51.1	17.0	−0.85	+	2.6	0.4/24.6	31686
(8107)	1999 05 24.4	16 03.22	−07 51.6	16.2	−1.02	+	2.3	5.5/22.5	30968
1992 DO_8	1999 05 24.4	16 03.41	−06 43.6	19.1	−0.73	+	3.1	3.9/21.9	32048
1998 DW_2	1999 05 24.5	16 03.43	−21 39.4	16.9	−0.89	+	3.4	0.3/24.7	31800
1998 BN_{48}	1999 05 24.5	16 03.49	−11 24.0	16.2	−1.04	+	2.4	3.8/23.0	33346
1996 VO_1	1999 05 24.5	16 03.54	−32 12.3	16.3	−1.17	−	1.7	4.2/25.7	31792
(8291)	1999 05 24.5	16 03.74	−26 35.4	18.0	−1.01	+	3.0	1.9/25.5	31216
1996 LP_1	1999 05 24.5	16 03.92	−08 51.8	18.2	−1.07	+	2.6	4.7/22.7	31588
1990 TB_{13}	1999 05 24.6	16 03.84	−05 05.1	17.6	−0.81	+	1.3	5.3/22.0	34577
1992 UK_2	1999 05 24.6	16 04.24	−33 31.5	18.0	−1.14	−	0.8	4.1/26.2	31585
(8717)	1999 05 24.7	16 04.34	−18 24.5	18.1	−0.78	+	2.1	0.6/24.3	31691
1998 EK_9	1999 05 24.7	16 04.41	+17 11.8	17.1	−1.00	−	1.7	13.2/19.2	34590
1990 SB_{14}	1999 05 24.7	16 04.54	−22 30.3	17.7	−0.87	+	2.4	0.5/25.0	32221
1981 EU_{19}	1999 05 24.7	16 04.54	−31 30.5	16.5	−1.10	+	1.3	5.3/26.3	28882
1996 RQ_{16}	1999 05 24.8	16 05.14	−09 56.0	16.9	−1.01	+	4.7	4.6/22.9	32675
4393 T-1	1999 05 24.9	16 05.04	−18 27.2	18.1	−0.83	+	1.6	0.8/24.5	31023

1996 SG_{8}	1999 05 25.0	16 05.61	−21 21.8	18.2	−1.09	+ 2.7	0.3/25.1	31388
1998 EW_{11}	1999 05 25.2	16 06.31	−08 45.8	17.1	−0.78	+ 1.5	3.8/23.3	32316
1977 RR_{6}	1999 05 25.2	16 06.37	−28 12.0	17.4	−1.10	+ 1.9	2.8/26.3	31779
1981 EX_{7}	1999 05 25.2	16 06.45	−04 29.8	19.3	−0.85	+ 5.8	5.9/21.8	26916
1989 UV_{1}	1999 05 25.2	16 06.45	−21 39.2	17.5	−0.87	+ 2.1	0.3/25.4	32045
1980 XX	1999 05 25.2	16 06.63	−17 13.3	17.6	−1.11	+ 1.2	1.5/24.8	31414
1992 DG_{10}	1999 05 25.3	16 07.08	−23 35.3	17.8	−1.15	+ 4.0	1.1/25.8	31786
1981 EJ_{43}	1999 05 25.4	16 07.12	−24 56.4	17.4	−1.08	+ 3.4	1.8/26.1	31135
1991 RQ_{16}	1999 05 25.4	16 07.14	−19 53.5	18.2	−0.97	+ 1.0	0.4/25.3	28585
1996 VP_{30}	1999 05 25.4	16 07.22	−17 43.5	17.6	−0.93	+ 5.7	1.0/24.8	32055
1996 US_{3}	1999 05 25.4	16 07.39	−24 18.8	21.5	−0.95	+ 1.6	1.0/26.0	30785
1998 EE_{6}	1999 05 25.5	16 07.60	−20 20.9	18.3	−0.90	+ 3.7	0.2/25.4	31803
(8246)	1999 05 25.5	16 07.62	−25 41.5	16.7	−1.13	+ 2.6	2.1/26.2	31207
5023 P-L	1999 05 25.5	16 07.62	−16 04.7	17.8	−0.96	+ 6.6	2.2/24.6	28319
(8360)	1999 05 25.5	16 07.63	−04 16.6	15.7	−0.96	− 2.5	6.7/23.9	31357
1994 DP	1999 05 25.5	16 07.64	−19 04.7	18.1	−0.99	+ 2.7	0.7/25.2	32666
1989 EF_{6}	1999 05 25.5	16 07.69	−35 06.3	17.9	−1.04	+ 2.4	5.0/27.9	31582
1993 FT_{5}	1999 05 25.5	16 07.73	−06 33.7	16.9	−0.78	+ 2.8	4.6/23.1	32306
1996 XT_{30}	1999 05 25.5	16 07.90	−11 55.6	16.4	−0.91	− 3.3	3.1/24.8	34586
1998 BW_{6}	1999 05 25.6	16 08.09	−22 01.6	17.8	−0.87	+ 1.9	0.4/25.8	31398
1979 MH_{6}	1999 05 25.6	16 08.30	−06 23.9	18.4	−0.82	+ 0.5	4.7/23.6	31780
1981 EU_{13}	1999 05 25.7	16 08.47	−10 59.0	18.3	−1.00	+ 5.0	3.9/24.0	30685
1995 EZ_{8}	1999 05 25.7	16 08.50	−15 50.9	15.8	−0.91	+ 2.9	2.5/24.9	34583
4844 P-L	1999 05 25.7	16 08.52	−14 56.9	18.2	−1.04	+ 2.6	2.8/24.8	34265
(8272)	1999 05 25.8	16 08.77	−30 58.8	16.7	−1.13	+ 1.8	3.6/27.3	31213
2225 T-2	1999 05 25.8	16 08.83	−24 04.8	16.7	−1.00	+ 1.6	1.4/26.3	34568
1998 BW_{3}	1999 05 25.8	16 08.85	−19 42.3	19.3	−1.01	+ 3.4	0.5/25.6	31592
1993 FD_{28}	1999 05 25.8	16 09.05	−32 20.9	18.3	−0.93	+ 1.7	3.7/27.6	34580
1998 BJ_{33}	1999 05 25.8	16 09.15	−41 33.7	17.0	−1.14	+ 4.7	7.9/29.9	31593
1998 AH_{5}	1999 05 25.9	16 09.20	−17 10.9	17.9	−0.82	+ 2.0	1.2/25.3	32059
(8478)	1999 05 25.9	16 09.22	−32 33.4	16.9	−0.92	+ 2.2	3.5/27.8	31491
(8598)	1999 05 26.0	16 09.59	−21 39.0	18.0	−0.83	+ 2.2	0.2/26.1	31519
1994 RD_{11}	1999 05 26.0	16 09.65	+27 45.8	18.8	−1.05	+ 1.2	22.5/12.6	24584
1981 ES_{47}	1999 05 26.0	16 09.68	−21 47.0	18.9	−1.10	+ 1.8	0.3/26.1	22697
1996 RP_{15}	1999 05 26.0	16 09.79	−07 20.3	18.1	−0.88	+ 4.9	6.6/23.4	27925
1996 QD_{1}	1999 05 26.0	16 09.87	−20 25.3	16.8	−1.01	+ 4.7	0.3/26.0	34584
1997 YL_{7}	1999 05 26.0	16 09.87	−11 09.7	16.9	−0.98	− 1.2	3.3/25.0	34300
1990 VV_{11}	1999 05 26.1	16 09.97	−21 05.3	18.7	−0.79	+ 1.7	0.0/26.1	29098
3177 T-2	1999 05 26.1	16 09.99	−20 22.6	17.7	−1.08	+ 2.0	0.3/26.0	27732
1998 FH_{82}	1999 05 26.1	16 10.19	−31 38.0	18.4	−1.06	− 0.3	3.4/27.5	32324
1981 EC_{11}	1999 05 26.1	16 10.36	−26 08.4	18.4	−0.95	+ 3.9	2.1/27.1	21966
1993 TS_{11}	1999 05 26.1	16 10.38	−29 55.8	17.2	−1.17	+ 1.2	3.5/27.4	31384
1995 BO_{1}	1999 05 26.2	16 10.34	−22 27.0	15.7	−1.06	+ 4.9	0.6/26.5	34012
1996 TJ_{9}	1999 05 26.2	16 10.67	−18 05.4	17.2	−0.93	+ 3.8	1.3/25.8	31791
1997 YF_{14}	1999 05 26.3	16 11.07	−27 06.1	18.9	−1.01	+ 3.5	2.1/27.4	31425
(8490)	1999 05 26.3	16 11.12	−12 34.1	18.1	−0.97	+ 3.4	2.9/25.0	31493
1978 VF_{3}	1999 05 26.3	16 11.19	−21 38.8	19.3	−1.03	+ 2.3	0.2/26.5	31780
1990 QV_{5}	1999 05 26.4	16 11.45	−17 48.2	16.9	−1.10	+ 3.5	1.5/26.0	34576
1997 UJ_{11}	1999 05 26.6	16 11.94	−33 04.0	16.3	−1.46	− 5.5	4.8/27.3	31015
(8629)	1999 05 26.6	16 11.98	−13 53.0	18.5	−0.78	+ 2.6	2.1/25.4	31670
1992 EG_{22}	1999 05 26.6	16 12.34	−15 31.5	16.6	−1.12	+ 0.1	2.8/26.0	34497
2547 P-L	1999 05 26.6	16 12.39	−20 29.9	18.4	−0.84	+ 1.5	0.2/26.6	22700
1998 CJ_{4}	1999 05 26.7	16 12.44	−37 44.6	18.0	−1.09	+ 2.7	5.3/29.4	31799
(9452)	1999 05 26.7	16 12.80	−15 50.0	18.9	−0.91	+ 2.0	1.6/26.0	32642
1981 EK_{38}	1999 05 26.7	16 12.83	−26 04.9	19.5	−1.08	+ 3.8	2.2/27.6	26922
1981 EY_{5}	1999 05 26.8	16 13.11	−36 58.2	19.1	−0.94	+ 2.5	4.5/29.4	30779
1996 XV_{30}	1999 05 26.8	16 13.15	−07 42.4	19.7	−0.93	+ 0.2	4.3/25.1	29926
(8511)	1999 05 26.8	16 13.16	−09 55.2	17.6	−0.84	+ 3.5	3.5/25.0	31499
1981 EL_{26}	1999 05 26.9	16 13.17	−38 27.5	17.9	−1.14	− 0.6	8.9/29.0	28611
1993 QB_{3}	1999 05 26.9	16 13.18	+10 05.4	18.8	−1.01	+ 2.0	10.6/21.3	32050
(9503)	1999 05 26.9	16 13.31	−32 03.7	17.7	−0.92	+ 0.9	3.4/28.5	32654
1998 FH	1999 05 26.9	16 13.51	−07 41.4	18.6	−0.84	+ 5.0	4.5/24.4	31567
1998 BZ_{24}	1999 05 27.0	16 13.57	−17 08.9	17.3	−0.83	+ 2.0	1.3/26.4	31593
1993 SM_{1}	1999 05 27.0	16 13.68	−13 55.8	18.1	−1.03	+ 2.5	2.7/26.0	34581
2542 P-L	1999 05 27.0	16 14.02	−22 48.1	18.4	−1.10	+ 1.4	0.6/27.3	32035
1998 FD	1999 05 27.1	16 13.94	−24 27.5	18.4	−0.87	+ 2.2	0.9/27.6	32256
1986 EJ_{1}	1999 05 27.1	16 14.03	−45 12.1	15.9	−1.30	− 3.5	10.7/29.3	31135
1998 AG_{6}	1999 05 27.1	16 14.25	−05 20.5	18.4	−0.81	+ 2.6	4.9/24.5	34589
1981 EM_{2}	1999 05 27.1	16 14.26	−18 43.7	18.8	−1.01	+ 6.8	1.1/26.7	26914
1993 UQ_{5}	1999 05 27.1	16 14.30	−20 22.9	18.0	−1.11	+ 0.1	0.3/27.1	31586
1995 WX_{8}	1999 05 27.1	16 14.38	−20 29.3	18.0	−0.83	+ 1.6	0.2/27.1	32310
1997 YG_{10}	1999 05 27.2	16 14.49	−24 16.0	16.6	−1.01	+ 1.5	1.1/27.6	31591
1992 FM_{1}	1999 05 27.2	16 14.79	−65 50.3	17.2	−2.16	− 0.6	19.2/05.6	22700
3196 T-3	1999 05 27.2	16 14.83	−20 03.4	17.0	−1.02	+ 1.1	0.6/27.1	28088
1986 TH	1999 05 27.3	16 14.81	−29 13.3	18.1	−1.15	+ 3.3	3.2/28.5	31272
1979 ME_{7}	1999 05 27.3	16 14.89	−29 51.7	18.1	−1.02	+ 5.3	2.9/28.9	21100
1989 YF_{1}	1999 05 27.3	16 14.93	−30 25.6	17.0	−1.04	+ 5.0	3.4/29.0	31273
1992 DX_{5}	1999 05 27.3	16 14.98	−18 58.5	17.1	−0.81	+ 1.4	0.7/27.0	32304
(8676)	1999 05 27.3	16 14.98	−19 56.0	17.8	−0.81	+ 2.8	0.4/27.1	31681
1998 BL_{25}	1999 05 27.3	16 15.23	−14 37.3	17.4	−0.87	+ 2.1	2.3/26.4	31798
1998 FG_{88}	1999 05 27.4	16 15.42	+00 46.4	17.5	−0.90	+ 2.7	7.5/23.6	34590
1997 VM_{6}	1999 05 27.4	16 15.43	−33 07.0	17.1	−1.04	+ 5.2	4.0/29.6	31423
(10583)	1999 05 27.5	16 15.67	−22 44.7	15.8	−0.97	− 2.2	0.5/27.7	34458
1992 UA_{1}	1999 05 27.5	16 15.80	−40 12.1	18.0	−1.18	0.0	6.1/29.9	31787
(8571)	1999 05 27.5	16 15.87	−21 42.7	17.0	−0.89	+ 2.5	0.1/27.6	31513
1993 TG_{39}	1999 05 27.5	16 15.92	−15 52.0	18.9	−1.04	+ 1.9	2.0/26.8	28616
4310 T-1	1999 05 27.5	16 16.06	−36 54.6	18.6	−1.10	− 0.1	4.9/29.5	32291
1994 CE_{1}	1999 05 27.5	16 16.08	−41 01.6	18.3	−1.17	+ 3.0	6.6/30.8	31586
1998 BA_{31}	1999 05 27.6	16 16.08	−13 32.3	18.6	−1.00	+ 3.1	2.9/26.4	31401
1996 QP	1999 05 27.7	16 16.73	−07 52.0	18.4	−0.99	+ 3.6	6.2/25.5	27924
1997 BJ_{5}	1999 05 27.7	16 16.77	−34 26.4	18.5	−0.90	+ 2.7	3.7/29.9	31986
1993 VY	1999 05 27.8	16 17.04	−49 37.6	18.0	−1.69	− 4.0	10.3/29.7	31788
4135 T-2	1999 05 27.9	16 17.40	−30 06.2	17.6	−1.04	− 0.3	3.2/28.9	19690
(10476)	1999 05 27.9	16 17.42	−22 47.5	15.4	−0.86	+11.8	0.8/28.3	34430
1994 CT_{12}	1999 05 27.9	16 17.42	−10 55.6	18.0	−0.94	+ 1.2	3.6/26.5	31789
1998 CL_{1}	1999 05 27.9	16 17.50	−21 48.7	18.9	−0.84	+ 2.6	0.1/28.0	32059
(8285)	1999 05 27.9	16 17.66	−13 40.0	17.1	−0.81	+ 4.9	2.3/26.6	31215
1998 FH_{10}	1999 05 28.0	16 17.76	−50 33.3	18.9	−1.17	− 0.2	8.0/01.1	32063
1992 GO_{4}	1999 05 28.1	16 18.01	−17 31.5	16.5	−1.01	+ 3.7	1.8/27.5	34008
(8573)	1999 05 28.1	16 18.19	−32 39.3	17.0	−1.01	− 0.7	3.5/29.4	31514
2287 T-2	1999 05 28.1	16 18.22	−12 08.2	18.3	−0.87	+ 2.9	3.3/26.7	32344
1979 QV_{1}	1999 05 28.1	16 18.23	−33 08.1	17.2	−1.13	+ 4.2	5.6/30.1	34573

1989 UG_2	1999 05 28.1	16 18.38	−38 59.7	17.8	−1.55	− 5.8	6.6/28.8 25329
1996 XW	1999 05 28.1	16 18.42	−21 23.7	17.8	−0.91	− 0.6	0.0/28.2 31734
1990 UB_3	1999 05 28.2	16 18.41	−25 12.5	18.1	−1.13	+ 2.4	1.5/28.7 34286
(8667)	1999 05 28.2	16 18.85	−24 20.2	17.7	−1.09	+ 0.1	1.1/28.6 31679
1981 EE_{12}	1999 05 28.3	16 18.85	−26 31.6	17.7	−1.10	+ 4.3	2.0/29.1 31271
1994 AE_{11}	1999 05 28.3	16 18.98	−19 56.6	18.2	−1.01	+ 1.0	0.5/28.2 31586
(8744)	1999 05 28.3	16 19.11	−19 42.1	18.3	−0.80	+ 1.5	0.5/28.1 31697
(8618)	1999 05 28.3	16 19.18	−24 52.5	17.1	−0.82	+ 3.6	1.1/29.0 31667
3151 T-2	1999 05 28.3	16 19.29	−25 05.5	17.7	−1.15	+ 1.2	1.5/28.8 24909
1998 AL	1999 05 28.4	16 19.24	−14 08.8	18.3	−1.01	+ 1.5	2.6/27.5 31425
1978 RU_8	1999 05 28.5	16 19.68	−06 15.1	18.7	−0.75	+ 2.3	4.2/26.1 32041
(8222)	1999 05 28.5	16 19.98	−12 35.4	16.7	−0.99	+ 3.2	4.4/27.2 31091
1998 DT_{12}	1999 05 28.5	16 20.04	−27 44.9	18.5	−1.12	+ 2.3	2.8/29.0 31560
1981 EU_{43}	1999 05 28.6	16 20.07	−43 49.8	20.1	−1.18	+ 2.5	7.1/32.0 26923
1998 DE_9	1999 05 28.6	16 20.11	−39 26.7	18.7	−1.01	− 0.4	5.5/30.8 33266
1981 DQ_3	1999 05 28.6	16 20.28	−39 21.9	15.5	−1.06	+ 3.5	7.6/31.7 31707
(10546)	1999 05 28.7	16 20.49	−11 51.8	15.3	−1.00	− 2.2	5.0/27.8 34448
1990 UZ	1999 05 28.7	16 20.84	−15 38.1	15.7	−0.89	− 0.8	1.9/28.1 34286
1992 PD_6	1999 05 28.8	16 20.92	−20 00.8	17.3	−1.04	+ 0.7	0.6/28.6 22407
1978 TT_7	1999 05 28.8	16 21.00	−15 48.9	16.1	−1.04	− 1.3	2.2/28.3 34280
1996 PC_3	1999 05 28.8	16 21.07	−56 48.4	21.0	−1.49	+ 1.9	9.4/03.5 30902
(8228)	1999 05 28.8	16 21.11	−03 40.3	16.7	−0.88	+ 3.2	5.8/25.9 31093
1981 DK	1999 05 28.8	16 21.17	−28 55.1	17.6	−0.84	+ 3.3	2.0/30.1 31579
1996 XJ_2	1999 05 28.8	16 21.18	−12 27.8	19.5	−0.85	− 2.0	2.6/28.0 31391
(10633)	1999 05 28.9	16 21.29	−11 29.3	17.7	−0.98	+ 0.8	3.8/27.7 34471
1992 UJ	1999 05 28.9	16 21.39	−24 40.5	19.0	−1.00	+ 2.6	1.1/29.4 32049
1990 UN_5	1999 05 28.9	16 21.43	−15 44.5	20.3	−0.80	+ 1.1	1.5/28.2 34577
1998 FS_{120}	1999 05 28.9	16 21.57	−03 15.1	19.1	−0.77	+ 2.4	5.2/26.1 32261
1981 DF	1999 05 28.9	16 21.62	−39 58.8	17.9	−0.98	+ 2.1	5.4/31.8 31780
1993 UU	1999 05 28.9	16 21.66	−23 26.1	16.5	−1.18	− 0.5	0.8/29.0 31788
1988 VK_2	1999 05 29.0	16 21.71	−19 43.0	17.0	−1.02	− 0.1	0.7/28.8 31581
1998 DD_6	1999 05 29.0	16 22.06	−16 58.0	19.2	−1.00	+ 2.4	1.6/28.4 32684
1997 YB_{14}	1999 05 29.1	16 22.14	−04 14.2	18.4	−0.94	− 0.3	5.7/27.2 31425
1990 UE_4	1999 05 29.1	16 22.36	−13 36.6	18.8	−0.77	+ 1.4	2.2/28.1 34577
1981 EA_{23}	1999 05 29.1	16 22.44	−35 28.4	17.9	−1.08	+ 1.0	5.4/31.0 32739
1998 FW_{108}	1999 05 29.1	16 22.49	−24 40.2	18.0	−0.81	+ 2.7	0.9/29.7 31766
1993 FF_{49}	1999 05 29.1	16 22.53	−29 49.1	19.1	−0.91	+ 1.4	2.3/30.3 32050
1997 YV_6	1999 05 29.2	16 22.63	−39 00.1	17.3	−1.03	+ 6.0	6.3/01.8 31796
(8593)	1999 05 29.3	16 22.89	−38 25.8	17.1	−1.02	+ 0.3	5.3/31.5 31518
1987 BS_2	1999 05 29.3	16 22.95	−17 30.7	18.0	−1.02	+ 2.2	1.5/28.8 31416
1998 FA_{53}	1999 05 29.3	16 22.96	−28 11.2	18.6	−0.84	+ 1.4	1.8/30.2 32320
1994 NV_1	1999 05 29.3	16 23.12	−11 16.8	17.6	−0.82	+ 0.6	4.4/28.0 34193
1990 TC_4	1999 05 29.3	16 23.15	−20 51.6	17.9	−0.84	+ 2.3	0.2/29.3 32046
1997 YX_1	1999 05 29.4	16 23.29	−17 22.6	18.3	−0.99	+ 1.4	1.5/28.9 31127
1996 XU_{25}	1999 05 29.4	16 23.43	−20 16.2	17.5	−0.87	+ 2.5	0.4/29.2 32311
1996 RK_{11}	1999 05 29.4	16 23.55	−23 15.8	20.1	−1.04	+ 1.9	0.6/29.7 31588
1998 DR_{14}	1999 05 29.5	16 23.72	−35 07.4	19.0	−0.94	+ 3.8	4.3/31.8 32060
(8498)	1999 05 29.5	16 23.80	−36 35.8	17.0	−0.98	+ 1.5	4.6/31.5 31496
1998 BE_{33}	1999 05 29.5	16 24.04	−07 14.5	19.5	−0.84	+ 2.4	4.1/27.4 32059
1993 TC_3	1999 05 29.6	16 24.25	−17 19.7	17.6	−1.12	+ 3.0	1.9/29.0 31788
(8487)	1999 05 29.6	16 24.32	−26 59.9	17.3	−1.08	+ 3.0	1.9/30.4 31493
(8341)	1999 05 29.6	16 24.47	−28 20.5	16.9	−1.15	+ 1.9	2.6/30.5 31352
1994 TV_{15}	1999 05 29.7	16 24.66	+14 41.0	15.5	−1.02	+10.7	17.1/18.9 30783
1996 QM_1	1999 05 29.7	16 24.83	−12 36.6	19.3	−1.00	+ 4.1	3.5/28.4 27924
1994 AC_1	1999 05 29.8	16 25.20	−31 47.6	18.3	−1.13	+ 3.6	3.6/31.3 31788
1977 PP_1	1999 05 29.9	16 25.39	−15 44.7	17.3	−0.89	+ 3.2	2.1/29.0 31779
1997 XH_{10}	1999 05 29.9	16 25.43	−22 55.3	17.8	−1.14	− 0.1	0.5/30.1 31424
(10581)	1999 05 29.9	16 25.54	−02 57.6	18.7	−0.79	+ 1.5	6.2/27.4 34458
1998 CR_3	1999 05 30.0	16 25.74	−21 00.7	18.4	−0.83	+ 1.8	0.2/29.9 31799
1996 RW	1999 05 30.1	16 26.60	−22 23.2	19.1	−0.96	+ 2.6	0.2/30.3 32054
(8910)	1999 05 30.2	16 26.99	−06 43.5	16.7	−0.86	− 0.9	4.9/28.6 31925
1998 FR_{57}	1999 05 30.3	16 27.30	−27 08.0	17.7	−0.84	+ 1.9	1.6/31.1 32321
1998 ER_{13}	1999 05 30.3	16 27.32	−05 58.8	18.1	−0.78	+ 2.0	4.9/28.1 32316
1997 YJ_{14}	1999 05 30.3	16 27.40	−25 43.2	19.7	−1.00	+ 2.5	1.3/30.9 31591
(8465)	1999 05 30.4	16 27.45	−12 57.8	20.2	−0.76	+ 2.0	2.4/29.2 31488
(10198)	1999 05 30.4	16 27.46	−22 02.9	17.1	−0.91	+ 0.9	0.1/30.5 33905
1996 VN_4	1999 05 30.4	16 27.47	−20 49.0	17.3	−0.87	+ 2.3	0.3/30.3 32055
1991 VN	1999 05 30.4	16 27.75	−18 15.3	18.1	−1.00	+ 2.4	1.3/30.0 31584
1991 RE_{20}	1999 05 30.5	16 27.88	−38 56.6	17.8	−1.08	+ 1.5	5.7/01.8 31785
1998 FL_{103}	1999 05 30.5	16 28.25	−33 19.4	17.5	−0.92	+ 1.9	3.3/01.2 31765
(8580)	1999 05 30.6	16 28.24	−10 15.0	18.0	−0.80	− 0.1	3.3/29.3 31515
1981 EM_{10}	1999 05 30.6	16 28.30	−34 35.5	17.6	−0.92	+ 1.7	4.0/01.3 32042
1993 FM_{19}	1999 05 30.6	16 28.55	−13 40.9	17.5	−0.83	+ 1.1	2.3/29.7 32050
1997 XL	1999 05 30.6	16 28.63	−26 02.6	16.9	−1.16	+ 0.1	1.8/31.1 31154
1997 YT_{10}	1999 05 30.6	16 28.64	−13 07.9	16.8	−0.91	− 0.6	3.3/29.8 34300
1995 SR_9	1999 05 30.8	16 29.06	−39 31.1	19.7	−0.98	+ 0.9	5.0/02.1 32053
1989 UD_1	1999 05 30.8	16 29.26	−31 35.0	17.4	−1.16	+ 1.1	3.8/32.0 31715
1996 TY_8	1999 05 30.8	16 29.38	−07 55.8	19.6	−0.99	+ 9.0	4.7/28.0 28864
1981 ET_{30}	1999 05 30.9	16 29.56	−10 45.6	18.7	−0.98	+ 3.0	4.9/29.4 26920
1993 FK_{81}	1999 05 30.9	16 29.71	−07 06.3	17.0	−0.78	+ 2.4	4.9/28.8 34501
1998 DN_3	1999 05 30.9	16 29.74	−35 00.4	17.5	−1.06	+ 1.5	4.7/01.7 31800
1995 OH_{10}	1999 05 30.9	16 29.76	−25 07.2	17.5	−1.00	+ 2.9	1.3/31.4 31790
1998 BK_{25}	1999 05 30.9	16 29.86	−18 06.1	16.2	−1.07	− 0.6	1.6/30.6 32059
1998 AN	1999 05 30.9	16 29.89	−28 54.7	16.8	−0.98	+ 2.2	2.5/32.0 31286
1997 YD_{10}	1999 05 31.0	16 30.05	−31 39.9	16.1	−1.11	+ 2.4	4.6/01.3 34019
4280 T-3	1999 05 31.0	16 30.18	−14 31.8	18.5	−0.79	+ 1.7	2.3/30.1 32505
1998 BO_1	1999 05 31.1	16 30.25	−30 36.6	17.9	−1.14	+ 1.9	3.4/01.2 32059
1998 DZ	1999 05 31.1	16 30.30	−26 54.3	17.9	−1.01	+ 2.1	2.1/31.8 31406
(8459)	1999 05 31.1	16 30.51	−19 16.1	18.3	−0.80	+ 1.7	0.7/30.8 31486
1989 RJ_2	1999 05 31.1	16 30.51	−22 22.6	17.2	−1.13	+10.1	0.2/31.3 30781
1998 FU_{38}	1999 05 31.1	16 30.63	−14 43.7	18.3	−0.79	+ 2.3	2.1/30.2 32754
1996 OK	1999 05 31.1	16 30.68	−09 29.6	18.2	−1.10	+ 0.7	5.9/29.7 31242
1998 DZ_4	1999 05 31.2	16 30.66	−25 12.7	18.9	−1.00	+ 1.8	1.1/31.6 31740
1993 TE_5	1999 05 31.2	16 30.82	−25 02.0	15.6	−1.13	+ 4.0	1.6/31.7 31276
1996 VK	1999 05 31.2	16 30.85	−23 58.8	17.7	−0.99	− 0.3	0.8/31.5 32245
1987 QE_7	1999 05 31.3	16 31.05	−06 17.9	17.5	−0.89	+ 4.3	5.4/28.7 32300
1981 EZ_{35}	1999 05 31.3	16 31.10	−21 36.1	19.7	−0.83	+ 1.6	0.1/31.3 32739
1996 VP_6	1999 05 31.3	16 31.25	−29 25.7	17.9	−1.06	+ 2.3	2.6/01.3 32055
1998 AL_8	1999 05 31.4	16 31.48	−21 34.9	18.0	−0.97	+ 1.4	0.1/31.4 31592
1996 WU_1	1999 05 31.4	16 31.91	−16 11.8	18.0	−0.85	− 0.7	1.8/30.9 32311
1993 FP_{19}	1999 05 31.5	16 32.07	−10 24.5	19.3	−0.80	+ 1.3	3.6/30.1 34500
(8500)	1999 05 31.5	16 32.26	−10 26.2	17.3	−0.80	+ 4.1	3.5/29.7 31496

1989 UE	1999 05 31.6	16 32.74	−22 03.7	17.9	−1.09	+ 1.2	0.1/31.7	31783
(8371)	1999 05 31.6	16 32.75	−17 17.2	17.2	−0.92	+ 1.0	1.8/31.2	31359
1996 RN	1999 05 31.7	16 32.82	−32 09.3	17.4	−1.16	+ 1.3	4.8/01.8	31244
3827 T-3	1999 05 31.7	16 33.04	−23 19.4	20.9	−1.06	+ 1.6	0.5/31.9	28313
1996 PF	1999 05 31.7	16 33.05	−25 39.6	18.6	−1.06	+ 4.4	1.5/01.3	32953
1993 FM_{40}	1999 05 31.8	16 33.22	−18 28.8	18.3	−0.84	+ 1.5	1.3/31.4	31585
1981 EO_{40}	1999 05 31.8	16 33.38	+01 28.8	17.6	−0.86	+ 3.7	9.1/27.7	31580
1994 CF_{14}	1999 05 31.8	16 33.49	−37 38.1	16.8	−1.18	− 1.1	6.3/02.2	31385
1996 TG_{28}	1999 05 31.9	16 33.60	−04 23.3	17.1	−0.83	+ 1.9	7.7/29.7	34295
1998 CA_1	1999 06 01.0	16 34.02	−35 26.4	16.6	−1.30	+ 2.2	6.1/02.5	32059
1989 GY_1	1999 06 01.0	16 34.09	−35 00.8	18.7	−1.04	+ 0.7	4.3/02.4	33543
1998 AQ	1999 06 01.1	16 34.42	+09 58.5	17.8	−0.80	− 2.6	11.1/29.5	31426
1990 QK_7	1999 06 01.1	16 34.67	−06 53.4	18.3	−0.79	+ 1.5	4.6/30.2	32046
1997 YG_{17}	1999 06 01.2	16 34.78	−12 00.5	17.4	−1.01	− 2.0	4.6/31.4	31130
1998 DC_{24}	1999 06 01.2	16 34.86	−03 46.1	18.3	−0.85	+ 2.8	5.5/29.7	32060
1989 VQ_1	1999 06 01.2	16 34.98	−09 27.9	17.5	−0.96	+ 0.9	5.3/30.9	21572
(8463)	1999 06 01.2	16 35.07	−18 25.8	18.8	−0.81	+ 1.4	1.1/31.8	31487
1981 EH_{11}	1999 06 01.3	16 35.20	−44 39.7	17.2	−1.25	+ 0.5	8.7/03.5	32042
4550 P-L	1999 06 01.3	16 35.26	−27 53.7	19.8	−1.18	+ 1.3	2.3/02.0	17462
1996 VG_3	1999 06 01.4	16 35.55	−19 40.5	18.2	−1.02	+ 3.5	0.9/01.1	28600
1979 MX_3	1999 06 01.5	16 35.94	−21 58.7	19.0	−1.12	+ 4.1	0.0/01.5	30778
1988 SE_2	1999 06 01.5	16 36.29	−29 07.3	16.6	−1.13	− 2.6	3.2/02.0	31526
1997 YO_{16}	1999 06 01.5	16 36.39	−24 45.3	19.4	−1.02	+ 2.8	0.9/01.9	31258
1994 EH_7	1999 06 01.6	16 36.42	−42 34.3	16.4	−1.20	− 2.6	9.0/02.9	31789
1996 OL	1999 06 01.6	16 36.52	−18 07.4	17.1	−1.10	− 0.2	1.9/01.3	31421
1990 UZ_1	1999 06 01.6	16 36.70	−15 10.3	17.6	−1.09	+ 1.6	2.8/31.9	31784
4095 T-2	1999 06 01.6	16 36.72	+01 04.2	17.5	−0.76	+ 3.5	8.3/28.8	31609
(8340)	1999 06 01.7	16 36.93	−28 02.8	16.2	−0.90	+ 3.9	2.0/02.6	31352
1325 T-2	1999 06 01.7	16 36.95	−28 38.0	17.8	−1.00	+ 0.7	2.3/02.4	31825
1977 DP_2	1999 06 01.7	16 37.19	−22 44.6	18.3	−0.90	+ 1.5	0.2/01.9	31222
1998 BV_2	1999 06 01.8	16 37.18	−23 23.0	18.5	−1.05	+ 1.5	0.5/01.9	31797
1996 TC_{54}	1999 06 01.9	16 37.61	−26 47.0	19.5	−1.03	+ 1.2	1.6/02.4	31792
(8800)	1999 06 01.9	16 37.62	−27 54.5	19.4	−0.85	+ 1.5	1.6/02.6	31899
1998 DJ_{10}	1999 06 01.9	16 37.66	−24 58.8	18.2	−0.89	+ 1.7	0.9/02.3	32315
1996 TN_{19}	1999 06 01.9	16 37.83	−22 49.3	17.4	−1.05	+ 1.6	0.3/02.0	31589
1997 WH_{13}	1999 06 01.9	16 37.89	−28 51.7	20.0	−1.12	+ 3.2	2.5/02.8	31281
1998 DA	1999 06 02.0	16 38.23	−17 21.1	16.7	−0.94	− 0.5	1.9/01.6	32059
(8343)	1999 06 02.0	16 38.41	−19 32.8	17.3	−0.88	+ 2.0	0.9/01.8	31353
1993 GG_1	1999 06 02.1	16 38.61	−22 27.7	16.1	−0.88	− 0.5	0.1/02.2	31788
1994 CD_7	1999 06 02.1	16 38.69	−09 54.2	18.9	−0.85	− 0.4	5.7/01.1	33240
4792 P-L	1999 06 02.2	16 39.06	−25 19.0	18.4	−0.91	+ 1.2	1.1/02.6	34338
1998 EG	1999 06 02.3	16 39.25	−11 30.8	18.3	−0.91	+ 0.7	4.2/01.2	31743
1998 FQ_{87}	1999 06 02.3	16 39.29	−36 49.8	16.9	−1.00	− 1.4	5.0/03.5	34218
1981 DO_3	1999 06 02.3	16 39.50	−27 54.1	17.1	−0.86	+ 3.0	1.9/03.0	31780
(8109)	1999 06 02.4	16 39.95	+08 35.5	17.6	−1.12	− 6.7	12.5/03.0	30968
1996 NX_3	1999 06 02.4	16 39.98	−29 28.4	16.7	−1.12	+ 3.2	3.2/03.4	31108
1992 WG_5	1999 06 02.4	16 40.04	−15 37.1	17.0	−0.97	− 2.2	2.3/02.0	31787
1993 FX_{14}	1999 06 02.5	16 40.25	−05 25.0	17.0	−0.80	+ 1.4	5.5/31.4	23783
1979 QH_4	1999 06 02.5	16 40.48	−34 48.3	18.1	−0.97	+ 1.9	3.8/04.1	34173
1981 DW_2	1999 06 02.6	16 40.48	−23 22.7	18.1	−1.04	+ 5.7	0.6/02.8	26914
1993 FQ_{10}	1999 06 02.6	16 40.84	−33 59.4	18.2	−0.98	0.0	3.6/03.8	32306
1992 ME	1999 06 02.7	16 40.89	+21 16.2	15.6	−0.97	−13.5	23.8/07.1	34579
(8673)	1999 06 02.7	16 40.93	−13 08.5	17.3	−0.89	+ 1.9	3.3/01.6	31680
1990 SS_6	1999 06 02.7	16 41.00	−16 21.4	17.6	−1.12	+ 1.9	2.6/02.1	31583
1991 RY_4	1999 06 02.9	16 41.79	−20 09.5	18.6	−0.94	+ 2.4	0.7/02.7	22084
1995 DH_6	1999 06 02.9	16 41.86	−32 23.4	18.1	−1.11	+ 0.8	5.0/04.0	27918
3834 T-3	1999 06 02.9	16 41.93	−22 54.2	19.1	−1.04	+ 0.9	8.3/23.0	31269
1998 DD_{33}	1999 06 02.9	16 42.03	−12 11.8	18.1	−0.98	+ 2.1	3.4/01.8	31563
1997 YR_5	1999 06 02.9	16 42.15	−17 57.7	16.7	−1.08	+ 0.4	1.9/02.6	31256
1998 DL_4	1999 06 02.9	16 42.16	−39 18.6	19.0	−1.06	+ 3.3	5.5/05.4	32059
1991 RT_{14}	1999 06 03.0	16 42.17	+00 12.8	18.6	−0.82	+ 2.1	7.2/31.1	34494
1998 BE_{30}	1999 06 03.0	16 42.39	−38 00.3	17.1	−1.03	+ 0.2	5.5/04.6	31798
1975 UA	1999 06 03.0	16 42.40	−04 26.9	18.0	−1.15	+12.6	8.0/30.2	31002
1996 XV	1999 06 03.1	16 42.71	−23 04.2	19.0	−0.86	+ 1.2	0.3/03.2	34586
1998 FQ_{60}	1999 06 03.1	16 42.89	−23 23.6	18.7	−0.83	+ 1.5	0.3/03.3	34217
1994 EJ_1	1999 06 03.2	16 42.92	+09 14.2	16.9	−0.84	+ 3.3	10.6/29.2	34582
1996 XQ_{19}	1999 06 03.2	16 43.08	−22 26.7	17.8	−0.91	+ 2.4	0.1/03.3	32311
1998 EA_{13}	1999 06 03.2	16 43.10	−21 15.4	17.3	−0.83	+ 0.8	0.3/03.1	32316
1991 EO_2	1999 06 03.2	16 43.10	−25 05.5	16.7	−1.06	+ 2.4	1.3/03.6	32223
1992 EY_{14}	1999 06 03.3	16 43.39	−11 01.8	19.0	−0.79	+ 2.0	3.4/01.9	33681
1998 DU_2	1999 06 03.3	16 43.42	−14 59.8	19.5	−0.96	− 0.2	2.3/02.7	32683
1992 LK	1999 06 03.3	16 43.64	−21 29.1	15.4	−1.06	− 4.0	0.4/03.3	34579
1991 RA_{18}	1999 06 03.3	16 43.67	−19 26.6	17.7	−0.93	+ 2.6	1.0/03.0	32225
1981 DA_2	1999 06 03.3	16 43.70	−28 53.3	18.3	−0.86	+ 2.5	1.9/04.2	32042
1990 VU_5	1999 06 03.4	16 43.85	−09 08.5	18.0	−0.79	+ 2.5	4.2/01.7	32742
1998 BF_{18}	1999 06 03.4	16 44.06	−25 02.7	19.6	−0.98	+ 1.4	0.9/03.8	31798
1998 DF_{20}	1999 06 03.5	16 44.29	−02 58.2	18.6	−0.86	+ 2.1	6.2/01.1	34530
1992 WY_3	1999 06 03.5	16 44.39	−16 24.6	17.6	−1.01	− 2.6	2.4/03.2	32228
1992 UZ_6	1999 06 03.5	16 44.41	−24 21.7	17.7	−1.01	+ 2.8	0.7/03.8	32049
1994 AE_9	1999 06 03.6	16 44.85	−23 51.0	18.0	−1.03	+ 2.5	0.7/03.8	23982
1979 ME_2	1999 06 03.6	16 44.97	−10 50.1	19.5	−1.02	+ 0.4	4.9/02.5	30778
1981 EJ_{19}	1999 06 03.7	16 45.11	−21 23.7	18.3	−0.83	+ 1.4	0.3/03.6	31781
1998 FR_{55}	1999 06 03.7	16 45.14	−04 13.4	19.2	−0.76	+ 1.7	5.1/01.5	32320
1998 BH_8	1999 06 03.7	16 45.27	−07 18.9	16.4	−0.91	− 1.6	6.3/02.6	34589
1995 QJ_3	1999 06 03.7	16 45.33	−04 23.5	17.9	−0.80	+ 3.2	5.8/01.2	32308
1987 UN_1	1999 06 03.7	16 45.39	−14 24.7	17.7	−0.90	+ 5.0	2.6/02.6	31581
1120 T-3	1999 06 03.8	16 45.50	−30 05.2	17.9	−0.97	+ 2.8	2.5/04.8	31826
1998 CN_1	1999 06 03.8	16 45.78	−28 50.6	16.4	−1.00	+ 0.3	2.5/04.5	31594
1996 TO_6	1999 06 03.8	16 45.84	−29 26.3	19.1	−1.17	+ 6.2	2.8/04.9	31389
1998 BT_{33}	1999 06 03.9	16 45.82	−20 45.0	17.6	−1.10	− 0.3	0.6/03.8	31798
1993 FW_{15}	1999 06 03.9	16 45.91	−33 12.8	17.2	−0.99	− 1.3	3.9/04.7	32228
1991 EB_5	1999 06 03.9	16 46.03	−10 18.9	15.9	−0.95	+ 0.7	5.6/02.8	31583
1998 BZ_{32}	1999 06 03.9	16 46.13	−34 49.8	18.0	−1.21	+ 0.3	5.7/05.0	32970
(8457)	1999 06 03.9	16 46.18	−25 25.0	17.6	−0.97	+ 2.5	1.0/04.3	31486
1994 FC	1999 06 03.9	16 46.19	−36 19.9	18.1	−1.16	− 0.8	4.4/05.0	31964
5087 T-2	1999 06 03.9	16 46.19	−19 36.5	18.1	−0.81	+ 3.8	0.8/03.6	32344
1995 SG_5	1999 06 04.0	16 46.30	−44 14.2	16.8	−1.28	− 3.1	8.2/04.8	32053
1993 FS_{35}	1999 06 04.1	16 46.93	−25 03.5	17.0	−0.89	+ 0.6	0.9/04.4	32746
1996 XR	1999 06 04.1	16 47.06	−23 24.2	17.5	−0.98	+ 1.0	0.4/04.3	31589
1995 ES	1999 06 04.1	16 47.09	−34 08.7	18.6	−1.23	+ 0.9	4.8/05.3	30901
1981 EG_{39}	1999 06 04.2	16 47.11	−29 47.1	18.3	−0.91	+ 1.2	2.4/05.0	31580
1996 VQ_1	1999 06 04.2	16 47.40	−38 53.4	16.9	−1.09	+ 4.0	6.6/06.6	31792

1998 FA_{91}	1999 06 04.2	16 47.40	−19 39.8	17.9	−0.87	−	0.1	0.9/04.0	32324
1981 EJ_{18}	1999 06 04.3	16 47.44	−28 51.8	19.0	−0.86	+	1.4	1.8/05.0	32509
1990 QX_8	1999 06 04.3	16 47.48	−25 05.0	17.4	−0.92	+	1.1	0.9/04.6	32301
(8333)	1999 06 04.3	16 47.54	−34 59.5	16.3	−1.07	−	0.4	4.9/05.3	31350
(8240)	1999 06 04.3	16 47.92	−18 13.9	17.3	−1.01	−	0.2	1.8/04.1	31095
1989 UO	1999 06 04.4	16 47.84	−22 26.8	18.0	−1.07	+	0.8	0.0/04.4	31783
1981 EE_{18}	1999 06 04.4	16 47.88	−28 55.6	19.6	−0.86	+	1.2	1.8/05.1	32042
1992 DY	1999 06 04.4	16 47.90	−14 42.8	15.4	−1.05	−	1.8	3.9/03.9	34578
1989 SY_2	1999 06 04.4	16 47.92	−14 56.0	16.9	−0.81	+	0.3	2.6/03.7	32301
1981 EY_{45}	1999 06 04.4	16 48.00	−27 35.7	18.1	−0.85	+	1.7	1.4/05.0	22271
(8433)	1999 06 04.5	16 48.50	−39 01.8	16.9	−1.16	−	1.7	6.3/05.7	31372
1990 TJ_3	1999 06 04.6	16 48.70	−20 01.4	16.8	−1.14		0.0	1.0/04.4	31417
(8332)	1999 06 04.6	16 48.73	−23 03.3	17.4	−1.05	+	3.6	0.2/04.7	31350
1986 WB	1999 06 04.6	16 48.80	−24 32.1	17.2	−1.14	−	1.0	0.8/04.8	31416
1993 BR_2	1999 06 04.6	16 49.00	−29 11.9	18.5	−0.96	+	1.3	2.1/05.4	32049
1996 VA_5	1999 06 04.7	16 49.13	−06 34.8	16.2	−0.84	+	6.6	7.2/02.0	34585
1993 FA_{23}	1999 06 04.7	16 49.46	−16 55.7	17.3	−0.83	+	2.6	1.8/04.1	32050
1998 DD_{15}	1999 06 04.8	16 49.51	−06 37.3	18.7	−0.88	+	2.2	4.9/03.0	31801
(8215)	1999 06 04.8	16 49.63	−23 22.6	16.2	−1.05	+	0.4	0.4/04.9	31090
4017 T-3	1999 06 04.9	16 49.94	−27 21.4	16.5	−1.17	−	1.5	2.4/05.2	29669
1981 EN_{11}	1999 06 04.9	16 50.01	−32 06.7	21.8	−1.24	+	2.4	3.5/06.0	26917
1998 DQ_9	1999 06 04.9	16 50.02	−22 39.7	16.3	−0.90	−	1.3	0.1/04.9	31741
1992 PM	1999 06 04.9	16 50.28	−20 24.3	18.3	−1.01	+	2.4	0.7/04.8	34579
1981 EV_{38}	1999 06 04.9	16 50.36	−28 07.5	18.6	−0.87	+	1.9	1.9/05.6	26922
1998 BT_2	1999 06 05.0	16 50.75	−19 58.8	18.9	−1.06	+	0.1	0.9/04.9	31263
1997 WD_8	1999 06 05.1	16 50.87	−18 59.2	18.7	−1.07	+	1.7	1.4/04.8	31151
1981 ER_9	1999 06 05.1	16 50.96	−27 47.3	18.8	−0.86	+	2.3	1.7/05.8	26916
(8681)	1999 06 05.1	16 51.13	−18 53.7	17.4	−0.83	+	1.3	1.1/04.8	31682
1998 BK_2	1999 06 05.2	16 51.12	−17 19.5	17.9	−1.05	+	1.2	2.2/04.7	34589
1981 ES_{32}	1999 06 05.2	16 51.21	−31 28.6	19.7	−1.17	+	3.5	3.6/06.3	22271
1988 VH_1	1999 06 05.2	16 51.23	−20 48.2	18.5	−0.96	+	2.5	0.5/05.0	32045
1981 EZ_{40}	1999 06 05.3	16 51.64	−31 45.9	18.3	−1.21	+	1.2	3.9/06.1	34482
4152 P-L	1999 06 05.3	16 51.96	−02 27.9	16.4	−0.78	+	4.8	8.4/02.1	34616
1996 OF	1999 06 05.3	16 51.98	−16 10.0	19.0	−1.09	−	0.6	2.6/04.9	31588
(8390)	1999 06 05.4	16 52.19	−20 27.3	16.4	−0.85	+	1.7	0.8/05.2	31363
1981 ET_{29}	1999 06 05.4	16 52.24	−19 24.5	18.5	−0.81	+	2.3	1.0/05.1	32043
1998 EX_{13}	1999 06 05.4	16 52.41	−16 58.6	17.1	−0.84	+	0.6	1.9/05.0	32062
1991 UC_3	1999 06 05.6	16 52.76	−18 14.2	17.9	−0.93	+	2.0	1.5/05.1	32048
1998 DL_1	1999 06 05.6	16 52.95	−03 40.7	17.8	−0.93	+	2.7	6.6/03.4	34590
1993 QE_3	1999 06 05.8	16 53.59	−16 32.5	18.7	−1.13	+	1.4	3.1/05.2	31384
2088 T-1	1999 06 05.8	16 53.80	−07 00.0	18.6	−0.78	+	2.1	5.4/04.1	32290
1979 MT_4	1999 06 05.8	16 53.83	−29 31.1	18.1	−1.04	+	4.7	2.3/06.8	22948
1981 EZ_{33}	1999 06 06.0	16 54.69	−23 18.8	18.8	−0.82	+	2.1	0.2/06.1	25972
1995 UR_5	1999 06 06.1	16 55.01	−07 53.5	17.1	−0.81	+	3.8	5.1/04.1	27731
(8756)	1999 06 06.1	16 55.15	−22 22.2	18.2	−0.80	+	1.1	0.1/06.1	31700
1979 MO_8	1999 06 06.2	16 55.62	−29 59.6	18.3	−0.93	+	4.1	2.6/07.2	30779
1998 BF_{44}	1999 06 06.2	16 55.63	−16 43.0	20.0	−0.93	−	0.6	1.8/05.9	31430
1994 AD_3	1999 06 06.3	16 55.79	−19 02.0	19.3	−1.04	+	0.8	1.3/06.0	31788
1998 FB_{61}	1999 06 06.3	16 55.81	−23 28.1	17.2	−0.85	+	1.3	0.3/06.4	32754
(8521)	1999 06 06.3	16 55.85	−29 41.3	17.5	−1.25	−	1.0	3.0/06.7	31501
2733 P-L	1999 06 06.4	16 56.15	−20 05.2	18.7	−0.99	+	0.8	0.9/06.2	32728
1997 AZ_1	1999 06 06.4	16 56.27	−30 32.0	18.0	−0.87	+	0.8	2.3/07.1	32312
1993 FC_{42}	1999 06 06.4	16 56.39	−36 19.4	17.6	−1.00	−	0.2	4.8/07.5	32306
1992 UU_6	1999 06 06.5	16 56.53	−02 44.4	17.9	−0.89	+	1.0	6.6/04.6	32305
1995 SO_1	1999 06 06.5	16 56.65	−37 43.7	18.2	−0.96	+	4.5	4.2/08.6	29664
1998 BT_{35}	1999 06 06.5	16 56.67	−31 27.4	17.3	−1.20	+	1.3	3.5/07.3	31556
1981 EQ_{15}	1999 06 06.6	16 56.89	−18 35.3	19.2	−0.93	+	2.8	1.3/06.2	31780
1998 BP_{25}	1999 06 06.6	16 57.28	−18 48.2	17.8	−0.84	+	0.7	1.4/06.4	32059
1996 SD_7	1999 06 06.7	16 57.35	−22 09.6	18.1	−1.03	+	3.7	0.2/06.7	29307
(8419)	1999 06 06.7	16 57.36	−09 53.9	16.0	−0.86	+	1.6	5.2/05.4	31369
1996 SV_7	1999 06 06.7	16 57.45	−27 47.3	17.5	−1.10	+	3.3	2.1/07.3	29307
(8435)	1999 06 06.7	16 57.71	−28 18.6	17.7	−1.20	+	0.2	2.2/07.2	31373
(8468)	1999 06 06.8	16 57.76	−18 55.6	17.7	−0.83	+	0.8	1.4/06.5	31488
1998 FM_{15}	1999 06 06.8	16 57.93	−20 16.7	17.0	−0.92	+	1.6	0.9/06.6	32684
1998 AX	1999 06 06.8	16 57.98	−32 26.6	17.0	−1.14	+	1.5	3.7/07.7	31592
1998 DG_{34}	1999 06 06.8	16 57.98	−27 53.5	18.0	−1.12	+	0.8	2.0/07.3	32060
1995 PQ	1999 06 06.8	16 58.02	−05 47.5	18.4	−0.96	−	0.6	5.6/05.4	29318
(8233)	1999 06 06.8	16 58.05	−29 06.8	17.1	−1.16		0.0	2.6/07.3	31094
1998 BE_{26}	1999 06 06.8	16 58.13	−07 34.1	18.8	−0.80	+	1.6	4.6/05.3	32314
1108 T-1	1999 06 06.9	16 58.13	−32 02.9	18.7	−1.20	+	1.5	3.8/07.7	27938
1979 MA_5	1999 06 06.9	16 58.23	−23 36.8	17.3	−0.87	+	3.4	0.3/07.0	31707
(8537)	1999 06 06.9	16 58.30	−09 04.8	16.2	−0.80	+	3.1	4.9/05.3	31504
1998 DN_{34}	1999 06 06.9	16 58.42	−20 20.9	17.3	−0.82	+	0.4	0.7/06.8	32315
1994 CY_{11}	1999 06 06.9	16 58.50	−27 53.7	19.7	−1.04	+	1.0	1.7/07.4	23864
1992 EL_9	1999 06 06.9	16 58.54	−17 50.8	19.1	−0.80	+	0.3	1.4/06.6	33681
1998 DQ_{15}	1999 06 07.0	16 58.73	−12 17.7	18.2	−0.78	+	2.6	3.2/05.9	31742
1985 PL_1	1999 06 07.0	16 58.76	−06 18.2	18.1	−0.82	+	3.1	5.7/05.0	31712
1996 VL_3	1999 06 07.0	16 58.76	−22 01.1	17.5	−0.96	+	2.3	0.2/07.0	32311
1998 FG_{28}	1999 06 07.0	16 58.78	−23 09.9	17.9	−0.91	+	1.6	0.2/07.1	32064
1981 EU_{11}	1999 06 07.1	16 59.17	−43 02.5	18.3	−1.14	+	0.5	9.1/08.7	26917
1976 UB_1	1999 06 07.1	16 59.24	−01 03.8	16.1	−0.89	−	0.8	8.9/05.9	34001
1993 BR_4	1999 06 07.2	16 59.63	−24 15.2	16.9	−0.93	+	1.4	0.6/07.4	31722
(8469)	1999 06 07.3	16 59.87	−37 04.5	17.5	−1.08	+	0.2	5.3/08.0	31489
(8297)	1999 06 07.3	17 00.06	−16 18.4	17.2	−1.07	+	1.5	2.8/06.8	31218
1981 EM_{11}	1999 06 07.3	17 00.21	−30 28.8	19.5	−1.15	+	3.4	3.2/08.2	26917
1998 CC_2	1999 06 07.4	17 00.54	−30 14.0	18.7	−1.05	+	2.1	2.5/08.2	32059
1986 QG_3	1999 06 07.5	17 00.67	−30 00.0	17.2	−1.02	+	0.3	2.6/08.0	32044
(8581)	1999 06 07.5	17 00.78	−22 50.3	17.2	−0.92	+	0.3	0.0/07.5	31515
(8480)	1999 06 07.6	17 01.05	−25 18.7	17.6	−0.97	+	1.1	0.8/07.8	31491
(8542)	1999 06 07.6	17 01.08	−22 09.7	17.2	−1.08	+	2.4	0.2/07.6	31505
(9450)	1999 06 07.6	17 01.14	−30 01.0	17.8	−1.24	+	1.1	3.1/08.0	32641
2100 T-2	1999 06 07.6	17 01.19	−01 37.2	19.6	−0.75	+	2.5	6.1/05.2	26186
1996 VD_9	1999 06 07.6	17 01.33	−18 42.0	16.7	−0.96	+	0.4	1.5/07.4	31793
6055 P-L	1999 06 07.7	17 01.67	−25 34.8	20.0	−1.10	+	1.6	1.0/08.0	31436
1998 FV_{20}	1999 06 07.8	17 01.91	−21 37.6	18.1	−1.04	+	0.8	0.4/07.7	32317
1994 GP	1999 06 07.9	17 02.26	−30 45.9	15.6	−1.04	−	2.0	3.3/08.3	31789
1997 AF	1999 06 07.9	17 02.55	−18 11.2	17.2	−1.05	−	0.5	1.7/07.7	32312
1975 SG_1	1999 06 08.0	17 02.77	−35 11.3	19.0	−1.12	−	0.7	4.4/08.7	32297
1998 DL_8	1999 06 08.0	17 02.86	−18 05.3	17.5	−0.89	+	2.4	1.7/07.6	32060
(9398)	1999 06 08.0	17 02.95	−21 27.5	18.0	−0.81	+	1.4	0.4/07.9	32629
3297 T-1	1999 06 08.0	17 03.11	−19 38.3	17.2	−0.84	+	1.3	1.1/07.8	31608
1995 WO_{42}	1999 06 08.1	17 03.10	−37 35.6	17.8	−1.05	−	2.6	4.5/08.6	32310

(8545)	1999 06 08.1	17 03.18	−25 34.4	17.9	−1.09	+ 3.6	1.1/08.4 31506
3237 T-2	1999 06 08.1	17 03.23	−34 13.5	19.7	−0.93	+ 0.1	3.2/09.0 32344
1994 BF_1	1999 06 08.1	17 03.27	−28 28.0	17.8	−1.10	+ 1.1	2.0/08.6 32307
(10634)	1999 06 08.1	17 03.30	−15 42.4	16.9	−0.96	+ 2.5	2.9/07.5 34472
2757 P-L	1999 06 08.1	17 03.41	−24 07.9	18.0	−0.88	+ 0.8	0.4/08.3 32785
1996 YY_1	1999 06 08.2	17 03.81	−20 14.5	17.9	−0.98	+ 0.1	0.9/08.1 30671
1997 AA_{22}	1999 06 08.2	17 03.87	−37 16.0	18.8	−0.99	+ 1.3	4.4/09.5 32057
1978 VR_{10}	1999 06 08.3	17 04.04	−25 16.0	17.3	−1.02	− 2.6	0.9/08.4 31223
1998 BS_{15}	1999 06 08.3	17 04.12	−33 08.2	17.1	−1.21	+ 1.7	3.9/09.2 32059
2849 P-L	1999 06 08.3	17 04.25	−25 18.6	19.7	−1.11	+ 1.1	1.2/08.5 34264
1996 UK_1	1999 06 08.4	17 04.55	−25 27.3	17.1	−1.12	− 0.2	1.1/08.6 31792
(8516)	1999 06 08.4	17 04.73	−26 39.5	17.4	−0.98	− 0.2	1.3/08.7 31500
1996 VQ_8	1999 06 08.5	17 05.22	−17 47.8	17.7	−1.03	+ 1.9	2.0/08.2 32055
1998 BY_8	1999 06 08.5	17 05.24	−41 18.4	18.9	−1.20	+ 2.3	6.7/10.4 31593
1982 UV_6	1999 06 08.6	17 05.51	−16 54.6	18.3	−0.88	+ 2.5	1.7/08.1 32299
1991 VJ_6	1999 06 08.7	17 05.56	−08 43.8	18.2	−0.86	+ 2.8	4.8/07.2 32304
4232 T-2	1999 06 08.7	17 05.59	−23 42.0	18.0	−1.06	0.0	0.3/08.8 32344
1993 TE_{34}	1999 06 08.7	17 05.78	−15 11.4	16.9	−1.06	+ 1.1	3.8/08.1 31419
1994 EP_3	1999 06 08.7	17 05.86	−41 06.8	17.2	−1.20	− 1.0	6.3/09.9 31725
1996 PQ	1999 06 08.7	17 05.89	−11 39.2	17.9	−1.02	+ 0.5	4.4/08.0 31791
1989 YA_2	1999 06 08.7	17 05.92	−26 02.4	17.7	−1.04	+ 2.9	1.1/09.1 31784
1998 BL_8	1999 06 08.7	17 06.06	−47 32.5	16.0	−1.37	+ 1.0	11.8/10.3 31798
1996 PA_7	1999 06 08.8	17 06.10	−16 11.7	17.5	−1.28	− 6.0	2.5/08.8 32054
1996 TN_{46}	1999 06 08.9	17 06.40	−38 58.6	18.9	−1.12	+ 1.2	4.8/10.2 31974
1991 GK_5	1999 06 08.9	17 06.43	−26 18.1	18.2	−1.08	+ 0.8	1.2/09.2 31583
4188 T-2	1999 06 08.9	17 06.76	−19 13.5	18.2	−0.92	+ 0.5	1.3/08.7 31825
1997 CQ_1	1999 06 09.0	17 07.07	+01 22.1	19.0	−0.74	− 0.4	6.5/07.3 32057
1998 FM_{135}	1999 06 09.0	17 07.23	−19 15.7	18.2	−0.82	+ 2.1	1.2/08.7 32686
1997 XM_5	1999 06 09.0	17 07.26	−28 33.5	17.1	−1.13	+ 6.2	2.4/09.8 31424
1996 QU	1999 06 09.0	17 07.27	−54 58.1	18.8	−1.66	+ 2.6	11.1/11.9 31791
1998 FX_{68}	1999 06 09.1	17 07.21	−08 55.3	17.1	−0.67	+ 2.9	4.0/07.5 32323
(8724)	1999 06 09.1	17 07.62	−25 58.0	17.7	−1.10	+ 0.9	1.2/09.4 31693
1997 XB_{10}	1999 06 09.2	17 07.67	−27 25.8	16.1	−1.22	− 5.3	2.0/09.2 34588
1993 FF_{40}	1999 06 09.2	17 07.69	−06 51.1	17.8	−0.80	+ 1.6	5.4/07.7 32306
1996 TQ_1	1999 06 09.2	17 07.75	−19 34.6	18.2	−1.07	+ 1.7	1.3/09.0 32054
1990 SH_7	1999 06 09.2	17 07.87	−21 41.6	17.8	−0.90	+ 0.2	0.4/09.2 32046
1996 XL_{29}	1999 06 09.2	17 08.12	−23 34.7	20.0	−1.03	+ 0.7	0.2/09.3 30786
1996 VB_6	1999 06 09.3	17 08.12	−19 26.4	17.6	−0.88	+ 0.6	1.1/09.1 32055
1089 T-1	1999 06 09.3	17 08.29	−36 22.8	18.2	−0.97	+ 1.0	4.2/10.4 32092
1993 TO_{29}	1999 06 09.3	17 08.32	−12 25.6	19.5	−1.05	+ 2.4	4.4/08.4 34191
(8168)	1999 06 09.3	17 08.51	−01 10.3	17.5	−1.01	+ 5.8	7.9/06.8 31079
1995 TW	1999 06 09.4	17 08.54	−15 19.8	20.4	−0.84	+ 5.7	2.2/08.4 26568
2272 T-2	1999 06 09.4	17 08.61	−35 01.3	16.1	−1.25	+ 0.4	5.5/10.2 31825
1981 DJ	1999 06 09.4	17 08.90	−16 55.8	17.7	−0.80	+ 3.3	2.0/08.9 31780
1996 SC_7	1999 06 09.5	17 09.00	−37 54.9	18.8	−1.17	− 1.4	5.1/10.1 31973
1996 XD_6	1999 06 09.6	17 09.28	−20 18.5	18.3	−0.87	− 2.7	0.8/09.5 28871
4194 T-1	1999 06 09.6	17 09.46	−10 27.1	16.9	−1.01	+ 1.1	5.8/08.7 31436
1996 TR_{41}	1999 06 09.6	17 09.57	−18 43.6	18.2	−0.97	+ 0.3	1.5/09.4 31589
1990 VL_4	1999 06 09.6	17 09.68	−15 02.1	17.1	−1.08	− 2.1	3.5/09.4 24739
1975 XF	1999 06 09.6	17 09.71	−11 37.8	17.3	−1.05	+ 1.2	4.9/08.8 31779
1993 FW_{26}	1999 06 09.6	17 09.77	−37 32.3	17.7	−1.02	+ 0.3	5.0/10.6 32050
1996 RB_4	1999 06 09.7	17 09.71	−32 16.0	17.1	−1.06	+ 4.1	3.2/10.7 31588
1198 T-1	1999 06 09.7	17 09.73	−27 53.6	18.4	−0.89	+ 1.7	1.6/10.1 31825
(8518)	1999 06 09.7	17 09.76	−20 52.0	16.4	−0.86	+ 0.6	0.7/09.6 31500
(8538)	1999 06 09.7	17 09.77	−37 27.1	15.8	−1.01	+ 0.7	5.1/10.7 31505
1981 ET_{45}	1999 06 09.7	17 09.85	−07 09.9	20.6	−0.75	+ 1.7	4.1/08.4 32214
1995 UE_{11}	1999 06 09.7	17 10.01	−13 07.8	19.7	−0.80	+ 2.1	3.0/08.9 30784
1995 EO	1999 06 09.7	17 10.13	−20 48.4	17.7	−1.08	+ 2.7	0.9/09.6 31420
3150 T-3	1999 06 09.8	17 10.36	−21 25.1	18.3	−0.93	+ 0.8	0.5/09.7 32787
1994 QP	1999 06 09.8	17 10.44	−31 07.9	16.9	−1.08	− 6.4	2.9/09.7 32748
1994 BN_3	1999 06 09.8	17 10.47	−18 44.4	19.8	−1.01	+ 1.2	1.5/09.6 32307
1996 TP_3	1999 06 09.8	17 10.61	−59 36.8	19.7	−1.86	− 1.3	12.9/10.7 29926
1995 SV_{53}	1999 06 09.9	17 10.73	−21 25.5	18.6	−0.88	+ 1.3	0.5/09.8 32309
1995 BF_1	1999 06 10.0	17 11.13	−27 46.3	16.0	−1.13	+ 3.5	2.3/10.5 31140
4095 P-L	1999 06 10.1	17 11.52	−20 00.3	19.7	−0.92	+ 2.1	1.0/09.9 32091
1188 T-2	1999 06 10.1	17 11.56	−21 42.3	16.3	−1.00	+ 2.4	0.6/10.0 28320
1981 EV_{31}	1999 06 10.1	17 11.78	−14 29.5	18.8	−1.05	+ 1.5	3.4/09.5 31710
1986 AT_2	1999 06 10.2	17 12.04	+02 01.4	18.0	−0.74	− 0.4	6.7/08.7 32299
1996 XF_2	1999 06 10.2	17 12.12	−24 31.4	18.3	−0.99	− 2.5	0.5/10.3 32056
1990 YM	1999 06 10.2	17 12.13	−04 14.4	15.9	−1.17	− 8.2	7.5/11.2 34577
1998 DX_1	1999 06 10.3	17 12.19	−13 07.1	19.1	−1.01	− 1.9	3.8/10.0 31558
1979 TT_2	1999 06 10.3	17 12.55	−26 47.5	16.5	−1.10	− 0.3	1.5/10.6 32042
1990 OE_5	1999 06 10.4	17 12.59	−19 54.4	16.0	−0.87	+ 5.1	1.4/10.0 31273
(8345)	1999 06 10.5	17 13.48	−34 31.8	17.1	−1.25	+ 7.3	4.0/12.1 31353
1996 SX_6	1999 06 10.6	17 13.44	−21 21.5	19.1	−0.95	+ 3.1	0.6/10.5 28864
1998 BE_8	1999 06 10.6	17 13.48	−29 51.4	17.6	−1.21	+ 1.3	2.8/11.1 31797
1995 QP_{10}	1999 06 10.6	17 13.58	−03 50.3	18.4	−0.77	+ 0.4	5.8/09.4 32308
1981 EM_{12}	1999 06 10.6	17 13.59	−46 17.8	18.9	−1.08	+ 1.4	7.8/12.5 31780
1981 EC_{19}	1999 06 10.6	17 13.90	−32 40.9	17.5	−1.21	+ 0.8	4.1/11.3 31580
(8679)	1999 06 10.7	17 14.04	−21 55.3	17.7	−0.86	+ 1.0	0.3/10.7 31682
1992 BK_2	1999 06 10.7	17 14.32	−07 33.8	16.7	−0.82	+ 0.5	5.3/09.7 31786
1998 FY_{67}	1999 06 10.8	17 14.33	−11 02.2	18.1	−0.67	+ 1.2	3.4/09.9 32322
1998 FE_{48}	1999 06 10.8	17 14.52	−50 28.3	17.8	−1.20	− 0.3	9.4/12.1 32065
1992 EB_5	1999 06 10.8	17 14.56	+08 16.0	16.8	−0.75	− 1.0	9.5/09.2 34579
1998 DQ_3	1999 06 10.8	17 14.58	+06 46.2	19.2	−0.97	0.0	9.5/09.2 31595
(8746)	1999 06 10.8	17 14.67	−29 40.8	18.1	−0.86	+ 0.8	1.8/11.3 31698
1991 FS_1	1999 06 10.8	17 14.73	−23 24.7	16.3	−0.99	+ 0.8	0.2/10.9 31137
1997 WD_7	1999 06 10.9	17 14.71	−29 11.4	17.7	−1.13	+ 3.1	2.5/11.4 31281
1981 EB_6	1999 06 10.9	17 14.79	−38 42.6	18.9	−1.00	+ 1.7	4.7/12.1 30779
(8358)	1999 06 10.9	17 15.16	−24 57.8	18.3	−1.07	+ 1.4	0.7/11.1 31356
1991 NL	1999 06 11.0	17 15.10	−23 11.4	15.6	−1.02	+10.3	0.1/11.0 31229
1998 HA_{133}	1999 06 11.0	17 15.31	−04 29.2	18.0	−0.76	+ 3.1	5.5/09.1 32331
(9457)	1999 06 11.1	17 15.49	−23 31.5	17.9	−0.81	+ 0.8	0.1/11.1 32643
1995 SH_5	1999 06 11.1	17 15.51	−23 39.1	18.2	−0.88	+ 1.1	0.2/11.1 32053
1997 YQ_{18}	1999 06 11.1	17 15.83	+00 25.9	19.2	−0.92	− 2.8	9.8/10.6 31425
1986 QC_1	1999 06 11.1	17 15.90	−20 07.1	16.6	−0.93	− 0.7	1.2/11.0 32740
1998 FA_{120}	1999 06 11.1	17 15.91	−08 59.5	17.5	−0.81	+ 2.4	5.0/09.9 32325
1991 PY_3	1999 06 11.1	17 15.96	−23 50.9	17.7	−0.99	+ 1.3	0.3/11.2 33227
1991 RQ_{11}	1999 06 11.2	17 16.04	−01 21.1	17.2	−0.91	− 2.8	8.4/10.8 31417
4917 P-L	1999 06 11.2	17 16.37	−26 25.1	17.3	−1.04	+ 0.5	1.4/11.5 31267
1991 WB	1999 06 11.2	17 16.39	−23 56.5	17.3	−1.21	− 6.7	0.3/11.3 32304
(8448)	1999 06 11.3	17 16.51	−18 40.6	17.4	−1.07	+ 2.7	1.8/11.0 31484

1998 EC	1999 06 11.3	17 16.58	−13 55.0	15.5	−1.08	−	5.9	3.8/11.5	31803
1981 ED_{40}	1999 06 11.3	17 16.68	−08 19.1	19.6	−0.75	+	1.0	3.8/10.4	32043
1998 FE_{73}	1999 06 11.4	17 16.85	−23 21.2	18.6	−1.00	−	0.6	0.1/11.4	31813
1998 EQ_{11}	1999 06 11.4	17 16.88	−27 59.3	17.6	−0.92	−	0.3	1.7/11.7	31744
1997 AL_1	1999 06 11.4	17 16.92	−40 20.1	16.4	−1.01	+	3.8	5.1/13.2	31590
1997 YM_{10}	1999 06 11.4	17 16.98	−17 11.4	17.3	−1.08	−	2.0	2.3/11.3	31591
1995 BH_2	1999 06 11.4	17 16.98	−21 06.0	16.5	−1.08	−	0.2	0.9/11.4	31277
1973 SF_6	1999 06 11.5	17 17.16	−10 35.9	15.9	−1.01	+	2.8	6.3/10.3	31414
1998 DZ_{23}	1999 06 11.5	17 17.37	−13 37.9	17.9	−0.88	+	2.1	3.0/10.8	31597
1996 TP_1	1999 06 11.5	17 17.58	−28 31.8	18.1	−1.12	+	0.3	2.0/11.9	31791
(8614)	1999 06 11.6	17 17.69	−21 58.7	16.8	−0.86		0.0	0.4/11.6	31666
(8495)	1999 06 11.6	17 17.70	−20 12.1	17.8	−0.89	+	0.3	1.0/11.5	31495
1993 FF_{18}	1999 06 11.6	17 17.81	−17 42.4	16.4	−0.85	−	1.1	2.1/11.4	31787
1991 AU_1	1999 06 11.6	17 17.83	−65 04.6	16.1	−2.48	+	4.3	20.3/17.9	31005
(8520)	1999 06 11.6	17 17.96	−05 05.0	17.4	−0.76	+	0.5	5.8/10.5	31501
1995 CJ_1	1999 06 11.6	17 18.08	−23 05.9	15.5	−1.09	+	3.7	0.0/11.7	31240
1992 ED_4	1999 06 11.7	17 18.11	−20 58.4	18.3	−0.82	+	0.3	0.6/11.6	32048
1981 EY_{11}	1999 06 11.7	17 18.11	−32 41.2	18.4	−1.19	+	2.0	3.8/12.4	31223
(8438)	1999 06 11.7	17 18.23	−19 33.9	17.6	−1.10	+	0.2	1.4/11.6	31373
(8163)	1999 06 11.8	17 18.46	−12 26.5	16.7	−1.02	+	3.2	5.0/11.0	31078
1981 QS_2	1999 06 11.8	17 18.76	−19 39.0	18.5	−1.05	+	0.5	1.3/11.7	32739
1994 CQ_1	1999 06 11.8	17 18.76	−17 35.2	18.3	−1.01	+	1.4	2.0/11.5	31789
1998 FZ_{52}	1999 06 11.9	17 19.27	−18 05.2	17.7	−0.83	+	1.4	1.7/11.6	32065
1987 SH_4	1999 06 12.0	17 19.25	−44 49.9	16.6	−1.29	−	3.3	9.2/11.8	31782
1998 CA	1999 06 12.0	17 19.41	−19 19.1	18.6	−1.00	−	1.5	1.3/11.9	31799
1997 AU_{19}	1999 06 12.0	17 19.49	−25 29.3	20.5	−0.84	+	1.4	0.7/12.2	30786
1981 EZ_{13}	1999 06 12.1	17 19.65	−41 41.1	19.2	−1.19	+	2.5	7.1/13.8	28314
(8683)	1999 06 12.1	17 19.74	−12 04.4	18.8	−0.77	+	1.1	3.1/11.4	31683
1993 XF_1	1999 06 12.2	17 20.24	−22 44.2	17.3	−1.14	−	1.2	0.2/12.2	29318
1991 PD_{13}	1999 06 12.2	17 20.30	−28 06.0	17.6	−1.04	+	0.8	2.2/12.5	24104
1994 RL_2	1999 06 12.2	17 20.33	−38 33.3	17.3	−1.00	+	1.5	5.7/13.0	31727
1998 FY_{27}	1999 06 12.2	17 20.34	−25 25.0	18.3	−0.89	+	1.4	0.7/12.4	32318
1992 AY	1999 06 12.2	17 20.54	−15 23.0	17.9	−0.84	−	2.2	2.3/12.1	32304
1995 UA_9	1999 06 12.3	17 20.59	−29 19.9	17.6	−0.92	+	0.2	2.1/12.6	32309
1992 JD_3	1999 06 12.3	17 20.70	−30 08.8	16.6	−1.17	−	2.6	3.4/12.5	31138
1990 SB_6	1999 06 12.4	17 20.88	−19 44.5	18.1	−0.87	+	0.2	1.1/12.2	34285
1995 HQ_2	1999 06 12.4	17 20.90	−27 44.0	19.1	−1.09	−	3.5	2.2/12.4	28302
(8662)	1999 06 12.4	17 21.06	−21 32.2	17.6	−0.86	+	0.7	0.5/12.3	31678
1998 BB_{37}	1999 06 12.5	17 21.45	−28 09.1	16.5	−1.06	+	2.5	2.6/12.9	32059
(8787)	1999 06 12.5	17 21.78	−31 24.4	17.4	−0.91	−	1.1	2.4/12.9	31896
1981 EY_3	1999 06 12.5	17 21.78	−18 20.6	18.8	−0.79	+	2.0	1.3/12.2	31707
(8560)	1999 06 12.6	17 21.99	−43 47.3	16.5	−1.11	+	0.5	7.2/13.7	31510
1990 SA_6	1999 06 12.6	17 22.00	−36 04.0	18.8	−0.92	−	0.1	3.2/13.3	32221
(8193)	1999 06 12.6	17 22.10	−29 24.0	18.8	−1.17	+	2.1	2.5/13.1	31085
2151 T-2	1999 06 12.6	17 22.17	−28 39.8	18.9	−0.93	+	0.7	1.6/13.0	15082
(8767)	1999 06 12.7	17 22.25	−22 14.6	18.7	−0.83	+	0.8	0.3/12.7	31703
1996 UJ_1	1999 06 12.7	17 22.60	−24 13.8	19.5	−1.16		0.0	0.4/12.8	29116
1998 BS_1	1999 06 12.8	17 22.66	−30 17.8	17.0	−1.11	+	0.9	2.7/13.2	31592
1998 FO_{75}	1999 06 12.8	17 22.76	−05 17.7	18.1	−0.76	+	1.8	5.1/11.5	32324
1996 UH_5	1999 06 12.9	17 23.13	−07 32.0	18.1	−0.93	+	3.8	5.4/11.4	32311
(8845)	1999 06 12.9	17 23.23	−11 37.0	17.3	−0.86	+	1.2	3.7/12.2	31910
1981 EO_6	1999 06 12.9	17 23.24	−20 44.5	18.6	−0.95	+	2.9	0.8/12.8	32210
(8512)	1999 06 13.0	17 23.47	−13 11.1	16.8	−0.92	+	0.1	3.4/12.5	31499
1998 EK_{12}	1999 06 13.0	17 23.54	−36 59.0	17.1	−1.12	−	1.8	5.3/13.3	32316
1994 CZ_{11}	1999 06 13.0	17 23.54	−23 15.5	18.1	−1.09	−	0.2	0.0/13.0	23982
1996 UU	1999 06 13.1	17 23.83	−07 46.5	17.6	−0.92	+	3.4	5.4/11.7	31792
1998 BL	1999 06 13.1	17 24.07	−24 27.3	17.6	−0.98	−	1.7	0.5/13.2	31426
(8310)	1999 06 13.2	17 24.23	−17 08.1	17.6	−1.05	−	0.6	2.5/13.0	31220
1981 ER_7	1999 06 13.3	17 24.72	−19 35.0	18.5	−1.01	+	3.5	1.8/13.0	26916
1998 DA_3	1999 06 13.3	17 24.83	−16 49.4	19.1	−1.02	−	0.3	2.4/13.1	31595
1981 EN_{38}	1999 06 13.3	17 24.90	−06 20.1	19.8	−0.77	+	2.3	5.7/12.1	30780
1989 EJ_1	1999 06 13.3	17 25.11	−14 25.8	16.1	−1.00	+	0.5	4.6/13.0	28613
1995 OE_1	1999 06 13.4	17 25.21	−19 37.1	18.6	−0.89	+	0.6	1.2/13.3	32052
1995 SV_{43}	1999 06 13.4	17 25.22	−13 54.0	18.1	−0.82	+	1.7	2.9/12.8	32309
1993 YK	1999 06 13.4	17 25.28	−21 25.0	18.3	−1.04	−	1.5	0.6/13.4	31788
1998 HA_{34}	1999 06 13.5	17 25.45	−03 40.8	17.5	−0.75	+	2.6	5.7/11.8	32687
(8532)	1999 06 13.5	17 25.45	−21 22.7	16.7	−0.94	−	2.0	0.6/13.5	31503
(8599)	1999 06 13.5	17 25.45	−27 37.2	17.5	−1.00	−	0.1	1.7/13.7	31519
1998 AF	1999 06 13.5	17 25.55	−14 42.4	18.1	−1.05	+	0.4	3.5/13.1	31425
(8334)	1999 06 13.5	17 25.57	−20 01.0	16.4	−0.95	−	2.4	1.1/13.5	31351
1992 YE_4	1999 06 13.5	17 25.74	−17 18.0	18.4	−0.98	+	0.5	2.1/13.3	32049
1988 DF_3	1999 06 13.7	17 26.56	−23 59.1	17.1	−1.14	+	4.0	0.3/13.8	32044
1316 T-2	1999 06 13.8	17 26.72	−25 17.9	20.5	−1.07	+	0.5	0.8/13.9	28088
1989 UP_4	1999 06 13.9	17 27.23	−24 52.4	17.2	−0.86	+	0.6	0.5/14.0	26560
1047 T-3	1999 06 13.9	17 27.37	−25 05.6	17.5	−0.96	+	3.5	0.8/14.1	25646
1995 SP_1	1999 06 13.9	17 27.39	−50 49.4	18.7	−1.18	+	3.0	7.2/16.3	29664
1992 EG_4	1999 06 13.9	17 27.51	−23 41.8	19.2	−0.84		0.0	0.1/14.0	32304
1997 AH_{21}	1999 06 13.9	17 27.53	−08 40.0	17.9	−0.79	−	1.9	3.9/13.7	34586
(8414)	1999 06 14.0	17 27.61	−20 26.6	16.2	−1.03		0.0	1.3/13.9	31368
1995 UP_{18}	1999 06 14.0	17 27.76	−36 09.0	19.6	−0.97	+	0.1	4.1/14.6	32518
1989 WZ_1	1999 06 14.1	17 28.37	−25 25.6	17.5	−1.10	−	0.2	0.8/14.3	32301
(8765)	1999 06 14.2	17 28.64	−26 04.6	17.7	−0.97	+	0.5	1.0/14.4	31702
2257 T-2	1999 06 14.3	17 28.84	−28 06.0	17.9	−1.09	+	0.2	1.9/14.5	31161
1981 DP_1	1999 06 14.3	17 28.99	−19 51.6	17.3	−1.01	+	5.6	1.7/14.0	26914
1998 BZ_{12}	1999 06 14.3	17 29.03	−24 32.2	18.4	−1.01	+	0.3	0.5/14.4	34590
1974 SF	1999 06 14.3	17 29.06	−14 44.8	17.8	−1.06	+	2.0	3.7/13.8	31779
1998 FH_{16}	1999 06 14.3	17 29.07	−21 09.5	17.9	−0.84	+	0.4	0.7/14.3	32317
1995 UJ_1	1999 06 14.4	17 29.21	−09 25.2	17.4	−0.82	+	1.9	4.6/13.5	32053
1997 CX_{27}	1999 06 14.4	17 29.40	−16 41.7	18.0	−0.81		0.0	1.9/14.2	32313
1995 BM_2	1999 06 14.4	17 29.56	−13 37.6	18.3	−1.20		+10.0	4.2/13.2	25431
1996 FK_{12}	1999 06 14.4	17 29.83	−65 23.8	17.0	−2.40		−10.8	22.5/08.1	27328
1981 EH_{30}	1999 06 14.5	17 29.61	−10 51.0	19.6	−0.79	+	0.6	3.9/14.0	32212
1981 EM_{29}	1999 06 14.6	17 30.31	−28 57.1	18.6	−1.09	+	4.2	2.7/15.1	26920
(8456)	1999 06 14.6	17 30.42	−31 21.5	16.9	−0.91	+	2.1	2.6/15.2	31486
1978 UJ_4	1999 06 14.6	17 30.46	−19 35.7	18.6	−1.10	+	3.2	1.6/14.4	28314
1996 VX_5	1999 06 14.7	17 30.52	−19 26.2	18.6	−0.95	+	1.9	1.3/14.5	32055
1992 EA	1999 06 14.7	17 30.66	−25 24.8	16.0	−1.08	+	1.0	1.1/14.8	28615
1980 VX_2	1999 06 14.7	17 30.87	+02 00.1	17.3	−0.95	+	7.8	9.5/11.4	32042
1996 XD	1999 06 14.8	17 30.98	−22 50.8	17.5	−1.09	−	0.6	0.2/14.8	28605
1996 VK_3	1999 06 14.9	17 31.31	−20 56.7	17.9	−0.92	+	1.3	0.8/14.8	32055
1998 GR_7	1999 06 14.9	17 31.37	−20 10.6	17.4	−0.95	−	2.5	1.0/14.9	32325
1981 ER_{13}	1999 06 14.9	17 31.41	−25 21.6	20.3	−0.99	+	1.9	0.7/15.0	26917

1997 YM_{14}	1999 06 14.9	17 31.64	−13 49.6	17.5	−1.00	−	1.6	3.7/14.8	31797
1998 FJ_{112}	1999 06 15.0	17 31.68	−20 07.3	16.5	−0.85	+	2.8	1.0/14.8	32324
1997 YU_{11}	1999 06 15.0	17 31.80	−34 09.4	17.0	−1.20	−	1.0	4.6/15.2	31797
1992 ET_{10}	1999 06 15.0	17 31.82	−23 04.3	18.6	−0.83	+	0.3	0.1/15.0	32927
1992 YH	1999 06 15.0	17 32.00	−28 20.8	17.0	−1.08	−	3.1	1.7/15.0	32049
1997 AQ_{17}	1999 06 15.1	17 32.51	−27 51.3	16.8	−0.99	+	2.4	1.8/15.5	31794
(8539)	1999 06 15.2	17 32.66	−22 47.6	16.9	−0.90	−	0.3	0.2/15.2	31505
1998 DV_{15}	1999 06 15.2	17 32.73	−19 57.9	18.1	−1.03	+	1.4	1.3/15.1	31742
1991 RE_{10}	1999 06 15.3	17 33.01	−30 05.1	17.7	−0.97	+	1.6	2.1/15.7	31785
1981 EC_{38}	1999 06 15.3	17 33.11	−21 07.4	19.0	−1.08	+	1.9	1.0/15.2	28070
1998 DN_{15}	1999 06 15.3	17 33.24	−28 28.7	17.9	−1.10	−	2.1	2.0/15.4	31742
(8559)	1999 06 15.3	17 33.39	−20 04.9	16.4	−0.93	−	1.0	1.2/15.3	31509
(8346)	1999 06 15.4	17 33.37	−25 25.2	16.5	−0.88	+	0.3	0.7/15.5	31353
1996 XQ_{13}	1999 06 15.4	17 33.48	−15 44.6	16.6	−0.95	+	5.6	3.1/14.7	31590
1998 FP_{73}	1999 06 15.4	17 33.69	−20 05.9	18.8	−0.84	−	0.1	0.9/15.4	32323
1993 TM_6	1999 06 15.4	17 33.72	−29 49.5	17.6	−1.12	+	1.1	3.2/15.8	25216
1997 XA_9	1999 06 15.5	17 33.83	−20 09.1	18.2	−0.88		0.0	1.0/15.4	32314
1996 TE_{47}	1999 06 15.5	17 34.08	−32 15.3	17.6	−1.14	+	1.9	3.7/16.0	31732
1998 BO_{46}	1999 06 15.6	17 34.24	−29 44.6	18.4	−1.01	+	1.3	2.3/15.9	31403
(8934)	1999 06 15.6	17 34.26	−13 59.9	17.3	−0.81	−	1.7	2.7/15.5	31931
3182 T-1	1999 06 15.6	17 34.31	−23 06.7	18.1	−0.86	+	1.2	0.1/15.6	32092
1996 PX_8	1999 06 15.6	17 34.36	−14 40.7	19.1	−1.09	+	0.2	3.2/15.3	32054
1995 CM	1999 06 15.6	17 34.42	−32 13.3	16.5	−1.14	−	0.9	4.5/15.9	31277
1993 JW	1999 06 15.6	17 34.59	−28 26.0	17.0	−0.92	−	3.1	1.7/15.6	34580
1995 WM_2	1999 06 15.7	17 34.72	−10 28.5	18.3	−0.85	+	3.5	3.9/14.7	32310
1981 EF_9	1999 06 15.8	17 35.13	−25 47.5	17.3	−1.11	+	2.8	1.1/16.0	26916
1996 XU_{18}	1999 06 15.8	17 35.31	−21 10.0	18.0	−0.81	+	0.1	0.6/15.8	32311
1993 UZ_5	1999 06 15.8	17 35.34	−16 52.6	17.1	−1.06	−	1.6	2.8/15.8	31140
1981 EV_{47}	1999 06 15.8	17 35.49	−00 51.0	17.8	−0.81	+	1.3	10.2/14.6	26923
1998 FO_{73}	1999 06 15.9	17 35.63	−22 28.0	18.1	−1.09	+	1.9	0.3/15.9	32069
1996 XL_{32}	1999 06 15.9	17 35.64	−17 40.9	17.5	−0.84	−	1.5	2.1/15.9	31793
2583 P-L	1999 06 15.9	17 35.67	−25 29.4	17.5	−0.92	−	0.5	0.8/16.0	32091
1997 AT_{18}	1999 06 15.9	17 35.67	−36 51.6	18.1	−0.97	+	0.5	4.3/16.5	32057
1992 EU_{28}	1999 06 15.9	17 35.75	−24 54.6	16.4	−0.86	−	0.1	0.6/16.0	32304
1050 T-2	1999 06 15.9	17 35.75	−08 30.3	19.1	−0.75	+	0.6	3.9/15.4	32092
1989 SV_3	1999 06 15.9	17 35.77	−16 45.9	19.3	−1.03	+	0.4	2.4/15.7	32045
(8515)	1999 06 15.9	17 35.93	−45 40.6	15.9	−1.23	+	1.8	9.7/17.0	31499
(8503)	1999 06 16.0	17 35.99	−21 03.8	17.0	−1.16	−	2.1	0.9/16.0	31497
1998 FD_7	1999 06 16.0	17 36.02	−26 15.2	19.2	−0.91	+	0.3	1.0/16.1	31746
1998 DE_{34}	1999 06 16.0	17 36.05	−24 46.2	17.9	−0.88	+	0.5	0.5/16.1	32315
1998 HX_{32}	1999 06 16.0	17 36.09	−16 22.7	17.5	−0.81	+	1.2	2.2/15.7	32327
1997 ET_1	1999 06 16.1	17 36.27	−23 18.0	17.3	−0.92	−	0.4	0.0/16.1	32058
1988 PK	1999 06 16.1	17 36.32	−15 40.4	16.8	−1.02	+	0.6	3.6/15.8	31581
1998 BW_{12}	1999 06 16.1	17 36.55	−37 41.5	18.2	−1.11	+	5.5	5.8/17.6	32970
(8421)	1999 06 16.1	17 36.73	−19 57.2	18.0	−0.89	+	0.3	1.2/16.1	31370
1981 EO_{31}	1999 06 16.2	17 36.68	−17 37.2	19.0	−0.93	+	0.5	2.4/16.0	26921
1974 WB	1999 06 16.2	17 36.77	−22 17.5	18.2	−0.97	+	3.4	0.3/16.1	31578
(8450)	1999 06 16.3	17 37.14	−30 47.3	16.6	−1.01	+	0.7	2.7/16.6	31484
1987 RA_3	1999 06 16.3	17 37.23	−16 15.4	16.0	−0.90	−	1.0	3.5/16.2	31782
1998 FO_{119}	1999 06 16.3	17 37.26	−23 50.6	19.1	−0.88		0.0	0.2/16.4	31817
1990 VX_6	1999 06 16.4	17 37.69	−18 13.3	18.0	−0.89	−	2.8	1.8/16.5	32046
1994 AO_3	1999 06 16.4	17 37.85	−22 46.7	18.0	−1.05	−	0.6	0.2/16.5	31724
1994 CS_2	1999 06 16.4	17 37.86	−05 47.6	17.5	−0.93	−	2.8	6.3/16.6	32747
1998 DP_9	1999 06 16.4	17 38.00	−25 02.2	17.6	−0.93	−	2.8	0.6/16.5	32315
1981 EP_{11}	1999 06 16.4	17 38.03	−32 39.9	17.2	−1.22	+	1.6	4.5/16.8	31579
1985 RV_2	1999 06 16.5	17 38.02	−14 05.3	17.9	−1.06	−	0.7	4.3/16.3	29655
(8464)	1999 06 16.5	17 38.10	−40 41.3	16.4	−1.17	−	1.4	7.2/16.6	31487
(9102)	1999 06 16.5	17 38.15	−23 39.8	18.6	−0.86	−	0.2	0.1/16.6	32197
1998 FZ_{62}	1999 06 16.5	17 38.33	−02 26.0	17.8	−0.89	+	1.8	7.2/15.3	32322
1993 TX_{15}	1999 06 16.5	17 38.39	−24 51.3	18.8	−1.12	−	0.3	0.6/16.6	32231
1996 TR_9	1999 06 16.6	17 38.40	−16 28.3	16.8	−1.02	−	1.1	3.5/16.5	31588
1989 SY_1	1999 06 16.7	17 38.90	−21 49.2	18.3	−0.85	−	0.1	0.5/16.7	26167
1996 YT_2	1999 06 16.7	17 38.90	−19 23.8	19.0	−1.01	+	0.8	1.5/16.6	31794
1993 FE_{19}	1999 06 16.7	17 38.92	−18 15.3	18.7	−0.86	−	1.1	1.7/16.7	31723
1995 UF_{45}	1999 06 16.7	17 38.96	−24 09.1	17.3	−0.85	−	0.1	0.2/16.8	31790
6214 P-L	1999 06 16.7	17 39.15	−18 32.3	18.4	−1.04	+	1.7	1.9/16.6	31294
7607 P-L	1999 06 16.7	17 39.27	−22 02.9	19.2	−1.06	−	0.4	0.5/16.8	31824
1996 TH_{42}	1999 06 16.8	17 39.24	−25 19.1	16.8	−1.12	−	1.3	0.9/16.8	31589
1998 FK_{54}	1999 06 16.8	17 39.29	−39 31.5	18.6	−1.03	+	0.2	5.2/17.3	32065
1995 VT_1	1999 06 16.8	17 39.38	−18 33.3	17.2	−0.81	+	2.3	1.4/16.6	32309
1997 WG_7	1999 06 16.8	17 39.41	−28 55.3	18.3	−1.19	+	2.2	2.2/17.1	31796
1998 HT_{37}	1999 06 16.9	17 40.08	−36 15.6	18.2	−0.92	+	0.2	3.6/17.4	32754
1998 DT_{22}	1999 06 17.0	17 40.00	−32 36.0	18.9	−1.11	+	2.6	4.3/17.5	32971
1994 AY	1999 06 17.0	17 40.02	−22 14.5	18.5	−1.07	+	1.0	0.4/17.0	32232
1998 FR_{41}	1999 06 17.0	17 40.06	−04 06.3	18.3	−0.96	+	2.3	8.0/15.7	32483
1998 BK_9	1999 06 17.0	17 40.23	−20 16.0	18.0	−0.87	+	0.8	1.1/16.9	34589
1998 FO_{58}	1999 06 17.0	17 40.24	−05 46.5	18.5	−0.87	+	1.0	5.7/16.3	32066
(8388)	1999 06 17.0	17 40.26	−24 44.6	16.8	−0.91	−	0.4	0.5/17.1	31363
1989 PT	1999 06 17.0	17 40.33	−12 26.7	16.1	−0.99	−	1.5	5.4/17.0	28315
1998 DV_4	1999 06 17.0	17 40.40	−22 33.3	19.1	−1.10	+	0.4	0.3/17.1	32683
1991 PY_{14}	1999 06 17.1	17 40.70	−33 19.1	16.8	−1.10	+	2.9	3.6/17.7	31583
1997 XZ	1999 06 17.1	17 40.91	−27 09.8	16.1	−1.08	+	0.9	1.7/17.3	31283
7069 P-L	1999 06 17.2	17 40.84	−08 07.1	18.5	−0.93	+	2.5	5.4/16.3	31773
1978 VW_4	1999 06 17.2	17 41.02	−25 19.9	19.5	−1.09	+	0.1	0.7/17.3	27930
2144 T-1	1999 06 17.2	17 41.07	−11 37.3	17.9	−1.00	−	0.6	5.5/17.1	28319
1331 T-2	1999 06 17.2	17 41.31	−23 25.9	17.7	−0.96	+	1.1	0.0/17.3	32343
1990 WM	1999 06 17.3	17 41.49	−18 59.0	15.6	−0.90	−	3.9	1.6/17.5	31785
1998 DG_{15}	1999 06 17.3	17 41.52	−03 04.6	17.2	−0.86	−	0.5	7.8/16.9	31801
3274 T-1	1999 06 17.4	17 41.90	−02 52.9	17.5	−0.87	+	1.4	7.3/16.4	32092
1998 HE_6	1999 06 17.4	17 41.94	−12 24.2	18.5	−0.77	+	0.6	3.2/17.1	32754
1991 PY_{12}	1999 06 17.5	17 42.12	−39 19.9	18.1	−1.12	+	1.7	5.1/18.2	31583
1998 BG_2	1999 06 17.5	17 42.20	−23 16.7	14.4	−0.98	−	0.8	0.1/17.5	34589
1998 FY_{113}	1999 06 17.5	17 42.33	−20 58.8	17.2	−0.86	+	2.1	0.8/17.4	32324
(8471)	1999 06 17.5	17 42.35	−21 26.1	16.9	−1.15	+	3.7	0.9/17.4	31489
1995 TT	1999 06 17.5	17 42.47	−37 02.4	17.2	−1.03	−	1.7	4.7/17.5	32309
(8656)	1999 06 17.5	17 42.57	−19 48.5	17.9	−0.87	−	0.4	1.1/17.5	31676
(8389)	1999 06 17.6	17 42.51	−19 39.7	17.5	−0.86	+	0.1	1.2/17.5	31363
1997 BV_4	1999 06 17.6	17 42.79	−48 39.0	18.8	−1.14	+	0.6	7.1/18.7	32313
1981 EG_{13}	1999 06 17.6	17 42.90	−31 28.1	18.3	−1.17	+	2.8	3.5/18.1	26917
1998 BU_6	1999 06 17.7	17 43.17	−16 44.1	17.6	−1.08	−	1.7	2.7/17.7	31427
1992 EC_{10}	1999 06 17.8	17 43.36	−06 22.3	17.5	−0.80	−	0.8	5.4/17.5	33481
1998 ES_1	1999 06 17.8	17 43.47	−15 57.3	18.7	−0.95	+	0.8	2.5/17.6	32684

1996 XT_{1}	1999 06 17.8	17 43.62	−23 56.8	17.1	−0.92	−	0.7	0.2/17.9	32056
1993 AJ	1999 06 17.9	17 43.78	−12 25.3	17.2	−0.95	−	2.7	3.7/18.0	32049
1998 FC_{122}	1999 06 18.1	17 44.72	−17 47.4	18.3	−0.94	−	0.4	1.8/18.0	32325
1990 WC_{9}	1999 06 18.1	17 44.79	−29 52.6	16.9	−0.95	−	2.7	2.1/18.0	32046
1979 TY_{1}	1999 06 18.1	17 44.84	−34 36.0	18.0	−1.24	−	1.6	4.4/18.1	31579
1984 HR	1999 06 18.1	17 44.87	−27 58.9	15.4	−1.04	−	0.2	2.3/18.2	31581
1981 ET_{24}	1999 06 18.1	17 45.04	−11 27.7	17.4	−1.00	+	0.5	5.3/17.9	22492
1981 EX_{29}	1999 06 18.2	17 44.99	−40 53.1	17.1	−1.11	+	5.9	8.1/19.8	26920
1998 FK_{28}	1999 06 18.2	17 45.12	−22 00.6	17.8	−0.85	+	0.6	0.5/18.2	32064
1995 SX_{52}	1999 06 18.2	17 45.16	−20 40.7	16.1	−0.92	+	1.7	1.1/18.1	32240
1994 PL_{21}	1999 06 18.2	17 45.16	−22 18.3	18.0	−0.84	+	0.1	0.4/18.2	32459
3157 T-3	1999 06 18.2	17 45.32	−26 43.9	16.9	−1.15	−	1.8	1.6/18.3	32537
(8325)	1999 06 18.2	17 45.34	−33 37.2	19.0	−0.93	−	0.1	3.4/18.4	31349
(8277)	1999 06 18.2	17 45.37	−25 15.3	17.5	−1.06	+	1.2	0.8/18.3	31214
(8953)	1999 06 18.2	17 45.48	−25 19.3	17.7	−0.90	+	0.4	0.6/18.3	31935
(8303)	1999 06 18.3	17 45.74	−26 28.6	16.2	−1.17	−	0.9	1.3/18.4	31219
1998 FR_{56}	1999 06 18.4	17 45.86	+04 52.6	18.3	−0.88	+	1.1	9.8/17.0	32321
(8613)	1999 06 18.4	17 45.90	−24 43.6	17.1	−0.88	−	0.4	0.5/18.4	31666
1998 DX_{33}	1999 06 18.4	17 46.15	−26 14.1	17.2	−0.94	−	0.3	1.0/18.5	32315
1989 TW_{3}	1999 06 18.4	17 46.19	−16 54.5	17.7	−0.99	−	1.7	3.3/18.5	28613
1998 FA	1999 06 18.4	17 46.23	−21 51.9	16.8	−0.99	−	2.7	0.5/18.5	31805
1997 YB_{2}	1999 06 18.4	17 46.28	−24 21.1	16.0	−1.06	+	1.7	0.5/18.5	31254
1991 PZ_{5}	1999 06 18.5	17 46.30	−35 25.6	17.0	−1.09	+	2.0	5.1/19.0	31229
1985 CX_{1}	1999 06 18.5	17 46.32	−19 54.1	17.2	−1.08	+	1.4	1.6/18.4	31004
1997 AR_{5}	1999 06 18.5	17 46.39	−14 30.6	17.3	−0.87	−	2.4	2.7/18.6	32057
(9453)	1999 06 18.5	17 46.55	−08 17.6	17.4	−0.82	−	0.6	5.2/18.3	32642
(8367)	1999 06 18.6	17 46.70	−27 10.7	16.7	−1.19	−	1.9	1.6/18.6	31358
1997 WO_{23}	1999 06 18.6	17 47.10	−18 17.5	18.7	−0.94	−	2.1	1.9/18.7	32058
1998 FT_{11}	1999 06 18.6	17 47.15	−49 02.2	17.5	−1.34	+	1.6	9.3/19.5	34531
1996 TK_{10}	1999 06 18.7	17 47.49	−32 35.9	17.3	−1.18	+	1.1	4.0/19.0	31588
1990 HU_{1}	1999 06 18.8	17 47.54	−03 47.0	17.5	−0.91	−	3.2	7.8/19.3	31582
1998 FE_{61}	1999 06 18.8	17 47.79	−12 23.2	19.6	−0.77	+	0.5	3.2/18.6	32066
1998 AK	1999 06 18.8	17 47.85	−23 41.7	17.7	−1.07	+	0.8	0.1/18.9	31591
3446 T-3	1999 06 18.9	17 48.17	−16 53.6	17.6	−0.90	+	0.2	2.4/18.8	31577
1981 EK_{32}	1999 06 18.9	17 48.26	−19 15.3	19.4	−1.05	+	3.3	1.9/18.8	26921
2714 P-L	1999 06 18.9	17 48.32	−26 31.9	19.3	−1.11	+	0.2	1.1/19.0	27938
1991 GG_{7}	1999 06 19.0	17 48.45	−29 39.7	17.6	−1.12	−	0.2	2.3/19.1	31583
1997 CH_{28}	1999 06 19.0	17 48.76	−33 32.3	17.5	−0.90	+	1.4	2.8/19.4	32251
1995 QB_{1}	1999 06 19.1	17 48.77	−20 38.5	19.2	−0.85	+	0.3	0.8/19.1	32052
(9454)	1999 06 19.1	17 49.03	−23 34.4	17.6	−0.88	−	0.1	0.1/19.2	32642
1998 HT_{129}	1999 06 19.2	17 49.21	−10 46.7	19.2	−0.80	+	0.8	3.9/18.9	32330
1981 EA_{35}	1999 06 19.2	17 49.23	−45 43.4	18.5	−1.13		0.0	6.7/19.2	26921
1979 MR_{6}	1999 06 19.2	17 49.33	−15 16.8	17.8	−0.99	−	0.6	4.2/19.2	27725
6792 P-L	1999 06 19.2	17 49.47	−22 01.9	17.6	−0.90	−	0.9	0.5/19.3	32092
1998 DX_{25}	1999 06 19.3	17 49.64	−21 26.3	20.1	−0.93	−	0.5	0.7/19.3	31802
(8170)	1999 06 19.3	17 49.71	−35 49.1	15.7	−1.10	+	5.1	5.3/20.3	31080
1998 BF_{14}	1999 06 19.3	17 49.76	−15 40.5	18.6	−1.00	−	1.3	2.9/19.4	31798
1997 XG	1999 06 19.3	17 49.83	−23 24.4	18.2	−1.14		0.0	0.0/19.4	31424
1996 PB_{5}	1999 06 19.3	17 49.83	−26 57.3	17.4	−1.17	+	1.3	1.5/19.4	31791
1994 PZ_{17}	1999 06 19.3	17 49.89	−36 29.8	18.0	−0.94	+	1.4	4.2/19.8	31727
1998 FY_{73}	1999 06 19.3	17 50.03	−38 12.2	17.5	−1.02	−	0.3	4.8/19.5	32323
1995 QO	1999 06 19.3	17 50.08	−36 19.8	20.0	−1.13	+	0.2	4.6/19.5	26176
5105 T-2	1999 06 19.4	17 50.12	−28 59.2	16.7	−1.03	+	3.4	2.2/19.7	31826
1995 SE_{17}	1999 06 19.4	17 50.27	−23 44.5	19.5	−0.82	+	0.2	0.1/19.5	34293
(8351)	1999 06 19.4	17 50.36	−16 53.5	17.0	−0.91	−	0.1	2.4/19.4	31355
(8841)	1999 06 19.4	17 50.49	−39 11.8	16.2	−1.16	+	0.6	6.5/19.8	31909
1994 AU	1999 06 19.5	17 50.72	−26 31.8	18.6	−1.10	−	0.3	1.1/19.6	32051
(8626)	1999 06 19.5	17 50.77	−13 56.3	18.3	−0.80	+	0.2	3.3/19.4	31669
1998 FU_{116}	1999 06 19.6	17 51.11	−16 56.0	18.1	−0.83	+	2.2	2.0/19.4	33267
1992 EY_{11}	1999 06 19.6	17 51.18	−24 29.9	18.6	−0.84	−	0.4	0.3/19.7	32304
1998 HO_{32}	1999 06 19.7	17 51.38	−01 13.7	18.7	−0.75	+	1.1	6.3/19.2	32327
1991 GO_{1}	1999 06 19.7	17 51.45	+08 49.0	18.8	−0.95	+	1.5	10.2/18.5	32302
4607 P-L	1999 06 19.7	17 51.63	−31 51.7	17.3	−1.04	−	0.5	3.4/19.8	31294
1998 FR_{115}	1999 06 19.9	17 52.22	−38 02.3	18.5	−0.98	+	0.6	4.3/20.2	32261
1992 RA_{4}	1999 06 20.0	17 52.84	−26 27.4	16.7	−1.00	+	0.8	1.5/20.1	31139
3260 T-2	1999 06 20.0	17 52.89	−21 59.4	18.2	−0.95	−	1.2	0.5/20.1	32344
1997 WM_{21}	1999 06 20.1	17 53.34	−17 46.2	16.5	−1.10	+	2.1	2.4/20.0	31152
1995 OB_{1}	1999 06 20.1	17 53.39	−26 47.3	17.9	−0.99	+	3.6	1.5/20.4	31587
1996 VR_{4}	1999 06 20.2	17 53.45	−29 40.8	17.5	−1.07	−	2.2	2.2/20.1	32055
1990 QF_{2}	1999 06 20.2	17 53.48	−20 05.4	17.1	−0.89	−	0.6	1.2/20.2	32301
1981 ER_{32}	1999 06 20.2	17 53.66	−09 44.4	21.1	−0.76	−	0.1	3.5/20.1	26921
1998 DF	1999 06 20.3	17 53.81	−18 03.3	17.8	−1.06	−	1.1	2.1/20.3	31799
1996 VK_{30}	1999 06 20.3	17 53.83	−19 01.6	18.5	−0.93	−	0.7	1.4/20.3	31793
(8263)	1999 06 20.4	17 54.53	−20 01.1	15.5	−0.98	−	2.0	1.8/20.5	31210
1984 SV_{5}	1999 06 20.5	17 54.77	−37 04.4	17.2	−1.00	−	0.2	4.6/20.6	32044
(8770)	1999 06 20.5	17 55.01	−24 12.1	17.2	−0.86	−	0.4	0.2/20.6	31703
1997 XN_{8}	1999 06 20.6	17 55.01	−27 40.4	17.3	−1.17	+	1.3	1.8/20.7	31796
1988 RD_{6}	1999 06 20.6	17 55.13	−25 45.7	17.2	−1.10	−	0.8	1.0/20.6	31783
1998 DA_{16}	1999 06 20.6	17 55.37	−07 01.1	19.7	−0.91	+	0.3	5.6/20.6	31802
(8563)	1999 06 20.7	17 55.51	−52 21.1	16.0	−1.32	+	3.4	10.3/22.0	31510
2599 P-L	1999 06 20.7	17 55.62	−12 52.6	18.9	−0.95	+	0.7	3.8/20.6	32785
1992 BC_{2}	1999 06 20.8	17 55.82	−23 37.7	18.1	−0.87	+	2.0	0.1/20.8	34578
1993 FX_{23}	1999 06 20.8	17 56.09	−25 49.4	18.0	−0.89	+	0.3	0.9/20.9	26400
1997 YB_{3}	1999 06 20.8	17 56.10	−21 29.0	17.4	−1.06	+	0.3	0.7/20.8	31255
(8446)	1999 06 20.8	17 56.24	−20 54.6	17.4	−1.06	−	0.3	1.1/20.9	31483
1998 BE_{1}	1999 06 20.8	17 56.26	−22 59.3	17.1	−1.11	−	2.8	0.2/20.9	31592
1992 DX_{7}	1999 06 20.8	17 56.29	−29 26.3	19.3	−0.87	−	0.3	1.7/20.9	33547
(9242)	1999 06 20.9	17 56.37	−16 07.3	18.5	−1.05	−	0.6	2.8/20.9	32433
(8513)	1999 06 21.0	17 56.69	−30 23.9	17.1	−0.99	+	1.2	2.2/21.1	31499
1981 EE_{4}	1999 06 21.0	17 56.92	−21 28.0	18.8	−0.84	+	2.2	0.6/21.0	26915
1994 GT_{8}	1999 06 21.0	17 57.07	+18 38.8	16.3	−0.85	+	1.6	14.7/20.3	31725
1998 FY_{13}	1999 06 21.1	17 57.06	−07 30.1	17.3	−0.81	+	0.2	5.4/21.0	32317
(8700)	1999 06 21.1	17 57.12	−22 02.1	17.9	−0.83		0.0	0.4/21.1	31687
1993 BM_{5}	1999 06 21.1	17 57.13	−23 04.3	16.7	−0.93	−	0.7	0.1/21.1	32305
1987 UW	1999 06 21.1	17 57.28	+22 18.8	17.7	−0.92	+	5.9	16.3/13.9	31581
1998 BU_{41}	1999 06 21.1	17 57.44	−30 40.8	18.2	−1.15	+	2.2	2.7/21.4	32059
1988 VP	1999 06 21.1	17 57.47	−36 57.9	16.1	−1.19	−	4.5	5.2/20.5	31783
1996 RL_{5}	1999 06 21.1	17 57.53	−35 20.9	18.2	−1.27	+	0.6	5.1/21.2	34585
1998 FB_{80}	1999 06 21.2	17 57.76	−22 11.1	18.7	−0.93	−	1.0	0.4/21.3	32324
1981 EO_{44}	1999 06 21.2	17 57.80	−26 06.2	19.7	−1.12	+	0.5	1.1/21.3	31580
1996 TP_{36}	1999 06 21.2	17 57.99	−31 19.6	17.1	−1.10	+	2.3	4.1/21.5	31246
1993 BL_{7}	1999 06 21.3	17 58.32	−22 49.6	17.8	−0.94	+	0.9	0.2/21.4	32049

1981 UK_{11}	1999 06 21.3	17 58.39	−19 08.6	17.0	−1.05	−	0.7	1.9/21.4	32043
(8264)	1999 06 21.4	17 58.58	−23 01.4	15.3	−1.03	−	1.3	0.2/21.5	31211
1992 EQ_{10}	1999 06 21.4	17 58.75	−16 18.0	19.3	−0.81	−	0.5	2.3/21.5	33481
1990 OE_4	1999 06 21.5	17 58.83	−11 31.5	15.9	−0.87	+	3.4	5.6/20.9	32046
1981 EZ_{11}	1999 06 21.5	17 58.94	−29 18.6	18.0	−1.14	+	1.2	2.7/21.6	31134
1991 UH_3	1999 06 21.5	17 59.19	−34 19.9	18.8	−0.97	−	0.6	3.0/21.5	32303
1992 EH_{11}	1999 06 21.5	17 59.19	−20 41.0	17.9	−0.82	−	0.2	0.8/21.6	32048
1981 EC_{39}	1999 06 21.6	17 59.21	+15 32.5	18.5	−0.74	−	0.2	13.0/21.7	32043
3061 T-2	1999 06 21.9	18 00.45	+00 56.6	18.6	−0.77	−	0.6	7.8/22.1	32786
1995 UW_6	1999 06 21.9	18 00.47	−34 16.8	18.4	−0.95	−	1.2	3.5/21.7	32309
1978 SQ_4	1999 06 21.9	18 00.80	−30 54.2	17.7	−1.19	−	0.1	3.0/21.9	32041
1997 AT_1	1999 06 21.9	18 00.81	−31 33.3	16.9	−0.91	+	2.4	2.4/22.2	31794
1996 VF_8	1999 06 22.0	18 00.86	−40 54.4	18.3	−1.19	−	2.2	5.9/21.4	32311
1992 YE_1	1999 06 22.0	18 00.93	−24 52.8	17.7	−1.01	−	1.6	0.5/22.0	32745
1990 TE_7	1999 06 22.0	18 01.16	−11 44.8	17.8	−0.83	+	1.4	3.9/21.8	32046
1998 DT_{14}	1999 06 22.0	18 01.29	−06 37.0	17.2	−0.91	−	1.2	6.4/22.4	31742
1981 ER_{10}	1999 06 22.1	18 01.68	−22 24.0	16.7	−1.10	+	1.3	0.5/22.2	31709
1986 EL_5	1999 06 22.2	18 01.72	−31 44.9	17.3	−1.08	−	0.2	3.1/22.2	34574
1993 FH_{49}	1999 06 22.2	18 01.77	−21 01.4	18.1	−0.89	+	0.1	0.8/22.2	32050
1981 EV_{33}	1999 06 22.2	18 02.10	+10 08.6	18.8	−0.86	+	0.1	11.6/22.3	32212
1993 FP_{11}	1999 06 22.3	18 02.25	−24 28.8	18.0	−0.90	−	1.0	0.4/22.3	32050
1989 SO	1999 06 22.3	18 02.50	−21 30.3	16.8	−0.82	+	0.9	0.6/22.4	32045
1996 SQ_4	1999 06 22.4	18 02.69	+14 23.2	19.8	−0.86	+	2.0	11.9/21.6	31730
1995 DZ_2	1999 06 22.4	18 02.95	−29 46.7	17.9	−1.36	+	16.4	3.1/23.6	25433
1976 GV_2	1999 06 22.5	18 02.89	−20 08.0	17.1	−0.84	−	0.6	1.1/22.5	34572
4052 P-L	1999 06 22.5	18 02.90	−13 14.1	18.8	−0.85	+	1.3	3.4/22.4	32728
1997 YO_9	1999 06 22.5	18 03.31	−12 03.9	17.7	−0.96	−	0.4	4.9/22.7	31257
(8718)	1999 06 22.6	18 03.57	−14 02.2	17.6	−0.83	+	0.8	3.0/22.6	31691
1974 RY_1	1999 06 22.6	18 03.60	−17 41.9	15.6	−0.95	+	0.4	3.0/22.6	31578
1998 BE_5	1999 06 22.6	18 03.80	−16 40.6	19.0	−1.04	+	1.1	2.8/22.6	31592
1997 XE_{11}	1999 06 22.7	18 03.84	−10 06.9	18.4	−1.01	−	0.1	4.8/22.8	32058
1998 EP_{10}	1999 06 22.8	18 04.45	−17 15.9	18.6	−0.95	−	2.4	2.3/23.1	32061
4801 P-L	1999 06 22.9	18 04.63	−22 58.6	18.0	−0.84	−	0.9	8.0/03.0	32091
1998 FO_{62}	1999 06 22.9	18 04.93	−16 41.6	17.4	−0.90	+	0.8	2.4/22.9	32322
1981 EQ_6	1999 06 22.9	18 05.01	−42 37.5	19.1	−1.18	+	3.4	8.1/23.8	26915
1988 XQ	1999 06 23.0	18 05.01	−19 54.1	18.2	−1.00	+	2.3	1.2/22.9	31582
1964 VZ_2	1999 06 23.0	18 05.19	−24 43.4	19.1	−0.85	−	0.6	0.3/23.0	31779
1997 YZ_5	1999 06 23.0	18 05.19	−25 19.0	17.3	−1.07	−	2.2	0.7/23.0	31591
(9124)	1999 06 23.0	18 05.24	−25 31.9	17.8	−0.93	−	0.2	0.7/23.0	32202
1992 EO_9	1999 06 23.0	18 05.26	−25 35.5	16.6	−0.87	−	0.1	0.8/23.0	32226
1990 WR_5	1999 06 23.1	18 05.38	−21 37.6	17.3	−0.89	−	3.4	0.6/23.2	32302
1998 ER_8	1999 06 23.1	18 05.51	−22 09.8	17.8	−0.95	+	0.8	0.5/23.1	31566
1998 HP_{42}	1999 06 23.1	18 05.81	−31 36.7	17.0	−1.10	−	4.2	2.9/22.7	32521
1994 CM_7	1999 06 23.1	18 05.85	−15 52.8	20.1	−1.00	−	1.7	3.0/23.4	33940
1998 EG_{10}	1999 06 23.1	18 05.87	−30 41.6	17.2	−1.16	+	2.1	2.9/23.3	31804
2765 P-L	1999 06 23.2	18 05.82	−25 13.9	19.9	−0.98	−	0.2	0.6/23.2	22694
1977 DH_4	1999 06 23.2	18 05.85	−40 25.2	18.3	−1.18	+	0.4	5.8/23.1	31706
1998 DJ_7	1999 06 23.2	18 05.86	−20 40.4	18.3	−0.89	−	0.9	1.0/23.3	32315
1996 SO	1999 06 23.2	18 05.89	−32 15.0	20.1	−1.18	−	0.8	3.3/23.0	31546
1998 FS_{34}	1999 06 23.2	18 05.97	−25 16.3	18.9	−0.87	+	0.6	0.6/23.2	32318
1993 YN_2	1999 06 23.2	18 06.12	−22 07.6	18.6	−1.06	+	0.7	0.5/23.3	31788
1997 AC_6	1999 06 23.2	18 06.15	−25 20.0	19.2	−0.93	−	1.1	0.7/23.2	32955
1981 ET_{21}	1999 06 23.3	18 06.28	−16 19.4	19.9	−0.92	−	0.5	2.3/23.4	32043
1995 CV	1999 06 23.3	18 06.47	−15 34.8	19.0	−0.55	−	0.5	1.7/23.5	31789
1985 UF_5	1999 06 23.3	18 06.47	−17 34.5	17.8	−1.01	+	0.4	2.1/23.4	32044
1995 CY_1	1999 06 23.3	18 06.51	−31 01.2	18.2	−1.39	+	11.6	3.3/24.3	25432
1993 FX_{26}	1999 06 23.4	18 06.69	−25 14.6	18.0	−0.90	+	0.6	0.6/23.4	32306
1995 SH_2	1999 06 23.4	18 06.75	−21 34.6	19.3	−0.90	+	0.1	0.6/23.4	30783
1997 YZ_6	1999 06 23.4	18 06.89	−22 10.4	17.7	−1.48	+	12.5	0.6/23.3	31425
1998 AR	1999 06 23.4	18 06.94	−29 38.4	16.9	−1.12	+	0.4	2.4/23.4	31797
1995 UJ_8	1999 06 23.4	18 06.96	−12 27.0	18.7	−0.77	+	1.5	3.0/23.3	32053
4262 T-1	1999 06 23.5	18 07.08	−24 55.4	17.6	−0.96	−	1.2	0.5/23.5	31608
(8411)	1999 06 23.5	18 07.23	−17 54.9	16.8	−0.97	−	1.7	2.8/23.7	31368
1998 FT_{39}	1999 06 23.5	18 07.24	−31 06.6	18.1	−0.90	+	0.3	2.6/23.5	32318
1998 CF_2	1999 06 23.5	18 07.41	−29 36.0	18.2	−1.16	+	2.4	2.7/23.7	32315
1998 HB_{84}	1999 06 23.6	18 07.45	−09 14.0	18.9	−0.75		0.0	3.8/23.7	32268
4072 P-L	1999 06 23.6	18 07.76	−20 00.5	16.1	−0.87	+	1.9	1.9/23.6	29668
1981 EB_{40}	1999 06 23.6	18 07.82	−24 10.6	19.4	−0.83	−	0.2	0.2/23.7	28611
1981 EQ_3	1999 06 23.6	18 07.83	−36 49.3	17.2	−1.01	+	3.3	5.0/24.0	32739
1990 HW_1	1999 06 23.7	18 08.19	−06 26.4	17.3	−0.93	−	3.9	6.3/24.8	31582
(8217)	1999 06 23.7	18 08.26	−18 26.8	16.2	−0.99		0.0	2.6/23.8	31090
1996 TY_4	1999 06 23.8	18 08.40	−44 15.1	18.6	−1.24	−	1.1	7.3/23.4	31791
1994 CG_2	1999 06 23.8	18 08.46	−49 25.3	16.6	−1.29		0.0	11.2/23.5	31586
1978 VN_3	1999 06 23.9	18 09.05	−19 07.0	19.9	−0.92	+	0.6	1.5/24.0	19856
1992 EU_5	1999 06 24.0	18 09.39	−22 51.3	17.4	−0.83	−	1.0	0.2/24.1	32304
1988 RX_{10}	1999 06 24.1	18 09.74	−26 57.9	17.7	−0.87	−	0.5	1.2/24.1	32300
1993 FW_{16}	1999 06 24.1	18 09.78	−25 05.5	18.0	−0.91	−	1.3	0.6/24.1	32050
(8499)	1999 06 24.1	18 10.00	−23 17.7	16.5	−0.90	+	0.1	0.0/24.2	31496
1998 EG_{14}	1999 06 24.2	18 10.19	−20 53.0	18.7	−1.10	−	1.1	0.9/24.3	32316
1998 DA_6	1999 06 24.2	18 10.21	−23 34.3	18.5	−1.05	+	0.1	0.1/24.2	32060
1998 FN_{12}	1999 06 24.2	18 10.31	−26 26.7	18.4	−0.94	−	0.3	1.1/24.2	34301
1997 YT_{11}	1999 06 24.2	18 10.34	−12 14.1	17.3	−0.94	−	4.5	4.0/25.0	31591
1993 FU_6	1999 06 24.3	18 10.50	−24 30.7	17.9	−0.90	−	1.2	0.4/24.3	32306
1998 DZ_{12}	1999 06 24.3	18 10.60	−34 36.3	18.2	−1.10		0.0	3.8/24.2	32315
1998 FR_{58}	1999 06 24.4	18 11.13	−25 20.1	17.9	−0.86	−	0.5	0.6/24.4	32754
1986 PB	1999 06 24.4	18 11.20	+23 18.9	17.5	−1.10	−	8.4	23.2/02.1	24385
2612 P-L	1999 06 24.5	18 11.56	−20 02.0	18.8	−0.86		0.0	1.1/24.6	26761
1998 CU	1999 06 24.5	18 11.66	−33 00.6	18.8	−1.11	+	3.6	3.5/24.9	31594
1993 TU_{20}	1999 06 24.5	18 11.68	−37 57.9	17.5	−1.28	−	1.8	6.3/24.2	32050
1998 FP_{26}	1999 06 24.5	18 11.71	−37 26.5	17.3	−1.28	−	1.2	6.3/24.1	32317
(8576)	1999 06 24.6	18 11.62	−27 17.1	18.0	−1.13	−	1.3	1.6/24.5	31514
1995 UJ_6	1999 06 24.6	18 11.64	−15 22.7	17.0	−0.85	+	2.4	2.8/24.5	31790
1997 AX_{14}	1999 06 24.6	18 11.68	−13 31.3	15.7	−0.92	−	9.6	5.1/25.8	31590
1998 AN_{10}	1999 06 24.6	18 11.70	−20 07.2	18.4	−1.10	+	0.7	1.4/24.6	31797
1111 T-3	1999 06 24.6	18 11.74	−37 34.4	18.2	−0.95	+	1.0	4.4/24.6	31776
3193 T-2	1999 06 24.6	18 11.81	−12 08.0	18.0	−0.80	−	1.5	3.6/25.0	32344
1998 DN_2	1999 06 24.6	18 12.02	−69 13.8	17.4	−2.20	−	2.0	17.4/20.4	31740
1994 AC_{17}	1999 06 24.7	18 12.04	−22 00.8	16.8	−1.03	−	1.7	0.5/24.8	31788
1998 DX_{17}	1999 06 24.7	18 12.18	−24 56.1	17.5	−0.97	−	1.3	0.6/24.7	32315
(8739)	1999 06 24.7	18 12.50	−27 12.5	15.6	−0.91	−	2.2	1.5/24.6	31696
1991 GA_7	1999 06 24.7	18 12.53	−17 16.9	18.3	−1.02	−	0.1	2.4/24.9	31229
1998 FZ_{125}	1999 06 24.8	18 12.90	−24 19.6	17.6	−0.85	+	1.6	0.3/24.9	32325