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

Responding to requests for new information on a shorter timescale than the monthly publication of the *Minor Planet Circulars* allows, the Minor Planet Center has been experimenting by issuing *Minor Planet Electronic Circulars* with a "Daily Orbit Update" that tabulates the orbits computed and identifications established each day. The precision with which these orbits are published is such that it is possible to derive 0.″1-precision ephemerides. Higher-precision data can be obtained by logging into the Computer Service for individual objects and into the WWW version of the Extended Computer Service for the orbits *en masse*. The *MPEC* publication is both to alert users to specific orbits and to provide specific references for citing the orbits. Generally issued seven days a week, this publication is interrupted for a few days each month while the *MPC*s themselves are being prepared. Since the daily-update *MPEC*s are produced completely automatically, they are not entirely error free, although the most obvious difficulties with them have been delays in the automatic e-mailing, which requires the use of some U**x-based computers of dubious reliability. During the course of the month, the daily arrival of new observations may result in many different revisions of the orbit of a given object. Indeed, it happens that several of the observations duplicate those already received, while others may be initially assigned to the wrong object; partly to minimize the confusion that subsequent documentation of corrections to the observations would necessarily entail, it was therefore decided not to issue the observations themselves with the orbits. The monthly cycle of *MPC* preparation allows the Minor Planet Center to pay proper attention to these problems, and it is to the *MPC*s and *MPS*s that users should therefore turn for more definitive information on orbits and observations alike.

The mailing of the printed *MPC*s is also sometimes not without difficulties. Several subscribers accidentally received two copies of the 1997 Dec. 16 *MPS*s and no copy of the *MPC*s. Replacement copies of the *MPC*s were subsequently sent to some of those subscribers affected. Subscribers who have still not received the December *MPC*s should contact the subscriptions department, preferably by e-mail to `iausubs@cfa.harvard.edu`. It is not necessary to return the duplicate *MPS*s.

This month the Minor Planet Center is publishing a record of more than 26 400 observations, some 20 percent greater than the previous record (set in December 1996). This month's assignment of new permanent numbers to 115 minor planets is 37 percent greater than in any previous month. This takes the number of objects beyond 2^{13}, the doubling from 2^{12} having been accomplished in only 8.6 years, the shortest doubling time since the increase from 2^5 to 2^6 between 1854 and 1861 (an increase now accomplished in ten days!). The average doubling time since the first minor planet was discovered has been about 15 years.

ERRATA

MPC	Line	
31027	4	*For* P. Pravec *read* L. Šarounová
31027	8	*For* Ladislav Pravec *read* Jaroslav Šaroun
31027	−19	*For* (7897) Bohuska *read* (7897) Bohuška

NEW OBSERVATORY CODES

The following listing is a continuation to that on *MPC* 30933. 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	$\rho\cos\phi'$	$\rho\sin\phi'$	
469	14.6320	0.67873	+0.73205	Courroux
632	11.1739	0.72380	+0.68773	San Polo A Mosciano
713	254.9897	0.76865	+0.63793	Thornton
733	263.3546	0.83802	+0.54387	Allen, Texas
736	263.3357	0.87006	+0.49132	Houston
947	2.1244	0.65268	+0.75511	Saint-Sulpice

CORRECTED OBSERVATIONS

The following observations correct those previously published.

Object		Date	UT	α_{2000}	δ_{2000}	Reference	Mag.	Obs.
1997 WT_{22}	*	1997 11	29.14100	03 18 31.22	+12 53 27.5	*MPS* 237	17.9	704
1997 WT_{22}		1997 11	29.17483	03 18 26.29	+12 53 53.9	*MPS* 237	19.1	704
1997 WT_{22}		1997 11	29.19363	03 18 23.47	+12 54 08.7	*MPS* 237		704
1997 WT_{22}		1997 11	29.21233	03 18 20.67	+12 54 23.1	*MPS* 237	17.9	704
1997 WT_{22}		1997 11	29.23374	03 18 17.50	+12 54 40.1	*MPS* 237		704
1997 WP_{23}	*	1997 11	29.28025	05 09 22.99	+26 16 23.5	*MPS* 238	18.3	704
1997 WP_{23}		1997 11	29.31721	05 09 12.09	+26 16 26.8	*MPS* 238	19.0	704
1997 WP_{23}		1997 11	29.33627	05 09 06.71	+26 16 30.3	*MPS* 238	19.3	704
1997 WQ_{23}	*	1997 11	29.31816	05 19 22.96	+26 27 35.9	*MPS* 238	18.4	704
1997 WQ_{23}		1997 11	29.38583	05 19 10.93	+26 27 52.4	*MPS* 238	18.7	704

DELETED OBSERVATIONS

The following observations are to be deleted.

Object	Date	UT	α_{2000}	δ_{2000}	Reference	Obs.
1942 VC	1942 11	07.87831	02 27 50.42	+09 41 11.2	*MPC* 7530	062
1992 JP_4	1992 05	05.91538	14 59 20.38	−04 56 25.2	*MPC* 27595	095
1997 WT_{22}	1997 11	07.27296	03 59 59.90	+09 51 34.1	*MPS* 237	704
1997 WT_{22}	1997 11	07.29060	03 59 58.49	+09 51 37.9	*MPS* 237	704
1997 WT_{22}	1997 11	07.30652	03 59 57.28	+09 51 42.6	*MPS* 237	704
1997 WT_{22}	1997 11	07.32244	03 59 56.01	+09 51 46.1	*MPS* 237	704
1997 WT_{22}	1997 11	07.34206	03 59 54.26	+09 51 51.4	*MPS* 237	704

IDENTIFICATION CHANGES

Continuation to *MPC* 30933.

Object		Date	UT	α_{2000}	δ_{2000}	Originally	Mag.	Obs.
1941 SP_2	*	1941 09	25.9308	23 13 27.46	+07 57 01.4	1941 SB		062
1986 RZ_{17}	*	1986 09	11.95554	00 18 54.39	+11 56 20.5	1986 TJ	16.0 V	095
1987 HV_2	*	1987 04	30.26250	13 16 43.41	−08 43 08.1	1987 HQ		675
1990 BK_6	*	1990 01	29.74166	09 09 31.43	+18 35 05.6	1990 BX_2	17.5	372
1990 BK_6		1990 01	29.75139	09 09 30.92	+18 35 05.7	1990 BX_2		372
1990 QQ_{19}	*	1990 08	26.20347	23 21 52.28	−05 55 00.1	1990 QR_6	19.6	809
1990 QQ_{19}		1990 08	26.21667	23 21 51.72	−05 55 03.3	1990 QR_6		809
1990 QQ_{19}		1990 08	26.22986	23 21 51.15	−05 55 08.0	1990 QR_6		809
1994 BO_5	*	1994 01	18.94849	09 41 19.00	+16 32 35.4	1994 BZ	17.5 R	098
1994 BO_5		1994 01	18.97349	09 41 17.86	+16 32 36.9	1994 BZ		098
1995 JA_2	*	1995 05	05.64450	14 50 16.98	−09 39 18.0	1995 HT	17.2	399
1995 JA_2		1995 05	05.65909	14 50 16.13	−09 39 16.5	1995 HT		399
1997 WP_{45}	*	1997 11	30.53236	04 13 22.28	+26 37 16.3	1997 RS_9	18.8 V	566
1997 WP_{45}		1997 11	30.54242	04 13 21.63	+26 37 16.9	1997 RS_9	18.4 V	566
1997 WP_{45}		1997 11	30.55278	04 13 20.92	+26 37 17.5	1997 RS_9	18.7 V	566
1997 XX_{11}	*	1997 12	01.72699	04 00 14.93	+27 48 40.2	1997 WU_{29}		327
1997 XX_{11}		1997 12	01.73053	04 00 14.69	+27 48 39.2	1997 WU_{29}	18.6	327
1997 XX_{11}		1997 12	01.73416	04 00 14.50	+27 48 37.4	1997 WU_{29}		327

DOUBLE DESIGNATION

The following double designation, by S. Nakano, continues the list on *MPC* 21832:

1995 UJ_{47} = 1995 UN_{47}

ERRONEOUS IDENTIFICATION

The following identification is erroneous:

1987 HQ = (2925) Reference: *MPC* 16114

IDENTIFICATION

The following identification with a numbered minor planet, by G. V. Williams, continues the list on *MPC* 30933:

1987 HV_2 = (2925)

CRITICAL LIST OF MINOR PLANETS

The following list updates and is in the same form as that on *MPC* 28336:

1. Object observed at only one opposition:
   (719)
2. Objects observed at only two oppositions:
   (4581) (4688) (5335) (5370) (5797) (6489) (6491) (7025)
   (7236) (7822) (7839) (8014) (8034)
3. Objects observed at only three oppositions:
   (2608) (3360) (3757) (3908) (4544) (5324) (5863) (6130)
   (6322) (7335) (7336)
4. Objects observed at four or more oppositions, last more than ten years ago:
   (1915)
5. Objects observed at four or more oppositions, only one night in last ten years:
   (457) (1236) (1843) (1906)
6. Other poorly-observed objects observed at four or more oppositions:
   (2100) (2135) (2285) (2340) (3200) (3362) (3416) (3554)
   (3607) (3747) (3750) (3753) (3800) (3838) (4034) (4663)
   (4769) (4776) (4878) (5011) (5381) (5395) (5590) (5604)
   (5786) (5819) (5828) (5912) (6037) (6239)

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.
108 Montelupo. 0.30-m $f/5.7$ Schmidt-Cassegrain + CCD. Observers M. Tombelli and G. Forti.
118 Modra. 0.6-m $f/5.5$ reflector + CCD. Observers A. Galád, P. Kolény, L. Kornoš and A. Pravda.
143 Gnosca. 0.20-m $f/6.3$ reflector. Observer S. Sposetti.
352 Konan. 0.25-m $f/6$ reflector + CCD. Observer M. Hotta.
355 Hadano. 0.28-m $f/5.0$ reflector + CCD. Observer A. Asami.
360 Kuma Kogen. 0.60-m $f/6.0$ Ritchey-Chrétien + CCD. Observer A. Nakamura.
372 Geisei. 0.21-m $f/3.0$ reflector. Observer T. Seki.
402 Dynic Astronomical Observatory. 0.60-m $f/4.0$ reflector + CCD. Observer A. Sugie.
403 Kani. 0.28-m $f/6.3$ Schmidt-Cassegrain + CCD. Observer Y. Mizuno.
422 Loomberah. 0.25-m $f/4.1$ reflector + CCD. Observer G. J. Garradd.
426 Woomera. 0.30-m $f/3.3$ Schmidt-Cassegrain + CCD. Observer F. B. Zoltowski.
469 Courroux. 0.20-m $f/6.3$ reflector + CCD. Observer H. Lehmann. Measured by R. Behrend.
504 Le Creusot. 0.40-m $f/5$ reflector + CCD. Observer J. C. Merlin.
540 Linz. 0.3-m $f/5.2$ Schmidt-Cassegrain + CCD. Observer E. Meyer.
568 Mauna Kea. 10-m Keck II telescope + CCD. Observer K. Meech, O. Hainaut and J. Bauer.

589 Santa Lucia Stroncone. 0.50-m $f/2.8$ Ritchey-Chrétien + CCD. Observers A. Vagnozzi, G. Bernabei, V. Risoldi and V. Scirri.
627 Blauvac. 0.26-m $f/5$ reflector. Observer R. Roy.
673 Table Mountain, Wrightwood. 0.6-m reflector + CCD. Observer W. M. Owen.
691 Kitt Peak. 0.91-m Spacewatch telescope. Observers T. Gehrels, J. Larsen, J. Montani and J. V. Scotti.
704 LINEAR. 1.0-m $f/2.15$ reflector + CCD. Observers M. Blythe, F. Shelly and M. Bezpalko. Measured by J. Stuart, H. Viggh and J. Sharma.
735 Needville. 0.46-m reflector + CCD. Observer W. G. Dillon.
758 Cocoa. 0.3-m reflector + CCD. Observer I. Griffin.
834 Buenos Aires-AAAA. 0.25-m $f/6.3$ reflector + CCD. Observers R. Caprio and R. Mackintosh. Measured by R. Mackintosh and J. R. Carozza.
844 Los Molinos. 0.35-m $f/6.4$ reflector + CCD. Observers T. Gallardo, N. Sosa, J. C. Tulic, O. Mendez and J. Scheck.
867 Saji Observatory. 1.03-m $f/4.8$ reflector + CCD. Observers M. Yamanishi, A. Miyamoto, M. Aimoto and T. Oribe.
897 YGCO Chiyoda Observatory. 0.25-m $f/6.0$ reflector + CCD. Observer T. Kojima.
900 Moriyama. 0.25-m $f/6.3$ reflector + CCD. Observer Y. Ikari.
954 Teide Observatory. 0.82-m $f/11.3$ reflector + CCD. Observers J. N. Gonzalez and J. Licandro. Measured by R. Casas.
966 Church Stretton. 0.25-m Schmidt-Cassegrain + CCD. Observer S. P. Laurie.
995 Durham. 0.30-m reflector + CCD. Observers J. Lucey, I. W. Anderson and D. T. Hutton.

Object	Date	UT	α_{2000}	δ_{2000}	Mag.	N	Obs.
P/1993 K2 (Helin-Lawrence)							
P/1993 K2	1997 12 29.24171		04 20 15.60	+17 15 08.6			568
P/1993 K2	1997 12 30.48341		04 19 42.84	+17 15 11.8			568
C/1995 O1 (Hale-Bopp)							
C/1995 O1	1997 09 22.30938		08 04 18.22	−33 48 07.1			834
C/1995 O1	1997 09 22.32834		08 04 18.79	−33 48 35.9			834
C/1995 O1	1997 09 26.32116		08 06 11.23	−35 29 54.2			834
C/1995 O1	1997 09 28.31305		08 07 00.56	−36 20 35.2			834
C/1995 O1	1997 09 29.31561		08 07 23.83	−36 46 05.2			834
C/1995 O1	1997 10 06.32503		08 09 29.84	−39 44 42.6			834
C/1995 O1	1997 10 10.32249		08 10 11.50	−41 26 19.0			834
C/1995 O1	1997 10 11.31347		08 10 18.26	−41 51 26.0			834
C/1995 O1	1997 10 19.30536		08 10 14.73	−45 12 14.4			834
C/1995 O1	1997 10 19.33205		08 10 14.26	−45 12 54.6			834
C/1995 O1	1997 10 30.18555		08 06 59.97	−49 37 14.3			834
C/1995 O1	1997 11 01.25917		08 05 54.82	−50 26 07.9			834
C/1995 O1	1997 11 04.22390		08 04 03.10	−51 34 38.4			834
C/1995 O1	1997 11 08.25999		08 00 56.85	−53 05 25.2			834
C/1995 O1	1997 11 14.21688		07 55 04.51	−55 12 52.9			834
C/1995 O1	1997 11 15.26357		07 53 52.47	−55 34 22.9			834
C/1995 O1	1997 11 17.19784		07 51 31.29	−56 13 19.0			834
C/1995 O1	1997 11 18.23014		07 50 11.63	−56 33 39.2			834
C/1995 O1	1997 11 18.25252		07 50 09.82	−56 34 04.7			834
C/1995 O1	1997 11 19.28185		07 48 47.29	−56 54 04.6			844
C/1995 O1	1997 11 19.28349		07 48 47.15	−56 54 06.2			844
C/1995 O1	1997 11 26.22595		07 38 09.63	−58 59 54.2			834
C/1995 O1	1997 12 09.24068		07 12 04.91	−62 06 21.4			844
C/1995 O1	1997 12 09.24245		07 12 04.61	−62 06 23.0			844
C/1995 O1	1997 12 09.24504		07 12 04.30	−62 06 24.5			844
C/1995 O1	1997 12 15.50700		06 57 09.45	−63 09 25.5	13.4	N	422
C/1995 O1	1997 12 15.50782		06 57 09.30	−63 09 26.0	13.1	N	422
C/1995 O1	1997 12 15.50865		06 57 09.18	−63 09 26.4	13.3	N	422
C/1995 O1	1997 12 19.66641		06 46 40.59	−63 40 59.1			426
C/1995 O1	1997 12 19.66976		06 46 40.06	−63 41 00.5			426
C/1995 O1	1997 12 19.67304		06 46 39.57	−63 41 01.9	11.9	N	426
C/1995 O1	1997 12 22.60258		06 39 07.16	−63 58 13.2	13.4	N	422
C/1995 O1	1997 12 22.60340		06 39 07.04	−63 58 13.5	13.3	N	422
C/1995 O1	1997 12 22.60423		06 39 06.90	−63 58 13.6	13.5	N	422
C/1995 O1	1997 12 27.58595		06 26 11.30	−64 17 57.9			426
C/1995 O1	1997 12 27.58901		06 26 10.80	−64 17 58.4			426
C/1995 O1	1997 12 27.59300		06 26 10.22	−64 17 58.8			426
C/1995 O1	1997 12 27.59612		06 26 09.71	−64 17 59.3	11.3	N	426
C/1995 O1	1997 12 28.14822		06 24 43.80	−64 19 28.4			844
C/1995 O1	1997 12 28.14906		06 24 43.69	−64 19 28.4			844
C/1995 O1	1997 12 28.15003		06 24 43.59	−64 19 28.4			844
C/1995 O1	1997 12 28.15082		06 24 43.41	−64 19 28.6			844
C/1995 O1	1997 12 28.15361		06 24 42.96	−64 19 29.1			844
C/1995 O1	1997 12 28.18251		06 24 38.46	−64 19 33.0			844
C/1995 O1	1997 12 28.18354		06 24 38.32	−64 19 33.3			844
C/1995 O1	1997 12 30.04976		06 19 50.02	−64 23 25.6	10.0	T	844
C/1995 O1	1997 12 30.18727		06 19 28.57	−64 23 38.1	10.2	T	844
C/1995 O1	1997 12 30.18769		06 19 28.53	−64 23 38.9	10.1	T	844
C/1995 O1	1997 12 31.10865		06 17 07.62	−64 24 53.9			844
C/1995 O1	1997 12 31.12149		06 17 05.67	−64 24 54.5			844
C/1995 O1	1997 12 31.13560		06 17 03.45	−64 24 55.6			844
C/1995 O1	1998 01 04.03095		06 07 16.13	−64 26 07.2			844
C/1995 O1	1998 01 04.03995		06 07 14.90	−64 26 06.3			844
C/1995 O1	1998 01 04.04484		06 07 14.13	−64 26 06.2			844
C/1995 O1	1998 01 04.70686		06 05 36.19	−64 25 38.2	13.7	N	422
C/1995 O1	1998 01 04.71044		06 05 35.68	−64 25 38.0	13.2	N	422
C/1995 O1	1998 01 04.71105		06 05 35.59	−64 25 38.0	13.7	N	422
C/1995 O1	1998 01 06.62955		06 00 56.84	−64 23 19.1			426
C/1995 O1	1998 01 06.63281		06 00 56.37	−64 23 18.7			426
C/1995 O1	1998 01 06.63624		06 00 55.84	−64 23 18.2	12.5	N	426
C/1995 O1	1998 01 06.69174		06 00 47.84	−64 23 12.6	13.7	N	422
C/1995 O1	1998 01 06.69236		06 00 47.76	−64 23 12.4	13.5	N	422
C/1995 O1	1998 01 06.69296		06 00 47.74	−64 23 12.3	13.4	N	422
C/1995 O1	1998 01 07.08063		05 59 52.45	−64 22 33.7	10.4	T	844
C/1995 O1	1998 01 08.06219		05 57 33.20	−64 20 38.3			844
C/1995 O1	1998 01 08.09233		05 57 28.86	−64 20 34.8			844
C/1995 O1	1998 01 08.10381		05 57 27.22	−64 20 33.1			844
C/1995 O1	1998 01 09.04323		05 55 16.06	−64 18 21.5			844
C/1995 O1	1998 01 09.04583		05 55 15.74	−64 18 21.3			844
C/1995 O1	1998 01 09.06887		05 55 12.48	−64 18 18.2			844
C/1995 O1	1998 01 09.08860		05 55 09.74	−64 18 15.2			844
C/1995 O1	1998 01 10.16807		05 52 41.15	−64 15 14.1	10.3	T	844

C/1996 J1 (Evans-Drinkwater)

C/1996 J1-B	1997 12 04.52882	02 10 31.44	+36 02 19.9	14	T		372
C/1996 J1-B	1997 12 05.56840	02 10 04.52	+35 54 37.4	14	T		372
C/1996 J1-B	1997 12 19.43264	02 06 06.67	+34 17 05.7	15	T		372
C/1996 J1-B	1997 12 21.55456	02 05 49.41	+34 03 18.6	16.0	T		897
C/1996 J1-B	1997 12 21.56474	02 05 49.31	+34 03 14.2				897
C/1996 J1-A	1997 12 24.50000	02 05 20.80	+33 44 23.1	18.9	T		360
C/1996 J1-B	1997 12 24.50000	02 05 33.63	+33 44 48.3	15.8	T		360
C/1996 J1-A	1997 12 24.50625	02 05 20.87	+33 44 20.7				360
C/1996 J1-B	1997 12 24.50625	02 05 33.63	+33 44 45.7				360
C/1996 J1-B	1997 12 25.80218	02 05 29.67	+33 36 52.0			1	118
C/1996 J1-B	1997 12 25.80663	02 05 29.65	+33 36 50.6			1	118
C/1996 J1-B	1997 12 25.81102	02 05 29.64	+33 36 49.0	16.5	T		118
C/1996 J1-A	1997 12 31.55627	02 05 20.61	+33 03 15.0	18.0	T		867
C/1996 J1-B	1997 12 31.55627	02 05 32.96	+33 03 40.4	15.0	T		867
C/1996 J1-A	1997 12 31.56218	02 05 20.63	+33 03 14.9				867
C/1996 J1-B	1997 12 31.56218	02 05 32.98	+33 03 39.5				867
C/1996 J1-B	1998 01 11.75413	02 07 12.53	+32 08 35.8	16.5	T		046
C/1996 J1-B	1998 01 11.75616	02 07 12.55	+32 08 35.3				046
C/1996 J1-B	1998 01 11.75995	02 07 12.60	+32 08 34.4				046

C/1996 P2 (Russell-Watson)

C/1996 P2	1997 12 31.21353	03 07 21.53	−09 23 58.8	22.1	N		691
C/1996 P2	1997 12 31.22507	03 07 21.40	−09 23 56.5	19.9	T		691
C/1996 P2	1997 12 31.23553	03 07 21.27	−09 23 54.0	20.0	T		691

C/1997 A1 (NEAT)

C/1997 A1	1997 12 24.48403	01 06 24.56	+53 22 17.4	18.7	T		360
C/1997 A1	1997 12 24.48889	01 06 24.19	+53 22 10.5				360
C/1997 A1	1997 12 24.49306	01 06 23.69	+53 22 06.0				360
C/1997 A1	1997 12 25.51528	01 04 50.46	+52 59 15.7	18.5	T		402
C/1997 A1	1997 12 25.51805	01 04 50.14	+52 59 09.8				402
C/1997 A1	1997 12 25.52083	01 04 50.22	+52 59 04.3				402

C/1997 BA_6 (Spacewatch)

C/1997 BA_6	1997 12 24.74931	09 43 50.52	−03 41 27.5	17.6	T		360
C/1997 BA_6	1997 12 24.75347	09 43 50.43	−03 41 28.5				360
C/1997 BA_6	1997 12 30.44680	09 41 37.96	−04 03 43.1				568
C/1997 BA_6	1998 01 09.82312	09 36 47.02	−04 39 47.5	17.6	T		897
C/1997 BA_6	1998 01 09.83295	09 36 46.63	−04 39 51.7				897
C/1997 BA_6	1998 01 09.83734	09 36 46.56	−04 39 51.9				897

C/1997 D1 (Mueller)

C/1997 D1	1997 12 05.62014	05 24 41.58	−04 27 26.0	10.5	T		372
C/1997 D1	1997 12 05.62847	05 24 39.16	−04 27 39.5				372
C/1997 D1	1997 12 09.74696	05 05 07.06	−06 16 08.9	14.2	T		352
C/1997 D1	1997 12 09.74973	05 05 06.24	−06 16 14.0				352
C/1997 D1	1997 12 09.75251	05 05 05.46	−06 16 18.2				352
C/1997 D1	1997 12 10.38681	05 02 07.46	−06 32 01.4				673
C/1997 D1	1997 12 16.08694	04 36 19.39	−08 39 17.3				844
C/1997 D1	1997 12 16.11999	04 36 10.68	−08 39 57.1				844
C/1997 D1	1997 12 16.12887	04 36 08.30	−08 40 07.1				844
C/1997 D1	1997 12 19.67531	04 21 10.35	−09 45 45.3				426
C/1997 D1	1997 12 19.67887	04 21 09.48	−09 45 48.8				426
C/1997 D1	1997 12 19.68304	04 21 08.51	−09 45 53.2	14.7	T		426
C/1997 D1	1997 12 21.51632	04 13 48.68	−10 15 46.8	11.5	T		372
C/1997 D1	1997 12 21.58073	04 13 33.44	−10 16 47.0			2	360
C/1997 D1	1997 12 21.58420	04 13 32.61	−10 16 50.3			2	360
C/1997 D1	1997 12 21.67509	04 13 11.13	−10 18 13.8				897
C/1997 D1	1997 12 21.67898	04 13 10.21	−10 18 17.1				897
C/1997 D1	1997 12 23.56480	04 05 57.88	−10 45 49.2				900
C/1997 D1	1997 12 23.57504	04 05 55.53	−10 45 57.4	14.0	T		900
C/1997 D1	1997 12 24.56064	04 02 17.34	−10 59 13.3	14.5	T		355
C/1997 D1	1997 12 24.56192	04 02 17.08	−10 59 13.5				355
C/1997 D1	1997 12 24.56560	04 02 16.24	−10 59 17.2				355
C/1997 D1	1997 12 24.58924	04 02 11.03	−10 59 36.0	13.3	T		360
C/1997 D1	1997 12 24.59201	04 02 10.41	−10 59 38.3				360
C/1997 D1	1997 12 25.59602	03 58 33.81	−11 12 21.2	14.2	T		402
C/1997 D1	1997 12 25.59881	03 58 33.17	−11 12 23.1				402
C/1997 D1	1997 12 25.60159	03 58 32.62	−11 12 25.1				402
C/1997 D1	1997 12 30.99742	03 40 46.76	−12 08 22.7	14.9	T		758
C/1997 D1	1997 12 31.05849	03 40 35.56	−12 08 54.1	14.9	T		758
C/1997 D1	1997 12 31.06006	03 40 35.31	−12 08 54.1	15.0	T		758
C/1997 D1	1997 12 31.58378	03 39 00.50	−12 13 18.1	14.0	T		897
C/1997 D1	1997 12 31.58900	03 38 59.59	−12 13 20.4				897
C/1997 D1	1998 01 01.72701	03 35 39.79	−12 22 19.6				108
C/1997 D1	1998 01 01.72934	03 35 39.30	−12 22 20.0				108
C/1997 D1	1998 01 01.73559	03 35 38.27	−12 22 24.3				108
C/1997 D1	1998 01 01.74057	03 35 37.53	−12 22 25.0	13.0	T		108
C/1997 D1	1998 01 01.75604	03 35 34.86	−12 22 32.4	14.9	T		540
C/1997 D1	1998 01 01.75965	03 35 34.15	−12 22 33.8				540
C/1997 D1	1998 01 01.76551	03 35 33.23	−12 22 35.8				540
C/1997 D1	1998 01 02.52331	03 33 23.91	−12 28 06.7	14.6	T		900
C/1997 D1	1998 01 02.53610	03 33 21.69	−12 28 12.2				900
C/1997 D1	1998 01 05.45487	03 25 34.04	−12 46 35.2	14.6	T		900
C/1997 D1	1998 01 05.47048	03 25 31.60	−12 46 40.3				900
C/1997 D1	1998 01 10.85961	03 13 03.55	−13 10 07.7				118
C/1997 D1	1998 01 10.86605	03 13 02.73	−13 10 09.0	15.6	T		118

P/1997 G1 (Montani)

P/1997 G1	1997 12 27.80686	11 10 01.94	+00 56 18.4	19.1	T		360
P/1997 G1	1997 12 27.81762	11 10 01.95	+00 56 16.5				360

C/1997 J1 (Mueller)

C/1997 J1	1997 12 05.63819	08 12 34.38	+36 11 05.1	15	T		372
C/1997 J1	1997 12 05.64618	08 12 33.44	+36 11 03.6				372
C/1997 J1	1997 12 21.65017	07 30 29.36	+35 12 06.3	14.4	T		360
C/1997 J1	1997 12 21.65313	07 30 28.86	+35 12 05.0				360
C/1997 J1	1997 12 21.69943	07 30 21.16	+35 11 48.5	14.9	T		897
C/1997 J1	1997 12 21.71331	07 30 18.85	+35 11 43.6				897
C/1997 J1	1997 12 23.67902	07 24 54.21	+34 59 28.3	14.6	T		900
C/1997 J1	1997 12 23.69165	07 24 52.05	+34 59 22.8				900
C/1997 J1	1997 12 24.66435	07 22 11.54	+34 52 57.5				426
C/1997 J1	1997 12 24.67269	07 22 10.17	+34 52 53.3	16.3	T		426
C/1997 J1	1997 12 25.60407	07 19 36.69	+34 46 21.3				355
C/1997 J1	1997 12 25.60619	07 19 36.34	+34 46 20.6	15.2	T		355
C/1997 J1	1997 12 25.61108	07 19 35.55	+34 46 18.5				355
C/1997 J1	1997 12 25.66097	07 19 27.17	+34 46 00.9				426
C/1997 J1	1997 12 25.66472	07 19 26.64	+34 45 59.5				426

C/1997 J1	1997 12 25.66793	07 19 26.04	+34 45 57.1			426
C/1997 J1	1997 12 25.67137	07 19 25.57	+34 45 56.3	16.4	T	426
C/1997 J1	1997 12 28.57809	07 11 28.72	+34 24 00.7	14.8	T	897
C/1997 J1	1997 12 28.58707	07 11 27.26	+34 23 56.3			897
C/1997 J1	1997 12 28.59421	07 11 26.08	+34 23 53.3			897
C/1997 J1	1997 12 31.06120	07 04 46.13	+34 03 29.4	15.9	T	118
C/1997 J1	1997 12 31.06713	07 04 45.18	+34 03 26.1			118
C/1997 J1	1997 12 31.08508	07 04 42.76	+34 03 16.4	15.0	T	758
C/1997 J1	1997 12 31.09363	07 04 41.09	+34 03 14.7	15.2	T	758
C/1997 J1	1998 01 02.58089	06 58 04.79	+33 41 04.6			900
C/1997 J1	1998 01 02.59353	06 58 02.73	+33 40 57.3	14.5	T	900
C/1997 J1	1998 01 02.67955	06 57 49.09	+33 40 10.1	15.3	T	355
C/1997 J1	1998 01 02.68163	06 57 48.79	+33 40 08.7			355
C/1997 J1	1998 01 02.68440	06 57 48.34	+33 40 07.0			355
C/1997 J1	1998 01 05.56502	06 50 20.90	+33 12 36.5			900
C/1997 J1	1998 01 05.58274	06 50 18.08	+33 12 25.9			900
C/1997 J1	1998 01 05.61366	06 50 13.39	+33 12 08.2	16.7	T	403
C/1997 J1	1998 01 05.61562	06 50 13.08	+33 12 07.5			403
C/1997 J1	1998 01 07.02818	06 46 38.71	+32 57 56.2			118
C/1997 J1	1998 01 07.03602	06 46 37.51	+32 57 51.2	15.0	T	118
C/1997 J1	1998 01 08.82701	06 42 11.47	+32 39 24.1			118
C/1997 J1	1998 01 08.83104	06 42 10.87	+32 39 21.7			118
C/1997 J1	1998 01 08.84363	06 42 08.88	+32 39 13.7	14.9	T	504
C/1997 J1	1998 01 08.84508	06 42 08.72	+32 39 12.9			504
C/1997 J1	1998 01 08.84596	06 42 08.67	+32 39 12.5	15.5	T	118
C/1997 J1	1998 01 08.84799	06 42 08.31	+32 39 11.3			504
C/1997 J1	1998 01 08.84954	06 42 07.97	+32 39 10.3			504
C/1997 J1	1998 01 09.66649	06 40 08.66	+32 30 35.8	16.4	T	403
C/1997 J1	1998 01 09.68160	06 40 06.49	+32 30 26.3			403
C/1997 J1	1998 01 10.96729	06 37 01.65	+32 16 40.0			118
C/1997 J1	1998 01 10.97247	06 37 00.92	+32 16 36.9	15.4	T	118

C/1997 J2 (Meunier-Dupouy)

C/1997 J2	1997 05 27.97604	10 47 34.36	+72 46 15.1			469
C/1997 J2	1997 10 03.82425	15 07 32.72	+60 17 13.6			995
C/1997 J2	1997 10 10.82565	15 29 30.16	+59 04 57.6			995
C/1997 J2	1997 10 24.83712	16 13 31.81	+56 22 39.5			995
C/1997 J2	1997 11 06.79700	16 53 33.79	+53 33 42.7			995
C/1997 J2	1997 11 12.77120	17 11 33.66	+52 11 10.4			995
C/1997 J2	1997 11 30.77593	18 03 18.37	+47 53 45.4			995
C/1997 J2	1997 12 01.74420	18 05 58.08	+47 39 52.4			995
C/1997 J2	1997 12 05.78554	18 16 56.01	+46 42 10.5	12.6	T	504
C/1997 J2	1997 12 05.78781	18 16 56.39	+46 42 08.2			504
C/1997 J2	1997 12 05.78832	18 16 56.45	+46 42 07.6			504
C/1997 J2	1997 12 05.78975	18 16 56.66	+46 42 06.5			504
C/1997 J2	1997 12 05.79275	18 16 57.18	+46 42 04.1			504
C/1997 J2	1997 12 05.79330	18 16 57.23	+46 42 03.4			504
C/1997 J2	1997 12 07.71446	18 22 04.97	+46 14 52.3	14.5	T	143
C/1997 J2	1997 12 07.71838	18 22 05.62	+46 14 49.0	14.4	T	143
C/1997 J2	1997 12 07.72229	18 22 06.22	+46 14 45.2	14.4	T	143
C/1997 J2	1997 12 07.72621	18 22 06.86	+46 14 42.1	14.4	T	143
C/1997 J2	1997 12 07.73013	18 22 07.45	+46 14 39.1	14.4	T	143
C/1997 J2	1997 12 07.73404	18 22 08.07	+46 14 35.9	14.5	T	143
C/1997 J2	1997 12 07.73795	18 22 08.71	+46 14 32.4	14.4	T	143
C/1997 J2	1997 12 07.74187	18 22 09.33	+46 14 29.0	14.4	T	143
C/1997 J2	1997 12 07.74579	18 22 09.96	+46 14 25.7	14.4	T	143
C/1997 J2	1997 12 07.74971	18 22 10.59	+46 14 22.1	14.4	T	143
C/1997 J2	1997 12 09.72432	18 27 23.36	+45 46 35.3	14.4	T	143
C/1997 J2	1997 12 09.72952	18 27 24.27	+45 46 30.1	14.6	T	143
C/1997 J2	1997 12 09.73400	18 27 24.88	+45 46 26.9	14.3	T	143
C/1997 J2	1997 12 09.73834	18 27 25.57	+45 46 23.1	14.4	T	143
C/1997 J2	1997 12 09.74270	18 27 26.23	+45 46 19.5	14.4	T	143
C/1997 J2	1997 12 09.80755	18 27 36.49	+45 45 24.1	14.1	T	143
C/1997 J2	1997 12 09.81146	18 27 37.06	+45 45 20.8	14.2	T	143
C/1997 J2	1997 12 09.81538	18 27 37.75	+45 45 17.5	14.2	T	143
C/1997 J2	1997 12 09.81931	18 27 38.32	+45 45 14.5	14.0	T	143
C/1997 J2	1997 12 09.82322	18 27 38.96	+45 45 11.0	13.9	T	143
C/1997 J2	1997 12 14.37890	18 39 26.90	+44 41 58.9	12.1	T	402
C/1997 J2	1997 12 14.38098	18 39 27.22	+44 41 57.1			402
C/1997 J2	1997 12 14.38307	18 39 27.52	+44 41 55.5			402
C/1997 J2	1997 12 15.36635	18 41 57.85	+44 28 27.5			897
C/1997 J2	1997 12 15.37879	18 41 59.72	+44 28 17.5	11.7	T	897
C/1997 J2	1997 12 15.38642	18 42 00.86	+44 28 11.4			897
C/1997 J2	1997 12 24.39288	19 04 16.76	+42 28 45.1	12.4	T	360
C/1997 J2	1997 12 24.39583	19 04 17.17	+42 28 43.0			360
C/1997 J2	1997 12 30.96841	19 19 45.64	+41 06 46.5	12.4	T	758
C/1997 J2	1997 12 30.97556	19 19 46.66	+41 06 41.7	13.1	T	758
C/1997 J2	1997 12 30.99079	19 19 48.72	+41 06 31.2	12.6	T	758
C/1997 J2	1997 12 31.37015	19 20 41.15	+41 01 55.0			897
C/1997 J2	1997 12 31.37395	19 20 41.73	+41 01 52.4			897
C/1997 J2	1998 01 01.70557	19 23 44.64	+40 45 58.6	13.0	T	540
C/1997 J2	1998 01 01.70703	19 23 44.76	+40 45 57.4			540
C/1997 J2	1998 01 01.70824	19 23 44.98	+40 45 56.8			540
C/1997 J2	1998 01 11.98061	19 46 21.85	+38 50 53.0	13.1	T	758
C/1997 J2	1998 01 11.98597	19 46 22.57	+38 50 49.8	13.3	T	758
C/1997 J2	1998 01 11.99193	19 46 23.30	+38 50 46.5	13.1	T	758

C/1997 O1 (Tilbrook)

C/1997 O1	1997 12 13.85818	15 22 39.60	+26 10 50.0				897
C/1997 O1	1997 12 13.86245	15 22 39.97	+26 10 51.8	16.2	T		897
C/1997 O1	1997 12 27.84535	15 37 13.38	+31 18 31.5	16.9	T		897
C/1997 O1	1997 12 27.84943	15 37 13.45	+31 18 34.9				897
C/1997 O1	1998 01 11.13196	15 50 44.04	+37 24 31.1			3	118
C/1997 O1	1998 01 11.13676	15 50 44.28	+37 24 39.2	17.3	T	3	118

C/1997 T1 (Utsunomiya)

C/1997 T1	1997 10 24.85528	19 20 51.70	+45 59 15.5			995
C/1997 T1	1997 10 27.91965	19 12 31.93	+41 49 49.6			995
C/1997 T1	1997 10 31.83443	19 04 44.39	+36 59 30.1			469
C/1997 T1	1997 11 06.78398	18 56 55.71	+30 38 52.4			995
C/1997 T1	1997 11 07.76363	18 55 58.50	+29 42 48.8			995
C/1997 T1	1997 11 10.78815	18 53 28.48	+27 00 37.6	11.9	T	540
C/1997 T1	1997 11 10.78912	18 53 28.44	+27 00 34.2			540
C/1997 T1	1997 11 10.79010	18 53 28.42	+27 00 31.3			540
C/1997 T1	1997 11 12.78257	18 52 08.38	+25 21 58.5			995
C/1997 T1	1997 11 17.40174	18 49 47.74	+21 56 27.3	11	T	372
C/1997 T1	1997 11 21.72235	18 48 20.51	+19 09 12.6			995

C/1997 T1	1997 11 27.41632	18 47 12.01	+15 59 38.2	11	T	372
C/1997 T1	1997 12 01.70789	18 46 46.51	+13 55 48.5			995
C/1997 T1	1997 12 06.72161	18 46 36.35	+11 48 16.1	14.4	T	589
C/1997 T1	1997 12 06.73544	18 46 36.31	+11 47 55.2			589
C/1997 T1	1997 12 06.74853	18 46 36.29	+11 47 37.1			589
C/1997 T1	1997 12 14.36623	18 46 49.47	+09 02 16.4	11.4	T	402
C/1997 T1	1997 12 14.36762	18 46 49.47	+09 02 14.7			402
C/1997 T1	1997 12 14.36900	18 46 49.48	+09 02 13.1			402
C/1997 T1	1997 12 15.34591	18 46 52.95	+08 43 03.7			897
C/1997 T1	1997 12 15.35090	18 46 53.01	+08 42 58.4			897
C/1997 T1	1997 12 15.38403	18 46 53.03	+08 42 20.0	11.5	T	372
C/1997 T1	1997 12 18.39306	18 47 05.57	+07 46 01.3	11.5	T	372
C/1997 T1	1997 12 19.37986	18 47 10.27	+07 28 19.7			372
C/1997 T1	1997 12 25.37685	18 47 42.77	+05 48 18.9	11.8	T	402
C/1997 T1	1997 12 25.37824	18 47 42.75	+05 48 18.2			402

P/1997 T3

P/1997 T3	1997 11 24.55937	00 55 20.65	+01 53 34.0	19.9	N	372
P/1997 T3	1997 11 26.57014	00 55 04.46	+01 54 45.4			372
P/1997 T3	1997 11 27.45590	00 54 58.65	+01 55 26.1			372
P/1997 T3	1997 11 27.54167	00 54 58.03	+01 55 30.4			372
P/1997 T3	1997 12 04.49557	00 54 34.92	+02 03 11.4	19.5	N	372
P/1997 T3	1997 12 05.54028	00 54 35.15	+02 04 43.9	19.5	N	372
P/1997 T3	1997 12 21.77920	00 56 41.10	+02 41 08.4	19.2	T	046
P/1997 T3	1997 12 21.78267	00 56 41.12	+02 41 09.9			046
P/1997 T3	1997 12 21.78615	00 56 41.23	+02 41 10.8			046
P/1997 T3	1997 12 25.42078	00 57 40.12	+02 52 21.6	19.7	T	402
P/1997 T3	1997 12 25.42494	00 57 40.19	+02 52 23.7			402
P/1997 T3	1997 12 25.42911	00 57 40.35	+02 52 23.7			402
P/1997 T3	1997 12 28.11756	00 58 30.87	+03 01 20.4	22.2	N	691
P/1997 T3	1997 12 28.12984	00 58 31.11	+03 01 22.5	20.8	T	691
P/1997 T3	1997 12 28.13995	00 58 31.31	+03 01 25.1	20.4	T	691
P/1997 T3	1998 01 02.48822	01 00 29.46	+03 20 50.6	19.3	T	867
P/1997 T3	1998 01 02.49412	01 00 29.59	+03 20 52.0			867
P/1997 T3	1998 01 02.50072	01 00 29.70	+03 20 52.5			867

P/1997 V1 (Larsen)

P/1997 V1	1997 11 24.57604	00 13 55.42	+10 38 00.0	17.5	T	372
P/1997 V1	1997 11 26.58646	00 14 19.93	+10 30 20.9	17.5	T	372
P/1997 V1	1997 11 30.23264	00 15 15.89	+10 17 52.3	16.2	T	735
P/1997 V1	1997 11 30.25451	00 15 16.31	+10 17 47.9	15.9	T	735
P/1997 V1	1997 11 30.26927	00 15 16.55	+10 17 45.4	15.9	T	735
P/1997 V1	1997 12 04.46944	00 16 39.22	+10 05 39.7	17.5	T	372
P/1997 V1	1997 12 05.55642	00 17 03.45	+10 02 56.5			372
P/1997 V1	1997 12 05.82291	00 17 09.82	+10 02 16.0	16.6	T	504
P/1997 V1	1997 12 05.82669	00 17 09.90	+10 02 14.9			504
P/1997 V1	1997 12 14.39947	00 21 07.01	+09 46 39.4	17.1	T	402
P/1997 V1	1997 12 14.40294	00 21 07.12	+09 46 39.1			402
P/1997 V1	1997 12 14.40641	00 21 07.20	+09 46 38.6			402
P/1997 V1	1997 12 15.40709	00 21 39.56	+09 45 27.4	17.5	T	897
P/1997 V1	1997 12 15.42792	00 21 40.08	+09 45 26.8			897
P/1997 V1	1997 12 18.40946	00 23 22.08	+09 42 43.8	17.9	T	372
P/1997 V1	1997 12 21.53316	00 25 17.33	+09 41 06.1	17.0	T	897
P/1997 V1	1997 12 21.54705	00 25 17.81	+09 41 04.4			897
P/1997 V1	1997 12 21.76804	00 25 26.54	+09 41 00.4	17.0	T	046
P/1997 V1	1997 12 21.77000	00 25 26.59	+09 41 00.2			046
P/1997 V1	1997 12 21.77266	00 25 26.69	+09 41 00.1			046
P/1997 V1	1997 12 24.43542	00 27 12.34	+09 40 40.0	17.1	T	360
P/1997 V1	1997 12 24.43993	00 27 12.50	+09 40 40.1			360
P/1997 V1	1997 12 25.39853	00 27 52.09	+09 40 45.3	17.1	T	402
P/1997 V1	1997 12 25.40132	00 27 52.17	+09 40 45.2			402
P/1997 V1	1997 12 25.40410	00 27 52.32	+09 40 45.2			402
P/1997 V1	1997 12 28.11115	00 29 47.98	+09 41 35.9	20.8	N	691
P/1997 V1	1997 12 28.12313	00 29 48.49	+09 41 36.3	20.9	N	691
P/1997 V1	1997 12 31.48448	00 32 20.62	+09 43 51.4	17.3	T	897
P/1997 V1	1997 12 31.51252	00 32 21.78	+09 43 53.2			897
P/1997 V1	1997 12 31.70867	00 32 31.07	+09 44 02.8	17.8	T	046
P/1997 V1	1997 12 31.71088	00 32 31.14	+09 44 02.9			046
P/1997 V1	1997 12 31.71490	00 32 31.33	+09 44 03.0			046
P/1997 V1	1998 01 02.46322	00 33 54.04	+09 45 46.7	17.1	T	867
P/1997 V1	1998 01 02.46947	00 33 54.36	+09 45 47.3			867
P/1997 V1	1998 01 10.71049	00 40 54.52	+09 58 18.9	17.7	T	046
P/1997 V1	1998 01 10.71405	00 40 54.61	+09 58 17.5			118
P/1997 V1	1998 01 10.71569	00 40 54.79	+09 58 19.6			046
P/1997 V1	1998 01 10.71913	00 40 54.94	+09 58 19.9			046
P/1997 V1	1998 01 10.72373	00 40 55.11	+09 58 18.7	16.8	T	118

6P/d'Arrest

6P	1997 12 30.34281	08 38 35.99	+11 50 10.8			568
6P	1997 12 30.39078	08 38 34.40	+11 50 18.1			568

9P/Tempel 1

9P	1997 12 29.22962	05 29 11.21	+27 17 03.9			568

10P/Tempel 2

10P	1997 12 30.49632	11 48 38.48	+10 50 58.2			568
10P	1998 01 02.80280	11 49 09.14	+10 58 35.3	19.8	N	867
10P	1998 01 02.80975	11 49 09.17	+10 58 36.7			867
10P	1998 01 02.84308	11 49 09.36	+10 58 40.9			867
10P	1998 01 02.85002	11 49 09.51	+10 58 41.9			867

22P/Kopff

22P	1997 12 29.21785	03 33 04.59	+14 08 44.1			568
22P	1997 12 31.59238	03 32 09.02	+14 08 30.9	17.8	T	867
22P	1997 12 31.60106	03 32 08.76	+14 08 32.6			867

29P/Schwassmann-Wachmann 1

29P	1997 12 09.85075	13 23 04.33	−17 13 02.0			352
29P	1997 12 09.85403	13 23 04.55	−17 13 01.9			352
29P	1997 12 09.85631	13 23 04.62	−17 13 01.8			352
29P	1997 12 10.82713	13 23 35.47	−17 17 14.1			897
29P	1997 12 10.83118	13 23 35.66	−17 17 15.9			897
29P	1997 12 10.83711	13 23 35.97	−17 17 16.4			897
29P	1997 12 27.85452	13 31 40.25	−18 26 38.6	14.6	T	897
29P	1997 12 27.85710	13 31 40.14	−18 26 39.9			897
29P	1997 12 30.65389	13 32 47.99	−18 37 16.0			568

43P/Wolf-Harrington

43P	1997 12 09.86323	10 05 55.12	−08 45 39.2	12.8	T	352
43P	1997 12 09.86601	10 05 55.22	−08 45 44.2			352

43P	1997 12 10.73229	10 06 37.54	−09 04 54.9			372
43P	1997 12 10.75660	10 06 38.69	−09 05 27.6	13	T	372
43P	1997 12 13.87084	10 08 56.67	−10 13 27.4	12.5	T	897
43P	1997 12 13.87440	10 08 56.74	−10 13 32.4			897
43P	1997 12 24.67768	10 14 17.24	−13 55 13.4			426
43P	1997 12 24.68164	10 14 17.31	−13 55 18.1			426
43P	1997 12 24.68597	10 14 17.40	−13 55 23.1	14.5	T	426
43P	1997 12 24.76597	10 14 18.63	−13 57 03.8	13.1	T	360
43P	1997 12 24.76875	10 14 18.68	−13 57 06.9			360
43P	1997 12 25.70592	10 14 34.15	−14 15 05.5	12.7	T	897
43P	1997 12 25.72220	10 14 34.38	−14 15 24.2			897
43P	1997 12 30.24244	10 15 20.23	−15 38 38.2	14.2	T	844
43P	1997 12 30.25887	10 15 20.29	−15 38 55.6	14.5	T	844
43P	1997 12 30.26870	10 15 20.27	−15 39 06.9	14.3	T	844
43P	1997 12 31.19753	10 15 23.96	−15 55 29.3			844
43P	1997 12 31.21219	10 15 23.95	−15 55 39.3			844
43P	1997 12 31.23200	10 15 23.98	−15 56 05.3			844
43P	1998 01 02.69877	10 15 23.56	−16 38 23.7	14.1	T	355
43P	1998 01 02.70390	10 15 23.53	−16 38 28.4			355
43P	1998 01 02.70571	10 15 23.47	−16 38 30.0			355
43P	1998 01 02.74794	10 15 23.23	−16 39 14.5			867
43P	1998 01 02.75558	10 15 23.17	−16 39 21.9			867
43P	1998 01 04.10138	10 15 17.43	−17 01 19.3			844
43P	1998 01 04.10431	10 15 17.39	−17 01 22.1			844
43P	1998 01 04.11454	10 15 17.30	−17 01 32.2			844
43P	1998 01 04.11530	10 15 17.29	−17 01 32.9			844
43P	1998 01 04.12821	10 15 17.21	−17 01 45.5			844
43P	1998 01 07.25397	10 14 46.50	−17 50 41.0	14.9	T	844
43P	1998 01 07.27664	10 14 46.15	−17 51 00.7	15.1	T	844
43P	1998 01 11.04098	10 13 40.96	−18 45 08.5			118
43P	1998 01 11.05009	10 13 40.73	−18 45 16.0	13.7	T	118
		46P/Wirtanen				
46P	1997 12 30.64882	15 01 00.02	−08 44 49.6			568
		48P/Johnson				
48P	1997 12 21.40461	21 45 59.49	−21 51 25.1			897
48P	1997 12 26.46816	21 55 54.38	−21 07 43.8			426
48P	1997 12 26.47247	21 55 54.92	−21 07 41.4			426
48P	1997 12 26.47704	21 55 55.51	−21 07 39.4	17.0	T	426
		55P/Tempel-Tuttle				
55P	1997 12 03.85000	12 31 49.38	+15 26 04.7	18	T	372
55P	1997 12 05.83924	12 32 42.90	+15 51 39.0	17.8	T	372
55P	1997 12 09.77894	12 34 21.66	+16 52 02.2	15.4	T	402
55P	1997 12 09.78241	12 34 21.78	+16 52 06.0			402
55P	1997 12 09.78588	12 34 21.85	+16 52 09.4	17.5	N	402
55P	1997 12 10.80905	12 34 45.48	+17 10 19.7	16.1	T	897
55P	1997 12 10.81395	12 34 45.64	+17 10 25.4			897
55P	1997 12 10.81865	12 34 45.72	+17 10 30.6			897
55P	1997 12 18.84177	12 37 16.40	+20 22 06.0			897
55P	1997 12 18.84530	12 37 16.36	+20 22 11.4			897
55P	1997 12 18.84941	12 37 16.49	+20 22 19.8			897
55P	1997 12 21.73330	12 37 49.63	+22 00 30.1			897
55P	1997 12 21.73754	12 37 49.69	+22 00 40.9	13.3	T	897
55P	1997 12 21.74187	12 37 49.67	+22 00 49.8			897
55P	1997 12 24.77483	12 38 05.96	+24 09 03.4	13.7	T	360
55P	1997 12 24.77778	12 38 05.94	+24 09 11.9			360
55P	1997 12 25.73020	12 38 06.20	+24 56 01.0	14.2	T	402
55P	1997 12 25.73367	12 38 06.17	+24 56 11.4			402
55P	1997 12 25.73714	12 38 06.16	+24 56 22.2			402
55P	1997 12 27.73919	12 37 56.58	+26 47 22.7	14.5	T	355
55P	1997 12 27.76178	12 37 56.33	+26 48 44.7			355
55P	1997 12 27.76419	12 37 56.32	+26 48 53.6			355
55P	1997 12 27.79635	12 37 55.97	+26 50 50.5	12.8	T	360
55P	1997 12 27.79913	12 37 55.94	+26 51 00.5			360
55P	1997 12 27.86164	12 37 55.09	+26 54 48.5	13.0	T	897
55P	1997 12 27.86394	12 37 55.03	+26 54 56.3			897
55P	1997 12 27.86678	12 37 55.01	+26 55 06.6			897
55P	1997 12 30.59830	12 37 12.70	+30 02 30.1			568
55P	1997 12 31.66833	12 36 44.46	+31 29 13.5			897
55P	1997 12 31.67434	12 36 44.28	+31 29 44.3			897
55P	1997 12 31.68630	12 36 43.91	+31 30 45.6	12.8	T	897
55P	1998 01 01.08896	12 36 30.63	+32 05 47.1			046
55P	1998 01 01.09167	12 36 30.53	+32 06 01.3			046
55P	1998 01 01.09438	12 36 30.44	+32 06 15.9			046
55P	1998 01 01.24670	12 36 25.65	+32 19 52.9	15.1	N	758
55P	1998 01 01.27222	12 36 24.67	+32 22 11.5	15.2	N	758
55P	1998 01 02.76688	12 35 21.38	+34 47 12.0	13.4	T	355
55P	1998 01 02.77226	12 35 21.06	+34 47 46.5			355
55P	1998 01 02.77793	12 35 20.75	+34 48 21.2			355
55P	1998 01 02.79201	12 35 20.07	+34 49 49.7			867
55P	1998 01 02.79514	12 35 19.90	+34 50 09.5			867
55P	1998 01 02.79861	12 35 19.69	+34 50 31.1			867
55P	1998 01 05.84569	12 31 41.03	+41 03 38.5			897
55P	1998 01 05.85297	12 31 40.28	+41 04 40.8			897
55P	1998 01 05.86889	12 31 38.55	+41 06 56.9			897
55P	1998 01 07.71499	12 27 50.30	+45 58 28.6			897
55P	1998 01 07.73517	12 27 47.06	+46 02 00.7			897
55P	1998 01 07.75068	12 27 44.49	+46 04 43.2			897
55P	1998 01 09.76493	12 20 52.32	+52 36 22.4	13.9	T	403
55P	1998 01 09.77422	12 20 49.68	+52 38 23.6			403
55P	1998 01 09.84171	12 20 30.79	+52 52 59.0			897
55P	1998 01 09.85244	12 20 27.69	+52 55 19.2			897
55P	1998 01 09.92167	12 20 10.42	+53 10 07.6			143
55P	1998 01 09.92206	12 20 10.25	+53 10 11.9			143
55P	1998 01 09.92245	12 20 10.13	+53 10 18.6			143
55P	1998 01 09.92284	12 20 10.02	+53 10 23.3			143
55P	1998 01 09.92324	12 20 09.93	+53 10 28.8			143
55P	1998 01 09.92363	12 20 09.86	+53 10 33.5			143
55P	1998 01 09.92402	12 20 09.74	+53 10 38.4			143
55P	1998 01 09.92441	12 20 09.55	+53 10 44.3			143
55P	1998 01 09.92480	12 20 09.50	+53 10 49.4			143
55P	1998 01 09.92520	12 20 09.40	+53 10 53.8			143
55P	1998 01 09.94910	12 20 02.61	+53 16 11.0			143
55P	1998 01 09.94950	12 20 02.52	+53 16 15.9			143
55P	1998 01 09.94989	12 20 02.40	+53 16 19.7			143

55P	1998 01 09.95028	12 20 02.30	+53 16 26.9		143
55P	1998 01 09.95067	12 20 02.22	+53 16 31.4		143
55P	1998 01 09.95106	12 20 02.13	+53 16 36.3		143
55P	1998 01 09.95146	12 20 01.96	+53 16 42.0		143
55P	1998 01 09.95185	12 20 01.84	+53 16 47.1		143
55P	1998 01 09.95224	12 20 01.78	+53 16 52.6		143
55P	1998 01 09.95263	12 20 01.63	+53 16 57.7		143
55P	1998 01 10.67840	12 16 11.69	+56 02 25.8	12.6 T	355
55P	1998 01 10.68237	12 16 10.36	+56 03 21.8		355
55P	1998 01 10.68543	12 16 09.17	+56 04 05.5		355

56P/Slaughter-Burnham

56P	1997 04 16.49550	12 02 24.23	−03 36 43.1		568
56P	1997 04 16.50457	12 02 24.04	−03 36 42.1		568
56P	1997 04 16.51705	12 02 23.70	−03 36 40.1		568
56P	1997 04 16.52995	12 02 23.47	−03 36 38.1		568
56P	1997 04 16.54218	12 02 23.05	−03 36 35.0		568
56P	1997 12 30.60978	13 16 26.63	−12 11 57.8		568
56P	1997 12 30.61803	13 16 26.71	−12 11 58.5		568
56P	1997 12 30.62601	13 16 26.81	−12 11 59.8		568

62P/Tsuchinshan 1

62P	1997 12 25.43879	01 50 38.03	+00 17 44.1	18.8 T	402
62P	1997 12 25.44296	01 50 38.06	+00 17 47.5		402
62P	1997 12 25.44713	01 50 38.17	+00 17 49.3		402
62P	1997 12 31.18407	01 52 40.26	+01 24 06.9	19.8 T	691
62P	1997 12 31.19562	01 52 40.48	+01 24 14.5	22.4 N	691
62P	1997 12 31.20632	01 52 40.78	+01 24 22.5	19.7 T	691
62P	1997 12 31.52259	01 52 49.84	+01 28 12.0	18.8 T	867
62P	1997 12 31.52919	01 52 49.95	+01 28 17.8		867
62P	1997 12 31.53544	01 52 50.11	+01 28 22.1		867
62P	1998 01 02.56738	01 53 52.52	+01 53 27.0	19.0 T	867
62P	1998 01 02.57329	01 53 52.79	+01 53 31.2		867
62P	1998 01 10.75683	01 59 33.94	+03 41 14.7		118
62P	1998 01 10.77215	01 59 34.73	+03 41 27.5	16.6 T	118
62P	1998 01 11.73810	02 00 24.23	+03 54 50.4	18.3 T	046
62P	1998 01 11.74292	02 00 24.47	+03 54 55.3		046
62P	1998 01 11.74613	02 00 24.64	+03 54 56.5		046

65P/Gunn

65P	1997 12 24.42587	00 17 23.81	−07 17 34.3	16.5 T	360
65P	1997 12 24.42951	00 17 23.94	−07 17 32.6		360
65P	1997 12 31.47354	00 21 04.92	−06 30 46.2		897
65P	1997 12 31.47783	00 21 05.06	−06 30 46.3	16.8 T	897
65P	1998 01 11.70178	00 28 07.21	−05 11 50.7	17.5 T	046
65P	1998 01 11.70359	00 28 07.28	−05 11 50.1		046
65P	1998 01 11.70689	00 28 07.44	−05 11 48.5		046

69P/Taylor

69P	1997 12 06.07630	08 25 59.29	+14 49 12.7		954
69P	1997 12 06.07873	08 25 59.36	+14 49 14.6		954
69P	1997 12 06.08155	08 25 59.45	+14 49 16.6		954
69P	1997 12 06.08444	08 25 59.55	+14 49 18.6		954
69P	1997 12 06.08641	08 25 59.61	+14 49 20.0		954
69P	1997 12 10.79367	08 28 19.92	+15 48 46.7	17.3 T	372
69P	1997 12 11.81319	08 28 44.84	+16 02 40.0	17.0 T	372
69P	1997 12 21.60938	08 31 01.09	+18 34 10.4	16.5 T	372
69P	1997 12 21.71852	08 31 01.23	+18 36 01.2	15.5 T	897
69P	1997 12 21.72620	08 31 01.25	+18 36 09.3		897
69P	1997 12 24.68308	08 31 03.94	+19 28 05.0		900
69P	1997 12 24.69920	08 31 03.85	+19 28 22.7	15.0 T	900
69P	1997 12 24.70399	08 31 03.91	+19 28 27.5	15.1 T	360
69P	1997 12 24.70903	08 31 03.89	+19 28 32.9		360
69P	1997 12 25.68874	08 31 00.89	+19 46 18.9	14.9 T	402
69P	1997 12 25.69152	08 31 00.86	+19 46 22.0		402
69P	1997 12 25.69429	08 31 00.84	+19 46 25.0		402
69P	1997 12 27.64379	08 30 49.32	+20 22 33.1	15.6 T	403
69P	1997 12 27.65037	08 30 49.28	+20 22 40.1		403
69P	1997 12 31.59380	08 30 03.66	+21 38 31.4	14.6 T	355
69P	1997 12 31.59855	08 30 03.55	+21 38 37.1		355
69P	1997 12 31.60205	08 30 03.50	+21 38 41.3		355
69P	1997 12 31.68288	08 30 02.06	+21 40 17.4	15.6 T	403
69P	1997 12 31.68779	08 30 01.88	+21 40 22.6		403
69P	1998 01 02.65801	08 29 28.46	+22 19 28.7	14.5 T	867
69P	1998 01 02.66426	08 29 28.32	+22 19 36.1		867
69P	1998 01 04.57909	08 28 49.52	+22 58 09.9	13.9 T	897
69P	1998 01 04.59427	08 28 49.15	+22 58 28.9		897
69P	1998 01 05.60114	08 28 26.34	+23 18 57.2	14.1 T	900
69P	1998 01 05.61379	08 28 26.00	+23 19 12.4		900
69P	1998 01 05.66100	08 28 24.73	+23 20 10.1	15.3 T	403
69P	1998 01 05.67265	08 28 24.47	+23 20 24.4		403
69P	1998 01 08.99873	08 26 58.12	+24 28 36.3		118
69P	1998 01 09.00572	08 26 57.90	+24 28 45.2		118
69P	1998 01 09.00832	08 26 57.82	+24 28 48.5	14.1 T	118
69P	1998 01 11.00308	08 25 59.06	+25 09 55.6		118
69P	1998 01 11.01093	08 25 58.80	+25 10 05.3	13.6 T	118

71P/Clark

71P	1997 12 29.27485	05 16 53.29	+28 01 39.8		568
71P	1997 12 30.29690	05 16 05.90	+28 01 14.9		568

78P/Gehrels 2

78P	1997 11 24.77708	06 58 00.72	+14 19 05.9	13 T	372
78P	1997 11 26.70382	06 57 27.87	+14 11 28.5	13 T	372
78P	1997 11 26.76233	06 57 26.60	+14 11 14.8		372
78P	1997 12 03.68993	06 54 30.26	+13 47 02.3	13 T	372
78P	1997 12 04.61753	06 54 00.50	+13 44 13.2	13.5 T	372
78P	1997 12 09.76701	06 50 50.95	+13 30 22.7		352
78P	1997 12 09.76979	06 50 50.81	+13 30 21.4		352
78P	1997 12 09.77257	06 50 50.74	+13 30 21.5		352
78P	1997 12 10.72674	06 50 11.83	+13 28 08.3		372
78P	1997 12 19.68487	06 43 20.97	+13 13 04.3		426
78P	1997 12 19.68793	06 43 20.80	+13 13 03.9		426
78P	1997 12 19.69141	06 43 20.63	+13 13 03.9	13.7 T	426
78P	1997 12 19.92965	06 43 09.09	+13 12 39.6		046
78P	1997 12 19.93215	06 43 08.96	+13 12 39.5		046
78P	1997 12 19.93434	06 43 08.86	+13 12 39.4		046
78P	1997 12 21.63976	06 41 43.68	+13 10 58.9	12.8 T	360
78P	1997 12 21.64427	06 41 43.44	+13 10 58.7		360

78P	1997 12 21.68532	06 41 41.29	+13 10 56.9				897
78P	1997 12 21.69493	06 41 40.70	+13 10 56.0				897
78P	1997 12 21.71076	06 41 39.93	+13 10 55.2				360
78P	1997 12 23.59716	06 40 04.69	+13 09 30.0	12.5	T		900
78P	1997 12 23.60638	06 40 04.18	+13 09 28.8				900
78P	1997 12 27.61457	06 36 39.42	+13 07 54.9	13.8	T		403
78P	1997 12 27.62397	06 36 38.89	+13 07 55.4				403
78P	1997 12 28.07993	06 36 15.32	+13 07 49.2				966
78P	1997 12 29.01962	06 35 27.41	+13 07 47.7				046
78P	1997 12 29.02068	06 35 27.35	+13 07 47.6				046
78P	1997 12 29.02139	06 35 27.31	+13 07 47.7				046
78P	1997 12 31.03718	06 33 45.28	+13 08 03.4	13.3	T		118
78P	1997 12 31.04456	06 33 44.88	+13 08 04.0				118
78P	1997 12 31.57560	06 33 18.47	+13 08 16.7	13.6	T		403
78P	1997 12 31.59528	06 33 17.42	+13 08 17.0				403
78P	1997 12 31.62455	06 33 15.93	+13 08 15.7				897
78P	1997 12 31.63252	06 33 15.51	+13 08 16.1				897
78P	1997 12 31.66947	06 33 13.61	+13 08 16.7				867
78P	1997 12 31.67537	06 33 13.29	+13 08 16.7				867
78P	1998 01 02.54959	06 31 40.72	+13 09 05.2	12.6	T		900
78P	1998 01 02.55786	06 31 40.24	+13 09 04.7				900
78P	1998 01 02.63944	06 31 36.13	+13 09 07.6	13.2	T		355
78P	1998 01 02.64398	06 31 35.90	+13 09 07.8				355
78P	1998 01 02.64630	06 31 35.79	+13 09 07.5				355
78P	1998 01 05.60382	06 29 13.98	+13 11 13.6	13.7	T		403
78P	1998 01 05.60874	06 29 13.81	+13 11 13.5				403
78P	1998 01 06.55921	06 28 29.74	+13 12 04.6	14.2	T		403
78P	1998 01 06.56354	06 28 29.58	+13 12 04.8				403
78P	1998 01 06.79256	06 28 19.22	+13 12 15.9				143
78P	1998 01 06.80039	06 28 18.87	+13 12 16.8				143
78P	1998 01 06.80823	06 28 18.54	+13 12 17.3				143
78P	1998 01 06.98606	06 28 10.01	+13 12 27.4				118
78P	1998 01 06.99544	06 28 09.58	+13 12 28.0	13.6	T		118
78P	1998 01 07.99402	06 27 24.49	+13 13 29.8	13.2	T		118
78P	1998 01 09.68840	06 26 10.13	+13 15 30.2	14.0	T		403
78P	1998 01 09.69826	06 26 09.62	+13 15 30.3				403
78P	1998 01 10.89291	06 25 19.31	+13 17 02.5				118
78P	1998 01 10.90079	06 25 18.96	+13 17 03.2	13.8	T		118
			86P/Wild 3				
86P	1997 12 30.31490	04 14 37.25	+20 55 55.8				568
86P	1997 12 30.32289	04 14 36.97	+20 55 55.7				568
			87P/Bus				
87P	1997 12 30.27298	01 22 31.59	+07 08 54.1				568
			103P/Hartley 2				
103P	1997 12 11.44118	21 52 38.48	−09 18 23.7				897
103P	1997 12 11.45160	21 52 41.22	−09 18 20.5				897
103P	1997 12 12.65953	21 57 54.26	−09 15 17.6			4	118
103P	1997 12 12.67014	21 57 57.01	−09 15 15.9	12.2	T	4	118
103P	1997 12 15.39612	22 09 56.88	−09 06 45.1				897
103P	1997 12 15.39960	22 09 57.76	−09 06 44.4				897
103P	1997 12 17.44297	22 19 10.06	−08 58 47.9	15.1	N		422
103P	1997 12 17.44364	22 19 10.25	−08 58 47.5	15.2	N		422
103P	1997 12 17.44431	22 19 10.40	−08 58 47.4	15.3	N		422
103P	1997 12 21.45573	22 37 45.33	−08 40 05.7				897
103P	1997 12 21.45975	22 37 46.48	−08 40 04.4				897
103P	1997 12 23.46237	22 47 17.24	−08 28 35.9	14.3	N		422
103P	1997 12 23.46318	22 47 17.46	−08 28 35.8	14.6	N		422
103P	1997 12 23.46401	22 47 17.72	−08 28 35.5	14.8	N		422
103P	1997 12 29.38786	23 16 17.01	−07 47 57.9				900
103P	1997 12 29.39363	23 16 18.69	−07 47 55.5				900
103P	1997 12 31.41091	23 26 25.97	−07 31 27.6				897
103P	1997 12 31.43465	23 26 33.11	−07 31 15.3				897
103P	1998 01 07.79634	00 04 18.27	−06 20 25.0				627
103P	1998 01 07.83360	00 04 29.87	−06 20 00.1				627
103P	1998 01 11.69266	00 24 36.99	−05 36 36.6				046
103P	1998 01 11.69411	00 24 37.41	−05 36 35.4				046
103P	1998 01 11.69565	00 24 37.91	−05 36 34.3				046
			104P/Kowal 2				
104P	1997 10 05.80868	22 07 17.89	+16 03 41.1				469
104P	1997 10 05.83090	22 07 17.16	+16 03 27.3				469
104P	1997 12 20.45998	23 12 47.85	+06 38 02.7	16.7	T		426
104P	1997 12 20.47808	23 12 50.12	+06 38 02.6				426
104P	1997 12 20.49317	23 12 51.92	+06 38 02.6				426
104P	1997 12 21.46347	23 14 55.57	+06 38 14.6	13.1	T		897
104P	1997 12 21.47785	23 14 57.43	+06 38 15.3				897
104P	1997 12 21.48027	23 14 57.73	+06 38 15.9				897
104P	1997 12 24.41753	23 21 20.64	+06 40 22.8	13.2	T		360
104P	1997 12 24.42083	23 21 21.08	+06 40 23.0				360
104P	1997 12 31.44234	23 37 26.55	+06 52 17.6	13.0	T		897
104P	1997 12 31.45432	23 37 28.29	+06 52 19.9				897
104P	1997 12 31.69287	23 38 02.45	+06 52 51.6				046
104P	1997 12 31.69433	23 38 02.63	+06 52 51.8				046
104P	1997 12 31.69557	23 38 02.81	+06 52 52.0				046
104P	1998 01 08.76561	23 57 57.42	+07 17 39.0			3	118
104P	1998 01 08.77720	23 57 59.22	+07 17 42.0	15.5	T	3	118
104P	1998 01 09.75812	00 00 29.79	+07 21 21.0				143
104P	1998 01 09.76204	00 00 30.61	+07 21 25.0				143
104P	1998 01 09.76595	00 00 31.01	+07 21 27.0				143
104P	1998 01 09.77378	00 00 32.14	+07 21 23.6				143
104P	1998 01 09.77770	00 00 32.85	+07 21 27.6				143
104P	1998 01 11.68829	00 05 30.16	+07 29 07.0				046
104P	1998 01 11.68998	00 05 30.43	+07 29 08.0				046
104P	1998 01 11.69127	00 05 30.61	+07 29 08.3				046
			115P/Maury				
115P	1997 12 30.53161	07 18 16.00	+09 15 41.2				568
			128P/Shoemaker-Holt 1				
128P-B	1997 11 26.16872	04 22 28.13	+18 08 16.6				704
128P-B	1997 11 26.19276	04 22 26.96	+18 08 12.8				704
128P-B	1997 11 26.21662	04 22 25.83	+18 08 08.4				704
128P-B	1997 11 29.25737	04 20 19.30	+17 59 18.8	17.3	T		704
128P-B	1997 11 29.30942	04 20 17.06	+17 59 10.9	17.2	T		704
128P-B	1997 11 29.32848	04 20 16.21	+17 59 05.3	18.3	T		704

128P-B	1997 11 29.34710	04 20 15.36	+17 59 01.0	18.0	T	704
128P-B	1997 11 29.36781	04 20 14.34	+17 58 56.8	18.0	T	704
128P-B	1997 12 05.80214	04 15 50.94	+17 41 02.5	14.7	T	504
128P-B	1997 12 05.80615	04 15 50.76	+17 41 01.8			504
128P-B	1997 12 05.81387	04 15 50.42	+17 41 00.8			504
128P-B	1997 12 06.82258	04 15 10.20	+17 38 20.7	14.9	T	504
128P-B	1997 12 06.82691	04 15 10.03	+17 38 19.7			504
128P-B	1997 12 06.83731	04 15 09.60	+17 38 18.1			504
128P-B	1997 12 06.84317	04 15 09.36	+17 38 17.2			504
128P-B	1997 12 06.85370	04 15 08.93	+17 38 15.6			504
128P-B	1997 12 07.81271	04 14 31.14	+17 35 44.8			504
128P-B	1997 12 07.81773	04 14 30.95	+17 35 44.2			504
128P-B	1997 12 07.82109	04 14 30.78	+17 35 43.9	15.3	T	504
128P-B	1997 12 07.83428	04 14 30.27	+17 35 41.4			504
128P-B	1997 12 09.66807	04 13 19.04	+17 31 02.7	15.2	T	402
128P-B	1997 12 09.67015	04 13 18.96	+17 31 02.3			402
128P-B	1997 12 09.67223	04 13 18.87	+17 31 01.9			402
128P-B	1997 12 09.73543	04 13 16.37	+17 30 52.6			352
128P-B	1997 12 09.73819	04 13 16.27	+17 30 51.8			352
128P-B	1997 12 09.74097	04 13 16.10	+17 30 51.7			352
128P-B	1997 12 21.58889	04 06 36.70	+17 05 23.1	15.5	T	360
128P-B	1997 12 21.59184	04 06 36.61	+17 05 22.9			360
128P-B	1997 12 24.60104	04 05 15.86	+17 00 26.4	15.5	T	360
128P-B	1997 12 24.60382	04 05 15.80	+17 00 26.3			360
128P-B	1997 12 25.60985	04 04 51.09	+16 58 58.1	15.4	T	897
128P-B	1997 12 25.64096	04 04 50.23	+16 58 54.2			897
128P-B	1997 12 25.84950	04 04 45.42	+16 58 36.1			118
128P-B	1997 12 25.85377	04 04 45.32	+16 58 35.1			118
128P-B	1997 12 25.86801	04 04 44.96	+16 58 35.0	15.5	T	118
128P-B	1997 12 27.19544	04 04 14.42	+16 56 45.0	19.8	N	691
128P-B	1997 12 27.19963	04 04 14.34	+16 56 44.7	16.0	T	691
128P-B	1997 12 27.20383	04 04 14.23	+16 56 44.3	16.0	T	691
128P-B	1997 12 27.89878	04 03 59.13	+16 55 50.8			118
128P-B	1997 12 27.90360	04 03 59.03	+16 55 50.5			118
128P-B	1997 12 27.90574	04 03 58.99	+16 55 50.3	15.3	T	118
128P-B	1997 12 31.53358	04 02 49.79	+16 51 50.4	15.5	T	403
128P-B	1997 12 31.54890	04 02 49.53	+16 51 48.7			403
128P-B	1997 12 31.62745	04 02 48.11	+16 51 43.9	15.0	T	867
128P-B	1997 12 31.63370	04 02 48.02	+16 51 43.8			867
128P-B	1998 01 10.84421	04 01 06.90	+16 46 30.7	16.2	T	504

129P/Shoemaker-Levy 3

129P	1997 12 04.64744	08 05 37.04	+22 38 24.9			352
129P	1997 12 04.65022	08 05 36.98	+22 38 25.3			352
129P	1997 12 04.65300	08 05 37.02	+22 38 24.9			352
129P	1997 12 09.81624	08 04 32.54	+22 36 32.5			352
129P	1997 12 09.81902	08 04 32.41	+22 36 32.8	17.0	T	352
129P	1997 12 09.82179	08 04 32.42	+22 36 33.1			352
129P	1997 12 24.73003	07 57 47.43	+22 37 33.9	16.7	T	360
129P	1997 12 24.73524	07 57 47.23	+22 37 34.1			360
129P	1997 12 25.64549	07 57 13.04	+22 37 50.4	16.7	T	897
129P	1997 12 25.65267	07 57 12.81	+22 37 51.6			897
129P	1997 12 31.12714	07 53 27.95	+22 39 44.4	16.9	T	118
129P	1997 12 31.13542	07 53 27.54	+22 39 44.7			118
129P	1997 12 31.13934	07 53 27.38	+22 39 44.8			118
129P	1998 01 02.64551	07 51 35.48	+22 40 41.6	16.0	T	867
129P	1998 01 02.65176	07 51 35.18	+22 40 41.7			867
129P	1998 01 06.61733	07 48 28.84	+22 42 10.2			426
129P	1998 01 06.62456	07 48 28.52	+22 42 10.5			426
129P	1998 01 06.62789	07 48 28.34	+22 42 10.6	17.5	T	426
129P	1998 01 07.07169	07 48 06.74	+22 42 13.1			118
129P	1998 01 07.08605	07 48 06.03	+22 42 13.5			118
129P	1998 01 07.11601	07 48 04.53	+22 42 14.0	16.2	T	118
129P	1998 01 07.88174	07 47 27.72	+22 42 28.7			118
129P	1998 01 07.88513	07 47 27.55	+22 42 28.8			118
129P	1998 01 07.89152	07 47 27.22	+22 42 28.7	16.3	T	118
129P	1998 01 08.85992	07 46 39.91	+22 42 46.6			118
129P	1998 01 08.88909	07 46 38.43	+22 42 47.2			118
129P	1998 01 08.90168	07 46 37.79	+22 42 47.3	16.3	T	118
129P	1998 01 10.93078	07 44 57.54	+22 43 20.5			118
129P	1998 01 10.94185	07 44 56.98	+22 43 20.5	16.2	T	118

131P/Mueller 2

131P	1997 12 31.17829	01 25 24.82	+07 04 25.1	23.0	N	691
131P	1997 12 31.18916	01 25 25.34	+07 04 26.7	20.6	T	691
131P	1997 12 31.20120	01 25 25.92	+07 04 28.8	20.5	T	691

132P/Helin-Roman-Alu 2

132P	1997 12 04.58204	02 04 34.33	+03 57 56.3			352
132P	1997 12 04.58482	02 04 34.39	+03 57 57.0			352
132P	1997 12 04.58759	02 04 34.46	+03 57 57.5			352
132P	1997 12 24.54427	02 17 14.86	+05 23 28.6	16.8	T	360
132P	1997 12 24.54965	02 17 15.14	+05 23 30.6			360
132P	1997 12 25.57581	02 18 10.88	+05 29 54.5			897
132P	1997 12 25.58205	02 18 11.17	+05 29 55.3	16.1	T	897
132P	1997 12 26.48223	02 19 01.68	+05 35 46.0			426
132P	1997 12 26.48581	02 19 01.87	+05 35 47.4	17.5	T	426
132P	1997 12 31.21945	02 23 44.30	+06 07 34.6	20.3	N	691
132P	1997 12 31.23014	02 23 44.96	+06 07 39.1	17.7	T	691
132P	1997 12 31.24078	02 23 45.61	+06 07 43.9	17.6	T	691
132P	1997 12 31.54204	02 24 04.86	+06 09 52.6	16.7	T	867
132P	1997 12 31.54863	02 24 05.26	+06 09 55.0			867
132P	1998 01 11.79218	02 37 16.96	+07 35 51.0	17.0	T	046
132P	1998 01 11.79535	02 37 17.18	+07 35 52.5			046
132P	1998 01 11.79743	02 37 17.34	+07 35 53.8			046

134P/Kowal-Vávrová

134P	1997 12 03.78055	10 25 18.27	+05 30 10.0	20.5	T	372
134P	1997 12 29.53007	10 33 29.03	+04 21 02.1	21.1	T	691
134P	1997 12 29.54056	10 33 29.13	+04 21 00.1	21.0	T	691
134P	1997 12 29.55019	10 33 29.23	+04 21 00.9	21.0	T	691
134P	1997 12 31.47875	10 33 40.78	+04 18 19.8	21.0	T	691
134P	1997 12 31.49737	10 33 40.86	+04 18 18.6	20.9	T	691
134P	1997 12 31.51360	10 33 40.92	+04 18 17.2	21.1	T	691
134P	1998 01 02.76756	10 33 49.59	+04 15 40.6	20.1	T	867
134P	1998 01 02.81981	10 33 49.65	+04 15 36.9			867

Note 1: involved with star. 2: bad seeing. 3: measurement difficult. 4: poor configuration of reference stars.

OBSERVATIONS OF MINOR PLANETS

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

010 Caussols

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C. Pollas, Observatoire de la Côte d'Azur, Avenue Copernic, F-06130 Grasse, France [pollas@ocar01.obs-azur.fr]
Observers C. Pollas, D. Albanese
Measurer E. W. Elst
0.9-m Schmidt telescope

1993 SO, 3, 1, 0; 1994 CJ_{20}, 2, 1, 0; 1994 EP_6, 2, 1, 0; 1996 QX_1, 3, 1, 0; 1996 QZ_2, 3, 1, 0; 1996 RO_5, 3, 1, 0; 1996 TT_{54}, 6, 2, 9; 1997 TR_{26}, 3, 1, 0; 1997 WJ_2, 3, 1, 0; 1997 WR_3, 3, 1, 0; 6579 P-L, 3, 1, 0; 4216 T-2, 3, 1, 0; (1475), 3, 1, 0; (1730), 3, 1, 0; (4051), 3, 1, 0; (5941), 3, 1, 0; (7276), 3, 1, 0; (7365), 3, 1, 0; (8050), 3, 1, 0; *[58, 19, 0*, 1993/08/19–1996/08/18]*

033 Tautenburg

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

1977 QD_2, 3, 2, 4; 1991 RS_8, 3, 2, 4; 1991 TP_1, 2, 1, 0; 1996 SJ_4, 2, 1, 0; (55), 2, 1, 0; (830), 2, 1, 0; (1823), 3, 2, 4; (1837), 3, 2, 4; (1964), 2, 1, 0; (2026), 2, 1, 0; (2130), 2, 1, 0; (2490), 3, 2, 4; (3866), 2, 1, 0; (7245), 2, 1, 0; *[33, 14, 0*, 1991/10/31–1995/03/04]*

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, A. Mrkos
Measurers M. Tichý, Z. Vávrová
0.57-m $f/5.2$ reflector + CCD
GSC, USNO-SA1.0

1978 SS_6, 3, 1, 0; 1981 ES_{38}, 3, 1, 0; 1981 SN, 6, 2, 1; 1982 RW_1, 6, 2, 1; 1982 VN, 6, 2, 1; 1984 HR, 7, 2, 1; 1986 TX_3, 6, 2, 1; 1986 VV, 2, 1, 0; 1986 VY, 6, 2, 4; 1986 WO_1, 6, 2, 3; 1988 AA_2, 6, 2, 1; 1991 VH, 3, 1, 0; 1992 AB, 3, 1, 0; 1992 BF, 7, 2, 15; 1993 KH, 3, 1, 0; 1993 QO, 4, 1, 0; 1993 TL_5, 7, 2, 1; 1993 WD, 3, 1, 0; 1995 EN, 6, 2, 1; 1995 EO, 6, 2, 2; 1995 JC, 12, 4, 6; 1995 OO, 3, 1, 0; 1996 DH, 4, 1, 0; 1996 FG_3, 7, 2, 13; 1996 OX, 6, 2, 1; 1996 QZ, 7, 2, 5; 1996 TE, 6, 2, 9; 1996 TJ_9, 6, 2, 1; 1996 TR_9, 6, 2, 1; 1996 VP, 5, 2, 1; 1997 RK_7, 6, 2, 2; 1997 SG_3, 6, 2, 6; 1997 SE_5, 9, 3, 23; 1997 TT_{25}, 4, 1, 0; 1997 UF_9, 3, 1, 0; 1997 US_9, 3, 1, 0; 1997 VM_4, 4, 1, 0; 1997 WS_{22}, 12, 4, 23; 1997 WT_{22}, 9, 3, 13; 1997 WU_{22}, 6, 2, 10; 1997 XR_2, 13, 4, 12; 1997 XS_2, 10, 3, 8; 1997 XE_{10}, 2, 1, 0; 1997 XF_{11}, 5, 1, 0; 1997 YA_1 *, 9, 2, 1; 1997 YH_3, 10, 2, 1; 1997 YM_3, 3, 1, 0; 1997 YX_3, 3, 1, 0; 1997 YR_6 *, 12, 3, 2; 1997 YB_8 *, 11, 2, 1; 1997 YM_9, 9, 2, 1; 1997 YR_{10}, 13, 2, 1; 1997 YL_{11}, 10, 3, 11; 1997 YH_{14}, 9, 2, 1; 1998 AK_8, 13, 2, 1; 1998 AL_8 *, 10, 2, 1; (433), 3, 1, 0; (1620), 3, 1, 0; (1959), 3, 1, 0; (1998), 3, 1, 0; (2122), 3, 1, 0; (3838), 3, 1, 0; *[383, 62, 4*, 1986/11/07–1998/01/12]*

095 Crimean Astrophysical Observatory

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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

1995 BF_1, 1, 1, 0; 1997 SZ_1, 2, 2, 19; *[3, 2, 0*, 1992/03/26–1993/10/12]*

098 Asiago Observatory, Cima Ekar

U. Munari, Osservatorio Astronomico di Padova, Sede di Asiago, I-36012 Asiago (VI), Italy [munari@astras.pd.astro.it]
Observers U. Munari, A. Boattini, M. Tombelli
Measurers A. Boattini, M. Tombelli, G. Forti
0.67-m $f/3.2$ Schmidt

1986 PK_6, 4, 2, 1; 1997 WA_8, 4, 2, 1; 1997 XH_{10} *, 4, 2, 1; 1997 XJ_{10} *, 4, 2, 1; 1997 XL_{10} *, 4, 2, 1; 1997 XN_{10} *, 4, 2, 1; 1997 XO_{10} *, 4, 2, 1; 1997 XY_{10} *, 4, 2, 1; (2736), 4, 2, 1; (4178), 4, 2, 1; (5118), 4, 2, 1; (5227), 4, 2, 1; (5583), 4, 2, 1; *[52, 13, 6*, 1997/12/07–1997/12/08]*

104 San Marcello Pistoiese

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Observers L. Tesi, A. Boattini, M. Tombelli
Measurers A. Boattini, G. Forti, L. Tesi
0.40-m $f/5$ reflector + CCD
GSC

1955 RV, 2, 1, 0; 1982 KK_1, 3, 1, 0; 1985 FE_3, 2, 1, 0; 1985 RM_6, 3, 1, 0; 1990 RW_4, 3, 1, 0; 1991 PN_7, 3, 1, 0; 1991 RD_{12}, 3, 1, 0; 1991 VE, 5, 2, 3; 1992 AB, 3, 1, 0; 1992 BF, 4, 1, 0; 1992 EB_1, 5, 2, 3; 1992 SW_{17}, 3, 1, 0; 1993 QJ_4, 3, 1, 0; 1994 AY_1, 3, 1, 0; 1995 CY, 3, 1, 0; 1996 OE_2, 5, 2, 3; 1996 PG_1, 3, 1, 0; 1996 PD_3, 2, 1, 0; 1997 SL_{17}, 6, 2, 12; 1997 TT_{25}, 3, 1, 0; 1997 UB_1, 10, 3, 22; 1997 UJ_5, 10, 3, 22; 1997 UK_5, 9, 3, 30; 1997 UF_9, 3, 1, 0; 1997 UH_9, 3, 1, 0; 1997 VM_4, 3, 1, 0; 1997 WB_{21}, 3, 1, 0; 1997 WS_{22}, 2, 1, 0; 1997 WT_{22}, 3, 1, 0; 1997 WU_{22}, 2, 1, 0; 1997 WQ_{23}, 4, 1, 0; 1997 XR_2, 5, 2, 3; 1997 XS_2, 3, 1, 0; 1997 XF_{11}, 4, 2, 3; 1997 YR_{10}, 3, 1, 0; 1997 YN_{14} *, 10, 2, 3; (8023), 5, 1, 0; *[149, 37, 1*, 1997/11/20–1998/01/01]*

106 Crni vrh

H. Mikuž, Kersnikova 11, SI-61000 Ljubljana, Slovenia [herman.mikuz@uni-lj.si]
0.36-m $f/6.7$ Schmidt-Cassegrain + CCD
GSC

1997 VW_8, 3, 1, 0; *[3, 1, 0*, 1997/12/28]*

108 Montelupo

M. Tombelli, Via Bozzeto 26, I-50056 Montelupo (Fi), Italy [iau@arcetri.astro.it]
Observers M. Tombelli, A. Boattini, G. Forti
0.30-m $f/5.7$ Schmidt-Cassegrain + CCD
GSC

1991 RD_{12}, 3, 1, 0; 1992 AB, 3, 1, 0; 1996 PG_1, 3, 1, 0; 1996 PJ_5, 2, 1, 0; 1997 XH_{10}, 6, 2, 4; 1997 XK_{10}, 4, 2, 2; 1997 XL_{10}, 10, 3, 8; 1997 XN_{10}, 3, 1, 0; 1997 XO_{10}, 8, 3, 8; 1997 XY_{10}, 4, 1, 0; (7314), 3, 1, 0; *[49, 11, 0*, 1997/12/07–1998/01/03]*

113 Volkssternwarte Drebach, Schönbrunn

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Observers J. Kandler, G. Lehmann, K. Hofmann
Measurers G. Lehmann, J. Kandler
0.18-m $f/9$ refractor + CCD, 0.50-m $f/4$ reflector + CCD
GSC

1987 SQ_{10}, 3, 1, 0; 1988 VS_6, 4, 1, 0; 1990 UF_2, 3, 1, 0; 1991 AV_2, 6, 2, 1; 1991 RP_2, 6, 2, 41; 1991 RV_3, 3, 1, 0; 1991 TT_{13}, 3, 1, 0; 1997 CU_{26}, 3, 1, 0; 1997 UA_4, 9, 3, 41; (823), 3, 1, 0; (8023), 3, 1, 0; (8108), 5, 2, 1; *[51, 12, 0*, 1997/11/19–1997/12/31]*

116 Giesing
H. Beuchat, European Patent Office, Erhardstrasse 27, D-80331 Munich, Germany [100341.75@compuserve.com]
Observer P. Sala
0.20-m reflector + CCD
1997 SG_1, 4, 1, 0; *[4, 1, 0*, 1997/12/16]*

118 Modra
A. Galád, AGO MFF UK, P.O. Box 4, SK-90001 Modra, Slovakia [ago_modra@center.fmph.uniba.sk]
Observers P. Kolény, L. Kornoš, A. Galád, A. Pravda
0.6-m $f/5.5$ reflector + CCD
GSC
1991 WA, 3, 1, 0; 1992 AB, 2, 1, 0; 1992 BF, 7, 3, 11; 1996 FG_3, 2, 1, 0; 1996 PK, 8, 3, 2; 1997 QA, 3, 1, 0; 1997 TT_{25}, 2, 1, 0; 1997 VK_3, 5, 2, 2; 1997 WS_{22}, 5, 2, 5; 1997 WT_{22}, 3, 1, 0; 1997 WU_{22}, 2, 1, 0; 1997 XR_2, 3, 1, 0; 1997 XS_2, 6, 2, 3; 1997 XF_{11}, 8, 3, 11; 1997 YM_3, 4, 2, 3; 1997 YB_{15}, 4, 2, 1; 1998 AW_4 *, 6, 2, 2; 1998 AP_7 *, 5, 2, 2; 1998 AQ_7 *, 5, 2, 2; (1843), 2, 1, 0; (3752), 3, 1, 0; (3800), 3, 1, 0; (3838), 3, 1, 0; (4980), 3, 1, 0; (5324), 2, 1, 0; (5653), 2, 1, 0; (7304), 2, 1, 0; *[103, 27, 3*, 1997/12/25–1998/01/11]*

122 Pises Observatory
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Measurer B. Gaillard
0.40-m $f/4.7$ reflector + CCD
USNO-SA1.0
1997 YH_{16} *, 8, 2, 4; *[8, 1, 1*, 1997/12/29–1998/01/02]*

124 Castres
A. Klotz, 82 rue Maroulet, F-81100 Castres, France [klotz@irsamc1.ups-tlse.fr]
0.20-m $f/6.15$ reflector + CCD
USNO-SA1.0, GSC
1997 UG_3, 2, 1, 0; 1997 VV, 3, 1, 0; *[5, 2, 0*, 1997/11/23–1997/12/02]*

126 Monte Viseggi
P. Pietrapiana, Associazione Astrofili Spezzini, Casella Postale 11, I-19100 La Spezia, Italy [MC7316@mclink.it]
Observers P. Pietrapiana, L. Sannino, A. Bondielli, L. Zannoni
Measurer P. Pietrapiana
0.40-m $f/6$ reflector + CCD
USNO-SA1.0, GSC
1997 YT_8 *, 18, 4, 9; 1998 AY_4 *, 6, 2, 2; 1998 AZ_4 *, 4, 2, 2; *[28, 3, 3*, 1997/12/28–1998/01/07]*

127 Bornheim
N. Ehring, Stationenweg 54, D-53332 Bornheim, Germany [norbert.ehring@t-online.de]
0.19-m $f/4$ FFC + CCD
GSC
1976 SC, 5, 2, 16; 1982 SO_4, 6, 2, 3; 1986 QQ, 12, 4, 7; 1992 AB, 5, 2, 3; 1992 PY_2, 5, 2, 16; 1994 CF_1, 5, 2, 16; 1998 AH *, 17, 4, 7; *[55, 7, 1*, 1997/12/16–1998/01/08]*

130 Lumezzane
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Observers W. Marinello, G. Pizzetti
Measurer G. Pizzetti, S. Foglia
0.40-m $f/6.5$ reflector + CCD
GSC
(676), 1, 1, 0; (3824), 5, 1, 0; *[6, 2, 0*, 1997/10/25–1998/01/06]*

132 Bedoin
P. Antonini, 47 rue Guillaume Puy, F-84000 Avignon, France [Pierre.Antonini@wanadoo.fr]
0.16-m $f/3.3$ reflector + CCD
GSC
1981 SN, 3, 1, 0; 1993 OB, 2, 1, 0; 1997 VV, 3, 1, 0; 1997 XQ_2, 8, 3, 6; 1997 XT_5, 2, 1, 0; 1997 XU_5, 2, 1, 0; 1997 YF_5 *, 7, 3, 6; 1997 YG_5 *, 6, 2, 3; (2122), 3, 1, 0; *[36, 9, 2*, 1997/12/20–1997/12/26]*

133 Les Tardieux
M. Boeuf, Les Tardieux, St Julien, F-13500 Martigues, France [Michel.Boeuf@wanadoo.fr]
0.20-m $f/3.5$ reflector + CCD
GSC
(1980), 4, 2, 4; *[4, 1, 0*, 1997/12/23–1997/12/27]*

143 Gnosca
S. Sposetti, CH-6525 Gnosca, Switzerland [spo@dial.eunet.ch]
0.20-m $f/6.3$ reflector + CCD
GSC
(1468), 2, 1, 0; (1843), 3, 1, 0; (3800), 3, 1, 0; (4663), 3, 1, 0; (5184), 3, 1, 0; (7304), 3, 1, 0; *[17, 6, 0*, 1997/12/23–1997/12/29]*

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
1981 SN, 6, 2, 1; 1982 UF_7, 2, 1, 0; 1997 UB_{25}, 3, 1, 0; 1997 XY_{11} *, 6, 2, 1; 1998 AA, 17, 6, 19; *[34, 5, 1*, 1997/12/02–1997/12/21]*

327 Peking Observatory, Xinglong Station
J. Zhu, Peking Astronomical Observatory, Chinese Academy of Sciences, Zhongguancun, Peking 100080, Peoples Republic of China [jinzhu@sun.ihep.ac.cn]
Observers B. Zhao, X. Zhou, L. C. Deng, J. Zhu, X. M. Teng, X. Y. Li, Y. J. Chen, Z. Y. Zheng, Z. J. Jiang, H. T. Zhang, R. Chen, Z. Zheng
Measurers X. M. Teng, Y. J. Chen, X. Y. Li, J. Zhu
0.60-m Schmidt + CCD
1967 JP, 3, 1, 0; 1976 SQ_7, 3, 1, 0; 1979 QT_8, 3, 1, 0; 1981 EW_{38}, 6, 2, 22; 1981 EG_{40}, 4, 1, 0; 1981 ET_{42}, 6, 2, 3; 1981 QU_3, 6, 2, 1; 1982 FP_3, 3, 1, 0; 1982 TL_2, 3, 1, 0; 1982 UR_6, 3, 1, 0; 1983 XC, 3, 1, 0; 1984 SU_3, 3, 1, 0; 1985 RS_1, 3, 1, 0; 1987 DW_6, 6, 2, 2; 1988 CQ_7, 3, 1, 0; 1989 JF, 6, 2, 6; 1989 TC, 3, 1, 0; 1990 OH_1, 3, 1, 0; 1990 QJ_2, 4, 1, 0; 1990 SM_7, 3, 1, 0; 1990 SN_{28}, 3, 1, 0; 1990 TE_9, 10, 3, 8; 1990 VR_8, 3, 1, 0; 1991 GY_3, 10, 2, 3; 1991 PO_2, 3, 1, 0; 1991 PN_7, 6, 2, 3; 1991 RV_3, 3, 1, 0; 1991 RT_{17}, 3, 1, 0; 1992 BO, 6, 2, 5; 1992 DQ_{10}, 6, 2, 5; 1992 EA_7, 3, 1, 0; 1992 HY_6, 3, 1, 0; 1992 YW_3, 3, 1, 0; 1993 BC_5, 3, 1, 0; 1993 OP, 3, 1, 0; 1993 QO, 3, 1, 0; 1993 RD_2, 7, 2, 1; 1993 TU, 3, 1, 0; 1993 TL_{13}, 3, 1, 0; 1993 UD_3, 3, 1, 0; 1993 WQ, 3, 1, 0; 1993 XP, 3, 1, 0; 1994 AC, 3, 1, 0; 1994 AZ_2, 3, 1, 0; 1994 PZ, 3, 1, 0; 1994 VC, 3, 1, 0; 1994 WU_1, 3, 1, 0; 1994 YH_1, 12, 4, 10; 1995 AT_2, 6, 2, 31; 1995 BQ_{15}, 3, 1, 0; 1995 DF, 13, 4, 28; 1995 EF_1, 6, 2, 7; 1995 FX_{14}, 13, 4, 9; 1996 PN_5, 4, 1, 0; 1996 RD_1, 6, 2, 6; 1996 RE_4, 6, 2, 8; 1996 SJ_4, 11, 4, 7; 1996 SS_6, 15, 5, 9; 1996 TV_1, 5, 2, 9; 1996 TB_6, 6, 2, 14; 1996 TU_{13}, 10, 3, 2; 1996 UH_1, 4, 1, 0; 1996 UF_4, 9, 3, 34; 1996 VD_4, 9, 3, 7; 1996 XF_6, 4, 1, 0; 1996 YU_1, 3, 1, 0; 1996 YB_2, 13, 4, 11; 1996 YD_2, 3, 1, 0; 1996 YH_3, 12, 4, 13; 1997 NZ, 3, 1, 0; 1997 ST, 3, 1, 0; 1997 SW_{33}, 6, 2, 2; 1997 SB_{34}, 6, 2, 5; 1997 TS_{16}, 4, 1, 0; 1997 TQ_{25}, 4, 1, 0; 1997 TT_{25}, 3, 1,

0; 1997 TG_{26}, 13, 4, 7; 1997 TR_{26}, 3, 1, 0; 1997 UO_1, 3, 1, 0; 1997 UJ_3, 6, 2, 5; 1997 UW_3, 3, 1, 0; 1997 UA_7, 3, 1, 0; 1997 UF_7, 10, 3, 26; 1997 UO_8, 9, 3, 3; 1997 US_{17}, 3, 1, 0; 1997 UK_{21}, 3, 1, 0; 1997 UV_{21}, 7, 3, 13; 1997 UC_{22}, 10, 3, 19; 1997 UL_{24}, 10, 3, 10; 1997 VZ, 6, 2, 6; 1997 VR_1, 3, 1, 0; 1997 VT_2, 6, 2, 9; 1997 VB_3, 3, 1, 0; 1997 VV_3, 6, 2, 15; 1997 VA_4, 6, 2, 7; 1997 VC_7, 9, 3, 18; 1997 VD_7, 6, 2, 17; 1997 VF_7, 3, 1, 0; 1997 VG_7, 3, 1, 0; 1997 VS_7, 3, 1, 0; 1997 VV_7, 3, 1, 0; 1997 VA_8, 3, 1, 0; 1997 VE_8, 3, 1, 0; 1997 VK_8, 3, 1, 0; 1997 VL_8, 3, 1, 0; 1997 VU_8, 4, 1, 0; 1997 WG_1, 9, 3, 14; 1997 WH_1, 6, 2, 6; 1997 WJ_1, 6, 2, 7; 1997 WK_1, 9, 3, 14; 1997 WL_1, 3, 1, 0; 1997 WO_3, 6, 2, 15; 1997 WP_3, 6, 2, 14; 1997 WR_3, 6, 2, 3; 1997 WX_{21}, 6, 2, 12; 1997 WZ_{21}, 6, 2, 69; 1997 WA_{22}, 18, 6, 29; 1997 WB_{22}, 16, 5, 25; 1997 WC_{22}, 3, 1, 0; 1997 WF_{22}, 12, 4, 56; 1997 WH_{22}, 7, 2, 16; 1997 WT_{23}, 3, 1, 0; 1997 WW_{29} *, 6, 2, 10; 1997 WY_{29} *, 9, 3, 17; 1997 WD_{30} *, 12, 4, 62; 1997 WE_{30} *, 6, 2, 7; 1997 WF_{30} *, 6, 2, 6; 1997 WG_{30} *, 6, 2, 6; 1997 WH_{30} *, 6, 2, 6; 1997 WJ_{30} *, 6, 2, 1; 1997 WM_{33}, 6, 2, 17; 1997 WT_{33}, 3, 1, 0; 1997 WY_{33}, 3, 1, 0; 1997 WS_{35}, 3, 1, 0; 1997 WT_{35}, 3, 1, 0; 1997 WW_{35}, 3, 1, 0; 1997 WY_{35}, 3, 1, 0; 1997 WA_{36}, 3, 1, 0; 1997 WL_{36}, 3, 1, 0; 1997 WT_{37}, 3, 1, 0; 1997 WJ_{38}, 3, 1, 0; 1997 WN_{47}, 9, 3, 22; 1997 XF_1, 9, 3, 8; 1997 XS_5, 6, 2, 5; 1997 XY_6, 6, 2, 35; 1997 XB_7, 6, 2, 46; 1997 XR_7, 3, 1, 0; 1997 XK_9, 3, 1, 0; 1997 XO_9 *, 6, 2, 4; 1997 XP_9 *, 9, 3, 13; 1997 XQ_9 *, 15, 5, 55; 1997 XR_9 *, 9, 3, 11; 1997 XS_9 *, 9, 3, 4; 1997 XT_9 *, 9, 3, 13; 1997 XU_9 *, 9, 3, 13; 1997 XV_9 *, 12, 4, 33; 1997 XW_9 *, 6, 2, 4; 1997 XP_{10} *, 10, 3, 18; 1997 XQ_{10} *, 6, 2, 11; 1997 XR_{10} *, 12, 4, 15; 1997 XS_{10} *, 18, 6, 71; 1997 XT_{10} *, 13, 4, 9; 1997 XU_{10} *, 7, 2, 2; 1997 XV_{10} *, 13, 4, 6; 1997 XW_{10} *, 9, 3, 8; 1997 XX_{10} *, 12, 4, 33; 1997 XE_{11} *, 6, 2, 1; 1997 XG_{11} *, 6, 2, 3; 1997 XH_{11} *, 12, 4, 22; 1997 XJ_{11} *, 9, 3, 11; 1997 XK_{11} *, 19, 6, 37; 1997 XL_{11} *, 15, 5, 43; 1997 XM_{11} *, 13, 4, 26; 1997 XN_{11} *, 10, 3, 9; 1997 XO_{11} *, 6, 2, 8; 1997 XP_{11} *, 6, 2, 8; 1997 XT_{11} *, 20, 6, 25; 1997 XW_{11} *, 8, 2, 7; 1997 XZ_{11} *, 6, 2, 9; 1997 YB_1 *, 5, 2, 1; 1997 YC_1 *, 15, 4, 17; 1997 YD_1 *, 10, 2, 1; 1997 YE_1 *, 10, 3, 2; 1997 YH_1 *, 9, 3, 8; 1997 YJ_1 *, 6, 2, 5; 1997 YK_1 *, 9, 3, 12; 1997 YL_1 *, 8, 2, 4; 1997 YM_1 *, 8, 2, 4; 1997 YN_1 *, 15, 5, 17; 1997 YO_1 *, 9, 3, 16; 1997 YP_1 *, 7, 2, 1; 1997 YQ_1 *, 12, 4, 10; 1997 YR_1 *, 9, 3, 9; 1997 YS_1 *, 9, 3, 4; 1997 YT_1 *, 9, 3, 8; 1997 YU_1 *, 10, 3, 8; 1997 YV_1 *, 6, 2, 6; 1997 YW_1 *, 13, 4, 14; 1997 YX_1 *, 13, 4, 14; 1997 YH_3 *, 9, 3, 14; 1997 YJ_3 *, 9, 3, 8; 1997 YK_3 *, 9, 3, 12; 1997 YL_3 *, 10, 3, 9; 1997 YM_3 *, 17, 5, 17; 1997 YN_3 *, 9, 3, 5; 1997 YP_3 *, 9, 3, 8; 1997 YQ_3 *, 6, 2, 3; 1997 YR_3 *, 12, 4, 13; 1997 YS_3 *, 6, 2, 3; 1997 YT_3 *, 13, 4, 31; 1997 YU_3 *, 7, 2, 2; 1997 YV_3 *, 10, 2, 2; 1997 YW_3 *, 10, 3, 11; 1997 YX_3 *, 9, 3, 13; 1997 YY_3 *, 10, 3, 13; 1997 YZ_3 *, 6, 2, 2; 1997 YA_4 *, 9, 3, 13; 1997 YB_4 *, 9, 3, 13; 1997 YC_4 *, 13, 4, 11; 1997 YD_4 *, 9, 3, 6; 1997 YE_4 *, 9, 3, 6; 1997 YF_4 *, 9, 3, 12; 1997 YG_4 *, 11, 3, 6; 1997 YH_4 *, 11, 3, 4; 1997 YJ_4 *, 8, 2, 1; 1997 YK_4 *, 9, 3, 12; 1997 YL_4 *, 9, 3, 10; 1997 YS_4 *, 8, 3, 9; 1997 YC_5 *, 6, 2, 3; 1997 YD_5 *, 14, 4, 12; 1997 YE_5 *, 6, 2, 2; 1997 YA_8, 6, 2, 7; 1997 YE_8, 3, 1, 0; 1997 YS_{10} *, 9, 3, 13; 1997 YT_{10} *, 6, 2, 7; 1997 YU_{10} *, 9, 3, 6; 1997 YV_{10} *, 7, 2, 5; 1997 YW_{10} *, 12, 4, 14; 1997 YX_{10} *, 6, 2, 2; 1997 YH_{11} *, 7, 2, 3; 1997 YJ_{11} *, 9, 3, 13; 1997 YN_{14}, 12, 4, 11; 1997 YO_{14} *, 6, 2, 7; 1997 YQ_{16} *, 10, 3, 14; 1997 YR_{16} *, 6, 2, 8; 1997 YS_{16} *, 6, 2, 8; 1997 YT_{16} *, 6, 2, 5; 1997 YU_{16} *, 12, 4, 9; 1997 YV_{16} *, 12, 4, 7; 1997 YW_{16} *, 15, 5, 9; 1997 YX_{16} *, 15, 5, 9; 1997 YY_{16} *, 6, 2, 4; 1997 YE_{18} *, 6, 2, 11; 1997 YF_{18} *, 6, 2, 8; 1997 YG_{18} *, 6, 2, 6; 1997 YH_{18} *, 18, 5, 9; 1997 YJ_{18} *, 12, 4, 14; 1997 YK_{18} *, 6, 2, 13; 1997 YL_{18} *, 9, 3, 14; 1997 YM_{18} *, 6, 2, 11; 1997 YN_{18} *, 7, 2, 11; 1997 YO_{18} *, 12, 3, 14; 1997 YP_{18} *, 6, 2, 6; 1997 YP_{19} *, 9, 3, 9; 1997 YQ_{19} *, 6, 2, 3; 1998 AG *, 6, 2, 1; 1998 AB_3 *, 6, 2, 2; 1998 AC_3 *, 9, 3, 4; 1998 AD_3 *, 6, 2, 2; 1998 AE_3 *, 9, 3, 3; 1998 AF_3 *, 6, 2, 1; 1998 AG_3 *, 9, 2, 1; 1998 AH_3 *, 6, 2, 1; 1998 AJ_3 *, 6, 2, 2; 1998 AL_6 *, 6, 2, 3; 1998 AM_6 *, 6, 2, 3; 1998 AN_6 *, 9, 3, 3; 1998 AO_6 *, 10, 2, 3; 1998 AP_6 *, 7, 2, 3; 1998 AQ_6 *, 7, 2, 3; 1998 AR_6 *, 6, 2, 3; 1998 AT_6 *, 6, 2, 3; 1998 AU_6 *, 6, 2, 3; 1998 AV_6 *, 6, 2, 2; 1998 AW_6 *, 6, 2, 2; 1998 AX_6 *, 6, 2, 2; 1998 AY_6 *, 6, 2, 2; 1998 AZ_6 *, 6, 2, 2; 1998 AA_7 *, 6, 2, 2; 1998 AB_7 *, 6, 2, 2; 1998 AC_7 *, 6, 2, 2; 1998 AD_7 *, 7, 2, 2; 1998 AE_7 *, 7, 2, 2; 1998 AF_7 *, 7, 2, 2; 1998 AG_7 *, 7, 2, 2; 1998 AH_7 *, 6, 2, 2; 1998 AJ_7 *, 6, 2, 2; 2537 P-L, 16, 5, 31; 2209 T-1, 3, 1, 0; 5058 T-2, 3, 1, 0; (121), 3, 1, 0; (296), 3, 1, 0; (394), 4, 1, 0; (506), 3, 1, 0; (685), 3, 1, 0; (731), 3, 1, 0; (835), 3, 1, 0; (845), 4, 1, 0; (975), 8, 2, 7; (1022), 3, 1, 0; (1071), 4, 1, 0; (1091), 3, 1, 0; (1215), 3, 1, 0; (1230), 4, 1, 0; (1317), 7, 2, 1; (1348), 12, 4, 13; (1494), 6, 2, 27; (1942), 3, 1, 0; (2042), 3, 1, 0; (2221), 6, 2, 4; (2360), 6, 2, 9; (2369), 3, 1, 0; (2433), 4, 1, 0; (2470), 8, 2, 7; (2501), 3, 1, 0; (2574), 3, 1, 0; (2635), 3, 1, 0; (2647), 3, 1, 0; (2678), 8, 2, 4; (2705), 3, 1, 0; (2754), 3, 1, 0; (2900), 3, 1, 0; (2914), 7, 2, 6; (2919), 3, 1, 0; (3130), 6, 2, 7; (3142), 3, 1, 0; (3219), 13, 4, 11; (3233), 3, 1, 0; (3282), 7, 2, 12; (3516), 3, 1, 0; (3601), 3, 1, 0; (3673), 11, 3, 10; (3723), 3, 1, 0; (3763), 13, 4, 4; (3970), 6, 2, 11; (3987), 3, 1, 0; (4007), 3, 1, 0; (4256), 3, 1, 0; (4365), 6, 2, 7; (4440), 3, 1, 0; (4455), 4, 1, 0; (4477), 3, 1, 0; (4496), 3, 1, 0; (4605), 19, 6, 9; (4810), 18, 4, 26; (4899), 3, 1, 0; (4958), 3, 1, 0; (5094), 10, 3, 3; (5204), 4, 1, 0; (5338), 3, 1, 0; (5398), 3, 1, 0; (5578), 3, 1, 0; (5665), 4, 1, 0; (5708), 3, 1, 0; (5832), 6, 2, 6; (5931), 3, 1, 0; (6025), 9, 3, 5; (6291), 3, 1, 0; (6357), 3, 1, 0; (6367), 6, 2, 13; (6488), 3, 1, 0; (7037), 4, 1, 0; (7052), 3, 1, 0; (7146), 3, 1, 0; (7233), 3, 1, 0; (7427), 12, 4, 29; (7753), 3, 1, 0; (7921), 3, 1, 0; (7943), 4, 1, 0; (7992), 3, 1, 0; (8041), 3, 1, 0; (8108), 3, 1, 0; (8117), 3, 1, 0; *[2538, 383, 154*, 1996/11/27–1998/01/08]*

355 Hadano

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[asami@st.rim.or.jp]

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

1982 SO_4, 3, 1, 0; 1990 UL_2, 3, 1, 0; 1997 UO_1, 11, 4, 20; 1997 VH, 3, 1, 0; 1997 XR_2, 3, 1, 0; 1997 YO_2, 3, 1, 0; (433), 3, 1, 0; *[29, 7, 0*, 1997/12/10–1998/01/10]*

358 Nanyou

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

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

1997 SU, 2, 1, 0; 1997 TR_{26}, 2, 1, 0; 1997 UG_{15}, 2, 1, 0; 1997 UN_{24}, 8, 3, 5; 1997 VR_1, 2, 1, 0; 1997 VA_9 *, 7, 3, 23; 1997 WC_2, 4, 2, 6; 1997 WT_{23}, 6, 2, 6; 1997 XY_6, 6, 3, 17; 1997 YL, 4, 2, 1; 1997 YV, 4, 2, 2; 1997 YX, 7, 3, 2; 1997 YP_2, 7, 3, 2; 1997 YD_8 *, 4, 2, 1; *[65, 14, 2*, 1997/11/07–1997/12/26]*

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0.60-m f/6.0 Ritchey-Chrétien + CCD
GSC, USNO-SA1.0

1991 VE, 3, 1, 0; 1991 WA, 3, 1, 0; 1993 WD, 3, 1, 0; 1993 XP, 3, 1, 0; 1994 AH_2, 3, 1, 0; 1995 BU_4, 4, 2, 6; 1995 DY_1, 4, 2, 3; 1996 FG_3, 3, 1, 0; 1996 NW, 2, 1, 0; 1996 OL, 4, 2, 10; 1996 UC, 5, 2, 3; 1997 CU_{26}, 2, 1, 0; 1997 SE_5, 3, 1, 0; 1997 TD, 3, 1, 0; 1997 TT_{25}, 3, 1, 0; 1997 UF_9, 3, 1, 0; 1997 US_9, 3, 1, 0; 1997 WS_{22}, 2, 1, 0; 1997 WT_{22}, 3, 1, 0; 1997 WU_{22}, 3, 1, 0; 1997 XO_2, 8, 3, 16; 1997 XR_2, 3, 1, 0; 1997 XF_{11}, 6, 2, 13; 1997 YO_2, 6, 2, 3; 1997 YD_{18} *, 6, 2, 10; (2675), 3, 1, 0; (4123), 3, 1, 0; (4786), 2, 1, 0; *[99, 28, 1*, 1997/12/21–1998/01/06]*

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

1981 EZ_{18}, 7, 3, 3; 1981 JE_2, 5, 3, 6; 1986 QA_3, 4, 2, 2; 1991 PZ_{11}, 5, 2, 5; 1991 PT_{12}, 4, 2, 2; 1991 VD_2, 5, 2, 3; 1997 UF_{22}, 2, 1, 0; 1997 UG_{22}, 2, 1, 0; 1997 UH_{22}, 4, 2, 27; 1997 UJ_{22}, 2, 1, 0; 1997 UL_{22}, 2, 1, 0; 1997 VW_6, 2, 1, 0; 1997 VX_6, 2, 1, 0; 1997 VY_6, 4, 2, 1; 1997 WZ_1, 7, 3, 26; 1997 WA_2, 6, 3, 26; 1997 WW_7, 4, 2, 6; 1997 WZ_7, 4, 2, 10; 1997 XZ_1, 2, 1, 0; 1997 XB_2, 2, 1, 0; 1997 XE_2, 5, 2, 10; 1997 XF_2, 4, 2, 6; 1997 XG_2, 2, 1, 0; 1997 XH_2, 8, 4, 10; 1997 XJ_2, 4, 2, 3; 1997 XX_9 *, 6, 4, 21; 1997 YQ_2 *, 6, 3, 6; 1997 YR_2 *, 9, 4, 10; 1997 YS_2 *, 6, 3, 6; 1997 YT_2 *, 9, 4, 10; 1997 YU_2 *, 9, 4, 10; 1997 YV_2 *, 7, 3, 6; 1997 YW_2 *, 7, 3, 6; 1997 YP_4 *, 9, 4, 12; 1997 YQ_4 *, 10, 4, 12; 1997 YR_4 *, 10, 5, 13; 1997 YS_6 *, 6, 3, 6; 1997 YU_6 *, 7, 3, 6; 1997 YV_6 *, 6, 3, 6; 1997 YW_6 *, 8, 3, 6; 1997 YX_6 *, 6, 3, 6; 1997 YS_8 *, 4, 2, 3; 1997 YA_{17} *, 8, 3, 6; 1997 YB_{17} *, 5, 2, 5; 1997 YC_{17} *, 8, 3, 6; 1997 YD_{17} *, 8, 3, 6; 1998 AK_3 *, 9, 2, 1; 1998 AL_3 *, 4, 2, 1; (1913), 3, 1, 0; (2096), 7, 3, 6; (2320), 5, 2, 1; (4592), 2, 1, 0; (4641), 2, 1, 0; (4755), 5, 2, 3; (5532), 3, 1, 0; (5897), 5, 2, 1; (7168), 9, 3, 6; (8076), 2, 1, 0; *[308, 58, 23*, 1997/11/06–1998/01/06]*

372 Geisei

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0.60-m f/3.5 reflector
GSC

1997 VU_3, 4, 3, 3; 1997 WB_{30} *, 5, 3, 5; 1997 XA_{11} *, 3, 2, 1; 1997 XB_{11} *, 3, 2, 1; 1997 XC_{11} *, 3, 2, 1; 4294 T-2, 6, 5, 9; (1422), 2, 1, 0; (6570), 5, 3, 6; (7136), 6, 3, 6; *[37, 9, 4*, 1997/11/09–1997/12/10]*

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0.31-m $f/4.7$ reflector + CCD
GSC, USNO-A1.0

1993 YR, 2, 1, 0; 1994 AT_1, 2, 1, 0; 1995 FZ, 4, 2, 26; 1996 TF_7, 5, 2, 26; 1997 RZ_7, 3, 1, 0; 1997 SB_{25}, 2, 1, 0; 1997 SF_{25}, 2, 1, 0; 1997 SG_{25}, 2, 1, 0; 1997 SK_{25}, 2, 1, 0; 1997 TD_{17}, 2, 1, 0; 1997 TF_{17}, 2, 1, 0; 1997 UC, 3, 1, 0; 1997 UE_1, 2, 1, 0; 1997 UF_1, 2, 1, 0; 1997 UG_1, 4, 2, 28; 1997 UU_2, 4, 2, 28; 1997 UB_{11}, 5, 2, 28; 1997 UC_{11}, 4, 2, 28; 1997 UD_{11}, 2, 1, 0; 1997 UE_{11}, 2, 1, 0; 1997 UZ_{14}, 2, 1, 0; 1997 UA_{15}, 2, 1, 0; 1997 UB_{15}, 2, 1, 0; 1997 VF_1, 2, 1, 0; 1997 VH_1, 2, 1, 0; 1997 VJ_1, 2, 1, 0; 1997 VL_1, 4, 2, 28; 1997 VW_4, 2, 1, 0; 1997 VY_4, 2, 1, 0; 1997 VQ_6, 2, 1, 0; 1997 WK_7, 2, 1, 0; 1997 WK_{13}, 1, 1, 0; 1997 WL_{13}, 2, 1, 0; 1997 WF_{21}, 5, 3, 3; 1997 XA, 2, 1, 0; 1997 XU_1, 2, 1, 0; 1997 XV_1, 2, 1, 0; 1997 XX_1, 2, 1, 0; 1997 XJ_5, 2, 1, 0; 1997 XL_9, 3, 2, 1; 1997 XQ_{11}, 2, 1, 0; 1997 XR_{11}, 1, 1, 0; 1997 XS_{11}, 4, 2, 9; 1997 YD_1, 2, 1, 0; 1997 YO_4, 2, 1, 0; 1997 YY_8, 3, 1, 0; 1997 YG_{16} *, 3, 2, 2; 1997 YJ_{16}, 2, 1, 0; 1997 YL_{16}, 2, 1, 0; 1997 YN_{16}, 2, 1, 0; 1998 AJ, 3, 1, 0; (3525), 2, 1, 0; (4785), 2, 1, 0; (5014), 2, 1, 0; *[133, 54, 1*, 1997/12/05–1998/01/09]*

388 National Observatory, Mitaka
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0.50-m $f/12$ reflector + CCD
GSC corrected to PPM system

(1437), 107, 3, 6; *[107, 1, 0*, 1997/11/18–1997/11/24]*

399 Kushiro
H. Kaneda, Taiyo MS 2-H, 2-15, Kawazoe 8 Jo 2 Chime, Minami-Ku, Sapporo, 005 Japan
Observer S. Ueda
Measurer H. Kaneda
0.25-m $f/3.4$ hyperboloid astrocamera
GSC

1982 VP_3, 2, 1, 0; 1991 FX_2, 2, 1, 0; 1991 RR_1, 4, 2, 9; 1992 WL, 8, 4, 10; 1994 AC_{17}, 4, 2, 1; 1995 AW_2, 6, 3, 11; 1995 EB_1, 2, 1, 0; 1995 FG_1, 2, 1, 0; 1997 UB_{25}, 6, 3, 23; 1997 VN_1, 4, 2, 3; 1997 VP_1, 2, 1, 0; 1997 VQ_1, 2, 1, 0; 1997 VD_4, 4, 2, 3; 1997 VF_5, 4, 2, 3; 1997 WZ_{29} *, 4, 2, 9; 1997 WA_{30} *, 5, 3, 11; 1997 YZ_{16} *, 5, 3, 11; (8097), 4, 2, 3; *[70, 18, 3*, 1997/10/11–1998/01/02]*

400 Kitami
K. Endate, 3-17, Hinode 1 Chome, Mihoro Cho, Abashiri-Gun, Hokkaido, 092 Japan
Observer K. Endate
0.25-m $f/3.4$ hyperboloid astrocamera + CCD
GSC

1991 VB_9, 2, 1, 0; 1997 UQ_8, 2, 1, 0; 1997 US_8, 4, 2, 3; 1997 UT_8, 4, 2, 3; 1997 UV_8, 2, 1, 0; 1997 UW_8, 4, 2, 3; 1997 VQ, 2, 1, 0; 1997 VR, 2, 1, 0; 1997 VE_2, 2, 1, 0; 1997 VF_2, 3, 2, 3; 1997 VU_6, 2, 1, 0; 1997 WD_2, 7, 2, 17; *[36, 12, 0*, 1997/11/25–1997/12/23]*

402 Dynic Astronomical Observatory
A. Sugie, Dynic Astronomical Observatory, Taga 283-1, Taga, Inukami-Gun, Shiga-Ken 522-03, Japan [hhf00201@niftyserve.or.jp]
0.60-m $f/5.0$ reflector + CCD
GSC

1991 VE, 3, 1, 0; 1997 QN, 5, 2, 11; 1997 TA_{18}, 6, 2, 16; 1997 WM_{16}, 6, 2, 11; 1997 WC_{21}, 6, 2, 11; 1997 WS_{22}, 3, 1, 0; 1997 WT_{22}, 3, 1, 0; 1997 WU_{22}, 6, 2, 16; 1997 WQ_{23}, 3, 1, 0; 1997 XH_1, 3, 1, 0; 1997 XJ_1, 5, 2, 16; 1997 XR_2, 6, 2, 16; 1997 XS_2, 6, 2, 16; 1997 XB_{10} *, 17, 5, 20; 1997 XE_{10}, 8, 1, 0; 1997 XZ_{10} *, 12, 3, 16; 1997 XF_{11}, 13, 3, 16; 1997 YO_2, 3, 1, 0; 1997 YN_4 *, 8, 2, 7; 1997 YZ_4, 3, 1, 0; 1997 YT_6 *, 3, 1, 0; (1443), 3, 1, 0; *[131, 22, 4*, 1997/12/05–1997/12/25]*

403 Kani
T. Furuta, Mitsuike 17-2, Kakiya-Cho, Tokai, Aichi-Ken 477, Japan
Observer Y. Mizuno
Measurer T. Furuta
0.20-m $f/4.0$ hyperboloid astrocamera
GSC

1989 SG, 2, 1, 0; 1994 LR, 2, 1, 0; *[4, 2, 0*, 1997/12/27]*

408 Nyukasa
M. Hirasawa, 6-62, Minami Koshigaya 1 Chome, Koshigaya, Saitama-Kem, 343 Japan
Observers M. Hirasawa, S. Suzuki
Measurer K. Watanabe
0.30-m $f/2.7$ Schmidt camera
GSC

1997 UX_{21}, 3, 1, 0; 1997 UT_{22}, 3, 1, 0; 1997 UK_{24}, 2, 1, 0; *[8, 3, 0*, 1997/11/09]*

411 Oizumi
T. Kobayashi, 8-6, Nishi Koizumi 1 Chome, Oizumi, Ora-Gun, Gunma-Ken, 370-05 Japan [kobataka@oaa.iijnet.or.jp]
0.25-m $f/4.4$ reflector + CCD, 0.41-m $f/4.3$ reflector + CCD
GSC

1971 US, 4, 2, 1; 1979 MW_1, 2, 1, 0; 1981 RQ_1, 2, 1, 0; 1984 HR, 2, 1, 0; 1986 TH, 2, 1, 0; 1986 TX_3, 4, 2, 3; 1990 QK_8, 4, 2, 2; 1991 GV_8, 4, 2, 2; 1991 RE_{20}, 4, 2, 1; 1992 RV_1, 2, 1, 0; 1992 WT_1, 2, 1, 0; 1993 SQ_{10}, 2, 1, 0; 1993 VX, 2, 1, 0; 1993 VS_1, 2, 1, 0; 1995 CO_1, 2, 1, 0; 1996 NZ_3, 4, 2, 2; 1996 PL_2, 2, 1, 0; 1996 QQ_1, 2, 1, 0; 1996 TR_1, 4, 2, 1; 1997 AJ_1, 2, 1, 0; 1997 CN, 7, 3, 18; 1997 UU_3, 4, 2, 11; 1997 VZ_2, 2, 1, 0; 1997 WC, 2, 1, 0; 1997 WD, 1, 1, 0; 1997 WE, 2, 1, 0; 1997 WG, 2, 1, 0; 1997 WJ, 2, 1, 0; 1997 WK, 2, 1, 0; 1997 WL, 2, 1, 0; 1997 WM, 2, 1, 0; 1997 WN, 2, 1, 0; 1997 WO, 2, 1, 0; 1997 WQ, 2, 1, 0; 1997 WR, 2, 1, 0; 1997 WT_1, 2, 1, 0; 1997 WV_1, 2, 1, 0; 1997 WE_2, 2, 1, 0; 1997 WF_2, 2, 1, 0; 1997 WG_2, 2, 1, 0; 1997 WJ_2, 2, 1, 0; 1997 WK_2, 2, 1, 0; 1997 WO_2, 2, 1, 0; 1997 WR_2, 2, 1, 0; 1997 WT_2, 2, 1, 0; 1997 WU_2, 2, 1, 0; 1997 WX_2, 2, 1, 0; 1997 WZ_2, 2, 1, 0; 1997 WA_3, 2, 1, 0; 1997 WB_3, 2, 1, 0; 1997 WC_3, 2, 1, 0; 1997 WD_3, 2, 1, 0; 1997 WE_3, 2, 1, 0; 1997 WS_3, 2, 1, 0; 1997 WA_7, 4, 2, 2; 1997 WC_8, 2, 1, 0; 1997 WE_{21}, 2, 1, 0; 1997 WH_{21}, 2, 1, 0; 1997 WJ_{21}, 2, 1, 0; 1997 WK_{21}, 2, 1, 0; 1997 WL_{21}, 2, 1, 0; 1997 WN_{21}, 2, 1, 0; 1997 WP_{21}, 2, 1, 0; 1997 WQ_{21}, 2, 1, 0; 1997 WR_{21}, 2, 1, 0; 1997 WS_{21}, 2, 1, 0; 1997 WT_{21}, 2, 1, 0; 1997 WU_{21}, 2, 1, 0; 1997 WV_{22}, 4, 2, 2; 1997 XB, 6, 3, 26; 1997 XJ, 2, 1, 0; 1997 XK, 6, 3, 26; 1997 XL, 2, 1, 0; 1997 XM, 6, 3, 26; 1997 XN, 6, 3, 18; 1997 XO, 6, 3, 26; 1997 XP, 6, 3, 26; 1997 XQ, 7, 4, 26; 1997 XR, 4, 2, 26; 1997 XS, 6, 3, 26; 1997 XT, 2, 1, 0; 1997 XU, 6, 3, 26; 1997 XV, 6, 3, 26; 1997 XW, 6, 3, 26; 1997 XX, 6, 3, 26; 1997 XY, 6, 3, 26; 1997 XZ, 6, 3, 26; 1997 XB_1, 7, 3, 26; 1997 XH_1, 4, 2, 8; 1997 XK_1, 6, 3, 26; 1997 XY_9 *, 8, 4, 26; 1997 XZ_9 *, 8, 4, 26; 1997 XA_{10} *, 10, 4, 26; 1997 XC_{10} *, 8, 4, 26; 1997 XD_{10} *, 7, 3, 23; 1997 YB *, 8, 4, 17; 1997 YC *, 8, 4, 17; 1997 YD *, 8, 4, 17; 1997 YE *, 9, 4, 17; 1997 YF *, 8, 4, 10; 1997 YG *, 7, 3, 17; 1997 YH *, 8, 4, 17; 1997 YJ *, 9, 4, 10; 1997 YK *, 8, 4, 17; 1997 YL *, 8, 4, 15; 1997 YM *, 8, 4, 17; 1997 YN *, 11, 5, 15; 1997 YO *, 8, 4, 15; 1997 YP *, 8, 4, 15; 1997 YQ *, 8, 4, 15; 1997 YR *, 8, 4, 15; 1997 YS *, 8, 4, 15; 1997 YT *, 8, 4, 15; 1997 YU *, 6, 3, 15; 1997 YV *, 8, 4, 15; 1997 YW *, 8, 4, 15; 1997 YX *, 8, 4, 15; 1997 YY *, 8, 4, 15; 1997 YY_1 *, 6, 3, 10; 1997 YZ_1 *, 6, 3, 10; 1997 YA_2 *, 4, 2, 3; 1997 YB_2 *, 6, 3, 10; 1997 YC_2 *, 6, 3, 10; 1997 YD_2 *, 6, 3, 10; 1997 YE_2 *, 6, 3, 10; 1997 YF_2 *, 6, 3, 10; 1997 YG_2 *, 6, 3, 10; 1997 YH_2 *, 7, 3, 10; 1997 YJ_2 *, 6, 3, 10; 1997 YK_2 *, 8, 4, 10; 1997 YL_2 *, 8, 4, 10; 1997 YM_2 *, 6, 3, 10; 1997 YN_2 *, 6, 3, 10; 1997 YX_2 *, 6, 3, 10; 1997 YY_2 *, 6, 3, 7; 1997 YZ_2 *, 6, 3, 7; 1997 YA_3 *, 6, 3, 7; 1997 YB_3 *, 6, 3, 7; 1997 YC_3 *, 7, 3, 7; 1997 YD_3 *, 6, 3, 7; 1997 YE_3 *, 6, 3, 7; 1997 YF_3 *, 6, 3, 7; 1997 YG_3 *, 6, 3, 7; 1997 YK_4, 4, 2, 1; 1997 YH_5 *, 6, 3, 9; 1997 YJ_5 *, 8, 4, 9; 1997 YK_5 *, 6, 3, 9; 1997 YL_5 *, 6, 3, 9; 1997 YM_5 *, 6, 3, 9; 1997 YN_5 *, 6, 3, 9; 1997 YO_5 *, 6, 3, 9; 1997 YP_5 *, 6, 3, 9; 1997 YQ_5 *, 6, 3, 9; 1997 YR_5 *, 6, 3, 9; 1997 YS_5 *, 6, 3, 9; 1997 YT_5 *, 6, 3, 9; 1997 YU_5 *, 6, 3, 9; 1997 YV_5 *, 6, 3, 9; 1997 YW_5 *, 6, 3, 9; 1997 YX_5 *, 7, 3, 9; 1997 YY_5 *, 6, 3, 9; 1997 YZ_5 *, 6, 3, 9; 1997 YA_6 *, 6, 3, 9; 1997 YG_7 *, 6, 3, 11; 1997 YH_7 *, 6, 3, 7; 1997 YJ_7 *, 6, 3, 9; 1997 YK_7 *, 6, 3, 8; 1997 YL_7 *, 6, 3, 9; 1997 YM_7 *, 7, 3, 9; 1997 YN_7 *, 6, 3, 9; 1997 YO_7 *, 6, 3, 9; 1997 YP_7 *, 6, 3, 9; 1997 YQ_7 *, 6, 3, 9; 1997 YR_7 *, 8, 4, 11; 1997 YC_{10} *, 6, 3, 7; 1997 YD_{10} *, 6, 3, 7; 1997 YE_{10} *, 6, 3, 7; 1997 YF_{10} *, 6, 3, 7; 1997 YG_{10} *, 6, 3, 7; 1997 YH_{10} *, 4, 2, 2; 1997 YJ_{10} *, 6, 3, 7; 1997 YK_{10} *, 6, 3, 7; 1997 YL_{10} *, 6, 3, 7; 1997 YM_{10} *, 4, 2, 2; 1997 YN_{10} *, 6, 3, 9; 1997 YO_{10} *, 6, 3, 7; 1997 YP_{10} *, 6, 3, 8; 1997 YQ_{10} *, 6, 3, 7; 1997 YP_{11}, 4, 2, 1; 1997 YQ_{11} *, 6, 3, 7; 1997 YR_{11} *, 7, 3, 10; 1997 YS_{11} *, 6, 3, 10; 1997 YT_{11} *, 4, 2, 1; 1997 YU_{11} *, 6, 3, 10; 1997 YV_{11} *, 6, 3, 10; 1997 YP_{13} *, 6, 3, 6; 1997 YQ_{13} *, 8, 4, 9; 1997 YR_{13} *, 6, 3, 6; 1997 YS_{13} *, 6, 3, 6; 1997 YT_{13} *, 6, 3, 6; 1997 YU_{13} *, 6, 3, 6; 1997 YV_{13} *, 6, 3, 6; 1997 YW_{13} *, 6, 3, 6; 1997 YX_{13} *, 6, 3, 6; 1997 YY_{13} *, 6, 3, 6; 1997 YZ_{13} *, 6, 3, 6; 1997 YA_{14} *, 7, 3, 6; 1997 YB_{14} *, 6, 3, 6; 1997 YC_{14} *, 6, 3, 6; 1997 YD_{14} *, 6, 3, 6; 1997 YE_{14} *, 6, 3, 6; 1997 YF_{14} *, 6, 3, 6; 1997 YG_{14} *, 6, 3, 6; 1997 YH_{14} *, 4, 2, 1; 1997 YJ_{14} *, 6, 3, 6;

1997 YK_{14} *, 6, 3, 6; 1997 YL_{14} *, 6, 3, 6; 1997 YM_{14} *, 6, 3, 6; 1998 AL *, 6, 3, 4; 1998 AM *, 6, 3, 4; 1998 AN *, 6, 3, 4; 1998 AO *, 6, 3, 4; 1998 AP *, 6, 3, 4; 1998 AQ *, 6, 3, 4; 1998 AR *, 6, 3, 4; 1998 AS *, 6, 3, 4; 1998 AT *, 4, 2, 1; 1998 AU *, 6, 3, 4; 1998 AV *, 6, 3, 4; 1998 AW *, 6, 3, 4; 1998 AX *, 6, 3, 4; 1998 AY *, 6, 3, 4; 1998 AZ *, 6, 3, 4; 1998 AA_1 *, 6, 3, 4; 1998 AB_1 *, 6, 3, 4; 1998 AC_1 *, 6, 3, 4; 1998 AK_7 *, 6, 3, 4; 1998 AL_7 *, 4, 2, 3; 1998 AM_7 *, 4, 2, 3; 4122 T-2, 4, 2, 3; *[1227, 240, 147*, 1997/01/26–1998/01/09]*

413 Siding Spring
R. H. McNaught, Anglo-Australian Observatory, Coonabarabran, NSW 2357, Australia [rmn@aaocbn2.aao.gov.au]
Observer K. S. Russell
Measurer R. H. McNaught
1.2-m U.K. Schmidt
1993 SB_1, 2, 1, 0; *[2, 1, 0*, 1996/07/11]*

422 Loomberah
G. J. Garradd, P.O. Box 157, Tamworth, NSW 2340, Australia [gjg@mpx.com.au]
0.25-m f/4.1 reflector + CCD
GSC
1997 XQ_2, 3, 1, 0; 1997 XR_2, 3, 1, 0; (146), 3, 1, 0; (347), 3, 1, 0; (389), 3, 1, 0; (776), 3, 1, 0; (1980), 3, 1, 0; (2703), 2, 1, 0; (2938), 2, 1, 0; (4183), 3, 1, 0; (5349), 2, 1, 0; (5870), 2, 1, 0; *[32, 12, 0*, 1997/12/15–1997/12/24]*

423 North Ryde
S. McAndrew, 2/32 Twin Rd, North Ryde, NSW 2113, Australia [mcandrew@trinity.nsw.edu.au]
0.2-m f/4 hyperbolic astrograph + CCD
GSC
1990 YM, 2, 1, 0; 1991 UK_3, 8, 3, 3; (1301), 4, 2, 5; (4483), 3, 2, 3; *[17, 4, 0*, 1997/12/16–1998/01/02]*

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-SA1.0, GSC
1980 LY, 6, 2, 2; 1982 VY_2, 6, 2, 1; 1983 WM, 6, 2, 2; 1985 FE_3, 6, 2, 9; 1986 QG_1, 3, 1, 0; 1986 VM_6, 12, 4, 20; 1987 MA_1, 3, 1, 0; 1988 VS_6, 6, 2, 1; 1990 OD_2, 7, 3, 27; 1990 SK_{11}, 6, 2, 2; 1990 UN_2, 6, 2, 2; 1991 RD_{12}, 6, 2, 3; 1991 VW_8, 6, 2, 1; 1992 BO, 6, 2, 2; 1992 FS_1, 4, 2, 3; 1992 JQ_3, 5, 2, 2; 1992 YS_2, 6, 2, 1; 1992 YE_3, 6, 2, 1; 1993 RL_5, 6, 2, 2; 1993 UB_3, 6, 2, 1; 1993 VE_2, 6, 2, 2; 1993 XN, 6, 2, 1; 1995 EO, 5, 2, 9; 1995 EB_1, 6, 2, 1; 1997 SR, 2, 1, 0; 1997 SB_{25}, 4, 2, 2; 1997 TX_{16}, 6, 2, 2; 1997 UJ_3, 6, 2, 5; 1997 UQ_{10}, 9, 3, 17; 1997 VQ_1, 6, 2, 3; 1997 VP_2, 9, 3, 17; 1997 VG_8, 3, 1, 0; 1997 WB, 2, 1, 0; 1997 WU_7, 15, 5, 29; 1997 YA *, 12, 4, 9; 1997 YZ *, 12, 4, 10; 1997 YF_1 *, 12, 4, 15; 1997 YG_1 *, 12, 4, 6; 1997 YM_4 *, 12, 4, 5; 1997 YA_5 *, 12, 4, 8; 1997 YB_5 *, 12, 4, 12; 1997 YN_8 *, 15, 5, 35; 1998 AA_5 *, 7, 2, 5; 1998 AB_5 *, 6, 2, 2; 1153 T-2, 5, 2, 2; 3201 T-2, 6, 2, 3; 4172 T-2, 8, 3, 25; (1001), 6, 2, 2; (1133), 7, 2, 2; (1267), 6, 2, 5; (1843), 9, 3, 2; (2067), 7, 2, 2; (2124), 4, 1, 0; (2274), 6, 2, 2; (2580), 5, 2, 3; (2612), 6, 2, 1; (2715), 6, 2, 1; (2840), 10, 4, 14; (2938), 6, 2, 2; (3890), 6, 2, 1; (4186), 6, 2, 1; (5256), 6, 2, 1; (5457), 6, 2, 1; (5540), 5, 2, 1; (5629), 6, 2, 1; (5870), 6, 2, 4; (7314), 6, 2, 5; (7977), 6, 2, 1; (8026), 3, 1, 0; (8080), 6, 2, 4; *[474, 70, 10*, 1997/11/23–1998/01/08]*

470 Ceccano
G. Masi, Via Madonna de Loco 47, I-03023 Ceccano (FR), Italy [gianmasi@fr.flashnet.it]
0.15-m f/5 reflector + CCD
GSC
1977 EX, 3, 1, 0; 1988 BX, 3, 1, 0; 1991 GR, 3, 1, 0; 1992 ST_{26}, 8, 3, 5; 1997 YW_{11}, 2, 1, 0; *[19, 5, 0*, 1998/01/01–1998/01/10]*

494 Stakenbridge
B. G. W. Manning, Moonrakers, Stakenbridge, Churchill, Kidderminster, Worcs. DY10 3LS, England [bgwm@star.sr.bham.ac.uk]
0.26-m f/7.3 reflector + CCD
PPM
1991 AH_1, 4, 2, 2; 1993 SU_6, 2, 1, 0; 1997 WL_{23}, 7, 3, 28; 1997 YY_6 *, 8, 3, 8; *[21, 4, 1*, 1997/09/09–1998/01/05]*

504 Le Creusot
J.-C. Merlin, 18 rue P. Mendès-France, F-71200 Le Creusot, France [merlin@obspm.fr]
0.40-m f/5.1 reflector + CCD
GSC
1997 XQ_2, 7, 2, 13; *[7, 1, 0*, 1997/12/28–1998/01/10]*

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
GSC
1991 WA, 5, 1, 0; 1992 BF, 6, 2, 1; *[11, 2, 0*, 1997/12/06–1997/12/31]*

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 TC, 3, 1, 0; 1988 QA, 3, 1, 0; 1996 KW, 2, 1, 0; 1996 QD_1, 3, 1, 0; 1997 TE, 3, 1, 0; 1997 XU_{11} *, 4, 2, 1; *[18, 6, 1*, 1997/12/06–1997/12/29]*

557 Ondřejov
P. Pravec, Astronomical Institute, Czech Academy of Sciences, CZ-25165 Ondřejov, Czech Republic [ppravec@asu.cas.cz]
Observers L. Šarounová, M. Wolf
0.65-m f/3.6 reflector + CCD
USNO-SA1.0, GSC
1980 EB, 3, 1, 0; 1995 HC, 4, 2, 8; 1995 OD_1, 4, 2, 8; 1995 SH, 7, 2, 11; 1996 QD, 2, 1, 0; 1996 TC_{15}, 4, 2, 11; 1996 YU_2, 5, 2, 8; 1997 SM_1, 2, 1, 0; 1997 SX_1, 5, 2, 12; 1997 TW_9, 1, 1, 0; 1997 TA_{17}, 1, 1, 0; 1997 TM_{19}, 2, 1, 0; 1997 TO_{19}, 2, 1, 0; 1997 UH, 6, 2, 12; 1997 UT, 2, 1, 0; 1997 UU, 3, 1, 0; 1997 UX, 3, 1, 0; 1997 UU_7, 3, 1, 0; 1997 UX_7, 3, 1, 0; 1997 UL_9, 4, 2, 11; 1997 UN_9, 3, 1, 0; 1997 UU_{10}, 2, 1, 0; 1997 UW_{14}, 5, 2, 1; 1997 UX_{14}, 2, 1, 0; 1997 VV_1, 5, 2, 11; 1997 VU_2, 3, 1, 0; 1997 VV_2, 4, 2, 11; 1997 VC_5, 2, 1, 0; 1997 VJ_6, 7, 3, 26; 1997 VM_6, 2, 1, 0; 1997 WX, 5, 2, 1; 1997 WS_{22}, 2, 1, 0; 1997 WT_{22}, 3, 1, 0; 1997 WU_{22}, 2, 1, 0; 1997 WP_{28}, 5, 2, 8; 1997 XS_2, 2, 1, 0; 1997 YM_9, 6, 1, 0; 1997 YR_{10}, 3, 1, 0; 1997 YL_{11}, 2, 1, 0; 1998 AK_8, 7, 1, 0; 1998 AM_8 *, 4, 2, 1; 1998 AN_8 *, 5, 2, 1; 1998 AO_8 *, 5, 2, 1; 1998 AP_8 *, 5, 2, 1; 1998 AQ_8 *, 5, 2, 1; (214), 4, 1, 0; (1581), 2, 1, 0; (2343), 2, 1, 0; (2437), 4, 1, 0; *[174, 49, 5*, 1997/12/16–1998/01/12]*

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Observers L. Lai, I. Rocchetti, G. Vesentini
0.40-m f/3.5 reflector + CCD
GSC
1980 UM_1, 4, 1, 0; 1982 KK_1, 3, 1, 0; 1984 SU_3, 4, 1, 0; 1991 SL_2, 3, 1, 0; 1992 DN_6, 3, 1, 0; 4008 T-3, 2, 1, 0; (2275), 5, 1, 0; (7144), 6, 2, 1; (8079), 3, 1, 0; *[33, 9, 0*, 1997/11/16–1997/12/27]*

561 Piszkéstető
L. Kiss, Pf. 596, H-6701 Szeged, Hungary [l.kiss@physx.u-szeged.hu]
Observers K. Sárneczky, L. Kiss
0.60-m Schmidt telescope
USNO-A1.0

1970 JB, 3, 1, 0; 1970 OF, 2, 1, 0; 1974 QF_1, 3, 2, 1; 1975 SF_1, 2, 1, 0; 1991 VX_2, 3, 1, 0; (1513), 4, 1, 0; (2682), 2, 1, 0; (3019), 3, 1, 0; (3183), 2, 1, 0; (3552), 2, 1, 0; (4560), 3, 1, 0; (6455), 2, 1, 0; *[31, 12, 0*, 1998/01/04–1998/01/07]*

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

1958 TL_1, 3, 1, 0; 1967 JP, 3, 1, 0; 1972 TC, 3, 1, 0; 1975 SA_1, 6, 2, 5; 1975 TO_2, 3, 1, 0; 1977 DR_2, 3, 1, 0; 1978 PS_2, 6, 2, 29; 1978 PH_3, 3, 1, 0; 1978 SJ_5, 3, 1, 0; 1978 SS_6, 6, 2, 4; 1978 SQ_7, 3, 1, 0; 1978 UG, 3, 1, 0; 1978 VP_{10}, 3, 1, 0; 1978 XU, 3, 1, 0; 1979 MD_2, 3, 1, 0; 1979 MK_5, 3, 1, 0; 1979 QV_1, 3, 1, 0; 1979 TV_2, 3, 1, 0; 1980 GG, 6, 2, 2; 1981 EZ_{11}, 3, 1, 0; 1981 EY_{14}, 3, 1, 0; 1981 EO_{15}, 3, 1, 0; 1981 EU_{15}, 3, 1, 0; 1981 EF_{18}, 3, 1, 0; 1981 SN, 3, 1, 0; 1981 SC_7, 3, 1, 0; 1982 YR_1, 6, 2, 25; 1983 UG, 3, 1, 0; 1983 WN, 3, 1, 0; 1984 HR, 3, 1, 0; 1984 SY_5, 6, 2, 5; 1985 RG, 3, 1, 0; 1985 RR_3, 3, 1, 0; 1986 EJ_1, 3, 1, 0; 1986 QH_2, 3, 1, 0; 1986 VM_6, 3, 1, 0; 1986 WO_1, 3, 1, 0; 1987 RT_5, 3, 1, 0; 1987 SU_1, 3, 1, 0; 1987 SF_5, 3, 1, 0; 1987 SG_{13}, 3, 1, 0; 1988 CP_1, 3, 1, 0; 1988 CT_4, 3, 1, 0; 1988 QA, 3, 1, 0; 1988 QB, 3, 1, 0; 1988 RV_4, 3, 1, 0; 1988 SC, 3, 1, 0; 1988 VS_6, 3, 1, 0; 1989 SX, 3, 1, 0; 1989 TL_{15}, 3, 1, 0; 1989 UL_1, 3, 1, 0; 1989 UN_1, 3, 1, 0; 1989 UB_3, 3, 1, 0; 1989 VQ, 3, 1, 0; 1989 WU_1, 3, 1, 0; 1989 YF_1, 3, 1, 0; 1989 YA_2, 3, 1, 0; 1989 YP_5, 3, 1, 0; 1990 BZ, 3, 1, 0; 1990 JN_1, 3, 1, 0; 1990 MG, 3, 1, 0; 1990 OD_2, 3, 1, 0; 1990 QW_{17}, 3, 1, 0; 1990 SG_3, 3, 1, 0; 1990 SM_7, 3, 1, 0; 1990 SU_8, 3, 1, 0; 1990 SF_9, 3, 1, 0; 1990 SA_{15}, 3, 1, 0; 1990 TX, 3, 1, 0; 1990 UN_2, 3, 1, 0; 1990 UO_3, 3, 1, 0; 1990 WQ_3, 3, 1, 0; 1991 CP_1, 3, 1, 0; 1991 FL, 3, 1, 0; 1991 GH_3, 3, 1, 0; 1991 GQ_3, 3, 1, 0; 1991 GY_3, 3, 1, 0; 1991 GV_8, 9, 3, 469; 1991 LQ, 3, 1, 0; 1991 PT_{12}, 3, 1, 0; 1991 PV_{16}, 3, 1, 0; 1991 RR_1, 3, 1, 0; 1991 RS_7, 3, 1, 0; 1991 RB_{12}, 3, 1, 0; 1991 SV, 3, 1, 0; 1991 VV_5, 3, 1, 0; 1992 BF, 6, 2, 2; 1992 DJ_4, 6, 2, 36; 1992 DF_{10}, 3, 1, 0; 1992 EJ_4, 6, 2, 5; 1992 EB_8, 3, 1, 0; 1992 HY_6, 3, 1, 0; 1992 RZ, 3, 1, 0; 1992 RA_4, 3, 1, 0; 1992 RK_7, 6, 2, 5; 1992 SU_{14}, 3, 1, 0; 1992 TX, 3, 1, 0; 1992 UQ, 3, 1, 0; 1992 UZ_3, 3, 1, 0; 1992 XL, 3, 1, 0; 1993 NH, 6, 2, 25; 1993 OW_6, 6, 2, 1; 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(2474), 3, 1, 0; (2501), 3, 1, 0; (2504), 3, 1, 0; (2506), 3, 1, 0; (2519), 3, 1, 0; (2547), 6, 1, 0; (2552), 3, 1, 0; (2564), 3, 1, 0; (2568), 3, 1, 0; (2573), 3, 1, 0; (2575), 3, 1, 0; (2579), 3, 1, 0; (2588), 3, 1, 0; (2606), 3, 1, 0; (2625), 3, 1, 0; (2635), 6, 2, 2; (2637), 3, 1, 0; (2638), 3, 1, 0; (2649), 9, 2, 1; (2654), 3, 1, 0; (2656), 6, 2, 1; (2657), 3, 1, 0; (2664), 3, 1, 0; (2665), 6, 2, 2; (2692), 3, 1, 0; (2693), 3, 1, 0; (2698), 3, 1, 0; (2708), 3, 1, 0; (2718), 6, 2, 2; (2720), 3, 1, 0; (2732), 3, 1, 0; (2755), 3, 1, 0; (2762), 6, 2, 30; (2807), 3, 1, 0; (2809), 3, 1, 0; (2819), 6, 2, 4; (2827), 3, 1, 0; (2911), 3, 1, 0; (2950), 3, 1, 0; (2971), 3, 1, 0; (2983), 3, 1, 0; (2999), 3, 1, 0; (3000), 6, 1, 0; (3114), 3, 1, 0; (3118), 3, 1, 0; (3123), 3, 1, 0; (3133), 6, 1, 0; (3139), 3, 1, 0; (3175), 3, 1, 0; (3178), 3, 1, 0; (3185), 3, 1, 0; (3198), 3, 1, 0; (3209), 3, 1, 0; (3221), 3, 1, 0; (3224), 3, 1, 0; (3244), 3, 1, 0; (3250), 3, 1, 0; (3253), 3, 1, 0; (3275), 3, 1, 0; 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3, 1, 0; (4094), 3, 1, 0; (4109), 3, 1, 0; (4111), 3, 1, 0; (4117), 3, 1, 0; (4139), 3, 1, 0; (4183), 3, 1, 0; (4186), 3, 1, 0; (4207), 3, 1, 0; (4218), 3, 1, 0; (4272), 3, 1, 0; (4280), 3, 1, 0; (4311), 3, 1, 0; (4319), 3, 1, 0; (4324), 6, 2, 27; (4346), 3, 1, 0; (4421), 9, 3, 5; (4433), 3, 1, 0; (4471), 3, 1, 0; (4480), 3, 1, 0; (4488), 6, 2, 5; (4506), 3, 1, 0; (4507), 3, 1, 0; (4517), 3, 1, 0; (4532), 3, 1, 0; (4560), 3, 1, 0; (4574), 3, 1, 0; (4585), 3, 1, 0; (4592), 3, 1, 0; (4600), 3, 1, 0; (4606), 3, 1, 0; (4640), 9, 3, 30; (4672), 3, 1, 0; (4678), 3, 1, 0; (4680), 3, 1, 0; (4682), 3, 1, 0; (4692), 3, 1, 0; (4698), 3, 1, 0; (4706), 3, 1, 0; (4711), 3, 1, 0; (4728), 3, 1, 0; (4729), 3, 1, 0; (4743), 3, 1, 0; (4755), 3, 1, 0; (4762), 3, 1, 0; (4773), 3, 1, 0; (4785), 3, 1, 0; (4810), 3, 1, 0; (4826), 3, 1, 0; (4845), 3, 1, 0; (4861), 3, 1, 0; (4896), 3, 1, 0; (4914), 3, 1, 0; (4940), 3, 1, 0; (4955), 3, 1, 0; (4958), 3, 1, 0; (4980), 3, 1, 0; (5022), 3, 1, 0; (5074), 6, 2, 2; (5115), 3, 1, 0; (5151), 3, 1, 0; (5155), 3, 1, 0; (5211), 3, 1, 0; (5216), 3, 1, 0; (5220), 3, 1, 0; (5226), 3, 1, 0; (5236), 3, 1, 0; (5238), 3, 1, 0; (5256), 3, 1, 0; (5289), 3, 1, 0; (5297), 3, 1, 0; (5302), 3, 1, 0; (5306), 3, 1, 0; (5320), 3, 1, 0; (5333), 3, 1, 0; (5351), 3, 1, 0; (5361), 3, 1, 0; (5385), 6, 2, 4; (5387), 3, 1, 0; (5414), 3, 1, 0; (5422), 3, 1, 0; (5432), 3, 1, 0; (5452), 3, 1, 0; (5477), 3, 1, 0; (5497), 3, 1, 0; (5550), 6, 1, 0; (5575), 3, 1, 0; (5615), 3, 1, 0; (5629), 3, 1, 0; (5674), 3, 1, 0; (5675), 3, 1, 0; (5682), 3, 1, 0; (5683), 3, 1, 0; (5686), 3, 1, 0; (5727), 3, 1, 0; (5728), 3, 1, 0; (5737), 3, 1, 0; (5746), 3, 1, 0; (5752), 3, 1, 0; (5777), 3, 1, 0; (5778), 3, 1, 0; (5782), 6, 2, 5; (5801), 3, 1, 0; (5813), 3, 1, 0; (5839), 6, 2, 4; (5847), 3, 1, 0; (5884), 3, 1, 0; (5893), 3, 1, 0; (5922), 3, 1, 0; (5923), 3, 1, 0; (5992), 3, 1, 0; (6055), 3, 1, 0; (6072), 3, 1, 0; (6109), 3, 1, 0; (6151), 3, 1, 0; (6176), 3, 1, 0; (6235), 3, 1, 0; (6243), 3, 1, 0; (6249), 3, 1, 0; (6251), 3, 1, 0; (6255), 3, 1, 0; (6311), 3, 1, 0; (6314), 6, 2, 4; (6316), 3, 1, 0; (6328), 3, 1, 0; (6330), 3, 1, 0; (6332), 3, 1, 0; (6344), 3, 1, 0; (6354), 3, 1, 0; (6360), 3, 1, 0; (6363), 3, 1, 0; (6367), 3, 1, 0; (6377), 3, 1, 0; (6398), 3, 1, 0; (6422), 3, 1, 0; (6424), 3, 1, 0; (6452), 3, 1, 0; (6476), 3, 1, 0; (6477), 3, 1, 0; (6517), 3, 1, 0; (6570), 3, 1, 0; (6867), 3, 1, 0; (6942), 3, 1, 0; (6963), 3, 1, 0; (6964), 3, 1, 0; (6975), 3, 1, 0; (6991), 3, 1, 0; (7004), 6, 2, 4; (7055), 6, 2, 5; (7057), 6, 1, 0; (7068), 3, 1, 0; (7080), 3, 1, 0; (7090), 3, 1, 0; (7113), 3, 1, 0; (7131), 3, 1, 0; (7135), 3, 1, 0; (7136), 3, 1, 0; (7138), 3, 1, 0; (7148), 3, 1, 0; (7154), 3, 1, 0; (7164), 3, 1, 0; (7170), 3, 1, 0; (7181), 3, 1, 0; (7190), 3, 1, 0; (7194), 3, 1, 0; (7195), 3, 1, 0; (7211), 3, 1, 0; (7228), 3, 1, 0; (7255), 3, 1, 0; (7266), 3, 1, 0; (7272), 6, 2, 5; (7275), 3, 1, 0; (7282), 3, 1, 0; (7291), 3, 1, 0; (7293), 3, 1, 0; (7305), 3, 1, 0; (7323), 3, 1, 0; (7360), 3, 1, 0; (7416), 3, 1, 0; (7427), 3, 1, 0; (7559), 3, 1, 0; (7865), 3, 1, 0; (7866), 3, 1, 0; (7868), 3, 1, 0; (7870), 3, 1, 0; (7872), 6, 2, 4; (7886), 3, 1, 0; (7938), 3, 1, 0; (7939), 6, 1, 0; (7949), 3, 1, 0; (7952), 3, 1, 0; (7959), 3, 1, 0; (7961), 3, 1, 0; (7963), 3, 1, 0; (7969), 3, 1, 0; (7974), 3, 1, 0; (7984), 3, 1, 0; (7990), 3, 1, 0; (7992), 6, 2, 27; (8003), 3, 1, 0; (8027), 3, 1, 0; (8030), 3, 1, 0; (8031), 3, 1, 0; (8032), 3, 1, 0; (8033), 3, 1, 0; (8040), 3, 1, 0; (8043), 3, 1, 0; (8047), 3, 1, 0; (8056), 3, 1, 0; (8068), 3, 1, 0; (8085), 3, 1, 0; (8087), 3, 1, 0; (8098), 3, 1, 0; (8099), 3, 1, 0; (8107), 3, 1, 0; (8110), 3, 1, 0; (8116), 3, 1, 0; *[3051, 849, 64*, 1996/03/18–1997/12/30]*

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D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A. [tholen@hale.ifa.hawaii.edu] (2)
K. Meech, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A. [meech@pavo.ifa.hawaii.edu] (4)
Observers J. Bauer (4), K. Meech (4), O. Hainaut(4), D. J. Tholen (2), R. J. Whiteley (2)
Measurers K. Meech (4), D. J. Tholen (2), R. J. Whiteley (2)
2.24-m telescope + CCD, 10-m Keck II telescope + CCD
USNO-A1.0
(2) 1997 QC_1, 13, 6, 12; 1997 QK_1, 8, 1, 0; (2340), 4, 1, 0; (3200), 3, 1, 0; (3362), 2, 1, 0; (3757), 6, 1, 0; (5786), 2, 1, 0; (5863), 2, 1, 0; *[40, 8, 0*, 1997/10/15–1997/10/27]*

(4) (2060), 1, 1, 0; (4015), 1, 1, 0; *[2, 2, 0*, 1997/12/30]*

587 Sormano
P. Sicoli, Via Valli 9, I-23846 Garbagnate Monastero (Lecco), Italy [sormano@tin.it]
Observers F. Manca, P. Ghezzi, P. Sicoli, M. Cavagna, A. Testa, P. Chiavenna
0.5-m reflector + CCD
GSC
1991 VE, 2, 1, 0; 1992 BF, 2, 1, 0; 1995 DL_2, 3, 2, 4; 1995 DM_2, 3, 2, 4; 1996 RM, 3, 2, 2; 1997 VM_4, 2, 1, 0; 1997 WB_{21}, 2, 1, 0; 1997 WS_{22}, 3, 1, 0; 1997 XR_2, 3, 1, 0; 1997 XS_2, 3, 1, 0; 1997 XF_{11}, 3, 2, 27; 1997 YR_{10}, 3, 1, 0; 1997 YK_{16} *, 9, 3, 7; 1998 AX_4 *, 7, 2, 2; 1998 AK_8, 2, 1, 0; 4601 P-L, 5, 2, 5; (66), 2, 1, 0; (2340), 2, 1, 0; (3800), 2, 1, 0; (3821), 3, 1, 0; (4072), 5, 2, 5; (5235), 4, 2, 1; (6437), 3, 1, 0; *[76, 23, 2*, 1997/11/23–1998/01/10]*

589 Santa Lucia Stroncone
A. Vagnozzi, Via Santa Lucia 68, I-05039 Stroncone (Terni), Italy [vagnozzi@freenet.hut.fi]
Observers A. Vagnozzi, G. Bernabei, V. Risoldi, V. Scrirri
0.50-m $f/2.8$ Ritchey-Chrétien + CCD
GSC
1979 SJ, 3, 1, 0; 1992 EK_1, 3, 1, 0; 1993 RB, 15, 4, 30; 1993 SF, 14, 4, 30; 1993 SN_2, 9, 4, 24; 1997 TS_{16}, 4, 2, 20; 1997 VS_6, 10, 3, 20; 1997 VA_7, 7, 2, 17; 1997 WB_1, 3, 1, 0; 1997 YQ_8 *, 10, 3, 13; 1997 YR_8 *, 8, 3, 9; 1998 AV_4 *, 7, 2, 1; 1998 AN_7 *, 6, 2, 2; 1998 AO_7 *, 8, 2, 1; (8112), 3, 1, 0; *[110, 15, 5*, 1997/12/04–1998/01/09]*

595 Farra d'Isonzo
L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy [ccaf@quark.it]
Observers A. Toso, W. Boschin, L. Drigo, G. Lombardi, E. Pettarin, F. Piani
Measurers L. Drigo, G. Lombardi, E. Pettarin, A. Toso
0.4-m $f/4.5$ reflector + CCD
GSC
1997 YH_9 *, 6, 2, 1; 1997 YJ_9 *, 4, 2, 1; 1997 YK_9 *, 5, 2, 1; *[15, 3, 3*, 1997/12/28–1997/12/29]*

596 Colleverde di Guidonia
V. S. Casulli, Via M. Rosa 1, I-00010 Colleverde di Guidonia (RM), Italy [v.casulli@priminet.it]
0.40-m $f/3.2$ reflector + CCD
GSC
1985 FE_3, 3, 1, 0; 1987 QM, 3, 1, 0; 1992 AB, 3, 1, 0; 1993 TD, 5, 2, 42; 1996 TS_{15}, 6, 2, 21; 1997 YN_{11} *, 6, 2, 1; (476), 3, 1, 0; *[29, 7, 1*, 1997/11/17–1997/12/29]*

610 Pianoro
V. Goretti, Via Resistenza 93, I-40065 Pianoro (BO), Italy [gorbiv@ntt.it]
0.25-m $f/4$ Schmidt-Cassegrain + CCD
GSC
1979 MN_3, 3, 1, 0; 1979 SP_{14}, 3, 1, 0; 1997 XK_{10}, 5, 1, 0; (5414), 3, 1, 0; (8059), 6, 2, 7; *[20, 5, 0*, 1997/12/07–1997/12/14]*

611 Starkenburg Sternwarte, Heppenheim
M. Busch, Giessener Strasse 4, D-64646 Heppenheim, Germany [mab@iez.com]
Observers R. Stoss, M. Busch, A. Seib
Measurers M. Busch, R. Stoss
0.45-m $f/4.4$ Newtonian reflector + CCD
USNO-SA1.0
1991 TT_{13}, 6, 2, 11; 1997 CU_{26}, 5, 2, 1; 1997 VN, 2, 1, 0; 1998 AK_8, 21, 2, 1; *[34, 4, 0*, 1997/12/30–1998/01/11]*

619 Sabadell
F. Casarramona, P.O. Box 50, E-8200 Sabadell (BCN), Spain [astrosab@redestb.es]
Observers F. Casarramona, E. Vigil, M. Guillen, J. Presa, C. Cera, S. Vilagrasa
Measurers F. Casarramona, E. Vigil
0.51-m $f/3.9$ reflector + CCD
GSC
1983 WG, 7, 2, 1; (1111), 6, 2, 1; *[13, 2, 0*, 1997/12/13–1997/12/14]*

620 Observatorio Astronómico de Mallorca
M. Blasco, Afueras s/n, E-07144 Costitx, Baleares, Spain [astroam@dinky.bitel.es]
Observers R. Pacheco, A. Lopez

Measurer A. Lopez
0.30-m $f/3.3$ Schmidt-Cassegrain + CCD
GSC
1997 YP_2 *, 11, 3, 8; 1997 YL_9 *, 5, 2, 6; *[16, 2, 2*, 1997/12/21–1997/12/29]*

627 Blauvac
P. Antonini, 47 Rue Guillaume Puy, F-84000 Avignon, France [Pierre.Antonini@wanadoo.fr]
Observer R. Roy
0.26-m $f/4.7$ reflector + CCD
GSC
1991 TQ, 3, 1, 0; 1997 CU_{26}, 3, 1, 0; 1997 XQ_2, 6, 2, 2; 1998 AK_8, 3, 1, 0; *[15, 4, 0*, 1997/12/06–1998/01/10]*

628 Mülheim-Ruhr
A. Martin, Turtle Star Observatory, Friedhostr. 15, D-45478 Mülheim-Ruhr, Germany [axelm@bph.ruhr-uni-bochum.de]
0.2-m Schmidt-Cassegrain + CCD
GSC
(164), 4, 1, 0; (4183), 4, 1, 0; *[8, 2, 0*, 1998/01/09–1998/01/11]*

631 Hamburg-Georgswerder
M. Buck, Niedergeorgswerder Deich 96a, D-21109 Hamburg, Germany [michael.buck@hamburg.netsurf.de]
0.15-m $f/8$ refractor + CCD
GSC
1976 UY, 4, 2, 1; 1984 SN_6, 3, 2, 1; 1991 RP_{15}, 3, 2, 1; 1992 UE_3, 2, 1, 0; 1993 UC_1, 4, 2, 1; 1993 WQ, 4, 2, 1; 1995 DD, 4, 2, 1; *[24, 7, 0*, 1997/12/16–1997/12/17]*

632 San Polo A Mosciano
F. Ferrini, C/O Villa Mirenda, Via San Polo A Mosciano, Firenze, Italy [ferrini@dada.it]
Observers M. Mannucci, N. Montigiani, W. Benedetti, E. Balocchini, R. Paolinetti
Measurers G. Forti, V. Goretti, M. Mannucci, N. Montigiani
0.25-m $f/5.6$ Newtonian reflector + CCD
GSC
1997 XK_{10} *, 30, 7, 29; *[30, 1, 1*, 1997/12/08–1998/01/05]*

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. Aikmanm, S. Banh
Measurers D. D. Balam, G. C. L. Aikman
1.82-m Plaskett telescope + CCD
GSC, USNO-A1.0
1966 BL, 3, 1, 0; 1967 JP, 8, 2, 9; 1979 MH_2, 3, 1, 0; 1991 VE, 12, 4, 33; 1991 WA, 3, 1, 0; 1993 DQ_1, 2, 1, 0; 1994 AH_2, 3, 1, 0; 1994 CA_1, 3, 1, 0; 1996 DH, 7, 3, 37; 1996 SY_4, 2, 1, 0; 1997 SE_5, 3, 1, 0; 1997 UF_9, 5, 2, 2; 1997 UH_9, 6, 2, 29; 1997 VM_4, 3, 1, 0; 1997 WB_{21}, 3, 1, 0; 1997 WS_{22}, 12, 4, 24; 1997 WT_{22}, 15, 5, 24; 1997 WU_{22}, 3, 1, 0; 1997 WQ_{23}, 2, 1, 0; 1997 WY_{35}, 5, 1, 0; 1997 XR_2, 3, 1, 0; 1997 XS_2, 6, 2, 21; 1997 XE_{10}, 10, 2, 3; 1997 XD_{11}, 6, 2, 1; 1997 XF_{11}, 6, 2, 1; 1997 YM_3, 6, 2, 1; 1997 YX_3, 9, 3, 2; 1997 YM_9, 3, 1, 0; 1997 YR_{10}, 3, 1, 0; 1997 YL_{11}, 8, 3, 9; 1998 AB, 3, 1, 0; 1998 AD, 6, 2, 1; 1998 AL, 3, 1, 0; 1998 AM, 3, 1, 0; 1998 AN, 3, 1, 0; 1998 AO, 3, 1, 0; 1998 AP, 3, 1, 0; 1998 AQ, 3, 1, 0; 1998 AR, 3, 1, 0; 1998 AC_5 *, 9, 3, 2; 1998 AK_8, 6, 2, 1; (3688), 3, 1, 0; (8014), 2, 1, 0; (8059), 3, 1, 0; *[216, 44, 1*, 1997/12/05–1998/01/11]*

670 Camarillo
J. E. Rogers, 441 Rowland Avenue, Camarillo, CA 93010, U.S.A. [72401.3174@compuserve.com]
0.25-m Schmidt-Cassegrain + CCD
GSC
1985 GP_1, 2, 1, 0; 1992 BF, 3, 1, 0; 1997 XR_2, 7, 2, 1; (5751), 3, 1, 0; *[15, 4, 0*, 1997/12/09–1997/12/28]*

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)
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. [elgb@lowell.edu] (6)
B. Gladman, Canadian Institute for Theoretical Astrophysics, 60 St. George Street, Toronto, ON M5S 1A7, Canada [gladman@cita.utoronto.ca] (8)
9 = 6 + 3
Observers J. A. Burns (8, H), D. J. Chadwick (3, S), T. Gehrels (4, L), B. Gladman (8, H), E. F. Helin (2, S), H. E. Holt (3, S), H. R. Holt (3, S), J. J. Kavelaars (8, H), K. Lawrence (2, S), D. H. Levy (3, S), F. J. Méndez (3, S), P. D. Nicholson (8, H), C. M. Olmstead (3, S), T. Rodriguez (3, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S), D. K. Williams (3, S), L. A. Zimmerman (3, S)
Measurers B. Gladman (8), J. J. Kavelaars (8), K. J. Lawrence (2), B. A. Skiff (6), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4)
5-m Hale reflector (H), 1.2-m Oschin Schmidt (L), 0.46-m Schmidt (S)
GSC, PPM
(2) 1990 YR_1 *, 4, 2, 1; 1993 QU, 4, 2, 3; 1997 WU_{22}, 4, 2, 1; *[12, 3, 1*, 1990/12/18–1993/09/15]*

(4) 1997 PC_4, 2, 1, 0; 1997 UX_7, 4, 3, 28; 1997 VD_4, 5, 3, 30; 6618 P-L *, 8, 8, 32; 1066 T-1 *, 5, 4, 3; 4264 T-1 *, 10, 8, 53; 3207 T-2 *, 14, 8, 16; 4122 T-2 *, 15, 8, 16; 5105 T-2 *, 14, 7, 15; 5133 T-2 *, 14, 7, 15; 1107 T-3 *, 6, 3, 6; *[97, 11, 8*, 1960/09/24–1977/10/22]*

(8) 1997 RT_5, 3, 1, 0; *[3, 1, 0*, 1997/10/27]*

(9) 1991 CB_5, 2, 1, 0; *[2, 1, 0*, 1991/01/18]*

683 Goodricke-Pigott Observatory, Tucson
R. A. Tucker, 5500 West Nebraska Street, Tucson, AZ 85746, U.S.A. [tucker@mail.hvs.com]
0.36-m $f/11$ Schmidt-Cassegrain + CCD
GSC
1996 UG_3, 7, 2, 2; 1996 XY_{25}, 5, 2, 4; 1997 AT_{17}, 8, 3, 53; 1997 GY_{24}, 12, 4, 19; 1997 GZ_{24}, 12, 4, 19; 1997 UG_7, 14, 5, 57; 1997 UF_8, 6, 2, 2; 1997 UG_8, 16, 5, 29; 1997 VT_6, 15, 5, 40; 1997 WC_8, 5, 2, 2; 1997 WV_{29} *, 6, 2, 1; 1997 XT_5, 5, 2, 2; 1997 XN_9 *, 13, 5, 21; 1997 YX_{11} *, 6, 2, 4; 1997 YY_{11} *, 6, 2, 4; 1997 YZ_{11} *, 6, 2, 4; 1997 YA_{12} *, 6, 2, 4; 1997 YB_{12} *, 6, 2, 4; 1997 YC_{12} *, 5, 2, 4; 1998 AD *, 8, 2, 1; *[167, 20, 9*, 1997/02/14–1998/01/03]*

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

1996 MN, 4, 2, 1; 1996 NA, 4, 2, 1; 1996 OE, 3, 2, 1; 1996 PD, 5, 2, 2; 1996 PE, 4, 2, 1; 1996 RJ_3, 4, 2, 1; 1996 UA, 5, 2, 2; 1996 UU_1, 4, 2, 1; 1997 UE, 4, 2, 1; 1997 UJ_1, 5, 2, 8; 1997 UK_1, 5, 2, 1; 1997 UG_2, 5, 2, 1; 1997 UX_2, 5, 2, 8; 1997 UY_2, 6, 2, 6; 1997 UG_5, 6, 2, 6; 1997 VY_1, 5, 2, 2; 1997 VA_4, 11, 4, 7; 1997 VB_4, 5, 2, 1; 1997 YT_1, 6, 2, 1; 1997 YZ_7 *, 8, 3, 6; 1997 YA_8 *, 12, 4, 3; 1997 YE_8 *, 8, 3, 5; 1997 YP_{14} *, 4, 2, 2; 1997 YQ_{14} *, 4, 2, 2; 1998 AA, 3, 1, 0; (3762), 3, 1, 0; (6405), 4, 2, 1; *[142, 27, 5*, 1997/12/17–1998/01/02]*

688 Lowell Observatory, Anderson Mesa Station

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

Observer B. A. Skiff

1.07-m Hall reflector + CCD

USNO-A1.0

1997 WC_2, 2, 1, 0; *[2, 1, 0*, 1997/08/01]*

691 Kitt Peak, Steward Observatory

T. Gehrels, Space Sciences Building, University of Arizona, Tucson, AZ 85721, U.S.A. [tgehrels@lpl.arizona.edu]

Observers T. Gehrels, J. Montani, J. V. Scotti

0.91-m Spacewatch telescope + CCD

GSC

1979 OQ_5, 6, 2, 5; 1980 FF_{12}, 3, 1, 0; 1981 EF_{12}, 3, 1, 0; 1981 EG_{40}, 3, 1, 0; 1982 JB_2, 3, 1, 0; 1982 VN, 3, 1, 0; 1985 RD, 6, 2, 4; 1986 PM, 6, 2, 5; 1986 VM_6, 3, 1, 0; 1988 QA, 2, 1, 0; 1988 VM_5, 3, 1, 0; 1990 QP_3, 6, 2, 6; 1990 RO_2, 3, 1, 0; 1990 RQ_8, 5, 2, 4; 1990 SB_{11}, 5, 2, 4; 1990 SN_{28}, 3, 1, 0; 1990 WS, 3, 1, 0; 1991 FX_2, 3, 1, 0; 1991 PO_5, 3, 1, 0; 1991 PT_{12}, 3, 1, 0; 1991 PV_{17}, 3, 1, 0; 1991 RZ_8, 3, 1, 0; 1991 VE, 3, 1, 0; 1991 VD_2, 3, 1, 0; 1992 CO_8 *, 3, 1, 0; 1992 DJ_4, 3, 1, 0; 1992 EY_9, 3, 1, 0; 1992 ED_{17}, 6, 2, 11; 1992 PJ_2, 2, 1, 0; 1992 SA_{27} *, 5, 2, 4; 1993 OF_3, 3, 1, 0; 1993 OW_6, 3, 1, 0; 1993 TH_{32}, 5, 2, 1062; 1993 UC_1, 3, 1, 0; 1994 CV_1, 3, 1, 0; 1994 CP_{10}, 3, 1, 0; 1994 CL_{19}, 3, 1, 0; 1994 CK_{20}, 3, 1, 0; 1995 FX_{14}, 3, 1, 0; 1995 FM_{21} *, 6, 2, 5; 1995 MG_4, 3, 1, 0; 1996 AS_1, 6, 2, 4; 1996 EK_{15}, 3, 1, 0; 1996 HC_{19}, 6, 2, 452; 1996 KQ_9 *, 3, 1, 0; 1996 PD_3, 3, 1, 0; 1996 TN_{52}, 3, 1, 0; 1996 UB, 3, 1, 0; 1996 VK_3, 3, 1, 0; 1996 VP_{39} *, 6, 2, 8; 1997 ET_1, 3, 1, 0; 1997 SX, 3, 1, 0; 1997 SU_1, 3, 1, 0; 1997 TW_{16}, 3, 1, 0; 1997 TX_{17}, 3, 1, 0; 1997 TY_{17}, 3, 1, 0; 1997 TY_{24}, 3, 1, 0; 1997 US_2, 3, 1, 0; 1997 UV_3, 6, 2, 46; 1997 UA_5, 3, 1, 0; 1997 US_8, 6, 2, 12; 1997 UW_8, 3, 1, 0; 1997 UY_{10}, 6, 2, 463; 1997 UY_{14}, 3, 1, 0; 1997 UC_{15}, 3, 1, 0; 1997 UA_{21}, 3, 1, 0; 1997 UK_{22}, 6, 2, 1452; 1997 VF, 3, 1, 0; 1997 VP_1, 3, 1, 0; 1997 VF_2, 3, 1, 0; 1997 VD_3, 3, 1, 0; 1997 VD_5, 3, 1, 0; 1997 VE_5, 3, 1, 0; 1997 VS_5, 2, 1, 0; 1997 WD_2, 3, 1, 0; 1997 WB_7, 9, 3, 32; 1997 WL_8, 3, 1, 0; 1997 WV_{12}, 2, 1, 0; 1997 WP_{14}, 6, 2, 914; 1997 WM_{16}, 3, 1, 0; 1997 WZ_{16}, 3, 1, 0; 1997 WJ_{20}, 3, 1, 0; 1997 WB_{22}, 6, 2, 6; 1997 WN_{34}, 3, 1, 0; 1997 XC_1, 3, 1, 0; 1997 XM_3, 6, 2, 2; 1997 XC_8, 3, 1, 0; 1997 XE_{10}, 3, 1, 0; 1997 XD_{11} *, 12, 4, 26; 1997 XF_{11} *, 6, 2, 32; 1997 YC_1, 6, 2, 16; 1997 YD_1, 6, 2, 4; 1997 YU_1, 3, 1, 0; 1997 YG_2, 3, 1, 0; 1997 YH_2, 3, 1, 0; 1997 YJ_2, 3, 1, 0; 1997 YV_2, 6, 2, 5; 1997 YW_2, 3, 1, 0; 1997 YH_4, 6, 2, 65; 1997 YR_5, 3, 1, 0; 1997 YZ_5, 3, 1, 0; 1997 YK_6 *, 6, 2, 6; 1997 YL_6 *, 6, 2, 6; 1997 YM_6 *, 6, 2, 6; 1997 YN_6 *, 6, 2, 6; 1997 YO_6 *, 6, 2, 6; 1997 YP_6 *, 6, 2, 6; 1997 YQ_6 *, 6, 2, 6; 1997 YW_6, 3, 1, 0; 1997 YS_7 *, 9, 3, 11; 1997 YT_7 *, 6, 2, 7; 1997 YU_7 *, 12, 4, 16; 1997 YV_7 *, 6, 2, 7; 1997 YW_7 *, 5, 2, 7; 1997 YX_7 *, 9, 3, 16; 1997 YY_7 *, 9, 3, 5; 1997 YO_8 *, 6, 2, 8; 1997 YP_8 *, 9, 3, 5; 1997 YS_{10}, 2, 1, 0; 1997 YM_{11} *, 5, 2, 4; 1997 YQ_{11}, 3, 1, 0; 1997 YD_{12} *, 6, 2, 11; 1997 YE_{12} *, 6, 2, 11; 1997 YF_{12} *, 6, 2, 11; 1997 YG_{12} *, 9, 3, 16; 1997 YH_{12} *, 6, 2, 11; 1997 YJ_{12} *, 9, 3, 16; 1997 YK_{12} *, 12, 4, 99; 1997 YL_{12} *, 6, 2, 11; 1997 YM_{12} *, 9, 3, 16; 1997 YN_{12} *, 12, 4, 18; 1997 YO_{12} *, 6, 2, 11; 1997 YP_{12} *, 6, 2, 5; 1997 YQ_{12} *, 6, 2, 5; 1997 YR_{12} *, 6, 2, 5; 1997 YS_{12} *, 9, 3, 10; 1997 YT_{12} *, 6, 2, 5; 1997 YU_{12} *, 9, 3, 10; 1997 YV_{12} *, 6, 2, 5; 1997 YW_{12} *, 9, 3, 10; 1997 YX_{12} *, 6, 2, 5; 1997 YY_{12} *, 6, 2, 5; 1997 YZ_{12} *, 9, 3, 10; 1997 YA_{13} *, 6, 2, 5; 1997 YB_{13} *, 9, 3, 10; 1997 YC_{13} *, 6, 2, 5; 1997 YD_{13} *, 9, 3, 33; 1997 YE_{13} *, 9, 3, 9; 1997 YF_{13} *, 5, 2, 4; 1997 YG_{13} *, 6, 2, 3; 1997 YH_{13} *, 6, 2, 3; 1997 YJ_{13} *, 6, 2, 3; 1997 YK_{13} *, 6, 2, 3; 1997 YL_{13} *, 6, 2, 3; 1997 YM_{13} *, 6, 2, 3; 1997 YN_{13} *, 6, 2, 3; 1997 YO_{13} *, 6, 2, 3; 1997 YT_{13}, 3, 1, 0; 1997 YC_{14}, 3, 1, 0; 1997 YR_{14} *, 6, 2, 12; 1997 YS_{14} *, 6, 2, 12; 1997 YT_{14} *, 5, 2, 5; 1997 YU_{14} *, 9, 3, 9; 1997 YV_{14} *, 9, 3, 9; 1997 YW_{14} *, 9, 3, 11; 1997 YX_{14} *, 6, 2, 5; 1997 YY_{14} *, 5, 2, 5; 1997 YZ_{14} *, 5, 2, 5; 1997 YA_{15} *, 9, 3, 11; 1997 YB_{15} *, 6, 2, 5; 1997 YC_{15} *, 9, 3, 11; 1997 YD_{15} *, 6, 2, 5; 1997 YE_{15} *, 6, 2, 5; 1997 YF_{15} *, 9, 3, 9; 1997 YG_{15} *, 5, 2, 4; 1997 YH_{15} *, 5, 2, 4; 1997 YJ_{15} *, 6, 2, 4; 1997 YK_{15} *, 8, 3, 10; 1997 YL_{15} *, 9, 3, 10; 1997 YM_{15} *, 6, 2, 4; 1997 YN_{15} *, 6, 2, 4; 1997 YO_{15} *, 6, 2, 4; 1997 YP_{15} *, 9, 3, 10; 1997 YQ_{15} *, 9, 3, 10; 1997 YR_{15} *, 6, 2, 4; 1997 YS_{15} *, 9, 3, 10; 1997 YT_{15} *, 5, 2, 4; 1997 YU_{15} *, 6, 2, 4; 1997 YV_{15} *, 6, 2, 4; 1997 YW_{15} *, 6, 2, 4; 1997 YX_{15} *, 9, 3, 33; 1997 YY_{15} *, 9, 3, 10; 1997 YZ_{15} *, 6, 2, 4; 1997 YA_{16} *, 6, 2, 4; 1997 YB_{16} *, 6, 2, 4; 1997 YC_{16} *, 6, 2, 4; 1997 YD_{16} *, 5, 2, 4; 1997 YE_{16} *, 6, 2, 2; 1997 YF_{16} *, 6, 2, 2; 1997 YO_{16}, 3, 1, 0; 1997 YP_{16}, 9, 3, 9; 1997 YQ_{16}, 3, 1, 0; 1997 YU_{16}, 3, 1, 0; 1997 YV_{16}, 3, 1, 0; 1997 YW_{16}, 3, 1, 0; 1997 YE_{17} *, 6, 2, 16; 1997 YF_{17} *, 6, 2, 16; 1997 YG_{17} *, 9, 3, 12; 1997 YH_{17} *, 5, 2, 10; 1997 YJ_{17} *, 6, 2, 9; 1997 YK_{17} *, 9, 3, 11; 1997 YL_{17} *, 6, 2, 9; 1997 YM_{17} *, 6, 2, 6; 1997 YN_{17} *, 6, 2, 6; 1997 YO_{17} *, 12, 3, 8; 1997 YP_{17} *, 8, 3, 8; 1997 YQ_{17} *, 8, 3, 8; 1997 YR_{17} *, 9, 3, 8; 1997 YS_{17} *, 12, 3, 8; 1997 YT_{17} *, 6, 2, 6; 1997 YU_{17} *, 12, 3, 8; 1997 YV_{17} *, 9, 3, 8; 1997 YW_{17} *, 6, 2, 6; 1997 YX_{17} *, 9, 3, 8; 1997 YY_{17} *, 8, 3, 8; 1997 YZ_{17} *, 6, 2, 6; 1997 YA_{18} *, 9, 3, 8; 1997 YB_{18} *, 6, 2, 6; 1997 YC_{18} *, 8, 3, 8; 1997 YQ_{18} *, 6, 2, 9; 1997 YR_{18} *, 6, 2, 7; 1997 YS_{18} *, 6, 2, 7; 1997 YT_{18} *, 6, 2, 7; 1997 YU_{18} *, 6, 2, 7; 1997 YV_{18} *, 6, 2, 7; 1997 YW_{18} *, 6, 2, 18; 1997 YX_{18} *, 6, 2, 18; 1997 YY_{18} *, 6, 2, 11; 1997 YZ_{18} *, 6, 2, 11; 1997 YA_{19} *, 6, 2, 11; 1997 YB_{19} *, 5, 2, 10; 1997 YC_{19} *, 6, 2, 10; 1997 YD_{19} *, 6, 2, 8; 1997 YE_{19} *, 6, 2, 8; 1997 YF_{19} *, 5, 2, 8; 1997 YG_{19} *, 6, 2, 8; 1997 YH_{19} *, 6, 2, 8; 1997 YJ_{19} *, 5, 2, 8; 1997 YK_{19} *, 6, 2, 8; 1997 YL_{19} *, 9, 2, 8; 1997 YM_{19} *, 6, 2, 8; 1997 YN_{19} *, 6, 2, 8; 1997 YO_{19} *, 6, 2, 8; 1998 AB *, 6, 2, 1; 1998 AC *, 6, 2, 1; 1998 AD_1 *, 6, 2, 5; 1998 AE_1 *, 6, 2, 5; 1998 AF_1 *, 6, 2, 5; 1998 AG_1 *, 6, 2, 5; 1998 AH_1 *, 5, 2, 5; 1998 AJ_1 *, 6, 2, 5; 1998 AK_1 *, 6, 2, 5; 1998 AL_1 *, 6, 2, 5; 1998 AM_1 *, 6, 2, 5; 1998 AN_1 *, 6, 2, 5; 1998 AO_1 *, 6, 2, 5; 1998 AP_1 *, 6, 2, 5; 1998 AQ_1 *, 6, 2, 5; 1998 AR_1 *, 6, 2, 5; 1998 AS_1 *, 6, 2, 5; 1998 AT_1 *, 6, 2, 5; 1998 AU_1 *, 6, 2, 5; 1998 AV_1 *, 6, 2, 5; 1998 AW_1 *, 6, 2, 5; 1998 AX_1 *, 6, 2, 5; 1998 AY_1 *, 6, 2, 5; 1998 AZ_1 *, 6, 2, 5; 1998 AA_2 *, 6, 2, 5; 1998 AB_2 *, 6, 2, 5; 1998 AC_2 *, 6, 2, 5; 1998 AD_2 *, 6, 2, 5; 1998 AE_2 *, 6, 2, 5; 1998 AF_2 *, 6, 2, 5; 1998 AG_2 *, 6, 2, 5; 1998 AH_2 *, 6, 2, 5; 1998 AJ_2 *, 6, 2, 5; 1998 AK_2 *, 6, 2, 5; 1998 AL_2 *, 6, 2, 5; 1998 AM_2 *, 6, 2, 5; 1998 AN_2 *, 6, 2, 5; 1998 AO_2 *, 6, 2, 5; 1998 AP_2 *, 6, 2, 5; 1998 AQ_2 *, 6, 2, 5; 1998 AR_2 *, 6, 2, 5; 1998 AS_2 *, 6, 2, 5; 1998 AT_2 *, 9, 3, 6; 1998 AU_2 *, 8, 3, 6; 1998 AV_2 *, 6, 2, 4; 1998 AW_2 *, 6, 2, 4; 1998 AX_2 *, 6, 2, 4; 1998 AY_2 *, 6, 2, 4; 1998 AZ_2 *, 6, 2, 4; 1998 AA_3 *, 6, 2, 4; 1998 AD_3, 3, 1, 0; 1998 AM_3 *, 6, 2, 6; 1998 AN_3 *, 6, 2, 6; 1998 AO_3 *, 6, 2, 6; 1998 AP_3 *, 6, 2, 6; 1998 AQ_3 *, 6, 2, 6; 1998 AR_3 *, 6, 2, 6; 1998 AS_3 *, 6, 2, 6; 1998 AT_3 *, 6, 2, 6; 1998 AU_3 *, 6, 2, 6; 1998 AV_3 *, 6, 2, 6; 1998 AW_3 *, 6, 2, 6; 1998 AX_3 *, 6, 2, 6; 1998 AY_3 *, 6, 2, 6; 1998 AZ_3 *, 6, 2, 6; 1998 AA_4 *, 6, 2, 6; 1998 AB_4 *, 6, 2, 6; 1998 AC_4 *, 6, 2, 6; 1998 AD_4 *, 6, 2, 6; 1998 AE_4 *, 6, 2, 6; 1998 AF_4 *, 6, 2, 6; 1998 AG_4 *, 6, 2, 6; 1998 AH_4 *, 6, 2, 6; 1998 AJ_4 *, 6, 2, 2; 1998 AK_4 *, 5, 2, 2; 1998 AL_4 *, 6, 2, 2; 1998 AM_4 *, 6, 2, 2; 1998 AN_4 *, 6, 2, 2; 1998 AO_4 *, 9, 2, 2; 1998 AP_4 *, 9, 2, 2; 1998 AQ_4 *, 6, 2, 2; 1998 AR_4 *, 8, 2, 2; 1998 AS_4 *, 6, 2, 2; 1998 AT_4 *, 6, 2, 2; 1998 AU_4 *, 6, 2, 2; 4033 P-L, 3, 1, 0; 4042 P-L, 3, 1, 0; 6133 P-L, 3, 1, 0; 3175 T-2, 3, 1, 0; 1189 T-3, 9, 3, 16; 3464 T-3, 3, 1, 0; (140), 6, 2, 16; (208), 3, 1, 0; (261), 6, 1, 0; (685), 3, 1, 0; (741), 6, 2, 7; (864), 3, 1, 0; (917), 3, 1, 0; (953), 3, 1, 0; (1496), 3, 1, 0; (1647), 3, 1, 0; (1904), 6, 2, 7; (2138), 9, 3, 9; (2169), 6, 2, 4; (3221), 3, 1, 0; (3856), 3, 1, 0; (3859), 3, 1, 0; (4061), 3, 1, 0; (4273), 3, 1, 0; (4592), 3, 1, 0; (4599), 12, 4, 16; (4641), 6, 2, 5; (4755), 3, 1, 0; (5157), 9, 3, 10; (5827), 3, 1, 0; (6432), 3, 1, 0; (6467), 6, 2, 3; (6952), 3, 1, 0; (7168), 3, 1, 0; (7234), 3, 1, 0; (7278), 6, 2, 4; (7442), 6, 2, 5; (7615), 3, 1, 0; *[2086, 376, 232*, 1991/10/01–1998/01/08]*

694 Tumamoc

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

Observer S. M. Larson

Measurer C. W. Hergenrother

0.5-m reflector + CCD

USNO SA1.0

1990 VX_3, 4, 1, 0; (718), 4, 1, 0; *[8, 2, 0*, 1997/11/06]*

695 Kitt Peak

T. J. Balonek, Dept. of Physics and Astronomy, Colgate University, Hamilton, NY 13346, U.S.A. [tbalonek@colgate.edu]

Observers T. J. Balonek, L. M. Lee, A. F. Schirmer, M. T. Pickard

Measurers L. W. Brenneman, T. J. Balonek

0.61-m $f/3.6$ Burrell Schmidt + CCD

GSC

1997 SG_{16}, 2, 1, 0; *[2, 1, 0*, 1995/04/09]*

704 Lincoln Laboratory Experimental Test System, New Mexico

H. Viggh, MIT Lincoln Laboratory, 244 Wood Street, Lexington, MA 02173, U.S.A. [viggh@ll.mit.edu]

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

Measurers J. Stuart, H. Viggh

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

1967 JP, 8, 2, 9; 1970 OF, 5, 1, 0; 1974 ST_{1}, 10, 2, 6; 1976 DJ_{1}, 4, 1, 0; 1976 SC, 5, 1, 0; 1976 UY, 5, 1, 0; 1976 YA_{6}, 16, 4, 37; 1977 DX_{3}, 13, 3, 34; 1978 PS_{2}, 8, 2, 9; 1978 PH_{3}, 4, 1, 0; 1978 SA_{7}, 5, 1, 0; 1978 SQ_{7}, 2, 1, 0; 1978 SA_{8}, 5, 1, 0; 1978 VO_{4}, 4, 1, 0; 1978 VD_{7}, 5, 1, 0; 1978 VK_{8}, 3, 1, 0; 1978 VP_{10}, 18, 4, 34; 1979 HW_{6}, 4, 1, 0; 1979 MW_{1}, 10, 2, 5; 1979 MH_{2}, 4, 1, 0; 1979 MN_{3}, 5, 1, 0; 1979 MG_{4}, 5, 1, 0; 1979 MK_{5}, 5, 1, 0; 1979 OQ_{5}, 4, 1, 0; 1979 QV_{1}, 4, 1, 0; 1979 SC, 5, 1, 0; 1979 SP_{14}, 11, 3, 9; 1980 UM_{1}, 10, 2, 6; 1980 UN_{1}, 4, 1, 0; 1981 EV_{7}, 6, 2, 3; 1981 EA_{9}, 4, 1, 0; 1981 EE_{12}, 8, 2, 6; 1981 EO_{15}, 5, 1, 0; 1981 EJ_{23}, 3, 1, 0; 1981 EK_{23}, 4, 1, 0; 1981 EC_{27}, 8, 2, 4; 1981 ER_{27}, 5, 1, 0; 1981 EU_{33}, 9, 2, 6; 1981 ET_{42}, 4, 1, 0; 1981 EJ_{43}, 4, 1, 0; 1981 JS_{2}, 5, 1, 0; 1982 JB_{2}, 13, 4, 9; 1982 KK_{1}, 3, 1, 0; 1982 UR_{6}, 13, 3, 9; 1982 UF_{7}, 5, 1, 0; 1982 VN, 5, 1, 0; 1982 VY_{2}, 5, 1, 0; 1982 YR_{1}, 4, 1, 0; 1983 RY_{4}, 9, 2, 1; 1983 WG, 5, 1, 0; 1984 BQ, 8, 2, 12; 1984 SH, 10, 2, 6; 1984 SU_{3}, 10, 2, 6; 1984 SN_{6}, 5, 1, 0; 1985 CR_{2}, 10, 2, 6; 1985 CS_{2}, 5, 1, 0; 1985 FE_{3}, 3, 1, 0; 1985 JN_{1}, 13, 3, 34; 1985 RD_{2}, 5, 1, 0; 1985 RJ_{3}, 3, 1, 0; 1985 UQ_{4}, 10, 2, 6; 1986 PM, 4, 1, 0; 1986 PK_{6}, 9, 2, 26; 1986 QT, 4, 1, 0; 1986 QG_{2}, 5, 1, 0; 1986 TC, 5, 1, 0; 1986 VY, 5, 1, 0; 1986 VM_{6}, 10, 2, 5; 1987 BU_{1}, 17, 4, 34; 1987 HK, 5, 1, 0; 1987 RT_{5}, 5, 1, 0; 1987 YC_{1}, 8, 2, 2; 1988 CE_{2}, 7, 2, 10; 1988 CY_{2}, 8, 2, 6; 1988 CQ_{7}, 9, 2, 5; 1988 ER_{1}, 5, 1, 0; 1988 FW_{2}, 8, 2, 3; 1988 RX_{2}, 10, 2, 6; 1988 RJ_{13}, 3, 1, 0; 1988 SU_{2}, 10, 2, 6; 1988 SF_{3}, 5, 1, 0; 1988 TR, 5, 1, 0; 1989 GC_{4}, 8, 2, 4; 1989 GQ_{4}, 5, 1, 0; 1989 WC_{2}, 15, 3, 5; 1990 BH_{1}, 10, 2, 6; 1990 FD_{1}, 6, 1, 0; 1990 MG, 13, 3, 34; 1990 OH_{1}, 5, 1, 0; 1990 OD_{2}, 5, 1, 0; 1990 QJ_{1}, 4, 1, 0; 1990 RR_{5}, 5, 1, 0; 1990 SA_{2}, 5, 1, 0; 1990 SM_{7}, 5, 1, 0; 1990 SB_{11}, 9, 2, 6; 1990 SN_{28}, 5, 1, 0; 1990 TO, 5, 1, 0; 1990 UL_{1}, 13, 3, 2; 1990 UB_{3}, 5, 1, 0; 1990 UO_{3}, 8, 2, 3; 1990 VW_{6}, 4, 1, 0; 1990 WQ_{3}, 13, 3, 9; 1991 AH_{1}, 12, 3, 35; 1991 CP_{1}, 5, 1, 0; 1991 CM_{3}, 10, 2, 6; 1991 DM, 5, 1, 0; 1991 EA, 5, 1, 0; 1991 FL, 4, 1, 0; 1991 FS_{1}, 5, 1, 0; 1991 GC_{1}, 5, 1, 0; 1991 GV_{8}, 4, 1, 0; 1991 JJ, 5, 1, 0; 1991 LW, 10, 2, 6; 1991 NZ_{6}, 5, 1, 0; 1991 PE_{5}, 5, 1, 0; 1991 PG_{5}, 12, 3, 34; 1991 PG_{16}, 5, 1, 0; 1991 PV_{16}, 5, 1, 0; 1991 RR_{1}, 8, 2, 3; 1991 RV_{3}, 5, 1, 0; 1991 RK_{5}, 5, 1, 0; 1991 RB_{11}, 5, 1, 0; 1991 RP_{15}, 5, 1, 0; 1991 RT_{17}, 10, 2, 31; 1991 SC_{1}, 10, 2, 6; 1991 VD_{2}, 4, 1, 0; 1991 VB_{9}, 10, 2, 5; 1992 EB_{8}, 5, 1, 0; 1992 ED_{17}, 4, 1, 0; 1992 FD_{1}, 5, 1, 0; 1992 FS_{1}, 5, 1, 0; 1992 GB_{2}, 10, 2, 5; 1992 GM_{4}, 5, 1, 0; 1992 GO_{4}, 8, 2, 3; 1992 HG_{4}, 5, 1, 0; 1992 HL_{4}, 5, 1, 0; 1992 JD_{3}, 5, 1, 0; 1992 LN, 5, 1, 0; 1992 NP, 5, 1, 0; 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USNO-SA1.0
1979 MH_2, 5, 1, 0; 1993 DQ_1, 5, 1, 0; 1996 PW, 14, 2, 1; 1997 XF_{10} *, 29, 6, 24; 1997 XG_{10} *, 24, 5, 23; 1997 YK_{11} *, 16, 3, 4; *[93, 6, 3*, 1997/12/05–1998/01/01]*

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0.25-m f/6.3 Schmidt-Cassegrain + focal reducer + CCD
GSC, USNO SA-1.0
(1005), 4, 2, 1; (1116), 4, 2, 1; (1118), 4, 2, 1; (1182), 4, 2, 1; (1233), 4, 2, 1; (1259), 3, 2, 1; (1289), 4, 2, 1; (1296), 4, 2, 1; (1356), 4, 2, 1; (1504), 4, 2, 1; (1591), 4, 2, 1; (1729), 4, 2, 1; (1874), 3, 2, 1; (1980), 4, 2, 3; (2008), 3, 2, 1; (2310), 4, 2, 1; (2354), 4, 2, 1; (2417), 4, 2, 1; (2421), 4, 2, 1; (2562), 4, 2, 1; (3099), 4, 2, 1; (3140), 4, 2, 1; (3198), 4, 2, 3; (3296), 4, 2, 1; (3724), 4, 2, 3; (4086), 4, 2, 1; (4100), 4, 2, 1; (4266), 3, 2, 1; (4324), 4, 2, 3; (4440), 4, 2, 3; (4452), 4, 2, 3; (4540), 4, 2, 1; (4706), 4, 2, 1; (4711), 4, 2, 1; (4896), 4, 2, 3; (4925), 4, 2, 3; (4998), 4, 2, 1; (5036), 4, 2, 1; (5092), 3, 2, 1; (5237), 4, 2, 1; (5399), 4, 2, 3; (5566), 3, 2, 1; (5713), 4, 2, 1; (5747), 4, 2, 1; (5798), 4, 2, 1; (5847), 4, 2, 3; (5913), 4, 2, 1; (6025), 4, 2, 1; (6245), 4, 2, 3; (6280), 4, 2, 3; (6291), 4, 2, 3; (6315), 4, 2, 1; (6361), 3, 2, 1; (6397), 4, 2, 1; (6421), 4, 2, 1; (6463), 4, 2, 1; (7124), 4, 2, 3; (7138), 4, 2, 1; (7197), 4, 2, 1; (7314), 4, 2, 1; *[233, 60, 0*, 1997/12/27–1998/01/08]*

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0.76-m f/3.0 reflector + CCD
GSC
1988 JB_1, 2, 1, 0; 1989 VA, 4, 2, 1; 1992 EB_1, 6, 3, 2; 1993 DQ_1, 6, 3, 2; 1994 AH_2, 6, 3, 2; 1994 CN_2, 4, 2, 1; 1995 LH, 4, 2, 1; 1996 DH, 2, 1, 0; 1996 FG_3, 6, 3, 2; 1996 HW_1, 4, 2, 1; 1996 PA, 4, 2, 1; 1996 TL_{66}, 6, 3, 2; 1997 SE_5, 4, 2, 1; 1997 TU_9, 4, 2, 1; 1997 TT_{25}, 7, 4, 4; 1997 UF_9, 4, 2, 1; 1997 UH_9, 4, 2, 1; 1997 US_9, 4, 2, 1; 1997 VM_4, 6, 4, 4; 1997 WB_{21}, 6, 3, 2; 1997 WU_{22}, 2, 1, 0; 1997 WQ_{23}, 8, 4, 3; 1997 XR_2, 4, 2, 1; (1951), 2, 1, 0; (2340), 3, 2, 1; (4878), 2, 1, 0; (5863), 5, 4, 4; (6042), 2, 1, 0; (6490), 4, 3, 2; (8014), 4, 2, 1; *[129, 30, 0*, 1997/12/30–1998/01/03]*

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0.20-m f/10 Schmidt-Cassegrain + CCD
GSC
(356), 6, 2, 3; (1468), 6, 2, 3; (5819), 5, 2, 2; *[17, 3, 0*, 1997/12/04–1997/12/30]*

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Measurers E. Ross, T. Houlden
0.25-m f/3.3 Schmidt-Cassegrain + CCD
GSC
1997 XC, 2, 1, 0; 1997 YW_{11} *, 6, 3, 2; *[8, 2, 1*, 1997/12/27–1998/01/02]*

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0.46-m f/4.5 Newtonian reflector + CCD
GSC
1975 SK_1, 3, 1, 0; 1985 QL_4, 3, 2, 2; 1986 WO_1, 7, 2, 2; 1988 XG_2, 7, 2, 2; 1990 FM_1, 2, 1, 0; 1991 FK_1, 8, 2, 2; 1991 RX_{23}, 5, 2, 3; 1992 DN_6, 3, 1, 0; 1992 WP_3, 3, 1, 0; 1993 OX_9, 6, 2, 6; 1997 VY_8, 5, 2, 2; 4232 T-1, 4, 2, 3; (8069), 6, 2, 6; (8085), 4, 1, 0; (8096), 3, 1, 0; *[69, 15, 0*, 1997/12/09–1997/12/30]*

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0.15m f/6 refractor + CCD
GSC
1997 VA_3, 6, 2, 1; 1997 VY_3, 2, 1, 0; 1997 WQ_{25}, 7, 2, 1; *[15, 3, 0*, 1997/12/16–1997/12/17]*

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GSC
1986 VR_5, 5, 2, 1; 1989 SG, 5, 2, 1; 1990 WF, 6, 2, 1; 1992 AB, 8, 2, 1; 1993 QO, 5, 2, 3; 1993 XP, 6, 2, 1; 1993 XV, 4, 2, 1; 1994 AW, 6, 2, 1; 1994 DD, 12, 4, 3; 1995 BD_1, 6, 2, 1; 1995 GW, 4, 2, 1; 1997 XR_2, 4, 1, 0; 1998 AE *, 10, 4, 3; (8073), 6, 2, 1; *[87, 14, 1*, 1997/12/08–1998/01/09]*

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0.2-m f/10 Schmidt-Cassegrain + CCD
GSC
(1468), 3, 1, 0; *[3, 1, 0*, 1997/11/24]*

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[bdillon@houston.geoquest.slb.com]
Observers C. Gustava, K. Rivich, E. Dillon, W. G. Dillon
Measurers K. Rivich, W. G. Dillon
0.46-m reflector + CCD
USNO-SA1.0
1997 YW_4 *, 10, 4, 10; 1997 YH_5, 6, 2, 3; 1997 YC_8 *, 9, 3, 7; 1998 AA *, 2, 1, 0; (7992), 3, 1, 0; *[30, 5, 3*, 1997/12/01–1998/01/01]*

736 Houston
D. Williams, 3619 Bellefontaine, Houston, TX 77025, U.S.A. [williams@pdq.com]
0.46-m f/4.5 reflector + CCD
GSC
(258), 6, 2, 28; (419), 6, 2, 28; *[12, 2, 0*, 1997/11/02–1997/11/30]*

750 Hobbs Observatory, Fall Creek
R. Elliott, S475 County Road K, Fall Creek, WI 54742, U.S.A.
[elliottb@uwec.edu]
0.60-m f/5 reflector + CCD
GSC
1992 AB, 2, 1, 0; (1980), 10, 4, 25; (2635), 2, 1, 0; (4810), 2, 1, 0; *[16, 4, 0*, 1997/11/29–1997/12/24]*

758 BCC Observatory, Cocoa
I. P. Griffin, BCC Observatory, 1519 Clearlake Road, Cocoa, FL 32922, U.S.A.
[GRIFFIN.I@a1.brevard.cc.fl.us]
0.30-m f/5 Maksutov + CCD
GSC
1976 YA_6, 2, 1, 0; 1983 RY_4, 2, 1, 0; 1983 TC, 2, 1, 0; 1983 WG, 2, 1, 0; 1988 TR, 5, 2, 1; 1989 UA, 5, 2, 2; 1990 BE_1, 6, 2, 1; 1991 CM_3, 2, 1, 0; 1992 WL, 4, 2, 1; 1993 ON_9, 1, 1, 0;

1994 AY_1, 2, 1, 0; 1995 FE, 2, 2, 1; 1997 XR_2, 3, 1, 0; 3006 T-3, 5, 2, 1; (433), 1, 1, 0; (1468), 2, 1, 0; (1843), 9, 4, 22; (1980), 2, 1, 0; (2655), 4, 2, 2; (3800), 2, 1, 0; (4663), 4, 2, 2; (4670), 4, 2, 2; (5184), 3, 1, 0; (5870), 1, 1, 0; *[75, 24, 0*, 1997/12/09–1998/01/12]*

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, 12, 3, 25; *[12, 1, 0*, 1997/12/03–1997/12/28]*

784 Alfred University Observatory
D. R. DeGraff, Physics and Astronomy, Alfred University, Alfred, NY 14803, U.S.A. [david@merlin.alfred.edu]
Observers D. R. DeGraff, J. S. Weaver, A. M. Robbins, M. O. Weaver
Measurers D. R. DeGraff, A. M. Robbins
0.81-m $f/4$ reflector + CCD
USNO-A1.0
1998 AK_8, 9, 1, 0; *[9, 1, 0*, 1998/01/11]*

801 Oak Ridge
R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A.
Observers R. E. McCrosky, C.-Y. Shao
1.5-m reflector + CCD
GSC
1991 PO_4, 2, 1, 0; 1994 CV_1, 2, 1, 0; 1995 GJ_7, 2, 1, 0; 1997 UM_9, 5, 2, 1; *[11, 4, 0*, 1992/10/28–1995/03/05]*

808 Carlos U. Cesco Observatory, El Leoncito
J. G. Sanguin, Felix Aguilar Observatory, Benavidez 8175 (Oeste), AR-5413 Chimbas, San Juan, Argentina [leoncito@unsjfa.edu.ar]
Observers J. E. Torres, M. R. Cesco, R. Gil-Hutton, H. S. Lepez, C. E. Lopez, J. G. Sanguin
0.5-m $f/7.5$ double astrograph
PPM
1997 VX, 2, 1, 0; *[2, 1, 0*, 1993/08/17]*

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
Observers G. Pizarro, O. Pizarro
Measurers H. Debehogne, E. W. Elst
1.0-m Schmidt
(4) 1985 RN_4, 3, 1, 0; 1988 SN_1, 6, 2, 3; 1988 SZ_2, 3, 1, 0; 1989 SB_4, 3, 1, 0; 1989 UH_7, 3, 1, 0; 1991 GC_1, 3, 1, 0; 1991 GN_9, 3, 1, 0; 1991 VB_9, 3, 1, 0; 1992 SF_2, 3, 1, 0; 1992 UA_3, 3, 1, 0; 1993 SQ_5, 3, 1, 0; 1993 SU_6, 3, 1, 0; 1994 CH_{19} *, 6, 2, 3; 1994 CJ_{19} *, 6, 2, 5; 1994 CK_{19} *, 6, 2, 5; 1994 CL_{19} *, 6, 2, 5; 1994 CM_{19} *, 6, 2, 5; 1994 CN_{19} *, 6, 2, 5; 1994 CO_{19} *, 9, 3, 6; 1994 CP_{19} *, 9, 3, 6; 1994 CQ_{19} *, 6, 2, 5; 1994 CR_{19} *, 6, 2, 5; 1994 CS_{19} *, 6, 2, 5; 1994 CT_{19} *, 6, 2, 5; 1994 CU_{19} *, 9, 2, 5; 1994 CV_{19} *, 9, 2, 5; 1994 CW_{19} *, 6, 2, 5; 1994 CX_{19} *, 6, 2, 5; 1994 CY_{19} *, 6, 2, 5; 1994 CZ_{19} *, 6, 2, 3; 1994 CA_{20} *, 6, 2, 3; 1994 CB_{20} *, 9, 3, 4; 1994 CC_{20} *, 6, 2, 3; 1994 CD_{20} *, 6, 2, 3; 1994 CE_{20} *, 6, 2, 3; 1994 CF_{20} *, 6, 2, 3; 1994 CG_{20} *, 6, 2, 3; 1994 CH_{20} *, 6, 2, 3; 1994 CJ_{20} *, 9, 2, 3; 1994 CK_{20} *, 6, 2, 3; 1994 CL_{20} *, 6, 2, 1; 1994 EV_5, 6, 2, 2; 1994 EZ_5, 9, 3, 5; 1994 EM_6, 6, 2, 5; 1994 EO_6, 6, 2, 3; 1994 EP_6, 6, 2, 3; 1994 ES_6, 6, 2, 3; 1995 FV, 3, 1, 0; 1996 HJ_1, 3, 1, 0; 1996 RK_1, 3, 1, 0; 1996 TM_3, 3, 1, 0; 1996 TN_3, 3, 1, 0; 1996 TH_8, 3, 1, 0; 1996 TD_{12}, 3, 1, 0; 1996 TG_{38}, 3, 1, 0; 1996 TH_{38}, 3, 1, 0; 1996 TJ_{38}, 3, 1, 0; 1996 TK_{38}, 3, 1, 0; 1996 TL_{38}, 3, 1, 0; 1996 TM_{38}, 3, 1, 0; 1996 TN_{38}, 3, 1, 0; 1996 TP_{38}, 3, 1, 0; 1996 TS_{38}, 3, 1, 0; 1996 TT_{38}, 3, 1, 0; 1996 TU_{38}, 3, 1, 0; 1996 TW_{38}, 3, 1, 0; 1996 TX_{38}, 3, 1, 0; 1996 TA_{39}, 3, 1, 0; 1996 TC_{39}, 3, 1, 0; 1996 TD_{39}, 3, 1, 0; 1996 TE_{39}, 3, 1, 0; 1996 TF_{39}, 3, 1, 0; 1996 TG_{39}, 3, 1, 0; 1996 TH_{39}, 3, 1, 0; 1996 TJ_{39}, 3, 1, 0; 1996 TK_{39}, 3, 1, 0; 1996 TL_{39}, 3, 1, 0; 1996 TM_{39}, 3, 1, 0; 1996 TN_{39}, 3, 1, 0; 1996 TO_{39}, 3, 1, 0; 1996 TP_{39}, 3, 1, 0; 1996 TR_{39}, 3, 1, 0; 1996 TS_{39}, 3, 1, 0; 1996 TT_{39}, 3, 1, 0; 1996 TU_{39}, 3, 1, 0; 1996 TV_{39}, 3, 1, 0; 1996 TW_{39}, 3, 1, 0; 1996 TX_{39}, 3, 1, 0; 1996 TY_{39}, 3, 1, 0; 1996 TZ_{39}, 3, 1, 0; 1996 TA_{40}, 3, 1, 0; 1996 TB_{40}, 3, 1, 0; 1996 TD_{40}, 3, 1, 0; 1996 TE_{40}, 3, 1, 0; 1996 TF_{40}, 3, 1, 0; 1996 TG_{40}, 3, 1, 0; 1996 TJ_{40}, 3, 1, 0; 1996 TK_{40}, 3, 1, 0; 1996 TL_{40}, 3, 1, 0; 1996 TN_{40}, 3, 1, 0; 1996 TO_{40}, 3, 1, 0; 1996 TP_{40}, 3, 1, 0; 1996 TQ_{40}, 3, 1, 0; 1996 TR_{40}, 3, 1, 0; 1996 TT_{40}, 3, 1, 0; 1996 TV_{40}, 3, 1, 0; 1996 TW_{40}, 3, 1, 0; 1996 TX_{40}, 3, 1, 0; 1996 TZ_{40}, 3, 1, 0; 1996 TB_{41}, 3, 1, 0; 1996 TC_{41}, 3, 1, 0; 1996 TD_{41}, 3, 1, 0; 1996 TF_{41}, 3, 1, 0; 1996 TG_{41}, 3, 1, 0; 1996 TH_{41}, 3, 1, 0; 1996 TJ_{41}, 3, 1, 0; 1996 TK_{41}, 3, 1, 0; 1996 TL_{41}, 3, 1, 0; 1996 TM_{41}, 3, 1, 0; 1996 TN_{41}, 3, 1, 0; 1996 TO_{41}, 3, 1, 0; 1996 TP_{41}, 3, 1, 0; 1996 TR_{41}, 3, 1, 0; 1996 TS_{41}, 3, 1, 0; 1996 TV_{41}, 3, 1, 0; 1996 TX_{41}, 3, 1, 0; 1996 TZ_{41}, 3, 1, 0; 1996 TC_{42}, 3, 1, 0; 1996 TE_{42}, 3, 1, 0; 1996 TF_{42}, 3, 1, 0; 1996 TG_{42}, 3, 1, 0; 1996 TH_{42}, 3, 1, 0; 1996 TL_{42}, 3, 1, 0; 1996 TM_{42}, 3, 1, 0; 1996 TN_{42}, 3, 1, 0; 1996 TP_{42}, 3, 1, 0; 1996 TC_{64}, 3, 1, 0; 1996 TE_{64}, 3, 1, 0; 1996 TH_{64}, 3, 1, 0; 1996 TT_{66} *, 6, 2, 1; 1996 TU_{66} *, 6, 2, 1; 1996 TV_{66} *, 6, 2, 1; 1996 TW_{66} *, 6, 2, 1; 1996 TX_{66} *, 6, 2, 3; 1997 SN_2, 3, 1, 0; 1997 UY_{20}, 3, 1, 0; 1997 UT_{24}, 3, 1, 0; (2409), 3, 1, 0; (2605), 3, 1, 0; (2657), 3, 1, 0; (2759), 3, 1, 0; (2770), 3, 1, 0; (3019), 3, 1, 0; (3548), 3, 1, 0; (3847), 3, 1, 0; (4096), 3, 1, 0; (5465), 3, 1, 0; (6333), 3, 1, 0; (7230), 3, 1, 0; (7255), 3, 1, 0; *[624, 160, 34*, 1992/05/03–1996/10/10]*

(7) 1993 TJ_{48} *, 6, 2, 12; 1997 SX_{15}, 3, 1, 0; 1997 UW_3, 6, 2, 1; *[15, 3, 1*, 1993/09/15–1993/10/22]*

817 Sudbury
D. di Cicco, Sky & Telescope, Cambridge, MA 02138, U.S.A. [dicicco@skypub.com]
0.41-m Schmidt-Cassegrain + CCD
GSC
1997 XZ_{10}, 8, 3, 5; 1997 YZ_4 *, 7, 3, 8; 1998 AK_8, 4, 1, 0; (5820), 3, 1, 0; *[22, 4, 1*, 1997/12/22–1998/01/11]*

834 Buenos Aires-AAAA
R. Mackintosh, Seccion Sistema Solar, Asociacion Argentina Amigos de la Astronomia, Av. Patricias Argentinas 550, AR-1405 Capital Federal, Argentina [robertom@aaaa.org.ar]
Observers R. Mackintosh, H. Ruggiu
Measurer R. Mackintosh, J. Carozza
0.25-m $f/6.3$ reflector + CCD
USNO A1.0
(943), 2, 1, 0; (1033), 2, 1, 0; (1392), 4, 2, 11; (1396), 2, 1, 0; (1496), 3, 1, 0; (2938), 3, 1, 0; *[16, 6, 0*, 1997/10/18–1997/10/30]*

844 Los Molinos
N. Sosa, Departamento de Astronomia, Facultad de Ciencias, Montevideo, Uruguay [nsosa@fisica.edu.uy]
Observers O. Mendez, N. Sosa
0.35-m reflector + CCD
GSC
(258), 4, 1, 0; (441), 4, 1, 0; *[8, 2, 0*, 1997/10/24–1997/11/11]*

867 Saji Observatory
M. Yamanishi, 1071-1 Takayama, Saji, Yazu-Gun, Tottori-Ken, 689-13 Japan [KYI03040@niftyserve.or.jp]
Observers M. Yamanishi, A. Miyamoto, M. Aimoto, T. Oribe
1.03-m $f/4.2$ reflector + CCD
GSC

1996 HK_1, 6, 2, 2; 1997 CS_{29}, 3, 1, 0; 1997 SF_{11}, 3, 1, 0; 1997 UE_{21}, 2, 1, 0; 1997 UF_{21}, 3, 1, 0; 1997 UM_{21}, 2, 1, 0; 1997 YF_7 *, 10, 4, 8; 1997 YR_{19} *, 5, 2, 6; (2351), 4, 1, 0; *[38, 9, 2*, 1997/12/25–1998/01/02]*

886 Susono
M. Akiyama, 1655-23, Chabatake, Susono, Shizuoka-Ken, 410-11 Japan
0.25-m f/6.3 reflector + CCD
GSC
1988 VQ_3, 2, 1, 0; 1988 VS_3, 4, 2, 18; 1995 FZ, 4, 2, 7; 1996 RF_5, 2, 1, 0; 1996 TF_7, 2, 1, 0; 1996 TJ_{12}, 4, 2, 4; 1996 UT, 2, 1, 0; 1997 UY_8, 2, 1, 0; 1997 WM_{13}, 2, 1, 0; 1997 WD_{21}, 2, 1, 0; 1997 XA, 2, 1, 0; 1997 XU_1, 2, 1, 0; 1997 XV_1, 4, 2, 21; 1997 XX_1, 4, 2, 26; 1997 XJ_5, 2, 1, 0; 1997 XL_5, 8, 4, 24; 1997 XM_5, 8, 4, 28; 1997 XR_{11}, 2, 1, 0; 1997 YD_1, 2, 1, 0; 1997 YO_4, 4, 2, 4; 1997 YY_8, 2, 1, 0; 1997 YB_{10}, 6, 3, 7; 1997 YO_{11}, 2, 1, 0; 1997 YP_{11}, 2, 1, 0; 1997 YJ_{16}, 2, 1, 0; 1997 YL_{16}, 2, 1, 0; 1997 YM_{16}, 2, 1, 0; 1997 YN_{16}, 2, 1, 0; 1997 YO_{16}, 2, 1, 0; 1997 YP_{16}, 2, 1, 0; *[88, 30, 0*, 1997/12/05–1998/01/07]*

888 Gekko Observatory
T. Urata, 1-8, Dobayashi 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
[urata@sannet.ne.jp]
Observer T. Kagawa
Measurer T. Urata
0.50-m f/4.0 reflector
GSC
1988 DH_1, 2, 1, 0; 1988 VS_3, 2, 1, 0; 1997 RZ_7, 2, 1, 0; 1997 TJ_{19}, 4, 2, 24; 1997 VE_4, 2, 1, 0; 1997 WN_{13}, 4, 2, 24; 1997 WO_{13}, 2, 1, 0; 1997 XM_{10} *, 6, 3, 20; 1997 YY_8, 2, 1, 0; 1997 YB_{10} *, 4, 2, 2; 1997 YO_{11} *, 4, 2, 4; 1997 YP_{11} *, 4, 2, 4; 1997 YP_{16}, 1, 1, 0; (2866), 4, 2, 4; *[43, 14, 4*, 1997/11/30–1998/01/05]*

897 YGCO Chiyoda Station
T. Kojima, 45 Shimonakamori, Chiyoda, Ohra-Gun, Gunma-Ken, 370-07 Japan
[kojitaku@scorpius.bekkoame.or.jp]
0.25-m f/6.0 reflector + CCD
GSC
1992 BF, 3, 1, 0; 1997 XF_{11}, 11, 3, 10; 1997 YL_{11}, 4, 1, 0; *[18, 3, 0*, 1997/12/21–1998/01/04]*

900 Moriyama
Y. Ikari, Katube-Cho 626, Moriyama, Shiga-Ken 524, Japan
[ikari@gold.ocn.ne.jp]
0.25-m f/6.3 Schmidt-Cassegrain + CCD
GSC
1990 SM_7, 2, 1, 0; 1996 VV, 6, 3, 11; 1996 VB_5, 2, 1, 0; 1997 TA_{18}, 2, 1, 0; 1997 UO_1, 2, 1, 0; 1997 XB_{10}, 2, 1, 0; 1997 XF_{11}, 4, 2, 10; 1997 YO_2 *, 10, 4, 4; 1997 YT_6, 2, 1, 0; 1998 AF *, 8, 3, 4; (3995), 2, 1, 0; *[42, 11, 2*, 1997/12/05–1998/01/06]*

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
1990 SB_{11}, 2, 1, 0; 1997 UY_8, 2, 1, 0; 1997 VZ_1, 4, 2, 14; 1997 VW_4, 1, 1, 0; 1997 VZ_4, 2, 1, 0; 1997 WK_7, 2, 1, 0; 1997 WL_7, 2, 1, 0; 1997 WM_7, 2, 1, 0; 1997 WN_7, 2, 1, 0; 1997 WO_7, 4, 2, 6; 1997 WP_7, 2, 1, 0; 1997 WQ_7, 2, 1, 0; 1997 WR_7, 2, 1, 0; 1997 WE_8, 2, 1, 0; 1997 WJ_{13}, 2, 1, 0; 1997 WK_{13}, 4, 2, 16; 1997 WL_{13}, 2, 1, 0; 1997 WD_{21}, 2, 1, 0; 1997 XQ_{11} *, 4, 2, 16; 1997 XR_{11} *, 4, 2, 16; 1997 XS_{11} *, 4, 2, 16; 1997 YD_1, 2, 1, 0; 1997 YO_4 *, 4, 2, 3; 1997 YG_{16}, 4, 2, 12; 1997 YJ_{16} *, 2, 1, 0; 1997 YL_{16} *, 6, 3, 3; 1997 YM_{16} *, 4, 2, 2; 1997 YN_{16} *, 4, 2, 2; 1997 YO_{16} *, 4, 2, 2; 1997 YP_{16} *, 4, 2, 2; 1998 AJ *, 4, 2, 1; 1998 AK *, 4, 2, 1; (2090), 4, 2, 29; (7120), 2, 1, 0; *[101, 34, 12*, 1997/10/26–1998/01/03]*

910 Caussols-ODAS
A. Maury, Observatoire de la Côte d'Azur, B.P. 229, F-06304 Nice, France
[maury@obs-azur.fr]
G. Hahn, DLR Institute of Planetary Exploration, Rudower Chaussee 5, D-12489 Berlin, Germany [Gerhard.Hahn@DLR.de]
Observers A. Maury, D. Albanese, G. Hahn, M. Hoffmann, C. Pollas
Measurers A. Maury, G. Hahn, M. Hoffmann
0.90-m Schmidt + CCD
GSC
1978 PS_2, 3, 1, 0; 1979 TH_2, 6, 2, 1; 1981 EM_{24}, 3, 1, 0; 1985 RJ_3, 3, 1, 0; 1985 UJ_3, 3, 1, 0; 1988 RJ_6, 3, 1, 0; 1990 QM_1, 3, 1, 0; 1990 WE_2, 3, 1, 0; 1991 GV_8, 3, 1, 0; 1992 PX, 3, 1, 0; 1993 FL_4, 3, 1, 0; 1993 FU_{24}, 3, 1, 0; 1993 TM_{12}, 6, 2, 1; 1993 VS, 3, 1, 0; 1994 PE_{10}, 3, 1, 0; 1996 NA_4, 3, 1, 0; 1996 TF_{11}, 3, 1, 0; 1996 XA_9, 6, 2, 1; 1997 AU_6, 3, 1, 0; 1997 AM_7, 3, 1, 0; 1997 AY_8, 3, 1, 0; 1997 AZ_{21}, 3, 1, 0; 1997 AY_{24} *, 6, 2, 3; 1997 AZ_{24} *, 6, 2, 3; 1997 AA_{25} *, 6, 2, 3; 1997 AB_{25} *, 6, 2, 3; 1997 AC_{25} *, 9, 3, 2; 1997 AD_{25} *, 9, 3, 2; 1997 AE_{25} *, 6, 2, 1; 1997 AF_{25} *, 6, 2, 1; 1997 BF_7, 3, 1, 0; 1997 CV_6, 3, 1, 0; 1997 CW_6, 3, 1, 0; 1997 CX_6, 3, 1, 0; 1997 EK_{38}, 3, 1, 0; 1997 EQ_{38}, 3, 1, 0; 1997 FL_2, 3, 1, 0; 1997 GY_{24}, 3, 1, 0; 1997 JC_{14}, 3, 1, 0; 1997 SG_{34} *, 6, 2, 1; 1997 SH_{34} *, 6, 2, 1; 1997 TF_{27} *, 6, 2, 1; 1997 TG_{27} *, 6, 2, 1; 1997 TH_{27} *, 6, 2, 1; 1997 US_8, 3, 1, 0; 1997 UN_{24}, 3, 1, 0; 1997 VF, 3, 1, 0; 1997 VC_1, 3, 1, 0; 1997 VD_3, 3, 1, 0; 1997 VU_3, 3, 1, 0; 1997 VX_4, 3, 1, 0; 1997 WR_3, 3, 1, 0; 1997 WQ_{11}, 6, 2, 1; 1997 WV_{12}, 6, 2, 1; 1997 WM_{13}, 3, 1, 0; 1997 WD_{15}, 3, 1, 0; 1997 WF_{22}, 3, 1, 0; 1997 WW_{36}, 3, 1, 0; 1997 WO_{39}, 3, 1, 0; 1997 WP_{39}, 3, 1, 0; 1997 XX_3, 6, 2, 1; 1997 XX_5, 3, 1, 0; 1997 XV_{11} *, 9, 3, 2; 1997 YH_1, 3, 1, 0; 1997 YS_1, 3, 1, 0; 1997 YU_1, 3, 1, 0; 1997 YH_3, 3, 1, 0; 1997 YP_4, 3, 1, 0; 1998 AD_5 *, 6, 2, 1; 1998 AE_5 *, 6, 2, 1; 1998 AF_5 *, 6, 2, 1; 1998 AG_5 *, 6, 2, 1; 1998 AH_5 *, 6, 2, 1; 1998 AJ_5 *, 6, 2, 1; 1998 AK_5 *, 6, 2, 1; 1998 AL_5 *, 6, 2, 1; 1998 AM_5 *, 6, 2, 1; 1998 AN_5 *, 6, 2, 1; 1998 AO_5 *, 6, 2, 1; 1998 AP_5 *, 6, 2, 1; 1998 AQ_5 *, 6, 2, 1; 1998 AR_5 *, 6, 2, 1; 1998 AS_5 *, 6, 2, 1; 1998 AT_5 *, 6, 2, 1; 1998 AU_5 *, 6, 2, 1; 1998 AV_5 *, 6, 2, 1; 1998 AW_5 *, 6, 2, 1; 1998 AX_5 *, 6, 2, 1; 1998 AY_5 *, 6, 2, 1; 1998 AZ_5 *, 6, 2, 1; 1998 AA_6 *, 6, 2, 1; 1998 AB_6 *, 6, 2, 1; 1998 AC_6 *, 6, 2, 1; 1998 AD_6 *, 6, 2, 1; 1998 AE_6 *, 6, 2, 1; 1998 AF_6 *, 6, 2, 1; 1998 AG_6 *, 6, 2, 1; 1998 AH_6 *, 6, 2, 1; 1998 AJ_6 *, 6, 2, 1; 1998 AK_6 *, 6, 2, 1; 1998 AK_8 *, 26, 2, 1; 2259 T-1, 3, 1, 0; 3057 T-1, 3, 1, 0; 1153 T-2, 3, 1, 0; (184), 3, 1, 0; (422), 3, 1, 0; (514), 3, 1, 0; (869), 3, 1, 0; (935), 3, 1, 0; (1003), 3, 1, 0; (1432), 3, 1, 0; (1532), 6, 2, 1; (1706), 3, 1, 0; (2297), 3, 1, 0; (2316), 3, 1, 0; (2407), 3, 1, 0; (2809), 3, 1, 0; (3231), 3, 1, 0; (3371), 3, 1, 0; (3399), 3, 1, 0; (3627), 3, 1, 0; (3754), 3, 1, 0; (3778), 3, 1, 0; (3850), 3, 1, 0; (3925), 3, 1, 0; (3989), 6, 2, 1; (4049), 6, 2, 1; (4216), 3, 1, 0; (4242), 3, 1, 0; (4250), 3, 1, 0; (4345), 3, 1, 0; (4387), 3, 1, 0; (4470), 3, 1, 0; (4921), 6, 2, 3; (5333), 3, 1, 0; (5501), 3, 1, 0; (5609), 6, 2, 1; (6001), 3, 1, 0; (6143), 6, 2, 2; (6422), 3, 1, 0; (6637), 3, 1, 0; (7026), 3, 1, 0; (7348), 3, 1, 0; (7452), 3, 1, 0; (7490), 3, 1, 0; (7993), 3, 1, 0; (8001), 3, 1, 0; (8054), 3, 1, 0; (8119), 3, 1, 0; *[653, 149, 47*, 1997/01/12–1998/01/10]*

947 Saint-Sulpice
B. Christophe, 63 rue Belliard, F-75018 Paris, France
[bernard.christophe@hol.fr]
0.60-m f/5.6 relector + CCD
GSC, USNO-SA1.0
(2), 2, 2, 6; (482), 4, 2, 1; (774), 4, 2, 21; (978), 3, 3, 7; (3782), 4, 2, 1; (4686), 5, 3, 21; (5748), 4, 2, 8; *[26, 7, 0*, 1997/09/13–1997/10/10]*

949 Durtal
S. Charbonnel, La Cesvrie, F-49430 Durtal, France [scharbonnel@oceanet.fr]
0.20-m f/6.3 reflector + CCD
GSC
1997 VV, 2, 1, 0; *[2, 1, 0*, 1997/12/14]*

952 Marxuquera
J. J. Gómez D., Cardenal Cisneros 55-4-8, E-46700 Gandia, Spain
[astsafor@arrakis.es]
Observers A. Ferrer, J. J. Gómez
Measuer J. J. Gómez
0.25-m f/6.3 Schmidt-Cassegrain + CCD
GSC

1992 SW_{17}, 6, 1, 0; 1992 UN_4, 2, 1, 0; 4008 T-3, 3, 1, 0; *[11, 3, 0∗, 1997/12/27–1997/12/28]*

958 Observatoire de Dax
P. Dupouy, Observatoire de Dax, F-40100 Dax, France
[DUPOUY_Philippe@compuserve.com]
Observers P. Dupouy, F. Marechal
Measurers J.-F. Lahitte, P. Dupouy
0.254-m $f/6.7$ reflector + CCD
GSC, USNO-SA1.0
1988 VM_5, 3, 1, 0; 1997 UW_{10}, 2, 1, 0; 1997 VV, 2, 1, 0; 1997 XQ_2, 3, 1, 0; 1997 XU_5, 3, 1, 0; 1997 YF_5, 2, 1, 0; 1997 YG_5, 2, 1, 0; *[17, 7, 0∗, 1997/12/03–1997/12/30]*

960 Rolvenden
M. Armstrong, Butterfly Cottage, Hastings Road, Rolvenden, Kent TN17 4PN, England [fw04@dial.pipex.com]
Observers M. Armstrong, C. Armstrong
Observer M. Armstrong
0.26-m Schmidt-Cassegrain + CCD
GSC
1997 WQ_{28}, 11, 4, 25; *[11, 1, 0∗, 1997/12/08–1998/01/02]*

966 Church Stretton
S. P. Laurie, Toleman, 10 Hazler Orchard, Church Stetton, Shropshire SY6 7AL, England [100336.3635@compuserve.com]
0.25-m Schmidt Cassegrain + focal reducer + CCD
GSC
1989 WH_3, 2, 1, 0; 1997 TJ_{19}, 4, 2, 1; 1997 YG_9 ∗, 4, 2, 1; 1997 YL_{11}, 2, 1, 0; *[12, 4, 1∗, 1997/12/26–1998/01/01]*

970 Chelmsford
N. D. James, 11 Tavistock Road, Chelmsford, Essex CM1 6JL, England [ndj@astro1.demon.co.uk]
0.30-m $f/5.25$ reflector + CCD
GSC
1997 WQ_{28}, 1, 1, 0; *[1, 1, 0∗, 1997/12/08]*

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P/1993 K2 (Helin-Lawrence)

Epoch 1993 June 22.0 TT = JDT 2449160.5

				Marsden	
T	1993 June 30.3453 TT				
q	3.090168		(2000.0)	**P**	**Q**
n	0.1042543	ω	163.7303	−0.2417410	+0.9550594
a	4.471022	Ω	92.0349	−0.9083040	−0.1605293
e	0.308845	i	9.8831	−0.3413870	−0.2491823
P	9.45				

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

C/1996 J1-B (Evans-Drinkwater)

Epoch 1996 Dec. 23.0 TT = JDT 2450440.5

				Nakano	
T	1996 Dec. 30.4198 TT				
q	1.297563		(2000.0)	**P**	**Q**
z	−0.000711	ω	14.8415	+0.3715395	+0.8474915
	±0.000003	Ω	278.1673	−0.8860594	+0.2017513
e	1.000923	i	22.5186	−0.2772311	+0.4909731

From 433 observations 1996 May 10–1998 Jan. 11, mean residual 0″.6.

C/1997 J1 (Mueller)

Epoch 1997 Apr. 22.0 TT = JDT 2450560.5

				Nakano	
T	1997 May 3.8025 TT				
q	2.302156		(2000.0)	**P**	**Q**
z	+0.003950	ω	98.9545	−0.5526257	−0.0376113
	±0.000002	Ω	277.0750	−0.2486828	+0.9609147
e	0.990907	i	122.9686	+0.7954632	+0.2742779

From 416 observations 1997 May 3–1998 Jan. 10, mean residual 0″.6.

C/1997 J2 (Meunier-Dupouy)

Epoch 1998 Mar. 8.0 TT = JDT 2450880.5

				Marsden	
T	1998 Mar. 10.4522 TT				
q	3.051070		(2000.0)	**P**	**Q**
z	−0.000197	ω	122.6770	+0.4717080	+0.7141150
	±0.000003	Ω	148.8445	−0.5763266	−0.1942555
e	1.000600	i	91.2734	+0.6673374	−0.6725359

From 765 observations 1997 May 5–1998 Jan. 11, mean residual 0″.6.

C/1997 T1 (Utsunomiya)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5

				Nakano	
T	1997 Dec. 10.1449 TT				
q	1.359107		(2000.0)	**P**	**Q**
z	+0.001105	ω	95.9649	+0.4319084	−0.6403266
	±0.000063	Ω	53.7027	−0.7211472	−0.6681259
e	0.998498	i	127.9925	+0.5416658	−0.3789322

From 491 observations 1997 Oct. 5–Dec. 25, mean residual 0″.7.

P/1997 T3
Epoch 1998 Mar. 8.0 TT = JDT 2450880.5
T 1998 Mar. 10.6712 TT Nakano

				P	**Q**
q	4.241139		(2000.0)		
n	0.0570780	ω	334.1323	+0.7938632	−0.6034230
a	6.680722	Ω	63.1889	+0.5715276	+0.6981254
e	0.365168	i	4.8363	+0.2076956	+0.3853590
P	17.3				

From 124 observations 1997 Oct. 5–1998 Jan. 2, mean residual 0″.5.

P/1997 V1 (Larsen)
T 1997 Sept. 15.1671 TT Marsden

				P	**Q**
q	3.293512		(2000.0)		
n	0.0899750	ω	132.8753	+0.9776643	−0.1218612
a	4.932361	Ω	234.8371	+0.0706570	+0.9578982
e	0.332265	i	12.0908	+0.1979398	+0.2599634
P	11.0				

From 226 observations 1997 Nov. 3–1998 Jan. 10.

55P/Tempel-Tuttle
Epoch 1998 Mar. 8.0 TT = JDT 2450880.5
T 1998 Feb. 28.0982 TT Nakano

				P	**Q**
q	0.976577		(2000.0)		
n	0.0296539	ω	172.4988	+0.4626996	+0.8513264
a	10.337486	Ω	235.2583	+0.7969354	−0.2772437
e	0.905531	i	162.4860	+0.3883337	−0.4453979
P	33.2				

From 160 observations 1866–1998, mean residual 0″.8. Nongravitational parameters $A_1 = -0.80$, $A_2 = +0.0090$.

103P/Hartley 2
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5
T 1997 Dec. 22.0171 TT Marsden

				P	**Q**
q	1.031730		(2000.0)		
n	0.1542575	ω	180.7214	+0.7586381	−0.6337226
a	3.443276	Ω	219.9543	+0.5989240	+0.7697096
e	0.700364	i	13.6189	+0.2564340	+0.0770902
P	6.39				

From 377 observations 1986–1998, mean residual 0″.8. Nongravitational parameters $A_1 = +0.46$, $A_2 = +0.0444$.

104P/Kowal 2
Epoch 1998 Mar. 8.0 TT = JDT 2450880.5
T 1998 Mar. 2.1680 TT Marsden

				P	**Q**
q	1.396506		(2000.0)		
n	0.1594392	ω	191.9098	+0.2137821	−0.9458545
a	3.368263	Ω	246.1479	+0.9167662	+0.2806091
e	0.585393	i	15.4891	+0.3373973	−0.1631494
P	6.18				

From 402 observations 1979–1998, mean residual 0″.9. Nongravitational parameters $A_1 = -2.46$, $A_2 = +0.1080$.

(8126)∗ 1966 BL = 1987 SD$_{24}$ = 1994 CA$_2$
Discovered 1966 Jan. 20 at Purple Mountain Observatory, Nanking.
Id. G. V. Williams (*MPC* 23235)
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

				P	**Q**
M	306.77177		(2000.0)		
n	0.21289639	ω	195.72106	−0.72285603	−0.68299970
a	2.7777331	Ω	300.71406	+0.64639646	−0.61474531
e	0.1652738	i	7.00413	+0.24423509	−0.39446117
P	4.63	H	12.8	G 0.15	U 1

Residuals in seconds of arc

1966 01 20	330	0.3+	0.5−	1994 03 12	675	0.2+	0.5−	1997 11 03	327	0.0	0.1−
1966 01 28	330	(3.5+	2.2+)	1994 03 14	675	0.0	0.1−	1997 11 03	327	0.2−	0.1−
1966 02 13	330	(5.6+	4.1+)	1994 03 14	675	1.3+	1.1−	1997 11 17	104	0.1+	0.2+
1966 02 16	330	0.3−	0.7+	1996 08 18	010	1.1+	0.3+	1997 11 17	104	0.2+	0.1+
1987 09 23	095	(2.1+	4.6−)	1996 08 18	010	0.7−	0.3+	1997 11 17	104	0.1+	0.0
1994 02 08	400	(3.5+	0.7+)	1996 08 18	010	0.3−	0.7−	1997 12 09	658	0.4−	0.3−
1994 02 08	400	1.1−	0.9+	1997 11 03	327	0.2+	0.4+	1997 12 09	658	0.2−	0.0
1994 02 11	400	0.5−	0.0	1997 11 03	327	0.3+	0.1−	1997 12 09	658	0.2−	0.0
1994 02 11	400	0.3−	0.3−	1997 11 03	327	0.4+	0.2−				
1994 03 12	675	0.4+	0.8+	1997 11 03	327	0.2−	0.0				

(8127)∗ 1967 HA = 1991 CH
Discovered 1967 Apr. 27 by C. U. Cesco at El Leoncito.
Id. H. Kaneda (*MPC* 17953), R. Nagata (*ibid.*)
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

				P	**Q**
M	192.45075		(2000.0)		
n	0.24200539	ω	225.46214	−0.94495763	+0.30633103
a	2.5502692	Ω	331.77820	−0.18570792	−0.79142330
e	0.0463210	i	14.07007	−0.26938384	−0.52897114
P	4.07	H	13.1	G 0.15	U 2

Residuals in seconds of arc

1967 04 27	808	0.1+	0.4−	1991 02 12	875	0.4+	0.2−	1995 03 27	801	0.1−	0.1−
1967 04 28	808	0.6+	0.2−	1991 02 12	875	0.2+	0.3+	1995 03 27	801	0.1+	0.2+
1967 04 29	808	0.0	1.3+	1991 02 17	875	0.3−	0.7−	1995 03 29	801	0.3+	0.1+
1989 10 29	675	1.1−	0.5−	1991 02 17	046	(6.2−	1.4−)	1995 03 29	801	0.3+	0.3+
1989 10 29	675	1.1+	0.9+	1991 02 17	046	(5.8−	1.9−)	1997 10 05	610	0.2+	0.3−
1989 11 01	675	0.8−	1.0−	1991 02 20	875	0.4−	0.1+	1997 10 05	610	0.1+	0.2−
1989 11 01	675	0.5+	0.3+	1991 02 20	875	0.6−	0.6+	1997 10 05	610	0.0	0.1−
1991 02 05	875	1.1−	1.3−	1991 03 05	071	1.2+	1.3+	1997 10 25	610	0.1+	0.6+
1991 02 05	875	(2.5−	0.7−)	1991 03 05	071	1.8−	0.0	1997 10 25	610	0.3−	0.6+
1991 02 07	875	0.9+	0.5−	1995 03 05	801	0.2+	0.1+	1997 10 25	610	0.6−	0.6+
1991 02 07	875	0.3+	0.1+	1995 03 05	801	0.2+	0.3+				

(8128)∗ 1967 JP = 1966 CU = 1966 DT
Discovered 1967 May 6 by C. U. Cesco and A. R. Klemola at El Leoncito.
Id. S. Nakano (*MPC* 9416)
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

				P	**Q**
M	201.89137		(2000.0)		
n	0.17845515	ω	263.92730	−0.62647020	+0.77846299
a	3.1245202	Ω	327.17912	−0.68353956	−0.57281488
e	0.1135193	i	4.13905	−0.37457809	−0.25666805
P	5.52	H	12.3	G 0.15	U 1

Residuals in seconds of arc

1955 04 20	675	0.3−	0.1+	1995 05 31	689	0.6+	0.2+	1997 12 05	704	1.1−	0.0
1955 04 20	675	0.5+	0.6−	1996 10 04	809	(2.4+	1.4−)	1997 12 05	704	0.5−	0.2+
1966 02 14	330	0.2−	1.2−	1996 10 04	809	1.4+	1.0−	1997 12 05	704	0.2−	0.5+
1966 02 24	330	0.1−	0.0	1996 10 04	809	0.6+	0.5−	1997 12 05	704	0.3−	0.8+
1967 05 06	808	1.0−	0.3+	1996 10 05	809	0.6+	0.5+	1997 12 09	658	0.5−	0.5+
1967 05 31	808	0.3−	1.1−	1996 10 05	809	0.1+	0.1−	1997 12 09	658	0.1+	0.1+
1967 06 02	808	0.7+	1.7+	1996 10 05	809	0.1−	0.5+	1997 12 09	658	0.3−	0.5+
1977 02 13	675	0.3−	0.9−	1997 10 21	658	0.4−	0.2+	1997 12 09	658	1.1+	0.0
1977 02 14	675	0.8+	0.6−	1997 10 21	658	0.0	0.6+	1997 12 09	658	1.1+	0.2+
1980 11 01	675	0.5+	0.3+	1997 10 21	658	0.1+	0.3+	1997 12 17	327	0.1−	0.4−
1980 11 02	675	0.0	0.6−	1997 11 26	704	0.8−	0.2−	1997 12 17	327	0.3−	0.2+

1990 09 15	675	0.1+	1.0−	1997 11 26	704	1.4−	0.6−	1997 12 17	327	0.4+	0.5−
1990 09 15	675	0.6+	1.5−	1997 11 26	704	0.3−	1.0−	1997 12 18	658	0.5+	0.4−
1991 11 08	691	1.4−	0.1+	1997 12 04	704	0.6+	0.0	1997 12 18	658	0.3+	0.2−
1991 11 08	691	1.5−	0.0	1997 12 04	704	0.2+	0.3−	1997 12 18	658	0.3+	0.3−
1991 11 08	691	1.3−	0.2−	1997 12 04	704	1.4+	0.0	1997 12 29	566	0.5−	0.0
1994 04 05	675	0.6−	0.3+	1997 12 04	704	1.6+	0.1+	1997 12 29	566	0.4−	0.0
1994 04 05	675	0.9−	0.4−	1997 12 04	704	1.4+	0.1−	1997 12 29	566	0.4−	0.1+
1995 05 30	689	0.4+	0.2−	1997 12 05	704	0.3−	0.5+				

(8129)∗ 1975 SK$_1$

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

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	256.75640		(2000.0)	**P**	**Q**	
n	0.27127819	ω	161.29812	−0.95975150	−0.28084471	
a	2.3633396	Ω	2.39350	+0.25179930	−0.86332595	
e	0.0551696	i	2.49715	+0.12439523	−0.41927861	
P	3.63	H	14.0	G 0.15	U 2	

Residuals in seconds of arc

1975 09 30	675	0.9+	0.9+	1995 01 25	411	1.0−	0.2+	1997 10 29	704	0.8−	0.1−
1975 10 01	675	0.2−	0.5+	1995 01 25	411	1.0−	0.1+	1997 10 29	704	0.2+	0.0
1975 10 02	675	0.2+	0.2+	1995 01 26	411	0.2+	1.5−	1997 10 30	704	2.0+	0.2−
1975 10 15	675	0.2−	0.4+	1995 01 26	411	0.5+	1.2−	1997 10 30	704	1.0+	0.1+
1975 10 16	675	1.8−	0.4+	1995 02 03	894	0.7−	0.5−	1997 10 30	704	1.5+	0.1−
1993 09 15	809	1.6+	0.7−	1995 02 03	894	1.0+	0.1−	1997 10 30	704	0.9+	0.1−
1993 09 15	809	0.4−	1.9−	1995 02 06	894	(3.0−	0.9−)	1997 10 30	566	0.3+	0.2+
1993 09 15	809	0.2−	0.3−	1995 02 06	894	(3.3−	0.1+)	1997 10 30	566	0.3−	0.2+
1993 09 19	675	0.1−	0.1+	1995 03 21	689	(16.1−	7.0+)	1997 10 30	566	0.2−	0.2+
1993 09 19	675	0.9+	0.3−	1997 10 29	704	(2.7−	0.3+)	1997 10 30	566	0.3−	0.1+
1993 09 22	809	0.3−	0.7−	1997 10 29	704	0.3−	1.4−	1997 10 30	566	0.2−	0.2+
1993 09 22	809	0.2−	1.7−	1997 10 29	704	0.5−	0.4+	1997 10 30	566	0.3−	0.0
1993 09 22	809	0.4−	1.7−	1997 10 29	704	0.3+	1.1−	1997 12 30	725	2.1−	1.5+
1993 09 23	675	0.7+	0.5+	1997 10 29	704	0.9−	0.3+	1997 12 30	725	0.6+	0.2+
1993 09 23	675	0.2+	0.7+	1997 10 29	704	0.5+	0.1−	1997 12 30	725	1.4−	0.6+
1993 10 10	675	0.5−	0.7+	1997 10 29	704	0.8−	0.4+				
1993 10 10	675	0.9+	0.9+	1997 10 29	704	0.4−	0.3+				

(8130)∗ 1976 DJ$_1$ = 1981 UO$_{21}$

Discovered 1976 Feb. 27 by F. Börngen and R. Ziener at Tautenburg.

Id. E. Bowell (*MPC* 20495)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	207.39692		(2000.0)	**P**	**Q**	
n	0.12383550	ω	95.91250	−0.86171620	+0.49839920	
a	3.9863242	Ω	114.01545	−0.49691506	−0.79108221	
e	0.1354560	i	5.97584	−0.10257007	−0.35466487	
P	7.96	H	11.3	G 0.15	U 1	

Residuals in seconds of arc

1954 05 28	675	0.8+	0.3+	1992 01 27	691	(2.6+	0.4−)	1993 05 24	033	0.5−	0.2+
1954 05 28	675	0.2−	0.1−	1992 01 27	691	1.6+	0.2−	1995 07 24	033	0.0	0.3+
1976 02 27	033	0.7−	0.6+	1993 04 20	033	0.4−	0.0	1995 07 25	033	0.1+	1.4+
1976 03 01	033	0.3+	0.4+	1993 04 21	033	0.5−	0.2+	1997 10 31	611	0.7+	0.3+
1976 03 02	033	0.0	0.3+	1993 04 21	033	0.8−	0.3−	1997 10 31	611	0.6+	0.2+
1976 03 03	033	1.6−	1.0+	1993 04 23	033	0.1−	0.3+	1997 11 29	704	1.1−	1.0−
1976 03 03	033	1.7+	1.2−	1993 04 26	033	0.3+	0.0	1997 11 29	704	1.1+	0.6+
1981 10 24	675	0.0	0.2−	1993 04 27	033	0.8+	0.3−	1997 11 29	704	0.3−	0.2+
1981 10 25	675	0.2−	0.4+	1993 04 28	033	0.5+	1.5+	1997 11 29	704	0.3−	0.4+
1981 10 26	675	1.3−	0.2−	1993 05 24	033	0.3−	0.4−				

(8131)∗ 1976 SC = 1970 EN$_3$ = 1972 RR$_1$ = 1972 TN$_6$ = 1995 GK

Discovered 1976 Sept. 27 by E. F. Helin at Palomar.

Id. T. Kobayashi (*MPC* 25326)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	43.65461		(2000.0)	**P**	**Q**	
n	0.23973326	ω	34.10864	+0.94513947	−0.32492970	
a	2.5663577	Ω	344.74436	+0.26387884	+0.82012924	
e	0.2009927	i	7.34657	+0.19255995	+0.47096573	
P	4.11	H	13.0	G 0.15	U 2	

Residuals in seconds of arc

1970 03 10	805	0.8+	0.1−	1991 04 14	675	0.0	0.6+	1995 05 22	411	(0.1+	2.1+)
1970 03 10	805	0.3+	0.4+	1991 04 14	675	1.5−	0.5+	1995 05 22	411	1.5+	0.3−
1970 03 10	805	0.1−	1.3+	1991 04 16	675	0.4−	0.5−	1997 12 06	704	0.3−	0.2+
1972 09 11	095	(2.1−	3.3+)	1991 04 16	675	0.1+	0.7+	1997 12 06	704	0.4−	0.9+
1972 10 06	095	(2.8+	3.6−)	1993 10 16	033	0.7−	1.1+	1997 12 06	704	0.2+	1.2+
1976 08 28	675	1.2−	0.9+	1993 10 16	033	0.8+	0.8+	1997 12 06	704	0.5−	0.5+
1976 09 24	095	1.4−	0.9+	1995 04 01	905	0.5+	0.7+	1997 12 06	704	0.5+	0.2−
1976 09 25	095	1.3+	1.3+	1995 04 01	905	0.9+	1.0+	1997 12 16	127	0.6+	1.8−
1976 09 27	675	(4.0−	1.6−)	1995 04 03	905	1.0+	0.2−	1997 12 16	127	0.3+	1.9−
1976 09 27	675	(3.4−	1.1−)	1995 04 03	905	1.8+	1.0−	1998 01 01	127	0.0	0.0
1976 09 28	095	1.2−	0.3+	1995 04 07	905	0.8−	1.2+	1998 01 01	127	0.1−	0.1+
1976 09 28	095	0.8−	1.3−	1995 04 07	905	1.8−	1.0−	1998 01 01	127	0.2−	0.1+
1976 09 29	095	2.0+	0.3+	1995 05 22	411	(0.0	2.3+)				

(8132)∗ 1976 YA$_6$ = 1991 JJ$_1$

Discovered 1976 Dec. 18 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Id. H. Kaneda (*MPC* 18413)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	199.08515		(2000.0)	**P**	**Q**	
n	0.23165777	ω	160.11378	−0.58024880	+0.77965977	
a	2.6256578	Ω	73.71325	−0.77649248	−0.44236949	
e	0.1051417	i	14.19987	−0.24570461	−0.44321539	
P	4.25	H	12.1	G 0.15	U 2	

Residuals in seconds of arc

1976 12 16	095	(5.4−	3.5+)	1995 05 02	563	0.5+	0.5+	1997 12 04	704	0.8−	0.6+
1976 12 18	095	0.1−	0.1−	1995 05 02	563	0.6+	0.5+	1997 12 05	704	1.1+	0.3+
1976 12 20	095	0.2−	0.0	1995 05 02	563	0.4+	0.4+	1997 12 05	704	0.4−	0.2+
1977 01 13	095	0.0	1.3+	1995 05 28	801	0.7−	0.1−	1997 12 05	704	1.0−	0.6+
1991 05 09	675	0.2+	1.1−	1995 05 28	801	0.5+	0.5−	1997 12 05	704	1.1−	1.4+
1991 05 09	675	0.1+	1.0−	1995 05 31	801	0.8−	1.3−	1997 12 05	704	0.9−	0.0
1991 05 11	675	0.7−	0.7+	1997 11 26	704	1.2+	0.5−	1997 12 31	704	0.1−	0.4−
1991 05 11	675	0.7−	1.0+	1997 11 26	704	0.1−	1.3−	1997 12 31	704	0.3−	0.0
1991 05 14	894	1.7+	2.0+	1997 11 26	704	1.2+	0.5−	1997 12 31	704	0.2−	0.3+
1991 05 14	894	0.7+	0.9+	1997 11 30	566	0.3+	0.2+	1997 12 31	704	0.7−	0.2−
1991 05 17	894	0.4−	0.7+	1997 11 30	566	0.3+	0.2+	1998 01 02	704	0.3+	0.3−
1991 05 17	894	0.8+	0.2+	1997 11 30	566	0.5+	0.1+	1998 01 02	704	0.2+	0.2−
1995 03 26	292	0.2−	0.3+	1997 12 04	704	0.1+	0.6−	1998 01 02	704	0.4−	0.5−
1995 03 26	292	0.0	0.5−	1997 12 04	704	0.2+	0.2−	1998 01 02	704	0.1−	0.2+
1995 04 16	292	1.1−	0.6−	1997 12 04	704	0.2−	0.1+	1998 01 06	758	0.6+	1.0+
1995 04 16	292	0.4−	0.8−	1997 12 04	704	0.6−	0.0	1998 01 06	758	0.2+	0.6+

(8133)∗ 1977 DX$_3$ = 1983 GD$_1$ = 1985 UF$_6$ = 1990 QK$_{18}$ = 1990 SU$_{18}$ = 1994 ED$_1$

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

Id. T. Kobayashi (*MPC* 23968)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	163.22015		(2000.0)	**P**	**Q**	
n	0.17654619	ω	178.71148	−0.02369092	+0.99890241	
a	3.1470030	Ω	89.92996	−0.91758561	−0.00568302	
e	0.1572363	i	2.31578	−0.39683169	−0.04649393	
P	5.58	H	12.2	G 0.15	U 1	

Residuals in seconds of arc

1977 02 18	381	0.9+	0.6+	1991 11 29	691	0.2−	0.6+	1997 11 29	704	1.2+	2.2−
1977 02 18	381	2.1+	0.6−	1991 11 29	691	0.8−	0.0	1997 12 04	704	0.4−	0.1−
1977 02 19	381	0.2−	0.2+	1991 11 29	691	1.4−	0.0	1997 12 04	704	1.5+	0.2+
1977 02 19	381	1.1−	0.1+	1993 01 24	675	0.1+	1.0−	1997 12 04	704	0.5+	1.2−
1977 03 12	381	1.0−	0.1+	1994 03 04	399	0.0	0.9−	1997 12 04	704	0.9−	1.9−
1977 03 12	381	0.4−	0.7−	1994 03 04	399	(0.4−	3.0−)	1997 12 04	704	(0.8+	2.6−)
1977 03 15	381	0.6+	1.0−	1994 03 07	399	0.6+	1.8+	1997 12 31	704	0.9+	0.5+
1977 03 15	381	0.2−	0.5−	1994 03 07	399	1.4−	0.7+	1997 12 31	704	0.9+	0.5+
1983 04 09	095	0.3+	0.5+	1996 09 02	689	1.5+	1.4+	1997 12 31	704	1.4+	0.6+
1985 10 18	095	1.6−	0.6+	1996 09 15	689	0.1−	0.2+	1997 12 31	704	1.1+	0.1+
1990 08 28	095	0.9+	0.6−	1997 11 29	704	2.5−	0.4−	1998 01 02	704	1.1+	0.5+
1990 08 28	095	(1.3−	3.3−)	1997 11 29	704	1.9−	1.2+	1998 01 02	704	1.3+	0.8+
1990 09 16	675	0.1−	0.7−	1997 11 29	704	0.9−	0.2−	1998 01 02	704	1.2+	0.4+
1990 09 16	675	0.1−	0.9−	1997 11 29	704	0.6−	0.2−	1998 01 02	704	2.3−	0.8+

(8134)∗ 1978 SQ_7 = 1996 HL_{23}

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

Id. T. Kobayashi (*MPC* 27552)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	39.05584		(2000.0)	**P**	**Q**	
n	0.26083838	ω	158.61420	+0.99957800	+0.01157232	
a	2.4259865	Ω	200.77620	−0.01977267	+0.94299477	
e	0.1916263	*i*	4.30773	+0.02128069	+0.33260628	
P	3.78	*H*	14.3	*G* 0.15	*U* 2	

Residuals in seconds of arc

1978 09 26	095	(4.3−	0.8+)	1996 05 22	809	(4.3+	0.5−)	1997 11 03	704	0.6−	1.1+
1978 10 02	095	0.7+	0.8+	1996 05 22	809	(4.4+	0.9−)	1997 11 06	704	0.1+	0.6−
1978 10 08	095	1.4−	0.9+	1996 05 22	809	(4.3+	0.5+)	1997 11 06	704	0.3−	0.5−
1993 09 20	675	0.7+	0.0	1997 10 29	704	0.7+	1.3−	1997 11 06	704	0.4−	0.5−
1993 09 20	675	0.1−	0.8−	1997 10 29	704	0.5+	1.1−	1997 11 06	704	0.1+	0.3−
1996 04 20	809	0.2+	0.4+	1997 10 29	704	0.4+	1.1−	1997 11 06	704	0.3+	0.4+
1996 04 20	809	0.2−	0.1+	1997 10 29	704	0.2−	0.6−	1997 11 26	566	0.3−	0.7−
1996 04 20	809	0.1−	0.2+	1997 10 29	704	0.1−	0.8−	1997 11 26	566	0.7+	0.0
1996 04 21	809	1.1−	0.4−	1997 10 30	704	(2.4+	0.6−)	1997 11 26	566	0.4+	0.0
1996 04 21	809	(2.5−	0.0)	1997 10 30	704	1.6+	0.3+	1997 12 27	566	0.7+	0.1+
1996 04 21	809	1.7−	1.3−	1997 11 03	704	1.2−	1.1+	1997 12 27	566	1.0+	0.1+
1996 05 14	566	1.0+	0.1−	1997 11 03	704	0.3−	0.7+	1997 12 27	566	0.8+	0.0
1996 05 14	566	0.6+	0.8−	1997 11 03	704	1.5−	0.7+				
1996 05 14	566	0.6+	0.5−	1997 11 03	704	0.8−	0.1−				

(8135)∗ 1978 VP_{10} = 1989 SE_1

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

Id. T. Kobayashi (*MPC* 15551)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	96.67254		(2000.0)	**P**	**Q**	
n	0.25907550	ω	248.19474	+0.85417379	+0.51562647	
a	2.4369792	Ω	80.70900	−0.44838976	+0.79583022	
e	0.0686876	*i*	3.90475	−0.26331304	+0.31746433	
P	3.80	*H*	13.9	*G* 0.15	*U* 2	

Residuals in seconds of arc

1978 11 05	675	0.9−	0.6+	1989 11 05	675	0.6+	1.0−	1997 12 04	704	0.1+	0.0
1978 11 06	675	0.3−	1.1+	1989 11 05	675	1.7−	0.4−	1997 12 04	704	1.2+	0.5−
1978 11 07	675	0.4−	1.3+	1995 03 17	608	0.1−	0.1−	1997 12 05	704	0.2−	0.4−
1978 11 08	675	0.4−	1.9+	1995 03 17	608	0.5−	0.5+	1997 12 05	704	0.7−	0.6−
1978 11 29	675	0.9+	1.0+	1995 03 29	608	0.1−	0.3−	1997 12 05	704	1.3−	0.2−
1978 11 30	675	0.2−	0.9+	1995 03 29	608	0.0	0.3−	1997 12 05	704	0.3+	0.5+
1989 09 26	809	0.1−	0.4−	1995 03 29	608	0.1+	0.5−	1997 12 05	704	0.9+	0.4−
1989 09 26	809	0.6−	1.3−	1995 03 30	608	0.1+	0.7−	1997 12 30	566	0.4−	0.3−
1989 09 26	809	0.4−	1.1−	1995 03 30	608	0.1−	0.6−	1997 12 30	566	0.1−	0.5−
1989 09 28	809	2.4+	0.7−	1997 11 28	566	0.2+	0.3+	1997 12 30	566	0.4−	0.5−
1989 09 28	809	1.6+	0.6−	1997 11 28	566	0.2−	0.4+	1997 12 31	704	0.1−	0.1−
1989 09 28	809	0.3+	0.4−	1997 11 28	566	0.2+	0.0	1997 12 31	704	0.1−	0.8−
1989 10 07	809	0.7−	0.2+	1997 11 29	704	(2.4−	0.5+)	1997 12 31	704	0.4+	0.2−
1989 10 07	809	1.6−	0.4+	1997 11 29	704	(3.3−	0.9−)	1997 12 31	704	0.6+	0.6−
1989 10 07	809	1.2−	0.1−	1997 11 29	704	(2.8−	0.2+)	1998 01 02	704	1.3+	0.8−
1989 10 08	809	0.6+	0.8+	1997 11 29	704	(2.1−	0.7+)	1998 01 02	704	0.3+	0.5−
1989 10 08	809	1.9+	0.2+	1997 11 29	704	(2.5−	1.7+)	1998 01 02	704	0.4+	0.6−
1989 10 08	809	1.1+	0.4+	1997 12 04	704	0.2−	0.2+	1998 01 02	704	0.6+	0.7−
1989 11 02	675	0.3+	0.0	1997 12 04	704	0.7−	0.5+				
1989 11 02	675	1.4−	0.7+	1997 12 04	704	0.7−	0.6+				

(8136)∗ 1979 MH_2 = 1991 TU_{14} = 1995 KV_5

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

Id. G. V. Williams (*MPC* 30753)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	85.91728		(2000.0)	**P**	**Q**	
n	0.17608407	ω	122.63057	+0.80816530	+0.58845616	
a	3.1525066	Ω	201.35280	−0.56021305	+0.75536540	
e	0.1316031	*i*	3.81918	−0.18174209	+0.28834435	
P	5.60	*H*	13.6	*G* 0.15	*U* 2	

Residuals in seconds of arc

1979 06 23	413	1.1−	0.5+	1991 10 13	691	0.2−	0.2+	1997 12 09	658	0.4−	0.7−
1979 06 24	413	1.4−	0.1+	1991 10 13	691	0.2−	0.4+	1997 12 09	658	0.1+	0.3−
1979 06 25	413	0.8−	0.6+	1991 10 13	691	0.2+	0.2−	1997 12 09	658	0.5−	0.6−
1979 06 29	413	0.8+	0.0	1995 05 31	691	0.2+	0.5+	1997 12 16	709	0.3+	0.0
1979 07 24	675	1.1+	1.6+	1995 05 31	691	0.6−	0.6+	1997 12 16	709	0.1+	0.1+
1979 07 24	413	1.2+	1.3−	1995 05 31	691	0.7+	0.2−	1997 12 16	709	0.4+	0.0
1979 07 25	675	(3.3+	1.9+)	1997 11 29	704	0.2+	1.6+	1997 12 16	709	0.3+	0.0
1979 07 26	675	0.5+	0.1+	1997 11 29	704	0.3−	1.1+	1997 12 16	709	0.2+	0.0
1979 07 28	413	0.7+	1.2−	1997 11 29	704	0.1+	0.1+				
1979 08 23	675	1.2−	0.3−	1997 11 29	704	0.5−	0.5−				

(8137)∗ 1979 SJ = 1986 RF_5

Discovered 1979 Sept. 19 at Kleť.

Id. C. M. Bardwell (*MPC* 12143)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Bardwell

M	61.99071		(2000.0)	**P**	**Q**	
n	0.27759864	ω	339.27283	+0.93655881	+0.35051029	
a	2.3273292	Ω	0.20960	−0.30664843	+0.81984233	
e	0.2151946	*i*	5.47858	−0.16977729	+0.45277046	
P	3.55	*H*	14.9	*G* 0.15	*U* 1	

Residuals in seconds of arc

1979 09 19	046	1.0+	0.7+	1986 09 08	809	0.0	0.3+	1996 04 18	046	0.0	1.5+
1979 09 19	046	(3.8+	1.0−)	1986 09 08	809	0.1+	0.2+	1996 04 18	046	0.2−	0.3+
1979 09 24	095	0.6+	2.3−	1986 09 08	809	0.1+	0.4+	1996 04 20	046	0.5−	0.5+
1979 09 25	046	0.1−	1.5−	1986 09 08	809	0.8−	0.2+	1996 04 20	046	0.5−	1.2+
1979 09 25	046	0.8+	0.5−	1986 09 08	809	0.6−	0.0	1996 04 21	046	0.0	0.3+
1979 09 26	046	0.2−	1.4−	1986 09 08	809	0.3−	0.1−	1996 05 06	046	0.3+	0.2+
1979 09 26	046	1.1+	2.2−	1986 09 08	809	0.3+	0.5+	1996 05 06	046	1.0−	0.3+
1979 09 27	046	1.2+	1.3−	1986 09 08	809	0.3+	0.4+	1996 05 06	046	0.5−	0.6−
1979 09 27	046	(5.9+	1.1−)	1986 09 08	809	0.3+	0.3+	1996 05 16	046	0.5+	0.1+
1979 10 18	046	0.5+	0.7−	1986 09 10	809	0.5+	0.2−	1996 05 16	046	0.2+	1.0+
1979 10 18	046	(1.1−	2.9−)	1986 09 10	809	0.6+	0.4−	1996 05 16	046	0.3+	1.0+
1986 09 04	809	0.3−	0.5+	1986 09 10	809	0.4+	0.4−	1997 10 23	046	0.3−	0.9+
1986 09 04	809	0.1+	0.4+	1986 09 12	809	1.0−	0.6+	1997 10 23	046	0.1+	1.0+
1986 09 04	809	0.6+	0.3+	1986 09 12	809	0.9−	0.6+	1997 10 23	046	0.0	1.0+
1986 09 05	809	0.4+	0.5+	1986 09 12	809	1.0−	0.4+	1997 10 30	046	0.7−	0.7+
1986 09 05	809	0.4+	0.4+	1986 09 13	809	1.6−	0.8+	1997 10 30	046	0.7−	0.9+
1986 09 05	809	0.6+	0.4+	1986 09 13	809	1.4−	0.7+	1997 10 30	046	0.7−	1.0+
1986 09 06	809	0.1+	0.7+	1986 09 13	809	1.1−	0.7+	1997 12 06	046	0.6−	0.2+
1986 09 06	809	0.2+	0.5+	1996 03 22	809	1.5+	0.4+	1997 12 06	046	0.2−	1.0+
1986 09 06	809	0.2+	0.2+	1996 03 22	809	1.1+	0.9−	1997 12 06	046	(0.4−	2.1+)
1986 09 07	809	0.3−	0.2+	1996 03 22	809	0.4+	0.6+	1997 12 17	589	1.5+	1.1+

1986 09 07	809	0.1−	0.3+	1996 04 18	046	0.3+	0.4+	1997 12 17	589	0.3−	0.5+
1986 09 07	809	0.2+	0.2+	1996 04 18	046	0.4+	0.9−	1997 12 17	589	0.7−	1.1+

(8138)∗ 1980 FF$_{12}$ =A919 EA = 1984 SJ$_6$

Discovered 1980 Mar. 20 at the Perth Observatory.

Id. C. M. Bardwell (*MPC* 9589, *MPC* 21929)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Bardwell

M	152.30694		(2000.0)		**P**	**Q**	
n	0.30794025	ω	251.85024		−0.46171803	+0.88698908	
a	2.1718263	Ω	350.63912		−0.79365302	−0.41721319	
e	0.0879146	*i*	2.88091		−0.39614562	−0.19794828	
P	3.20	*H*	14.1	*G*	0.15	*U*	2

Residuals in seconds of arc

1919 03 07	024	(38.2+	3.9−)X	1984 09 26	809	0.4−	0.6+	1994 11 07	675	0.5+	0.4−
1955 07 24	675	2.1+	0.6+	1984 09 27	809	0.4−	0.5+	1994 11 30	675	0.1+	0.0
1955 07 24	675	0.6−	0.0	1984 09 27	809	0.1−	0.4+	1994 11 30	675	1.1+	0.1−
1980 03 20	323	0.4−	0.8+	1984 09 27	809	0.2+	0.2+	1994 12 02	675	1.2−	0.0
1980 03 20	323	0.3+	2.2+	1984 09 28	809	0.4−	0.5+	1994 12 02	675	1.3+	0.5−
1980 03 21	323	1.3+	0.4−	1984 09 28	809	0.2−	0.3+	1997 10 27	127	(2.4+	0.3−)
1980 03 21	323	(0.4−	2.6+)	1984 09 28	809	0.0	0.1−	1997 10 27	127	1.2+	0.1−
1980 04 10	323	0.1+	0.7+	1984 09 29	809	0.9−	0.6−	1997 10 28	127	0.0	1.3−
1980 04 10	323	0.2+	0.6−	1984 09 29	809	0.8−	0.5−	1997 10 28	127	0.1+	1.7−
1984 09 23	809	1.9−	0.0	1984 09 29	809	0.6−	0.2−	1997 10 30	704	0.6+	1.1+
1984 09 23	809	1.8−	0.3+	1986 02 13	801	0.4−	1.5+	1997 10 30	704	0.1−	0.8+
1984 09 23	809	2.0−	0.5+	1987 08 21	046	(4.0−	2.3−)	1997 10 30	704	0.3+	1.3+
1984 09 24	809	0.1−	1.2+	1987 08 21	046	0.3+	1.7−	1997 10 30	704	1.8+	1.3+
1984 09 24	809	0.5+	1.1+	1987 08 22	046	2.3+	1.4−	1997 10 30	704	0.7+	0.8+
1984 09 24	809	1.0+	1.1+	1987 08 22	046	(4.4+	1.4−)	1998 01 08	691	0.9−	1.0−
1984 09 26	809	1.1−	0.5+	1987 08 25	801	0.1−	0.8−	1998 01 08	691	0.5−	0.4−
1984 09 26	809	0.8−	0.6+	1994 11 07	675	0.1+	1.4−	1998 01 08	691	0.7−	0.5−

(8139)∗ 1980 UM$_1$ = 1970 WH$_1$ = 1987 XA$_1$

Discovered 1980 Oct. 31 by S. J. Bus at Palomar.

Id. G. V. Williams (*MPC* 21784)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	344.98015		(2000.0)		**P**	**Q**	
n	0.29187308	ω	174.83887		+0.09702109	−0.99170187	
a	2.2508162	Ω	269.57502		+0.91010891	+0.12270104	
e	0.0982208	*i*	4.83858		+0.40285069	−0.03836487	
P	3.38	*H*	14.1	*G*	0.15	*U*	2

Residuals in seconds of arc

1953 10 12	675	0.3+	0.0	1995 02 03	033	0.9+	0.0	1997 12 04	704	0.5−	0.7−
1953 10 12	675	0.3+	0.1+	1995 02 03	033	0.4+	0.1+	1997 12 04	704	1.3−	0.0
1970 11 23	033	2.2−	0.5−	1997 11 25	691	0.3−	0.3+	1997 12 04	704	1.2−	1.1−
1980 10 14	675	0.4+	0.8−	1997 11 25	691	0.1−	0.5+	1997 12 05	704	0.4+	0.1−
1980 10 14	675	1.4+	0.4+	1997 11 25	691	0.3−	0.4+	1997 12 05	704	0.4+	0.9−
1980 10 31	675	1.1+	0.0	1997 11 29	704	0.2+	0.8+	1997 12 05	704	0.0	0.4−
1980 11 02	675	0.5+	0.2−	1997 11 29	704	0.6+	0.1+	1997 12 05	704	1.1+	0.0
1987 12 15	046	1.0−	1.4−	1997 11 29	704	0.8+	0.5+	1997 12 05	704	0.3−	0.9−
1987 12 15	046	(4.3+	1.1+)	1997 11 29	704	0.3+	0.2+	1997 12 14	560	0.5−	0.8+
1993 07 22	691	0.4−	0.3+	1997 11 29	704	1.8+	0.7+	1997 12 14	560	1.1−	0.1+
1993 07 22	691	0.7−	0.3+	1997 12 04	704	0.2−	0.6+	1997 12 14	560	0.3−	0.1+
1993 07 22	691	0.2−	0.1−	1997 12 04	704	0.0	1.6+	1997 12 14	560	0.9−	0.1+

(8140)∗ 1981 EO$_{15}$ = 1974 SM$_4$ = 1979 YG$_5$

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

Id. D. W. E. Green (*MPC* 10821), L. D. Schmadel (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Green

M	16.76150		(2000.0)		**P**	**Q**	
n	0.21814457	ω	193.79549		+0.57760666	−0.81262815	
a	2.7330009	Ω	220.99897		+0.75971348	+0.56986413	
e	0.0685683	*i*	6.78419		+0.29867370	+0.12202606	
P	4.52	*H*	13.8	*G*	0.15	*U*	2

Residuals in seconds of arc

1974 09 25	095	0.1+	1.5−	1981 04 08	413	0.7−	0.1+	1997 11 29	704	1.7−	1.9−
1977 05 18	675	2.3−	0.7−	1981 04 08	413	0.9+	0.8−	1997 11 29	704	1.1−	0.7+
1977 05 19	675	(4.8−	0.6+)	1981 04 09	413	0.3−	0.1+	1997 12 04	704	0.8−	0.3−
1979 12 18	095	1.0+	0.4−	1981 04 09	413	2.3+	0.8−	1997 12 04	704	0.3+	0.5+
1981 02 09	413	0.9−	0.9−	1981 05 01	413	(0.5−	2.7−)	1997 12 04	704	1.1+	1.6−
1981 02 12	413	1.3−	0.2−	1992 10 04	675	0.5+	0.2−	1997 12 04	704	0.7−	0.7+
1981 03 01	413	0.2+	0.6−	1992 10 04	675	0.8+	0.0	1997 12 04	704	(3.2−	0.1+)
1981 03 06	413	0.7−	0.9+	1995 05 31	691	(2.1+	1.2−)	1997 12 04	400	1.3+	0.1+
1981 03 06	413	1.7+	0.8−	1995 05 31	691	1.1+	0.5−	1997 12 04	400	1.5+	0.4+
1981 03 08	413	0.3−	0.1+	1997 11 28	400	1.0+	0.6+	1997 12 26	566	0.8+	0.8+
1981 03 08	413	0.3+	0.4+	1997 11 28	400	0.2+	1.4+	1997 12 26	566	1.1+	0.5+
1981 03 12	413	0.0	0.3−	1997 11 29	704	1.7−	0.2+	1997 12 26	566	0.9+	0.6+
1981 04 06	413	1.2−	0.7+	1997 11 29	704	1.0−	1.9−				
1981 04 06	413	0.3+	0.1+	1997 11 29	704	2.9−	0.6−				

(8141)∗ 1982 SO$_4$ = 1982 TL = 1991 CV$_2$

Discovered 1982 Sept. 20 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. M. Kretlow (d, *MPC* 9019), G. V. Williams (*MPC* 17957)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	12.84273		(2000.0)		**P**	**Q**	
n	0.26631682	ω	54.60852		+0.36080341	−0.93207280	
a	2.3926012	Ω	14.34959		+0.80739310	+0.29467514	
e	0.2887052	*i*	7.55287		+0.46683752	+0.21072936	
P	3.70	*H*	13.7	*G*	0.15	*U*	1

Residuals in seconds of arc

1982 09 20	095	(0.2−	5.5−)	1991 02 23	889	0.2+	0.8−	1993 10 12	801	0.3+	0.9−
1982 09 22	095	1.7+	1.5+	1991 02 23	889	(2.9−	0.7−)	1993 10 12	801	0.1+	0.9−
1982 10 13	688	0.9+	0.6−	1991 03 12	675	1.4−	0.7−	1993 10 12	095	1.4−	0.9+
1982 10 13	688	0.1−	0.0	1991 03 12	675	0.7−	0.3−	1993 10 19	801	0.1+	0.4−
1982 10 24	688	0.1−	0.6−	1993 09 12	801	0.4−	0.0	1993 10 19	801	0.1−	0.5−
1982 10 24	688	0.5−	0.8−	1993 09 12	801	0.6−	0.3+	1997 12 10	355	0.0	0.4+
1982 11 09	095	0.7+	0.3−	1993 09 18	675	0.4+	0.4+	1997 12 10	355	0.1−	0.2+
1982 11 11	095	0.3−	0.1−	1993 09 18	675	0.1+	0.6+	1997 12 10	355	0.1−	0.4+
1982 11 14	095	0.7−	1.1−	1993 09 19	801	0.5−	0.3+	1998 01 01	127	0.1+	0.2+
1991 02 14	675	0.1+	0.2+	1993 09 19	801	0.4−	0.5−	1998 01 01	127	0.1+	0.3+
1991 02 14	675	0.2−	0.3−	1993 09 21	675	0.6+	0.2−	1998 01 01	127	0.2+	0.2+
1991 02 16	675	0.3+	0.8−	1993 09 21	675	0.3+	0.3−	1998 01 04	127	0.2+	0.1−
1991 02 16	675	0.3+	0.1−	1993 09 22	675	0.8+	0.6+	1998 01 04	127	0.1+	0.0
1991 02 20	675	0.2−	0.5+	1993 09 22	675	0.1−	0.3+	1998 01 04	127	0.1+	0.0
1991 02 20	675	0.4+	0.7+	1993 09 23	095	0.1+	0.7+				

(8142)∗ 1982 UR$_6$ = 1978 SG$_4$ = 1981 JM$_3$ = 1992 HZ$_5$

Discovered 1982 Oct. 20 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Id. E. Bowell (*MPC* 19860), S. Nakano (*MPC* 24733)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	48.72932		(2000.0)		**P**	**Q**	
n	0.26428782	ω	313.42151		+0.99923756	−0.00354515	
a	2.4048313	Ω	46.82247		+0.01995936	+0.90228212	
e	0.2215312	*i*	3.05631		−0.03355479	+0.43113154	
P	3.73	*H*	14.0	*G*	0.15	*U*	1

Residuals in seconds of arc

1978 09 28	095	0.2−	0.5+	1993 09 21	675	0.2+	0.2−	1997 11 29	704	0.2−	0.4−
1981 05 08	675	(3.1−	1.3−)	1993 09 21	675	0.9+	0.1+	1997 11 29	704	0.2+	0.8+
1981 05 09	675	(4.0−	0.7+)	1993 09 21	675	0.3−	0.2+	1997 11 29	704	0.7+	1.3−
1982 10 20	095	1.0−	1.5+	1993 10 15	675	0.3−	0.6−	1997 11 29	704	0.1+	1.6−
1982 10 25	095	0.4+	1.3+	1993 10 15	675	0.2+	0.1−	1997 12 04	704	0.0	0.3−
1982 11 09	095	0.3+	1.0+	1995 03 04	033	0.8+	1.2−	1997 12 04	704	(0.6−	2.8+)
1982 11 14	095	1.9−	1.1+	1995 03 04	033	0.6+	0.3+	1997 12 04	704	0.9−	1.2−
1991 02 10	675	0.3+	0.1−	1996 05 14	566	0.3−	0.0	1997 12 04	704	1.2+	1.1+
1991 02 10	675	0.7+	0.5+	1996 05 14	566	0.3+	0.1−	1997 12 04	704	0.1−	0.6+
1992 04 25	809	0.1+	1.9+	1996 05 14	566	0.0	0.1+	1997 12 04	327	0.5+	0.6+
1992 04 25	809	0.1−	1.9+	1997 09 07	910	1.3−	1.5−	1997 12 04	327	0.5+	0.8+
1992 04 25	809	0.1+	1.6+	1997 09 07	910	1.3−	1.4−	1997 12 04	327	0.2+	0.8+
1993 09 12	400	(2.2−	4.6−)	1997 09 07	910	1.3−	1.5−	1997 12 05	704	0.4−	0.2−
1993 09 12	400	(0.7−	10.0−)	1997 11 26	704	2.1−	0.6+	1997 12 05	704	1.2+	0.3−
1993 09 13	400	0.3+	1.3+	1997 11 26	704	1.3−	1.6+	1997 12 05	704	0.9+	0.6−
1993 09 13	400	0.1+	0.7+	1997 11 26	704	1.6−	0.4−	1997 12 05	704	0.8+	0.0
1993 09 21	675	0.3−	0.2+	1997 11 29	704	0.8+	0.0	1997 12 05	704	1.1+	0.8−

(8143)∗ 1982 VN = 1993 QW$_{10}$ = 1995 FK$_{21}$ = 1997 TE$_{27}$

Discovered 1982 Nov. 11 by A. Mrkos at Kleť.

Id. S. Nakano (*MPC* 30973)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	340.11062		(2000.0)	**P**	**Q**	
n	0.25977425	ω	21.15555	+0.27333711	−0.96101223	
a	2.4326072	Ω	53.00497	+0.87487047	+0.23032928	
e	0.1990994	i	2.99576	+0.39986059	+0.15298337	
P	3.79	H	13.9	G 0.15	U 1	

Residuals in seconds of arc

1982 10 21	095	1.9+	1.3−	1993 08 24	809	0.2+	0.3−	1997 10 30	704	0.0	0.7−
1982 10 23	095	0.1+	0.7−	1993 08 24	809	0.5+	0.3−	1997 10 30	704	0.6−	0.9+
1982 11 11	046	0.8+	0.5+	1995 02 25	691	0.3−	0.4−	1997 10 30	704	0.3+	0.7−
1982 11 11	046	(3.1+	0.1+)	1995 02 25	691	0.2−	0.2−	1997 10 30	704	0.5−	0.2+
1982 11 12	095	0.0	0.7−	1995 02 25	691	0.4−	0.1+	1997 12 18	046	0.3+	0.3+
1982 11 15	046	0.6−	0.8+	1995 03 23	033	0.6+	0.6−	1997 12 18	046	0.4+	0.8+
1982 11 15	046	0.2−	1.1−	1995 03 24	033	0.2−	0.3+	1997 12 18	046	0.2+	0.4+
1982 11 16	046	(3.3−	0.8+)	1997 10 08	894	(1.2+	2.7+)	1997 12 19	046	0.4+	1.0+
1982 11 16	046	1.1−	0.3−	1997 10 08	894	1.5−	0.6−	1997 12 19	046	0.1−	0.7+
1982 11 20	046	(3.7+	1.3+)	1997 10 12	894	0.5−	0.2−	1997 12 19	046	0.5+	0.6+
1982 11 20	046	(4.3+	1.5+)	1997 10 12	894	0.2+	0.2+				
1993 08 24	809	0.3+	0.3−	1997 10 30	704	0.1−	0.6+				

(8144)∗ 1982 VY$_2$ = 1986 PU$_2$ = 1989 CQ$_8$

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

Id. R. Nagata (*MPC* 17433)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	302.69950		(2000.0)	**P**	**Q**	
n	0.19656209	ω	353.93374	−0.45656154	−0.88860200	
a	2.9295632	Ω	123.22382	+0.81847255	−0.43889797	
e	0.0519465	i	3.01661	+0.34878970	−0.13324809	
P	5.01	H	13.0	G 0.15	U 1	

Residuals in seconds of arc

1982 11 14	381	0.1−	1.2+	1991 09 04	809	0.1+	1.2+	1997 10 31	704	0.3−	0.4−
1982 11 14	381	0.5−	1.0+	1991 09 06	809	0.0	0.1−	1997 10 31	704	0.0	0.7−
1982 12 13	381	0.5−	0.3+	1991 09 06	809	0.8−	0.1−	1997 11 06	704	1.4+	0.5+
1982 12 13	381	0.1+	0.5+	1991 09 06	809	0.0	0.5−	1997 11 06	704	1.7+	0.2−
1982 12 14	381	0.6−	0.4+	1992 10 21	675	0.4+	0.0	1997 11 06	704	(2.1+	0.6−)
1982 12 14	381	0.1+	0.1−	1992 10 21	675	0.5−	0.4−	1997 11 06	704	1.4+	0.4−
1986 08 01	675	(11.4−	0.9−)	1992 11 28	675	0.4−	1.1+	1997 11 06	704	1.4+	0.3−
1986 08 01	675	(11.0−	0.5+)	1992 11 28	675	1.3−	0.1+	1997 11 29	704	0.4+	0.2+
1986 08 02	675	(6.1+	1.0+)	1994 02 14	675	0.9−	0.6−	1997 11 29	704	1.1−	0.8−
1986 08 02	675	(5.0+	1.5+)	1994 02 14	675	1.2−	0.6−	1997 11 29	704	1.4−	0.5+
1989 02 12	809	0.7+	0.7+	1994 03 14	675	1.4−	0.0	1997 11 29	704	1.2−	0.5+
1989 02 12	809	1.5+	0.6+	1994 03 14	675	0.6−	0.1−	1997 11 29	704	0.9−	0.1+
1989 02 12	809	2.0+	0.4+	1997 10 30	704	1.8+	0.8−	1997 12 27	426	0.6−	0.5+
1990 05 25	675	(4.3+	0.6+)	1997 10 30	704	1.1+	0.5−	1997 12 27	426	0.6−	0.5+
1990 05 25	675	(2.7+	1.0−)	1997 10 30	704	1.9+	0.5−	1997 12 27	426	1.0−	0.2−
1991 08 08	675	(3.3+	0.3−)	1997 10 30	704	1.5+	1.5−	1997 12 28	426	1.2−	0.3+
1991 08 08	675	(2.6+	0.1−)	1997 10 31	704	0.2+	0.0	1997 12 28	426	1.2−	0.4+
1991 09 04	809	0.4+	0.8+	1997 10 31	704	0.1−	0.0	1997 12 28	426	1.4−	0.4−
1991 09 04	809	0.5−	0.7+	1997 10 31	704	0.5+	0.8−				

(8145)∗ 1983 RY$_4$ = 1988 XS

Discovered 1983 Sept. 5 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. T. Kobayashi (*MPC* 14190)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	38.51961		(2000.0)	**P**	**Q**	
n	0.21509345	ω	103.31632	+0.98456625	−0.08787687	
a	2.7587854	Ω	261.87936	+0.02538892	+0.92736842	
e	0.2348496	i	8.79406	+0.17316093	+0.36368320	
P	4.58	H	12.4	G 0.15	U 1	

Residuals in seconds of arc

1954 05 24	675	0.1−	0.3+	1988 12 11	401	0.7+	1.0+	1992 08 28	095	0.5+	1.5+
1954 05 24	675	0.1−	0.4+	1988 12 11	399	1.3−	0.7+	1992 08 28	095	(3.4+	1.6+)
1983 09 05	095	(2.8−	2.4+)	1988 12 11	399	2.4−	0.4+	1992 10 24	801	0.2−	0.2+
1983 09 07	095	0.4+	0.8+	1988 12 11	552	(0.3+	5.0−)	1992 10 24	801	0.3−	0.2+
1983 09 12	095	0.4+	0.9+	1988 12 11	552	(0.6−	3.7−)	1992 10 28	801	0.5−	0.1+
1988 12 03	400	0.8−	1.3−	1988 12 12	872	1.3−	1.7+	1993 12 17	801	1.0+	0.7−
1988 12 03	400	(0.1+	2.7−)	1988 12 12	872	1.9−	1.1+	1993 12 17	801	0.1+	0.6−
1988 12 03	400	0.2−	2.2−	1988 12 13	872	(0.8+	2.6+)	1994 02 08	801	0.3+	0.5−
1988 12 06	675	0.7−	1.4−	1988 12 13	872	(2.5+	2.8+)	1994 02 08	801	0.0	0.2+
1988 12 06	675	(0.3+	2.9−)	1988 12 13	552	(0.7+	3.9−)	1997 11 19	631	0.3−	0.4−
1988 12 06	400	0.9+	1.4+	1988 12 13	552	0.1−	1.1+	1997 11 19	631	0.1−	0.7−
1988 12 06	400	0.8+	0.5+	1988 12 27	400	0.6−	1.4−	1997 11 20	631	0.0	0.1+
1988 12 06	400	(2.5+	3.1+)	1988 12 27	400	(2.9+	2.7−)	1997 11 20	631	0.0	0.2−
1988 12 07	675	(0.2+	3.0−)	1989 01 01	872	1.5−	2.3+	1997 11 29	691	0.4−	0.8−
1988 12 07	399	1.6+	0.6+	1989 01 01	872	1.5−	1.8+	1997 11 29	691	0.6−	0.4−
1988 12 07	399	2.1+	0.3−	1992 07 26	801	0.1−	0.1−	1997 11 29	691	0.6−	0.3−
1988 12 07	399	0.8−	1.0+	1992 07 26	801	0.1−	0.2−	1997 12 05	704	1.6+	0.2−
1988 12 07	399	1.3−	0.8+	1992 07 29	801	0.2+	0.1−	1997 12 05	704	1.9+	0.8+
1988 12 09	552	(2.9+	2.1−)	1992 07 29	801	0.1−	0.1−	1997 12 05	704	0.6−	2.1+
1988 12 09	552	2.2+	2.1−	1992 08 01	596	0.1+	0.8+	1997 12 05	704	0.5−	0.3+
1988 12 10	401	0.9+	0.6−	1992 08 01	596	0.2−	1.1+	1997 12 05	704	1.5−	1.6−
1988 12 10	401	0.6+	0.6+	1992 08 03	596	(0.9+	2.2−)	1997 12 06	704	0.4+	0.3−
1988 12 10	400	0.7+	0.4−	1992 08 03	596	(3.0−	0.5+)	1997 12 06	704	1.4+	0.6+
1988 12 10	400	0.4+	0.9−	1992 08 25	801	0.0	0.4−	1997 12 06	704	0.6+	0.3+
1988 12 10	552	0.8+	2.0−	1992 08 25	801	0.7+	1.3−	1997 12 06	704	1.4−	1.0+
1988 12 10	552	0.5−	0.7−	1992 08 27	801	0.1−	0.4−	1998 01 12	758	0.3+	0.1−
1988 12 11	401	0.8+	0.1+	1992 08 27	801	0.1+	0.4−	1998 01 12	758	0.3+	0.5+
1988 12 11	399	0.9+	0.5−	1992 08 27	675	0.3−	1.4−				
1988 12 11	399	0.9−	1.3−	1992 08 27	675	0.3−	0.7−				

(8146)∗ 1983 WG = 1980 DM$_1$

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

Id. W. Landgraf (*MPC* 8540)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	330.03118		(2000.0)	**P**	**Q**	
n	0.20999242	ω	29.24810	−0.27159341	−0.94330045	
a	2.8032832	Ω	77.06057	+0.84056489	−0.32907113	
e	0.2181376	i	11.29239	+0.46870852	+0.04354828	
P	4.69	H	12.8	G 0.15	U 1	

Residuals in seconds of arc

1958 07 12	675	0.1−	1.6−	1983 12 27	552	(0.9−	2.8+)	1997 10 31	688	0.7−	0.1−
1958 07 12	675	0.6+	1.0+	1983 12 29	688	0.6−	0.8−	1997 11 03	587	0.3−	0.6+
1980 02 21	033	0.0	1.1+	1983 12 29	688	1.3+	0.7−	1997 11 03	587	0.5−	0.6+
1980 02 22	033	0.7+	0.9+	1984 01 01	552	0.1−	0.5+	1997 11 29	704	0.4+	1.5+
1983 11 06	675	0.3−	0.5+	1984 01 01	552	0.5−	0.4+	1997 11 29	704	0.6−	0.7+
1983 11 06	675	0.8+	0.5−	1984 01 02	688	0.8+	0.3−	1997 11 29	704	0.8+	1.5+
1983 11 28	688	0.5+	1.4−	1984 01 04	688	0.1+	0.8−	1997 11 29	704	0.3−	0.8+
1983 11 28	688	0.1+	0.9−	1984 01 04	688	(0.5−	4.4−)	1997 11 29	704	0.5−	0.8+
1983 12 01	688	0.5+	2.2−	1989 03 07	675	0.5+	0.4−	1997 12 13	619	1.0+	1.0+
1983 12 01	688	(2.8+	2.8−)	1989 03 07	675	1.1+	0.0	1997 12 14	619	0.5−	0.3+
1983 12 05	688	(2.7+	2.8−)	1994 03 12	675	0.2+	1.0+	1997 12 14	619	0.3−	0.4+
1983 12 05	688	0.4+	1.7−	1994 03 12	675	0.4−	0.1+	1997 12 14	619	0.0	1.3+
1983 12 06	688	1.4+	1.2−	1997 10 25	587	1.0−	0.1+	1997 12 14	619	0.1−	0.9+
1983 12 06	688	1.4+	1.3−	1997 10 25	587	0.7−	0.2−	1997 12 14	619	0.1−	1.2+
1983 12 09	688	0.2+	2.0−	1997 10 30	688	0.7−	0.4−	1997 12 14	619	0.7−	1.7+
1983 12 09	688	0.3−	1.3−	1997 10 30	688	0.4−	0.4−	1998 01 11	758	0.8−	1.6+
1983 12 27	552	2.1−	1.6+	1997 10 31	688	1.1−	0.2−	1998 01 12	758	1.1+	0.5−

(8147)∗ 1984 SU$_3$ = 1954 WK = 1971 QH$_3$ = 1971 SZ$_3$

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

Id. W. Landgraf (*MPC* 9415)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	37.43386		(2000.0)	**P**	**Q**	
n	0.22952262	ω	314.90295	+0.99709291	+0.03213011	
a	2.6419163	Ω	43.39674	+0.00350299	+0.88645580	
e	0.3109999	i	5.77145	−0.07611482	+0.46169663	
P	4.29	H	13.9	G 0.15	U 2	

Residuals in seconds of arc

1954 11 17	760	0.7−	1.1+	1997 10 30	566	0.1+	0.5+	1997 12 05	704	0.0	0.9−
1954 11 17	760	0.2+	0.1+	1997 10 30	566	0.1+	0.7+	1997 12 05	704	0.6+	1.3−
1971 08 24	095	1.0−	1.2+	1997 10 30	566	0.2+	0.5+	1997 12 05	704	0.5−	0.7−
1971 09 22	095	(1.1−	3.8+)	1997 11 29	704	0.5+	0.1−	1997 12 05	704	0.7−	0.1+
1984 09 28	688	0.4−	0.5−	1997 11 29	704	0.7+	0.1+	1997 12 05	704	1.5−	0.3+
1984 09 28	688	0.2−	0.6−	1997 11 29	704	0.9+	0.5+	1997 12 08	327	0.7−	0.4+
1984 10 26	688	1.0+	0.3−	1997 11 29	704	1.1+	0.0	1997 12 08	327	0.5−	0.7+
1984 10 26	688	0.0	0.5−	1997 11 29	704	0.1−	0.3−	1997 12 08	327	0.8−	0.6+
1984 10 31	688	1.0+	0.3+	1997 12 04	704	0.1−	0.4−	1997 12 14	560	1.0−	0.5+
1984 10 31	688	1.4+	0.0	1997 12 04	704	0.9+	0.2+	1997 12 14	560	0.7−	0.7+
1984 11 20	688	0.0	2.5−	1997 12 04	704	0.2+	0.1+	1997 12 14	560	1.0−	1.1+
1984 11 20	688	0.5+	1.5−	1997 12 04	704	0.9+	0.5−	1997 12 14	560	0.5−	0.1+
1995 03 27	675	0.6−	1.4−	1997 12 04	704	0.4−	0.6+				

(8148)∗ 1985 CR$_2$ = 1973 WK = 1987 WW$_1$

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

Id. D. W. E. Green (*MPC* 12708)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Green

M	317.61534		(2000.0)	**P**	**Q**	
n	0.28948941	ω	190.26071	−0.36635902	−0.93042298	
a	2.2631548	Ω	281.23106	+0.85439219	−0.33225513	
e	0.0573660	i	0.56679	+0.36850381	−0.15465962	
P	3.40	H	14.4	G 0.15	U 1	

Residuals in seconds of arc

1963 11 12	760	1.5+	0.2−	1985 02 22	675	1.9+	0.4+	1992 04 04	303	1.0+	0.7−
1973 11 22	033	1.3−	0.3−	1985 02 24	809	0.5−	0.1+	1992 04 04	303	0.6+	0.6−
1973 11 22	033	0.6+	1.1+	1985 02 24	809	0.3−	0.1+	1993 08 14	691	0.4−	1.3+
1985 02 15	809	0.9+	0.6−	1985 02 24	809	0.2−	0.1−	1993 08 14	691	0.7−	0.9+
1985 02 15	809	0.6+	0.2−	1985 02 26	809	0.9−	0.5+	1993 08 14	691	0.7−	0.5+
1985 02 15	809	0.4+	0.5+	1985 02 26	809	0.5−	0.2+	1993 08 15	691	1.0−	0.6+
1985 02 16	809	0.8−	0.1−	1985 02 26	809	0.2+	0.2+	1993 08 15	691	0.7−	0.5+
1985 02 16	809	0.4−	0.2−	1985 02 28	809	0.4+	1.1+	1993 08 15	691	0.4−	0.3+
1985 02 16	809	0.6−	0.5−	1985 02 28	809	0.4+	1.2+	1997 10 27	411	0.0	0.2+
1985 02 17	809	1.1−	0.4+	1987 11 26	033	0.1+	0.7−	1997 10 27	411	0.3−	0.6+
1985 02 17	809	0.5−	0.4+	1987 11 26	033	0.0	1.2−	1997 11 29	704	0.5+	0.6−
1985 02 17	809	0.3−	0.4+	1987 12 22	033	0.1−	0.2−	1997 11 29	704	1.6+	1.0−
1985 02 18	809	0.7+	0.8+	1987 12 25	033	0.9+	0.4−	1997 11 29	704	0.0	0.2+
1985 02 18	809	0.6+	0.8+	1987 12 25	033	0.5−	0.2−	1997 11 29	704	0.8+	0.1+
1985 02 18	809	0.8+	0.8+	1988 01 11	033	0.3−	0.3−	1997 11 29	704	0.8+	0.1+
1985 02 19	809	0.1−	0.6+	1988 01 11	033	0.3−	0.2−	1997 12 04	704	0.2−	0.2−
1985 02 19	809	0.2+	0.6+	1990 09 24	095	1.2+	1.9+	1997 12 04	704	0.0	0.3+
1985 02 19	809	0.2+	0.7+	1990 10 21	801	0.2−	0.7+	1997 12 04	704	(2.1+	0.1−)
1985 02 20	809	0.7−	0.3+	1990 10 21	801	0.1−	0.7+	1997 12 04	704	2.0−	0.6−
1985 02 20	809	0.3−	0.3+	1990 11 19	801	0.4−	0.7+	1997 12 04	704	0.8−	0.8−
1985 02 20	809	0.0	0.3+	1990 11 19	801	0.5−	0.3+	1997 12 05	704	0.1+	0.3−
1985 02 20	675	1.7+	0.6+	1992 04 03	303	0.8+	1.4−	1997 12 05	704	0.0	0.7+
1985 02 22	809	1.1−	0.8+	1992 04 03	303	0.6+	0.3−	1997 12 05	704	0.3−	0.9+
1985 02 22	809	0.8−	0.9+	1992 04 03	303	0.9+	0.3−	1997 12 05	704	0.3−	1.6−
1985 02 22	809	0.5−	0.8+	1992 04 04	303	0.0	0.9−	1997 12 05	704	0.1+	1.7+

(8149)∗ 1985 JN$_1$ = 1992 HC

Discovered 1985 May 11 by C. S. Shoemaker at Palomar.

Id. S. Nakano (*MPC* 20143)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	189.51744		(2000.0)	**P**	**Q**	
n	0.27849713	ω	169.16890	−0.32949928	+0.93732041	
a	2.3223209	Ω	81.51832	−0.87459098	−0.25776153	
e	0.1430849	i	6.58395	−0.35569767	−0.23449827	
P	3.54	H	13.6	G 0.15	U 2	

Residuals in seconds of arc

1951 11 08	675	0.1−	0.0	1992 05 30	801	0.4+	0.1+	1997 11 29	704	1.1−	1.2−
1951 11 08	675	0.6+	0.4−	1992 05 30	801	0.2+	0.2−	1997 11 29	704	0.7−	0.4−
1985 05 11	675	0.6−	0.7+	1993 10 09	809	(0.2+	2.3−)	1997 11 29	704	1.6−	1.5+
1985 05 14	675	0.3+	0.6+	1993 10 09	809	(0.0	2.8−)	1997 11 29	704	(2.3−	0.7+)
1985 05 24	675	0.3−	0.4−	1993 10 09	809	(0.1+	2.8−)	1997 12 31	704	0.3+	0.2−
1985 05 24	675	0.4−	0.0	1993 10 11	809	(3.0+	1.0+)	1997 12 31	704	0.1+	0.2+
1989 09 04	675	0.8−	0.2−	1993 10 11	809	(2.6+	0.7+)	1997 12 31	704	0.3+	0.1+
1989 09 04	675	1.0−	0.2+	1993 10 11	809	(2.4+	1.1+)	1997 12 31	704	0.2+	0.0
1992 04 22	896	1.0+	1.6+	1993 10 21	809	1.5+	0.5+	1998 01 02	704	1.0+	0.9+
1992 04 22	896	1.1+	0.9+	1993 10 21	809	0.8+	1.0+	1998 01 02	704	1.9−	0.3+
1992 04 25	896	0.3−	1.7−	1993 10 21	809	0.7+	1.0+	1998 01 02	704	0.9+	0.3+
1992 04 25	896	(0.6+	2.8−)	1997 11 29	704	1.6−	0.1+	1998 01 02	704	0.6+	0.3−

(8150)∗ 1985 QL$_4$ = 1978 JR = 1991 RK$_6$

Discovered 1985 Aug. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. H. E. Holt (*MPC* 19018), G. V. Williams (unpublished)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	115.34383		(2000.0)	**P**	**Q**	
n	0.17259915	ω	153.66199	+0.01033228	+0.99432880	
a	3.1947996	Ω	116.76996	−0.93708522	+0.04656717	
e	0.1269909	i	6.80858	−0.34894775	−0.09561239	
P	5.71	H	12.0	G 0.15	U 1	

Residuals in seconds of arc

1951 09 08	675	0.5−	0.8+	1989 04 03	675	1.6+	0.1+	1991 09 15	675	0.4+	0.6+
1951 09 08	675	0.2+	0.5+	1989 05 09	675	1.1+	1.6+	1991 09 16	675	0.8−	0.9−
1978 05 05	095	2.5−	1.2+	1989 05 09	675	0.6+	0.4−	1991 09 16	675	0.3−	1.0−
1985 08 24	095	1.6−	0.2−	1991 09 12	675	0.8+	0.4−	1997 10 21	966	1.0−	0.7+
1985 09 11	095	0.8+	0.4+	1991 09 12	675	0.1+	0.9−	1997 10 21	966	0.5−	0.4+
1985 09 19	095	2.1+	0.3+	1991 09 13	675	0.2−	0.2−	1997 12 28	725	0.9−	0.3−
1985 09 20	095	1.0+	2.5+	1991 09 13	675	0.7−	0.3+	1997 12 28	725	0.5+	0.3−
1989 04 03	675	0.2+	0.2+	1991 09 15	675	0.3−	0.4−	1997 12 30	725	0.1−	0.7+

(8151)∗ 1986 PK$_6$ = 1935 GH = 1989 LS

Discovered 1986 Aug. 12 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. S. Nakano (*MPC* 14948; unpublished)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	197.68881		(2000.0)			
n	0.29270191	ω	345.57961		−0.44106923	+0.89454569
a	2.2465651	Ω	258.20560		−0.81591232	−0.43329299
e	0.1607217	i	4.24325		−0.37382485	−0.10975057
P	3.37	H	13.6	G	0.15	U 2

Residuals in seconds of arc

1935 04 10	078	(39.5−	3.7−)X	1989 07 01	675	0.9−	1.5−	1997 12 05	704	1.4+	0.5−
1955 04 18	675	0.6−	0.1+	1992 03 26	095	0.8−	0.2+	1997 12 05	704	1.3+	0.3−
1955 04 18	675	0.4+	0.1+	1992 04 05	675	0.5+	0.6+	1997 12 05	704	2.0+	0.4+
1986 08 12	095	1.5−	1.1+	1992 04 05	675	0.6+	0.0	1997 12 05	704	1.6+	0.6+
1986 08 29	095	1.9+	1.0−	1993 09 15	801	0.8−	0.3−	1997 12 07	098	1.4−	0.9+
1986 09 06	095	1.3+	1.0+	1993 09 15	801	0.6−	0.3−	1997 12 07	098	1.4−	0.7+
1989 06 03	675	0.7+	0.1+	1993 09 19	801	0.7−	0.4+	1997 12 08	098	1.4−	1.0−
1989 06 03	675	0.2+	0.3+	1993 09 19	801	0.9−	0.4+	1997 12 08	098	(0.5−	2.5−)
1989 06 05	675	0.3−	1.2+	1997 12 04	704	0.3+	0.5−	1997 12 31	704	0.5−	0.0
1989 06 05	675	0.1−	0.7+	1997 12 04	704	0.2−	0.2−	1997 12 31	704	0.5−	0.1−
1989 06 29	675	0.2−	1.8−	1997 12 04	704	0.0	0.1−	1997 12 31	704	0.0	0.2−
1989 07 01	675	0.0	0.6−	1997 12 05	704	0.4+	1.2−	1997 12 31	704	0.4−	0.0

(8152)∗ 1986 VY = 1962 CC$_1$ = 1975 TC$_1$ = 1991 AP

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

Id. H. Kaneda (*MPC* 17958)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	20.06465		(2000.0)			
n	0.27202202	ω	73.59860		+0.61408714	−0.78882382
a	2.3590293	Ω	338.45367		+0.69494260	+0.55579264
e	0.2206559	i	3.99288		+0.37410128	+0.26239573
P	3.62	H	14.3	G	0.15	U 1

Residuals in seconds of arc

1962 02 10	033	(13.3+	0.6−)	1991 01 21	372	(7.7−	1.4+)	1997 12 06	704	1.5−	0.5+
1962 02 10	033	(12.8+	1.8−)	1991 01 21	372	(3.5−	2.6+)	1997 12 06	704	0.9+	0.1−
1975 10 03	095	2.4+	2.3+	1991 01 22	675	0.2−	1.6−	1997 12 06	704	0.4−	0.5+
1986 11 03	046	0.7−	0.7−	1991 01 22	675	1.3−	0.7−	1997 12 06	704	0.3+	0.9−
1986 11 04	046	1.7−	1.2−	1991 02 09	675	0.2−	0.1−	1997 12 06	704	1.0+	0.3+
1986 11 07	046	(3.2−	0.8−)	1991 02 09	675	0.3−	0.8−	1997 12 22	046	0.6+	0.7+
1986 11 07	046	(2.6−	1.1−)	1993 08 18	010	0.4+	0.4−	1997 12 22	046	0.6+	0.7+
1986 11 09	046	0.2−	1.1−	1993 08 19	010	0.2−	0.2−	1997 12 23	046	0.6+	0.6+
1986 11 09	046	1.3−	1.7−	1993 08 19	010	0.1−	0.8−	1997 12 26	046	0.3+	1.2+
1991 01 09	372	0.8−	1.5−	1993 08 19	010	0.4−	0.6−	1997 12 26	046	0.5+	1.3+
1991 01 09	372	0.3+	1.1−	1993 09 20	675	0.6+	0.5−	1997 12 26	046	0.3+	1.2+
1991 01 12	372	0.8−	0.3+	1993 09 20	675	0.4+	0.2−				
1991 01 12	372	(0.7+	2.5+)	1997 10 20	689	(5.6−	0.1+)				

(8153)∗ 1986 WO$_1$ = 1986 XG = 1982 RQ$_1$

Discovered 1986 Nov. 25 by A. Mrkos at Kleť.

Id. S. Nakano (d, *MPC* 11613; *MPC* 11733)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	19.53471		(2000.0)			
n	0.26599993	ω	15.91758		+0.86663810	−0.49883820
a	2.3945011	Ω	14.01856		+0.45317173	+0.77865119
e	0.2204439	i	2.35240		+0.20874335	+0.38060842
P	3.71	H	14.4	G	0.15	U 2

Residuals in seconds of arc

1982 09 15	046	(2.9−	0.4+)	1995 02 22	046	0.9−	1.3+	1997 11 02	367	0.7+	0.2+
1982 09 15	046	0.3−	1.4+	1995 03 01	046	0.9+	0.5+	1997 11 02	367	0.9+	0.2+
1982 09 15	046	0.9−	1.6+	1995 03 01	046	0.2+	0.1+	1997 12 18	046	1.3−	0.5−
1982 09 15	046	1.7−	0.5+	1995 03 01	046	0.5+	0.2+	1997 12 18	046	0.2−	0.1+
1982 09 16	095	(8.5+	3.9+)	1997 10 29	704	0.5−	0.1+	1997 12 18	046	0.2+	0.3+
1982 09 16	095	0.0	0.6−	1997 10 29	704	0.1+	0.2−	1997 12 21	046	0.5−	0.6−
1982 09 16	046	(4.7+	0.5−)	1997 10 29	704	0.1−	0.7+	1997 12 21	046	0.5−	0.5−
1982 09 16	046	(5.7+	0.9+)	1997 10 29	704	0.1−	0.1+	1997 12 21	046	0.5−	0.5−
1982 09 17	046	1.2+	0.0	1997 10 29	704	0.1+	0.1−	1997 12 28	725	0.6−	0.7−
1982 09 17	046	(5.8+	0.2+)	1997 10 30	704	(2.6+	0.7−)	1997 12 28	725	0.4−	0.2+
1986 11 25	046	0.8−	1.5−	1997 10 30	704	(3.2+	0.5−)	1997 12 28	725	1.4−	0.2−
1986 11 25	046	1.4−	0.0	1997 10 30	704	(3.3+	0.7−)	1997 12 30	725	0.5−	0.3+
1986 11 29	046	1.7+	1.2+	1997 10 30	704	(2.9+	0.2+)	1997 12 30	725	0.6−	0.6+
1986 11 29	046	0.4+	0.4−	1997 10 30	704	0.0	0.2−	1997 12 30	725	1.0+	0.9+
1986 12 04	046	0.2+	0.3−	1997 10 30	566	0.5+	0.3+	1997 12 30	725	0.4−	0.2−
1986 12 04	046	(3.1−	0.7−)	1997 10 30	566	0.6+	0.3+	1997 12 30	566	(1.2−	2.4−)
1986 12 06	054	0.7+	0.8−	1997 10 30	566	0.4+	0.3+	1997 12 30	566	(1.3−	2.4−)
1995 02 22	046	0.4+	0.9+	1997 11 01	367	0.6+	0.1−	1997 12 30	566	(1.2−	2.2−)
1995 02 22	046	0.7+	0.9+	1997 11 01	367	0.6+	0.1−				

(8154)∗ 1988 CQ$_7$ = 1992 HK$_4$ = 1993 SU$_8$

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

Id. T. Kobayashi (*MPC* 23972), G. V. Williams (*MPC* 30974)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	217.71410		(2000.0)			
n	0.28139660	ω	169.61594		−0.79612135	+0.60479783
a	2.3063408	Ω	47.61802		−0.55715011	−0.71951394
e	0.1402366	i	1.57152		−0.23616636	−0.34134919
P	3.50	H	14.5	G	0.15	U 2

Residuals in seconds of arc

1988 02 15	809	2.4+	0.1+	1992 05 04	809	0.7+	1.0−	1997 11 06	327	0.5+	0.4+
1988 02 16	809	1.2+	1.3−	1992 05 07	691	1.4−	0.2+	1997 11 28	327	0.5−	0.2−
1988 02 16	809	1.1+	1.4−	1992 05 07	691	1.2−	1.2+	1997 11 28	327	0.4+	0.1−
1988 02 16	809	0.6+	0.2+	1992 05 07	691	0.7+	0.6+	1997 11 28	327	0.9−	0.3−
1988 02 17	809	0.1−	1.2+	1993 09 17	809	1.0−	0.6+	1997 11 29	704	2.3−	1.8−
1988 02 17	809	1.2+	1.2+	1993 09 17	809	1.3−	2.1+	1997 11 29	704	2.2+	1.2−
1988 02 17	809	0.1+	1.0+	1993 09 17	809	0.9+	1.5+	1997 11 29	704	0.5+	1.0−
1988 02 21	809	1.7−	1.5+	1993 09 18	809	0.7+	1.3+	1997 11 29	704	0.7+	1.2−
1988 02 21	809	0.8−	0.7+	1993 09 18	809	0.1−	0.5+	1997 11 29	704	(3.6−	1.3−)
1988 02 21	809	1.7−	1.2+	1993 09 18	809	0.5−	0.7+	1997 12 04	704	1.2+	1.0+
1988 02 23	809	0.6−	1.2+	1996 08 12	566	0.6−	0.4+	1997 12 04	704	0.2+	0.4−
1988 02 23	809	0.9−	1.5+	1996 08 12	566	0.8−	0.8+	1997 12 04	704	1.6+	0.4−
1988 02 23	809	0.7−	1.8+	1996 08 12	566	0.6−	0.5+	1997 12 04	704	2.1+	0.9−
1992 04 25	809	0.2+	0.3−	1997 11 02	327	0.2+	0.1+	1997 12 23	327	0.5−	0.2+
1992 04 25	809	0.3−	0.4−	1997 11 02	327	0.4+	0.4+	1997 12 23	327	0.3−	0.3−
1992 04 25	809	0.3−	0.7−	1997 11 02	327	0.1+	0.1+	1997 12 23	327	0.4−	0.1−
1992 05 04	809	1.1+	0.1−	1997 11 06	327	0.3+	0.1+				
1992 05 04	809	0.8+	0.5−	1997 11 06	327	0.1+	0.2+				

(8155)∗ 1988 QA = 1984 UM$_4$ = 1997 VD$_1$

Discovered 1988 Aug. 17 at Osservatorio S. Vittore, Bologna.

Id. B. G. Marsden (*MPC* 30869), G. V. Williams (unpublished)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	27.29442		(2000.0)			
n	0.22611245	ω	207.24161		+0.99939332	−0.02922998
a	2.6684131	Ω	154.41221		+0.03409835	+0.93189875
e	0.2164835	i	2.51299		−0.00709182	+0.36153882
P	4.36	H	13.5	G	0.15	U 2

Residuals in seconds of arc

1984 10 20	095	0.2−	0.8−	1988 09 03	552	1.2+	1.1+	1997 11 04	046	0.3−	0.4+
1988 08 08	095	2.0+	1.5−	1988 09 07	552	0.4+	0.1+	1997 11 04	046	0.1−	0.0
1988 08 08	095	0.6+	0.5+	1988 09 07	552	0.9+	0.5+	1997 11 04	046	0.4−	0.1+
1988 08 17	552	0.7+	1.5+	1988 09 10	675	0.6+	0.7+	1997 11 04	046	0.2−	0.2+
1988 08 17	046	2.8−	3.1−	1988 09 10	552	0.7+	0.3−	1997 11 04	046	0.1+	0.2+

1988 08 17	046	3.1−	1.9−	1988 09 10	552	0.1+	1.3+	1997 11 04	046	0.3−	0.2+
1988 08 17	552	2.0+	2.6+	1995 02 24	691	0.3+	0.8−	1997 11 06	046	0.2−	0.1+
1988 08 18	552	0.4+	1.1−	1995 02 24	691	0.1−	0.5−	1997 11 06	046	0.0	0.0
1988 08 18	046	(1.9−	4.7−)	1996 05 21	566	0.2−	0.7+	1997 11 06	046	0.0	0.2−
1988 08 18	046	2.0−	0.6−	1996 05 21	566	0.2−	0.4+	1997 11 10	046	0.5+	0.3−
1988 08 18	552	0.5+	0.8−	1996 05 21	566	0.0	0.4+	1997 11 10	046	0.4+	0.2−
1988 08 22	552	0.7−	2.0−	1997 10 08	894	0.7−	0.7+	1997 11 10	046	0.6+	0.2−
1988 08 22	552	(0.5−	4.9−)	1997 10 08	894	0.7−	0.7+	1997 12 06	552	0.0	0.1−
1988 08 23	046	0.9−	0.6−	1997 10 12	894	0.7+	0.6+	1997 12 06	552	0.2−	0.1+
1988 08 24	046	1.2−	0.6−	1997 10 12	894	0.7−	0.1−	1997 12 06	552	0.2−	0.1−
1988 09 03	552	1.1+	0.4+	1997 11 03	046	0.0	0.2+	1997 12 14	552	0.2+	0.3−
1988 09 03	552	0.2+	2.2+	1997 11 03	046	0.1−	0.1−	1997 12 14	552	1.0+	0.6−
1988 09 03	552	0.9+	0.4+	1997 11 03	046	0.1−	0.1−	1997 12 14	552	0.5+	0.1−

(8156)∗ 1988 TR = 1977 DP$_{10}$ = 1992 PY$_6$

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

Id. T. B. Spahr (*MPC* 30447), G. V. Williams (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	34.31260		(2000.0)		**P**	**Q**	
n	0.22252376	ω	244.21303		+0.96343685	−0.26415780	
a	2.6970260	Ω	131.06940		+0.26216650	+0.89486486	
e	0.0998915	*i*	3.40930		+0.05530070	+0.35977430	
P	4.43	*H*	12.5	*G*	0.15	*U*	2

Residuals in seconds of arc

1977 02 19	381	0.4+	0.3−	1988 11 01	400	(3.7+	0.6+)	1997 11 01	367	0.3+	0.7−
1977 02 19	381	0.7+	0.0	1988 11 02	400	1.3+	1.0−	1997 11 29	704	0.2+	0.0
1988 10 13	400	(10.7−	42.7+)	1988 11 02	400	1.6+	0.4+	1997 11 29	704	0.7+	0.4+
1988 10 13	400	(14.0−	40.5+)	1992 08 06	675	0.5+	0.2−	1997 11 29	704	0.6+	0.2−
1988 10 13	400	(3.4+	3.2+)	1992 08 06	675	1.0+	1.4−	1997 11 29	704	0.3+	0.2−
1988 10 14	400	1.3−	1.1+	1995 03 27	691	0.6−	0.4−	1997 11 29	704	0.9+	0.1−
1988 10 14	400	1.6−	0.1+	1995 03 27	691	0.8−	0.6−	1997 12 18	758	0.5−	0.1+
1988 10 14	400	0.1−	0.5+	1995 03 27	691	0.7−	0.8−	1997 12 18	758	0.4−	0.5+
1988 10 18	400	1.4−	0.5+	1997 10 25	688	0.2+	0.8−	1997 12 18	758	0.7+	0.3+
1988 10 18	400	1.2−	0.0	1997 10 25	688	0.2+	0.9−	1997 12 19	758	0.2−	0.1+
1988 10 18	046	(3.3+	2.5+)	1997 10 26	688	0.1+	0.6−	1997 12 19	758	1.9−	0.4−
1988 10 18	046	(2.9+	2.2+)	1997 10 26	688	0.3+	0.3−				
1988 11 01	400	0.1+	0.3+	1997 11 01	367	0.2+	0.7−				

(8157)∗ 1988 XG$_2$ = 1983 VX$_4$ = 1992 SB$_{24}$

Discovered 1988 Dec. 15 by Y. Oshima at the Gekko Observatory.

Id. H. E. Holt (*MPC* 21788), G. V. Williams (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	344.34403		(2000.0)		**P**	**Q**	
n	0.21053040	ω	180.60982		+0.07880196	−0.98927784	
a	2.7985056	Ω	264.87513		+0.91515083	+0.12070300	
e	0.1955477	*i*	7.09156		+0.39533431	−0.08222009	
P	4.68	*H*	13.2	*G*	0.15	*U*	1

Residuals in seconds of arc

1954 07 04	675	0.5+	0.4+	1989 01 05	888	(7.0+	0.0)	1994 03 13	675	1.6−	1.0−
1954 07 04	675	0.6−	0.6−	1989 01 27	888	0.6+	0.1+	1997 10 29	566	0.6+	0.9−
1955 10 24	675	0.1−	0.5+	1989 01 27	888	0.2−	0.8+	1997 10 29	566	0.4+	0.8−
1955 10 24	675	0.0	0.7+	1989 01 29	888	0.1−	0.9−	1997 10 29	566	0.4+	0.9−
1983 11 08	381	1.2+	1.5+	1989 01 29	888	0.2−	0.7−	1997 11 25	691	0.7−	0.1−
1988 12 15	888	(3.0+	2.0−)	1992 09 28	095	(0.8+	3.5+)	1997 11 25	691	0.7−	0.1−
1988 12 15	888	1.8+	1.6−	1992 09 28	095	0.7+	0.1+	1997 11 25	691	0.7−	0.2−
1988 12 17	888	1.7+	0.5+	1992 09 29	675	0.5−	0.1+	1997 12 28	725	0.1−	0.2+
1988 12 17	888	2.1+	0.8+	1992 09 29	675	0.1+	0.4−	1997 12 28	725	0.2+	0.1+
1989 01 01	888	1.0−	0.6+	1992 10 04	675	0.2−	1.3−	1997 12 28	725	0.3+	0.0
1989 01 01	888	0.4−	0.6−	1992 10 04	675	0.5+	0.2+	1997 12 28	725	0.2−	0.1−
1989 01 03	888	2.1−	1.4+	1994 02 10	675	0.1+	1.0−	1997 12 30	725	0.1−	0.0
1989 01 03	888	2.1−	0.8+	1994 02 10	675	0.2−	1.1−	1997 12 30	725	0.1+	0.0
1989 01 05	888	(5.8+	0.2+)	1994 03 13	675	1.1+	0.4+	1997 12 30	725	0.4+	0.2−

(8158)∗ 1989 UH$_7$ = 1993 SR$_7$ = 1996 FS$_{16}$ = 1997 SH$_{10}$

Discovered 1989 Oct. 23 by F. Börngen at Tautenburg.

Id. G. V. Williams (*MPC* 30870)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	43.25237		(2000.0)		**P**	**Q**	
n	0.22882794	ω	117.50280		+0.68318150	+0.73010440	
a	2.6472605	Ω	195.61721		−0.68757183	+0.63643415	
e	0.0616231	*i*	3.09013		−0.24598380	+0.24879535	
P	4.31	*H*	13.7	*G*	0.15	*U*	1

Residuals in seconds of arc

1989 10 23	033	0.3+	0.3−	1993 09 24	809	0.4−	0.2+	1997 09 26	327	0.0	0.3−
1989 10 23	033	0.6+	0.3+	1996 03 22	809	(2.9−	0.1−)	1997 09 26	327	0.1+	0.2−
1989 10 25	033	0.1+	0.3+	1996 03 22	809	(3.7−	0.7+)	1997 09 26	327	0.0	0.4−
1989 10 25	033	0.5+	0.7+	1996 03 22	809	(3.0−	0.5−)	1997 09 27	327	0.5−	0.5−
1989 10 27	033	1.3−	0.4+	1996 03 24	809	0.6+	0.7−	1997 09 27	327	1.0+	0.3+
1992 05 03	809	0.5+	0.4+	1996 03 24	809	0.5−	0.2−	1997 09 27	327	0.9+	0.5+
1992 05 03	809	0.0	0.1−	1996 03 24	809	0.6−	1.0−	1997 09 29	327	0.2+	0.2−
1992 05 03	809	0.3−	0.4+	1996 03 26	809	1.0+	1.8+	1997 09 29	327	0.0	0.4−
1993 09 17	809	1.7−	0.3+	1996 03 26	809	0.7+	1.5+	1997 09 29	327	0.3+	0.2−
1993 09 17	809	1.3−	0.0	1996 03 26	809	0.2+	1.9+	1997 10 17	327	0.6−	0.1+
1993 09 17	809	1.5−	0.2−	1996 03 26	809	0.6+	0.4+	1997 10 17	327	0.6−	0.1−
1993 09 18	809	(2.1+	0.9+)	1996 03 26	809	0.3+	0.0	1997 10 17	327	0.5−	0.2+
1993 09 18	809	0.9+	1.6+	1996 03 26	809	0.8+	0.5+	1997 10 17	327	0.1−	0.5−
1993 09 18	809	0.9+	1.7+	1996 04 23	566	0.8−	0.3−	1997 10 19	327	0.0	0.2+
1993 09 22	809	0.1+	0.3−	1996 04 23	566	0.8−	0.3−	1997 10 19	327	0.3−	0.3+
1993 09 22	809	1.0−	0.8−	1996 04 23	566	0.6−	0.3−	1997 10 19	327	0.0	0.1−
1993 09 22	809	(2.3−	0.0)	1997 09 26	327	0.1−	0.1−	1997 11 02	327	0.7+	0.7+
1993 09 24	809	1.2+	0.0	1997 09 26	327	0.3−	0.0	1997 11 02	327	0.1+	0.7−
1993 09 24	809	0.9+	0.7+	1997 09 26	327	0.0	0.2−	1997 11 02	327	0.8+	0.6+

(8159)∗ 1990 BE$_1$ = 1984 SY$_4$ = 1993 XB$_2$

Discovered 1990 Jan. 24 by K. Endate and K. Watanabe at Kitami.

Id. G. V. Williams (*MPC* 23237)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	7.78453		(2000.0)		**P**	**Q**	
n	0.23153128	ω	278.94572		+0.69310677	−0.69934747	
a	2.6266141	Ω	125.66630		+0.71647931	+0.64178180	
e	0.2910824	*i*	12.41675		+0.07912279	+0.31468911	
P	4.26	*H*	13.3	*G*	0.15	*U*	2

Residuals in seconds of arc

1984 09 23	071	0.3+	1.1+	1993 12 14	675	0.0	0.3−	1997 11 07	423	0.2+	0.1−
1984 09 23	071	(4.3+	0.8+)	1993 12 16	675	0.0	0.4−	1997 11 08	423	0.1−	0.4−
1984 09 23	071	0.5−	0.2−	1993 12 16	675	0.6−	1.8+	1997 11 08	423	0.3+	0.2−
1990 01 24	400	(0.6+	3.3+)	1994 01 12	675	1.1−	0.1+	1997 11 08	423	0.1+	0.3−
1990 01 24	400	(4.5+	3.7+)	1994 01 16	675	0.9+	0.8+	1997 12 16	758	0.7−	0.8+
1990 01 27	400	1.6+	0.1−	1994 01 16	675	1.0+	0.4−	1997 12 16	758	0.3−	0.3−
1990 01 27	400	(0.1−	2.5+)	1997 09 23	689	0.4+	0.2−	1997 12 17	758	0.3−	0.2−
1990 02 01	403	1.1−	0.2+ Y	1997 11 07	423	0.3+	0.3+	1997 12 18	758	0.1−	0.5−
1990 02 01	403	0.8−	0.8− Y	1997 11 07	423	0.2+	0.0	1997 12 18	758	0.3−	0.3−
1993 12 14	675	(2.7−	1.5−)	1997 11 07	423	0.3+	0.2+	1997 12 18	758	0.1−	0.4−

(8160)∗ 1990 MG = 1958 VN = 1979 BY$_2$

Discovered 1990 June 21 by H. E. Holt at Palomar.

Id. S. J. Bus (*MPC* 18120), G. V. Williams (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	105.98374		(2000.0)		**P**	**Q**	
n	0.30424881	ω	218.27925		+0.60172323	+0.79621710	
a	2.1893580	Ω	88.80248		−0.71639685	+0.57290167	
e	0.1865239	*i*	3.61212		−0.35313554	+0.19447881	
P	3.24	*H*	14.0	*G*	0.15	*U*	2

Residuals in seconds of arc

1957 04 28	675	0.5+	0.6−	1990 07 29	675	0.4−	0.5−	1997 12 04	704	1.5+	0.9−
1958 11 11	760	0.1−	1.1−	1990 07 30	675	(4.5−	0.7−)	1997 12 04	704	0.9−	1.3−
1958 11 11	760	0.2+	0.3+	1990 07 30	675	1.1+	0.8+	1997 12 04	704	1.7+	0.0
1979 01 27	675	0.1+	0.9−	1990 09 15	675	0.2−	0.2+	1997 12 29	566	0.1−	0.7+
1979 01 29	675	1.5−	0.2+	1990 09 15	675	0.6−	0.2−	1997 12 29	566	0.1+	0.7+
1990 06 21	675	(4.4+	2.3−)	1990 09 16	675	0.5+	1.5+	1997 12 29	566	0.1+	1.1+
1990 06 21	675	0.0	0.4−	1990 09 16	675	1.2+	1.4+	1997 12 31	704	0.4+	0.2−
1990 06 23	675	(0.6+	2.4−)	1997 11 29	704	(2.5−	0.7−)	1997 12 31	704	0.3+	0.4−
1990 06 23	675	0.2+	1.2−	1997 11 29	704	1.8−	0.2−	1997 12 31	704	0.3+	0.0
1990 07 25	675	0.3−	0.3−	1997 11 29	704	1.4−	0.1−	1997 12 31	704	0.0	0.1−
1990 07 25	675	0.1−	0.1+	1997 11 29	704	1.1−	0.2−	1998 01 02	704	0.7+	0.1−
1990 07 29	675	0.7−	1.8−	1997 11 29	704	1.4−	1.2+	1998 01 02	704	0.4+	0.2−
1990 07 29	675	0.2−	0.3+	1997 12 04	704	1.2+	0.1−	1998 01 02	704	1.0+	0.5+
1990 07 29	675	0.3−	0.9−	1997 12 04	704	0.4+	0.3−	1998 01 02	704	0.3+	0.6−

(8161)∗ 1990 QP$_3$ = 1979 SG$_7$

Discovered 1990 Aug. 19 at the Oak Ridge Observatory.

Id. G. V. Williams (*MPC* 20019)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	106.66968			(2000.0)			**P**			**Q**	
n	0.17523161		ω	246.53837			+0.96172187			+0.27047214	
a	3.1627224		Ω	97.74610			−0.23241970			+0.89016871	
e	0.1742873		*i*	2.54498			−0.14516240			+0.36666673	
P	5.62		*H*	13.3	*G*	0.15		*U*	2		

Residuals in seconds of arc

1950 06 15	675	0.0	0.6+	1990 08 26	809	0.1+	1.0−	1990 10 16	801	0.4−	0.5+
1950 06 15	675	0.1−	1.0−	1990 08 26	809	0.4−	1.8−	1990 10 17	801	0.4−	0.7+
1954 02 10	675	0.0	0.1−	1990 08 27	675	(1.1−	2.1−)	1990 10 17	801	0.2−	0.3+
1979 09 23	095	(0.1+	3.2−)	1990 08 27	675	0.7−	0.1+	1990 10 18	801	0.1−	0.3+
1990 08 16	809	(2.1+	1.1+)	1990 09 13	809	1.3−	0.2+	1990 10 18	801	0.1−	0.1+
1990 08 16	809	1.6+	0.6+	1990 09 13	809	0.8−	0.3+	1990 11 14	801	0.2−	0.2+
1990 08 16	809	0.7+	0.5−	1990 09 13	809	0.9−	0.1−	1990 11 15	801	0.3−	0.2−
1990 08 19	801	0.7+	0.4+	1990 09 14	809	1.0−	0.1−	1992 01 01	801	0.3−	0.2−
1990 08 19	801	0.1−	0.2+	1990 09 14	809	0.8−	0.2−	1992 01 01	801	0.5+	0.4−
1990 08 20	809	1.8+	0.7+	1990 09 14	809	0.5−	0.3−	1997 11 24	910	0.2+	0.5+
1990 08 20	809	0.1+	0.4+	1990 09 14	675	0.2−	0.7−	1997 11 24	910	0.3+	0.7+
1990 08 20	809	0.3−	0.3+	1990 09 14	675	0.1+	1.1−	1997 11 24	910	0.0	0.6+
1990 08 20	801	0.0	1.3+	1990 09 16	801	0.4+	0.0	1998 01 02	691	0.1−	0.5−
1990 08 20	801	0.2+	1.6+	1990 09 16	801	0.1+	0.0	1998 01 02	691	0.4+	0.4−
1990 08 23	675	0.0	0.1−	1990 09 19	801	0.2+	0.1+	1998 01 02	691	0.4+	0.4−
1990 08 23	675	0.2−	0.3−	1990 09 19	801	0.3+	0.1+	1998 01 08	691	0.4−	0.4−
1990 08 25	675	0.2−	1.6−	1990 09 19	675	1.2+	0.7+	1998 01 08	691	0.3−	0.4−
1990 08 25	675	0.3+	0.5−	1990 09 19	675	1.2+	0.3+	1998 01 08	691	0.5−	0.3−
1990 08 26	809	0.4+	1.6−	1990 10 16	801	0.4−	0.6+				

(8162)∗ 1990 SK$_{11}$ = 1990 QA$_{19}$ = 1990 SL$_{29}$ = 1987 XR

Discovered 1990 Sept. 16 by H. E. Holt at Palomar.

Id. S. Nakano (*MPC* 20927)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	33.33253			(2000.0)			**P**			**Q**	
n	0.29040194		ω	106.93699			+0.94883665			−0.31294266	
a	2.2584113		Ω	271.31528			+0.27129880			+0.87621062	
e	0.1087679		*i*	2.41588			+0.16157343			+0.36649946	
P	3.39		*H*	14.2	*G*	0.15		*U*	2		

Residuals in seconds of arc

1987 12 14	046	1.5−	0.8+	1993 07 23	809	1.0+	1.3−	1997 10 31	704	0.1−	0.8+
1987 12 14	046	0.6+	0.0	1996 06 15	566	0.1+	0.5+	1997 10 31	704	0.1+	1.6+
1987 12 15	046	1.8+	1.7−	1996 06 15	566	0.4+	0.1−	1997 10 31	704	0.0	1.6+
1987 12 15	046	(5.8+	1.8+)	1996 06 15	566	0.2+	0.2−	1997 10 31	704	0.2−	0.4+
1990 08 30	095	0.0	0.2−	1997 10 29	704	0.8+	0.7−	1997 11 06	704	1.4−	1.1−
1990 08 31	095	(3.4−	2.3+)	1997 10 29	704	0.2−	0.3−	1997 11 06	704	1.5−	0.7+
1990 09 16	675	0.3−	0.1+	1997 10 29	704	0.1+	0.7+	1997 11 06	704	1.0−	0.1+
1990 09 16	675	0.1+	0.3−	1997 10 29	704	1.0+	0.5−	1997 11 06	704	1.4−	0.7−
1990 09 19	675	0.5−	0.4+	1997 10 29	704	0.7−	0.3+	1997 11 06	704	2.0−	0.1−
1990 09 19	675	0.0	0.3−	1997 10 30	704	0.6+	1.0−	1997 11 08	910	1.0+	0.5+
1990 09 23	095	(1.9−	2.4+)	1997 10 30	704	0.7+	1.1−	1997 11 08	910	1.2+	0.5+
1992 03 01	809	0.5−	0.8−	1997 10 30	704	0.8+	0.6−	1997 11 08	910	1.1+	0.4+
1992 03 03	809	0.6−	1.2−	1997 10 30	704	1.4+	1.4−	1997 12 19	426	1.1+	0.0
1992 03 06	809	1.7+	0.1+	1997 10 30	704	1.1−	1.3−	1997 12 19	426	1.0+	0.2−
1992 03 09	809	1.9−	0.8−	1997 10 30	566	0.9−	0.0	1997 12 19	426	1.3+	0.0
1992 04 07	809	1.5−	0.5−	1997 10 30	566	0.7−	0.3−	1997 12 21	426	0.8+	0.4−
1993 07 23	809	0.7+	2.0−	1997 10 30	566	1.0−	0.0	1997 12 21	426	0.8+	0.4−
1993 07 23	809	0.5−	1.3−	1997 10 31	704	0.3−	0.5+	1997 12 21	426	0.9+	0.2−

(8163)∗ 1990 UF$_2$ = 1980 WJ$_3$

Discovered 1990 Oct. 27 by T. Seki at Geisei.

Id. E. Bowell (*MPC* 18823)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	264.58853			(2000.0)			**P**			**Q**	
n	0.29094039		ω	338.01756			−0.99689336			+0.05934126	
a	2.2556240		Ω	205.55055			−0.04146231			−0.95444131	
e	0.1360002		*i*	6.89657			−0.06696638			−0.29243870	
P	3.39		*H*	14.3	*G*	0.15		*U*	2		

Residuals in seconds of arc

1980 11 29	675	1.0−	0.4−	1992 04 05	372	(2.3+	0.0)	1993 09 15	098	(2.7−	1.1−)
1980 12 01	675	0.9−	1.2−	1992 04 06	809	(3.5+	2.0+)	1994 12 29	372	0.5+	0.1+
1990 10 27	372	(3.7−	0.3−)	1992 04 06	809	(3.4+	2.5+)	1994 12 29	372	1.3+	0.6+
1990 10 27	372	0.8−	0.2−	1992 04 06	809	(3.0+	1.7+)	1995 02 27	801	0.7+	0.0
1990 10 28	372	0.0	1.0+	1992 04 11	372	1.5+	1.0+	1995 02 27	801	0.7+	0.1+
1990 10 30	372	0.7+	0.3−	1992 04 11	372	(1.3+	2.5+)	1997 10 30	113	0.1+	1.3−
1990 11 14	372	2.0+	0.1+	1992 04 22	372	0.9+	0.5+	1997 10 31	113	1.0−	0.8−
1990 11 14	372	1.9+	0.6+	1992 04 22	372	(1.3+	6.2+)	1997 10 31	113	1.1−	0.8−
1990 11 15	372	(5.9−	0.6−)	1992 04 25	809	0.5−	1.6−	1997 10 31	113	0.8−	1.1−
1990 11 23	372	1.3−	1.3+	1992 04 25	809	1.3−	1.8−	1997 11 01	113	1.5−	0.5−
1990 11 23	372	1.7+	1.4+	1992 04 25	809	1.1−	1.5−	1997 11 01	113	(0.2−	3.0−)
1992 04 04	809	(3.2+	0.9+)	1992 04 27	691	0.3−	0.9+	1997 12 30	113	0.3−	0.1+
1992 04 04	809	(2.1+	1.1+)	1992 04 27	691	0.4−	1.1+	1997 12 30	113	0.4−	0.0
1992 04 04	809	(2.5+	0.7+)	1992 04 27	691	(1.3+	4.6+)	1997 12 30	113	0.2−	0.1−
1992 04 05	372	0.2+	0.2+	1993 09 14	098	0.4+	0.1+				

(8164)∗ 1990 UO$_3$ = 1990 UD$_8$ = 1990 UU$_9$ = 1995 CP$_{10}$

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

Id. S. Nakano (d, *MPC* 20913; *MPC* 24895)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	291.47954			(2000.0)			**P**			**Q**	
n	0.28778900		ω	50.39958			−0.85601916			−0.51083362	
a	2.2720607		Ω	98.74576			+0.44631332			−0.80767555	
e	0.0888802		*i*	4.59892			+0.26083639			−0.29446430	
P	3.42		*H*	14.6	*G*	0.15		*U*	1		

Residuals in seconds of arc

1990 10 16	809	0.5−	0.1+	1995 02 05	372	0.7−	0.4+	1997 11 29	704	0.3−	0.2−
1990 10 16	809	0.7+	0.3+	1995 02 05	372	1.3+	0.1+	1997 11 29	704	0.2−	0.5−
1990 10 16	809	0.7+	0.6+	1995 02 06	372	0.2−	1.5−	1997 11 29	704	0.0	0.7−
1990 10 20	809	0.3−	0.3+	1995 02 06	372	(1.9+	2.6+)	1997 11 29	704	0.2+	0.8−
1990 10 20	809	0.9−	0.2+	1996 07 14	566	0.3−	0.5−	1997 12 04	704	0.2−	0.2−
1990 10 20	809	0.2−	0.5+	1996 07 14	566	0.0	0.5−	1997 12 04	704	0.2−	0.2−
1990 10 24	809	0.1−	1.3+	1996 07 14	566	0.3−	0.4−	1997 12 04	704	0.6−	0.6−
1990 10 24	809	0.0	1.0+	1996 07 14	566	0.1+	0.6−	1997 12 04	704	0.3−	0.4−
1990 10 24	809	0.4−	0.3+	1996 07 14	566	0.9+	0.7+	1997 12 04	704	0.5−	0.5−
1993 07 26	675	1.4−	0.7−	1996 07 14	566	0.6+	0.8−	1997 12 28	566	1.5+	0.0
1993 09 21	675	1.2+	0.3+	1997 11 26	704	(3.2−	0.7+)	1997 12 28	566	0.8+	0.3+
1993 09 21	675	0.5−	2.0−	1997 11 26	704	(4.0−	0.2+)	1997 12 28	566	1.3+	0.1−
1995 02 04	372	0.9−	0.1−	1997 11 26	704	(3.2−	0.2+)				
1995 02 04	372	(2.7−	5.1+)	1997 11 29	704	0.1−	0.2−				

(8165)∗ 1990 WQ_3 = 1955 QU_1 = 1972 KF = 1993 TD_{29}

Discovered 1990 Nov. 21 by E. W. Elst at the European Southern Observatory.

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

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	136.66467		(2000.0)			
n	0.28644118	ω	177.11198		+0.15433215	+0.97953171
a	2.2791824	Ω	101.74106		−0.90911444	+0.19200449
e	0.2127110	i	7.58443		−0.38690119	−0.06043099
P	3.44	H	13.8	G	0.15	U 2

Residuals in seconds of arc

1955 08 25	839	0.7+	0.2−	1993 10 09	675	0.4+	0.2−	1996 05 23	691	0.1+	0.8−
1972 05 17	095	2.1−	1.8−	1993 10 09	675	0.8−	0.3−	1996 05 23	691	0.4−	0.6+
1990 11 11	809	0.9+	0.1−	1993 10 14	675	0.2−	0.8−	1997 11 26	704	1.8−	0.1−
1990 11 11	809	1.5+	0.7−	1993 10 14	675	0.1+	0.0	1997 11 26	704	1.8−	1.2+
1990 11 11	809	0.1+	0.7−	1996 04 18	801	0.4+	0.6−	1997 11 26	704	1.6−	1.1−
1990 11 12	809	(2.8+	3.1−)	1996 04 18	801	0.3+	0.5−	1997 11 29	704	1.3−	0.1−
1990 11 12	809	(3.5+	4.3−)	1996 04 22	801	1.1+	1.0−	1997 11 29	704	1.6−	0.2−
1990 11 12	809	(2.8+	2.9−)	1996 04 22	801	0.2−	0.1−	1997 11 29	704	1.8−	0.2+
1990 11 14	809	(3.2+	2.2−)	1996 05 10	691	0.4−	0.0	1997 11 29	704	1.9−	0.5+
1990 11 14	809	2.1+	1.2−	1996 05 10	691	0.4−	0.2+	1997 11 29	704	1.7−	0.4+
1990 11 14	809	2.0+	0.4−	1996 05 10	691	0.4−	0.2+	1997 12 05	704	1.2+	0.0
1990 11 15	809	1.4+	0.1−	1996 05 15	801	0.9+	0.1−	1997 12 05	704	0.7+	0.2−
1990 11 17	809	0.3+	0.2−	1996 05 15	801	1.1+	0.1−	1997 12 05	704	1.1+	1.0+
1990 11 21	809	(2.0+	6.2−)	1996 05 17	691	0.9−	0.2+	1997 12 05	704	1.3+	0.1+
1990 11 22	809	0.5−	0.9+	1996 05 17	691	0.6−	0.5+	1997 12 05	704	2.1+	0.3−
1990 11 23	809	(0.6−	2.9−)	1996 05 17	691	0.2−	0.3+	1997 12 28	566	0.5+	1.0−
1990 11 23	809	(1.5+	3.7−)	1996 05 20	801	0.7+	0.1−	1997 12 28	566	0.2+	1.0−
1990 11 23	809	(2.9+	3.4−)	1996 05 20	801	0.5+	0.1−	1997 12 28	566	0.2+	1.1−
1993 09 18	675	0.3−	1.4+	1996 05 23	691	0.4−	0.4−				

(8166)∗ 1991 AH_1 = 1995 FF_1

Discovered 1991 Jan. 12 by B. G. W. Manning at Stakenbridge.

Id. S. Nakano (*MPC* 25213)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	282.29847		(2000.0)			
n	0.26580942	ω	256.33713		−0.95923514	−0.28187523
a	2.3956451	Ω	267.28779		+0.26652780	−0.87835348
e	0.1404907	i	1.16760		+0.09397270	−0.38605896
P	3.71	H	14.2	G	0.15	U 2

Residuals in seconds of arc

1989 09 27	675	0.4−	0.7+	1991 02 10	413	1.1+	0.2+	1997 11 29	704	1.2+	1.5−
1989 09 27	675	0.5−	0.5−	1991 02 11	675	1.2−	1.0−	1997 11 29	704	0.2+	0.9−
1991 01 12	494	0.3−	0.1+	1991 02 11	675	0.5−	0.7−	1997 11 30	494	0.0	0.4−
1991 01 13	494	0.5+	0.6+	1991 02 21	413	0.1+	1.3−	1997 11 30	494	0.0	0.4+
1991 01 13	494	0.6+	0.1+	1995 03 28	399	0.4+	0.1−	1997 11 30	494	0.0	0.6+
1991 01 15	033	0.4−	0.6+	1995 03 28	399	0.6−	1.0+	1997 12 02	494	0.4−	0.1+
1991 01 15	033	0.5−	0.1+	1995 04 04	399	(2.8−	3.1−)	1997 12 02	494	0.4−	0.3+
1991 01 15	033	0.4+	0.9+	1995 04 04	399	(3.1−	0.1+)	1997 12 04	704	1.0−	0.1−
1991 01 15	494	0.8+	0.4−	1996 08 08	809	0.4+	1.7+	1997 12 04	704	0.5−	0.4+
1991 01 15	033	0.0	0.2−	1996 08 08	809	(0.5+	2.4+)	1997 12 04	704	0.2+	0.1−
1991 01 16	033	0.0	0.9+	1996 08 08	809	(2.0+	3.3+)	1997 12 04	704	0.7−	0.0
1991 01 17	494	1.2−	0.4−	1996 08 09	809	(1.5+	3.3+)	1997 12 25	494	1.2+	0.8+
1991 01 22	675	1.1−	1.0+	1996 08 09	809	(2.2+	3.8+)	1997 12 25	494	0.0	1.3+
1991 01 22	675	0.4−	1.4+	1996 08 09	809	(1.7+	4.1+)	1997 12 27	494	1.3+	0.8+
1991 02 07	413	0.7+	0.2−	1997 11 26	704	1.9−	1.1−	1997 12 27	494	1.2+	1.5+
1991 02 07	413	0.6+	0.0	1997 11 26	704	1.5−	1.0−	1997 12 31	704	0.0	0.3−
1991 02 09	675	0.1+	0.3−	1997 11 26	704	(2.8−	1.4−)	1997 12 31	704	1.3+	0.5+
1991 02 09	675	0.7+	0.1+	1997 11 29	704	0.7−	0.4+	1997 12 31	704	0.6+	0.3+
1991 02 09	413	0.2+	0.5−	1997 11 29	704	0.5−	1.6−	1997 12 31	704	0.1+	0.2+
1991 02 10	413	0.7+	0.4−	1997 11 29	704	0.6+	0.4−				

(8167)∗ 1991 CM_3 = 1987 BP_2

Discovered 1991 Feb. 14 by K. Endate and K. Watanabe at Kitami.

Id. T. Urata (*MPC* 18127)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

					P	Q
M	8.24042		(2000.0)			
n	0.26006495	ω	298.02516		+0.41000207	−0.90991978
a	2.4307941	Ω	127.63149		+0.86219858	+0.36419701
e	0.1304489	i	4.54845		+0.29750952	+0.19851078
P	3.79	H	13.4	G	0.15	U 1

Residuals in seconds of arc

1951 08 06	675	1.3+	0.2−	1993 10 10	809	0.7+	0.8+	1993 11 11	033	0.4−	0.4+
1951 08 06	675	0.7−	0.7+	1993 10 10	809	0.3+	1.0+	1993 11 12	033	0.2+	0.5+
1987 01 31	046	0.6−	0.4+	1993 10 10	809	0.3+	1.1+	1995 04 07	400	0.7−	0.1−
1987 01 31	046	1.3−	0.9−	1993 10 17	033	1.1−	0.3−	1995 04 07	400	1.0−	0.3−
1987 02 01	046	2.1−	2.1+	1993 10 18	033	0.9−	0.1−	1997 11 29	704	(2.7−	0.8+)
1987 02 01	046	0.4+	0.3+	1993 10 19	901	0.4−	1.1+	1997 11 29	704	(2.2−	1.2−)
1987 02 02	046	0.9+	0.3+	1993 10 19	901	1.4+	0.6+	1997 11 29	704	(4.2−	0.3+)
1987 02 02	046	(0.9+	2.8−)	1993 10 20	809	(0.7+	4.8+)	1997 11 29	704	0.1+	0.8+
1989 09 02	675	0.1−	0.0	1993 10 20	809	(0.4+	4.8+)	1997 11 29	704	(2.5−	1.7−)
1989 09 02	675	0.2+	0.8−	1993 10 20	809	(0.3−	4.9+)	1997 12 05	704	0.3+	0.7−
1991 02 14	400	1.8+	0.5+	1993 10 21	809	(0.6−	3.2+)	1997 12 05	704	1.0+	0.9−
1991 02 14	400	1.5+	0.4+	1993 10 21	809	(0.7−	3.1+)	1997 12 05	704	1.0+	1.1−
1991 02 20	400	(1.6+	2.2+)	1993 10 21	809	(1.5−	3.4+)	1997 12 05	704	0.9+	1.4−
1991 02 20	400	1.1+	0.6+	1993 11 11	400	2.0−	0.4−	1997 12 05	704	0.2+	0.9−
1991 03 18	898	(1.6−	3.2+)	1993 11 11	400	1.1−	0.8−	1998 01 12	758	0.0	0.4+
1991 03 18	898	(1.3−	2.5+)	1993 11 11	033	0.5−	0.5+	1998 01 12	758	0.1−	0.7−

(8168)∗ 1991 FK_1 = 1995 HU

Discovered 1991 Mar. 18 by E. F. Helin at Palomar.

Id. S. Nakano (*MPC* 25214)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	317.90043		(2000.0)			
n	0.26597708	ω	270.74862		−0.58439522	−0.78036826
a	2.3946382	Ω	218.00686		+0.81035635	−0.57558172
e	0.2881919	i	21.18310		−0.04248302	−0.24439939
P	3.71	H	13.6	G	0.15	U 2

Residuals in seconds of arc

1991 03 18	675	2.1+	1.4−	1995 05 05	399	0.6−	0.6+	1997 11 01	670	0.5+	0.2+
1991 03 18	675	0.0	1.5−	1995 05 05	399	1.5−	0.2−	1997 11 01	670	0.1−	0.1−
1991 04 09	675	0.4+	0.1+	1995 05 05	010	0.8+	2.0−	1997 11 04	046	0.1+	0.0
1991 04 09	675	0.5+	0.6+	1995 05 05	010	0.3+	1.3−	1997 11 04	046	0.2+	0.0
1991 04 11	675	0.2−	0.8+	1995 05 05	010	1.0−	0.6−	1997 11 04	046	0.1+	0.1−
1991 04 11	675	1.0−	0.9+	1995 05 08	010	0.1+	1.1−	1997 11 04	046	0.1+	0.0
1991 05 06	413	0.9+	1.1+	1995 05 08	010	1.1−	0.9−	1997 12 28	725	0.3−	0.9−
1991 05 06	413	1.3−	1.2+	1995 05 08	010	0.5−	1.2−	1997 12 28	725	0.6+	1.3−
1991 05 07	675	1.0+	0.1−	1996 09 04	608	0.2+	0.0	1997 12 28	725	0.0	0.6−
1991 05 07	675	0.3−	0.2+	1996 09 04	608	1.0+	0.6+	1997 12 28	725	0.2−	0.9−
1991 05 10	675	2.1−	2.1+	1996 09 05	608	0.5+	0.1−	1997 12 30	725	0.3−	0.6−
1991 05 10	675	1.3+	1.0+	1997 10 30	566	0.2−	0.2+	1997 12 30	725	1.3−	1.6−
1991 05 12	413	1.6−	0.2−	1997 10 30	566	0.2−	0.1+	1997 12 30	725	0.7−	1.0−
1995 04 27	399	1.5+	0.5−	1997 10 30	566	0.2−	0.4+	1997 12 30	725	0.5−	0.6−
1995 04 27	399	1.8+	1.9−	1997 11 01	670	0.3+	0.2−				

(8169)∗ 1991 PO_2 = 1981 UU_7 = 1989 EA_7

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

Id. H. Kaneda (*MPC* 19310)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	300.51447	(2000.0)	**P**	**Q**	
n	0.17568370	ω	351.38918	+0.32079183	−0.94641624
a	3.1572943	Ω	79.89361	+0.87123185	+0.27941525
e	0.1110644	i	2.16948	+0.37154767	+0.16193649
P	5.61	H	13.4	G 0.15	U 1

Residuals in seconds of arc

1981 10 24	095	2.2+	0.2+	1991 08 14	809	1.7−	0.4+	1997 08 11	118	0.5+	0.3−
1981 10 30	381	0.9−	0.1+	1991 09 04	809	(3.0+	0.1+)	1997 08 13	557	0.6+	0.1−
1981 10 30	381	0.5−	1.0+	1991 09 04	809	0.2+	0.0	1997 08 14	557	0.4+	0.5−
1989 03 06	033	0.8+	1.2−	1991 09 04	809	0.2+	0.3−	1997 08 14	557	0.4+	0.1+
1989 03 06	033	0.6+	0.5−	1992 10 22	675	0.1−	1.0+	1997 08 14	557	0.3−	0.1+
1989 03 29	675	1.2+	0.6−	1992 10 22	675	0.8+	0.3+	1997 08 14	118	0.4+	0.2+
1989 03 29	675	0.4+	0.3−	1992 11 02	010	1.0−	0.5−	1997 08 14	118	0.1+	0.4−
1991 08 02	809	1.4+	0.4−	1992 11 02	010	0.4−	0.2−	1997 08 16	557	0.4+	0.0
1991 08 02	809	0.6−	0.0	1992 11 02	010	0.3−	1.5−	1997 08 16	557	1.5+	0.4−
1991 08 02	809	0.7−	0.2−	1994 01 10	691	1.5−	0.6+	1997 08 16	557	0.4+	0.4−
1991 08 07	809	1.5−	0.5+	1994 01 10	691	2.0−	0.5+	1997 08 16	557	0.3+	0.3−
1991 08 07	809	1.7−	0.2+	1994 02 12	675	0.0	0.3−	1997 12 22	327	0.5+	0.6+
1991 08 07	809	(2.7−	1.2−)	1994 02 12	675	0.2+	0.2−	1997 12 22	327	0.1+	0.2−
1991 08 14	809	0.3−	0.6+	1997 08 11	118	0.7+	0.0	1997 12 22	327	0.2+	0.5+
1991 08 14	809	1.3−	0.5+	1997 08 11	118	0.6+	0.2−				

(8170)∗ 1991 PZ$_{11}$

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

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	264.14886	(2000.0)	**P**	**Q**	
n	0.22847515	ω	284.18766	−0.63498303	+0.75486280
a	2.6499849	Ω	305.18404	−0.60836404	−0.61965452
e	0.1291462	i	11.59355	−0.47611948	−0.21496608
P	4.31	H	12.7	G 0.15	U 1

Residuals in seconds of arc

1991 08 07	675	0.3+	0.1−	1992 11 28	675	0.1−	1.5−	1997 10 28	691	0.6−	0.1+
1991 08 07	675	0.1−	0.5−	1994 03 16	801	0.0	1.0−	1997 10 28	691	1.1−	0.0
1991 08 08	675	1.5−	0.1+	1994 03 16	801	0.2+	0.4−	1997 12 31	369	0.5+	0.1−
1991 08 08	675	1.0+	0.6−	1994 04 09	801	0.8−	0.6−	1997 12 31	369	0.5+	0.5+
1991 09 12	675	1.1+	0.3+	1994 04 09	801	1.2−	0.4−	1997 12 31	369	0.6+	1.1+
1991 09 12	675	0.5−	0.1−	1995 07 25	372	0.6−	0.7−	1998 01 05	369	0.7+	0.5+
1992 11 26	675	0.0	0.2−	1995 07 25	372	0.5+	0.9+	1998 01 05	369	0.6+	0.4+
1992 11 26	675	0.8+	0.3−	1997 10 28	691	0.7−	0.1+				

(8171)∗ 1991 RV$_3$ = 1988 AH$_4$ = 1994 CS$_{10}$

Discovered 1991 Sept. 5 by F. Börngen and L. D. Schmadel at Tautenburg.

Id. B. G. Marsden (*MPC* 23673)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	147.86498	(2000.0)	**P**	**Q**	
n	0.18419602	ω	292.96618	+0.07088862	+0.99615144
a	3.0592565	Ω	340.88298	−0.84781754	+0.03294538
e	0.0719756	i	9.05581	−0.52552852	+0.08122133
P	5.35	H	13.1	G 0.15	U 1

Residuals in seconds of arc

1951 02 04	675	0.3−	0.7+	1994 02 07	809	0.1−	0.4+	1997 11 08	611	0.2+	0.0
1951 02 04	675	0.7+	0.3+	1994 02 09	809	1.5+	1.1+	1997 11 20	113	1.6−	0.8+
1988 01 12	033	1.5−	0.1−	1994 02 09	809	0.2+	0.4+	1997 11 20	113	(2.3−	0.2+)
1988 01 12	033	0.5−	0.7+	1994 02 09	809	0.6−	0.1−	1997 11 20	113	(2.7−	0.1−)
1991 09 05	033	1.0+	0.6+	1994 02 15	675	0.1+	1.1−	1997 11 21	327	0.5−	0.5−
1991 09 05	033	0.7+	0.3+	1994 02 15	675	0.1+	1.8−	1997 11 21	327	0.3+	0.1+
1991 09 12	033	0.0	0.3−	1996 09 03	113	1.3−	0.4−	1997 11 21	327	0.5−	0.2−
1991 09 12	033	0.3+	0.1+	1996 09 03	113	1.1−	0.6−	1997 12 06	704	0.1−	0.7+
1991 10 04	033	0.6+	0.6+	1996 09 03	113	1.0+	0.2−	1997 12 06	704	0.6+	0.5+
1991 10 05	033	0.2−	0.3−	1996 09 03	113	0.7−	0.0	1997 12 06	704	0.2+	0.2−
1991 10 05	033	1.0+	1.0+	1996 09 19	113	0.3−	1.9+	1997 12 06	704	1.6+	1.0−
1994 02 07	809	(2.5+	1.1+)	1996 09 19	113	0.8−	0.9−	1997 12 06	704	0.4−	1.1−
1994 02 07	809	0.6+	0.9+	1997 11 08	611	0.0	0.3+				

(8172)∗ 1991 RP$_{15}$ = 1975 TK$_2$ = 1975 VA$_2$ = 1982 BE$_{11}$ = 1986 TE$_{18}$ = 1986 VO$_6$ = 1988 CY$_6$

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

Id. K. Ichikawa (*MPC* 20027), H. Oishi (d, *JAM* 1815)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	4.76994	(2000.0)	**P**	**Q**	
n	0.18280073	ω	14.42977	+0.46841912	−0.88330776
a	3.0748040	Ω	47.64234	+0.80806763	+0.41975338
e	0.1416034	i	1.45268	+0.35722575	+0.20874509
P	5.39	H	12.7	G 0.15	U 1

Residuals in seconds of arc

1975 10 03	095	1.2−	0.4+	1989 05 07	675	1.1+	1.4−	1994 05 06	560	0.4−	0.9−
1975 11 02	095	(2.0−	6.0+)	1989 05 07	675	0.6−	0.1+	1994 05 06	560	0.0	0.8−
1975 11 07	095	(4.9−	9.4+)	1991 09 11	675	1.0+	0.3−	1994 05 06	560	1.2−	0.7−
1982 01 20	095	0.3−	0.4+	1991 09 11	675	0.2−	1.6−	1994 05 06	560	1.0−	0.6−
1986 10 12	095	(6.1−	0.8+)	1991 09 14	675	(0.8+	2.1−)	1996 08 19	801	0.5+	0.2+
1986 10 23	381	0.1+	0.2−	1991 09 14	675	0.0	1.3−	1996 08 19	801	0.6+	0.4+
1986 10 23	381	1.3−	1.3+	1991 09 15	675	0.1+	1.0−	1997 11 29	704	0.7+	0.6−
1986 10 25	381	(1.1−	4.1+)	1991 09 15	675	1.1+	1.4−	1997 11 29	704	0.4−	0.7+
1986 10 25	381	(3.1+	0.8+)	1991 09 16	675	(0.2−	2.6−)	1997 11 29	704	0.2+	0.1+
1986 10 25	381	2.1+	1.2+	1991 09 16	675	0.7−	1.5−	1997 11 29	704	0.3−	1.7−
1986 10 25	381	0.2+	1.1+	1992 12 27	801	0.3−	0.2−	1997 11 29	704	0.7+	1.9−
1986 11 06	688	0.0	0.6+	1993 01 20	801	0.1+	0.4−	1997 12 16	631	0.2−	0.3−
1986 11 06	688	0.2+	0.5+	1993 01 20	801	0.1−	0.6−	1997 12 16	631	0.6+	0.3−
1988 02 15	046	(0.9−	5.8−)	1993 01 27	801	0.1−	0.5−	1997 12 17	631	1.2−	0.2+
1988 02 15	046	(2.1−	4.4−)	1993 01 27	801	0.2+	0.1−				

(8173)∗ 1991 RX$_{23}$ = 1981 UL$_{28}$

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

Id. E. Bowell (*MPC* 20641)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	22.12010	(2000.0)	**P**	**Q**	
n	0.18811279	ω	40.96669	+0.80224073	−0.59686668
a	3.0166425	Ω	355.62225	+0.49537889	+0.67735739
e	0.0331808	i	9.53798	+0.33318098	+0.43004318
P	5.24	H	13.2	G 0.15	U 1

Residuals in seconds of arc

1981 10 24	675	0.3+	0.0	1993 02 26	691	1.1−	0.3−	1994 02 16	010	0.0	0.2−
1981 10 25	675	0.5+	0.5+	1994 02 08	809	1.2+	1.5+	1997 11 27	426	0.3−	0.1−
1981 10 26	675	1.0−	0.1−	1994 02 08	809	0.6+	1.4+	1997 11 27	426	0.0	0.0
1991 09 08	691	1.3−	0.4+	1994 02 08	809	0.2+	0.9+	1997 11 27	426	0.1−	0.0
1991 09 08	691	1.1−	0.2+	1994 02 10	809	0.9+	0.1+	1997 12 02	426	0.2+	0.5+
1991 09 08	691	0.8−	0.3+	1994 02 10	809	0.1+	0.5−	1997 12 02	426	0.1+	0.3−
1991 09 11	675	1.5+	0.0	1994 02 10	809	0.9−	0.9−	1997 12 02	426	0.6−	0.5+
1991 09 11	675	0.4+	0.0	1994 02 13	809	(0.3+	3.5−)	1997 12 15	725	1.6−	1.8+
1991 09 12	675	0.8+	0.6−	1994 02 13	809	(0.9−	3.8−)	1997 12 15	725	1.5+	1.1−
1991 09 12	675	1.2+	0.5−	1994 02 13	809	(1.6−	3.6−)	1997 12 15	725	0.7+	0.2+
1991 09 16	675	1.3−	0.9+	1994 02 15	691	0.8−	0.1−	1997 12 18	725	0.3−	0.1−
1991 09 16	675	(1.0+	2.8−)	1994 02 15	691	0.6−	0.1+	1997 12 18	725	0.4−	0.6+
1992 11 27	675	0.2−	1.4−	1994 02 15	691	0.6−	0.1−				
1992 11 27	675	1.1+	0.9−	1994 02 16	010	1.0+	0.5−				

(8174)∗ 1991 SL$_2$ = 1980 TM$_{14}$ = 1980 VK = 1980 VL$_2$ = 1992 YX$_3$

Discovered 1991 Sept. 17 by H. E. Holt at Palomar.

Id. B. G. Marsden (d, *MPC* 10195), S. Nakano (*MPC* 21796)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	13.93321		(2000.0)		+0.80737247	−0.56633700
n	0.17408330	ω	327.11327		+0.57251972	+0.68404785
a	3.1766154	Ω	68.25491		+0.14272656	+0.45971833
e	0.1409580	i	10.26785			
P	5.66	H	11.8	G 0.15	U	1

Residuals in seconds of arc

1980 10 13	095	0.4+	1.1−	1991 09 17	675	0.5+	0.2−	1993 01 29	896	0.3−	0.3+	Y
1980 11 08	688	(0.2+	3.2−)	1992 12 29	896	(3.3+	0.3−)Y	1996 10 12	689	1.0−	0.5−	
1980 11 08	688	(0.7−	5.2−)	1992 12 29	896	0.6+	0.9+	1996 10 13	689	1.2−	1.5+	
1980 11 11	330	1.1−	1.4−	1992 12 30	896	1.1+	1.9+	1997 10 20	689	0.4+	0.4+	
1991 09 12	675	0.5+	0.1−	1992 12 30	896	(1.4+	21.7+)Y	1997 11 20	560	1.0−	0.0	
1991 09 12	675	1.0+	0.3+	1993 01 12	896	(0.5+	3.0−)	1997 11 20	560	1.3−	0.2+	
1991 09 15	675	1.3+	0.5+	1993 01 12	896	1.1−	2.2−	1997 11 20	560	1.0−	0.1+	
1991 09 15	675	1.7+	0.2+	1993 01 17	896	1.1+	2.0−	1997 12 02	758	0.6−	1.0+	
1991 09 17	675	0.2+	0.5−	1993 01 17	896	(0.6+	2.6−)	1997 12 02	758	0.7−	0.6+	

(8175)∗ 1991 VV$_5$ = 1990 OV$_2$ = 1990 RA$_{11}$ = 1995 OW$_1$

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

Id. T. Urata (*MPC* 25530)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	155.80832		(2000.0)		+0.67796573	+0.70971237
n	0.18887664	ω	223.38106		−0.61123107	+0.68898204
a	3.0085037	Ω	90.30268		−0.40836143	+0.14701053
e	0.0437364	i	11.04027			
P	5.22	H	12.3	G 0.15	U	1

Residuals in seconds of arc

1990 07 28	675	0.2−	0.4−	1991 11 06	809	0.6−	0.1+	1995 08 01	905	1.5+	0.2−	
1990 07 28	675	1.1−	0.3+	1991 11 09	809	0.7+	0.5+	1995 08 01	905	1.4+	0.2+	
1990 07 30	675	0.3−	0.7+	1991 11 09	809	0.2−	0.0	1997 01 23	327	0.4+	0.3+	
1990 07 30	675	0.6−	0.5−	1991 11 09	809	0.9−	0.3−	1997 01 23	327	0.0	0.2−	
1990 09 14	675	0.9−	1.7−	1991 11 12	809	1.7+	0.8+	1997 01 23	327	0.4−	0.1+	
1990 09 14	675	0.9+	1.6−	1991 11 12	809	0.5−	0.2−	1997 11 24	691	0.7−	0.7−	
1991 11 02	809	0.4+	0.1+	1991 11 12	809	0.9+	0.6+	1997 11 24	691	0.6−	0.8−	
1991 11 02	809	0.1−	0.6−	1993 01 28	675	1.1+	0.1−	1997 11 24	691	0.9−	0.9−	
1991 11 02	809	(2.7−	0.5−)	1993 01 28	675	0.4+	0.2+	1997 12 25	566	0.3−	0.9−	
1991 11 06	809	0.3+	0.4+	1995 07 24	905	0.6−	0.1−	1997 12 25	566	0.0	0.6−	
1991 11 06	809	1.1−	1.2+	1995 07 24	905	0.1−	0.3−	1997 12 25	566	0.7−	0.4−	

(8176)∗ 1991 WA

Discovered 1991 Nov. 29 by R. H. McNaught at Siding Spring.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	53.83124		(2000.0)		+0.43647366	+0.68243931
n	0.49855626	ω	241.76497		−0.42083339	+0.73084057
a	1.5751670	Ω	66.74976		−0.79522953	−0.01219187
e	0.6426633	i	39.65330			
P	1.98	H	17.1	G 0.15	U	2

Residuals in seconds of arc

1991 11 29	413	(0.7−	10.5+)	1995 11 18	108	0.5+	1.3−	1996 02 09	711	0.3+	0.2−	
1991 11 29	413	(0.8+	7.3−)	1995 11 18	108	0.7−	1.1−	1996 02 10	711	0.9+	0.3+	
1991 12 01	413	(1.2−	2.2+)	1995 11 18	108	0.2+	1.2−	1996 02 11	711	(2.1+	0.1+)	
1991 12 01	413	(1.1−	2.4+)	1995 11 18	108	(0.4−	2.0−)	1996 02 11	711	1.8+	0.5+	
1991 12 01	413	(1.0+	3.6+)	1995 11 19	104	1.8−	0.5−	1997 02 01	696	0.5−	0.7+	
1991 12 02	413	0.4+	1.4+	1995 11 19	104	1.5−	0.3−	1997 02 01	696	1.4+	1.1+	
1991 12 02	413	0.3+	1.1−	1995 11 19	104	1.8−	0.6+	1997 02 01	696	0.2−	0.2+	
1991 12 04	413	0.1+	1.8−	1995 11 19	108	0.4+	1.2−	1997 03 16	711	1.5−	0.5+	
1991 12 04	413	0.3+	0.6+	1995 11 19	108	0.2+	0.3+	1997 03 16	711	(3.6−	1.6+)	
1991 12 04	413	(0.6+	2.1−)	1995 11 19	108	0.8+	1.4−	1997 10 31	711	0.5−	0.1+	
1991 12 05	801	0.6+	0.0	1995 11 19	108	1.2+	0.1−	1997 10 31	711	0.7−	0.3+	
1991 12 20	413	0.1−	0.5−	1995 11 19	108	0.8+	1.4−	1997 11 01	711	1.0−	0.0	
1991 12 20	413	0.1+	0.2+	1995 11 19	108	0.5+	0.8+	1997 11 01	711	1.0−	0.3−	
1991 12 20	413	1.1−	0.5−	1995 11 20	108	1.3+	0.7+	1997 11 02	046	1.0−	1.1−	
1991 12 20	413	0.1−	0.8−	1995 11 20	108	1.1+	0.0	1997 11 02	046	0.8−	0.6−	
1991 12 20	413	0.1+	0.2−	1995 11 20	108	0.6+	1.3+	1997 11 02	046	0.9−	0.5−	
1991 12 20	413	0.1+	0.0	1995 11 20	108	1.3+	1.0+	1997 11 05	046	0.4−	0.2+	
1991 12 20	413	0.6+	0.1+	1995 11 21	108	0.3+	1.8+	1997 11 05	046	0.2−	0.0	
1992 01 02	801	0.3+	1.2+	1995 11 21	108	0.6−	0.9+	1997 11 05	046	0.3−	0.0	
1992 01 02	801	0.5−	0.0	1995 11 21	108	0.8+	0.4−	1997 11 05	046	0.1−	0.1−	
1993 11 21	413	(1.8−	3.3+)	1995 11 21	108	0.8+	1.4+	1997 11 06	381	0.2+	0.0	
1993 11 21	413	(1.0−	2.6+)	1995 11 22	691	0.1−	0.3+	1997 11 06	381	0.0	0.5+	
1993 11 22	413	0.3+	0.1+	1995 11 22	691	0.0	0.3+	1997 11 06	381	0.1+	0.3+	
1993 11 22	413	0.1−	1.0+	1995 11 22	557	0.1+	0.1+	1997 11 09	557	0.6−	0.4−	
1993 11 22	413	0.4+	0.5+	1995 11 22	557	0.3+	0.1+	1997 11 09	557	0.7−	0.5−	
1993 11 23	658	0.1−	0.4+	1995 11 23	557	0.4+	0.2+	1997 11 09	557	0.6−	0.7−	
1993 11 23	658	0.6+	0.9−	1995 11 23	557	0.1+	0.2+	1997 11 09	360	0.4+	0.1+	
1993 11 23	658	1.0+	1.2−	1995 11 23	118	0.1−	0.1+	1997 11 09	360	0.3+	0.1−	
1993 11 25	658	0.4−	0.0	1995 11 23	118	0.0	0.2+	1997 11 09	360	0.3+	0.1−	
1993 11 25	658	0.5−	0.2+	1995 11 23	801	0.1−	0.5−	1997 11 11	658	0.3−	0.6+	
1993 11 25	658	0.8−	0.4+	1995 11 23	801	0.0	0.9−	1997 11 11	658	0.6−	0.4+	
1993 12 14	691	1.7−	0.5+	1995 11 25	072	0.7+	0.0	1997 11 11	658	0.5−	1.2−	
1993 12 14	691	1.1−	0.0	1995 11 25	072	0.4+	0.2+	1997 11 23	670	0.3−	0.1−	
1993 12 14	691	1.5−	1.2+	1995 11 27	711	0.2−	0.4+	1997 11 23	670	0.4−	0.6−	
1993 12 15	691	1.0−	1.0+	1995 11 27	711	0.0	0.4+	1997 11 23	670	0.4−	0.3+	
1993 12 15	691	0.6−	1.1+	1995 11 28	711	0.3+	0.0	1997 11 23	360	0.7+	0.0	
1993 12 15	691	1.1−	0.6+	1995 11 28	711	0.2+	0.1+	1997 11 23	360	0.6+	0.1−	
1994 01 14	658	0.2+	1.0+	1995 12 10	108	1.5−	0.5−	1997 11 23	360	0.4+	0.2−	
1994 01 14	658	0.2+	0.1+	1995 12 10	108	(2.2−	1.5+)	1997 11 26	608	0.3−	0.6+	
1994 01 14	658	0.5−	0.1−	1995 12 11	046	0.1+	0.0	1997 11 26	608	0.3+	0.3+	
1994 01 14	658	0.0	0.5+	1995 12 11	046	0.7+	0.0	1997 12 04	360	0.1−	0.3+	
1995 05 31	711	0.6+	0.8−	1995 12 11	046	0.3+	0.2+	1997 12 04	360	0.1−	0.7+	
1995 05 31	711	0.8+	0.9−	1995 12 11	108	0.4+	1.3+	1997 12 04	360	0.2−	0.7+	
1995 10 20	413	1.1−	0.0	1995 12 11	108	0.5+	1.7+	1997 12 05	118	0.1+	0.4+	
1995 10 20	413	0.1+	0.5−	1995 12 13	360	0.4+	0.1+	1997 12 05	118	0.0	0.5+	
1995 10 25	711	1.1+	0.2+	1995 12 13	360	0.0	0.0	1997 12 06	540	0.3−	0.6+	
1995 10 25	711	0.8+	0.5+	1995 12 13	360	0.3+	0.2−	1997 12 06	540	0.2+	0.7−	
1995 10 31	413	0.4+	0.1+	1995 12 23	658	0.4−	0.6−	1997 12 06	540	0.3−	0.4−	
1995 10 31	413	0.5+	0.4+	1995 12 23	658	0.3−	0.6−	1997 12 06	540	(3.1+	0.7+)	
1995 11 09	118	0.2+	0.1+	1995 12 23	658	0.4−	0.6−	1997 12 06	540	(3.5+	1.9−)	
1995 11 09	118	0.2+	0.6−	1995 12 24	658	0.1+	1.4−	1997 12 07	118	0.7+	0.2+	
1995 11 09	118	0.3+	0.2−	1995 12 24	658	0.3+	1.4−	1997 12 07	118	0.7+	0.2+	
1995 11 09	118	0.4+	0.5−	1995 12 24	658	0.2+	1.4−	1997 12 09	658	0.7−	0.4+	
1995 11 09	118	0.6+	0.3−	1996 01 12	658	0.2−	0.3−	1997 12 09	658	0.6−	0.1+	
1995 11 15	691	1.4−	0.2−	1996 01 12	658	0.3−	0.3−	1997 12 09	658	0.5−	0.1+	
1995 11 15	691	1.5−	0.2−	1996 01 12	658	0.3−	0.3−	1997 12 21	360	0.4+	0.6+	
1995 11 15	691	1.7−	0.1−	1996 01 22	711	0.1+	0.1−	1997 12 21	360	0.3+	0.5+	
1995 11 16	360	0.0	0.2+	1996 01 22	711	0.3+	0.0	1997 12 21	360	0.3+	1.0+	
1995 11 16	360	0.2+	0.0	1996 01 23	711	0.7+	0.3+	1997 12 30	118	1.0+	0.9−	
1995 11 16	360	0.1+	0.2+	1996 01 23	711	0.5+	0.3+	1997 12 30	118	1.1+	0.9−	
1995 11 18	801	0.2−	0.1−	1996 02 09	711	0.6+	0.6−	1997 12 30	118	1.5+	0.7−	

(8177)∗ 1992 BO = 1989 LN$_1$ = 1990 TS$_{14}$

Discovered 1992 Jan. 28 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 22688)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	187.54406		(2000.0)		−0.60565594	+0.79524008
n	0.29355698	ω	213.20329		−0.71077419	−0.52494526
a	2.2422005	Ω	19.56629		−0.35774423	−0.30335734
e	0.1105612	i	4.76548			
P	3.36	H	13.6	G 0.15	U	2

Residuals in seconds of arc

1950 12 09	675	0.2+	0.1−	1992 02 08	399	(2.9−	0.4+)	1997 11 06	704	(2.7+	1.4+)	
1950 12 09	675	0.1−	0.2−	1992 02 08	399	1.2−	0.3−	1997 11 06	704	0.0	1.5+	
1989 06 03	675	0.7+	0.9+	1992 02 22	399	(3.9−	0.6+)	1997 12 17	327	0.0	0.3−	
1989 06 03	675	0.5−	0.8−	1992 02 22	399	0.3+	0.7+	1997 12 17	327	0.2−	0.4−	
1989 06 05	675	0.8−	0.9−	1993 08 17	675	(1.0−	3.0−)	1997 12 17	327	0.1−	0.2−	
1989 06 05	675	0.6−	1.0−	1993 08 17	675	(1.2−	3.2−)	1997 12 19	426	0.4−	0.5−	
1990 10 15	046	(3.1+	5.5−)	1997 10 26	411	1.1+	0.6−	1997 12 19	426	0.4−	0.6−	
1990 10 15	046	(4.5+	2.9−)	1997 10 26	411	0.9+	0.4+	1997 12 19	426	0.4−	0.8−	

1992 01 28	399	0.8+	0.3+	1997 11 06	704	(2.0+	2.6+)	1997 12 21	426	0.7−	0.3−
1992 01 28	399	(3.2−	1.3+)	1997 11 06	704	0.8+	0.2+	1997 12 21	426	0.6−	0.4−
1992 01 29	399	(3.0−	0.5−)	1997 11 06	704	(2.2+	1.3+)	1997 12 21	426	0.1+	0.5−
1992 01 29	399	(2.6−	1.7+)	1997 11 06	704	0.6+	0.0	1997 12 22	327	0.2−	0.4−
1992 02 04	894	0.1+	0.6+	1997 11 06	704	(3.4+	1.4+)	1997 12 22	327	0.1−	0.4−
1992 02 04	894	0.7+	0.4−	1997 11 06	704	0.0	0.5+	1997 12 22	327	0.3−	0.5−
1992 02 05	399	0.6−	0.2+	1997 11 06	704	(2.8+	2.1+)				
1992 02 05	399	0.4+	0.5−	1997 11 06	704	0.1+	0.4+				

(8178)∗ 1992 DQ_{10} = 1986 PM_6 = 1986 RL_3 = 1990 TS_{12}

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* 25427)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	84.19976		(2000.0)		**P**		**Q**
n	0.27865801	ω	38.95676		+0.68446882		+0.72642377
a	2.3214270	Ω	274.33167		−0.68341240		+0.60983796
e	0.1897902	i	3.54944		−0.25386990		+0.31686933
P	3.54	H	14.1	G	0.15	U	2

Residuals in seconds of arc

1986 08 12	095	0.6−	0.2+	1992 02 29	809	0.2+	0.2+	1997 11 26	566	0.7+	1.1−
1986 09 06	071	(4.9−	1.1−)	1992 03 03	809	0.8+	0.3−	1997 11 26	566	0.7+	1.0−
1986 09 06	071	1.4−	1.5−	1992 03 05	809	0.6−	0.6+	1997 11 26	566	1.2+	1.3−
1986 09 07	071	1.4+	1.6+	1992 04 07	809	(2.4+	0.3−)	1997 12 17	327	0.3−	0.0
1986 09 07	071	0.0	0.8+	1993 07 25	033	0.6+	0.9−	1997 12 17	327	0.1+	0.0
1990 10 14	033	0.9−	0.6−	1993 07 26	033	0.2−	0.1−	1997 12 17	327	0.1−	0.4+
1990 10 15	033	0.1+	1.1+	1994 11 30	691	(3.0−	0.9+)	1997 12 22	327	0.1+	0.1+
1990 10 15	033	0.5+	0.4+	1994 11 30	691	0.4−	0.3−	1997 12 22	327	0.1−	0.1+
1990 10 18	033	(1.1+	4.6−)	1997 11 18	758	0.9−	0.3+	1997 12 22	327	0.2+	0.5+
1990 10 18	033	0.4+	0.7+	1997 11 18	758	1.1−	0.4+				

(8179)∗ 1992 EA_7 = 1952 HB_3 = 1985 GY_1

Discovered 1992 Mar. 1 at the European Southern Observatory in the course of the Uppsala-ESO Survey of Asteroids and Comets.

Id. G. V. Williams (*MPC* 29616)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	106.40006		(2000.0)		**P**		**Q**
n	0.26857250	ω	249.70738		+0.18883538		+0.98001150
a	2.3791858	Ω	31.38416		−0.85017094		+0.19505491
e	0.1616324	i	6.90389		−0.49147795		+0.03912857
P	3.67	H	14.0	G	0.15	U	1

Residuals in seconds of arc

1952 04 26	711	0.5−	1.6− Y	1996 03 24	566	0.7+	0.6+	1997 10 04	557	0.1−	0.2−
1985 04 14	688	0.9+	0.9+	1996 03 24	566	0.8+	0.1−	1997 11 03	704	1.1+	0.8+
1992 03 01	809	0.1−	0.1+	1996 03 24	566	0.8+	0.6+	1997 11 03	704	1.3+	0.9+
1992 03 04	809	1.5−	0.3+	1997 09 26	557	0.1−	0.1+	1997 11 03	704	1.0+	0.8+
1992 03 09	809	0.1−	0.1+	1997 09 27	557	0.2−	0.1−	1997 11 03	704	0.5+	0.0
1992 04 04	809	0.8−	0.4−	1997 09 27	557	0.1−	0.2−	1997 12 24	327	0.4−	0.1−
1993 08 14	675	1.0−	1.3−	1997 09 27	557	0.1−	0.1−	1997 12 24	327	0.6−	0.5+
1993 08 14	675	0.8−	0.6+	1997 10 04	557	0.3−	0.4−	1997 12 24	327	0.6−	0.4−

(8180)∗ 1992 PY_2

Discovered 1992 Aug. 6 by H. E. Holt at Palomar.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	11.52086		(2000.0)		**P**		**Q**
n	0.23149770	ω	132.89410		+0.47005956		−0.85031862
a	2.6268681	Ω	287.63851		+0.72004803		+0.52449420
e	0.1051886	i	14.37826		+0.51046532		+0.04317509
P	4.26	H	11.8	G	0.15	U	2

Residuals in seconds of arc

1988 11 07	675	0.8+	0.5+	1994 01 04	411	0.5+	0.4+	1997 11 19	631	0.6+	1.1−
1988 11 07	675	0.9+	0.2+	1994 01 06	411	0.0	0.8−	1997 11 19	631	0.7+	1.1−
1992 08 06	675	0.3+	0.7−	1994 01 07	675	0.3+	1.1−	1997 11 20	631	1.1+	0.8−
1992 08 06	675	0.4+	1.8−	1994 01 07	675	0.1+	0.3−	1997 11 20	631	0.7+	1.5−
1992 08 07	675	1.5−	0.7−	1994 01 09	894	0.5−	0.3−	1997 12 06	704	1.0−	1.3+
1992 08 07	675	1.8−	0.1+	1994 01 09	894	1.4−	0.0	1997 12 06	704	(2.1−	1.5+)
1992 08 24	675	0.1+	0.5−	1995 02 18	689	(20.5−	1.3+)	1997 12 06	704	1.2−	1.6+
1992 08 24	675	0.1+	0.6−	1996 07 20	801	1.1+	0.9−	1997 12 06	704	1.7−	1.2+
1992 08 26	095	0.1−	1.4+	1996 07 20	801	0.5+	1.7−	1997 12 06	704	1.5−	1.8+
1992 08 26	095	1.0+	1.3−	1996 08 19	801	0.6+	0.5−	1997 12 16	127	(1.9+	3.4−)
1992 08 28	095	0.9−	1.5+	1996 08 19	801	0.3−	0.2+	1997 12 16	127	(1.9+	3.6−)
1992 08 28	095	1.0−	1.5+	1996 09 29	689	1.2+	1.5+	1998 01 01	127	0.9+	0.6−
1994 01 04	411	0.2−	0.3+	1996 10 14	801	0.3+	0.2+	1998 01 01	127	0.8+	0.7−
1994 01 04	411	0.4+	0.2+	1996 10 15	801	0.2−	0.6+	1998 01 01	127	0.7+	0.4−

(8181)∗ 1992 ST_{26} = 1979 YY_7 = 1980 BC_4 = 1987 QK_3 = 1994 CX_7

Discovered 1992 Sept. 28 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. G. V. Williams (*MPC* 27714)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	28.79578		(2000.0)		**P**		**Q**
n	0.21655346	ω	126.61776		+0.69436595		−0.71420397
a	2.7463716	Ω	279.15305		+0.62845577		+0.66150110
e	0.1026928	i	5.12199		+0.35056994		+0.22875531
P	4.55	H	12.5	G	0.15	U	1

Residuals in seconds of arc

1979 12 23	095	1.1+	0.5−	1992 10 20	095	0.3−	1.7−	1997 12 05	704	1.2+	0.6+
1980 01 22	095	1.6−	0.4−	1992 10 28	095	1.2−	0.6−	1997 12 05	704	(3.1+	0.9−)
1987 08 29	809	0.6−	0.6+	1994 02 08	400	1.2−	0.8+	1997 12 05	704	(3.2+	0.5−)
1987 08 29	809	0.2+	1.2+	1994 02 08	400	(2.6−	1.6−)	1998 01 01	470	0.6+	0.6−
1987 08 29	809	0.8+	1.6+	1996 09 30	689	0.3−	0.4−	1998 01 01	470	0.4+	0.5−
1987 08 30	809	0.1+	0.2+	1996 10 15	801	1.3−	1.4−	1998 01 01	470	0.7+	0.4−
1987 08 30	809	0.7+	0.7+	1997 12 04	704	0.4−	1.3+	1998 01 03	470	0.2+	0.6+
1987 08 30	809	0.8+	0.4−	1997 12 04	704	0.0	0.2+	1998 01 03	470	0.3+	0.2+
1987 08 31	809	0.6−	0.2+	1997 12 04	704	0.3−	0.6+	1998 01 06	470	0.3+	0.3+
1987 08 31	809	0.6+	0.2+	1997 12 04	704	0.1−	0.2−	1998 01 06	470	0.5+	0.4+
1992 09 28	095	0.5−	0.7−	1997 12 05	704	0.2+	0.0	1998 01 06	470	0.3+	0.5+
1992 09 28	095	0.5−	0.8−	1997 12 05	704	(2.6+	0.8−)				

(8182)∗ 1992 TX = 1992 SR_{26} = 1987 QR_{12} = 1990 FX_4 = 1994 BJ_5 = 1995 GT_8

Discovered 1992 Oct. 1 by M. Yanai and K. Watanabe at Kitami.

Id. K. Kinoshita (*MPC* 27105)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	23.24337		(2000.0)		**P**		**Q**
n	0.20179137	ω	354.39958		+0.97976994		−0.19989668
a	2.8787304	Ω	17.14044		+0.18485459		+0.88557476
e	0.0856617	i	1.86698		+0.07667891		+0.41928351
P	4.88	H	12.6	G	0.15	U	2

Residuals in seconds of arc

1987 08 28	095	0.9+	2.3−	1994 01 18	033	1.4−	0.3+	1995 04 10	695	(1.9−	2.3+)
1990 03 27	675	0.3−	1.2−	1994 01 19	033	0.9+	1.3−	1995 04 10	695	(1.7−	2.7+)
1990 03 27	675	(0.6−	2.6−)	1995 04 06	695	0.1+	0.1−	1995 04 10	695	(1.7−	2.4+)
1992 09 21	400	(57.6−	18.1−)	1995 04 06	695	0.1−	0.0	1997 10 29	566	0.8+	1.2+
1992 09 21	400	(54.8−	18.1−)	1995 04 06	695	0.1−	0.1−	1997 10 29	566	0.6+	1.3+
1992 09 26	046	1.3+	1.8−	1995 04 08	695	0.1−	0.1−	1997 10 29	566	0.5+	1.1+
1992 09 26	046	(2.8+	2.1−)	1995 04 08	695	0.1−	0.3−	1997 10 30	704	0.1−	0.1+
1992 10 01	400	0.6−	0.4+	1995 04 08	695	0.1+	0.2−	1997 10 30	704	1.3−	0.1−
1992 10 01	400	0.6+	0.5+	1995 04 08	695	0.1−	0.0	1997 10 30	704	0.3−	0.2−
1992 10 02	400	(2.4+	0.7+)	1995 04 09	695	0.9+	0.3+	1997 10 30	704	0.4−	0.4−
1992 10 02	400	1.0−	0.0	1995 04 09	695	0.3−	0.0	1997 10 30	704	1.6−	0.2−

1992 10 19	400	0.7−	1.8−	1995 04 09	695	0.2+	0.2+	1997 12 28	566	0.5+	0.2−
1992 10 19	400	1.5+	0.9+	1995 04 10	695	0.8−	0.1+	1997 12 28	566	0.1+	0.2−
1994 01 18	033	0.0	0.2−	1995 04 10	695	0.2−	0.3−	1997 12 28	566	0.5+	0.5−

(8183)∗ 1992 UE$_3$ = 1983 YY

Discovered 1992 Oct. 22 by S. Ueda and H. Kaneda at Kushiro.

Id. K. Ichikawa (*MPC* 21273)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	5.99793		(2000.0)		**P**	**Q**	
n	0.20457937	ω	326.36354		+0.58273260	−0.81087489	
a	2.8525165	Ω	87.93668		+0.75698340	+0.51748555	
e	0.0680489	i	3.09144		+0.29563297	+0.27329584	
P	4.82	H	13.2	G	0.15	U	1

Residuals in seconds of arc

1983 12 30	675	0.3−	0.9−	1992 10 28	402	0.6+	1.1+	1997 11 29	704	0.1+	0.5−
1984 01 08	675	0.9−	0.6+	1995 05 08	010	(3.2−	4.8−)	1997 11 29	704	0.5−	0.6−
1989 01 08	675	1.1+	0.1−	1995 05 08	010	(1.8−	4.4−)	1997 11 29	704	0.4+	0.2−
1989 01 08	675	0.4+	0.6+	1995 05 08	010	(0.9−	2.4−)	1997 11 29	704	0.8+	0.5−
1992 10 22	675	0.0	0.1+	1995 05 30	691	0.4+	0.4+	1997 11 29	691	0.1+	0.5−
1992 10 22	675	0.1−	1.3+	1995 05 30	691	0.1+	0.7+	1997 11 29	691	0.2+	0.4−
1992 10 22	399	0.0	1.8−	1995 05 30	691	0.2−	0.4+	1997 11 29	691	0.3+	0.0
1992 10 22	399	1.9−	1.3−	1997 10 30	566	0.1+	0.2−	1997 12 04	704	0.6+	0.1−
1992 10 25	675	0.3−	0.1+	1997 10 30	566	0.1+	0.1−	1997 12 04	704	0.2+	0.7+
1992 10 25	675	0.4+	0.6+	1997 10 30	566	0.1+	0.2−	1997 12 04	704	1.7+	1.2+
1992 10 26	400	(2.3−	2.3−)	1997 11 23	691	1.1−	0.3+	1997 12 04	704	1.4+	0.2+
1992 10 26	400	0.2+	0.4−	1997 11 23	691	1.0−	0.4+	1997 12 04	704	0.8+	0.4+
1992 10 27	402	1.1+	1.1+	1997 11 23	691	0.9−	0.4+	1997 12 06	691	0.4+	0.3−
1992 10 27	402	0.0	0.0	1997 11 25	691	1.1−	0.0	1997 12 06	691	0.1−	0.2−
1992 10 28	399	0.3−	0.4+	1997 11 25	691	1.1−	0.4+	1997 12 06	691	0.0	0.2−
1992 10 28	399	0.1+	0.7−	1997 11 25	691	1.2−	0.4+	1997 12 17	631	0.5−	0.3+
1992 10 28	402	0.7+	1.2+	1997 11 29	704	0.1+	0.5+	1997 12 17	631	0.7−	1.2−

(8184)∗ 1992 WL = 1982 YW$_1$ = 1994 CU

Discovered 1992 Nov. 16 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (*MPC* 23125)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	280.24959		(2000.0)		**P**	**Q**	
n	0.18768285	ω	79.23139		−0.57326831	−0.80800584	
a	3.0212477	Ω	46.63328		+0.65951461	−0.55350685	
e	0.0414052	i	10.78048		+0.48621386	−0.20188296	
P	5.25	H	11.4	G	0.15	U	1

Residuals in seconds of arc

1954 08 29	675	0.3+	0.3−	1992 11 18	402	1.8+	1.6+	1997 11 02	399	1.4−	0.4−
1954 08 29	675	0.0	0.8−	1992 11 27	399	0.0	1.1+	1997 11 03	704	0.2−	0.3−
1982 12 24	095	(5.7+	4.7−)	1992 11 27	399	0.6−	2.1+	1997 11 03	704	0.2+	0.1+
1991 09 16	675	0.9−	0.8+	1992 12 15	400	1.5−	1.0+	1997 11 03	704	0.3−	0.3−
1991 09 16	675	0.6+	0.5+	1992 12 15	400	1.6−	0.1+	1997 11 03	704	0.0	0.6−
1992 10 25	675	0.2+	0.3+	1994 02 04	399	1.5−	1.6−	1997 11 03	704	0.1−	1.1−
1992 10 25	675	1.2+	0.6+	1994 02 04	399	0.8−	0.3+	1997 11 04	426	0.9+	0.1−
1992 10 28	400	(1.5−	2.5−)	1994 02 05	399	0.5+	0.4−	1997 11 04	426	0.8+	0.4−
1992 10 28	400	0.8−	1.2−	1994 02 05	399	1.1+	0.2+	1997 11 04	426	0.8+	0.2−
1992 11 16	399	0.8−	0.3+	1997 10 23	399	1.0+	0.3−	1997 11 05	426	0.4+	0.1−
1992 11 16	399	0.8−	0.0	1997 10 23	399	1.1+	0.5+	1997 11 05	426	0.2+	0.2−
1992 11 17	402	1.3−	1.1−	1997 10 25	399	1.0−	0.6+	1997 11 05	426	0.2+	0.3−
1992 11 17	402	0.8+	0.2−	1997 10 25	399	0.4+	0.3+	1997 12 18	758	0.7+	0.7+
1992 11 18	399	0.4+	1.0−	1997 11 01	399	0.1−	0.9−	1997 12 18	758	0.8+	0.6+
1992 11 18	399	0.1−	0.3−	1997 11 01	399	1.2−	1.2−	1997 12 19	758	(2.2+	0.5−)
1992 11 18	402	1.4+	0.4−	1997 11 02	399	1.1−	0.2+	1997 12 19	758	0.2+	0.3+

(8185)∗ 1992 WR$_2$ = 1980 EV$_1$ = 1984 BS$_7$ = 1995 MH

Discovered 1992 Nov. 18 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 28074)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	186.39323		(2000.0)		**P**	**Q**	
n	0.20424734	ω	185.37723		−0.29843635	+0.95314195	
a	2.8556070	Ω	67.26655		−0.87365676	−0.25190530	
e	0.0179302	i	3.08022		−0.38426503	−0.16752355	
P	4.83	H	12.8	G	0.15	U	1

Residuals in seconds of arc

1980 03 15	095	0.3+	1.0−	1995 06 28	046	0.7−	1.0−	1996 09 07	399	0.7−	1.4−
1984 01 27	046	(1.2−	4.8−)	1995 06 28	046	0.7−	0.5−	1997 11 29	704	1.5−	0.2−
1984 01 27	046	1.7−	0.9−	1995 06 28	046	0.5−	0.7−	1997 11 29	704	(2.5−	0.8+)
1992 11 18	399	1.3+	0.8+	1995 06 28	046	0.9−	1.1−	1997 11 29	704	0.9−	1.1−
1992 11 18	399	1.3+	0.9+	1995 06 29	046	0.3+	0.4−	1997 11 29	704	1.8−	0.5−
1992 11 21	399	1.1−	0.2+	1995 06 29	046	0.5+	0.3−	1997 11 29	704	(2.4−	0.4−)
1992 11 21	399	0.2−	0.3−	1995 06 29	046	0.2+	0.1−	1997 12 04	704	0.6+	1.2−
1992 11 25	675	(0.0	2.1−)	1995 06 29	046	0.1+	0.4+	1997 12 04	704	1.2+	0.2−
1992 11 25	675	1.5+	0.1−	1995 06 30	046	0.3+	0.0	1997 12 04	704	0.9+	0.1+
1992 11 25	675	0.5+	1.8−	1995 06 30	046	0.6+	0.5−	1997 12 04	704	1.7+	1.5+
1992 11 25	675	(2.1+	0.7−)	1995 06 30	046	0.2+	0.5−	1997 12 05	704	0.1+	0.2−
1992 11 28	675	0.2+	1.8−	1995 07 07	046	0.1−	0.3−	1997 12 05	704	0.2+	0.2−
1992 11 28	675	(0.3−	2.7−)	1995 07 07	046	0.6−	0.9−	1997 12 05	704	0.3+	0.2+
1992 11 29	399	(2.0−	0.0)	1995 07 07	046	0.3−	0.7−	1997 12 05	704	1.1−	0.5+
1992 11 29	399	(3.6−	0.6+)	1996 08 24	399	0.1+	0.5−	1997 12 05	704	0.1+	0.8+
1992 12 15	399	1.3−	0.8−	1996 08 24	399	0.6−	0.6+	1998 01 02	704	0.1+	0.2−
1992 12 15	399	0.9−	1.0−	1996 08 25	399	0.8−	0.2−	1998 01 02	704	0.2−	0.1−
1992 12 17	399	0.2+	1.1−	1996 08 25	399	0.8+	1.6+	1998 01 02	704	0.0	0.2+
1992 12 17	399	1.9+	0.3+	1996 09 07	399	0.6+	0.9−	1998 01 02	704	0.0	0.2−

(8186)∗ 1992 WP$_3$ = 1981 SF$_3$ = 1986 RE$_{12}$ = 1986 TN$_{11}$ = 1988 AS$_5$

Discovered 1992 Nov. 17 by A. Sugie at the Dynic Astronomical Observatory.

Id. K. Ichikawa (*MPC* 21945), S. Nakano (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	9.52106		(2000.0)		**P**	**Q**	
n	0.18499913	ω	102.80585		+0.90164622	−0.40098380	
a	3.0503963	Ω	281.02060		+0.30426726	+0.85437315	
e	0.1215243	i	9.50015		+0.30733618	+0.33054276	
P	5.33	H	12.4	G	0.15	U	2

Residuals in seconds of arc

1949 11 19	675	0.1+	0.7+	1992 10 28	095	1.9+	0.8+	1992 11 26	675	0.2+	0.7−
1949 11 19	675	0.5−	0.5+	1992 11 17	402	1.0+	0.1+	1994 02 11	675	0.9−	0.3−
1981 09 27	095	1.0−	0.6−	1992 11 17	402	0.9+	0.1+	1994 02 11	675	0.4−	0.5−
1981 10 03	095	1.3−	0.2−	1992 11 18	402	0.9+	0.5−	1997 10 19	689	0.2−	0.4−
1986 09 09	095	1.9+	1.2−	1992 11 18	402	0.2+	0.1+	1997 10 20	689	0.1−	1.1+
1986 10 03	095	2.1+	1.8−	1992 11 25	372	(4.9+	7.2−)	1997 12 18	725	1.5−	0.5+
1988 01 11	033	0.1−	1.1−	1992 11 25	372	(5.4+	5.4−)	1997 12 18	725	1.2−	0.0
1988 01 11	033	0.6−	0.5−	1992 11 26	675	1.2−	0.5−	1997 12 18	725	1.3−	0.5+

(8187)∗ 1992 XL = 1971 UF$_4$ = 1971 VV

Discovered 1992 Dec. 15 by S. Otomo at Kiyosato.

Id. S. Nakano (*MPC* 21800)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	62.48847		(2000.0)		**P**	**Q**	
n	0.19085979	ω	273.86505		+0.97869185	+0.04619990	
a	2.9876273	Ω	83.56563		+0.04087707	+0.91101937	
e	0.1184728	i	11.61520		−0.20122459	+0.40976735	
P	5.16	H	13.0	G	0.15	U	2

Residuals in seconds of arc

1971 10 22	805	1.9−	1.2+	1992 12 29	894	0.9−	0.5+	1997 11 29	704	(2.3−	0.4+)
1971 10 22	805	0.8−	1.6+	1995 05 07	104	0.4+	1.3−	1997 11 29	704	2.0−	0.9+
1971 10 22	805	0.6−	0.8−	1995 05 07	104	0.8+	1.0−	1997 12 04	704	(3.0+	1.3−)
1971 11 10	805	1.1+	0.1+	1995 05 07	104	0.4+	0.9−	1997 12 04	704	1.0+	0.6+
1971 11 10	805	0.6+	0.7−	1995 05 07	104	0.6+	0.9−	1997 12 04	704	0.1+	0.9−

1971 11 10	805	1.7+	1.9−	1995 05 08	104	1.7+	0.1+	1997 12 04	704	0.3+	1.0−
1992 12 15	894	1.5+	0.4−	1995 05 08	104	0.6+	0.5+	1997 12 04	704	1.6+	0.9−
1992 12 15	894	0.4+	1.3−	1995 05 08	104	0.0	0.5+	1997 12 05	704	1.1+	0.4+
1992 12 16	894	0.2+	0.7+	1995 05 08	104	0.8−	0.5+	1997 12 05	704	0.3−	0.2−
1992 12 16	894	1.3+	0.6−	1995 05 09	104	0.9−	0.2−	1997 12 05	704	0.4−	0.6+
1992 12 20	894	0.2−	0.3−	1995 05 09	104	1.5−	0.5−	1997 12 05	704	1.3−	0.8+
1992 12 20	894	0.2+	0.3−	1995 05 10	104	(0.6−	2.3+)	1997 12 05	704	0.8+	0.5+
1992 12 22	894	0.5+	1.4+	1995 05 10	104	0.8−	2.0+	1997 12 26	566	0.7+	0.6+
1992 12 22	894	0.3−	1.6−	1995 05 10	104	0.4−	1.3+	1997 12 26	566	1.0+	0.4−
1992 12 27	894	0.5−	0.4+	1997 11 29	704	0.1+	0.5−	1997 12 26	566	0.6+	0.8+
1992 12 27	894	0.5−	1.0+	1997 11 29	704	2.1−	0.1+				
1992 12 29	894	1.7−	0.0	1997 11 29	704	1.4−	0.0				

(8188)∗ 1992 YE$_3$ = 1983 GS$_2$ = 1994 EY$_1$

Discovered 1992 Dec. 18 by Y. Mizuno and T. Furuta at Kani.

Id. G. V. Williams (*MPC* 23520)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	261.47985		(2000.0)		**P**		**Q**
n	0.17561365	ω	57.16736		−0.93415819		−0.29366879
a	3.1581338	Ω	105.05410		+0.21443160		−0.91606760
e	0.1297706	*i*	12.11968		+0.28525000		−0.27309117
P	5.61	*H*	12.2	*G*	0.15	*U*	1

Residuals in seconds of arc

1983 04 11	095	0.7+	1.6+	1994 03 12	098	1.0−	0.2+	1994 04 06	111	0.3−	0.2+
1992 12 17	399	0.9+	1.2+	1994 03 12	098	1.0−	0.2+	1997 10 29	566	0.1+	0.1−
1992 12 17	399	1.3−	1.0+	1994 03 18	108	0.4−	0.2−	1997 10 29	566	0.1+	0.3−
1992 12 18	403	0.8−	1.7−	1994 03 18	108	0.4−	1.4−	1997 10 29	566	0.1−	0.2−
1992 12 18	403	0.7−	0.0	1994 03 18	108	0.2+	0.6+	1997 10 29	566	0.3+	0.0
1992 12 25	403	0.4+	1.2+ Y	1994 03 29	111	0.1+	0.6−	1997 10 29	566	0.0	0.3−
1992 12 25	403	(3.4−	1.7−)Y	1994 03 29	111	0.8+	0.2−	1997 10 29	566	0.1+	0.1−
1992 12 29	403	(2.8+	1.1−)	1994 03 29	111	0.5−	0.1−	1997 12 24	426	0.8+	0.3−
1992 12 29	403	(2.2+	1.5−)	1994 03 29	111	0.4+	0.3+	1997 12 24	426	0.5+	0.4−
1992 12 29	403	1.4+	0.7−	1994 04 06	111	0.8+	1.1−	1997 12 24	426	0.3−	0.3−
1992 12 30	886	(2.1−	2.4−)Y	1994 04 06	111	0.1+	0.5−	1997 12 25	426	0.0	0.3−
1992 12 30	886	0.6−	1.2+ Y	1994 04 06	111	0.8−	0.9−	1997 12 25	426	0.2−	0.5−
1994 03 11	098	1.0−	1.2+	1994 04 06	111	1.6+	0.7−	1997 12 25	426	0.1−	0.1+

(8189)∗ 1992 YG$_3$ = 1982 DM = 1994 JH

Discovered 1992 Dec. 30 by T. Hioki and S. Hayakawa at Okutama.

Id. K. Watanabe (*MPC* 23675), G. V. Williams (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	300.38037		(2000.0)		**P**		**Q**
n	0.17694960	ω	16.81260		−0.77791979		−0.62783925
a	3.1422181	Ω	124.26842		+0.57288034		−0.72541990
e	0.1513108	*i*	1.77964		+0.25816452		−0.28210607
P	5.57	*H*	12.2	*G*	0.15	*U*	2

Residuals in seconds of arc

1982 02 21	688	(0.3−	2.7−)	1993 01 19	801	0.0	0.6−	1994 05 14	691	(2.1−	0.5−)
1982 02 21	688	(0.6−	3.0−)	1993 01 19	801	0.1−	0.1−	1994 05 14	691	1.1−	0.8−
1988 03 18	675	0.1−	0.5−	1993 01 20	801	0.4+	0.9−	1994 05 14	691	1.0−	0.7−
1988 03 18	675	0.5+	1.4+	1993 01 20	801	0.3+	0.6−	1996 10 05	809	(2.6+	3.5+)
1992 12 30	877	1.1+	0.8+	1993 01 20	877	0.7+	1.0−	1996 10 05	809	(1.4+	3.0+)
1992 12 30	877	0.5+	0.9−	1993 01 20	877	0.5−	0.1−	1996 10 05	809	(0.5+	2.9+)
1993 01 02	877	0.4−	0.1+	1993 01 21	894	0.6−	0.5+	1997 11 29	704	0.5+	0.3+
1993 01 02	877	0.6−	0.5−	1993 01 21	894	0.7−	0.1−	1997 11 29	704	0.6−	1.0+
1993 01 13	400	1.0+	1.1−	1993 01 22	411	0.2−	0.3−	1997 11 29	704	0.0	1.6+
1993 01 13	400	(2.8+	0.9−)	1993 01 22	411	0.5−	0.4−	1997 11 29	704	0.2+	0.1+
1993 01 14	400	0.1−	0.3+	1993 01 22	411	0.3−	0.4−	1997 11 29	704	0.4+	0.7+
1993 01 14	400	(2.2+	0.1−)	1993 01 28	877	1.3−	0.6+	1997 12 04	704	0.1+	1.2−
1993 01 17	586	0.0	0.2+ Y	1993 01 28	877	0.8−	0.2−	1997 12 04	704	0.1+	1.3−
1993 01 17	586	0.1−	0.5+ Y	1993 01 29	411	0.1−	0.5+	1997 12 04	704	0.5+	1.6−
1993 01 17	877	1.1+	0.2−	1993 01 29	411	0.2+	0.5+	1997 12 04	704	0.4−	2.0−
1993 01 17	877	0.9+	0.1+	1993 01 29	411	0.1−	0.1+	1997 12 04	704	(0.4−	2.2−)
1993 01 17	894	0.5−	0.7−	1993 01 29	877	1.5−	1.6+	1998 01 02	704	0.9+	0.5+
1993 01 17	894	1.1−	0.6+	1993 01 29	877	1.6+	0.5−	1998 01 02	704	0.2−	0.9+
1993 01 17	586	0.5+	0.1− Y	1994 05 06	400	0.9+	1.2+	1998 01 02	704	1.2−	1.9+
1993 01 17	557	(2.1+	0.0)Y	1994 05 06	400	1.1+	0.3+	1998 01 02	704	0.7−	0.7+
1993 01 18	586	1.0+	0.8+ Y	1994 05 07	400	(1.1+	2.3+)				
1993 01 18	557	(0.3−	2.4+)Y	1994 05 07	400	0.0	0.0				

(8190)∗ 1993 ON$_9$ = 1993 OL$_{13}$ = 1976 JR$_{10}$ = 1982 BP$_1$ = 1982 BM$_{13}$ = 1989 GZ$_2$

Discovered 1993 July 20 by E. W. Elst at the European Southern Observatory.

Id. G. V. Williams (*MPC* 22959), S. Nakano (d, *MPC* 20062)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	332.39906		(2000.0)		**P**		**Q**
n	0.30029871	ω	168.40432		−0.05899318		−0.99694215
a	2.2085153	Ω	284.96201		+0.91159077		−0.03287848
e	0.1221443	*i*	3.04065		+0.40684405		−0.07088975
P	3.28	*H*	14.0	*G*	0.15	*U*	2

Residuals in seconds of arc

1976 05 02	809	(2.9−	0.2+)	1993 07 20	809	(2.8−	0.3−)	1997 10 29	704	0.9−	0.2+
1982 01 30	688	(2.6+	1.9−)	1993 07 20	809	0.9−	0.1+	1997 10 29	704	1.1−	0.9−
1982 01 30	688	1.0+	0.5+	1993 07 20	809	0.9−	0.3+	1997 10 29	704	0.8−	0.1−
1982 01 30	688	0.2−	0.4−	1993 07 24	809	0.8−	0.0	1997 10 29	566	0.0	0.7+
1982 01 30	688	1.2+	0.6−	1993 07 26	809	1.9+	0.2+	1997 10 29	566	0.0	0.6+
1982 01 30	675	0.2−	1.2+	1993 07 26	809	(2.8+	0.1+)	1997 10 29	566	0.0	0.6+
1982 01 31	675	0.8−	1.1+	1993 07 26	809	(2.4+	1.5+)	1997 10 30	704	0.1−	0.8−
1989 04 03	809	(3.6−	4.7+)	1997 10 22	704	0.4+	0.9+	1997 10 30	704	1.0−	0.0
1989 04 03	809	(3.4−	5.0+)	1997 10 22	704	1.2+	0.1+	1997 10 30	704	1.6−	0.6−
1989 04 03	809	(3.8−	4.5+)	1997 10 22	704	1.2+	0.1+	1997 10 30	704	0.5+	0.4−
1989 04 05	809	0.9−	1.5+	1997 10 22	704	1.0+	0.5+	1997 10 30	704	0.5−	0.9−
1989 04 05	809	1.3−	1.3+	1997 10 22	704	0.8+	0.4−	1997 10 30	127	0.2+	0.1−
1989 04 05	809	1.5−	0.7+	1997 10 23	367	0.4−	0.2−	1997 10 30	127	0.4+	0.1−
1992 02 28	675	1.0+	0.1−	1997 10 23	367	0.1−	0.8+	1997 10 30	127	0.2+	0.1+
1992 02 28	675	0.5+	0.2−	1997 10 27	127	0.0	0.6−	1997 11 06	704	0.4+	1.4+
1992 03 02	809	0.1+	1.0+	1997 10 27	127	0.2−	0.6−	1997 11 06	704	0.3−	0.8+
1992 03 05	809	0.3+	0.2+	1997 10 27	127	0.2−	0.8−	1997 11 06	704	1.8+	0.1+
1992 03 09	809	1.8+	1.8−	1997 10 28	127	0.3+	0.3−	1997 11 06	704	1.3−	0.9+
1992 04 07	809	0.4−	0.4+	1997 10 28	127	0.1−	0.3−	1997 11 06	704	0.9+	0.7+
1993 07 13	809	1.1+	1.8+	1997 10 28	127	0.2−	0.0	1997 12 18	758	0.2−	1.3+
1993 07 13	809	0.4+	1.2+	1997 10 29	704	1.9−	0.3+				
1993 07 13	809	0.7+	1.3+	1997 10 29	704	1.0−	0.5+				

(8191)∗ 1993 OX$_9$ = 1980 VA$_4$ = 1990 SG$_{20}$

Discovered 1993 July 20 by E. W. Elst at the European Southern Observatory.

Id. K. Kinoshita (*MPC* 24394)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	1.67280		(2000.0)		**P**		**Q**
n	0.28945236	ω	109.60113		+0.60792518		−0.79291271
a	2.2633479	Ω	302.88969		+0.70873834		+0.56543157
e	0.1090462	*i*	2.82797		+0.35793427		+0.22710475
P	3.41	*H*	14.4	*G*	0.15	*U*	1

Residuals in seconds of arc

1980 11 01	675	0.6+	0.1+	1995 01 23	691	0.2−	0.4−	1995 02 06	691	0.7−	0.3−
1980 11 02	675	0.1−	0.1−	1995 01 24	897	0.7+	0.1+	1995 02 06	691	0.5−	0.2−
1990 09 19	675	0.6−	0.9−	1995 01 24	897	0.5+	0.4+	1995 02 06	691	0.1−	0.3−
1990 09 19	675	0.1−	1.0−	1995 01 25	897	1.1+	0.3−	1997 11 19	127	0.7+	0.4−
1993 07 13	809	0.0	0.8−	1995 01 25	897	0.4+	0.8−	1997 11 19	127	0.4+	0.2−
1993 07 13	809	0.3+	0.5−	1995 01 25	887	1.0+	0.2+	1997 12 09	725	0.8+	0.4+
1993 07 13	809	0.8+	1.4−	1995 01 25	887	0.6+	0.3+	1997 12 09	725	0.2−	0.3+
1993 07 20	809	(0.9+	2.8−)	1995 01 27	691	1.0−	0.3−	1997 12 09	725	1.0+	1.4+
1993 07 20	809	(1.0−	2.5−)	1995 01 27	691	1.0−	0.1−	1997 12 09	725	0.5−	0.3+

1993 07 20	809	(0.4+	3.2−)	1995 01 27	691	1.1−	0.2−	1997 12 15	725	0.0	0.4−
1993 07 24	809	0.3+	0.5−	1995 01 28	385	0.2+	1.0−	1997 12 15	725	0.8−	0.3−
1995 01 05	033	0.5−	0.3+	1995 01 28	385	0.0	1.1−	1997 12 26	566	0.7−	0.2+
1995 01 06	033	0.3−	0.5+	1995 01 29	897	0.3−	0.1+	1997 12 26	566	0.1−	0.7+
1995 01 08	033	0.1+	0.4+	1995 01 29	897	0.6+	0.2+	1997 12 26	566	0.3−	0.2−
1995 01 23	691	1.0−	0.9−	1995 01 29	897	0.1+	0.7−				

(8192)∗ 1993 RB

Discovered 1993 Sept. 10 by A. Vagnozzi at Stroncone.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	325.08461		(2000.0)		**P**		**Q**
n	0.29756648	ω	161.21321		−0.75426311		−0.65426893
a	2.2220136	Ω	337.63585		+0.58238017		−0.62803963
e	0.0525926	i	8.30337		+0.30318393		−0.42130559
P	3.31	H	15.4	G	0.15	U	1

Residuals in seconds of arc

1993 09 10	589	0.0	0.6−	1993 09 23	595	0.3−	0.1−	1995 03 09	589	0.3−	0.1+
1993 09 10	589	0.0	0.7−	1993 09 23	595	0.4+	0.6−	1995 03 23	589	0.1+	0.1−
1993 09 10	589	0.6+	0.6−	1993 09 23	595	0.4−	0.3−	1995 03 23	589	0.6−	0.7+
1993 09 10	589	0.4+	0.1−	1993 10 04	589	0.3+	0.5+	1995 04 03	589	0.4−	0.2−
1993 09 11	589	0.2+	0.2+	1993 10 04	589	0.3+	0.7+	1995 04 03	589	0.0	0.9+
1993 09 11	589	0.1+	0.2+	1993 10 04	589	0.0	1.2+	1995 04 03	589	0.4−	0.7−
1993 09 11	596	(4.2−	2.1+)	1993 10 04	589	0.1−	0.6+	1996 07 13	589	0.4+	0.5+
1993 09 11	589	0.8+	0.9+	1993 12 12	589	0.2+	0.4−	1996 07 13	589	0.1+	0.9+
1993 09 11	596	(2.4−	1.9+)	1993 12 12	589	0.4−	0.2+	1996 07 13	589	0.4+	0.1+
1993 09 12	589	1.0−	1.7+	1993 12 12	589	0.1+	0.5−	1996 07 13	589	0.5−	0.2−
1993 09 12	589	0.3+	0.4+	1994 12 11	589	0.6−	0.6+	1996 08 09	589	2.0−	0.1−
1993 09 13	589	0.9−	0.2−	1994 12 11	589	0.4−	0.3+	1996 08 09	589	0.8−	0.7+
1993 09 13	589	0.1−	0.2−	1994 12 11	589	0.1+	0.8+	1996 08 20	589	0.2+	0.6−
1993 09 13	589	0.1−	0.5+	1994 12 11	589	0.6−	0.4−	1996 08 20	589	1.1+	0.4+
1993 09 16	589	0.4−	0.3+	1995 01 05	589	1.3−	0.6−	1997 12 07	589	0.1+	0.8+
1993 09 16	589	0.9−	0.0	1995 01 06	589	0.0	0.1+	1997 12 07	589	0.1−	0.0
1993 09 16	589	0.6−	0.1+	1995 01 06	589	0.5+	0.3+	1997 12 08	589	0.1+	0.2+
1993 09 17	589	1.1+	0.7−	1995 01 28	589	1.2+	1.6+	1997 12 28	589	0.2−	0.1−
1993 09 17	589	0.1+	0.3+	1995 01 28	589	1.0+	0.0	1997 12 28	589	0.3−	0.2−
1993 09 17	589	0.1−	0.3+	1995 02 03	589	0.4+	0.1+	1997 12 29	589	0.8−	0.9−
1993 09 17	589	0.2−	0.3+	1995 02 03	589	0.1−	0.1−	1997 12 29	589	0.5+	0.1−
1993 09 19	589	0.5+	0.3+	1995 02 20	589	0.9+	0.0	1997 12 29	589	0.2+	0.2−
1993 09 19	589	0.7−	0.5−	1995 02 20	589	0.8+	0.1+	1997 12 29	589	0.3+	0.2+
1993 09 19	589	0.5−	0.7−	1995 02 21	589	0.7+	0.4+	1997 12 29	589	0.0	0.3−
1993 09 20	589	0.0	0.7+	1995 02 21	411	0.5+	1.2+	1997 12 29	589	0.0	0.0
1993 09 20	589	0.3+	0.7−	1995 02 21	411	1.1+	0.0	1998 01 06	589	0.5+	0.0
1993 09 20	589	0.1−	0.3+	1995 02 27	589	0.3+	0.0	1998 01 06	589	0.0	0.5−
1993 09 22	589	0.4−	0.1+	1995 02 27	589	0.3+	0.0	1998 01 06	589	0.4−	0.0
1993 09 22	589	0.2−	0.2−	1995 03 09	589	0.6−	0.4−	1998 01 06	589	0.1+	0.3+
1993 09 22	589	0.0	0.0	1995 03 09	589	0.5−	0.4+				

(8193)∗ 1993 SF

Discovered 1993 Sept. 17 by A. Vagnozzi at Stroncone.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	1.33586		(2000.0)		**P**		**Q**
n	0.28982391	ω	141.94280		−0.15759157		−0.98606350
a	2.2614131	Ω	317.04959		+0.88574473		−0.11727077
e	0.1106629	i	4.48876		+0.43660185		−0.11800989
P	3.40	H	15.7	G	0.15	U	1

Residuals in seconds of arc

1993 09 17	589	0.6+	0.2+	1993 09 23	595	1.8−	0.2−	1997 12 07	589	0.7+	0.0
1993 09 17	589	0.4+	0.1+	1993 09 23	595	0.6+	0.7+	1997 12 07	589	0.2−	1.0+
1993 09 17	589	0.3−	0.1−	1993 10 10	589	0.7−	0.4+	1997 12 07	589	0.6−	0.4+
1993 09 17	589	0.7+	0.5+	1993 10 10	589	0.4−	0.5+	1997 12 24	589	0.8−	0.5−
1993 09 19	589	0.1−	0.6+	1993 11 13	589	0.3−	0.1+	1997 12 24	589	0.5−	1.4−
1993 09 19	589	1.7−	0.1−	1993 11 13	589	0.2+	0.4+	1997 12 24	589	0.1+	0.9−
1993 09 19	589	0.5−	0.6+	1993 11 13	589	0.2−	1.1+	1997 12 24	589	0.4−	0.1−
1993 09 20	589	0.2+	0.1−	1995 02 28	589	0.7+	0.1−	1997 12 25	589	0.4−	1.0−
1993 09 20	589	0.1−	0.6+	1995 02 28	589	0.7+	0.6+	1997 12 28	589	0.6+	0.6+
1993 09 20	589	0.4−	0.2+	1995 02 28	589	0.5+	0.7+	1997 12 28	589	0.8+	0.2−
1993 09 22	589	1.2+	0.3+	1995 03 09	589	0.2+	0.7+	1997 12 28	589	0.2+	0.1+
1993 09 22	589	0.1+	0.6−	1995 03 09	589	0.1−	0.9+	1998 01 06	589	0.3−	0.7+
1993 09 22	589	0.1+	0.5+	1995 03 09	589	0.1−	0.7+	1998 01 06	589	0.2−	0.2−
1993 09 23	589	0.2+	0.7−	1996 08 19	589	(3.5−	0.8−)	1998 01 06	589	0.3+	0.3−
1993 09 23	589	0.3+	0.1+	1996 08 19	589	0.4+	0.9−				
1993 09 23	589	0.3−	0.8−	1996 08 19	589	0.4+	1.1−				

(8194)∗ 1993 SB$_1$ = 1950 TC$_1$ = 1982 RC$_3$ = 1988 JV$_1$

Discovered 1993 Sept. 16 by K. Endate and K. Watanabe at Kitami.

Id. T. B. Spahr (*MPC* 30452)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	158.00533		(2000.0)		**P**		**Q**
n	0.27510731	ω	282.42392		+0.08136321		+0.99657926
a	2.3413588	Ω	352.19949		−0.86797086		+0.06370510
e	0.0288817	i	6.12621		−0.48990470		+0.05264437
P	3.58	H	13.1	G	0.15	U	2

Residuals in seconds of arc

1950 10 13	024	0.2+	0.1+	1993 09 18	400	(3.2−	1.7+)	1997 11 19	900	0.5−	0.0
1982 09 13	095	0.3+	0.5+	1993 10 11	400	0.1+	0.5−	1997 11 19	900	0.4−	0.0
1988 05 11	413	0.3+	0.2+	1993 10 11	400	0.2+	0.0	1997 12 06	704	1.6+	0.7+
1988 05 11	413	1.0−	1.0+	1993 10 14	675	0.9−	0.5−	1997 12 06	704	(2.2+	2.5+)
1993 09 16	400	1.5−	0.0	1993 10 14	675	1.1−	1.3−	1997 12 30	566	0.2+	0.2+
1993 09 16	400	0.5+	0.0	1996 07 11	413	0.0	0.2−	1997 12 30	566	0.4+	0.3+
1993 09 18	400	0.7+	1.0+	1996 07 11	413	0.7+	0.9+	1997 12 30	566	0.4+	0.2+

(8195)∗ 1993 UC$_1$ = 1962 RC = 1976 EJ = 1986 XW$_1$

Discovered 1993 Oct. 19 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 22820)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	64.14806		(2000.0)		**P**		**Q**
n	0.25561108	ω	79.65434		+0.92371870		+0.31872395
a	2.4589495	Ω	261.50894		−0.37719434		+0.85356359
e	0.1755801	i	12.40738		+0.06684454		+0.41212163
P	3.86	H	12.7	G	0.15	U	2

Residuals in seconds of arc

1955 12 12	675	2.2+	0.9+	1993 10 19	675	0.8+	0.7−	1997 12 06	704	0.9−	0.5+
1955 12 12	675	0.7−	0.3+	1993 10 21	675	0.3+	1.5−	1997 12 06	704	0.7+	0.0
1962 09 06	760	0.0	0.0	1993 10 21	675	1.4+	0.2+	1997 12 06	704	0.9+	0.3−
1962 09 06	760	1.1−	1.1+	1993 11 09	675	(2.6+	0.2+)	1997 12 16	631	0.1+	0.2−
1976 03 07	808	1.1−	0.0	1993 11 09	675	0.6+	1.6−	1997 12 16	631	0.1−	0.0
1976 03 07	808	1.0−	0.6+	1997 11 01	367	0.3+	0.2+	1997 12 17	631	0.1−	0.2−
1986 12 01	010	1.2−	1.7−	1997 11 01	367	0.2+	0.2+	1997 12 17	631	0.4+	0.2+
1986 12 01	010	0.5+	0.1+	1997 11 30	566	0.1−	0.3+	1997 12 21	691	1.7−	0.0
1986 12 01	010	1.7+	2.3−	1997 11 30	566	0.0	0.6+	1997 12 21	691	1.9−	0.2+
1992 04 04	675	0.5+	0.3+	1997 11 30	566	0.1+	0.6+	1997 12 21	691	1.8−	0.1+
1992 04 04	675	0.3+	0.0	1997 12 06	704	0.6+	1.3+				
1993 10 19	675	0.4+	0.6−	1997 12 06	704	1.1−	0.8+				

(8196)∗ 1993 UB$_3$ = 1975 VM = 1979 XV$_1$ = 1986 TC$_{12}$

Discovered 1993 Oct. 16 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 22820)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	8.87216		(2000.0)		**P**		**Q**
n	0.27153227	ω	171.68282		+0.61598948		−0.78316691
a	2.3618651	Ω	240.24954		+0.71700783		+0.60203802
e	0.0852120	i	5.61130		+0.32627709		+0.15556289
P	3.63	H	13.5	G	0.15	U	1

Residuals in seconds of arc

1975 11 01	095	(0.8−	5.3+)	1993 10 19	675	0.9−	0.3+	1997 10 29	566	0.6−	0.3−
1979 12 14	095	0.2+	2.5−	1993 11 09	675	0.4−	1.3−	1997 10 29	566	0.1−	0.6−
1979 12 18	095	0.3−	1.3+	1993 11 09	675	0.5+	0.5+	1997 11 29	704	1.7+	1.8+
1986 10 03	095	(0.2+	3.2−)	1993 11 10	675	0.2−	1.9−	1997 11 29	704	0.4−	0.0
1986 10 07	095	0.0	1.6−	1993 11 10	675	1.7+	0.1+	1997 11 29	704	0.1−	0.3+
1986 10 11	095	(4.5+	0.0)	1995 01 31	801	0.6+	0.0	1997 11 29	704	0.3+	0.7−
1993 10 12	675	0.6+	0.0	1995 01 31	801	0.1+	0.4−	1997 11 29	704	0.0	1.3−
1993 10 12	675	0.3+	0.2+	1995 03 27	801	0.0	0.1+	1997 12 27	426	0.4−	0.3+
1993 10 14	675	1.1+	0.9+	1995 03 27	801	0.1−	0.0	1997 12 27	426	0.2−	0.3+
1993 10 14	675	0.1−	0.4−	1995 03 29	801	0.2+	0.0	1997 12 27	426	0.1−	0.4+
1993 10 16	675	0.7−	1.3+	1995 03 29	801	0.3+	0.3+	1997 12 28	426	0.4−	0.6+
1993 10 16	675	0.9−	0.6+	1996 06 05	689	1.0−	0.8−	1997 12 28	426	0.3−	0.7+
1993 10 19	675	0.1+	1.6+	1997 10 29	566	0.4−	0.4−	1997 12 28	426	0.5−	0.4+

(8197)∗ 1993 VX = 1979 YN$_1$

Discovered 1993 Nov. 15 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 23126)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	316.88291		(2000.0)		**P**	**Q**	
n	0.21236548	ω	336.84939		+0.37425816	−0.91714228	
a	2.7823607	Ω	90.94273		+0.87080054	+0.29678003	
e	0.1429559	i	7.87787		+0.31880598	+0.26602943	
P	4.64	H	12.4	G	0.15	U	1

Residuals in seconds of arc

1955 07 24	675	0.0	0.1+	1993 11 24	411	0.2+	0.3−	1995 03 28	411	2.1+	0.4−
1955 07 24	675	0.2−	0.5−	1993 11 24	411	0.5+	0.3−	1995 03 28	411	0.2−	0.7+
1979 12 23	095	(3.9−	1.0+)	1993 12 04	411	0.1+	0.4+	1995 04 01	801	0.1−	0.2−
1979 12 23	095	(5.2−	1.2+)	1993 12 04	411	0.5+	0.1+	1995 04 01	801	0.1+	0.3−
1988 10 09	675	0.3+	0.5−	1993 12 04	411	0.7+	0.2+	1995 04 01	411	0.1+	0.3+
1988 10 09	675	0.1+	0.2−	1993 12 12	411	0.0	0.1+	1995 04 01	411	0.5+	0.1+
1988 11 04	675	0.9+	0.4+	1993 12 12	411	0.2+	0.1+	1995 04 03	411	0.0	0.2−
1988 11 04	675	0.5+	0.1+	1993 12 12	411	0.0	0.1−	1995 04 03	411	0.9−	0.0
1990 03 30	675	1.4−	0.2−	1993 12 17	894	1.2+	0.3−	1995 04 19	411	0.2−	0.5−
1990 03 30	675	1.0−	0.2−	1993 12 17	894	(3.1−	2.8−)	1995 04 19	411	0.3+	0.6−
1993 11 15	411	0.1−	0.0	1993 12 18	894	0.1−	0.1+	1996 06 15	801	1.2+	0.0
1993 11 15	411	0.3−	0.3−	1993 12 18	894	0.7−	1.0+	1996 06 15	801	0.7+	1.4−
1993 11 15	868	1.0+	0.1−	1993 12 19	894	1.4−	0.4+	1997 08 30	540	1.9−	0.6+
1993 11 15	868	0.0	0.7+	1993 12 19	894	0.1−	0.4−	1997 08 30	540	0.1+	0.1+
1993 11 16	411	0.8−	0.3−	1994 01 04	411	0.6+	0.8−	1997 08 30	540	0.3−	0.1+
1993 11 16	411	1.0−	0.4−	1994 01 04	411	0.5+	0.2−	1997 08 31	540	0.8−	0.7−
1993 11 16	411	1.3−	0.2−	1994 01 04	411	0.5+	0.4−	1997 08 31	540	0.1+	0.6−
1993 11 16	868	0.1+	0.4+	1995 02 27	801	0.7−	0.8+	1997 08 31	540	0.3+	0.1+
1993 11 16	868	0.3+	0.3+	1995 02 27	801	0.7−	0.3+	1997 09 01	367	0.1−	0.0
1993 11 18	411	0.1+	0.0	1995 03 02	801	0.9−	0.1+	1997 09 01	367	0.1−	0.4−
1993 11 18	411	0.0	0.1−	1995 03 02	801	0.7+	0.0	1997 12 21	411	0.5−	0.6+
1993 11 18	411	0.2+	0.1+	1995 03 28	801	0.1+	0.2+	1997 12 21	411	0.1+	0.2+
1993 11 24	411	0.4+	0.0	1995 03 28	801	0.2+	0.2+				

(8198)∗ 1993 VE$_2$ = 1996 KC$_9$

Discovered 1993 Nov. 11 by S. Ueda and H. Kaneda at Kushiro.

Id. B. G. Marsden (*MPC* 27716)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	45.30088		(2000.0)		**P**	**Q**	
n	0.23871319	ω	117.17296		+0.93970777	+0.29887242	
a	2.5736636	Ω	225.97036		−0.33248938	+0.91216610	
e	0.1894072	i	13.36594		+0.08000074	+0.28040736	
P	4.13	H	13.9	G	0.15	U	2

Residuals in seconds of arc

1992 05 03	809	0.3+	1.0+	1996 05 19	809	1.8−	1.7+	1997 10 23	399	1.2−	0.7−
1992 05 03	809	0.1−	0.2−	1996 05 19	809	1.5−	1.5+	1997 10 25	399	0.0	1.0+
1992 05 03	809	0.4+	0.1+	1996 05 19	809	1.8−	1.0+	1997 10 25	399	1.9−	1.0−
1993 11 11	399	0.1+	0.3+	1996 05 22	809	1.8+	0.1−	1997 10 26	098	0.7+	1.1+
1993 11 11	399	0.0	0.7−	1996 05 22	809	0.7+	1.5−	1997 10 26	098	(0.7−	2.7−)
1993 11 16	399	0.5−	0.7−	1996 05 22	809	0.3+	0.1−	1997 12 19	426	0.6+	0.2+
1993 11 16	399	0.4−	0.4+	1996 05 23	809	1.1+	0.3−	1997 12 19	426	0.6+	0.5−
1993 11 22	399	0.6+	1.7+	1996 05 23	809	0.7+	0.1−	1997 12 19	426	0.6−	0.3+
1993 11 22	399	0.4−	0.8+	1996 05 23	809	0.7+	0.4−	1997 12 21	426	1.4+	0.1−
1996 05 14	566	0.1−	0.4−	1997 10 11	399	0.5+	0.9−	1997 12 21	426	0.9+	0.2−
1996 05 14	566	0.2−	0.1−	1997 10 11	399	0.5−	0.0	1997 12 21	426	0.6+	0.1−
1996 05 14	566	0.3−	0.6−	1997 10 23	399	0.3+	0.6+				

(8199)∗ 1993 XR

Discovered 1993 Dec. 9 by T. Kobayashi at Oizumi.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	128.62048		(2000.0)		**P**	**Q**	
n	0.23723824	ω	208.69370		+0.28900050	+0.93270528	
a	2.5843198	Ω	78.79581		−0.83097169	+0.35629781	
e	0.1797477	i	12.70444		−0.47535751	−0.05579191	
P	4.15	H	13.6	G	0.15	U	1

Residuals in seconds of arc

1993 12 09	411	0.4−	0.7−	1995 01 25	411	0.8+	1.7−	1997 11 29	704	(2.7−	0.9−)
1993 12 09	411	0.6+	0.5+	1995 01 25	411	0.7+	0.5−	1997 11 29	704	1.2−	0.2−
1993 12 11	411	0.7+	1.2+	1995 01 29	411	0.6−	0.4+	1997 11 29	704	1.7−	0.2−
1993 12 11	411	0.6+	0.8+	1995 01 29	411	0.9−	0.2+	1997 11 30	566	1.6+	1.6−
1993 12 11	411	0.5+	1.1+	1995 02 10	411	1.0−	0.3+	1997 11 30	566	1.6+	0.9−
1993 12 14	411	1.5−	0.4−	1995 02 10	411	1.4−	0.5−	1997 11 30	566	1.9+	1.5−
1993 12 14	411	0.1−	2.0−	1995 03 05	411	0.1−	0.8+	1997 12 04	704	0.2+	0.4−
1993 12 14	411	(1.7+	3.2−)	1995 03 05	411	0.6−	0.1+	1997 12 04	704	1.3+	0.6−
1993 12 18	411	0.5+	0.4+	1996 07 08	423	0.1−	0.1+	1997 12 04	704	0.2−	0.7−
1993 12 18	411	0.8−	0.1−	1996 07 08	423	0.4−	0.4+	1997 12 04	704	0.5+	1.3−
1993 12 18	411	1.4−	0.2−	1996 07 08	423	0.0	0.2−	1997 12 05	704	0.5−	0.1+
1994 01 01	411	(0.5−	2.5+)	1996 07 08	423	0.1+	0.4−	1997 12 05	704	1.1−	0.6−
1994 01 01	411	1.2+	0.2−	1996 07 08	423	0.1−	0.5+	1997 12 05	704	1.2−	0.6+
1994 01 04	411	(0.5−	2.6+)	1996 07 08	423	0.5−	0.3+	1997 12 05	704	0.6−	1.0+
1994 01 04	411	0.2−	1.2+	1996 07 08	423	0.6−	0.3−	1997 12 05	704	0.7+	1.6+
1994 01 04	411	0.3−	0.2−	1996 07 11	423	0.7+	0.8−	1997 12 29	566	0.3−	0.3+
1995 01 12	411	0.1+	0.0	1996 07 11	423	0.3+	0.6−	1997 12 29	566	0.0	0.2+
1995 01 12	411	0.5+	1.4−	1996 07 11	423	0.3+	0.6−	1997 12 29	566	0.2+	0.3+
1995 01 12	411	1.4+	1.0−	1996 07 11	423	0.2+	0.7−	1998 01 02	704	0.4+	0.4+
1995 01 14	411	0.8+	0.4−	1996 07 11	423	0.4+	1.1−	1998 01 02	704	0.1+	0.0
1995 01 14	411	0.1−	0.5+	1996 07 14	423	1.3+	0.5−	1998 01 02	704	0.1−	0.6−
1995 01 14	411	0.1+	1.0−	1996 07 14	423	1.5−	0.8−	1998 01 02	704	0.2+	0.3−
1995 01 25	411	0.8−	1.4−	1996 07 15	423	0.2+	0.4−				

(8200)∗ 1994 AY$_1$ = 1992 RJ$_4$ = 1992 SV$_{19}$

Discovered 1994 Jan. 7 by M. Hirasawa and S. Suzuki at Nyukasa.

Id. B. G. Marsden (*MPC* 23343)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	352.55706		(2000.0)		**P**	**Q**	
n	0.23209389	ω	295.67962		−0.04955209	−0.99871294	
a	2.6223676	Ω	157.15288		+0.92605433	−0.04999927	
e	0.1258350	i	1.59671		+0.37412294	−0.00851667	
P	4.25	H	13.4	G	0.15	U	2

Residuals in seconds of arc

1992 09 02	809	1.7+	0.8−	1994 01 08	408	0.4+	1.0−	1996 08 10	566	0.0	0.1−
1992 09 02	809	1.1+	0.8−	1994 01 08	408	(0.6+	2.6−)	1996 08 10	566	0.0	0.1+
1992 09 02	809	0.6+	1.5−	1994 01 12	399	0.8+	0.5−	1997 12 04	704	0.0	0.3−
1992 09 03	809	(0.7−	2.8−)	1994 01 12	399	0.5+	0.6−	1997 12 04	704	(1.1+	2.6+)
1992 09 22	809	0.7−	0.4+	1994 01 15	399	0.6+	0.6−	1997 12 04	704	0.1−	0.3+
1992 09 22	809	0.8−	0.4+	1994 01 15	399	0.9+	0.0	1997 12 04	704	0.1+	0.9−
1992 09 22	809	1.4−	0.6+	1994 01 16	691	1.0−	0.3+	1997 12 04	704	1.5+	0.3−
1992 09 23	809	0.6+	1.3+	1994 01 16	691	(2.3−	0.3+)	1997 12 07	104	0.6+	0.3+
1992 09 23	809	0.6−	0.2+	1994 01 16	691	1.7−	0.5+	1997 12 07	104	0.1+	0.2+
1992 09 23	809	0.5−	0.1+	1994 01 30	010	0.2−	0.8+	1997 12 07	104	0.0	0.3+

1994 01 07	408	(2.2+	0.8+)	1994 01 30	010	0.6−	1.0+	1998 01 12	758	0.7−	0.5+
1994 01 07	408	0.1+	0.8−	1996 08 10	566	0.0	0.2−	1998 01 12	758	1.7−	0.2+

(8201)∗ 1994 AH_2

Discovered 1994 Jan. 5 by G. J. Garradd at Siding Spring.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	326.29557		(2000.0)		**P**	**Q**	
n	0.24537936	ω	24.83645		−0.98555713	+0.16323646	
a	2.5268378	Ω	164.35850		−0.16931461	−0.95475178	
e	0.7109874	i	9.62217		+0.00311567	−0.24860189	
P	4.02	H	16.3	G	0.15	U	1

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

1981 12 16	413	0.8−	1.0+	1994 06 03	557	0.4−	0.8+	1994 07 02	658	0.7−	0.2+
1981 12 16	413	0.7+	0.5+	1994 06 03	557	0.5−	0.7+	1994 07 02	540	1.0+	0.2−
1994 01 05	413	2.0+	0.9−	1994 06 03	557	0.2−	0.2+	1994 07 02	540	0.9+	0.5+
1994 01 05	413	1.8+	1.5+	1994 06 03	557	0.7−	0.4+	1994 07 02	540	0.4+	0.3+
1994 01 07	413	0.2+	0.5−	1994 06 08	540	1.0+	1.1+	1994 07 02	540	0.9−	0.3+
1994 01 16	413	0.2−	0.2+	1994 06 08	540	0.5+	0.6+	1994 07 02	540	0.3+	0.3−
1994 01 21	413	0.2−	0.6+	1994 06 08	540	(0.5−	2.0+)	1994 07 03	557	0.1+	0.6−
1994 01 21	413	0.2−	0.5+	1994 06 08	540	1.0−	1.4+	1994 07 03	557	0.1+	0.1+
1994 01 21	413	0.1−	0.1−	1994 06 08	540	0.4−	1.9+	1994 07 03	557	0.1−	0.2+
1994 01 21	413	0.5−	1.1+	1994 06 08	540	0.5+	1.7+	1994 07 03	557	0.0	0.1+
1994 01 21	413	0.6+	0.1+	1994 06 14	557	0.1−	0.2+	1994 07 04	557	0.0	0.2+
1994 01 22	413	0.3+	0.1−	1994 06 14	557	0.2−	0.1+	1994 07 05	801	0.3−	0.3−
1994 01 22	413	0.2+	0.1−	1994 06 15	557	0.1−	0.3+	1994 07 05	801	0.2−	0.4−
1994 01 22	413	0.7+	0.3−	1994 06 15	557	0.3−	0.2+	1994 07 06	557	0.2+	0.1+
1994 01 22	413	0.5+	0.4−	1994 06 15	540	0.0	0.8+	1994 07 06	557	0.4+	0.0
1994 01 23	413	0.5−	0.3+	1994 06 15	540	0.3+	0.6−	1994 07 06	557	0.3+	0.1+
1994 01 23	413	0.5−	0.2+	1994 06 15	540	0.1−	0.8+	1994 07 06	557	0.4+	0.0
1994 01 25	360	0.0	0.2−	1994 06 15	540	1.1+	1.6+	1994 07 07	801	0.3+	0.2+
1994 01 25	360	0.5−	0.2−	1994 06 16	696	0.1−	0.4−	1994 07 07	801	0.7+	0.5+
1994 01 29	385	0.3+	0.2−	1994 06 20	557	0.1+	0.4+	1994 07 09	711	(0.2+	2.7−)
1994 01 29	385	0.1+	0.1−	1994 06 20	557	0.1+	0.7+	1994 07 09	360	0.8+	0.4−
1994 01 30	360	0.5−	0.7+	1994 06 20	557	0.0	0.6+	1994 07 09	360	0.7+	0.2−
1994 01 30	360	0.0	0.2−	1994 06 20	557	0.1+	0.4+	1994 07 11	323	0.9−	0.9+
1994 02 05	658	0.1−	0.1−	1994 06 21	557	0.2+	0.6+	1994 07 13	657	0.9+	1.3+
1994 02 05	658	0.2−	0.0	1994 06 21	557	0.2+	0.5+	1994 07 13	657	0.7+	0.6+
1994 02 05	658	0.2−	0.1+	1994 06 22	657	0.3−	1.3−	1994 07 16	540	0.3+	0.3−
1994 02 08	658	0.0	0.1−	1994 06 22	657	0.3−	0.9−	1994 07 16	540	0.7−	0.3−
1994 02 08	658	0.5−	0.3−	1994 06 22	657	0.3−	1.0−	1994 07 16	540	0.6+	0.4−
1994 02 08	658	0.4−	0.2+	1994 06 22	540	0.2−	0.1+	1994 07 25	413	0.1+	0.3−
1994 02 12	587	0.0	0.5+	1994 06 22	540	0.1−	0.3−	1994 07 25	413	0.0	0.4−
1994 02 12	587	0.5+	0.1+	1994 06 22	540	0.4−	0.6−	1994 07 29	540	1.3−	0.9+
1994 02 12	587	0.4−	0.6+	1994 06 22	540	0.7−	0.3−	1994 07 29	540	0.4−	0.3+
1994 02 16	104	0.8+	1.5−	1994 06 23	587	0.2−	0.9+	1994 07 29	540	0.4+	0.3+
1994 02 16	104	1.9−	0.3−	1994 06 23	587	0.1+	0.2+	1994 07 29	540	1.5−	1.1−
1994 02 16	104	1.9−	1.4+	1994 06 23	587	0.2+	0.0	1994 08 04	540	0.5+	0.6+
1994 02 16	104	(3.1−	2.8+)	1994 06 24	540	0.4−	0.7−	1994 08 04	540	1.1−	0.7−
1994 02 17	711	0.0	0.9+	1994 06 24	540	0.2+	0.9−	1994 08 04	540	1.2−	0.7−
1994 02 20	413	0.4+	0.4+	1994 06 24	540	0.8+	0.4−	1994 08 07	360	0.2+	0.5+
1994 02 20	413	0.9+	0.8+	1994 06 24	540	0.3+	1.0−	1994 08 07	360	0.4+	0.4+
1994 03 04	360	0.3+	0.4−	1994 06 24	540	0.4+	0.6−	1994 08 08	801	0.3+	0.9−
1994 03 04	360	0.8+	0.8−	1994 06 24	540	0.5−	0.8−	1994 08 16	413	0.2−	0.7+
1994 03 07	658	1.7−	0.4−	1994 06 24	540	0.8−	1.6−	1994 08 16	413	0.4−	0.3+
1994 03 07	658	1.7−	0.4−	1994 06 24	540	1.5−	0.8−	1997 10 31	711	1.4−	0.7−
1994 03 07	658	1.9−	0.6−	1994 06 25	540	0.3+	0.0	1997 10 31	711	1.0+	0.4+
1994 03 10	557	0.3+	0.1−	1994 06 25	540	0.2+	0.3+	1997 11 01	711	0.1−	0.2+
1994 03 10	557	0.3−	0.4+	1994 06 25	540	0.2−	0.0	1997 11 01	711	0.2−	0.2−
1994 03 13	801	1.0−	0.8−	1994 06 25	540	0.0	0.3−	1997 11 02	711	0.0	0.0
1994 03 13	801	0.3−	0.4+	1994 06 28	711	0.2−	0.2−	1997 11 02	711	0.2−	0.0
1994 03 19	413	0.3−	0.1+	1994 06 28	071	(3.5−	7.6+)	1997 11 06	381	0.1−	0.3+
1994 03 19	413	0.6−	0.0	1994 06 28	071	(3.9−	12.3+)	1997 11 06	381	0.1−	0.4+
1994 03 22	413	0.2−	0.1−	1994 06 29	657	0.1−	0.7+	1997 11 06	381	0.0	0.3+
1994 03 28	587	1.3+	1.6−	1994 06 29	657	0.2−	0.3+	1997 11 24	360	0.1+	0.1−
1994 03 28	587	0.3−	0.7−	1994 06 29	657	0.3−	0.7+	1997 11 24	360	0.4+	0.2+
1994 04 02	413	0.3−	0.4−	1994 06 30	596	(3.5−	1.4+)	1997 11 24	360	0.2+	0.4+
1994 04 02	413	0.2+	0.2−	1994 06 30	596	(2.8−	1.4+)	1997 12 09	658	0.3−	0.5−
1994 04 21	658	0.7+	1.0+	1994 06 30	596	(1.9−	2.6+)	1997 12 09	658	0.1−	0.1+
1994 04 21	658	0.5+	0.9+	1994 06 30	596	(1.2−	2.2+)	1997 12 09	658	0.4+	0.4−
1994 06 01	540	0.5+	1.2+	1994 06 30	071	(0.00−	0.04+)	1997 12 24	360	0.8+	0.6+
1994 06 01	540	1.4+	1.2−	1994 06 30	071	(21.2−	31.0+)	1997 12 24	360	0.6+	0.7+
1994 06 01	540	0.8+	0.1+	1994 07 01	540	0.1+	0.4+	1997 12 24	360	0.7+	0.8+
1994 06 01	540	0.3−	1.1+	1994 07 01	540	0.0	0.0	1998 01 01	711	0.4−	0.5+
1994 06 01	540	0.2+	1.5+	1994 07 01	540	0.2+	1.0+	1998 01 01	711	0.5−	0.3+
1994 06 01	540	0.9+	1.0+	1994 07 01	540	0.1−	0.0	1998 01 02	711	1.1−	0.4+
1994 06 01	540	1.0+	1.5+	1994 07 01	540	0.3+	0.5+	1998 01 02	711	0.4−	0.4+
1994 06 03	557	0.7−	0.4+	1994 07 02	658	0.5−	0.1+	1998 01 03	711	0.5−	0.1+
1994 06 03	557	0.7−	0.5+	1994 07 02	658	0.5−	0.2−	1998 01 03	711	0.4−	0.1+

(8202)∗ 1994 CX_2 = 1959 CO = 1991 RO_{22}

Discovered 1994 Feb. 11 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 23244)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	247.26083		(2000.0)		**P**	**Q**	
n	0.19815635	ω	73.08461		−0.97657040	+0.21002046	
a	2.9138289	Ω	119.01746		−0.21216058	−0.90311523	
e	0.0816147	i	3.07582		−0.03602978	−0.37453210	
P	4.97	H	13.0	G	0.15	U	1

Residuals in seconds of arc

1959 02 15	024	0.4+	1.3+	1994 02 12	809	1.3−	0.4−	1997 11 29	704	1.2−	0.1−
1991 09 15	675	0.1−	1.1−	1994 02 19	400	0.3+	0.1+	1997 11 29	704	0.1+	0.3−
1991 09 15	675	0.3+	1.0−	1994 02 19	400	0.9+	1.6−	1997 11 29	704	0.8−	1.2−
1991 09 17	675	0.5+	1.4−	1994 03 03	400	0.5−	0.7+	1997 11 29	704	0.7−	0.9−
1991 09 17	675	0.6+	0.8−	1994 03 03	400	1.7+	1.1−	1997 12 04	704	0.8+	0.5+
1994 02 07	809	(1.2−	2.9−)	1996 09 10	566	0.0	0.3+	1997 12 04	704	(1.2+	4.0+)
1994 02 07	809	(1.8−	2.6−)	1996 09 10	566	0.1+	0.3+	1997 12 04	704	0.7−	0.9+
1994 02 07	809	(2.7−	3.3−)	1996 09 10	566	0.0	0.3+	1997 12 04	704	0.2−	1.3+
1994 02 09	809	(0.1−	2.9−)	1996 09 14	566	0.2−	0.9+	1997 12 25	566	0.2+	0.5−
1994 02 09	809	(0.5−	3.6−)	1996 09 14	566	0.2+	0.9+	1997 12 25	566	0.7+	0.5−
1994 02 09	809	(1.5−	4.1−)	1996 09 14	566	0.3−	0.9+	1997 12 25	566	0.4+	1.0−
1994 02 11	400	0.8−	1.3+	1996 09 15	566	0.0	0.4−	1997 12 30	566	1.3+	0.4+
1994 02 11	400	1.1−	0.2+	1996 09 15	566	0.3−	0.1−	1997 12 30	566	0.9+	0.9+
1994 02 12	809	0.1+	1.0−	1996 09 15	566	0.2−	0.4−	1997 12 30	566	1.4+	0.9+
1994 02 12	809	0.3−	0.7−	1997 11 29	704	2.0−	0.2−				

(8203)∗ 1994 CP_{10} = 1974 RN = 1977 CQ_2 = 1991 RK_4

Discovered 1994 Feb. 7 by E. W. Elst at the European Southern Observatory.

Id. K. Ichikawa (*MPC* 23982), G. V. Williams (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	85.61858		(2000.0)		**P**	**Q**	
n	0.17702558	ω	327.12599		+0.79316187	+0.60896803	
a	3.1413190	Ω	355.33956		−0.53780126	+0.69480444	
e	0.1339710	i	5.10125		−0.28576923	+0.38262870	
P	5.57	H	13.1	G	0.15	U	1

Residuals in seconds of arc

1974 09 11	095	0.3+	1.6−	1994 02 09	809	0.0	0.5−	1995 05 04	689	0.0	0.7−
1977 02 11	675	0.8+	0.0	1994 02 09	809	(0.3+	2.1−)	1997 10 29	566	0.5−	0.5+
1977 02 12	675	0.3+	0.9+	1994 02 12	809	1.8+	1.7−	1997 10 29	566	0.4−	0.4+
1991 09 10	033	0.0	0.2+	1994 02 12	809	1.1+	1.1−	1997 10 29	566	0.7−	0.5+
1991 09 10	033	0.1−	0.1−	1994 02 12	809	0.1−	1.1−	1997 12 06	704	1.6+	0.2+
1991 09 11	033	0.5+	0.2+	1994 02 15	675	0.3+	0.0	1997 12 06	704	2.0+	1.9−
1991 10 08	675	1.0−	1.6−	1994 02 15	675	0.9+	1.0−	1997 12 06	704	(3.1+	2.2−)
1991 10 16	095	1.5+	1.9+	1994 02 16	691	1.3−	1.1+	1997 12 06	704	0.3+	0.6−
1994 02 07	809	0.2+	0.5+	1994 02 16	691	1.3−	1.2+	1997 12 31	691	1.2−	0.3+
1994 02 07	809	0.7−	0.2−	1994 02 16	691	1.4−	1.3+	1997 12 31	691	1.1−	0.2+
1994 02 07	809	0.9−	1.0−	1995 04 29	689	0.0	0.5+	1997 12 31	691	1.1−	0.3+
1994 02 09	809	0.4−	0.0	1995 04 30	689	(2.7−	0.1+)				

(8204)∗ 1994 GC_1 = 1977 EN

Discovered 1994 Apr. 8 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 23677)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	268.74679		(2000.0)			
n	0.18080566	ω	89.01200		−0.99393501	−0.10160648
a	3.0973815	Ω	85.15543		+0.07637780	−0.91302309
e	0.1135165	*i*	2.41941		+0.07911784	−0.39505059
P	5.45	*H*	12.5	*G*	0.15	*U* 1

Residuals in seconds of arc

1977 03 09	095	0.4+	0.1+	1996 10 08	809	0.5+	0.3−	1997 12 04	704	0.6+	0.7−
1977 03 13	095	0.3−	0.3+	1996 10 10	809	(2.9+	3.1+)	1997 12 04	704	0.3−	0.1−
1994 04 08	400	1.3+	0.8+	1996 10 10	809	(2.2+	2.8+)	1997 12 04	704	0.7+	0.8−
1994 04 08	400	(2.9−	1.2−)	1996 10 10	809	(2.2+	3.5+)	1997 12 05	704	0.1−	0.7+
1994 04 09	400	(2.7+	1.1+)	1997 11 26	704	0.0	0.4+	1997 12 05	704	0.5+	0.0
1994 04 13	400	0.4−	0.8−	1997 11 26	704	0.3−	0.6+	1997 12 05	704	0.2+	0.2−
1994 04 13	400	0.8+	1.3+	1997 11 26	704	0.3+	0.4−	1997 12 05	704	0.2−	0.0
1994 04 16	400	(1.7−	3.3+)	1997 11 29	704	(3.4−	1.7−)	1997 12 05	704	0.4+	0.2−
1994 04 16	400	1.9−	0.5+	1997 11 29	704	(2.2−	0.9−)	1997 12 29	566	0.4+	0.3+
1994 05 06	400	0.8+	0.0	1997 11 29	704	(2.5−	0.7−)	1997 12 29	566	0.5−	0.3+
1994 05 06	400	0.5−	1.7−	1997 11 29	704	(2.5−	1.4−)	1997 12 29	566	0.8+	0.0
1996 10 06	684	0.3+	0.1−	1997 11 29	704	(2.3−	0.1+)	1997 12 31	704	0.7+	0.1−
1996 10 06	684	0.2+	0.1−	1997 11 30	566	(3.5−	2.0−)	1997 12 31	704	0.8−	0.0
1996 10 07	684	0.4+	0.0	1997 11 30	566	(3.4−	1.5−)	1997 12 31	704	1.4−	0.2+
1996 10 07	684	0.3+	0.1−	1997 11 30	566	(3.4−	2.0−)	1997 12 31	704	1.4−	0.1+
1996 10 08	809	1.1−	1.0+	1997 12 04	704	0.2+	0.6−				
1996 10 08	809	1.0−	0.6+	1997 12 04	704	0.1+	0.3−				

(8205)∗ 1994 PE_{10} = 1989 TA_{15} = 1992 JO_2

Discovered 1994 Aug. 10 by E. W. Elst at the European Southern Observatory.

Id. K. Ichikawa (*MPC* 25218)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	57.44882		(2000.0)			
n	0.17423364	ω	354.34097		−0.71645046	−0.69734560
a	3.1747878	Ω	141.41857		+0.64133385	−0.66974531
e	0.1654509	*i*	1.85579		+0.27457173	−0.25524562
P	5.66	*H*	12.4	*G*	0.15	*U* 1

Residuals in seconds of arc

1989 10 02	809	0.3−	1.0+	1992 05 08	809	0.8−	0.5+	1994 09 04	809	1.4+	0.8−
1989 10 02	809	0.0	0.7+	1994 08 10	809	0.0	0.2−	1994 09 04	809	0.9+	0.7−
1989 10 02	809	0.5+	0.5+	1994 08 10	809	0.6+	0.1−	1997 02 08	910	0.7−	0.5+
1989 10 03	809	0.5−	0.0	1994 08 10	809	1.0−	0.3−	1997 02 08	910	0.6−	0.3+
1989 10 03	809	0.3−	0.0	1994 08 11	809	0.7−	0.0	1997 02 08	910	0.6−	0.4+
1989 10 03	809	0.1−	0.1−	1994 08 11	809	1.5−	0.1−	1997 03 05	704	0.1−	0.8−
1992 05 04	809	0.6+	0.5+	1994 08 11	809	0.6−	0.3+	1997 03 05	704	1.0+	0.0
1992 05 04	809	1.2+	0.3+	1994 09 03	809	0.0	0.6+	1997 03 06	704	0.4+	0.6−
1992 05 04	809	1.6+	0.1+	1994 09 03	809	0.4+	0.1−	1997 03 06	704	0.7+	0.1−
1992 05 08	809	1.1−	0.1+	1994 09 03	809	0.3+	0.7+				
1992 05 08	809	1.0−	0.0	1994 09 04	809	0.6+	0.5−				

(8206)∗ 1994 WK_1 = 1981 UQ_6 = 1987 QV_{12} = 1989 CK_7

Discovered 1994 Nov. 27 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 24574), G. V. Williams (*MPC* 25430)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	46.98375		(2000.0)			
n	0.30603676	ω	72.77751		+0.99966401	−0.00872369
a	2.1808225	Ω	287.71702		−0.00190413	+0.91440294
e	0.0461990	*i*	1.46828		+0.02585027	+0.40471121
P	3.22	*H*	14.3	*G*	0.15	*U* 2

Residuals in seconds of arc

1949 11 25	675	0.4−	0.4+	1994 11 28	411	0.4+	0.7−	1996 05 21	566	0.5+	0.6+
1949 11 25	675	0.0	0.8−	1994 11 28	411	0.1+	0.3+	1997 10 25	587	0.4+	0.5+
1981 10 30	381	0.1+	0.6−	1994 12 06	411	0.0	0.5+	1997 10 25	587	0.4−	1.0+
1981 10 30	381	1.2+	1.0−	1994 12 06	411	0.4+	0.4+	1997 10 25	587	0.3−	0.9+
1987 08 22	046	(3.8−	0.6+)	1994 12 21	411	0.0	0.5−	1997 11 02	587	0.0	0.6+
1987 08 22	046	0.6+	1.3−	1994 12 21	411	0.5−	0.4−	1997 11 02	587	0.3−	0.3+
1989 02 10	872	(1.9+	4.2−)Y	1996 05 21	566	(0.8+	2.3+)	1997 11 08	758	0.2−	0.8+
1989 02 10	872	(5.5+	3.4−)	1996 05 21	566	0.0	0.8+	1997 11 08	758	0.3+	0.3−
1994 11 27	411	0.8−	0.4−	1996 05 21	566	(0.7+	2.4+)	1997 12 25	566	1.3−	0.7+
1994 11 27	411	0.5+	0.4−	1996 05 21	566	0.3+	0.7+	1997 12 25	566	1.5−	0.3+
1994 11 28	411	0.4+	0.2−	1996 05 21	566	(0.9+	2.8+)	1997 12 25	566	0.3−	0.6+

(8207)∗ 1994 YS_1 = 1987 RL_3 = 1992 CB_4

Discovered 1994 Dec. 31 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 24753)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	45.33510		(2000.0)			
n	0.30326457	ω	294.18753		+0.98301437	−0.14530455
a	2.1940925	Ω	74.32282		+0.17956771	+0.88771068
e	0.1759412	*i*	6.68697		−0.03792357	+0.43687107
P	3.25	*H*	14.9	*G*	0.15	*U* 2

Residuals in seconds of arc

1987 09 03	095	0.6+	1.3−	1996 05 15	691	0.2−	0.7−	1997 11 29	704	0.6−	0.5−
1992 02 08	033	0.6+	0.9−	1996 05 20	566	0.4+	0.6−	1997 11 29	704	0.9−	0.1−
1992 02 08	033	0.3−	1.4−	1996 05 20	566	0.4+	0.6−	1997 11 29	704	0.1+	0.0
1992 02 09	033	1.0−	1.1−	1996 05 20	566	0.6+	0.6−	1997 12 04	704	0.5+	0.0
1994 12 31	411	0.2+	1.4+	1996 06 08	809	0.4+	1.5+	1997 12 04	704	0.9+	0.7−
1994 12 31	411	0.2+	0.3+	1996 06 08	809	0.6−	0.7+	1997 12 04	704	1.3+	0.4−
1995 01 01	411	0.1−	0.4−	1996 06 08	809	0.8−	0.9+	1997 12 04	704	0.3+	0.4−
1995 01 01	411	0.1−	0.4−	1996 06 10	809	0.4−	0.2−	1997 12 04	704	0.9+	0.8−
1995 01 02	411	0.3−	0.5+	1996 06 10	809	0.0	0.3+	1998 01 02	704	0.8−	0.2−
1995 01 02	411	0.3−	0.7+	1996 06 10	809	0.6+	0.8+	1998 01 02	704	0.4−	0.2+
1995 01 05	411	0.3+	0.5−	1997 11 02	367	0.5+	0.4+	1998 01 02	704	0.4+	1.5+
1995 01 07	411	0.2−	0.4+	1997 11 02	367	0.7+	0.4+	1998 01 02	704	1.8−	1.2+
1995 01 07	411	0.1−	0.4−	1997 11 29	704	0.8−	1.0+				
1996 05 15	691	0.1−	0.5−	1997 11 29	704	0.8−	0.7−				

(8208)∗ 1995 DL_2

Discovered 1995 Feb. 28 by P. Sicoli and P. Ghezzi at Sormano.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	87.80634		(2000.0)			
n	0.24346413	ω	215.62455		+0.66352889	+0.70930681
a	2.5400722	Ω	97.25003		−0.61876825	+0.69905614
e	0.2476142	*i*	13.87787		−0.42054163	+0.09057800
P	4.05	*H*	13.1	*G*	0.15	*U* 1

Residuals in seconds of arc

1988 06 13	675	1.1+	0.6−	1995 03 31	587	0.1−	0.2+	1996 05 16	587	0.3+	0.1−
1988 06 13	675	1.0−	0.8+	1995 03 31	587	0.0	0.3−	1996 05 21	801	0.3+	0.9−
1995 02 28	587	0.4−	0.0	1995 04 03	587	0.5+	0.4−	1996 05 21	801	0.3+	0.3−
1995 02 28	587	0.8+	0.2−	1995 04 03	587	0.2−	0.4+	1996 06 11	587	0.2+	0.4+
1995 03 04	587	0.0	0.2+	1995 04 17	587	1.0−	0.3−	1996 06 11	587	0.6−	0.9+
1995 03 04	587	0.1+	0.1−	1995 04 17	587	0.0	0.3+	1996 06 11	587	0.1+	0.2+
1995 03 04	587	0.3−	0.0	1995 04 28	587	0.1+	0.7+	1996 06 13	801	0.1−	0.1+
1995 03 07	587	0.1+	1.6+	1995 04 28	587	0.2−	0.8−	1996 06 13	801	0.0	0.5−
1995 03 07	587	0.1−	0.9+	1996 04 14	587	0.2+	0.1−	1997 11 08	587	0.1−	0.6−
1995 03 07	587	0.5−	0.2−	1996 04 14	587	0.3−	0.1−	1997 11 08	587	0.1+	0.0
1995 03 09	587	0.3+	0.8+	1996 04 14	587	0.4−	0.3+	1997 11 08	587	0.1+	1.0−
1995 03 09	587	0.4+	0.4+	1996 04 16	587	0.9−	0.5−	1997 12 01	587	0.4+	0.9−
1995 03 22	587	0.1−	0.7−	1996 04 16	587	0.5−	0.8−	1997 12 01	587	0.7+	0.7−
1995 03 22	587	0.1+	0.0	1996 05 15	801	0.3+	0.0	1997 12 23	587	0.2−	0.2+
1995 03 22	587	0.5−	0.2+	1996 05 15	801	0.2+	0.1−	1997 12 23	587	0.3+	0.3+

1995 03 23	587	0.4+	0.8−	1996 05 16	587	0.1+	1.0−	1997 12 27	587	0.5+	0.8−
1995 03 23	587	0.0	0.6−	1996 05 16	587	0.7−	1.1−				

(8209)∗ 1995 DM$_2$

Discovered 1995 Feb. 28 by P. Sicoli and P. Ghezzi at Sormano.

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	140.28080		(2000.0)		**P**	**Q**	
n	0.23421103	ω	189.45400		−0.13537440	+0.97671500	
a	2.6065406	Ω	72.90441		−0.89728006	−0.04961350	
e	0.1674059	i	10.02814		−0.42019313	−0.20872544	
P	4.21	H	12.9	G	0.15	U	1

Residuals in seconds of arc

1993 12 16	691	0.1−	0.3+	1995 03 22	587	0.0	0.4−	1996 06 09	587	0.2−	0.9+
1993 12 16	691	0.1−	0.2+	1995 03 22	587	0.3−	0.1−	1996 06 09	587	0.7−	0.1+
1993 12 16	691	0.0	0.1+	1995 03 23	587	0.1−	0.4+	1996 06 10	587	0.1−	0.4+
1995 02 28	587	0.5+	0.3−	1995 03 23	587	0.5−	0.3+	1996 06 11	587	0.3+	0.8+
1995 02 28	587	0.8+	0.3−	1995 03 31	587	0.2+	0.1−	1996 06 11	587	0.7+	0.2+
1995 03 04	587	0.1+	0.1+	1995 03 31	587	0.2+	0.4−	1997 11 03	587	0.8+	0.3+
1995 03 04	587	0.4−	0.3+	1995 04 03	587	0.3−	0.0	1997 11 03	587	0.7+	0.4+
1995 03 04	587	0.1−	0.5+	1995 04 03	587	0.2+	0.7−	1997 12 01	587	0.9−	0.2−
1995 03 06	587	0.3+	0.5+	1995 04 17	587	1.0−	0.3+	1997 12 01	587	0.8−	0.0
1995 03 06	587	0.1+	0.3+	1995 04 17	587	0.6−	0.8+	1997 12 23	587	0.1+	0.2+
1995 03 07	587	0.0	0.3+	1995 04 28	587	0.0	0.7+	1997 12 23	587	0.0	0.1+
1995 03 07	587	0.2−	0.4+	1995 04 28	587	0.5−	0.5+	1997 12 27	587	0.7−	0.6+
1995 03 09	587	0.6+	0.0	1995 05 20	587	0.2+	1.5−				
1995 03 09	587	0.5+	0.0	1995 05 20	587	0.6+	0.2−				

(8210)∗ 1995 EH = 1972 GN$_1$ = 1982 YN$_3$ = 1985 SY$_4$

Discovered 1995 Mar. 5 by T. Kobayashi at Oizumi.

Id. T. Kobayashi (*MPC* 25074)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	201.56648		(2000.0)		**P**	**Q**	
n	0.25496313	ω	212.66938		−0.68741310	+0.72564482	
a	2.4631137	Ω	13.98474		−0.63678874	−0.58231187	
e	0.0964769	i	7.14232		−0.34923250	−0.36654123	
P	3.87	H	13.2	G	0.15	U	2

Residuals in seconds of arc

1972 04 09	805	1.3−	0.1−	1993 10 24	691	0.2−	0.2+	1995 03 08	411	0.0	0.1−
1972 04 09	805	0.0	1.2−	1995 03 05	411	0.3+	0.3+	1995 03 11	411	0.8+	0.2−
1972 04 10	805	0.5−	0.1+	1995 03 05	411	0.1+	0.1+	1995 03 11	411	0.2+	0.0
1972 04 10	805	0.2+	1.3−	1995 03 05	411	0.1−	0.1+	1995 03 11	411	1.1+	0.7−
1982 12 22	095	0.1−	0.8+	1995 03 07	411	0.5−	0.3−	1996 10 13	689	0.4−	0.0
1985 09 20	095	1.8+	2.1−	1995 03 07	411	1.5−	0.7−	1997 11 02	367	0.3−	0.2+
1985 09 22	095	0.6+	0.7−	1995 03 07	411	0.4+	1.2+	1997 11 02	367	1.1+	0.1+
1993 10 24	691	0.2−	0.1+	1995 03 08	411	0.6−	0.2+	1997 11 24	367	0.5−	0.7−
1993 10 24	691	0.4−	0.2+	1995 03 08	411	0.1+	0.4−	1997 11 24	367	0.0	0.5−

(8211)∗ 1995 EB$_1$ = 1975 TL$_2$ = 1979 YS$_7$ = 1991 AR

Discovered 1995 Mar. 5 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (*MPC* 25074)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	359.99191		(2000.0)		**P**	**Q**	
n	0.26985103	ω	302.55120		+0.50616304	−0.86106748	
a	2.3716649	Ω	116.96593		+0.80842902	+0.45408391	
e	0.1956985	i	3.12568		+0.30040224	+0.22884624	
P	3.65	H	13.9	G	0.15	U	2

Residuals in seconds of arc

1975 10 03	095	0.3+	1.1−	1995 03 06	399	1.3+	0.5−	1997 11 01	138	0.1+	0.6+
1975 10 13	095	0.3+	2.1−	1995 03 06	399	0.5−	1.8+	1997 11 01	138	0.0	0.1−
1979 12 23	095	2.0+	1.1+	1995 03 07	033	0.1−	0.1+	1997 11 01	138	0.3−	0.2+
1991 01 12	885	1.8−	0.8−	1995 03 23	691	1.1−	0.0	1997 11 02	399	2.0−	0.6−
1991 01 12	885	0.2−	0.1−	1995 03 23	691	0.8−	0.2−	1997 11 02	399	0.9−	0.2−
1991 01 15	885	2.1−	0.7+	1995 03 23	691	0.5−	0.6−	1997 11 24	399	0.2+	0.6−
1991 01 15	885	0.4+	2.0−	1995 03 23	033	0.6+	0.7+	1997 11 24	399	1.1+	0.9+
1995 02 05	691	0.8−	0.1+	1995 03 23	033	0.3+	0.4+	1997 12 24	426	0.6+	0.5+
1995 02 05	691	0.0	0.8−	1995 03 26	399	0.5−	0.1+	1997 12 24	426	0.7+	0.4+
1995 02 05	691	0.4−	0.1−	1995 03 26	399	1.2+	0.4−	1997 12 24	426	0.4+	0.3+
1995 03 04	033	0.4+	0.3−	1997 10 25	399	0.5−	0.4+	1997 12 25	426	1.1+	0.6+
1995 03 05	033	0.7+	1.1−	1997 10 25	399	0.0	0.5−	1997 12 25	426	1.0+	0.8+
1995 03 05	399	0.1+	0.3−	1997 11 01	399	0.8−	0.0	1997 12 25	426	1.0+	0.7+
1995 03 05	399	1.1+	0.4+	1997 11 01	399	0.3−	0.9+				

(8212)∗ 1995 EF$_1$ = 1958 DG = 1980 BN$_6$

Discovered 1995 Mar. 6 by S. Otomo at Kiyosato.

Id. S. Nakano (*MPC* 25074)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	293.33064		(2000.0)		**P**	**Q**	
n	0.26760436	ω	92.88150		−0.80344418	−0.59401654	
a	2.3849206	Ω	50.67970		+0.52348322	−0.73702619	
e	0.1503679	i	2.98396		+0.28362435	−0.32239222	
P	3.68	H	13.8	G	0.15	U	2

Residuals in seconds of arc

1958 02 18	760	0.6+	1.0−	1995 03 11	894	0.2−	0.4+	1997 11 06	704	0.4+	1.2−
1958 02 18	760	(4.7+	2.7−)	1995 03 11	894	0.7−	0.3+	1997 11 06	704	0.9+	0.7−
1980 01 22	095	0.5−	0.0	1995 03 20	894	0.0	0.0	1997 11 29	704	0.4−	0.4+
1980 01 23	095	0.7−	0.4+	1995 03 20	894	1.2+	0.6−	1997 11 29	704	1.3+	1.1+
1991 01 19	675	0.6−	0.1+	1995 03 21	894	0.6+	0.4+	1997 11 29	704	0.8−	2.1+
1991 01 19	675	0.8−	0.1+	1995 03 21	894	0.6−	0.1+	1997 11 29	704	0.9+	0.7+
1993 09 21	675	0.8−	0.5−	1995 04 22	033	0.0	0.1+	1997 11 29	704	1.4−	0.7+
1993 09 21	675	1.4−	1.2−	1995 04 22	033	0.1−	0.4+	1997 12 01	327	0.4−	0.1−
1993 09 23	675	1.3−	0.6−	1995 04 24	033	0.6−	1.2+	1997 12 01	327	0.3−	0.1−
1993 10 12	675	0.4+	1.5+	1997 10 24	327	0.0	0.0	1997 12 01	327	0.6−	0.1+
1993 10 12	675	0.9+	0.3−	1997 10 24	327	0.1+	0.2+	1997 12 08	327	0.0	0.2−
1995 03 06	894	0.2+	0.4+	1997 10 24	327	0.1−	0.1−	1997 12 08	327	0.2−	0.2−
1995 03 06	894	1.1−	0.9−	1997 11 06	704	1.1+	0.0	1997 12 08	327	0.1−	0.3−
1995 03 07	894	1.2+	0.9−	1997 11 06	704	1.2+	0.7−				
1995 03 07	894	0.7+	0.7−	1997 11 06	704	1.2+	0.4−				

(8213)∗ 1995 FE = 1984 FL

Discovered 1995 Mar. 26 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 25222)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	295.36022		(2000.0)		**P**	**Q**	
n	0.26796920	ω	134.50615		−0.77424995	−0.63085954	
a	2.3827554	Ω	6.95024		+0.39389390	−0.54283441	
e	0.2143223	i	24.68164		+0.49536311	−0.55438889	
P	3.68	H	13.1	G	0.15	U	2

Residuals in seconds of arc

1984 03 29	675	(0.1+	2.9+)	1995 03 26	905	0.2+	1.0−	1995 05 02	801	0.9−	0.2+
1984 03 29	675	0.8+	0.5+	1995 03 26	905	0.1+	0.9−	1995 05 17	905	1.2+	1.4+
1984 03 30	675	0.1−	0.6+	1995 03 27	905	1.8+	0.7−	1995 05 17	905	(0.2−	3.4−)
1984 03 30	675	1.1+	1.0+	1995 03 27	905	1.1−	0.8−	1997 11 01	385	0.1+	0.0
1993 09 15	691	0.7−	0.4+	1995 03 31	905	0.1−	0.0	1997 11 01	385	0.2−	0.1+
1993 09 15	691	0.1−	0.5+	1995 03 31	905	1.1−	1.5−	1997 11 06	385	0.4−	0.6−
1993 09 15	691	0.6−	0.4+	1995 04 04	905	0.1−	0.7+	1997 11 06	385	0.0	0.3−
1993 09 18	675	0.7+	0.2−	1995 04 04	905	0.3−	1.0+	1997 12 19	758	1.5−	0.5+
1993 09 18	675	0.2+	0.5+	1995 04 27	801	0.5−	0.1+	1997 12 20	758	0.2−	0.4+
1993 09 22	675	0.6+	0.5−	1995 04 27	801	0.8−	0.1+				
1993 09 22	675	0.3+	0.3+	1995 05 02	801	0.9+	0.9+				

(8214)∗ 1995 FH = 1982 DS$_2$

Discovered 1995 Mar. 29 by S. Mottola at the European Southern Observatory.

Id. G. V. Williams (*MPC* 25075)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P		Q	
M	180.45529		(2000.0)					
n	0.22993733	ω	1.95426		−0.28913567		+0.92801842	
a	2.6387387	Ω	251.29991		−0.88162452		−0.35375860	
e	0.0551891	i	14.35927		−0.37301311		+0.11677615	
P	4.29	H	12.9	G	0.15	U	1	

Residuals in seconds of arc

1982 02 18	809	0.0	0.2−	1995 03 30	809	0.0	0.2−	1996 08 08	596	0.1−	0.6−
1982 02 24	809	0.0	0.1+	1995 03 30	809	0.0	0.2−	1996 08 09	596	0.2−	0.4−
1995 03 29	809	0.3−	0.1−	1995 03 30	809	0.1+	0.2−	1996 08 09	596	0.3+	0.1+
1995 03 29	809	0.3−	0.1+	1995 03 30	608	0.6−	0.2+	1996 08 09	596	0.3−	0.1−
1995 03 29	809	0.2−	0.0	1995 03 30	608	0.7+	0.4−	1996 09 15	801	0.8+	0.7−
1995 03 29	809	0.3−	0.0	1995 03 31	608	0.1−	0.5−	1996 09 15	801	0.5+	0.0
1995 03 29	809	0.3−	0.1+	1995 03 31	608	0.4−	0.2−	1997 10 30	809	0.3+	0.6−
1995 03 29	809	0.2−	0.0	1995 03 31	608	0.2−	0.3−	1997 10 30	809	0.2+	0.4−
1995 03 29	809	0.2−	0.0	1995 03 31	608	0.3−	0.1−	1997 11 29	704	(3.2−	0.0)
1995 03 29	809	0.2−	0.1−	1995 04 06	809	0.1−	0.1+	1997 11 29	704	(2.7−	0.2−)
1995 03 29	809	0.2−	0.1−	1995 04 06	809	0.2−	0.1+	1997 11 29	704	2.0−	0.2−
1995 03 29	809	0.2−	0.1−	1995 04 08	608	0.3+	0.9−	1997 11 29	704	(2.8−	1.5+)
1995 03 29	809	0.1−	0.0	1995 04 08	608	0.1+	0.7−	1997 11 29	704	(3.3−	0.4+)
1995 03 29	809	0.2−	0.1−	1995 04 10	608	0.1+	0.5+	1997 12 31	704	0.4+	0.2+
1995 03 29	809	0.3−	0.0	1995 04 10	608	0.1+	0.6+	1997 12 31	704	0.2+	0.0
1995 03 29	809	0.1−	0.1+	1995 04 12	608	0.7+	0.0	1997 12 31	704	0.1+	0.0
1995 03 29	809	0.1−	0.0	1995 04 12	608	0.6+	0.2+	1997 12 31	704	0.1−	0.2+
1995 03 29	809	0.1−	0.1−	1995 04 12	608	1.0+	0.2−	1998 01 02	704	0.5+	0.4−
1995 03 29	809	0.1−	0.1+	1996 08 06	596	0.1−	0.5+	1998 01 02	704	0.3+	0.1−
1995 03 29	809	0.2+	0.2+	1996 08 06	596	0.1+	0.4+	1998 01 02	704	0.3+	0.7−
1995 03 29	809	0.2+	0.3+	1996 08 06	596	0.1+	0.1+	1998 01 02	704	0.0	0.0
1995 03 29	608	0.5+	0.2−	1996 08 08	596	0.3−	0.5−				
1995 03 29	608	0.0	0.2+	1996 08 08	596	0.2−	0.6−				

(8215)∗ 1995 FZ = 1977 EE$_4$ = 1989 TZ$_{16}$

Discovered 1995 Mar. 31 by Y. Shimizu and T. Urata at Nachi-Katsuura Observatory.

Id. G. V. Williams (*MPC* 27718)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P		Q	
M	241.31837		(2000.0)					
n	0.27351077	ω	160.63664		−0.74726857		+0.66367133	
a	2.3504612	Ω	60.99056		−0.61464454		−0.67106676	
e	0.0848754	i	2.20291		−0.25259014		−0.33046901	
P	3.60	H	14.1	G	0.15	U	2	

Residuals in seconds of arc

1977 03 15	381	0.2−	0.2+	1995 03 31	905	0.0	1.2−	1996 09 14	385	0.8−	0.2+
1977 03 15	381	0.5−	0.1−	1995 04 03	905	0.2−	1.2+	1996 09 14	385	0.5−	0.4+
1989 10 07	809	0.7−	2.0+	1995 04 03	905	0.1+	0.1+	1996 09 14	385	0.5−	0.1−
1989 10 07	809	0.8+	0.2+	1995 04 07	905	0.3−	0.4−	1997 12 05	385	0.8+	0.8+
1989 10 07	809	2.4+	1.6−	1995 04 07	905	(2.4+	0.1−)	1997 12 05	385	0.3+	1.4−
1994 12 09	691	1.5−	0.4+	1995 04 07	905	1.7+	0.8−	1997 12 31	886	1.0−	1.1+
1994 12 09	691	1.7−	0.6+	1995 04 20	905	0.3−	0.4+	1997 12 31	886	(2.5+	1.5+)
1994 12 09	691	1.8−	0.5+	1995 04 20	905	0.0	1.2+	1997 12 31	385	0.3−	0.8−
1995 03 27	905	1.9+	0.4−	1996 08 14	566	0.1−	0.7−	1997 12 31	385	0.7+	0.5−
1995 03 27	905	0.4−	0.4−	1996 08 14	566	0.1−	0.4−	1998 01 07	886	(1.0−	2.4+)
1995 03 31	905	0.4+	1.2−	1996 08 14	566	0.1−	0.6−	1998 01 07	886	0.6−	1.0+

(8216)∗ 1995 FX$_{14}$ = 1992 PN$_5$

Discovered 1995 Mar. 27 by Spacewatch at Kitt Peak.

Id. T. Kobayashi (*MPC* 25335)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P		Q	
M	98.10178		(2000.0)					
n	0.24059763	ω	269.16782		+0.96653935		+0.24608544	
a	2.5602074	Ω	76.58388		−0.19561510		+0.88969731	
e	0.2164630	i	4.26931		−0.16594100		+0.38455253	
P	4.10	H	14.8	G	0.15	U	1	

Residuals in seconds of arc

1992 08 03	675	0.6−	0.7−	1995 04 04	691	0.0	0.7−	1997 12 20	327	0.5+	0.2−
1992 08 03	675	0.3+	0.9−	1995 04 04	691	0.6−	0.3−	1997 12 20	327	0.7+	0.1−
1992 08 06	675	0.5+	0.6−	1995 04 08	691	0.0	0.7−	1997 12 20	327	0.3+	0.1−
1992 08 06	675	0.3−	0.0	1995 04 08	691	0.1−	0.6−	1997 12 21	691	1.5−	0.0
1992 08 24	675	1.3+	0.5+	1995 04 08	691	0.1−	0.9−	1997 12 21	691	1.4−	0.3−
1992 08 24	675	0.2−	0.5−	1996 10 01	684	0.1+	0.9−	1997 12 21	691	1.5−	0.0
1994 01 19	691	0.0	0.0	1996 10 01	684	0.1−	1.0−	1997 12 23	327	0.1−	0.1−
1994 01 19	691	0.5−	0.1−	1996 10 01	684	0.2+	1.3−	1997 12 23	327	0.0	0.3−
1994 01 19	691	0.6−	0.3−	1996 10 02	684	0.5+	1.7−	1997 12 23	327	0.3+	0.7−
1995 03 27	691	0.1−	0.3−	1996 10 02	684	(0.1+	2.1−)	1997 12 23	327	0.8+	0.2−
1995 03 27	691	0.3−	0.1−	1996 10 02	684	0.0	1.3−	1997 12 24	327	0.7+	0.2+
1995 03 27	691	0.1−	0.6−	1997 11 30	691	0.8−	0.3−	1997 12 24	327	1.0+	0.0
1995 04 01	691	0.3−	0.5−	1997 11 30	691	1.0−	0.4−	1997 12 24	327	0.8+	0.8−
1995 04 01	691	0.4−	0.6−	1997 12 05	691	0.2−	0.1−	1997 12 29	327	0.4+	0.7−
1995 04 01	691	0.0	0.4−	1997 12 05	691	0.1−	0.3−	1997 12 29	327	0.2−	0.8−
1995 04 04	691	0.2−	0.1−	1997 12 05	691	0.2−	0.4−	1997 12 29	327	0.9+	0.5−

(8217)∗ 1995 HC = 1996 RH$_5$

Discovered 1995 Apr. 21 by P. Pravec and L. Šarounová at Ondřejov.

Id. T. Urata (*MPC* 28075)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P		Q	
M	168.45946		(2000.0)					
n	0.29198300	ω	134.49880		+0.69888558		+0.71523348	
a	2.2502512	Ω	179.83873		−0.66736389		+0.65216851	
e	0.1744749	i	2.36456		−0.25726326		+0.25123155	
P	3.38	H	14.7	G	0.15	U	2	

Residuals in seconds of arc

1949 11 19	675	0.4−	0.5+	1996 09 14	905	0.1−	0.2+	1997 02 07	557	0.6+	0.4+
1949 11 19	675	0.2+	0.2+	1996 09 14	905	0.2+	0.6+	1997 11 02	557	1.1+	0.6+
1995 04 21	557	0.3+	0.3+	1996 09 18	385	0.6+	0.7+	1997 11 02	557	0.7−	0.2+
1995 04 21	557	0.2+	0.6+	1996 09 18	385	0.2−	0.6+	1997 11 02	557	0.0	0.2−
1995 04 22	557	0.6+	0.2+	1996 09 18	385	0.1+	0.8+	1997 11 10	557	0.4−	0.4−
1995 04 22	557	0.5+	0.7+	1996 10 05	905	1.0−	0.3−	1997 11 10	557	0.2−	0.9+
1995 04 22	557	0.7+	0.4+	1996 10 05	905	0.9−	0.3−	1997 12 31	557	0.1+	0.3−
1995 04 23	557	0.3−	1.1+	1996 12 28	557	0.4+	0.3−	1997 12 31	557	0.1+	0.3−
1995 04 23	557	0.6+	0.7+	1996 12 28	557	0.5+	0.4−	1998 01 08	557	0.0	0.6−
1995 05 24	557	0.4−	0.5−	1996 12 28	557	0.6−	0.3−	1998 01 08	557	0.6−	0.3−
1995 05 24	557	0.5−	0.4+	1997 02 07	557	0.2+	0.5+				

(8218)∗ 1996 JH = 1979 SR$_6$ = 1979 TP = 1986 TC$_9$

Discovered 1996 May 8 by R. H. McNaught at Siding Spring.

Id. G. V. Williams (*MPC* 27452), N. S. Chernykh (d, *ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P		Q	
M	93.08811		(2000.0)					
n	0.27952861	ω	108.21156		+0.80417022		+0.59347994	
a	2.3166044	Ω	215.40507		−0.56463084		+0.74534341	
e	0.1592906	i	3.26957		−0.18574788		+0.30371821	
P	3.53	H	14.4	G	0.15	U	1	

Residuals in seconds of arc

1971 05 14	675	(4.1+	1.9−)	1996 05 08	413	0.6−	0.5−	1997 11 29	704	0.4−	0.8−
1971 05 14	675	2.0+	0.8−	1996 05 09	413	(2.6−	1.5+)	1997 11 29	704	1.4−	0.1+
1971 05 16	675	0.3−	1.3+	1996 05 09	413	(3.4−	1.8+)	1997 11 29	704	1.2−	0.1−
1979 09 23	095	1.7−	0.9−	1996 05 15	566	0.2−	0.5−	1997 12 04	704	0.0	0.2+
1979 10 14	095	(4.2−	1.1−)	1996 05 15	566	0.3−	0.4−	1997 12 04	704	1.1+	0.8−

1986 10 02	095	0.5+	1.6+	1996 05 15	566	0.3−	0.6−	1997 12 04	704	0.1−	0.6−
1993 09 20	675	1.7+	1.2−	1996 05 21	566	0.2+	0.4−	1997 12 04	704	0.6−	1.6−
1996 03 18	566	0.0	0.1+	1996 05 21	566	0.2−	0.8−	1997 12 26	566	1.7+	0.0
1996 03 18	566	0.3−	0.6−	1996 05 21	566	0.7−	0.8−	1997 12 26	566	2.0+	0.6−
1996 03 18	566	0.2+	0.2−	1997 11 29	704	1.4−	0.7+	1997 12 26	566	1.5+	0.6−
1996 05 08	413	(7.3−	3.4+)	1997 11 29	704	0.5−	0.1−				

(8219)∗ 1996 JL = 1974 SW$_3$ = 1974 TW$_1$ = 1979 YU$_3$ = 1983 RP$_6$ = 1988 SV$_4$ = 1993 UG$_3$

Discovered 1996 May 10 by R. H. McNaught and T. Kojima at the YGCO Chiyoda Station.

Id. G. V. Williams (*MPC* 27319, *MPC* 30984)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	344.69769		(2000.0)	**P**	**Q**	
n	0.21243617	ω	175.80776	+0.90965156	−0.40861133	
a	2.7817434	Ω	208.67604	+0.37643072	+0.88691561	
e	0.1633288	*i*	8.94823	+0.17559598	+0.21544716	
P	4.64	*H*	12.9	*G* 0.15	*U* 1	

Residuals in seconds of arc

1974 09 22	095	0.9+	0.2−	1996 05 14	900	0.2−	0.5−	1997 08 24	560	0.4+	0.2+
1974 10 10	095	(4.2+	5.9−)	1996 05 14	867	0.2−	0.5−	1997 08 24	560	0.5+	0.3+
1979 12 18	095	0.8−	0.6−	1996 05 14	867	0.2−	0.5−	1997 08 24	560	0.3+	0.4+
1983 09 05	095	0.1+	1.2−	1996 05 14	867	0.1−	0.4−	1997 08 24	560	0.5+	0.2+
1988 09 17	095	0.6−	0.1+	1996 05 22	566	0.3+	0.3−	1997 08 30	566	0.2−	0.2−
1993 10 19	675	0.5+	1.6−	1996 05 22	566	0.2−	0.0	1997 08 30	566	0.0	0.2−
1993 10 19	675	0.3+	1.7−	1996 05 22	566	0.4−	0.7−	1997 08 30	566	0.2−	0.1−
1993 10 20	675	(0.3−	2.4−)	1997 08 23	560	0.5−	0.1−	1997 11 30	566	0.0	0.3+
1996 05 10	897	0.6−	0.3−	1997 08 23	560	0.1−	0.1+	1997 11 30	566	0.3+	0.3+
1996 05 10	897	(0.4−	2.1−)	1997 08 23	560	0.5−	0.2−	1997 11 30	566	0.1−	0.4+
1996 05 10	897	1.5+	0.3−	1997 08 23	560	0.5−	0.2+				
1996 05 14	900	0.2−	0.0	1997 08 23	560	0.1−	0.1+				

(8220)∗ 1996 JD$_1$ = 1989 GO$_3$

Discovered 1996 May 13 by T. Okuni at Nanyou.

Id. S. Nakano (*MPC* 27320)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	122.88553		(2000.0)	**P**	**Q**	
n	0.28933075	ω	121.65939	+0.29116461	+0.95652981	
a	2.2639821	Ω	165.24087	−0.89825819	+0.27929746	
e	0.1335452	*i*	3.72474	−0.32917380	+0.08392648	
P	3.41	*H*	15.0	*G* 0.15	*U* 1	

Residuals in seconds of arc

1989 04 03	809	0.1−	0.3+	1996 05 13	358	0.4−	0.5+	1997 10 30	566	0.4−	0.0
1989 04 03	809	0.3+	0.8+	1996 05 13	358	0.5+	1.1+	1997 10 30	566	0.2−	0.3−
1989 04 03	809	0.7+	1.1+	1996 05 14	358	0.1−	0.6+	1997 10 30	566	0.2−	0.3−
1989 04 06	809	0.4−	0.3−	1996 05 14	358	1.2−	0.3−	1997 11 29	704	0.4−	0.7+
1989 04 06	809	0.4+	0.1+	1996 05 19	358	1.1+	0.7−	1997 11 29	704	0.3+	0.5−
1989 04 06	809	0.2−	0.2−	1996 05 19	358	0.1+	2.0−	1997 11 29	704	0.5+	0.2−
1993 07 24	691	0.6−	0.6+	1996 06 09	358	1.8+	0.8−	1997 11 29	704	0.0	0.9−
1993 07 24	691	0.4+	0.1−	1996 06 09	358	1.8+	0.7−	1997 11 29	704	0.4+	0.5−
1993 07 24	691	0.2−	0.4+	1996 06 09	358	0.1+	0.1−	1997 12 04	704	0.6−	0.3+
1996 04 13	691	1.5−	0.3+	1997 10 30	566	0.4−	0.1+	1997 12 04	704	0.7+	1.4+
1996 04 13	691	1.6−	0.0	1997 10 30	566	0.3+	0.1+	1997 12 04	704	0.9+	0.4−
1996 04 13	691	1.4−	0.5−	1997 10 30	566	0.6−	0.2−	1997 12 04	704	(3.0−	1.5−)

(8221)∗ 1996 NA$_4$ = 1991 PA$_4$ = 1995 KW$_4$

Discovered 1996 July 14 by E. W. Elst at the European Southern Observatory.

Id. B. G. Marsden (*MPC* 27922)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	90.18474		(2000.0)	**P**	**Q**	
n	0.20020331	ω	149.49836	+0.88552021	+0.46459845	
a	2.8939335	Ω	182.81866	−0.43215818	+0.82250109	
e	0.0700371	*i*	1.73982	−0.17056746	+0.32808571	
P	4.92	*H*	13.2	*G* 0.15	*U* 1	

Residuals in seconds of arc

1991 08 03	809	2.0+	0.2−	1996 08 08	809	0.6−	0.4+	1997 11 30	566	(1.3+	2.2−)
1991 08 03	809	0.6+	0.1+	1996 08 08	809	0.9−	0.2−	1997 11 30	566	(1.1+	2.8−)
1991 08 03	809	0.0	0.1−	1996 08 09	809	0.1+	0.3+	1997 12 04	704	(2.1+	1.4−)
1991 08 04	809	1.6−	0.8−	1996 08 09	809	0.1+	0.4+	1997 12 04	704	0.0	0.6−
1991 08 05	809	0.0	0.1+	1996 08 09	809	0.5+	0.9+	1997 12 04	704	0.5−	0.9+
1991 08 05	809	0.9−	0.2+	1996 09 08	809	(3.7+	1.6+)	1997 12 04	704	0.3−	0.7+
1991 08 05	809	0.1−	0.6+	1996 09 08	809	(2.9+	0.8+)	1997 12 04	704	(1.2−	2.3+)
1995 05 27	691	1.5−	0.5−	1996 09 08	809	(3.2+	1.3+)	1997 12 05	704	0.9−	0.4+
1995 05 27	691	1.4−	0.2−	1996 11 01	413	0.1+	1.0−	1997 12 05	704	1.2+	0.2+
1995 05 30	691	0.9+	0.0	1996 11 01	413	0.2+	1.0−	1997 12 05	704	0.8+	0.4−
1995 05 30	691	0.5+	0.2+	1997 11 26	704	0.3+	0.8+	1997 12 05	704	0.9−	0.1+
1995 05 30	691	1.3+	0.2−	1997 11 26	704	0.4+	0.7+	1997 12 05	704	1.2−	0.5−
1996 07 14	809	1.9+	0.5−	1997 11 26	704	0.2+	0.2+	1997 12 29	566	0.8+	1.3−
1996 07 14	809	(3.1+	0.7−)	1997 11 29	704	(2.3−	0.1+)	1997 12 29	566	0.7+	1.1−
1996 07 14	809	(2.4+	0.6−)	1997 11 29	704	(2.6−	0.5−)	1997 12 29	566	1.1+	1.4−
1996 07 16	809	(2.2+	1.8−)	1997 11 29	704	(2.2−	1.1−)	1998 01 03	910	0.6−	0.2+
1996 07 16	809	(2.2+	2.2−)	1997 11 29	704	(2.6−	0.2−)	1998 01 03	910	0.6−	0.4+
1996 07 16	809	(2.0+	2.7−)	1997 11 29	704	(2.5−	1.2−)	1998 01 03	910	0.4−	0.1+
1996 08 08	809	1.0−	0.3−	1997 11 30	566	(1.6+	2.5−)				

(8222)∗ 1996 OX = 1992 GW$_5$ = 1995 CU$_{10}$

Discovered 1996 July 22 at Kleť.

Id. G. V. Williams (*MPC* 28077)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	165.22740		(2000.0)	**P**	**Q**	
n	0.30055037	ω	130.60230	+0.40084174	+0.91588381	
a	2.2072823	Ω	162.98929	−0.86160079	+0.38501919	
e	0.1390494	*i*	4.30711	−0.31140003	+0.11365325	
P	3.28	*H*	14.9	*G* 0.15	*U* 1	

Residuals in seconds of arc

1992 04 03	033	0.5+	0.6+	1996 08 01	046	0.3+	0.2−	1996 09 18	327	0.0	0.8+
1992 04 03	033	0.4+	0.7+	1996 08 05	046	0.2+	0.3−	1996 09 19	046	0.1+	0.3+
1993 09 21	675	0.1−	0.8−	1996 08 05	046	0.3+	0.5−	1996 09 19	046	0.5−	0.1+
1993 09 21	675	1.0−	0.9−	1996 08 09	046	0.2+	0.7−	1996 09 19	046	0.5−	0.1−
1993 09 23	675	1.5−	0.1−	1996 08 09	046	0.2−	0.4−	1996 09 30	046	0.0	0.5+
1993 10 12	675	1.0+	0.3+	1996 08 09	046	0.2+	1.0−	1996 09 30	046	0.1−	0.5+
1993 10 12	675	1.9+	0.5+	1996 08 15	046	0.6+	0.1−	1996 09 30	046	0.1+	0.4+
1995 02 08	691	0.7−	0.3+	1996 08 15	046	0.3+	0.6−	1996 10 11	046	0.3−	0.1−
1995 02 08	691	0.6−	0.5−	1996 08 15	046	0.3+	0.2−	1996 10 11	046	0.2−	0.2+
1996 07 22	046	0.1−	0.1+	1996 08 15	046	0.3+	0.3−	1996 10 11	046	0.5−	0.0
1996 07 22	046	0.2−	0.2+	1996 08 18	046	0.4+	0.0	1996 10 14	046	0.2−	0.6+
1996 07 22	046	0.1−	0.1+	1996 08 18	046	0.3+	0.2−	1996 10 14	046	0.2−	0.2+
1996 07 23	046	0.1−	0.1+	1996 08 18	046	0.4+	0.0	1997 11 01	046	0.2−	0.4−
1996 07 23	046	0.0	0.2+	1996 08 20	046	0.0	0.2−	1997 11 01	046	0.6−	0.3−
1996 07 24	046	0.1−	0.0	1996 08 20	046	0.1+	0.2−	1997 11 01	046	0.5+	0.2−
1996 07 24	046	0.2−	0.1−	1996 08 20	046	0.0	0.3−	1997 11 02	046	0.3+	0.3−
1996 07 24	046	0.0	0.0	1996 08 22	046	0.2−	0.3−	1997 11 02	046	0.3+	0.6−
1996 07 24	046	0.1−	0.0	1996 08 22	046	0.2+	0.1+	1997 11 02	046	0.3+	0.1−
1996 07 24	046	0.1−	0.0	1996 08 22	046	0.1−	0.3+	1997 12 27	046	0.0	0.5+
1996 07 26	046	0.5−	0.6+	1996 08 29	046	0.2+	0.1−	1997 12 27	046	0.3−	0.4+
1996 07 26	046	0.5−	0.8+	1996 08 29	046	0.4+	0.4+	1997 12 27	046	0.0	0.8+
1996 07 26	046	0.9−	0.8+	1996 08 29	046	0.2+	0.8+	1997 12 29	046	0.3+	0.3+
1996 08 01	046	0.1+	0.0	1996 09 18	327	0.7−	0.9+	1997 12 29	046	0.3+	0.5+
1996 08 01	046	0.2+	0.2−	1996 09 18	327	0.0	0.8+	1997 12 29	046	0.0	0.5+

(8223)∗ 1996 PD = 1994 AR$_{11}$

Discovered 1996 Aug. 6 by P. G. Comba at Prescott.

Id. B. G. Marsden (*MPC* 27923)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	89.83559		(2000.0)	**P**		**Q**	
n	0.21786383	ω	225.02417	+0.94522395		+0.29153864	
a	2.7353483	Ω	117.50696	−0.23297223		+0.91757665	
e	0.2272463	i	9.52836	−0.22863864		+0.27029301	
P	4.52	H	13.7	G 0.15		U 1	

Residuals in seconds of arc

1992 10 22	675	0.1−	0.1+	1996 08 10	684	0.2−	0.7+	1996 09 15	684	0.2+	0.5−
1992 10 22	675	0.9−	0.1+	1996 08 11	684	0.3−	0.4+	1996 10 01	684	(0.9+	2.2−)
1992 10 26	675	0.1−	0.9+	1996 08 11	684	0.3−	0.4+	1996 10 01	684	0.6+	1.8−
1992 10 26	675	0.7+	0.3−	1996 08 11	684	0.2−	0.6+	1996 10 01	684	0.4+	1.5−
1994 01 10	691	0.2−	0.1+	1996 08 12	684	0.1−	0.4+	1997 11 25	684	0.0	0.4+
1994 01 10	691	0.1−	0.4+	1996 08 12	684	0.1−	0.4+	1997 11 25	684	0.1+	0.4+
1994 01 10	691	0.2−	0.0	1996 08 12	684	0.1−	0.5+	1997 11 25	684	0.4+	0.1+
1994 01 17	691	0.4+	0.7+	1996 09 02	684	0.2−	0.8−	1997 11 27	684	0.5+	0.5+
1994 01 17	691	0.7+	0.2−	1996 09 02	684	0.2−	0.3−	1997 12 29	684	0.4−	0.1−
1996 08 06	684	0.6+	1.2+	1996 09 02	684	0.1−	0.2−	1997 12 29	684	0.2−	0.1−
1996 08 06	684	0.4+	1.3+	1996 09 04	684	0.0	0.5−	1997 12 29	684	0.4−	0.1−
1996 08 07	684	0.0	0.4+	1996 09 04	684	0.0	0.5−	1997 12 31	684	0.1−	0.0
1996 08 07	684	0.1−	0.5+	1996 09 04	684	0.1−	0.6−	1997 12 31	684	0.0	0.1+
1996 08 10	684	0.3−	0.6+	1996 09 15	684	0.1+	0.6−				
1996 08 10	684	0.2−	0.6+	1996 09 15	684	0.0	0.5−				

(8224)∗ 1996 PE = 1992 WQ$_9$ = 1995 HO$_5$

Discovered 1996 Aug. 6 by P. G. Comba at Prescott.

Id. G. V. Williams (*MPC* 28078)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	81.12956		(2000.0)	**P**		**Q**	
n	0.21080449	ω	238.11848	+0.96707394		+0.24402815	
a	2.7960792	Ω	107.67152	−0.20029300		+0.90491417	
e	0.1604379	i	4.34805	−0.15700542		+0.34868411	
P	4.68	H	14.2	G 0.15		U 1	

Residuals in seconds of arc

1992 10 21	675	0.7−	0.9−	1996 08 07	684	0.6+	0.2+	1996 09 08	684	0.4−	0.3−
1992 10 21	675	1.8+	0.9−	1996 08 07	684	0.8+	0.3+	1996 09 08	684	0.8−	0.5−
1992 11 17	691	0.4−	0.5+	1996 08 10	684	0.1+	0.2+	1996 09 08	684	0.8−	0.4−
1992 11 17	691	0.6−	0.6+	1996 08 10	684	0.2+	0.1+	1996 10 02	684	0.6−	0.4−
1992 11 17	691	0.7−	0.5+	1996 08 10	684	0.2+	0.2+	1996 10 02	684	0.4−	0.2−
1992 11 28	675	0.6+	0.5−	1996 08 11	684	0.1−	0.2+	1996 10 02	684	0.6−	0.1−
1992 11 28	675	0.0	0.6+	1996 08 11	684	0.0	0.3+	1997 11 02	684	0.2+	0.2−
1995 04 23	691	0.3−	0.1−	1996 08 11	684	0.0	0.2+	1997 11 02	684	0.2+	0.1−
1995 04 23	691	0.2−	0.3−	1996 08 12	684	0.1+	0.1+	1997 11 03	684	0.3−	0.2+
1995 04 23	691	0.1−	0.3−	1996 08 12	684	0.1−	0.2+	1997 11 03	684	0.4−	0.3−
1996 08 06	684	0.5+	0.3−	1996 08 12	684	0.0	0.1+	1997 12 27	684	0.2+	0.1+
1996 08 06	684	0.7+	0.3−	1996 09 04	684	0.5−	0.1+	1997 12 27	684	0.1+	0.1−
1996 08 06	684	0.7+	0.3−	1996 09 04	684	0.5−	0.0	1997 12 28	684	0.0	0.2−
1996 08 07	684	0.6+	0.2+	1996 09 04	684	0.5−	0.1+	1997 12 28	684	0.1+	0.1−

(8225)∗ 1996 QC = 1981 RP$_3$ = 1981 SM$_4$ = 1986 RK$_5$

Discovered 1996 Aug. 16 by C. F. Durman and B. M. Ewen-Smith at Portimão.

Id. G. V. Williams (*MPC* 27723), N. S. Chernykh (d, *ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	72.10841		(2000.0)	**P**		**Q**	
n	0.19194815	ω	199.71336	+0.91787343		+0.39644881	
a	2.9763233	Ω	136.91580	−0.36042470		+0.85204051	
e	0.2396966	i	1.53936	−0.16613972		+0.34184107	
P	5.13	H	12.4	G 0.15		U 1	

Residuals in seconds of arc

1981 09 02	095	0.6−	1.8−	1996 08 16	965	0.1+	0.4−	1996 09 12	965	0.9+	0.1−
1981 09 25	095	0.3+	0.3+	1996 08 17	965	0.6−	0.4−	1997 11 18	965	0.3+	0.4−
1986 07 27	413	0.9+	1.2−	1996 08 17	965	0.8−	0.6−	1997 11 19	965	0.2−	0.3−
1986 07 27	413	0.1−	0.1+	1996 08 18	965	0.8−	0.1−	1997 11 19	965	0.1−	0.1+
1986 09 05	809	0.0	0.4+	1996 08 19	965	1.1−	0.5+	1997 11 19	965	0.4−	0.0
1986 09 05	809	0.1+	0.4+	1996 08 19	965	0.1−	0.4+	1997 11 19	965	0.9−	1.5−
1986 09 05	809	0.3+	0.5+	1996 08 20	965	0.4−	0.9+	1997 11 22	965	0.2−	0.4−
1986 09 06	809	0.0	0.4−	1996 08 20	965	0.1−	0.4−	1997 11 22	965	0.5+	0.3−
1986 09 06	809	0.2+	0.4−	1996 08 21	965	0.6−	1.3+	1997 11 22	965	0.1−	0.7−
1986 09 06	809	0.1+	0.4−	1996 08 21	965	0.2−	0.7+	1997 11 28	965	0.0	0.3+
1986 09 08	095	1.3−	1.9+	1996 08 22	965	0.9−	0.1+	1997 11 28	965	0.1+	0.4−
1991 07 17	413	1.3+	0.1+	1996 08 23	965	0.0	0.8+	1997 11 28	965	0.5+	0.3−
1995 04 22	413	0.2+	0.1+	1996 08 23	965	0.1+	0.5−	1997 12 05	704	0.4+	0.8+
1996 07 21	566	0.6+	0.4+	1996 08 25	965	(0.2−	0.0)	1997 12 05	704	0.7−	0.0
1996 07 21	566	0.3+	0.4−	1996 08 29	965	0.6−	1.1−	1997 12 05	704	0.5+	1.4+
1996 07 21	566	0.3+	0.1+	1996 08 29	965	0.4+	0.8−	1997 12 05	704	1.5−	1.1+
1996 08 16	965	1.1+	0.4−	1996 09 12	965	0.8+	0.2+	1997 12 05	704	1.7+	1.1+
1996 08 16	965	0.5−	0.2−	1996 09 12	965	0.8+	0.9+				

(8226)∗ 1996 TF$_7$ = 1978 EH$_2$ = 1980 RV = 1985 RC$_5$ = 1988 EC$_2$

Discovered 1996 Oct. 5 by Y. Shimizu and T. Urata at the Nachi-Katsuura Observatory.

Id. T. Urata (*MPC* 28081)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	69.50970		(2000.0)	**P**		**Q**	
n	0.18823662	ω	195.49306	+0.90730732		−0.41949013	
a	3.0153193	Ω	189.46256	+0.40192252		+0.88529252	
e	0.1006098	i	10.03994	+0.12349783		+0.20071170	
P	5.24	H	11.8	G 0.15		U 2	

Residuals in seconds of arc

1978 03 05	095	1.5−	0.3−	1996 10 09	121	0.5−	0.4+	1996 11 04	385	0.5+	0.3−
1980 09 07	688	0.1−	1.2−	1996 10 09	121	0.2−	0.3+	1996 11 04	385	0.7+	1.1−
1980 09 07	688	0.2+	0.7−	1996 10 09	121	0.2−	0.8+	1996 12 08	385	0.5+	0.2+
1980 09 17	688	1.0+	2.2−	1996 10 09	121	0.0	0.9+	1996 12 08	385	0.4−	0.1−
1985 09 07	413	0.8+	0.2+	1996 10 09	121	0.6−	1.0+	1996 12 08	385	0.3+	0.5+
1985 09 07	413	0.7+	1.6+	1996 10 09	121	0.9−	0.8+	1997 12 05	385	0.2+	0.2+
1988 03 14	033	0.0	0.8+	1996 10 11	385	0.1−	0.3+	1997 12 05	385	0.6+	0.1+
1988 03 14	033	0.1+	0.1+	1996 10 11	385	0.1−	0.4+	1997 12 31	385	0.4+	0.2−
1996 10 05	905	1.2+	0.1+	1996 10 11	385	0.1−	0.1+	1997 12 31	385	0.5+	0.7−
1996 10 05	905	0.4+	0.4+	1996 10 15	385	0.5−	0.4−	1997 12 31	385	0.1+	0.2−
1996 10 09	121	0.9−	0.5−	1996 10 15	385	0.2−	0.5−	1998 01 02	886	0.6−	0.8−
1996 10 09	121	0.5−	0.8−	1996 10 15	385	0.1+	0.3−	1998 01 02	886	0.3+	0.1−
1996 10 09	121	0.8−	0.3−	1996 11 04	385	0.4+	0.2+				

(8227)∗ 1996 VD$_4$ = 1977 LT$_1$ = 1988 JB$_2$ = 1994 LL$_9$

Discovered 1996 Nov. 8 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. G. V. Williams (*MPC* 28600)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	185.43152		(2000.0)	**P**		**Q**	
n	0.17221948	ω	224.03066	+0.56976409		+0.82113446	
a	3.1994933	Ω	80.73031	−0.74436712		+0.53280803	
e	0.1406550	i	1.93198	−0.34826209		+0.20458199	
P	5.72	H	13.0	G 0.15		U 1	

Residuals in seconds of arc

1977 06 13	675	1.4+	1.8−	1996 11 08	327	0.4−	0.7−	1997 11 25	327	1.4+	1.3+
1977 06 14	675	0.1−	0.2−	1996 11 08	327	0.0	0.7−	1997 12 01	327	0.7+	0.1+
1988 05 12	033	0.7−	0.6−	1996 11 10	327	0.3−	0.4−	1997 12 01	327	0.3−	0.5+
1988 05 12	033	2.5−	0.7−	1996 11 10	327	0.3−	0.5−	1997 12 01	327	1.2+	0.0
1992 02 04	675	1.2−	1.9−	1996 11 10	327	0.7−	0.1−	1997 12 22	327	0.5+	0.2+
1993 04 14	675	0.6−	0.2−	1996 11 20	327	0.3+	0.7+	1997 12 22	327	0.4+	0.7−
1993 04 14	675	1.4−	1.0+	1996 11 20	327	0.5−	0.0	1997 12 22	327	0.1+	0.2+
1994 06 08	809	0.8+	0.5+	1996 11 20	327	0.5−	0.2−	1997 12 24	327	0.5+	0.3+
1994 06 08	809	0.4+	1.6+	1996 11 20	327	0.4+	0.0	1997 12 24	327	0.3+	1.5−
1994 06 08	809	0.2−	0.2+	1996 11 30	327	0.0	0.1−	1997 12 24	327	0.2−	0.4−
1994 06 09	809	1.1+	0.5+	1996 11 30	327	0.1−	0.2−	1997 12 29	327	0.5+	0.3+
1994 06 09	809	0.8−	0.7−	1996 11 30	327	0.1+	0.2+	1997 12 29	327	0.5+	0.3+
1994 06 09	809	0.1+	0.2−	1997 11 25	327	0.3+	0.0	1997 12 29	327	0.2+	0.0
1996 11 08	327	0.0	0.8−	1997 11 25	327	0.8+	0.6+				

(8228)∗ 1996 YB$_2$ = 1955 XU = 1963 TZ = 1963 VO = 1988 VR$_4$

Discovered 1996 Dec. 22 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Id. D. Asher (*MPC* 30460), R. Mitrinovic (d, *MPC* 2505)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	85.17664			(2000.0)		**P**	**Q**	
n	0.23839980	ω	231.33758			+0.71952272	−0.69390647	
a	2.5759185	Ω	172.45326			+0.68474725	+0.70216665	
e	0.1873145	*i*	12.28462			+0.11579401	+0.15954874	
P	4.13	*H*	12.3	*G*	0.15	*U*	1	

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

1955 12 13	760	0.5−	1.1+	1996 12 22	327	0.1+	0.0	1997 12 13	327	0.4+	0.2−
1955 12 13	760	0.9+	1.2+	1996 12 22	327	0.2−	0.2+	1997 12 13	327	0.4+	0.0
1963 10 14	760	(0.05−	0.01+)X	1996 12 23	327	0.1+	0.1+	1997 12 13	327	0.6+	0.1−
1963 11 15	760	(76.2−	95.8+)X	1996 12 23	327	0.1+	0.1−	1997 12 19	327	0.2+	0.1−
1988 11 12	675	0.8−	0.8−	1996 12 23	327	1.0+	0.1−	1997 12 19	327	0.1−	0.2−
1988 11 13	675	1.3−	0.2−	1997 01 09	327	0.5+	0.1+	1997 12 19	327	0.2−	0.3−
1994 03 14	691	0.3−	0.8+	1997 01 09	327	0.2+	0.7+	1997 12 19	327	0.1−	0.1+
1994 03 14	691	0.4−	0.6+	1997 01 09	327	0.3−	0.1+	1997 12 21	327	0.2−	0.4−
1994 03 14	691	0.4−	0.6+	1997 01 09	327	0.2+	0.4+	1997 12 21	327	0.3+	0.2−
1995 06 07	966	0.9−	0.1+	1997 12 10	327	0.6+	1.0−	1997 12 21	327	0.1−	0.1−
1995 06 08	966	0.5+	1.1+	1997 12 10	327	0.7+	0.8−				
1996 12 22	327	0.3+	0.2−	1997 12 10	327	0.7+	0.4−				

(8229)∗ 1996 YU$_2$ = 1979 SE$_8$ = 1987 DV$_3$ = 1990 SW$_{26}$ = 1990 SH$_{29}$

Discovered 1996 Dec. 28 by M. Wolf and L. Šarounová at Ondřejov.

Id. G. V. Williams (*MPC* 28877)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	114.85091			(2000.0)		**P**	**Q**	
n	0.18085864	ω	188.59569			+0.96483427	−0.26141774	
a	3.0967766	Ω	186.74991			+0.25293069	+0.95177101	
e	0.1915833	*i*	13.52508			+0.07156047	+0.16060111	
P	5.45	*H*	12.5	*G*	0.15	*U*	2	

Residuals in seconds of arc

1979 09 24	095	0.7−	1.0−	1996 12 30	557	0.3−	0.1+	1997 04 02	557	1.1−	0.4+
1987 02 23	010	(2.7+	4.2−)	1996 12 30	557	0.1+	0.4+	1997 04 02	557	0.4−	0.0
1987 02 24	010	0.4−	0.5+	1997 01 02	557	0.2+	1.1+	1997 10 29	557	0.7−	1.4−
1987 02 24	010	2.2+	1.2−	1997 01 02	557	0.7+	0.3+	1997 10 29	557	0.9+	0.1+
1990 09 22	095	1.8+	1.5−	1997 01 02	557	0.5−	0.1+	1997 11 01	557	0.0	0.3−
1990 09 22	095	0.2−	0.9−	1997 01 15	557	0.2+	0.3+	1997 11 01	557	0.4+	0.3−
1990 09 29	095	(3.1+	0.1−)	1997 01 15	557	0.1−	0.1+	1997 12 31	557	0.2−	0.5−
1993 04 17	413	0.3+	0.9+	1997 01 15	557	0.1+	0.2+	1997 12 31	557	0.3−	0.9−
1996 12 28	557	0.5−	0.2−	1997 02 07	557	0.2+	0.7+	1997 12 31	557	1.2−	0.6−
1996 12 28	557	0.2−	0.1−	1997 02 07	557	0.1+	0.4+	1998 01 08	557	0.1+	1.0−
1996 12 28	557	0.6−	0.1+	1997 02 07	557	0.2+	0.7+	1998 01 08	557	1.4−	1.7−
1996 12 28	557	0.1−	0.0	1997 03 03	557	0.8+	0.2−				
1996 12 30	557	0.1−	0.1+	1997 03 03	557	0.6+	0.2−				

(8230)∗ 1997 TW$_{16}$ = 1980 PQ$_3$

Discovered 1997 Oct. 8 by A. Vagnozzi at Stroncone.

Id. G. V. Williams (*MPC* 30883)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	113.22455			(2000.0)		**P**	**Q**	
n	0.29495429	ω	338.77263			−0.39205140	+0.91890140	
a	2.2351134	Ω	268.12354			−0.83759864	−0.37623038	
e	0.2330993	*i*	2.51006			−0.38042636	−0.11862092	
P	3.34	*H*	15.1	*G*	0.15	*U*	1	

Residuals in seconds of arc

1980 08 03	675	0.3−	0.3−	1997 10 08	589	1.0+	0.8+	1997 10 20	589	1.2+	0.7−
1980 08 05	675	0.2+	0.0	1997 10 08	589	0.0	0.5+	1997 10 25	589	0.2+	0.8−
1993 04 18	413	0.4+	0.2−	1997 10 09	589	0.3−	0.4+	1997 10 25	589	0.2+	0.9−
1994 11 10	691	0.5−	1.4+	1997 10 09	589	0.6+	0.8+	1997 10 25	589	0.2+	1.8−
1994 11 10	691	1.1+	1.3+	1997 10 09	589	0.4+	0.5+	1997 10 26	589	0.1+	0.3−
1995 11 27	691	0.1−	0.5−	1997 10 10	691	1.1−	0.4+	1997 10 26	589	0.3+	0.4−
1995 11 27	691	0.4−	0.5−	1997 10 10	691	1.0−	0.3+	1997 10 26	589	0.5+	0.6+
1995 11 27	691	0.2+	0.3−	1997 10 10	691	1.2−	0.3+	1997 10 26	589	0.2−	0.4−
1995 12 26	691	0.7−	0.1+	1997 10 19	589	0.5−	0.6−	1997 10 26	589	0.6−	1.7−
1995 12 26	691	0.3−	0.0	1997 10 19	589	0.2+	0.1−	1997 11 02	589	0.0	0.4−
1995 12 26	691	0.2−	0.1−	1997 10 20	589	0.1−	0.3−	1997 11 02	589	1.0−	0.7+
1997 10 08	589	0.9+	0.1+	1997 10 20	589	0.3+	0.2+	1997 11 02	589	0.0	0.2+

(8231)∗ 1997 TX$_{17}$ = 1975 BQ = 1978 WZ$_{16}$ = 1982 QA$_4$ = 1990 FT$_5$

Discovered 1997 Oct. 6 by K. Endate and K. Watanabe at Kitami.

Id. S. Nakano (*MPC* 30988)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	78.97530			(2000.0)		**P**	**Q**	
n	0.20450755	ω	255.70700			+0.75860412	+0.64988194	
a	2.8531843	Ω	63.73773			−0.57595969	+0.70232425	
e	0.0090397	*i*	2.97982			−0.30461489	+0.29050666	
P	4.82	*H*	13.1	*G*	0.15	*U*	2	

Residuals in seconds of arc

1975 01 17	095	0.5−	1.2+	1997 10 09	400	0.2+	0.5−	1997 11 03	704	1.1−	0.5+
1978 11 30	675	0.5+	0.7−	1997 10 09	400	0.2−	0.5−	1997 11 03	704	1.9−	0.3−
1978 12 01	675	0.8+	0.2−	1997 10 25	400	0.2−	0.7−	1997 11 09	400	1.3+	0.5−
1982 08 21	413	0.1+	0.5+	1997 10 25	400	0.4+	0.2−	1997 11 09	400	1.0−	0.8−
1982 08 21	413	1.0+	0.7+	1997 10 30	704	0.2+	0.6+	1997 11 18	557	0.0	0.2−
1990 03 19	046	(1.8+	2.4+)	1997 10 30	704	0.8+	0.2+	1997 11 18	557	0.0	0.3+
1990 03 19	046	0.9+	1.1+	1997 10 30	704	1.0+	0.7+	1997 11 18	557	0.3+	0.1−
1992 09 27	691	1.9−	0.1−	1997 10 30	704	0.4+	0.0	1997 11 19	557	0.4+	0.3+
1992 09 27	691	1.7−	0.1−	1997 10 30	704	0.7+	0.1+	1997 12 06	910	0.1+	0.1−
1992 09 27	691	1.8−	0.1−	1997 11 03	704	0.1−	1.3+	1997 12 06	910	0.1+	0.1−
1997 10 06	400	0.7+	0.2+	1997 11 03	704	0.1+	1.5+	1997 12 06	910	0.0	0.1−
1997 10 06	400	1.0+	1.2−	1997 11 03	704	0.3−	0.8+				

(8232)∗ 1997 UW$_3$ = 1980 FW$_3$ = 1991 BV$_2$

Discovered 1997 Oct. 26 by T. Kobayashi at Oizumi.

Id. G. V. Williams (*MPC* 30885)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	1.57008			(2000.0)		**P**	**Q**	
n	0.26279599	ω	52.92570			+0.46798589	−0.88369968	
a	2.4139238	Ω	9.18106			+0.79405704	+0.41650296	
e	0.1487906	*i*	2.87579			+0.38789513	+0.21354193	
P	3.75	*H*	14.4	*G*	0.15	*U*	2	

Residuals in seconds of arc

1980 03 16	809	0.2−	0.1+	1993 09 16	809	0.3−	1.9−	1997 11 08	727	0.4+	0.3+
1980 03 16	809	0.2+	0.1+	1997 10 26	411	1.6+	0.2+	1997 11 08	727	0.2+	0.2+

1980 03 16	809	0.2+	0.1−	1997 10 26	411	0.2+	0.3−	1997 11 11	727	0.3−	0.7+
1980 03 16	809	1.6+	0.1+	1997 10 27	411	0.2+	1.0−	1997 11 11	727	1.2−	0.7+
1980 03 17	809	0.4−	0.8+	1997 10 27	411	0.0	0.4−	1997 11 11	727	0.3−	0.6+
1980 03 17	809	1.1−	0.5+	1997 10 29	566	0.0	0.2+	1997 11 29	704	0.5−	0.3+
1980 03 17	809	0.6−	0.2+	1997 10 29	566	0.4+	0.0	1997 11 29	704	0.8+	0.8−
1980 03 17	809	0.7+	0.5−	1997 10 29	566	0.0	0.1+	1997 11 29	704	0.6−	0.7+
1991 01 17	033	0.1−	1.3−	1997 11 01	411	0.6−	0.6−	1997 11 29	704	0.2+	0.3+
1991 01 17	033	0.2−	0.5−	1997 11 01	411	0.8−	0.0	1997 11 29	704	0.3+	0.5−
1991 01 18	033	0.7−	0.8−	1997 11 06	411	0.2−	0.8−	1997 11 30	411	0.8−	0.2+
1993 09 15	809	(2.3+	1.7+)	1997 11 06	411	0.5+	0.8−	1997 11 30	411	0.5−	0.8+
1993 09 15	809	0.4+	1.8+	1997 11 07	727	0.1+	0.2−	1998 01 03	327	0.3+	1.0+
1993 09 15	809	0.3+	1.1+	1997 11 07	727	0.2+	0.3−	1998 01 03	327	0.2−	0.5+
1993 09 16	809	0.1+	1.7−	1997 11 07	727	0.1−	0.2−	1998 01 03	327	0.4−	0.9+
1993 09 16	809	(0.1+	2.2−)	1997 11 08	727	0.4+	0.1−				

(8233)∗ 1997 VZ$_2$ = 1975 XO$_3$ = 1980 BK$_1$ = 1980 DJ$_2$ = 1984 JR$_1$ = 1986 WK$_1$ = 1993 TS$_{21}$

Discovered 1997 Nov. 5 by T. Kobayashi at Oizumi.

Id. S. Nakano (*MPC* 30994)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	311.94031		(2000.0)		**P**	**Q**	
n	0.26879610	ω	106.31525		−0.76865838	−0.63724098	
a	2.3778662	Ω	34.15591		+0.54258205	−0.69555014	
e	0.1818388	*i*	5.68043		+0.33877577	−0.33186434	
P	3.67	*H*	14.0	*G*	0.15	*U*	2

Residuals in seconds of arc

1975 12 02	095	1.2+	0.9−	1993 10 13	675	0.1−	0.1−	1997 12 05	704	0.2+	0.2+
1980 01 23	095	1.2−	1.0+	1997 11 05	411	1.2−	1.7+	1997 12 05	704	0.1+	0.8+
1980 02 20	095	1.0+	0.8−	1997 11 05	411	1.0−	0.6+	1997 12 06	704	(3.5−	1.8+)
1984 05 02	095	0.1+	0.1−	1997 11 05	411	0.1−	0.0	1997 12 06	704	0.6−	1.3+
1986 11 25	046	(3.2−	1.5−)	1997 11 06	411	0.5−	0.1−	1997 12 06	704	1.6+	0.8+
1986 11 25	046	(4.9−	0.8−)	1997 11 06	411	0.5−	0.1−	1997 12 06	704	0.6+	0.9+
1986 11 29	046	1.1−	0.1−	1997 11 23	411	0.7−	0.0	1997 12 18	411	0.5−	0.7+
1986 11 29	046	0.5−	0.3−	1997 11 23	411	0.9−	0.6−	1997 12 18	411	0.3−	0.7+
1993 10 10	675	0.4+	0.5−	1997 12 05	704	0.8+	0.7−	1997 12 30	566	0.6+	0.9−
1993 10 10	675	0.4+	0.5−	1997 12 05	704	0.7+	0.7−	1997 12 30	566	0.8+	0.9−
1993 10 13	675	0.3−	0.1+	1997 12 05	704	0.6+	0.7−	1997 12 30	566	0.9+	1.0−

(8234)∗ 1997 VK$_8$ = 1977 RA$_{17}$ = 1990 HO$_4$ = 1995 KU$_4$

Discovered 1997 Nov. 3 by T. Seki at Geisei.

Id. G. V. Williams (*MPC* 30997)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	226.92212		(2000.0)		**P**	**Q**	
n	0.20304100	ω	5.12183		−0.98548462	+0.16974757	
a	2.8669067	Ω	184.65339		−0.15679441	−0.91555470	
e	0.0106031	*i*	1.70631		−0.06508137	−0.36461673	
P	4.85	*H*	12.6	*G*	0.15	*U*	1

Residuals in seconds of arc

1977 09 09	675	0.2+	0.6−	1995 05 30	691	1.3+	0.1−	1997 11 26	566	0.5−	0.2−
1977 09 10	675	0.7+	1.1−	1996 08 15	566	0.6−	0.5+	1997 11 26	566	0.3−	0.3+
1990 04 22	675	0.6+	0.2+	1996 08 15	566	0.1−	0.4+	1997 11 29	704	0.7+	0.2+
1990 04 22	675	0.8−	0.9+	1996 08 15	566	0.0	0.6+	1997 11 29	704	0.8+	0.3−
1995 05 27	691	1.1−	0.5−	1997 11 03	372	(4.3−	0.0)	1997 11 29	704	0.5+	0.3+
1995 05 27	691	1.0−	0.1−	1997 11 03	372	1.9−	0.5+	1997 11 29	704	0.2+	0.3−
1995 05 27	691	1.0−	0.2−	1997 11 05	372	(0.0	2.7+)	1997 12 01	327	0.5+	0.1−
1995 05 30	691	1.2+	0.3−	1997 11 07	372	0.7−	1.5+	1997 12 01	327	0.4+	0.3−
1995 05 30	691	1.1+	0.3+	1997 11 26	566	0.2−	0.0	1997 12 01	327	0.3+	0.2−

(8235)∗ 2096 P-L = 1993 PZ$_4$

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* 22597)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	359.62663		(2000.0)		**P**	**Q**	
n	0.26696533	ω	205.56048		+0.68873229	−0.72478853	
a	2.3887249	Ω	200.92541		+0.67360644	+0.64895391	
e	0.1185050	*i*	2.91293		+0.26814586	+0.23138799	
P	3.69	*H*	14.7	*G*	0.15	*U*	2

Residuals in seconds of arc

1960 09 24	675	0.3+	0.5−	1986 10 25	381	(3.6+	0.2+)	1997 10 30	704	0.2+	0.8+
1960 09 26	675	0.7−	0.9−	1986 10 25	381	1.7+	1.6+	1997 10 30	704	0.3−	1.0+
1960 09 26	675	0.2+	1.0−	1992 04 24	691	0.0	0.1+	1997 10 30	704	0.1−	1.4+
1960 09 28	675	0.9+	1.9−	1992 04 24	691	0.2−	0.0	1997 10 30	704	0.2+	0.5+
1960 09 29	675	0.4−	0.7+	1992 04 24	691	0.5+	0.6+	1997 10 30	704	0.2−	1.3+
1960 10 17	675	0.3+	0.8−	1993 08 15	010	1.0+	1.0+	1997 11 03	704	0.7−	0.4+
1960 10 22	675	0.5+	0.8+	1993 08 15	010	1.0−	0.3−	1997 11 03	704	0.4−	1.5+
1960 10 25	675	0.3+	0.4+	1993 08 16	010	0.4−	0.6−	1997 11 03	704	0.8−	0.5−
1960 10 26	675	0.1+	0.4−	1993 08 16	010	1.0−	1.0−	1997 11 03	704	1.1−	0.3−
1986 10 23	381	0.4−	2.3−	1993 08 16	010	0.3−	1.4−	1997 12 27	566	0.6+	0.4+
1986 10 23	381	0.4+	1.9−	1993 08 19	010	0.6+	1.6+	1997 12 27	566	0.3+	0.6−
1986 10 25	381	0.9−	1.7+	1993 08 19	010	0.7+	1.6+	1997 12 27	566	0.9+	0.1+
1986 10 25	381	0.4−	1.8−	1993 08 20	010	(0.1+	2.5+)				

(8236)∗ 4040 P-L = 1991 GB$_{14}$ = 1992 ST$_{24}$

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* 22694)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	80.48417		(2000.0)		**P**	**Q**	
n	0.21551996	ω	97.73157		+0.68135989	+0.72864358	
a	2.7551445	Ω	215.54251		−0.70981076	+0.63459994	
e	0.2236157	*i*	6.86445		−0.17865436	+0.25760717	
P	4.57	*H*	14.3	*G*	0.15	*U*	1

Residuals in seconds of arc

1960 09 24	675	0.2+	0.6+	1991 04 19	675	1.4+	0.5−	1997 10 29	566	0.5+	0.8−
1960 09 25	675	0.2−	0.4+	1991 04 19	675	0.8−	0.5−	1997 11 29	704	(1.1+	2.2+)
1960 09 26	675	0.6+	0.6+	1991 05 17	675	0.6+	0.3−	1997 11 29	704	0.7+	0.6−
1960 09 28	675	0.4+	0.4+	1992 09 21	033	0.2+	1.3−	1997 11 29	704	0.3−	0.4+
1960 10 17	675	0.9−	0.7−	1992 09 21	033	(0.3−	2.2+)	1997 11 29	704	(1.6+	2.3−)
1960 10 22	675	0.5−	0.0	1992 09 22	033	0.4−	0.3+	1997 11 29	704	0.6−	1.6−
1960 10 24	675	0.2+	0.2−	1992 09 25	033	1.2+	1.3−	1997 12 07	910	0.5+	0.2+
1960 10 26	675	0.1−	0.2−	1992 09 27	033	0.5+	0.9−	1997 12 07	910	0.4+	0.2+
1991 04 10	809	1.4−	0.6−	1992 09 28	033	0.3−	0.4−	1997 12 07	910	0.5+	0.3+
1991 04 10	809	0.6−	1.7−	1997 10 29	566	0.7−	0.5−				
1991 04 10	809	0.7−	1.6−	1997 10 29	566	0.4−	0.4−				

(8237)∗ 7581 P-L = 1976 JM$_9$ = 1987 UU$_6$ = 1990 SA$_{17}$

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. G. V. Williams (*MPC* 18831)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	56.04819		(2000.0)		**P**	**Q**	
n	0.29414241	ω	306.29013		+0.94710021	+0.31606917	
a	2.2392244	Ω	35.38043		−0.25489592	+0.84623492	
e	0.1063810	*i*	5.51947		−0.19501091	+0.42893676	
P	3.35	*H*	14.9	*G*	0.15	*U*	2

Residuals in seconds of arc

1960 10 17	675	0.8−	0.1−	1996 03 26	809	0.2+	0.2+	1997 11 03	704	0.2+	0.6−
1960 10 22	675	0.1−	0.7+	1996 03 26	809	0.4−	0.2+	1997 11 03	704	0.4+	0.9−
1960 10 25	675	0.4−	0.6+	1996 03 26	809	0.2−	0.4−	1997 12 26	566	0.1−	0.2−
1960 10 26	675	0.0	1.3+	1996 05 20	566	0.4+	0.5−	1997 12 26	566	0.1−	0.2+
1976 05 02	809	0.4+	0.1+	1996 05 20	566	0.1−	0.4−	1997 12 26	566	0.0	0.0
1987 10 27	095	(3.2+	0.7−)	1996 05 20	566	0.8+	0.1−	1997 12 26	566	0.2−	0.2+

1990 09 15	675	0.4+	1.5−	1997 10 21	886	0.2−	1.2−	1997 12 26	566	0.0	0.3+
1990 09 15	675	0.1−	0.8−	1997 10 21	886	1.0−	0.8−	1997 12 26	566	0.2−	0.5+
1990 09 16	675	(2.5−	1.7+)	1997 10 22	886	0.8+	0.3−	1997 12 26	566	0.3−	0.3+
1990 09 16	675	0.0	1.8+	1997 10 22	886	0.7−	0.0	1997 12 26	566	0.2−	0.5+
1996 03 24	809	0.3+	0.1−	1997 11 03	704	1.1+	0.5−	1997 12 26	566	0.1−	0.3+
1996 03 24	809	0.8−	0.4−	1997 11 03	704	0.7+	0.3+				
1996 03 24	809	1.4−	0.4−	1997 11 03	704	1.0+	0.8−				

(8238)∗ 4232 T-1 = 1980 BA$_1$ = 1980 DY$_1$

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (*MPC* 19880)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	298.16835		(2000.0)		**P**		**Q**	
n	0.21147876	ω	124.11453		−0.75829839		−0.65088162	
a	2.7901328	Ω	15.38442		+0.54349688		−0.66216950	
e	0.1688918	i	7.92119		+0.35999263		−0.37132825	
P	4.66	H	13.6	G	0.15	U	2	

Residuals in seconds of arc

1952 01 31	675	0.9−	0.5+	1971 05 14	675	0.3−	0.6+	1997 11 20	426	0.7−	0.6−
1952 01 31	675	0.2+	0.5−	1971 05 14	675	1.8−	0.5−	1997 11 21	426	1.0−	0.8−
1971 03 24	675	0.0	0.5+	1978 10 27	675	0.9+	0.4−	1997 11 21	426	0.1+	0.7−
1971 03 26	675	2.2−	1.5−	1978 10 28	675	1.2+	0.2−	1997 11 21	426	0.2−	0.5−
1971 03 26	675	1.8−	1.3−	1978 10 29	675	0.6+	0.3−	1997 12 15	725	1.4+	0.6+
1971 03 27	675	0.9+	0.4−	1978 11 28	675	0.3+	0.3−	1997 12 15	725	0.9−	1.3−
1971 04 02	675	1.7+	0.5+	1978 11 29	675	0.2−	0.1−	1997 12 18	725	0.6−	0.2−
1971 04 16	675	1.3+	1.0−	1980 01 23	095	1.1+	0.8+	1997 12 18	725	1.6+	0.8+
1971 04 16	675	0.8−	0.1−	1980 02 20	095	1.9+	0.9+				
1971 05 13	675	1.3−	1.2−	1997 11 20	426	0.5−	0.6−				

(8239)∗ 1153 T-2 = 1976 GG = 1993 FG$_{42}$

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* 23534)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	330.32311		(2000.0)		**P**		**Q**	
n	0.17632082	ω	351.90361		−0.92385811		−0.38269632	
a	3.1496840	Ω	165.59192		+0.35236881		−0.85603367	
e	0.1178074	i	1.25559		+0.14940689		−0.34749085	
P	5.59	H	13.2	G	0.15	U	1	

Residuals in seconds of arc

1954 04 08	675	0.5+	0.5−	1973 10 05	675	1.4+	0.3−	1995 10 01	691	0.9−	0.2+
1954 04 08	675	1.2−	0.2−	1973 10 05	675	1.0+	0.4−	1995 10 01	691	0.7−	0.3+
1973 09 19	675	1.1−	0.1+	1976 04 01	095	(4.0−	1.8+)	1996 11 12	689	0.9−	0.7+
1973 09 19	675	0.3−	1.0−	1993 03 19	809	0.3−	0.5−	1997 10 09	691	0.4−	0.1−
1973 09 20	675	0.0	0.4+	1993 03 20	809	0.4+	0.9−	1997 10 09	691	0.2−	0.2−
1973 09 24	675	0.5−	0.7−	1993 03 24	809	0.8+	0.8−	1997 10 09	691	1.0+	0.6−
1973 09 24	675	0.1−	1.1−	1993 04 21	413	0.9−	0.2+	1997 12 24	910	0.5+	0.2−
1973 09 25	675	0.0	1.1−	1995 09 17	327	0.3−	0.6+	1997 12 24	910	0.4+	0.0
1973 09 29	675	0.6+	1.6−	1995 09 17	327	0.4+	0.5+	1997 12 24	910	0.4+	0.1−
1973 09 29	675	0.2+	0.1−	1995 09 17	327	1.7+	0.9+	1997 12 24	426	0.5−	0.6+
1973 09 30	675	0.7+	0.5+	1995 09 25	691	0.5−	0.2+	1997 12 24	426	0.0	0.1+
1973 09 30	675	0.5−	1.2+	1995 09 25	691	0.3−	0.2+	1997 12 26	426	0.4−	0.3+
1973 10 04	675	0.7+	1.4−	1995 09 25	691	0.8−	0.4+	1997 12 26	426	0.4−	0.0
1973 10 04	675	1.5+	0.5−	1995 10 01	691	0.6−	0.1+	1997 12 26	426	0.3−	0.3+

(8240)∗ 4172 T-2 = 1993 VE$_8$

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* 22966)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	280.12263		(2000.0)		**P**		**Q**	
n	0.25490240	ω	74.56143		−0.99719221		+0.02904756	
a	2.4635049	Ω	107.06504		−0.05304719		−0.92457066	
e	0.1464669	i	4.14036		+0.05285545		−0.37990175	
P	3.87	H	14.7	G	0.15	U	2	

Residuals in seconds of arc

1973 09 19	675	0.3+	0.9−	1973 10 05	675	1.0+	1.2+	1997 11 27	426	0.3−	0.6−
1973 09 19	675	0.4+	0.9−	1991 04 14	675	0.5−	0.5−	1997 12 04	704	0.3−	1.0−
1973 09 20	675	1.9−	0.8+	1991 04 14	675	0.2+	0.2−	1997 12 04	704	0.1−	1.0+
1973 09 24	675	1.6−	0.8+	1991 04 16	675	0.4−	0.6−	1997 12 04	704	0.4−	0.3+
1973 09 24	675	0.4−	0.6+	1991 04 16	675	0.1−	0.5−	1997 12 04	704	1.8+	1.1+
1973 09 25	675	0.6−	0.1−	1993 11 11	033	0.7+	0.7+	1997 12 04	704	0.3+	0.2+
1973 09 25	675	0.6−	0.4−	1993 11 12	033	0.8−	0.6+	1997 12 19	426	0.1−	0.3−
1973 09 29	675	0.1+	2.2−	1993 11 12	033	0.2+	1.2+	1997 12 19	426	0.3−	0.6−
1973 09 29	675	0.9+	2.0−	1993 11 13	033	0.3−	0.5+	1997 12 19	426	0.0	0.3−
1973 09 30	675	1.5+	0.4+	1995 05 29	675	(0.3−	2.7−)	1997 12 22	426	0.4−	0.9−
1973 09 30	675	1.0+	0.6+	1995 05 29	675	(2.8−	0.5+)	1997 12 22	426	0.1+	1.3−
1973 10 04	675	1.4+	1.1−	1995 06 01	675	0.5−	0.5−	1997 12 22	426	0.3+	0.6−
1973 10 04	675	0.8−	0.6−	1995 06 01	675	0.6+	0.4+				
1973 10 05	675	0.4+	0.9+	1997 11 27	426	0.6−	0.3−				

1971 US

Id. T. Kobayashi (1997 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	59.79375		(2000.0)		**P**		**Q**	
n	0.27024992	ω	345.68996		+0.80472962		−0.59247288	
a	2.3693306	Ω	50.70450		+0.54927609		+0.71933359	
e	0.2441572	i	2.75748		+0.22517996		+0.36267764	
P	3.65	H	14.4	G	0.15	U	5	

Residuals in seconds of arc

1971 10 26	029	0.1+	0.4+	1971 10 30	029	0.4−	0.9−	1997 12 27	411	0.3+	0.3−
1971 10 26	029	0.1−	0.0	1971 11 10	029	0.3+	0.5+	1997 12 28	411	0.1+	0.0
1971 10 27	095	(1.2+	6.8−)	1971 11 10	029	0.1−	0.1−	1997 12 28	411	0.3−	0.6−
1971 10 30	029	0.1+	0.1+	1971 11 19	029	0.0	0.4−				
1971 10 30	029	0.2+	0.3+	1997 12 27	411	0.1−	0.9+				

1976 QS = 1976 SW = 1998 AQ$_6$

Id. J. G. Williams (d, *MPC* 5638), G. V. Willliams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	119.01240		(2000.0)		**P**		**Q**	
n	0.29285458	ω	3.70542		+0.90993453		+0.41175119	
a	2.2457843	Ω	331.81440		−0.38318656		+0.78865392	
e	0.2546663	i	6.05232		−0.15870483		+0.45660262	
P	3.37	H	14.5	G	0.15	U	5	

Residuals in seconds of arc

1976 08 26	095	1.8−	0.6+	1976 09 27	675	0.9+	0.8+	1998 01 07	327	0.5+	0.1+
1976 08 27	675	0.6+	0.7−	1998 01 04	327	1.1−	0.5+	1998 01 07	327	0.4+	0.2−
1976 08 28	675	0.9+	0.7−	1998 01 04	327	0.2+	0.4−	1998 01 07	327	0.4+	0.1+
1976 08 30	675	0.6+	0.8+	1998 01 04	327	0.2+	0.2+				
1976 09 24	095	1.2−	0.8−	1998 01 04	327	0.6−	0.4−				

1978 VU$_6$ = 1997 SG$_3$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	348.15850		(2000.0)		**P**		**Q**	
n	0.25422697	ω	131.70327		+0.74240604		−0.66932649	
a	2.4678663	Ω	270.33327		+0.60576494		+0.68908030	
e	0.1887874	i	1.65621		+0.28615050		+0.27779558	
P	3.88	H	15.0	G	0.15	U	3	

Residuals in seconds of arc

1978 11 05	675	0.1+	0.6−	1997 09 27	046	0.2−	0.3−	1997 10 27	046	0.1−	0.2+
1978 11 06	675	0.1+	0.4+	1997 09 27	046	0.2+	0.3−	1997 10 27	046	0.4−	0.0
1978 11 07	675	0.1+	0.9+	1997 09 27	046	0.0	0.2−	1997 10 27	046	0.4−	0.1+
1978 11 08	675	0.0	0.2−	1997 09 28	046	0.1+	0.5−	1997 10 28	046	0.1−	0.3−
1978 11 29	675	1.5+	0.1−	1997 09 28	046	0.1+	0.4−	1997 10 28	046	0.2+	0.3+
1978 11 30	675	1.8−	1.1−	1997 09 28	046	0.0	0.5−	1997 10 28	046	0.7+	0.8+
1997 09 25	046	0.5+	0.1+	1997 10 04	046	0.1−	0.1−	1997 12 21	046	0.0	0.3−
1997 09 25	046	0.2+	0.0	1997 10 04	046	0.7−	0.6−	1997 12 21	046	0.3+	0.2+
1997 09 25	046	0.2+	0.2−	1997 10 04	046	1.3−	0.1+	1997 12 21	046	0.3−	0.1+
1997 09 26	046	0.6+	0.5+	1997 10 06	046	0.1−	0.2−	1997 12 21	046	0.1−	0.3+
1997 09 26	046	0.6+	0.3+	1997 10 06	046	0.2−	0.2−	1997 12 27	046	0.8−	0.8+
1997 09 26	046	0.4+	0.6+	1997 10 06	046	0.0	0.1−	1997 12 27	046	0.5+	0.2+
1997 09 26	046	0.3+	0.4+	1997 10 27	046	0.3−	0.1+				

1979 KJ = 1997 YO$_2$

Id. G. V. Williams, S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	271.15883		(2000.0)		**P**		**Q**
n	0.18898483	ω	57.21041		−0.97227763		+0.18432568
a	3.0073554	Ω	132.96084		−0.21750317		−0.93880600
e	0.0495421	i	11.33821		+0.08584041		−0.29097651
P	5.22	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1979 05 19	809	0.1−	0.4+	1997 12 23	900	0.5+	0.1−	1997 12 25	355	0.1+	0.5−
1979 05 20	809	0.2−	0.2+	1997 12 24	900	0.3−	0.2−	1997 12 25	402	0.2−	0.1+
1979 05 24	809	0.3+	0.6−	1997 12 24	900	0.1+	0.1+	1997 12 25	402	0.1+	0.0
1997 12 21	360	0.4+	0.3+	1997 12 24	360	0.3+	0.0	1997 12 25	402	0.2+	0.0
1997 12 21	360	0.2+	0.2+	1997 12 24	360	0.0	0.1+	1997 12 25	900	0.2−	0.2+
1997 12 21	360	0.0	0.3+	1997 12 24	360	0.1+	0.2+	1997 12 27	900	0.4+	0.1+
1997 12 23	900	0.5−	0.1+	1997 12 25	355	0.2−	0.5+	1997 12 27	900	0.2−	0.2−
1997 12 23	900	0.2−	0.8−	1997 12 25	900	0.4−	0.2+				
1997 12 23	900	0.1−	0.3−	1997 12 25	355	0.0	0.3−				

1979 MW$_1$ = 1987 KC$_3$

Id. E. Bowell, T. Kobayashi (1997 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	47.45791		(2000.0)		**P**		**Q**
n	0.22928061	ω	125.58562		+0.98004747		−0.18470224
a	2.6437751	Ω	245.15913		+0.14590167		+0.91939103
e	0.1781444	i	4.64128		+0.13498020		+0.34728263
P	4.30	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1979 06 23	413	1.3−	0.7+	1979 07 28	413	0.4+	1.1−	1997 11 29	704	0.7−	0.0
1979 06 24	413	0.9−	0.1−	1979 08 23	675	0.3−	0.0	1997 11 29	704	0.5+	0.5+
1979 06 25	413	0.9−	0.6+	1987 05 30	413	0.0	0.0	1997 11 29	704	0.4−	0.2+
1979 06 29	413	0.3+	1.1−	1987 05 30	413	0.0	0.2−	1997 12 04	704	0.5+	0.3−
1979 07 24	675	1.0+	0.8+	1997 11 08	411	0.7+	0.4+	1997 12 04	704	(2.5+	0.5−)
1979 07 24	413	0.7−	1.0−	1997 11 08	411	0.1+	0.2+	1997 12 04	704	0.2+	0.2−
1979 07 25	675	2.1+	1.1+	1997 11 29	704	0.4−	0.2+	1997 12 04	704	(0.7+	2.6−)
1979 07 26	675	(2.7+	0.5+)	1997 11 29	704	1.1−	0.9−	1997 12 04	704	0.8+	0.3−

1979 MB$_9$ = 1991 SY$_2$ = 1997 YF$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	14.34376		(2000.0)		**P**		**Q**
n	0.17873584	ω	253.78319		+0.42859374		−0.90348717
a	3.1212481	Ω	170.83496		+0.83887634		+0.39617401
e	0.1678071	i	1.54114		+0.33555015		+0.16357596
P	5.51	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1979 06 24	413	0.5−	0.9−	1991 10 13	691	0.0	0.1−	1997 12 22	426	0.5+	0.8−
1979 06 25	413	0.5+	0.0	1991 10 13	691	0.0	0.3+	1997 12 24	426	0.1−	0.8−
1979 06 29	413	0.5−	0.3+	1991 10 13	691	0.1−	0.0	1997 12 24	426	0.2−	0.5−
1979 07 24	675	0.4−	0.8−	1997 12 19	426	0.3+	0.1+	1997 12 24	426	0.2+	0.6−
1979 07 25	675	1.1+	0.4−	1997 12 19	426	0.2+	0.2+	1998 01 03	426	0.7−	0.3+
1991 09 29	691	0.1−	0.4+	1997 12 19	426	0.6+	0.1+	1998 01 03	426	0.4−	0.2+
1991 09 29	691	0.1+	0.3+	1997 12 22	426	0.0	0.3−	1998 01 03	426	0.3−	0.6+
1991 09 29	691	0.2−	0.2+	1997 12 22	426	0.2−	0.4−				

1980 PY$_2$ = 1997 XQ$_{11}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Urata

M	47.21562		(2000.0)		**P**		**Q**
n	0.24275018	ω	340.44623		+0.94232806		−0.29089696
a	2.5450501	Ω	37.75640		+0.33162896		+0.74479413
e	0.1308850	i	15.68344		+0.04516702		+0.60055030
P	4.06	H	14.0	G	0.15	U	6

Residuals in seconds of arc

1980 08 04	413	1.1+	0.8−	1980 08 11	413	(3.8+	0.9+)	1997 12 05	905	0.0	0.5+
1980 08 05	413	0.8−	0.2−	1980 08 15	413	0.4−	0.5−	1997 12 21	905	0.3+	0.1+
1980 08 06	413	(3.8+	3.7+)	1980 08 16	413	1.6−	0.4−	1997 12 21	905	0.6−	0.1−
1980 08 08	413	2.4+	0.6+	1980 08 18	413	0.8−	0.6−	1997 12 24	385	0.3+	0.0
1980 08 09	413	0.1−	2.0+	1997 12 05	905	0.2−	0.1−	1997 12 24	385	0.2+	0.3−

1981 DK$_2$ = 1998 AD$_5$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	330.87022		(2000.0)		**P**		**Q**
n	0.22983588	ω	223.54629		−0.99558439		−0.04590096
a	2.6395152	Ω	313.62967		+0.07900491		−0.88080591
e	0.2672310	i	6.49561		−0.05069464		−0.47124733
P	4.29	H	16.0	G	0.15	U	4

Residuals in seconds of arc

1981 02 09	413	0.7−	2.5+	1981 03 12	413	1.5−	0.1+	1981 05 01	413	1.1−	0.2−
1981 02 12	413	1.0+	0.9−	1981 03 12	413	0.7+	0.5+	1998 01 08	910	0.1+	0.0
1981 02 28	413	2.1−	1.6−	1981 04 07	413	0.1+	0.4−	1998 01 08	910	0.1−	0.0
1981 02 28	413	0.9+	0.1+	1981 04 07	413	1.2+	0.5+	1998 01 08	910	0.0	0.0
1981 03 06	413	0.7−	0.2−	1981 04 08	413	0.7−	0.1−	1998 01 09	910	0.1+	0.2+
1981 03 06	413	1.0+	1.0−	1981 04 08	413	1.4+	0.2+	1998 01 09	910	0.0	0.0
1981 03 08	413	0.7−	0.2−	1981 04 09	413	0.7−	0.2+	1998 01 09	910	0.1−	0.2−
1981 03 08	413	1.2+	0.0	1981 04 09	413	0.6+	0.7+				

1981 EC$_{31}$ = 1994 CK$_{20}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	354.30910		(2000.0)		**P**		**Q**
n	0.22528924	ω	116.07877		−0.38115553		−0.92438356
a	2.6749094	Ω	356.22559		+0.74289513		−0.29635719
e	0.1169567	i	13.48051		+0.55029745		−0.24018211
P	4.37	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1981 03 02	413	1.7+	0.4−	1981 05 03	413	0.8−	1.3−	1994 02 13	809	0.2−	0.4+
1981 03 02	413	(5.9−	1.8−)	1994 02 10	809	0.0	0.8−	1994 03 05	691	1.1−	0.8+
1981 03 11	413	2.2−	0.4+	1994 02 10	809	0.8−	1.4−	1994 03 05	691	1.1−	0.7+
1981 03 15	413	0.6−	1.4+	1994 02 10	809	0.0	1.7−	1994 03 05	691	1.2−	0.6+
1981 03 15	413	2.3+	0.3+	1994 02 13	809	1.9+	0.8+				
1981 04 05	413	(6.5+	0.8+)	1994 02 13	809	2.2+	0.3−				

1981 UJ$_{23}$ = 1981 WY$_3$ = 1979 HO$_6$ = 1997 WF$_{38}$

Id. S. Nakano (d, *MPC* 20606), G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	162.40557		(2000.0)		**P**	**Q**	
n	0.18781332	ω	196.01116		−0.10900440	+0.97766604	
a	3.0198483	Ω	68.01028		−0.88943429	−0.01520946	
e	0.0739632	i	11.17369		−0.44387463	−0.20961343	
P	5.25	H	12.5	G	0.15	U	4

Residuals in seconds of arc

1979 04 30	095	0.5+	1.0+	1997 11 29	704	1.6−	0.1−	1997 12 31	704	0.1+	0.1+
1981 10 24	675	0.1−	0.1+	1997 11 29	704	1.1−	0.3−	1997 12 31	704	0.0	0.6+
1981 10 25	675	0.1+	0.6+	1997 12 04	704	1.2+	0.3+	1997 12 31	704	0.2+	0.3+
1981 11 24	033	0.3−	1.0+	1997 12 04	704	1.5+	0.4−	1998 01 02	704	0.5+	1.1+
1981 11 24	033	0.7−	0.3+	1997 12 04	704	0.4+	0.6−	1998 01 02	704	1.1+	0.2+
1997 11 29	704	2.5−	0.0	1997 12 04	704	0.8+	0.8−	1998 01 02	704	0.3+	0.5+
1997 11 29	704	1.8−	1.2−	1997 12 04	704	1.6+	0.7−	1998 01 02	704	0.3+	0.8+
1997 11 29	704	1.0−	0.8−	1997 12 31	704	0.3+	0.5+				

1981 UT$_{29}$ = 1986 TN$_6$ = 1986 RZ$_{17}$ = 1994 DU = 1997 SC$_{16}$

Id. K. Ichikawa; 1986 TN$_6$ = 1986 UJ$_1$ (*MPC* 11723) is invalid

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Ichikawa

M	122.70529		(2000.0)		**P**	**Q**	
n	0.18614476	ω	50.19410		+0.06763533	+0.99148053	
a	3.0378676	Ω	224.07965		−0.95730485	+0.03306043	
e	0.0947231	i	9.20801		−0.28105672	+0.12598954	
P	5.29	H	12.9	G	0.15	U	2

Residuals in seconds of arc

1981 10 24	675	0.3+	1.6+	1994 02 16	033	0.0	0.6−	1997 09 30	910	0.1+	0.2+
1981 10 25	675	0.4−	0.3−	1994 02 16	033	1.1+	0.1−	1997 10 01	910	0.3−	0.3+
1981 10 26	675	0.1−	0.0	1994 02 17	033	1.4−	0.2−	1997 10 01	910	0.3−	0.4+
1986 09 11	095	0.4+	0.5+	1997 09 27	910	0.4+	0.6−	1997 10 01	910	0.3−	0.3+
1986 10 08	054	(3.4+	2.0+)	1997 09 29	910	0.0	0.1+				
1986 10 11	054	0.2+	2.7−	1997 09 30	910	0.2+	0.1+				

1983 RZ$_4$ = 1997 WM$_7$

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	61.15901		(2000.0)		**P**	**Q**	
n	0.28581617	ω	95.46975		+0.90804531	+0.41406754	
a	2.2825039	Ω	240.08351		−0.40738207	+0.83787744	
e	0.2615806	i	4.18544		−0.09743498	+0.35568170	
P	3.45	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1983 09 05	095	0.2−	1.9+	1997 11 23	905	0.1+	0.8+	1997 11 29	704	0.9+	0.5−
1983 09 07	095	0.2−	0.8−	1997 11 23	905	0.2−	0.7+	1997 11 29	704	0.0	0.4−
1983 09 09	095	0.4+	1.1−	1997 11 29	704	0.4−	0.0	1997 12 04	905	0.2+	0.6+
1997 11 19	905	0.7+	0.9−	1997 11 29	704	0.1−	0.5−	1997 12 04	905	0.6+	0.3+
1997 11 19	905	0.8−	0.3+	1997 11 29	704	0.9−	0.2−				

1984 SS$_1$ = 1981 UW$_2$ = 1987 RC$_4$ = 1987 SY$_{17}$ = 1997 WM$_{13}$

Id. T. Urata; 1984 SS$_1$ = 1989 EP$_3$ (*MPC* 14786) is invalid

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	6.93387		(2000.0)		**P**	**Q**	
n	0.30988941	ω	196.29377		+0.39937705	−0.91587805	
a	2.1627097	Ω	230.18601		+0.84695335	+0.38562989	
e	0.0701941	i	3.04543		+0.35095299	+0.11161082	
P	3.18	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1981 10 30	381	0.6−	1.7+	1997 11 27	888	0.7+	0.4−	1997 12 04	704	1.6+	0.7+
1981 10 30	381	0.1−	1.5+	1997 11 27	888	0.6+	0.0	1997 12 04	704	0.1−	1.2+
1984 09 27	046	0.8+	1.7−	1997 11 29	704	1.7−	0.1+	1997 12 25	566	0.6+	0.2−
1984 09 27	046	0.9−	1.6−	1997 11 29	704	1.6−	1.3−	1997 12 25	566	0.6+	0.3−
1984 09 29	046	1.2−	1.3−	1997 11 29	704	1.6−	0.7−	1997 12 25	566	0.9+	0.1+
1984 09 29	046	1.9+	0.9+	1997 11 29	704	1.7−	0.9−	1997 12 25	886	0.5−	0.0
1984 09 30	046	0.3+	0.2−	1997 11 29	704	2.1−	0.4+	1997 12 25	886	0.7+	0.2−
1984 09 30	046	0.7+	0.3−	1997 12 02	886	0.3+	0.1−	1998 01 03	910	0.0	0.1−
1987 09 02	095	0.0	2.8+	1997 12 02	886	0.1−	0.3−	1998 01 03	910	0.1+	0.2+
1987 09 16	095	1.0−	0.2−	1997 12 04	704	1.7+	0.5+	1998 01 03	910	0.1−	0.1+
1997 11 24	888	1.2+	0.9−	1997 12 04	704	0.5−	2.1+				
1997 11 24	888	1.3+	0.7−	1997 12 04	704	0.1−	0.3+				

1985 QG$_5$ = 1997 YZ$_{19}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	69.41589		(2000.0)		**P**	**Q**	
n	0.17561065	ω	281.69113		+0.97919304	+0.20116816	
a	3.1581698	Ω	66.70819		−0.17302713	+0.89636727	
e	0.1605801	i	1.66515		−0.10603114	+0.39504060	
P	5.61	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1985 08 23	095	0.1−	2.3−	1997 11 29	704	0.8−	0.5+	1998 01 02	704	0.7+	0.3−
1985 09 15	095	0.9−	1.4+	1997 11 29	704	1.6−	0.8+	1998 01 02	704	0.5+	0.4−
1985 09 20	095	1.1+	0.6+	1997 12 31	704	0.8+	0.0	1998 01 02	704	0.7+	0.6−
1997 11 29	704	0.8−	0.6−	1997 12 31	704	1.1+	0.0	1998 01 02	704	0.8−	0.2−
1997 11 29	704	(3.0−	0.3+)	1997 12 31	704	0.8+	0.2+				
1997 11 29	704	0.7−	0.8+	1997 12 31	704	0.5+	0.2−				

1986 TH = 1984 BG$_1$

Id. T. Kobayashi

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	82.85276		(2000.0)		**P**	**Q**	
n	0.28708859	ω	72.46295		+0.91004418	−0.40907739	
a	2.2757546	Ω	311.62720		+0.33821454	+0.82610936	
e	0.1366935	i	5.13468		+0.23964665	+0.38755517	
P	3.43	H	14.2	G	0.15	U	4

Residuals in seconds of arc

1984 01 24	381	0.8+	0.8+	1986 10 03	054	0.5+	0.2+	1986 10 11	054	0.8−	0.1+
1984 01 24	381	0.9−	1.8−	1986 10 04	054	0.5+	0.5+	1998 01 05	411	0.1−	0.3+
1986 09 07	095	0.9+	0.0	1986 10 05	095	(2.9−	0.5−)	1998 01 05	411	0.6+	0.8+
1986 09 11	095	1.3−	0.0	1986 10 08	054	0.0	0.4−				

1986 TX$_3$ = 1993 RN

Id. T. Kobayashi (*MPC* 23971)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	48.26240		(2000.0)		**P**	**Q**	
n	0.27930258	ω	311.26834		+0.81523078	−0.57648428	
a	2.3178540	Ω	84.00665		+0.54660110	+0.73432060	
e	0.1513307	i	3.19094		+0.19137925	+0.35838407	
P	3.53	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1986 10 04	046	1.3+	1.6+	1993 09 14	376	0.9−	0.1−	1997 12 21	411	0.5−	0.3−
1986 10 05	046	0.5−	1.7+	1993 09 16	376	(0.6−	2.3+)	1997 12 24	411	0.1−	0.4+
1986 10 05	046	(3.1−	1.4+)	1993 09 16	376	1.7−	1.7+	1997 12 24	411	0.1−	0.2+
1986 10 05	046	0.5+	1.0+	1993 09 21	675	0.2+	0.2+	1997 12 26	046	0.2+	0.3+
1986 10 09	046	0.5−	2.0−	1993 10 13	675	0.6+	0.7+	1997 12 26	046	0.0	0.1+
1986 10 09	046	0.1−	1.1−	1993 10 13	675	0.8+	0.3−	1997 12 26	046	0.1−	0.3+
1986 10 10	046	0.5+	1.3−	1993 10 15	675	0.3+	0.0	1997 12 27	046	0.2−	0.2+
1986 10 10	046	0.4−	1.7−	1993 10 15	675	0.1−	0.4−	1997 12 27	046	0.0	0.2+
1993 09 14	376	(2.5−	0.2+)	1997 12 21	411	0.7+	0.5−	1997 12 27	046	0.0	0.1+

1988 BL_3 = 1959 RC_1 = 1983 VL_4 = 1997 YO_{11}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Urata

M	105.94217		(2000.0)	**P**		**Q**	
n	0.29076795	ω	82.93569	+0.97093365		+0.21505485	
a	2.2565157	Ω	264.60545	−0.23911912		+0.89077288	
e	0.2058500	i	6.05801	+0.01048308		+0.40034372	
P	3.39	H	13.5	G 0.15		U 3	

Residuals in seconds of arc

1959 09 09	024	0.1+	0.2−	1988 01 19	809	0.7+	0.5−	1988 01 29	809	0.5−	1.1+
1983 11 08	381	0.1−	0.9+	1988 01 21	809	0.3+	0.3−	1988 01 29	809	0.1−	0.6+
1988 01 16	809	0.2+	0.2+	1988 01 21	809	0.7+	0.3−	1997 12 27	888	0.6−	0.7−
1988 01 16	809	0.6+	0.7+	1988 01 23	809	0.6−	0.5−	1997 12 27	888	0.1−	0.0
1988 01 16	809	0.9+	1.1+	1988 01 23	809	0.3−	0.6−	1997 12 31	888	0.1−	0.4−
1988 01 17	809	0.3−	0.4+	1988 01 25	809	0.1+	0.1−	1997 12 31	888	0.1−	0.6−
1988 01 17	809	0.1−	0.7+	1988 01 25	809	0.4+	0.3−	1998 01 02	886	0.1+	0.8−
1988 01 17	809	0.2+	0.2+	1988 01 27	809	1.2−	0.0	1998 01 02	886	0.0	0.4−
1988 01 19	809	0.3+	0.4−	1988 01 27	809	0.6−	0.1+				

1988 BN_4 = 1997 YT_2

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	301.22489		(2000.0)	**P**		**Q**	
n	0.18821379	ω	230.35998	−0.80065254		−0.58002155	
a	3.0155631	Ω	273.67690	+0.58539328		−0.70400914	
e	0.0343343	i	8.65076	+0.12755475		−0.40981231	
P	5.24	H	12.2	G 0.15		U 5	

Residuals in seconds of arc

1988 01 22	809	0.7−	0.3−	1988 01 26	809	0.6−	0.2+	1997 12 24	369	0.1+	0.1+
1988 01 22	809	0.3−	0.2−	1988 01 26	809	0.0	0.0	1997 12 24	369	0.1+	1.3+
1988 01 22	809	0.6+	0.0	1988 01 27	809	0.2−	0.0	1997 12 27	369	0.0	0.3+
1988 01 23	809	0.2+	0.1−	1988 01 27	809	0.5−	0.1+	1997 12 27	369	0.0	0.4−
1988 01 23	809	0.5+	0.1−	1988 01 29	809	0.3−	0.4+	1997 12 31	369	0.2−	0.2−
1988 01 24	809	0.4+	0.1+	1988 01 30	809	0.1−	0.5+	1997 12 31	369	0.0	0.1−
1988 01 24	809	0.5+	0.1−	1997 12 21	369	0.1−	0.4−	1997 12 31	369	0.2−	0.3−
1988 01 24	809	0.5+	0.4−	1997 12 21	369	0.2+	0.4−				

1988 CY_2 = 1993 SL_{12}

Id. G. V. Williams (*MPC* 24101)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	149.58080		(2000.0)	**P**		**Q**	
n	0.28329409	ω	315.28490	+0.18665871		+0.98182750	
a	2.2960308	Ω	325.43049	−0.88361913		+0.15254475	
e	0.0912560	i	3.46096	−0.42938999		+0.11289316	
P	3.48	H	14.5	G 0.15		U 4	

Residuals in seconds of arc

1988 02 11	809	1.2−	0.1+	1988 02 21	809	1.8−	0.1−	1993 09 23	809	0.3−	1.3−
1988 02 15	809	1.1+	0.5−	1988 02 23	809	0.0	1.0−	1997 11 29	704	1.3−	0.6+
1988 02 16	809	2.1+	0.2+	1988 02 23	809	0.5−	0.2−	1997 11 29	704	1.1−	0.8−
1988 02 16	809	0.7+	0.7+	1988 02 23	809	0.4+	0.7+	1997 11 29	704	(2.4−	0.4−)
1988 02 16	809	0.1+	0.8+	1993 09 16	809	0.1−	0.8+	1997 11 29	704	0.1+	0.1−
1988 02 17	809	0.6+	0.5−	1993 09 16	809	0.4+	0.8+	1997 11 29	704	1.2−	0.7−
1988 02 17	809	0.4+	0.3−	1993 09 16	809	0.4+	0.9+	1997 12 05	704	0.6+	0.1−
1988 02 17	809	0.9−	0.1+	1993 09 18	675	0.6+	0.7−	1997 12 05	704	1.6+	0.1+
1988 02 21	809	0.4−	0.1−	1993 09 23	809	0.9−	0.5+	1997 12 05	704	1.3+	0.9+
1988 02 21	809	0.8−	0.1+	1993 09 23	809	0.2−	0.9−				

1988 CU_3 = 1997 YM_{16}

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	7.93999		(2000.0)	**P**		**Q**	
n	0.18976023	ω	171.97240	−0.14503417		−0.97699770	
a	2.9991574	Ω	286.26324	+0.89849504		−0.06388412	
e	0.0702370	i	9.37244	+0.41433291		−0.20345592	
P	5.19	H	12.5	G 0.15		U 5	

Residuals in seconds of arc

1988 02 13	809	1.1+	1.7+	1988 02 23	809	1.6−	1.0+	1998 01 02	905	0.6−	0.2−
1988 02 15	809	1.0−	1.3−	1988 02 23	809	1.6−	0.4+	1998 01 02	905	1.0−	0.1−
1988 02 16	809	1.8+	1.4−	1997 12 31	905	0.4+	0.5−	1998 01 06	886	0.7+	0.0
1988 02 16	809	1.2+	1.5−	1997 12 31	905	0.6−	0.5−	1998 01 06	886	0.3+	0.3−
1988 02 16	809	1.1+	2.1−	1998 01 02	704	0.2+	0.3+	1998 01 08	704	0.5+	0.0
1988 02 21	809	0.2+	0.7+	1998 01 02	704	0.4−	0.3+	1998 01 08	704	0.2+	0.2−
1988 02 21	809	0.3+	0.8+	1998 01 02	704	0.0	0.2+	1998 01 08	704	0.7+	0.3+
1988 02 21	809	0.1+	0.5+	1998 01 02	704	0.5−	0.1+	1998 01 08	704	0.6+	0.3+
1988 02 23	809	1.6−	1.1+	1998 01 02	704	0.5−	0.2+				

1988 DK = 1997 WR_{37}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	306.76727		(2000.0)	**P**		**Q**	
n	0.18248934	ω	277.90872	−0.71176416		−0.69528750	
a	3.0783008	Ω	218.13020	+0.69118674		−0.66795710	
e	0.1725319	i	9.30497	+0.12511065		−0.26534620	
P	5.40	H	13.5	G 0.15		U 5	

Residuals in seconds of arc

1988 02 22	413	2.4−	1.7+	1988 03 10	413	0.2+	0.2+	1997 12 04	704	0.9+	0.4+
1988 02 22	413	1.9−	0.3+	1988 03 10	413	1.4+	0.7−	1997 12 04	704	0.6−	0.2−
1988 02 23	413	0.5−	0.0	1997 11 29	704	0.8−	0.7−	1997 12 04	704	0.9−	0.4+
1988 02 23	413	2.2+	1.0−	1997 11 29	704	0.1−	0.2−	1997 12 04	704	1.9+	1.3−
1988 02 25	413	0.8−	0.7+	1997 11 29	704	0.2−	1.4+	1997 12 04	704	0.4+	0.3−
1988 02 25	413	1.8+	1.2−	1997 11 29	704	0.6−	0.5+				

1988 RQ_{12} = 1997 WO_{40}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	336.08112		(2000.0)	**P**		**Q**	
n	0.12617735	ω	100.43298	−0.34068451		−0.94012324	
a	3.9368461	Ω	9.50420	+0.83685245		−0.30813039	
e	0.2112309	i	3.51289	+0.42849976		−0.14568445	
P	7.81	H	12.5	G 0.15		U 4	

Residuals in seconds of arc

1988 09 14	807	0.4−	0.3+	1988 11 03	807	0.2+	0.2−	1997 11 29	704	0.8−	0.3+
1988 09 15	807	0.0	0.1+	1988 11 06	807	0.1−	0.5−	1997 11 29	704	1.3−	0.5+
1988 09 16	807	0.7+	0.2−	1988 11 08	807	0.0	0.3−	1997 12 04	704	0.6+	0.9+
1988 10 04	807	1.2−	0.5+	1997 11 29	704	1.8−	0.1−	1997 12 04	704	1.7+	0.2+
1988 10 05	807	0.3+	0.3+	1997 11 29	704	0.4+	1.7−	1997 12 04	704	1.2+	0.5+
1988 10 08	807	0.4+	0.2−	1997 11 29	704	0.5−	1.0−	1997 12 04	704	0.5+	0.5+

1989 CD_6 = 1994 CB_7 = 1997 WQ_{36}

Id. A. Lowe, G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	328.67630		(2000.0)	**P**		**Q**	
n	0.20139566	ω	330.48119	−0.19069049		−0.98086721	
a	2.8824999	Ω	130.48283	+0.91044602		−0.19164900	
e	0.0343785	i	2.95425	+0.36704929		−0.03420788	
P	4.89	H	13.5	G 0.15		U 4	

Residuals in seconds of arc

1989 02 02	033	0.5−	0.5+	1994 02 16	691	0.0	0.1−	1997 11 29	704	0.9−	0.0
1989 02 04	033	0.5+	0.3−	1994 02 16	691	0.1+	0.1−	1997 12 04	704	1.3−	0.3−
1994 02 15	691	0.0	0.0	1997 11 29	704	0.6−	1.2+	1997 12 04	704	0.6+	0.1−
1994 02 15	691	0.1−	0.0	1997 11 29	704	0.0	0.2+	1997 12 04	704	1.4+	0.2−

1994 02 15	691	0.1−	0.0	1997 11 29	704	0.4+	0.5−	1997 12 04	704	0.3−	0.3−
1994 02 16	691	0.1+	0.0	1997 11 29	704	0.5+	0.1−	1997 12 04	704	0.2+	0.0

1990 QK$_8$

Id. T. Kobayashi (1997 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	213.97683		(2000.0)		**P**		**Q**
n	0.18980048	ω	139.42669		−0.13156710		+0.99077473
a	2.9987333	Ω	122.98949		−0.91923421		−0.10966771
e	0.0764023	i	2.21985		−0.37107758		−0.07961421
P	5.19	H	13.7	G	0.15	U	5

Residuals in seconds of arc

1990 08 16	809	1.1+	0.3+	1990 08 24	809	0.7+	0.4−	1997 12 25	411	0.6−	0.1−
1990 08 16	809	0.3−	0.3+	1990 08 24	809	0.6+	0.0	1997 12 25	411	0.3+	0.5+
1990 08 16	809	1.5−	0.6−	1990 08 24	809	0.5+	0.1+	1997 12 27	411	0.2+	0.2+
1990 08 18	809	0.8+	0.7−	1990 08 26	809	0.9−	0.0	1997 12 27	411	0.1+	0.7−
1990 08 18	809	0.0	0.4−	1990 08 26	809	0.6−	0.4+				
1990 08 18	809	0.3−	1.0+	1990 08 26	809	0.1−	0.0				

1990 ST$_2$ = 1990 SY$_{28}$ = 1973 UM$_1$ = 1997 WN$_7$

Id. S. Nakano (d, *MPC* 20913), T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	52.93447		(2000.0)		**P**		**Q**
n	0.28846442	ω	309.21465		+0.98231777		+0.18576026
a	2.2685127	Ω	40.09549		−0.15865883		+0.89215331
e	0.2353057	i	2.07709		−0.09939403		+0.41177130
P	3.42	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1973 10 26	095	0.7−	1.9+	1997 11 23	905	1.0+	0.1−	1997 11 30	566	0.6−	0.8+
1990 09 18	675	0.2−	0.7−	1997 11 24	886	0.8−	0.3−	1997 11 30	566	0.7−	0.6+
1990 09 18	675	0.4−	0.6−	1997 11 24	886	1.0−	0.1−	1997 12 04	704	0.4+	0.9−
1990 09 20	675	0.3+	0.3+	1997 11 29	704	0.1−	0.1−	1997 12 04	704	1.5+	1.5+
1990 09 20	675	0.6+	0.3+	1997 11 29	704	0.4+	0.8−	1997 12 04	704	0.6+	0.2+
1990 09 29	095	(0.8+	2.8+)	1997 11 29	704	0.4−	0.8−	1997 12 04	704	0.6+	1.2+
1997 11 19	905	0.0	0.7−	1997 11 29	704	0.2+	1.2−	1997 12 04	704	0.2+	0.6+
1997 11 19	905	0.5+	0.3−	1997 11 29	704	0.0	0.9−	1997 12 04	905	0.3−	0.5+
1997 11 23	905	0.1−	0.4−	1997 11 30	566	0.6−	0.5+	1997 12 04	905	0.5−	0.5−

1990 SF$_3$ = 1993 OH$_7$ = 1998 AO$_8$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	1.05532		(2000.0)		**P**		**Q**
n	0.28434211	ω	284.99229		+0.71707767		−0.69460082
a	2.2903856	Ω	119.04241		+0.66215739		+0.65305512
e	0.0647743	i	3.78421		+0.21759414		+0.30174280
P	3.47	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1990 09 18	675	0.1−	1.2−	1993 07 13	809	0.0	0.5+	1998 01 10	557	0.4−	0.4+
1990 09 18	675	0.1+	0.5+	1993 07 13	809	0.0	0.6+	1998 01 10	557	0.2+	0.1+
1990 09 20	675	0.3+	0.3−	1993 07 20	809	0.4+	1.2−	1998 01 10	557	0.3−	0.4+
1990 09 20	675	0.4+	1.0−	1993 07 20	809	0.6−	0.0	1998 01 11	557	0.2+	0.1−
1990 09 28	675	0.4−	1.3+	1993 07 20	809	0.8−	0.3+	1998 01 11	557	0.0	0.3+
1993 07 13	809	0.1−	0.5+	1993 07 24	809	0.9+	0.1−				

1990 SL$_{10}$ = 1997 VS$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Ichikawa

M	30.72544		(2000.0)		**P**		**Q**
n	0.27874489	ω	317.42403		+0.91911677		+0.38479046
a	2.3209446	Ω	20.42059		−0.26336204		+0.75979512
e	0.1050347	i	14.03589		−0.29302696		+0.52406839
P	3.54	H	14.2	G	0.15	U	5

Residuals in seconds of arc

1990 09 17	675	0.4−	0.3−	1997 11 02	587	0.9−	0.4+	1997 11 18	587	0.1+	0.1+
1990 09 17	675	0.4+	0.9+	1997 11 02	587	0.2+	0.9+	1997 11 18	587	0.3+	1.2+
1990 09 19	675	0.6−	0.3+	1997 11 02	587	1.1+	0.2−	1997 12 01	587	0.8−	0.1+
1990 09 19	675	1.0−	0.0	1997 11 03	587	1.0−	0.4−	1997 12 01	587	0.1−	0.3−
1990 09 20	675	1.3+	0.1−	1997 11 03	587	0.4−	0.3+				
1990 09 20	675	0.5+	1.2−	1997 11 16	587	1.1+	1.7−				

1990 TP = 1997 WZ$_{45}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	56.69698		(2000.0)		**P**		**Q**
n	0.28964823	ω	229.57895		+0.99853228		−0.01290086
a	2.2623274	Ω	131.09195		+0.03075909		+0.93446690
e	0.1449064	i	4.00217		−0.04457760		+0.35581621
P	3.40	H	14.5	G	0.15	U	6

Residuals in seconds of arc

1990 10 12	413	0.9−	0.7−	1990 10 18	871	(2.8−	4.6+)	1997 11 29	704	0.0	0.1−
1990 10 12	413	0.6+	0.9+	1990 10 18	871	(1.0−	6.5+)	1997 11 29	704	0.4+	1.0−
1990 10 13	413	0.2+	0.3+	1990 10 20	374	(6.8+	7.3+)	1997 11 29	704	0.5+	0.2+
1990 10 15	675	0.3+	1.1−	1997 11 26	704	0.1−	0.7+	1997 11 30	566	0.1+	0.3−
1990 10 15	675	0.2+	0.2−	1997 11 26	704	0.3+	0.7+	1997 11 30	566	0.1+	0.2−
1990 10 15	374	0.4−	1.8−	1997 11 26	704	0.9−	0.6+	1997 11 30	566	0.3+	0.3−
1990 10 17	675	0.2+	1.8+	1997 11 29	704	0.4−	0.3+				
1990 10 17	675	0.0	0.8+	1997 11 29	704	0.1−	0.6−				

1990 TJ$_1$ = 1942 VC = 1973 YS$_1$ = 1997 XJ$_{10}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	32.17744		(2000.0)		**P**		**Q**
n	0.28742342	ω	314.25142		+0.85472173		−0.51521007
a	2.2739869	Ω	76.85626		+0.49285802		+0.76718955
e	0.2007882	i	3.72816		+0.16291634		+0.38207170
P	3.43	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1942 11 05	062	0.7−	0.3−	1997 11 29	704	1.7−	0.0	1997 12 08	098	0.6+	0.0
1942 11 05	062	0.7+	0.1+	1997 11 29	704	(2.3−	0.4−)	1997 12 08	098	0.8+	1.2+
1973 12 20	095	(2.0+	2.6−)	1997 11 29	704	1.5−	1.0−	1997 12 31	704	0.3+	0.7−
1990 10 15	400	(2.2−	2.6−)	1997 11 29	704	(2.6+	0.9+)	1997 12 31	704	0.2+	0.5−
1990 10 15	400	(3.5−	0.1+)	1997 11 29	704	1.8−	1.6−	1997 12 31	704	0.1+	0.4−
1990 10 19	400	0.1−	0.5+	1997 12 04	704	1.0+	0.9+	1997 12 31	704	0.5−	0.5−
1990 10 19	400	0.4−	0.6+	1997 12 04	704	0.8+	0.7+	1998 01 02	704	1.1+	0.5−
1990 11 11	400	1.4+	0.7+	1997 12 04	704	0.9+	1.0+	1998 01 02	704	0.0	0.2−
1990 11 11	400	0.9+	0.6−	1997 12 04	704	0.2+	1.0+	1998 01 02	704	0.3−	0.9−
1990 11 12	809	0.5−	1.2−	1997 12 04	704	1.3+	0.8+	1998 01 02	704	0.7−	0.2−
1990 11 12	809	0.5−	0.4−	1997 12 07	098	1.0−	0.6+				
1990 11 12	809	0.4−	0.7−	1997 12 07	098	0.0	1.3+				

1990 WF

Id. J. Roe (1998 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	56.32025		(2000.0)		**P**		**Q**
n	0.29128725	ω	255.81305		+0.89086101		−0.45034173
a	2.2538330	Ω	130.91547		+0.44127682		+0.82668363
e	0.1435491	i	4.52795		+0.10789543		+0.33732256
P	3.38	H	13.5	G	0.15	U	5

Residuals in seconds of arc

1990 11 11	809	0.0	0.4−	1990 11 22	877	(2.4−	0.1+)	1998 01 03	732	0.8−	0.1−
1990 11 11	809	0.4+	0.6−	1990 11 24	877	1.3+	0.3+	1998 01 03	732	1.3−	0.3+
1990 11 11	809	0.6−	0.1+	1990 11 24	877	0.0	0.8+	1998 01 04	732	1.4+	0.3−
1990 11 16	877	0.3−	1.3−	1990 12 24	877	0.2−	0.2+	1998 01 04	732	0.5+	0.2+
1990 11 16	877	1.5+	0.4+	1990 12 24	877	0.2−	0.3+	1998 01 04	732	1.8+	1.3−
1990 11 22	877	1.9−	0.5+	1998 01 03	732	1.6−	0.8+				

1991 AS_2 = 1997 WU_{29} = 1997 XN_{11}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	37.96192		(2000.0)	**P**		**Q**	
n	0.26532580	ω	85.12956	+0.93679010		−0.34145354	
a	2.3985553	Ω	294.81924	+0.27831282		+0.85947323	
e	0.1649515	i	4.82725	+0.21205255		+0.38041458	
P	3.71	H	14.5	G 0.15		U 5	

Residuals in seconds of arc

1991 01 15	033	0.1+	0.2−	1997 11 23	327	0.3+	0.1+	1997 12 15	327	0.2+	0.2+
1991 01 15	033	1.0+	0.6−	1997 11 23	327	0.0	0.0	1997 12 22	327	0.1−	0.1−
1991 01 15	033	0.1+	0.7+	1997 11 23	327	0.1+	0.3+	1997 12 22	327	0.2−	0.0
1991 01 15	033	0.2−	0.3−	1997 11 26	704	(2.3−	0.2−)	1997 12 22	327	0.1−	0.1−
1991 01 16	033	0.2−	0.9+	1997 11 26	704	0.3−	0.4−	1997 12 22	327	0.1+	0.1+
1991 01 22	675	1.3−	0.4−	1997 11 26	704	0.2−	0.2−	1997 12 24	327	0.2+	0.1+
1991 01 22	675	0.5+	0.0	1997 12 15	327	0.1+	0.1+	1997 12 24	327	0.3−	0.1+
1997 11 23	327	0.1+	0.2+	1997 12 15	327	0.2+	0.0	1997 12 24	327	0.1−	0.3−

1991 CM_1 = 1997 YP_1

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	317.19383		(2000.0)	**P**		**Q**	
n	0.25561215	ω	166.12009	−0.19075769		−0.98045502	
a	2.4589426	Ω	294.85900	+0.89549384		−0.15371041	
e	0.1382417	i	3.04262	+0.40212222		−0.12280498	
P	3.86	H	14.5	G 0.15		U 6	

Residuals in seconds of arc

1991 02 07	372	0.9+	0.4−	1991 02 17	372	2.0−	0.7+	1997 12 21	327	0.7−	0.2−
1991 02 07	372	1.0+	0.1−	1997 12 20	327	1.1+	0.5−	1997 12 21	327	0.9−	0.4−
1991 02 10	372	0.3+	0.5−	1997 12 20	327	0.9+	0.0	1997 12 21	327	0.6−	0.4−
1991 02 10	372	1.3−	1.1+	1997 12 20	327	0.8+	0.0				
1991 02 17	372	1.1+	0.8−	1997 12 21	327	0.6−	1.6+				

1991 GG_7 = 1982 YD_3 = 1998 AO

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	0.30003		(2000.0)	**P**		**Q**	
n	0.26508037	ω	94.27770	−0.39213909		−0.91959874	
a	2.4000355	Ω	18.86433	+0.81214868		−0.35822450	
e	0.1581728	i	4.21627	+0.43202020		−0.16128656	
P	3.72	H	14.7	G 0.15		U 5	

Residuals in seconds of arc

1982 12 22	095	0.0	0.1−	1991 04 15	675	(4.4−	0.3−)	1998 01 06	411	0.3+	0.3−
1991 04 08	809	0.1+	0.3+	1991 04 19	809	0.1−	0.0	1998 01 06	411	0.3+	0.1−
1991 04 08	809	0.3−	0.5+	1991 04 19	809	0.0	0.5−	1998 01 09	658	0.6−	0.0
1991 04 08	809	0.2+	1.1+	1991 04 19	809	0.1−	0.2−	1998 01 09	658	0.5−	0.0
1991 04 10	809	1.3+	0.5−	1991 04 19	675	1.0−	0.7+	1998 01 09	658	0.4−	0.0
1991 04 10	809	1.3+	0.4−	1991 04 19	675	0.9−	0.0	1998 01 09	411	0.2+	0.2+
1991 04 10	809	0.6+	1.0−	1998 01 05	411	1.0+	0.4−	1998 01 09	411	0.2−	0.0
1991 04 15	675	1.1−	0.0	1998 01 05	411	0.1−	0.5+				

1991 GV_8 = 1977 RX_{16}

Id. H. Kaneda (*MPC* 18637)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	303.35365		(2000.0)	**P**		**Q**	
n	0.25938408	ω	233.93509	−0.99039851		−0.13456120	
a	2.4350460	Ω	298.31225	+0.13556679		−0.90050142	
e	0.0794672	i	2.06269	+0.02706374		−0.41350995	
P	3.80	H	14.5	G 0.15		U 2	

Residuals in seconds of arc

1977 09 09	675	0.3+	0.5−	1991 04 19	809	(3.1−	1.5+)	1997 12 25	411	0.3−	0.8+
1977 09 10	675	0.2+	0.5−	1991 04 19	809	1.3−	1.2+	1997 12 25	566	0.4−	1.1+
1991 04 08	809	(3.2+	0.6−)	1996 09 17	566	0.7−	0.3+	1997 12 27	411	0.0	0.2+
1991 04 08	809	(2.4+	0.8−)	1996 09 17	566	0.4−	0.1−	1997 12 27	411	0.7−	0.2−
1991 04 08	809	1.5+	1.3−	1996 09 17	566	0.7+	0.4+	1997 12 30	566	1.2+	0.7−
1991 04 10	809	0.4+	0.5+	1997 11 28	910	1.1−	1.5−	1997 12 30	566	1.1+	0.5−
1991 04 10	809	0.2+	0.2+	1997 11 28	910	1.0−	1.4−	1997 12 30	566	1.5+	0.8−
1991 04 10	809	0.7−	0.1+	1997 11 28	910	1.0−	1.5−	1998 01 08	704	0.2−	0.2+
1991 04 15	675	0.5+	1.0−	1997 12 25	411	0.2−	1.2+	1998 01 08	704	0.6+	0.8+
1991 04 15	675	0.8+	1.8−	1997 12 25	566	0.7−	0.8+	1998 01 08	704	0.4+	0.4−
1991 04 19	809	1.7−	1.4+	1997 12 25	566	0.8−	0.9+	1998 01 08	704	0.7+	0.2+

1991 LB_4 = 1988 TE_5 = 1997 WY_{33}

Id. G. V. Williams, B. A. Skiff

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	168.73819		(2000.0)	**P**		**Q**	
n	0.22365992	ω	17.32292	−0.23851911		+0.94786520	
a	2.6878845	Ω	239.34059	−0.91756775		−0.29123699	
e	0.0332348	i	14.22149	−0.31808498		+0.12935447	
P	4.41	H	13.5	G 0.15		U 4	

Residuals in seconds of arc

1988 10 08	675	0.5−	0.1+	1991 06 08	809	0.2+	0.5−	1997 11 29	704	0.6−	0.0
1988 10 08	675	0.4+	0.6+	1991 06 08	809	0.1−	1.1−	1997 11 29	704	0.6−	0.6+
1991 05 18	809	0.3+	2.4+	1991 06 08	809	0.7−	0.1+	1997 11 29	704	0.3−	0.2+
1991 05 18	809	0.8+	0.7+	1997 11 06	327	0.2+	0.7−	1997 12 04	704	0.6+	0.5−
1991 05 18	809	0.7+	0.1−	1997 11 06	327	0.1+	0.6−	1997 12 04	704	0.5−	0.5+
1991 06 06	809	0.5+	0.1+	1997 11 06	327	0.3+	1.0−	1997 12 04	704	0.7+	2.2+
1991 06 06	809	0.7−	0.3+	1997 11 29	704	1.4−	1.0−	1997 12 04	704	2.1+	0.4+
1991 06 06	809	1.1−	0.5−	1997 11 29	704	0.8+	0.6−	1997 12 04	704	1.5−	1.2+

1991 PJ_{12} = 1986 TK_{17} = 1997 WM_{33}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	16.42983		(2000.0)	**P**		**Q**	
n	0.18467421	ω	144.24070	+0.66874671		−0.72916884	
a	3.0539731	Ω	263.30632	+0.64362879		+0.66555286	
e	0.1423457	i	8.40810	+0.37218251		+0.15922371	
P	5.34	H	12.5	G 0.15		U 4	

Residuals in seconds of arc

1986 10 11	095	0.5−	1.5+	1997 11 26	704	1.8−	1.2−	1997 12 04	704	0.8+	0.6+
1991 08 07	675	(0.5+	2.9−)	1997 11 28	327	1.8+	1.6+	1997 12 04	704	0.4+	0.1+
1991 08 07	675	0.1−	0.7−	1997 11 28	327	0.2−	0.3−	1997 12 04	704	0.6+	0.5+
1991 08 10	675	0.0	0.3−	1997 11 28	327	0.5−	0.3−	1997 12 04	704	0.8+	0.7+
1991 08 10	675	1.2+	0.9+	1997 11 29	704	0.6+	0.7+	1997 12 04	704	0.4+	1.3+
1991 09 10	675	0.6−	0.4−	1997 11 29	704	0.7−	0.1−	1997 12 15	327	0.3−	0.2+
1991 09 10	675	0.0	0.3−	1997 11 29	704	0.8+	0.6−	1997 12 15	327	0.5−	0.2+
1997 11 26	704	1.0−	1.4−	1997 11 29	704	0.9+	1.5−	1997 12 15	327	0.3−	0.1+
1997 11 26	704	1.7−	1.3−	1997 11 29	704	(0.2+	2.1−)				

1991 PT_{12} = 1982 SR_{11}

Id. G. V. Williams, S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	107.48372		(2000.0)	**P**		**Q**	
n	0.21143880	ω	297.92300	+0.99766404		+0.06705105	
a	2.7904844	Ω	58.23508	−0.05602484		+0.91253168	
e	0.0829464	i	0.88031	−0.03908564		+0.40347253	
P	4.66	H	13.6	G 0.15		U 2	

Residuals in seconds of arc

1982 09 27	095	0.2−	1.5+	1991 09 12	675	0.3−	0.2−	1997 12 25	369	0.3+	0.3+
1991 08 05	675	0.8+	1.0−	1992 11 28	675	0.8−	1.3−	1997 12 26	566	(3.2+	2.6−)
1991 08 07	809	(0.1+	2.8−)	1992 11 28	675	0.5+	1.7−	1997 12 26	566	(3.3+	2.0−)
1991 08 07	809	(0.6−	3.0−)	1992 12 01	675	0.8−	0.2+	1997 12 26	566	(3.9+	2.1−)
1991 08 07	809	(0.7−	3.8−)	1994 03 12	691	0.4−	0.2−	1997 12 27	369	0.8+	0.1+
1991 08 08	675	0.5−	1.0−	1994 03 12	691	0.0	0.1−	1997 12 27	369	0.1−	0.6+
1991 08 08	675	0.1−	0.7−	1994 03 12	691	0.2−	0.4−				
1991 09 12	675	0.6+	1.3+	1997 12 25	369	0.6+	0.5+				

1991 PV$_{16}$ = 1986 RC$_{13}$ = 1986 TQ$_{18}$
Id. T. B. Spahr (*MPC* 30655)
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	62.96387		(2000.0)	**P**	**Q**		
n	0.19664915	ω	289.15118	+0.89914735	−0.43443891		
a	2.9286986	Ω	96.62782	+0.41887820	+0.81927413		
e	0.1216304	i	3.05195	+0.12678763	+0.37423620		
P	5.01	H	13.0	G 0.15	U 4		

Residuals in seconds of arc

1986 09 09	095	1.7−	2.0−	1991 09 17	675	0.2−	0.2+	1998 01 02	704	0.3+	0.6+
1986 10 06	095	1.8+	2.2+	1991 09 17	675	(2.6+	1.8−)	1998 01 02	704	0.6+	0.0
1991 08 07	675	0.9+	1.2−	1997 12 25	566	1.0−	0.2+	1998 01 02	704	0.5+	0.1−
1991 08 08	675	0.6+	0.2+	1997 12 25	566	0.1−	0.4−	1998 01 02	704	0.5−	0.2+
1991 09 15	675	0.7−	0.3+	1997 12 25	566	0.0	0.8−				
1991 09 15	675	0.3−	0.3+	1998 01 02	704	0.2+	0.2−				

1991 RC$_{5}$ = 1996 TQ$_{53}$
Id. A. Gnädig
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	18.21178		(2000.0)	**P**	**Q**		
n	0.18898307	ω	72.10110	+0.29604391	−0.95517162		
a	3.0073741	Ω	0.69113	+0.78926823	+0.24328019		
e	0.0912669	i	10.88058	+0.53797181	+0.16870664		
P	5.22	H	13.5	G 0.15	U 5		

Residuals in seconds of arc

1991 09 10	675	0.1−	0.3+	1991 09 15	033	0.4−	0.3+	1996 10 05	809	0.7+	0.1+
1991 09 10	675	0.1+	1.5−	1991 09 16	675	0.0	0.8−	1996 10 05	809	0.1−	0.5+
1991 09 13	033	0.3−	0.2+	1991 09 16	675	0.9+	1.0−	1996 10 05	809	0.2−	0.8+
1991 09 13	033	0.1+	0.6+	1991 09 18	033	0.1+	0.9+	1996 10 06	809	0.7−	0.2+
1991 09 13	033	0.3−	0.4+	1991 10 03	033	0.5−	0.3+	1996 10 06	809	0.1−	0.5−
1991 09 14	033	0.2−	0.5+	1991 10 04	033	0.0	0.3−	1996 10 06	809	0.3+	1.0−
1991 09 15	033	0.7+	0.6+	1991 10 04	033	0.2−	0.4−				

1991 RS$_{8}$ = 1982 BR$_{7}$ = 1984 WZ$_{4}$
Id. G. V. Williams, A. Gnädig
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	233.11061		(2000.0)	**P**	**Q**		
n	0.27590802	ω	55.46608	+0.66809237	−0.74384231		
a	2.3368267	Ω	352.52775	+0.62671230	+0.57611024		
e	0.1071523	i	8.28555	+0.40110383	+0.33881501		
P	3.57	H	14.0	G 0.15	U 3		

Residuals in seconds of arc

1982 01 26	381	0.2−	0.1+	1991 09 12	675	1.8−	0.2−	1991 10 04	033	0.6+	0.9+
1982 01 26	381	0.7+	1.0+	1991 09 14	675	0.0	0.2−	1991 10 05	033	0.9−	1.2+
1984 11 21	010	0.8+	1.4−	1991 09 14	675	0.1−	0.3+	1991 10 31	033	0.3+	0.5+
1991 09 11	675	0.5+	1.0−	1991 09 14	675	0.7−	0.1+	1991 10 31	033	0.4+	0.4−
1991 09 11	675	0.1+	0.1−	1991 09 14	675	0.1−	0.4+	1991 11 04	033	0.3+	0.4−
1991 09 12	675	0.5+	0.8−	1991 10 04	033	0.1+	1.1+				

1991 RY$_{15}$ = 1998 AY$_{4}$
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	120.87672		(2000.0)	**P**	**Q**		
n	0.20115183	ω	201.80724	+0.88267866	+0.46828981		
a	2.8848288	Ω	130.20696	−0.42313143	+0.82868862		
e	0.0660362	i	2.98629	−0.20454382	+0.30656131		
P	4.90	H	12.0	G 0.15	U 6		

Residuals in seconds of arc

1991 09 11	675	0.6+	0.7+	1991 09 15	675	0.8+	1.0+	1998 01 06	126	0.5−	0.3+
1991 09 11	675	0.6−	0.9−	1991 09 16	675	0.7−	0.2−	1998 01 07	126	0.1−	0.7−
1991 09 14	675	0.4+	0.2−	1991 09 16	675	0.3+	0.1−	1998 01 07	126	0.4+	0.5+
1991 09 14	675	0.5−	0.4−	1998 01 05	126	0.1−	0.2−	1998 01 07	126	0.1+	0.1+
1991 09 15	675	0.1−	0.0	1998 01 05	126	0.1+	0.0				

1991 RE$_{20}$
Id. T. Kobayashi (1997 observations)
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	42.85156		(2000.0)	**P**	**Q**		
n	0.21408333	ω	107.12270	−0.02922902	−0.99816550		
a	2.7674566	Ω	344.26554	+0.82659644	+0.00568867		
e	0.0759186	i	11.27526	+0.56203558	−0.06027668		
P	4.60	H	13.5	G 0.15	U 6		

Residuals in seconds of arc

1991 09 14	675	0.3−	0.4−	1991 09 17	675	0.9+	0.1+	1997 12 30	411	1.6−	0.4+
1991 09 14	675	0.8+	0.5−	1991 09 17	675	0.4+	0.2−	1997 12 30	411	0.1−	0.0
1991 09 15	691	0.1+	0.3+	1991 10 05	691	0.6−	0.3−	1997 12 31	411	0.9+	0.1−
1991 09 15	691	0.6−	0.2+	1991 10 05	691	0.3+	0.2+	1997 12 31	411	0.7+	0.3−
1991 09 15	691	0.8−	0.5+	1991 10 05	691	0.2−	0.0				

1991 RR$_{40}$ = 1975 VA$_{4}$ = 1997 WL$_{41}$
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	19.53124		(2000.0)	**P**	**Q**		
n	0.18114285	ω	263.20549	+0.68906406	−0.72468297		
a	3.0935366	Ω	143.23678	+0.66817638	+0.63261577		
e	0.1637831	i	0.48172	+0.28059055	+0.27318836		
P	5.44	H	13.0	G 0.15	U 4		

Residuals in seconds of arc

1975 11 02	095	0.4+	1.2−	1991 10 04	033	0.2+	0.0	1997 12 04	704	0.5+	0.3−
1975 11 07	095	(2.6+	3.3+)	1991 10 05	033	0.8+	0.3−	1997 12 04	704	0.2−	0.9−
1991 09 10	033	0.5+	0.3+	1991 10 30	033	0.6+	0.1−	1997 12 04	704	0.2+	1.8−
1991 09 10	033	0.3+	0.0	1991 10 30	033	0.1+	0.9−	1997 12 31	704	1.0+	0.6+
1991 09 13	033	0.3−	0.0	1997 11 29	704	1.8−	0.8+	1997 12 31	704	0.0	0.5+
1991 09 15	691	1.5−	0.1−	1997 11 29	704	1.8−	1.1+	1997 12 31	704	0.3+	0.0
1991 09 15	691	1.8−	0.1+	1997 11 29	704	(3.3−	0.5+)	1997 12 31	704	0.0	0.8+
1991 09 15	691	1.9−	0.6+	1997 11 29	704	(2.6−	1.4+)	1998 01 02	704	0.7+	0.3+
1991 09 17	675	0.8+	0.9+	1997 11 29	704	(3.4−	2.7+)	1998 01 02	704	0.1+	0.4+
1991 09 17	675	1.6+	0.4+	1997 12 04	704	0.8+	0.5−	1998 01 02	704	0.1+	0.7+
1991 10 04	033	0.3+	0.2−	1997 12 04	704	1.1+	0.1−	1998 01 02	704	1.1−	0.1−

1991 TL$_{3}$ = 1997 XS$_{9}$
Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	30.04542		(2000.0)	**P**	**Q**		
n	0.17983595	ω	101.41912	+0.86600365	−0.49307523		
a	3.1085059	Ω	288.17133	+0.41785019	+0.80493121		
e	0.1197371	i	5.02084	+0.27466141	+0.33009477		
P	5.48	H	13.0	G 0.15	U 6		

Residuals in seconds of arc

1991 10 03	033	0.8−	0.2−	1997 12 04	704	0.9+	0.2−	1997 12 07	327	0.1+	0.7−
1991 10 03	033	1.0+	0.4−	1997 12 04	704	1.6−	0.4−	1997 12 07	327	0.2+	0.1+
1991 10 04	033	0.2−	0.1+	1997 12 04	704	0.6+	0.4−	1997 12 07	327	0.2−	0.3−
1991 10 04	033	0.2−	0.4+	1997 12 04	704	0.7+	0.2−	1997 12 08	327	0.7−	1.0−
1991 10 04	033	0.5+	0.2−	1997 12 04	704	0.8+	0.6+	1997 12 08	327	0.2+	1.1+
1991 10 05	033	0.4−	0.3−	1997 12 04	327	0.3−	0.4+	1997 12 08	327	0.1+	0.3+
1991 10 07	033	0.3−	0.1+	1997 12 04	327	0.4−	0.2+				
1991 10 07	033	0.5+	0.5+	1997 12 04	327	0.4−	0.5+				

1991 VD$_{2}$ = 1985 RB$_{6}$
Id. H. Kaneda (*MPC* 19519)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	46.94522		(2000.0)		**P**	**Q**	
n	0.17985658	ω	301.13542		+0.70831789	−0.70403733	
a	3.1082683	Ω	103.67266		+0.66424977	+0.64025393	
e	0.1810346	i	3.01805		+0.23886818	+0.30725615	
P	5.48	H	13.0	G	0.15	U	4

Residuals in seconds of arc

1985 09 15	095	0.1−	1.2−	1991 11 15	894	1.0−	0.1+	1997 12 21	369	0.8+	0.7−
1985 09 20	095	1.5+	2.1−	1991 12 01	675	0.7+	0.4+	1997 12 24	369	0.4+	0.5−
1991 11 09	399	0.3+	0.7+	1991 12 01	675	1.2+	0.1+	1997 12 24	369	0.2−	0.0
1991 11 09	399	1.4−	1.1+	1991 12 03	675	0.9+	0.2−	1998 01 06	691	0.6−	0.0
1991 11 11	399	0.6−	1.1+	1991 12 03	675	0.6+	0.2+	1998 01 06	691	0.6−	0.1−
1991 11 11	399	1.6−	0.4−	1991 12 05	399	1.4+	0.0	1998 01 06	691	0.6−	0.3−
1991 11 12	894	0.2−	1.8+	1991 12 05	399	1.1−	0.5+	1998 01 08	704	0.1+	0.8−
1991 11 12	894	0.1+	0.7−	1991 12 07	399	0.2+	0.4−	1998 01 08	704	0.2−	0.4−
1991 11 13	399	1.1−	0.7−	1991 12 07	399	1.4+	0.3+	1998 01 08	704	0.8+	0.1−
1991 11 13	399	(2.6−	0.2+)	1997 12 21	369	0.5−	0.9+	1998 01 08	704	0.5+	0.8−
1991 11 15	894	0.6−	0.3−	1997 12 21	369	0.2−	1.0−				

1992 BF

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	141.45493		(2000.0)		**P**	**Q**	
n	1.13933257	ω	336.24494		+0.37465607	+0.92293046	
a	0.9078952	Ω	315.61824		−0.82909521	+0.29077233	
e	0.2715710	i	7.26913		−0.41501080	+0.25229115	
P	0.87	H	19.5	G	0.15	U	4

Residuals in seconds of arc

1992 01 30	675	(0.4+	2.4−)	1992 02 09	596	(2.3−	1.0+)	1997 12 28	670	0.4−	0.6−
1992 01 30	675	1.6+	0.3−	1992 02 09	596	(2.6+	0.9+)	1997 12 28	670	0.5+	0.2−
1992 01 31	675	0.4−	1.2−	1992 02 09	596	(2.4−	0.6+)	1997 12 28	670	0.1+	0.2+
1992 01 31	675	0.6+	0.1−	1992 03 04	474	0.6+	1.1+	1997 12 28	897	0.4−	0.3−
1992 02 02	675	0.2+	1.6−	1992 03 04	474	0.8−	0.5+	1997 12 28	897	0.1+	0.1−
1992 02 02	675	(3.1+	2.5−)	1992 03 05	474	(0.3+	2.5+)	1997 12 28	897	0.8−	0.3−
1992 02 03	675	0.8+	1.0−	1992 03 05	474	(3.2+	1.5+)	1997 12 30	540	0.0	1.4+
1992 02 03	675	0.3+	1.6−	1992 03 07	474	0.8−	1.5+	1997 12 30	540	0.1+	0.5+
1992 02 03	675	2.0−	0.0	1992 03 07	474	1.0−	1.1+	1997 12 30	540	0.4+	0.9+
1992 02 04	657	0.6−	0.8+	1997 12 25	566	0.3−	0.8−	1997 12 31	118	0.1+	0.7+
1992 02 04	657	0.3+	0.8+	1997 12 25	566	0.2−	0.8−	1997 12 31	118	0.0	0.8+
1992 02 04	657	1.8−	1.4+	1997 12 25	566	0.1+	1.2−	1997 12 31	540	0.0	0.2+
1992 02 04	675	0.9+	0.4+	1997 12 27	566	0.5−	0.2+	1997 12 31	540	0.2+	0.1+
1992 02 04	675	0.8+	0.7−	1997 12 27	566	0.4−	0.3+	1997 12 31	540	1.0+	0.4+
1992 02 05	474	0.6+	0.6+	1997 12 27	566	0.5−	0.5+	1998 01 08	118	0.3+	0.3+
1992 02 05	474	0.7+	1.1+	1997 12 27	587	0.1−	0.8−	1998 01 08	118	0.8+	0.4+
1992 02 06	801	0.3−	0.4−	1997 12 27	587	0.8−	0.6−	1998 01 11	118	0.3−	0.1−
1992 02 06	801	0.6+	1.9−	1997 12 27	046	0.4+	0.0	1998 01 11	118	0.3−	0.1−
1992 02 08	675	(3.3+	0.3+)	1997 12 27	046	0.3+	0.1+	1998 01 11	118	0.2−	0.0
1992 02 08	675	1.1−	0.9−	1997 12 27	046	0.3+	0.1+	1998 01 11	046	0.8−	0.1+
1992 02 09	596	(2.5+	0.8−)	1997 12 28	104	0.4+	0.3+	1998 01 11	046	0.6−	0.1+
1992 02 09	596	1.1−	1.3−	1997 12 28	104	0.1+	0.7+	1998 01 11	046	0.1+	0.0
1992 02 09	596	(0.9−	5.1−)	1997 12 28	104	0.0	0.3+	1998 01 11	046	0.0	0.3+
1992 02 09	596	0.3+	0.1+	1997 12 28	104	0.5+	0.5+				

1992 CR_2 = 1997 WZ_{34}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	168.04803		(2000.0)		**P**	**Q**	
n	0.30395359	ω	55.38326		−0.21965859	+0.97521332	
a	2.1907754	Ω	201.97361		−0.91675649	−0.21567230	
e	0.1068908	i	4.08093		−0.33362798	−0.04944132	
P	3.24	H	14.0	G	0.15	U	6

Residuals in seconds of arc

1992 01 30	809	0.8+	0.3+	1992 02 12	809	0.4+	0.2−	1997 11 29	704	1.3+	0.2+
1992 01 30	809	0.1+	0.5+	1992 02 12	809	0.4−	0.0	1997 11 29	704	1.7+	0.1+
1992 01 30	809	3.0−	1.9+	1992 02 12	809	1.1−	0.5+	1997 12 04	704	1.6−	0.8+
1992 02 02	809	1.4+	0.0	1997 11 26	704	0.2−	0.2+	1997 12 04	704	0.0	2.0−
1992 02 02	809	1.3+	0.7−	1997 11 26	704	1.5−	0.9+	1997 12 04	704	0.4−	1.0−
1992 02 02	809	2.1+	0.6−	1997 11 26	704	0.3−	0.4+	1997 12 04	704	0.3−	0.5−
1992 02 06	809	0.0	0.9−	1997 11 29	704	0.5−	0.3−	1997 12 04	704	0.2−	1.3−
1992 02 06	809	0.4−	0.4−	1997 11 29	704	1.0+	1.4+				
1992 02 06	809	1.2−	0.3−	1997 11 29	704	0.9+	0.8+				

1992 EB_1

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	327.64393		(2000.0)		**P**	**Q**	
n	0.15851557	ω	231.21192		−0.89697475	+0.40574296	
a	3.3813342	Ω	331.42193		−0.19550887	−0.72018032	
e	0.5705845	i	21.52662		−0.39650040	−0.56277256	
P	6.22	H	16.5	G	0.15	U	1

Residuals in seconds of arc

1992 03 10	413	0.7+	1.5−	1992 04 30	413	0.5−	1.5−	1997 12 24	104	0.4−	0.1+
1992 03 10	413	0.8+	1.0+	1992 05 24	413	0.2+	0.2−	1997 12 24	104	0.3−	0.9+
1992 03 11	413	0.9−	0.6−	1992 05 24	413	0.2+	0.2−	1997 12 27	104	0.5+	0.4−
1992 03 13	413	0.5−	0.2+	1992 06 18	413	0.2−	0.2−	1997 12 27	104	0.6+	0.0
1992 03 14	413	1.4+	1.3+	1992 06 18	413	0.2−	0.1−	1997 12 27	104	0.1+	0.0
1992 03 15	413	0.4−	0.2+	1992 06 19	413	0.5−	0.0	1997 12 30	711	0.1−	0.3−
1992 03 24	413	1.1−	0.7−	1992 06 19	413	0.6+	0.1−	1997 12 30	711	0.2−	0.2+
1992 03 24	413	0.7−	0.5+	1992 07 05	413	0.6−	0.1−	1997 12 31	711	0.1−	0.1−
1992 03 28	413	0.3+	0.1−	1992 07 05	413	0.6−	0.1−	1997 12 31	711	0.0	0.2−
1992 04 04	413	0.6+	0.8+	1992 08 21	413	0.1−	0.7+	1998 01 01	711	0.2+	0.1−
1992 04 22	413	0.2+	0.2+	1992 08 21	413	0.4−	0.5+	1998 01 01	711	0.2−	0.1−
1992 04 22	413	0.2+	0.2+	1992 08 22	413	0.4+	0.8+				

1992 GW_4 = 1997 WR_{30}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	220.22693		(2000.0)		**P**	**Q**	
n	0.27922465	ω	171.41959		−0.86241645	+0.49997928	
a	2.3182853	Ω	38.90683		−0.47158423	−0.73676937	
e	0.1030850	i	7.23632		−0.18397333	−0.45518306	
P	3.53	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1992 04 04	809	0.6+	0.1−	1992 04 25	809	0.1+	0.3−	1997 11 29	704	1.3+	0.8−
1992 04 04	809	0.6−	0.1−	1992 04 25	809	0.4+	0.5+	1997 12 04	704	0.5+	0.0
1992 04 04	809	1.1−	0.9−	1992 04 25	809	0.6+	0.1−	1997 12 04	704	1.5−	2.9−
1992 04 06	809	0.1−	0.3+	1997 11 29	704	0.1+	1.6−	1997 12 04	704	0.7−	0.9+
1992 04 06	809	0.7−	0.8+	1997 11 29	704	0.1−	0.1+	1997 12 04	704	0.3−	0.8+
1992 04 06	809	0.7+	0.0	1997 11 29	704	1.4+	1.1+	1997 12 04	704	0.9−	2.5+

1992 OK = 1997 WK_{30}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	47.22081		(2000.0)		**P**	**Q**	
n	0.21546160	ω	103.17305		+0.98170498	+0.14753246	
a	2.7556420	Ω	248.44625		−0.18108924	+0.91877090	
e	0.3540691	i	7.43622		+0.05883899	+0.36618876	
P	4.57	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1992 07 29	372	(3.6+	0.0)	1992 08 20	413	0.2+	0.5+	1992 10 27	801	0.2+	0.5+
1992 07 29	372	1.6−	0.8+	1992 08 21	413	0.1+	0.4+	1992 11 21	801	0.6−	0.0
1992 07 31	675	0.8+	1.5−	1992 08 21	413	0.1+	0.5+	1992 11 21	801	0.6−	0.1−
1992 07 31	675	0.2+	0.6+	1992 08 21	372	0.3−	0.1−	1992 11 27	801	0.1−	0.0
1992 07 31	372	0.4+	0.1+	1992 08 21	372	(2.2−	0.8+)	1992 11 27	801	0.6+	0.3+
1992 07 31	372	0.5−	0.7−	1992 08 23	372	1.1−	1.1−	1997 11 29	704	0.9−	0.4+
1992 08 02	675	1.0+	1.2−	1992 08 31	372	(0.6−	4.0+)	1997 11 29	704	1.0−	0.5−
1992 08 02	675	0.3+	1.2−	1992 08 31	372	(1.9−	3.7+)	1997 11 29	704	0.6−	0.1−
1992 08 04	675	0.5−	1.0−	1992 09 05	413	0.2+	0.0	1997 11 29	704	0.8−	0.0
1992 08 04	675	0.6+	0.2+	1992 09 05	413	0.4+	0.0	1997 12 04	704	0.4−	1.8−

1992 08 06	675	(1.9+	2.1−)	1992 09 24	801	0.4+	0.3+	1997 12 04	704	0.2+	0.5−
1992 08 06	675	0.1−	0.8+	1992 09 24	801	0.7+	0.2+	1997 12 04	704	1.3+	0.5+
1992 08 07	675	0.1+	0.9−	1992 09 30	801	0.5+	0.8+	1997 12 04	704	1.1+	0.2−
1992 08 07	675	0.2+	0.1+	1992 09 30	801	0.7+	0.7+	1997 12 04	704	0.1−	0.8−
1992 08 09	372	1.2−	0.8−	1992 10 23	801	0.7−	0.1+	1997 12 28	566	0.6+	0.3+
1992 08 09	372	0.3−	0.7+	1992 10 24	801	0.5−	0.0	1997 12 28	566	0.5+	0.4+
1992 08 20	413	0.2+	0.5+	1992 10 27	801	0.1−	0.7+	1997 12 28	566	0.3+	0.5+

1992 PN$_1$ = 1997 XP$_{10}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	38.22484		(2000.0)		**P**	**Q**	
n	0.22627340	ω	69.23758		+0.91365431	−0.37941737	
a	2.6671476	Ω	312.73918		+0.25787818	+0.81841037	
e	0.1835119	i	11.45580		+0.31422069	+0.43156336	
P	4.36	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1992 07 24	809	0.6+	0.1+	1992 08 08	010	0.2+	1.2+	1997 12 11	327	0.4+	0.3+
1992 07 24	809	2.2+	0.4−	1992 08 08	010	0.3+	0.1−	1997 12 11	327	0.2+	0.0
1992 07 24	809	0.1+	0.0	1992 08 08	010	0.1−	0.6−	1997 12 11	327	0.3−	0.1−
1992 07 26	809	0.7−	0.9+	1992 08 09	010	0.6−	0.5+	1997 12 11	327	0.5−	0.3+
1992 07 26	809	0.6−	0.3+	1992 08 09	010	1.0−	0.0	1997 12 20	327	0.4+	0.1−
1992 07 26	809	0.0	0.4+	1992 08 09	010	1.0−	0.4−	1997 12 20	327	0.2+	0.2−
1992 07 30	809	0.2+	0.9−	1997 12 02	327	0.1−	0.3−	1997 12 20	327	0.0	0.2−
1992 07 30	809	0.4+	0.5−	1997 12 02	327	0.1−	0.0				
1992 07 30	809	0.1+	0.4−	1997 12 02	327	0.1−	0.1+				

1992 RC$_4$ = 1988 VO$_{11}$ = 1997 WP$_{35}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	53.22364		(2000.0)		**P**	**Q**	
n	0.22431268	ω	136.51497		+0.99094959	−0.13236557	
a	2.6826674	Ω	231.10477		+0.11396835	+0.91748613	
e	0.0844329	i	1.64350		+0.07092339	+0.37509807	
P	4.39	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1988 11 03	327	1.3+	0.8−	1992 09 22	809	1.8−	0.8−	1997 11 29	704	0.4−	0.8−
1988 11 03	327	0.8−	0.9−	1992 09 23	809	1.1+	0.4+	1997 11 29	704	0.5−	1.3−
1992 09 02	809	0.9+	1.0+	1992 09 23	809	0.1−	0.3+	1997 11 29	704	0.2−	0.5−
1992 09 02	809	0.5−	0.0	1992 09 23	809	0.5−	0.3+	1997 12 04	704	1.2+	0.2−
1992 09 02	809	0.8−	0.2−	1997 11 26	704	1.2−	0.3+	1997 12 04	704	0.8+	1.5+
1992 09 03	809	1.1+	1.6+	1997 11 26	704	1.2−	0.6+	1997 12 04	704	1.8+	1.5+
1992 09 22	809	0.4+	0.2−	1997 11 26	704	(3.0−	3.5+)	1997 12 04	704	1.0+	1.2+
1992 09 22	809	0.1−	1.6−	1997 11 29	704	1.4−	0.8−				

1992 UO$_6$ = 1998 AR$_7$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	53.67683		(2000.0)		**P**	**Q**	
n	0.21085083	ω	276.45143		+0.96230407	−0.22672852	
a	2.7956695	Ω	96.72865		+0.26775446	+0.88669249	
e	0.2402814	i	8.69987		−0.04773292	+0.40295238	
P	4.67	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1992 10 26	675	0.9−	0.8−	1992 11 30	675	0.2+	0.0	1998 01 06	704	0.1−	0.2−
1992 10 26	675	0.3−	0.0	1992 11 30	675	0.2−	0.3+	1998 01 06	704	0.0	0.1+
1992 10 28	400	0.8+	1.0+	1998 01 02	704	0.2−	0.2−	1998 01 08	704	0.6+	0.2−
1992 10 28	400	1.0+	0.0	1998 01 02	704	0.1+	0.3−	1998 01 08	704	0.1−	0.1+
1992 11 02	400	(3.6−	0.2+)	1998 01 02	704	0.0	0.3−	1998 01 08	704	1.3−	0.5+
1992 11 02	400	(3.1−	1.2−)	1998 01 02	704	0.0	0.2−	1998 01 08	704	0.6+	0.9+
1992 11 17	400	0.6−	0.3−	1998 01 02	704	0.4+	0.2−	1998 01 08	704	(2.7−	0.5+)
1992 11 17	400	0.1−	0.2−	1998 01 06	704	0.0	0.0				

1992 WT$_1$ = 1969 VB$_2$

Id. T. Kobayashi

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	66.35056		(2000.0)		**P**	**Q**	
n	0.21478166	ω	291.39927		+0.95516524	−0.26582932	
a	2.7614547	Ω	84.20307		+0.29603715	+0.86436555	
e	0.2591082	i	7.52921		−0.00462306	+0.42685708	
P	4.59	H	12.9	G	0.15	U	4

Residuals in seconds of arc

1969 11 15	095	1.0−	2.6+	1992 11 21	402	0.4+	0.8−	1992 12 01	372	0.7−	0.8+
1992 11 17	494	0.4−	0.5−	1992 11 22	894	1.1+	0.7+	1992 12 01	372	0.2+	1.2+
1992 11 18	400	0.8+	0.8−	1992 11 22	376	0.5+	0.8+	1992 12 04	894	0.6−	0.5−
1992 11 18	400	0.7−	0.4−	1992 11 22	376	0.9−	1.1−	1992 12 04	894	2.0−	0.8−
1992 11 18	402	1.4+	0.9−	1992 11 25	675	0.8+	0.1+	1992 12 14	894	0.2−	0.1−
1992 11 18	402	0.6+	1.7−	1992 11 25	675	1.6+	1.0+	1992 12 14	894	0.7−	0.1+
1992 11 19	494	0.3+	0.7+	1992 11 25	372	(3.2+	0.3+)	1992 12 22	894	0.5−	0.1−
1992 11 19	494	0.2−	0.6+	1992 11 25	372	1.4−	0.4+	1992 12 22	894	0.5+	0.0
1992 11 21	400	1.1−	0.5−	1992 11 27	372	1.2−	1.0−	1992 12 26	894	(1.9−	2.7+)
1992 11 21	400	(2.6+	1.5−)	1992 11 27	372	1.8−	1.2+	1992 12 26	894	0.1−	0.4−
1992 11 21	894	1.4+	0.7−	1992 11 27	894	0.6−	0.2−	1997 12 28	411	0.0	0.5+
1992 11 21	894	1.3+	0.4−	1992 11 28	675	1.0+	0.7+	1997 12 28	411	0.1+	0.1+
1992 11 21	402	1.2+	0.3−	1992 11 28	675	0.6+	0.1−				

1993 BY$_2$ = 1979 OK$_5$ = 1997 XT

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	317.79597		(2000.0)		**P**	**Q**	
n	0.18707479	ω	204.69629		−0.87312966	−0.48137992	
a	3.0277909	Ω	306.30934		+0.46162765	−0.76573691	
e	0.1250912	i	5.47806		+0.15666688	−0.42652122	
P	5.27	H	13.1	G	0.15	U	5

Residuals in seconds of arc

1979 07 24	675	1.1+	0.5+	1993 01 25	372	1.9−	0.3+	1997 12 03	411	0.0	0.4+
1979 07 24	413	1.0−	1.4−	1993 01 26	372	1.4−	0.1−	1997 12 03	411	0.7+	0.5−
1979 07 25	675	0.3−	1.4+	1993 01 28	809	0.3−	1.4+	1997 12 04	411	0.8−	0.1+
1993 01 22	809	0.7+	0.4+	1993 01 28	809	0.2−	0.9+	1997 12 04	411	0.2−	0.6−
1993 01 22	809	0.7+	0.6−	1993 01 28	809	0.4−	0.8+	1997 12 10	411	0.2−	0.2+
1993 01 22	809	0.8+	0.6−	1993 01 28	372	1.4+	1.0−	1997 12 10	411	0.5+	0.6+
1993 01 25	372	0.1+	1.4−	1993 01 28	372	0.6+	0.0				

1993 BD$_4$ = 1975 NP$_1$ = 1994 CE$_{20}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	330.51803		(2000.0)		**P**	**Q**	
n	0.08425800	ω	177.82459		+0.72892998	+0.66387800	
a	5.1530213	Ω	138.90360		−0.63187374	+0.74638148	
e	0.1514100	i	14.72810		−0.26343247	+0.04669781	
P	11.70	H	10.0	G	0.15	U	4

Residuals in seconds of arc

1975 07 12	095	0.0	0.1−	1993 01 28	010	1.3−	0.8+	1994 02 10	809	0.6+	0.0
1993 01 27	010	0.3+	0.4+	1993 02 20	010	1.1+	0.5−	1994 02 10	809	0.3−	0.4−
1993 01 27	010	0.1+	0.0	1993 02 20	010	0.7+	0.3−	1994 02 10	809	0.7−	0.4−
1993 01 27	010	1.1+	0.7−	1993 02 20	010	0.4+	0.6−	1994 02 13	809	0.6+	0.3+
1993 01 28	010	1.7−	0.8+	1993 02 22	010	0.0	0.7−	1994 02 13	809	0.6+	0.1+
1993 01 28	010	1.7−	0.9+	1993 02 23	010	0.9+	0.4−	1994 02 13	809	0.6−	0.5+

1993 DR$_2$ = 1997 YH$_{10}$

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	100.07203		(2000.0)		**P**	**Q**	
n	0.18762407	ω	33.93466		+0.99620694	−0.02103609	
a	3.0218786	Ω	326.95800		−0.02527200	+0.85856776	
e	0.0966016	i	8.90833		+0.08326499	+0.51226838	
P	5.25	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1993 01 29	691	0.1+	0.1+	1993 02 20	010	0.8+	0.1+	1997 12 30	566	1.0+	0.7+
1993 01 29	691	0.1−	0.2−	1993 02 22	010	0.3+	0.5−	1997 12 30	566	0.5+	0.4+
1993 01 29	691	0.1+	0.2−	1993 02 23	010	1.0−	0.8−	1997 12 30	566	0.0	0.5+
1993 02 20	010	0.5−	1.3+	1997 12 28	411	0.4+	0.0	1997 12 30	411	0.5−	0.5−
1993 02 20	010	0.3+	0.2+	1997 12 28	411	0.9−	0.4−	1997 12 30	411	0.5−	0.7−

1993 FU$_{35}$ = 1998 AM$_7$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	45.56275		(2000.0)		**P**	**Q**	
n	0.17115948	ω	323.39678		+0.37148149	−0.92757373	
a	3.2126894	Ω	104.76558		+0.86136239	+0.32820000	
e	0.1532179	i	2.37705		+0.34649145	+0.17858259	
P	5.76	H	12.3	G	0.15	U	6

Residuals in seconds of arc

1993 03 19	809	0.5+	0.6+	1993 04 14	691	0.9−	0.1−	1998 01 06	411	0.7−	0.5+
1993 03 20	809	0.1+	0.4+	1993 04 14	691	0.9−	0.2−	1998 01 09	411	0.6+	1.0−
1993 03 24	809	0.2+	0.4+	1993 04 18	413	2.0+	0.7−	1998 01 09	411	0.5−	0.6−
1993 04 14	691	1.0−	0.4−	1998 01 06	411	0.4+	1.1+				

1993 QO = 1986 QC

Id. G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	51.11474		(2000.0)		**P**	**Q**	
n	0.28281405	ω	77.57848		+0.80064691	−0.53552165	
a	2.2986282	Ω	314.04370		+0.29070937	+0.73933395	
e	0.2844527	i	21.94796		+0.52388223	+0.40816893	
P	3.49	H	13.5	G	0.15	U	2

Residuals in seconds of arc

1986 08 26	046	1.4−	1.5+	1993 10 13	801	0.8−	0.2+	1997 12 29	327	0.6−	0.1−
1986 08 26	046	(5.3+	2.2−)	1993 10 14	801	0.9−	0.3+	1998 01 06	732	0.4+	0.0
1993 08 20	675	0.8+	1.1−	1993 10 19	801	1.1−	0.0	1998 01 06	732	0.9+	0.9−
1993 08 20	675	0.6−	1.2−	1993 10 19	801	0.2−	0.0	1998 01 06	732	1.0−	0.4−
1993 08 24	675	(2.3+	1.0−)	1993 11 10	801	0.6−	0.4+	1998 01 09	732	1.6+	0.4−
1993 08 24	675	0.1+	0.2−	1993 11 10	801	0.2−	0.6+	1998 01 09	732	0.6+	0.5−
1993 09 12	675	0.6+	0.4+	1993 12 17	801	0.7−	0.4+	1998 01 11	046	0.6−	0.1−
1993 09 12	675	1.0+	0.7−	1993 12 17	801	0.5−	0.3+	1998 01 11	046	0.6−	0.2+
1993 09 14	675	1.8+	0.8−	1997 12 29	327	0.7−	0.1+	1998 01 12	046	0.6−	0.2+
1993 09 14	675	1.9+	0.3−	1997 12 29	327	0.7−	0.2−	1998 01 12	046	0.4−	0.3+

1993 SQ$_5$ = 1998 AU

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	323.87596		(2000.0)		**P**	**Q**	
n	0.30721719	ω	160.10474		−0.92596032	−0.37761328	
a	2.1752326	Ω	357.70520		+0.33789788	−0.82571981	
e	0.0202238	i	3.41483		+0.16858973	−0.41904057	
P	3.21	H	15.2	G	0.15	U	6

Residuals in seconds of arc

1993 09 17	809	1.1+	0.1+	1993 09 18	809	0.7−	0.8−	1993 09 24	809	0.3−	0.4−
1993 09 17	809	0.7−	0.4−	1993 09 18	675	1.1+	0.5+	1993 09 24	809	0.9−	1.1−
1993 09 17	809	0.2−	0.4−	1993 09 22	809	0.5−	0.3+	1998 01 05	411	0.2+	0.5−
1993 09 18	809	(3.6+	0.8+)	1993 09 22	809	0.4−	0.4+	1998 01 05	411	0.7−	1.3+
1993 09 18	809	1.5+	0.4+	1993 09 22	809	0.4−	1.2+	1998 01 06	411	1.0−	0.6−
1993 09 18	809	2.1+	0.5+	1993 09 22	675	0.3+	1.4+	1998 01 06	411	0.1+	0.4−
1993 09 18	809	1.1−	1.0−	1993 09 22	675	(0.4−	2.4−)	1998 01 09	411	0.9+	0.5+
1993 09 18	809	1.6−	1.6−	1993 09 24	809	0.9+	0.9+	1998 01 09	411	0.4+	0.3−

1993 TC$_{25}$ = 1997 WN$_{34}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	353.89746		(2000.0)		**P**	**Q**	
n	0.25884464	ω	330.04373		+0.22318637	−0.97303783	
a	2.4384280	Ω	107.00801		+0.90598993	+0.18504293	
e	0.1705812	i	3.48825		+0.35968053	+0.13768259	
P	3.81	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1993 10 09	809	1.1+	0.4+	1993 10 20	809	0.0	0.2−	1997 12 04	704	2.9+	0.7+
1993 10 09	809	0.2+	0.4+	1993 10 20	809	0.8−	0.1−	1997 12 04	704	0.6+	0.0
1993 10 09	809	0.8−	0.1−	1997 11 29	704	1.6−	2.1+	1997 12 04	704	0.4−	0.2+
1993 10 11	809	0.2−	0.4−	1997 11 29	704	0.7−	0.2+	1997 12 04	704	0.2+	1.6−
1993 10 11	809	0.2−	0.0	1997 11 29	704	0.2−	0.1−	1997 12 05	691	0.4−	0.4−
1993 10 11	809	0.4+	0.2+	1997 11 29	704	0.4+	0.3−	1997 12 05	691	0.3−	0.2−
1993 10 20	809	0.5+	0.4−	1997 11 29	704	0.0	0.1−	1997 12 05	691	0.4−	0.4−

1993 TP$_{37}$ = 1997 WY$_{46}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	338.32450		(2000.0)		**P**	**Q**	
n	0.26218168	ω	17.85638		−0.10224053	−0.98888853	
a	2.4176930	Ω	78.11725		+0.89869552	−0.13833418	
e	0.0798065	i	6.33154		+0.42648943	+0.05443469	
P	3.76	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1993 10 09	809	0.7−	0.8−	1997 11 26	704	2.2−	0.4+	1997 12 04	704	0.2+	0.7+
1993 10 09	809	0.0	1.0−	1997 11 26	704	(4.5−	0.1+)	1997 12 31	704	0.6−	0.5−
1993 10 09	809	0.9+	0.1−	1997 11 29	704	1.9+	0.9+	1997 12 31	704	1.1+	0.9+
1993 10 11	809	0.4+	0.5−	1997 11 29	704	1.1+	0.2+	1997 12 31	704	0.5−	0.2−
1993 10 11	809	0.5−	0.4−	1997 11 29	704	1.1+	0.2−	1997 12 31	704	0.8−	0.3−
1993 10 11	809	1.3−	0.2−	1997 11 29	704	1.1+	0.4−	1998 01 02	704	0.3−	0.1+
1993 10 21	809	0.5−	0.9+	1997 11 29	704	1.4+	1.0−	1998 01 02	704	0.2+	0.4−
1993 10 21	809	1.4+	1.4+	1997 12 04	704	1.3+	0.2−	1998 01 02	704	0.5+	1.1+
1993 10 21	809	0.2+	0.8+	1997 12 04	704	0.0	0.3−	1998 01 02	704	0.3−	0.5−
1997 11 26	704	2.8−	0.3+	1997 12 04	704	2.3−	1.0−				

1993 VS$_1$ = 1982 VG$_{12}$

Id. T. Kobayashi

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	37.38730		(2000.0)		**P**	**Q**	
n	0.26611247	ω	130.84158		+0.63267193	−0.77328903	
a	2.3938259	Ω	279.86114		+0.69712623	+0.59222102	
e	0.2049126	i	2.43374		+0.33725547	+0.22649137	
P	3.70	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1982 11 13	095	0.0	0.0	1993 11 22	399	0.1+	0.2−	1998 01 08	704	0.8+	0.1−
1993 11 11	399	0.2+	0.0	1993 11 22	399	0.5+	0.4−	1998 01 08	704	0.1−	0.6+
1993 11 11	399	0.6−	0.2+	1997 12 25	411	0.2−	0.1−	1998 01 08	704	0.1+	0.4−
1993 11 16	399	0.8+	0.9+	1997 12 25	411	0.3−	0.0				
1993 11 16	399	1.1−	0.6−	1998 01 08	704	0.4−	0.0				

1993 XN

Id. F. B. Zoltowski (1997 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	256.28024		(2000.0)		**P**	**Q**	
n	0.22883898	ω	280.56904		−0.96540245	+0.15364000	
a	2.6471754	Ω	268.50780		−0.06285239	−0.92127227	
e	0.1248705	i	12.16734		−0.25307643	−0.35728441	
P	4.31	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1993 12 08	411	1.2−	0.5−	1993 12 23	411	0.0	0.2−	1997 12 26	426	0.1+	0.8+
1993 12 08	411	0.4−	0.2−	1993 12 23	411	0.0	0.0	1997 12 27	426	0.0	0.2+
1993 12 09	411	1.0+	0.2−	1993 12 23	411	0.2+	0.1−	1997 12 27	426	0.1−	0.2+
1993 12 09	411	0.5+	0.5−	1994 01 02	411	0.4−	0.0	1997 12 27	426	0.3+	0.5+
1993 12 09	411	0.6+	0.1+	1994 01 02	411	0.3−	0.3−	1997 12 30	566	0.4−	0.9−
1993 12 18	411	0.4−	0.8+	1994 01 02	411	0.1−	0.3+	1997 12 30	566	0.3−	1.0−
1993 12 18	411	0.1+	0.4+	1997 12 26	426	0.4+	0.6+	1997 12 30	566	0.3−	1.1−
1993 12 18	411	0.2+	0.5+	1997 12 26	426	0.2+	0.7+				

1993 XV

Id. J. Roe (1998 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	27.23442		(2000.0)		**P**	**Q**	
n	0.25298001	ω	136.84863		+0.40482631	−0.90834687	
a	2.4759692	Ω	289.02030		+0.80583056	+0.40866463	
e	0.2104856	i	6.37566		+0.43214900	+0.08887738	
P	3.90	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1993 12 11	411	0.0	0.3+	1993 12 23	411	0.1−	0.4+	1994 01 19	411	0.1−	0.2−
1993 12 11	411	0.2+	0.4−	1993 12 23	411	0.6−	0.1−	1994 01 19	411	0.1+	0.2−
1993 12 12	411	0.1+	0.8+	1993 12 23	411	0.6−	0.3−	1994 01 19	411	0.9+	0.4+
1993 12 12	411	0.4+	0.6−	1994 01 02	411	0.0	0.2+	1998 01 07	732	0.3−	1.0+
1993 12 12	411	0.0	0.1−	1994 01 02	411	0.1−	0.3+	1998 01 07	732	0.4+	1.1+
1993 12 18	411	0.2−	0.3−	1994 01 02	411	0.3−	0.1−	1998 01 08	732	0.8−	0.8−
1993 12 18	411	0.2−	0.7−	1994 01 03	411	0.5+	0.9+	1998 01 08	732	0.7+	1.7−

1994 AT_2 = 1990 EA_2

Id. S. Nakano (*MPC* 23242)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	68.01972		(2000.0)		**P**	**Q**	
n	0.21804878	ω	106.83625		+0.99682909	−0.00140038	
a	2.7338012	Ω	253.29892		−0.02858817	+0.92678550	
e	0.0733564	i	4.76470		+0.07425958	+0.37558845	
P	4.52	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1990 03 02	809	0.3+	0.3−	1994 01 15	411	0.6−	1.0−	1997 11 29	704	1.7−	0.4−
1990 03 02	809	0.5+	1.0−	1994 01 19	411	1.5+	0.9+	1997 12 04	704	1.3+	0.8+
1990 03 02	809	0.6+	0.1−	1994 01 19	411	(2.8+	1.0−)	1997 12 04	704	1.1+	0.1+
1990 03 04	809	1.7−	0.6+	1994 01 19	411	(4.0+	1.8−)	1997 12 04	704	1.1+	1.1+
1990 03 04	809	0.0	1.0+	1994 01 21	411	0.6−	0.5−	1997 12 04	704	0.1+	1.0+
1990 03 04	809	1.1+	1.3+	1994 01 21	411	0.3+	0.2−	1997 12 04	704	0.1−	0.8+
1994 01 14	411	1.2−	0.6+	1994 01 21	411	0.9−	0.0	1997 12 31	704	(2.9+	0.9−)
1994 01 14	411	0.2−	0.1+	1997 11 29	704	0.9−	0.4−	1997 12 31	704	(2.8+	0.3+)
1994 01 14	411	0.7+	0.8−	1997 11 29	704	0.8−	0.8−	1997 12 31	704	(2.4+	0.1+)
1994 01 15	411	0.2+	0.7−	1997 11 29	704	1.3−	1.1−	1997 12 31	704	1.3+	0.3+
1994 01 15	411	0.0	0.6−	1997 11 29	704	0.2−	0.3+				

1994 CE_1 = 1998 AN_5

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	50.11806		(2000.0)		**P**	**Q**	
n	0.24279911	ω	108.61868		+0.33449131	−0.93103334	
a	2.5447082	Ω	320.85172		+0.75382939	+0.35725700	
e	0.1417644	i	13.36363		+0.56555886	+0.07446040	
P	4.06	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1994 02 09	596	1.1+	0.0	1994 02 19	596	1.0−	2.6−	1994 03 10	596	0.7−	0.1+
1994 02 09	596	1.7−	0.1+	1994 02 19	596	1.3−	1.9−	1994 03 10	596	0.9+	0.4−
1994 02 09	596	1.6+	0.1+	1994 02 19	596	1.3+	0.9−	1998 01 08	910	0.1−	0.1+
1994 02 10	596	0.7+	2.8−	1994 03 04	596	1.3−	1.8+	1998 01 08	910	0.2−	0.1+
1994 02 10	596	0.7+	1.1−	1994 03 04	596	1.1+	0.2−	1998 01 08	910	0.1+	0.2+
1994 02 10	596	0.4−	0.1+	1994 03 05	596	0.8+	0.3−	1998 01 09	910	0.0	0.0
1994 02 11	596	0.9−	2.4+	1994 03 05	596	0.9−	0.0	1998 01 09	910	0.0	0.1+
1994 02 11	596	0.3−	2.4+	1994 03 10	596	(8.3+	0.3−)	1998 01 09	910	0.3+	0.2−
1994 02 11	596	1.0−	2.3+	1994 03 10	596	1.2+	0.8+				

1994 CF_1 = 1992 QF_2

Id. T. Kobayashi (*MPC* 23982)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	15.73376		(2000.0)		**P**	**Q**	
n	0.22306674	ω	116.83552		+0.54826117	−0.81760286	
a	2.6926475	Ω	298.81938		+0.67823604	+0.55773399	
e	0.1812918	i	11.58071		+0.48929088	+0.14303271	
P	4.42	H	13.0	G	0.15	U	2

Residuals in seconds of arc

1992 08 25	675	0.2+	0.8+	1994 02 03	894	0.0	0.1−	1994 02 18	894	1.2+	0.5−
1992 08 25	675	0.5+	0.4+	1994 02 03	894	0.0	0.0	1997 12 16	127	0.0	0.3−
1992 08 28	675	0.3−	0.3−	1994 02 10	691	0.2−	0.8+	1997 12 16	127	0.1+	0.9−
1992 08 28	675	0.4−	0.8−	1994 02 10	691	0.2−	0.3+	1998 01 01	127	0.1−	0.2+
1994 02 02	894	0.9−	1.1+	1994 02 10	691	0.1−	0.2+	1998 01 01	127	0.2+	0.6+
1994 02 02	894	0.6−	0.5−	1994 02 18	894	1.0+	1.3−	1998 01 01	127	0.2−	0.4+

1994 LJ_1 = 1989 CH_9 = 1997 XJ_{11}

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	337.35737		(2000.0)		**P**	**Q**	
n	0.22363751	ω	93.87635		−0.97667990	−0.03301113	
a	2.6880641	Ω	84.32057		−0.05782427	−0.91115365	
e	0.2058496	i	12.30961		+0.20676732	−0.41074237	
P	4.41	H	12.5	G	0.15	U	3

Residuals in seconds of arc

1989 02 02	675	0.1−	0.1+	1994 06 12	675	1.5+	0.3+	1997 12 21	327	0.4−	0.3−
1989 02 02	675	0.2+	0.1+	1994 06 12	675	0.8+	0.2−	1997 12 21	327	0.1−	0.2−
1994 06 02	905	0.2+	0.9+	1997 12 13	327	0.4+	0.2+	1997 12 24	327	0.2−	0.3−
1994 06 02	905	0.8−	0.4−	1997 12 13	327	0.1−	0.3+	1997 12 24	327	0.2+	0.0
1994 06 09	675	0.5−	0.4−	1997 12 13	327	0.4+	0.2−	1997 12 24	327	0.1+	0.2−
1994 06 09	675	1.1−	0.3−	1997 12 21	327	0.4−	0.4+				

1995 BD_1 = 1980 TN_{14}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	25.20486		(2000.0)		**P**	**Q**	
n	0.29121075	ω	298.02482		+0.80410710	−0.59014016	
a	2.2542277	Ω	98.22900		+0.56771223	+0.72647747	
e	0.1537018	i	4.15670		+0.17639331	+0.35208674	
P	3.38	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1980 10 13	095	0.3−	0.9+	1995 02 10	411	0.1+	0.4−	1997 12 04	704	0.6+	0.5+
1995 01 25	411	0.8+	0.4−	1995 02 17	411	0.9−	0.3+	1997 12 04	704	0.7+	0.5−
1995 01 25	411	0.8−	0.5+	1995 02 22	033	0.2−	0.3+	1997 12 04	704	0.4−	0.5−
1995 01 26	411	0.3+	0.8+	1995 02 22	033	0.5−	0.4+	1998 01 01	732	0.7+	2.4−
1995 01 26	411	1.1+	0.3−	1997 11 29	704	0.2+	1.0−	1998 01 01	732	1.8+	0.9−
1995 01 30	411	0.2−	0.3−	1997 11 29	704	0.1+	0.0	1998 01 01	732	0.5−	0.5+
1995 01 30	411	0.3−	0.3−	1997 11 29	704	0.4−	0.4+	1998 01 02	732	0.6+	1.1+
1995 02 07	411	0.0	0.2+	1997 11 29	704	1.1−	0.1+	1998 01 02	732	1.7−	0.4+
1995 02 07	411	0.6+	0.4+	1997 11 29	704	0.3−	0.0	1998 01 02	732	0.3+	0.1+
1995 02 10	411	0.2+	0.3−	1997 12 04	704	0.1−	0.9+				

1995 BP_{15} = 1997 RN

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	43.94442		(2000.0)			
n	0.17966878	ω	166.38927		+0.41226605	+0.87448883
a	3.1104339	Ω	127.33517		−0.86308470	+0.46470161
e	0.1918974	i	18.74798		−0.29175589	−0.13900252
P	5.49	H	12.3	G	0.15	U 5

Residuals in seconds of arc

1995 01 31	372	1.2+	0.8−	1995 02 06	372	1.1−	1.3−	1997 09 01	566	0.3−	0.0
1995 01 31	372	0.8+	0.5+	1995 02 19	372	0.2+	1.5+	1997 09 02	566	0.2−	0.2+
1995 02 04	372	1.1−	1.7+	1995 02 19	372	0.5+	1.1−	1997 09 02	566	0.2−	0.1+
1995 02 04	372	0.7−	1.3+	1997 09 01	566	0.3+	0.2−	1997 09 02	566	0.1+	0.0
1995 02 06	372	0.2+	1.7−	1997 09 01	566	0.4+	0.1−				

1995 DY = 1997 WF_{42}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	149.84685		(2000.0)			
n	0.24160439	ω	82.19938		+0.11160193	+0.99370425
a	2.5530903	Ω	194.21955		−0.92681299	+0.10050584
e	0.1416145	i	2.29627		−0.35855639	+0.04950182
P	4.08	H	14.0	G	0.15	U 6

Residuals in seconds of arc

1995 02 21	411	1.6+	0.6−	1995 03 05	411	1.5−	0.6+	1997 11 29	704	1.7−	1.1+
1995 02 21	411	0.9+	0.3−	1995 03 11	411	1.1+	0.1+	1997 12 04	704	1.8+	0.8−
1995 02 22	411	0.7+	0.6−	1995 03 11	411	1.1+	0.3−	1997 12 04	704	0.7+	0.2+
1995 02 22	411	0.8+	0.7−	1995 03 11	411	0.7+	0.1−	1997 12 04	704	0.4−	0.3−
1995 02 22	411	1.1+	0.3+	1997 11 29	704	0.6+	1.1−	1997 12 04	704	0.3+	1.4+
1995 02 26	411	1.4−	0.3+	1997 11 29	704	1.3−	1.7+	1997 12 04	704	0.3+	2.1−
1995 02 26	411	2.3−	1.5+	1997 11 29	704	0.2−	0.6+				
1995 03 05	411	2.7−	0.2−	1997 11 29	704	0.0	0.6−				

1995 EM = 1997 SB_{16}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	332.62220		(2000.0)			
n	0.26187894	ω	66.07457		+0.04527512	−0.99801989
a	2.4195559	Ω	21.46750		+0.86768372	+0.01762736
e	0.0972195	i	6.85210		+0.49505064	+0.06037866
P	3.76	H	14.5	G	0.15	U 5

Residuals in seconds of arc

1995 03 05	399	1.7−	0.4−	1997 09 27	910	1.2−	0.1+	1997 10 29	704	0.1−	0.3−
1995 03 05	399	(3.2−	0.9+)	1997 09 27	910	1.1−	0.1+	1997 10 29	704	0.1−	0.2−
1995 03 06	411	0.6+	0.5−	1997 09 27	910	1.3−	0.1+	1997 10 29	704	0.2−	0.6−
1995 03 06	411	0.6+	0.1−	1997 09 29	910	0.2−	0.5+	1997 10 29	704	0.3−	0.5−
1995 03 06	399	(0.3−	3.1+)	1997 09 30	910	0.3−	0.5+	1997 10 30	704	1.2+	0.5−
1995 03 06	399	0.1+	0.4+	1997 09 30	910	0.3−	0.7+	1997 10 30	704	1.7+	1.1−
1995 03 07	411	0.7+	0.6+	1997 09 30	910	0.2−	0.3+	1997 10 30	704	0.8+	0.2−
1995 03 07	411	(2.2+	0.9−)	1997 09 30	910	0.2−	0.4+	1997 10 30	704	0.8+	1.0−
1995 03 08	411	0.1+	0.7−	1997 10 01	910	0.2−	0.3+	1997 10 31	704	0.4−	0.7+
1995 03 08	411	0.8+	0.2−	1997 10 22	704	0.7+	0.2−	1997 10 31	704	0.3+	1.5+
1995 03 11	411	0.2+	0.9+	1997 10 22	704	0.9+	0.5−	1997 10 31	704	0.5−	1.1+
1995 03 11	411	0.9+	0.2−	1997 10 22	704	1.3−	1.9−	1997 10 31	704	0.2+	1.4+
1995 03 21	411	0.7−	0.1−	1997 10 22	704	0.5−	0.2+	1997 10 31	704	0.1−	0.9+
1995 03 21	411	1.2−	1.0+	1997 10 29	704	1.2+	0.9−				

1995 FQ_4 = 1997 WM_{38}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	97.34052		(2000.0)			
n	0.24408828	ω	262.15116		+0.80737496	+0.58885283
a	2.5357403	Ω	61.76551		−0.52325054	+0.74383224
e	0.0865339	i	2.43235		−0.27268032	+0.31617392
P	4.04	H	13.5	G	0.15	U 4

Residuals in seconds of arc

1995 03 23	691	0.2−	0.0	1997 11 26	704	0.9−	0.6−	1997 12 04	704	0.4+	0.3−
1995 03 23	691	0.1−	0.1+	1997 11 29	704	1.5−	0.0	1997 12 04	704	1.3+	0.1−
1995 03 23	691	0.4−	0.1+	1997 11 29	704	0.0	0.3+	1997 12 31	704	0.1+	0.4+
1995 03 27	675	1.0+	0.6+	1997 11 29	704	(2.4−	2.7−)	1997 12 31	704	0.7−	0.2+
1995 03 29	691	0.1−	0.0	1997 11 29	704	0.1+	0.6−	1997 12 31	704	0.3+	0.6+
1995 03 29	691	0.1−	0.1−	1997 11 29	704	0.4−	0.0	1997 12 31	704	0.2−	0.3+
1995 03 29	691	0.3−	0.1−	1997 11 30	566	1.1+	0.0	1998 01 02	704	0.1−	0.5+
1995 04 04	691	0.1−	0.2−	1997 11 30	566	1.1+	0.5+	1998 01 02	704	0.4+	0.9−
1995 04 04	691	0.1+	0.2−	1997 11 30	566	1.0+	0.2+	1998 01 02	704	0.1−	0.5−
1995 04 04	691	0.1+	0.4−	1997 12 04	704	1.0+	0.4+	1998 01 02	704	0.6−	1.2+
1997 11 26	704	1.2−	0.3−	1997 12 04	704	(3.8+	1.9−)				
1997 11 26	704	0.9−	0.2−	1997 12 04	704	0.2−	0.9−				

1995 GW

Id. J. Roe (1998 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	325.20488		(2000.0)			
n	0.28048952	ω	118.17997		−0.89267083	−0.44251579
a	2.3113105	Ω	35.74539		+0.34484898	−0.79280313
e	0.1354997	i	8.42074		+0.29020332	−0.41909782
P	3.51	H	13.5	G	0.15	U 5

Residuals in seconds of arc

1995 04 07	411	0.1−	0.0	1995 04 12	411	0.2+	0.0	1995 05 18	411	0.6+	0.8+
1995 04 07	411	1.0−	1.3+	1995 04 19	411	0.0	0.5−	1998 01 08	732	0.8−	0.1+
1995 04 10	411	0.1+	0.8+	1995 04 19	411	0.7−	1.2−	1998 01 08	732	0.0	0.2+
1995 04 10	411	1.2+	0.6+	1995 04 26	411	0.1−	0.3−	1998 01 09	732	0.1+	0.7+
1995 04 10	411	0.2+	0.7−	1995 04 26	411	1.1−	1.3−	1998 01 09	732	0.6+	0.9−
1995 04 12	411	0.4−	0.3−	1995 05 18	411	0.1−	0.6+				
1995 04 12	411	0.6+	0.5+	1995 05 18	411	0.5+	0.1−				

1995 KN = 1997 WX_{32}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	273.48485		(2000.0)			
n	0.29055986	ω	84.39303		−0.94014013	−0.33012757
a	2.2575929	Ω	76.30858		+0.26793762	−0.86939244
e	0.0741719	i	4.99362		+0.21058480	−0.36765824
P	3.39	H	14.0	G	0.15	U 4

Residuals in seconds of arc

1995 01 07	408	1.2+	0.7+	1995 05 24	104	0.7+	0.2+	1997 11 29	704	0.6+	0.1+
1995 01 07	408	1.4−	0.6−	1995 05 28	104	1.6−	0.3+	1997 11 29	704	0.7+	1.0−
1995 01 07	408	0.1−	1.0−	1995 05 28	104	0.1+	0.8+	1997 11 29	704	0.4+	0.1+
1995 05 23	104	1.4+	0.0	1995 05 28	104	0.5+	0.6+	1997 12 04	704	0.7−	0.1+
1995 05 23	104	0.1+	0.8+	1995 05 28	104	0.3−	0.4−	1997 12 04	704	0.7−	0.2+
1995 05 23	104	0.6−	1.2+	1995 06 07	104	0.5+	1.1−	1997 12 04	704	1.9−	0.5+
1995 05 23	104	0.7+	0.1+	1995 06 07	104	0.2−	0.3−	1997 12 04	704	0.7−	0.6+
1995 05 23	104	0.2+	0.1−	1995 06 07	104	0.7−	0.5+	1997 12 04	704	0.2−	0.0
1995 05 24	104	0.7−	0.7−	1997 11 29	704	0.3+	0.6−				
1995 05 24	104	0.4+	0.7−	1997 11 29	704	1.9+	0.7+				

1995 SS_{52} = 1995 TR_3 = 1997 EN_{37}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	80.23442		(2000.0)	**P**		**Q**	
n	0.23955220	ω	121.66540	−0.69627825		−0.71764721	
a	2.5676507	Ω	12.49192	+0.63582316		−0.62532699	
e	0.0264680	i	3.54692	+0.33305480		−0.30651042	
P	4.11	H	15.6	G 0.15		U 4	

Residuals in seconds of arc

1995 09 29	691	0.2+	0.4+	1995 10 15	691	0.1−	0.2+	1995 10 21	691	0.1+	0.3+
1995 09 29	691	0.1−	0.5+	1995 10 15	691	0.0	0.0	1997 03 05	704	0.0	0.1+
1995 10 01	691	0.1+	0.4−	1995 10 15	691	0.3−	0.1−	1997 03 05	704	0.5−	0.5+
1995 10 01	691	0.3−	0.4−	1995 10 21	691	0.1−	0.1−	1997 03 06	704	0.2+	0.2−
1995 10 01	691	0.3+	0.3−	1995 10 21	691	0.2+	0.2−	1997 03 06	704	0.3+	0.5−

1995 UM_{50} = 1995 WG_{17} = 1997 CG

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	325.82821		(2000.0)	**P**		**Q**	
n	0.23101483	ω	242.77437	−0.37851799		+0.92557484	
a	2.6305273	Ω	4.99490	−0.82323634		−0.33371649	
e	0.0672079	i	3.91510	−0.42309109		−0.17873028	
P	4.27	H	17.4	G 0.15		U 4	

Residuals in seconds of arc

1995 10 17	691	0.2−	0.2−	1995 11 17	691	0.1+	0.1−	1997 02 01	691	0.0	0.3+
1995 10 17	691	0.0	0.6+	1995 11 17	691	0.4−	0.1−	1997 02 01	691	0.1−	0.1−
1995 10 24	691	0.1+	0.4−	1995 11 23	691	0.3−	0.1−	1997 02 02	691	0.0	0.0
1995 10 24	691	0.2+	0.3−	1995 11 23	691	0.1−	0.2−	1997 02 02	691	0.2−	0.1−
1995 10 24	691	0.1+	0.3+	1995 11 23	691	0.5+	0.5+	1997 02 02	691	0.3+	0.2−
1995 11 17	691	0.1+	0.1+	1997 02 01	691	0.0	0.2+				

1996 AS_1

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	137.97906		(2000.0)	**P**		**Q**	
n	0.42585154	ω	357.29490	+0.40923270		+0.88514744	
a	1.7497012	Ω	296.77907	−0.83241241		+0.26278707	
e	0.3611181	i	14.36274	−0.37365516		+0.38400127	
P	2.31	H	18.5	G 0.15		U 5	

Residuals in seconds of arc

1996 01 13	691	0.3−	0.0	1996 01 22	711	1.9+	0.4+	1996 02 09	711	0.7−	1.0−
1996 01 13	691	0.6+	0.0	1996 01 22	711	0.8+	0.5−	1996 02 09	711	0.1+	0.8−
1996 01 13	691	0.9−	0.2−	1996 01 25	658	3.4−	0.5+	1996 02 10	711	0.2+	0.5−
1996 01 14	691	1.0+	0.2−	1996 01 25	658	1.7−	0.0	1996 02 10	711	0.3+	0.5−
1996 01 14	691	1.1+	0.1+	1996 01 25	658	0.2−	0.6−	1996 02 12	711	0.8+	0.4−
1996 01 15	691	0.3−	0.2+	1996 01 26	413	1.0+	0.4+	1996 02 12	711	0.5+	1.0+
1996 01 15	691	0.7−	0.1+	1996 01 26	413	0.1+	0.4+	1997 12 27	691	0.4−	0.6−
1996 01 15	691	1.1−	0.2+	1996 01 27	691	0.5−	0.0	1997 12 27	691	0.0	0.0
1996 01 20	691	0.2−	0.6−	1996 01 27	691	1.0−	0.2−	1997 12 27	691	0.6+	1.1−
1996 01 20	691	0.5−	0.3−	1996 01 27	691	0.8−	0.3−	1997 12 31	691	0.0	0.4+
1996 01 20	691	0.8−	0.7+	1996 01 27	413	0.8+	0.7+	1997 12 31	691	0.1+	0.8+
1996 01 20	711	0.1−	0.2+	1996 01 27	413	1.1+	0.5+	1997 12 31	691	0.2−	0.6+
1996 01 20	711	0.7+	0.1+	1996 01 28	413	1.2+	0.5+				
1996 01 21	711	0.8+	0.4−	1996 01 28	413	0.2+	0.6+				

1996 DH

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	190.75177		(2000.0)	**P**		**Q**	
n	0.49290273	ω	351.33265	+0.51633167		+0.82523356	
a	1.5871887	Ω	309.40484	−0.76689581		+0.32659987	
e	0.2767010	i	17.23132	−0.38114620		+0.46078423	
P	2.00	H	16.5	G 0.15		U 3	

Residuals in seconds of arc

1996 02 18	691	0.1−	0.0	1996 02 29	118	0.9+	0.7−	1996 04 07	557	0.0	0.7−
1996 02 18	691	0.1−	0.1−	1996 02 29	118	0.2−	0.0	1996 04 07	557	0.0	0.2+
1996 02 18	691	0.2+	0.4+	1996 02 29	608	0.4+	0.1+	1996 04 18	557	0.2−	0.1−
1996 02 18	691	0.3−	0.3+	1996 02 29	608	1.7+	0.9+	1996 04 18	557	1.7+	0.4−
1996 02 18	691	0.4−	0.2+	1996 02 29	413	0.3+	0.4+	1996 04 20	691	0.7−	0.1−
1996 02 18	691	0.4−	0.1+	1996 02 29	413	0.6+	0.2+	1996 04 20	691	0.7−	0.2+
1996 02 19	691	0.7−	0.0	1996 03 11	691	0.9−	0.2+	1996 04 20	691	0.6−	0.0
1996 02 19	691	1.0−	0.2+	1996 03 11	691	0.8−	0.2+	1996 04 25	711	1.0+	0.5−
1996 02 19	691	0.8−	0.2+	1996 03 11	691	0.9−	0.2+	1996 04 25	711	0.9+	1.2−
1996 02 21	691	(2.7+	0.2+)	1996 03 14	658	0.2+	0.2+	1996 05 23	691	1.4−	0.2+
1996 02 21	691	0.3−	0.7+	1996 03 14	658	0.4+	0.2+	1996 05 23	691	0.7−	0.9−
1996 02 21	691	0.5−	0.0	1996 03 14	658	0.2+	0.2+	1996 05 23	691	0.3−	0.9−
1996 02 22	360	0.6+	0.3−	1996 03 18	691	0.7−	0.1+	1996 05 28	413	0.5+	0.6−
1996 02 22	360	0.6+	0.3−	1996 03 18	691	0.5−	0.1−	1996 05 28	413	0.1+	0.1+
1996 02 22	360	0.0	0.0	1996 03 18	691	0.6−	0.0	1996 06 09	413	0.3−	0.8−
1996 02 23	120	1.9−	0.1+	1996 03 23	658	0.2+	0.4+	1996 06 09	413	0.2−	0.7−
1996 02 23	120	0.8−	0.5−	1996 03 23	658	0.2−	0.5+	1996 06 09	413	0.8+	0.6−
1996 02 23	120	1.1+	1.0−	1996 03 23	658	0.0	0.2+	1997 12 05	658	0.7+	1.0+
1996 02 24	658	0.4+	0.2+	1996 03 25	658	0.3−	0.2+	1997 12 05	658	1.2+	0.3+
1996 02 24	658	0.5−	0.6+	1996 03 25	658	0.3−	0.4+	1997 12 09	658	0.6+	0.1+
1996 02 24	658	0.9−	0.3−	1996 03 25	658	0.1−	0.4+	1997 12 09	658	0.2−	0.0
1996 02 24	557	0.6+	0.2+	1996 03 25	658	0.3−	0.6+	1998 01 02	711	1.3−	0.6+
1996 02 24	557	0.4+	0.2+	1996 03 26	413	0.4+	0.2+	1998 01 02	711	(2.2+	1.8+)
1996 02 26	658	0.2+	0.4+	1996 03 26	413	0.3+	0.2+	1998 01 11	046	0.2−	0.7−
1996 02 26	658	0.1+	0.2+	1996 03 26	413	0.2+	0.1+	1998 01 11	046	0.4−	0.6−
1996 02 26	658	0.3−	0.2−	1996 03 26	413	0.5+	0.1+	1998 01 11	046	0.9−	0.6−
1996 02 26	046	0.1+	0.4−	1996 03 28	413	0.5+	0.3+	1998 01 11	046	0.1−	0.7−
1996 02 26	046	0.7+	1.0+	1996 03 28	413	0.5+	0.2+	1998 01 11	658	1.6−	1.4−
1996 02 26	046	0.8+	0.2+	1996 03 28	413	0.4+	0.3+	1998 01 11	658	0.4+	0.4−
1996 02 27	413	1.1+	0.2+	1996 03 28	413	0.4+	0.2+	1998 01 11	658	1.0−	1.9−
1996 02 27	118	1.5+	0.1−	1996 04 06	557	0.2−	0.2−				
1996 02 27	118	1.1+	0.0	1996 04 06	557	0.1−	0.2−				

1996 GN_{19} = 1980 RS = 1983 JF_1 = 1983 LB_1 = 1990 SE_{26} = 1990 UL_{12} = 1993 LG = 1993 MG

Id. B. G. Marsden (*MPC* 28862), G. V. Williams, N. S. Chernykh (d)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	115.88152		(2000.0)	**P**		**Q**	
n	0.30041896	ω	106.00527	+0.57751722		+0.81594375	
a	2.2079259	Ω	199.34325	−0.77639844		+0.53885575	
e	0.2209528	i	4.61310	−0.25234763		+0.20945235	
P	3.28	H	13.5	G 0.15		U 2	

Residuals in seconds of arc

1980 09 04	688	0.8+	1.0−	1993 06 17	675	0.3−	1.3−	1996 04 15	809	0.2+	1.8−
1980 09 04	095	0.3−	0.3−	1993 06 19	675	1.6+	1.6+	1996 04 17	809	0.8+	0.5−
1980 09 07	095	(4.2−	3.1+)	1993 06 19	675	0.3−	0.7+	1996 04 17	809	0.6+	0.8−
1980 09 09	095	(4.0−	2.2+)	1996 03 24	809	1.6−	1.1+	1996 04 17	809	0.7+	1.2−
1983 05 14	095	0.1+	0.7−	1996 03 24	809	0.8−	0.9+	1997 12 05	704	0.9−	0.7−
1983 06 05	095	(2.2−	3.5+)	1996 03 24	809	1.4−	0.9+	1997 12 05	704	1.5+	1.4−
1990 09 27	402	0.7+	0.8−	1996 03 27	809	0.2+	1.2+	1997 12 05	704	1.1+	0.8−
1990 09 27	402	1.7−	0.7+	1996 03 27	809	0.1+	1.3+	1997 12 05	704	0.5+	1.2−
1990 10 23	095	(2.7−	5.7+)	1996 03 27	809	0.3+	1.1+	1997 12 05	704	0.9−	0.3+
1993 06 15	675	0.8+	0.3−	1996 04 15	809	0.8−	1.8−				
1993 06 15	675	1.1−	0.8−	1996 04 15	809	0.4−	1.8−				

1996 HJ_1 = 1997 YR_{19}

Id. A. Miyamoto, S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	99.02442		(2000.0)	**P**		**Q**	
n	0.27158399	ω	266.93703	+0.63187268		+0.77483980	
a	2.3615652	Ω	42.27116	−0.69943728		+0.58059136	
e	0.2138219	i	1.61686	−0.33395271		+0.25007390	
P	3.63	H	15.5	G 0.15		U 5	

Residuals in seconds of arc

1996 04 13	867	1.8−	0.8−	1996 04 22	608	0.9−	0.1−	1996 05 19	809	0.7+	2.0−
1996 04 13	867	0.1−	0.6+	1996 04 22	608	1.3−	0.1−	1996 05 19	809	(2.5+	2.4−)
1996 04 17	867	(0.8−	2.8−)	1996 04 22	608	1.7−	0.6−	1996 05 22	867	0.9−	0.1+
1996 04 17	867	(1.8−	4.3−)	1996 04 22	867	0.5+	0.6−	1996 05 22	867	0.4+	0.3+
1996 04 17	867	(2.0−	4.2−)	1996 04 22	867	0.3+	0.5−	1996 05 22	867	1.0−	0.4+
1996 04 18	809	1.6+	1.6+	1996 04 22	867	1.2−	0.3+	1996 05 24	867	0.9−	0.8+
1996 04 18	809	0.8+	1.4+	1996 04 23	608	0.6+	0.3−	1996 05 24	867	0.2−	0.7+
1996 04 18	809	2.1+	1.3+	1996 04 23	608	0.5+	0.2−	1997 12 27	867	1.2−	0.0
1996 04 20	809	(2.6+	4.0+)	1996 04 26	867	0.3+	0.3−	1997 12 27	867	0.1−	0.7+
1996 04 20	809	(2.3+	3.9+)	1996 04 26	867	0.3+	0.1−	1998 01 02	867	1.0+	0.4+
1996 04 20	809	(1.7+	2.8+)	1996 04 26	867	0.0	0.1+	1998 01 02	867	0.2+	0.8−
1996 04 21	867	0.1+	0.1+	1996 05 12	867	0.2−	0.8−	1998 01 02	867	0.3+	0.6−
1996 04 21	867	0.5+	0.2−	1996 05 12	867	0.0	0.6−				
1996 04 21	867	0.0	0.2−	1996 05 19	809	1.5+	0.1−				

1996 HW_{25} = 1997 WQ_{41}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	51.81133			(2000.0)			**P**			**Q**	
n	0.27952803		ω	285.35570			+0.99418421			−0.01471337	
a	2.3166076		Ω	75.57678			+0.05852510			+0.90538905	
e	0.2115149		i	6.32424			−0.09040223			+0.42432792	
P	3.53		H	14.0	G	0.15		U	4		

Residuals in seconds of arc

1996 04 20	809	0.1−	1.1−	1996 05 22	809	0.9−	1.1−	1997 12 04	704	0.4+	0.2−
1996 04 20	809	0.5+	0.5−	1996 05 24	809	0.4+	0.1+	1997 12 04	704	0.8+	0.1+
1996 04 20	809	0.3+	0.8−	1996 05 24	809	0.0	0.6+	1997 12 04	704	1.5+	0.0
1996 04 21	809	2.7+	1.9+	1996 05 24	809	0.1−	1.2+	1997 12 31	704	1.5+	0.6−
1996 04 21	809	2.6+	2.5+	1997 11 29	704	2.0−	0.8+	1997 12 31	704	1.2+	0.4−
1996 04 21	809	1.4+	1.5+	1997 11 29	704	2.0−	0.1−	1997 12 31	704	1.1+	0.4−
1996 05 12	691	1.7−	0.2−	1997 11 29	704	2.6−	1.6+	1997 12 31	704	0.4+	1.1−
1996 05 12	691	1.5−	0.0	1997 11 29	704	1.8−	0.2+	1998 01 02	704	1.3+	0.6−
1996 05 12	691	0.5−	1.2+	1997 11 29	704	2.3−	1.2+	1998 01 02	704	0.9+	0.2+
1996 05 22	809	0.9−	1.6−	1997 12 04	704	0.4−	0.3+	1998 01 02	704	1.6+	0.4−
1996 05 22	809	1.4−	1.6−	1997 12 04	704	1.3+	0.8+	1998 01 02	704	0.2+	0.4−

1996 MN

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	134.04223			(2000.0)			**P**			**Q**	
n	0.28823977		ω	48.96898			+0.67406884			+0.73148042	
a	2.2696912		Ω	263.72555			−0.70495698			+0.59548251	
e	0.1461646		i	5.93605			−0.22060566			+0.33217011	
P	3.42		H	16.0	G	0.15		U	4		

Residuals in seconds of arc

1996 06 22	684	0.1+	0.3+	1996 07 08	684	0.2−	0.6−	1996 08 12	684	0.4+	0.5+
1996 06 22	684	0.1+	0.4+	1996 07 09	684	0.8−	0.9−	1996 08 12	684	0.6+	0.3+
1996 06 22	684	0.0	0.3+	1996 07 09	684	0.8+	0.9−	1996 09 02	684	1.2+	0.7+
1996 06 23	684	0.1+	0.2+	1996 07 09	684	0.4−	0.4−	1996 09 02	684	0.9+	0.2+
1996 06 23	684	0.1+	0.2+	1996 07 18	684	0.2+	0.1−	1996 09 02	684	1.1−	0.3+
1996 06 23	684	0.2+	0.0	1996 07 18	684	0.1−	0.2+	1996 09 04	684	(3.9−	1.0+)
1996 06 23	684	0.2+	0.2+	1996 07 18	684	0.1+	0.3+	1996 09 04	684	0.9−	0.3−
1996 06 24	684	0.1−	0.0	1996 07 19	684	0.4−	0.1−	1997 12 25	684	0.2−	0.3−
1996 06 24	684	0.0	0.1−	1996 07 19	684	0.1−	0.1−	1997 12 25	684	0.2+	0.6−
1996 06 24	684	0.1+	0.1+	1996 07 19	684	0.2−	0.3−	1997 12 26	684	0.0	0.5−
1996 06 24	684	0.1+	0.0	1996 08 11	684	0.2−	0.2+	1997 12 26	684	0.3−	0.4−
1996 07 08	684	0.1−	0.7−	1996 08 11	684	0.5−	0.6−				
1996 07 08	684	0.2−	0.6−	1996 08 12	684	0.3+	0.5+				

1996 NX_3 = 1986 VD_3 = 1997 YR_6

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	297.99624			(2000.0)			**P**			**Q**	
n	0.28015583		ω	208.13394			−0.93648148			−0.34525067	
a	2.3131454		Ω	311.53187			+0.33525054			−0.82957964	
e	0.0476319		i	4.72625			+0.10300245			−0.43886171	
P	3.52		H	14.0	G	0.15		U	4		

Residuals in seconds of arc

1986 11 04	010	2.3−	0.0	1996 08 08	809	(1.2+	3.7+)	1997 12 26	046	0.4+	0.3−
1986 11 04	010	1.1+	0.4−	1996 08 08	809	(2.3+	3.8+)	1997 12 26	046	0.0	0.2−
1986 11 04	010	1.6+	0.6−	1996 08 08	809	(2.3+	4.5+)	1997 12 27	046	0.0	0.2+
1996 07 14	809	1.1+	0.9−	1996 08 09	809	0.3−	0.4+	1997 12 27	046	0.2−	0.1+
1996 07 14	809	0.6−	1.5−	1996 08 09	809	0.9−	0.6+	1997 12 27	046	0.1−	0.1+
1996 07 14	809	0.1−	1.2−	1996 08 09	809	1.2−	0.9+	1997 12 27	046	0.1−	0.3+
1996 07 16	809	1.2+	1.2+	1997 12 26	046	0.4−	0.5−	1997 12 28	046	0.0	0.4+
1996 07 16	809	0.3+	1.3+	1997 12 26	046	0.5+	0.1−	1997 12 28	046	0.0	0.4+
1996 07 16	809	0.2+	0.3+	1997 12 26	046	0.1−	0.4+	1997 12 29	046	0.0	0.4+

1996 NZ_3 = 1976 JD_9

Id. T. Kobayashi (1997 observations), S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	64.94546			(2000.0)			**P**			**Q**	
n	0.25733044		ω	116.87874			+0.83052017			−0.55469702	
a	2.4479842		Ω	276.85108			+0.49129422			+0.77224396	
e	0.0899761		i	2.91392			+0.26242379			+0.30975874	
P	3.83		H	14.5	G	0.15		U	3		

Residuals in seconds of arc

1976 05 02	809	0.2+	0.7+	1996 08 08	809	1.4+	0.6+	1997 12 25	411	0.5+	0.2+
1996 07 14	809	0.4+	1.8+	1996 08 08	809	1.3+	0.3+	1997 12 27	411	0.1−	0.6+
1996 07 14	809	0.0	1.3+	1996 08 08	809	1.2+	0.5+	1997 12 27	411	0.6+	0.3−
1996 07 14	809	0.7−	1.2+	1996 08 09	809	1.0−	1.2−	1997 12 30	566	0.3+	0.9+
1996 07 16	809	0.8−	1.0+	1996 08 09	809	0.5−	1.1−	1997 12 30	566	0.1−	1.0+
1996 07 16	809	0.4−	0.2−	1996 08 09	809	0.6−	1.5−	1997 12 30	566	0.0	0.8+
1996 07 16	809	1.5−	0.0	1997 12 25	411	0.5−	0.5−				

1996 NN_4 = 1997 WW_{44}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	46.60649			(2000.0)			**P**			**Q**	
n	0.17036306		ω	223.81956			+0.96566853			−0.25930929	
a	3.2226942		Ω	151.19872			+0.24636445			+0.89512630	
e	0.1733375		i	1.85416			+0.08239451			+0.36263976	
P	5.79		H	13.5	G	0.15		U	4		

Residuals in seconds of arc

1996 07 14	809	0.7+	0.0	1996 08 09	809	0.6+	1.2−	1997 11 29	704	1.4−	0.6−
1996 07 14	809	0.2−	0.1+	1996 08 09	809	0.0	0.8−	1997 12 04	704	1.2+	0.5−
1996 07 14	809	0.2−	0.0	1996 08 09	809	0.1+	1.4−	1997 12 04	704	1.9+	0.8−
1996 07 16	809	0.2−	2.3+	1996 08 11	566	0.9−	0.0	1997 12 04	704	0.7+	1.3+
1996 07 16	809	0.3−	1.2+	1996 08 11	566	1.4−	0.3−	1997 12 04	704	0.4+	0.8−
1996 07 16	809	0.3−	2.3+	1996 08 11	566	0.9−	0.5−	1997 12 29	566	0.3+	0.6+
1996 08 08	809	1.0+	1.6−	1997 11 29	704	1.9−	0.0	1997 12 29	566	0.1+	1.1+
1996 08 08	809	1.4+	0.5−	1997 11 29	704	0.2+	0.2+	1997 12 29	566	0.2+	1.3+
1996 08 08	809	0.4+	1.4+	1997 11 29	704	1.9−	1.0−				

1996 OL

Id. A. Nakamura (1997–98 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	146.61652		(2000.0)		**P**	**Q**	
n	0.29115552	ω	230.13432		+0.83668930	+0.54202820	
a	2.2545127	Ω	96.90804		−0.47526150	+0.78976524	
e	0.1646345	i	4.53320		−0.27217186	+0.28718685	
P	3.39	H	15.1	G	0.15	U	4

Residuals in seconds of arc

1996 07 16	360	0.3−	0.4+	1996 07 26	360	0.1−	0.1+	1996 09 10	360	0.4−	0.0
1996 07 16	360	0.5−	0.1+	1996 07 26	360	0.1−	0.0	1996 10 04	360	0.9−	0.4−
1996 07 16	360	0.5−	0.1+	1996 08 18	360	0.4+	0.1+	1996 10 04	360	0.8−	0.4−
1996 07 20	360	0.3−	0.3+	1996 08 18	360	0.6+	0.1+	1997 12 27	360	0.1+	0.3+
1996 07 20	360	0.3−	0.4+	1996 08 19	360	0.7+	0.1−	1997 12 27	360	0.3+	0.6+
1996 07 20	360	0.4−	0.3+	1996 08 19	360	1.0+	0.0	1998 01 06	360	0.2+	0.2+
1996 07 23	360	0.1+	0.1−	1996 09 02	360	0.7+	0.1+	1998 01 06	360	0.2−	0.3+
1996 07 23	360	0.1−	0.0	1996 09 02	360	0.9+	0.1+				
1996 07 23	360	0.2−	0.1−	1996 09 10	360	0.6−	0.1−				

1996 OQ$_1$ = 1991 PM$_{23}$ = 1997 WS$_{45}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	150.44545		(2000.0)		**P**	**Q**	
n	0.20574520	ω	321.16020		+0.13360743	+0.99094434	
a	2.8417306	Ω	316.51321		−0.90434639	+0.11639744	
e	0.0390294	i	1.11199		−0.40534758	+0.06693989	
P	4.79	H	13.5	G	0.15	U	5

Residuals in seconds of arc

1991 08 02	809	1.0+	1.1−	1996 08 06	327	0.2+	0.1−	1997 11 29	704	1.9−	1.0−
1991 08 02	809	0.3−	0.1−	1996 08 06	327	0.1−	0.3−	1997 11 29	704	1.3−	1.8−
1991 08 02	809	0.3−	0.2−	1996 08 13	327	0.4+	0.3+	1997 11 29	704	(0.8−	2.8−)
1996 07 20	327	0.3−	1.0+	1996 08 13	327	0.0	0.5+	1997 11 29	704	0.7−	0.1+
1996 07 20	327	0.1+	0.7+	1996 08 13	327	0.7+	0.2−	1997 11 30	566	0.5+	0.0
1996 07 20	327	0.1+	1.4+	1996 08 13	327	0.3−	0.3−	1997 11 30	566	1.0+	0.0
1996 07 21	327	0.2+	0.5−	1996 08 15	566	0.2−	0.3−	1997 11 30	566	0.5+	0.3+
1996 07 21	327	0.1−	0.3+	1996 08 15	566	0.1−	0.7−	1997 12 29	566	0.7+	0.7+
1996 07 21	327	0.1−	0.3+	1996 08 15	566	0.1−	0.4−	1997 12 29	566	0.6+	0.8+
1996 07 21	327	0.3−	0.4+	1997 11 26	704	(2.6−	0.7−)	1997 12 29	566	0.7+	1.0+
1996 08 06	327	0.9−	0.2−	1997 11 26	704	(2.6−	1.3−)				
1996 08 06	327	0.2+	0.2−	1997 11 26	704	(3.1−	1.9−)				

1996 OE$_2$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	178.27248		(2000.0)		**P**	**Q**	
n	0.22968607	ω	337.25962		+0.05242859	+0.97612836	
a	2.6406628	Ω	295.19381		−0.87667239	−0.05608440	
e	0.1356873	i	13.46960		−0.47822251	+0.20982843	
P	4.29	H	13.5	G	0.15	U	3

Residuals in seconds of arc

1996 07 23	599	0.2+	0.1−	1996 08 14	104	1.2+	0.8+	1996 09 25	658	0.7−	0.1−
1996 07 23	599	0.0	0.3−	1996 08 24	658	0.3−	1.0−	1996 09 25	658	0.5−	0.2−
1996 07 24	599	0.8−	1.0+	1996 08 24	658	0.3−	1.2−	1996 09 25	658	0.2+	0.1+
1996 07 24	599	1.0−	0.1+	1996 08 24	658	0.3−	1.1−	1996 11 03	104	0.4+	0.2+
1996 07 26	599	0.1+	0.2−	1996 08 25	658	0.1−	0.4−	1996 11 03	104	0.0	0.1+
1996 07 26	599	0.3−	0.1−	1996 08 25	658	0.2−	0.3−	1996 11 03	104	0.2+	0.1+
1996 08 05	104	0.3+	0.2−	1996 08 25	658	0.1−	0.3−	1997 12 24	104	0.5−	0.1−
1996 08 05	104	0.3+	0.3−	1996 09 08	104	0.3−	0.0	1997 12 25	104	0.1+	0.3+
1996 08 05	104	0.2+	0.2+	1996 09 08	104	0.1+	0.4−	1997 12 28	104	0.0	0.1−
1996 08 05	104	0.4+	0.2+	1996 09 21	658	0.1−	0.6+	1997 12 28	104	0.3+	0.2−
1996 08 05	104	0.6+	0.7+	1996 09 21	658	0.1−	0.3+	1997 12 28	104	0.1+	0.1+
1996 08 14	104	0.1+	0.7+	1996 09 21	658	0.1−	0.3+				
1996 08 14	104	0.7+	0.8+	1996 09 21	658	0.1+	0.3+				

1996 OS$_2$ = 1997 WC$_{30}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	72.50559		(2000.0)		**P**	**Q**	
n	0.21855734	ω	313.25020		+0.97475255	+0.22199185	
a	2.7295587	Ω	33.94456		−0.19037088	+0.88245521	
e	0.0921223	i	2.46568		−0.11668927	+0.41471969	
P	4.51	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1996 07 23	608	0.3+	0.3−	1996 07 31	608	0.3+	0.1+	1996 08 14	608	0.0	0.1+
1996 07 23	608	0.6+	0.3−	1996 08 01	608	0.2−	0.2−	1996 08 14	608	0.2+	0.0
1996 07 25	608	0.4−	0.3+	1996 08 01	608	0.3−	0.2+	1996 10 07	608	0.3+	0.2−
1996 07 25	608	0.0	0.1−	1996 08 02	608	0.2−	0.2+	1996 10 07	608	0.2−	0.4−
1996 07 26	608	0.4+	0.3−	1996 08 02	608	0.1−	0.4+	1997 11 26	704	0.4+	0.2+
1996 07 26	608	0.5+	0.1−	1996 08 05	608	0.5+	0.4+	1997 11 26	704	0.1+	0.1−
1996 07 29	608	0.2+	0.1−	1996 08 05	608	0.7+	0.4+	1997 11 26	704	1.0−	0.7+
1996 07 29	608	0.1+	0.8−	1996 08 07	608	0.9−	0.4+	1997 12 04	704	0.7+	0.2+
1996 07 29	608	0.5−	0.5−	1996 08 07	608	0.9−	0.3+	1997 12 04	704	(3.2+	0.8−)
1996 07 29	608	0.9−	0.1−	1996 08 09	608	0.1+	0.1+	1997 12 04	704	1.4+	0.8−
1996 07 31	608	0.2+	0.1+	1996 08 09	608	0.2+	0.2+	1997 12 04	704	1.5−	0.3−

1996 PB$_1$ = 1998 AM$_4$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	137.88398		(2000.0)		**P**	**Q**	
n	0.26857642	ω	336.80454		+0.77056502	+0.63727932	
a	2.3791626	Ω	343.59355		−0.57894757	+0.69314153	
e	0.2143914	i	2.07533		−0.26655067	+0.33679354	
P	3.67	H	16.0	G	0.15	U	3

Residuals in seconds of arc

1996 08 08	905	0.7−	0.7−	1996 08 18	816	0.2−	0.1−	1996 10 12	816	0.0	0.2−
1996 08 08	905	0.8+	0.8−	1996 08 18	816	0.0	0.2−	1996 10 12	816	0.3−	0.6+
1996 08 11	816	0.0	0.5+	1996 08 18	816	0.1−	0.1−	1996 10 12	816	0.0	1.1+
1996 08 11	816	0.1−	0.6+	1996 08 18	905	1.3−	0.2−	1996 10 18	816	0.2−	0.3−
1996 08 11	816	0.3+	0.6+	1996 08 18	905	0.5+	0.1+	1996 10 18	816	0.2−	0.5−
1996 08 11	816	0.2+	0.5+	1996 08 22	905	0.2−	0.3−	1996 11 05	816	0.3−	0.1+
1996 08 12	816	0.4+	0.1−	1996 08 22	905	0.4+	0.1+	1996 11 05	816	0.1−	0.4+
1996 08 12	816	0.5+	0.2−	1996 09 20	816	0.1−	0.3−	1998 01 06	691	0.2−	0.3−
1996 08 12	816	0.5+	0.2−	1996 09 20	816	0.0	0.1−	1998 01 06	691	0.4−	0.5−
1996 08 12	816	0.5+	0.2−	1996 09 20	816	0.1+	0.3−	1998 01 06	691	0.1−	0.0
1996 08 15	816	0.2−	0.4−	1996 09 21	816	0.1+	0.2−	1998 01 08	691	0.4+	0.2−
1996 08 15	816	0.2−	0.2−	1996 09 21	816	0.2+	0.1+	1998 01 08	691	0.0	0.2−
1996 08 15	816	0.3−	0.4−	1996 09 21	816	0.4+	0.6+	1998 01 08	691	0.0	0.2−
1996 08 15	816	0.2−	0.3−	1996 09 21	816	0.1+	0.6+				
1996 08 18	816	0.2−	0.1−	1996 10 12	816	0.2−	0.1−				

1996 PG$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	161.09728		(2000.0)		**P**	**Q**	
n	0.28557457	ω	296.95109		+0.40116399	+0.91600004	
a	2.2837910	Ω	356.69437		−0.81830577	+0.35671832	
e	0.1504031	i	3.35485		−0.41163469	+0.18356464	
P	3.45	H	15.0	G	0.15	U	4

Residuals in seconds of arc

1996 08 10	108	0.7+	1.7−	1996 08 17	108	0.7−	0.9+	1996 09 08	809	1.0+	0.6+
1996 08 10	108	(0.8−	2.5−)	1996 08 17	108	1.5−	0.2−	1996 09 08	809	0.0	1.1−
1996 08 10	108	0.2−	0.8−	1996 08 17	108	0.7−	0.3−	1996 09 08	809	0.5+	0.2−
1996 08 10	108	1.7−	0.3−	1996 08 19	108	1.3+	0.4−	1996 09 10	108	0.8+	0.2−
1996 08 12	108	(2.2−	1.1−)	1996 08 19	108	0.5−	1.5+	1996 09 10	108	0.1−	1.4−
1996 08 12	108	0.7+	0.8−	1996 08 19	108	0.1+	0.7+	1996 09 14	108	(3.6+	2.1+)
1996 08 12	108	(1.4+	3.5−)	1996 08 19	108	1.3+	1.4−	1996 09 14	108	(2.7+	0.3+)
1996 08 13	108	1.3+	0.1−	1996 08 23	108	1.9−	1.1−	1996 10 18	104	1.5−	1.5+
1996 08 13	108	1.4−	0.4−	1996 08 23	108	1.5+	0.3−	1996 10 18	104	1.1−	1.5+
1996 08 13	108	1.3+	0.3−	1996 08 23	108	0.2+	1.2+	1996 10 18	104	1.0−	1.3+

1996 08 13	108	0.1+	0.3+	1996 09 05	596	0.2−	0.3−	1996 10 18	104	1.3−	1.2+
1996 08 13	108	0.0	0.9−	1996 09 05	596	1.1−	0.8−	1997 12 07	108	1.6+	0.5+
1996 08 14	108	0.7+	1.5−	1996 09 05	596	0.1−	1.4+	1997 12 07	108	0.4+	0.1+
1996 08 15	108	0.6+	1.0−	1996 09 06	108	0.5−	1.7+	1997 12 08	108	1.8−	0.4−
1996 08 15	108	(0.7−	3.2−)	1996 09 06	108	(2.8+	1.7+)	1997 12 27	104	0.3−	1.5−
1996 08 16	108	1.3+	0.3+	1996 09 07	108	0.9+	0.2+	1997 12 27	104	0.3−	1.4−
1996 08 17	108	0.6−	1.3+	1996 09 07	108	1.2+	0.3−	1997 12 27	104	0.1−	0.9−

1996 PJ_1 = 1997 YY_7

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	23.65518		(2000.0)		**P**	**Q**	
n	0.23924391	ω	279.36878		+0.26012577	−0.96557176	
a	2.5698560	Ω	155.55329		+0.88815653	+0.23829403	
e	0.0941212	i	0.33206		+0.37883051	+0.10434140	
P	4.12	H	16.0	G	0.15	U	5

Residuals in seconds of arc

1996 08 11	816	0.6−	0.5+	1996 08 15	816	0.5+	0.7+	1997 12 27	691	0.6+	0.2−
1996 08 11	816	0.1−	0.0	1996 08 15	816	0.1−	0.5+	1997 12 28	691	0.7−	0.8−
1996 08 12	816	0.1−	1.0+	1996 08 15	816	0.2−	0.5+	1997 12 28	691	0.8−	0.4−
1996 08 12	816	0.7−	0.3−	1996 08 18	816	0.2−	0.9+	1997 12 28	691	0.6−	0.0
1996 08 13	684	0.3+	0.9−	1996 08 18	816	0.3+	0.1−	1998 01 01	691	1.1−	0.0
1996 08 13	684	0.5+	0.9−	1996 08 18	816	0.6+	0.2−	1998 01 01	691	0.9−	0.2+
1996 08 13	684	0.3−	0.5−	1996 08 18	816	0.3+	0.3+	1998 01 01	691	0.7−	0.0
1996 08 13	327	0.2+	0.5−	1996 09 20	816	1.3−	0.5−	1998 01 02	704	1.0+	0.5+
1996 08 13	327	0.5−	0.2−	1996 09 20	816	0.4+	0.1+	1998 01 02	704	0.8+	1.1+
1996 08 13	327	0.1+	0.7−	1996 09 20	816	0.7+	0.2−	1998 01 02	704	0.8+	0.6+
1996 08 13	327	0.6+	0.0	1997 12 27	691	0.5+	0.2−	1998 01 02	704	0.0	0.4−
1996 08 15	816	0.6−	0.7+	1997 12 27	691	0.9+	0.4−				

1996 RM

Id. M. Cavagna (1998 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	71.36714		(2000.0)		**P**	**Q**	
n	0.19593747	ω	36.01221		+0.85159123	−0.52369624	
a	2.9357860	Ω	355.38390		+0.38810051	+0.65951928	
e	0.0898521	i	16.69668		+0.35237816	+0.53923703	
P	5.03	H	14.0	G	0.15	U	3

Residuals in seconds of arc

1996 09 07	587	1.1−	0.4+	1996 09 12	587	0.1+	0.3−	1996 10 18	587	0.1+	0.2+
1996 09 07	587	(2.5−	1.1+)	1996 09 13	587	0.3−	1.1−	1996 11 03	587	1.2−	0.1−
1996 09 07	587	1.7+	0.7+	1996 09 13	587	1.5−	0.2−	1996 11 03	587	0.2−	0.1−
1996 09 08	587	0.6+	0.6−	1996 09 15	587	0.2+	0.5−	1996 11 28	587	0.4+	1.0+
1996 09 08	587	0.4−	1.2+	1996 09 15	587	0.3−	0.3+	1996 11 28	587	0.9+	1.1−
1996 09 08	587	0.2+	0.9+	1996 10 02	587	0.1−	0.7−	1998 01 03	587	0.5+	0.2+
1996 09 10	587	0.1−	0.8−	1996 10 02	587	0.2+	0.1+	1998 01 03	587	0.1−	0.6−
1996 09 10	587	0.6+	0.3+	1996 10 18	587	0.3+	0.3+	1998 01 05	587	0.3−	0.5+

1996 TE

Id. M. Tichý (1998 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	93.28609		(2000.0)		**P**	**Q**	
n	0.20718991	ω	313.02289		+0.98798719	−0.14884481	
a	2.8285052	Ω	55.57849		+0.15234772	+0.89304289	
e	0.0898347	i	2.88730		+0.02591301	+0.42464058	
P	4.76	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1996 10 01	046	0.7+	0.8+	1996 10 03	046	0.4−	0.3−	1996 11 03	046	0.2+	0.2−
1996 10 01	046	0.2+	0.2−	1996 10 03	046	0.2−	0.3−	1996 11 04	046	0.2−	0.2+
1996 10 01	046	0.1−	0.1−	1996 10 05	327	0.1+	0.5+	1996 11 04	046	0.2+	0.1+
1996 10 01	046	0.6+	1.1+	1996 10 05	327	0.0	0.2−	1996 11 04	046	0.2−	0.2+
1996 10 01	046	0.1−	0.0	1996 10 05	327	0.0	0.3−	1996 11 29	327	0.5−	0.3−
1996 10 01	046	0.2−	0.2+	1996 10 11	046	0.1+	0.1+	1996 11 29	327	0.1+	0.1+
1996 10 01	046	0.1−	0.3+	1996 10 11	046	0.2−	0.2+	1996 11 29	327	0.4+	0.2−
1996 10 03	327	0.3−	0.4−	1996 10 11	046	0.1−	0.1+	1998 01 02	046	0.0	0.2+
1996 10 03	327	0.2+	0.1−	1996 10 13	046	0.1−	0.1−	1998 01 02	046	0.0	0.0
1996 10 03	327	0.2+	0.4−	1996 10 13	046	0.1−	0.2−	1998 01 02	046	0.4+	0.2+
1996 10 03	046	0.5−	0.5−	1996 10 13	046	0.4−	0.1−	1998 01 10	046	0.2−	0.2+
1996 10 03	046	0.1+	0.4−	1996 11 03	046	0.4+	0.1−	1998 01 10	046	0.5−	0.4−
1996 10 03	046	0.1+	0.2+	1996 11 03	046	0.2+	0.2+	1998 01 10	046	0.3+	0.1−

1996 TR_1

Id. T. Kobayashi (1997–98 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	5.04461		(2000.0)		**P**	**Q**	
n	0.21646966	ω	302.74619		−0.29812269	−0.95423694	
a	2.7470804	Ω	164.54604		+0.90267330	−0.28986348	
e	0.0521471	i	5.07095		+0.31032849	−0.07355967	
P	4.55	H	13.6	G	0.15	U	5

Residuals in seconds of arc

1996 10 03	327	0.0	0.2−	1996 10 05	327	0.2−	0.1−	1996 10 14	327	0.2−	0.1−
1996 10 03	327	0.1+	0.2−	1996 10 05	327	0.4+	0.2−	1996 10 14	327	0.1−	0.2−
1996 10 03	327	0.0	0.1+	1996 10 09	046	0.3+	0.0	1996 10 14	327	0.2+	0.0
1996 10 04	046	0.0	0.2+	1996 10 09	046	0.1−	0.1−	1997 12 31	411	0.7−	0.3+
1996 10 04	046	0.1−	0.2+	1996 10 09	046	0.4+	0.0	1997 12 31	411	0.5+	0.3−
1996 10 04	046	0.2−	0.0	1996 10 09	046	0.4+	0.1−	1998 01 01	411	0.2+	0.0
1996 10 04	046	0.1−	0.1−	1996 10 09	327	0.3−	0.2−	1998 01 01	411	0.1−	0.0
1996 10 04	046	0.1+	0.0	1996 10 09	327	0.2+	0.4+				
1996 10 05	327	0.2−	0.1+	1996 10 09	327	0.6−	0.4+				

1996 TJ_9

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	208.16760		(2000.0)		**P**	**Q**	
n	0.24324773	ω	64.13213		+0.05286128	+0.99830724	
a	2.5415785	Ω	208.92942		−0.93321093	+0.04074006	
e	0.0842580	i	2.87420		−0.35541953	+0.04150794	
P	4.05	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1996 10 05	327	0.2+	1.1−	1996 10 16	046	0.6−	0.3−	1996 11 08	691	(2.6−	0.2+)
1996 10 05	327	0.9+	0.4−	1996 10 18	566	1.5+	0.4−	1996 11 08	691	0.8−	0.3+
1996 10 05	327	0.2+	0.8−	1996 10 18	566	0.6+	0.5−	1996 11 08	691	0.9−	0.0
1996 10 12	046	0.2−	0.2+	1996 10 18	566	0.9+	0.1−	1996 11 16	046	0.1−	1.2+
1996 10 12	046	0.4+	0.5+	1996 10 19	046	1.0+	0.1+	1996 11 16	046	0.3+	0.3+
1996 10 12	046	0.3−	0.1−	1996 10 19	046	0.6+	0.2−	1996 11 16	046	0.2−	1.5+
1996 10 12	046	0.3−	0.1−	1996 10 19	046	0.1+	0.3−	1996 12 29	046	0.1+	0.1+
1996 10 12	046	0.2−	0.3+	1996 11 03	046	0.7−	0.3−	1996 12 29	046	0.1+	0.1−
1996 10 14	046	0.3−	0.0	1996 11 03	046	0.1−	0.0	1996 12 29	046	0.1−	1.3+
1996 10 14	046	0.1−	0.3+	1996 11 03	046	0.2−	0.3−	1998 01 10	046	0.7+	0.4−
1996 10 14	046	0.3−	0.2+	1996 11 03	046	0.5+	0.4−	1998 01 10	046	0.3−	0.1−
1996 10 14	046	0.3−	0.2+	1996 11 04	046	0.3−	1.1−	1998 01 10	046	0.0	0.4−
1996 10 14	046	0.3−	0.2+	1996 11 04	046	0.1−	0.6−	1998 01 11	046	0.1−	0.2−
1996 10 14	046	0.2−	0.1+	1996 11 04	046	0.1−	0.0	1998 01 11	046	0.2+	0.2+
1996 10 14	046	0.1−	0.1+	1996 11 07	327	0.1−	0.5+	1998 01 11	046	0.6−	0.3+
1996 10 16	046	0.4−	0.1+	1996 11 07	327	0.8+	0.1+				
1996 10 16	046	0.5−	0.3−	1996 11 07	327	0.3−	0.3+				

1996 TC_{15}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	184.90659		(2000.0)		**P**	**Q**	
n	0.22222884	ω	268.30872		+0.97853668	+0.11530898	
a	2.6994115	Ω	85.04473		−0.03685838	+0.91336296	
e	0.1405632	i	9.87111		−0.20274965	+0.39047656	
P	4.44	H	14.0	G	0.15	U	3

Residuals in seconds of arc

1996 10 15	557	0.3+	0.3−	1996 11 06	557	0.1+	0.5−	1997 02 07	557	0.3+	0.0
1996 10 15	557	0.3−	0.4−	1996 11 21	557	0.5+	0.3+	1997 02 07	557	0.4+	0.1−
1996 10 15	557	0.0	0.4−	1996 11 21	557	0.1+	0.5−	1997 02 26	557	0.3+	0.4+
1996 10 23	557	0.3+	0.2+	1996 11 21	557	0.3−	0.1−	1997 02 26	557	0.5−	0.1−
1996 10 23	557	0.6+	0.4+	1997 01 14	557	0.2−	0.1+	1997 12 31	557	0.2+	0.3+
1996 10 23	557	0.7+	0.5+	1997 01 14	557	0.2−	0.2+	1997 12 31	557	0.7+	0.8+
1996 11 05	557	0.2−	0.1+	1997 01 14	557	0.2−	0.2+	1998 01 11	557	1.0−	0.7−
1996 11 05	557	0.4−	0.1+	1997 01 31	557	0.2−	0.3+	1998 01 11	557	0.0	0.6−
1996 11 05	557	0.5−	0.0	1997 01 31	557	0.4+	0.0				
1996 11 06	557	0.8−	0.2−	1997 02 07	557	0.1−	0.2−				

1996 TS_{15} = 1990 TY_{14}

Id. V. S. Casulli (1997 observations), G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	144.97072			(2000.0)		**P**		**Q**
n	0.16842916	ω	284.84301		+0.69481411		+0.68786503	
a	3.2473158	Ω	32.55200		−0.41180535		+0.61984086	
e	0.0944020	i	22.96552		−0.58961827		+0.37767579	
P	5.85	H	12.0	G	0.15	U	3	

Residuals in seconds of arc

1990 10 14	808	0.1−	0.2−	1996 10 21	596	0.3−	0.4+	1996 12 04	596	0.0	0.2+
1990 10 14	808	0.1−	0.5+	1996 10 30	596	0.1−	0.1+	1996 12 04	596	0.3−	0.4+
1996 10 12	596	0.6−	0.2+	1996 10 30	596	0.1−	0.0	1996 12 04	596	0.2−	0.4+
1996 10 12	596	0.8−	1.0−	1996 10 30	596	0.2+	0.1−	1997 12 07	596	0.8+	0.4−
1996 10 12	596	0.2−	0.2−	1996 10 31	596	0.2−	0.3+	1997 12 07	596	0.5+	0.7−
1996 10 12	596	0.6+	0.1+	1996 10 31	596	0.5+	0.1+	1997 12 07	596	0.5+	0.7−
1996 10 20	596	0.4+	0.8+	1996 10 31	596	0.1+	0.0	1997 12 28	596	0.5−	0.6+
1996 10 20	596	1.1+	0.3−	1996 10 31	596	0.1−	0.2+	1997 12 28	596	0.9−	0.7+
1996 10 20	596	1.1+	0.4+	1996 11 03	596	0.7+	0.9−	1997 12 28	596	0.4−	0.3+
1996 10 21	596	0.0	0.4+	1996 11 27	596	0.8−	0.8−				
1996 10 21	596	0.2−	0.2+	1996 11 27	596	0.7−	1.2−				

1996 TY_{27} = 1998 AG_7

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	333.22868			(2000.0)		**P**		**Q**
n	0.17266206	ω	47.85297		−0.81092746		−0.57666460	
a	3.1940234	Ω	96.69634		+0.50306060		−0.77371464	
e	0.1978899	i	5.73642		+0.29887570		−0.26234252	
P	5.71	H	15.0	G	0.15	U	5	

Residuals in seconds of arc

1996 10 07	691	0.2−	0.1+	1996 10 11	691	0.2+	0.1+	1998 01 05	327	0.0	0.2−
1996 10 07	691	0.0	0.2−	1996 10 11	691	0.1−	0.1−	1998 01 07	327	0.6−	0.2−
1996 10 07	691	0.0	0.1−	1996 10 11	691	0.0	0.1+	1998 01 07	327	0.0	0.1+
1996 10 09	691	0.1+	0.2+	1998 01 05	327	0.1−	0.1+	1998 01 07	327	0.3+	0.2+
1996 10 09	691	0.1−	0.2−	1998 01 05	327	0.3+	0.2+				
1996 10 09	691	0.1+	0.1+	1998 01 05	327	0.2+	0.0				

1996 TR_{41} = 1980 WY_4 = 1990 FJ_3 = 1994 CH_{19}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	13.30854			(2000.0)		**P**		**Q**
n	0.23891952	ω	344.99294		−0.32654898		−0.94364479	
a	2.5721816	Ω	124.03901		+0.87374242		−0.32310771	
e	0.1117586	i	3.72627		+0.36047185		−0.07166532	
P	4.13	H	14.5	G	0.15	U	2	

Residuals in seconds of arc

1980 11 29	675	0.5+	1.0−	1994 02 13	809	1.4+	1.4+	1996 10 08	809	1.7−	0.6+
1980 12 01	675	0.1+	1.7−	1994 02 13	809	0.5+	1.0+	1996 10 08	809	0.1+	0.4+
1990 03 17	046	0.5+	1.9−	1994 02 13	809	0.0	1.0+	1996 10 10	809	0.3+	0.1−
1990 03 17	046	1.8−	1.2−	1996 10 07	809	0.0	0.2+	1996 10 10	809	0.4−	0.1+
1994 02 10	809	0.8+	0.9+	1996 10 07	809	1.1+	0.1+	1996 10 10	809	1.6−	0.4−
1994 02 10	809	0.3+	0.7+	1996 10 07	809	0.3+	0.6+				
1994 02 10	809	1.0−	0.5+	1996 10 08	809	0.6+	1.6+				

1996 UA

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	137.63890			(2000.0)		**P**		**Q**
n	0.23169794	ω	312.87165		+0.86974820		+0.48903907	
a	2.6253544	Ω	18.16784		−0.36782805		+0.73180824	
e	0.1092918	i	12.25294		−0.32899939		+0.47465512	
P	4.25	H	14.0	G	0.15	U	3	

Residuals in seconds of arc

1996 09 14	566	0.2−	0.2+	1996 10 31	684	0.0	0.3+	1996 12 09	684	0.1+	0.2+
1996 09 14	566	0.4+	0.2−	1996 10 31	684	0.0	0.3+	1996 12 09	684	0.0	0.2+
1996 09 14	566	0.3+	0.2+	1996 10 31	684	0.2+	0.4+	1996 12 09	684	0.1−	0.2+
1996 10 16	684	0.3+	0.0	1996 11 09	684	0.1−	0.1−	1996 12 16	684	0.4−	0.4−
1996 10 16	684	0.0	0.1+	1996 11 09	684	0.3−	0.1+	1996 12 16	684	0.5−	0.3−
1996 10 16	684	0.2+	0.1+	1996 11 09	684	0.4+	0.4+	1996 12 16	684	0.3−	0.4−
1996 10 17	684	0.4−	0.2−	1996 11 28	684	0.5+	0.0	1997 12 29	684	0.1−	0.1+
1996 10 17	684	0.4−	0.4−	1996 11 28	684	0.4+	0.2+	1997 12 29	684	0.0	0.2−
1996 10 17	684	0.5−	0.4−	1996 11 28	684	0.7+	0.1+	1997 12 29	684	0.1+	0.0
1996 10 18	684	0.1−	0.3−	1996 11 28	684	0.4+	0.0	1997 12 31	684	0.2−	0.1+
1996 10 18	684	0.1+	0.3−	1996 12 08	684	0.1−	0.2+	1997 12 31	684	0.1+	0.0
1996 10 18	684	0.2+	0.3−	1996 12 08	684	0.3−	0.1+				

1996 UO = 1991 PY_{15} = 1997 YN_{14}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	125.55045			(2000.0)		**P**		**Q**
n	0.20562862	ω	302.26676		+0.72323745		+0.69055468	
a	2.8428046	Ω	14.06459		−0.62223168		+0.65653591	
e	0.0692296	i	1.85428		−0.29959194		+0.30347131	
P	4.79	H	13.0	G	0.15	U	4	

Residuals in seconds of arc

1991 08 06	675	0.5+	0.1−	1996 10 19	610	0.9−	0.6−	1997 12 29	104	0.6+	0.7−
1991 08 06	675	0.3−	1.0−	1996 10 19	610	0.6−	0.0	1997 12 29	104	0.2−	0.6−
1991 08 10	675	0.6+	0.5−	1996 10 19	610	0.1−	0.6+	1997 12 29	104	0.1−	0.4+
1991 08 10	675	0.0	0.3−	1997 12 24	327	0.2−	0.3−	1997 12 29	104	0.2−	0.5+
1996 10 05	809	1.4+	0.5+	1997 12 24	327	0.1−	0.0	1997 12 29	104	0.3−	0.8+
1996 10 05	809	1.0+	0.6+	1997 12 24	327	0.4−	0.2−	1998 01 01	104	0.1−	0.3−
1996 10 05	809	0.1−	1.0+	1997 12 26	327	0.0	0.1−	1998 01 01	104	0.7+	0.2−
1996 10 06	809	0.3−	0.3+	1997 12 26	327	0.2−	0.2+	1998 01 01	104	0.3+	0.1−
1996 10 06	809	0.2−	0.6+	1997 12 26	327	0.2−	0.2+	1998 01 01	104	0.3+	0.5+
1996 10 06	809	0.7−	0.2−	1997 12 29	327	(2.5+	2.2+)	1998 01 04	327	0.9+	0.1+
1996 10 18	610	0.0	0.3−	1997 12 29	327	0.0	0.1+	1998 01 04	327	0.2−	0.1+
1996 10 18	610	0.2−	0.4−	1997 12 29	327	0.4−	0.2−	1998 01 04	327	0.5−	0.3−
1996 10 18	610	0.1−	0.5−	1997 12 29	104	0.5+	1.0−				

1996 VQ = 1980 TQ_2 = 1988 FL_2

Id. A. Gnädig

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	17.86997			(2000.0)		**P**		**Q**
n	0.19156418	ω	83.57326		−0.44737521		−0.88471018	
a	2.9802991	Ω	33.99621		+0.69972423		−0.43742600	
e	0.1327847	i	13.54261		+0.55699319		−0.16107886	
P	5.15	H	12.5	G	0.15	U	2	

Residuals in seconds of arc

1980 10 05	809	0.0	0.1−	1996 11 16	046	0.1−	0.3−	1996 12 12	046	0.1+	0.0
1988 03 16	400	0.7−	1.3+	1996 11 16	046	0.2−	0.2−	1997 01 08	046	0.3+	0.3−
1988 03 16	400	1.1+	0.8−	1996 11 19	046	0.5−	0.3−	1997 01 08	046	0.2+	0.1−
1996 11 04	046	0.0	0.4+	1996 11 19	046	0.5−	0.3−	1997 01 08	046	0.1+	0.0
1996 11 04	046	0.5+	0.9+	1996 11 19	046	0.6−	0.4−	1997 01 12	046	0.1+	0.0
1996 11 06	046	0.0	0.1+	1996 12 03	046	0.2+	0.2−	1997 01 12	046	0.1+	0.0
1996 11 06	046	0.1−	0.0	1996 12 03	046	0.3+	0.1−	1997 01 12	046	0.2+	0.1+

1996 11 06	046	0.1+	0.2+	1996 12 03	046	0.0	0.2−	1997 01 28	046	0.1+	0.0
1996 11 06	046	0.1−	0.3+	1996 12 04	046	0.2+	0.0	1997 01 28	046	0.0	0.1+
1996 11 08	046	0.2−	0.1+	1996 12 04	046	0.0	0.1−	1997 01 28	046	0.3+	0.0
1996 11 08	046	0.1+	0.6+	1996 12 04	046	0.2−	0.1−	1997 01 29	046	0.1−	0.3−
1996 11 09	046	0.3−	0.4+	1996 12 12	046	0.3+	0.1−	1997 01 29	046	0.2+	0.1+
1996 11 16	046	0.3−	0.2−	1996 12 12	046	0.1+	0.0	1997 01 29	046	0.0	0.2−

1996 VV

Id. Y. Ikari (1997–98 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	192.03991		(2000.0)		**P**		**Q**
n	0.24600413	ω	233.93366		+0.35683539		+0.93219991
a	2.5225577	Ω	57.08093		−0.83219763		+0.34668448
e	0.1362796	i	4.13955		−0.42440028		+0.10398653
P	4.01	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1996 11 03	900	0.0	0.0	1996 11 13	900	1.5+	0.1−	1996 12 15	402	1.1−	1.4+
1996 11 03	900	0.1−	0.3+	1996 11 15	900	0.5−	0.3+	1996 12 15	402	0.4−	0.0
1996 11 03	900	0.5+	0.2+	1996 11 15	900	0.7−	0.0	1996 12 27	402	0.1+	0.1−
1996 11 03	900	1.2−	0.5−	1996 11 16	402	(2.6+	0.3−)	1996 12 27	402	0.6−	0.6−
1996 11 04	900	0.7−	0.0	1996 11 16	402	(2.5+	0.3−)	1997 01 12	402	0.6+	0.9+
1996 11 04	900	0.6−	1.2−	1996 11 16	402	(2.5+	0.2−)	1997 01 12	402	0.4−	0.6−
1996 11 06	900	0.6+	0.7−	1996 11 19	900	0.1+	0.6+	1997 01 12	402	0.2−	0.5+
1996 11 06	900	0.8+	0.8−	1996 11 19	900	1.0+	0.0	1997 12 25	900	0.7+	1.0−
1996 11 06	900	0.8−	0.3−	1996 12 02	900	0.8+	0.2−	1997 12 25	900	0.5+	0.3−
1996 11 06	900	0.2−	0.6+	1996 12 03	402	0.1+	0.0	1998 01 02	900	0.0	0.4−
1996 11 13	402	(3.2+	0.2+)	1996 12 03	402	0.2+	0.1−	1998 01 02	900	0.3−	0.8+
1996 11 13	402	(3.3+	0.2+)	1996 12 03	402	0.1+	0.1−	1998 01 05	900	1.0−	0.8+
1996 11 13	402	(3.2+	0.1+)	1996 12 08	900	0.5−	0.5+	1998 01 05	900	0.0	0.3−
1996 11 13	900	1.3+	0.7+	1996 12 15	402	0.0	0.1−				

1996 VJ$_4$ = 1997 YS$_8$

Id. N. Sato

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	153.41774		(2000.0)		**P**		**Q**
n	0.17197600	ω	87.14684		+0.78053447		+0.59095004
a	3.2025124	Ω	236.53927		−0.62509233		+0.73521873
e	0.0709549	i	14.14137		−0.00505192		+0.33201125
P	5.73	H	12.9	G	0.15	U	4

Residuals in seconds of arc

1996 11 06	369	0.1−	0.3−	1996 11 13	369	0.4−	0.4+	1996 12 08	369	0.6−	0.8+
1996 11 06	369	0.8+	1.7−	1996 11 15	369	0.8+	0.5−	1996 12 29	369	0.1+	0.2−
1996 11 06	369	0.5+	0.5−	1996 11 15	369	0.2−	0.0	1996 12 29	369	0.5+	0.0
1996 11 13	369	0.5−	0.1+	1996 11 19	369	0.3−	0.4+	1996 12 29	369	0.4−	1.8−
1996 11 13	369	0.2+	0.2+	1996 11 19	369	1.4−	0.5+	1997 12 24	369	1.0−	1.4−
1996 11 13	369	0.2+	0.6−	1996 11 19	369	1.2−	0.6+	1997 12 24	369	0.9+	0.2+
1996 11 13	369	0.1−	1.1+	1996 11 30	369	1.4+	0.0	1997 12 27	369	0.7−	0.0
1996 11 13	369	0.0	0.8−	1996 11 30	369	0.5+	1.0+	1997 12 27	369	0.8+	1.1+
1996 11 13	369	0.2+	0.5+	1996 11 30	369	0.1+	0.6+				

1996 VB$_5$ = 1986 TO$_{13}$

Id. Y. Ikari (1998 observations), S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	176.48220		(2000.0)		**P**		**Q**
n	0.29617618	ω	287.20070		+0.92613710		+0.36692424
a	2.2289618	Ω	51.36254		−0.28936890		+0.83978843
e	0.0462371	i	6.42349		−0.24194154		+0.40015246
P	3.33	H	13.3	G	0.15	U	3

Residuals in seconds of arc

1986 10 05	095	0.3+	0.6−	1996 11 20	402	1.2+	0.2+	1996 12 14	355	1.0−	0.1−
1996 11 13	900	0.4−	0.0	1996 11 20	402	1.1+	0.2+	1996 12 14	355	1.2−	0.5−
1996 11 13	900	0.2−	0.1+	1996 11 27	900	0.5+	0.3−	1996 12 15	402	0.1−	0.1+
1996 11 13	900	0.3+	0.2−	1996 11 27	900	1.7+	0.3−	1996 12 15	402	0.2−	0.2+
1996 11 13	900	0.2−	0.2−	1996 11 30	355	0.6+	0.1−	1996 12 27	402	0.0	0.1−
1996 11 14	900	0.4+	0.5+	1996 11 30	355	0.0	0.8−	1996 12 27	402	0.2+	0.5−
1996 11 14	900	0.6+	0.1−	1996 12 03	900	0.6−	0.0	1996 12 28	355	0.6+	0.5−
1996 11 15	900	0.1−	0.7+	1996 12 03	900	1.1−	0.2+	1996 12 28	355	0.7+	0.1+
1996 11 15	900	0.1+	0.0	1996 12 03	402	1.0−	0.1+	1996 12 29	355	1.2+	0.6+
1996 11 15	900	0.0	0.0	1996 12 03	402	0.9−	0.1+	1996 12 29	355	0.4+	0.6−
1996 11 16	402	(3.0+	0.1−)	1996 12 03	402	0.9−	0.1+	1996 12 30	900	1.8−	0.1−
1996 11 16	402	(2.8+	0.2−)	1996 12 03	355	0.6−	0.5−	1996 12 30	900	0.7−	0.1+
1996 11 16	402	(2.9+	0.1−)	1996 12 03	355	0.6−	0.0	1997 01 02	355	0.4+	0.3+
1996 11 16	402	(2.7+	0.2−)	1996 12 06	900	0.2+	0.4+	1997 01 02	355	0.0	0.7+
1996 11 16	402	(2.6+	0.2−)	1996 12 06	900	0.9−	0.4+	1997 01 12	402	0.2+	0.2−
1996 11 16	402	(2.7+	0.3−)	1996 12 07	355	0.3−	0.8−	1997 01 12	402	0.5+	0.1−
1996 11 19	900	0.1−	0.1+	1996 12 07	355	0.4−	0.7−	1997 01 12	402	0.4+	0.2−
1996 11 19	900	0.3−	0.3+	1996 12 08	355	0.4+	0.8+	1998 01 02	900	0.9−	0.2+
1996 11 20	402	1.1+	0.0	1996 12 08	355	0.3+	0.6+	1998 01 02	900	0.8+	0.4−

1996 XR = 1998 AD$_6$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	179.39097		(2000.0)		**P**		**Q**
n	0.23020241	ω	270.53056		+0.79301048		+0.60877654
a	2.6367127	Ω	51.96858		−0.54672327		+0.72776958
e	0.1093420	i	1.66772		−0.26875274		+0.31582046
P	4.28	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1996 12 01	369	0.1+	0.7+	1996 12 08	369	0.4−	0.6+	1997 01 03	369	1.0−	0.3+
1996 12 01	369	0.6+	0.5+	1996 12 14	369	0.6+	0.6−	1998 01 08	910	0.1+	0.0
1996 12 02	369	0.1+	0.3+	1996 12 14	369	0.0	0.1+	1998 01 08	910	0.1+	0.1+
1996 12 02	369	0.1+	0.6+	1996 12 14	369	0.4+	0.9−	1998 01 08	910	0.0	0.2−
1996 12 02	369	0.5−	0.2−	1996 12 14	369	0.6−	0.2+	1998 01 09	910	0.1−	0.1−
1996 12 02	369	0.9−	0.5−	1997 01 02	369	0.4+	0.1−	1998 01 09	910	0.1+	0.1+
1996 12 06	369	0.7−	1.0−	1997 01 02	369	0.1−	0.5+	1998 01 09	910	0.2−	0.1+
1996 12 06	369	1.4+	0.6−	1997 01 03	369	0.6+	0.0				

1996 XP$_1$ = 1981 UO$_5$ = 1990 DQ$_8$ = 1990 ER$_9$

Id. A. Gnädig

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	91.36188		(2000.0)		**P**		**Q**
n	0.26529646	ω	206.90994		−0.03171571		−0.99520310
a	2.3987321	Ω	245.03043		+0.93441916		+0.00334167
e	0.1969970	i	5.85946		+0.35476042		−0.09777328
P	3.72	H	15.0	G	0.15	U	3

Residuals in seconds of arc

1981 10 30	381	1.5−	0.8−	1990 02 24	809	1.1−	0.0	1996 12 08	411	0.6−	0.0
1981 10 30	381	1.1+	0.9−	1990 03 04	809	0.9−	0.7+	1996 12 08	411	0.2+	0.2−
1981 10 30	381	0.2+	0.4+	1990 03 04	809	0.5+	0.2+	1996 12 12	411	1.6−	0.7−
1981 10 30	381	0.3−	0.4−	1990 03 04	809	0.3+	0.9−	1996 12 12	411	0.4−	0.0
1981 10 30	381	0.9+	1.2+	1996 12 02	411	0.1−	0.4−	1996 12 19	411	0.5+	0.2+
1981 10 30	381	0.5−	1.0+	1996 12 02	411	1.3+	1.1−	1996 12 19	411	0.6+	0.4+
1990 02 24	809	1.5+	0.4+	1996 12 03	411	0.5−	0.3+	1996 12 29	411	0.1−	0.8+
1990 02 24	809	0.3−	0.4−	1996 12 03	411	0.4+	0.1−	1996 12 29	411	0.4+	0.4+

1996 XF$_3$ = 1993 FL$_{45}$

Id. A. Gnädig

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	290.61506		(2000.0)		**P**		**Q**
n	0.19812060	ω	119.46494		−0.38065723		+0.92443483
a	2.9141795	Ω	128.14281		−0.85813880		−0.34395285
e	0.1044678	i	1.66200		−0.34452557		−0.16467143
P	4.97	H	12.5	G	0.15	U	6

Residuals in seconds of arc

1993 03 19	809	0.7−	0.1−	1996 12 06	411	0.5−	1.2+	1996 12 13	411	0.0	0.2−
1993 03 20	809	0.1+	0.7+	1996 12 06	411	0.5+	0.2+	1996 12 28	411	0.3−	0.3−
1993 03 24	809	0.6+	0.5−	1996 12 12	411	0.7−	0.7−	1996 12 28	411	0.0	0.1+
1996 12 03	411	(7.0−	1.4−)	1996 12 12	411	0.8+	0.2+				
1996 12 03	411	(6.5−	0.7−)	1996 12 13	411	0.2+	0.5−				

1996 XY$_{25}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	105.85419		(2000.0)	**P**	**Q**	
n	0.23102086	ω	207.14468	+0.98262798	+0.12559908	
a	2.6304815	Ω	144.79509	−0.09537785	+0.97330110	
e	0.1730969	i	13.70920	−0.15920210	+0.19211934	
P	4.27	H	14.5	G 0.15	U 4	

Residuals in seconds of arc

1996 12 14	683	0.2+	0.4−	1996 12 21	683	0.8−	1.5−	1997 02 02	683	0.1−	1.2−
1996 12 14	683	0.6+	0.9−	1996 12 23	683	1.6−	1.7+	1997 02 02	683	0.1−	1.1−
1996 12 14	683	0.3+	0.2−	1996 12 23	683	(2.1+	0.5+)	1997 03 05	683	(1.3−	2.7+)
1996 12 15	683	0.2+	0.3−	1996 12 29	683	0.7+	1.4+	1997 03 05	683	0.8−	0.8+
1996 12 15	683	1.1+	0.1+	1996 12 29	683	0.4+	1.3+	1997 03 05	683	(10.3+	1.3−)
1996 12 15	683	0.2+	0.0	1996 12 29	683	0.2−	2.0+	1997 03 06	683	0.7−	1.0+
1996 12 16	683	(2.4−	0.7−)	1996 12 29	683	0.4+	1.6+	1997 03 06	683	(0.4+	4.4+)
1996 12 16	683	1.6−	0.2−	1997 01 31	683	1.0+	0.8−	1997 12 27	683	0.3+	0.2+
1996 12 16	683	1.6−	0.3+	1997 01 31	683	0.5+	0.6−	1997 12 27	683	0.2+	0.5+
1996 12 21	683	0.3+	0.1+	1997 01 31	683	0.3+	0.1−	1997 12 27	683	0.2+	0.2−
1996 12 21	683	0.1−	0.0	1997 01 31	683	0.7+	1.0−	1997 12 31	683	0.1−	0.2−
1996 12 21	683	0.4+	1.0−	1997 02 02	683	0.4+	1.2−	1997 12 31	683	0.4−	0.1−

1996 XJ$_{26}$ = 1985 RD$_1$ = 1990 QD$_{17}$

Id. A. Gnädig

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	175.49242		(2000.0)	**P**	**Q**	
n	0.19336430	ω	221.71955	+0.74560165	+0.66425290	
a	2.9617736	Ω	96.57335	−0.59630665	+0.70078314	
e	0.1225074	i	3.07846	−0.29748372	+0.26013664	
P	5.10	H	14.0	G 0.15	U 4	

Residuals in seconds of arc

1985 09 13	801	0.3+	0.8−	1996 12 05	595	0.6−	0.9+	1997 01 13	595	0.2+	0.3−
1990 08 26	809	0.4+	0.2+	1996 12 05	595	0.5−	1.3+	1997 01 13	595	0.1+	1.0−
1990 08 26	809	0.1−	0.0	1996 12 14	595	0.4−	0.5+	1997 01 30	595	0.3+	0.9−
1990 08 26	809	0.3−	0.1+	1996 12 14	595	0.4+	0.2+	1997 02 01	595	0.3−	0.6−
1996 12 04	595	1.1−	0.7+	1997 01 07	595	0.9+	0.6−	1997 02 01	595	2.4+	0.9−
1996 12 05	595	0.4−	0.6+	1997 01 07	595	0.4−	0.3−				

1996 YZ$_2$ = 1997 WZ$_{21}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	59.07531		(2000.0)	**P**	**Q**	
n	0.18361878	ω	190.97322	+0.74795480	−0.65675615	
a	3.0656647	Ω	210.76271	+0.62231968	+0.74423000	
e	0.1390386	i	10.82923	+0.23082859	+0.12162679	
P	5.37	H	13.5	G 0.15	U 4	

Residuals in seconds of arc

1996 12 30	683	0.5−	1.1−	1997 01 12	683	0.6−	0.4−	1997 11 25	327	0.0	0.5−
1996 12 30	683	0.2+	0.1+	1997 01 12	683	1.0+	0.9−	1997 12 01	327	0.3−	0.4−
1996 12 30	683	0.2−	0.2+	1997 10 13	327	0.1+	0.1−	1997 12 01	327	0.3−	0.1+
1997 01 02	683	0.7−	0.6+	1997 10 13	327	0.3−	0.7+	1997 12 01	327	0.0	0.3−
1997 01 02	683	0.2+	0.0	1997 10 13	327	0.3+	0.3−	1997 12 21	327	0.0	0.4+
1997 01 02	683	0.6+	1.5+	1997 11 25	327	0.3−	0.6+	1997 12 21	327	0.1−	0.3−
1997 01 12	683	0.1+	0.2−	1997 11 25	327	0.4+	0.2+	1997 12 21	327	0.5+	0.1+

1997 AJ$_1$ = 1958 BL = 1990 BX$_2$ = 1990 DR$_5$ = 1990 DM$_6$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	56.14215		(2000.0)	**P**	**Q**	
n	0.27809109	ω	188.14334	−0.95098991	−0.30824441	
a	2.3245809	Ω	333.86231	+0.28675526	−0.84937656	
e	0.1059556	i	3.19697	+0.11571350	−0.42842134	
P	3.54	H	13.9	G 0.15	U 5	

Residuals in seconds of arc

1958 01 24	330	0.3+	1.2+	1990 02 23	033	(4.3−	2.1+)	1997 01 07	411	(13.7+	5.3−)
1990 01 25	372	0.6−	2.3+	1997 01 02	411	0.1−	0.8−	1997 01 14	411	0.4+	0.1+
1990 01 25	372	1.9−	0.4+	1997 01 02	411	0.4+	1.2−	1997 01 14	411	0.2+	0.1−
1990 02 20	046	1.1+	1.6−	1997 01 03	411	0.4+	0.1−	1997 01 26	411	1.1−	0.4+
1990 02 20	046	1.6+	1.1−	1997 01 03	411	0.1−	0.4−	1997 01 26	411	0.5−	0.7+
1990 02 23	033	(4.5+	0.2−)	1997 01 07	411	(12.5+	6.7−)				

1997 AN$_{22}$ = 1971 BY$_2$ = 1971 BU$_3$ = 1978 ND$_8$ = 1984 UY$_3$

Id. S. Nakano, C. M. Bardwell (d, *MPC* 6840); 1982 RK$_1$ = 1978 ND$_8$ (*MPC* 11154) is invalid

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	246.96774		(2000.0)	**P**	**Q**	
n	0.18724355	ω	1.59363	+0.43378012	+0.88916193	
a	3.0259713	Ω	294.13476	−0.82842459	+0.32999542	
e	0.0726246	i	9.18637	−0.35432684	+0.31700802	
P	5.26	H	11.8	G 0.15	U 2	

Residuals in seconds of arc

1971 01 27	805	1.1−	0.1−	1984 10 20	095	0.1−	0.2+	1997 01 18	327	0.2+	0.4+
1971 01 29	805	1.1+	0.1+	1997 01 11	327	0.4−	0.1+	1997 01 18	327	0.3−	0.2+
1978 07 07	675	0.3−	0.7+	1997 01 11	327	1.0−	0.1+	1997 01 26	327	0.2−	0.2−
1978 07 08	675	0.2−	0.3+	1997 01 11	327	0.5+	0.2+	1997 01 26	327	0.3+	0.1+
1978 07 09	675	0.1+	0.4+	1997 01 18	327	0.5+	0.5+	1997 01 26	327	0.9+	0.1+

1997 BB$_1$ = 1973 UZ$_3$ = 1990 TL$_8$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	218.46436		(2000.0)	**P**	**Q**	
n	0.17306803	ω	357.35290	−0.31157018	+0.93076205	
a	3.1890267	Ω	254.43977	−0.86812347	−0.36069236	
e	0.0881665	i	11.45546	−0.38637503	+0.05985842	
P	5.69	H	11.4	G 0.15	U 4	

Residuals in seconds of arc

1973 10 29	095	0.1+	0.5−	1997 01 23	327	0.5−	0.2−	1997 01 25	327	0.3+	0.3+
1990 10 12	046	0.9+	0.3+	1997 01 23	327	0.4−	0.5−	1997 02 06	327	0.6+	0.1+
1990 10 12	046	0.3−	0.8+	1997 01 23	327	0.4+	0.2−	1997 02 06	327	0.2+	0.4+
1990 10 13	046	(3.5−	2.4−)	1997 01 25	327	0.1−	0.0	1997 02 06	327	0.3−	0.4+
1990 10 13	046	0.7−	0.7−	1997 01 25	327	0.2−	0.0				

1997 BM$_8$ = 1995 PS

Id. A. Gnädig

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	246.86892		(2000.0)	**P**	**Q**	
n	0.29857254	ω	32.42377	+0.93293813	+0.35468477	
a	2.2170193	Ω	306.67851	−0.34458904	+0.82985803	
e	0.1554802	i	4.42287	−0.10433040	+0.43073700	
P	3.30	H	14.5	G 0.15	U 5	

Residuals in seconds of arc

1995 08 04	372	0.6−	0.3+	1997 01 31	691	0.1+	0.1+	1997 03 05	704	0.2−	1.5−
1995 08 04	372	1.4+	0.2−	1997 02 11	691	0.2−	0.2−	1997 03 06	704	0.6−	0.5+
1995 08 05	372	0.8−	0.0	1997 02 11	691	1.1+	0.2−	1997 03 06	704	0.0	0.3+
1997 01 31	691	0.0	0.2+	1997 02 11	691	0.9−	0.1−				
1997 01 31	691	0.1−	0.1+	1997 03 05	704	0.8+	0.9+				

1997 CN = 1941 SB = 1991 PD$_{18}$

Id. T. Kobayashi, S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	224.31898		(2000.0)			
n	0.25600864	ω	49.29441		+0.97168158	+0.21515951
a	2.4564031	Ω	298.07311		−0.23604404	+0.86482293
e	0.2567578	i	6.35591		−0.01086820	+0.45363828
P	3.85	H	13.0	G	0.15	U 4

Residuals in seconds of arc

1941 08 28	062	1.4+	0.5+	1997 02 01	411	0.5−	0.0	1997 02 11	411	0.8−	0.2+
1941 09 16	062	1.4−	0.6−	1997 02 01	411	0.8+	0.0	1997 02 12	411	0.1−	0.4−
1991 08 08	675	0.2−	1.0−	1997 02 03	411	(23.0−	1.6−)	1997 02 12	411	0.3−	0.1−
1991 08 08	675	0.3−	1.5−	1997 02 03	411	(23.7−	0.0)	1997 03 01	411	0.5+	0.9−
1991 09 12	675	0.7+	0.5+	1997 02 11	411	0.1+	0.3+	1997 03 01	411	0.3−	1.6−
1991 09 12	675	0.6+	0.2+	1997 02 11	411	0.5−	0.1−				

1997 GQ$_{22}$ = 1987 SY$_{23}$ = 1991 GX$_{12}$

Id. A. Gnädig

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	285.42951		(2000.0)			
n	0.17172025	ω	131.89958		+0.97387608	+0.17991245
a	3.2056913	Ω	218.34469		−0.20806000	+0.95140419
e	0.1453494	i	12.90479		+0.09097487	+0.24992314
P	5.74	H	13.5	G	0.15	U 4

Residuals in seconds of arc

1987 09 23	095	0.0	0.1−	1997 04 30	704	0.1−	0.4+	1997 05 01	704	0.0	0.0
1991 04 08	809	0.6+	1.2+	1997 04 30	704	0.7+	0.7−	1997 05 05	704	0.8+	0.3−
1991 04 08	809	0.2+	0.5+	1997 04 30	704	0.2+	0.1−	1997 05 05	704	0.0	0.5−
1991 04 08	809	1.0−	2.5−	1997 04 30	704	0.4−	0.0	1997 05 05	704	0.4−	0.2−
1997 04 06	704	0.3+	0.8+	1997 05 01	704	0.7+	0.7−	1997 05 05	704	0.6+	0.2+
1997 04 06	704	1.5−	0.8+	1997 05 01	704	0.1−	0.0	1997 05 05	704	0.1+	0.2+
1997 04 08	704	0.8−	0.4+	1997 05 01	704	0.2+	0.1+				
1997 04 08	704	0.4−	0.0	1997 05 01	704	0.1+	0.1+				

1997 GO$_{24}$ = 1989 SP$_{7}$ = 1990 XZ$_{1}$

Id. A. Gnädig

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	303.46787		(2000.0)			
n	0.08375324	ω	87.64186		+0.66844111	+0.72170694
a	5.1737047	Ω	226.08485		−0.74208713	+0.63092512
e	0.1274122	i	14.45297		−0.04993168	+0.28473249
P	11.77	H	11.0	G	0.15	U 3

Residuals in seconds of arc

1989 09 28	675	0.1+	0.9−	1997 04 07	704	0.0	0.7−	1997 05 01	704	0.0	0.3+
1989 09 28	675	0.0	0.2+	1997 04 08	704	0.5−	0.3+	1997 05 01	704	0.1−	0.0
1990 12 10	372	1.3+	0.9−	1997 04 08	704	0.7−	0.0	1997 05 01	704	0.3−	0.2+
1990 12 10	372	1.3−	0.2−	1997 04 30	704	0.3−	0.2−	1997 05 01	704	0.2−	0.0
1997 04 06	704	0.4+	0.4−	1997 04 30	704	0.0	0.2+	1997 05 07	704	0.3+	0.1−
1997 04 06	704	0.3+	0.3+	1997 04 30	704	0.1−	0.1−	1997 05 07	704	0.2+	0.3−
1997 04 06	704	0.3+	1.5−	1997 04 30	704	0.6−	1.0+	1997 05 07	704	0.5+	0.4−
1997 04 06	704	0.1+	1.3+	1997 04 30	704	0.2−	0.1−	1997 05 07	704	0.4+	1.1−
1997 04 07	704	0.5+	0.2−	1997 05 01	704	0.1+	0.3−				

1997 RK$_{7}$ = 1978 PH$_{4}$ = 1978 TW = 1982 UT$_{8}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	17.55868		(2000.0)			
n	0.25943617	ω	54.79811		+0.99379391	+0.03671903
a	2.4347201	Ω	302.87975		−0.08100725	+0.88580585
e	0.2612936	i	7.18250		+0.07623317	+0.46260102
P	3.80	H	14.5	G	0.15	U 2

Residuals in seconds of arc

1978 08 09	095	0.7−	0.9+	1997 09 20	046	0.1−	0.4−	1997 10 27	046	0.2−	0.0
1978 10 02	095	0.1−	0.9+	1997 09 20	046	0.2−	0.5−	1997 10 29	046	0.2−	0.3+
1982 10 21	095	0.7−	1.6+	1997 09 20	046	0.1−	0.4−	1997 10 29	046	0.0	0.2+
1997 09 10	046	0.2+	0.2+	1997 09 23	046	0.2+	0.3−	1997 10 29	046	0.1−	0.2+
1997 09 10	046	0.1+	0.2+	1997 09 23	046	0.2+	0.2−	1997 11 05	046	0.2+	0.1−
1997 09 10	046	0.1+	0.2+	1997 09 23	046	0.2+	0.3−	1997 11 05	046	0.8+	0.7−
1997 09 10	046	0.1+	0.3+	1997 09 29	046	0.2+	0.2−	1997 12 19	046	0.0	0.1+
1997 09 11	046	0.1−	0.2+	1997 09 29	046	0.1+	0.3−	1997 12 19	046	0.1+	0.1−
1997 09 11	046	0.1−	0.1+	1997 09 29	046	0.2+	0.3−	1997 12 19	046	0.4+	0.1+
1997 09 11	046	0.1−	0.1+	1997 10 17	046	0.0	0.3−	1997 12 21	046	0.6+	0.2+
1997 09 11	046	0.0	0.2+	1997 10 17	046	0.0	0.3−	1997 12 21	046	0.5+	0.3+
1997 09 12	046	0.0	0.1+	1997 10 17	046	0.2+	0.2−	1997 12 21	046	0.4+	0.0
1997 09 12	046	0.1+	0.0	1997 10 18	046	0.1−	0.2−	1997 12 27	566	0.3−	0.4−
1997 09 12	046	0.1−	0.0	1997 10 18	046	0.2−	0.2−	1997 12 27	566	0.1+	0.8−
1997 09 16	046	0.1−	0.0	1997 10 18	046	0.0	0.3−	1997 12 27	566	0.0	0.5−
1997 09 16	046	0.1+	0.2−	1997 10 27	046	0.5−	0.2+				
1997 09 16	046	0.1+	0.1−	1997 10 27	046	0.2−	0.4+				

1997 SX$_{33}$ = 1975 VV$_{3}$ = 1977 DN$_{6}$ = 1991 RO$_{17}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	17.50406		(2000.0)			
n	0.18036431	ω	3.76052		+0.73730991	−0.67547254
a	3.1024323	Ω	38.73721		+0.61936931	+0.66968085
e	0.1850647	i	0.96449		+0.26973275	+0.30864934
P	5.46	H	13.0	G	0.15	U 1

Residuals in seconds of arc

1975 11 02	095	2.3−	1.4−	1991 09 14	033	0.6−	1.0+	1997 11 29	704	0.6−	0.6−
1975 11 07	095	1.5+	3.2+	1991 09 16	675	0.3−	1.2−	1997 11 29	704	0.7−	0.5−
1977 02 19	381	0.1+	0.2+	1991 09 16	675	0.5+	0.8−	1997 11 29	704	0.3−	0.2−
1977 02 19	381	0.0	0.6−	1997 09 17	327	1.1+	0.1+	1997 11 29	704	1.7−	0.4−
1991 09 11	675	2.3+	0.7+	1997 09 17	327	1.1+	0.5+	1997 12 04	704	1.4+	1.0−
1991 09 11	675	0.2−	0.4+	1997 09 17	327	1.1+	0.1+	1997 12 04	704	1.0−	0.8+
1991 09 13	675	1.1−	2.1−	1997 09 26	327	0.7+	0.1+	1997 12 04	704	0.3+	0.5−
1991 09 13	675	2.7−	0.3−	1997 09 26	327	0.4+	0.3+	1997 12 04	704	0.9−	0.5+
1991 09 14	033	2.6+	1.0+	1997 09 26	327	0.4+	0.3+	1997 12 04	704	0.3+	0.6−

1997 TY$_{7}$ = 1977 DX$_{9}$ = 1983 GV$_{1}$ = 1994 BZ

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	196.32493		(2000.0)			
n	0.17194524	ω	117.47559		−0.94965611	+0.31104156
a	3.2028944	Ω	80.66625		−0.29918476	−0.86484827
e	0.1522079	i	2.17808		−0.09296105	−0.39406930
P	5.73	H	12.8	G	0.15	U 2

Residuals in seconds of arc

1977 02 19	381	0.2+	0.5+	1997 10 06	046	0.1−	0.1+	1997 10 10	046	1.6−	0.1+
1977 02 19	381	0.1−	0.3−	1997 10 06	046	0.3+	0.2+	1997 10 19	046	0.7+	0.3−
1983 04 09	095	0.2+	0.6+	1997 10 06	046	0.2−	0.3+	1997 10 19	046	0.8+	0.4−
1994 01 16	098	1.1+	0.0	1997 10 06	046	0.0	0.4+	1997 10 19	046	0.8+	0.5−
1994 01 16	098	1.1−	0.0	1997 10 07	046	0.2+	0.0	1997 10 23	046	0.5+	0.1−
1997 10 05	046	1.3−	0.5+	1997 10 07	046	0.4+	0.1−	1997 10 23	046	0.4+	0.1−
1997 10 05	046	0.3−	0.7+	1997 10 07	046	0.0	0.0	1997 10 23	046	0.7+	0.1−
1997 10 05	046	1.0−	0.2−	1997 10 09	046	0.4+	0.3+	1997 11 06	046	0.8+	0.9−
1997 10 05	046	0.4+	0.3+	1997 10 09	046	0.1−	0.5+				
1997 10 05	046	1.3−	0.1−	1997 10 10	046	0.7−	0.2+				

1997 TQ$_{25}$ = 1992 PZ$_2$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	78.64772		(2000.0)			
n	0.22631650	ω	82.27110		+0.86975926	+0.47413576
a	2.6668089	Ω	249.33778		−0.49043269	+0.79977598
e	0.1508924	i	8.40700		−0.05472293	+0.36817613
P	4.35	H	13.5	G	0.15	U 5

Residuals in seconds of arc

1992 08 06	675	0.5+	0.5+	1997 10 15	327	1.2+	0.3−	1997 11 29	704	0.1+	1.1+
1992 08 06	675	1.1+	1.0−	1997 10 15	327	0.0	0.6−	1997 11 29	704	0.5−	0.3+
1992 08 07	675	0.9−	0.3+	1997 10 27	327	0.5−	0.0	1997 11 29	704	1.8−	0.6+
1992 08 07	675	0.6−	0.2+	1997 10 27	327	0.4−	0.0	1997 12 04	704	0.9+	1.0+
1997 10 12	327	0.0	0.3+	1997 10 27	327	0.6−	0.0	1997 12 04	704	0.6+	0.4−
1997 10 12	327	0.5−	0.7+	1997 10 27	327	0.6−	0.1−	1997 12 04	704	1.6+	1.0−
1997 10 12	327	0.8+	0.1−	1997 11 29	704	0.5−	0.2+	1997 12 04	704	0.2+	0.6−
1997 10 15	327	0.1+	0.1+	1997 11 29	704	1.3−	0.3−	1997 12 04	704	1.3+	0.8−

1997 TS$_{25}$ = 1996 VP$_{39}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	14.02451		(2000.0)			
n	0.08267031	ω	158.93107		+0.63523851	−0.74852827
a	5.2187883	Ω	251.11420		+0.67673107	+0.65815124
e	0.0657780	i	11.59696		+0.37216543	+0.08088497
P	11.92	H	10.5	G	0.15	U 3

Residuals in seconds of arc

1996 11 09	691	0.2+	0.0	1997 10 15	327	0.3+	0.9+	1997 11 29	704	0.7+	1.4+
1996 11 09	691	0.1+	0.0	1997 10 15	327	0.5−	0.3+	1997 11 29	704	0.8+	0.8+
1996 11 09	691	0.0	0.0	1997 10 15	327	0.6+	0.7−	1997 11 29	704	0.5−	0.3+
1996 11 17	691	0.1−	0.1−	1997 10 22	327	0.2+	0.1+	1997 11 29	704	0.2+	0.3−
1996 11 17	691	0.0	0.0	1997 10 22	327	0.2−	0.2+	1997 11 29	704	0.6+	0.0
1996 11 17	691	0.2−	0.1+	1997 10 22	327	0.4−	0.0	1997 12 04	704	0.0	0.2−
1997 10 12	327	0.1+	0.1+	1997 11 26	704	0.6−	0.1−	1997 12 04	704	0.9+	0.4+
1997 10 12	327	0.2+	0.6−	1997 11 26	704	0.3−	0.2−	1997 12 04	704	0.0	0.7−
1997 10 12	327	0.2−	0.2−	1997 11 26	704	0.9−	0.2−	1997 12 04	704	0.9−	1.2−

1997 UT = 1990 TC$_7$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	355.26687		(2000.0)			
n	0.29230928	ω	199.73302		+0.54992280	−0.83263419
a	2.2485764	Ω	216.98834		+0.78019698	+0.54015107
e	0.0765767	i	6.26093		+0.29812345	+0.12229933
P	3.37	H	15.5	G	0.15	U 4

Residuals in seconds of arc

1990 10 09	413	1.7−	1.1−	1997 10 28	557	0.5+	0.3+	1997 11 03	704	0.0	1.3−
1990 10 11	413	1.8+	0.9+	1997 10 28	557	0.8+	0.4+	1997 11 03	704	1.0−	1.2−
1997 10 21	557	0.5+	0.4+	1997 10 28	691	1.1−	0.5+	1997 11 04	557	0.7+	0.5−
1997 10 21	557	0.9+	0.3+	1997 10 28	691	0.9−	0.6+	1997 11 04	557	0.4+	0.1+
1997 10 21	557	0.6+	0.1+	1997 10 28	691	1.3−	0.2+	1997 11 19	557	0.1−	0.2+
1997 10 22	557	0.1+	0.2+	1997 10 31	557	0.2+	0.5+	1997 11 19	557	0.1−	0.0
1997 10 22	557	0.2+	0.5+	1997 10 31	557	0.5+	0.6+	1997 12 30	557	0.1−	0.0
1997 10 23	691	0.5−	0.5+	1997 11 03	704	0.6+	0.6−	1997 12 30	557	0.2−	0.1+
1997 10 23	691	1.6−	0.4−	1997 11 03	704	0.8+	0.6−				
1997 10 23	691	0.5−	0.1+	1997 11 03	704	0.4+	0.6−				

1997 UP$_8$ = 1981 TP$_3$ = 1981 UH$_{11}$ = 1991 XN$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Ichikawa

					P	Q
M	56.98267		(2000.0)			
n	0.30972399	ω	264.40117		+0.91861706	+0.39309795
a	2.1634797	Ω	72.44627		−0.34379619	+0.84524981
e	0.1709867	i	2.41700		−0.19479961	+0.36197618
P	3.18	H	14.2	G	0.15	U 5

Residuals in seconds of arc

1981 10 07	095	1.1−	1.5+	1997 10 23	399	0.0	0.8+	1997 11 02	399	0.9+	0.7+
1981 10 22	095	1.2+	1.7−	1997 10 25	399	(3.9−	3.1+)	1997 11 03	704	1.0+	0.3−
1991 12 10	033	0.1+	0.3−	1997 10 25	399	(3.3−	1.2+)	1997 11 03	704	0.9+	0.0
1991 12 11	033	0.2+	0.6+	1997 11 01	399	0.1−	0.2−	1997 11 03	704	0.3+	0.5+
1991 12 12	033	0.3−	0.0	1997 11 01	399	0.5−	0.3+	1997 11 03	704	(3.0+	0.7+)
1997 10 23	399	2.1−	0.8−	1997 11 02	399	0.3−	0.9−				

1997 UH$_{22}$ = 1992 SA$_{27}$

Id. G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	42.14508		(2000.0)			
n	0.20565797	ω	184.60424		+0.99744281	+0.07007155
a	2.8425341	Ω	171.33997		−0.06222716	+0.94826779
e	0.1242197	i	5.35979		−0.03515142	+0.30964203
P	4.79	H	14.3	G	0.15	U 5

Residuals in seconds of arc

1992 09 28	691	0.0	0.5+	1997 10 29	704	1.3−	0.0	1997 11 03	704	0.5+	0.1−
1992 09 28	691	0.1+	0.3+	1997 10 29	704	0.7−	0.2−	1997 11 03	704	0.6+	0.7−
1992 10 02	691	0.0	1.7−	1997 10 30	704	1.6+	0.6−	1997 11 03	704	(2.3−	3.5−)
1992 10 02	691	0.1−	0.3+	1997 10 30	704	0.4−	0.9−	1997 11 06	369	1.3−	1.4+
1992 10 02	691	0.0	0.5+	1997 10 30	704	0.2+	0.9−	1997 11 06	369	0.7−	1.4+
1997 10 26	369	0.1−	0.4+	1997 10 30	704	(0.4−	2.9−)	1997 11 19	369	0.6+	0.6−
1997 10 26	369	1.9+	0.3+	1997 10 30	704	1.0+	0.6−	1997 11 19	369	0.0	0.8−
1997 10 26	369	0.3−	0.6+	1997 11 01	369	0.2−	0.0	1997 12 03	369	0.9−	0.7−
1997 10 29	704	0.4−	0.4−	1997 11 01	369	(1.2−	2.7+)	1997 12 03	369	0.9+	0.5+
1997 10 29	704	0.7−	1.1+	1997 11 03	704	0.4+	0.0				
1997 10 29	704	0.8−	0.3+	1997 11 03	704	0.1+	0.6+				

1997 UT$_{22}$ = 1991 RO$_{15}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	35.95526		(2000.0)			
n	0.17473295	ω	17.77647		+0.99763478	−0.06346763
a	3.1687368	Ω	345.78462		+0.04236081	+0.87008955
e	0.2505810	i	6.17045		+0.05413326	+0.48879038
P	5.64	H	12.8	G	0.15	U 5

Residuals in seconds of arc

1991 09 11	675	1.5+	0.0	1997 10 25	408	0.0	0.6−	1997 11 09	408	0.3+	0.1−
1991 09 11	675	0.3−	0.2−	1997 10 25	408	0.3+	0.8−	1997 11 09	408	0.3−	0.0
1991 09 15	675	0.9−	0.5+	1997 10 27	408	0.6+	0.6+	1997 11 09	408	0.0	0.0
1991 09 15	675	0.2−	0.3−	1997 10 27	408	0.8+	0.5+				
1997 10 25	408	0.5−	0.0	1997 10 27	408	1.1−	0.3+				

1997 UB$_{25}$ = 1984 WE$_5$ = 1987 SW$_{19}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	58.97712		(2000.0)			
n	0.30151066	ω	74.64162		+0.91988116	+0.38587547
a	2.2025931	Ω	262.61943		−0.38147878	+0.83879882
e	0.2170781	i	4.05533		−0.09106363	+0.38407897
P	3.27	H	13.8	G	0.15	U 4

Residuals in seconds of arc

1984 11 21	010	0.0	0.2+	1997 10 30	704	1.2+	0.9−	1997 11 18	292	0.7+	0.3−
1987 09 17	095	0.1+	3.0+	1997 10 30	704	0.8+	1.4−	1997 11 18	292	0.3+	0.8−

1987 09 23	095	0.2−	2.8−	1997 11 01	399	(3.1−	1.7−)	1997 11 18	292	0.8+	0.8−
1997 10 29	704	(3.5+	0.1+)	1997 11 01	399	0.7−	0.1+	1997 11 24	399	0.6−	0.8−
1997 10 29	704	(3.0+	0.2−)	1997 11 02	399	1.5−	1.2−	1997 11 24	399	0.6+	0.8+
1997 10 29	704	(2.9+	0.3+)	1997 11 02	399	1.2+	1.3+	1997 11 25	292	0.4−	0.3−
1997 10 29	704	(3.9+	0.0)	1997 11 03	292	2.0−	0.7+	1997 11 25	292	0.6+	0.1−
1997 10 29	704	(3.8+	0.4−)	1997 11 03	292	1.6−	1.8+	1997 11 25	292	0.4+	0.6−
1997 10 30	704	1.7+	1.1−	1997 11 05	292	1.2−	1.3+	1997 12 06	292	0.0	0.5−
1997 10 30	704	1.8+	0.8−	1997 11 05	292	1.7−	0.7+	1997 12 06	292	0.1+	1.5+
1997 10 30	704	1.2+	0.7−	1997 11 05	292	1.8−	0.6+	1997 12 06	292	0.5+	1.3+

1997 VE = 1991 FK$_2$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	150.76766		(2000.0)		**P**		**Q**
n	0.23280490	ω	264.21037		−0.33673996		+0.94157038
a	2.6170256	Ω	346.10477		−0.85165149		−0.30781235
e	0.1503133	i	1.71116		−0.40161665		−0.13673616
P	4.23	H	13.8	G	0.15	U	5

Residuals in seconds of arc

1991 03 20	809	0.1−	0.1−	1997 11 02	046	0.3+	0.1+	1997 11 04	046	0.2−	0.2+
1991 03 20	809	0.2+	0.1−	1997 11 02	046	0.4+	0.2−	1997 11 04	046	0.5+	0.4+
1991 03 20	809	0.7+	0.0	1997 11 02	046	0.3−	0.1+	1997 11 04	046	0.6+	0.1+
1991 03 21	809	0.5−	0.2+	1997 11 02	046	0.2−	0.0	1997 11 04	046	1.1−	0.1−
1991 03 21	809	0.3−	0.0	1997 11 02	046	0.6+	0.0	1997 11 10	046	0.6+	0.0
1991 03 21	809	0.0	0.1+	1997 11 02	046	0.4−	0.0	1997 11 10	046	0.3−	0.6−
1997 11 02	046	0.1+	0.2+	1997 11 02	046	0.1−	0.2−	1997 11 22	046	0.1−	0.3+
1997 11 02	046	0.1+	0.1+	1997 11 02	046	0.5−	0.1+	1997 11 22	046	0.4+	0.2−
1997 11 02	046	0.1−	0.1−	1997 11 04	046	0.2+	0.2−	1997 11 22	046	0.4−	0.2+

1997 VQ = 1991 RG$_{33}$ = 1995 JW$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	42.82965		(2000.0)		**P**		**Q**
n	0.18336410	ω	159.69649		+0.98939256		−0.12468649
a	3.0685027	Ω	207.79103		+0.10111415		+0.95950802
e	0.0981153	i	9.19898		+0.10429902		+0.25258196
P	5.38	H	13.1	G	0.15	U	4

Residuals in seconds of arc

1991 09 10	675	0.1+	0.1+	1997 10 25	691	1.3−	0.4−	1997 11 09	400	0.8+	1.1−
1991 09 10	675	0.2−	0.2+	1997 10 25	691	(2.5−	1.5−)	1997 11 09	400	0.5+	0.5−
1995 05 05	010	(2.9−	3.2+)	1997 10 30	566	0.1−	0.4+	1997 11 25	400	1.0+	0.9−
1995 05 05	010	(5.6−	2.0+)	1997 10 30	566	0.2−	0.1+	1997 11 25	400	0.7+	0.1+
1995 05 05	010	(5.6−	2.7+)	1997 10 30	566	0.4−	0.2+	1997 11 29	704	0.6+	0.8+
1995 05 08	010	0.4−	1.5−	1997 11 01	400	0.3−	0.4+	1997 11 29	704	0.9+	1.6+
1995 05 08	010	0.1+	0.7−	1997 11 01	400	0.2+	0.9−	1997 11 29	704	0.2−	0.4+
1995 05 08	010	0.2+	0.9+	1997 11 02	400	0.8−	1.3−	1997 11 29	704	0.2−	1.4+
1997 10 25	691	1.9−	0.9−	1997 11 02	400	0.8+	0.8−	1997 11 29	704	(2.5+	1.3+)

1997 VR = 1990 QS$_{18}$ = 1990 UW$_6$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	40.42055		(2000.0)		**P**		**Q**
n	0.28990813	ω	194.10017		+0.99239189		−0.12295347
a	2.2609751	Ω	172.95310		+0.11740309		+0.92942327
e	0.1888004	i	2.98375		+0.03707898		+0.34792934
P	3.40	H	15.1	G	0.15	U	4

Residuals in seconds of arc

1990 08 29	095	(2.9+	4.6−)	1997 10 30	566	0.3+	0.8+	1997 11 25	400	1.3+	0.2−
1990 08 29	095	0.0	1.1−	1997 10 30	566	0.3+	0.9+	1997 11 25	400	0.6+	1.7−
1990 10 22	675	0.7−	0.5+	1997 11 01	400	0.9−	0.2−	1997 11 29	704	1.8−	0.4+
1990 10 22	675	0.7+	0.7+	1997 11 01	400	0.2+	0.1+	1997 11 29	704	1.2−	0.2−
1997 10 25	691	0.6−	0.2+	1997 11 02	400	1.1+	0.2−	1997 11 29	704	0.2+	0.4+
1997 10 25	691	0.8−	0.1+	1997 11 02	400	0.3+	0.1+	1997 11 29	704	0.3+	0.0
1997 10 25	691	1.0−	0.2+	1997 11 09	400	0.9+	1.2−	1997 11 29	704	0.6−	0.2+
1997 10 30	566	0.6+	0.6+	1997 11 09	400	0.9+	0.7−				

1997 VB$_1$ = 1978 EG$_9$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	265.84912		(2000.0)		**P**		**Q**
n	0.08325953	ω	165.95967		−0.85715437		−0.51468586
a	5.1941372	Ω	343.02109		+0.46583823		−0.75842934
e	0.0754786	i	3.85204		+0.21972969		−0.39985423
P	11.84	H	11.6	G	0.15	U	5

Residuals in seconds of arc

1978 03 15	675	1.0−	0.3−	1997 11 02	046	0.0	0.3−	1997 11 08	910	0.5+	0.2+
1978 03 16	675	1.0+	0.3+	1997 11 04	046	0.3−	0.6−	1997 11 08	910	0.4+	0.2+
1997 10 29	704	1.6+	0.4+	1997 11 04	046	0.1−	0.0	1997 11 10	046	0.7−	0.6+
1997 10 29	704	1.1−	1.3−	1997 11 04	046	0.2+	0.1−	1997 11 10	046	0.1+	0.2+
1997 10 29	704	1.2+	1.2+	1997 11 04	046	0.5−	0.1−	1997 11 10	046	0.5+	0.6+
1997 10 29	704	1.8−	0.5−	1997 11 04	046	0.4+	0.2+	1997 12 05	046	0.1−	0.2−
1997 11 02	046	0.1−	0.1−	1997 11 04	046	0.4−	0.0	1997 12 05	046	0.2−	0.1−
1997 11 02	046	0.0	0.3−	1997 11 08	910	0.5+	0.3+	1997 12 05	046	0.1+	0.1−

1997 VN$_1$ = 1985 PS$_1$ = 1991 RM$_{10}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	15.50094		(2000.0)		**P**		**Q**
n	0.17143766	ω	221.62569		+0.85976524		−0.51067070
a	3.2092132	Ω	169.08030		+0.47444325		+0.79554195
e	0.1454404	i	1.32428		+0.18896385		+0.32608043
P	5.75	H	12.6	G	0.15	U	5

Residuals in seconds of arc

1985 08 14	010	2.0−	0.9−	1991 09 16	675	0.3+	1.2−	1997 11 24	399	0.8+	1.1−
1985 08 16	010	1.8+	1.6+	1997 11 01	399	0.9−	0.2+	1997 11 24	399	1.2−	0.1+
1991 09 10	675	1.3−	0.2+	1997 11 01	399	1.9+	0.3+	1997 11 27	399	1.2+	0.3−
1991 09 10	675	0.4+	1.3−	1997 11 02	399	0.0	0.1−	1997 11 27	399	1.5−	0.4+
1991 09 16	675	1.0+	1.1+	1997 11 02	399	0.6−	1.1+				

1997 VQ$_1$ = 1978 WD$_{16}$ = 1987 SD$_{21}$ = 1992 SU$_{12}$

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Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	0.67617		(2000.0)		**P**		**Q**
n	0.20586492	ω	167.86437		+0.58844280		−0.79772653
a	2.8406288	Ω	245.94651		+0.72922915		+0.59402554
e	0.0694481	i	8.29775		+0.34922760		+0.10375955
P	4.79	H	12.5	G	0.15	U	3

Residuals in seconds of arc

1978 11 30	675	0.0	0.5+	1997 10 30	566	0.1+	0.3+	1997 11 06	704	0.1−	0.5−
1978 12 01	675	0.2−	0.4+	1997 10 30	566	0.2+	0.2+	1997 11 06	704	0.3−	0.4−
1987 09 18	095	0.4+	0.2+	1997 10 30	566	0.0	0.6+	1997 11 24	399	1.8+	0.4−
1992 09 27	372	(0.8+	3.4+)	1997 11 01	399	1.2−	0.8−	1997 11 24	399	1.7+	0.5−
1992 10 01	372	0.6−	0.8+	1997 11 01	399	0.6−	0.9−	1997 12 21	426	1.4+	0.8+
1997 10 29	704	1.8−	0.4+	1997 11 02	399	(0.6−	2.1−)	1997 12 21	426	0.9+	0.0
1997 10 29	704	0.9−	0.8+	1997 11 02	399	0.3+	0.7−	1997 12 21	426	0.8+	0.8+
1997 10 29	704	0.8−	0.4−	1997 11 06	704	1.4−	0.9−	1997 12 24	426	1.5+	0.4+
1997 10 29	704	1.1−	0.2−	1997 11 06	704	0.7−	0.2−	1997 12 24	426	1.1+	0.4+
1997 10 29	704	0.0	0.2−	1997 11 06	704	0.4−	0.1−	1997 12 24	426	1.3+	0.6+

1997 VA$_4$ = 1996 TN$_{52}$

Id. B. G. Marsden, G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	3.28510		(2000.0)		**P**		**Q**
n	0.18513143	ω	283.00623		−0.15748352		−0.98748030
a	3.0489428	Ω	176.02125		+0.94898365		−0.15386182
e	0.2091190	i	7.48018		+0.27318303		−0.03477350
P	5.32	H	14.5	G	0.15	U	3

Residuals in seconds of arc

1996 09 12	691	0.2+	0.8+	1997 11 08	684	0.2−	0.2−	1997 12 26	684	0.3+	0.2+
1996 09 12	691	0.0	0.9+	1997 11 08	684	0.0	0.2+	1997 12 27	684	0.2+	0.1+
1996 09 12	691	0.5+	1.3+	1997 11 28	684	0.3−	1.0−	1997 12 27	684	0.1+	0.1+
1996 10 05	809	1.1+	1.4−	1997 11 28	684	0.7−	0.4−	1997 12 27	684	0.3+	0.0
1996 10 05	809	1.1−	0.8−	1997 11 28	684	0.4−	0.7−	1997 12 28	684	0.1−	0.1+
1996 10 05	809	0.9−	0.2−	1997 11 29	684	0.1−	0.4+	1997 12 28	684	0.0	0.0
1996 10 06	809	(4.8+	5.1+)	1997 11 29	684	0.2−	0.4+	1997 12 28	684	0.0	0.1+
1996 10 06	809	(5.9+	4.8+)	1997 12 22	327	0.0	0.4+	1997 12 29	327	0.1+	0.4+
1996 10 06	809	(4.1+	3.7+)	1997 12 22	327	0.2+	0.2+	1997 12 29	327	0.3+	0.4+
1997 11 07	684	0.2+	0.4−	1997 12 22	327	0.3−	0.3−	1997 12 29	327	0.1+	0.5+
1997 11 07	684	0.3+	0.4−	1997 12 26	684	0.1+	0.2+	1998 01 02	684	0.1−	0.1−
1997 11 08	684	0.4−	0.5−	1997 12 26	684	0.2+	0.1+	1998 01 02	684	0.3+	0.0

1997 VZ_4 = 1992 CW_3

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	93.98775		(2000.0)	**P**	**Q**	
n	0.28843773	ω	253.89336	+0.62354102	+0.77657077	
a	2.2686527	Ω	55.03321	−0.66862777	+0.58950740	
e	0.1919954	i	6.31868	−0.40513393	+0.22230355	
P	3.42	H	14.5	G 0.15	U 5	

Residuals in seconds of arc

1992 02 08	033	1.1+	0.1+	1997 11 19	886	0.8+	0.1+	1997 11 30	905	(2.8−	2.4−)
1992 02 08	033	0.5−	0.3−	1997 11 19	886	0.0	0.0	1997 11 30	905	0.5−	1.0−
1992 02 09	033	0.6−	0.1+	1997 11 29	704	0.5−	1.0+	1997 12 04	704	0.9−	0.6−
1997 11 05	905	1.4−	0.2+	1997 11 29	704	0.2−	0.7+	1997 12 04	704	0.2−	1.1+
1997 11 05	905	0.6+	0.4−	1997 11 29	704	0.5+	0.5−	1997 12 04	704	0.1+	0.6+
1997 11 06	905	0.6+	0.3+	1997 11 29	704	1.0+	0.7+	1997 12 04	704	(1.1−	3.0+)
1997 11 06	905	0.1+	0.3−	1997 11 29	704	1.3+	0.1−	1997 12 04	704	1.4−	1.8−

1997 VY_6 = 1992 SP_{18}

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	11.26730		(2000.0)	**P**	**Q**	
n	0.21389640	ω	152.09827	+0.70115664	−0.71280144	
a	2.7690688	Ω	253.37610	+0.65079843	+0.64961220	
e	0.2329019	i	1.02441	+0.29127440	+0.26442030	
P	4.61	H	14.5	G 0.15	U 4	

Residuals in seconds of arc

1992 09 22	809	0.1−	0.1−	1997 11 06	369	0.2+	0.1+	1997 11 29	704	0.1+	0.2+
1992 09 22	809	1.1−	0.6−	1997 11 07	369	0.1+	0.7+	1997 11 29	704	1.2+	1.3−
1992 09 22	809	0.2−	0.3+	1997 11 07	369	0.1−	0.7−	1997 11 29	704	1.4+	1.4−
1992 09 23	809	1.2+	0.5+	1997 11 07	369	0.3−	0.9+	1997 12 02	369	1.1−	0.4+
1992 09 23	809	0.2+	0.3−	1997 11 19	369	0.2−	0.5−	1997 12 02	369	1.0−	0.1+
1992 09 23	809	0.0	0.2+	1997 11 19	369	0.2−	0.2−	1997 12 03	369	0.1−	0.6+
1997 11 06	369	0.4−	0.3+	1997 11 29	704	0.4−	0.6+	1997 12 03	369	1.0−	0.3+
1997 11 06	369	0.0	0.4−	1997 11 29	704	1.7+	0.3+				

1997 VE_7 = 1978 UM_4

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Ichikawa

M	260.86757		(2000.0)	**P**	**Q**	
n	0.26054251	ω	259.16835	−0.90289553	−0.42168415	
a	2.4278228	Ω	255.84798	+0.42030983	−0.82535545	
e	0.1496981	i	4.93647	+0.09010721	−0.37546085	
P	3.78	H	14.0	G 0.15	U 5	

Residuals in seconds of arc

1978 10 27	675	0.6+	0.0	1997 11 02	327	0.4+	0.9−	1997 11 06	327	0.1+	0.2+
1978 10 28	675	0.4+	0.5+	1997 11 02	327	0.1+	0.2−	1997 11 19	327	0.0	0.0
1978 10 29	675	1.1−	0.4−	1997 11 06	327	1.0−	0.6+	1997 11 19	327	0.1−	0.1−
1997 11 02	327	0.3+	0.1+	1997 11 06	327	0.1−	0.1+	1997 11 19	327	0.4+	0.1+

1997 VQ_7 = 1993 RB_{19}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	354.08568		(2000.0)	**P**	**Q**	
n	0.27331894	ω	133.68239	+0.19446544	−0.98049731	
a	2.3515609	Ω	305.08324	+0.88967772	+0.18851056	
e	0.1013894	i	1.99092	+0.41310623	+0.05557697	
P	3.61	H	15.0	G 0.15	U 5	

Residuals in seconds of arc

1993 09 15	809	0.5+	0.9+	1997 11 02	327	0.3−	0.3+	1997 11 07	327	0.2−	0.4+
1993 09 15	809	0.2+	0.8−	1997 11 02	327	0.4−	0.2−	1997 11 07	327	0.2−	0.6−
1993 09 15	809	0.4−	1.0−	1997 11 06	327	0.7+	0.0	1997 11 26	704	0.1−	0.5−
1993 09 22	809	0.0	0.7+	1997 11 06	327	0.1+	0.0	1997 11 26	704	0.8+	0.1+
1993 09 22	809	0.3−	0.3+	1997 11 06	327	0.0	0.3−	1997 11 26	704	1.2−	0.7+
1993 09 22	809	0.0	0.0	1997 11 07	327	0.0	0.1−				
1997 11 02	327	0.4−	0.5−	1997 11 07	327	0.9+	0.6+				

1997 VE_8 = 1992 PG_4

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	101.33552		(2000.0)	**P**	**Q**	
n	0.23067936	ω	328.05119	+0.63950140	+0.76860042	
a	2.6330770	Ω	341.68517	−0.69342416	+0.56708059	
e	0.1731400	i	3.11382	−0.33196520	+0.29609628	
P	4.27	H	13.5	G 0.15	U 5	

Residuals in seconds of arc

1992 08 02	675	0.1+	0.2+	1997 11 07	327	0.3−	0.0	1997 11 26	704	1.5+	1.1+
1992 08 02	675	(1.5−	3.5−)	1997 11 07	327	0.3−	0.0	1997 11 26	704	0.6−	0.6+
1992 08 06	675	0.7+	0.1−	1997 11 07	327	(2.4−	0.5−)	1997 12 09	327	0.2−	1.0−
1992 08 06	675	0.8−	0.1−	1997 11 20	327	0.3+	0.2−	1997 12 09	327	0.0	1.2−
1997 11 06	327	0.0	0.1−	1997 11 20	327	0.6−	0.2−	1997 12 09	327	0.8−	0.3−
1997 11 06	327	0.3+	0.3−	1997 11 20	327	0.3+	0.1−				
1997 11 06	327	0.1+	0.2−	1997 11 26	704	0.2+	1.9+				

1997 VG_8 = 1995 FM_{21}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	50.86569		(2000.0)	**P**	**Q**	
n	0.19293369	ω	284.47561	+0.95809968	+0.25761220	
a	2.9661789	Ω	60.72984	−0.17449511	+0.87163048	
e	0.0712173	i	8.25342	−0.22714852	+0.41700871	
P	5.11	H	14.5	G 0.15	U 4	

Residuals in seconds of arc

1995 03 28	691	0.1+	0.2+	1997 11 03	704	0.1−	0.4−	1997 11 18	426	0.0	0.4+
1995 03 28	691	0.8+	0.5+	1997 11 03	704	0.2+	0.4−	1997 11 18	426	1.1+	0.4−
1995 03 28	691	0.3−	0.5−	1997 11 03	704	0.5−	0.5−	1997 11 18	426	0.3+	0.2+
1995 04 02	691	0.3−	0.3+	1997 11 15	426	0.4+	0.3−	1997 11 27	426	0.8+	0.5−
1995 04 02	691	0.5−	0.6−	1997 11 15	426	0.1−	0.4+	1997 11 27	426	0.6−	0.4+
1995 04 02	691	0.1+	0.1+	1997 11 15	426	0.0	0.2−	1997 11 27	426	0.4−	0.2+
1997 11 03	704	0.2+	1.4+	1997 11 15	426	1.3−	0.3−				

1997 VJ_8 = 1986 WG_8 = 1991 CB_5 = 1993 SA_5

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Ichikawa

M	346.71540		(2000.0)	**P**	**Q**	
n	0.26874174	ω	239.11975	+0.14356034	−0.98958514	
a	2.3781868	Ω	202.63354	+0.91709550	+0.13704206	
e	0.1805690	i	1.57355	+0.37192241	+0.04405359	
P	3.67	H	14.2	G 0.15	U 2	

Residuals in seconds of arc

1986 11 30	381	0.3−	0.9−	1997 10 29	704	(3.6+	1.0−)	1997 11 06	704	1.6−	1.2+
1986 11 30	381	0.4−	0.2+	1997 10 29	704	(3.5+	1.3−)	1997 11 06	704	1.3−	0.7+
1986 12 01	381	0.2−	0.2−	1997 10 29	704	(3.9+	0.6−)	1997 11 06	704	(4.0−	0.3+)
1986 12 01	381	1.1+	0.1+	1997 10 29	704	(4.7+	0.4−)	1997 11 06	704	(3.0−	1.0+)

1991 01 18	675	0.5−	0.1+	1997 11 03	372	1.7−	0.7−	1997 11 07	372	0.5+	1.0−
1991 01 18	675	0.0	0.7−	1997 11 03	372	1.5−	0.8−	1997 11 07	372	0.6+	0.1+
1991 02 11	675	0.3+	0.6+	1997 11 05	372	0.7−	0.8−	1997 11 29	704	1.5+	0.7−
1991 02 11	675	0.3+	0.6+	1997 11 05	372	0.7−	0.8−	1997 11 29	704	1.3+	0.0
1993 09 19	010	2.3+	1.8+	1997 11 06	704	1.9−	0.8+	1997 11 29	704	1.5+	0.0
1993 09 19	010	1.0+	2.2+	1997 11 06	704	1.6−	1.2+	1997 11 29	704	2.4+	0.2−
1993 09 20	010	0.1−	1.2−	1997 11 06	704	(3.2−	0.0)	1997 11 29	704	1.8+	0.0
1993 09 20	010	1.1−	1.2−	1997 11 06	704	1.5−	1.2+	1997 11 30	566	1.4+	0.2+
1993 09 20	010	1.8−	1.6−	1997 11 06	704	(2.7−	0.6+)	1997 11 30	566	1.5+	0.2+
1997 10 29	704	(4.3+	1.3−)	1997 11 06	704	1.1−	0.4+	1997 11 30	566	1.3+	0.1+

1997 VA$_9$ = 1993 RS$_8$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	328.66943		(2000.0)	**P**	**Q**	
n	0.27206371	ω	264.18562	−0.30032077	−0.95341894	
a	2.3587883	Ω	203.35163	+0.90093740	−0.27380331	
e	0.1851899	i	4.09138	+0.31323991	−0.12658626	
P	3.62	H	15.1	G 0.15	U 5	

Residuals in seconds of arc

1993 09 14	809	1.7−	1.0−	1993 09 19	809	1.5−	1.4−	1997 11 09	358	1.0+	0.7−
1993 09 14	809	1.9+	1.7+	1997 11 07	358	0.7−	0.9−	1997 11 30	358	1.3−	1.1+
1993 09 14	809	2.4+	1.1+	1997 11 07	358	0.2−	0.6+	1997 11 30	358	1.2+	0.6−
1993 09 19	809	0.9−	0.9+	1997 11 09	358	0.5+	1.8+				
1993 09 19	809	0.2−	1.2−	1997 11 09	358	0.5−	1.2−				

1997 WH$_1$ = 1990 SJ$_{15}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	36.55859		(2000.0)	**P**	**Q**	
n	0.28542503	ω	93.35718	+0.99163908	+0.10880131	
a	2.2845887	Ω	260.40485	−0.12725657	+0.91366678	
e	0.2298994	i	4.03518	+0.02139376	+0.39163158	
P	3.45	H	15.5	G 0.15	U 4	

Residuals in seconds of arc

1990 09 17	675	1.3−	0.1+	1997 11 19	327	0.4+	0.2−	1997 12 15	327	0.2+	0.0
1990 09 17	675	(2.8−	2.9+)	1997 11 19	327	0.2−	0.2−	1997 12 15	327	0.4−	0.1−
1990 09 19	675	0.9+	0.0	1997 11 19	327	0.1+	0.2+	1997 12 21	327	0.2−	0.2+
1990 09 19	675	0.5+	0.2−	1997 11 21	327	0.2−	0.1−	1997 12 21	327	0.3+	0.3+
1997 10 29	566	0.4−	0.1+	1997 11 21	327	0.2−	0.2−	1997 12 21	327	0.0	0.1+
1997 10 29	566	0.3+	0.6+	1997 11 21	327	0.2+	0.7−				
1997 10 29	566	0.0	0.3+	1997 12 15	327	0.1−	0.1−				

1997 WA$_2$ = 1992 CO$_8$ = 1996 KQ$_9$

Id. G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	140.41625		(2000.0)	**P**	**Q**	
n	0.28517763	ω	137.39202	−0.17193417	+0.98370330	
a	2.2859097	Ω	122.64294	−0.91980680	−0.14119199	
e	0.1235415	i	3.58122	−0.35269547	−0.11132225	
P	3.46	H	15.1	G 0.15	U 4	

Residuals in seconds of arc

1992 02 05	691	1.7+	0.9+	1997 10 30	704	0.6+	0.9−	1997 11 06	369	1.8+	1.6+
1992 02 05	691	0.4−	0.1+	1997 10 30	704	0.8+	0.4−	1997 11 07	369	0.1−	0.5−
1992 02 05	691	1.2−	0.7−	1997 10 30	704	0.1−	0.1+	1997 11 07	369	0.3−	0.2+
1996 05 22	691	0.0	0.2−	1997 11 01	369	0.3+	0.5+	1997 11 07	369	0.5−	0.2−
1996 05 22	691	0.3−	0.1+	1997 11 01	369	0.2−	0.2−	1997 11 19	369	0.4+	1.3−
1996 05 22	691	0.1+	0.6−	1997 11 01	369	0.1−	0.6−	1997 11 19	369	0.2−	0.1+
1997 10 29	704	1.0−	0.3+	1997 11 01	369	1.8−	0.4+	1997 11 23	369	0.3+	1.8−
1997 10 29	704	0.9−	1.7+	1997 11 03	704	0.0	0.0	1997 11 23	369	0.7−	1.1−
1997 10 29	704	1.2−	0.4+	1997 11 03	704	2.0+	1.9+	1997 11 24	369	0.4+	1.0−
1997 10 29	704	(2.4+	1.0+)	1997 11 03	704	0.8−	0.5+	1997 11 24	369	0.6−	0.2−
1997 10 30	704	(3.0+	1.5−)	1997 11 03	704	0.8+	0.0	1997 12 02	369	0.6−	1.9−
1997 10 30	704	0.6+	0.3+	1997 11 06	369	1.1+	0.7+				

1997 WP$_2$ = 1977 AG$_2$

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	330.90321		(2000.0)	**P**	**Q**	
n	0.23156083	ω	28.78579	−0.35040143	−0.91666972	
a	2.6263906	Ω	82.28135	+0.81788209	−0.39946312	
e	0.0953828	i	11.18300	+0.45638550	+0.01207608	
P	4.26	H	13.0	G 0.15	U 4	

Residuals in seconds of arc

1977 01 13	095	0.5−	0.6−	1997 11 29	704	1.0−	0.1+	1997 12 31	704	0.2+	0.4−
1977 01 20	095	0.5+	0.6+	1997 11 29	704	1.5−	0.1−	1997 12 31	704	0.1+	0.1−
1997 11 23	411	0.1+	0.6+	1997 11 29	704	1.3−	0.5−	1997 12 31	704	0.1+	0.4−
1997 11 23	411	1.5+	0.0	1997 11 29	704	1.2−	0.4+	1998 01 02	704	0.3+	0.3+
1997 11 24	411	0.5+	0.1+	1997 11 30	411	0.5+	0.5−	1998 01 02	704	0.1−	0.1+
1997 11 24	411	0.4+	0.1+	1997 11 30	411	1.0+	0.4−	1998 01 02	704	0.1−	0.1+
1997 11 27	411	0.7+	0.3−	1997 12 05	411	0.4+	0.4+	1998 01 02	704	0.5−	0.3+
1997 11 27	411	0.6+	0.1+	1997 12 05	411	0.4+	0.6+				
1997 11 29	704	1.4−	0.5−	1997 12 31	704	0.2+	0.2−				

1997 WU$_3$ = 1982 FC$_2$ = 1984 YE$_5$ = 1992 BR$_3$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Ichikawa

M	263.60092		(2000.0)	**P**	**Q**	
n	0.29347779	ω	275.17267	−0.91723190	−0.39129921	
a	2.2426038	Ω	241.80974	+0.39074459	−0.84733308	
e	0.0928293	i	4.85767	+0.07748748	−0.35904259	
P	3.36	H	14.4	G 0.15	U 2	

Residuals in seconds of arc

1982 03 23	704	0.0	0.2+	1992 01 28	691	0.4−	0.5−	1997 11 25	046	0.3−	0.5−
1984 12 28	095	0.4+	1.7+	1997 11 22	046	0.2+	0.0	1997 11 25	046	0.3−	0.6−
1992 01 27	691	0.1+	0.2−	1997 11 22	046	0.0	0.1−	1997 11 25	046	0.0	0.2+
1992 01 27	691	0.3+	0.4−	1997 11 22	046	0.2−	0.0	1997 11 29	566	0.2+	0.0
1992 01 27	691	0.2+	0.2−	1997 11 22	046	0.0	0.2+	1997 11 29	566	0.2+	0.5+
1992 01 28	691	0.5−	0.0	1997 11 25	046	0.7+	0.2−	1997 11 29	566	0.3−	0.2−
1992 01 28	691	0.3−	0.4−	1997 11 25	046	0.3+	0.6−				

1997 WA$_7$ = 1991 LL = 1995 KM$_5$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	187.49636		(2000.0)	**P**	**Q**	
n	0.23666647	ω	190.30241	+0.27758930	+0.92454101	
a	2.5884805	Ω	96.18653	−0.86168813	+0.35977449	
e	0.1962303	i	15.22556	−0.42477965	−0.12564328	
P	4.16	H	12.5	G 0.15	U 4	

Residuals in seconds of arc

1991 06 15	675	0.4−	0.5+	1997 11 23	691	0.1+	0.4−	1997 12 25	566	0.5+	0.5+
1991 06 15	675	1.4−	0.3+	1997 11 23	691	0.1+	0.0	1997 12 25	566	0.3+	0.1+
1991 06 17	675	0.5+	0.2−	1997 11 23	691	0.2+	0.1+	1997 12 28	411	0.4+	1.2+
1991 06 17	675	1.1+	1.6−	1997 11 25	691	1.0−	0.0	1997 12 28	411	0.5+	0.8−
1995 05 24	693	0.8−	0.2+	1997 11 25	691	0.9−	0.0	1997 12 30	411	0.3+	0.9−
1995 05 24	693	0.3+	0.8+	1997 11 25	691	0.9−	0.1+	1997 12 30	411	0.1−	1.1−
1995 05 25	693	0.8+	0.4−	1997 12 25	566	0.3+	0.4+				

1997 WU$_7$ = 1989 WT$_2$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	0.62915		(2000.0)	**P**	**Q**	
n	0.24309565	ω	34.34955	+0.39534628	−0.90977252	
a	2.5426384	Ω	32.88813	+0.78174728	+0.26092724	
e	0.2438934	i	13.47727	+0.48225772	+0.32284817	
P	4.05	H	12.5	G 0.15	U 3	

Residuals in seconds of arc

1989 11 30	675	1.0+	0.4+	1997 12 02	426	0.0	0.0	1997 12 22	426	0.1+	0.0
1989 12 01	675	0.3−	0.1−	1997 12 02	426	0.2+	0.0	1997 12 22	426	0.0	0.0
1989 12 01	675	0.6−	0.5−	1997 12 02	426	0.1+	0.1+	1998 01 01	426	0.3+	0.1+
1997 11 27	426	0.3−	0.3+	1997 12 08	426	0.4−	0.3+	1998 01 01	426	0.0	0.1+
1997 11 27	426	0.5−	0.2+	1997 12 08	426	0.1−	0.0	1998 01 01	426	0.0	0.1+
1997 11 27	426	0.2−	0.1+	1997 12 08	426	0.1−	0.3−	1998 01 06	426	0.2−	0.1−
1997 11 27	426	0.1+	0.0	1997 12 18	426	0.2−	0.0	1998 01 06	426	0.0	0.3+
1997 11 28	426	0.8+	0.2−	1997 12 18	426	0.0	0.1−	1998 01 06	426	0.2−	0.2−
1997 11 28	426	0.1−	0.2−	1997 12 18	426	0.0	0.1−				
1997 11 28	426	0.2+	0.2−	1997 12 22	426	0.1+	0.1+				

1997 WA_8 = 1994 CK_{16}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	342.14090		(2000.0)		**P**		**Q**
n	0.22032355	ω	38.75934		−0.25331580		−0.96639149
a	2.7149516	Ω	65.95345		+0.87518492		−0.24822955
e	0.2245659	i	2.74922		+0.41216800		−0.06685494
P	4.47	H	15.0	G	0.15	U	6

Residuals in seconds of arc

1994 02 08	809	0.2+	0.2+	1997 11 24	369	0.4+	1.0+	1997 12 03	369	0.5−	0.3+
1994 02 08	809	0.6−	0.0	1997 11 24	369	0.4+	0.7+	1997 12 04	704	0.6+	1.3−
1994 02 08	809	1.4−	0.2−	1997 11 24	369	0.9+	0.4+	1997 12 04	704	1.5+	1.2+
1994 02 10	809	1.6+	0.1−	1997 11 29	704	1.6−	0.8−	1997 12 04	704	0.7−	0.7−
1994 02 10	809	0.4−	0.2+	1997 11 29	704	0.2−	0.1−	1997 12 04	704	0.6−	0.6+
1994 02 10	809	0.6+	0.3−	1997 11 29	704	0.5−	0.2−	1997 12 07	098	0.2−	0.8−
1997 11 23	369	0.3+	0.3−	1997 11 29	704	1.4−	1.0−	1997 12 07	098	0.2+	0.2+
1997 11 23	369	0.6+	0.4−	1997 11 29	704	1.5−	0.8−	1997 12 08	098	0.2−	0.4+
1997 11 23	369	0.6+	0.2−	1997 12 03	369	0.5+	0.2+	1997 12 08	098	1.4+	1.5+

1997 WE_8 = 1995 GG_7

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Urata

M	213.40828		(2000.0)		**P**		**Q**
n	0.22306042	ω	325.13461		−0.83055175		+0.55108315
a	2.6926983	Ω	248.50386		−0.48927179		−0.79107421
e	0.0916661	i	4.96750		−0.26607686		−0.26553523
P	4.42	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1995 04 01	408	0.5−	0.7+	1997 11 19	905	0.5−	0.4−	1997 12 04	905	0.1−	0.1+
1995 04 01	408	0.8+	1.4+	1997 11 19	905	0.6+	0.0	1997 12 04	905	0.1+	0.4−
1995 04 03	408	0.1+	0.8−	1997 11 23	905	0.4+	0.1−				
1995 04 03	408	0.3−	1.2−	1997 11 23	905	0.5−	0.6+				

1997 WV_{12} = 1992 SB_{23}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	186.12730		(2000.0)		**P**		**Q**
n	0.21787539	ω	184.55029		−0.70720061		+0.70474926
a	2.7352515	Ω	40.45797		−0.64589143		−0.61147332
e	0.0191973	i	4.99794		−0.28756140		−0.35976222
P	4.52	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1992 09 22	809	0.3+	0.4+	1997 10 29	704	0.7−	0.5−	1997 11 06	704	0.6−	0.9+
1992 09 22	809	1.0−	0.3+	1997 10 29	704	0.5+	1.9−	1997 11 06	704	0.3−	0.1+
1992 09 22	809	0.4−	0.4+	1997 10 29	704	1.3−	1.1+	1997 11 23	691	0.6−	0.2+
1992 09 23	809	1.6+	0.4+	1997 10 29	704	0.5−	0.1−	1997 11 23	691	0.6−	0.0
1992 09 23	809	0.2+	0.1−	1997 10 29	704	0.7−	1.4−	1997 11 23	691	0.7−	0.1−
1992 09 23	809	1.0−	0.8−	1997 10 31	704	1.8+	0.7−	1997 11 28	691	0.1−	0.4+
1997 10 04	910	0.7+	0.4−	1997 10 31	704	1.2+	0.0	1997 11 28	691	0.2+	0.2−
1997 10 04	910	0.6+	0.4−	1997 10 31	704	(2.4+	0.3+)	1997 11 28	691	0.4+	0.1−
1997 10 04	910	0.8+	0.3−	1997 10 31	704	1.2+	0.2+	1997 12 05	691	0.1+	0.9−
1997 10 05	910	0.6+	0.1−	1997 11 06	704	1.4−	1.1+	1997 12 05	691	0.3−	0.3+
1997 10 05	910	0.6+	0.1−	1997 11 06	704	0.3−	1.4+				
1997 10 05	910	0.7+	0.1−	1997 11 06	704	0.7−	0.8+				

1997 WN_{13} = 1986 TF_{13} = 1993 RR_{11}

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	352.77289		(2000.0)		**P**		**Q**
n	0.27294656	ω	271.89431		+0.07372599		−0.99727175
a	2.3536993	Ω	173.87402		+0.92814585		+0.06726504
e	0.1775524	i	1.97583		+0.36484211		+0.03040517
P	3.61	H	15.3	G	0.15	U	5

Residuals in seconds of arc

1986 10 05	095	0.3+	1.0−	1997 11 27	888	0.5+	0.4−	1997 12 04	704	1.1+	1.6−
1993 09 14	809	1.4+	0.6+	1997 11 27	888	0.0	0.3+	1997 12 04	704	(2.3+	1.5+)
1993 09 14	809	0.6+	0.8+	1997 11 29	704	1.4−	0.3+	1997 12 04	704	(2.6+	0.6−)
1993 09 14	809	0.5−	0.2+	1997 11 29	704	1.5−	0.3+	1997 12 04	704	2.0+	0.8+
1993 09 19	809	0.7−	0.1−	1997 11 29	704	1.7−	0.1−	1997 12 24	888	0.9+	1.3−
1993 09 19	809	1.0−	0.5−	1997 11 29	704	0.3+	1.5−	1997 12 24	888	0.1−	0.4−
1993 09 19	809	0.0	0.4−	1997 11 29	704	1.4−	0.5+	1997 12 25	566	0.2−	0.5+
1997 11 24	888	0.5+	0.5+	1997 11 30	888	1.3+	0.7+	1997 12 25	566	0.7−	0.6+
1997 11 24	888	0.0	0.6+	1997 11 30	888	0.7+	0.7+	1997 12 25	566	0.3−	0.0

1997 WQ_{15} = 1991 TO_7

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	44.01632		(2000.0)		**P**		**Q**
n	0.17658836	ω	146.85556		+0.99891463		−0.00884870
a	3.1465020	Ω	213.74191		−0.00692231		+0.94268407
e	0.1835157	i	4.72250		+0.04606134		+0.33356924
P	5.58	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1991 10 07	033	0.2−	0.5−	1997 11 29	704	(2.4+	1.4−)	1997 12 04	704	0.9+	0.8−
1991 10 07	033	0.5−	0.0	1997 11 29	704	1.2+	0.2−	1997 12 04	704	1.5+	1.6+
1991 10 08	033	0.8+	0.4+	1997 11 29	704	1.0+	1.8−	1997 12 04	704	0.4+	0.4−
1997 10 30	566	0.2+	0.2+	1997 11 29	704	0.5+	0.8−	1997 12 04	704	0.4−	1.3+
1997 10 30	566	0.0	0.1+	1997 11 29	704	0.3+	0.1+	1997 12 06	691	1.4−	0.3−
1997 10 30	566	0.1−	0.1+	1997 11 29	691	0.0	0.0	1997 12 06	691	1.3−	0.1+
1997 11 23	691	0.4−	0.6+	1997 11 29	691	0.0	0.3−	1997 12 06	691	0.8−	0.0
1997 11 23	691	0.5−	0.8+	1997 11 29	691	0.1+	0.1−				
1997 11 23	691	0.3−	0.7+	1997 12 04	704	0.8−	0.9−				

1997 WS_{20} = 1996 KQ_3

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	65.67260		(2000.0)		**P**		**Q**
n	0.28683480	ω	262.46900		+0.95489668		+0.28155752
a	2.2770968	Ω	81.14249		−0.22058029		+0.88526688
e	0.1526157	i	5.47815		−0.19878801		+0.37017281
P	3.44	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1996 05 17	691	0.5+	0.5+	1997 11 25	691	0.6−	0.0	1997 11 30	691	1.0−	0.3+
1996 05 17	691	0.2+	0.7−	1997 11 29	704	0.3−	0.1−	1997 12 04	704	1.8+	0.1−
1996 05 17	691	0.2+	0.1+	1997 11 29	704	0.0	0.3−	1997 12 04	704	0.7+	1.2+
1996 05 23	691	0.3−	0.0	1997 11 29	704	2.3+	0.3−	1997 12 04	704	0.9+	0.7+
1996 05 23	691	0.1−	0.0	1997 11 29	704	2.2+	0.2−	1997 12 04	704	0.4−	1.2−
1996 05 23	691	0.6−	0.1+	1997 11 29	704	0.5+	0.3−	1997 12 04	704	2.9−	0.9−
1997 11 25	691	0.4−	0.3+	1997 11 30	691	1.2−	0.5+				
1997 11 25	691	0.5−	0.0	1997 11 30	691	1.1−	0.4+				

1997 WQ_{21} = 1988 NQ

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	165.15684		(2000.0)		+0.28264322	+0.93616181
n	0.25325077	ω	11.25661		−0.89557504	+0.17946755
a	2.4742041	Ω	275.42047		−0.34359594	+0.30231186
e	0.1818992	i	12.12339			
P	3.89	H	13.0	G 0.15	U 5	

Residuals in seconds of arc

1988 07 14	675	0.6+	0.6−	1997 12 05	411	0.5−	0.3+	1998 01 02	704	0.4+	0.1−
1988 07 15	675	0.6−	0.6+	1997 12 05	411	0.1+	0.2+	1998 01 02	704	0.5+	0.3−
1997 11 30	411	1.2−	0.6+	1997 12 27	411	0.2+	0.8+	1998 01 06	704	0.6+	0.2+
1997 11 30	411	0.6−	0.1+	1997 12 27	411	1.7−	0.3−	1998 01 06	704	1.3+	0.2+
1997 12 02	411	0.2−	0.4+	1998 01 02	704	0.6+	0.2−	1998 01 06	704	0.2−	0.9−
1997 12 02	411	0.7+	1.1−	1998 01 02	704	0.1+	0.3+				

1997 WR_{21} = 1993 PX_3

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	48.80439		(2000.0)		+0.87386869	−0.47951031
n	0.28896634	ω	112.32065		+0.41108406	+0.81681717
a	2.2658851	Ω	276.41308		+0.25954460	+0.32074846
e	0.1664305	i	4.62596			
P	3.41	H	15.0	G 0.15	U 5	

Residuals in seconds of arc

1993 08 14	010	0.6−	1.5−	1997 11 30	411	0.6−	0.3−	1998 01 02	704	0.2+	0.5+
1993 08 14	010	1.1−	1.6−	1997 12 02	411	0.0	0.3+	1998 01 02	704	0.2+	0.4+
1993 08 14	010	1.2−	1.8−	1997 12 02	411	0.2−	0.1+	1998 01 02	704	0.2+	0.8+
1993 08 15	010	(0.8−	2.9−)	1997 12 05	411	0.4+	0.1−	1998 01 02	704	0.1−	0.5−
1993 08 18	010	2.0+	1.8+	1997 12 05	411	0.0	0.2+	1998 01 06	704	0.5+	0.2−
1993 08 18	010	0.6+	1.4+	1997 12 27	411	0.7+	0.1−	1998 01 06	704	0.0	0.0
1993 08 18	010	0.3+	1.8+	1997 12 27	411	0.3−	0.2+	1998 01 06	704	0.2−	0.1−
1997 11 30	411	1.2−	1.0−	1998 01 02	704	0.4+	0.1+				

1997 WS_{21} = 1990 SJ_{13}

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	20.69439		(2000.0)		+0.57102949	−0.82085717
n	0.29818870	ω	247.70343		+0.77045594	+0.53128886
a	2.2189214	Ω	167.45685		+0.28341308	+0.20958449
e	0.1194854	i	2.87725			
P	3.31	H	15.5	G 0.15	U 5	

Residuals in seconds of arc

1990 09 23	809	(3.6−	0.4+)	1997 11 30	411	0.2+	0.2+	1997 12 05	411	0.2+	0.6−
1990 09 23	809	(3.0−	0.4+)	1997 11 30	411	1.0+	0.7−	1997 12 05	411	0.5+	0.2+
1990 09 23	809	(2.6−	0.7+)	1997 12 02	411	0.4+	0.0	1997 12 21	411	0.3+	0.3−
1990 09 23	809	0.1−	0.4+	1997 12 02	411	0.3−	0.4+	1997 12 21	411	0.4+	0.5+
1990 09 23	809	0.6+	0.4+	1997 12 04	704	0.2−	0.4+	1997 12 30	566	0.4−	0.3+
1990 09 23	809	1.2+	0.5+	1997 12 04	704	1.3−	0.9+	1997 12 30	566	0.4+	0.2−
1990 09 24	809	1.1−	0.3−	1997 12 04	704	(2.2−	0.3+)	1997 12 30	566	0.4−	0.1+
1990 09 24	809	0.6−	0.4−	1997 12 04	704	1.5−	0.4−				
1990 09 24	809	0.1−	0.6−	1997 12 04	704	0.6+	0.7−				

1997 WT_{21} = 1996 TB_{62}

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	101.16189		(2000.0)		+0.97340920	+0.22409743
n	0.20487248	ω	286.52568		−0.18382737	+0.88786397
a	2.8497950	Ω	60.54618		−0.13668218	+0.40184314
e	0.0734723	i	3.12611			
P	4.81	H	13.5	G 0.15	U 5	

Residuals in seconds of arc

1996 10 06	809	0.1−	0.6+	1996 10 07	809	0.0	0.6−	1997 12 05	411	0.3−	0.4−
1996 10 06	809	1.6−	0.4+	1997 11 30	411	0.5−	0.8−	1997 12 05	411	0.0	0.2−
1996 10 06	809	0.5−	0.0	1997 11 30	411	0.5−	0.0	1997 12 27	411	0.0	0.4−
1996 10 07	809	1.4+	0.2+	1997 12 02	411	1.4+	0.1+	1997 12 27	411	0.0	0.4+
1996 10 07	809	0.7+	0.5−	1997 12 02	411	0.0	1.2+				

1997 WU_{21} = 1986 WS_7

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

					P	Q
M	136.46372		(2000.0)		+0.69853318	+0.69613917
n	0.18552736	ω	232.88415		−0.59201922	+0.69225513
a	3.0446035	Ω	82.32243		−0.40195104	+0.19019225
e	0.0732483	i	9.62237			
P	5.31	H	11.2	G 0.15	U 5	

Residuals in seconds of arc

1986 11 30	046	0.3−	0.1−	1997 11 30	411	0.3−	0.5+	1997 12 05	411	0.2+	0.6+
1986 11 30	046	1.0−	1.0+	1997 11 30	411	0.5−	1.0+	1997 12 05	411	0.2−	0.1+
1986 12 01	046	0.9+	0.5−	1997 12 02	411	1.1+	2.0−	1997 12 27	411	0.4+	0.4−
1986 12 01	046	0.4+	0.5−	1997 12 02	411	0.1−	0.2−	1997 12 27	411	0.6−	0.4+

1997 WX_{21} = 1990 DO_3

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	226.29360		(2000.0)		−0.56382780	+0.82558489
n	0.22203068	ω	241.36376		−0.65911165	−0.46624211
a	2.7010174	Ω	354.16129		−0.49766459	−0.31784883
e	0.1318158	i	12.79800			
P	4.44	H	12.5	G 0.15	U 5	

Residuals in seconds of arc

1990 02 24	809	1.2+	0.1−	1990 03 01	809	0.4+	0.1−	1997 11 30	327	0.5−	0.6+
1990 02 24	809	1.1+	0.1+	1997 11 19	327	0.1−	0.1−	1997 12 07	327	0.2+	0.5−
1990 02 24	809	1.1+	0.3+	1997 11 19	327	0.2+	0.1−	1997 12 07	327	0.0	0.6−
1990 02 27	809	1.8−	0.2+	1997 11 19	327	0.3+	0.3−	1997 12 07	327	0.1+	0.5−
1990 02 27	809	1.0−	0.0	1997 11 19	327	0.1−	0.0	1997 12 19	327	0.1−	0.0
1990 02 27	809	0.4−	0.2−	1997 11 30	327	0.3+	0.2+	1997 12 19	327	0.1−	0.2+
1990 03 01	809	0.3−	0.0	1997 11 30	327	0.5+	0.1+	1997 12 19	327	0.1+	0.2+
1990 03 01	809	0.2−	0.1−	1997 11 30	327	0.9−	0.8+				

1997 WA_{22} = 1979 MU = 1989 NT = 1992 JP_4

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

					P	Q
M	222.88851		(2000.0)		−0.03603873	+0.98995070
n	0.29911855	ω	182.24649		−0.91473466	+0.02242628
a	2.2143205	Ω	85.70937		−0.40244468	−0.13962333
e	0.1706652	i	7.88169			
P	3.30	H	14.0	G 0.15	U 2	

Residuals in seconds of arc

1979 06 22	805	0.4−	0.6+	1997 12 01	327	0.6+	0.6+	1997 12 22	327	0.6+	0.1−
1979 06 22	805	0.3+	0.4+	1997 12 01	327	0.4−	0.7+	1997 12 24	327	0.0	0.2−
1979 06 25	805	0.2+	0.5+	1997 12 01	327	0.3+	0.1−	1997 12 24	327	0.6−	0.2−
1989 07 02	675	1.2+	0.5−	1997 12 09	327	0.2−	0.2−	1997 12 24	327	0.2−	0.3+
1989 07 02	675	0.7+	0.7−	1997 12 09	327	0.1−	0.1−	1998 01 04	327	0.4+	0.5−
1989 07 04	675	0.5−	1.2−	1997 12 09	327	0.8−	0.3+	1998 01 04	327	0.3+	0.6−
1989 07 04	675	0.6−	2.1−	1997 12 11	327	0.4−	0.0	1998 01 04	327	0.1−	0.5−
1992 05 01	095	0.0	0.2−	1997 12 11	327	0.2−	0.3−	1998 01 07	327	0.1+	0.4−
1997 11 25	327	0.3+	0.4−	1997 12 11	327	0.4−	0.1+	1998 01 07	327	0.1+	0.2−
1997 11 25	327	0.0	0.2+	1997 12 22	327	0.1+	0.7−	1998 01 07	327	0.2+	0.7−
1997 11 25	327	0.3−	0.5−	1997 12 22	327	0.8−	0.6−				

1997 WB$_{22}$ = 1942 EJ$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	248.37553		(2000.0)	**P**	**Q**		
n	0.27976960	ω	137.17981	−0.55852608	+0.81391005		
a	2.3152738	Ω	98.25280	−0.79804257	−0.47465719		
e	0.0921037	i	9.30391	−0.22622261	−0.33503879		
P	3.52	H	12.5	G 0.15	U 4		

Residuals in seconds of arc

1942 03 14	062	1.2−	0.0	1997 12 01	327	0.3+	0.3−	1997 12 29	566	0.4−	0.5+
1942 03 14	062	(0.3−	4.2−)	1997 12 01	327	0.3+	0.3−	1997 12 29	566	0.4−	0.6+
1942 03 17	062	1.2+	0.2+	1997 12 01	327	0.1+	0.4−	1997 12 29	566	0.5−	0.8+
1997 10 03	691	0.1+	0.0	1997 12 13	327	0.2+	0.5−	1998 01 04	327	0.1−	0.2−
1997 10 03	691	0.1+	0.0	1997 12 13	327	0.6+	0.2+	1998 01 04	327	0.1+	0.1−
1997 10 03	691	0.1+	0.5+	1997 12 13	327	0.5−	0.3−	1998 01 04	327	0.1−	0.1−
1997 10 09	691	0.1−	0.6+	1997 12 22	327	0.2+	0.1+	1998 01 04	327	0.0	0.2−
1997 10 09	691	0.4−	0.3+	1997 12 22	327	0.1+	0.1+	1998 01 07	327	0.0	0.1−
1997 10 09	691	0.3−	0.3+	1997 12 22	327	0.1+	0.0	1998 01 07	327	0.2−	0.1−
1997 11 25	327	0.3+	0.4−	1997 12 24	327	0.1−	0.0	1998 01 07	327	0.0	0.1−
1997 11 25	327	0.4+	0.2−	1997 12 24	327	0.1+	0.1−				
1997 11 25	327	0.1+	0.3−	1997 12 24	327	0.0	0.0				

1997 WQ$_{22}$ = 1993 TE$_{13}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Ichikawa

M	83.23509		(2000.0)	**P**	**Q**		
n	0.28968747	ω	67.08623	+0.95272887	−0.30285328		
a	2.2621231	Ω	310.53377	+0.26575916	+0.86938074		
e	0.1768446	i	1.82772	+0.14724053	+0.39045745		
P	3.40	H	16.6	G 0.15	U 6		

Residuals in seconds of arc

1993 10 13	675	0.4+	0.0	1997 11 28	910	0.1−	0.3−	1997 12 03	910	0.1−	0.8−
1993 10 13	675	0.3−	0.1−	1997 11 28	910	0.1−	0.4−	1997 12 04	910	0.0	0.3+
1993 10 15	675	0.1−	0.1+	1997 12 03	910	0.1+	1.0+	1997 12 04	910	0.2+	0.1+
1997 11 28	910	0.2−	0.0	1997 12 03	910	0.3+	0.1+	1997 12 04	910	0.2−	0.1+

1997 WU$_{22}$

Id. K. Lawrence (1990 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	216.23959		(2000.0)	**P**	**Q**		
n	0.55436512	ω	334.10290	−0.55631336	+0.78526976		
a	1.4675924	Ω	260.93953	−0.70656956	−0.61915217		
e	0.4420530	i	15.97504	−0.43734987	+0.00141310		
P	1.78	H	15.5	G 0.15	U 4		

Residuals in seconds of arc

1990 12 18	675	1.0−	1.5+	1997 12 05	360	0.4−	0.1+	1997 12 24	360	0.2+	0.1+
1990 12 18	675	0.6+	0.7−	1997 12 05	360	0.1−	0.3+	1997 12 24	104	0.8+	0.4+
1990 12 19	675	1.7+	0.7−	1997 12 05	046	0.1−	0.1+	1997 12 24	104	1.5−	1.7−
1990 12 19	675	1.3−	0.1−	1997 12 05	046	0.4−	0.1−	1997 12 25	402	0.3+	0.1+
1997 11 30	566	0.5+	0.3−	1997 12 05	046	0.3−	0.2+	1997 12 25	402	0.6+	0.1−
1997 11 30	566	0.5+	0.3−	1997 12 05	046	0.5−	0.3+	1997 12 25	402	0.4+	0.1−
1997 11 30	566	0.5+	1.0−	1997 12 06	118	0.3+	0.4+	1997 12 31	046	0.3+	0.1−
1997 12 01	587	0.0	0.5+	1997 12 06	118	0.1−	0.4+	1997 12 31	046	0.2+	0.3+
1997 12 01	587	0.2+	0.4+	1997 12 06	118	0.3−	0.1−	1997 12 31	046	0.2−	0.1+
1997 12 01	587	0.2+	0.6+	1997 12 06	118	0.0	0.0	1998 01 03	711	0.4−	0.1+
1997 12 02	658	0.4−	0.2+	1997 12 06	118	0.0	0.2−	1998 01 03	711	0.5−	0.3+
1997 12 02	658	0.3−	0.0	1997 12 06	118	0.1+	0.0	1998 01 06	118	0.0	0.1−
1997 12 02	658	0.2−	0.1+	1997 12 09	402	0.9+	0.7−	1998 01 06	118	0.2+	0.0
1997 12 03	658	0.3−	0.0	1997 12 09	402	1.1+	0.6−	1998 01 10	557	0.3−	0.3−
1997 12 03	658	0.4−	0.1−	1997 12 09	402	0.7+	0.4−	1998 01 10	557	0.2−	0.1+
1997 12 03	658	0.3−	0.2+	1997 12 18	658	0.6−	0.6−	1998 01 10	046	0.1+	0.1+
1997 12 04	402	0.0	0.3+	1997 12 18	658	0.5−	0.6−	1998 01 10	046	0.2+	0.3+
1997 12 04	402	0.1+	0.0	1997 12 18	658	0.5−	0.4−	1998 01 10	046	0.2+	0.4+
1997 12 04	402	0.2+	0.0	1997 12 24	360	0.2+	0.5+				
1997 12 05	360	0.0	0.5+	1997 12 24	360	0.1−	0.6+				

1997 WP$_{28}$ = 1989 EF$_3$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	9.67080		(2000.0)	**P**	**Q**		
n	0.19198063	ω	101.34116	+0.94634444	−0.28447046		
a	2.9759875	Ω	275.32567	+0.20208558	+0.89118281		
e	0.1042966	i	8.85825	+0.25217777	+0.35336916		
P	5.13	H	14.0	G 0.15	U 4		

Residuals in seconds of arc

1989 03 02	809	0.1+	0.6−	1997 11 29	557	0.1+	0.2−	1997 12 30	557	0.4+	0.4+
1989 03 02	809	0.7−	0.1+	1997 11 29	557	0.1−	0.3−	1997 12 30	557	0.7−	0.2+
1989 03 02	809	1.1−	0.2+	1997 11 29	557	0.5+	0.1+	1998 01 07	557	0.1−	0.5+
1989 03 03	809	1.1+	0.1−	1997 12 05	557	0.5−	0.4−	1998 01 07	557	0.3−	0.9−
1989 03 03	809	1.1+	0.9+	1997 12 05	557	0.1−	0.1+				
1989 03 03	809	0.5−	0.5−	1997 12 30	557	0.7+	0.4+				

1997 WZ$_{29}$ = 1974 SA$_3$ = 1991 RU$_{29}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	39.24129		(2000.0)	**P**	**Q**		
n	0.17330167	ω	107.10749	+0.98872981	−0.09664845		
a	3.1861597	Ω	258.55204	+0.04731775	+0.92629416		
e	0.2178354	i	6.69912	+0.14203656	+0.36419529		
P	5.69	H	13.0	G 0.15	U 5		

Residuals in seconds of arc

1974 09 20	095	0.9+	2.0+	1997 11 26	566	0.6+	0.2+	1997 12 03	399	1.8−	0.7−
1974 09 22	095	1.4−	0.6−	1997 11 26	566	0.3−	0.3−	1997 12 03	399	0.4−	0.3−
1991 09 12	675	0.1−	0.1+	1997 11 26	566	0.4−	0.1+	1997 12 04	704	1.8+	1.2−
1991 09 12	675	0.4+	0.5−	1997 11 29	704	1.5−	0.9+	1997 12 04	704	1.2+	1.4+
1991 09 16	675	0.0	0.8−	1997 11 29	704	0.2+	0.7−	1997 12 04	704	0.8+	1.8+
1991 09 16	675	0.2+	0.3−	1997 11 29	704	0.8−	1.2−	1997 12 04	704	(0.2+	2.3+)
1997 11 24	399	0.9+	0.4+	1997 11 29	704	0.6−	0.8−	1997 12 04	704	0.2+	1.8+
1997 11 24	399	0.1−	0.4−	1997 11 29	704	0.2+	1.1−				

1997 WT$_{33}$ = 1989 TU$_{15}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	30.13953		(2000.0)	**P**	**Q**		
n	0.25448687	ω	353.14534	+0.85825723	−0.51270838		
a	2.4661858	Ω	37.72748	+0.47262920	+0.77219427		
e	0.1451544	i	2.14523	+0.20004041	+0.37529473		
P	3.87	H	14.0	G 0.15	U 6		

Residuals in seconds of arc

1989 10 03	809	0.8−	0.1−	1997 11 26	704	0.1+	0.4−	1997 11 29	704	1.4+	1.4−
1989 10 03	809	0.7−	0.3−	1997 11 26	704	0.9−	0.7+	1997 12 04	704	2.2+	0.4−
1989 10 03	809	0.6−	0.2−	1997 11 26	704	0.3−	0.0	1997 12 04	704	2.3−	1.4+
1989 10 04	809	0.3+	0.1+	1997 11 26	704	0.4−	1.2+	1997 12 04	704	1.8−	0.3+
1989 10 04	809	0.6+	0.3+	1997 11 29	704	0.1−	0.5+	1997 12 04	704	0.8+	1.6−
1989 10 04	809	1.1+	0.3+	1997 11 29	704	0.1+	0.1−	1997 12 07	327	0.1+	0.5+
1997 11 26	704	0.1+	0.2−	1997 11 29	704	0.8+	0.7−	1997 12 07	327	0.3−	0.4+
1997 11 26	704	0.0	0.3+	1997 11 29	704	0.7+	1.2−	1997 12 07	327	0.3−	0.5+

1997 WK$_{37}$ = 1986 TD$_3$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	55.65474		(2000.0)	**P**	**Q**		
n	0.27418489	ω	195.46063	+0.98872460	+0.14860153		
a	2.3466070	Ω	155.97007	−0.13212954	+0.92380024		
e	0.2196681	i	2.60010	−0.07046600	+0.35286074		
P	3.59	H	15.5	G 0.15	U 6		

Residuals in seconds of arc

1986 10 04	046	0.5−	0.4−	1997 11 26	704	0.4+	0.4−	1997 12 04	704	0.1+	0.2+
1986 10 04	046	0.5+	0.9−	1997 11 29	704	0.4+	0.5+	1997 12 04	704	0.2−	0.8−
1986 10 05	046	(1.4+	4.2+)	1997 11 29	704	1.6+	0.9−	1997 12 04	704	0.3+	0.5+
1986 10 05	046	0.1−	1.3+	1997 11 29	704	1.1−	0.3−	1997 12 04	704	1.1−	0.0
1997 11 26	704	0.6−	0.5+	1997 11 29	704	(5.5−	0.5+)				
1997 11 26	704	0.3−	0.2+	1997 12 04	704	0.5+	0.5+				

1997 WT$_{37}$ = 1993 TU$_{21}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	88.97803		(2000.0)		**P**		**Q**
n	0.26573876	ω	337.63721		+0.85481787		+0.51888524
a	2.3960697	Ω	351.09637		−0.46934459		+0.76759097
e	0.1120662	i	2.47093		−0.22136410		+0.37624754
P	3.71	H	13.5	G	0.15	U	6

Residuals in seconds of arc

1993 10 10	675	0.0	1.7−	1997 11 06	327	0.1+	0.1+	1997 11 29	704	0.9+	0.1−
1993 10 10	675	0.1−	1.1−	1997 11 06	327	0.1−	0.2+	1997 12 04	704	0.2+	0.6−
1993 10 12	809	0.7−	1.6+	1997 11 26	704	0.6−	0.8+	1997 12 04	704	0.2−	1.2−
1993 10 12	809	0.3+	1.4+	1997 11 26	704	0.3+	1.3+	1997 12 04	704	0.3+	0.7−
1993 10 12	809	0.7+	1.5+	1997 11 26	704	1.6−	0.8+	1997 12 04	704	0.5−	0.9−
1993 10 13	675	0.3−	1.0−	1997 11 29	704	1.1+	0.0	1997 12 04	704	1.5−	0.1+
1993 10 13	675	0.1+	0.9−	1997 11 29	704	1.5+	0.2−				
1997 11 06	327	0.3−	0.2+	1997 11 29	704	0.6+	0.3+				

1997 WT$_{39}$ = 1986 WY$_{2}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	352.81712		(2000.0)		**P**		**Q**
n	0.18351277	ω	341.85671		+0.16691690		−0.97936691
a	3.0668452	Ω	98.41555		+0.91827725		+0.11233992
e	0.1737662	i	6.61322		+0.35903433		+0.16798866
P	5.37	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1986 11 27	033	1.7+	0.5+	1997 11 26	704	1.2−	0.4+	1997 11 29	704	0.2−	0.7+
1986 11 28	033	0.3−	0.0	1997 11 29	704	0.6+	0.6−	1997 12 04	704	1.1+	0.0
1986 11 29	033	1.4−	0.5−	1997 11 29	704	0.9+	0.7−	1997 12 04	704	1.8+	1.5+
1997 11 26	704	1.4−	0.1−	1997 11 29	704	0.5+	1.2−	1997 12 04	704	0.7−	1.0+
1997 11 26	704	0.2−	0.6+	1997 11 29	704	0.4−	0.1−	1997 12 04	704	0.8−	1.4−

1997 WR$_{41}$ = 1978 WC$_{2}$ = 1989 TT$_{7}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	54.81192		(2000.0)		**P**		**Q**
n	0.25980248	ω	143.74026		+0.99980629		+0.01027536
a	2.4324309	Ω	215.68216		−0.01583700		+0.92641754
e	0.1917149	i	1.64919		+0.01168652		+0.37635749
P	3.79	H	15.0	G	0.15	U	4

Residuals in seconds of arc

1978 11 29	675	0.4−	0.5+	1997 11 29	704	1.7−	0.2−	1997 12 31	704	0.9+	0.6−
1978 11 30	675	0.3+	0.3+	1997 11 29	704	0.8−	1.2−	1997 12 31	704	0.2+	1.9−
1989 10 02	071	0.3+	0.4+	1997 11 29	704	1.6−	0.0	1997 12 31	704	1.9−	0.5+
1989 10 02	071	0.2−	0.7−	1997 12 04	704	1.4+	0.4−	1998 01 02	704	0.5+	0.1+
1997 11 28	566	0.5+	1.2+	1997 12 04	704	1.3+	0.8−	1998 01 02	704	0.3+	0.5+
1997 11 28	566	0.7+	1.2+	1997 12 04	704	0.0	1.6−	1998 01 02	704	0.4−	0.3−
1997 11 28	566	0.6+	1.0+	1997 12 04	704	0.3+	1.5+	1998 01 02	704	1.5−	1.1+
1997 11 29	704	(2.3−	0.2−)	1997 12 04	704	(1.6+	2.2−)				
1997 11 29	704	(3.1−	0.1+)	1997 12 31	704	1.4+	1.0−				

1997 WL$_{44}$ = 1991 RC$_{15}$ = 1996 PL$_{4}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	24.91954		(2000.0)		**P**		**Q**
n	0.18453202	ω	230.50262		+0.72193656		−0.69195672
a	3.0555418	Ω	173.28182		+0.63967086		+0.66634881
e	0.1546737	i	0.91689		+0.26387267		+0.27780419
P	5.34	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1991 09 04	033	0.2+	0.7+	1996 08 17	566	0.7−	1.0+	1997 12 04	704	1.8+	0.4−
1991 09 05	033	1.1+	0.8+	1996 08 17	566	0.7−	0.8+	1997 12 04	704	1.0+	1.3−
1991 09 11	675	1.4+	0.7−	1996 08 17	566	0.8−	1.1+	1997 12 31	704	0.2−	0.1+
1991 09 11	675	0.4−	1.1−	1997 11 29	704	1.5−	0.5+	1997 12 31	704	0.5+	0.4+
1991 09 14	033	0.3+	0.0	1997 11 29	704	1.4−	0.5+	1997 12 31	704	0.2+	0.4+
1991 09 14	033	3.4−	0.8−	1997 11 29	704	2.2−	0.2−	1997 12 31	704	0.0	0.4+
1991 09 15	675	0.7+	0.6−	1997 11 29	704	2.2−	0.1+	1998 01 02	704	0.3+	0.3+
1991 09 15	675	1.4+	1.2−	1997 11 29	704	1.1−	0.8+	1998 01 02	704	0.5+	1.0+
1996 08 12	566	0.2+	0.1+	1997 12 04	704	1.6+	0.6−	1998 01 02	704	0.6−	0.6+
1996 08 12	566	0.3+	0.3+	1997 12 04	704	2.0+	0.3−	1998 01 02	704	0.3−	0.5+
1996 08 12	566	0.6+	0.3+	1997 12 04	704	1.4+	0.6−				

1997 WO$_{44}$ = 1991 LW$_{2}$ = 1996 TW$_{57}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	258.70322		(2000.0)		**P**		**Q**
n	0.24370341	ω	306.22610		−0.93994079		+0.32928648
a	2.5384093	Ω	253.15119		−0.27521646		−0.88689659
e	0.1955876	i	5.38977		−0.20190894		−0.32401367
P	4.04	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1991 06 06	809	0.1−	1.0+	1996 10 03	809	1.0−	0.2+	1997 12 04	704	0.7+	0.2+
1991 06 06	809	0.2+	0.9−	1996 10 03	809	0.7−	0.6−	1997 12 04	704	0.0	1.2−
1991 06 06	809	0.1−	0.3−	1997 11 29	704	0.2−	2.4+	1997 12 31	704	0.8+	0.2−
1991 06 08	809	(0.9−	4.7+)	1997 11 29	704	0.4−	0.4−	1997 12 31	704	0.4+	0.7−
1991 06 08	809	(1.5−	4.5+)	1997 11 29	704	0.7−	0.2−	1997 12 31	704	0.1+	0.1−
1991 06 08	809	(3.3−	5.6+)	1997 11 29	704	1.4−	1.3+	1997 12 31	704	0.1−	0.4−
1996 10 02	809	0.8+	0.3−	1997 11 29	704	2.2−	0.4−	1998 01 02	704	0.4+	0.5−
1996 10 02	809	0.7+	0.5+	1997 12 04	704	1.7+	0.8+	1998 01 02	704	0.6+	0.3−
1996 10 02	809	0.1−	0.4−	1997 12 04	704	0.9+	0.2−	1998 01 02	704	0.5−	0.2−
1996 10 03	809	0.4+	0.3+	1997 12 04	704	0.4+	0.1+	1998 01 02	704	0.4−	0.0

1997 WP$_{44}$ = 1990 HM$_{3}$ = 1991 RG$_{8}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	33.90081		(2000.0)		**P**		**Q**
n	0.17829376	ω	304.36454		+0.87437790		−0.48288672
a	3.1264054	Ω	84.55196		+0.45947959		+0.79226012
e	0.1980460	i	2.75154		+0.15601853		+0.37302054
P	5.53	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1990 04 29	413	0.1+	0.8−	1997 11 29	704	0.8−	0.8−	1997 12 31	704	0.4+	0.2−
1990 05 01	413	0.0	0.6−	1997 11 29	704	0.6−	0.3−	1997 12 31	704	0.2+	0.2−
1990 05 02	413	0.1−	0.6−	1997 12 04	704	0.3+	0.0	1997 12 31	704	0.1+	0.4−
1991 09 12	675	0.2+	0.2−	1997 12 04	704	0.3−	0.9+	1997 12 31	704	0.1−	0.5−
1991 09 12	675	0.1−	0.0	1997 12 04	704	0.6+	0.6+	1998 01 02	704	0.1+	0.1−
1991 09 14	675	0.2−	0.1−	1997 12 04	704	0.2+	0.6+	1998 01 02	704	0.1−	0.0
1991 09 14	675	0.0	0.3+	1997 12 04	704	1.5+	0.7−	1998 01 02	704	0.0	0.3+
1997 11 29	704	0.4−	0.0	1997 12 29	566	0.0	0.1−	1998 01 02	704	0.4−	0.4−
1997 11 29	704	0.1+	0.0	1997 12 29	566	0.0	0.1−				
1997 11 29	704	0.5−	0.1−	1997 12 29	566	0.1+	0.1−				

1997 WN$_{47}$ = 1993 RW$_5$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	334.99959		(2000.0)	**P**		**Q**	
n	0.27082695	ω	140.11143	−0.26880810		−0.96304850	
a	2.3659640	Ω	325.47250	+0.87601436		−0.23722168	
e	0.1560382	i	1.69110	+0.40042608		−0.12752826	
P	3.64	H	15.0	G	0.15	U	6

Residuals in seconds of arc

1993 09 15	809	0.1+	0.1−	1993 09 23	809	(3.7−	2.5−)	1997 12 07	327	0.2−	0.2+
1993 09 15	809	0.0	1.3+	1993 09 23	809	(4.9−	3.5−)	1997 12 07	327	0.9+	0.5+
1993 09 15	809	0.6−	1.3+	1993 09 23	809	(5.5−	3.2−)	1997 12 07	327	0.4+	0.0
1993 09 17	809	0.2+	1.4−	1997 11 26	704	1.0−	1.1+	1997 12 23	327	0.1−	0.2−
1993 09 17	809	1.3−	0.6+	1997 11 26	704	1.3−	0.7+	1997 12 23	327	0.0	0.7+
1993 09 17	809	0.4+	0.4+	1997 11 26	704	(5.7−	1.1+)	1997 12 23	327	0.3−	0.5+
1993 09 18	809	(2.3+	0.7+)	1997 11 29	704	1.2+	0.6−	1997 12 29	327	0.1−	0.0
1993 09 18	809	1.1+	0.7+	1997 11 29	704	0.4−	0.5−	1997 12 29	327	0.0	0.1+
1993 09 18	809	0.6+	0.5−	1997 11 29	704	0.4+	0.7−	1997 12 29	327	0.1−	0.3+
1993 09 22	675	0.4−	0.4−	1997 11 29	704	0.7+	0.6−				
1993 09 22	675	0.2−	1.6−	1997 11 29	704	0.2−	1.5−				

1997 XB = 1995 HD$_5$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	329.05342		(2000.0)	**P**		**Q**	
n	0.24043960	ω	18.16805	−0.45636148		−0.87615587	
a	2.5613291	Ω	99.23129	+0.79562932		−0.47990072	
e	0.1044048	i	9.04615	+0.39838195		−0.04523475	
P	4.10	H	14.6	G	0.15	U	4

Residuals in seconds of arc

1995 04 26	691	0.1−	0.0	1997 12 02	411	1.0+	0.0	1997 12 21	411	0.2+	1.1+
1995 04 26	691	0.2−	0.4+	1997 12 02	411	0.4+	0.1−	1997 12 21	411	0.5−	1.8+
1995 04 26	691	0.1−	0.2+	1997 12 03	411	0.5+	0.2−	1998 01 05	411	0.1+	1.5−
1995 05 04	691	0.3+	0.0	1997 12 03	411	0.8−	0.9−	1998 01 05	411	0.0	0.1−
1995 05 04	691	0.1+	0.0	1997 12 10	411	0.5−	0.6+				
1995 05 04	691	0.0	0.7−	1997 12 10	411	0.4−	0.7−				

1997 XM = 1984 SQ$_6$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	15.02128		(2000.0)	**P**		**Q**	
n	0.23774364	ω	49.83639	+0.27684308		−0.96075504	
a	2.5806560	Ω	24.10890	+0.86805448		+0.24221915	
e	0.1802315	i	2.46115	+0.41211568		+0.13520224	
P	4.15	H	14.0	G	0.15	U	6

Residuals in seconds of arc

1984 09 27	809	1.2+	0.1−	1984 09 28	809	1.3−	0.1−	1997 12 10	411	0.6−	0.5+
1984 09 27	809	1.5+	0.2−	1984 09 28	809	1.1−	0.3−	1997 12 27	411	0.3+	0.1−
1984 09 27	809	1.7+	0.2−	1997 12 03	411	0.1+	0.2−	1997 12 27	411	0.1−	0.1+
1984 09 28	809	0.4−	0.4+	1997 12 03	411	0.3−	0.2−	1998 01 05	411	0.1−	0.0
1984 09 28	809	0.2−	0.3+	1997 12 04	411	0.3+	0.0	1998 01 05	411	0.0	0.0
1984 09 28	809	0.0	0.3+	1997 12 04	411	0.0	0.0				
1984 09 28	809	1.5−	0.1−	1997 12 10	411	0.4+	0.2−				

1997 XN = 1989 AB$_5$ = 1991 PZ$_8$ = 1996 TP$_{57}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	71.00877		(2000.0)	**P**		**Q**	
n	0.21258922	ω	89.89594	+0.90335470		−0.41397077	
a	2.7804082	Ω	294.55778	+0.32784015		+0.83508580	
e	0.0210649	i	7.08305	+0.27653414		+0.36229809	
P	4.64	H	13.1	G	0.15	U	2

Residuals in seconds of arc

1989 01 04	413	0.8+	0.4+	1991 08 14	809	(7.1+	3.7+)	1997 12 03	411	0.2+	0.6−
1989 01 04	413	1.0−	0.3−	1991 08 14	809	(8.0+	3.7+)	1997 12 04	411	0.7+	0.6−
1989 01 10	413	(4.9−	1.7+)	1996 10 02	809	1.2+	0.9+	1997 12 04	411	0.3+	0.6+
1989 01 10	413	0.2+	0.0	1996 10 02	809	1.5+	1.0+	1997 12 10	411	0.0	0.0
1991 08 05	675	0.3−	0.1+	1996 10 02	809	1.4+	0.8+	1997 12 10	411	0.4+	0.9+
1991 08 05	675	1.1+	0.0	1996 10 03	809	1.5−	0.8−	1997 12 27	411	0.6−	0.1−
1991 08 08	675	0.4−	0.7−	1996 10 03	809	1.5−	0.9−	1997 12 27	411	0.4+	0.2−
1991 08 08	675	0.4+	0.8−	1996 10 03	809	1.7−	0.1−	1997 12 28	411	0.3+	0.1+
1991 08 14	809	(4.4+	4.2+)	1997 12 03	411	1.1−	0.6−	1997 12 28	411	0.8−	0.7−

1997 XV = 1996 TA$_{52}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	261.22057		(2000.0)	**P**		**Q**	
n	0.20301102	ω	192.58119	−0.99699147		+0.07659582	
a	2.8671889	Ω	351.78400	−0.06194618		−0.87948482	
e	0.0273607	i	4.76788	−0.04659057		−0.46972282	
P	4.85	H	13.0	G	0.15	U	6

Residuals in seconds of arc

1996 10 05	809	0.0	0.3−	1997 12 03	411	0.2−	0.8−	1997 12 21	411	1.0+	2.0+
1996 10 05	809	0.5−	0.4−	1997 12 03	411	0.6+	0.7−	1997 12 21	411	0.3−	0.4+
1996 10 05	809	0.3−	0.3−	1997 12 04	411	0.1−	0.1−	1998 01 05	411	0.6+	0.1−
1996 10 06	809	0.0	0.6+	1997 12 04	411	0.1−	0.2−	1998 01 05	411	0.9−	0.5+
1996 10 06	809	0.2+	0.2+	1997 12 10	411	0.7−	0.6−				
1996 10 06	809	0.5+	0.4+	1997 12 10	411	0.1+	0.5−				

1997 XY = 1989 YT$_4$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	14.44573		(2000.0)	**P**		**Q**	
n	0.23968615	ω	95.59966	+0.49720772		−0.86690344	
a	2.5666939	Ω	324.51333	+0.76983676		+0.45968612	
e	0.2295073	i	3.50968	+0.40016978		+0.19278769	
P	4.11	H	15.1	G	0.15	U	5

Residuals in seconds of arc

1989 12 30	413	0.2+	0.3+	1997 12 04	411	0.6−	0.3+	1997 12 21	411	0.5+	0.5−
1989 12 31	413	0.2−	0.2−	1997 12 04	411	0.4+	0.1+	1998 01 05	411	0.3+	0.2−
1989 12 31	413	(2.9+	1.1+)	1997 12 10	411	0.2−	0.3−	1998 01 05	411	0.6−	0.4+
1997 12 03	411	0.5−	0.6+	1997 12 10	411	0.4−	0.1−				
1997 12 03	411	0.8+	0.2−	1997 12 21	411	0.3+	0.2−				

1997 XZ = 1991 ES$_3$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	281.84823		(2000.0)	**P**		**Q**	
n	0.26321663	ω	209.60224	−0.98999883		+0.14034342	
a	2.4113514	Ω	338.45136	−0.12053736		−0.89434969	
e	0.1094596	i	2.23980	−0.07330122		−0.42478507	
P	3.74	H	13.7	G	0.15	U	5

Residuals in seconds of arc

1991 03 11	809	0.2−	0.4+	1997 12 03	411	0.6+	0.3+	1997 12 27	411	1.0+	0.4−
1991 03 11	809	0.3−	0.5+	1997 12 03	411	0.2+	0.1−	1997 12 27	411	0.3+	0.1+
1991 03 11	809	0.3+	0.5+	1997 12 04	411	0.5−	0.2+	1998 01 05	411	0.7−	0.3+
1991 03 13	809	0.3−	0.4−	1997 12 04	411	0.7+	0.4+	1998 01 05	411	0.1+	0.9−
1991 03 13	809	0.2+	0.4−	1997 12 10	411	0.9−	0.2+				
1991 03 13	809	0.4+	0.4−	1997 12 10	411	0.7−	0.0				

1997 XH$_1$ = 1982 ST$_5$ = 1982 SN$_9$ = 1993 TJ$_{48}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	63.05387		(2000.0)	P	Q	
n	0.26983032	ω	348.84123	+0.99707040	+0.07622785	
a	2.3717863	Ω	6.79651	−0.06542402	+0.89271241	
e	0.3216255	i	3.06063	−0.03962711	+0.44413272	
P	3.65	H	15.9	G 0.15	U 4	

Residuals in seconds of arc

1982 09 16	095	1.2+	2.5−	1993 10 22	809	1.1−	0.6−	1997 12 10	411	0.1+	0.6−
1982 09 20	095	(0.8+	5.4−)	1997 12 03	411	1.0−	0.8−	1997 12 18	411	0.9+	0.2−
1993 10 10	809	1.3+	1.3+	1997 12 03	411	1.0−	0.7+	1997 12 18	411	0.6+	0.6−
1993 10 10	809	0.0	1.0+	1997 12 04	411	1.2−	0.8+	1997 12 25	402	0.3+	0.4−
1993 10 10	809	1.2−	0.5+	1997 12 04	411	0.6+	0.0	1997 12 25	402	0.3+	0.4−
1993 10 22	809	0.0	0.6+	1997 12 04	411	0.4+	1.3+	1997 12 25	402	0.1+	0.4−
1993 10 22	809	0.4−	0.3−	1997 12 10	411	0.4−	0.6−				

1997 XV$_1$ = 1996 OW

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	326.30551		(2000.0)	P	Q	
n	0.27963238	ω	357.46163	−0.44621031	−0.88843929	
a	2.3160312	Ω	119.02034	+0.82323250	−0.45462857	
e	0.0667410	i	7.06634	+0.35097666	−0.06315450	
P	3.52	H	15.2	G 0.15	U 4	

Residuals in seconds of arc

1996 07 22	566	0.4−	0.2−	1996 07 23	566	0.5−	0.3−	1997 12 10	886	0.3−	0.6+
1996 07 22	566	0.1+	0.2+	1996 07 23	566	0.0	0.1−	1997 12 31	886	0.4−	0.1+
1996 07 22	566	0.1−	0.0	1997 12 02	905	0.3−	1.1−	1997 12 31	886	0.8−	0.1+
1996 07 23	566	0.2+	0.1+	1997 12 02	905	1.0−	0.3−	1997 12 31	385	1.1+	0.4−
1996 07 23	566	0.2+	0.2+	1997 12 03	905	(2.6+	1.6−)	1997 12 31	385	0.2+	0.0
1996 07 23	566	0.5+	0.3+	1997 12 03	905	1.5+	0.8+				
1996 07 23	566	0.1+	0.1−	1997 12 10	886	0.0	0.1+				

1997 XJ$_2$ = 1989 YG$_2$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	36.65820		(2000.0)	P	Q	
n	0.23687837	ω	51.13974	+0.82885118	−0.55941842	
a	2.5869365	Ω	342.87167	+0.50505407	+0.75396061	
e	0.1496658	i	1.46583	+0.24067845	+0.34437542	
P	4.16	H	14.8	G 0.15	U 6	

Residuals in seconds of arc

1989 12 30	413	0.1−	0.0	1997 12 03	369	1.2−	0.0	1997 12 05	369	0.1+	1.2+
1989 12 30	413	(3.9+	1.4−)	1997 12 04	704	1.3+	0.5−	1997 12 21	369	0.0	0.7+
1989 12 31	413	0.1+	0.1−	1997 12 04	704	1.1−	1.8−	1997 12 21	369	0.3−	0.3+
1997 12 03	369	0.0	0.3+	1997 12 04	704	0.2+	0.2−	1997 12 24	369	0.1+	0.0
1997 12 03	369	1.0+	0.6+	1997 12 05	369	0.2−	0.0	1997 12 24	369	0.2+	0.7−

1997 XQ$_2$ = 1991 JE$_3$

Id. G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Marsden

M	98.50498		(2000.0)	P	Q	
n	0.21929408	ω	139.72483	+0.79381833	+0.60815095	
a	2.7234419	Ω	182.82197	−0.56886748	+0.74124837	
e	0.0888148	i	2.56999	−0.21504009	+0.28408321	
P	4.49	H	12.5	G 0.15	U 4	

Residuals in seconds of arc

1991 05 12	809	0.4−	0.6+	1997 12 05	504	0.3+	1.7+	1997 12 20	132	1.2−	0.1+
1991 05 12	809	0.4−	0.2−	1997 12 06	504	0.1−	0.1+	1997 12 23	132	1.7+	0.9+
1991 05 12	809	0.6−	0.3−	1997 12 06	504	0.4−	0.0	1997 12 23	132	0.4−	0.8−
1991 05 17	809	0.2−	0.3+	1997 12 06	504	0.3−	0.0	1997 12 26	132	0.3−	0.4+
1991 05 17	809	1.0+	0.5−	1997 12 06	504	0.2−	0.1+	1997 12 26	132	0.2+	0.2+
1991 05 17	809	0.5+	0.4−	1997 12 06	504	0.1−	0.3+	1997 12 26	132	0.7−	0.1−
1997 11 29	704	(2.4−	0.7−)	1997 12 07	504	0.0	0.2−	1997 12 28	504	0.8+	0.2−
1997 11 29	704	(2.9−	1.0−)	1997 12 07	504	0.3−	0.0	1997 12 28	504	0.3+	0.1−
1997 11 29	704	1.4−	1.0−	1997 12 07	504	0.8−	0.5−	1997 12 28	504	1.0+	0.2−
1997 11 29	704	0.8−	0.0	1997 12 07	504	1.4−	0.5−	1997 12 28	504	0.7+	0.4−
1997 11 29	704	(2.8−	0.7−)	1997 12 07	627	0.1−	0.0	1997 12 28	504	0.2+	0.1−
1997 11 30	566	0.4+	0.8−	1997 12 07	627	0.3+	1.0−	1997 12 28	958	0.2+	0.1−
1997 11 30	566	0.2+	0.7−	1997 12 07	627	0.3−	0.2+	1997 12 28	958	0.1−	2.0+
1997 11 30	566	0.6+	0.8−	1997 12 09	627	0.1−	0.4−	1997 12 29	958	(2.6−	0.2+)
1997 12 04	704	0.1+	0.3−	1997 12 09	627	(0.9+	2.1+)	1997 12 29	566	0.5−	0.2−
1997 12 04	704	1.2+	0.8+	1997 12 09	627	1.1+	0.3−	1997 12 29	566	0.2−	0.0
1997 12 04	704	1.2+	0.4−	1997 12 20	422	0.2−	0.3−	1997 12 29	566	0.5−	0.0
1997 12 04	704	0.1+	0.3+	1997 12 20	422	0.3−	0.2−	1998 01 10	504	0.2−	0.1−
1997 12 04	704	0.2+	0.2+	1997 12 20	422	0.1−	0.2−	1998 01 10	504	0.8−	0.2−
1997 12 05	504	0.0	1.5+	1997 12 20	132	0.3−	0.4−				
1997 12 05	504	1.0+	1.3+	1997 12 20	132	0.2+	0.1−				

1997 XX$_3$ = 1997 EV$_{39}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	251.19046		(2000.0)	P	Q	
n	0.12534031	ω	137.37973	+0.44675262	+0.89403424	
a	3.9543540	Ω	159.08794	−0.84396888	+0.43353129	
e	0.1879280	i	5.36765	−0.29686465	+0.11293098	
P	7.86	H	13.0	G 0.15	U 6	

Residuals in seconds of arc

1997 03 05	704	0.5−	0.4−	1997 12 04	910	0.2+	0.0	1998 01 08	910	0.1+	0.0
1997 03 05	704	0.7+	0.1−	1997 12 06	910	0.2−	0.3+	1998 01 09	910	1.0−	0.4+
1997 03 06	704	0.0	0.0	1997 12 06	910	0.4+	0.1−	1998 01 09	910	0.1−	0.1−
1997 03 06	704	0.3−	0.4+	1997 12 06	910	0.1−	0.3+	1998 01 09	910	0.0	0.0
1997 12 04	910	0.3+	0.1+	1998 01 08	910	0.3+	0.2−				
1997 12 04	910	0.3−	0.3+	1998 01 08	910	0.4+	0.6−				

1997 XT$_5$ = 1991 RC$_{25}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	61.29946		(2000.0)	P	Q	
n	0.17906558	ω	255.07583	+0.99098509	+0.04494849	
a	3.1174152	Ω	102.22707	+0.00488956	+0.92927591	
e	0.1457467	i	7.41968	−0.13388296	+0.36664141	
P	5.50	H	12.5	G 0.15	U 5	

Residuals in seconds of arc

1991 09 11	675	0.1−	0.3+	1997 11 29	704	1.1−	0.2−	1997 12 06	132	0.5+	0.8+
1991 09 11	675	0.3−	0.3−	1997 11 29	704	0.1−	0.1+	1997 12 06	132	0.5+	0.3−
1991 09 12	675	0.5+	1.0−	1997 11 29	704	0.8−	0.8+	1997 12 06	132	0.2−	0.1−
1991 09 12	675	0.3−	0.5−	1997 11 29	704	1.4−	1.0+	1997 12 07	132	0.5+	0.1−
1991 09 13	675	1.2−	0.8+	1997 12 04	704	0.8+	0.6−	1997 12 07	132	0.6−	0.6+
1991 09 13	675	0.2+	1.1+	1997 12 04	704	1.3+	0.6−	1997 12 07	132	0.4−	0.3+
1991 09 13	675	0.5−	0.2−	1997 12 04	704	1.1+	1.5−	1997 12 08	683	0.0	0.2−
1991 09 15	675	0.9−	0.4+	1997 12 04	704	1.4+	0.7+	1997 12 08	683	0.1−	0.1−
1991 09 15	675	0.3+	0.5+	1997 12 04	704	0.4+	1.4−	1997 12 20	132	0.4−	0.6+
1991 09 16	675	0.9+	0.4−	1997 12 06	683	0.2−	0.3+	1997 12 20	132	0.1+	0.6−
1991 09 16	675	1.4+	0.8−	1997 12 06	683	0.4−	0.0				
1997 11 29	704	0.8−	0.5+	1997 12 06	683	0.3−	0.1+				

1997 XX$_5$ = 1991 ND$_6$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	74.31305		(2000.0)	P	Q	
n	0.19536435	ω	91.02117	+0.84506609	+0.53442930	
a	2.9415247	Ω	236.67380	−0.49774237	+0.77560165	
e	0.1058321	i	1.08129	−0.19523276	+0.33589791	
P	5.04	H	13.5	G 0.15	U 6	

Residuals in seconds of arc

1991 07 10	809	0.2+	1.0+	1997 10 29	704	1.2+	2.1+	1997 11 06	704	2.8−	0.5−
1991 07 10	809	0.5+	0.9+	1997 10 30	704	1.4+	1.1−	1997 11 06	704	2.4−	0.0
1991 07 10	809	0.8+	0.9+	1997 10 30	704	0.9+	0.9−	1997 12 05	910	0.1−	0.7−
1991 07 11	809	1.0−	0.3−	1997 10 30	704	1.3+	0.6−	1997 12 05	910	0.1−	0.5−
1991 07 11	809	0.7−	0.7−	1997 10 30	704	0.7+	0.9−	1997 12 05	910	0.0	0.5−
1991 07 11	809	0.0	0.8−	1997 10 31	704	0.2−	1.0+	1997 12 07	910	0.0	0.2−
1991 07 12	809	0.2−	0.3−	1997 10 31	704	0.0	0.4+	1997 12 07	910	0.0	0.2−
1991 07 12	809	0.0	0.3−	1997 10 31	704	0.7−	0.4+	1997 12 07	910	0.1−	0.2−
1991 07 12	809	0.5+	0.7−	1997 10 31	704	0.0	0.1+	1997 12 08	910	0.3+	0.5−
1997 10 29	704	2.2+	2.9+	1997 10 31	704	0.9−	0.5−	1997 12 08	910	0.2+	0.5−
1997 10 29	704	3.9+	0.4+	1997 11 06	704	3.1−	0.3−	1997 12 09	910	0.0	0.4−
1997 10 29	704	1.0+	1.3+	1997 11 06	704	2.4−	0.3−				

1997 XZ$_9$ = 1983 AO$_5$ = 1983 CS$_7$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	332.82023		(2000.0)		**P**	**Q**	
n	0.25827432	ω	211.86395		−0.35465986	−0.93100086	
a	2.4420163	Ω	259.03175		+0.87525012	−0.29810104	
e	0.0559854	i	5.04521		+0.32886715	−0.21064940	
P	3.82	H	13.1	G	0.15	U	5

Residuals in seconds of arc

1983 01 14	095	0.9+	0.4+	1997 12 10	411	0.1+	0.3−	1997 12 31	411	0.1−	0.1−
1983 02 10	095	0.9−	0.2−	1997 12 10	411	0.3+	0.1−	1997 12 31	411	0.5+	0.1−
1997 12 05	411	0.1+	0.5+	1997 12 21	411	0.5−	0.3−				
1997 12 05	411	0.2+	0.4+	1997 12 21	411	0.7−	0.2−				

1997 XA$_{10}$ = 1996 TF$_{40}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	244.71113		(2000.0)		**P**	**Q**	
n	0.22418417	ω	139.90832		−0.87111658	+0.48844767	
a	2.6836925	Ω	69.39944		−0.46330051	−0.78318798	
e	0.1388673	i	3.10745		−0.16281445	−0.38475377	
P	4.40	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1996 10 07	809	0.5+	0.4+	1996 10 10	809	0.6−	0.2−	1997 12 21	411	0.4+	0.8+
1996 10 07	809	1.6+	1.0+	1996 10 10	809	0.9−	0.1+	1997 12 21	411	1.6+	0.2+
1996 10 07	809	0.9+	1.0+	1997 12 05	411	0.3+	0.1−	1997 12 21	411	1.5+	0.1−
1996 10 08	809	0.6−	1.0−	1997 12 05	411	1.2−	0.5−	1997 12 31	411	0.3−	0.5+
1996 10 08	809	1.3−	0.5−	1997 12 10	411	0.2−	1.0−	1997 12 31	411	1.6−	0.8−
1996 10 08	809	0.2+	1.1−	1997 12 10	411	0.2+	0.5+				
1996 10 10	809	0.1+	0.2+	1997 12 10	411	0.8−	0.5+				

1997 XB$_{10}$ = 1959 GH = 1974 OA$_2$ = 1986 WL$_9$

Id. G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	281.64377		(2000.0)		**P**	**Q**	
n	0.27379679	ω	106.66718		−0.97196647	−0.11370917	
a	2.3488240	Ω	67.18833		+0.00452728	−0.88416543	
e	0.1388357	i	12.90039		+0.23507591	−0.45312439	
P	3.60	H	13.7	G	0.15	U	2

Residuals in seconds of arc

1959 04 06	760	0.5−	0.5−	1997 11 29	704	1.0−	0.7−	1997 12 09	402	0.0	0.4−
1959 04 06	760	0.3+	1.8+	1997 11 29	704	(2.4−	0.1+)	1997 12 10	402	0.7+	0.1−
1959 04 15	760	0.2−	1.0+	1997 11 29	704	1.8−	0.4+	1997 12 10	402	0.5+	0.2−
1959 04 15	760	1.4+	0.6−	1997 12 04	704	1.5+	0.8−	1997 12 10	402	0.7+	0.1−
1974 07 24	413	0.0	1.8+	1997 12 04	704	0.8+	0.1+	1997 12 14	402	0.2+	0.3+
1986 11 30	381	0.7−	1.8+	1997 12 04	704	0.3+	0.7+	1997 12 14	402	0.6+	0.1+
1986 11 30	381	2.0−	0.6+	1997 12 04	704	(2.9−	0.7−)	1997 12 14	402	0.7+	0.3+
1986 12 01	381	0.9+	0.4+	1997 12 05	402	0.4−	0.6−	1997 12 24	900	0.2+	0.6+
1986 12 01	381	0.2+	0.9+	1997 12 05	402	0.7−	0.5−	1997 12 24	900	0.1−	0.6+
1997 11 28	566	0.9+	0.3+	1997 12 05	402	0.7−	0.5−	1997 12 25	402	0.2−	1.0+
1997 11 28	566	0.3+	0.5−	1997 12 05	402	0.7−	0.6−	1997 12 25	402	0.3−	1.0+
1997 11 28	566	0.6+	0.2+	1997 12 05	402	0.7−	0.7−	1997 12 25	402	0.6−	1.0+
1997 11 29	704	1.3−	0.8−	1997 12 06	402	0.1+	0.6−				
1997 11 29	704	(2.7−	1.6−)	1997 12 09	402	0.2+	0.6−				

1997 XH$_{10}$ = 1976 UN$_{17}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	328.22322		(2000.0)		**P**	**Q**	
n	0.28531805	ω	56.46988		−0.46253737	−0.88174649	
a	2.2851597	Ω	61.34557		+0.77441686	−0.45267431	
e	0.1253319	i	6.06001		+0.43166851	−0.13269924	
P	3.45	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1976 10 22	381	0.5+	0.2+	1997 12 04	704	0.9+	0.1−	1997 12 08	098	1.2+	1.0+
1976 10 22	381	0.1−	0.2+	1997 12 04	704	1.2+	0.5+	1997 12 24	108	1.1−	0.1−
1976 10 24	381	0.3−	0.5−	1997 12 04	704	0.0	2.0−	1997 12 24	108	0.1+	0.7−
1997 11 29	704	0.5−	0.1−	1997 12 04	704	0.4+	0.5−	1997 12 24	108	0.5−	0.4+
1997 11 29	704	1.5−	0.2+	1997 12 04	704	(2.3+	0.1−)	1997 12 28	108	0.1+	0.2−
1997 11 29	704	(2.4−	0.2−)	1997 12 07	098	0.6−	0.6−	1997 12 28	108	0.7+	0.5−
1997 11 29	704	(2.5−	0.6+)	1997 12 07	098	1.7+	0.4+	1997 12 28	108	0.1−	0.5+
1997 11 29	704	1.6−	0.6+	1997 12 08	098	0.3−	1.1+				

1997 XM$_{10}$ = 1993 UP = 1995 FY$_{12}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Urata

M	33.01831		(2000.0)		**P**	**Q**	
n	0.26440399	ω	30.06786		+0.72567844	−0.68796949	
a	2.4041269	Ω	13.41481		+0.62288849	+0.65109033	
e	0.2050298	i	2.32765		+0.29223403	+0.32059220	
P	3.73	H	15.0	G	0.15	U	5

Residuals in seconds of arc

1993 10 15	400	1.2+	1.2+	1995 03 27	691	0.5−	0.2+	1997 12 04	888	0.3+	0.1+
1993 10 15	400	1.4−	1.0−	1995 03 27	691	0.4−	0.0	1997 12 10	888	0.3+	0.0
1993 10 20	399	0.0	0.8−	1995 04 07	691	0.1+	0.6−	1997 12 10	888	0.6−	0.5+
1993 10 20	399	0.6+	0.5−	1995 04 07	691	0.4+	0.6−	1997 12 24	888	(0.5+	2.6+)
1995 03 27	691	0.2−	0.3−	1997 12 04	888	0.2+	0.9−	1997 12 24	888	0.1−	0.7+

1997 XN$_{10}$ = 1996 PG$_2$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	347.45671		(2000.0)		**P**	**Q**	
n	0.26074762	ω	29.09701		−0.10735232	−0.99298277	
a	2.4265495	Ω	67.10316		+0.90144740	−0.11825908	
e	0.1744378	i	3.08677		+0.41936626	+0.00001273	
P	3.78	H	15.5	G	0.15	U	5

Residuals in seconds of arc

1996 08 07	608	0.2+	0.0	1997 11 29	704	0.4+	0.0	1997 12 08	098	0.1+	0.2+
1996 08 07	608	0.3+	0.5+	1997 11 29	704	0.0	1.0−	1997 12 24	108	0.2−	0.5−
1996 08 09	608	0.2−	0.2−	1997 11 29	704	0.8−	0.1−	1997 12 24	108	1.7+	0.1−
1996 08 09	608	0.3−	0.3−	1997 12 07	098	1.0−	0.0	1997 12 24	108	1.4−	0.2+
1997 11 29	704	0.1+	0.4+	1997 12 07	098	1.2+	0.6+				
1997 11 29	704	0.2+	0.2+	1997 12 08	098	0.3−	0.0				

1997 XY$_{10}$ = 1985 SZ$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	58.95155		(2000.0)		**P**	**Q**	
n	0.17538920	ω	300.95284		+0.99611382	+0.01397517	
a	3.1608276	Ω	58.37762		+0.02627275	+0.89523266	
e	0.1620383	i	5.86140		−0.08406550	+0.44537981	
P	5.62	H	13.0	G	0.15	U	6

Residuals in seconds of arc

1985 09 19	095	0.7−	1.1−	1997 12 04	704	1.0+	0.7+	1997 12 08	098	1.0+	1.0+
1985 09 20	095	0.8+	0.9+	1997 12 04	704	0.3+	0.7+	1997 12 08	098	0.3−	1.4+
1997 11 29	704	0.5−	0.1−	1997 12 04	704	0.5−	0.5+	1998 01 03	108	3.3+	1.0−
1997 11 29	704	0.6−	0.1−	1997 12 04	704	0.1−	0.1+	1998 01 03	108	1.3+	0.7−
1997 11 29	704	0.4−	0.4−	1997 12 04	704	0.1−	0.7+	1998 01 03	108	2.5+	0.6−
1997 11 29	704	3.3−	1.7−	1997 12 07	098	0.8−	0.7−	1998 01 03	108	0.7−	0.4+
1997 11 29	704	0.7−	0.2+	1997 12 07	098	0.6−	0.2−				

1997 XR$_{11}$ = 1983 RM$_5$

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	104.73197		(2000.0)		**P**		**Q**
n	0.22338628	ω	6.27283		+0.65983633		+0.72636367
a	2.6900791	Ω	305.20623		−0.69923377		+0.49981170
e	0.1828220	i	13.61834		−0.27511480		+0.47178818
P	4.41	H	12.9	G	0.15	U	5

Residuals in seconds of arc

1983 09 01	095	0.2−	0.1−	1997 12 05	905	1.0−	0.5+	1997 12 24	385	2.0+	1.0−
1983 09 11	095	0.2+	0.1+	1997 12 21	905	0.0	0.5+	1998 01 03	886	0.4−	0.3+
1997 12 05	905	0.6+	0.1−	1997 12 21	905	0.2−	0.0	1998 01 03	886	1.0−	0.2−

1997 YD = 1975 VB$_3$ = 1980 BT$_5$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	8.12556		(2000.0)		**P**		**Q**
n	0.27115703	ω	16.78055		+0.31843764		−0.94772514
a	2.3640436	Ω	54.65542		+0.86682981		+0.28242922
e	0.1990607	i	1.43029		+0.38367115		+0.14849512
P	3.63	H	14.9	G	0.15	U	4

Residuals in seconds of arc

1975 11 02	095	0.3+	0.8−	1997 12 04	704	(2.3−	2.5+)	1997 12 19	411	1.0+	0.3−
1975 11 07	095	(7.3+	6.3+)	1997 12 04	704	1.4−	0.2+	1997 12 27	411	0.5+	0.1−
1980 01 23	095	0.2−	0.9−	1997 12 18	411	0.6+	0.3+	1997 12 27	411	0.2+	0.4+
1997 12 04	704	0.4−	0.2+	1997 12 18	411	0.5+	0.1+	1998 01 04	411	0.3−	0.0
1997 12 04	704	1.5−	0.6+	1997 12 19	411	0.8+	0.2−	1998 01 04	411	0.1−	0.1+

1997 YQ = 1989 RJ$_1$ = 1993 VM$_3$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	66.39772		(2000.0)		**P**		**Q**
n	0.26575116	ω	171.61431		+0.98364278		−0.17964375
a	2.3959951	Ω	198.75040		+0.16278711		+0.91797779
e	0.2085184	i	2.35858		+0.07711829		+0.35361689
P	3.71	H	14.6	G	0.15	U	5

Residuals in seconds of arc

1989 09 03	511	1.2+	1.9−	1989 09 08	511	0.6−	0.2−	1997 12 20	411	0.1−	0.0
1989 09 03	511	(3.6+	2.0−)	1989 09 08	511	(3.4+	1.5+)	1997 12 21	411	0.6+	0.3+
1989 09 03	511	(4.2+	1.7−)	1993 11 11	399	0.2+	1.6−	1997 12 21	411	0.4+	0.2−
1989 09 05	511	0.2+	0.7+	1993 11 11	399	0.7−	1.1+	1997 12 28	411	0.3+	0.2−
1989 09 05	511	0.5−	1.4+	1993 11 16	399	0.6−	0.5+	1997 12 28	411	0.5+	0.2−
1989 09 06	511	0.1−	0.8−	1993 11 16	399	1.0+	0.8+	1998 01 04	411	0.7−	1.3−
1989 09 06	511	(0.3+	2.6+)	1997 12 20	411	0.4−	0.4+	1998 01 04	411	0.9−	0.0

1997 YR = 1984 ER

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	321.50927		(2000.0)		**P**		**Q**
n	0.27622785	ω	27.79293		−0.85768781		−0.50976050
a	2.3350225	Ω	121.40297		+0.45593567		−0.81443893
e	0.1377816	i	4.51571		+0.23768525		−0.27718848
P	3.57	H	14.3	G	0.15	U	5

Residuals in seconds of arc

1984 03 01	688	0.2−	1.0+	1997 12 20	411	0.5+	0.3−	1997 12 28	411	0.6−	0.5−
1984 03 01	688	1.5−	0.9−	1997 12 20	411	0.6+	0.2−	1997 12 28	411	1.7−	0.2−
1984 03 06	688	0.7+	0.8+	1997 12 21	411	0.6+	0.5−	1998 01 04	411	0.1+	1.1+
1984 03 06	688	1.0+	1.0−	1997 12 21	411	0.3+	0.3−	1998 01 04	411	0.1+	0.9+

1997 YU = 1996 RV$_{21}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	35.02134		(2000.0)		**P**		**Q**
n	0.17708107	ω	303.64777		+0.62391229		−0.78087058
a	3.1406627	Ω	107.71859		+0.72742228		+0.56567898
e	0.1907798	i	1.87810		+0.28564013		+0.26504418
P	5.57	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1996 09 07	691	0.3−	0.0	1997 12 20	411	1.0−	0.4−	1998 01 02	704	0.0	0.2+
1996 09 07	691	0.3−	0.4−	1997 12 21	411	0.1+	0.7−	1998 01 02	704	0.1+	0.2−
1996 09 07	691	0.1−	0.0	1997 12 21	411	0.3−	0.4−	1998 01 02	704	0.3−	0.0
1996 09 17	691	0.9+	0.1+	1997 12 25	566	0.2+	0.2+	1998 01 04	411	0.2−	0.0
1996 09 17	691	0.0	0.3+	1997 12 25	566	0.3+	0.1−	1998 01 04	411	0.1−	0.7+
1996 09 17	691	0.2−	0.0	1997 12 25	566	0.1+	0.6+				
1997 12 20	411	1.1+	0.2−	1998 01 02	704	0.0	0.3+				

1997 YX = 1982 BP$_{12}$ = 1990 BN$_4$ = 1990 DM$_5$ = 1992 OY$_6$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	7.09847		(2000.0)		**P**		**Q**
n	0.24444502	ω	247.66541		+0.00007209		−0.99991553
a	2.5332726	Ω	202.34224		+0.92960337		+0.00485738
e	0.1580703	i	1.95941		+0.36856148		−0.01205594
P	4.03	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1982 01 30	675	0.4−	0.4−	1992 07 31	809	0.7+	0.2+	1997 12 25	358	0.2−	0.9+
1982 01 31	675	0.5+	1.1+	1992 07 31	809	0.1−	0.7+	1997 12 25	358	1.1+	0.6−
1990 01 24	033	0.5+	0.4−	1992 07 31	809	0.5−	0.0	1997 12 25	358	1.6+	0.4−
1990 01 25	033	0.3−	0.1+	1997 12 20	411	0.6−	0.0	1997 12 26	358	0.2−	0.8−
1990 02 23	033	0.2+	0.5−	1997 12 20	411	0.7−	0.2+	1997 12 26	358	0.1+	0.7−
1990 02 23	033	0.4−	0.1+	1997 12 21	411	0.5−	0.6+	1997 12 28	411	0.2−	0.0
1992 07 30	809	0.1−	0.5−	1997 12 21	411	0.3−	0.1+	1997 12 28	411	0.4−	0.3+
1992 07 30	809	0.2−	0.1+	1997 12 24	358	(3.4−	1.3+)	1998 01 04	411	0.2+	0.1+
1992 07 30	809	0.2+	0.3−	1997 12 24	358	0.0	0.5+	1998 01 04	411	0.0	0.0

1997 YY = 1993 SH$_{16}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	101.81598		(2000.0)		**P**		**Q**
n	0.28845257	ω	75.41879		+0.91960902		+0.38624886
a	2.2685748	Ω	261.81932		−0.38250372		+0.83886841
e	0.2158598	i	4.15000		−0.08949947		+0.38355132
P	3.42	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1993 09 18	675	0.2−	0.4−	1997 12 20	411	0.4+	0.2+	1997 12 28	411	1.3+	0.4+
1993 09 22	675	0.2+	0.5+	1997 12 21	411	1.5−	0.0	1998 01 04	411	0.5−	0.8+
1993 09 22	675	0.1−	0.1−	1997 12 21	411	0.2−	0.1−	1998 01 04	411	0.5+	1.2−
1997 12 20	411	0.1+	0.8−	1997 12 28	411	0.1−	0.6+				

1997 YZ = 1986 VV = 1986 XA$_2$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	240.93545		(2000.0)		**P**		**Q**
n	0.17964619	ω	301.54625		−0.96796457		−0.04057676
a	3.1106946	Ω	237.24782		+0.10040910		−0.96706706
e	0.0953895	i	17.13515		−0.23013605		−0.25126644
P	5.49	H	12.5	G	0.15	U	4

Residuals in seconds of arc

1986 11 03	046	0.8+	0.3−	1997 10 29	704	0.9+	0.0	1997 12 19	426	0.3+	0.5−
1986 11 04	046	1.0+	1.0−	1997 10 29	704	0.3+	0.3+	1997 12 19	426	0.3−	0.2−
1986 11 07	046	1.7−	0.1−	1997 10 29	704	0.5+	0.4+	1997 12 19	426	0.1+	0.3−
1986 11 07	046	(4.1−	0.5−)	1997 10 30	704	0.7+	0.0	1997 12 21	426	0.0	0.4+
1986 12 01	010	(0.6−	4.2−)	1997 10 30	704	1.1+	0.9+	1997 12 21	426	0.1−	0.2−
1986 12 01	010	(0.7−	5.2−)	1997 10 30	704	1.3+	0.5−	1997 12 21	426	0.2−	0.0
1986 12 01	010	(0.8+	6.6−)	1997 10 30	704	1.2+	0.9−	1997 12 25	426	0.3−	0.8+
1997 10 22	704	0.2−	1.6+	1997 11 06	704	1.4−	0.7−	1997 12 25	426	0.0	0.3+
1997 10 22	704	0.1+	0.3+	1997 11 06	704	1.1−	1.0−	1997 12 25	426	0.1+	0.5+
1997 10 22	704	0.7−	1.7+	1997 11 06	704	1.1−	0.9−	1997 12 29	426	0.2−	0.5+
1997 10 22	704	0.0	0.8+	1997 11 06	704	1.0−	1.3−	1997 12 29	426	0.2−	0.1−
1997 10 29	704	1.0+	0.2+	1997 11 06	704	0.9−	0.6−	1997 12 29	426	0.3+	0.2+

1997 YC_1 = 1971 SH_3

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	86.84844		(2000.0)		**P**		**Q**
n	0.27067381	ω	282.45914		+0.99384096		+0.09279224
a	2.3668563	Ω	72.24054		−0.05949346		+0.90797796
e	0.2144914	i	3.64703		−0.09349156		+0.40861426
P	3.64	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1971 09 26	805	0.5+	0.4+	1997 12 19	327	0.1+	0.2+	1997 12 28	566	0.3+	0.7−
1971 09 27	805	0.5−	0.4−	1997 12 19	327	0.1−	0.1−	1997 12 28	566	0.4+	0.6−
1997 12 05	691	0.2+	0.1+	1997 12 20	327	0.1+	0.0	1997 12 29	327	0.1+	0.1+
1997 12 05	691	0.1+	0.2−	1997 12 20	327	0.2+	0.0	1997 12 29	327	0.0	0.2−
1997 12 05	691	0.1+	0.2−	1997 12 20	327	0.0	0.2+	1997 12 29	327	0.2+	0.2−
1997 12 19	327	0.7+	0.7+	1997 12 21	691	1.4−	0.2−	1998 01 05	327	0.0	0.8+
1997 12 19	327	0.7+	0.6+	1997 12 21	691	1.3−	0.2−	1998 01 05	327	0.1+	0.3+
1997 12 19	327	0.9+	0.1+	1997 12 21	691	1.8−	0.3−	1998 01 05	327	0.1−	0.7+
1997 12 19	327	0.4+	0.3−	1997 12 28	566	0.2+	0.7−				

1997 YS_1 = 1989 VN_1

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	67.86618		(2000.0)		**P**		**Q**
n	0.26267670	ω	292.79026		+0.83799789		−0.53154863
a	2.4146546	Ω	99.52303		+0.53520762		+0.75658858
e	0.1209696	i	7.18510		+0.10635951		+0.38082776
P	3.75	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1989 11 03	809	1.9+	0.0	1997 12 04	910	0.2−	0.2−	1997 12 22	327	0.0	0.4−
1989 11 03	809	0.3+	0.1+	1997 12 04	910	0.1+	0.0	1997 12 24	327	0.2−	0.6−
1989 11 03	809	1.0−	0.2−	1997 12 20	327	0.4+	0.4+	1997 12 24	327	0.3−	0.4−
1989 11 06	809	0.1−	0.0	1997 12 20	327	0.5+	0.0	1997 12 24	327	0.3−	0.3−
1989 11 06	809	0.6−	0.4−	1997 12 20	327	0.2+	1.5+	1997 12 29	566	0.3−	0.3+
1989 11 06	809	0.4−	0.5+	1997 12 22	327	0.2+	0.3−	1997 12 29	566	0.2+	0.0
1997 12 03	910	0.1−	0.1−	1997 12 22	327	0.1−	0.3−	1997 12 29	566	0.0	0.3+

1997 YX_1 = 1990 BQ

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	345.88371		(2000.0)		**P**		**Q**
n	0.24270720	ω	0.92239		−0.37995912		−0.92289104
a	2.5453506	Ω	111.41086		+0.84824363		−0.37457186
e	0.2275076	i	3.84783		+0.36893606		−0.08926391
P	4.06	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1990 01 21	887	1.1−	0.0	Y	1997 12 21	327	0.1+	0.3−	1997 12 24	327	0.0	0.0
1990 01 21	887	1.4+	0.4+	Y	1997 12 21	327	0.0	0.3−	1997 12 24	327	0.2−	0.3+
1990 01 24	887	0.6−	0.1−		1997 12 21	327	0.0	0.2−	1998 01 04	327	0.3−	0.5+
1990 01 24	887	0.8+	0.9−		1997 12 23	327	0.3+	0.0	1998 01 04	327	0.2−	0.5+
1990 01 25	887	0.0	0.2−		1997 12 23	327	0.1+	0.0	1998 01 04	327	0.2−	0.4+
1990 01 25	887	0.6−	0.7+		1997 12 23	327	0.1+	0.2−				
1997 12 21	327	0.3+	0.4−		1997 12 24	327	0.1−	0.0				

1997 YY_1 = 1987 SB_{11} = 1991 PP_3

Id. S. Nakano

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	32.01594		(2000.0)		**P**		**Q**
n	0.20637622	ω	325.41903		+0.54157374		−0.83811875
a	2.8359350	Ω	91.70768		+0.78526841		+0.47666962
e	0.1424491	i	3.74168		+0.30008566		+0.26522262
P	4.78	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1987 09 30	033	0.1+	0.0	1991 08 07	809	0.8−	0.1+	1998 01 02	704	0.1+	0.1+
1987 09 30	033	0.2−	0.1+	1997 12 21	411	0.0	0.0	1998 01 02	704	0.0	0.0
1991 08 02	809	1.4+	0.5−	1997 12 21	411	0.9+	0.4−	1998 01 02	704	0.1+	0.1−
1991 08 02	809	0.1−	1.2−	1997 12 24	411	0.3−	0.2−	1998 01 02	704	0.1+	0.1−
1991 08 02	809	0.0	0.2+	1997 12 24	411	0.2−	0.1−	1998 01 02	704	0.2+	0.2+
1991 08 07	809	0.2−	0.7+	1997 12 31	411	0.3−	0.2+				
1991 08 07	809	0.2−	0.5+	1997 12 31	411	0.4−	0.2+				

1997 YP_2 = 1995 DP_9

Id. G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	63.28443		(2000.0)		**P**		**Q**
n	0.29024181	ω	168.06147		+0.96094049		−0.27469113
a	2.2592419	Ω	207.95302		+0.24762794		+0.90782953
e	0.1865722	i	4.12724		+0.12358709		+0.31684433
P	3.40	H	13.4	G	0.15	U	5

Residuals in seconds of arc

1995 02 25	691	0.2+	0.0	1997 12 21	620	0.0	0.2+	1997 12 24	358	(2.6−	1.3−)
1995 02 25	691	0.2+	0.0	1997 12 21	620	0.2+	0.4−	1997 12 25	358	0.9−	0.1+
1995 02 25	691	0.2−	0.1−	1997 12 21	620	0.9+	0.0	1997 12 25	358	0.5−	0.2+
1995 02 26	691	0.1−	0.1−	1997 12 22	620	1.0+	0.2−	1997 12 26	358	1.7−	1.3+
1995 02 26	691	0.6+	0.3−	1997 12 22	620	0.8+	0.3+	1997 12 26	358	0.2−	0.2−
1995 02 26	691	0.1+	0.1+	1997 12 23	620	0.1+	0.2−	1997 12 26	358	1.0−	0.0
1995 02 27	691	0.4−	0.5+	1997 12 24	620	1.0−	0.4+	1997 12 29	620	1.7+	0.2−
1995 02 27	691	0.2−	0.6+	1997 12 24	620	0.8−	0.3−	1997 12 29	620	1.3+	0.2−
1995 02 27	691	0.3−	0.6−	1997 12 24	358	0.2+	0.4−	1997 12 29	620	0.1−	0.3−

1997 YR_3 = 1992 WV_4

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	330.84449		(2000.0)		**P**		**Q**
n	0.19033593	ω	213.97122		−0.21925729		−0.93460880
a	2.9931067	Ω	250.09855		+0.94823921		−0.13654378
e	0.2240502	i	17.32826		+0.22971425		−0.32842381
P	5.18	H	11.5	G	0.15	U	3

Residuals in seconds of arc

1992 11 22	675	0.3+	0.4+	1997 12 22	327	0.0	0.1−	1997 12 30	327	0.0	0.1+
1992 11 22	675	0.5−	0.2−	1997 12 22	327	0.0	0.0	1997 12 30	327	0.0	0.0
1992 11 24	675	0.5−	0.5+	1997 12 22	327	0.0	0.0	1998 01 04	327	0.0	0.1+
1992 11 24	675	0.7+	0.6−	1997 12 25	327	0.2−	0.1−	1998 01 04	327	0.2+	0.2+
1997 11 26	566	0.1+	0.1+	1997 12 25	327	0.2−	0.4−	1998 01 04	327	0.2−	0.2+
1997 11 26	566	0.2−	0.1+	1997 12 25	327	0.3+	0.0				
1997 11 26	566	0.1+	0.0	1997 12 30	327	0.0	0.0				

1997 YW$_3$ = 1992 SB$_{25}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	18.00416		(2000.0)	**P**		**Q**	
n	0.21500895	ω	73.71574	+0.57508611		−0.81686216	
a	2.7595082	Ω	340.96991	+0.68821507		+0.51270459	
e	0.2345584	i	7.90738	+0.44230756		+0.26432975	
P	4.58	H	13.0	G	0.15	U	4

Residuals in seconds of arc

1992 09 30	675	0.4−	0.5−	1997 12 22	327	0.1−	0.0	1998 01 02	327	0.1+	0.0
1992 09 30	675	0.3+	0.6+	1997 12 22	327	0.0	0.0	1998 01 02	327	0.1−	0.1+
1992 10 03	675	0.2+	0.3−	1997 12 24	327	0.0	0.1−	1998 01 02	327	0.0	0.0
1992 10 03	675	0.1−	0.3+	1997 12 24	327	0.1+	0.0	1998 01 02	327	0.1+	0.1+
1997 12 22	327	0.1−	0.1−	1997 12 24	327	0.1+	0.2−				

1997 YX$_3$ = 1984 AD

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	41.64947		(2000.0)	**P**		**Q**	
n	0.21223973	ω	85.99944	+0.80471055		−0.42879401	
a	2.7834596	Ω	298.93982	+0.14892585		+0.81529116	
e	0.4202092	i	27.98020	+0.57468429		+0.38914782	
P	4.64	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1984 01 05	688	1.0+	2.0+	1997 12 24	327	0.1+	0.0	1998 01 08	658	0.0	0.1+
1984 01 05	688	2.4−	1.5−	1997 12 24	327	0.1+	0.2−	1998 01 09	658	0.0	0.5−
1984 01 07	675	1.2−	1.5+	1997 12 29	566	0.3−	0.9−	1998 01 09	658	0.2−	0.2+
1984 01 07	675	1.6+	0.2−	1997 12 29	566	0.2−	0.7−	1998 01 09	658	0.2−	0.0
1984 01 08	688	1.1+	1.7−	1997 12 29	566	0.2−	0.8−	1998 01 10	658	0.2−	0.1+
1984 01 08	688	(6.1+	2.2+)	1998 01 04	327	0.0	0.0	1998 01 10	658	0.2+	0.0
1997 12 22	327	0.1−	0.6+	1998 01 04	327	0.1+	0.3−	1998 01 10	658	0.3−	0.1+
1997 12 22	327	0.2+	0.7+	1998 01 04	327	0.0	0.2−	1998 01 10	046	0.5+	0.3+
1997 12 22	327	0.3+	0.4+	1998 01 08	658	0.2−	0.2+	1998 01 10	046	0.3+	0.2+
1997 12 24	327	0.2+	0.0	1998 01 08	658	0.5−	0.2+	1998 01 10	046	0.6+	0.4+

1997 YA$_4$ = 1993 PE$_5$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	101.15297		(2000.0)	**P**		**Q**	
n	0.30113152	ω	38.73465	+0.99021009		+0.12221284	
a	2.2044415	Ω	314.10258	−0.13953985		+0.87898051	
e	0.1876464	i	5.38879	+0.00355026		+0.46093089	
P	3.27	H	14.5	G	0.15	U	5

Residuals in seconds of arc

1993 08 15	010	1.6+	1.4−	1993 08 19	010	0.2+	0.2+	1997 12 24	327	0.1+	0.2+
1993 08 15	010	0.0	1.2−	1993 08 20	010	0.5−	0.7+	1997 12 24	327	0.3−	0.3−
1993 08 16	010	0.1−	0.1−	1997 12 22	327	0.3−	0.3+	1998 01 04	327	0.4−	1.2−
1993 08 16	010	0.9+	0.3−	1997 12 22	327	0.0	0.4+	1998 01 04	327	0.2+	0.5−
1993 08 16	010	0.0	0.9+	1997 12 22	327	0.6+	0.5+	1998 01 04	327	0.2−	0.6−
1993 08 19	010	1.8−	0.9+	1997 12 24	327	0.2+	0.8+				

1997 YH$_4$ = 1996 TM$_{40}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	62.89751		(2000.0)	**P**		**Q**	
n	0.20531534	ω	336.25177	+0.81070331		−0.58379646	
a	2.8456957	Ω	59.53908	+0.54500366		+0.72505213	
e	0.0757176	i	2.93037	+0.21384843		+0.36535064	
P	4.80	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1996 10 08	809	0.3+	0.0	1997 12 03	691	0.4−	0.3−	1997 12 23	327	0.0	0.2+
1996 10 08	809	0.7−	0.2−	1997 12 03	691	0.2−	0.5−	1997 12 24	327	0.5−	0.5+
1996 10 08	809	0.8+	0.2−	1997 12 03	691	0.2−	0.4−	1997 12 24	327	0.6−	0.4+
1996 10 10	809	0.2−	0.1−	1997 12 20	327	(0.3+	2.7+)	1997 12 24	327	0.1−	0.4+
1996 10 10	809	0.2+	0.3+	1997 12 20	327	0.5+	0.3+	1997 12 24	327	0.1+	0.0
1996 10 10	809	0.5−	0.7+	1997 12 20	327	0.6+	0.3+	1997 12 28	566	0.0	0.2−
1997 09 29	691	0.2−	0.6−	1997 12 23	327	0.2+	0.1−	1997 12 28	566	0.5+	0.1−
1997 09 29	691	0.2+	0.5−	1997 12 23	327	0.1+	0.3+	1997 12 28	566	0.2+	0.3−
1997 09 29	691	0.1+	0.5−	1997 12 23	327	0.1−	0.2+				

1997 YK$_4$ = 1979 SV$_7$ = 1988 FH$_2$ = 1988 GK$_2$ = 1993 DR

Id. S. Nakano, G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	195.24098		(2000.0)	**P**		**Q**	
n	0.18141444	ω	281.05003	+0.37955231		+0.92495457	
a	3.0904483	Ω	11.31790	−0.80412314		+0.34049396	
e	0.1369151	i	5.84244	−0.45752161		+0.16888726	
P	5.43	H	12.0	G	0.15	U	2

Residuals in seconds of arc

1979 09 23	095	0.7−	1.3+	1993 02 25	399	(6.2−	2.1+)	1998 01 04	327	0.3−	0.2+
1988 03 18	054	0.3+	0.3+	1997 12 23	327	0.0	0.5+	1998 01 04	327	0.4−	0.0
1988 04 13	054	0.1−	0.3+	1997 12 23	327	1.2+	0.1+	1998 01 05	411	0.4+	1.8−
1993 02 15	399	0.7−	0.7+	1997 12 23	327	0.5−	0.3+	1998 01 05	411	0.1+	1.6−
1993 02 15	399	(3.0−	0.9+)	1997 12 24	327	0.3−	0.2+	1998 01 06	411	0.9+	0.1−
1993 02 21	399	1.3+	1.4+	1997 12 24	327	0.6−	0.3+	1998 01 06	411	0.3−	0.1+
1993 02 21	399	0.5+	0.5−	1997 12 24	327	0.5−	0.4+				
1993 02 25	399	(4.1−	3.8+)	1998 01 04	327	0.4−	0.1+				

1997 YM$_4$ = 1989 YT$_6$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	88.78660		(2000.0)	**P**		**Q**	
n	0.23826018	ω	57.64664	+0.82675413		+0.51726882	
a	2.5769248	Ω	270.31276	−0.56116353		+0.73058020	
e	0.1740575	i	12.77721	−0.03966238		+0.44574155	
P	4.14	H	14.0	G	0.15	U	7

Residuals in seconds of arc

1989 12 25	033	0.1+	0.7−	1997 12 22	426	0.2−	0.1+	1997 12 26	426	0.0	0.0
1989 12 26	033	0.2−	0.3+	1997 12 24	426	0.1−	0.2−	1997 12 26	426	0.3+	0.8+
1989 12 26	033	0.1+	0.4+	1997 12 24	426	0.4+	0.0	1997 12 27	426	0.1+	0.4−
1997 12 22	426	0.6−	0.1−	1997 12 24	426	0.3−	0.2−	1997 12 27	426	0.1+	0.1+
1997 12 22	426	0.2−	0.2−	1997 12 26	426	0.3+	0.2+	1997 12 27	426	0.3+	0.1+

1997 YO$_4$ = 1977 XA

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Urata

M	300.03407		(2000.0)	**P**		**Q**	
n	0.19130684	ω	73.89964	−0.73410585		−0.65584734	
a	2.9829711	Ω	64.75179	+0.52460255		−0.71228821	
e	0.0592133	i	11.21650	+0.43113892		−0.25001954	
P	5.15	H	12.5	G	0.15	U	5

Residuals in seconds of arc

1977 12 07	675	0.2−	0.1+	1997 12 24	905	0.4−	0.3+	1997 12 31	385	0.5−	0.9−
1977 12 08	675	0.2+	0.1−	1997 12 24	905	0.4−	0.0	1997 12 31	385	0.5−	0.0
1997 12 21	905	0.2−	0.5−	1997 12 27	886	1.8+	0.8+	1997 12 31	886	0.5−	0.1−
1997 12 21	905	0.2−	0.1−	1997 12 27	886	0.2+	0.0	1997 12 31	886	0.7+	0.4+

1997 YW$_5$ = 1985 ME = 1989 FM

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	341.96768		(2000.0)	**P**		**Q**	
n	0.21043972	ω	63.45860	−0.60491966		−0.79052778	
a	2.7993094	Ω	64.09308	+0.68753470		−0.57908776	
e	0.0969683	i	6.10051	+0.40170666		−0.19930678	
P	4.68	H	12.9	G	0.15	U	5

Residuals in seconds of arc

1985 06 21	474	1.3−	1.0−	1989 04 01	402	1.2+	0.2+	1997 12 28	566	0.4+	0.6−
1985 06 21	474	0.7+	0.4−	1997 12 25	411	0.9−	0.9−	1997 12 28	566	0.4+	0.4−
1989 03 30	402	0.6+	0.9+	1997 12 25	411	0.8−	0.1−	1997 12 28	566	0.8+	0.6−
1989 03 30	402	1.3−	0.1−	1997 12 27	411	0.2−	0.1+	1998 01 03	411	0.3+	1.4+
1989 04 01	402	(4.7+	0.0)	1997 12 27	411	0.1−	0.8−	1998 01 03	411	0.1−	0.5+

1997 YO_7 = 1991 VX_6

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	346.62492		(2000.0)		**P**		**Q**
n	0.19128632	ω	39.64548		−0.78968177		−0.58124400
a	2.9831845	Ω	103.72171		+0.49901350		−0.79470919
e	0.0637820	i	11.66161		+0.35691488		−0.17490775
P	5.15	H	13.1	G	0.15	U	5

Residuals in seconds of arc

1991 11 09	809	0.7−	1.2+	1991 11 12	809	0.0	0.1+	1997 12 28	411	0.2+	0.1+
1991 11 09	809	0.6+	0.9−	1997 12 27	411	0.3−	0.1+	1998 01 05	411	0.3−	0.4+
1991 11 12	809	0.4−	0.1−	1997 12 27	411	0.3+	0.3−	1998 01 05	411	0.0	0.4+
1991 11 12	809	0.5+	0.3−	1997 12 28	411	0.1+	0.7−				

1997 YA_8 = 1991 LQ_1 = 1991 NH

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	281.36967		(2000.0)		**P**		**Q**
n	0.25691140	ω	317.12809		−0.86359497		+0.46457467
a	2.4506453	Ω	251.52869		−0.38835878		−0.86071369
e	0.2145625	i	11.91926		−0.32152945		−0.20818818
P	3.84	H	13.5	G	0.15	U	4

Residuals in seconds of arc

1991 06 06	809	0.4−	0.9+	1997 12 22	327	0.5−	1.0−	1997 12 29	684	0.0	0.2+
1991 06 06	809	0.1+	0.6+	1997 12 22	327	0.4−	1.0−	1997 12 29	684	0.1−	0.3+
1991 06 06	809	0.5−	0.7+	1997 12 22	327	0.4−	0.9−	1997 12 29	327	0.0	0.4+
1991 06 08	809	0.1−	0.7−	1997 12 27	684	0.2−	0.5−	1997 12 29	327	0.1+	0.3+
1991 06 08	809	0.1−	0.2−	1997 12 27	684	0.1+	0.5−	1997 12 29	327	0.1−	0.2+
1991 06 08	809	0.4−	0.5−	1997 12 27	684	0.1−	0.2−	1997 12 30	684	0.6+	0.7+
1991 07 10	675	0.2+	1.3−	1997 12 28	684	0.0	0.1+	1997 12 30	684	0.5+	0.6+
1991 07 10	675	1.0+	0.0	1997 12 28	684	0.2−	0.2−	1997 12 30	684	0.6+	0.6+
1991 07 11	675	0.6+	0.3−	1997 12 28	684	0.2−	0.4−				
1991 07 11	675	0.2−	0.1−	1997 12 29	684	0.1+	0.3+				

1997 YB_{10} = 1987 SV_{19} = 1991 NC_5

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	22.36621		(2000.0)		**P**		**Q**
n	0.21364172	ω	118.37407		+0.30967650		−0.94686827
a	2.7712689	Ω	313.31026		+0.82527648		+0.31301760
e	0.2079467	i	6.85408		+0.47224908		+0.07389489
P	4.61	H	13.1	G	0.15	U	4

Residuals in seconds of arc

1987 09 17	095	1.2+	0.7−	1991 07 11	809	0.8−	0.9−	1997 12 31	886	1.1+	0.6+
1987 09 23	095	1.3−	0.8+	1991 07 11	809	1.2+	0.9−	1997 12 31	886	0.8+	0.4−
1991 07 10	809	0.1+	1.3+	1991 07 11	809	1.4+	0.9−	1998 01 03	886	0.6+	0.2−
1991 07 10	809	0.2+	1.4+	1997 12 25	888	2.3−	0.9−	1998 01 03	886	0.4+	0.1−
1991 07 10	809	0.3+	1.5+	1997 12 25	888	1.3−	0.3−	1998 01 07	886	1.1+	0.1+
1991 07 11	809	1.3−	1.0−	1997 12 27	888	1.1−	0.9+	1998 01 07	886	0.8+	0.1−
1991 07 11	809	1.1−	0.9−	1997 12 27	888	0.3−	0.0				

1997 YD_{10} = 1984 BX_5 = 1995 EC_1

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	181.07076		(2000.0)		**P**		**Q**
n	0.27944595	ω	318.46000		+0.31486955		+0.94805985
a	2.3170612	Ω	329.81160		−0.84540644		+0.25851082
e	0.1080738	i	5.15295		−0.43144539		+0.18535015
P	3.53	H	13.5	G	0.15	U	5

Residuals in seconds of arc

1984 01 25	675	0.4+	0.2−	1997 12 25	566	0.2+	0.4−	1997 12 30	566	0.1+	0.2+
1984 01 26	675	0.3−	0.3+	1997 12 25	566	0.4+	0.5−	1997 12 30	566	0.1−	0.2−
1995 03 05	399	0.7+	0.2−	1997 12 25	566	0.1−	0.4−	1997 12 30	411	0.4−	0.1−
1995 03 05	399	0.1−	0.2+	1997 12 28	411	0.5+	1.1+	1997 12 30	411	0.5+	0.1−
1995 03 06	399	1.1−	0.4+	1997 12 28	411	0.6+	0.1+	1998 01 04	411	0.8−	0.3+
1995 03 06	399	0.6+	0.4−	1997 12 30	566	0.2−	0.1−	1998 01 04	411	0.5−	0.0

1997 YP_{10} = 1993 RH_7 = 1995 DO_7

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	316.65202		(2000.0)		**P**		**Q**
n	0.30089527	ω	153.17704		−0.91756737		−0.39754508
a	2.2055952	Ω	3.41131		+0.34693998		−0.80712742
e	0.0632919	i	5.10412		+0.19417200		−0.43646677
P	3.28	H	15.2	G	0.15	U	4

Residuals in seconds of arc

1993 09 15	809	1.1+	0.2−	1995 02 24	691	0.2−	0.7+	1997 12 28	411	0.8−	0.9+
1993 09 15	809	0.5−	0.8−	1995 02 24	691	1.4−	0.7+	1997 12 28	411	(2.8−	0.1+)
1993 09 15	809	1.1−	0.8−	1995 02 24	691	0.1−	0.4+	1997 12 30	411	0.3+	0.1−
1993 09 17	809	0.3+	0.2+	1995 03 07	691	0.2+	0.8−	1997 12 30	411	0.2+	0.7−
1993 09 17	809	0.3−	0.7+	1995 03 07	691	0.3+	1.1−	1998 01 05	411	0.4+	0.5+
1993 09 17	809	1.2+	0.5−	1995 03 07	691	0.5+	1.1−	1998 01 05	411	0.0	0.3−

1997 YS_{10} = 1989 RP_2 = 1989 WB_1

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	92.55324		(2000.0)		**P**		**Q**
n	0.26372662	ω	165.90942		+0.96509010		−0.26076445
a	2.4082417	Ω	209.24156		+0.23517458		+0.90400341
e	0.1262007	i	2.88143		+0.11529968		+0.33879160
P	3.74	H	13.0	G	0.15	U	4

Residuals in seconds of arc

1989 09 07	033	0.2−	0.7+	1989 11 26	877	(0.2+	3.0−)	1997 12 29	327	0.1−	0.1+
1989 09 08	033	0.4+	0.5+	1989 12 01	877	1.8+	0.1−	1998 01 04	327	0.4+	0.1−
1989 09 08	033	0.2−	0.3+	1989 12 01	877	1.1−	0.2−	1998 01 04	327	0.5+	0.1−
1989 11 21	877	0.4−	0.6+	1997 12 22	327	0.3−	0.7+	1998 01 04	327	0.4+	0.1−
1989 11 21	877	0.8+	0.5+	1997 12 22	327	0.0	0.4+	1998 01 07	691	(1.7+	2.7−)
1989 11 25	877	0.0	0.1+	1997 12 22	327	0.4−	0.3+	1998 01 07	691	0.1−	0.5−
1989 11 25	877	1.0−	2.1−	1997 12 29	327	0.0	0.2+				
1989 11 26	877	(0.4+	4.3−)	1997 12 29	327	0.3−	0.2−				

1997 YP_{11} = 1990 WO_2 = 1993 SK_8 = 1996 NU_2

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Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	25.71603		(2000.0)		**P**		**Q**
n	0.29693660	ω	247.22921		+0.09554516		−0.99529371
a	2.2251548	Ω	197.31143		+0.93206083		+0.09515545
e	0.0276065	i	3.11557		+0.34947638		+0.01832695
P	3.32	H	14.0	G	0.15	U	3

Residuals in seconds of arc

1990 11 17	372	0.5−	3.6+	1996 07 14	809	2.2−	0.2+	1997 12 31	888	0.2−	0.0
1990 11 17	372	(2.8−	5.1+)	1996 07 14	809	0.1+	0.4−	1997 12 31	888	0.1+	0.2+
1993 09 17	809	1.1+	1.0−	1996 07 14	809	0.5−	0.3−	1997 12 31	411	0.1−	0.2−
1993 09 17	809	0.7+	1.2−	1996 07 16	809	2.3+	1.7+	1997 12 31	411	0.7−	0.1−

1993 09 17	809	0.6−	1.5−	1996 07 16	809	0.3−	0.9+	1998 01 01	411	0.5−	0.1−
1993 09 18	809	(4.0+	0.6−)	1996 07 16	809	(0.3+	3.3+)	1998 01 01	411	0.3−	0.1−
1993 09 18	809	(3.8+	0.7−)	1997 12 27	888	0.9+	0.5−	1998 01 02	886	0.4−	0.0
1993 09 18	809	(3.6+	0.9−)	1997 12 27	888	0.7+	0.8−	1998 01 02	886	0.2+	0.0

1997 YB$_{14}$ = 1994 BO

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	16.76160		(2000.0)		**P**		**Q**
n	0.24245410	ω	331.26395		+0.01077317		−0.97536302
a	2.5471217	Ω	117.35382		+0.95832265		−0.05284084
e	0.2098536	i	14.36403		+0.28548490		+0.21418408
P	4.07	H	13.4	G	0.15	U	5

Residuals in seconds of arc

1994 01 17	098	0.2−	0.5+	1997 12 31	411	0.2+	0.3+	1998 01 06	411	0.2−	0.1+
1994 01 17	098	0.0	0.2−	1997 12 31	411	0.2−	0.1−	1998 01 06	411	0.1+	0.0
1994 01 18	098	0.2−	0.3+	1998 01 01	411	0.3+	0.2−				
1994 01 19	098	0.3+	0.6−	1998 01 01	411	0.3−	0.1−				

1997 YF$_{14}$ = 1994 CY$_4$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	19.31256		(2000.0)		**P**		**Q**
n	0.24344345	ω	155.48785		+0.00079156		−0.99670092
a	2.5402161	Ω	294.38067		+0.90214956		+0.03572525
e	0.1605316	i	5.11208		+0.43142270		−0.07287649
P	4.05	H	15.1	G	0.15	U	6

Residuals in seconds of arc

1994 02 11	691	0.4−	0.0	1994 02 12	691	0.7+	0.2−	1998 01 01	411	0.7+	0.2+
1994 02 11	691	0.3−	0.0	1994 02 12	691	0.2−	0.2−	1998 01 01	411	0.9−	0.1−
1994 02 11	691	0.3−	0.0	1997 12 31	411	0.1+	0.3+	1998 01 06	411	0.0	0.6−
1994 02 12	691	0.5+	0.4+	1997 12 31	411	0.0	0.3−	1998 01 06	411	0.1−	0.5+

1997 YX$_{15}$ = 1979 OD$_{12}$ = 1995 LP

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	185.57252		(2000.0)		**P**		**Q**
n	0.18609894	ω	350.12526		+0.26348375		+0.93778076
a	3.0383662	Ω	294.86014		−0.86718979		+0.12756814
e	0.1150957	i	14.43286		−0.42256145		+0.32294522
P	5.30	H	13.0	G	0.15	U	3

Residuals in seconds of arc

1979 07 26	675	1.1−	2.1+	1995 06 06	691	0.0	0.3−	1998 01 02	691	1.0+	0.4+
1979 07 27	675	0.8+	1.4−	1997 11 30	691	0.8−	0.0	1998 01 02	691	1.1+	0.1+
1995 06 03	691	0.3+	0.8+	1997 11 30	691	1.1−	0.0	1998 01 02	691	1.1+	0.4+
1995 06 03	691	0.2+	0.4+	1997 11 30	691	0.8−	0.3−	1998 01 08	704	(3.1+	0.3+)
1995 06 03	691	0.1+	0.5+	1997 12 29	691	0.0	0.2+	1998 01 08	704	(2.4+	1.5+)
1995 06 06	691	0.1−	0.9−	1997 12 29	691	0.0	0.1−	1998 01 08	704	(3.3+	0.8+)
1995 06 06	691	0.3−	0.6−	1997 12 29	691	0.7−	0.0	1998 01 08	704	(2.4+	0.5+)

1997 YJ$_{16}$ = 1988 EV = 1990 WA$_{14}$

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	358.61889		(2000.0)		**P**		**Q**
n	0.28183076	ω	63.65147		+0.15102195		−0.98738692
a	2.3039716	Ω	17.85487		+0.84269660		+0.10345597
e	0.1795948	i	8.91859		+0.51677347		+0.11984963
P	3.50	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1988 03 13	054	1.2+	0.1+	1990 11 20	095	1.5+	2.1−	1998 01 03	385	0.3+	0.1−
1988 03 13	054	0.7+	0.3−	1997 12 31	905	0.3+	0.1+	1998 01 06	886	0.9−	0.1+
1988 03 14	054	2.1−	0.1−	1997 12 31	905	0.1−	0.3−	1998 01 06	886	0.4−	0.5+
1990 11 20	095	1.3−	1.0+	1998 01 03	385	0.5+	0.8+				

1997 YQ$_{16}$ = 1984 WR$_4$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	40.56147		(2000.0)		**P**		**Q**
n	0.23161113	ω	334.93252		+0.80473937		−0.59177050
a	2.6260103	Ω	61.43105		+0.55325242		+0.71900114
e	0.2765585	i	3.06299		+0.21518901		+0.36447912
P	4.26	H	14.0	G	0.15	U	4

Residuals in seconds of arc

1984 11 20	010	0.6+	0.0	1997 12 24	327	0.1−	0.2+	1998 01 03	327	0.0	0.2+
1984 11 21	010	0.6−	0.1−	1997 12 24	327	0.1+	0.1+	1998 01 03	327	0.5+	0.0
1997 12 03	691	0.4−	0.5+	1997 12 24	327	0.4+	0.0	1998 01 07	327	0.7−	0.1+
1997 12 03	691	0.1+	0.2+	1997 12 24	327	0.5+	0.1−	1998 01 07	327	0.2−	0.2−
1997 12 03	691	0.1−	0.0	1998 01 03	327	0.2+	0.8−	1998 01 07	327	0.4−	0.1−

1997 YZ$_{16}$ = 1985 RA$_6$ = 1989 TK$_2$ = 1991 ER$_8$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	35.80622		(2000.0)		**P**		**Q**
n	0.25964319	ω	260.59303		+0.63253078		−0.77306895
a	2.4334257	Ω	150.00368		+0.74276096		+0.58799847
e	0.1160159	i	5.46762		+0.21956998		+0.23795420
P	3.80	H	13.8	G	0.15	U	3

Residuals in seconds of arc

1985 09 15	095	0.9+	1.7−	1991 03 12	675	1.0−	1.2−	1997 12 23	399	1.4+	0.1−
1985 09 20	095	(0.1+	5.7−)	1991 03 12	675	0.0	1.3−	1998 01 02	399	0.7−	1.1−
1989 10 03	807	0.3−	0.1−	1997 12 22	399	0.0	0.0	1998 01 02	399	0.6−	0.9+
1989 10 06	807	0.0	0.6−	1997 12 23	399	0.2+	0.4+				

1997 YG$_{17}$ = 1989 XA$_1$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	197.75698		(2000.0)		**P**		**Q**
n	0.26920856	ω	165.21043		+0.05490164		+0.98860880
a	2.3754368	Ω	107.78492		−0.93039339		+0.10159412
e	0.0978257	i	8.46299		−0.36242785		−0.11104627
P	3.66	H	15.0	G	0.15	U	6

Residuals in seconds of arc

1989 12 02	809	0.2+	0.1+	1989 12 03	809	0.3+	0.7−	1998 01 06	691	0.1−	0.6−
1989 12 02	809	0.9−	0.5+	1997 12 27	691	0.0	0.3+	1998 01 06	691	1.0+	0.1+
1989 12 02	809	0.8−	0.3+	1997 12 27	691	0.1+	0.2−	1998 01 08	691	0.4−	0.1+
1989 12 03	809	1.0+	0.5−	1997 12 27	691	0.1+	0.1−	1998 01 08	691	0.6−	0.5+
1989 12 03	809	0.2+	0.3+	1998 01 06	691	0.3+	0.1−	1998 01 08	691	0.5−	0.2+

1997 YL$_{18}$ = 1992 SV$_{17}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	331.48951		(2000.0)		**P**		**Q**
n	0.23173605	ω	303.86050		−0.61853864		−0.78575299
a	2.6250666	Ω	184.34987		+0.72722495		−0.57174844
e	0.1465608	i	1.12124		+0.29757995		−0.23599994
P	4.25	H	14.0	G	0.15	U	7

Residuals in seconds of arc

1992 09 21	033	1.0−	2.1−	1992 09 27	033	0.9+	0.4+	1998 01 04	327	0.2−	0.1−
1992 09 22	033	0.2−	0.7−	1997 12 24	327	1.1+	0.0	1998 01 04	327	0.8−	0.1+
1992 09 24	033	0.1−	1.2+	1997 12 24	327	0.3+	0.5−	1998 01 07	327	1.1+	0.2+
1992 09 24	033	0.3+	0.2+	1997 12 24	327	1.1−	0.6+	1998 01 07	327	0.5+	0.8+
1992 09 26	033	0.1+	1.0+	1998 01 04	327	0.5−	0.1−	1998 01 07	327	0.6−	1.0−

1997 YO$_{18}$ = 1066 T-1

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	256.44201		(2000.0)	**P**	**Q**		
n	0.25161545	ω	255.79270	−0.52174168	+0.85233158		
a	2.4849129	Ω	342.61408	−0.72839634	−0.46721046		
e	0.1469905	i	6.97452	−0.44409952	−0.23504309		
P	3.92	H	14.0	G 0.15	U 6		

Residuals in seconds of arc

1971 03 24	675	1.0+	1.0−	1997 12 24	327	0.1−	0.3+	1998 01 04	327	0.3−	0.1+
1971 03 25	675	0.2−	0.8+	1997 12 24	327	0.7+	0.6+	1998 01 04	327	0.3−	0.1−
1971 03 25	675	0.3−	1.6+	1998 01 04	327	0.2+	0.2+	1998 01 07	327	0.4−	0.5−
1971 03 26	675	0.1−	0.9−	1998 01 04	327	0.1+	0.2−	1998 01 07	327	0.1−	0.1−
1971 03 27	675	0.3−	0.5−	1998 01 04	327	0.1−	0.2−	1998 01 07	327	0.0	0.2+
1997 12 24	327	0.4−	0.4−	1998 01 04	327	0.7+	0.2−				

1998 AN = 1986 PF$_3$ = 1991 RJ$_{18}$ = 1992 YV$_5$ = 1997 BB$_7$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	344.20689		(2000.0)	**P**	**Q**		
n	0.21372529	ω	172.02368	−0.79717756	−0.60250441		
a	2.7705464	Ω	330.81751	+0.54945401	−0.69744785		
e	0.0871353	i	4.55032	+0.25021638	−0.38801409		
P	4.61	H	12.9	G 0.15	U 2		

Residuals in seconds of arc

1986 08 01	675	(6.5+	2.6−)	1991 09 16	675	0.1−	1.7−	1998 01 05	411	0.2+	0.7−
1986 08 01	675	(14.0+	1.3+)	1992 12 22	885	0.2−	0.6−	1998 01 06	411	0.3+	0.1−
1986 08 02	675	4.1+	0.2−	1992 12 22	885	0.4−	0.5+	1998 01 06	411	0.1+	0.6−
1986 08 02	675	(9.0+	2.2+)	1997 01 28	327	0.9+	1.1+	1998 01 09	658	0.5−	0.3−
1991 09 13	675	0.1−	1.4−	1997 01 28	327	1.4+	0.4+	1998 01 09	658	0.7−	0.4−
1991 09 13	675	0.8−	1.0−	1997 01 28	327	0.7+	0.9+	1998 01 09	658	0.4−	0.3−
1991 09 13	691	1.5−	0.1+	1997 01 29	327	0.3−	1.3+	1998 01 09	411	0.0	0.8−
1991 09 13	691	1.3−	0.1+	1997 01 29	327	1.1+	0.8+	1998 01 09	411	0.2−	0.1−
1991 09 13	691	1.0−	0.1+	1997 01 29	327	0.7+	0.9+				
1991 09 16	675	0.0	1.4−	1998 01 05	411	0.7−	0.1+				

1998 AD$_3$ = 1980 FD$_3$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	261.21893		(2000.0)	**P**	**Q**		
n	0.26728193	ω	237.92368	−0.80680545	+0.59065771		
a	2.3868382	Ω	338.27041	−0.52880009	−0.73228398		
e	0.1102181	i	2.12488	−0.26350602	−0.33894491		
P	3.69	H	15.0	G 0.15	U 6		

Residuals in seconds of arc

1980 03 16	809	0.3−	1.1+	1980 03 17	809	0.2−	0.5−	1998 01 03	327	0.7−	0.1+
1980 03 16	809	0.4+	0.6+	1980 03 17	809	0.5+	0.5−	1998 01 03	327	0.7−	0.1+
1980 03 16	809	0.2−	0.1+	1980 03 23	809	0.4+	0.2−	1998 01 03	327	0.7+	1.2+
1980 03 16	809	0.1−	0.1−	1997 12 05	691	0.0	0.3+	1998 01 05	327	0.6−	1.7−
1980 03 17	809	0.3−	0.2−	1997 12 05	691	0.2+	0.2+	1998 01 05	327	0.6+	0.1−
1980 03 17	809	0.2−	0.1−	1997 12 05	691	0.0	0.1−	1998 01 05	327	0.5+	0.0

2779 P-L = 1997 SB$_{25}$

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	39.43997		(2000.0)	**P**	**Q**		
n	0.29351362	ω	303.28424	+0.99576939	+0.08674754		
a	2.2424213	Ω	51.75770	−0.06611230	+0.90539489		
e	0.1805912	i	2.21107	−0.06381598	+0.41561395		
P	3.36	H	15.0	G 0.15	U 4		

Residuals in seconds of arc

1960 09 24	675	1.1+	0.1+	1997 10 08	376	0.6−	0.3−	1997 12 19	426	0.7−	0.1−
1960 09 26	675	0.5+	0.4+	1997 10 08	376	0.1+	0.4−	1997 12 21	426	1.4−	0.1−
1960 09 28	675	0.7−	0.4−	1997 10 21	886	0.3−	0.1+	1997 12 21	426	0.9−	0.2−
1960 09 29	675	0.0	0.1+	1997 10 21	886	0.5−	0.2−	1997 12 26	566	0.9+	0.1−
1960 10 25	675	0.1+	0.4−	1997 10 22	886	0.3+	0.3−	1997 12 26	566	0.7+	0.3−
1960 10 26	675	0.4−	1.2−	1997 10 22	886	0.0	0.6+	1997 12 26	566	0.7+	0.3−
1997 09 28	905	0.5+	0.1+	1997 10 30	566	0.8−	0.6+	1997 12 26	566	1.0+	0.0
1997 09 28	905	(2.1−	0.4+)	1997 10 30	566	0.4−	0.4+	1997 12 26	566	0.4+	0.0
1997 09 30	905	1.7+	0.4+	1997 10 30	566	0.4−	0.4+	1997 12 26	566	0.7+	0.0
1997 09 30	905	1.3−	0.4−	1997 12 05	385	0.1+	0.0	1997 12 26	566	0.2+	0.3+
1997 10 06	905	0.6+	0.5+	1997 12 05	385	0.6−	0.0	1997 12 26	566	0.1−	0.3+
1997 10 06	905	0.4+	0.6+	1997 12 19	426	0.5−	0.9−	1997 12 26	566	0.1+	0.4+

3002 P-L = 1986 UK$_1$ = 1993 BC$_1$ = 1996 QW$_1$ = 1997 XJ

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	82.88541		(2000.0)	**P**	**Q**		
n	0.19022917	ω	48.67829	+0.95046612	+0.27195701		
a	2.9942264	Ω	295.04539	−0.31082575	+0.83351267		
e	0.1211107	i	9.56299	+0.00122944	+0.48093244		
P	5.18	H	11.6	G 0.15	U 2		

Residuals in seconds of arc

1960 09 24	675	0.4+	0.3+	1993 01 16	010	0.9+	1.1+	1996 08 25	399	0.3−	0.9+
1960 09 24	675	0.1+	0.1−	1993 01 16	010	0.2+	1.3+	1997 12 03	411	0.3−	0.6−
1960 09 25	675	0.5−	0.5−	1993 01 16	010	0.2−	1.2+	1997 12 03	411	0.2−	0.4−
1960 09 26	675	0.6+	0.5+	1993 01 17	010	0.5−	0.2+	1997 12 04	411	0.1+	0.4−
1960 09 26	675	0.6+	0.1−	1993 01 17	010	0.5−	0.4+	1997 12 04	411	0.7+	0.9−
1960 09 27	675	0.4−	0.8−	1993 01 17	010	0.1+	0.6+	1997 12 10	411	0.1+	1.4−
1960 09 28	675	0.1−	0.4−	1996 08 24	399	0.1−	0.1+	1997 12 10	411	0.1+	0.6−
1960 09 29	675	0.4−	1.2+	1996 08 24	399	0.3−	0.2+				
1986 10 31	054	1.0−	0.1+	1996 08 25	399	0.4+	0.1−				

4523 P-L = 1977 CE$_1$

Id. T. Kobayashi (*MPC* 14206), E. Bowell (*ibid.*)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	97.89117		(2000.0)	**P**	**Q**		
n	0.08224858	ω	114.95100	+0.80137804	+0.59810661		
a	5.2366126	Ω	208.31655	−0.55460006	+0.73803669		
e	0.0474368	i	0.94906	−0.22408038	+0.31236250		
P	11.98	H	11.0	G 0.15	U 1		

Residuals in seconds of arc

1960 09 24	675	0.7+	0.2+	1960 10 24	675	0.1−	0.6+	1997 11 26	704	0.3−	1.3+
1960 09 26	675	0.3+	0.9−	1960 10 26	675	0.1−	0.4−	1997 11 26	704	0.8−	0.2+
1960 09 27	675	0.3+	1.1+	1977 02 13	675	0.4−	0.4+	1997 12 31	704	0.7+	0.6−
1960 09 28	675	1.0+	0.2+	1977 02 14	675	0.6+	0.1+	1997 12 31	704	0.4+	0.4−
1960 10 17	675	(2.6−	0.5−)	1978 03 15	675	0.3−	0.1−	1997 12 31	704	0.3+	0.0
1960 10 17	675	1.6−	0.1+	1978 03 16	675	0.4+	0.3+	1997 12 31	704	0.2−	0.2−
1960 10 22	675	0.8−	0.2−	1997 11 26	704	0.1+	0.7−				

6618 P-L = 1997 WJ$_{32}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	34.48845		(2000.0)	**P**	**Q**		
n	0.26816144	ω	301.49475	+0.95603146	−0.29061033		
a	2.3816165	Ω	75.42481	+0.28097177	+0.86921642		
e	0.2028673	i	2.33100	+0.08401614	+0.40001056		
P	3.68	H	15.5	G 0.15	U 5		

Residuals in seconds of arc

1960 09 24	675	0.4+	0.2−	1960 10 24	675	0.8+	0.1+	1997 11 29	704	0.0	0.7−
1960 09 26	675	0.0	0.4−	1960 10 26	675	0.3+	0.4−	1997 12 04	704	0.4+	0.1+
1960 09 27	675	0.5−	0.7+	1997 11 29	704	0.3+	0.1+	1997 12 04	704	1.2−	1.6+
1960 09 28	675	0.4+	0.2+	1997 11 29	704	0.2+	0.5+	1997 12 04	704	0.2+	0.4−
1960 10 17	675	0.8−	0.1−	1997 11 29	704	0.6+	0.6−	1997 12 04	704	0.3+	0.4−
1960 10 22	675	0.4−	0.2+	1997 11 29	704	0.4−	0.2−	1997 12 04	704	0.5−	0.2+

4264 T-1 = 1997 YD$_{13}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	123.76845		(2000.0)		**P**		**Q**
n	0.20511673	ω	253.04787		+0.21404967		+0.97418130
a	2.8475323	Ω	29.60627		−0.83180880		+0.22031026
e	0.1821244	i	8.35518		−0.51212973		+0.04933744
P	4.81	H	14.5	G	0.15	U	4

Residuals in seconds of arc

1971 03 24	675	1.7+	1.1−	1971 05 13	675	0.5−	0.4+	1997 12 28	691	1.1−	0.5+
1971 03 26	675	0.4−	1.1+	1971 05 14	675	0.7+	0.1−	1997 12 28	691	1.2−	0.0
1971 03 26	675	0.2+	0.5+	1971 05 16	675	0.5−	0.6+	1998 01 01	691	0.1+	0.2−
1971 03 27	675	1.7−	1.1−	1997 11 29	691	1.1+	0.8−	1998 01 01	691	0.1+	0.0
1971 04 02	675	0.7−	2.1+	1997 11 29	691	1.3+	0.0	1998 01 01	691	0.5−	0.3−
1971 04 16	675	0.9+	2.3−	1997 11 29	691	1.0+	0.3+				
1971 04 16	675	0.2+	0.0	1997 12 28	691	1.4−	0.4+				

3207 T-2 = 1997 WH$_{30}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	281.23596		(2000.0)		**P**		**Q**
n	0.29242884	ω	115.09645		−0.89093923		−0.44762147
a	2.2479635	Ω	38.44091		+0.35952582		−0.79825489
e	0.0937623	i	7.07416		+0.27743193		−0.40301879
P	3.37	H	14.0	G	0.15	U	5

Residuals in seconds of arc

1973 09 19	675	1.1+	1.7−	1973 10 04	675	0.9+	0.9−	1997 11 29	704	0.8−	1.2−
1973 09 19	675	(3.6+	0.4+)	1973 10 04	675	0.7−	1.4+	1997 11 29	704	1.1+	0.8−
1973 09 20	675	1.0+	0.2+	1973 10 05	675	1.4+	0.7−	1997 11 29	704	0.7+	1.6−
1973 09 24	675	0.8−	0.7+	1973 10 05	675	0.5+	1.4−	1997 11 29	704	0.4−	0.3−
1973 09 24	675	1.6−	1.8+	1997 11 22	327	0.1+	0.5+	1997 11 29	704	(0.1−	2.1−)
1973 09 25	675	1.2−	0.9−	1997 11 22	327	0.0	0.6+	1997 12 04	704	0.1−	0.7−
1973 09 29	675	0.0	0.6+	1997 11 22	327	0.1−	0.7+	1997 12 04	704	0.6+	1.8+
1973 09 29	675	0.5−	1.3+	1997 11 28	327	0.5−	0.4−	1997 12 04	704	0.2+	1.8+
1973 09 30	675	0.8+	0.6−	1997 11 28	327	0.4−	0.0				
1973 09 30	675	0.8−	0.1+	1997 11 28	327	0.4−	0.4−				

4120 T-2 = 1997 WG$_{46}$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	30.06589		(2000.0)		**P**		**Q**
n	0.29052772	ω	257.52243		+0.84264108		−0.53627305
a	2.2577594	Ω	134.88333		+0.51686657		+0.78017759
e	0.1505834	i	3.93747		+0.15101313		+0.32207784
P	3.39	H	15.5	G	0.15	U	6

Residuals in seconds of arc

1973 09 19	675	0.1+	0.2−	1973 09 29	675	0.7+	1.7−	1997 11 26	704	0.9+	0.7+
1973 09 19	675	0.4−	1.5−	1973 09 29	675	1.3+	2.1−	1997 11 26	704	0.7+	1.4−
1973 09 20	675	1.5−	0.8+	1973 09 30	675	0.3+	1.3+	1997 11 29	704	0.0	1.3+
1973 09 24	675	1.0+	1.1+	1973 09 30	675	0.4+	0.4+	1997 11 29	704	0.4−	0.8+
1973 09 24	675	0.3−	0.6+	1973 10 04	675	1.8−	1.3−	1997 11 29	704	0.9−	1.5−
1973 09 25	675	0.2+	1.1+	1973 10 04	675	0.4−	0.1+	1997 11 29	704	0.4+	0.6−
1973 09 25	675	0.3+	1.3+	1997 11 26	704	0.3+	0.2−	1997 11 29	704	1.1−	1.1+

4122 T-2

Id. T. Kobayashi (1997 observations)

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	343.42961		(2000.0)		**P**		**Q**
n	0.21415063	ω	38.75691		−0.52865240		−0.84736438
a	2.7668767	Ω	83.21079		+0.76571746		−0.50147976
e	0.0488328	i	2.88638		+0.36633784		−0.17461861
P	4.60	H	12.5	G	0.15	U	6

Residuals in seconds of arc

1973 09 19	675	0.7−	1.0−	1973 09 29	675	0.4+	0.0	1997 12 21	411	0.0	0.6−
1973 09 19	675	0.5−	1.6−	1973 09 30	675	0.7+	0.3−	1997 12 24	411	0.8+	0.1+
1973 09 20	675	2.0−	0.6+	1973 09 30	675	0.4+	0.4+	1997 12 24	411	1.2+	0.0
1973 09 24	675	0.2−	0.9−	1973 10 04	675	0.3−	1.0+	1997 12 26	566	0.6−	0.1+
1973 09 24	675	0.7+	0.3−	1973 10 04	675	0.1+	1.3+	1997 12 26	566	0.7−	0.4+
1973 09 25	675	0.2+	0.4+	1973 10 05	675	0.5+	0.1+	1997 12 26	566	0.6−	0.1+
1973 09 25	675	0.7+	0.3+	1973 10 05	675	0.0	1.2−				
1973 09 29	675	0.0	1.1+	1997 12 21	411	0.0	0.2−				

5105 T-2 = 1997 YL$_2$

Id. G. V. Williams

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Nakano

M	300.48718		(2000.0)		**P**		**Q**
n	0.21662356	ω	252.31773		−0.98715570		+0.10097330
a	2.7457790	Ω	293.33084		−0.03604450		−0.89572896
e	0.2055249	i	7.74885		−0.15564194		−0.43298270
P	4.55	H	13.2	G	0.15	U	6

Residuals in seconds of arc

1973 09 20	675	0.0	0.2−	1973 09 30	675	1.5−	0.6−	1997 12 24	411	0.1−	0.6+
1973 09 20	675	1.8+	0.1−	1973 09 30	675	0.7−	0.0	1997 12 24	411	0.1−	0.1+
1973 09 24	675	(2.0−	2.6+)	1973 10 04	675	0.4−	1.2−	1997 12 25	411	0.0	0.1−
1973 09 24	675	0.1−	1.8+	1973 10 04	675	0.1+	0.5−	1997 12 25	411	0.0	0.4−
1973 09 25	675	0.2+	1.0+	1973 10 05	675	0.0	0.3+	1997 12 31	411	0.0	0.5−
1973 09 25	675	0.3−	0.1+	1973 10 05	675	0.7+	1.9−	1997 12 31	411	0.2−	0.0
1973 09 29	675	0.3−	0.6+	1997 12 21	411	0.5+	0.2+				
1973 09 29	675	0.5+	0.6+	1997 12 21	411	0.1−	0.1+				

5133 T-2 = 1998 AG$_5$

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	95.19603		(2000.0)		**P**		**Q**
n	0.21692280	ω	75.18801		+0.80881655		−0.57929544
a	2.7432533	Ω	320.06898		+0.46050665		+0.73091550
e	0.0549918	i	9.06747		+0.36571768		+0.36080372
P	4.54	H	15.5	G	0.15	U	6

Residuals in seconds of arc

1973 09 20	675	1.2+	1.7−	1973 09 29	675	0.1+	0.7−	1998 01 08	910	0.1−	0.2+
1973 09 20	675	1.7+	1.7−	1973 09 30	675	1.4−	0.3+	1998 01 08	910	0.1+	0.2+
1973 09 24	675	0.6−	1.8+	1973 09 30	675	1.0−	0.8+	1998 01 08	910	0.2−	0.2+
1973 09 24	675	2.7−	2.3+	1973 10 04	675	1.8+	1.1+	1998 01 09	910	0.1+	0.0
1973 09 25	675	0.8−	0.1+	1973 10 04	675	0.0	1.8−	1998 01 09	910	0.2+	0.2+
1973 09 25	675	1.6−	0.8−	1973 10 05	675	1.5+	0.7−	1998 01 09	910	0.1−	0.7−
1973 09 29	675	0.1−	1.2+	1973 10 05	675	1.7+	0.2−				

1107 T-3 = 1982 UW$_7$ = 1997 WR$_7$

Id. T. Urata

Epoch 1997 Dec. 18.0 TT = JDT 2450800.5 Williams

M	96.93654		(2000.0)		**P**		**Q**
n	0.20114646	ω	66.53688		+0.59569283		+0.77846463
a	2.8848802	Ω	241.51569		−0.79430044		+0.53434237
e	0.1525523	i	13.00839		−0.11931832		+0.32934945
P	4.90	H	13.0	G	0.15	U	5

Residuals in seconds of arc

1977 10 16	675	0.0	2.0−	1997 11 19	905	(0.8−	3.0−)	1997 11 29	704	0.3+	0.1−
1977 10 16	675	0.1−	1.4−	1997 11 23	905	0.9−	0.3+	1997 11 29	704	1.1−	0.3+
1977 10 17	675	1.6+	1.1+	1997 11 23	905	0.7−	0.6+	1997 12 04	704	1.3+	1.3+
1977 10 17	675	0.3+	1.6+	1997 11 23	905	0.5−	0.3−	1997 12 04	704	(2.4+	1.9+)
1977 10 22	675	1.7−	0.7−	1997 11 24	886	0.3−	1.2+	1997 12 04	704	1.6+	0.3+
1977 10 22	675	0.4+	1.6+	1997 11 24	886	1.0+	1.2+	1997 12 04	704	1.7+	0.3−
1982 10 21	095	0.7−	0.1−	1997 11 29	704	1.6−	0.3−	1997 12 04	704	0.8+	0.3−
1997 11 19	905	0.9+	1.5−	1997 11 29	704	0.3+	0.0	1997 12 04	905	0.2−	0.2−
1997 11 19	905	0.6−	1.4−	1997 11 29	704	1.6−	1.1−	1997 12 04	905	0.0	0.1+

Object	H	G	Epoch	M	ω	Ω	i	e	a	Obs.	Opp. & Arc	rms	Perts	U	Computer	MPC	Object
(113)	8.74	0.35	19971218	196.11327	79.34708	123.63059	5.03581	0.0886660	2.3750683	836	87 1871–1997	0.57	M-v	0	Goffin	28313	(113)
(123)	8.89	0.15	19971218	22.48812	125.48052	308.01762	6.42731	0.1203554	2.6949286	162	46 1872–1996	0.56	M-v	0	Goffin	31003	(123)
(263)	10.40	0.15	19971218	253.27311	161.03948	216.80891	1.30886	0.0802837	2.8845080	178	42 1886–1997	0.56	M-v	0	Goffin	24893	(263)
(415)	9.21	0.15	19971218	357.94258	297.38614	127.11165	8.17257	0.2992748	2.7932205	132	38 1896–1997	0.56	M-v	0	Goffin	30685	(415)
(428)	11.5	0.15	19971218	215.97572	15.49938	17.80673	6.19818	0.1786935	2.3072064	112	23 1897–1997	0.56	M-v	0	Goffin	29607	(428)
(431)	8.72	0.15	19971218	108.42141	212.24284	117.45154	1.82794	0.1798837	3.1300725	195	51 1897–1996	0.55	M-v	0	Goffin	30892	(431)
(454)	9.20	0.15	19971218	324.98287	176.81812	32.60011	6.31523	0.1135888	2.6265851	254	42 1900–1997	0.56	M-v	0	Goffin	22073	(454)
(465)	9.7	0.15	19971218	212.30250	285.16241	300.81622	4.66177	0.2117000	3.0869220	160	29 1901–1996	0.55	M-v	0	Goffin	21965	(465)
(468)	9.83	0.15	19971218	256.98445	335.42876	21.63170	0.44365	0.1957900	3.1334995	210	36 1901–1997	0.54	M-v	0	Goffin	23235	(468)
(489)	8.32	0.15	19971218	168.59066	8.91037	167.21791	12.97222	0.0347240	3.1602661	100	34 1902–1997	0.56	M-v	0	Goffin	31003	(489)
(512)	10.68	0.15	19971218	1.05709	248.87807	107.23639	8.75104	0.2539650	2.1895648	76	26 1903–1997	0.55	M-v	0	Goffin	31003	(512)
(533)	9.67	0.15	19971218	71.01975	32.43641	180.69106	6.54681	0.0380945	2.9810971	149	44 1901–1997	0.56	M-v	0	Goffin	26914	(533)
(606)	10.38	0.15	19971218	325.61581	56.81228	318.92902	8.64452	0.2192803	2.5878974	120	22 1906–1993	0.55	M-v	0	Goffin	26915	(606)
(656)	10.0	0.15	19971218	332.42126	333.77921	184.62052	0.51106	0.1356166	3.1500138	161	38 1908–1995	0.56	M-v	0	Goffin	26915	(656)
(720)	9.71	0.15	19971218	77.89442	105.17033	36.04576	2.36638	0.0183490	2.8862075	214	46 1899–1997	0.54	M-v	0	Goffin	26916	(720)
(786)	8.65	0.15	19971218	275.17554	134.36616	90.05729	14.56924	0.1701548	3.1673869	71	26 1914–1996	0.55	M-v	0	Goffin	30779	(786)
(827)	13.2	0.15	19971218	236.56234	195.30531	173.07384	3.41662	0.1566871	2.2740177	93	15 1916–1995	0.54	M-v	0	Goffin	28314	(827)
(836)	13.6	0.15	19971218	7.27910	179.31121	199.97507	4.84171	0.1762862	2.1899342	63	13 1903–1997	0.56	M-v	0	Goffin	26917	(836)
(917)	11.0	0.15	19971218	142.73887	359.47720	343.70671	5.14186	0.2012388	2.3818658	78	28 1926–1994	0.56	M-v	0	Goffin	22429	(917)
(965)	9.8	0.15	19971218	155.03610	47.56037	41.61503	21.49411	0.2876912	3.1421510	59	19 1921–1993	0.56	M-v	0	Goffin	29132	(965)
(987)	9.3	0.15	19971218	204.94350	14.96525	323.35522	8.83509	0.2201153	3.1606349	97	27 1922–1997	0.56	M-v	0	Goffin	26919	(987)
(993)	11.8	0.15	19971218	208.41095	246.67089	184.58574	1.76952	0.0489111	2.8598865	111	26 1923–1997	0.54	M-v	0	Goffin	24239	(993)
(1007)	11.5	0.15	19971218	232.71681	76.85921	307.69174	2.54204	0.1116637	2.7062913	104	24 1906–1996	0.55	M-v	0	Goffin	21967	(1007)
(1054)	10.3	0.15	19971218	181.50410	295.59950	86.11511	10.85740	0.1375715	2.9208164	53	23 1907–1997	0.56	M-v	0	Goffin	29315	(1054)
(1259)	11.0	0.15	19971218	232.32947	151.63017	75.20373	2.38717	0.1361766	3.0975813	117	23 1928–1996	0.56	M-v	0	Goffin	28611	(1259)
(1346)	11.25	0.15	19971218	142.80017	249.42632	166.48695	13.85936	0.1780928	2.6276292	59	16 1929–1995	0.55	M-v	0	Goffin	26923	(1346)
(1487)	10.6	0.15	19971218	102.81114	104.10158	97.67769	2.46981	0.1050223	3.1568363	90	25 1929–1997	0.56	M-v	0	Goffin	27324	(1487)
(1780)	10.68	0.15	19971218	243.71203	330.19249	291.55570	8.99003	0.0536290	3.0167389	56	22 1906–1997	0.55	M-v	0	Goffin	25439	(1780)
(1843)	11.6	0.15	19971218	180.13823	30.42490	267.29747	8.44406	0.1705133	2.6520947	72	14 1935–1998	0.75	M-v	1	Williams	30974	(1843)
(2475)	11.2	0.15	19971218	281.07302	177.72037	210.48200	9.08101	0.1102139	3.0369971	32	12 1908–1997	0.54	M-v	0	Goffin	29657	(2475)
(2612)	10.8	0.15	19971218	315.10006	0.25596	132.97313	20.17958	0.1634448	2.8959348	33	6 1979–1997	1.03	M-v	2	Williams	30448	(2612)
(2655)	11.2	0.15	19971218	10.92892	352.49325	88.31853	17.14055	0.1532022	3.1975391	21	7 1974–1998	1.02	M-v	2	Williams	30687	(2655)
(2715)	11.9	0.15	19971218	72.32508	142.89932	200.99499	6.72452	0.1515937	2.7347643	75	14 1929–1997	0.77	M-v	1	Williams	28844	(2715)
(2736)	12.8	0.15	19971218	107.02312	64.24525	255.74064	7.45340	0.0846634	2.2904362	52	8 1979–1997	0.80	M-v	1	Forti	17965	(2736)
(3890)	13.3	0.15	19971218	65.27424	71.14172	259.78494	5.20976	0.1399184	2.3300850	35	5 1983–1997	0.88	M-v	2	Williams	30291	(3890)
(4072)	13.4	0.15	19971218	314.63362	126.50422	21.47543	2.16593	0.0647355	2.1449180	35	8 1972–1998	0.79	M-v	1	Forti	28616	(4072)
(4178)	12.5	0.15	19971218	252.29998	166.78451	34.00930	1.04035	0.1754164	3.1831159	56	10 1951–1997	0.79	M-v	1	Forti	31007	(4178)
(4186)	11.5	0.15	19971218	12.16213	272.15256	144.98938	24.11884	0.0590234	3.1073462	32	9 1977–1997	0.89	M-v	1	Williams	29944	(4186)
(4280)	13.2	0.15	19971218	58.45207	2.49663	51.45094	4.63161	0.0092270	2.3772171	27	5 1952–1997	1.01	M-v	2	Williams	23247	(4280)
(4663)	12.0	0.15	19971218	119.07598	357.95050	353.39092	14.92284	0.0609658	3.2108223	35	6 1955–1998	1.12	M-v	2	Williams	30783	(4663)
(4670)	14.2	0.15	19971218	324.68570	181.11182	315.09967	5.02140	0.0930533	2.2405812	33	5 1987–1998	0.82	M-v	2	Williams	30092	(4670)
(4921)	13.7	0.15	19971218	202.88249	145.03773	233.47812	5.18969	0.1420412	2.4121554	43	6 1952–1997	0.75	M-v	2	Williams	27937	(4921)
(5094)	13.1	0.15	19971218	110.16325	348.80039	358.22504	1.66359	0.0836523	2.8400690	45	9 1963–1998	0.74	M-v	1	Williams	29138	(5094)
(5118)	12.0	0.15	19971218	98.19212	60.93289	253.00637	12.11154	0.2165989	2.6034994	41	8 1953–1997	0.75	M-v	1	Forti	29318	(5118)
(5235)	12.8	0.15	19971218	92.13016	29.78654	257.85296	4.85205	0.1423283	2.2962899	49	11 1969–1997	0.98	M-v	1	Sicoli	30292	(5235)
(5256)	12.3	0.15	19971218	107.50590	87.08323	219.91264	14.95592	0.2020226	2.5507281	54	7 1955–1997	0.70	M-v	1	Williams	25968	(5256)
(5583)	12.4	0.15	19971218	329.25313	48.20582	60.50635	2.90616	0.0216429	2.8769525	39	9 1970–1997	0.82	M-v	1	Forti	27450	(5583)
(5713)	13.2	0.15	19971218	17.64457	151.35954	276.81333	1.64284	0.1197956	2.2144985	59	7 1982–1998	0.80	M-v	1	Williams	28890	(5713)
(6437)	12.8	0.15	19971218	140.74146	59.92877	166.16238	2.05707	0.0441667	2.8995334	53	5 1978–1997	0.75	M-v	1	Sicoli	29927	(6437)
(7314)	12.2	0.15	19971218	335.57752	328.90287	163.79328	1.69478	0.1465943	3.1243458	37	5 1971–1997	0.69	M-v	1	Forti	23993	(7314)
1955 RV	14.0	0.15	19971218	34.41840	220.95790	178.43880	2.43050	0.1944209	2.4299086	33	7 1955–1997	0.89	M-v	2	Williams	28881	1955 RV

1958 TL_1	12.5	0.15	19971218	7.71612	161.92295	203.76144	17.69057	0.1895083	3.1573791	50	3	1986–1997	0.89	M-v	3	Williams	30892	1958 TL_1
1970 JB	14.0	0.15	19971218	315.75549	281.22431	289.20191	20.64468	0.2816821	2.3168922	8	3	1970–1998	0.70	M-v	4	Williams	18412	1970 JB
1970 OF	13.5	0.15	19971218	47.38865	29.97385	321.73845	6.29864	0.3122786	2.6948694	10	5	1970–1998	0.64	M-v	3	Williams	23346	1970 OF
1972 TC	13.0	0.15	19971218	2.64957	159.12577	247.42249	12.60634	0.1700429	2.5788775	30	3	1972–1997	0.56	M-v	2	Williams	31002	1972 TC
1974 QF_1	13.0	0.15	19971218	82.95827	5.78080	332.26682	9.24047	0.2526786	2.4120981	10	4	1974–1998	0.44	M-v	2	Williams	30647	1974 QF_1
1974 ST_1	14.5	0.15	19971218	74.65117	328.47936	356.93332	2.77026	0.2040748	2.4273649	23	5	1955–1997	0.85	M-v	2	Williams	27323	1974 ST_1
1975 SA_1	13.0	0.15	19971218	224.45899	225.14011	26.23962	10.41494	0.0573619	2.9922691	28	10	1952–1997	0.84	M-v	1	Williams	29939	1975 SA_1
1975 SF_1	13.0	0.15	19971218	202.86224	246.81607	29.87954	8.49452	0.1376933	2.5893280	16	6	1957–1998	0.73	M-v	1	Williams	28083	1975 SF_1
1975 TO_2	14.5	0.15	19971218	67.71062	186.85469	189.42522	5.24616	0.2086069	2.3445668	24	5	1975–1997	0.90	M-v	2	Williams	29315	1975 TO_2
1976 SQ_7	13.5	0.15	19971218	100.41544	142.00687	197.59350	5.36600	0.2105014	2.2626412	28	5	1952–1997	0.64	M-v	1	Williams	28610	1976 SQ_7
1976 UY	13.5	0.15	19971218	21.53560	153.23729	238.17329	11.15396	0.2103467	2.6424076	34	3	1976–1997	0.87	M-v	4	Williams	31003	1976 UY
1977 DR_2	14.5	0.15	19971218	240.94255	251.86393	344.72707	6.73489	0.0848648	2.3230497	27	5	1970–1997	0.83	M-v	2	Williams	30777	1977 DR_2
1977 EX	12.5	0.15	19971218	287.52946	229.33030	304.96685	12.11870	0.1060802	2.6527633	22	6	1977–1998	0.59	M-v	1	Williams	28083	1977 EX
1977 QD_2	14.0	0.15	19971218	291.54520	0.33954	350.30673	5.61156	0.1917798	2.2998141	35	4	1977–1997	0.76	M-v	3	Williams	29652	1977 QD_2
1978 PS_2	14.0	0.15	19971218	133.46854	82.76339	211.98920	2.04616	0.0422669	2.3790125	37	3	1978–1998	0.85	M-v	5	Williams	31003	1978 PS_2
1978 PH_3	13.0	0.15	19971218	174.89481	30.35843	259.40276	0.32767	0.1873768	3.1951115	34	4	1978–1998	0.62	M-v	2	Williams	28610	1978 PH_3
1978 SJ_5	14.5	0.15	19971218	78.73005	330.70772	31.47613	5.77221	0.2130211	2.3922869	15	4	1978–1997	0.62	M-v	2	Williams	29132	1978 SJ_5
1978 SS_6	13.5	0.15	19971218	22.12911	37.74608	331.60343	2.67103	0.1907535	2.4341023	23	3	1938–1997	0.88	M-v	3	Williams	30867	1978 SS_6
1978 SA_7	13.5	0.15	19971218	34.46982	36.75238	347.71508	7.30239	0.2338087	2.7946286	32	4	1964–1997	0.65	M-v	2	Williams	31003	1978 SA_7
1978 SA_8	14.5	0.15	19971218	32.61921	163.52600	211.98766	2.61458	0.1895324	2.4234084	44	3	1978–1997	0.54	M-v	2	Williams	31003	1978 SA_8
1978 UG	14.0	0.15	19971218	33.06790	316.82074	46.20075	3.27968	0.2020417	2.4346940	17	5	1978–1997	0.62	M-v	2	Williams	29652	1978 UG
1978 VO_4	14.5	0.15	19971218	162.80020	196.44660	89.47269	3.63974	0.1544737	2.4111043	17	3	1978–1998	0.62	M-v	4	Williams	24893	1978 VO_4
1978 VD_7	14.0	0.15	19971218	13.96791	333.87015	74.57241	3.12485	0.0719413	2.8362943	25	6	1949–1997	0.64	M-v	2	Williams	29652	1978 VD_7
1978 VK_8	14.0	0.15	19971218	29.10909	320.32103	86.01952	2.21648	0.1576731	2.8159855	27	6	1978–1998	0.73	M-v	1	Williams	29652	1978 VK_8
1978 XU	13.5	0.15	19971218	58.76012	148.59802	215.80672	6.94374	0.1453730	2.4235682	21	8	1954–1997	0.68	M-v	1	Williams	27930	1978 XU
1979 HW_6	13.5	0.15	19971218	166.02397	344.66036	267.88395	0.36147	0.1293000	2.2507195	24	5	1979–1997	0.84	M-v	2	Williams	31003	1979 HW_6
1979 MD_2	14.0	0.15	19971218	340.10537	248.34242	186.20679	3.38220	0.1802463	2.2984570	34	6	1954–1997	0.83	M-v	2	Williams	31003	1979 MD_2
1979 MN_3	14.5	0.15	19971218	284.98472	266.29135	235.57175	1.97525	0.0687627	2.2738442	22	3	1954–1997	0.79	M-v	4	Marsden	31003	1979 MN_3
1979 MG_4	13.0	0.15	19971218	179.94864	81.80796	162.45582	1.66399	0.1411101	3.0934715	27	3	1979–1997	1.06	M-v	4	Williams	28610	1979 MG_4
1979 MK_5	14.5	0.15	19971218	259.87469	321.31998	221.44378	2.63898	0.0871380	2.5869696	25	3	1979–1997	0.65	M-v	4	Williams	31003	1979 MK_5
1979 OQ_5	12.5	0.15	19971218	151.98289	323.68906	302.16830	4.85268	0.0773588	3.1205424	18	5	1979–1997	0.85	M-v	2	Williams	21965	1979 OQ_5
1979 QV_1	14.5	0.15	19971218	246.96171	243.72815	315.02792	6.41555	0.1235442	2.2698367	28	5	1979–1997	0.77	M-v	1	Williams	30892	1979 QV_1
1979 QT_8	14.5	0.15	19971218	131.89624	1.81070	338.37897	2.57886	0.1611965	2.2701458	21	7	1979–1997	0.84	M-v	2	Williams	29132	1979 QT_8
1979 SC	13.5	0.15	19971218	174.89827	226.24904	33.75661	4.65686	0.1261237	2.2935491	20	4	1979–1997	0.68	M-v	2	Williams	31003	1979 SC
1979 SP_{14}	12.5	0.15	19971218	37.09352	272.58496	109.84730	2.70259	0.1035975	3.2181615	55	9	1954–1997	0.86	M-v	1	Williams	31003	1979 SP_{14}
1979 TH_2	13.0	0.15	19971218	49.24367	49.37557	25.41508	1.14657	0.1634080	3.1536367	30	3	1979–1998	0.63	M-v	3	Williams	31003	1979 TH_2
1979 TV_2	14.5	0.15	19971218	62.65853	195.43532	194.63910	2.22745	0.1418972	2.3108321	24	6	1958–1997	0.67	M-v	1	Williams	27930	1979 TV_2
1980 EB	14.0	0.15	19971218	190.36953	210.93232	2.70249	2.03846	0.0942025	2.4487565	26	5	1954–1998	0.87	M-v	2	Williams	30892	1980 EB
1980 GG	14.5	0.15	19971218	302.21783	89.04923	99.18326	6.09464	0.1827393	2.3799547	25	4	1980–1997	0.75	M-v	2	Williams	25438	1980 GG
1980 LY	14.5	0.15	19971218	166.23599	174.14295	101.37930	4.52628	0.1576992	2.1659503	29	8	1954–1997	0.72	M-v	2	Williams	25647	1980 LY
1980 UN_1	13.5	0.15	19971218	47.66152	75.39174	275.77837	2.50938	0.2371895	2.6118740	22	2	1980–1997	0.52	M-v	5	Williams	31003	1980 UN_1
1981 EV_7	14.0	0.15	19971218	102.52153	66.96004	255.14070	4.27590	0.0514120	2.7453590	25	4	1978–1997	0.84	M-v	1	Williams	31003	1981 EV_7
1981 EA_9	16.0	0.15	19971218	59.02419	21.53232	333.02935	6.86774	0.2426744	2.3482801	20	4	1977–1997	1.06	M-v	2	Williams	22823	1981 EA_9
1981 EZ_{11}	15.5	0.15	19971218	265.17221	234.52071	328.76190	3.74947	0.0570200	2.3016871	31	4	1981–1997	0.83	M-v	2	Williams	27930	1981 EZ_{11}
1981 EE_{12}	14.5	0.15	19971218	28.86599	147.17061	281.86882	5.29684	0.0985018	2.3005760	21	3	1981–1998	0.70	M-v	4	Williams	22696	1981 EE_{12}
1981 EF_{12}	16.0	0.15	19971218	260.85081	327.15653	267.57991	5.09265	0.1273657	2.2873060	17	4	1981–1997	0.93	M-v	2	Williams	30779	1981 EF_{12}
1981 EY_{14}	15.0	0.15	19971218	341.26474	216.07268	278.25582	3.68589	0.1163798	2.2872576	39	6	1979–1997	0.78	M-v	2	Williams	30893	1981 EY_{14}
1981 EU_{15}	15.5	0.15	19971218	354.41527	243.90418	232.25922	4.64135	0.1126034	2.2904752	21	4	1978–1997	0.73	M-v	2	Williams	21967	1981 EU_{15}
1981 EF_{18}	14.5	0.15	19971218	66.35958	206.29195	184.00280	5.34086	0.0939561	2.3008848	28	5	1979–1997	0.94	M-v	2	Williams	27726	1981 EF_{18}
1981 EZ_{18}	13.5	0.15	19971218	130.75400	50.26658	284.11542	1.62931	0.0455260	2.6895902	47	9	1955–1997	0.87	M-v	1	Williams	29653	1981 EZ_{18}
1981 EJ_{23}	14.0	0.15	19971218	338.20847	108.75581	347.66619	4.07049	0.0618337	2.7178314	21	4	1979–1997	0.98	M-v	2	Williams	28314	1981 EJ_{23}
1981 EK_{23}	15.0	0.15	19971218	100.88620	129.23420	185.46455	3.06290	0.1841021	2.3595436	45	8	1964–1997	0.90	M-v	1	Williams	31003	1981 EK_{23}
1981 EM_{24}	14.0	0.15	19971218	2.62856	50.87500	333.84881	2.84939	0.1002472	2.7900435	22	3	1981–1997	0.85	M-v	4	Williams	30893	1981 EM_{24}

1981 EC_{27}	14.0	0.15	19971218	62.12078	253.54666	129.01246	1.44390	0.0900886	2.7146776	34	5	1981–1998	0.77	M-v	1	Williams	29653	1981 EC_{27}
1981 ER_{27}	15.5	0.15	19971218	36.12469	33.42875	1.74449	7.29901	0.1092272	2.3276476	21	5	1979–1997	0.76	M-v	2	Williams	29653	1981 ER_{27}
1981 EU_{33}	14.5	0.15	19971218	73.65789	105.42956	234.20826	5.69342	0.1355845	2.3544411	26	4	1977–1997	0.97	M-v	2	Williams	31003	1981 EU_{33}
1981 ES_{38}	14.5	0.15	19971218	43.76227	145.43386	198.10018	6.57561	0.1312562	2.3816969	19	3	1981–1997	0.85	M-v	4	Williams	28882	1981 ES_{38}
1981 EW_{38}	14.5	0.15	19971218	204.11715	304.21127	281.82329	4.11743	0.0620202	2.7498300	33	4	1969–1997	0.62	M-v	3	Williams	31003	1981 EW_{38}
1981 EG_{40}	15.0	0.15	19971218	53.65564	277.08021	147.23413	1.84838	0.2002023	3.2182948	23	5	1978–1997	0.69	M-v	2	Williams	30973	1981 EG_{40}
1981 ET_{42}	14.5	0.15	19971218	107.29164	327.29740	333.34813	1.80933	0.2051494	2.3782629	29	7	1977–1997	0.95	M-v	2	Williams	24911	1981 ET_{42}
1981 EJ_{43}	15.0	0.15	19971218	282.01773	210.19067	312.34443	2.34353	0.1175970	2.3143643	25	4	1981–1997	1.00	M-v	3	Williams	27909	1981 EJ_{43}
1981 JE_2	14.0	0.15	19971218	117.20211	244.06603	62.58865	3.01690	0.2079961	2.3912497	23	3	1981–1997	0.69	M-v	4	Williams	31003	1981 JE_2
1981 JS_2	14.5	0.15	19971218	129.47449	295.09326	0.14661	2.14650	0.2002578	2.3913240	36	6	1978–1997	0.67	M-v	1	Williams	29132	1981 JS_2
1981 QU_3	13.5	0.15	19971218	155.84265	151.03665	151.68441	10.29248	0.1767894	2.3964033	36	4	1981–1997	0.90	M-v	2	Williams	30287	1981 QU_3
1981 RQ_1	13.0	0.15	19971218	102.55757	195.71877	154.25093	2.53986	0.0926200	2.9009538	36	5	1955–1997	0.85	M-v	2	Williams	24116	1981 RQ_1
1981 SN	14.0	0.15	19971218	49.90304	155.90211	216.18003	5.17627	0.1570269	2.4835407	56	7	1981–1997	0.83	M-v	3	Williams	30893	1981 SN
1981 SC_7	13.5	0.15	19971218	4.06012	344.47700	40.50125	8.64823	0.2421689	2.5307233	30	6	1969–1997	0.79	M-v	3	Williams	31003	1981 SC_7
1982 FP_3	12.5	0.15	19971218	270.70643	142.57282	67.60001	2.30869	0.1330948	3.1741054	46	7	1977–1998	0.75	M-v	2	Williams	28314	1982 FP_3
1982 JB_2	14.5	0.15	19971218	350.72832	334.76864	106.43888	2.69271	0.0826056	2.2682628	31	3	1982–1997	0.88	M-v	3	Williams	30973	1982 JB_2
1982 KK_1	14.0	0.15	19971218	140.29531	204.72164	96.67691	4.97414	0.0980982	2.2739500	31	5	1982–1998	0.57	M-v	1	Williams	30893	1982 KK_1
1982 RK_1	14.5	0.15	19820908	33.36746	4.67979	296.77213	3.77921	0.2391911	2.4655045	6	1	2 days	0.99			Nakano	22271	1982 RK_1
1982 RW_1	15.0	0.15	19971218	119.50551	343.37687	11.30380	5.09887	0.1840281	2.3148457	52	6	1954–1998	0.70	M-v	2	Marsden	28883	1982 RW_1
1982 TL_2	14.0	0.15	19971218	34.29100	176.66630	257.85550	5.25896	0.1424025	2.3659697	20	5	1955–1997	0.84	M-v	2	Williams	27709	1982 TL_2
1982 UF_7	12.5	0.15	19971218	53.91603	146.62638	218.26907	8.20320	0.1645880	2.9102923	21	4	1982–1997	0.88	M-v	3	Williams	30468	1982 UF_7
1982 VP_3	12.5	0.15	19971218	142.68099	200.37188	61.79358	13.57868	0.0586947	2.9418589	17	2	1982–1997	0.77	M-v	5	Williams	31004	1982 VP_3
1982 YR_1	14.5	0.15	19971218	346.07808	46.79934	7.09154	5.93686	0.2175113	2.4574495	19	3	1982–1997	0.68	M-v	3	Williams	31004	1982 YR_1
1983 TC	13.0	0.15	19971218	85.28457	125.05219	229.26430	11.90242	0.1947940	2.6948935	32	4	1983–1998	0.84	M-v	2	Williams	28612	1983 TC
1983 UG	14.0	0.15	19971218	75.74747	301.74131	77.71887	5.78096	0.2219648	2.2538845	25	6	1966–1997	0.78	M-v	2	Williams	29132	1983 UG
1983 WM	14.0	0.15	19971218	337.75780	190.39638	253.44552	5.72368	0.0779267	2.3202612	41	3	1954–1997	0.89	M-v	4	Williams	31004	1983 WM
1983 WN	14.5	0.15	19971218	23.29329	110.80691	251.78593	9.32810	0.2490773	2.3308062	29	5	1951–1997	0.69	M-v	2	Williams	30893	1983 WN
1983 XC	14.0	0.15	19971218	41.45832	309.05373	84.44096	7.63119	0.1715306	2.2915337	24	4	1983–1997	0.94	M-v	2	Williams	29654	1983 XC
1984 BQ	13.0	0.15	19971218	225.95172	133.32774	52.74975	7.79234	0.0653183	2.3877182	27	4	1984–1997	0.89	M-v	3	Williams	31004	1984 BQ
1984 HR	14.0	0.15	19971218	237.38228	217.54319	16.48164	2.46608	0.1582334	2.3855247	31	4	1980–1997	0.63	M-v	2	Williams	30973	1984 HR
1984 SH	14.0	0.15	19971218	117.41592	176.30910	114.69964	2.82481	0.1723641	2.1554098	55	8	1978–1997	0.87	M-v	2	Williams	31004	1984 SH
1984 SY_5	12.0	0.15	19971218	86.82817	250.92350	117.45659	2.38722	0.1465784	3.2513632	47	4	1984–1997	0.57	M-v	3	Williams	28084	1984 SY_5
1984 SN_6	13.5	0.15	19971218	250.04811	129.35142	61.94978	3.29896	0.0880095	2.5613541	44	4	1984–1997	0.62	M-v	3	Williams	31004	1984 SN_6
1985 CS_2	14.0	0.15	19971218	192.90167	294.59306	295.43853	3.99155	0.0929253	2.2918996	45	4	1978–1997	0.75	M-v	2	Williams	31004	1985 CS_2
1985 FE_3	13.5	0.15	19971218	229.16369	139.76745	91.95246	7.95167	0.1873702	2.2568067	37	4	1985–1998	0.58	M-v	2	Williams	25225	1985 FE_3
1985 GP_1	13.5	0.15	19971218	148.54183	202.38503	98.54974	24.88396	0.1690931	2.3138055	15	3	1985–1997	0.68	M-v	4	Williams	27709	1985 GP_1
1985 RD	13.0	0.15	19971218	144.30106	316.25867	0.00813	1.39051	0.1789734	3.0379266	32	8	1949–1998	0.73	M-v	1	Williams	29655	1985 RD
1985 RG	14.5	0.15	19971218	74.88616	10.39472	10.89787	0.99688	0.2094625	2.4185542	33	4	1985–1997	0.86	M-v	1	Williams	29655	1985 RG
1985 RS_1	13.5	0.15	19971218	117.22549	312.48664	26.59108	2.68932	0.2172262	2.4026251	50	4	1970–1997	0.70	M-v	2	Williams	22076	1985 RS_1
1985 RD_2	14.0	0.15	19971218	83.12233	346.37984	343.72019	10.67906	0.2241927	2.4466969	15	4	1985–1997	0.98	M-v	3	Williams	24734	1985 RD_2
1985 RJ_3	12.5	0.15	19971218	156.51653	92.88379	174.09282	1.84137	0.1373021	3.1080962	45	4	1969–1998	0.69	M-v	3	Williams	31004	1985 RJ_3
1985 RR_3	12.5	0.15	19971218	159.24949	145.01232	170.48491	10.93486	0.0922426	3.0025142	29	5	1985–1997	0.41	M-v	1	Williams	29940	1985 RR_3
1985 RN_4	16.0	0.15	19971218	129.84588	288.70726	53.32511	2.39847	0.3122492	2.3804384	26	2	1985–1996	0.51	M-v	5	Williams	28295	1985 RN_4
1985 RM_6	13.0	0.15	19971218	60.37673	147.48015	220.53178	0.17536	0.1785174	3.1804923	16	6	1951–1997	0.96	M-v	2	Williams	22683	1985 RM_6
1985 UJ_3	14.5	0.15	19971218	196.79593	222.11960	107.87662	1.26894	0.2412646	2.3180054	23	4	1978–1998	0.73	M-v	4	Williams	22077	1985 UJ_3
1985 UQ_4	13.0	0.15	19971218	39.95507	258.89867	125.00802	2.70445	0.1271496	3.2529474	34	4	1985–1997	0.85	M-v	2	Williams	31004	1985 UQ_4
1986 EJ_1	13.0	0.15	19971218	242.24830	230.01374	11.77562	15.59296	0.1541461	2.6084011	22	4	1969–1997	0.74	M-v	2	Williams	31004	1986 EJ_1
1986 PM	13.5	0.15	19971218	140.45326	334.89475	297.58304	5.27133	0.1731050	2.2789641	22	4	1986–1998	0.88	M-v	2	Williams	30893	1986 PM
1986 QQ	13.5	0.15	19971218	7.82775	85.46267	359.07267	4.32653	0.1485029	2.2804060	103	10	1950–1998	0.66	M-v	1	Williams	29655	1986 QQ
1986 QT	14.0	0.15	19971218	184.83746	162.73524	122.38234	2.82999	0.1587473	2.2232381	58	7	1986–1998	0.64	M-v	1	Williams	28315	1986 QT
1986 QG_1	15.0	0.15	19971218	206.87445	88.58773	111.79154	4.57294	0.0141580	2.3206832	38	3	1986–1997	0.86	M-v	4	Williams	22077	1986 QG_1
1986 QG_2	15.5	0.15	19971218	65.50100	202.56794	132.93033	4.63876	0.2686359	2.3250990	43	4	1986–1997	0.72	M-v	1	Williams	27119	1986 QG_2
1986 QH_2	13.0	0.15	19971218	354.44677	308.15254	129.55561	7.25419	0.0637912	2.2895694	36	3	1986–1997	0.47	M-v	3	Williams	30893	1986 QH_2

1986 QA_3	14.0	0.15	19971218	182.20266	191.58880	97.00048	1.55036	0.1316387	2.2258796	51	6	1973–1997	0.90	M-v	2	Williams	27932	1986 QA_3
1986 TC	14.5	0.15	19971218	76.00665	357.99839	349.82638	5.64538	0.1525178	2.3198522	40	5	1954–1997	0.83	M-v	1	Williams	29655	1986 TC
1986 VR_5	14.0	0.15	19971218	357.76837	177.22038	267.44174	5.77055	0.0927589	2.3525308	24	5	1986–1997	0.84	M-v	2	Williams	31004	1986 VR_5
1986 VM_6	15.0	0.15	19971218	47.92955	324.46365	43.14658	4.11366	0.2232055	2.3555533	38	3	1986–1997	0.68	M-v	4	Williams	30974	1986 VM_6
1987 BU_1	15.0	0.15	19971218	346.57199	211.92873	241.40902	3.42080	0.1733858	2.4213486	36	3	1987–1998	0.77	M-v	4	Williams	30974	1987 BU_1
1987 DW_6	12.5	0.15	19971218	311.28038	180.39655	22.23099	1.55752	0.1498858	3.1535088	54	8	1951–1997	0.51	M-v	1	Williams	29940	1987 DW_6
1987 HK	13.5	0.15	19971218	165.18943	338.40192	313.18765	1.05175	0.0860021	2.5555953	32	6	1982–1998	0.94	M-v	2	Williams	30288	1987 HK
1987 MA_1	13.5	0.15	19971218	129.88277	131.77501	152.49757	12.20516	0.2710318	2.6820958	23	5	1987–1997	0.59	M-v	2	Williams	28085	1987 MA_1
1987 QM	13.0	0.15	19971218	69.37832	11.36200	334.52071	17.12532	0.2737678	2.8012605	18	3	1987–1997	0.73	M-v	3	Williams	21971	1987 QM
1987 RT_5	14.5	0.15	19971218	136.17304	194.79191	119.52214	3.00467	0.1833896	2.1311400	32	6	1981–1998	0.70	M-v	2	Williams	27324	1987 RT_5
1987 SU_1	14.5	0.15	19971218	31.76945	122.12348	254.74657	6.02158	0.1331983	2.2092189	30	4	1954–1997	0.71	M-v	2	Williams	31004	1987 SU_1
1987 SF_5	15.0	0.15	19971218	14.88147	74.46088	325.57733	3.23635	0.1477379	2.2151392	30	3	1987–1997	0.68	M-v	3	Williams	31004	1987 SF_5
1987 SQ_{10}	13.5	0.15	19971218	315.46343	15.02010	125.57175	5.24010	0.0478939	2.7558963	37	7	1987–1997	0.95	M-v	1	Williams	29655	1987 SQ_{10}
1987 SG_{13}	14.5	0.15	19971218	352.17684	28.08622	22.43795	4.72345	0.1138777	2.2210480	35	5	1954–1997	0.77	M-v	2	Williams	30894	1987 SG_{13}
1987 YC_1	13.5	0.15	19971218	62.33779	242.87930	124.67702	0.46116	0.0535905	2.9595692	23	3	1987–1998	0.64	M-v	5	Williams	31004	1987 YC_1
1988 AA_2	14.0	0.15	19971218	319.83729	356.81575	92.42137	5.32502	0.1676406	2.3072881	31	3	1988–1997	0.62	M-v	2	Williams	30894	1988 AA_2
1988 BX	13.5	0.15	19971218	23.12518	119.24498	290.96876	19.00076	0.0673891	1.8695299	59	4	1988–1998	0.50	M-v	2	Williams	31004	1988 BX
1988 CP_1	13.5	0.15	19971218	45.35292	290.30335	135.42481	2.98098	0.0806910	2.9056958	33	4	1988–1997	0.85	M-v	2	Williams	28883	1988 CP_1
1988 CE_2	14.0	0.15	19971218	53.10052	57.78747	307.69924	6.45382	0.1492087	2.2816675	25	4	1978–1997	0.69	M-v	3	Williams	25327	1988 CE_2
1988 CT_4	12.5	0.15	19971218	212.41030	62.69539	198.47351	9.40183	0.0565837	3.0187978	24	4	1980–1997	0.40	M-v	1	Williams	28071	1988 CT_4
1988 DH_1	14.0	0.15	19971218	292.59894	50.66174	151.48785	6.58469	0.1122626	2.2423046	18	5	1951–1998	0.91	M-v	2	Williams	25328	1988 DH_1
1988 ER_1	14.0	0.15	19971218	177.62102	239.44263	27.31239	7.15826	0.0944357	2.3497976	22	6	1975–1997	0.77	M-v	2	Williams	29941	1988 ER_1
1988 FW_2	14.0	0.15	19971218	306.75913	289.31670	201.52510	6.11681	0.0660288	2.3306774	36	4	1988–1997	0.92	M-v	2	Williams	30894	1988 FW_2
1988 JB_1	14.0	0.15	19971218	266.84952	83.94228	149.91867	20.06419	0.4000264	3.1385291	48	4	1988–1998	0.78	M-v	2	Marsden	29133	1988 JB_1
1988 QB	13.0	0.15	19971218	55.44058	240.22471	153.12054	9.19707	0.2092170	2.5565432	31	7	1964–1997	0.84	M-v	1	Williams	29133	1988 QB
1988 RX_2	13.0	0.15	19971218	47.71183	235.48122	135.50564	0.40502	0.1094367	2.6657372	27	2	1988–1997	0.62	M-v	4	Williams	31004	1988 RX_2
1988 RV_4	14.0	0.15	19971218	65.34471	22.05810	303.41689	1.64163	0.1793589	2.6586150	64	3	1988–1997	0.72	M-v	3	Williams	30974	1988 RV_4
1988 RJ_6	15.0	0.15	19971218	157.11260	70.13349	326.50529	4.20288	0.2381386	2.3814196	36	2	1988–1997	0.59	M-v	4	Williams	30755	1988 RJ_6
1988 RJ_{13}	14.0	0.15	19971218	146.61046	241.66100	37.60666	14.43871	0.0713002	2.5811913	21	5	1971–1997	0.83	M-v	1	Williams	29134	1988 RJ_{13}
1988 SC	13.5	0.15	19971218	26.29182	70.15345	0.65233	12.97474	0.1553710	2.5696654	33	5	1951–1997	1.04	M-v	1	Williams	23348	1988 SC
1988 SN_1	14.0	0.15	19971218	226.24080	210.47619	114.80357	7.55167	0.1651033	2.3434513	20	3	1988–1997	0.89	M-v	3	Williams	28842	1988 SN_1
1988 SU_2	14.0	0.15	19971218	225.88821	88.99201	120.26925	2.68900	0.0193119	2.5925362	33	4	1988–1997	0.78	M-v	1	Williams	31004	1988 SU_2
1988 SZ_2	13.0	0.15	19971218	210.42345	80.69391	124.45064	2.99297	0.0353056	3.9755700	34	5	1981–1997	0.79	M-v	1	Williams	30894	1988 SZ_2
1988 SF_3	13.5	0.15	19971218	341.85363	44.92772	58.01694	16.02697	0.0937712	2.5768148	23	3	1988–1997	0.69	M-v	3	Williams	25439	1988 SF_3
1988 VQ_3	13.5	0.15	19971218	309.86952	269.76079	230.36193	11.71347	0.1171626	2.6988661	14	2	1988–1998	0.87	M-v	5	Williams	30975	1988 VQ_3
1988 VS_3	13.0	0.15	19971218	68.99684	110.24625	246.30271	10.30901	0.2169168	2.6804738	35	5	1979–1998	0.98	M-v	2	Williams	27727	1988 VS_3
1988 VM_5	14.5	0.15	19971218	0.83871	268.35057	120.04904	2.20773	0.2731870	2.7675429	19	3	1988–1997	0.86	M-v	3	Williams	30975	1988 VM_5
1988 VS_6	13.0	0.15	19971218	36.79066	211.71752	209.46751	4.90319	0.2386238	3.9522141	37	3	1988–1997	0.72	M-v	3	Williams	29941	1988 VS_6
1989 GC_4	13.5	0.15	19971218	221.04063	322.85238	273.98972	1.08484	0.0691095	2.9419777	39	8	1951–1998	0.68	M-v	1	Williams	29941	1989 GC_4
1989 GQ_4	14.5	0.15	19971218	201.67184	40.88093	187.62918	4.88939	0.0933684	2.2217837	20	4	1979–1997	0.81	M-v	2	Williams	23972	1989 GQ_4
1989 JF	13.5	0.15	19971218	203.80764	281.15795	0.68205	4.43780	0.1697500	2.1819785	27	5	1989–1997	0.73	M-v	2	Williams	28085	1989 JF
1989 SG	13.0	0.15	19971218	22.07319	81.82241	357.02145	6.66654	0.1505296	2.3855561	30	6	1934–1998	0.82	M-v	1	Williams	28884	1989 SG
1989 SX	14.5	0.15	19971218	3.01641	354.81128	27.91746	6.68595	0.3017664	2.5573758	69	4	1989–1997	0.92	M-v	2	Williams	30894	1989 SX
1989 SB_4	15.0	0.15	19971218	41.45953	343.88949	121.58941	4.08241	0.1724728	2.3315692	25	2	1989–1996	0.94	M-v	6	Williams	28296	1989 SB_4
1989 TC	14.0	0.15	19971218	59.34286	11.51214	2.31857	23.85466	0.0448487	1.8829043	22	3	1989–1997	0.86	M-v	4	Williams	31005	1989 TC
1989 TL_{15}	14.0	0.15	19971218	347.00793	87.53368	322.61077	1.42409	0.1503661	2.5252786	34	7	1969–1997	0.80	M-v	3	Williams	30894	1989 TL_{15}
1989 UA	12.5	0.15	19971218	350.44983	7.10142	45.59891	10.77222	0.0979402	2.5456015	45	5	1954–1997	0.69	M-v	2	Williams	30894	1989 UA
1989 UL_1	12.5	0.15	19971218	47.63526	293.80138	44.59951	10.25845	0.1123670	2.5594674	40	5	1971–1997	0.83	M-v	3	Williams	30894	1989 UL_1
1989 UN_1	14.5	0.15	19971218	1.48938	184.75140	213.78057	4.80428	0.2849852	2.5497381	26	4	1985–1997	0.88	M-v	3	Williams	30781	1989 UN_1
1989 UB_3	14.0	0.15	19971218	328.65247	19.61507	61.46609	5.42434	0.2585779	2.5708295	54	4	1989–1997	0.89	M-v	3	Williams	31005	1989 UB_3
1989 VA	17.5	0.15	19971218	187.24660	2.78738	225.65404	28.78557	0.5947055	0.7286728	127	5	1989–1998	0.66	M-v	3	Marsden	31005	1989 VA
1989 VQ	13.5	0.15	19971218	82.50726	291.39451	65.02963	2.66695	0.2209929	2.4192604	22	5	1974–1997	0.72	M-v	2	Williams	29134	1989 VQ
1989 WU_1	13.5	0.15	19971218	33.91487	110.77245	227.15830	9.93694	0.2789223	2.5893635	41	3	1972–1997	1.03	M-v	2	Williams	30781	1989 WU_1

1989 WC_2	13.5	0.15	19971218	340.75968	19.54346	64.92205	9.31283	0.1739403	2.5577651	36	5	1982–1997	1.02	M-v	3	Williams	25339	1989 WC_2
1989 WH_3	13.5	0.15	19971218	17.50283	347.58945	36.97910	1.20584	0.2059515	2.5650940	21	4	1989–1997	0.87	M-v	4	Williams	25080	1989 WH_3
1989 YF_1	14.0	0.15	19971218	346.80843	197.79338	284.92270	8.95854	0.0838541	2.5321248	17	4	1988–1997	0.76	M-v	4	Williams	31005	1989 YF_1
1989 YA_2	14.0	0.15	19971218	349.23825	201.06911	280.04966	5.32359	0.1787658	2.5294035	34	5	1980–1997	0.76	M-v	3	Williams	31005	1989 YA_2
1989 YP_5	13.5	0.15	19971218	72.90547	224.07111	127.09190	5.64882	0.1271187	2.5590197	26	4	1982–1997	0.78	M-v	4	Williams	21973	1989 YP_5
1990 BZ	13.5	0.15	19971218	42.69715	106.93820	310.50280	14.32996	0.0831597	2.5350687	24	6	1982–1997	0.75	M-v	2	Williams	27933	1990 BZ
1990 BH_1	13.0	0.15	19971218	281.41233	87.20051	71.14389	5.62962	0.1535717	2.6377996	32	5	1950–1997	0.73	M-v	3	Williams	31005	1990 BH_1
1990 FD_1	12.0	0.15	19971218	289.14885	76.17578	104.90683	14.13153	0.1168011	2.6465429	29	7	1954–1998	0.55	M-v	1	Williams	25538	1990 FD_1
1990 FM_1	12.5	0.15	19971218	263.98854	41.95500	121.88229	8.21265	0.1647383	2.7941289	23	5	1976–1997	0.89	M-v	2	Williams	27728	1990 FM_1
1990 JN_1	13.5	0.15	19971218	209.45807	29.11589	239.30197	1.21755	0.0169725	2.8303033	20	5	1953–1997	0.77	M-v	1	Williams	30781	1990 JN_1
1990 OH_1	12.0	0.15	19971218	119.45407	39.87544	239.38128	27.46335	0.2966378	3.1316916	28	3	1990–1997	0.77	M-v	3	Williams	31005	1990 OH_1
1990 OD_2	15.5	0.15	19971218	49.13962	283.44386	47.66536	6.70896	0.1842749	2.2709691	26	2	1990–1997	0.69	M-v	4	Williams	30975	1990 OD_2
1990 QJ_1	14.0	0.15	19971218	46.62388	53.22327	323.82007	4.58993	0.1630921	2.2262593	30	7	1976–1997	0.87	M-v	2	Williams	27933	1990 QJ_1
1990 QM_1	13.0	0.15	19971218	67.56064	245.79345	147.28417	2.52628	0.1784227	3.1775768	43	3	1990–1997	0.80	M-v	3	Williams	30781	1990 QM_1
1990 QJ_2	15.5	0.15	19971218	52.38157	0.84887	34.23651	1.55017	0.1592595	2.1919931	26	3	1990–1997	0.51	M-v	4	Williams	31005	1990 QJ_2
1990 QW_{17}	13.5	0.15	19971218	36.06859	70.80954	288.79341	4.66337	0.2114116	2.2637716	20	3	1990–1997	0.61	M-v	3	Williams	30895	1990 QW_{17}
1990 RO_2	15.0	0.15	19971218	138.55556	328.60437	309.45456	3.76698	0.1267872	2.2067799	26	4	1990–1997	0.68	M-v	2	Williams	28885	1990 RO_2
1990 RW_4	12.0	0.15	19971218	154.42521	344.63084	303.11482	4.18822	0.1489672	3.1724870	13	3	1990–1997	0.69	M-v	5	Williams	28072	1990 RW_4
1990 RR_5	14.0	0.15	19971218	28.38966	175.23365	210.07483	1.67560	0.1437548	2.2645388	35	4	1973–1997	0.65	M-v	2	Williams	31005	1990 RR_5
1990 RM_7	14.0	0.15	19900817	19.07147	276.14784	38.61507	1.27778	0.1520959	3.1222779	18	1	30 days	0.68		D	Williams		1990 RM_7
1990 RQ_8	14.0	0.15	19971218	128.50146	320.05981	8.23593	1.30103	0.1776284	3.1321150	31	3	1990–1998	0.45	M-v	4	Williams	23515	1990 RQ_8
1990 SA_2	14.5	0.15	19971218	46.84020	7.44851	359.36449	1.43174	0.1322941	2.2740338	35	6	1983–1997	1.02	M-v	2	Williams	31005	1990 SA_2
1990 SG_3	14.0	0.15	19971218	59.98995	197.48242	131.19056	4.04514	0.1906310	2.2874394	20	5	1983–1997	0.89	M-v	2	Williams	31005	1990 SG_3
1990 SM_7	15.0	0.15	19971218	300.22074	85.47118	45.08309	6.08644	0.0980400	2.2277876	27	3	1990–1997	0.74	M-v	4	Williams	30975	1990 SM_7
1990 SU_8	15.0	0.15	19971218	119.30994	141.86064	154.23663	6.40350	0.2083765	2.2065331	14	3	1980–1997	0.66	M-v	4	Williams	18298	1990 SU_8
1990 SF_9	13.0	0.15	19971218	133.50478	288.09238	34.30895	5.68573	0.1642031	3.1446644	24	4	1979–1997	0.79	M-v	2	Williams	29316	1990 SF_9
1990 SB_{11}	15.0	0.15	19971218	76.45142	81.92804	284.98570	4.45878	0.1744514	2.1955045	29	3	1990–1998	0.77	M-v	4	Williams	24103	1990 SB_{11}
1990 SA_{15}	13.5	0.15	19971218	352.02655	158.60350	252.45886	4.49171	0.1343163	2.2810208	22	3	1990–1997	0.57	M-v	3	Williams	31005	1990 SA_{15}
1990 SN_{28}	14.5	0.15	19971218	66.61698	321.44862	0.25921	2.19437	0.1640182	2.3003132	30	4	1983–1997	0.80	M-v	4	Williams	30975	1990 SN_{28}
1990 TO	14.0	0.15	19971218	49.58112	287.47648	69.94014	5.63387	0.1901358	2.2763286	28	4	1989–1997	1.04	M-v	3	Williams	27567	1990 TO
1990 TX	14.0	0.15	19971218	6.50696	298.62538	76.01249	4.46862	0.2666714	2.3409288	45	4	1965–1997	0.65	M-v	2	Williams	30895	1990 TX
1990 TE_9	13.5	0.15	19971218	75.29691	344.44314	326.05290	4.36379	0.1477956	2.3026271	31	2	1990–1997	0.71	M-v	6	Williams	30976	1990 TE_9
1990 UL_1	14.5	0.15	19971218	43.24641	285.61598	106.52853	4.51121	0.1754795	2.2590178	41	5	1989–1998	0.88	M-v	2	Williams	29658	1990 UL_1
1990 UL_2	13.5	0.15	19971218	55.57792	352.35863	63.03596	5.40637	0.1288428	2.2072378	23	5	1988–1998	0.76	M-v	2	Williams	29658	1990 UL_2
1990 UN_2	14.5	0.15	19971218	64.00647	278.11372	54.08358	6.06477	0.0944603	2.3288048	32	3	1990–1997	0.83	M-v	4	Williams	27307	1990 UN_2
1990 UB_3	15.0	0.15	19971218	352.37022	99.69508	353.79466	2.39811	0.1651848	2.2711672	31	3	1990–1997	0.68	M-v	4	Williams	31005	1990 UB_3
1990 VX_3	13.5	0.15	19971218	278.97934	110.41480	38.72721	3.18406	0.1804861	2.3339962	27	8	1982–1997	1.06	M-v	2	Marsden	29658	1990 VX_3
1990 VW_6	14.0	0.15	19971218	81.57669	235.48060	88.91731	3.99887	0.1775908	2.2766820	30	4	1990–1997	0.68	M-v	3	Williams	31005	1990 VW_6
1990 VR_8	14.0	0.15	19971218	324.64255	87.67484	87.08567	3.81797	0.0950805	2.1498239	26	6	1949–1997	0.73	M-v	2	Williams	30895	1990 VR_8
1990 WS	16.0	0.15	19971218	354.75421	208.76192	177.86617	6.47297	0.1074518	2.3857450	22	4	1986–1997	0.50	M-v	2	Williams	30976	1990 WS
1990 WE_2	14.0	0.15	19971218	354.01474	90.68997	202.43032	13.18238	0.2104962	2.5909301	22	5	1955–1997	0.85	M-v	1	Williams	22404	1990 WE_2
1990 YM	12.5	0.15	19971218	301.33950	38.55849	103.87428	24.36788	0.2507083	2.3891867	46	5	1990–1997	0.67	M-v	2	Williams	27567	1990 YM
1991 AV_2	14.5	0.15	19971218	284.95645	188.69680	319.61971	1.56941	0.1450948	2.4176908	42	3	1991–1997	0.73	M-v	4	Williams	30895	1991 AV_2
1991 CP_1	14.5	0.15	19971218	307.50082	7.80468	112.53991	5.09157	0.1292705	2.4315229	29	3	1991–1997	0.81	M-v	4	Williams	31006	1991 CP_1
1991 DM	14.0	0.15	19971218	311.99423	25.48125	133.37020	1.34206	0.1487636	2.3680594	26	4	1991–1998	0.62	M-v	2	Williams	27934	1991 DM
1991 EA	13.5	0.15	19971218	292.71094	152.47225	350.46062	6.28530	0.0764440	2.4617259	48	5	1955–1997	0.75	M-v	2	Williams	31006	1991 EA
1991 FL	14.0	0.15	19971218	297.35303	283.47675	261.82925	1.35062	0.1433719	2.3884344	35	5	1987–1998	0.69	M-v	1	Williams	27934	1991 FL
1991 FS_1	14.5	0.15	19971218	240.48666	178.55728	51.54109	0.41576	0.1523031	2.4212709	34	6	1954–1998	0.69	M-v	1	Williams	28885	1991 FS_1
1991 FX_2	12.5	0.15	19971218	31.83774	1.81299	18.28780	13.26272	0.1704089	2.5876734	25	3	1991–1997	0.63	M-v	4	Williams	31006	1991 FX_2
1991 GR	11.5	0.15	19971218	58.44502	0.41863	19.43621	15.60144	0.1222196	2.5639299	47	7	1953–1998	0.61	M-v	1	Williams	28085	1991 GR
1991 GC_1	14.0	0.15	19971218	212.72298	222.29601	14.97556	13.83547	0.2086715	2.5340677	43	4	1991–1997	1.04	M-v	2	Williams	28886	1991 GC_1
1991 GH_3	13.5	0.15	19971218	325.86223	189.39616	255.04477	0.95021	0.1366197	2.5639386	34	5	1989–1997	0.89	M-v	2	Williams	30895	1991 GH_3
1991 GQ_3	13.5	0.15	19971218	321.88654	236.71768	200.11836	12.07771	0.1484083	2.5991406	22	3	1991–1997	1.02	M-v	4	Williams	28614	1991 GQ_3

1991 GY_3	15.0	0.15	19971218	315.78306	149.02383	18.66428	2.82442	0.1260796	2.3931780	37	3	1991–1998	0.53	M-v	4	Williams	28085	1991 GY_3
1991 GN_9	15.5	0.15	19971218	31.70687	24.86388	88.46601	1.82593	0.1529230	2.3191700	22	2	1991–1996	0.97	M-v	6	Williams	29914	1991 GN_9
1991 JJ	12.5	0.15	19971218	211.44796	165.60390	62.73924	14.13231	0.1266836	2.5936743	27	5	1976–1997	0.88	M-v	2	Williams	31006	1991 JJ
1991 LQ	13.0	0.15	19971218	176.16643	204.27150	94.29935	15.23092	0.1501264	2.5787029	13	3	1991–1997	0.71	M-v	4	Williams	28072	1991 LQ
1991 LW	13.5	0.15	19971218	241.00422	116.47935	91.18026	12.13954	0.1813523	2.5695193	45	5	1954–1997	0.84	M-v	2	Williams	26420	1991 LW
1991 NZ_6	13.0	0.15	19971218	20.37017	285.05786	117.91885	4.39584	0.1528180	2.8916126	40	4	1991–1997	0.75	M-v	1	Williams	30977	1991 NZ_6
1991 PO_4	12.5	0.15	19971218	357.25428	228.31315	155.26799	2.07069	0.1962512	3.1754899	23	5	1969–1997	0.83	M-v	1	Williams	31006	1991 PO_4
1991 PE_5	12.5	0.15	19971218	263.55481	276.60028	245.38568	1.21813	0.0093692	2.8754941	52	6	1980–1997	0.82	M-v	1	Williams	31006	1991 PE_5
1991 PG_5	13.5	0.15	19971218	74.78325	130.04014	225.81646	0.95495	0.0684281	2.8769191	28	3	1991–1998	0.79	M-v	4	Williams	28086	1991 PG_5
1991 PO_5	14.5	0.15	19971218	4.88660	118.59832	249.37437	0.58348	0.1711048	3.1942926	26	3	1991–1997	0.56	M-v	4	Williams	30977	1991 PO_5
1991 PN_7	13.0	0.15	19971218	11.37678	21.76022	54.12557	2.81216	0.0321376	2.8294858	33	6	1951–1997	0.80	M-v	1	Williams	28614	1991 PN_7
1991 PG_{16}	13.5	0.15	19971218	36.50944	252.91264	111.18893	2.60050	0.2913491	3.1616423	19	4	1980–1997	0.78	M-v	2	Williams	30977	1991 PG_{16}
1991 PV_{17}	14.5	0.15	19971218	214.56531	317.73965	74.75412	3.02552	0.1932772	2.3976843	14	3	1971–1996	0.62	M-v	3	Williams	31006	1991 PV_{17}
1991 RR_1	12.0	0.15	19971218	87.59077	94.83997	230.16886	9.45243	0.1402814	3.0528993	28	2	1991–1997	0.82	M-v	4	Williams	31006	1991 RR_1
1991 RP_2	12.5	0.15	19971218	168.69085	47.86682	213.10733	9.40172	0.0554252	3.0013957	49	4	1989–1997	0.63	M-v	1	Williams	30896	1991 RP_2
1991 RK_5	12.5	0.15	19971218	91.98709	319.71577	13.22054	10.85420	0.1182243	3.0305411	31	4	1933–1997	0.80	M-v	2	Williams	28614	1991 RK_5
1991 RS_7	14.0	0.15	19971218	190.01438	180.12224	108.43606	8.51705	0.1128010	2.7561626	16	2	1991–1997	0.64	M-v	4	Williams	30977	1991 RS_7
1991 RZ_8	13.0	0.15	19971218	199.15927	280.05108	350.10228	1.38893	0.0272281	2.8579949	15	4	1991–1997	0.47	M-v	2	Williams	28585	1991 RZ_8
1991 RB_{11}	13.5	0.15	19971218	29.57892	240.30816	158.17796	1.53715	0.1448184	3.1191167	41	6	1975–1997	0.60	M-v	1	Williams	31006	1991 RB_{11}
1991 RB_{12}	13.5	0.15	19971218	59.80661	83.18905	320.06743	12.75095	0.1699283	2.8099867	36	3	1991–1997	0.71	M-v	3	Williams	28615	1991 RB_{12}
1991 RD_{12}	14.0	0.15	19971218	38.90879	284.33700	127.15033	3.34770	0.1164877	2.8345962	29	5	1953–1998	0.76	M-v	1	Williams	23349	1991 RD_{12}
1991 RT_{17}	12.5	0.15	19971218	85.43863	54.46676	259.50164	1.53205	0.1438894	3.0729750	45	4	1953–1997	0.66	M-v	2	Williams	30977	1991 RT_{17}
1991 SV	12.5	0.15	19971218	84.91697	313.44469	71.44897	10.26049	0.0864924	2.8110295	18	4	1991–1997	0.62	M-v	1	Williams	23349	1991 SV
1991 SC_1	12.5	0.15	19971218	80.61726	289.95525	42.68472	10.42382	0.0923432	3.0246865	34	4	1981–1997	0.68	M-v	2	Williams	31006	1991 SC_1
1991 TQ	13.0	0.15	19971218	122.31850	241.51122	68.57577	6.76412	0.1209729	2.9998275	20	6	1950–1997	0.68	M-v	1	Williams	25538	1991 TQ
1991 TP_1	14.0	0.15	19971218	0.39597	82.37494	234.27760	3.79226	0.2158521	2.2045973	47	4	1991–1997	0.74	M-v	3	Williams	30290	1991 TP_1
1991 TT_{13}	12.5	0.15	19971218	311.30524	245.39932	279.95131	11.60186	0.1376833	3.1050056	36	5	1991–1998	0.72	M-v	1	Williams	28886	1991 TT_{13}
1991 UK_3	12.5	0.15	19971218	350.65606	268.76375	222.91423	13.44500	0.2558005	3.1020727	28	6	1988–1998	0.59	M-v	1	Williams	29660	1991 UK_3
1991 VE	18.5	0.15	19971218	185.31937	193.42540	62.10631	7.22463	0.6644876	0.8907739	72	2	1991–1998	0.69	M-v	5	Williams	30978	1991 VE
1991 VH	16.5	0.15	19971218	53.24623	207.05751	139.48567	13.91652	0.1438463	1.1365704	188	2	1991–1997	0.55	M-v	2	Marsden	30470	1991 VH
1991 VX_2	12.5	0.15	19971218	65.29527	66.05676	303.19654	4.41355	0.1507283	3.1770738	15	3	1991–1998	0.95	M-v	5	Williams	21944	1991 VX_2
1991 VW_8	14.0	0.15	19971218	83.16101	194.03795	149.72655	2.13872	0.1560344	3.1278750	35	6	1990–1997	0.72	M-v	1	Williams	30470	1991 VW_8
1991 VB_9	13.5	0.15	19971218	8.28744	314.09196	95.32693	2.88290	0.1178230	3.2572603	38	4	1979–1997	0.79	M-v	3	Williams	30978	1991 VB_9
1992 AB	14.0	0.15	19971218	344.11723	55.60993	88.90043	40.75549	0.5526004	3.2875593	96	6	1992–1998	0.60	M-v	1	Williams	31006	1992 AB
1992 DJ_4	14.5	0.15	19971218	132.12168	229.35069	7.21332	6.59840	0.0892021	2.3685562	33	3	1992–1997	0.53	M-v	3	Williams	30978	1992 DJ_4
1992 DN_6	13.0	0.15	19971218	67.77679	185.05933	136.95913	3.12522	0.2407699	2.3653640	30	4	1986–1997	0.61	M-v	2	Marsden	31006	1992 DN_6
1992 DF_{10}	14.0	0.15	19971218	357.94271	178.44229	214.55742	4.96107	0.1585498	2.2725977	10	4	1980–1997	0.73	M-v	2	Williams	30656	1992 DF_{10}
1992 EK_1	13.5	0.15	19971218	215.55308	282.27407	334.24579	6.14627	0.1017125	2.1781135	31	6	1990–1998	0.77	M-v	1	Williams	30896	1992 EK_1
1992 EJ_4	14.5	0.15	19971218	219.65887	150.97638	104.69214	2.31309	0.1125384	2.1417365	26	5	1990–1997	0.69	M-v	2	Williams	30290	1992 EJ_4
1992 EB_8	15.0	0.15	19971218	25.51604	240.98082	165.28178	1.21356	0.1207536	2.1830408	25	4	1987–1997	0.85	M-v	3	Williams	31006	1992 EB_8
1992 EY_9	15.5	0.15	19971218	144.37286	290.30336	317.96337	2.61297	0.0771749	2.3324599	30	2	1992–1998	0.60	M-v	5	Williams	30978	1992 EY_9
1992 ED_{17}	14.5	0.15	19971218	132.95914	261.96876	58.68554	0.64801	0.1650361	2.2008740	31	6	1970–1998	0.84	M-v	2	Williams	28615	1992 ED_{17}
1992 FD_1	14.0	0.15	19971218	229.23336	175.16843	25.94108	4.21340	0.1201541	2.2772539	17	2	1992–1997	0.64	M-v	5	Williams	30872	1992 FD_1
1992 FS_1	13.5	0.15	19971218	185.34655	172.58681	104.74635	7.14852	0.1732305	2.2620040	22	4	1989–1998	0.71	M-v	2	Williams	25227	1992 FS_1
1992 GB_2	15.0	0.15	19971218	271.27722	312.33461	209.72016	3.68912	0.0848676	2.2798619	29	2	1992–1997	0.68	M-v	5	Williams	30978	1992 GB_2
1992 GM_4	14.0	0.15	19971218	80.26261	127.10242	213.04320	5.70711	0.1352966	2.3868901	30	3	1992–1997	0.61	M-v	4	Williams	31006	1992 GM_4
1992 GO_4	14.5	0.15	19971218	254.91518	349.08455	199.57275	2.70970	0.1197754	2.2712992	26	3	1992–1997	0.72	M-v	4	Williams	27935	1992 GO_4
1992 HG_4	13.5	0.15	19971218	129.22051	79.07599	216.22964	1.14666	0.2218781	2.3959674	36	6	1959–1997	0.77	M-v	1	Williams	31006	1992 HG_4
1992 HL_4	14.0	0.15	19971218	210.28586	207.33083	24.19941	8.21309	0.1401043	2.2885852	21	5	1979–1997	0.69	M-v	2	Williams	30896	1992 HL_4
1992 HY_6	15.0	0.15	19971218	231.76688	164.21254	90.14857	4.97995	0.1451872	2.1934796	16	3	1976–1997	0.34	M-v	5	Williams	30450	1992 HY_6
1992 JD_3	14.5	0.15	19971218	248.06178	158.94920	48.20611	6.63326	0.1125850	2.2677297	29	6	1971–1997	1.03	M-v	2	Williams	30896	1992 JD_3
1992 JQ_3	14.5	0.15	19971218	238.24089	345.48484	267.94138	2.52335	0.1551247	2.1919653	28	5	1979–1997	0.81	M-v	2	Williams	27729	1992 JQ_3
1992 LN	13.5	0.15	19971218	210.07223	123.78200	88.74853	7.42292	0.0647962	2.3807378	44	4	1992–1997	0.59	M-v	2	Williams	30896	1992 LN

1992 NP	12.5	0.15	19971218	62.24572	51.43052	298.17396	11.91107	0.1981006	2.6070396	26	7	1950–1997	0.92	M-v	1	Williams	27935	1992 NP
1992 PX	15.0	0.15	19971218	133.07273	210.37045	161.56399	4.54087	0.1278010	2.3508885	31	4	1980–1998	0.87	M-v	2	Williams	29660	1992 PX
1992 PJ_2	14.5	0.15	19971218	166.83022	82.83612	212.04166	5.60831	0.3178616	2.4147543	24	4	1988–1997	0.60	M-v	2	Williams	31006	1992 PJ_2
1992 RZ	13.0	0.15	19971218	307.04268	162.56798	280.49854	0.94961	0.0278571	2.8799573	24	3	1978–1997	0.64	M-v	4	Williams	30896	1992 RZ
1992 RV_1	14.0	0.15	19971218	355.74451	147.91727	317.12319	3.93806	0.2275977	2.5943071	20	4	1976–1997	0.63	M-v	2	Williams	24583	1992 RV_1
1992 RA_4	15.0	0.15	19971218	231.81024	270.58462	333.10866	1.65903	0.1723406	2.4002825	21	5	1978–1997	0.75	M-v	1	Williams	28615	1992 RA_4
1992 RK_7	14.0	0.15	19971218	210.80212	111.13695	112.34017	4.62921	0.0343420	2.6282384	27	3	1989–1997	0.82	M-v	4	Williams	31006	1992 RK_7
1992 SJ	13.5	0.15	19971218	82.78811	317.76391	3.00956	8.81712	0.2826908	2.7292293	19	3	1992–1997	0.69	M-v	4	Williams	24897	1992 SJ
1992 SE_1	13.0	0.15	19971218	144.47578	233.65863	46.43628	13.66322	0.1556443	2.6805692	37	3	1992–1997	0.72	M-v	3	Williams	31006	1992 SE_1
1992 ST_1	12.5	0.15	19971218	115.07978	333.88970	315.44738	7.55041	0.2086998	2.7894742	26	7	1955–1997	0.91	M-v	2	Williams	28086	1992 ST_1
1992 SF_2	13.5	0.15	19971218	264.95301	28.43339	172.10935	14.21304	0.0951407	2.5379026	19	2	1992–1996	0.72	M-v	6	Williams	28586	1992 SF_2
1992 SU_{14}	12.0	0.15	19971218	24.81974	80.41073	354.19620	14.52786	0.1486786	2.7251598	26	4	1989–1997	0.75	M-v	2	Williams	29660	1992 SU_{14}
1992 SW_{17}	12.0	0.15	19971218	57.14048	94.22692	281.11865	14.02709	0.1535713	2.7480640	43	4	1992–1997	0.71	M-v	1	Williams	28086	1992 SW_{17}
1992 UQ	13.0	0.15	19971218	186.17109	111.91398	174.48646	4.58322	0.1515252	2.5310666	56	8	1980–1997	0.85	M-v	1	Williams	30688	1992 UQ
1992 UA_3	13.5	0.15	19971218	72.23050	352.69787	44.57651	3.94376	0.0985098	2.6573115	30	3	1992–1996	0.89	M-v	4	Williams	29661	1992 UA_3
1992 UZ_3	13.0	0.15	19971218	15.41850	359.60714	11.30155	2.33193	0.2167380	3.0094865	16	3	1976–1997	0.52	M-v	4	Williams	29661	1992 UZ_3
1992 UN_4	12.0	0.15	19971218	35.13987	324.02275	78.04296	10.34346	0.1567099	2.7842067	16	4	1978–1997	0.76	M-v	2	Williams	25441	1992 UN_4
1992 WN_1	13.5	0.15	19971218	353.88675	306.88936	132.09447	5.52183	0.1647661	2.9130863	13	3	1991–1997	0.80	M-v	6	Williams	21594	1992 WN_1
1992 YS_2	12.5	0.15	19971218	352.69494	13.72730	78.07052	3.20965	0.0377155	2.9277663	33	3	1991–1997	0.70	M-v	4	Williams	31007	1992 YS_2
1992 YW_3	11.5	0.15	19971218	18.43908	26.41081	87.89089	12.02557	0.2118344	2.7993473	33	5	1956–1997	0.59	M-v	1	Williams	28887	1992 YW_3
1993 AN	13.0	0.15	19971218	325.56833	8.51089	104.23979	2.62482	0.1583198	3.1218394	28	5	1982–1997	0.64	M-v	1	Williams	31007	1993 AN
1993 BC_5	13.0	0.15	19971218	345.36396	282.95152	155.25150	0.49570	0.1627607	3.2233218	51	3	1993–1997	0.75	M-v	4	Williams	31007	1993 BC_5
1993 DQ_1	16.5	0.15	19971218	123.39393	344.63107	313.78754	10.01517	0.4917703	2.0373185	67	3	1993–1998	0.60	M-v	3	Marsden	27121	1993 DQ_1
1993 FL_4	13.5	0.15	19971218	153.60394	295.36027	138.78945	2.16080	0.1338242	2.5457499	20	4	1991–1997	0.80	M-v	2	Williams	28887	1993 FL_4
1993 FU_{24}	14.5	0.15	19971218	277.31195	313.16890	341.96005	1.72187	0.0516685	2.7329984	11	2	1993–1997	0.89	M-v	6	Williams	29617	1993 FU_{24}
1993 KH	19.0	0.15	19971218	45.71007	293.59925	54.52711	12.80819	0.3111121	1.2338281	34	4	1993–1997	0.83	M-v	2	Williams	29662	1993 KH
1993 NH	15.0	0.15	19971218	71.31258	80.91427	246.02434	22.26642	0.3116157	2.3045307	33	3	1986–1997	0.80	M-v	2	Williams	31007	1993 NH
1993 OB	13.0	0.15	19971218	24.95927	84.06627	281.27409	21.43612	0.2972841	2.4105867	27	2	1993–1997	0.69	M-v	3	Williams	31007	1993 OB
1993 OP	13.0	0.15	19971218	52.70667	95.42619	286.25939	23.90663	0.1982637	2.2876143	25	4	1990–1997	0.72	M-v	1	Williams	25082	1993 OP
1993 OF_3	15.5	0.15	19971218	75.25501	318.56630	326.39225	1.21025	0.1275764	2.4044327	46	2	1993–1997	0.61	M-v	4	Williams	30979	1993 OF_3
1993 OW_6	14.0	0.15	19971218	38.45023	258.39669	129.04514	3.78692	0.1680382	2.2607296	27	3	1993–1997	0.73	M-v	4	Williams	30980	1993 OW_6
1993 OD_8	15.5	0.15	19971218	80.85885	64.06770	282.82574	2.85150	0.2202023	2.2389782	23	4	1990–1998	0.91	M-v	2	Williams	31007	1993 OD_8
1993 QU	14.0	0.15	19930821	356.31654	355.24009	346.35747	18.89438	0.2664011	2.6375358	13	1	36 days	0.54			Williams		1993 QU
1993 QJ_4	14.5	0.15	19971218	320.84259	325.91300	165.14897	3.58551	0.0620072	2.2374855	20	4	1973–1997	0.88	M-v	2	Williams	27916	1993 QJ_4
1993 QO_8	15.5	0.15	19971218	8.29193	29.69064	38.32117	3.04257	0.2081499	2.3512340	42	2	1993–1997	0.66	M-v	5	Williams	30980	1993 QO_8
1993 QH_{10}	13.0	0.15	19971218	118.36678	24.75694	276.93592	20.63531	0.1430699	2.3166153	15	3	1990–1997	0.83	M-v	5	Williams	31007	1993 QH_{10}
1993 RD_2	13.0	0.15	19971218	29.76482	152.80252	174.80694	15.33213	0.1246691	2.6050473	29	2	1993–1997	0.64	M-v	3	Williams	30872	1993 RD_2
1993 RL_5	14.5	0.15	19971218	51.95929	70.63037	307.53702	2.59216	0.0609479	2.3456887	27	4	1984–1997	0.68	M-v	2	Williams	31007	1993 RL_5
1993 SO	14.0	0.15	19971218	56.38640	175.91585	168.19390	8.27485	0.0949075	2.3722435	23	2	1993–1997	0.78	M-v	4	Williams	30980	1993 SO
1993 SN_2	16.0	0.15	19971218	29.70014	145.12850	264.70890	1.94184	0.1562330	2.3361814	32	3	1993–1997	0.68	M-v	3	Williams	27936	1993 SN_2
1993 SG_3	15.0	0.15	19971218	299.13032	332.02354	168.56832	3.75498	0.1256361	2.3223143	37	2	1993–1997	0.84	M-v	5	Williams	30980	1993 SG_3
1993 SW_3	14.0	0.15	19971218	117.29056	279.53930	55.35609	6.21821	0.2007849	2.2354955	22	4	1973–1997	0.53	M-v	2	Williams	30899	1993 SW_3
1993 SU_6	14.0	0.15	19971218	92.75577	268.64125	350.06243	0.43963	0.0908525	2.6448683	27	5	1976–1997	0.87	M-v	2	Williams	30980	1993 SU_6
1993 SQ_{10}	14.5	0.15	19971218	321.23270	160.55029	2.21076	3.82907	0.1138945	2.1883182	27	5	1982–1998	0.83	M-v	2	Williams	30899	1993 SQ_{10}
1993 TD	14.5	0.15	19971218	12.71880	32.50046	4.46055	10.95575	0.1838344	2.4816590	40	4	1989–1997	0.82	M-v	3	Williams	30900	1993 TD
1993 TN	13.5	0.15	19971218	85.86275	253.10446	88.75607	3.58644	0.1270235	2.3535226	32	6	1975–1997	0.87	M-v	2	Williams	31007	1993 TN
1993 TU	14.0	0.15	19971218	170.32657	327.54611	335.02428	4.37306	0.1277370	2.1955189	29	5	1992–1997	0.82	M-v	2	Williams	28616	1993 TU
1993 TL_5	15.0	0.15	19971218	263.43479	244.53413	321.15401	3.28646	0.1112585	2.2536121	21	3	1993–1997	0.56	M-v	4	Williams	24898	1993 TL_5
1993 TM_{12}	14.5	0.15	19971218	49.18492	295.38931	134.39541	2.44931	0.1146123	2.2326050	32	5	1986–1998	0.84	M-v	1	Williams	30900	1993 TM_{12}
1993 TL_{13}	14.0	0.15	19971218	102.49113	247.01232	48.29808	9.16559	0.1937389	2.4283080	49	3	1993–1997	0.61	M-v	3	Williams	31007	1993 TL_{13}
1993 TP_{24}	14.5	0.15	19971218	228.84156	81.12006	167.04333	4.46122	0.1136823	2.1854964	34	6	1983–1997	0.67	M-v	1	Williams	27936	1993 TP_{24}
1993 TL_{25}	14.5	0.15	19971218	118.51353	150.61929	111.96741	3.20620	0.1083574	2.5435854	39	4	1993–1997	0.65	M-v	1	Williams	31007	1993 TL_{25}
1993 TH_{32}	14.0	0.15	19971218	152.14638	120.75335	142.15304	2.70050	0.1846591	2.3838208	31	4	1988–1998	0.84	M-v	4	Williams	31007	1993 TH_{32}

1993 UR_2	14.0	0.15	19971218	315.79277	354.09048	169.41233	7.09225	0.0788782	2.2564644	28	7	1976–1997	0.76	M-v	2	Williams	28616	1993 UR_2
1993 UD_3	13.0	0.15	19971218	77.96812	98.62670	256.35920	5.32356	0.1501442	2.3995110	23	2	1993–1997	0.63	M-v	4	Williams	30981	1993 UD_3
1993 UZ_5	14.5	0.15	19971218	293.95038	47.37456	124.20137	5.57225	0.0341619	2.2933505	21	3	1993–1997	0.65	M-v	5	Williams	27716	1993 UZ_5
1993 VS	15.0	0.15	19971218	18.02299	271.43137	126.08299	1.51822	0.1739759	2.5359474	30	2	1993–1997	0.47	M-v	4	Williams	30981	1993 VS
1993 WD	17.0	0.15	19971218	265.90446	132.26906	56.58932	63.46100	0.2666090	1.0067146	306	6	1991–1997	0.62	M-v	3	Williams	31007	1993 WD
1993 WQ	14.0	0.15	19971218	12.06450	359.63351	47.58594	5.06074	0.2231189	2.5533302	47	4	1985–1997	0.71	M-v	3	Williams	31007	1993 WQ
1993 XP	13.0	0.15	19971218	340.62502	206.50453	267.82602	12.28314	0.1139717	2.5450254	27	4	1986–1998	0.56	M-v	4	Williams	22963	1993 XP
1993 XN_1	12.5	0.15	19971218	172.37009	181.81493	95.03919	16.46662	0.1504450	2.5851997	38	4	1991–1998	0.77	M-v	2	Williams	25340	1993 XN_1
1993 YR	14.5	0.15	19971218	356.72838	196.25162	216.04746	11.66866	0.3173872	2.6199334	38	2	1993–1997	0.63	M-v	3	Williams	30900	1993 YR
1994 AC	14.5	0.15	19971218	118.64173	160.92016	255.36541	3.15304	0.0927787	2.1782545	28	3	1991–1997	0.66	M-v	4	Williams	23248	1994 AC
1994 AH	12.5	0.15	19971218	71.89526	174.18236	136.46023	2.75436	0.0737723	2.9326703	39	3	1994–1997	0.66	M-v	3	Williams	30900	1994 AH
1994 AW	14.5	0.15	19971218	22.65229	244.50042	170.27023	1.25057	0.1370697	2.6084172	29	2	1994–1997	0.69	M-v	5	Williams	30981	1994 AW
1994 AT_1	12.0	0.15	19971218	44.23456	328.60611	55.85427	13.72957	0.2242361	2.6532121	26	3	1991–1997	0.49	M-v	2	Williams	30760	1994 AT_1
1994 AB_2	12.5	0.15	19971218	284.03330	240.76993	232.75017	0.76347	0.0218995	2.9319173	24	5	1977–1997	0.65	M-v	1	Williams	25228	1994 AB_2
1994 AO_2	14.5	0.15	19971218	17.66064	112.35305	307.69116	11.28630	0.1679220	2.6168237	29	5	1988–1997	0.70	M-v	1	Williams	29944	1994 AO_2
1994 AY_2	13.0	0.15	19971218	319.56076	180.07420	293.95120	6.10342	0.1146228	2.7081908	21	4	1979–1997	0.67	M-v	4	Williams	29618	1994 AY_2
1994 AZ_2	13.0	0.15	19971218	308.49832	211.26303	290.26643	11.04422	0.2075684	2.6898881	34	3	1991–1997	0.72	M-v	4	Williams	31008	1994 AZ_2
1994 AC_{17}	13.5	0.15	19971218	312.78422	55.48215	106.47415	3.62687	0.2191259	2.5591411	40	4	1986–1998	0.77	M-v	3	Williams	28616	1994 AC_{17}
1994 CM	13.0	0.15	19971218	348.33315	45.95797	33.17816	8.60461	0.0851340	2.8473806	40	4	1989–1997	0.76	M-v	2	Williams	31008	1994 CM
1994 CV	14.5	0.15	19971218	4.18629	224.43401	183.85325	3.75159	0.1892469	2.5900461	24	3	1976–1997	0.67	M-v	3	Williams	31008	1994 CV
1994 CA_1	15.5	0.15	19971218	254.54569	66.91381	196.01050	4.48389	0.0672973	2.3991554	42	3	1994–1998	0.52	M-v	3	Williams	28888	1994 CA_1
1994 CV_1	13.0	0.15	19971218	262.07245	74.73923	66.50060	3.89631	0.1793828	3.0775450	21	3	1992–1997	0.47	M-v	4	Williams	30982	1994 CV_1
1994 CL_2	14.0	0.15	19971218	3.42032	337.16160	118.26506	4.30299	0.1614123	2.6172863	23	3	1992–1998	0.63	M-v	3	Williams	23539	1994 CL_2
1994 CN_2	16.5	0.15	19971218	124.99888	248.12919	99.37639	1.43825	0.3950333	1.5733041	88	3	1994–1998	0.49	M-v	4	Marsden	27456	1994 CN_2
1994 CV_{16}	14.0	0.15	19971218	223.07671	107.53919	107.86638	3.11409	0.0159638	2.9148154	26	6	1989–1997	0.65	M-v	1	Williams	28087	1994 CV_{16}
1994 CO_{19}	14.0	0.15	19940128	67.44544	320.36799	107.78579	2.77204	0.1440778	2.5370731	9	1	6 days	0.70			Williams		1994 CO_{19}
1994 CP_{19}	14.0	0.15	19940128	227.86216	212.32180	77.93009	2.24392	0.0866625	2.2271705	9	1	6 days	0.53			Williams		1994 CP_{19}
1994 CB_{20}	14.5	0.15	19940128	2.30358	73.20118	73.20578	3.30907	0.1606501	2.6775097	9	1	4 days	0.40			Williams		1994 CB_{20}
1994 CJ_{20}	15.0	0.15	19940128	12.46678	135.67797	355.33546	10.61154	0.2243375	2.7014185	11	1	6 days	0.73			Williams		1994 CJ_{20}
1994 DD	13.5	0.15	19971218	339.70940	348.28082	135.55968	2.92948	0.1489565	2.6636727	37	4	1984–1998	0.87	M-v	2	Williams	28074	1994 DD
1994 EV_5	13.5	0.15	19940217	58.94622	89.34725	8.73167	11.42796	0.0219212	2.8270062	12	1	31 days	1.03			Williams		1994 EV_5
1994 EZ_5	15.0	0.15	19940217	16.83970	87.34533	43.52170	4.47910	0.2245872	2.5901476	15	1	31 days	1.01			Williams		1994 EZ_5
1994 EM_6	13.5	0.15	19940217	82.97469	279.67104	145.82022	17.85569	0.1111998	2.7630822	20	1	31 days	1.85			Williams		1994 EM_6
1994 EO_6	14.0	0.15	19940217	116.29216	320.40762	74.06038	5.06748	0.0975336	2.3609409	12	1	29 days	0.61			Williams		1994 EO_6
1994 EP_6	14.5	0.15	19940217	24.64684	340.70556	141.25925	10.23955	0.2122374	2.7605778	14	1	29 days	0.64			Williams		1994 EP_6
1994 ES_6	10.5	0.15	19940217	313.28502	88.30973	124.89710	9.21724	0.0341284	5.1680773	21	1	31 days	1.00			Williams		1994 ES_6
1994 GT	13.0	0.15	19971218	267.38257	111.19178	71.56891	3.42430	0.1771668	3.0320526	19	3	1983–1997	0.76	M-v	4	Williams	30873	1994 GT
1994 GR_9	12.5	0.15	19971218	209.21621	224.22847	9.19634	0.46241	0.1449473	3.2082981	25	5	1982–1997	0.66	M-v	1	Williams	28318	1994 GR_9
1994 GY_9	14.5	0.15	19971218	18.97791	262.84906	173.64031	10.42219	0.2121696	2.6991007	15	4	1952–1997	0.47	M-v	2	Williams	25070	1994 GY_9
1994 LR	12.0	0.15	19971218	256.41922	129.44414	95.01971	12.66752	0.0533202	3.0785373	15	4	1972–1997	0.46	M-v	1	Williams	30783	1994 LR
1994 PZ	15.0	0.15	19971218	61.00154	139.40548	149.79268	3.10971	0.1652256	2.1347992	35	5	1991–1997	0.61	M-v	2	Williams	30291	1994 PZ
1994 VC	15.5	0.15	19971218	0.33506	51.20343	345.12721	1.37937	0.1421676	2.1536557	27	2	1994–1997	0.62	M-v	4	Williams	30760	1994 VC
1994 WU_1	14.5	0.15	19971218	54.75218	123.33273	172.91529	14.82622	0.1607362	2.4460962	102	3	1994–1997	0.64	M-v	2	Williams	30900	1994 WU_1
1994 YH_1	14.0	0.15	19971218	320.44473	180.84339	268.20318	3.04330	0.0250594	2.2003677	34	2	1994–1997	0.63	M-v	5	Williams	30982	1994 YH_1
1994 YQ_1	13.5	0.15	19971218	16.93471	278.17130	83.39708	6.87882	0.1318405	2.4001846	22	4	1986–1997	0.66	M-v	2	Williams	30901	1994 YQ_1
1995 AG	14.0	0.15	19971218	347.38497	165.11721	278.49852	3.38147	0.0587023	2.2186404	30	3	1984–1997	0.54	M-v	3	Williams	31008	1995 AG
1995 AJ	13.5	0.15	19971218	92.99549	39.00644	286.29824	6.42314	0.2069109	2.2373880	26	4	1989–1997	0.67	M-v	2	Williams	31008	1995 AJ
1995 AT_2	14.5	0.15	19971218	309.09299	90.95578	34.50086	2.78873	0.0363325	2.1972317	21	3	1992–1997	0.67	M-v	5	Williams	31008	1995 AT_2
1995 AW_2	13.5	0.15	19971218	243.18008	305.52763	248.16556	5.38999	0.1154735	2.2716546	35	4	1986–1997	0.68	M-v	2	Williams	31008	1995 AW_2
1995 BF_1	14.0	0.15	19971218	238.89782	274.43463	296.63300	4.01449	0.0773382	2.2015249	16	4	1982–1997	0.70	M-v	3	Williams	31008	1995 BF_1
1995 BO_1	13.5	0.15	19971218	268.98922	277.55587	256.43492	3.61356	0.0782546	2.2467635	38	5	1980–1998	0.61	M-v	2	Williams	31008	1995 BO_1
1995 BG_2	14.5	0.15	19971218	298.46488	7.82462	127.54855	3.71371	0.0986241	2.3259170	37	4	1990–1997	0.59	M-v	2	Williams	31008	1995 BG_2
1995 BT_2	13.5	0.15	19971218	356.28260	358.29371	74.12604	3.91877	0.1267138	2.2531067	37	5	1988–1997	0.70	M-v	2	Williams	31008	1995 BT_2

1995 BU_4	15.5	0.15	19971218	40.70991	11.50342	17.46646	8.38904	0.1899352	2.2118230	30	3	1995–1997	0.29	M-v	2	Williams	31008	1995 BU_4
1995 BQ_{15}	13.0	0.15	19971218	157.39926	239.39999	25.92605	3.27550	0.1554595	2.4480714	32	4	1980–1998	0.82	M-v	2	Williams	31008	1995 BQ_{15}
1995 CY	14.0	0.15	19971218	60.80616	285.37495	82.97079	5.36239	0.1614179	2.3047211	17	4	1976–1997	0.78	M-v	2	Williams	29664	1995 CY
1995 CM_1	14.5	0.15	19971218	106.59846	331.67843	351.22875	9.96713	0.1196266	2.3914069	22	3	1989–1997	0.79	M-v	4	Williams	31008	1995 CM_1
1995 CO_1	14.0	0.15	19971218	340.32570	64.81652	53.50521	3.17953	0.0707224	2.2141452	19	5	1980–1997	0.57	M-v	2	Williams	31008	1995 CO_1
1995 DD	12.5	0.15	19971218	84.15129	321.22707	357.80344	13.07895	0.1770276	2.6654131	24	3	1988–1997	0.39	M-v	4	Williams	30983	1995 DD
1995 DF	15.0	0.15	19971218	293.80702	55.74853	117.08806	4.51017	0.1471364	2.2352041	23	3	1979–1998	0.52	M-v	4	Williams	25071	1995 DF
1995 DJ_1	13.5	0.15	19971218	187.01833	302.70052	311.40747	1.95432	0.1430537	2.4575205	30	5	1991–1997	0.83	M-v	1	Williams	31008	1995 DJ_1
1995 DO_1	14.0	0.15	19971218	237.38600	174.79511	33.32026	4.86124	0.1873758	2.4264731	22	4	1980–1997	0.64	M-v	2	Williams	30292	1995 DO_1
1995 DQ_1	14.0	0.15	19971218	37.55442	278.48676	111.72101	5.65150	0.1057413	2.4143341	23	4	1991–1997	0.91	M-v	2	Williams	30472	1995 DQ_1
1995 DY_1	15.0	0.15	19971218	114.12189	142.99555	208.89399	4.77160	0.2204488	2.2419376	36	4	1986–1997	0.51	M-v	2	Williams	28087	1995 DY_1
1995 DB_6	15.7	0.15	19950304	4.87662	4.20023	154.28649	3.29302	0.1959070	2.7675367	16	1	39 days	0.60		D	Nakano		1995 DB_6
1995 EN	15.5	0.15	19971218	226.44518	254.71516	11.90457	5.20898	0.1079285	2.1642555	73	4	1992–1998	0.49	M-v	2	Marsden	29138	1995 EN
1995 EO	15.0	0.15	19971218	317.09309	261.73902	236.01737	3.21362	0.1004978	2.2890343	61	3	1995–1998	0.61	M-v	3	Williams	31008	1995 EO
1995 FT	13.0	0.15	19971218	245.42764	68.84353	142.66379	3.58263	0.1453184	2.4340556	26	3	1995–1997	0.64	M-v	4	Williams	28087	1995 FT
1995 FV	14.0	0.15	19971218	256.14528	70.68126	154.42671	4.76742	0.0904900	2.3058053	23	4	1989–1996	0.68	M-v	2	Williams	28889	1995 FV
1995 FG_1	12.5	0.15	19971218	151.40753	295.31747	304.52786	0.94644	0.0225737	2.8786252	21	7	1953–1997	0.84	M-v	1	Williams	25963	1995 FG_1
1995 GF	13.0	0.15	19971218	323.33456	45.54295	67.15115	6.68071	0.0794456	2.5494601	48	4	1985–1997	0.65	M-v	3	Williams	31008	1995 GF
1995 GJ_7	13.0	0.15	19971218	205.50990	200.91339	15.80305	9.20886	0.1565168	2.6584514	22	5	1982–1997	0.81	M-v	2	Williams	31008	1995 GJ_7
1995 HJ	14.0	0.15	19971218	248.43593	98.51034	132.52626	1.56494	0.1501324	2.3771913	33	5	1980–1998	0.76	M-v	1	Williams	28318	1995 HJ
1995 JC	15.0	0.15	19971218	208.47350	209.12834	46.57410	4.46383	0.2333603	2.5774768	61	3	1995–1997	0.43	M-v	2	Williams	28318	1995 JC
1995 JJ_1	14.5	0.15	19950503	357.54554	107.96857	118.22823	3.43583	0.1439897	2.4703095	8	1	10 days	0.71		D	Nakano		1995 JJ_1
1995 LH	14.0	0.15	19971218	190.65039	266.00843	49.65935	11.44868	0.4079238	2.6948860	87	3	1995–1998	0.55	M-v	2	Marsden	29138	1995 LH
1995 LV	14.9	0.15	19950702	133.41965	3.45788	107.06482	12.84257	0.0449104	2.6886107	12	1	31 days	0.18		D	Nakano		1995 LV
1995 MM_2	16.5	0.15	19950702	328.32240	174.97034	174.89132	4.83626	0.2492412	2.2117238	12	1	36 days	0.32		D	Nakano		1995 MM_2
1995 MR_2	17.4	0.15	19950722	291.49803	135.30100	254.44575	6.09986	0.1107770	2.2183774	11	1	36 days	0.27		D	Nakano		1995 MR_2
1995 MF_4	18.1	0.15	19950722	18.92997	68.99401	211.49441	4.57164	0.1728506	2.2331366	11	1	28 days	0.25		D	Nakano		1995 MF_4
1995 MG_4	17.0	0.15	19950702	48.89075	69.97859	175.94358	6.67910	0.0873980	2.4208135	14	1	54 days	0.27		D	Williams		1995 MG_4
1995 OO	17.0	0.15	19971218	327.47911	211.16833	349.62082	24.02218	0.7792351	2.1513045	33	2	1995–1998	0.43	M-v	2	Marsden	30983	1995 OO
1995 OD_1	14.5	0.15	19971218	335.97217	5.75369	154.65000	12.25394	0.0875043	3.0068914	38	3	1995–1998	0.53	M-v	3	Williams	30901	1995 OD_1
1995 QB_1	13.9	0.15	19950831	223.00397	298.51175	191.24823	2.01017	0.2004330	3.0448500	17	1	44 days	0.36		D	Nakano		1995 QB_1
1995 QE_1	15.9	0.15	19950831	24.02202	143.48507	163.03102	5.22038	0.1551111	3.2155143	17	1	42 days	0.45		D	Nakano		1995 QE_1
1995 QR_1	15.2	0.15	19950831	40.73866	117.24440	174.91431	2.46433	0.0749380	2.6588764	13	1	42 days	0.29		D	Nakano		1995 QR_1
1995 QK_2	14.4	0.15	19950920	16.82991	331.78196	346.08597	13.58734	0.2360610	2.6526510	20	1	31 days	0.69		D	Nakano		1995 QK_2
1995 QV_9	16.6	0.15	19971218	334.28967	255.54987	357.32821	6.72985	0.0966983	2.2952973	14	1	65 days	0.43	M-v	6	D Nakano		1995 QV_9
1995 SH	13.5	0.15	19971218	350.71231	9.07084	188.95751	13.53736	0.0933837	2.6206193	42	3	1995–1998	0.45	M-v	2	Williams	29318	1995 SH
1995 SM_{20}	14.8	0.15	19950920	329.06139	32.68049	19.53944	11.77059	0.0692893	3.1616316	12	1	34 days	0.25		D	Nakano		1995 SM_{20}
1995 SY_{27}	15.8	0.15	19951010	235.21686	131.48561	18.19231	7.15870	0.0494084	2.2791268	12	1	32 days	0.13		D	Nakano		1995 SY_{27}
1995 SA_{44}	14.5	0.15	19951010	7.56831	168.31883	201.37070	9.36737	0.0419305	3.0912010	12	1	28 days	0.55		D	Nakano		1995 SA_{44}
1995 SS_{48}	16.6	0.15	19951030	12.46718	312.84006	48.62708	2.55720	0.2420986	2.3986073	12	1	29 days	0.14		D	Nakano		1995 SS_{48}
1995 ST_{48}	14.6	0.15	19951010	150.36863	116.15517	98.12357	2.44747	0.1579527	2.9767863	12	1	28 days	0.25		D	Nakano		1995 ST_{48}
1995 SR_{51}	15.8	0.15	19950920	201.20240	231.97448	308.23415	0.36353	0.0889711	3.1134864	12	1	25 days	0.21		D	Nakano		1995 SR_{51}
1995 SU_{51}	16.3	0.15	19951010	359.12765	173.43897	209.38127	1.91813	0.3269229	3.9336828	12	1	25 days	0.19		D	Nakano		1995 SU_{51}
1995 SP_{52}	16.8	0.15	19951010	294.39199	94.02532	10.39423	3.02688	0.1678983	2.3113362	11	1	22 days	0.20		D	Nakano		1995 SP_{52}
1995 SV_{53}	14.3	0.15	19950831	214.17424	280.83351	208.98769	1.34347	0.0674820	2.9459961	15	1	44 days	0.33		D	Nakano		1995 SV_{53}
1995 TL_1	15.5	0.15	19951010	282.52172	255.96683	198.81865	14.24260	0.0629122	2.6816891	12	1	8 days	0.33		D	Nakano		1995 TL_1
1995 TO_1	15.5	0.15	19951010	302.45837	87.93836	354.27053	2.48191	0.1316516	2.5814276	11	1	7 days	0.42		D	Nakano		1995 TO_1
1996 EK_{15}	15.5	0.15	19971218	66.75700	178.55917	127.95847	2.03188	0.1538589	2.1753593	17	4	1993–1997	0.52	M-v	2	Williams	31009	1996 EK_{15}
1996 FG_3	18.5	0.15	19971218	108.32223	23.38254	300.47857	1.98148	0.3497329	1.0543528	198	3	1996–1998	0.61	M-v	4	Marsden	31009	1996 FG_3
1996 HK_1	15.5	0.15	19971218	20.23842	342.74055	40.22481	6.87629	0.0937365	2.2235983	53	2	1996–1998	0.70	M-v	3	Williams	31009	1996 HK_1
1996 HW_1	15.5	0.15	19971218	119.55104	176.78485	177.27822	8.42573	0.4487419	2.0465734	137	4	1980–1998	0.66	M-v	2	Marsden	29947	1996 HW_1
1996 HC_{19}	14.5	0.15	19971218	14.08239	174.17592	199.64904	2.34703	0.1059605	2.3985950	28	4	1992–1997	0.74	M-v	2	Williams	31009	1996 HC_{19}
1996 HD_{24}	14.0	0.15	19971218	104.62503	89.38214	206.07187	6.19959	0.2049982	2.4426049	32	3	1993–1997	0.73	M-v	3	Williams	31009	1996 HD_{24}

1996 JY	15.0	0.15	19971218	128.35432	102.25314	185.50938	10.04093	0.2431571	2.4100443	34	3	1989–1997	0.43	M-v	3		Williams	27457	1996 JY
1996 JT_3	14.5	0.15	19971218	50.13938	167.45458	178.36747	4.93192	0.2252436	2.4522507	26	5	1978–1997	0.94	M-v	2		Williams	30902	1996 JT_3
1996 KW	13.5	0.15	19971218	41.15932	278.11804	54.00332	13.51876	0.2565808	2.6750899	34	2	1996–1997	0.76	M-v	3		Williams	30876	1996 KW
1996 NA	15.0	0.15	19971218	199.99708	158.37122	103.91225	24.25837	0.0644158	1.9306009	29	2	1996–1998	0.37	M-v	3		Williams	30876	1996 NA
1996 NW	14.5	0.15	19971218	46.07069	111.90838	265.09168	2.73671	0.1028944	2.7344929	43	2	1996–1997	0.51	M-v	3		Williams	31009	1996 NW
1996 NL_1	14.0	0.15	19971218	86.97315	74.64569	292.93368	3.20472	0.0802411	2.2779007	24	5	1979–1998	0.73	M-v	1		Williams	29666	1996 NL_1
1996 NF_3	12.5	0.15	19971218	357.57626	298.95831	142.44719	10.08144	0.0746195	2.6938002	23	4	1975–1997	0.67	M-v	2		Williams	28319	1996 NF_3
1996 NB_4	14.0	0.15	19971218	258.65010	229.48834	311.67975	2.47383	0.1255672	2.4297693	20	4	1978–1997	1.12	M-v	2		Williams	28618	1996 NB_4
1996 NF_4	13.0	0.15	19971218	47.01059	73.77599	307.61909	7.94089	0.1098472	2.9624178	21	3	1982–1997	0.84	M-v	3		Williams	27938	1996 NF_4
1996 NE_5	13.0	0.15	19971218	112.84256	42.75482	267.96611	1.16978	0.0245043	2.9135356	34	3	1986–1998	0.87	M-v	5		Williams	30984	1996 NE_5
1996 OE	16.5	0.15	19971218	142.84965	242.43197	57.23285	2.62837	0.0494065	2.4082163	29	3	1995–1997	0.42	M-v	4		Williams	27938	1996 OE
1996 PA	16.0	0.15	19971218	200.24713	153.10540	143.91498	19.33254	0.2990476	1.9044019	211	4	1983–1997	0.56	M-v	2		Marsden	29947	1996 PA
1996 PK	14.5	0.15	19971218	284.49031	203.37548	7.65397	3.04076	0.0830022	2.3138763	49	3	1991–1998	0.51	M-v	3		Marsden	28618	1996 PK
1996 PW	14.0	0.15	19971218	0.08261	181.90496	144.47084	29.81570	0.9922552	327.4853230	249	2	1996–1997	0.52	M-v			Williams	30985	1996 PW
1996 PA_1	15.0	0.15	19971218	108.43458	213.36595	133.69031	7.41038	0.1344299	2.3779111	36	2	1996–1997	0.31	M-v	4		Williams	30985	1996 PA_1
1996 PL_2	15.0	0.15	19971218	33.96904	311.91880	125.65843	5.13552	0.0694229	2.3275339	25	4	1975–1997	0.63	M-v	2		Williams	28088	1996 PL_2
1996 PD_3	14.0	0.15	19971218	57.09378	307.74504	83.85883	3.95328	0.0138590	2.6245120	39	3	1995–1997	0.72	M-v	3		Williams	31009	1996 PD_3
1996 PJ_5	13.5	0.15	19971218	54.07123	26.04025	334.76278	11.62426	0.1242030	3.1940231	50	2	1996–1997	0.74	M-v	3		Williams	31009	1996 PJ_5
1996 PN_5	14.0	0.15	19971218	78.73608	272.67064	80.77983	2.60797	0.1020580	2.7471568	21	3	1992–1997	0.52	M-v	4		Williams	30986	1996 PN_5
1996 PY_7	13.5	0.15	19971218	21.85732	280.94907	126.74658	2.91469	0.0506389	2.8378362	27	4	1949–1997	0.97	M-v	1		Williams	29115	1996 PY_7
1996 QD	14.5	0.15	19971218	134.94068	85.07217	209.24605	11.38829	0.1708631	2.6358875	33	2	1996–1997	0.31	M-v	3		Williams	30877	1996 QD
1996 QZ	15.5	0.15	19971218	83.39339	219.42637	146.63355	7.07582	0.0827717	2.7503274	42	3	1995–1998	0.50	M-v	3		Marsden	28319	1996 QZ
1996 QD_1	15.0	0.15	19971218	248.84774	321.68298	238.53051	3.09941	0.0856568	2.2926416	26	2	1996–1997	0.55	M-v	4		Marsden	30986	1996 QD_1
1996 QQ_1	14.0	0.15	19971218	66.32599	273.07987	108.85435	2.13766	0.2019129	3.1290669	66	3	1991–1997	0.66	M-v	3		Williams	29666	1996 QQ_1
1996 QX_1	13.5	0.15	19960805	308.49026	85.00238	312.51488	12.21394	0.1745278	2.6970629	12	1	29 days	1.37				Williams		1996 QX_1
1996 QZ_1	12.5	0.15	19971218	50.10621	290.58100	97.75224	2.72793	0.1717309	3.2323944	25	7	1973–1998	0.86	M-v	1		Williams	28305	1996 QZ_1
1996 QZ_2	15.5	0.15	19960805	353.33784	85.33307	252.11936	2.70917	0.2576290	2.6006499	9	1	11 days	0.52				Williams		1996 QZ_2
1996 RD_1	15.0	0.15	19971218	169.31926	131.22552	179.12989	3.43952	0.1487254	2.2054242	53	3	1960–1998	0.51	M-v	3		Williams	28890	1996 RD_1
1996 RK_1	16.0	0.15	19960914	324.98575	11.56545	37.80321	2.13060	0.2082606	2.7493024	12	1	28 days	0.30				Williams		1996 RK_1
1996 RJ_3	14.5	0.15	19971218	133.12522	297.51253	9.91524	5.48178	0.1931249	2.4135623	44	3	1985–1997	0.49	M-v	3		Williams	31009	1996 RJ_3
1996 RE_4	13.0	0.15	19971218	146.44872	306.21067	26.69322	12.75320	0.1697188	2.6067049	28	4	1975–1997	0.51	M-v	2		Williams	31009	1996 RE_4
1996 RF_5	14.0	0.15	19971218	160.41861	189.19158	117.22029	7.16362	0.1273080	2.3136542	11	3	1984–1998	0.46	M-v	4		Williams	27925	1996 RF_5
1996 RO_5	14.5	0.15	19960825	60.29075	101.37946	155.18838	11.61030	0.1502983	2.5824639	18	1	44 days	0.44				Williams		1996 RO_5
1996 SQ_1	16.0	0.15	19960914	22.58821	119.68419	211.59317	3.63569	0.1295456	2.5624229	12	1	18 days	0.65				Williams		1996 SQ_1
1996 SJ_4	14.5	0.15	19971218	148.58236	337.47449	343.84665	5.07004	0.2007317	2.2324055	30	5	1976–1997	0.66	M-v	3		Williams	31009	1996 SJ_4
1996 SY_4	15.5	0.15	19971218	131.09490	276.81925	69.56595	2.97802	0.2054295	2.4005819	27	3	1981–1997	0.51	M-v	3		Williams	28890	1996 SY_4
1996 SS_6	13.0	0.15	19971218	158.03206	249.75488	67.54452	3.05739	0.0537849	2.9146527	51	4	1981–1997	0.49	M-v	3		Williams	31009	1996 SS_6
1996 TV_1	14.5	0.15	19971218	263.19822	66.15735	160.37371	3.97574	0.0803505	2.3035021	32	5	1989–1997	0.61	M-v	1		Williams	31009	1996 TV_1
1996 TM_3	15.5	0.15	19961004	47.15109	138.69996	168.14863	6.32621	0.1169372	2.3095282	31	1	22 days	1.43				Williams		1996 TM_3
1996 TN_3	16.0	0.15	19961004	331.42218	227.93068	178.28607	12.65379	0.1882309	2.6230144	35	1	11 days	1.26				Williams		1996 TN_3
1996 TB_6	13.5	0.15	19971218	101.77298	345.70465	31.80019	12.21688	0.3079620	2.7310194	44	4	1978–1997	0.60	M-v	3		Williams	31009	1996 TB_6
1996 TH_8	15.5	0.15	19961004	289.18633	70.51087	9.47403	21.85069	0.0507260	2.6395408	18	1	12 days	1.42				Williams		1996 TH_8
1996 TW_8	13.0	0.15	19971218	36.11088	156.06452	286.95368	21.31442	0.0679871	2.6727542	28	3	1989–1997	0.84	M-v	3		Williams	28319	1996 TW_8
1996 TR_9	15.0	0.15	19971218	161.76428	188.56507	136.09303	4.33179	0.1958521	2.2779668	45	3	1971–1998	0.41	M-v	3		Marsden	28619	1996 TR_9
1996 TF_{11}	14.0	0.15	19971218	164.88012	36.27292	274.61759	2.31853	0.2094131	2.4127603	14	3	1992–1997	0.55	M-v	4		Williams	28619	1996 TF_{11}
1996 TD_{12}	14.5	0.15	19961004	288.99375	72.44044	11.75278	8.98172	0.0911289	3.1954643	15	1	10 days	1.52		E		Williams		1996 TD_{12}
1996 TJ_{12}	12.5	0.15	19971218	142.62262	281.95887	39.41891	10.09595	0.0888661	3.0634216	28	4	1990–1998	0.68	M-v	1		Williams	28619	1996 TJ_{12}
1996 TL_{12}	12.5	0.15	19971218	135.35504	299.75215	36.12066	13.49246	0.1885015	2.6860984	31	4	1960–1997	0.43	M-v	3		Williams	28891	1996 TL_{12}
1996 TU_{13}	13.0	0.15	19971218	242.38154	206.33856	16.16411	12.99467	0.1370434	2.6212937	44	4	1969–1997	0.48	M-v	1		Williams	31009	1996 TU_{13}
1996 TM_{15}	13.5	0.15	19971218	117.92288	188.05497	140.54153	1.58510	0.1773398	3.1317663	25	3	1990–1998	0.67	M-v	6		Williams	28619	1996 TM_{15}
1996 TG_{38}	15.5	0.15	19961004	23.81430	299.98335	30.29768	4.97658	0.1724979	2.2740249	9	1	3 days	0.60		E		Williams		1996 TG_{38}
1996 TH_{38}	14.0	0.15	19961004	319.55234	345.52260	68.61535	2.72141	0.1324292	2.7550031	9	1	3 days	1.08		E		Williams		1996 TH_{38}
1996 TJ_{38}	14.5	0.15	19961004	331.04040	3.31449	36.07902	4.89910	0.1184143	2.6074384	9	1	3 days	0.79		E		Williams		1996 TJ_{38}

1996 TK_{38}	15.0	0.15	19961004	358.15440	232.67356	133.91115	2.86436	0.1216342	2.2342699	9	1	3 days	1.14	E	Williams	1996 TK_{38}
1996 TL_{38}	14.5	0.15	19961004	358.39688	215.21798	150.81039	2.10980	0.1205907	2.5170417	9	1	3 days	0.61	E	Williams	1996 TL_{38}
1996 TM_{38}	14.5	0.15	19961004	14.19302	193.25930	148.68199	4.61611	0.1966311	2.7245366	9	1	3 days	0.69	E	Williams	1996 TM_{38}
1996 TN_{38}	13.5	0.15	19961004	125.07618	77.73877	141.73153	4.79268	0.2190911	2.5199934	9	1	3 days	0.77	E	Williams	1996 TN_{38}
1996 TP_{38}	13.5	0.15	19961004	177.13803	163.76510	20.66093	9.94898	0.1035873	2.4492832	9	1	3 days	1.15	E	Williams	1996 TP_{38}
1996 TS_{38}	14.5	0.15	19961004	36.39571	233.12175	72.42181	2.38184	0.2500440	2.5042835	9	1	3 days	0.26	E	Williams	1996 TS_{38}
1996 TT_{38}	14.0	0.15	19961004	100.28730	141.97501	101.51262	2.34606	0.1680293	3.2131831	12	1	5 days	1.56	E	Williams	1996 TT_{38}
1996 TU_{38}	15.5	0.15	19961004	358.71892	321.61795	44.40779	4.87703	0.2467046	2.6027875	9	1	3 days	1.37	E	Williams	1996 TU_{38}
1996 TW_{38}	11.5	0.15	19961004	244.67757	135.57240	6.41358	24.97568	0.2894958	3.0157981	9	1	3 days	1.35	E	Williams	1996 TW_{38}
1996 TX_{38}	15.0	0.15	19961004	358.53807	307.19924	58.40528	2.83032	0.1205834	2.5146129	9	1	3 days	0.90	E	Williams	1996 TX_{38}
1996 TA_{39}	14.0	0.15	19961004	358.70563	245.38847	119.45916	2.74369	0.1292806	2.8234532	9	1	3 days	1.19	E	Williams	1996 TA_{39}
1996 TC_{39}	14.5	0.15	19961004	359.20513	226.44939	138.48897	1.65880	0.2032553	3.0917620	9	1	3 days	0.66	E	Williams	1996 TC_{39}
1996 TD_{39}	15.0	0.15	19961004	44.32147	122.79922	169.16920	3.38816	0.2794175	2.4463705	9	1	3 days	0.59	E	Williams	1996 TD_{39}
1996 TE_{39}	16.0	0.15	19960914	60.73315	125.05914	160.93534	6.26686	0.1045188	2.3019093	12	1	30 days	0.53		Williams	1996 TE_{39}
1996 TF_{39}	16.0	0.15	19961004	357.91483	336.39196	30.61861	2.77445	0.1215829	2.5226616	12	1	3 days	1.40	E	Williams	1996 TF_{39}
1996 TG_{39}	15.5	0.15	19961004	17.86353	315.52551	18.98697	5.66301	0.2601593	2.3790304	9	1	3 days	0.37	E	Williams	1996 TG_{39}
1996 TH_{39}	14.0	0.15	19961004	358.34072	336.90559	28.12052	7.25790	0.1063511	2.7503028	9	1	3 days	1.01	E	Williams	1996 TH_{39}
1996 TJ_{39}	15.5	0.15	19961004	358.21277	191.70735	175.53615	9.34346	0.1185578	2.2314185	9	1	3 days	1.30	E	Williams	1996 TJ_{39}
1996 TK_{39}	15.5	0.15	19961004	358.29479	346.32210	20.16327	11.45185	0.1678908	2.3591880	9	1	3 days	1.34	E	Williams	1996 TK_{39}
1996 TL_{39}	15.5	0.15	19961004	358.23612	307.43327	59.40706	3.16499	0.1318056	2.2629279	9	1	3 days	0.68	E	Williams	1996 TL_{39}
1996 TM_{39}	16.0	0.15	19961004	358.50354	343.00079	23.88722	4.42848	0.0949342	2.1756909	9	1	3 days	0.73	E	Williams	1996 TM_{39}
1996 TN_{39}	11.5	0.15	19961004	82.82199	183.15043	80.10133	4.64000	0.1207057	5.1669568	9	1	3 days	0.80	E	Williams	1996 TN_{39}
1996 TO_{39}	15.5	0.15	19961004	343.40939	297.73717	92.73769	2.76267	0.2121834	2.3677060	9	1	3 days	0.52	E	Williams	1996 TO_{39}
1996 TP_{39}	16.0	0.15	19960914	321.60055	266.38265	145.05582	2.85120	0.1797942	2.3912496	14	1	30 days	1.40		Williams	1996 TP_{39}
1996 TR_{39}	14.5	0.15	19961004	311.48079	44.87716	13.97709	18.80901	0.0812449	2.5056405	9	1	3 days	0.65	E	Williams	1996 TR_{39}
1996 TS_{39}	16.0	0.15	19961004	8.19554	222.36917	130.72202	2.83120	0.1744803	2.2963074	9	1	3 days	0.97	E	Williams	1996 TS_{39}
1996 TT_{39}	15.5	0.15	19961004	43.41464	158.22241	141.25157	3.67586	0.2250436	2.3207589	9	1	3 days	0.66	E	Williams	1996 TT_{39}
1996 TU_{39}	13.0	0.15	19961004	177.19563	171.65952	12.87792	16.25547	0.1296479	2.6174127	9	1	3 days	1.16	E	Williams	1996 TU_{39}
1996 TV_{39}	14.5	0.15	19961004	176.59791	47.15024	139.02561	4.67713	0.1058468	2.2220067	9	1	3 days	1.00	E	Williams	1996 TV_{39}
1996 TW_{39}	16.5	0.15	19961004	358.52082	319.42686	48.58142	3.85305	0.3018795	2.5339563	9	1	3 days	0.94	E	Williams	1996 TW_{39}
1996 TX_{39}	14.0	0.15	19961004	177.63868	35.23754	149.34040	7.17384	0.1597759	2.3304394	9	1	3 days	0.74	E	Williams	1996 TX_{39}
1996 TY_{39}	15.5	0.15	19961004	358.92753	317.06696	49.53182	3.39375	0.2456494	2.6078614	9	1	3 days	1.85	E	Williams	1996 TY_{39}
1996 TZ_{39}	11.0	0.15	19961004	6.33616	241.43413	113.18511	1.77913	0.0641047	5.1893689	9	1	3 days	0.73	E	Williams	1996 TZ_{39}
1996 TA_{40}	14.0	0.15	19961004	1.24386	284.90288	76.61235	3.53882	0.0994127	3.0066734	9	1	3 days	0.70	E	Williams	1996 TA_{40}
1996 TB_{40}	14.5	0.15	19961004	359.63975	217.55960	146.70349	4.69619	0.1016683	2.7398529	9	1	3 days	0.42	E	Williams	1996 TB_{40}
1996 TD_{40}	13.5	0.15	19960914	15.36526	220.47077	117.96968	2.38418	0.1417522	3.0987680	20	1	35 days	1.41		Williams	1996 TD_{40}
1996 TE_{40}	14.0	0.15	19961004	359.57627	257.30484	106.72923	2.84628	0.1294748	3.1142104	9	1	3 days	0.71	E	Williams	1996 TE_{40}
1996 TG_{40}	13.5	0.15	19961004	176.87493	32.25173	153.78862	5.56711	0.1499455	2.3570297	9	1	3 days	1.00	E	Williams	1996 TG_{40}
1996 TJ_{40}	13.5	0.15	19961004	177.38601	117.72416	67.90332	3.53596	0.1276670	2.4035925	9	1	3 days	0.86	E	Williams	1996 TJ_{40}
1996 TK_{40}	13.5	0.15	19961004	302.26076	311.31834	132.48611	2.92933	0.2041913	3.0966540	9	1	3 days	0.57	E	Williams	1996 TK_{40}
1996 TL_{40}	15.5	0.15	19961004	7.45845	312.04598	41.89913	4.36771	0.1921962	2.4219580	9	1	3 days	0.53	E	Williams	1996 TL_{40}
1996 TN_{40}	14.5	0.15	19961004	358.36354	192.26451	174.28022	9.17194	0.1296274	3.1031921	12	1	6 days	1.15	E	Williams	1996 TN_{40}
1996 TO_{40}	15.5	0.15	19961004	358.23167	336.81019	30.75816	5.79988	0.1144847	2.2247215	9	1	3 days	1.03	E	Williams	1996 TO_{40}
1996 TP_{40}	12.5	0.15	19961004	175.05127	13.86626	174.19302	25.33184	0.0957719	2.6965934	9	1	3 days	1.50	E	Williams	1996 TP_{40}
1996 TQ_{40}	17.0	0.15	19961004	355.75127	351.01570	22.83716	10.27397	0.2708804	2.1889909	9	1	3 days	0.63	E	Williams	1996 TQ_{40}
1996 TR_{40}	15.5	0.15	19961004	25.95177	175.18420	143.66432	4.36658	0.2876520	2.4595541	9	1	3 days	0.37	E	Williams	1996 TR_{40}
1996 TT_{40}	15.5	0.15	19961004	15.92302	164.73030	174.42206	6.10972	0.2439238	2.6632453	9	1	3 days	0.83	E	Williams	1996 TT_{40}
1996 TV_{40}	15.5	0.15	19961004	358.90676	208.95038	158.47505	6.40149	0.2959270	2.7953920	9	1	3 days	0.79	E	Williams	1996 TV_{40}
1996 TW_{40}	14.0	0.15	19961004	358.80553	335.85989	30.35473	4.96345	0.1236982	2.8166966	9	1	3 days	1.13	E	Williams	1996 TW_{40}
1996 TX_{40}	15.5	0.15	19961004	358.18142	279.09086	88.85339	2.28529	0.1026896	2.1971063	9	1	3 days	1.43	E	Williams	1996 TX_{40}
1996 TZ_{40}	15.0	0.15	19961004	237.23437	124.37330	13.48087	13.65667	0.1230861	2.6205206	12	1	10 days	0.53		Williams	1996 TZ_{40}
1996 TB_{41}	14.0	0.15	19961004	359.34502	196.47506	168.69963	11.18635	0.1022969	3.0227866	9	1	3 days	1.13	E	Williams	1996 TB_{41}
1996 TC_{41}	14.0	0.15	19961004	358.68188	203.41314	163.08643	7.21920	0.1363779	2.8558984	9	1	3 days	1.13	E	Williams	1996 TC_{41}

1996 TD_{41}	16.0	0.15	19961004	356.49352	345.58857	26.48258	4.58919	0.2241936	2.3463040	9	1	3 days	0.42		E	Williams		1996 TD_{41}
1996 TF_{41}	14.0	0.15	19961004	177.09797	14.85618	172.42621	8.20420	0.1024571	2.4656139	9	1	3 days	0.97		E	Williams		1996 TF_{41}
1996 TG_{41}	15.0	0.15	19961004	64.00347	239.52039	41.59489	2.98656	0.1850417	2.1897253	9	1	3 days	0.81		E	Williams		1996 TG_{41}
1996 TH_{41}	15.0	0.15	19961004	326.92319	353.29636	53.61742	4.40123	0.1271808	2.5452099	9	1	3 days	0.97		E	Williams		1996 TH_{41}
1996 TJ_{41}	14.5	0.15	19961004	81.96602	247.10318	31.09749	7.56511	0.0388775	2.3338790	9	1	3 days	0.87		E	Williams		1996 TJ_{41}
1996 TK_{41}	14.0	0.15	19961004	358.73648	261.93155	104.34089	3.95096	0.2323408	3.2081265	9	1	3 days	1.67		E	Williams		1996 TK_{41}
1996 TL_{41}	14.0	0.15	19961004	0.05608	213.17258	150.85572	6.79203	0.1368070	3.1417180	9	1	3 days	1.01		E	Williams		1996 TL_{41}
1996 TM_{41}	13.5	0.15	19961004	357.79219	325.25683	41.83157	4.41732	0.1002095	3.0191583	9	1	3 days	1.40		E	Williams		1996 TM_{41}
1996 TN_{41}	14.0	0.15	19961004	358.47836	277.36566	89.25810	3.03172	0.1118959	2.7776212	9	1	3 days	0.59		E	Williams		1996 TN_{41}
1996 TO_{41}	14.5	0.15	19961004	359.20515	204.50920	161.20326	8.97035	0.1281210	2.8259217	9	1	3 days	0.95		E	Williams		1996 TO_{41}
1996 TP_{41}	15.5	0.15	19961004	30.16080	167.65627	147.51448	5.51459	0.2609734	2.3689672	9	1	3 days	0.82		E	Williams		1996 TP_{41}
1996 TS_{41}	13.0	0.15	19961004	286.62216	341.36501	121.91801	3.19045	0.2232095	3.1504551	9	1	3 days	0.37		E	Williams		1996 TS_{41}
1996 TV_{41}	11.0	0.15	19961004	4.48081	183.56034	174.46490	23.26709	0.0938612	5.1416254	9	1	3 days	0.37		E	Williams		1996 TV_{41}
1996 TX_{41}	13.5	0.15	19961004	93.53081	180.11225	86.60158	3.39832	0.0356745	2.7879508	9	1	3 days	0.81		E	Williams		1996 TX_{41}
1996 TZ_{41}	13.0	0.15	19961004	177.63647	171.72185	13.99640	18.84833	0.1190731	2.6498632	9	1	3 days	0.46		E	Williams		1996 TZ_{41}
1996 TC_{42}	16.0	0.15	19961004	344.85533	283.99423	105.76648	3.10180	0.2118521	2.2465483	9	1	3 days	0.50		E	Williams		1996 TC_{42}
1996 TE_{42}	15.0	0.15	19961004	358.29928	324.94300	43.26069	4.30170	0.1097818	2.2169985	9	1	3 days	0.67		E	Williams		1996 TE_{42}
1996 TF_{42}	16.0	0.15	19961004	27.27359	213.28864	110.90655	3.50765	0.2131155	2.3151677	9	1	3 days	0.80		E	Williams		1996 TF_{42}
1996 TG_{42}	13.0	0.15	19961004	119.19522	106.62192	116.30239	5.30259	0.2546817	2.7835389	9	1	3 days	0.53		E	Williams		1996 TG_{42}
1996 TH_{42}	15.0	0.15	19961004	344.98443	321.15035	65.93689	3.16484	0.1617213	2.3026949	9	1	3 days	0.52		E	Williams		1996 TH_{42}
1996 TL_{42}	15.0	0.15	19961004	358.85693	344.15298	22.99550	8.46565	0.1079891	2.4923812	9	1	3 days	0.67		E	Williams		1996 TL_{42}
1996 TM_{42}	15.5	0.15	19961004	358.61217	312.12773	55.74383	3.69361	0.1127993	2.2243062	9	1	3 days	0.85		E	Williams		1996 TM_{42}
1996 TN_{42}	14.0	0.15	19961004	358.05823	325.28377	41.20441	7.57066	0.0995992	3.0131730	9	1	3 days	1.04		E	Williams		1996 TN_{42}
1996 TP_{42}	13.5	0.15	19961004	1.69193	188.51525	174.62983	17.82918	0.1221045	3.0945297	9	1	3 days	1.44		E	Williams		1996 TP_{42}
1996 TT_{54}	14.0	0.15	19971218	65.64253	227.33302	154.64293	22.26950	0.0336042	2.6072976	10	1	66 days	0.64	M-v	6	Williams		1996 TT_{54}
1996 TC_{64}	16.5	0.15	19961004	350.93994	1.08241	17.42645	10.43922	0.2334186	2.4567563	12	1	12 days	1.26			Williams		1996 TC_{64}
1996 TH_{64}	15.0	0.15	19961004	358.88200	207.46283	157.69803	5.32246	0.1260509	2.2504875	12	1	2 days	1.62		E	Williams		1996 TH_{64}
1996 TL_{66}	5.0	0.15	19971218	358.56263	183.76356	217.76200	23.95075	0.5851457	84.5047327	117	2	1996–1998	0.50	M-v	4	Marsden	31009	1996 TL_{66}
1996 UB	13.0	0.15	19971218	146.87906	90.09897	247.81179	1.00642	0.0123611	2.8689939	24	4	1991–1997	0.66	M-v	3	Williams	30986	1996 UB
1996 UC	13.5	0.15	19971218	80.58859	273.30979	92.99002	2.99413	0.2477911	3.1492617	37	5	1974–1997	0.47	M-v	2	Williams	31009	1996 UC
1996 UT	12.0	0.15	19971218	90.53080	208.46890	162.51637	1.37327	0.1719744	3.2049477	44	4	1978–1998	0.44	M-v	1	Williams	28891	1996 UT
1996 UH_1	14.5	0.15	19971218	119.11084	306.72824	85.62636	5.66010	0.1600272	2.2287683	53	4	1974–1998	0.53	M-v	2	Williams	28619	1996 UH_1
1996 UU_1	13.5	0.15	19971218	6.24554	90.80662	10.60927	4.96030	0.1393123	3.1687828	34	2	1996–1997	0.28	M-v	3	Williams	30986	1996 UU_1
1996 UG_3	12.5	0.15	19971218	153.11934	286.45707	27.85535	13.32800	0.1997625	2.6708966	24	4	1961–1998	0.77	M-v	2	Williams	30986	1996 UG_3
1996 UF_4	14.0	0.15	19971218	110.11556	315.18180	44.80105	4.67043	0.1078473	2.8155339	38	4	1982–1997	0.47	M-v	2	Williams	30670	1996 UF_4
1996 VP	14.5	0.15	19971218	236.34236	196.51131	51.80352	2.99080	0.1676334	2.4162724	53	4	1988–1997	0.52	M-v	3	Williams	31010	1996 VP
1996 VK_3	14.5	0.15	19971218	75.37710	205.24579	226.65554	2.55351	0.0769682	2.7436013	23	4	1991–1997	0.53	M-v	2	Williams	28867	1996 VK_3
1996 XF_6	13.0	0.15	19971218	37.10605	91.94740	41.81606	2.18235	0.1675236	3.1701477	19	4	1987–1998	0.47	M-v	1	Williams	30690	1996 XF_6
1996 XA_9	14.0	0.15	19971218	67.86370	289.27762	157.01869	2.33173	0.0350714	2.8743202	36	5	1976–1998	0.50	M-v	1	Williams	29140	1996 XA_9
1996 YU_1	13.0	0.15	19971218	175.51460	251.72386	113.16632	14.67215	0.1695420	2.6110287	42	5	1990–1997	0.58	M-v	1	Williams	30094	1996 YU_1
1996 YD_2	12.0	0.15	19971218	54.45554	110.54988	4.27988	12.21600	0.1061712	3.0326556	15	3	1972–1997	0.37	M-v	3	Williams	30671	1996 YD_2
1996 YH_3	11.5	0.15	19971218	132.53956	261.28536	64.69127	16.93979	0.0929528	3.2138758	39	4	1979–1997	0.47	M-v	2	Williams	31010	1996 YH_3
1997 AU_6	13.0	0.15	19971218	150.63878	278.86132	123.11969	3.02386	0.0695207	2.8634685	26	4	1990–1997	0.73	M-v	1	Williams	30094	1997 AU_6
1997 AM_7	15.5	0.15	19971218	56.25689	208.14016	328.67817	3.47435	0.0931250	2.2899730	21	2	1989–1997	0.61	M-v	5	Williams	29667	1997 AM_7
1997 AY_8	17.0	0.15	19970112	76.85095	252.80193	135.34909	6.35949	0.2117006	2.5617335	12	1	36 days	0.18			Williams		1997 AY_8
1997 AT_{17}	15.5	0.15	19971218	56.68295	72.27869	56.01668	1.95614	0.2274492	3.0770473	31	1	86 days	0.27	M-v	3	Williams		1997 AT_{17}
1997 AZ_{21}	13.5	0.15	19970201	247.94258	242.52071	19.10601	1.04404	0.1296545	3.1162498	29	1	59 days	1.01			Williams		1997 AZ_{21}
1997 AC_{25}	17.5	0.15	19970112	332.25423	284.23315	231.24483	12.92325	0.1262211	2.7503690	9	1	2 days	0.17			Williams		1997 AC_{25}
1997 AD_{25}	14.5	0.15	19970112	91.48397	178.17046	201.53436	12.93105	0.1005622	2.8918632	9	1	2 days	0.05			Williams		1997 AD_{25}
1997 BF_7	13.5	0.15	19971218	91.39052	121.56211	336.53898	0.72100	0.0692388	3.0299969	17	2	1992–1997	0.46	M-v	6	Williams	30094	1997 BF_7
1997 CX_6	16.5	0.15	19970201	53.32760	113.65246	317.25848	5.97083	0.1001498	2.2638006	12	1	9 days	0.52		E	Williams		1997 CX_6
1997 CU_{26}	6.0	0.15	19971218	324.90909	242.19709	300.47782	23.42559	0.1683958	15.7105833	236	2	1997–1998	0.49	M-v	3	Williams	31010	1997 CU_{26}
1997 CS_{29}	5.0	0.15	19971218	299.55821	231.85430	304.31825	2.25211	0.0056986	43.7297068	36	2	1997–1997	0.28	M-v	4	Williams	30903	1997 CS_{29}

1997 ET_1	13.5	0.15	19971218	130.83436	305.13224	84.87959	3.19259	0.0853403	2.8445291	44	5	1981–1997	0.57	M-v	3	Williams	30986	1997 ET_1
1997 EK_{38}	15.0	0.15	19970201	46.82719	294.07331	140.09601	1.68181	0.1806719	3.0752519	10	1	28 days	0.35			Williams		1997 EK_{38}
1997 EQ_{38}	16.0	0.15	19970201	343.02537	200.09192	327.83960	1.49404	0.2588428	3.2510379	21	1	41 days	0.99			Williams		1997 EQ_{38}
1997 FL_2	14.5	0.15	19971218	138.72108	282.30865	135.27919	3.13861	0.1769991	2.4531490	18	1	140 days	0.41	M-v	4	Williams	30690	1997 FL_2
1997 GO_{19}	16.0	0.15	19970313	39.90734	198.81408	304.08238	1.39937	0.0697996	2.4027653	16	1	27 days	1.11		D	Williams		1997 GO_{19}
1997 GY_{24}	14.5	0.15	19970402	243.66081	266.82548	49.29606	3.51593	0.0796504	3.0094933	18	1	24 days	0.67			Williams		1997 GY_{24}
1997 GZ_{24}	14.5	0.15	19970402	187.31167	179.89948	185.26566	15.39351	0.0128320	3.1268416	15	1	23 days	2.13			Williams		1997 GZ_{24}
1997 JC_{14}	14.5	0.15	19971218	322.77570	153.10531	195.89238	10.09655	0.2061321	2.5507771	17	1	79 days	0.32	M-v	5	Williams		1997 JC_{14}
1997 NZ	12.5	0.15	19971218	34.28868	8.19310	284.77709	12.06471	0.1631969	2.6073781	49	4	1972–1997	0.52	M-v	2	Williams	31010	1997 NZ
1997 PC_4	15.5	0.15	19971218	38.70080	142.78512	162.49028	5.33644	0.2345910	2.6051777	26	4	1971–1997	0.48	M-v	2	Williams	31010	1997 PC_4
1997 QA	14.0	0.15	19971218	55.00867	25.62692	317.86663	6.80831	0.0834083	2.4115815	46	1	132 days	0.47	M-v	4	Williams	31010	1997 QA
1997 QN	15.0	0.15	19971218	17.83478	132.32925	256.98149	5.01913	0.1011744	2.2885094	50	1	123 days	0.45	M-v	3	Williams	31010	1997 QN
1997 QC_1	15.0	0.15	19971218	70.23502	119.93189	169.81723	3.41121	0.1414515	2.2864630	29	1	112 days	0.32	M-v	4	Williams	31010	1997 QC_1
1997 QH_1	14.0	0.15	19971218	95.03428	349.78594	277.30137	5.11911	0.1414257	2.2050947	24	1	121 days	0.46	M-v	4	Williams	31010	1997 QH_1
1997 QK_1	20.0	0.15	19971218	26.04217	2.53396	307.14271	2.89015	0.6424435	2.7917351	144	1	72 days	0.66	M-v	5	Williams	30904	1997 QK_1
1997 RC	14.0	0.15	19971218	308.59912	51.60861	63.33996	3.01355	0.0272161	2.8545543	49	1	94 days	0.44	M-v	5	Williams	31010	1997 RC
1997 RT_5	7.0	0.15	19970909	0.00000	180.08634	163.74603	12.49435	0.0000000	42.2357954	24	1	50 days	0.35		E	Marsden		1997 RT_5
1997 RP_7	14.0	0.15	19971218	66.88795	79.32947	264.73340	4.48223	0.1343753	2.4021154	27	4	1974–1997	0.62	M-v	2	Williams	31011	1997 RP_7
1997 RZ_7	12.9	0.15	19971218	3.79006	42.20013	339.70612	14.81935	0.1767998	2.5968993	17	1	114 days	0.50	M-v	4	Nakano		1997 RZ_7
1997 RT_9	14.0	0.15	19971218	338.09637	240.57165	179.72783	5.23861	0.2091688	2.7243971	29	4	1979–1997	0.56	M-v	2	Williams	30905	1997 RT_9
1997 SR	14.0	0.15	19971218	34.68602	353.50577	324.33015	11.92102	0.1746111	2.7169973	29	1	89 days	0.34	M-v	4	Williams	30905	1997 SR
1997 ST	14.0	0.15	19971218	1.70645	208.14777	210.64288	3.39764	0.0709271	2.2686417	42	4	1980–1997	0.52	M-v	1	Williams	31011	1997 ST
1997 SU	13.5	0.15	19971218	24.50556	178.58577	211.67208	5.48042	0.1272896	2.4023873	34	2	1993–1997	0.60	M-v	4	Williams	31011	1997 SU
1997 SX	12.5	0.15	19971218	56.07037	312.64921	46.62885	10.56037	0.1023314	3.0602082	24	1	117 days	0.63	M-v	4	Williams		1997 SX
1997 SG_1	13.5	0.15	19971218	276.49485	339.76496	161.02451	13.52519	0.1077667	2.6724221	53	2	1977–1997	0.76	M-v	4	Marsden	31011	1997 SG_1
1997 SM_1	13.5	0.15	19971218	162.21509	5.57647	199.20028	13.38576	0.1058066	2.6821746	21	1	112 days	0.16	M-v	4	Williams		1997 SM_1
1997 SU_1	15.5	0.15	19971218	3.73287	191.96225	182.47407	2.30000	0.1636720	2.5484699	43	3	1993–1997	0.45	M-v	3	Williams	30987	1997 SU_1
1997 SX_1	14.0	0.15	19971218	322.36260	248.46873	209.36971	4.41538	0.1462377	2.6366864	36	1	111 days	0.46	M-v	4	Williams		1997 SX_1
1997 SZ_1	14.0	0.15	19971218	343.52433	230.70918	200.65913	2.71249	0.1185327	2.4446067	52	3	1991–1997	0.60	M-v	2	Williams	31011	1997 SZ_1
1997 SG_2	14.5	0.15	19971218	36.87612	13.28265	338.29770	7.56975	0.0747571	2.2216186	28	1	100 days	0.28	M-v	4	Williams	31011	1997 SG_2
1997 SN_2	16.0	0.15	19971218	326.33692	186.39478	230.35686	1.58786	0.1577494	2.3861289	24	3	1990–1997	0.52	M-v	4	Williams	31011	1997 SN_2
1997 SN_3	14.0	0.15	19971218	317.10730	290.11665	149.00804	5.69941	0.1383524	2.7579076	21	3	1992–1997	0.63	M-v	2	Williams	31011	1997 SN_3
1997 SV_3	15.0	0.15	19971218	14.05748	23.69510	358.28860	8.30166	0.3611912	2.7447563	18	1	68 days	0.16	M-v	5	Williams		1997 SV_3
1997 SE_5	15.0	0.15	19971218	11.64854	56.38822	288.05856	2.61438	0.6674942	3.7225139	401	1	196 days	0.54	M-v	3	Marsden	31011	1997 SE_5
1997 SB_{10}	13.5	0.15	19971218	320.01842	250.20406	233.08803	4.36790	0.1634647	2.5634780	34	3	1978–1997	0.63	M-v	3	Williams	31011	1997 SB_{10}
1997 SU_{10}	15.0	0.15	19971218	30.46158	160.07350	230.29097	3.35836	0.1577090	2.2421106	21	1	75 days	0.59	M-v	5	Williams		1997 SU_{10}
1997 SF_{11}	14.0	0.15	19971218	278.82840	264.60248	215.70068	12.67932	0.0558466	3.0991962	36	1	96 days	0.57	M-v	5	Williams	31011	1997 SF_{11}
1997 SL_{15}	16.5	0.15	19971019	323.58581	165.82412	276.88959	1.87995	0.1756953	2.2574709	22	1	57 days	0.48			Williams		1997 SL_{15}
1997 SU_{15}	15.0	0.15	19971218	22.87430	67.92042	313.83911	1.49717	0.2066565	2.4426267	25	1	105 days	0.49	M-v	4	Williams	31012	1997 SU_{15}
1997 SX_{15}	13.5	0.15	19971218	211.23660	181.41867	23.98763	10.43113	0.1804713	2.4259183	22	2	1993–1997	0.70	M-v	5	Williams	30987	1997 SX_{15}
1997 SG_{16}	13.5	0.15	19971218	252.32933	315.03762	187.68495	1.81477	0.0108279	2.8534694	30	5	1985–1997	0.69	M-v	2	Williams	31012	1997 SG_{16}
1997 SL_{17}	15.0	0.15	19971218	330.21282	79.20088	351.17384	10.17461	0.2328903	2.4217839	36	1	88 days	0.61	M-v	5	Williams		1997 SL_{17}
1997 SP_{17}	14.5	0.15	19971218	14.80724	183.64224	198.28140	7.05417	0.3001036	2.6349982	22	1	87 days	0.74	M-v	4	Williams		1997 SP_{17}
1997 SF_{25}	14.7	0.15	19971218	4.03724	10.86240	19.86853	6.67362	0.1315424	2.3985124	18	1	86 days	0.62	M-v	5	Nakano		1997 SF_{25}
1997 SG_{25}	14.1	0.15	19971218	102.19006	197.41912	68.72555	3.04711	0.1855827	2.4049953	11	1	67 days	0.76	M-v	6	Nakano		1997 SG_{25}
1997 SK_{25}	13.5	0.15	19971218	4.09650	210.41207	172.42994	9.96970	0.0921885	2.9812064	11	1	67 days	0.70	M-v	6	Nakano		1997 SK_{25}
1997 SW_{33}	13.0	0.15	19971218	346.26015	47.76178	37.82330	4.98710	0.1462783	3.1307686	35	4	1977–1997	0.67	M-v	2	Williams	31012	1997 SW_{33}
1997 SA_{34}	13.0	0.15	19971218	346.00549	51.16033	37.35800	9.75660	0.2108754	2.9144778	24	1	80 days	0.53	M-v	4	Williams	31012	1997 SA_{34}
1997 SB_{34}	13.5	0.15	19971218	44.75169	339.80518	32.08210	5.51906	0.1647756	2.1695114	24	1	106 days	0.50	M-v	4	Williams		1997 SB_{34}
1997 TD	16.5	0.15	19971218	28.35862	170.57074	159.16935	12.89222	0.4683268	2.2496805	138	1	85 days	0.56	M-v	5	Williams	31012	1997 TD
1997 TE	13.5	0.15	19971218	345.80982	35.46563	27.06507	9.45004	0.1892306	2.6254154	18	1	74 days	0.35	M-v	4	Marsden	31012	1997 TE
1997 TU_9	14.0	0.15	19971218	238.09542	339.88260	212.82054	4.75157	0.4269858	2.7062909	29	3	1959–1998	0.56	M-v	4	Marsden	30882	1997 TU_9
1997 TW_9	14.5	0.15	19971218	17.34811	288.47938	89.88486	2.92736	0.1283761	3.0611732	35	1	87 days	0.55	M-v	4	Williams		1997 TW_9

1997 TS_{16}	15.0	0.15	19971218	11.66931	172.14415	203.02323	5.18652	0.1565688	2.4290980	51	4	1993–1997	0.76	M-v	2	Williams	31013	1997 TS_{16}
1997 TX_{16}	14.5	0.15	19971218	244.78498	125.19551	48.34459	11.23163	0.0294160	2.5145820	30	1	75 days	0.30	M-v	4	Williams		1997 TX_{16}
1997 TA_{17}	15.5	0.15	19971218	19.23380	73.62790	306.38308	5.43491	0.1549697	2.5396856	20	1	82 days	0.24	M-v	3	Williams		1997 TA_{17}
1997 TD_{17}	15.1	0.15	19971218	2.40919	276.58582	126.63779	5.57024	0.1678810	2.3029237	12	1	60 days	0.49	M-v	5	Nakano		1997 TD_{17}
1997 TF_{17}	15.0	0.15	19971218	49.30840	184.16181	143.87327	6.32983	0.2583194	2.4142192	12	1	60 days	0.76	M-v	6	Nakano		1997 TF_{17}
1997 TY_{17}	13.0	0.15	19971218	359.48373	328.86663	72.54478	2.82756	0.0652288	2.8799301	26	4	1980–1997	0.92	M-v	4	Williams	30988	1997 TY_{17}
1997 TA_{18}	14.4	0.15	19971218	35.46851	225.96105	187.64687	11.44664	0.1788011	2.6385857	29	1	86 days	0.37	M-v	5	Nakano		1997 TA_{18}
1997 TJ_{19}	13.2	0.15	19971218	3.44982	357.38380	46.35000	5.95794	0.0874251	2.7641089	28	1	81 days	0.49	M-v	4	Nakano		1997 TJ_{19}
1997 TM_{19}	15.5	0.15	19971218	344.62184	89.01614	337.06395	12.31862	0.1545925	2.6486688	16	1	81 days	0.23	M-v	4	Williams		1997 TM_{19}
1997 TO_{19}	15.0	0.15	19971218	64.28160	116.91721	210.71166	4.99884	0.1640837	2.2728095	26	2	1990–1997	0.50	M-v	4	Williams	31013	1997 TO_{19}
1997 TJ_{24}	12.5	0.15	19971218	302.42017	233.56381	228.07975	9.00071	0.0711589	3.0497275	31	1	84 days	0.44	M-v	5	Williams		1997 TJ_{24}
1997 TN_{24}	13.0	0.15	19971019	263.67054	117.89911	40.35385	7.55351	0.0823777	2.4200301	26	1	56 days	0.57			Williams		1997 TN_{24}
1997 TY_{24}	15.0	0.15	19971218	48.89179	171.41543	164.36270	2.27509	0.2003422	2.5887817	22	3	1995–1997	0.69	M-v	4	Williams	30989	1997 TY_{24}
1997 TE_{25}	14.5	0.15	19971218	40.12670	157.16077	194.30794	3.89466	0.2922961	2.5800518	42	2	1996–1997	0.65	M-v	4	Williams	31013	1997 TE_{25}
1997 TR_{25}	12.5	0.15	19971019	359.79571	13.41505	34.28409	7.05245	0.2824785	2.5626395	22	1	47 days	0.69			Williams		1997 TR_{25}
1997 TT_{25}	19.0	0.15	19971218	13.35860	17.82758	30.39978	7.62002	0.4162046	2.1237852	148	1	83 days	0.47	M-v	4	Marsden	31013	1997 TT_{25}
1997 TD_{26}	14.0	0.15	19971019	338.89574	21.12957	27.16120	9.70831	0.2048533	2.7250851	17	1	36 days	0.43			Williams		1997 TD_{26}
1997 TG_{26}	13.5	0.15	19971218	33.63584	51.75372	303.38521	2.81699	0.2239128	2.5732305	30	2	1993–1997	0.44	M-v	4	Williams	30989	1997 TG_{26}
1997 TR_{26}	14.5	0.15	19971218	55.25453	298.76914	46.06163	3.64686	0.1901954	2.4309189	34	3	1978–1997	0.79	M-v	4	Williams	30989	1997 TR_{26}
1997 TS_{26}	13.0	0.15	19971019	18.13116	349.14784	38.46010	9.79107	0.1613074	2.7930226	15	1	41 days	0.54			Williams		1997 TS_{26}
1997 TA_{27}	15.0	0.15	19971019	17.38120	73.82387	306.54851	1.28168	0.2268398	2.3769847	15	1	51 days	0.31			Williams		1997 TA_{27}
1997 UC	15.0	0.15	19971218	60.20335	126.65818	186.19908	14.38166	0.1836647	2.4522164	17	1	66 days	0.78	M-v	5	Nakano		1997 UC
1997 UE	16.0	0.15	19971108	315.14287	256.53766	185.44389	0.51018	0.0907673	2.3788959	19	1	59 days	0.40			Williams		1997 UE
1997 UH	14.0	0.15	19971218	161.21299	78.52807	157.25963	14.29359	0.1140513	2.6280327	16	1	84 days	0.49	M-v	5	Williams		1997 UH
1997 UU	16.0	0.15	19971218	331.66782	230.74493	219.61984	5.61730	0.0689149	2.2912363	24	1	70 days	0.62	M-v	5	Williams		1997 UU
1997 UX	15.5	0.15	19971218	54.43444	294.85102	31.91043	10.29669	0.2561290	2.5286393	26	1	92 days	0.64	M-v	4	Williams	31014	1997 UX
1997 UB_1	15.0	0.15	19971218	97.56872	260.96600	32.36065	4.76484	0.1557552	2.3187831	42	1	69 days	0.59	M-v	5	Williams		1997 UB_1
1997 UE_1	15.0	0.15	19971218	18.81901	348.94475	32.57946	5.99979	0.3185272	2.5823136	33	1	78 days	0.69	M-v	4	Williams		1997 UE_1
1997 UF_1	15.0	0.15	19971108	5.57659	174.56321	218.06154	4.32397	0.1387773	2.3209325	22	1	45 days	0.76			Nakano		1997 UF_1
1997 UG_1	13.3	0.15	19971218	15.04073	357.12927	33.56956	10.08091	0.0785210	2.9957435	28	1	73 days	0.55	M-v	4	Nakano		1997 UG_1
1997 UJ_1	15.5	0.15	19971218	0.54314	19.54861	25.37305	4.10072	0.1187446	2.7332997	30	1	63 days	0.55	M-v	5	Williams		1997 UJ_1
1997 UK_1	15.0	0.15	19971218	337.49891	47.63727	29.85333	6.03897	0.1161062	2.6136456	33	1	79 days	0.45	M-v	5	Williams		1997 UK_1
1997 UO_1	14.9	0.15	19971218	24.07669	140.21835	249.27144	3.78431	0.1941715	2.1824204	81	1	73 days	0.63	M-v	4	Nakano		1997 UO_1
1997 UE_2	15.0	0.15	19971218	343.98542	51.42164	33.74658	6.40876	0.2666677	2.5996878	35	1	67 days	0.69	M-v	5	Williams		1997 UE_2
1997 UG_2	14.5	0.15	19971108	5.91442	168.18461	217.67914	1.79479	0.2394283	2.6839094	46	1	55 days	0.63			Williams		1997 UG_2
1997 UJ_2	17.0	0.15	19971108	31.22015	308.13592	58.10631	8.07277	0.1346449	2.3955762	16	1	45 days	0.72			Williams		1997 UJ_2
1997 US_2	19.5	0.15	19971218	337.60233	99.76931	66.37862	3.16990	0.6615749	1.6730103	79	1	66 days	0.67	M-v	6	Williams	31014	1997 US_2
1997 UU_2	13.3	0.15	19971218	359.55432	93.20093	313.77442	1.59164	0.0205238	2.8947901	14	1	73 days	0.41	M-v	5	Nakano		1997 UU_2
1997 UX_2	16.0	0.15	19971218	73.34436	90.37666	215.16667	10.21299	0.2683819	2.2755680	50	1	85 days	0.44	M-v	4	Williams		1997 UX_2
1997 UY_2	15.0	0.15	19971218	14.52802	180.96289	222.66236	10.43638	0.2388643	2.3079935	40	1	61 days	0.30	M-v	4	Williams		1997 UY_2
1997 UG_3	15.0	0.15	19971019	24.67368	17.62359	325.74223	3.16667	0.2572079	2.2921903	19	1	50 days	1.00			Williams		1997 UG_3
1997 UJ_3	13.5	0.15	19971108	94.78709	359.42938	304.89483	2.84187	0.0836589	2.7288658	33	1	59 days	0.52			Williams		1997 UJ_3
1997 UK_3	15.0	0.15	19971218	10.42519	179.91710	228.88339	4.19679	0.2537789	2.3812671	34	5	1964–1997	0.64	M-v	3	Williams	31014	1997 UK_3
1997 UM_3	13.5	0.15	19971218	8.56376	62.72915	349.09699	2.02659	0.1997091	2.3799948	22	4	1975–1997	0.74	M-v	2	Williams	31014	1997 UM_3
1997 UN_3	16.0	0.15	19971218	354.09015	204.50500	227.73501	4.11601	0.2037713	2.5764960	22	2	1989–1997	0.56	M-v	5	Williams	31014	1997 UN_3
1997 UO_3	14.0	0.15	19971108	336.60550	205.71995	238.61876	7.07606	0.2059382	2.3566910	18	1	35 days	0.49			Williams		1997 UO_3
1997 UP_3	13.5	0.15	19971218	314.74859	187.53463	281.33790	2.51642	0.0377043	2.3984467	21	2	1991–1997	0.58	M-v	6	Williams	31014	1997 UP_3
1997 UQ_3	13.5	0.15	19971218	325.64366	61.61638	44.66758	1.54953	0.1371380	2.4219817	23	2	1993–1997	0.58	M-v	5	Williams	31014	1997 UQ_3
1997 UR_3	14.0	0.15	19971218	83.99319	291.58724	37.43160	3.33423	0.0511284	2.6663852	24	1	91 days	0.68	M-v	5	Williams	31014	1997 UR_3
1997 US_3	13.5	0.15	19971108	7.57877	169.97622	228.98401	12.92723	0.1615553	2.7115383	17	1	35 days	0.54			Williams		1997 US_3
1997 UT_3	13.5	0.15	19971218	1.63733	203.74193	213.68405	0.65754	0.1349382	3.2022395	28	1	95 days	0.60	M-v	4	Williams	31014	1997 UT_3
1997 UU_3	14.0	0.15	19971218	55.97317	109.24432	225.86978	24.91710	0.2820807	2.3431614	22	2	1982–1997	0.83	M-v	5	Williams	30989	1997 UU_3
1997 UV_3	14.0	0.15	19971218	24.97248	0.33008	27.45884	2.55450	0.1895140	2.4486984	31	3	1974–1997	0.35	M-v	4	Williams	31014	1997 UV_3

1997 UX_3	16.0	0.15	19971108	15.88875	145.74080	228.44176	7.86335	0.3622265	2.6767206	31	1	39 days	0.86			Williams		1997 UX_3
1997 UY_3	13.5	0.15	19971218	350.66892	200.23467	235.91522	2.72861	0.1520541	2.5838677	28	2	1989–1997	0.70	M-v	5	Williams	31014	1997 UY_3
1997 UA_4	14.5	0.15	19971218	208.07331	315.70474	254.08842	3.59153	0.0578218	2.3104745	50	1	69 days	0.78	M-v	4	Williams		1997 UA_4
1997 UU_4	15.0	0.15	19971218	42.87631	306.78958	45.26333	6.32708	0.2840631	2.3644500	24	2	1996–1997	0.49	M-v	4	Williams	31014	1997 UU_4
1997 UX_4	15.0	0.15	19971218	324.74628	110.11283	5.20754	2.80856	0.1893847	2.3497797	22	2	1993–1997	0.64	M-v	5	Williams	30990	1997 UX_4
1997 UA_5	15.0	0.15	19971218	40.63105	303.61727	37.08091	6.93331	0.2275024	2.3378240	23	1	89 days	0.43	M-v	4	Williams		1997 UA_5
1997 UG_5	14.5	0.15	19971108	348.88120	19.74857	30.56424	18.60840	0.1857936	3.2330404	31	1	59 days	0.60			Williams		1997 UG_5
1997 UJ_5	15.0	0.15	19971218	57.78618	339.29128	355.41618	4.38883	0.0983872	2.3072646	41	4	1992–1997	0.63	M-v	2	Williams	30990	1997 UJ_5
1997 UK_5	14.5	0.15	19971218	40.76675	29.95984	320.51785	13.50315	0.2201716	2.5513349	25	1	60 days	0.40	M-v	4	Williams		1997 UK_5
1997 UA_7	13.5	0.15	19971108	17.68035	316.44602	53.19667	8.34983	0.3435053	3.0062192	35	1	44 days	0.98			Williams		1997 UA_7
1997 UC_7	12.0	0.15	19971108	165.37794	192.57104	57.52318	13.82539	0.1446019	2.5889629	17	1	38 days	0.57			Williams		1997 UC_7
1997 UF_7	15.0	0.15	19971108	348.52669	24.40093	47.79870	7.33919	0.0964888	2.3298948	14	1	58 days	0.71			Williams		1997 UF_7
1997 UG_7	13.0	0.15	19971218	218.85428	195.38454	337.53469	12.41808	0.1191161	2.6902787	30	1	74 days	0.48	M-v	5	Williams		1997 UG_7
1997 UP_7	15.0	0.15	19971218	342.06165	104.60088	338.40469	2.49454	0.2317032	2.5705271	32	1	143 days	0.52	M-v	4	Williams	31015	1997 UP_7
1997 UU_7	14.5	0.15	19971218	80.52841	122.50937	162.58327	6.59908	0.1447077	2.3070663	13	1	75 days	0.32	M-v	6	Williams		1997 UU_7
1997 UX_7	13.5	0.15	19971218	334.99744	222.41778	226.26394	7.09304	0.1956544	2.7919855	42	3	1969–1997	0.62	M-v	3	Williams	30990	1997 UX_7
1997 UB_8	15.0	0.15	19971218	356.12845	221.41891	202.86838	22.75514	0.3115129	2.3325103	27	2	1990–1997	0.55	M-v	4	Williams	31015	1997 UB_8
1997 UE_8	15.5	0.15	19971108	56.24525	291.06237	48.36851	1.54211	0.0982936	2.7392870	19	1	47 days	0.86			Williams		1997 UE_8
1997 UF_8	16.0	0.15	19971019	29.12820	285.36955	13.80325	28.75333	0.4328803	2.5626431	12	1	7 days	0.84			Williams		1997 UF_8
1997 UG_8	15.0	0.15	19971108	32.04181	171.73744	154.95221	17.23871	0.2904527	2.7200360	22	1	31 days	1.00			Williams		1997 UG_8
1997 UO_8	12.0	0.15	19971218	331.03695	39.47658	39.89432	15.32041	0.0817786	2.5573812	18	1	62 days	0.60	M-v	6	Williams		1997 UO_8
1997 UQ_8	15.1	0.15	19971108	45.12252	278.66976	44.83649	5.13314	0.2541422	2.3591504	20	1	34 days	0.75			Nakano		1997 UQ_8
1997 US_8	13.0	0.15	19971218	205.89655	44.87682	165.46500	1.47865	0.1246516	3.1797013	29	3	1988–1997	0.79	M-v	5	Williams	31015	1997 US_8
1997 UT_8	14.5	0.15	19971108	57.34474	121.74695	210.37738	5.54675	0.1470609	2.5332709	28	1	34 days	1.17			Nakano		1997 UT_8
1997 UV_8	14.5	0.15	19971108	26.80865	160.55889	209.57308	12.37816	0.1314261	2.8682704	23	1	31 days	0.93			Nakano		1997 UV_8
1997 UW_8	15.0	0.15	19971218	85.28170	148.96791	157.32817	2.86794	0.1925211	2.6240426	39	3	1995–1997	0.78	M-v	4	Williams	30990	1997 UW_8
1997 UY_8	14.5	0.15	19971108	58.93358	273.68562	57.65119	5.13818	0.2041194	2.2051365	25	1	37 days	0.69			Williams		1997 UY_8
1997 UZ_8	13.5	0.15	19971218	95.55080	102.60392	217.86701	3.83657	0.0768807	2.3902128	33	3	1978–1997	0.78	M-v	3	Williams	31015	1997 UZ_8
1997 UA_9	12.0	0.15	19971218	235.96661	132.13860	59.01981	11.07044	0.0226145	2.5584743	27	3	1970–1997	0.68	M-v	3	Williams	31015	1997 UA_9
1997 UF_9	16.5	0.15	19971218	280.08478	157.76012	37.28363	25.88314	0.6042589	1.4423688	122	1	73 days	0.59	M-v	5	Williams	31015	1997 UF_9
1997 UH_9	19.0	0.15	19971218	235.43700	180.83518	42.47485	25.48940	0.4747089	0.8299979	177	1	73 days	0.60	M-v	6	Williams	31015	1997 UH_9
1997 UL_9	15.0	0.15	19971218	322.02664	73.05250	37.22200	14.29970	0.2176600	2.6060873	33	1	74 days	0.68	M-v	5	Williams		1997 UL_9
1997 UM_9	14.0	0.15	19971218	271.62930	88.32279	45.91475	7.52664	0.0377646	2.4310481	32	3	1982–1997	0.36	M-v	3	Williams	30991	1997 UM_9
1997 UN_9	14.5	0.15	19971218	71.21905	348.96591	333.77486	1.46100	0.1391252	2.6282401	29	1	102 days	0.57	M-v	5	Williams		1997 UN_9
1997 US_9	17.5	0.15	19971218	232.66144	357.19333	212.31466	20.01532	0.2818331	1.0523754	123	1	62 days	0.59	M-v	5	Marsden	31015	1997 US_9
1997 UQ_{10}	15.5	0.15	19971108	9.29238	233.39363	145.19931	4.79035	0.2526198	2.6059270	36	1	51 days	0.39			Williams		1997 UQ_{10}
1997 UU_{10}	15.0	0.15	19971218	293.79174	111.66932	21.98994	3.99433	0.1500700	2.4333390	17	1	61 days	0.44	M-v	6	Williams		1997 UU_{10}
1997 UV_{10}	12.0	0.15	19971218	255.65963	270.69730	240.69297	7.95857	0.1050713	2.7704854	39	5	1979–1997	0.73	M-v	2	Williams	30991	1997 UV_{10}
1997 UW_{10}	14.5	0.15	19971108	15.55020	3.41189	5.96138	6.68457	0.2012967	2.3647201	21	1	50 days	0.82			Williams		1997 UW_{10}
1997 UY_{10}	14.0	0.15	19971218	338.16212	255.06622	189.36846	1.51991	0.0719619	2.9761244	46	4	1992–1997	0.62	M-v	1	Williams	30991	1997 UY_{10}
1997 UB_{11}	12.3	0.15	19971218	340.49122	26.87868	0.59726	21.38117	0.0416574	3.2156016	13	1	68 days	0.72	M-v	6	Nakano		1997 UB_{11}
1997 UC_{11}	13.8	0.15	19971218	79.92696	264.36045	7.54578	23.20274	0.2099351	2.3611131	15	1	68 days	0.44	M-v	5	Nakano		1997 UC_{11}
1997 UD_{11}	13.0	0.15	19971218	193.56504	161.52718	52.89289	1.83108	0.1410129	3.1186732	28	4	1978–1997	0.69	M-v	2	Williams	30991	1997 UD_{11}
1997 UE_{11}	16.5	0.15	19971108	29.94583	155.43529	200.35235	1.58846	0.2184218	2.3372693	23	1	37 days	0.86			Williams		1997 UE_{11}
1997 UV_{14}	13.5	0.15	19971218	77.68745	137.06606	201.61686	8.10402	0.0282949	2.8798430	26	2	1992–1997	0.47	M-v	5	Williams	31016	1997 UV_{14}
1997 UW_{14}	14.0	0.15	19971218	6.33303	342.68405	50.31773	6.53479	0.1136704	3.1636018	18	1	72 days	0.47	M-v	5	Williams		1997 UW_{14}
1997 UX_{14}	15.0	0.15	19971218	9.99191	347.58803	43.20171	10.19775	0.1047259	2.7360031	21	1	62 days	0.54	M-v	5	Williams		1997 UX_{14}
1997 UY_{14}	13.5	0.15	19971218	24.55941	318.95666	62.84025	2.94096	0.1175901	2.9498207	24	2	1977–1997	0.80	M-v	5	Williams	30991	1997 UY_{14}
1997 UZ_{14}	14.8	0.15	19971218	294.28543	87.53208	48.35479	4.35071	0.1313301	2.3506882	36	1	66 days	0.70	M-v	6	Nakano		1997 UZ_{14}
1997 UA_{15}	16.0	0.15	19971218	20.15013	339.18170	53.09274	2.95869	0.1843869	2.2457953	36	1	66 days	0.59	M-v	4	Nakano		1997 UA_{15}
1997 UB_{15}	15.0	0.15	19971218	349.54783	14.19667	54.75854	1.57757	0.0628839	2.3761844	25	1	118 days	0.99	M-v	4	Williams	31016	1997 UB_{15}
1997 UC_{15}	13.5	0.15	19971218	28.67324	249.77250	124.18280	1.08090	0.2050063	3.1094562	43	4	1975–1997	0.79	M-v	3	Williams	30991	1997 UC_{15}
1997 UG_{15}	14.6	0.15	19971108	354.11316	281.67471	134.90965	2.71403	0.1620109	2.4344804	13	1	31 days	0.78			Nakano		1997 UG_{15}

1997 US_{17}	15.0	0.15	19971108	161.25697	173.83535	70.95608	5.18773	0.0601727	2.3118754	9	1	29 days	0.22			Williams		1997 US_{17}
1997 UW_{17}	14.5	0.15	19971108	159.85165	190.98708	55.36251	8.63734	0.0260838	2.5549628	23	1	40 days	0.61			Williams		1997 UW_{17}
1997 UW_{18}	12.5	0.15	19971108	265.59490	82.73785	62.77725	9.20968	0.0127285	3.4000665	23	1	40 days	0.74			Williams		1997 UW_{18}
1997 UX_{20}	13.0	0.15	19971218	28.47872	312.34077	68.30236	1.71728	0.1418232	3.2205521	26	3	1971–1997	0.61	M-v	4	Williams	30992	1997 UX_{20}
1997 UY_{20}	13.5	0.15	19971218	61.00869	84.55133	206.45680	11.63533	0.2376912	3.0831449	28	3	1991–1997	0.50	M-v	2	Williams	30992	1997 UY_{20}
1997 UA_{21}	14.0	0.15	19971218	70.74026	92.15070	210.01845	9.56880	0.0893654	2.5733631	24	2	1996–1997	0.40	M-v	3	Williams	30992	1997 UA_{21}
1997 UC_{21}	14.5	0.15	19971019	19.23802	352.53065	11.32012	7.04222	0.1303083	2.3797707	25	1	48 days	0.68			Williams		1997 UC_{21}
1997 UE_{21}	14.4	0.15	19971218	289.40191	111.01186	9.95521	12.51204	0.1509546	3.1450531	14	1	64 days	0.76	M-v	6	Nakano		1997 UE_{21}
1997 UF_{21}	16.5	0.15	19971218	357.24520	208.92874	198.99828	3.52575	0.1517377	2.2637081	18	1	65 days	0.39	M-v	5	Nakano		1997 UF_{21}
1997 UK_{21}	14.0	0.15	19971218	338.04149	71.68570	23.81082	4.05771	0.1673526	2.5873600	25	2	1976–1997	0.48	M-v	5	Williams	30992	1997 UK_{21}
1997 UM_{21}	15.5	0.15	19971218	232.79288	142.15782	27.27088	5.26471	0.0739231	2.2178058	16	1	65 days	0.32	M-v	5	Nakano		1997 UM_{21}
1997 UV_{21}	13.5	0.15	19971218	319.48398	67.31171	53.36797	13.15724	0.2123006	2.5385872	33	2	1993–1998	0.69	M-v	4	Williams	30992	1997 UV_{21}
1997 UX_{21}	15.5	0.15	19971019	32.02082	71.57141	279.03852	4.99836	0.2311838	2.2324082	12	1	15 days	0.90			Williams		1997 UX_{21}
1997 UZ_{21}	14.0	0.15	19971108	45.46318	176.46542	165.84652	3.96789	0.2079279	2.2220914	16	1	35 days	0.81			Williams		1997 UZ_{21}
1997 UC_{22}	11.5	0.15	19971108	8.89554	51.60532	292.73707	17.63867	0.1552232	3.2113006	16	1	41 days	0.37			Williams		1997 UC_{22}
1997 UF_{22}	15.4	0.15	19971108	350.10392	252.04824	158.64506	3.59545	0.0833821	2.4223499	16	1	28 days	0.68			Nakano		1997 UF_{22}
1997 UG_{22}	15.4	0.15	19971108	329.01696	14.90491	60.15685	7.55438	0.0810700	2.3629721	20	1	24 days	0.81			Nakano		1997 UG_{22}
1997 UJ_{22}	16.0	0.15	19971108	20.45374	193.30910	172.73024	4.73692	0.2460925	2.6070963	18	1	24 days	1.00			Nakano		1997 UJ_{22}
1997 UK_{22}	14.5	0.15	19971218	77.38129	186.94348	126.55567	3.42414	0.1658642	2.4304522	39	5	1982–1997	0.74	M-v	1	Williams	30992	1997 UK_{22}
1997 UL_{22}	15.7	0.15	19971108	80.06416	191.43897	114.88462	3.59944	0.1162126	2.2146133	23	1	28 days	1.03			Nakano		1997 UL_{22}
1997 UK_{24}	13.5	0.15	19971019	29.27669	66.03923	301.29614	4.53100	0.0923238	2.2025658	11	1	15 days	0.38			Williams		1997 UK_{24}
1997 UL_{24}	12.5	0.15	19971108	28.42307	53.81758	269.09214	14.19032	0.1341054	2.6065223	16	1	41 days	0.30			Williams		1997 UL_{24}
1997 UN_{24}	15.0	0.15	19971218	1.99099	181.67372	250.09840	5.36469	0.2795893	2.3790155	42	3	1964–1998	0.89	M-v	3	Williams	30992	1997 UN_{24}
1997 UT_{24}	16.0	0.15	19971218	21.10231	100.23115	279.92461	2.19953	0.2438716	2.3602075	22	2	1993–1997	0.45	M-v	4	Williams	30993	1997 UT_{24}
1997 VF	16.5	0.15	19971108	21.29418	309.58072	60.45630	5.78388	0.2464399	2.3506520	29	1	38 days	0.49			Williams		1997 VF
1997 VH	14.5	0.15	19971108	11.69322	6.49913	23.03778	5.88307	0.2097308	2.6027629	46	1	57 days	1.02			Williams		1997 VH
1997 VK	16.0	0.15	19971108	15.87495	171.56047	218.65511	5.36576	0.1052368	2.3559407	33	1	39 days	0.46			Williams		1997 VK
1997 VN	15.5	0.15	19971218	28.81712	235.56436	154.39434	3.90141	0.2015073	2.7413332	26	2	1992–1998	0.63	M-v	4	Williams	30993	1997 VN
1997 VS	15.0	0.15	19971218	34.79387	290.89896	81.50486	3.40996	0.2227403	2.3758486	21	2	1986–1997	0.70	M-v	5	Williams	30993	1997 VS
1997 VU	15.0	0.15	19971019	315.25572	240.72880	210.99240	13.86755	0.0900828	2.6389610	14	1	11 days	0.90			Williams		1997 VU
1997 VV	11.5	0.15	19971218	359.54916	162.62370	241.64221	12.61052	0.0673203	3.1713211	27	1	61 days	0.58	M-v	5	Williams		1997 VV
1997 VW	13.0	0.15	19971108	239.80295	289.48584	255.84110	10.91610	0.1102851	2.6782772	26	1	57 days	0.91			Williams		1997 VW
1997 VX	13.0	0.15	19971218	44.42773	339.43631	31.25942	8.68429	0.1403890	2.3267244	20	4	1972–1997	0.54	M-v	2	Williams	30993	1997 VX
1997 VY	15.5	0.15	19971218	36.00379	110.18559	251.45682	2.97898	0.3397834	2.4340919	35	2	1978–1998	0.70	M-v	4	Williams	30993	1997 VY
1997 VZ	12.5	0.15	19971128	358.92484	18.33085	45.55086	7.02027	0.1805748	3.0236262	21	1	52 days	0.43			Williams		1997 VZ
1997 VC_1	13.0	0.15	19971218	124.79729	220.10617	67.61201	3.12074	0.0298402	2.8806022	26	1	83 days	0.90	M-v	6	Williams		1997 VC_1
1997 VF_1	13.5	0.15	19971218	0.58395	22.58175	4.00927	15.59039	0.2969961	2.8970137	19	1	84 days	0.31	M-v	4	Nakano		1997 VF_1
1997 VH_1	14.1	0.15	19971218	9.83594	97.37119	300.91578	13.11614	0.0853375	2.6089812	9	1	62 days	0.49	M-v	5	Nakano		1997 VH_1
1997 VJ_1	12.9	0.15	19971218	206.74002	250.92229	312.26409	14.38116	0.0655814	2.6212737	10	1	62 days	0.37	M-v	5	Nakano		1997 VJ_1
1997 VK_1	14.0	0.15	19971019	21.64627	335.09742	18.13611	4.02050	0.1788121	2.1516555	10	1	6 days	0.81		E	Williams		1997 VK_1
1997 VL_1	15.3	0.15	19971218	332.74634	50.01312	41.19482	6.62391	0.1492829	2.3498393	31	1	72 days	0.60	M-v	5	Nakano		1997 VL_1
1997 VP_1	14.0	0.15	19971108	343.26816	322.99183	101.03319	0.88388	0.1024243	2.6092053	30	1	27 days	1.14			Williams		1997 VP_1
1997 VR_1	15.7	0.15	19971128	40.12282	304.45940	50.82895	23.39286	0.2203207	2.3216602	19	1	27 days	0.57			Nakano		1997 VR_1
1997 VV_1	11.5	0.15	19971218	349.23596	12.39871	20.30843	4.67271	0.1428087	5.2277857	24	1	73 days	0.49	M-v	5	Williams		1997 VV_1
1997 VY_1	13.0	0.15	19971218	50.76769	148.43007	225.08525	3.22335	0.0877602	3.0710341	41	2	1991–1998	0.70	M-v	5	Williams	30993	1997 VY_1
1997 VZ_1	14.9	0.15	19971128	23.83651	140.94027	247.98095	6.19121	0.1381156	2.4720427	20	1	47 days	0.72			Nakano		1997 VZ_1
1997 VC_2	13.5	0.15	19971108	343.01815	195.14842	235.78105	9.59125	0.0888122	3.0173931	23	1	36 days	0.76			Williams		1997 VC_2
1997 VE_2	14.1	0.15	19971108	305.30633	297.35599	197.02234	5.02818	0.2602140	2.5726437	8	1	24 days	0.43			Nakano		1997 VE_2
1997 VF_2	14.5	0.15	19971108	346.96773	8.41417	59.57496	14.39536	0.1503430	2.5720604	15	1	33 days	0.99			Williams		1997 VF_2
1997 VG_2	15.0	0.15	19971218	1.99932	149.00307	278.70367	2.29862	0.2057371	2.3783105	20	2	1986–1997	0.66	M-v	4	Williams	31017	1997 VG_2
1997 VP_2	15.5	0.15	19971108	303.65200	264.20296	205.72210	14.69486	0.1646616	2.5797867	26	1	46 days	0.58			Williams		1997 VP_2
1997 VT_2	14.5	0.15	19971108	187.79431	222.17405	10.60913	3.44579	0.0551711	2.3941654	20	1	36 days	1.00			Williams		1997 VT_2
1997 VU_2	12.0	0.15	19971218	134.87887	311.70323	293.32369	8.91317	0.0635921	2.9880432	26	3	1989–1998	0.43	M-v	4	Williams	30994	1997 VU_2

1997 VV_2	15.0	0.15	19971218	358.87806	198.58515	199.67097	9.35112	0.1700201	2.5768051	16	1	73 days	0.54	M-v	5	Williams		1997 VV_2
1997 VA_3	14.0	0.15	19971218	125.45167	16.48771	271.07969	2.86001	0.0887703	2.2678115	38	2	1993–1997	0.61	M-v	5	Williams	30994	1997 VA_3
1997 VB_3	15.0	0.15	19971108	351.72723	4.66484	62.36793	4.49973	0.1983550	2.3472489	27	1	40 days	0.54			Williams		1997 VB_3
1997 VC_3	14.5	0.15	19971108	8.66444	163.11166	237.24881	3.46128	0.3155441	2.6505947	15	1	24 days	0.59			Williams		1997 VC_3
1997 VD_3	14.0	0.15	19971218	9.38275	262.56312	153.90655	0.62587	0.0772868	2.7169953	41	4	1988–1998	0.73	M-v	1	Williams	30994	1997 VD_3
1997 VE_3	13.5	0.15	19971108	73.89640	103.84170	232.04762	9.55942	0.1155500	2.9749129	22	1	28 days	0.91			Williams		1997 VE_3
1997 VF_3	15.5	0.15	19971218	63.33855	274.45888	72.69579	5.56771	0.1957524	2.2828108	29	3	1990–1997	0.87	M-v	4	Williams	30994	1997 VF_3
1997 VH_3	14.0	0.15	19971108	32.17400	331.92868	54.68676	3.71992	0.0468496	2.6175787	16	1	24 days	1.02			Williams		1997 VH_3
1997 VJ_3	13.5	0.15	19971128	17.54778	173.72173	228.54193	3.42808	0.0798129	2.6824897	27	1	57 days	0.79			Williams		1997 VJ_3
1997 VK_3	14.0	0.15	19971128	327.65131	293.37539	180.96096	2.47859	0.1959546	3.0051829	24	1	51 days	0.63			Williams		1997 VK_3
1997 VL_3	15.5	0.15	19971128	358.82048	337.34601	88.21015	3.35077	0.2293894	2.3400513	30	1	57 days	0.55			Williams		1997 VL_3
1997 VM_3	13.5	0.15	19971108	252.25021	92.96914	79.15178	7.24736	0.0565518	2.7416533	26	1	28 days	0.90			Williams		1997 VM_3
1997 VN_3	13.0	0.15	19971218	147.08866	36.18355	237.19882	18.14486	0.1927032	2.5829833	33	3	1991–1997	0.71	M-v	3	Williams	30994	1997 VN_3
1997 VO_3	15.5	0.15	19971108	342.67651	1.95361	82.19560	2.65601	0.1899053	2.3042295	19	1	28 days	0.70			Williams		1997 VO_3
1997 VP_3	13.0	0.15	19971128	199.17648	350.90751	241.24915	17.77318	0.1044044	3.1913464	19	1	54 days	0.97			Williams		1997 VP_3
1997 VQ_3	14.5	0.15	19971019	24.45181	144.74387	231.32731	8.69607	0.1809327	2.7124448	29	1	56 days	0.56			Williams		1997 VQ_3
1997 VS_3	14.5	0.15	19971108	9.31482	329.47659	72.19872	3.46099	0.2016143	2.3709492	20	1	28 days	0.48			Williams		1997 VS_3
1997 VU_3	14.5	0.15	19971218	22.37013	207.63315	191.58414	2.74173	0.1898958	2.3460684	31	2	1993–1997	0.54	M-v	4	Williams	30994	1997 VU_3
1997 VV_3	14.5	0.15	19971128	20.65080	333.99060	61.94316	15.07140	0.1506707	2.5747775	21	1	47 days	0.54			Williams		1997 VV_3
1997 VW_3	13.5	0.15	19971108	38.57304	218.81464	154.79580	2.51480	0.0897010	2.8446603	23	1	28 days	0.93			Williams		1997 VW_3
1997 VY_3	15.0	0.15	19971108	44.74758	96.95888	242.24954	7.97329	0.2566317	2.4118497	20	1	48 days	0.65			Williams		1997 VY_3
1997 VB_4	15.0	0.15	19971128	303.16961	107.11201	60.22846	7.84717	0.0752914	2.3205024	15	1	50 days	0.20			Williams		1997 VB_4
1997 VD_4	13.0	0.15	19971218	138.03839	60.91593	208.91509	1.36529	0.0301171	2.8345089	26	3	1971–1997	0.89	M-v	3	Williams	30995	1997 VD_4
1997 VE_4	14.4	0.15	19971128	51.02096	108.46787	235.17332	10.67545	0.3023826	2.5859819	24	1	53 days	0.58			Nakano		1997 VE_4
1997 VF_4	15.0	0.15	19971128	319.82682	38.14546	80.38275	3.14901	0.1406541	2.4245795	26	1	55 days	0.88			Williams		1997 VF_4
1997 VG_4	13.0	0.15	19971218	301.45540	12.00704	136.22981	2.03349	0.1729072	3.1886881	27	2	1991–1997	0.92	M-v	5	Williams	30995	1997 VG_4
1997 VM_4	18.0	0.15	19971218	347.06918	124.33746	46.01414	14.13284	0.8130336	2.6199106	124	1	58 days	0.65	M-v	5	Marsden	31018	1997 VM_4
1997 VW_4	13.8	0.15	19971218	244.56922	130.14346	49.71447	14.14486	0.1136152	2.5710483	22	1	66 days	0.97	M-v	6	Nakano		1997 VW_4
1997 VX_4	14.5	0.15	19971218	355.58105	345.64507	80.25165	1.25548	0.2527267	3.0455432	21	1	64 days	0.61	M-v	5	Williams	31018	1997 VX_4
1997 VY_4	15.9	0.15	19971218	6.76428	4.62792	48.17509	13.93171	0.2496905	2.4257211	25	1	65 days	0.69	M-v	5	Nakano		1997 VY_4
1997 VA_5	15.0	0.15	19971218	15.22071	351.42456	56.77323	6.70313	0.1698765	2.2947619	34	3	1976–1997	0.51	M-v	4	Williams	30995	1997 VA_5
1997 VC_5	13.0	0.15	19971128	90.33662	265.49303	63.58659	10.63321	0.0879838	3.0782147	24	1	57 days	1.03			Williams		1997 VC_5
1997 VD_5	15.0	0.15	19971218	20.56465	192.63425	181.01383	4.20347	0.2471204	2.4250225	26	3	1993–1997	0.39	M-v	3	Williams	30995	1997 VD_5
1997 VE_5	14.0	0.15	19971218	25.39667	292.07958	75.23052	3.06070	0.2015751	2.4028249	38	2	1996–1997	0.59	M-v	4	Williams	30995	1997 VE_5
1997 VF_5	14.5	0.15	19971108	7.06300	7.95973	27.54846	11.81680	0.1473376	2.3888317	21	1	29 days	1.01			Williams		1997 VF_5
1997 VG_5	15.5	0.15	19971108	21.54186	311.77505	60.66839	7.39132	0.1755564	2.3138470	44	1	36 days	0.81			Williams		1997 VG_5
1997 VH_5	15.0	0.15	19971108	16.41993	333.59059	65.30494	7.16482	0.1585785	2.3299813	24	1	26 days	0.92			Williams		1997 VH_5
1997 VM_5	13.5	0.15	19971218	82.77999	224.53117	106.22299	0.61865	0.1822506	3.1730768	20	2	1996–1998	0.72	M-v	5	Williams	30996	1997 VM_5
1997 VN_5	16.0	0.15	19971108	7.69113	344.82203	66.92491	8.80171	0.1887569	2.6051177	12	1	25 days	0.99			Williams		1997 VN_5
1997 VO_5	14.0	0.15	19971108	56.64237	270.75966	65.32327	13.18091	0.2885143	2.6900002	12	1	25 days	0.87			Williams		1997 VO_5
1997 VP_5	15.5	0.15	19971108	287.83769	258.88459	243.74065	5.45556	0.0632302	2.1825164	13	1	25 days	0.80			Williams		1997 VP_5
1997 VQ_5	15.5	0.15	19971218	20.04330	349.86473	59.33429	3.58220	0.1633426	2.3800584	20	2	1960–1997	0.72	M-v	5	Williams	30996	1997 VQ_5
1997 VR_5	15.5	0.15	19971108	357.77173	180.93029	245.82573	4.77824	0.1491400	2.5789103	17	1	26 days	0.87			Williams		1997 VR_5
1997 VS_5	14.0	0.15	19971218	44.91923	4.29548	6.49340	2.18130	0.2070850	3.1331186	24	3	1980–1997	0.79	M-v	4	Williams	30996	1997 VS_5
1997 VT_5	13.5	0.15	19971108	99.31358	254.21070	53.87524	9.99405	0.1850939	2.6475084	17	1	26 days	1.24			Williams		1997 VT_5
1997 VY_5	14.0	0.15	19971218	86.17011	210.11440	94.36119	2.27276	0.1892630	2.4189949	32	2	1996–1997	0.78	M-v	4	Williams	30996	1997 VY_5
1997 VA_6	15.0	0.15	19971128	337.19430	214.34712	246.36574	7.86763	0.0988238	2.3001983	25	1	51 days	1.08			Williams		1997 VA_6
1997 VB_6	15.0	0.15	19971128	34.04135	140.26065	250.04822	1.82659	0.1130524	2.1878385	16	1	53 days	0.56			Williams		1997 VB_6
1997 VD_6	13.0	0.15	19971128	268.01251	92.19141	80.47856	10.63910	0.0481605	3.0458608	12	1	53 days	0.39			Williams		1997 VD_6
1997 VF_6	14.0	0.15	19971128	284.85101	272.70640	251.58546	11.58663	0.1290718	2.5807679	16	1	50 days	0.51			Williams		1997 VF_6
1997 VH_6	14.5	0.15	19971108	83.68916	265.64121	49.51054	4.78602	0.0446158	2.6386297	32	1	37 days	1.06			Williams		1997 VH_6
1997 VJ_6	14.5	0.15	19971218	346.55242	84.01577	6.31702	4.36739	0.1122557	2.5583836	21	1	64 days	0.21	M-v	4	Williams		1997 VJ_6
1997 VM_6	13.0	0.15	19971128	28.34812	159.87242	284.58882	12.38359	0.1241308	2.5917360	12	1	59 days	0.45			Williams		1997 VM_6

1997 VO_6	12.0	0.15	19971218	19.59677	157.44999	244.43813	12.62079	0.0652675	3.1291776	35	4	1975–1997	0.71	M-v	2	Williams	30996	1997 VO_6
1997 VP_6	14.5	0.15	19971218	40.06233	138.34260	225.95410	1.04315	0.1705595	2.5153063	31	4	1977–1997	0.71	M-v	4	Williams	30996	1997 VP_6
1997 VQ_6	14.5	0.15	19971218	12.53071	341.83483	55.22322	2.13405	0.2803882	3.0891996	27	1	66 days	0.75	M-v	5	Nakano		1997 VQ_6
1997 VS_6	15.0	0.15	19971108	177.57345	336.07271	244.33067	5.20438	0.0095856	2.3451886	28	1	55 days	0.65			Williams		1997 VS_6
1997 VT_6	14.5	0.15	19971128	328.02638	305.71783	153.37844	22.85899	0.1403200	2.9803598	20	1	52 days	0.47			Williams		1997 VT_6
1997 VU_6	14.0	0.15	19971218	79.55187	172.90473	158.16356	2.35608	0.0689630	2.8434098	12	2	1978–1997	0.66	M-v	6	Williams	30996	1997 VU_6
1997 VV_6	15.0	0.15	19971108	346.55332	213.05917	217.08264	7.06652	0.1713189	2.5969241	18	1	33 days	0.84			Williams		1997 VV_6
1997 VW_6	14.0	0.15	19971108	19.15031	117.51857	268.71855	0.82120	0.1138644	2.9335362	21	1	36 days	0.90			Williams		1997 VW_6
1997 VX_6	16.1	0.15	19971128	330.68648	58.98471	42.00764	2.67375	0.2051537	2.3651391	10	1	26 days	0.45			Nakano		1997 VX_6
1997 VA_7	13.5	0.15	19971128	324.49429	204.35847	224.85319	16.74274	0.1068610	2.8005680	18	1	40 days	0.58			Williams		1997 VA_7
1997 VC_7	14.5	0.15	19971108	43.56862	74.44811	266.98986	4.22711	0.3154393	2.5881200	29	1	36 days	0.59			Williams		1997 VC_7
1997 VD_7	14.5	0.15	19971108	13.37207	37.91160	2.53545	2.57965	0.1280939	2.4061570	21	1	36 days	0.97			Williams		1997 VD_7
1997 VF_7	14.5	0.15	19971108	334.64833	210.33820	236.12937	8.32909	0.2038310	3.0300572	36	1	33 days	0.85			Williams		1997 VF_7
1997 VG_7	15.0	0.15	19971108	27.30847	88.61777	279.19319	1.25669	0.1934792	2.5256503	30	1	40 days	0.91			Williams		1997 VG_7
1997 VM_7	14.5	0.15	19971218	133.20840	232.51457	51.24398	4.99488	0.1262551	2.3143053	19	2	1971–1997	0.58	M-v	4	Williams	30996	1997 VM_7
1997 VR_7	12.0	0.15	19971108	108.44675	258.47761	46.27667	10.18987	0.0855259	3.0548197	19	1	32 days	0.65			Williams		1997 VR_7
1997 VS_7	14.0	0.15	19971128	189.37415	188.09329	49.75828	11.93971	0.1322439	2.5222121	12	1	52 days	0.87			Williams		1997 VS_7
1997 VV_7	14.5	0.15	19971128	70.66557	289.68696	46.66536	12.85128	0.1634899	2.7131116	15	1	57 days	0.28			Williams		1997 VV_7
1997 VZ_7	12.0	0.15	19971108	23.18597	339.60358	47.48021	13.79885	0.1656306	2.6846629	18	1	25 days	0.23			Williams		1997 VZ_7
1997 VA_8	13.5	0.15	19971108	108.89527	258.64823	40.30152	7.84024	0.1028949	2.3556434	23	1	28 days	0.93			Williams		1997 VA_8
1997 VL_8	15.0	0.15	19971218	12.73696	28.89483	21.82380	4.40380	0.2598572	2.6291493	21	1	64 days	0.41	M-v	4	Williams		1997 VL_8
1997 VU_8	12.5	0.15	19971108	12.74401	163.93131	256.52852	12.37230	0.1558239	2.5769520	17	1	30 days	0.49			Williams		1997 VU_8
1997 VV_8	17.0	0.15	19971108	28.69532	96.18143	274.77299	0.97451	0.1424830	2.2017000	11	1	18 days	1.21			Williams		1997 VV_8
1997 VW_8	15.0	0.15	19971128	31.61215	137.71087	232.38717	9.72204	0.1862302	2.7015443	23	1	56 days	0.44			Williams		1997 VW_8
1997 VX_8	13.0	0.15	19971128	30.19113	303.43161	67.03503	13.94342	0.1866824	2.6370129	24	1	47 days	0.97			Williams		1997 VX_8
1997 VY_8	12.0	0.15	19971218	46.50133	58.84358	304.96561	8.59675	0.1029070	3.0568268	18	4	1986–1997	0.77	M-v	2	Williams	30997	1997 VY_8
1997 WB	16.5	0.15	19971108	68.68971	151.29015	165.53323	6.39318	0.0716386	2.2871076	8	1	9 days	0.45			Williams		1997 WB
1997 WC	15.0	0.15	19971128	56.88644	105.21060	249.25802	6.13777	0.1455084	2.2858709	27	1	43 days	1.13			Williams		1997 WC
1997 WD	14.1	0.15	19971128	353.81709	14.77568	59.56595	15.13406	0.0597113	2.6069599	14	1	33 days	0.60			Nakano		1997 WD
1997 WE	15.1	0.15	19971128	226.39751	170.42835	31.05851	2.98342	0.0109949	2.1483483	17	1	33 days	0.88			Nakano		1997 WE
1997 WF	17.0	0.15	19971128	335.59166	221.60170	257.77818	4.96342	0.3668519	2.3429868	16	1	43 days	0.57			Williams		1997 WF
1997 WG	14.1	0.15	19971128	49.59287	316.22672	42.73520	5.04758	0.1870294	2.5810021	19	1	33 days	0.88			Nakano		1997 WG
1997 WH	13.5	0.15	19971218	328.04622	221.92208	245.78233	10.05079	0.0646691	3.2389854	17	2	1996–1997	0.59	M-v	4	Williams	30997	1997 WH
1997 WJ	14.5	0.15	19971128	359.75261	7.38404	60.08235	7.39976	0.1751892	2.3277008	25	1	33 days	0.73			Nakano		1997 WJ
1997 WK	13.0	0.15	19971128	170.42451	0.43322	256.43495	1.82310	0.0079864	2.6289204	18	1	45 days	0.45			Williams		1997 WK
1997 WL	13.5	0.15	19971128	198.10351	168.41113	62.33650	7.68071	0.0332787	2.8037482	18	1	42 days	0.53			Williams		1997 WL
1997 WM	13.0	0.15	19971128	275.75008	271.66596	253.42787	13.06862	0.1168252	2.7914674	23	1	43 days	0.93			Williams		1997 WM
1997 WN	13.7	0.15	19971128	30.49673	136.12213	248.01360	17.01851	0.1831873	3.0969557	15	1	33 days	0.55			Nakano		1997 WN
1997 WO	14.2	0.15	19971128	319.08512	62.22617	56.56429	3.53146	0.1223135	2.4150584	19	1	33 days	0.71			Nakano		1997 WO
1997 WP	15.5	0.15	19971108	20.91314	96.05872	293.91009	1.82719	0.1794326	2.4072782	12	1	16 days	0.60			Williams		1997 WP
1997 WQ	12.5	0.15	19971128	95.13197	256.88156	54.69174	12.73053	0.1988673	2.6390579	23	1	42 days	0.68			Williams		1997 WQ
1997 WR	14.5	0.15	19971128	1.99738	13.74268	50.67658	3.81583	0.1497074	2.6173224	13	1	33 days	0.54			Nakano		1997 WR
1997 WX	14.5	0.15	19971218	354.68978	29.15471	9.28557	8.00329	0.0689174	2.3395785	15	1	76 days	0.52	M-v	5	Williams		1997 WX
1997 WB_1	15.0	0.15	19971128	337.89023	72.25516	357.72066	2.33655	0.0974915	2.6556922	9	1	12 days	0.19			Williams		1997 WB_1
1997 WG_1	12.5	0.15	19971128	357.82284	123.70481	242.08372	9.87406	0.1126490	2.9851826	15	1	28 days	0.34			Williams		1997 WG_1
1997 WJ_1	13.5	0.15	19971218	357.72766	27.19311	15.27010	10.13335	0.0950448	2.9846198	16	1	62 days	0.49	M-v	5	Williams		1997 WJ_1
1997 WK_1	13.0	0.15	19971128	58.72778	42.72400	314.09599	4.46967	0.0793251	2.7234507	18	1	33 days	0.65			Williams		1997 WK_1
1997 WL_1	13.5	0.15	19971128	284.91469	248.51990	269.87085	9.24686	0.1627743	2.6454443	19	1	26 days	0.36			Williams		1997 WL_1
1997 WM_1	12.5	0.15	19971108	346.75870	162.02807	273.77826	8.38110	0.0689612	3.0630781	16	1	12 days	0.29			Williams		1997 WM_1
1997 WP_1	14.5	0.15	19971108	31.06242	109.17942	262.69490	0.93330	0.0829857	2.8681326	36	1	33 days	0.92			Williams		1997 WP_1
1997 WQ_1	16.0	0.15	19971108	338.76650	197.54904	235.53529	18.22621	0.0848898	1.9236134	16	1	10 days	0.44			Williams		1997 WQ_1
1997 WT_1	14.1	0.15	19971128	93.88929	282.54612	38.82620	3.72252	0.1110287	2.8057478	12	1	32 days	0.54			Nakano		1997 WT_1
1997 WU_1	14.5	0.15	19971108	85.57413	235.20327	73.78270	13.15163	0.2417188	2.3576090	18	1	15 days	0.97			Williams		1997 WU_1

1997 WV_1	14.5	0.15	19971128	270.09637	239.24846	289.72472	3.46112	0.0789750	2.2832315	16	1	32 days	1.07			Williams		1997 WV_1
1997 WY_1	17.0	0.15	19971108	6.01346	151.75087	240.07564	4.72898	0.0800320	2.4031488	12	1	23 days	0.56			Williams		1997 WY_1
1997 WZ_1	16.0	0.15	19971108	332.01792	264.88211	169.02338	3.82829	0.0977102	2.2430809	28	1	34 days	0.94			Williams		1997 WZ_1
1997 WB_2	15.5	0.15	19971218	344.95658	277.54519	158.76445	2.28561	0.1836299	2.4028670	15	2	1993–1997	0.57	M-v	6	Williams	30997	1997 WB_2
1997 WC_2	13.5	0.15	19971218	4.69203	10.50629	40.54084	4.21812	0.1152878	3.0391125	30	1	125 days	0.72	M-v	4	Williams		1997 WC_2
1997 WD_2	14.0	0.15	19971218	57.29483	259.76695	87.07116	6.24058	0.2746577	2.3393443	37	4	1993–1997	0.53	M-v	2	Williams	30997	1997 WD_2
1997 WE_2	14.9	0.15	19971128	42.64192	294.70611	75.04781	9.63470	0.2148419	2.3519330	18	1	28 days	0.50			Nakano		1997 WE_2
1997 WF_2	13.5	0.15	19971128	340.85240	227.23660	230.60002	4.98738	0.1754155	2.9210343	20	1	28 days	0.93			Williams		1997 WF_2
1997 WG_2	14.2	0.15	19971128	325.29603	253.30843	223.39028	1.00291	0.1069005	2.2727212	10	1	28 days	0.43			Nakano		1997 WG_2
1997 WJ_2	14.0	0.15	19971218	263.32641	109.63899	73.32036	3.90854	0.0501343	2.2870022	24	3	1971–1997	0.71	M-v	5	Williams	30997	1997 WJ_2
1997 WK_2	12.2	0.15	19971128	119.76167	229.47772	75.29148	7.47958	0.1395421	3.1227916	10	1	28 days	0.45			Nakano		1997 WK_2
1997 WN_2	15.5	0.15	19971218	345.50906	134.23504	327.95127	1.72111	0.1705776	2.3728955	31	3	1960–1997	0.71	M-v	5	Williams	30997	1997 WN_2
1997 WO_2	15.4	0.15	19971128	31.20723	293.04803	93.73218	6.66648	0.1649777	2.3335615	15	1	31 days	0.87			Nakano		1997 WO_2
1997 WQ_2	15.0	0.15	19971218	34.93896	309.43721	85.67718	6.69754	0.0880106	2.3620637	31	2	1991–1998	0.67	M-v	5	Williams	30998	1997 WQ_2
1997 WR_2	15.0	0.15	19971128	357.16378	198.07259	239.80518	1.43580	0.0470998	2.2761401	15	1	28 days	0.83			Williams		1997 WR_2
1997 WT_2	13.6	0.15	19971128	355.12216	6.81831	73.41136	7.55002	0.0704209	2.2858610	10	1	28 days	0.47			Nakano		1997 WT_2
1997 WU_2	12.5	0.15	19971128	293.87898	65.42552	78.97163	22.86206	0.0658200	3.1740613	18	1	38 days	0.62			Williams		1997 WU_2
1997 WV_2	12.5	0.15	19971218	23.72774	144.52081	268.56382	5.18608	0.0840979	2.3956398	18	2	1993–1997	0.53	M-v	6	Williams	30998	1997 WV_2
1997 WX_2	15.0	0.15	19971128	335.72129	43.52210	57.16707	5.29717	0.0316059	2.2293939	14	1	32 days	0.81			Williams		1997 WX_2
1997 WZ_2	15.1	0.15	19971128	359.60944	1.72131	73.04659	4.60719	0.1543276	2.3132705	10	1	32 days	0.63			Nakano		1997 WZ_2
1997 WA_3	14.4	0.15	19971128	327.43911	52.01775	64.61160	2.37424	0.1037728	3.1271084	13	1	28 days	0.68			Nakano		1997 WA_3
1997 WB_3	16.1	0.15	19971128	14.64270	324.74824	81.50183	9.26616	0.2366825	2.3454618	20	1	28 days	0.73			Nakano		1997 WB_3
1997 WC_3	14.5	0.15	19971128	74.73902	251.77782	91.47642	7.71492	0.1204484	2.4031015	22	1	35 days	0.96			Williams		1997 WC_3
1997 WD_3	12.1	0.15	19971128	44.02269	308.46961	82.66380	2.97530	0.0232072	2.8465122	10	1	28 days	1.24		E	Nakano		1997 WD_3
1997 WE_3	14.5	0.15	19971128	47.48743	89.02014	296.57985	0.93608	0.0458700	2.8705693	14	1	28 days	0.83			Williams		1997 WE_3
1997 WO_3	13.0	0.15	19971128	141.34162	339.86883	292.29156	2.50446	0.0521320	2.6308440	20	1	37 days	0.66			Williams		1997 WO_3
1997 WP_3	13.5	0.15	19971128	51.62495	330.60667	37.31877	9.06700	0.0620629	2.5374517	16	1	40 days	0.29			Williams		1997 WP_3
1997 WR_3	13.5	0.15	19971218	114.81589	247.10068	50.15033	6.84119	0.1137226	2.3709621	38	4	1975–1997	0.69	M-v	4	Williams	30998	1997 WR_3
1997 WS_3	14.5	0.15	19971128	30.53787	325.41208	73.11317	12.68250	0.0825341	2.7946157	18	1	31 days	1.30			Williams		1997 WS_3
1997 WR_5	14.0	0.15	19971108	198.76865	124.77264	88.96753	2.89392	0.0109493	2.6733839	24	1	37 days	0.68			Williams		1997 WR_5
1997 WT_5	14.0	0.15	19971108	140.30481	192.46044	75.35817	5.48204	0.0662829	2.9985942	13	1	7 days	0.87			Williams		1997 WT_5
1997 WB_6	14.5	0.15	19971128	275.28678	69.80602	79.97058	4.33031	0.0625890	2.3185799	18	1	11 days	0.58			Williams		1997 WB_6
1997 WN_6	15.5	0.15	19971128	23.02066	304.73631	78.52117	4.71393	0.2266008	2.4215619	18	1	11 days	0.87			Williams		1997 WN_6
1997 WB_7	16.0	0.15	19971128	0.56581	165.79929	289.71574	7.76832	0.2492079	2.7567142	15	1	43 days	0.29			Williams		1997 WB_7
1997 WK_7	13.8	0.15	19971128	277.71127	108.64192	43.08777	4.38098	0.0903552	2.2688758	19	1	42 days	0.81			Nakano		1997 WK_7
1997 WL_7	13.5	0.15	19971218	326.27157	213.65960	250.60477	3.48710	0.0900048	2.6450793	24	2	1991–1997	0.86	M-v	5	Williams	30998	1997 WL_7
1997 WO_7	12.9	0.15	19971128	331.34588	32.32531	59.08805	10.70940	0.0682113	3.0646912	22	1	35 days	0.69			Nakano		1997 WO_7
1997 WP_7	15.5	0.15	19971108	53.28632	12.89531	327.96137	0.59584	0.1886569	2.1723618	19	1	37 days	0.70			Williams		1997 WP_7
1997 WQ_7	14.5	0.15	19971218	74.09092	80.18759	259.43828	1.59905	0.1243132	2.1890491	28	2	1996–1997	0.69	M-v	5	Williams	30998	1997 WQ_7
1997 WV_7	15.0	0.15	19971128	320.84028	76.86807	42.44104	0.78784	0.1394257	2.3809687	19	1	38 days	0.59			Williams		1997 WV_7
1997 WW_7	10.5	0.15	19971128	26.94076	149.74085	249.88127	5.73276	0.0695910	5.1567529	28	1	40 days	1.05			Williams		1997 WW_7
1997 WZ_7	13.0	0.15	19971128	94.24145	252.00001	70.04615	11.32533	0.1241204	2.9769616	18	1	38 days	0.79			Nakano		1997 WZ_7
1997 WC_8	14.9	0.15	19971128	29.54870	181.07268	211.20715	4.53997	0.1257276	2.2405986	27	1	27 days	0.78			Nakano		1997 WC_8
1997 WD_8	15.5	0.15	19971218	330.06354	319.04714	160.79782	2.11206	0.1779495	2.3321908	20	2	1993–1997	0.85	M-v	6	Williams	30998	1997 WD_8
1997 WL_8	14.5	0.15	19971108	255.25856	73.98100	85.47827	4.92224	0.0331623	2.7235118	16	1	32 days	0.73			Williams		1997 WL_8
1997 WU_8	14.5	0.15	19971108	53.01603	179.71608	155.98825	2.68557	0.2201790	2.8027484	10	1	9 days	0.25			Williams		1997 WU_8
1997 WQ_9	15.5	0.15	19971108	345.11872	254.46432	177.81287	2.27686	0.1766902	2.3854870	19	1	35 days	0.50			Williams		1997 WQ_9
1997 WR_9	16.0	0.15	19971128	13.84998	282.81115	115.04499	2.40313	0.1809751	2.5544005	14	1	13 days	1.20			Williams		1997 WR_9
1997 WQ_{11}	13.5	0.15	19971019	173.91329	171.18905	53.47652	1.48585	0.1165443	3.1676977	27	1	55 days	1.04			Williams		1997 WQ_{11}
1997 WV_{11}	14.5	0.15	19971128	336.31253	353.68662	94.31513	2.84359	0.1593890	3.2111829	16	1	16 days	0.70			Williams		1997 WV_{11}
1997 WW_{11}	13.5	0.15	19971128	40.72289	147.44076	216.90920	5.24000	0.1309847	2.7691411	15	1	12 days	0.64			Williams		1997 WW_{11}
1997 WJ_{13}	13.4	0.15	19971128	43.58661	118.22764	262.98451	8.01856	0.0452885	2.9945581	13	1	30 days	0.85			Nakano		1997 WJ_{13}
1997 WK_{13}	15.2	0.15	19971128	12.50958	357.22282	53.55382	5.02794	0.1561206	2.3126114	21	1	37 days	1.02			Nakano		1997 WK_{13}

1997 WL_{13}	14.5	0.15	19971128	359.85338	173.09414	255.90445	7.04348	0.2025986	2.7784374	27	1	39 days	0.74			Williams		1997 WL_{13}
1997 WO_{13}	14.0	0.15	19971218	239.01775	113.60562	86.07928	7.86469	0.0623264	2.3586289	29	3	1977–1998	0.83	M-v	3	Williams	30999	1997 WO_{13}
1997 WV_{13}	14.0	0.15	19971108	176.58750	222.42038	353.55937	4.68925	0.1008226	3.1853248	16	1	37 days	0.52			Williams		1997 WV_{13}
1997 WH_{14}	14.0	0.15	19971108	267.73385	107.20826	67.62623	8.65448	0.2823943	2.6028661	11	1	7 days	0.41			Williams		1997 WH_{14}
1997 WP_{14}	14.0	0.15	19971218	354.85031	297.55043	131.02654	2.58061	0.0818173	3.0935553	21	3	1991–1997	0.73	M-v	4	Williams	30999	1997 WP_{14}
1997 WD_{15}	13.5	0.15	19971218	237.10954	141.94250	42.05559	5.98035	0.1180342	2.7523400	18	1	62 days	0.34	M-v	5	Williams	31021	1997 WD_{15}
1997 WM_{15}	15.0	0.15	19971128	10.76430	281.88807	119.78297	2.04243	0.1693217	3.1419327	13	1	13 days	0.62			Williams		1997 WM_{15}
1997 WU_{15}	15.5	0.15	19971128	358.45647	317.57514	103.48859	2.56640	0.0636931	2.2403296	15	1	11 days	0.69			Williams		1997 WU_{15}
1997 WB_{16}	13.5	0.15	19971108	326.29387	227.69298	229.70003	14.70639	0.1494686	3.2242620	29	1	23 days	0.64			Williams		1997 WB_{16}
1997 WD_{16}	16.0	0.15	19971128	21.83642	179.98320	211.99587	3.50660	0.1341367	2.1553805	18	1	10 days	0.78			Williams		1997 WD_{16}
1997 WE_{16}	16.5	0.15	19971128	330.41680	255.46531	219.57138	5.32300	0.3079685	2.6444809	13	1	10 days	0.43			Williams		1997 WE_{16}
1997 WM_{16}	14.5	0.15	19971218	38.69946	222.95214	116.76858	6.72528	0.1885167	2.2684187	31	3	1973–1997	0.60	M-v	3	Williams	30999	1997 WM_{16}
1997 WU_{16}	15.0	0.15	19971128	28.11018	122.28176	243.78281	9.71430	0.3103820	2.3711470	16	1	6 days	0.57			Williams		1997 WU_{16}
1997 WZ_{16}	14.5	0.15	19971218	174.23867	336.73844	247.48609	8.23556	0.1072896	2.7647127	18	2	1991–1997	0.45	M-v	5	Williams	30999	1997 WZ_{16}
1997 WS_{18}	15.5	0.15	19971108	7.55073	324.31946	76.25877	4.82570	0.2028725	2.8157260	10	1	7 days	0.34			Williams		1997 WS_{18}
1997 WT_{18}	15.5	0.15	19971108	327.61406	28.81804	69.19282	8.05058	0.1792425	2.5636571	10	1	7 days	0.86			Williams		1997 WT_{18}
1997 WJ_{20}	14.5	0.15	19971128	328.03939	231.15314	219.90184	4.89100	0.0209112	2.3865582	19	1	11 days	0.78			Williams		1997 WJ_{20}
1997 WW_{20}	16.0	0.15	19971128	328.89352	23.77571	77.41018	4.98979	0.1547163	2.2759385	15	1	5 days	0.58			Williams		1997 WW_{20}
1997 WX_{20}	14.5	0.15	19971128	25.26449	320.00520	64.74088	30.92322	0.1678725	2.5144481	21	1	6 days	0.43			Williams		1997 WX_{20}
1997 WB_{21}	20.5	0.15	19971218	41.68727	81.56153	281.25043	3.39497	0.3176740	1.4610822	41	1	36 days	0.67	M-v	6	Marsden		1997 WB_{21}
1997 WC_{21}	14.7	0.15	19971218	356.16957	102.50394	308.26174	5.10136	0.2980070	2.6582091	24	1	61 days	0.52	M-v	6	Nakano		1997 WC_{21}
1997 WD_{21}	14.7	0.15	19971128	22.66362	159.37933	243.03583	13.50667	0.1501558	2.6909345	14	1	41 days	0.83			Nakano		1997 WD_{21}
1997 WE_{21}	12.7	0.15	19971128	347.99535	30.85038	61.74606	8.14920	0.1285742	3.1243954	9	1	28 days	0.48			Nakano		1997 WE_{21}
1997 WF_{21}	14.0	0.15	19971218	6.30824	242.53473	188.47538	3.34145	0.1722680	2.4187740	24	4	1978–1998	0.63	M-v	2	Williams	30999	1997 WF_{21}
1997 WH_{21}	16.0	0.15	19971128	26.08336	210.21966	183.29450	2.39333	0.2092252	2.4742376	11	1	30 days	0.41			Williams		1997 WH_{21}
1997 WJ_{21}	15.5	0.15	19971128	284.31770	325.92397	209.44389	5.72864	0.2212019	2.2720266	14	1	30 days	0.68			Williams		1997 WJ_{21}
1997 WK_{21}	12.7	0.15	19971128	118.97890	115.68584	195.90122	4.76704	0.0486336	2.7625900	8	1	21 days	0.50			Nakano		1997 WK_{21}
1997 WL_{21}	15.5	0.15	19971128	12.46840	259.65420	153.58745	2.52684	0.2260793	2.6239581	15	1	30 days	0.85			Williams		1997 WL_{21}
1997 WM_{21}	13.5	0.15	19971218	316.77359	264.39327	232.70768	5.64142	0.1475490	2.2436200	27	3	1990–1997	0.84	M-v	3	Williams	30999	1997 WM_{21}
1997 WN_{21}	13.2	0.15	19971128	47.34341	283.06367	85.96944	16.72094	0.1833177	2.6050488	8	1	21 days	0.50			Nakano		1997 WN_{21}
1997 WP_{21}	10.6	0.15	19971128	330.04257	36.94333	91.68553	17.93375	0.0953837	3.1819591	8	1	27 days	0.28			Nakano		1997 WP_{21}
1997 WC_{22}	14.0	0.15	19971128	9.28404	124.63556	280.93640	8.10498	0.2966440	3.1208170	9	1	19 days	0.18			Williams		1997 WC_{22}
1997 WF_{22}	15.0	0.15	19971218	345.67543	37.98588	46.07608	2.89546	0.1826974	2.4131333	31	1	93 days	0.39	M-v	4	Williams		1997 WF_{22}
1997 WH_{22}	14.0	0.15	19971128	22.36347	118.08231	262.53112	11.37812	0.3243858	3.0654405	16	1	16 days	0.43			Williams		1997 WH_{22}
1997 WM_{22}	15.5	0.15	19971128	70.17303	242.16598	94.75612	5.81290	0.1487886	2.4211528	15	1	6 days	0.97			Williams		1997 WM_{22}
1997 WN_{22}	13.5	0.15	19971128	201.68120	154.55628	76.21622	18.20894	0.2832368	2.9248522	14	1	6 days	1.16		E	Williams		1997 WN_{22}
1997 WS_{22}	17.5	0.15	19971218	176.95824	196.97281	59.29806	23.98525	0.1207541	1.2696864	67	1	48 days	0.50	M-v	5	Williams		1997 WS_{22}
1997 WT_{22}	19.0	0.15	19971218	319.96557	74.56840	72.08510	8.16180	0.3061323	1.4853357	81	1	43 days	0.66	M-v	5	Marsden	31022	1997 WT_{22}
1997 WL_{23}	14.5	0.15	19971128	33.77377	317.35291	57.19222	2.79908	0.2035919	2.6934250	24	1	41 days	0.69			Williams		1997 WL_{23}
1997 WQ_{23}	20.5	0.15	19971218	36.18612	296.20184	56.10593	2.45292	0.4945964	1.7365129	58	1	34 days	0.56	M-v	6	Marsden		1997 WQ_{23}
1997 WT_{23}	14.5	0.15	19971218	51.62635	94.34752	254.68869	1.49928	0.1920674	2.4094257	21	3	1978–1997	0.51	M-v	4	Williams	31000	1997 WT_{23}
1997 WO_{25}	16.5	0.15	19971128	318.56254	278.82202	204.88141	3.33227	0.2325732	2.2253260	10	1	6 days	0.90			Williams		1997 WO_{25}
1997 WQ_{25}	15.5	0.15	19971128	19.77575	158.14869	244.19678	2.04058	0.1865367	2.2438152	32	1	38 days	0.88			Williams		1997 WQ_{25}
1997 WN_{28}	14.5	0.15	19971128	24.21895	151.86078	235.11367	23.98346	0.1284652	2.6988912	15	1	6 days	0.55			Williams		1997 WN_{28}
1997 WQ_{28}	13.0	0.15	19971128	323.78277	89.76570	8.71186	11.25278	0.1623311	2.6536111	22	1	33 days	0.72			Williams		1997 WQ_{28}
1997 WR_{28}	14.0	0.15	19971128	7.71202	176.49324	237.86255	11.07166	0.1870806	2.6285699	17	1	11 days	1.35			Williams		1997 WR_{28}
1997 WT_{28}	16.0	0.15	19971128	345.56253	9.06659	73.99569	10.23120	0.2394585	3.2531980	10	1	8 days	0.85			Williams		1997 WT_{28}
1997 WY_{29}	13.5	0.15	19971128	339.58535	38.01267	53.51849	7.77058	0.1326003	3.1597491	14	1	17 days	0.76			Williams		1997 WY_{29}
1997 WA_{30}	14.0	0.15	19971128	319.19303	243.83868	235.46900	11.88099	0.1541481	2.6325060	21	1	34 days	0.92			Williams		1997 WA_{30}
1997 WB_{30}	16.0	0.15	19971128	39.21483	280.75644	85.92823	5.26588	0.2110030	2.2053939	17	1	9 days	0.67			Williams		1997 WB_{30}
1997 WD_{30}	13.0	0.15	19971218	25.14932	336.56385	48.92928	11.46992	0.1278272	2.9780468	25	1	62 days	0.57	M-v	4	Williams		1997 WD_{30}
1997 WG_{30}	14.5	0.15	19971128	22.85611	348.30317	41.85607	6.71365	0.1088936	2.2419512	15	1	12 days	0.76			Williams		1997 WG_{30}
1997 WP_{33}	14.0	0.15	19971128	338.50830	40.01225	51.83188	4.67035	0.1375585	2.5908975	13	1	8 days	0.52			Williams		1997 WP_{33}

1997 WR_{33}	14.5	0.15	19971128	346.66084	29.27466	49.60907	4.78103	0.0490495	2.3692347	12	1	8 days	1.20		Williams	1997 WR_{33}
1997 WC_{35}	13.5	0.15	19971128	304.98102	14.96712	108.39642	3.31590	0.0605853	2.9509759	16	1	8 days	0.76		Williams	1997 WC_{35}
1997 WD_{35}	14.0	0.15	19971128	52.34270	283.06484	73.59773	14.14729	0.1346544	2.5589466	13	1	8 days	0.65		Williams	1997 WD_{35}
1997 WE_{35}	14.0	0.15	19971128	345.40117	12.22663	72.77796	14.17155	0.2044496	3.0012990	13	1	8 days	1.15		Williams	1997 WE_{35}
1997 WL_{35}	14.5	0.15	19971128	44.27051	127.55715	234.84272	5.47646	0.1789355	2.5770728	16	1	8 days	0.72		Williams	1997 WL_{35}
1997 WM_{35}	13.0	0.15	19971128	196.56675	153.73402	77.79473	3.44097	0.1878637	2.3673221	12	1	8 days	0.54		Williams	1997 WM_{35}
1997 WO_{35}	13.5	0.15	19971128	358.53895	8.81019	57.50010	0.50532	0.2475855	3.0578245	13	1	8 days	0.72	E	Williams	1997 WO_{35}
1997 WQ_{35}	14.0	0.15	19971128	286.35649	105.31093	63.35123	18.60491	0.2684786	2.2772246	13	1	8 days	0.68		Williams	1997 WQ_{35}
1997 WS_{35}	12.5	0.15	19971128	163.23632	197.02232	57.97062	10.01767	0.2739231	2.4638136	15	1	9 days	1.04	E	Williams	1997 WS_{35}
1997 WT_{35}	14.0	0.15	19971128	350.31206	184.64292	253.19784	12.58860	0.1432132	2.6615291	24	1	43 days	0.54		Williams	1997 WT_{35}
1997 WU_{35}	12.5	0.15	19971128	177.83962	245.22985	1.64281	1.72943	0.1201112	2.8231925	13	1	8 days	0.81		Williams	1997 WU_{35}
1997 WV_{35}	11.5	0.15	19971128	155.21102	347.25211	277.21279	5.11214	0.1268501	3.0499603	12	1	8 days	1.15	E	Williams	1997 WV_{35}
1997 WW_{35}	14.0	0.15	19971108	8.30137	110.20518	297.87067	2.68295	0.1281172	2.4225564	16	1	27 days	0.80		Williams	1997 WW_{35}
1997 WY_{35}	13.0	0.15	19971218	33.90389	337.36249	50.38077	11.44087	0.1268279	2.9891183	23	1	64 days	0.76	M-v 5	Williams	1997 WY_{35}
1997 WZ_{35}	14.5	0.15	19971128	11.07006	10.58384	40.03065	6.45113	0.1739431	2.6451829	15	1	8 days	1.01	D	Williams	1997 WZ_{35}
1997 WA_{36}	15.0	0.15	19971128	350.11998	26.43411	52.42263	8.30772	0.0950144	2.3392004	14	1	22 days	0.88		Williams	1997 WA_{36}
1997 WD_{36}	13.0	0.15	19971128	227.26433	217.00478	345.40593	1.29947	0.0453343	2.8690887	15	1	8 days	0.69	E	Williams	1997 WD_{36}
1997 WE_{36}	13.0	0.15	19971128	22.65205	348.21067	49.77625	5.68785	0.1117738	3.2282689	15	1	8 days	0.76		Williams	1997 WE_{36}
1997 WG_{36}	13.5	0.15	19971128	275.27181	189.81810	339.29986	1.76154	0.1565720	2.4401407	16	1	8 days	0.79		Williams	1997 WG_{36}
1997 WH_{36}	15.0	0.15	19971128	346.09906	185.57041	261.79924	2.50678	0.2052858	2.4426979	16	1	8 days	0.88		Williams	1997 WH_{36}
1997 WJ_{36}	14.0	0.15	19971128	72.79790	268.81412	56.79775	0.13075	0.2320895	2.1830942	13	1	8 days	0.66	E	Williams	1997 WJ_{36}
1997 WK_{36}	14.0	0.15	19971128	14.07107	332.50282	65.78708	11.92339	0.2990363	2.9125642	13	1	8 days	0.46		Williams	1997 WK_{36}
1997 WL_{36}	14.0	0.15	19971128	43.65681	110.85073	249.81092	4.96979	0.2194305	2.3847263	16	1	8 days	0.34		Williams	1997 WL_{36}
1997 WM_{36}	14.5	0.15	19971128	328.17453	338.22791	131.03434	1.97068	0.1821424	3.0546319	11	1	8 days	1.44		Williams	1997 WM_{36}
1997 WN_{36}	12.5	0.15	19971128	8.38029	345.64042	68.87515	23.40572	0.0319922	3.1472788	21	1	37 days	0.73		Williams	1997 WN_{36}
1997 WO_{36}	14.5	0.15	19971128	333.02727	343.54302	128.26318	2.06766	0.2804005	3.1721946	13	1	8 days	0.76		Williams	1997 WO_{36}
1997 WT_{36}	16.0	0.15	19971128	348.57577	357.59613	85.20085	7.82961	0.2540276	2.6202125	13	1	8 days	0.85		Williams	1997 WT_{36}
1997 WW_{36}	15.5	0.15	19971128	298.84898	26.21832	104.93652	4.00163	0.0630985	2.2400592	16	1	8 days	1.03		Williams	1997 WW_{36}
1997 WZ_{36}	15.5	0.15	19971128	25.54063	212.28038	176.39218	2.74658	0.1628505	2.3727842	13	1	8 days	0.50		Williams	1997 WZ_{36}
1997 WB_{37}	11.5	0.15	19971128	205.35447	135.91916	85.59125	12.44131	0.1276120	3.2100252	13	1	8 days	0.46		Williams	1997 WB_{37}
1997 WH_{37}	13.0	0.15	19971128	19.83460	320.25402	83.19630	10.38262	0.0131842	3.0263947	13	1	8 days	0.73	E	Williams	1997 WH_{37}
1997 WL_{37}	16.0	0.15	19971128	2.44061	226.33217	194.85700	2.47118	0.1766221	2.3390620	13	1	8 days	0.82		Williams	1997 WL_{37}
1997 WV_{37}	14.5	0.15	19971128	16.78840	145.39626	258.52030	5.40086	0.1348232	2.4769857	12	1	8 days	0.64		Williams	1997 WV_{37}
1997 WE_{38}	14.5	0.15	19971128	99.81266	245.72664	74.35156	4.41715	0.0508063	2.2517554	13	1	8 days	0.61		Williams	1997 WE_{38}
1997 WG_{38}	14.0	0.15	19971128	311.15647	246.11046	241.93129	7.95638	0.1361734	2.6545756	13	1	8 days	0.94	E	Williams	1997 WG_{38}
1997 WH_{38}	15.0	0.15	19971128	21.56303	148.16534	247.16590	4.73951	0.1697494	2.2748183	13	1	8 days	0.44		Williams	1997 WH_{38}
1997 WJ_{38}	15.0	0.15	19971128	48.94214	291.33199	65.51385	6.92059	0.1985258	2.2184826	15	1	8 days	0.53		Williams	1997 WJ_{38}
1997 WK_{38}	14.0	0.15	19971128	349.63635	192.42454	248.62638	6.81951	0.1786942	2.7898752	20	1	35 days	0.66		Williams	1997 WK_{38}
1997 WL_{38}	14.0	0.15	19971128	76.89364	83.63938	247.27081	4.81637	0.1590481	2.4992051	16	1	8 days	0.58		Williams	1997 WL_{38}
1997 WN_{38}	13.5	0.15	19971128	44.15363	296.81857	69.37374	2.41294	0.1719457	3.2462674	17	1	35 days	0.81		Williams	1997 WN_{38}
1997 WO_{38}	13.5	0.15	19971128	115.30340	47.69895	246.36889	17.72222	0.1856942	2.5430268	15	1	8 days	0.98	E	Williams	1997 WO_{38}
1997 WP_{38}	13.5	0.15	19971128	40.19855	74.49146	295.72473	0.86289	0.1796931	3.0916357	15	1	8 days	0.85		Williams	1997 WP_{38}
1997 WQ_{38}	14.0	0.15	19971128	334.26816	204.71028	257.57051	8.78634	0.1623064	2.5873908	20	1	37 days	0.81		Williams	1997 WQ_{38}
1997 WR_{38}	15.0	0.15	19971128	88.85861	23.23986	295.95512	3.83057	0.1634749	2.2472174	14	1	8 days	0.86		Williams	1997 WR_{38}
1997 WS_{38}	14.0	0.15	19971128	16.42008	13.33789	35.49828	5.07465	0.0475487	2.3448612	13	1	8 days	0.63		Williams	1997 WS_{38}
1997 WF_{39}	14.5	0.15	19971128	316.86061	56.07994	70.91458	4.35329	0.1805109	2.3711739	18	1	34 days	0.64		Williams	1997 WF_{39}
1997 WH_{39}	15.0	0.15	19971128	301.52057	50.17253	87.86877	1.93577	0.1263129	2.3705225	12	1	8 days	0.71		Williams	1997 WH_{39}
1997 WK_{39}	15.5	0.15	19971128	17.10344	319.64101	81.65073	3.85840	0.1780379	2.4215597	12	1	8 days	0.94		Williams	1997 WK_{39}
1997 WL_{39}	15.5	0.15	19971128	274.55073	294.18704	226.33113	4.09825	0.0776337	2.2733654	13	1	8 days	1.03		Williams	1997 WL_{39}
1997 WM_{39}	15.0	0.15	19971128	333.34491	342.56897	117.05052	3.06316	0.1267022	2.3796389	13	1	8 days	0.57		Williams	1997 WM_{39}
1997 WN_{39}	15.5	0.15	19971128	53.80969	128.87300	221.00201	6.21699	0.2067496	2.3765897	12	1	8 days	0.68		Williams	1997 WN_{39}
1997 WO_{39}	14.0	0.15	19971128	44.32499	168.01052	199.43897	4.45697	0.1513884	2.7561983	16	1	8 days	0.62		Williams	1997 WO_{39}
1997 WP_{39}	14.5	0.15	19971128	124.77405	68.29303	214.48978	6.24865	0.2303157	2.2588665	15	1	8 days	1.41		Williams	1997 WP_{39}

1997 WR_{39}	15.5	0.15	19971128	61.04951	251.83630	90.43137	5.92454	0.2023604	2.2745202	12	1	8 days	0.72			Williams		1997 WR_{39}
1997 WS_{39}	14.5	0.15	19971128	32.67014	258.73489	118.25580	3.84439	0.1975853	2.4335163	13	1	8 days	0.59			Williams		1997 WS_{39}
1997 WU_{39}	14.0	0.15	19971128	28.40136	309.01777	78.82278	16.14072	0.1382116	2.6425208	18	1	34 days	0.79			Williams		1997 WU_{39}
1997 WD_{41}	12.5	0.15	19971128	285.26377	252.75230	257.70314	7.81155	0.0522861	3.0764273	17	1	34 days	0.44			Williams		1997 WD_{41}
1997 WG_{41}	13.0	0.15	19971128	125.51775	41.58262	255.18908	9.48513	0.0937590	2.9730119	18	1	34 days	0.71			Williams		1997 WG_{41}
1997 WO_{41}	13.5	0.15	19971128	53.27559	282.74587	72.15526	9.31162	0.1985943	3.0009731	18	1	34 days	0.55			Williams		1997 WO_{41}
1997 WS_{41}	15.5	0.15	19971128	353.24751	340.49683	96.44495	3.57866	0.1474598	2.3985226	18	1	34 days	0.75			Williams		1997 WS_{41}
1997 WZ_{42}	13.5	0.15	19971128	49.07886	266.37775	99.14693	2.07330	0.1690865	3.2094972	16	1	34 days	0.60			Williams		1997 WZ_{42}
1997 WB_{43}	14.0	0.15	19971128	340.57088	6.89481	86.94689	7.03033	0.0959455	3.0179839	15	1	34 days	0.67			Williams		1997 WB_{43}
1997 WF_{43}	14.0	0.15	19971128	160.04189	190.05365	78.79507	6.99016	0.0778358	2.3043727	18	1	34 days	0.62			Williams		1997 WF_{43}
1997 WM_{43}	15.0	0.15	19971128	326.49592	207.13166	263.32357	8.53152	0.0665778	2.2811768	14	1	34 days	0.78			Williams		1997 WM_{43}
1997 WN_{43}	14.5	0.15	19971128	53.53665	82.77660	266.12014	9.52052	0.2761253	2.5886283	18	1	34 days	0.76			Williams		1997 WN_{43}
1997 WE_{44}	16.0	0.15	19971128	358.47084	345.51983	87.56665	5.22641	0.1118669	2.2622338	18	1	34 days	0.56			Williams		1997 WE_{44}
1997 WS_{44}	14.0	0.15	19971128	336.99183	13.81065	87.19662	4.38146	0.0866521	2.7241356	21	1	34 days	0.48			Williams		1997 WS_{44}
1997 WC_{45}	12.0	0.15	19971128	89.28750	70.26206	236.36922	12.41046	0.2648600	3.0351808	12	1	8 days	0.66			Williams		1997 WC_{45}
1997 WD_{45}	15.5	0.15	19971128	30.60097	131.05441	231.06217	6.98210	0.3693927	2.9531140	15	1	8 days	0.78			Williams		1997 WD_{45}
1997 WF_{45}	13.5	0.15	19971128	296.69633	59.68770	80.57189	10.03915	0.0922402	2.7656974	21	1	34 days	0.71			Williams		1997 WF_{45}
1997 WK_{45}	13.0	0.15	19971128	346.97101	16.02623	71.57284	2.06906	0.1738862	3.1911245	17	1	34 days	0.47			Williams		1997 WK_{45}
1997 XA	14.1	0.15	19971218	343.89261	202.43425	246.46404	8.97095	0.1949043	2.7823642	18	1	32 days	0.68			Nakano		1997 XA
1997 XC	13.5	0.15	19971128	346.47622	246.97409	242.75722	13.61464	0.2496220	3.0547368	12	1	27 days	0.22			Williams		1997 XC
1997 XK	13.3	0.15	19971218	61.17567	331.14682	36.68134	4.63454	0.1154099	2.7015110	10	1	33 days	0.81			Nakano		1997 XK
1997 XL	14.0	0.15	19971218	330.56159	74.29021	44.31270	5.83584	0.1098493	2.2922407	19	3	1983–1997	0.62	M-v	5	Williams	31000	1997 XL
1997 XO	13.3	0.15	19971218	71.59243	64.66058	300.80316	5.37906	0.1661203	2.3786399	10	1	33 days	0.43			Nakano		1997 XO
1997 XP	13.0	0.15	19980107	117.16990	257.03755	70.02203	8.36185	0.1899472	2.2390393	10	1	33 days	0.45			Nakano		1997 XP
1997 XQ	14.0	0.15	19971218	354.90185	175.50861	288.33468	2.25664	0.1595335	2.5752276	20	1	36 days	0.38			Williams		1997 XQ
1997 XR	15.0	0.15	19971218	66.57080	94.51076	278.86581	6.64838	0.1452952	2.2553551	12	1	33 days	0.33			Williams		1997 XR
1997 XS	13.9	0.15	19980107	348.36817	175.32956	302.40918	3.54561	0.1224031	2.5471500	10	1	33 days	0.48			Nakano		1997 XS
1997 XU	13.1	0.15	19971218	31.16746	117.13905	289.14574	7.57385	0.0787605	2.5515704	10	1	33 days	0.43			Nakano		1997 XU
1997 XW	14.3	0.15	19971218	28.78070	108.78804	293.61613	4.69925	0.1813602	2.3012564	10	1	33 days	0.45			Nakano		1997 XW
1997 XX	13.0	0.15	19971218	252.74186	137.98313	63.75795	12.21648	0.1051088	2.3136124	10	1	33 days	0.29			Nakano		1997 XX
1997 XB_1	14.8	0.15	19980107	18.02064	350.28214	75.31699	10.81163	0.3554674	2.6771938	11	1	33 days	0.48			Nakano		1997 XB_1
1997 XC_1	13.5	0.15	19971108	355.58407	293.19610	121.87671	2.28195	0.0731249	2.9770021	12	1	14 days	0.75			Williams		1997 XC_1
1997 XF_1	15.0	0.15	19971128	55.93656	106.44914	250.16486	20.38771	0.1040246	1.9298039	27	1	27 days	0.65			Williams		1997 XF_1
1997 XJ_1	15.0	0.15	19971128	8.20392	160.94408	259.50221	23.69776	0.1744206	2.3175109	19	1	25 days	0.68			Williams		1997 XJ_1
1997 XK_1	13.5	0.15	19980107	2.00715	87.15678	11.41964	4.52959	0.0746933	2.2049309	10	1	32 days	0.26			Nakano		1997 XK_1
1997 XU_1	14.3	0.15	19971218	55.46127	270.52875	96.21310	11.66604	0.1396359	2.9625359	8	1	29 days	0.49			Nakano		1997 XU_1
1997 XX_1	14.5	0.15	19980107	35.52528	282.35709	114.73076	6.91852	0.1664421	2.5218641	13	1	34 days	0.35			Nakano		1997 XX_1
1997 XZ_1	15.5	0.15	19971128	4.72564	170.34959	252.67176	9.07179	0.0772074	2.3922848	6	1	18 days	0.45			Nakano		1997 XZ_1
1997 XB_2	13.5	0.15	19971128	93.27519	71.37752	253.23535	12.02880	0.1099861	2.9235372	10	1	28 days	0.53			Williams		1997 XB_2
1997 XE_2	14.8	0.15	19971218	312.14635	72.11301	73.80756	14.15182	0.1595104	2.4725420	10	1	28 days	0.54			Nakano		1997 XE_2
1997 XF_2	13.2	0.15	19971218	141.83839	22.85926	270.51641	8.45166	0.1027428	3.0636798	10	1	24 days	0.50			Nakano		1997 XF_2
1997 XG_2	16.2	0.15	19971128	17.99906	346.81028	61.32952	4.15734	0.1959416	2.3435212	8	1	18 days	0.75			Nakano		1997 XG_2
1997 XH_2	15.5	0.15	19971218	315.81482	93.10359	47.35071	2.97495	0.1494951	2.3642692	16	1	28 days	0.89			Nakano		1997 XH_2
1997 XO_2	16.7	0.15	19971218	18.93950	303.05942	114.74892	5.14759	0.2422989	2.6019933	14	1	33 days	0.15			Nakano		1997 XO_2
1997 XR_2	21.0	0.15	19971218	85.31174	84.56876	250.92287	7.17378	0.2012657	1.0767112	144	1	28 days	0.75			Marsden		1997 XR_2
1997 XS_2	19.5	0.15	19971218	355.28788	23.62152	75.32050	19.58597	0.5236980	2.6540746	67	1	35 days	0.55	M-v	5	Williams		1997 XS_2
1997 XM_3	16.0	0.15	19971218	54.17976	286.34064	104.21553	7.66130	0.2367806	2.5562047	12	1	35 days	0.30			Williams		1997 XM_3
1997 XJ_5	15.6	0.15	19971218	11.92806	228.91702	196.93184	5.18630	0.1366908	2.2786427	11	1	29 days	0.38			Nakano		1997 XJ_5
1997 XL_5	14.0	0.15	19971218	14.55084	291.63840	132.33958	5.43945	0.0924480	2.6051414	12	1	32 days	0.53			Nakano		1997 XL_5
1997 XM_5	14.0	0.15	19971218	306.73774	235.06923	275.83951	10.61921	0.1198815	2.3544980	15	1	35 days	0.68			Williams		1997 XM_5
1997 XS_5	16.0	0.15	19971128	73.28514	338.44004	349.30815	5.84609	0.1982175	2.2723264	12	1	28 days	0.39			Williams		1997 XS_5
1997 XU_5	16.0	0.15	19971128	19.22820	214.67174	183.11948	2.92357	0.2463519	2.3071763	15	1	26 days	0.64			Williams		1997 XU_5
1997 XY_6	14.7	0.15	19971128	77.07340	186.30411	133.18292	0.80251	0.1492853	2.5995900	26	1	44 days	0.59			Nakano		1997 XY_6

1997 XB_7	14.5	0.15	19971108	72.93498	249.70929	68.34950	3.63608	0.1567788	2.8906047	17	1	55 days	0.67			Williams	1997 XB_7
1997 XP_7	16.0	0.15	19971128	31.99625	304.68327	62.35758	15.03160	0.2088515	2.4695425	10	1	9 days	0.41			Williams	1997 XP_7
1997 XR_7	16.5	0.15	19971128	68.52633	93.19053	230.91283	12.72645	0.1872699	2.6287637	9	1	9 days	0.24			Williams	1997 XR_7
1997 XC_8	16.0	0.15	19971128	19.84539	142.70837	297.06373	3.50891	0.1607464	2.4507617	9	1	14 days	0.14			Williams	1997 XC_8
1997 XK_9	12.5	0.15	19971128	81.62922	40.89044	238.25192	21.36029	0.0702739	1.8637992	10	1	10 days	0.13			Williams	1997 XK_9
1997 XL_9	14.5	0.15	19971218	340.78613	15.11649	89.76100	7.24568	0.1036969	2.4580251	12	1	32 days	0.79			Williams	1997 XL_9
1997 XN_9	14.5	0.15	19971128	328.63871	23.37587	80.72300	22.86291	0.0518623	2.6522354	21	1	28 days	0.90			Williams	1997 XN_9
1997 XP_9	11.0	0.15	19971128	118.78126	227.16769	52.47025	21.34721	0.3196111	2.7875033	9	1	13 days	0.42			Williams	1997 XP_9
1997 XQ_9	15.0	0.15	19971108	5.28501	25.95778	24.85977	5.79287	0.1417754	2.5574786	15	1	55 days	0.42			Williams	1997 XQ_9
1997 XR_9	12.0	0.15	19971128	103.92654	267.91917	36.19447	7.88517	0.1404601	3.1551733	14	1	16 days	0.42			Williams	1997 XR_9
1997 XT_9	15.0	0.15	19971128	338.01212	55.73129	40.10331	2.98580	0.1864290	2.4241953	17	1	21 days	0.88			Williams	1997 XT_9
1997 XU_9	14.0	0.15	19971128	62.60009	284.41367	50.10973	5.07484	0.2355743	2.2614043	12	1	21 days	0.98			Williams	1997 XU_9
1997 XV_9	15.0	0.15	19971128	54.19453	292.19029	51.68294	12.22361	0.2419542	2.5952358	16	1	33 days	0.95			Williams	1997 XV_9
1997 XX_9	14.9	0.15	19971218	277.31425	109.15338	66.83972	7.26752	0.0902467	2.4300605	6	1	21 days	1.03			Nakano	1997 XX_9
1997 XY_9	13.5	0.15	19971218	135.33321	12.09141	277.18971	1.61361	0.2084225	2.4042835	21	1	29 days	0.78			Williams	1997 XY_9
1997 XC_{10}	12.5	0.15	19971218	109.00720	86.31077	233.83954	9.23242	0.1101475	2.9851249	13	1	27 days	0.35			Nakano	1997 XC_{10}
1997 XD_{10}	14.1	0.15	19971218	226.55692	283.07395	310.73788	6.91646	0.0652509	2.3088076	7	1	23 days	0.37			Nakano	1997 XD_{10}
1997 XE_{10}	25.0	0.15	19971218	357.29511	24.66428	72.77075	6.32003	0.4762473	1.8678750	20	1	8 days	0.93	M-v	E	Marsden	1997 XE_{10}
1997 XF_{10}	15.0	0.15	19971128	326.98543	46.75813	20.46795	8.16017	0.1875272	2.3613095	29	1	24 days	0.46			Williams	1997 XF_{10}
1997 XG_{10}	14.0	0.15	19971218	321.54583	233.61938	197.05741	9.54738	0.1702007	3.0315292	24	1	23 days	0.42			Williams	1997 XG_{10}
1997 XK_{10}	14.5	0.15	19971218	23.43274	152.13898	257.86720	14.95815	0.1817038	2.5932817	43	1	33 days	0.89			Williams	1997 XK_{10}
1997 XL_{10}	13.5	0.15	19971128	24.38447	330.52135	72.02288	11.48291	0.1067812	2.9785637	23	1	34 days	0.78			Williams	1997 XL_{10}
1997 XO_{10}	14.0	0.15	19971218	65.39152	276.92398	76.86811	10.97071	0.1553218	2.9531337	12	1	26 days	0.84			Williams	1997 XO_{10}
1997 XR_{10}	14.5	0.15	19971128	314.79650	83.85685	32.90748	2.69141	0.1467203	2.6064722	16	1	24 days	0.49			Williams	1997 XR_{10}
1997 XS_{10}	15.5	0.15	19971218	35.68189	355.72410	21.03375	4.58089	0.2269791	2.3798561	18	1	71 days	0.31	M-v	4	Williams	1997 XS_{10}
1997 XT_{10}	13.5	0.15	19971128	348.99490	216.45928	304.57581	13.30292	0.2660565	3.0466623	13	1	9 days	0.26			Williams	1997 XT_{10}
1997 XV_{10}	15.0	0.15	19971218	0.39732	159.84286	251.27079	5.47928	0.2309194	2.3973410	13	1	6 days	0.22			Williams	1997 XV_{10}
1997 XW_{10}	14.0	0.15	19971218	28.38962	144.79023	242.85132	2.78806	0.1843020	2.5817258	9	1	8 days	0.18			Williams	1997 XW_{10}
1997 XX_{10}	13.5	0.15	19971128	305.90302	135.20738	357.08707	4.95372	0.1433469	3.1592563	12	1	33 days	0.35			Williams	1997 XX_{10}
1997 XZ_{10}	15.5	0.15	19971128	341.97880	167.49187	289.92318	2.19599	0.1424129	2.5311029	27	1	29 days	0.36			Williams	1997 XZ_{10}
1997 XD_{11}	15.5	0.15	19971128	140.56596	355.12174	310.67048	6.21472	0.3255692	2.2005971	18	1	26 days	0.37			Williams	1997 XD_{11}
1997 XF_{11}	17.0	0.15	19971218	96.68834	102.45990	214.12845	4.09499	0.4838323	1.4416791	63	1	35 days	0.53	M-v	6	Marsden	1997 XF_{11}
1997 XH_{11}	12.5	0.15	19971218	358.24367	79.04801	68.32276	11.19818	0.0990458	2.6468085	12	1	22 days	0.38			Williams	1997 XH_{11}
1997 XK_{11}	14.0	0.15	19971218	61.79365	304.36747	93.97135	7.26438	0.1245545	2.4529720	22	1	37 days	0.34			Williams	1997 XK_{11}
1997 XL_{11}	13.0	0.15	19971128	149.97435	224.61621	95.64343	7.18386	0.0548494	2.7797640	18	1	43 days	0.43			Williams	1997 XL_{11}
1997 XM_{11}	14.5	0.15	19971128	358.69426	15.70685	51.13859	7.73103	0.1557585	2.3055560	25	1	28 days	0.59			Williams	1997 XM_{11}
1997 XS_{11}	12.9	0.15	19971218	342.31806	187.64709	264.32614	8.17106	0.0516976	3.0517832	12	1	29 days	0.78			Nakano	1997 XS_{11}
1997 XT_{11}	13.0	0.15	19971218	353.64199	48.92934	105.65740	16.16239	0.0614509	2.6395514	20	1	25 days	0.25			Williams	1997 XT_{11}
1997 XV_{11}	20.0	0.15	19971128	303.52454	270.03690	241.33960	44.41998	0.3177426	1.8709808	9	1	2 days	0.27			Williams	1997 XV_{11}
1997 YA	13.5	0.15	19971218	17.37993	312.45908	69.79488	12.33050	0.0905630	2.9401895	15	1	9 days	0.33			Williams	1997 YA
1997 YB	14.5	0.15	19971218	37.71899	242.35723	141.35565	1.51025	0.2412108	3.0636072	11	1	31 days	0.83			Nakano	1997 YB
1997 YC	13.0	0.15	19971218	52.72266	111.18183	267.80440	5.93255	0.1151672	2.6953030	8	1	17 days	0.43			Nakano	1997 YC
1997 YE	15.7	0.15	19971218	342.05609	205.53635	262.82675	4.87658	0.1556172	2.5337252	13	1	31 days	0.69			Nakano	1997 YE
1997 YF	14.0	0.15	19971218	340.17065	43.20587	67.10429	2.28721	0.1478981	2.9148425	8	1	10 days	0.59			Nakano	1997 YF
1997 YG	14.6	0.15	19971218	13.86236	332.91613	93.15590	7.42294	0.1183491	2.5681407	7	1	17 days	0.49			Nakano	1997 YG
1997 YH	14.2	0.15	19971218	36.67147	143.86216	254.38856	7.24978	0.1171242	2.4678606	8	1	17 days	0.41			Nakano	1997 YH
1997 YJ	14.0	0.15	19971218	253.82182	276.64058	289.95939	1.94125	0.1627081	2.3851973	9	1	10 days	0.47			Nakano	1997 YJ
1997 YK	12.8	0.15	19971218	68.13409	94.78626	267.42361	17.96755	0.1244616	1.9484660	8	1	17 days	0.32			Nakano	1997 YK
1997 YL	13.7	0.15	19980107	43.62730	288.59785	109.04166	16.36754	0.2490045	2.7582278	12	1	15 days	0.61			Nakano	1997 YL
1997 YM	13.7	0.15	19980107	53.81453	243.25053	157.68626	2.51576	0.1143727	2.9425073	8	1	17 days	0.43			Nakano	1997 YM
1997 YN	14.5	0.15	19980107	204.97022	15.30660	252.01652	3.43293	0.1590428	2.2483633	11	1	15 days	0.61			Nakano	1997 YN
1997 YO	11.0	0.15	19971218	336.74238	26.85735	107.17528	17.41784	0.1693970	3.1315294	13	1	15 days	0.49			Williams	1997 YO
1997 YP	15.0	0.15	19971218	16.01986	324.93375	111.00732	2.22701	0.1745179	2.4593787	13	1	15 days	0.55			Williams	1997 YP

1997 YS	13.5	0.15	19971218	52.92345	129.03864	276.10160	5.54445	0.0498058	3.1037246	13	1	15 days	0.37			Williams	1997 YS
1997 YT	13.5	0.15	19971218	155.81614	29.69393	273.27410	3.92883	0.0810951	2.6410992	12	1	15 days	0.23			Williams	1997 YT
1997 YV	14.1	0.15	19971218	50.88209	221.92282	163.73693	2.33340	0.2232782	2.3828012	12	1	15 days	0.76			Nakano	1997 YV
1997 YW	12.6	0.15	19980107	45.00111	133.69401	270.62460	11.48501	0.1854129	2.6458105	8	1	15 days	0.51			Nakano	1997 YW
1997 YD_1	15.0	0.15	19971218	314.21440	251.36785	287.62063	22.84414	0.2941429	2.2857897	27	1	18 days	0.66			Williams	1997 YD_1
1997 YE_1	13.5	0.15	19971218	87.73338	11.08296	332.14641	14.39341	0.1796357	2.7465563	10	1	2 days	0.27			Williams	1997 YE_1
1997 YG_1	15.0	0.15	19971218	291.85126	63.82960	62.30883	2.94793	0.1020440	2.3336881	12	1	6 days	0.43			Williams	1997 YG_1
1997 YH_1	13.0	0.15	19971218	354.55662	17.82107	44.08552	11.04222	0.0480850	3.0730479	21	1	109 days	0.66	M-v	4	Williams	1997 YH_1
1997 YK_1	13.0	0.15	19971218	72.92995	62.48723	283.30503	8.45521	0.0778661	3.0048201	9	1	12 days	0.19			Williams	1997 YK_1
1997 YN_1	14.5	0.15	19971218	11.79766	313.51931	126.97020	13.19459	0.2546959	2.5948424	15	1	17 days	0.22			Williams	1997 YN_1
1997 YQ_1	13.5	0.15	19971218	315.60227	85.03844	20.49775	4.34680	0.1519217	2.4143581	12	1	10 days	0.26			Williams	1997 YQ_1
1997 YR_1	13.5	0.15	19971218	241.17125	352.69828	252.51804	12.04170	0.2219266	2.5526181	9	1	9 days	0.20			Williams	1997 YR_1
1997 YT_1	13.0	0.15	19971218	82.42816	106.66810	250.83397	11.93109	0.2285787	2.4682661	15	1	9 days	0.22			Williams	1997 YT_1
1997 YU_1	15.5	0.15	19971128	47.32540	90.76423	293.08819	20.76665	0.3651935	2.2938005	16	1	32 days	0.36			Williams	1997 YU_1
1997 YW_1	13.5	0.15	19971218	343.95466	54.77895	19.28932	9.65989	0.2951144	3.0237837	13	1	14 days	0.31			Williams	1997 YW_1
1997 YZ_1	14.2	0.15	19971218	29.54609	352.54857	58.80789	3.15718	0.2189736	2.3534994	6	1	10 days	0.36			Nakano	1997 YZ_1
1997 YB_2	14.5	0.15	19971218	191.79280	352.03620	281.35695	1.83515	0.1023237	2.2324371	10	1	12 days	0.40			Williams	1997 YB_2
1997 YC_2	13.2	0.15	19971218	318.52052	54.30639	103.33208	16.71731	0.1491761	2.7673488	6	1	10 days	0.47			Nakano	1997 YC_2
1997 YD_2	15.0	0.15	19971218	293.33048	248.30421	286.79368	4.38093	0.0661961	2.1669462	11	1	12 days	0.31			Williams	1997 YD_2
1997 YE_2	13.2	0.15	19971218	8.09643	12.39402	75.13621	5.50271	0.1119795	2.1894786	6	1	10 days	0.39			Nakano	1997 YE_2
1997 YF_2	12.4	0.15	19971218	91.23553	254.10456	107.24004	10.07670	0.1162122	3.1170903	6	1	10 days	0.47			Nakano	1997 YF_2
1997 YG_2	14.4	0.15	19971218	7.47398	352.59535	104.02415	10.19179	0.0462463	2.9850323	9	1	10 days	0.43			Nakano	1997 YG_2
1997 YH_2	16.3	0.15	19971218	344.79639	19.88269	99.66139	5.16115	0.1184013	2.1569282	10	1	10 days	0.49			Nakano	1997 YH_2
1997 YJ_2	14.2	0.15	19971218	17.17579	154.69064	287.79712	10.65771	0.0945559	2.6969294	9	1	10 days	0.47			Nakano	1997 YJ_2
1997 YK_2	14.1	0.15	19971218	142.32321	14.89727	300.19368	3.67889	0.0791215	2.1557136	8	1	10 days	0.80		E	Nakano	1997 YK_2
1997 YM_2	16.1	0.15	19971218	11.78575	341.17554	92.78265	7.68266	0.3401659	2.6364302	6	1	10 days	0.36			Nakano	1997 YM_2
1997 YN_2	12.0	0.15	19971218	67.82283	85.46195	292.68768	15.39461	0.1698721	3.2312415	6	1	10 days	0.51			Nakano	1997 YN_2
1997 YQ_2	14.5	0.15	19971128	25.13399	122.29396	259.47693	10.34002	0.3106784	3.0977384	18	1	32 days	0.71			Williams	1997 YQ_2
1997 YR_2	14.0	0.15	19971128	79.25292	247.91450	81.48607	3.44190	0.1847434	2.4406903	25	1	34 days	0.52			Williams	1997 YR_2
1997 YS_2	15.6	0.15	19971218	1.84778	5.74468	74.90963	5.83040	0.1126668	2.4150742	6	1	6 days	0.64			Nakano	1997 YS_2
1997 YU_2	15.0	0.15	19971218	64.19197	309.10052	46.51334	3.11480	0.2007213	2.3753599	14	1	27 days	0.94			Nakano	1997 YU_2
1997 YV_2	13.5	0.15	19971218	341.52987	27.29709	105.07986	2.10565	0.1166470	3.1052801	20	1	18 days	0.72			Williams	1997 YV_2
1997 YW_2	15.5	0.15	19971218	18.55927	338.00928	102.00614	3.25454	0.1470799	2.4068238	10	1	11 days	0.36			Williams	1997 YW_2
1997 YX_2	13.8	0.15	19971218	279.80923	207.41847	352.92193	1.28921	0.1316411	2.9644287	6	1	10 days	0.41			Nakano	1997 YX_2
1997 YY_2	14.5	0.15	19971218	36.72674	311.34287	107.63359	0.95552	0.0768157	2.1918032	15	1	15 days	0.28			Williams	1997 YY_2
1997 YZ_2	12.5	0.15	19971218	17.15020	170.27357	270.50545	12.40148	0.1063251	2.5973197	9	1	7 days	0.18			Nakano	1997 YZ_2
1997 YA_3	14.0	0.15	19971218	36.03310	312.10050	100.19432	12.67653	0.1778099	2.6922586	6	1	7 days	0.50			Nakano	1997 YA_3
1997 YB_3	13.9	0.15	19971218	339.29059	277.10297	211.46130	1.42655	0.1604783	2.4015906	6	1	7 days	0.43			Nakano	1997 YB_3
1997 YC_3	14.0	0.15	19971218	24.67183	298.49743	120.55144	3.94010	0.2602265	2.7947892	11	1	15 days	1.00		E	Williams	1997 YC_3
1997 YD_3	14.0	0.15	19971218	17.03520	293.12603	139.15499	4.39326	0.2299730	2.4110878	6	1	7 days	0.52		E	Williams	1997 YD_3
1997 YE_3	12.5	0.15	19980107	25.65429	311.14807	124.61526	6.77887	0.1321255	3.2142305	6	1	7 days	0.80		E	Nakano	1997 YE_3
1997 YF_3	12.6	0.15	19971218	300.86542	318.89990	228.22293	1.57678	0.2229097	2.5068496	6	1	7 days	0.17			Nakano	1997 YF_3
1997 YG_3	13.0	0.15	19971218	332.09113	215.58228	280.92236	9.24660	0.0560602	2.9811605	14	1	9 days	0.38		E	Williams	1997 YG_3
1997 YH_3	14.5	0.15	19971218	36.67569	31.00464	324.39700	2.10771	0.1710314	2.5934597	32	1	74 days	0.49	M-v	5	Marsden	1997 YH_3
1997 YJ_3	14.0	0.15	19971218	49.00354	270.47721	70.47771	7.50107	0.1666068	2.3162972	9	1	8 days	0.39			Williams	1997 YJ_3
1997 YK_3	14.5	0.15	19971218	37.72976	52.89798	321.94123	5.77891	0.2141901	2.3150576	9	1	12 days	0.15			Williams	1997 YK_3
1997 YL_3	14.0	0.15	19971218	191.56366	188.36700	91.31156	8.48848	0.1773377	2.5544290	13	1	9 days	0.77			Williams	1997 YL_3
1997 YM_3	17.0	0.15	19971218	16.49098	73.51394	303.67136	4.00034	0.6723194	3.2275693	30	1	21 days	0.51	M-v	6	Marsden	1997 YM_3
1997 YN_3	16.5	0.15	19971218	5.39097	52.37403	24.50988	1.47638	0.3001722	2.6775282	9	1	5 days	0.38			Williams	1997 YN_3
1997 YP_3	13.0	0.15	19971218	122.11263	137.48973	187.41964	1.63961	0.0357561	2.8581704	9	1	8 days	0.22			Williams	1997 YP_3
1997 YT_3	15.0	0.15	19971128	19.90309	112.55850	283.81457	6.28286	0.1656807	2.3380321	13	1	31 days	0.25			Williams	1997 YT_3
1997 YY_3	13.0	0.15	19971218	87.96131	250.89773	108.96784	16.72187	0.2760240	2.8444860	10	1	13 days	0.24			Williams	1997 YY_3
1997 YZ_3	14.5	0.15	19971218	119.01406	238.32462	107.51167	23.69045	0.0677366	1.9364560	9	1	7 days	0.16			Williams	1997 YZ_3

1997 YB_4	14.0	0.15	19971218	59.70191	309.59055	82.33103	5.88830	0.2244378	2.3791069	9	1	13 days	0.19		Williams	1997 YB_4
1997 YC_4	14.5	0.15	19971218	8.68431	62.01064	334.27249	3.99476	0.1328991	2.1706953	13	1	11 days	0.21		Williams	1997 YC_4
1997 YD_4	13.5	0.15	19971218	13.32403	317.58108	116.89039	3.41607	0.0855490	2.9358952	9	1	6 days	0.27	E	Williams	1997 YD_4
1997 YE_4	13.5	0.15	19971218	83.25690	92.93846	254.74389	4.24506	0.1686229	2.2385289	9	1	6 days	0.38		Williams	1997 YE_4
1997 YF_4	14.0	0.15	19971218	24.52048	298.27415	123.65962	3.10310	0.0749321	2.6606530	9	1	12 days	0.33	E	Williams	1997 YF_4
1997 YG_4	15.5	0.15	19971218	6.16512	2.33602	94.06940	10.29042	0.1557650	2.7946673	11	1	6 days	0.25		Williams	1997 YG_4
1997 YL_4	13.5	0.15	19971218	349.95053	316.50806	103.68139	4.02430	0.2241963	2.9478827	9	1	10 days	0.30		Williams	1997 YL_4
1997 YP_4	16.0	0.15	19971218	356.11220	175.03889	300.51365	3.48460	0.1905616	2.3976345	12	1	31 days	0.45		Williams	1997 YP_4
1997 YQ_4	13.6	0.15	19980107	43.36513	311.58458	114.46715	12.35549	0.1359144	3.1353628	13	1	12 days	0.61		Nakano	1997 YQ_4
1997 YR_4	14.7	0.15	19980107	59.97164	293.16362	109.45307	4.06373	0.1529782	2.2872182	10	1	13 days	0.53		Nakano	1997 YR_4
1997 YS_4	16.0	0.15	19971218	45.08675	305.05594	87.84530	24.41677	0.1106453	2.0071926	8	1	9 days	0.81		Williams	1997 YS_4
1997 YT_4	16.0	0.15	19971218	19.65481	322.11120	62.49958	7.79665	0.2348699	2.1808813	9	1	3 days	0.45	E	Williams	1997 YT_4
1997 YW_4	15.0	0.15	19971218	194.40379	19.47518	228.75136	6.39863	0.0791111	2.3306447	10	1	10 days	0.49		Williams	1997 YW_4
1997 YY_4	14.0	0.15	19971218	28.60643	90.59112	277.80618	16.28328	0.2807598	2.7166561	9	1	4 days	0.10		Williams	1997 YY_4
1997 YZ_4	15.0	0.15	19971218	73.87755	279.66667	65.89426	4.19512	0.1733194	2.5187504	14	1	30 days	0.56		Williams	1997 YZ_4
1997 YA_5	13.5	0.15	19971218	351.80471	180.07263	267.96986	16.49771	0.1492787	2.7590896	12	1	8 days	0.16		Williams	1997 YA_5
1997 YB_5	14.0	0.15	19971218	213.10846	155.47884	79.26754	3.94814	0.0684732	2.7458883	12	1	12 days	0.37		Williams	1997 YB_5
1997 YD_5	15.0	0.15	19971218	352.08471	211.73705	248.24487	4.03512	0.1147040	2.2511259	14	1	12 days	0.37		Williams	1997 YD_5
1997 YF_5	15.0	0.15	19971128	29.91444	151.20831	235.29232	5.04967	0.1534803	2.2215710	14	1	26 days	0.42		Williams	1997 YF_5
1997 YG_5	14.0	0.15	19971128	342.61628	352.10237	98.94469	5.01997	0.1632190	2.4166035	13	1	25 days	0.62		Williams	1997 YG_5
1997 YH_5	13.3	0.15	19980107	59.48941	60.09876	323.27803	3.63249	0.2327540	2.1810013	12	1	9 days	0.39		Nakano	1997 YH_5
1997 YJ_5	10.5	0.15	19971218	238.65133	309.15553	301.24737	18.52018	0.2572659	3.2520536	8	1	9 days	0.36	E	Williams	1997 YJ_5
1997 YK_5	12.5	0.15	19980107	66.33216	305.02433	93.89545	15.92422	0.0487913	2.6580505	6	1	9 days	0.46		Nakano	1997 YK_5
1997 YL_5	14.4	0.15	19980107	335.24462	15.84998	127.80880	6.58004	0.0835682	2.7795781	9	1	9 days	0.24		Nakano	1997 YL_5
1997 YM_5	13.2	0.15	19980107	67.76064	196.47985	193.13149	1.06347	0.1510217	2.7740121	6	1	9 days	0.59	E	Nakano	1997 YM_5
1997 YN_5	13.1	0.15	19980107	85.69120	258.77961	117.95789	12.57540	0.1087918	2.9857744	6	1	9 days	0.50		Nakano	1997 YN_5
1997 YO_5	15.5	0.15	19971218	5.84454	341.43932	116.92255	6.03405	0.1141639	2.2840636	13	1	14 days	0.55		Williams	1997 YO_5
1997 YP_5	14.5	0.15	19971218	54.14124	264.07280	126.31940	2.63582	0.2125615	2.4283126	13	1	14 days	0.33		Williams	1997 YP_5
1997 YQ_5	15.0	0.15	19971218	34.46019	295.48086	115.20739	6.62031	0.2536567	2.6328848	13	1	14 days	0.40		Williams	1997 YQ_5
1997 YR_5	15.0	0.15	19971218	100.45172	249.19383	109.83299	3.51879	0.0751292	2.2619073	16	1	14 days	0.50		Williams	1997 YR_5
1997 YS_5	11.7	0.15	19980107	346.96024	184.20776	305.38146	11.22566	0.1964277	3.0386728	6	1	9 days	0.15		Nakano	1997 YS_5
1997 YT_5	13.5	0.15	19971218	97.93337	79.19497	284.22442	8.39091	0.0993164	3.0503388	9	1	9 days	0.89		Williams	1997 YT_5
1997 YU_5	14.6	0.15	19980107	9.66817	175.05018	281.34604	6.98066	0.2681414	2.7788668	6	1	9 days	0.19		Nakano	1997 YU_5
1997 YV_5	12.5	0.15	19980107	108.75919	30.29135	313.71489	8.34034	0.1741723	2.4222783	6	1	9 days	0.48		Nakano	1997 YV_5
1997 YX_5	14.9	0.15	19980107	7.55994	170.90257	292.95991	7.67256	0.1452321	2.8534142	10	1	9 days	0.36		Nakano	1997 YX_5
1997 YY_5	10.9	0.15	19980107	104.48376	43.98250	312.70679	8.93927	0.1020309	3.0647236	6	1	9 days	0.44		Nakano	1997 YY_5
1997 YZ_5	14.0	0.15	19971218	329.81748	65.58512	79.42778	5.66290	0.1505430	2.4546937	9	1	31 days	0.34		Williams	1997 YZ_5
1997 YA_6	13.1	0.15	19980107	42.16443	14.91974	39.35614	3.85850	0.1663886	2.6039333	6	1	9 days	0.43		Nakano	1997 YA_6
1997 YG_6	15.0	0.15	19971218	75.17258	257.70339	84.24286	26.12848	0.0468743	1.8533802	9	1	3 days	0.13		Williams	1997 YG_6
1997 YS_6	14.2	0.15	19980107	286.32785	285.20580	297.35018	7.07016	0.2522488	2.4682769	6	1	6 days	0.54		Nakano	1997 YS_6
1997 YU_6	15.5	0.15	19971218	26.65183	327.96223	109.08288	6.52640	0.0738349	2.3772400	10	1	6 days	0.45		Williams	1997 YU_6
1997 YV_6	13.0	0.15	19980107	310.12226	252.86553	293.80308	15.82940	0.2124898	2.9655813	6	1	6 days	0.14		Nakano	1997 YV_6
1997 YW_6	15.0	0.15	19971218	43.49454	283.67127	107.74310	12.42830	0.3170060	2.6135266	11	1	12 days	0.45		Williams	1997 YW_6
1997 YX_6	13.0	0.15	19971218	141.05235	217.38833	112.10454	16.72526	0.0371940	3.0411111	9	1	6 days	0.43	E	Williams	1997 YX_6
1997 YY_6	17.5	0.15	19971218	13.60409	333.18525	72.74800	8.32363	0.3208724	2.5953186	8	1	8 days	0.59		Marsden	1997 YY_6
1997 YZ_6	16.0	0.15	19971218	351.04794	161.59899	268.83053	19.90847	0.1196499	1.9460389	9	1	3 days	0.22		Williams	1997 YZ_6
1997 YB_7	15.5	0.15	19971218	15.47427	297.61164	117.10443	10.71146	0.1022742	2.4668307	9	1	4 days	0.29		Williams	1997 YB_7
1997 YF_7	16.4	0.15	19980107	351.84706	350.73696	108.29584	4.51599	0.2259141	2.3883510	10	1	8 days	0.57		Nakano	1997 YF_7
1997 YG_7	14.7	0.15	19980107	272.72755	100.75096	115.57114	13.16885	0.1277429	2.6842072	9	1	11 days	0.48		Nakano	1997 YG_7
1997 YH_7	15.1	0.15	19980107	34.63501	80.44543	333.89514	2.26126	0.1661825	2.2076948	6	1	7 days	0.43		Nakano	1997 YH_7
1997 YJ_7	13.8	0.15	19980107	44.01823	312.72307	94.21929	13.38426	0.2002728	2.5709092	6	1	9 days	0.44		Nakano	1997 YJ_7
1997 YK_7	14.5	0.15	19971218	15.85037	354.12839	84.14672	12.88906	0.1627038	2.6388694	9	1	10 days	0.55		Williams	1997 YK_7
1997 YL_7	13.0	0.15	19971218	356.54487	18.36984	88.00470	15.06749	0.2317615	2.6521335	9	1	10 days	0.31		Williams	1997 YL_7

1997 YM_7	12.0	0.15	19980107	149.26180	222.26958	114.53462	10.59974	0.1627170	2.7274475	7	1	9 days	0.44		Nakano	1997 YM_7
1997 YN_7	11.8	0.15	19980107	89.65733	276.79456	110.47681	15.44544	0.1305303	2.6036649	6	1	9 days	0.36		Nakano	1997 YN_7
1997 YP_7	11.0	0.15	19971218	224.67913	239.68671	43.86631	5.77940	0.2406746	3.0835773	6	1	9 days	0.44	E	Williams	1997 YP_7
1997 YQ_7	11.7	0.15	19980107	44.64883	86.52356	337.21980	11.20436	0.2166451	2.7927222	6	1	9 days	0.25		Nakano	1997 YQ_7
1997 YR_7	15.0	0.15	19971218	40.10119	100.88203	301.55207	11.30558	0.2263731	2.6422439	11	1	11 days	0.73	E	Williams	1997 YR_7
1997 YS_7	16.5	0.15	19971218	250.85438	120.60972	111.52058	3.15111	0.1849071	2.4099832	9	1	11 days	0.25		Williams	1997 YS_7
1997 YU_7	15.5	0.15	19971218	53.64291	289.22695	102.54805	2.07146	0.1789351	2.4331831	12	1	16 days	0.31		Williams	1997 YU_7
1997 YX_7	14.5	0.15	19971218	334.69014	34.56145	103.89710	2.43496	0.1050463	3.0357268	9	1	16 days	0.42		Williams	1997 YX_7
1997 YZ_7	15.0	0.15	19971218	20.50261	148.17818	280.90858	10.27856	0.2001348	2.5294896	13	1	6 days	0.11		Williams	1997 YZ_7
1997 YC_8	15.0	0.15	19971218	119.98476	119.94618	192.37901	6.45629	0.0404920	2.4857235	9	1	7 days	0.49		Williams	1997 YC_8
1997 YE_8	14.5	0.15	19971218	76.60633	189.09785	180.90898	7.33598	0.1561160	2.4271236	11	1	11 days	0.30		Williams	1997 YE_8
1997 YF_8	13.0	0.15	19971218	104.56384	94.42020	204.32023	10.17560	0.2966106	2.6420092	9	1	5 days	0.21	E	Williams	1997 YF_8
1997 YN_8	14.0	0.15	19971218	153.54049	262.25594	14.14590	2.77144	0.1567231	2.2486056	27	1	38 days	0.54		Williams	1997 YN_8
1997 YP_8	13.0	0.15	19971218	63.93323	294.38331	106.63392	12.01632	0.0422668	3.2266040	9	1	5 days	0.34	E	Williams	1997 YP_8
1997 YQ_8	16.0	0.15	19971218	24.70693	10.17071	56.31792	3.51797	0.1661699	2.3734500	10	1	13 days	0.51		Williams	1997 YQ_8
1997 YR_8	14.0	0.15	19971218	132.13790	328.92750	358.52670	9.02553	0.0561021	3.0967522	8	1	9 days	0.44		Williams	1997 YR_8
1997 YT_8	12.5	0.15	19971218	30.04639	147.62673	257.27641	11.88711	0.2352676	2.5911706	18	1	9 days	0.48		Williams	1997 YT_8
1997 YY_8	12.9	0.15	19980107	4.60092	342.91129	89.96855	15.54430	0.1779073	2.7112795	16	1	6 days	0.91		Nakano	1997 YY_8
1997 YG_9	14.5	0.15	19971218	326.20386	279.26668	213.86665	1.16511	0.2496614	3.1885037	8	1	4 days	0.40	E	Williams	1997 YG_9
1997 YM_9	25.0	0.15	19971218	310.86343	51.17576	95.23755	7.87517	0.1035673	1.0949091	36	1	13 days	1.13		Williams	1997 YM_9
1997 YC_{10}	13.9	0.15	19980107	359.47715	252.52260	214.15284	1.77024	0.1034980	2.5665082	6	1	7 days	0.32		Nakano	1997 YC_{10}
1997 YE_{10}	14.5	0.15	19980107	21.78645	138.83450	305.92653	11.85151	0.1361782	2.5886945	9	1	7 days	0.41		Nakano	1997 YE_{10}
1997 YF_{10}	14.0	0.15	19971218	332.78156	97.34948	50.51305	3.48306	0.2420900	2.3009765	12	1	10 days	0.32		Williams	1997 YF_{10}
1997 YG_{10}	14.0	0.15	19971218	0.51344	71.70589	34.71049	3.64144	0.1426237	2.5889682	12	1	10 days	0.32		Williams	1997 YG_{10}
1997 YJ_{10}	13.7	0.15	19980107	10.41576	15.00148	85.15347	10.29214	0.1443111	2.5678894	9	1	7 days	0.43		Nakano	1997 YJ_{10}
1997 YK_{10}	15.2	0.15	19980107	20.50903	106.86283	329.54704	6.82270	0.2754462	2.6948214	9	1	7 days	0.52		Nakano	1997 YK_{10}
1997 YL_{10}	13.7	0.15	19980107	84.44547	349.59720	27.63787	3.22779	0.1096301	2.2314387	6	1	7 days	0.58		Nakano	1997 YL_{10}
1997 YN_{10}	13.3	0.15	19980107	59.86877	316.29682	94.69292	8.78731	0.1991159	2.5607018	6	1	9 days	0.26		Nakano	1997 YN_{10}
1997 YO_{10}	12.5	0.15	19980107	212.39033	210.30661	59.25115	6.09837	0.1136661	2.2872851	6	1	7 days	0.20		Nakano	1997 YO_{10}
1997 YQ_{10}	13.0	0.15	19971218	351.10023	43.79241	78.14714	9.71425	0.0822484	2.9242591	9	1	9 days	0.21		Williams	1997 YQ_{10}
1997 YR_{10}	20.5	0.15	19971218	351.40937	190.54377	270.11293	36.76473	0.3341410	1.7207433	34	1	6 days	0.55		Williams	1997 YR_{10}
1997 YU_{10}	15.5	0.15	19971218	26.54361	306.41316	102.94882	8.26589	0.2057968	2.2213187	9	1	6 days	0.70		Williams	1997 YU_{10}
1997 YW_{10}	15.0	0.15	19971218	17.53985	56.87059	31.81745	2.87686	0.1754432	2.4021843	12	1	14 days	0.56		Williams	1997 YW_{10}
1997 YJ_{11}	14.0	0.15	19971218	272.16332	224.22489	3.49138	3.84081	0.1798699	2.5763342	9	1	13 days	0.36		Williams	1997 YJ_{11}
1997 YK_{11}	16.5	0.15	19971218	287.28858	210.21240	317.96337	7.85914	0.0156588	2.2561905	16	1	4 days	0.18		Marsden	1997 YK_{11}
1997 YL_{11}	17.5	0.15	19971218	350.88548	91.18116	36.82522	5.46389	0.4217240	2.6758783	29	1	12 days	0.41		Marsden	1997 YL_{11}
1997 YQ_{11}	14.5	0.15	19971128	230.36775	163.23979	86.07315	7.75762	0.1769314	2.2813555	9	1	45 days	0.28		Williams	1997 YQ_{11}
1997 YR_{11}	13.3	0.15	19980107	218.45169	276.33720	10.74764	6.65354	0.0653855	2.1116061	7	1	10 days	0.28		Nakano	1997 YR_{11}
1997 YS_{11}	13.2	0.15	19980107	244.88361	167.06764	109.65843	6.40566	0.1720356	2.3166374	6	1	10 days	0.61		Nakano	1997 YS_{11}
1997 YU_{11}	12.8	0.15	19980107	61.22142	33.91217	24.17844	6.79617	0.2195625	2.6913993	6	1	10 days	0.29		Nakano	1997 YU_{11}
1997 YV_{11}	11.4	0.15	19980107	79.08473	300.00741	125.54288	17.71135	0.0333894	3.0637789	6	1	10 days	0.31		Nakano	1997 YV_{11}
1997 YW_{11}	13.5	0.15	19971218	84.49316	279.45212	92.10278	4.43682	0.1246239	2.8568558	8	1	7 days	0.33		Williams	1997 YW_{11}
1997 YG_{12}	15.0	0.15	19971218	64.67591	265.74442	108.88907	3.51701	0.2261010	2.6696208	14	1	16 days	0.62		Williams	1997 YG_{12}
1997 YJ_{12}	17.5	0.15	19971218	45.32684	134.45735	272.35309	0.47142	0.1271629	2.4278604	9	1	16 days	0.21		Williams	1997 YJ_{12}
1997 YK_{12}	13.5	0.15	19971218	16.88777	160.17968	287.52734	5.76431	0.0701695	3.1603234	21	1	101 days	0.42	M-v 5	Williams	1997 YK_{12}
1997 YM_{12}	15.0	0.15	19971218	139.04418	207.85529	109.01791	3.80227	0.1838203	2.4318462	9	1	16 days	0.32		Williams	1997 YM_{12}
1997 YN_{12}	16.5	0.15	19971218	175.21768	183.74535	107.61774	7.37083	0.1077590	2.4378025	12	1	18 days	0.33		Williams	1997 YN_{12}
1997 YS_{12}	17.5	0.15	19971218	349.51843	9.21885	107.72515	3.34665	0.1346045	2.3786348	9	1	10 days	0.41		Williams	1997 YS_{12}
1997 YU_{12}	17.0	0.15	19971218	25.94476	136.86584	289.49638	2.79752	0.1922428	2.5115461	13	1	10 days	0.43		Williams	1997 YU_{12}
1997 YW_{12}	18.5	0.15	19971218	42.86642	332.90649	66.38811	0.09995	0.2239682	2.2412855	9	1	10 days	0.30		Williams	1997 YW_{12}
1997 YZ_{12}	16.0	0.15	19971218	237.73456	135.16030	109.14547	6.38544	0.1680843	2.2888130	9	1	10 days	0.20		Williams	1997 YZ_{12}
1997 YB_{13}	16.0	0.15	19971218	346.33824	22.43337	102.86670	1.00419	0.1168589	2.9705461	9	1	10 days	0.36		Williams	1997 YB_{13}
1997 YE_{13}	15.0	0.15	19971218	5.11042	169.43384	290.04147	7.76850	0.1260661	3.1023286	9	1	9 days	0.44		Williams	1997 YE_{13}

1997 YP_{13}	12.9	0.15	19980107	310.77432	274.91303	261.98426	6.05161	0.1185328	2.2896138	6	1	6 days	0.45		Nakano	1997 YP_{13}
1997 YQ_{13}	11.4	0.15	19980107	278.44734	330.23639	247.43256	1.62331	0.0950418	2.7516560	8	1	9 days	0.27		Nakano	1997 YQ_{13}
1997 YR_{13}	11.5	0.15	19971218	128.03479	123.05454	224.62414	0.10259	0.0927377	3.1262398	6	1	6 days	0.25	E	Williams	1997 YR_{13}
1997 YS_{13}	13.8	0.15	19980107	299.67103	233.63919	327.61034	0.39587	0.1651436	2.4480832	6	1	6 days	0.46	E	Nakano	1997 YS_{13}
1997 YT_{13}	14.5	0.15	19971218	222.86068	317.53412	309.29790	8.13784	0.1499027	2.3445878	9	1	8 days	0.53		Williams	1997 YT_{13}
1997 YU_{13}	12.0	0.15	19980107	91.19486	25.72149	0.60691	1.41673	0.0680592	2.9670409	6	1	6 days	0.34	E	Nakano	1997 YU_{13}
1997 YV_{13}	13.5	0.15	19971218	32.55592	131.67002	266.86947	4.99151	0.3921905	2.6145423	9	1	9 days	0.33		Williams	1997 YV_{13}
1997 YW_{13}	12.6	0.15	19980107	343.13714	239.44215	258.51810	5.35185	0.1050030	2.3007012	6	1	6 days	0.23		Nakano	1997 YW_{13}
1997 YX_{13}	13.2	0.15	19980107	7.84858	351.69159	122.78526	22.36841	0.0731367	2.5427240	6	1	6 days	0.30		Nakano	1997 YX_{13}
1997 YY_{13}	14.9	0.15	19980107	311.19189	264.63560	298.77116	5.46520	0.2920874	2.5901129	6	1	6 days	0.68		Nakano	1997 YY_{13}
1997 YZ_{13}	14.3	0.15	19980107	66.87777	273.58882	117.78147	5.94770	0.2182371	2.4302945	6	1	6 days	0.50		Nakano	1997 YZ_{13}
1997 YA_{14}	14.3	0.15	19980107	24.54269	148.07721	288.13174	22.41643	0.2362833	2.3318007	7	1	6 days	0.29		Nakano	1997 YA_{14}
1997 YC_{14}	13.5	0.15	19971218	229.11801	316.62889	312.00454	6.66119	0.2463773	2.2661559	9	1	8 days	0.34		Williams	1997 YC_{14}
1997 YD_{14}	12.3	0.15	19980107	15.36420	152.29145	308.95471	7.88508	0.1928891	3.1392263	6	1	6 days	0.17		Nakano	1997 YD_{14}
1997 YE_{14}	11.9	0.15	19980107	176.93447	11.37618	298.03165	7.84234	0.0813146	2.8267292	6	1	6 days	0.18		Nakano	1997 YE_{14}
1997 YG_{14}	12.8	0.15	19980107	331.73383	213.27679	302.20537	14.11065	0.0444960	2.6093848	6	1	6 days	0.36		Nakano	1997 YG_{14}
1997 YH_{14}	13.5	0.15	19971218	285.40639	241.45393	323.77825	1.06879	0.0792428	2.9225189	13	1	11 days	0.48		Marsden	1997 YH_{14}
1997 YJ_{14}	14.1	0.15	19980107	9.14325	158.71318	309.11031	3.07180	0.1974063	2.4719693	6	1	6 days	0.21		Nakano	1997 YJ_{14}
1997 YK_{14}	12.3	0.15	19980107	194.33469	339.91138	315.13614	8.83023	0.0905654	3.1858723	6	1	6 days	0.41	E	Nakano	1997 YK_{14}
1997 YL_{14}	13.8	0.15	19980107	329.32885	274.35462	239.27068	2.63416	0.0805378	2.3119281	6	1	6 days	0.27		Nakano	1997 YL_{14}
1997 YM_{14}	14.5	0.15	19971218	10.72759	329.35928	127.97723	7.95424	0.1298709	2.4808316	9	1	8 days	0.51		Williams	1997 YM_{14}
1997 YU_{14}	16.5	0.15	19971218	2.44058	162.82394	297.05530	1.23331	0.1856846	2.6971476	9	1	9 days	0.33		Williams	1997 YU_{14}
1997 YV_{14}	18.0	0.15	19971218	26.55993	113.00790	306.20779	1.22079	0.2326347	2.1686255	9	1	9 days	0.50		Williams	1997 YV_{14}
1997 YW_{14}	15.0	0.15	19971218	240.41503	295.37372	295.16087	3.78238	0.0607915	2.4012546	13	1	11 days	0.64	E	Williams	1997 YW_{14}
1997 YA_{15}	16.5	0.15	19971218	112.73476	28.02717	309.00788	1.85481	0.1811923	2.3313836	9	1	11 days	0.22	E	Williams	1997 YA_{15}
1997 YB_{15}	17.5	0.15	19971218	13.32485	350.32894	97.41110	3.39006	0.1025245	2.3162939	10	1	11 days	0.31		Marsden	1997 YB_{15}
1997 YC_{15}	15.0	0.15	19971218	298.79377	122.15242	58.03280	0.88648	0.1225271	2.4261869	9	1	11 days	0.15		Williams	1997 YC_{15}
1997 YF_{15}	14.0	0.15	19971218	224.06873	318.35892	298.55720	8.12028	0.1517480	2.9707486	9	1	9 days	0.37		Williams	1997 YF_{15}
1997 YK_{15}	15.5	0.15	19971218	118.68005	242.95999	89.00266	1.81563	0.1943518	3.0528282	8	1	10 days	0.37		Williams	1997 YK_{15}
1997 YL_{15}	14.5	0.15	19971218	149.07759	281.24027	27.80049	0.70055	0.2216491	3.1017683	9	1	10 days	0.12		Williams	1997 YL_{15}
1997 YP_{15}	16.0	0.15	19971218	261.37114	270.87151	309.12775	1.92901	0.1442945	2.3787311	9	1	10 days	0.17		Williams	1997 YP_{15}
1997 YQ_{15}	15.5	0.15	19971218	251.99739	295.04425	296.19366	8.03499	0.1564433	2.7276849	9	1	10 days	0.10		Williams	1997 YQ_{15}
1997 YS_{15}	17.5	0.15	19971218	97.67424	65.23887	298.83145	4.03885	0.0249190	2.2288494	9	1	10 days	0.65	E	Williams	1997 YS_{15}
1997 YY_{15}	18.5	0.15	19971218	21.40626	104.77051	327.02430	1.11952	0.1829520	2.3030391	9	1	10 days	0.14		Williams	1997 YY_{15}
1997 YG_{16}	15.7	0.15	19971128	337.64637	329.35879	132.06039	3.66945	0.1413983	2.3585783	10	1	40 days	0.44		Nakano	1997 YG_{16}
1997 YK_{16}	14.5	0.15	19971218	9.53864	73.60544	354.15883	4.73262	0.1042855	2.3652009	9	1	7 days	0.30		Williams	1997 YK_{16}
1997 YL_{16}	14.0	0.15	19971218	75.94791	77.84070	285.56157	11.88350	0.2304226	2.4016851	18	1	12 days	0.66		Williams	1997 YL_{16}
1997 YN_{16}	15.0	0.15	19971218	313.68058	36.92819	129.81473	3.28191	0.1786415	2.4968284	11	1	13 days	1.07		Williams	1997 YN_{16}
1997 YO_{16}	16.0	0.15	19971218	1.89295	174.64635	283.03223	2.87233	0.2315396	2.4619697	18	1	8 days	0.76		Williams	1997 YO_{16}
1997 YP_{16}	14.5	0.15	19971218	350.59090	190.61246	285.65409	5.02967	0.1406189	2.6160985	20	1	11 days	0.66		Williams	1997 YP_{16}
1997 YU_{16}	13.5	0.15	19971218	241.71122	154.24265	73.79341	3.06826	0.0400519	2.6248116	15	1	9 days	0.43	E	Williams	1997 YU_{16}
1997 YV_{16}	15.0	0.15	19971218	63.78719	57.33509	324.89201	2.46098	0.1685957	2.5195548	15	1	31 days	0.39		Williams	1997 YV_{16}
1997 YW_{16}	14.0	0.15	19971218	58.09258	279.02955	103.53860	16.07121	0.2368038	3.1214661	18	1	9 days	0.47		Williams	1997 YW_{16}
1997 YX_{16}	14.0	0.15	19971218	71.52044	288.54204	91.05285	6.44473	0.1151709	2.2740383	15	1	9 days	0.49		Williams	1997 YX_{16}
1997 YA_{17}	16.2	0.15	19980107	55.15493	118.46395	294.74515	18.63990	0.0952007	1.8802883	8	1	6 days	0.39		Nakano	1997 YA_{17}
1997 YC_{17}	13.0	0.15	19971218	161.65814	15.42656	302.70614	6.50608	0.0404725	3.1173172	8	1	6 days	0.43	E	Williams	1997 YC_{17}
1997 YD_{17}	13.5	0.15	19971218	318.26803	53.74027	119.17594	2.59661	0.1456549	3.0480317	8	1	6 days	0.24	E	Williams	1997 YD_{17}
1997 YK_{17}	15.0	0.15	19971218	264.03313	178.30673	42.11028	0.60315	0.1436236	3.0162274	9	1	11 days	0.45	E	Williams	1997 YK_{17}
1997 YO_{17}	16.5	0.15	19971218	280.85970	265.88211	312.95217	4.97916	0.2473340	2.7897690	12	1	8 days	1.27	E	Williams	1997 YO_{17}
1997 YP_{17}	16.0	0.15	19971218	167.94160	341.59892	318.51928	3.63130	0.1461852	2.3486857	8	1	8 days	0.14	E	Williams	1997 YP_{17}
1997 YQ_{17}	16.5	0.15	19971218	156.66607	10.58034	300.71012	14.50940	0.0760860	2.5548216	8	1	8 days	0.25		Williams	1997 YQ_{17}
1997 YR_{17}	15.5	0.15	19971218	48.02222	342.78820	69.37673	2.37275	0.1264571	3.0988084	9	1	8 days	0.17		Williams	1997 YR_{17}
1997 YS_{17}	16.0	0.15	19971218	349.39473	157.57126	323.01303	2.93484	0.0642939	2.3466027	12	1	8 days	0.12	E	Williams	1997 YS_{17}

1997 YU_{17}	16.0	0.15	19971218	64.03808	324.16804	73.56803	2.66356	0.1022844	3.0449947	12	1	8 days	0.22			Williams		1997 YU_{17}
1997 YV_{17}	17.0	0.15	19971218	22.99292	112.60879	323.54747	2.93541	0.1518084	2.3378263	9	1	8 days	0.23			Williams		1997 YV_{17}
1997 YX_{17}	16.5	0.15	19971218	42.85433	115.93366	308.42913	6.84963	0.0288350	2.3116781	9	1	8 days	0.12			Williams		1997 YX_{17}
1997 YY_{17}	16.5	0.15	19971218	78.86326	46.33574	325.07189	4.24684	0.2004458	2.8051362	8	1	8 days	0.39		E	Williams		1997 YY_{17}
1997 YA_{18}	16.5	0.15	19971218	235.56268	302.46636	317.24788	5.93648	0.2807379	2.3691909	9	1	8 days	0.31			Williams		1997 YA_{18}
1997 YC_{18}	16.5	0.15	19971218	1.98199	164.24430	300.91611	7.93078	0.1449855	2.7852324	8	1	8 days	0.30			Williams		1997 YC_{18}
1997 YH_{18}	14.5	0.15	19971218	35.43315	13.78295	37.90107	1.89450	0.1937480	2.4292578	18	1	9 days	0.36			Williams		1997 YH_{18}
1997 YJ_{18}	13.0	0.15	19971218	64.89247	25.48907	354.63190	1.78893	0.0285720	2.8810037	12	1	14 days	0.50			Williams		1997 YJ_{18}
1997 YP_{19}	15.5	0.15	19971218	28.75474	111.74369	310.90098	3.19461	0.1684385	2.3657225	9	1	9 days	0.28			Williams		1997 YP_{19}
1998 AA	13.5	0.15	19971128	72.46537	85.33890	246.56023	23.39316	0.2422336	2.3698903	29	1	34 days	0.61			Williams		1998 AA
1998 AB	17.5	0.15	19971218	160.40171	189.35664	108.13721	29.83486	0.2309346	2.0098819	9	1	7 days	0.43			Williams		1998 AB
1998 AD	14.5	0.15	19971218	351.46394	47.32399	355.28537	12.52645	0.0314980	1.9213249	14	1	8 days	0.47		E	Williams		1998 AD
1998 AE	14.0	0.15	19971218	344.55711	7.55223	113.57032	8.60203	0.2227035	3.0677383	9	1	3 days	0.66		E	Williams		1998 AE
1998 AF	15.5	0.15	19980107	7.85778	291.75945	163.88675	4.66323	0.1285459	2.2171931	8	1	4 days	0.59			Nakano		1998 AF
1998 AG	13.0	0.15	19971218	181.62793	147.64686	137.69606	12.44274	0.1097252	2.9439305	9	1	9 days	0.17			Williams		1998 AG
1998 AH	14.0	0.15	19971218	6.67575	69.25805	12.97205	4.03721	0.2800435	2.5880442	17	1	7 days	0.72			Williams		1998 AH
1998 AJ	13.0	0.15	19971218	27.80772	309.98485	118.73230	4.03894	0.1667412	3.0974452	16	1	7 days	0.39			Williams		1998 AJ
1998 AK	14.0	0.15	19971218	300.73964	272.00818	279.01954	1.75604	0.2264297	2.5772356	13	1	6 days	0.50		E	Williams		1998 AK
1998 AL	13.2	0.15	19980107	45.22710	304.66542	120.66038	5.66344	0.1726882	2.3682270	9	1	4 days	0.42			Nakano		1998 AL
1998 AM	14.4	0.15	19980107	29.28914	108.94827	329.52209	3.48888	0.2422162	2.5213303	9	1	4 days	0.23			Nakano		1998 AM
1998 AP	13.0	0.15	19980107	339.30932	29.76284	127.52072	8.75040	0.1540881	2.7899836	9	1	5 days	0.22			Williams		1998 AP
1998 AQ	12.5	0.15	19980107	18.84247	338.66993	129.83146	19.70771	0.0985246	3.1380627	9	1	5 days	0.45		E	Williams		1998 AQ
1998 AR	12.5	0.15	19980107	289.24515	247.69051	336.93154	4.81572	0.2314189	2.3117360	9	1	5 days	0.18		E	Williams		1998 AR
1998 AS	14.8	0.15	19980107	26.38451	65.47664	28.62734	1.28587	0.1315545	2.5980488	6	1	4 days	0.63		E	Nakano		1998 AS
1998 AV	11.8	0.15	19980107	267.96177	119.87315	114.60415	21.97597	0.1286093	3.0636303	6	1	4 days	0.53			Nakano		1998 AV
1998 AW	12.7	0.15	19980107	4.76805	170.40329	315.27626	17.57670	0.0973672	3.1557996	6	1	4 days	0.23			Nakano		1998 AW
1998 AX	12.8	0.15	19980107	284.31660	248.20747	339.55712	7.47394	0.2405602	2.3419430	6	1	4 days	0.34			Nakano		1998 AX
1998 AY	15.0	0.15	19980107	8.47407	11.54506	96.38896	4.18566	0.3054386	2.6298574	6	1	4 days	0.43			Nakano		1998 AY
1998 AZ	11.1	0.15	19980107	251.29436	279.16377	326.89254	10.30804	0.0482136	3.1298147	6	1	4 days	0.21		E	Nakano		1998 AZ
1998 AA_1	15.0	0.15	19980107	353.80858	31.85655	103.02796	5.48919	0.2409688	2.3927970	6	1	4 days	0.31			Nakano		1998 AA_1
1998 AB_1	13.3	0.15	19980107	34.88287	320.34176	120.74949	19.99934	0.1762590	2.8860169	6	1	4 days	0.32			Nakano		1998 AB_1
1998 AC_1	13.9	0.15	19980107	295.59799	248.43769	327.77460	8.70392	0.2507979	2.1849572	6	1	4 days	0.54		E	Nakano		1998 AC_1
1998 AD_1	16.5	0.15	19971218	31.46550	298.07318	109.79683	7.68219	0.2759825	2.4872859	10	1	5 days	0.39			Williams		1998 AD_1
1998 AS_1	13.0	0.15	19971218	296.53280	84.37802	114.60450	3.82756	0.2351563	3.2019698	15	1	7 days	0.76		E	Williams		1998 AS_1
1998 AT_2	17.5	0.15	19971218	30.19561	319.63617	105.49341	3.14154	0.1304069	2.5518593	9	1	6 days	0.33		E	Williams		1998 AT_2
1998 AU_2	17.5	0.15	19971218	21.91862	328.06248	101.49060	2.30316	0.2292577	2.9777885	8	1	6 days	0.40		E	Williams		1998 AU_2
1998 AC_3	14.0	0.15	19971218	84.81410	269.34549	100.20390	8.24706	0.0895298	2.3202518	9	1	4 days	0.48		E	Williams		1998 AC_3
1998 AE_3	14.5	0.15	19971218	279.00018	256.97235	307.58574	6.29212	0.1687709	2.3088195	9	1	3 days	0.33		E	Williams		1998 AE_3
1998 AC_5	17.5	0.15	19980107	356.08991	17.21686	97.22118	5.87532	0.1252153	2.6098686	9	1	2 days	0.34		E	Williams		1998 AC_5
1998 AN_6	13.0	0.15	19971218	305.99116	63.40668	103.34972	10.49005	0.0570416	3.1386641	9	1	3 days	0.35		E	Williams		1998 AN_6
1998 AX_7	14.0	0.15	19971218	347.19344	8.96210	102.59619	13.49392	0.1333034	2.5740058	12	1	5 days	0.62			Williams		1998 AX_7
1998 AH_8	12.0	0.15	19971218	78.53519	87.74811	273.95076	14.19606	0.1240565	3.1131442	11	1	5 days	0.28		E	Williams		1998 AH_8
1998 AK_8	16.5	0.15	19980107	350.87150	12.04679	126.88794	48.35959	0.1841399	1.8039070	91	1	3 days	0.35			Marsden		1998 AK_8
2017 P-L	14.5	0.15	19971218	89.81836	55.32295	262.64899	2.25102	0.2178963	2.2330142	34	4	1960–1997	0.77	M-v	5	Williams	31022	2017 P-L
2020 P-L	14.5	0.15	19971218	6.68845	60.94971	342.80597	5.12086	0.2384234	2.5630270	27	3	1960–1997	0.61	M-v	2	Williams	30914	2020 P-L
2177 P-L	15.0	0.15	19971218	9.72845	197.80609	247.07603	1.27826	0.2497780	3.0008567	19	3	1960–1998	0.52	M-v	5	Williams	23680	2177 P-L
2207 P-L	14.0	0.15	19971218	285.41547	177.53451	334.75461	6.15279	0.0493172	2.3727153	21	4	1960–1997	0.63	M-v	2	Williams	29141	2207 P-L
2537 P-L	15.0	0.15	19971218	63.33580	317.63483	26.99172	5.23690	0.2038156	2.3802700	35	3	1960–1997	0.40	M-v	3	Williams	31000	2537 P-L
2660 P-L	14.5	0.15	19971218	95.57331	130.52311	179.07844	2.67742	0.1376187	3.0033238	14	2	1960–1997	0.50	M-v	5	Williams	31000	2660 P-L
3086 P-L	12.5	0.15	19971218	127.38029	58.61049	246.13142	9.16873	0.0844952	2.9892084	39	4	1960–1997	0.61	M-v	3	Williams	31022	3086 P-L
3520 P-L	13.5	0.15	19971218	31.68774	141.32025	243.40934	9.50739	0.1239328	3.0144210	27	3	1960–1997	0.74	M-v	3	Williams	31022	3520 P-L
4033 P-L	15.5	0.15	19971218	359.18543	86.82340	317.29501	1.60039	0.2041997	2.3908644	35	2	1960–1998	0.46	M-v	3	Williams	30888	4033 P-L
4042 P-L	14.5	0.15	19971218	10.41318	229.50873	195.97509	4.88911	0.2040194	2.7549938	16	3	1960–1997	0.46	M-v	4	Williams	31000	4042 P-L

4110 P-L	15.0	0.15	19971218	100.86512	119.11934	196.67592	3.01983	0.1164710	2.2308095	36	3	1960–1997	0.74	M-v	3	Williams	31022	4110 P-L
4168 P-L	14.5	0.15	19971218	276.48743	270.36572	269.62304	2.01001	0.0275759	2.7293171	20	3	1960–1998	0.41	M-v	5	Williams	27926	4168 P-L
4601 P-L	13.5	0.15	19971218	7.49280	11.67158	73.93524	2.96613	0.2281855	2.9965617	24	6	1960–1998	0.94	M-v	2	Williams	23540	4601 P-L
6133 P-L	15.5	0.15	19971218	46.26948	127.12143	246.08437	2.77778	0.2172348	2.3784507	25	3	1960–1997	0.44	M-v	3	Williams	31001	6133 P-L
6199 P-L	16.0	0.15	19971218	29.08355	173.65779	211.36301	2.86063	0.1675161	2.2368085	18	2	1960–1997	0.57	M-v	4	Williams	30888	6199 P-L
6570 P-L	15.0	0.15	19971218	5.86990	242.25317	180.59704	2.41098	0.2079048	2.3811854	32	3	1960–1997	0.67	M-v	3	Williams	31023	6570 P-L
6579 P-L	14.0	0.15	19971218	349.45594	16.10980	66.60327	3.15297	0.0893194	2.3750658	35	3	1960–1997	0.78	M-v	4	Williams	31023	6579 P-L
6580 P-L	14.0	0.15	19971218	205.22049	155.21950	69.23260	3.92778	0.0993538	2.2248575	21	3	1960–1997	0.89	M-v	4	Williams	24120	6580 P-L
6629 P-L	10.5	0.15	19971218	312.56657	322.70417	162.63927	4.20253	0.0058334	5.1852963	28	4	1960–1997	0.82	M-v	2	Williams	28088	6629 P-L
6676 P-L	13.5	0.15	19971218	318.54252	132.85199	345.27185	1.13134	0.1112868	2.9937698	21	3	1960–1997	0.80	M-v	4	Williams	31023	6676 P-L
1269 T-1	15.0	0.15	19971218	7.59989	107.41813	351.14957	8.90895	0.1329969	2.7626030	24	3	1971–1997	0.54	M-v	3	Williams	28607	1269 T-1
2209 T-1	13.0	0.15	19971218	73.05153	295.99012	76.65344	3.00162	0.1817312	3.1747695	21	8	1968–1998	0.73	M-v	1	Williams	27938	2209 T-1
2251 T-1	14.0	0.15	19971218	312.63009	109.58176	16.61798	3.61672	0.0428857	2.7948080	31	3	1971–1997	1.03	M-v	4	Williams	31023	2251 T-1
2259 T-1	13.5	0.15	19971218	53.77122	305.99961	129.89568	4.19640	0.1170835	3.1013394	29	5	1971–1998	0.81	M-v	1	Williams	31023	2259 T-1
3057 T-1	15.0	0.15	19971218	154.65789	40.32385	230.92193	2.45046	0.0451934	2.5275979	24	6	1971–1998	0.84	M-v	2	Williams	29142	3057 T-1
3078 T-1	15.0	0.15	19971218	350.78842	229.24227	204.12126	4.04597	0.2418552	2.2856940	44	2	1971–1997	0.74	M-v	4	Williams	30914	3078 T-1
3277 T-1	13.0	0.15	19971218	146.92209	133.14188	175.98016	0.51130	0.1370299	3.1917683	25	4	1971–1998	0.89	M-v	3	Williams	28620	3277 T-1
4062 T-1	13.0	0.15	19971218	328.64744	297.66115	172.72910	10.77708	0.0137429	3.1812680	24	4	1971–1997	0.97	M-v	2	Williams	31023	4062 T-1
4835 T-1	13.5	0.15	19971218	53.77051	324.05919	26.76731	18.60375	0.1011235	1.8542478	41	5	1953–1997	0.68	M-v	2	Williams	30914	4835 T-1
1210 T-2	14.0	0.15	19971218	213.67650	233.48792	348.30378	3.55400	0.0785304	2.2421758	33	4	1973–1997	0.92	M-v	2	Williams	28620	1210 T-2
2185 T-2	13.5	0.15	19971218	347.08400	58.74387	30.39871	1.58579	0.1468751	3.2306423	23	2	1973–1997	0.91	M-v	5	Williams	30888	2185 T-2
2257 T-2	14.5	0.15	19971218	341.98256	108.35885	22.54753	3.44244	0.1307660	2.4655500	30	5	1973–1997	0.90	M-v	3	Williams	28892	2257 T-2
2272 T-2	13.5	0.15	19971218	282.58248	162.20851	5.28411	6.87975	0.0940719	2.2422730	27	6	1973–1997	0.88	M-v	2	Williams	29669	2272 T-2
3175 T-2	16.0	0.15	19971218	113.45891	267.54016	30.45587	5.54210	0.1548868	2.2495923	22	3	1973–1997	0.85	M-v	4	Williams	27322	3175 T-2
3201 T-2	14.0	0.15	19971218	133.26106	191.46845	130.45249	4.17954	0.0976007	2.7623360	39	5	1973–1998	0.84	M-v	2	Williams	25443	3201 T-2
3365 T-2	14.0	0.15	19971218	31.45116	10.31755	52.82347	2.35320	0.1660713	3.1963842	33	4	1973–1997	0.85	M-v	2	Williams	31023	3365 T-2
4090 T-2	14.0	0.15	19971218	183.17589	149.80191	102.30128	3.79564	0.1570309	2.4689942	28	3	1973–1997	0.92	M-v	5	Williams	28088	4090 T-2
4101 T-2	12.5	0.15	19971218	200.26813	175.21191	87.47103	1.85318	0.1420399	3.1613577	24	4	1973–1998	0.67	M-v	2	Williams	29949	4101 T-2
4216 T-2	12.5	0.15	19971218	73.31616	143.82478	169.28563	9.29958	0.1525287	3.9591664	36	6	1973–1997	0.75	M-v	1	Williams	31023	4216 T-2
4294 T-2	14.0	0.15	19971218	359.78804	325.93559	106.45184	2.85154	0.1192934	2.2560738	29	4	1951–1997	0.95	M-v	2	Williams	31023	4294 T-2
5058 T-2	13.0	0.15	19971218	229.50465	296.16465	270.67298	7.17050	0.1197396	2.7848927	29	4	1973–1997	0.89	M-v	3	Williams	31023	5058 T-2
1189 T-3	16.0	0.15	19971218	156.35519	12.47275	292.03032	4.01222	0.2017681	2.4436958	34	4	1977–1998	0.85	M-v	2	Williams	28320	1189 T-3
3006 T-3	13.5	0.15	19971218	30.89669	350.01678	32.75516	6.71782	0.1145753	2.2229608	31	5	1977–1997	1.00	M-v	2	Williams	30915	3006 T-3
3357 T-3	13.0	0.15	19971218	26.45532	29.72711	14.82330	2.11406	0.0460970	2.8766249	44	4	1977–1997	0.92	M-v	4	Williams	31023	3357 T-3
3464 T-3	16.0	0.15	19971218	120.11455	351.87946	7.39523	2.57201	0.2132721	2.4397333	30	3	1977–1998	0.73	M-v	4	Williams	29315	3464 T-3
4008 T-3	13.5	0.15	19971218	279.61647	86.59135	98.06357	4.99206	0.1392904	2.1898180	25	6	1953–1998	1.03	M-v	2	Marsden	29949	4008 T-3
4207 T-3	13.5	0.15	19971218	339.06502	357.25463	135.32586	4.80488	0.1805209	2.8492889	22	3	1977–1997	0.93	M-v	6	Williams	28313	4207 T-3
4314 T-3	13.0	0.15	19971218	156.37319	179.53463	119.10752	3.24656	0.0481899	2.8392389	39	9	1954–1998	0.88	M-v	1	Williams	29669	4314 T-3

1990 RM_7 = 1990 QQ_{19} (A. Gnädig)
1995 DB_6 = 1995 FS_5 (S. Nakano)
1995 JJ_1 = 1995 HT (S. Nakano)
1995 LV = 1995 MH_1 (S. Nakano)
1995 MM_2 = 1995 OB_8 (S. Nakano)
1995 MR_2 = 1995 ON_2 (S. Nakano)
1995 MF_4 = 1995 OM_2 (S. Nakano)
1995 MG_4 = 1995 OT_7 (S. Nakano)
1995 QB_1 = 1995 SJ_{46} (S. Nakano)
1995 QE_1 = 1995 SB_{40} (S. Nakano)
1995 QR_1 = 1995 SM_{45} (S. Nakano)
1995 QK_2 = 1995 SE_{21} (S. Nakano)
1995 QV_9 = 1995 UA_{40} (S. Nakano)
1995 SM_{20} = 1995 TX_3 (S. Nakano)
1995 SY_{27} = 1995 TY_3 (S. Nakano)
1995 SA_{44} = 1995 US_{45} = 1995 UU_{47} (S. Nakano)
1995 SS_{48} = 1995 UG_{25} (S. Nakano)
1995 ST_{48} = 1995 UU_{18} (S. Nakano)
1995 SR_{51} = 1995 TA_4 (S. Nakano)
1995 SU_{51} = 1995 TP_4 (S. Nakano)
1995 SP_{52} = 1995 TW_3 (S. Nakano)
1995 SV_{53} = 1995 QL_1 (S. Nakano)
1995 TL_1 = 1995 UZ_{10} (S. Nakano)
1995 TO_1 = 1995 TA_3 (S. Nakano)
1997 GO_{19} = 1997 FS_3 (A. Gnädig)
1997 WZ_{35} = 1997 WP_{45} (G. V. Williams)

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1997 WU$_{22}$ a, e, i = 1.47, 0.44, 16 Elements *MPC* 31121

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	03 21.27	+20 36.7	1.260	2.009	126.7	23.1	18.6
1998 01 17	03 18.97	+19 10.7	1.347	1.983	115.7	26.6	18.8
1998 01 27	03 20.88	+18 09.7	1.441	1.953	105.7	29.0	19.0
1998 02 06	03 26.42	+17 30.6	1.537	1.920	96.6	30.7	19.2
1998 02 16	03 34.98	+17 08.9	1.631	1.884	88.4	31.6	19.3
1998 02 26	03 46.11	+16 59.8	1.721	1.845	80.9	32.0	19.4
1998 03 08	03 59.45	+16 59.1	1.803	1.803	74.0	32.0	19.4
1998 03 18	04 14.71	+17 02.8	1.875	1.757	67.7	31.6	19.4
1998 03 28	04 31.70	+17 07.6	1.936	1.709	61.8	31.0	19.4

1997 XS$_2$ a, e, i = 2.65, 0.52, 20 Elements *MPC* 31154

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	03 58.36	+48 09.5	0.365	1.264	134.0	34.0	19.2
1998 01 17	04 09.00	+54 38.2	0.409	1.268	126.1	38.8	19.6
1998 01 27	04 32.18	+59 09.9	0.461	1.282	120.5	41.4	20.0
1998 02 06	05 07.71	+61 54.5	0.520	1.305	116.6	42.5	20.3
1998 02 16	05 52.30	+62 57.6	0.584	1.336	113.9	42.5	20.6
1998 02 26	06 40.19	+62 24.9	0.652	1.374	111.9	42.0	20.9
1998 03 08	07 25.98	+60 30.5	0.727	1.419	110.2	41.0	21.2
1998 03 18	08 06.56	+57 35.1	0.809	1.468	108.5	40.0	21.5
1998 03 28	08 41.36	+53 58.9	0.899	1.523	106.7	38.9	21.7
1998 04 07	09 11.24	+49 59.2	0.997	1.580	104.5	37.8	22.0

1992 BF a, e, i = 0.91, 0.27, 7 Elements *MPC* 31102

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	05 10.75	+47 10.4	0.195	1.149	145.4	29.1	17.5
1998 01 17	04 42.01	+39 06.9	0.225	1.154	135.0	37.1	18.1
1998 01 27	04 33.16	+32 43.4	0.264	1.153	124.0	45.1	18.6
1998 02 06	04 35.55	+28 03.8	0.307	1.147	114.2	51.7	19.1
1998 02 16	04 44.41	+24 41.5	0.350	1.134	105.7	57.0	19.6
1998 02 26	04 57.18	+22 09.6	0.390	1.115	98.3	61.5	19.9
1998 03 08	05 12.47	+20 08.4	0.425	1.091	91.6	65.5	20.1
1998 03 18	05 29.19	+18 23.7	0.453	1.060	85.5	69.3	20.3
1998 03 28	05 46.49	+16 45.8	0.472	1.025	79.7	73.4	20.5
1998 04 07	06 03.64	+15 08.5	0.481	0.984	74.1	77.9	20.6
1998 04 17	06 19.53	+13 28.5	0.478	0.939	68.3	83.4	20.7
1998 04 27	06 32.75	+11 46.3	0.462	0.890	62.2	90.4	20.8

1997 XF$_{11}$ a, e, i = 1.44, 0.48, 4 Elements *MPC* 31155

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	06 58.40	+14 38.0	0.907	1.885	171.6	4.4	18.6
1998 01 17	06 39.71	+15 14.6	0.966	1.924	161.3	9.4	19.0
1998 01 27	06 25.29	+15 51.4	1.052	1.960	148.5	15.2	19.4
1998 02 06	06 16.03	+16 26.9	1.159	1.993	136.4	20.0	19.8
1998 02 16	06 11.81	+17 00.2	1.282	2.022	125.4	23.5	20.2
1998 02 26	06 12.01	+17 30.4	1.416	2.047	115.5	25.9	20.5
1998 03 08	06 15.92	+17 56.7	1.557	2.070	106.5	27.4	20.8
1998 03 18	06 22.80	+18 18.0	1.701	2.089	98.2	28.1	21.0
1998 03 28	06 32.07	+18 33.4	1.846	2.106	90.5	28.3	21.2
1998 04 07	06 43.25	+18 42.1	1.988	2.119	83.3	28.0	21.4
1998 04 17	06 55.93	+18 43.5	2.126	2.128	76.5	27.3	21.5
1998 04 27	07 09.81	+18 36.9	2.258	2.135	70.0	26.3	21.6
1998 05 07	07 24.63	+18 22.1	2.382	2.139	63.9	25.1	21.7

1997 YM$_3$ a, e, i = 3.23, 0.67, 4 Elements *MPC* 31156

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	07 34.68	+23 56.7	0.821	1.802	174.5	3.0	18.2
1998 01 17	07 20.04	+23 46.2	0.910	1.889	171.4	4.5	18.6
1998 01 27	07 09.24	+23 30.3	1.024	1.975	158.9	10.3	19.2
1998 02 06	07 02.84	+23 11.5	1.160	2.061	147.4	14.9	19.7
1998 02 16	07 00.63	+22 51.8	1.315	2.145	136.8	18.4	20.2
1998 02 26	07 01.99	+22 31.8	1.487	2.228	127.1	20.8	20.6
1998 03 08	07 06.30	+22 11.0	1.671	2.310	118.1	22.3	21.0
1998 03 18	07 12.91	+21 48.9	1.865	2.391	109.7	23.1	21.3
1998 03 28	07 21.31	+21 24.6	2.066	2.471	101.7	23.3	21.6
1998 04 07	07 31.07	+20 57.3	2.272	2.549	94.2	23.1	21.9

1992 EB$_1$ a, e, i = 3.38, 0.57, 22 Elements *MPC* 31102

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	08 26.84	+43 09.1	1.390	2.314	154.1	10.7	19.7
1998 01 17	08 11.66	+43 05.6	1.309	2.249	157.5	9.7	19.5
1998 01 27	07 54.55	+42 23.8	1.254	2.184	154.5	11.2	19.4
1998 02 06	07 38.06	+40 59.0	1.225	2.120	146.8	14.8	19.4
1998 02 16	07 24.65	+38 56.1	1.219	2.056	137.1	19.1	19.5
1998 02 26	07 15.87	+36 26.3	1.232	1.992	127.1	23.4	19.6
1998 03 08	07 12.31	+33 41.7	1.260	1.930	117.4	27.2	19.6
1998 03 18	07 13.74	+30 51.4	1.298	1.869	108.5	30.3	19.7
1998 03 28	07 19.56	+28 00.1	1.341	1.810	100.4	32.8	19.8
1998 04 07	07 29.12	+25 08.8	1.387	1.754	93.1	34.7	19.9
1998 04 17	07 41.75	+22 16.6	1.433	1.700	86.6	36.1	19.9
1998 04 27	07 56.88	+19 21.2	1.477	1.650	80.9	37.0	19.9
1998 05 07	08 14.10	+16 20.5	1.518	1.604	75.8	37.6	19.9
1998 05 17	08 33.04	+13 12.4	1.556	1.563	71.4	37.8	20.0
1998 05 27	08 53.44	+09 55.5	1.591	1.527	67.6	37.8	19.9
1998 06 06	09 15.14	+06 29.0	1.624	1.498	64.4	37.7	19.9
1998 06 16	09 38.00	+02 53.1	1.655	1.475	61.7	37.3	19.9

1997 YX$_3$ a, e, i = 2.78, 0.42, 28 Elements *MPC* 31128

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	08 36.84	+19 04.5	1.403	2.350	159.8	8.3	16.7
1998 01 17	08 21.77	+17 48.2	1.418	2.398	173.0	2.9	16.5
1998 01 27	08 07.03	+16 34.7	1.465	2.445	172.6	3.0	16.6
1998 02 06	07 54.19	+15 26.3	1.543	2.492	159.9	7.8	17.0
1998 02 16	07 44.31	+14 24.7	1.649	2.539	147.6	12.0	17.3
1998 02 26	07 37.82	+13 30.6	1.778	2.585	136.2	15.4	17.7
1998 03 08	07 34.72	+12 43.1	1.926	2.631	125.6	17.9	18.0
1998 03 18	07 34.67	+12 00.8	2.088	2.676	115.9	19.6	18.2
1998 03 28	07 37.24	+11 21.4	2.259	2.720	106.8	20.6	18.5
1998 04 07	07 42.02	+10 43.3	2.436	2.764	98.3	21.0	18.7
1998 04 17	07 48.56	+10 04.5	2.615	2.808	90.4	20.9	18.9
1998 04 27	07 56.53	+09 23.9	2.795	2.850	82.9	20.5	19.0
1998 05 07	08 05.62	+08 40.3	2.971	2.892	75.7	19.8	19.2
1998 05 17	08 15.59	+07 53.0	3.142	2.933	68.9	18.8	19.3
1998 05 27	08 26.22	+07 01.5	3.307	2.974	62.3	17.6	19.4

1997 YL$_{11}$ a, e, i = 2.68, 0.42, 5 Elements E1998-A16

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	09 08.22	+30 42.6	0.618	1.558	152.7	16.8	18.3
1998 01 17	09 08.18	+31 36.4	0.588	1.550	160.4	12.3	18.0
1998 01 27	09 04.97	+32 12.1	0.575	1.547	165.0	9.5	17.9
1998 02 06	09 00.46	+32 16.7	0.580	1.550	163.0	10.7	17.9
1998 02 16	08 56.94	+31 44.1	0.601	1.557	156.2	14.8	18.2
1998 02 26	08 56.15	+30 36.7	0.639	1.570	148.2	19.4	18.5
1998 03 08	08 59.05	+29 01.5	0.692	1.587	140.3	23.6	18.8
1998 03 18	09 05.66	+27 06.9	0.757	1.609	132.9	27.0	19.1
1998 03 28	09 15.44	+24 59.8	0.835	1.635	126.0	29.6	19.5
1998 04 07	09 27.76	+22 44.4	0.923	1.665	119.8	31.4	19.8
1998 04 17	09 41.92	+20 24.0	1.021	1.698	114.0	32.7	20.1
1998 04 27	09 57.36	+18 00.6	1.128	1.735	108.6	33.4	20.4
1998 05 07	10 13.67	+15 35.3	1.243	1.774	103.4	33.6	20.6
1998 05 17	10 30.51	+13 09.4	1.365	1.815	98.5	33.4	20.9
1998 05 27	10 47.66	+10 43.7	1.494	1.858	93.7	33.0	21.1
1998 06 06	11 04.99	+08 18.7	1.628	1.903	89.0	32.2	21.3
1998 06 16	11 22.39	+05 55.3	1.766	1.949	84.3	31.2	21.5
1998 06 26	11 39.81	+03 34.0	1.909	1.996	79.7	30.1	21.7
1998 07 06	11 57.24	+01 15.1	2.054	2.044	75.1	28.7	21.9
1998 07 16	12 14.64	−01 00.6	2.200	2.092	70.5	27.2	22.0

1996 DH a, e, i = 1.59, 0.28, 17 Elements *MPC* 31107

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	10 20.72	+08 26.4	1.209	2.009	132.6	21.1	19.5
1998 01 17	10 12.07	+07 26.1	1.117	2.000	144.3	16.7	19.1
1998 01 27	09 58.96	+06 37.6	1.045	1.988	156.8	11.3	18.8
1998 02 06	09 42.29	+06 01.4	0.999	1.975	168.6	5.7	18.4
1998 02 16	09 23.93	+05 36.2	0.981	1.960	169.3	5.4	18.4
1998 02 26	09 06.30	+05 19.9	0.991	1.943	157.5	11.2	18.6
1998 03 08	08 51.66	+05 08.8	1.026	1.924	144.8	17.3	18.9
1998 03 18	08 41.43	+04 58.9	1.081	1.903	132.8	22.6	19.1
1998 03 28	08 36.03	+04 46.7	1.150	1.880	122.0	26.8	19.4
1998 04 07	08 35.27	+04 29.3	1.227	1.855	112.3	29.9	19.6
1998 04 17	08 38.58	+04 04.4	1.309	1.829	103.7	32.2	19.8
1998 04 27	08 45.33	+03 30.5	1.391	1.800	96.0	33.8	19.9
1998 05 07	08 54.97	+02 46.3	1.470	1.770	89.1	34.7	20.0
1998 05 17	09 06.98	+01 51.0	1.545	1.739	82.9	35.2	20.1
1998 05 27	09 21.00	+00 44.3	1.614	1.706	77.3	35.4	20.2
1998 06 06	09 36.75	−00 34.2	1.676	1.671	72.1	35.3	20.2
1998 06 16	09 54.01	−02 04.4	1.730	1.635	67.4	35.0	20.2
1998 06 26	10 12.67	−03 45.9	1.776	1.598	63.1	34.6	20.2

1998 AK$_8$ a, e, i = 1.80, 0.18, 48 Elements *MPC* 31160

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	V
1998 01 07	10 30.18	+06 48.9	0.641	1.478	129.8	30.8	17.7
1998 01 17	10 35.71	+18 27.7	0.568	1.474	142.2	24.2	17.2
1998 01 27	10 36.96	+32 42.6	0.535	1.472	149.6	19.8	17.0
1998 02 06	10 32.54	+46 58.9	0.551	1.472	145.1	22.5	17.1
1998 02 16	10 21.64	+58 29.5	0.608	1.476	133.7	28.9	17.5
1998 02 26	10 05.05	+66 17.2	0.693	1.481	122.3	34.4	18.0
1998 03 08	09 47.1	+70 52.8	0.791	1.489	112.7	37.9	18.4
1998 03 18	09 34.7	+73 13.3	0.894	1.499	105.0	39.9	18.7
1998 03 28	09 32.7	+74 06.2	0.995	1.512	98.7	40.7	19.0
1998 04 07	09 42.0	+74 01.3	1.091	1.526	93.6	40.9	19.2
1998 04 17	10 00.4	+73 13.9	1.179	1.542	89.5	40.6	19.4
1998 04 27	10 24.4	+71 50.3	1.260	1.560	86.2	40.1	19.6
1998 05 07	10 51.05	+69 53.0	1.332	1.579	83.7	39.4	19.7
1998 05 17	11 18.29	+67 24.3	1.395	1.600	81.6	38.7	19.8
1998 05 27	11 44.87	+64 25.5	1.452	1.621	80.1	38.0	19.9
1998 06 06	12 10.34	+60 58.8	1.503	1.644	78.9	37.3	20.0
1998 06 16	12 34.53	+57 07.1	1.550	1.666	78.0	36.6	20.0
1998 06 26	12 57.53	+52 53.0	1.595	1.690	77.1	35.9	20.1
1998 07 06	13 19.56	+48 20.4	1.640	1.714	76.4	35.2	20.2
1998 07 16	13 40.77	+43 33.5	1.688	1.738	75.4	34.5	20.3
1998 07 26	14 01.37	+38 37.1	1.740	1.762	74.3	33.7	20.3
1998 08 05	14 21.55	+33 36.5	1.797	1.786	72.9	32.9	20.4
1998 08 15	14 41.41	+28 37.4	1.862	1.809	71.1	32.0	20.5
1998 08 25	15 01.10	+23 44.6	1.934	1.833	68.9	31.0	20.6
1998 09 04	15 20.71	+19 03.1	2.014	1.855	66.3	29.9	20.7
1998 09 14	15 40.30	+14 36.6	2.100	1.878	63.3	28.6	20.7

85P/Boethin Elements *MPC* 23482

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1998 01 07	11 31.97	+07 07.0	2.675	3.226	115.7	15.9	18.8	22.5
1998 01 17	11 28.99	+07 30.0	2.624	3.307	126.7	13.8	19.0	22.5
1998 01 27	11 23.90	+08 04.6	2.590	3.388	138.2	11.2	19.2	22.4
1998 02 06	11 17.02	+08 48.2	2.578	3.468	150.1	8.1	19.4	22.3
1998 02 16	11 08.85	+09 36.6	2.592	3.546	162.2	4.9	19.6	22.2
1998 02 26	11 00.04	+10 25.3	2.638	3.624	173.8	1.7	19.8	22.1
1998 03 08	10 51.31	+11 10.0	2.715	3.700	171.8	2.2	20.0	22.3

80P/Peters-Hartley Elements *MPC* 25183

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1998 02 06	09 50.63	−34 24.4	1.683	2.430	129.3	18.3	17.8	22.5
1998 02 16	09 39.90	−35 50.7	1.594	2.367	131.5	18.2	17.5	22.3
1998 02 26	09 28.08	−36 34.9	1.522	2.304	131.9	18.7	17.2	22.2
1998 03 08	09 16.69	−36 33.6	1.469	2.242	130.3	19.7	16.8	22.1
1998 03 18	09 07.31	−35 50.2	1.431	2.181	127.2	21.3	16.6	22.0
1998 03 28	09 01.22	−34 32.4	1.407	2.121	122.9	23.3	16.3	22.0
1998 04 07	08 59.25	−32 51.3	1.394	2.063	118.0	25.4	16.0	22.0
1998 04 17	09 01.68	−30 58.4	1.390	2.006	112.8	27.5	15.8	22.0
1998 04 27	09 08.44	−29 03.0	1.394	1.952	107.7	29.4	15.5	22.0
1998 05 07	09 19.30	−27 12.6	1.402	1.900	102.7	31.2	15.3	22.0
1998 05 17	09 33.87	−25 32.2	1.415	1.851	98.0	32.8	15.1	22.0
1998 05 27	09 51.78	−24 04.2	1.431	1.805	93.6	34.1	14.9	22.0
1998 06 06	10 12.65	−22 50.0	1.452	1.764	89.5	35.1	14.7	22.0
1998 06 16	10 36.08	−21 49.5	1.476	1.727	85.6	35.9	14.6	22.0
1998 06 26	11 01.69	−21 01.4	1.505	1.695	82.0	36.4	14.5	22.0
1998 07 06	11 29.12	−20 24.3	1.540	1.668	78.5	36.7	14.4	22.0
1998 07 16	11 57.95	−19 55.7	1.581	1.648	75.3	36.6	14.3	22.1
1998 07 26	12 27.80	−19 33.3	1.629	1.633	72.1	36.3	14.3	22.1
1998 08 05	12 58.31	−19 14.7	1.685	1.625	69.0	35.6	14.4	22.1
1998 08 15	13 29.13	−18 57.4	1.748	1.624	65.9	34.7	14.4	22.2
1998 08 25	13 59.97	−18 39.5	1.819	1.630	62.9	33.5	14.5	22.3
1998 09 04	14 30.60	−18 19.1	1.896	1.642	59.9	32.1	14.7	22.3

1998 09 14	15 00.79	−17 54.7	1.980	1.660	56.9	30.5	14.9	22.4
1998 09 24	15 30.44	−17 25.0	2.070	1.685	53.8	28.7	15.1	22.5

4P/Faye Elements *MPC* 27081

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1998 02 06	19 03.91	−15 13.4	4.715	3.917	32.2	7.7	20.3	22.4
1998 02 16	19 15.03	−14 44.9	4.579	3.868	39.5	9.3	20.1	22.4
1998 02 26	19 25.82	−14 12.0	4.428	3.818	46.7	10.9	20.0	22.3
1998 03 08	19 36.15	−13 35.2	4.263	3.767	54.1	12.3	19.8	22.3
1998 03 18	19 45.91	−12 55.1	4.087	3.716	61.5	13.6	19.6	22.2
1998 03 28	19 54.99	−12 12.2	3.902	3.665	69.0	14.7	19.4	22.1
1998 04 07	20 03.24	−11 27.3	3.710	3.612	76.6	15.6	19.2	22.0
1998 04 17	20 10.51	−10 41.3	3.513	3.559	84.4	16.3	19.0	21.9
1998 04 27	20 16.66	−09 55.3	3.316	3.505	92.4	16.7	18.8	21.7
1998 05 07	20 21.48	−09 10.3	3.119	3.451	100.6	16.7	18.5	21.6
1998 05 17	20 24.80	−08 28.0	2.927	3.396	109.1	16.3	18.3	21.4
1998 05 27	20 26.43	−07 49.7	2.743	3.341	118.0	15.5	18.0	21.2
1998 06 06	20 26.19	−07 17.4	2.571	3.285	127.2	14.3	17.8	20.9
1998 06 16	20 23.97	−06 52.9	2.413	3.228	136.7	12.5	17.5	20.7
1998 06 26	20 19.74	−06 38.1	2.274	3.171	146.4	10.2	17.3	20.4
1998 07 06	20 13.64	−06 34.8	2.157	3.113	156.0	7.6	17.1	20.2
1998 07 16	20 06.02	−06 43.7	2.064	3.055	164.1	5.2	16.8	19.9
1998 07 26	19 57.46	−07 04.9	1.999	2.996	166.4	4.6	16.7	19.8
1998 08 05	19 48.75	−07 37.0	1.962	2.937	160.3	6.7	16.5	19.8
1998 08 15	19 40.74	−08 17.5	1.950	2.877	150.8	9.9	16.3	19.9
1998 08 25	19 34.24	−09 03.3	1.963	2.817	140.5	13.2	16.2	20.0
1998 09 04	19 29.90	−09 51.0	1.995	2.757	130.3	16.2	16.1	20.1
1998 09 14	19 28.11	−10 37.5	2.044	2.697	120.4	18.8	16.0	20.2
1998 09 24	19 29.05	−11 20.1	2.104	2.636	111.0	20.8	15.9	20.2
1998 10 04	19 32.73	−11 56.8	2.171	2.575	102.2	22.3	15.8	20.3
1998 10 14	19 39.01	−12 25.8	2.241	2.515	93.9	23.3	15.8	20.4
1998 10 24	19 47.71	−12 45.7	2.311	2.454	86.1	23.9	15.7	20.4
1998 11 03	19 58.62	−12 55.4	2.380	2.394	78.8	24.0	15.6	20.4
1998 11 13	20 11.51	−12 54.0	2.443	2.334	71.9	23.8	15.5	20.4
1998 11 23	20 26.17	−12 40.7	2.501	2.275	65.4	23.2	15.3	20.4
1998 12 03	20 42.39	−12 14.9	2.552	2.217	59.3	22.5	15.2	20.3
1998 12 13	20 59.99	−11 36.2	2.596	2.160	53.5	21.5	15.1	20.3
1998 12 23	21 18.83	−10 44.4	2.631	2.104	48.0	20.3	14.9	20.2
1999 01 02	21 38.75	−09 39.6	2.659	2.049	42.8	19.0	14.8	20.1
1999 01 12	21 59.63	−08 22.0	2.680	1.997	37.9	17.6	14.6	20.1
1999 01 22	22 21.40	−06 52.3	2.693	1.947	33.3	16.1	14.5	20.0

P/1990 S1 (Mueller 3) Elements *MPC* 27081

Date TT	α_{2000}	δ_{2000}	Δ	r	Variation		m_1	m_2
1998 02 16	19 52.46	−17 05.7	4.425	3.609	−0.52	−0.3	19.8	21.8
1998 02 26	20 05.51	−16 34.9	4.321	3.585	−0.54	−0.4	19.7	21.7
1998 03 08	20 18.15	−16 01.3	4.203	3.561	−0.55	−0.6	19.6	21.7
1998 03 18	20 30.31	−15 25.7	4.074	3.537	−0.57	−0.7	19.5	21.7
1998 03 28	20 41.88	−14 49.1	3.934	3.513	−0.59	−0.9	19.4	21.6
1998 04 07	20 52.76	−14 12.6	3.786	3.490	−0.62	−1.0	19.3	21.5
1998 04 17	21 02.84	−13 37.4	3.631	3.467	−0.65	−1.2	19.2	21.4
1998 04 27	21 12.01	−13 04.9	3.471	3.444	−0.68	−1.3	19.1	21.2
1998 05 07	21 20.12	−12 36.4	3.309	3.422	−0.71	−1.5	18.9	21.1
1998 05 17	21 27.03	−12 13.4	3.146	3.399	−0.75	−1.7	18.8	20.9
1998 05 27	21 32.58	−11 57.7	2.987	3.378	−0.79	−1.8	18.7	20.8
1998 06 06	21 36.61	−11 50.7	2.834	3.356	−0.84	−2.0	18.5	20.6
1998 06 16	21 38.99	−11 53.9	2.689	3.335	−0.89	−2.2	18.4	20.4
1998 06 26	21 39.59	−12 08.4	2.557	3.315	−0.94	−2.3	18.2	20.2
1998 07 06	21 38.36	−12 34.7	2.442	3.295	−0.99	−2.4	18.1	20.0
1998 07 16	21 35.38	−13 12.3	2.346	3.275	−1.04	−2.5	18.0	19.8
1998 07 26	21 30.88	−13 59.6	2.274	3.256	−1.08	−2.5	17.9	19.6
1998 08 05	21 25.26	−14 53.6	2.228	3.237	−1.11	−2.5	17.8	19.5
1998 08 15	21 19.11	−15 50.2	2.209	3.219	−1.12	−2.3	17.8	19.4
1998 08 25	21 13.10	−16 45.3	2.218	3.202	−1.11	−2.1	17.8	19.5
1998 09 04	21 07.94	−17 34.8	2.254	3.185	−1.09	−1.9	17.8	19.7
1998 09 14	21 04.22	−18 15.6	2.314	3.169	−1.06	−1.7	17.8	19.8
1998 09 24	21 02.35	−18 46.1	2.395	3.153	−1.01	−1.5	17.9	20.0
1998 10 04	21 02.57	−19 05.1	2.493	3.139	−0.97	−1.4	18.0	20.1
1998 10 14	21 04.92	−19 12.9	2.603	3.124	−0.93	−1.3	18.0	20.3
1998 10 24	21 09.32	−19 09.5	2.723	3.111	−0.88	−1.3	18.1	20.4
1998 11 03	21 15.61	−18 55.5	2.848	3.098	−0.84	−1.4	18.2	20.5
1998 11 13	21 23.58	−18 31.6	2.975	3.087	−0.81	−1.4	18.3	20.7
1998 11 23	21 33.01	−17 58.3	3.102	3.075	−0.78	−1.5	18.3	20.8
1998 12 03	21 43.68	−17 16.2	3.226	3.065	−0.75	−1.7	18.4	20.9
1998 12 13	21 55.38	−16 26.1	3.346	3.056	−0.73	−1.8	18.5	21.0
1998 12 23	22 07.94	−15 28.5	3.459	3.047	−0.71	−1.9	18.5	21.1
1999 01 02	22 21.19	−14 24.1	3.563	3.040	−0.69	−2.1	18.6	21.1
1999 01 12	22 34.98	−13 13.8	3.659	3.033	−0.67	−2.2	18.6	21.2
1999 01 22	22 49.21	−11 58.4	3.744	3.027	−0.66	−2.3	18.7	21.2
1999 02 01	23 03.78	−10 38.6	3.817	3.022	−0.65	−2.4	18.7	21.2

68P/Klemola Elements *MPC* 25183

Date TT	α_{2000}	δ_{2000}	Δ	r	ϵ	ϕ	m_1	m_2
1998 03 08	21 12.19	−09 35.7	2.631	1.843	30.3	15.8	14.8	21.3
1998 03 18	21 38.80	−07 48.4	2.562	1.814	33.3	17.5	14.6	21.3
1998 03 28	22 05.37	−05 52.2	2.496	1.791	36.2	19.2	14.5	21.2
1998 04 07	22 31.80	−03 49.7	2.434	1.773	39.1	20.9	14.4	21.2
1998 04 17	22 58.03	−01 43.7	2.375	1.761	42.0	22.4	14.3	21.2
1998 04 27	23 23.99	+00 22.8	2.319	1.755	44.8	23.8	14.3	21.2
1998 05 07	23 49.60	+02 26.7	2.266	1.755	47.8	25.2	14.2	21.2
1998 05 17	00 14.78	+04 25.0	2.216	1.762	50.8	26.4	14.2	21.2
1998 05 27	00 39.44	+06 15.1	2.168	1.774	54.1	27.5	14.2	21.2
1998 06 06	01 03.46	+07 54.5	2.120	1.792	57.5	28.5	14.2	21.2
1998 06 16	01 26.70	+09 21.1	2.073	1.816	61.2	29.3	14.2	21.2
1998 06 26	01 49.01	+10 33.3	2.025	1.845	65.2	30.0	14.2	21.2
1998 07 06	02 10.17	+11 29.9	1.976	1.879	69.5	30.5	14.2	21.2
1998 07 16	02 29.98	+12 10.0	1.925	1.918	74.2	30.7	14.3	21.2
1998 07 26	02 48.18	+12 33.3	1.873	1.960	79.4	30.6	14.3	21.1
1998 08 05	03 04.50	+12 39.6	1.819	2.006	85.1	30.3	14.3	21.1
1998 08 15	03 18.65	+12 29.2	1.764	2.055	91.4	29.5	14.4	21.1
1998 08 25	03 30.31	+12 02.6	1.709	2.108	98.3	28.3	14.4	21.0
1998 09 04	03 39.18	+11 20.9	1.655	2.162	105.9	26.7	14.4	21.0
1998 09 14	03 45.00	+10 25.4	1.607	2.219	114.3	24.4	14.5	20.9
1998 09 24	03 47.58	+09 18.4	1.565	2.277	123.4	21.6	14.5	20.8
1998 10 04	03 46.89	+08 03.3	1.536	2.337	133.1	18.2	14.6	20.7
1998 10 14	03 43.20	+06 44.5	1.522	2.398	143.4	14.4	14.7	20.6
1998 10 24	03 37.03	+05 28.0	1.529	2.460	153.6	10.4	14.8	20.5

1998 11 03	03 29.29	+04 20.2	1.560	2.523	162.3	6.9	15.0	20.5
1998 11 13	03 21.04	+03 27.0	1.617	2.587	165.4	5.5	15.2	20.6
1998 11 23	03 13.32	+02 52.2	1.702	2.651	160.1	7.3	15.4	20.8
1998 12 03	03 07.05	+02 37.3	1.812	2.716	150.9	10.2	15.6	21.1
1998 12 13	03 02.76	+02 41.4	1.945	2.781	141.0	12.9	15.9	21.4
1998 12 23	03 00.69	+03 01.8	2.100	2.846	131.2	15.1	16.2	21.7
1999 01 02	03 00.88	+03 35.4	2.271	2.911	121.8	16.7	16.4	22.0
1999 01 12	03 03.15	+04 18.9	2.455	2.976	112.7	17.8	16.7	22.2
1999 01 22	03 07.30	+05 09.1	2.648	3.041	104.0	18.3	16.9	22.5

OPPOSITION DATA

Planet	Opposition	α_{2000}	δ_{2000}	V	$\dot{\alpha}$	$\dot{\delta}$	$\phi_{\rm MIN}$	*MPC*
1990 UB_3	1997 12 12.1	05 17.13	+28 02.5	16.5	−1.13	− 0.9	2.6/12.4	31137
1996 QD	1997 12 12.2	05 17.75	+09 55.8	18.8	−0.95	− 2.8	4.3/11.3	31142
1981 DJ_1	1997 12 12.2	05 17.77	+25 30.1	18.8	−1.17	− 3.8	1.0/12.5	26914
1982 BE_1	1997 12 12.3	05 18.08	+13 26.8	15.7	−0.97	+ 2.0	4.6/12.1	31003
1981 EX_{28}	1997 12 12.5	05 18.94	+29 20.0	17.8	−1.20	− 3.1	2.4/13.0	27726
4125 T-2	1997 12 12.5	05 19.04	+05 00.0	19.2	−0.80	− 0.8	5.5/11.5	29314
1978 RM_7	1997 12 12.5	05 19.10	+22 16.0	18.6	−1.12	− 1.5	0.3/12.5	30892
1993 UH_1	1997 12 12.6	05 19.62	−08 55.4	18.6	−1.03	− 3.0	11.2/10.5	31007
1985 SG_3	1997 12 12.7	05 19.90	+13 39.9	17.4	−0.85	− 2.9	2.7/12.0	28084
1988 BN_4	1997 12 12.7	05 20.08	+26 00.3	16.2	−0.95	− 3.4	1.0/13.0	31098
1993 TN	1997 12 12.8	05 20.62	+22 17.0	16.1	−1.16	+ 0.6	0.4/12.9	31139
1981 ES_{17}	1997 12 12.9	05 20.58	+22 57.8	18.0	−1.01	− 1.7	0.1/12.9	26918
1997 XJ_2	1997 12 12.9	05 21.03	+25 40.9	17.4	−1.07	− 1.2	1.1/13.1	31124
1995 FQ	1997 12 13.0	05 21.04	+25 20.3	17.4	−1.03	− 4.9	0.7/13.2	31008
4213 P-L	1997 12 13.0	05 21.26	+35 00.7	19.1	−1.03	− 1.0	3.7/13.7	27938
1981 EE_{45}	1997 12 13.0	05 21.30	+38 18.5	17.6	−1.17	+ 0.3	5.2/13.7	26923
1982 UE_6	1997 12 13.1	05 21.54	+26 49.4	16.2	−1.10	− 0.1	1.8/13.3	31004
1997 XV	1997 12 13.1	05 21.83	+30 23.8	17.0	−1.03	− 0.8	2.5/13.6	31123
4556 P-L	1997 12 13.2	05 21.97	+26 07.8	17.2	−0.98	− 0.1	1.0/13.4	31022
1981 EK_{38}	1997 12 13.3	05 22.53	+26 41.3	19.6	−1.18	− 2.4	1.5/13.6	26922
1995 BF_1	1997 12 13.3	05 22.55	+27 12.3	16.6	−1.25	− 2.7	1.7/13.6	31140
1981 JE_2	1997 12 13.3	05 22.75	+24 42.6	17.4	−1.16	− 0.1	0.6/13.4	31135
(7625)	1997 12 13.5	05 23.57	+07 42.2	18.0	−0.93	− 1.6	5.1/12.8	29606
1987 OT	1997 12 13.5	05 23.63	+10 46.0	18.2	−0.92	− 0.7	3.7/13.0	30894
(8152)	1997 12 13.5	05 23.70	+31 18.5	15.8	−1.12	− 2.1	4.2/14.1	31076
1986 RQ	1997 12 13.6	05 23.97	+11 08.1	16.7	−1.10	− 3.1	4.8/12.9	27932
1997 XY	1997 12 13.7	05 24.13	+29 18.5	17.0	−1.04	− 2.3	3.0/14.1	31123
1982 HJ	1997 12 13.8	05 24.88	+28 05.7	17.0	−1.24	+ 1.4	1.8/14.0	31004
1993 TS_{33}	1997 12 13.9	05 25.10	+18 32.4	17.2	−1.08	+ 1.5	2.2/13.8	31007
(8200)	1997 12 14.0	05 25.54	+20 29.8	16.0	−1.01	− 0.6	1.2/13.9	31086
1997 YD	1997 12 14.1	05 25.89	+24 35.0	16.2	−1.06	+ 0.3	0.7/14.2	31126
1989 TK_{16}	1997 12 14.2	05 26.31	+19 53.3	18.4	−1.10	− 0.9	1.2/14.1	25329
1990 QR_5	1997 12 14.2	05 26.65	+20 44.0	18.0	−0.85	− 0.3	0.7/14.2	30653
1991 TQ	1997 12 14.3	05 26.88	+25 34.5	17.4	−0.95	+ 0.9	0.7/14.4	31138
1995 FT	1997 12 14.3	05 27.00	+18 13.7	16.4	−1.08	− 0.3	1.9/14.1	31141
1997 YW_3	1997 12 14.4	05 27.54	+37 22.0	15.5	−1.11	− 2.1	6.4/15.4	31128
1981 EK_{40}	1997 12 14.4	05 27.71	+15 52.3	17.8	−0.97	− 1.1	2.8/14.2	26922
1992 JD_3	1997 12 14.5	05 28.06	+29 40.0	17.4	−1.27	+ 1.7	2.6/14.7	31138
1993 QY_9	1997 12 14.7	05 28.71	+16 11.5	18.7	−1.15	+ 0.4	2.8/14.5	29944
1317 T-2	1997 12 14.7	05 29.01	+32 39.1	19.8	−1.19	0.0	3.3/15.1	27939
1996 OQ	1997 12 14.8	05 29.20	+24 44.7	19.1	−1.12	− 1.3	0.5/14.9	27722
1990 OF_1	1997 12 15.0	05 30.04	+03 54.2	17.3	−0.80	+ 0.2	5.3/14.5	27933
1996 PN_5	1997 12 15.1	05 30.57	+23 26.5	17.4	−1.02	+ 0.2	0.1/15.2	31142
1992 YS_2	1997 12 15.2	05 30.84	+23 43.3	16.1	−0.96	+ 0.4	0.2/15.2	31139
1979 MU_2	1997 12 15.2	05 30.86	+15 20.5	20.3	−0.85	− 0.3	2.3/14.9	28293
1979 MF	1997 12 15.2	05 31.05	+13 44.2	18.0	−1.14	− 0.5	3.6/14.9	27930
(7412)	1997 12 15.2	05 31.14	+22 17.9	17.8	−0.85	− 0.1	0.3/15.2	28829
1991 RQ_7	1997 12 15.2	05 31.21	+32 31.6	17.3	−1.02	− 2.3	2.7/15.9	28615
1981 WO	1997 12 15.4	05 31.77	+38 10.4	16.4	−1.11	+ 1.4	5.3/15.7	29654
1989 SM_8	1997 12 15.4	05 32.09	+25 46.9	17.2	−1.18	− 0.3	1.0/15.6	20505
1990 UK_1	1997 12 15.5	05 32.18	+22 03.7	16.4	−1.18	− 3.5	0.6/15.4	27454
1981 ES_{37}	1997 12 15.6	05 32.55	+19 39.7	20.1	−1.15	− 2.5	1.5/15.4	26922
1985 VB_1	1997 12 15.6	05 32.63	−06 28.1	19.2	−0.85	+ 3.2	8.3/16.3	27305
1996 JR_1	1997 12 15.6	05 32.86	+34 39.0	17.8	−1.51	+ 7.4	4.4/15.2	27457
1988 ER_1	1997 12 15.6	05 32.89	+32 59.3	17.4	−1.25	+ 0.8	3.7/15.9	31136
3163 T-2	1997 12 15.6	05 33.00	+24 06.0	18.8	−0.91	+ 0.3	0.2/15.7	28083
5065 T-2	1997 12 15.8	05 33.81	+17 22.5	18.3	−1.06	− 5.4	2.5/15.4	22701
1989 TP_{11}	1997 12 15.8	05 33.83	+17 34.8	16.7	−1.09	− 1.0	2.3/15.7	22811
6085 P-L	1997 12 15.8	05 33.88	+20 41.1	18.2	−1.14	− 0.9	1.0/15.8	28319
1994 AW	1997 12 15.9	05 33.90	+21 06.6	17.0	−1.02	− 0.6	0.9/15.8	31140
1993 TS_{20}	1997 12 16.0	05 34.78	+20 03.6	18.7	−1.14	− 0.3	1.3/16.0	27715
1993 SX_6	1997 12 16.1	05 35.13	+32 01.2	17.0	−1.25	+ 0.1	3.9/16.4	30899
9535 P-L	1997 12 16.1	05 35.22	+13 19.9	18.2	−0.95	− 0.2	3.6/15.9	29668
1996 RJ_4	1997 12 16.4	05 36.52	+20 08.8	19.2	−1.01	− 0.2	1.1/16.4	29115
1979 MB_9	1997 12 16.4	05 36.56	+20 51.9	17.3	−0.90	− 0.4	0.9/16.4	31096
1993 QD_4	1997 12 16.5	05 36.64	+28 05.0	17.5	−1.22	− 1.0	2.1/17.0	23791
1991 VW_8	1997 12 16.5	05 36.69	+20 30.2	18.3	−0.90	− 0.2	0.9/16.5	31138
1992 FG	1997 12 16.5	05 36.75	+32 35.6	17.0	−1.28	+ 0.1	3.5/16.8	25340
(8240)	1997 12 16.5	05 36.88	+20 41.1	17.6	−1.11	+ 1.0	1.1/16.5	31095
1981 ED_8	1997 12 16.5	05 36.90	+28 31.1	17.9	−1.20	− 2.4	2.3/16.8	26916
1994 AO_2	1997 12 16.6	05 37.40	+37 09.4	17.2	−1.18	− 5.7	6.1/18.0	31140
3266 T-1	1997 12 16.8	05 37.90	+24 32.7	18.3	−0.91	− 0.4	0.4/16.9	22432
3177 T-2	1997 12 16.8	05 37.93	+23 35.7	17.8	−1.20	+ 0.1	10.7/27.0	27732
1996 PO_8	1997 12 16.8	05 38.03	+09 07.1	18.7	−1.02	+ 1.0	5.2/16.7	30279
1996 NS_3	1997 12 16.8	05 38.09	+20 12.5	18.0	−1.05	0.0	1.1/16.8	31009
1993 BD_{13}	1997 12 16.8	05 38.14	+27 32.9	17.3	−0.93	− 1.6	1.3/17.0	26564
1996 HJ_{23}	1997 12 16.9	05 38.33	+18 35.6	16.8	−1.18	+ 0.7	2.1/17.0	28088
1989 EJ_1	1997 12 16.9	05 38.34	+16 21.9	17.5	−1.18	− 0.4	2.9/16.7	28613
1980 LY	1997 12 17.1	05 39.38	+21 16.2	17.5	−1.22	+ 1.1	0.8/17.1	31134
(8224)	1997 12 17.1	05 39.51	+20 47.2	17.9	−1.00	+ 0.9	0.9/17.1	31092
1993 TM_6	1997 12 17.2	05 40.01	+28 57.8	18.5	−1.23	− 0.7	2.3/17.4	25216
7075 P-L	1997 12 17.2	05 40.09	+11 10.5	18.0	−0.88	− 1.5	3.9/16.9	20516
1996 PM_3	1997 12 17.3	05 40.46	+02 59.8	17.6	−0.95	+ 2.2	8.5/17.3	27924
1996 OE	1997 12 17.4	05 40.74	+25 25.4	19.5	−1.14	+ 0.4	0.8/17.5	31142
1996 VS	1997 12 17.4	05 40.80	+10 44.8	18.0	−0.80	− 1.0	3.6/17.0	29116
1978 VK_8	1997 12 17.8	05 42.29	+23 22.2	16.8	−1.00	+ 0.6	0.0/17.8	31134
1981 EM_{45}	1997 12 17.8	05 42.73	+38 14.0	19.5	−1.17	− 2.0	5.1/18.6	23245
(7351)	1997 12 17.8	05 42.74	+24 01.0	16.9	−1.09	+ 2.0	0.2/17.9	28576
1996 OB_1	1997 12 17.9	05 43.00	+19 42.6	21.2	−1.10	0.0	1.3/17.9	27723
1981 EL_{10}	1997 12 18.0	05 43.40	+27 34.5	19.0	−1.03	− 1.6	1.4/18.2	28611

1995 EO	1997 12 18.1	05 44.03	+20 22.9	17.1	−1.13	−	2.3	1.4/18.1	31141
1995 BU_4	1997 12 18.2	05 44.20	+39 11.5	17.4	−1.38	+	1.0	8.0/18.5	31141
6097 P-L	1997 12 18.3	05 44.55	+23 44.0	18.7	−1.16	−	0.9	0.1/18.3	27732
4204 P-L	1997 12 18.4	05 45.38	+10 38.0	18.8	−0.87	−	1.7	4.2/18.1	28607
4086 T-3	1997 12 18.5	05 45.50	+20 41.3	19.3	−1.22	+	1.1	1.1/18.5	27458
1981 ET_{41}	1997 12 18.6	05 45.84	+09 02.4	17.8	−1.07	+	0.4	6.2/18.5	30868
1991 PN_{10}	1997 12 18.6	05 46.25	−16 23.1	17.5	−1.17	+	1.8	17.5/19.0	27935
4023 T-1	1997 12 18.7	05 46.30	+09 13.6	16.6	−0.98	+	0.1	7.5/18.5	21952
1995 CY	1997 12 18.8	05 47.05	+24 05.7	16.1	−1.20	+	2.8	0.3/18.9	31141
1993 TJ_{15}	1997 12 18.9	05 47.47	+32 54.6	19.0	−1.29	+	0.5	3.5/19.1	25642
1985 FE_3	1997 12 19.0	05 48.07	+22 20.2	16.6	−1.21	+	2.6	0.4/19.1	31135
1951 SY	1997 12 19.1	05 48.43	−12 01.5	18.7	−0.98	+	3.5	14.9/22.1	28610
1989 TN	1997 12 19.2	05 48.57	+22 17.2	17.9	−1.13	+	1.0	0.4/19.2	24582
1996 TO_3	1997 12 19.3	05 49.14	+30 47.2	18.3	−1.01	−	2.4	2.4/19.6	30785
1996 MU	1997 12 19.4	05 49.37	+19 04.1	20.1	−1.38	+	9.7	1.7/19.8	30785
1981 EF_9	1997 12 19.4	05 49.77	+25 23.4	17.6	−1.19	−	2.2	0.8/19.5	26916
1985 CX_1	1997 12 19.4	05 49.84	+20 04.3	17.5	−1.17	−	1.3	1.5/19.4	31004
1993 QJ_4	1997 12 19.5	05 50.17	+16 55.8	16.8	−1.13	+	0.2	3.0/19.5	31139
1995 EZ_8	1997 12 19.6	05 50.66	+19 28.2	18.0	−1.10	−	0.1	1.5/19.6	29138
1987 QM	1997 12 19.8	05 51.28	+47 39.4	17.1	−1.39	−	3.3	8.5/22.0	31136
1989 SH_3	1997 12 19.9	05 51.98	+22 50.8	17.6	−1.14	+	0.9	0.3/20.0	24582
1994 GD_1	1997 12 20.0	05 52.52	+28 57.9	17.3	−1.03	+	2.5	1.7/20.0	23791
1992 EA	1997 12 20.2	05 52.89	+25 08.2	17.3	−1.23	−	0.4	0.7/20.2	28615
1985 RM_6	1997 12 20.2	05 53.07	+23 14.1	16.9	−0.92	−	0.2	0.1/20.2	31135
1996 UO	1997 12 20.2	05 53.08	+26 06.0	17.0	−0.99		0.0	0.9/20.3	31111
1981 ER_{30}	1997 12 20.2	05 53.11	+20 41.3	18.5	−1.00	−	0.7	1.1/20.2	26920
1991 PN_7	1997 12 20.3	05 53.36	+25 54.5	16.6	−1.01	+	0.7	0.9/20.3	31138
1991 PT_{16}	1997 12 20.3	05 53.79	+20 14.8	17.1	−0.93	+	0.2	1.0/20.4	30655
1977 EL_5	1997 12 20.4	05 54.15	−05 36.4	18.4	−0.78		0.0	7.8/20.4	21964
1931 TC_2	1997 12 20.4	05 54.29	+36 06.5	16.6	−1.21	−	1.0	4.5/20.8	22696
1989 SE_8	1997 12 20.6	05 54.72	+33 22.1	16.3	−1.22	−	1.4	4.2/20.8	28085
3052 P-L	1997 12 20.6	05 55.02	+35 23.8	17.9	−1.05	−	1.7	3.8/21.0	28607
1990 RW_4	1997 12 20.6	05 55.16	+26 40.6	17.0	−0.89	−	0.8	0.9/20.7	31137
1982 KK_1	1997 12 20.7	05 55.53	+22 18.8	16.9	−1.18	+	2.0	0.4/20.8	31135
1985 SW_4	1997 12 20.9	05 56.17	+32 26.2	17.8	−0.96	+	0.5	2.5/20.9	22698
1993 EM	1997 12 20.9	05 56.30	+20 30.3	16.7	−1.45		−13.2	1.4/20.6	30782
3222 T-1	1997 12 20.9	05 56.37	+21 45.7	17.8	−1.27	−	0.6	0.7/21.0	28892
1993 VU_5	1997 12 21.0	05 56.60	+32 48.4	16.7	−1.26	+	0.4	3.7/21.0	27730
4008 T-3	1997 12 21.0	05 56.76	+22 02.0	15.7	−1.23	+	2.7	0.6/21.1	31161
4030 P-L	1997 12 21.0	05 56.85	+25 09.4	17.0	−1.03	−	1.0	0.6/21.1	29141
1981 EH_{10}	1997 12 21.0	05 56.97	+31 33.6	18.2	−1.26	−	2.3	3.5/21.3	26916
1990 WT_6	1997 12 21.2	05 57.40	+14 07.6	17.4	−1.06	+	0.6	4.6/21.3	27934
1995 ED_8	1997 12 21.2	05 57.47	+59 20.6	17.4	−1.98	−	0.2	13.2/20.6	30901
1991 RX_4	1997 12 21.2	05 57.64	+12 04.8	18.1	−0.88	−	1.0	3.7/21.1	20508
(7322)	1997 12 21.2	05 57.67	+46 09.6	17.1	−1.15		0.0	6.7/21.5	28567
1996 SR_7	1997 12 21.2	05 57.68	+24 17.8	17.7	−1.01	−	0.7	0.3/21.3	28619
1996 OB	1997 12 21.3	05 58.08	+20 54.0	18.7	−1.15	−	1.3	1.1/21.3	30785
6809 P-L	1997 12 21.3	05 58.22	+23 44.3	19.9	−1.21	+	0.4	0.1/21.4	28319
1981 ET_{30}	1997 12 21.4	05 58.56	+12 36.2	18.9	−1.09	+	0.2	4.6/21.4	26920
1996 TR_{14}	1997 12 21.5	05 58.90	+31 51.6	18.4	−0.93	+	0.5	2.2/21.5	29631
1979 MG_6	1997 12 21.6	05 59.24	+20 58.5	18.6	−1.17	−	2.2	1.0/21.6	30753
1990 BB_2	1997 12 21.6	05 59.32	+34 30.2	16.0	−1.20	−	4.3	4.5/22.0	25649
1978 SP_5	1997 12 21.8	05 59.99	+17 11.6	16.5	−0.97	−	0.1	2.3/22.0	29939
1992 SW_{17}	1997 12 21.8	06 00.09	+27 53.7	15.3	−1.12	−	5.7	1.7/22.1	31139
1981 DA_1	1997 12 21.8	06 00.19	+13 29.0	18.7	−0.96	−	2.7	3.3/21.5	30271
1993 SL_3	1997 12 21.8	06 00.27	+58 54.6	17.2	−1.98	+	1.4	12.3/22.0	30899
1992 UX_4	1997 12 21.8	06 00.42	+07 27.5	14.7	−0.94	−	9.3	7.6/20.4	27729
6109 P-L	1997 12 22.0	06 00.91	+28 15.0	18.7	−1.11	−	0.4	1.7/22.0	27926
1987 SU	1997 12 22.0	06 01.11	+30 29.3	16.2	−1.31	−	0.6	3.3/22.1	29941
1978 VU_5	1997 12 22.0	06 01.24	+20 01.0	18.4	−1.09	−	0.2	1.4/22.1	27708
1996 TX_{16}	1997 12 22.0	06 01.37	+13 24.7	18.4	−0.89	−	1.4	3.2/22.0	28598
3151 T-2	1997 12 22.1	06 01.34	+29 29.1	16.8	−1.23	+	1.4	2.9/22.0	24909
1992 UN_4	1997 12 22.1	06 01.37	+27 08.2	15.0	−1.07	+	4.7	1.5/21.9	31139
4234 T-2	1997 12 22.1	06 01.54	+29 44.7	18.1	−0.91	+	0.5	1.7/22.1	30696
1995 DX_8	1997 12 22.2	06 02.00	+20 34.8	17.7	−1.13	+	1.1	1.3/22.3	25341
1990 SN_3	1997 12 22.4	06 02.71	+30 34.4	17.1	−1.32	+	1.0	2.8/22.3	27325
1990 QG_3	1997 12 22.4	06 03.04	+26 07.7	18.4	−1.32	+	0.4	1.3/22.5	31005
1995 GT	1997 12 22.4	06 03.22	+59 48.7	18.1	−2.00	+	2.6	12.8/20.3	28318
1989 VQ_1	1997 12 22.5	06 03.23	+13 12.0	17.5	−1.05	+	2.0	4.2/22.7	21572
1993 QS_1	1997 12 22.5	06 03.59	+25 44.4	18.8	−1.25	−	0.3	0.9/22.6	28616
1990 RF	1997 12 22.6	06 03.74	+00 00.2	16.3	−0.79	+	0.6	7.1/23.0	25649
1988 RW_{12}	1997 12 22.6	06 03.76	+24 16.5	18.8	−1.08	−	0.8	0.3/22.6	27727
1992 RU_1	1997 12 22.6	06 03.90	+16 43.3	18.0	−1.05	−	0.1	2.5/22.7	28299
1981 EH_{38}	1997 12 22.6	06 04.01	+17 44.8	19.6	−1.10	−	0.6	2.1/22.7	26922
1979 MB_5	1997 12 22.7	06 04.00	+18 28.5	18.8	−1.03	−	0.2	1.7/22.7	30778
1955 RV	1997 12 22.7	06 04.25	+18 50.6	16.1	−1.07	+	0.4	2.2/22.8	31133
1981 EU_{37}	1997 12 22.8	06 04.62	+22 16.6	19.4	−1.02	−	1.9	0.5/22.8	22430
1988 VS_3	1997 12 22.9	06 05.22	+16 24.2	16.4	−1.04	−	3.3	2.7/22.8	31136
1996 PD_3	1997 12 22.9	06 05.32	+24 14.6	17.2	−1.06	+	1.7	0.3/23.0	31142
1974 QF_1	1997 12 23.0	06 05.40	+36 43.4	16.4	−1.34	−	2.2	5.2/23.4	31134
1994 AT_1	1997 12 23.0	06 05.67	+37 18.6	14.9	−1.26	+	5.3	5.8/22.3	31140
2212 T-2	1997 12 23.0	06 05.70	+26 08.9	18.6	−1.02	+	0.5	1.0/23.0	28608
1994 GQ	1997 12 23.1	06 06.04	+39 36.6	16.3	−1.16	+	3.3	5.7/22.4	25532
1991 LA_1	1997 12 23.1	06 06.27	+08 36.7	17.6	−0.99	+	3.3	5.1/23.8	27728
1993 XP	1997 12 23.2	06 06.31	+22 02.6	15.4	−1.11	−	6.6	0.6/23.1	31140
1978 OP	1997 12 23.2	06 06.64	+16 35.5	18.2	−0.99	+	4.0	2.2/23.6	23245
1993 UD_3	1997 12 23.3	06 06.68	+21 03.1	15.8	−1.14	−	2.2	1.0/23.3	31140
1997 YX_1	1997 12 23.4	06 07.11	+20 51.2	16.2	−0.99	+	3.0	1.3/23.5	31127
1994 AQ	1997 12 23.4	06 07.41	+09 44.3	15.5	−1.03	+	6.3	5.7/24.6	29137
1977 EX	1997 12 23.6	06 08.19	+34 12.4	16.0	−1.19	−	3.7	4.1/23.9	31134
1997 YL_{18}	1997 12 23.6	06 08.19	+21 28.0	16.5	−1.03	+	0.1	0.8/23.7	31130
1993 OA_3	1997 12 23.7	06 08.58	+31 38.4	15.4	−1.48		−10.4	3.4/24.5	23135
1981 EL_{27}	1997 12 23.7	06 08.90	+18 24.1	18.6	−0.99	+	0.1	2.0/23.8	26920
1979 MR_6	1997 12 23.7	06 08.94	+16 58.0	19.1	−1.15	+	0.7	2.6/23.9	27725
1981 ED_{36}	1997 12 23.8	06 09.30	+32 14.0	19.3	−1.25	−	1.2	3.4/23.9	26921
1995 DF	1997 12 23.8	06 09.35	+19 53.4	17.2	−1.18	+	2.7	1.6/24.0	31141
1993 SH_1	1997 12 23.9	06 09.44	+12 07.6	17.1	−1.10	+	1.0	4.6/24.2	30275
1980 KK	1997 12 23.9	06 09.55	+22 16.9	18.0	−1.23	+	0.6	0.4/24.0	17816
2225 T-2	1997 12 23.9	06 09.65	+26 47.4	18.3	−1.14	+	0.5	1.3/23.9	28620
1981 EP_8	1997 12 23.9	06 09.70	+37 30.9	20.9	−1.18	−	1.0	4.5/23.9	26916
1981 EO_{20}	1997 12 24.0	06 09.79	+19 19.0	18.8	−1.10	+	0.5	1.4/24.1	28882
1993 SN_2	1997 12 24.0	06 10.06	+22 55.5	17.7	−1.13	−	1.1	0.2/24.1	31139

1993 XN_1	1997 12 24.0	06 10.26	+22 13.3	16.4	−1.07	+ 4.8	0.4/24.2	31140
1993 RX_5	1997 12 24.0	06 10.26	+19 57.9	19.0	−1.17	+ 0.2	1.3/24.1	30980
1995 ES	1997 12 24.0	06 10.31	+37 03.4	17.7	−1.31	+ 0.2	6.5/23.9	30901
1983 XC	1997 12 24.1	06 10.32	+25 27.0	15.8	−1.20	+ 5.6	1.0/24.0	31135
1995 DZ	1997 12 24.1	06 10.50	+28 53.9	16.7	−1.22	+ 1.8	2.5/24.0	29623
1991 GR	1997 12 24.2	06 10.98	+48 01.2	15.0	−1.43	+ 1.7	9.7/23.7	31137
1986 XR_5	1997 12 24.3	06 11.49	+29 06.6	16.1	−1.04	+ 0.8	2.1/24.3	27119
1991 VX_2	1997 12 24.4	06 11.54	+26 44.0	16.7	−0.94	− 0.9	1.1/24.4	31138
1986 RG_3	1997 12 24.5	06 12.02	+11 26.4	18.1	−1.12	+ 1.6	4.4/24.9	30894
1985 SR	1997 12 24.5	06 12.18	+26 59.2	17.8	−1.15	+ 0.8	1.2/24.5	29133
2112 T-2	1997 12 24.6	06 12.44	+23 30.4	18.4	−0.89	+ 0.3	0.0/24.6	27927
2289 T-1	1997 12 24.6	06 12.84	+37 47.8	17.4	−1.15	+ 1.6	5.5/24.2	22087
1991 DC	1997 12 24.6	06 12.89	+30 17.3	16.0	−1.15	+ 0.9	3.4/24.5	17972
1996 OE_2	1997 12 24.7	06 13.13	+31 07.8	17.7	−1.13	− 3.1	2.5/24.9	31109
4050 P-L	1997 12 24.9	06 14.06	+09 32.8	18.0	−0.88	− 0.8	4.8/25.1	21978
1993 VN	1997 12 24.9	06 14.26	+20 00.4	17.2	−1.14	+ 0.6	1.3/25.1	27730
4017 T-3	1997 12 25.0	06 14.43	+30 11.9	17.2	−1.29	+ 2.3	2.9/24.8	29669
2714 P-L	1997 12 25.0	06 14.46	+28 02.1	16.5	−1.00	+ 0.8	2.6/24.9	27938
6644 P-L	1997 12 25.0	06 14.54	+16 28.8	19.7	−1.01	+ 1.1	2.3/25.3	27732
1992 ME	1997 12 25.1	06 14.81	+05 55.5	18.1	−1.12	+ 6.1	5.9/26.5	25215
1981 DB_2	1997 12 25.1	06 14.87	+26 29.7	16.8	−1.06	− 3.5	1.4/25.2	26914
1989 SY_3	1997 12 25.2	06 15.38	+22 11.1	19.4	−1.12	+ 1.5	0.4/25.3	27710
1996 TU_{13}	1997 12 25.3	06 15.66	+42 42.6	17.1	−1.28	+ 1.5	6.6/24.6	31142
1981 EE_6	1997 12 25.3	06 15.75	+21 17.4	19.9	−1.01	− 1.6	0.7/25.3	26915
1987 SQ_{10}	1997 12 25.5	06 16.59	+19 00.5	17.0	−0.98	+ 2.1	1.6/25.7	31136
1992 OW	1997 12 25.5	06 16.92	+39 30.8	18.5	−1.32	+ 3.4	6.2/24.9	30782
6180 P-L	1997 12 25.6	06 16.91	+20 09.9	19.5	−0.99	+ 0.2	1.1/25.7	31023
1996 NU_4	1997 12 25.7	06 17.42	+31 05.1	17.0	−1.15	− 2.0	2.9/25.8	29947
1991 PB_2	1997 12 25.7	06 17.81	+20 19.4	18.4	−1.03	+ 2.2	1.0/25.9	23124
1997 WX_{21}	1997 12 25.8	06 18.10	+42 08.3	16.9	−1.23	− 0.1	6.1/25.4	31120
3288 T-2	1997 12 25.8	06 18.25	+24 37.7	18.6	−0.89	+ 0.8	0.4/25.9	15729
1992 GN_3	1997 12 25.9	06 18.19	+26 46.2	19.2	−1.16	+ 0.5	1.2/25.8	27913
1981 EW_{19}	1997 12 25.9	06 18.34	+35 21.7	19.4	−1.30	− 0.6	4.6/25.7	26918
1986 TU_6	1997 12 25.9	06 18.61	+26 08.4	16.3	−0.96	− 1.7	0.8/26.0	24407
1996 TT_{54}	1997 12 26.0	06 19.06	−07 20.9	17.9	−0.94	+ 4.6	11.2/28.7	31144
1990 RX_8	1997 12 26.0	06 19.11	+19 12.0	16.8	−1.23	− 1.8	1.9/26.1	25649
1981 QY_2	1997 12 26.1	06 19.10	+20 35.8	16.9	−0.95	+ 1.1	0.9/26.2	19496
1989 GC_4	1997 12 26.1	06 19.40	+23 21.1	17.6	−0.94	+ 0.1	0.0/26.2	31136
1990 UL_1	1997 12 26.2	06 19.57	+21 32.0	16.3	−1.16	+ 3.8	0.9/26.3	31137
1988 XH_1	1997 12 26.2	06 19.73	+29 11.0	16.0	−1.11	+ 4.3	2.0/25.9	25439
1990 WQ_4	1997 12 26.4	06 20.65	+19 51.2	17.3	−1.17	+ 1.7	1.3/26.6	30289
1978 VO_4	1997 12 26.5	06 20.97	+23 52.5	18.0	−1.12	+ 1.7	0.2/26.5	31134
1990 SN_7	1997 12 26.6	06 21.84	+28 29.9	18.4	−1.31	+ 1.8	2.1/26.5	27325
1981 EL_{26}	1997 12 26.7	06 21.96	+36 42.5	19.7	−1.31	+ 0.2	4.9/26.4	28611
1996 TG_{28}	1997 12 26.7	06 21.97	+08 56.5	19.0	−0.95	+ 1.1	5.0/27.0	28309
1992 UO_6	1997 12 26.7	06 21.98	+22 55.2	16.6	−1.05	+ 4.2	9.2/16.0	31103
6196 P-L	1997 12 26.7	06 22.04	+09 47.7	18.4	−0.87	+ 0.1	4.3/27.1	28312
1976 UB_1	1997 12 26.8	06 22.52	+05 45.5	16.0	−0.98	+ 3.0	6.7/27.8	28083
1981 EJ_{16}	1997 12 26.9	06 22.81	+33 10.5	19.9	−1.26	− 0.3	3.8/26.7	27709
4168 P-L	1997 12 26.9	06 23.14	+23 01.3	17.9	−1.01	− 0.2	8.7/07.0	31161
1108 T-1	1997 12 27.1	06 23.67	+33 34.6	17.5	−1.25	− 0.5	5.0/26.9	27938
1981 ES_{21}	1997 12 27.1	06 23.71	+45 48.0	17.0	−1.30	− 0.9	9.6/26.7	31003
1977 TD	1997 12 27.1	06 23.79	+13 19.4	16.2	−1.80	+29.6	5.2/29.4	30892
1994 AC_{17}	1997 12 27.2	06 23.97	+22 05.7	15.9	−1.08	+ 2.6	0.5/27.3	31140
(7652)	1997 12 27.2	06 24.17	+38 52.3	16.3	−1.10	+ 1.3	5.8/26.7	29900
1993 OD_8	1997 12 27.2	06 24.19	+23 57.6	18.0	−1.26	− 0.7	0.3/27.2	31139
1994 GA	1997 12 27.2	06 24.24	−11 26.0	16.9	−1.02	− 8.4	14.0/24.8	24112
1995 JC	1997 12 27.3	06 24.47	+28 14.2	19.3	−1.08	+ 1.3	1.5/27.1	31141
1996 NX_3	1997 12 27.3	06 24.70	+28 14.6	16.6	−1.22	− 1.3	2.1/27.3	31108
1981 EL_{40}	1997 12 27.3	06 24.81	+30 03.0	20.0	−1.10	0.0	2.5/27.2	26922
1987 BS_2	1997 12 27.4	06 25.11	+19 27.9	15.8	−1.04	+ 1.9	1.9/27.6	27727
1991 PP_{11}	1997 12 27.5	06 25.72	+10 05.8	19.1	−0.87	+ 0.7	3.6/28.1	28086
1981 DR_2	1997 12 27.6	06 26.15	+35 38.8	17.3	−1.18	− 4.2	5.3/27.9	27708
1997 XM_{10}	1997 12 27.8	06 27.10	+27 44.2	16.9	−1.15	+ 0.7	2.1/27.7	31125
1996 RB	1997 12 27.8	06 27.11	+31 47.0	18.2	−1.07	− 0.7	2.5/27.7	28088
1179 T-2	1997 12 28.0	06 27.75	+20 51.9	18.1	−1.08	+ 0.4	0.9/28.1	28892
1981 EZ_{44}	1997 12 28.0	06 27.94	+13 28.3	19.8	−1.10	0.0	3.8/28.4	26923
3290 T-2	1997 12 28.1	06 28.13	+31 32.4	17.4	−0.96	+ 1.3	2.6/27.7	28088
1986 QO_1	1997 12 28.1	06 28.39	+21 29.2	17.6	−0.94	+ 1.6	0.5/28.3	19674
1996 RJ_3	1997 12 28.1	06 28.50	+31 43.9	18.3	−1.20	+ 0.7	3.0/27.9	31142
2281 T-1	1997 12 28.2	06 28.91	+16 25.8	17.5	−0.95	+ 1.4	2.5/28.6	29650
1989 RD_2	1997 12 28.3	06 28.93	+18 58.1	17.8	−1.14	+ 1.3	1.6/28.5	27728
1981 EC_{27}	1997 12 28.3	06 29.08	+22 02.1	17.3	−1.01	+ 1.2	0.5/28.4	31135
5564 P-L	1997 12 28.5	06 29.86	+27 46.2	18.1	−1.18	+ 2.2	2.1/28.3	30914
1995 CX	1997 12 28.5	06 30.11	+13 20.2	15.9	−1.11	+ 5.4	3.8/29.5	29106
1986 RK	1997 12 28.7	06 30.68	+15 04.0	17.3	−1.15	− 1.1	3.1/28.9	27454
1992 SF_2	1997 12 28.7	06 30.71	+01 18.5	17.2	−0.96	+ 1.8	8.2/29.9	31139
1979 MF_2	1997 12 28.8	06 31.08	+21 34.0	19.3	−1.17	+ 1.0	0.6/28.9	25338
1993 SJ_1	1997 12 28.8	06 31.11	+14 29.1	18.4	−1.13	+ 1.6	3.3/29.3	27567
4522 P-L	1997 12 28.9	06 31.79	+31 11.4	18.3	−1.08	+ 0.7	2.8/28.6	28082
1988 KB	1997 12 29.0	06 32.22	+29 19.2	16.6	−1.33	+ 9.4	2.2/28.3	25439
1995 EY_8	1997 12 29.0	06 32.45	+32 55.3	18.0	−1.29	+ 0.5	3.9/28.7	25433
1996 TL_{15}	1997 12 29.3	06 33.40	−05 19.9	17.0	−0.80	− 1.2	8.4/30.1	30460
(8215)	1997 12 29.4	06 33.84	+25 24.9	17.0	−1.17	+ 1.7	0.9/29.3	31090
1995 KC	1997 12 29.4	06 33.96	+06 51.8	18.6	−1.04	+ 0.1	6.2/30.0	28087
1997 WR_{21}	1997 12 29.4	06 34.21	+22 59.5	16.8	−1.21	− 2.1	0.1/29.5	31120
2216 T-2	1997 12 29.5	06 34.39	+24 15.3	18.2	−0.86	+ 0.8	0.3/29.5	29142
1991 JT_1	1997 12 29.6	06 34.65	+00 05.6	17.4	−0.94	+ 1.2	7.6/30.9	28086
1979 KJ	1997 12 29.6	06 34.81	+13 32.9	17.2	−0.88	+ 3.4	3.1/30.4	31096
1996 QZ_1	1997 12 29.6	06 34.87	+23 12.8	16.4	−0.91	+ 1.6	0.0/29.6	31142
1979 ML_2	1997 12 29.6	06 35.10	+13 42.1	18.7	−0.83	+ 2.7	2.5/30.4	30973
1991 RC_5	1997 12 29.7	06 35.28	+39 55.2	17.4	−1.12	+ 0.1	5.9/29.0	31101
1979 MQ_6	1997 12 29.8	06 35.53	+22 28.0	17.6	−1.21	− 1.1	0.3/29.8	30779
1993 SK_1	1997 12 29.8	06 35.77	+25 57.3	16.2	−1.21	+ 1.9	1.2/29.7	30899
1988 RB_6	1997 12 29.8	06 35.80	+06 13.5	18.2	−0.98	+ 2.7	5.6/31.2	30288
1992 HN	1997 12 29.8	06 35.83	+28 04.1	16.8	−1.26	+ 3.9	2.2/29.5	30978
1991 RY_{16}	1997 12 29.8	06 35.89	+29 27.4	16.6	−1.02	+ 2.6	2.1/29.4	28886
1997 WQ_{21}	1997 12 29.8	06 35.91	+22 15.8	16.8	−1.11	− 2.4	0.3/29.9	31119
1993 RF_2	1997 12 29.8	06 36.04	+30 49.3	17.8	−1.28	+ 0.4	3.0/29.6	30897
7622 P-L	1997 12 29.9	06 36.30	+33 24.7	16.5	−1.34	+ 2.8	4.6/29.3	23686
1992 RC_6	1997 12 30.1	06 37.11	+22 06.4	19.0	−1.05	+ 1.5	0.3/30.2	28615
1978 QE_2	1997 12 30.1	06 37.19	+27 05.0	17.6	−1.21	+ 1.0	1.5/30.0	27725

1980 WE_5	1997 12 30.2	06 37.68	+06 45.9	16.6	−0.87	− 2.2	5.5/30.7	28314
1996 PT_9	1997 12 30.3	06 37.96	+17 18.7	18.2	−0.96	+ 0.6	2.1/30.6	28304
4269 P-L	1997 12 30.4	06 38.44	+10 48.5	18.4	−0.88	+ 0.1	4.3/31.0	31022
1997 WT_{21}	1997 12 30.4	06 38.66	+26 03.9	17.4	−0.99	+ 1.6	1.0/30.3	31120
1986 GY	1997 12 30.5	06 38.68	+28 33.5	16.7	−1.29	+ 1.2	2.3/30.2	28612
1997 YZ_{16}	1997 12 30.5	06 38.71	+15 32.6	16.4	−1.05	+ 3.1	3.3/31.1	31130
1996 NY_3	1997 12 30.6	06 39.30	+11 20.2	17.9	−1.01	+ 3.8	4.5/31.7	28319
1985 PG_2	1997 12 30.8	06 39.92	+27 18.6	16.3	−1.15	+ 2.8	1.9/30.5	30893
1997 WU_{21}	1997 12 30.8	06 39.93	+27 08.2	15.7	−0.94	+ 3.1	1.2/30.5	31120
1997 WV_{21}	1997 12 30.8	06 39.95	+25 57.5	17.2	−0.98	+ 1.0	1.0/30.6	30999
1979 MQ_4	1997 12 30.8	06 40.18	+18 42.0	17.0	−0.92	− 1.7	1.5/31.0	30778
1981 EK_{19}	1997 12 30.9	06 40.89	+29 41.5	19.0	−1.22	+ 0.2	2.4/30.7	27930
1995 CA_1	1997 12 31.0	06 41.08	+31 54.1	17.7	−1.28	+ 1.0	3.5/30.6	28087
4314 T-3	1997 12 31.1	06 41.60	+21 28.1	17.0	−0.96	+ 1.9	0.5/31.3	31161
1994 CJ_{11}	1997 12 31.2	06 41.70	−04 10.9	17.6	−0.92	+ 7.2	10.4/04.0	27730
1989 RT	1997 12 31.2	06 42.24	+30 38.5	17.4	−1.23	− 0.7	2.8/31.0	28085
3074 P-L	1997 12 31.3	06 42.63	+11 38.4	16.7	−0.89	− 0.9	3.8/31.8	29668
1991 FS_1	1997 12 31.4	06 42.60	+23 34.5	17.7	−1.13	+ 1.3	0.2/31.4	31137
1981 EL_{21}	1997 12 31.4	06 42.77	+20 03.4	17.2	−0.99	+ 0.8	1.0/31.6	29653
1985 VL	1997 12 31.4	06 42.79	+03 19.1	16.7	−0.81	− 0.5	6.0/01.4	29133
1997 XH_1	1997 12 31.4	06 43.13	+28 24.6	18.6	−1.30	+ 0.8	2.3/01.0	31124
2281 T-2	1997 12 31.5	06 43.02	+26 01.3	17.5	−1.02	+ 0.8	1.0/31.3	21953
1981 ED_{28}	1997 12 31.5	06 43.42	+19 39.5	18.0	−0.97	+ 1.5	1.1/31.8	27931
4101 T-2	1997 12 31.5	06 43.53	+23 36.9	17.4	−0.87	+ 1.3	0.2/31.6	31161
(8141)	1997 12 31.6	06 43.45	+39 59.6	15.0	−1.12	+ 0.2	9.4/30.8	31073
1990 QW_3	1997 12 31.7	06 43.94	+24 53.8	18.4	−1.27	+ 0.7	0.7/31.6	29657
1996 RR_5	1997 12 31.8	06 44.45	+09 00.7	18.5	−0.94	− 2.8	4.0/01.2	28864
1993 BS_4	1997 12 31.8	06 44.56	+24 12.1	18.1	−0.86	+ 1.0	0.3/31.8	28317
4171 T-2	1997 12 31.8	06 44.57	+17 34.1	18.5	−1.05	+ 2.7	2.0/01.3	25224
(8223)	1997 12 31.8	06 44.58	+18 46.0	17.6	−1.00	+ 3.9	1.4/01.2	31092
1996 MN	1997 12 31.9	06 45.04	+20 13.5	19.1	−1.18	− 0.9	1.1/01.1	31108
1978 NU_3	1997 12 31.9	06 45.07	+17 15.7	18.0	−1.10	+ 3.0	2.1/01.4	24910
1981 EO_{24}	1998 01 01.1	06 45.78	+18 09.2	17.4	−1.12	+ 2.0	2.0/01.5	28611
1990 FD_1	1998 01 01.1	06 45.80	+21 15.5	15.2	−1.05	+ 6.9	0.7/01.3	31137
4537 P-L	1998 01 01.1	06 45.97	+35 35.3	18.5	−1.31	− 0.1	6.2/31.6	22086
1994 DD	1998 01 01.2	06 46.10	+20 04.5	16.1	−0.99	+ 2.4	1.3/01.4	31140
1993 OP	1998 01 01.2	06 46.39	+27 51.0	15.1	−1.56	−13.5	2.2/01.6	31139
1995 CO_1	1998 01 01.3	06 46.70	+27 27.7	16.0	−1.21	+ 2.8	2.1/32.0	31141
1981 EH_{20}	1998 01 01.3	06 46.95	+19 23.8	19.6	−0.98	+ 1.2	1.2/01.6	21967
1997 XM	1998 01 01.4	06 47.20	+27 25.0	16.2	−1.07	+ 1.4	2.0/01.1	31123
1985 GP_1	1998 01 01.4	06 47.34	+24 37.5	16.9	−1.25	+ 9.7	0.6/01.2	31135
1980 VA_3	1998 01 01.5	06 47.59	+28 38.3	16.3	−1.25	+ 0.4	2.6/01.2	22492
4283 T-2	1998 01 01.6	06 47.92	+22 17.2	17.4	−0.90	+ 2.0	0.3/01.7	28320
1996 PW_2	1998 01 01.6	06 47.98	+23 51.4	20.2	−1.11	+ 1.9	0.3/01.6	30785
1993 TL_5	1998 01 01.6	06 48.07	+26 43.0	17.6	−1.24	+ 0.2	1.6/01.4	31139
1996 TJ_{15}	1998 01 01.6	06 48.26	+22 01.6	17.2	−0.86	+ 1.5	0.3/01.7	28619
1992 DA_9	1998 01 01.7	06 48.38	+35 33.4	17.5	−1.35	+ 1.1	4.8/32.0	30896
1997 XN	1998 01 01.7	06 48.70	+25 33.6	16.7	−1.04	− 1.2	0.9/01.7	31123
1996 PJ_2	1998 01 01.7	06 48.71	+35 10.5	20.9	−1.22	− 2.0	4.3/01.4	30785
1984 HR	1998 01 01.7	06 48.72	+26 55.2	17.3	−1.17	+ 1.5	1.5/01.5	31135
1991 DM	1998 01 01.8	06 49.20	+21 38.2	16.1	−1.12	+ 2.0	0.6/02.0	31137
4066 P-L	1998 01 01.9	06 49.36	+31 28.5	17.8	−1.26	+ 0.2	4.2/01.5	25229
1996 RP_{15}	1998 01 01.9	06 49.41	+11 14.0	19.6	−1.06	+ 1.8	4.3/02.8	27925
1986 QQ	1998 01 01.9	06 49.68	+31 29.2	15.3	−1.20	+ 0.4	4.3/01.5	31135
1981 DP	1998 01 02.0	06 50.16	+13 07.4	18.6	−1.12	− 1.1	4.0/02.5	26914
3507 T-3	1998 01 02.1	06 50.15	+14 08.7	18.5	−1.14	+ 1.1	3.0/02.7	27939
1992 UO_5	1998 01 02.2	06 50.72	+29 29.6	16.1	−1.06	+ 4.9	2.5/01.5	30979
1997 XZ	1998 01 02.2	06 50.77	+26 09.0	16.5	−1.16	+ 0.8	1.3/02.0	31123
1993 BY_2	1998 01 02.2	06 50.87	+26 31.4	16.7	−0.98	− 0.6	1.3/02.1	31103
1991 RT_{40}	1998 01 02.3	06 51.48	+26 12.1	17.5	−0.98	+ 1.4	1.1/02.2	31006
1982 QK_3	1998 01 02.4	06 51.55	+25 52.7	16.9	−1.21	+ 0.6	1.2/02.3	27931
1991 RY_{15}	1998 01 02.4	06 51.79	+20 47.8	16.0	−0.94	+ 1.9	0.7/02.6	31101
3282 T-2	1998 01 02.5	06 52.12	+31 05.1	19.0	−1.17	+ 2.1	3.0/01.9	15085
1991 RO_1	1998 01 02.5	06 52.29	+29 30.3	16.7	−1.02	− 0.1	2.2/02.2	30290
1996 QZ	1998 01 02.6	06 52.61	+15 11.5	19.2	−0.95	+ 3.1	2.7/03.4	31142
1996 TS	1998 01 02.8	06 53.59	+20 37.2	17.9	−0.95	+ 1.1	0.8/03.0	28619
1985 RJ_4	1998 01 02.9	06 53.74	+25 51.2	18.1	−0.93	+ 1.3	0.9/02.7	23536
1987 HK	1998 01 02.9	06 53.83	+23 42.2	17.0	−1.06	+ 1.1	0.3/02.9	31136
2268 T-2	1998 01 03.0	06 54.36	+15 54.6	20.4	−0.83	+ 1.2	2.0/03.6	28608
1996 UP_1	1998 01 03.1	06 54.93	+01 42.5	18.1	−0.93	− 0.3	6.6/04.5	28891
1985 RP_3	1998 01 03.2	06 54.98	+26 03.4	18.8	−1.14	+ 1.4	1.1/03.0	28295
1979 MP_3	1998 01 03.3	06 55.70	+17 52.7	17.5	−1.13	+ 0.7	2.3/03.7	28610
1984 SR_5	1998 01 03.4	06 55.99	+30 38.0	17.6	−0.93	+ 1.2	2.3/02.8	28084
1981 EM_{11}	1998 01 03.4	06 56.01	+26 58.1	18.7	−1.22	− 1.9	1.9/03.3	26917
1977 FN	1998 01 03.4	06 56.01	+17 34.7	17.1	−1.02	− 1.9	1.7/03.7	28610
4642 P-L	1998 01 03.4	06 56.34	+24 19.0	19.2	−1.14	+ 1.7	0.5/03.4	24909
4601 P-L	1998 01 03.5	06 56.57	+25 17.7	16.1	−0.94	+ 2.6	1.0/03.3	31161
1995 FB_{14}	1998 01 03.6	06 56.87	+21 45.0	19.0	−1.08	+ 1.4	0.4/03.7	25334
1981 EO_{28}	1998 01 03.6	06 56.90	+31 42.1	18.7	−1.10	+ 0.7	3.2/03.0	26920
1991 NM_6	1998 01 03.9	06 58.10	+16 25.6	16.8	−0.95	+ 2.8	2.2/04.5	28614
1993 TE_3	1998 01 03.9	06 58.17	+36 42.5	16.6	−1.33	+ 1.1	5.7/02.9	30452
4072 P-L	1998 01 03.9	06 58.40	+19 46.1	18.6	−1.12	+ 1.0	1.1/04.2	29668
1990 WF	1998 01 03.9	06 58.53	+18 53.3	15.7	−1.14	+ 4.3	1.8/04.4	31099
2165 T-3	1998 01 04.0	06 58.54	+30 06.1	18.7	−1.04	+ 0.7	2.6/03.5	27928
1968 OL	1998 01 04.0	06 58.58	+13 09.2	18.1	−1.17	+ 9.0	3.5/05.4	25646
1996 PG_1	1998 01 04.0	06 58.66	+27 55.7	18.4	−1.21	+ 1.2	1.9/03.7	31109
1984 QS	1998 01 04.0	06 58.69	+24 27.6	18.2	−0.85	+ 1.4	0.4/03.9	28315
1995 MC	1998 01 04.0	06 58.72	+32 43.5	17.8	−1.03	− 2.0	2.6/03.6	28318
1986 RN_5	1998 01 04.2	06 59.35	+33 19.0	17.7	−1.33	+ 0.6	4.2/03.5	29655
1983 TC	1998 01 04.2	06 59.56	+07 31.2	17.0	−0.98	− 0.5	5.3/05.3	31135
1990 QY	1998 01 04.2	06 59.61	+11 40.4	17.8	−0.82	+ 1.1	2.9/05.2	29942
1991 NA_2	1998 01 04.3	06 59.89	+17 02.7	17.5	−0.98	+ 3.8	1.9/04.9	29659
1997 YY_1	1998 01 04.3	07 00.01	+24 00.2	16.6	−0.99	+ 3.0	0.5/04.2	31127
1981 ES_7	1998 01 04.4	07 00.45	+16 10.7	19.7	−1.13	+ 0.6	2.5/04.9	26916
1991 RD_{12}	1998 01 04.4	07 00.70	+20 35.2	17.3	−0.96	+ 2.7	0.8/04.7	31138
1986 TX_3	1998 01 04.4	07 00.74	+24 42.8	16.6	−1.16	+ 3.5	0.9/04.3	31097
1993 BE_2	1998 01 04.5	07 00.77	+24 39.3	16.0	−0.95	+ 4.8	0.6/04.3	30658
(7328)	1998 01 04.5	07 00.96	+43 29.5	17.7	−1.34	− 0.1	7.3/03.3	28569
(7463)	1998 01 04.5	07 01.10	+32 03.5	16.6	−1.22	+ 0.6	3.5/03.9	29079
1994 DA	1998 01 04.6	07 01.39	+10 33.7	18.3	−0.95	+ 3.0	4.3/05.9	28617
1988 RT_{11}	1998 01 04.7	07 01.78	+25 06.2	18.5	−1.07	+ 1.5	1.0/04.5	18114
1995 OE	1998 01 04.7	07 02.01	+16 05.1	17.0	−0.91	− 1.2	2.2/05.2	29138

(7603)	1998 01 04.9	07 02.59	+09 33.1	17.6	−0.87	+ 0.3	4.1/05.9	29601
1992 RM_2	1998 01 04.9	07 02.72	+40 27.2	18.1	−1.30	− 1.1	6.1/04.0	31006
6058 P-L	1998 01 05.0	07 02.88	+31 26.9	19.1	−1.14	+ 0.6	2.9/04.4	27938
1994 LA_1	1998 01 05.1	07 03.31	+01 35.8	19.6	−0.80	+ 4.4	5.3/07.7	30900
1981 EM_{29}	1998 01 05.2	07 03.72	+24 10.3	19.5	−1.20	− 0.6	0.6/05.1	26920
1990 UF_1	1998 01 05.2	07 03.82	+28 09.9	16.3	−1.26	+ 3.1	2.3/04.7	29612
(8117)	1998 01 05.2	07 04.18	+37 19.6	17.6	−1.03	+ 1.5	4.3/03.9	30970
1989 MH	1998 01 05.3	07 04.58	+27 45.5	16.8	−0.95	+ 3.7	1.5/04.8	28613
4320 T-1	1998 01 05.4	07 04.86	+28 17.4	17.2	−1.20	+ 2.9	2.6/04.9	25341
1993 VZ_4	1998 01 05.4	07 05.06	+25 33.3	16.3	−1.16	+ 1.9	1.3/05.2	22962
1992 FS_1	1998 01 05.5	07 05.19	+22 38.6	16.7	−1.16	+ 4.3	0.0/05.5	31138
1996 TM_{15}	1998 01 05.6	07 05.75	+21 17.6	18.3	−0.87	+ 1.7	0.4/05.8	31142
2235 T-2	1998 01 05.6	07 05.83	+19 47.3	19.5	−0.87	+ 1.6	0.8/06.0	30466
2144 T-1	1998 01 05.7	07 05.97	+13 24.3	18.4	−1.09	+ 3.4	3.8/06.7	28319
1220 T-2	1998 01 05.7	07 06.11	+22 19.8	18.2	−0.90	+ 1.3	8.1/26.0	30285
1994 CB_1	1998 01 05.8	07 06.53	+18 21.0	15.2	−0.90	− 0.9	2.3/06.1	28888
1986 TB_7	1998 01 05.9	07 07.21	+13 24.5	17.3	−0.91	− 0.6	2.9/06.7	21970
1997 YQ	1998 01 06.0	07 07.32	+18 26.8	17.3	−1.12	+ 2.0	1.7/06.4	31126
1991 NE_3	1998 01 06.1	07 07.66	+12 46.7	16.2	−0.93	+ 3.2	3.5/07.2	20023
1997 YP_2	1998 01 06.1	07 07.72	+15 08.1	15.8	−1.15	+ 1.8	3.3/06.8	31127
1981 EZ_{13}	1998 01 06.1	07 07.87	+38 21.4	18.6	−1.26	− 1.7	6.5/05.1	28314
1997 YY	1998 01 06.1	07 08.16	+19 42.3	17.6	−1.19	+ 0.5	1.1/06.4	31126
1994 GD_2	1998 01 06.3	07 08.62	+16 15.5	20.7	−0.84	+ 2.2	1.7/07.0	23678
1992 RV_1	1998 01 06.3	07 08.82	+26 34.3	15.8	−1.03	− 1.0	2.0/06.1	31139
1978 RY_6	1998 01 06.4	07 09.11	+32 51.6	16.7	−0.99	− 0.6	3.4/05.6	29132
1997 YR	1998 01 06.4	07 09.37	+20 12.0	16.3	−1.08	+ 4.7	1.1/06.7	31126
1981 RQ_1	1998 01 06.5	07 09.58	+19 38.8	17.1	−0.93	+ 2.1	0.9/06.8	31135
3277 T-1	1998 01 06.6	07 09.99	+21 47.9	17.9	−0.85	+ 1.5	0.2/06.7	31161
1991 PV_{16}	1998 01 06.6	07 10.13	+23 14.1	16.7	−0.95	+ 2.6	0.3/06.6	31101
1997 BB_1	1998 01 06.6	07 10.18	+13 41.0	16.3	−0.85	− 0.7	2.5/07.3	31113
3201 T-2	1998 01 06.6	07 10.22	+19 53.2	18.0	−0.96	+ 2.7	0.8/06.9	31161
1976 SQ_7	1998 01 06.6	07 10.22	+13 31.1	16.7	−1.14	+ 2.2	3.5/07.6	31134
1992 RA_4	1998 01 06.7	07 10.39	+24 23.4	18.4	−1.14	+ 1.5	0.7/06.5	31139
1996 NA	1998 01 06.8	07 10.73	+24 25.6	16.8	−1.48	+18.1	0.9/06.4	31142
1997 YX	1998 01 06.8	07 10.95	+18 48.8	16.7	−1.01	+ 1.6	1.6/07.2	31126
1997 YU	1998 01 06.8	07 11.09	+22 21.8	17.4	−0.91	+ 2.3	0.0/06.9	31126
(8222)	1998 01 07.0	07 11.77	+16 30.1	18.1	−1.14	+ 3.0	2.3/07.6	31091
1990 TH_7	1998 01 07.0	07 12.00	+23 44.8	18.8	−0.83	+ 1.4	0.3/06.9	29134
1166 T-2	1998 01 07.1	07 12.19	+32 37.4	19.6	−1.18	+ 1.1	3.4/06.2	28088
1985 UF	1998 01 07.2	07 12.49	+36 21.2	17.7	−1.25	+ 2.1	5.1/05.8	31004
1995 KF	1998 01 07.2	07 12.50	+10 01.5	19.0	−1.07	+ 7.6	4.2/09.0	25533
1994 CL_2	1998 01 07.2	07 12.60	+20 50.0	16.3	−0.98	+ 4.3	0.7/07.4	31140
3003 T-2	1998 01 07.2	07 12.81	+10 00.5	18.8	−0.91	+ 2.7	4.0/08.7	28313
1988 RM_4	1998 01 07.3	07 13.24	+18 37.2	18.5	−1.03	+ 2.1	1.2/07.7	25339
1996 WZ_1	1998 01 07.4	07 13.44	+24 26.2	15.4	−0.89	+ 4.9	0.7/07.1	28605
(8118)	1998 01 07.4	07 13.52	+02 49.8	17.4	−0.93	+ 0.8	6.3/09.2	30970
1977 RC_9	1998 01 07.5	07 14.20	+23 39.9	17.4	−1.14	+ 1.5	0.5/07.4	31003
3353 T-2	1998 01 07.6	07 14.26	+29 23.5	19.2	−0.90	+ 1.6	1.9/06.9	30286
1990 QV_5	1998 01 07.7	07 14.96	+19 06.1	17.0	−1.20	+ 2.6	1.4/08.1	22082
1981 EG_{13}	1998 01 07.8	07 15.30	+27 09.3	18.0	−1.23	− 1.1	2.1/07.5	26917
1991 TT_{13}	1998 01 07.9	07 15.89	+19 51.1	16.2	−0.96	− 2.2	0.8/08.1	31138
1990 QX_7	1998 01 08.0	07 16.19	+23 59.8	18.4	−0.90	+ 1.2	0.5/07.9	30653
(7458)	1998 01 08.0	07 16.41	+23 50.5	17.1	−0.77	+ 1.1	0.4/07.9	29078
1995 DH_6	1998 01 08.1	07 16.47	+30 04.7	19.3	−1.23	+ 1.3	3.0/07.4	27918
1981 ET_{24}	1998 01 08.1	07 16.63	+11 14.5	17.5	−1.07	+ 2.9	4.6/09.4	22492
1977 RD	1998 01 08.1	07 16.96	+62 16.3	19.5	−1.85	− 1.8	10.2/04.9	20139
1996 OM_2	1998 01 08.2	07 17.09	+16 09.1	17.7	−1.04	− 0.9	2.4/08.7	30785
1987 RT_5	1998 01 08.2	07 17.26	+21 13.9	17.4	−1.22	+ 3.5	0.4/08.4	31136
1992 EP_4	1998 01 08.4	07 18.22	+22 45.1	16.7	−1.21	+ 3.7	0.2/08.4	30782
1993 UZ_5	1998 01 08.4	07 18.23	+19 28.1	17.0	−1.11	+ 5.0	1.2/08.9	31140
1981 EO_{39}	1998 01 08.5	07 18.24	+19 30.7	18.4	−0.99	+ 2.4	1.0/08.8	28611
1981 EU_{19}	1998 01 08.5	07 18.24	+29 39.8	18.0	−1.22	+ 1.1	2.8/07.8	28882
4843 T-1	1998 01 08.7	07 19.16	+30 20.8	18.9	−0.95	+ 2.2	2.5/07.8	21124
2177 P-L	1998 01 08.7	07 19.53	+20 41.2	17.5	−0.91	+ 1.2	0.6/08.9	31160
1985 RP_4	1998 01 08.9	07 20.03	+19 17.5	18.4	−1.10	+ 3.4	1.1/09.3	25973
4207 T-3	1998 01 08.9	07 20.21	+18 26.7	16.3	−0.92	+ 4.0	1.5/09.4	31161
1981 EZ_{11}	1998 01 08.9	07 20.34	+26 27.0	18.1	−1.20	+ 0.8	1.8/08.6	31134
(7476)	1998 01 09.0	07 20.50	+51 09.7	15.6	−1.31	+ 6.3	8.8/03.4	29083
1991 LY	1998 01 09.0	07 20.56	+18 31.3	17.2	−0.98	+ 5.8	1.1/09.6	29659
1981 EX_{11}	1998 01 09.0	07 20.71	+46 47.4	21.2	−1.26	− 0.1	7.5/06.2	26917
1997 TA_{18}	1998 01 09.0	07 20.82	+02 47.5	17.5	−0.93	+ 3.3	7.9/11.8	31146
1188 T-2	1998 01 09.0	07 20.83	+19 18.3	17.1	−1.08	+ 1.4	1.1/09.4	28320
1988 VC_1	1998 01 09.0	07 20.88	+14 36.0	16.8	−1.06	− 3.6	3.2/09.5	31004
1992 UH_4	1998 01 09.0	07 20.89	+33 51.5	17.1	−1.12	+ 5.0	3.9/07.5	31007
(8192)	1998 01 09.1	07 20.86	+34 03.9	17.8	−1.34	− 1.1	5.5/08.2	31085
(8226)	1998 01 09.2	07 21.55	+07 16.0	16.1	−0.85	+ 2.3	4.8/11.1	31092
1978 PH_3	1998 01 09.3	07 21.70	+21 53.5	18.2	−0.83	+ 1.6	0.1/09.3	31134
4122 T-2	1998 01 09.6	07 23.08	+24 05.4	15.8	−0.99	+ 3.0	0.7/09.4	31132
5105 T-2	1998 01 09.6	07 23.13	+23 01.2	16.2	−1.08	− 1.2	0.4/09.6	31132
1981 QU_3	1998 01 09.7	07 23.44	+11 25.4	17.4	−1.02	+ 4.5	3.7/11.2	31135
(8193)	1998 01 09.7	07 23.76	+26 12.9	17.5	−1.20	− 0.7	2.0/09.4	31085
(7373)	1998 01 09.7	07 23.81	+19 56.6	17.7	−0.85	+ 1.7	0.6/10.0	28819
1997 YA_8	1998 01 09.9	07 24.43	+09 07.9	16.6	−1.11	− 2.6	5.2/10.6	31129
1972 RF_2	1998 01 09.9	07 24.80	+15 55.8	18.4	−1.13	+ 2.8	2.3/11.0	28610
1996 YH_3	1998 01 10.1	07 25.27	+38 35.3	16.6	−0.99	+ 4.1	4.6/07.7	31144
1995 SO_3	1998 01 10.2	07 26.09	+24 39.5	18.1	−0.98	− 0.6	0.8/10.1	25966
1982 FP_3	1998 01 10.3	07 26.27	+24 13.1	16.9	−0.89	+ 2.3	0.7/10.1	31135
1996 PJ_1	1998 01 10.4	07 26.63	+21 32.2	18.6	−1.04	+ 2.3	0.2/10.5	31110
1989 VQ	1998 01 10.4	07 26.65	+25 03.3	16.6	−1.15	+ 3.0	1.2/10.1	31136
1995 HJ	1998 01 10.5	07 26.96	+20 56.9	17.0	−1.11	+ 2.9	0.4/10.6	31141
1997 VA_4	1998 01 10.5	07 27.09	+10 25.6	17.6	−0.84	+ 3.4	4.6/12.2	31116
1992 PJ_2	1998 01 10.6	07 27.39	+13 52.2	19.0	−1.01	+ 1.9	2.5/11.5	31139
1996 QG_1	1998 01 10.6	07 27.41	+20 56.6	18.8	−1.06	+ 2.5	0.3/10.7	28078
1990 SB_{11}	1998 01 10.8	07 28.62	+21 05.8	17.3	−1.25	+ 0.2	10.8/31.0	31137
1996 NL_1	1998 01 10.9	07 28.76	+22 06.9	16.5	−1.18	+ 0.8	10.5/31.0	31142
1988 RE_{10}	1998 01 11.1	07 29.84	+18 19.2	19.3	−1.03	+ 2.9	1.2/11.6	29656
1996 TY_{27}	1998 01 11.3	07 30.76	+24 03.2	18.3	−0.89	+ 4.3	0.8/11.0	31111
4186 P-L	1998 01 11.3	07 30.78	+18 46.6	19.3	−1.03	+ 2.2	1.0/11.7	28892
2213 T-1	1998 01 11.4	07 30.99	+33 29.3	17.5	−0.95	+ 1.3	3.3/10.0	28088
2209 T-1	1998 01 11.5	07 31.21	+24 16.0	17.3	−0.90	+ 2.5	0.8/11.2	31161
1979 MG_3	1998 01 11.6	07 31.95	+17 26.0	18.1	−0.89	+ 0.1	1.3/12.1	30778
1188 T-3	1998 01 11.7	07 32.20	+24 54.7	18.9	−1.13	+ 0.3	1.2/11.4	31001

1992 ED_{17}	1998 01 11.9	07 33.15	+22 34.5	17.5	−1.20	+ 2.8	0.3/11.8	31138
1997 YQ_{16}	1998 01 12.2	07 34.41	+25 52.1	16.5	−1.10	+ 3.2	1.8/11.7	31130
1998 AD_3	1998 01 12.3	07 35.20	+24 16.0	17.9	−1.14	+ 1.9	1.1/12.1	31131
9085 P-L	1998 01 12.3	07 35.20	+27 58.5	19.8	−1.25	+ 2.1	2.4/11.7	24114
1990 SF_9	1998 01 12.4	07 35.60	+29 22.0	18.1	−0.90	+ 2.1	2.1/11.5	31137
1997 YK_{12}	1998 01 12.5	07 35.80	+20 53.7	17.4	−0.91	+ 0.3	0.2/12.6	31158
1997 YC_1	1998 01 12.6	07 36.11	+25 29.1	17.1	−1.17	+ 3.6	1.5/12.1	31127
1981 EE_{12}	1998 01 12.7	07 36.46	+19 44.7	16.6	−1.16	− 0.7	0.8/12.9	31134
(8216)	1998 01 12.7	07 36.65	+25 26.8	18.5	−1.08	+ 3.4	1.3/12.2	31090
(8161)	1998 01 12.9	07 37.70	+22 27.7	18.0	−0.86	+ 2.5	0.3/12.9	31078
3365 T-2	1998 01 13.0	07 38.05	+24 41.7	17.7	−0.91	+ 2.4	1.1/12.6	31161
1997 YH_4	1998 01 13.1	07 38.13	+25 11.2	17.7	−0.98	+ 2.8	1.3/12.6	31128
(7442)	1998 01 13.1	07 38.38	+22 32.0	18.3	−0.85	+ 2.0	0.3/13.0	28836
9086 P-L	1998 01 13.1	07 38.54	+12 35.2	18.8	−1.22	+ 3.1	4.0/14.4	27328
1988 CU_3	1998 01 13.2	07 38.62	+19 45.9	16.1	−0.96	− 1.0	0.6/13.4	31098
1997 YW_5	1998 01 13.3	07 39.07	+29 00.5	16.2	−1.01	+ 4.0	2.9/12.2	31128
1978 SJ_5	1998 01 13.3	07 39.08	+31 04.7	17.7	−1.22	+ 2.6	3.8/12.1	31134
1189 T-3	1998 01 13.4	07 39.46	+21 21.8	19.8	−1.08	+ 1.4	0.0/13.4	31161
1990 QJ_2	1998 01 13.4	07 39.66	+24 24.3	17.4	−1.21	+ 2.9	1.4/13.1	31137
4667 P-L	1998 01 13.5	07 40.16	+31 44.8	18.0	−1.06	+ 2.3	3.2/12.2	28620
1991 GA_7	1998 01 13.6	07 40.52	+14 16.2	17.2	−1.01	+ 2.7	3.3/14.6	27934
1988 CT_4	1998 01 13.7	07 40.73	+07 42.4	17.1	−0.83	+ 2.2	4.2/15.6	31136
1981 EB_{37}	1998 01 13.7	07 40.87	+33 13.1	18.4	−1.11	+ 1.1	4.1/12.3	22430
1980 RV_2	1998 01 13.8	07 41.42	+24 46.4	17.3	−1.24	+ 1.9	1.4/13.4	30892
1996 QM_1	1998 01 13.8	07 41.66	+08 53.0	18.5	−1.03	+ 3.3	5.6/15.7	27924
1997 YX_{15}	1998 01 13.9	07 41.65	+21 53.4	17.6	−0.95	− 0.9	0.1/13.9	31130
1994 GY_9	1998 01 14.0	07 42.21	+05 12.6	17.2	−0.88	+ 5.7	6.9/17.1	31140
1991 RZ_8	1998 01 14.1	07 42.73	+23 06.7	16.9	−0.96	+ 2.1	0.6/13.9	31138
1988 RB_{12}	1998 01 14.1	07 42.83	+28 20.2	18.5	−1.12	+ 1.6	2.3/13.3	29656
1997 YG_{17}	1998 01 14.2	07 43.21	+22 46.1	18.2	−1.09	+ 5.9	0.5/14.0	31130
3212 T-2	1998 01 14.2	07 43.22	+12 17.3	18.5	−1.01	+ 4.6	3.6/16.0	25341
1992 EK_1	1998 01 14.2	07 43.35	+28 22.5	16.3	−1.30	+ 0.9	2.9/13.5	31138
1986 RY_4	1998 01 14.3	07 43.49	+27 54.1	17.7	−1.24	+ 2.0	2.5/13.5	24911
2370 T-3	1998 01 14.4	07 43.88	+09 46.8	18.6	−0.89	+ 1.7	3.5/16.0	23686
1990 QQ_8	1998 01 14.6	07 44.76	+23 59.4	18.6	−0.88	+ 2.4	0.8/14.2	30686
1981 EF_{18}	1998 01 14.6	07 44.81	+12 19.3	17.2	−1.07	+ 3.9	3.8/16.0	31134
1107 T-2	1998 01 14.6	07 44.83	+20 17.1	18.9	−0.95	+ 1.9	0.3/14.8	21978
1055 T-2	1998 01 14.7	07 45.51	+24 18.6	19.0	−0.99	+ 2.0	1.0/14.4	28320
1996 UL_1	1998 01 15.0	07 46.38	+04 05.3	18.2	−0.82	+ 2.0	5.2/17.6	29140
1981 DQ_3	1998 01 15.0	07 46.52	+28 54.8	16.2	−1.13	− 0.4	2.7/14.2	27302
1985 RD	1998 01 15.0	07 46.55	+22 58.0	17.9	−0.88	+ 2.1	0.5/14.8	31135
1990 RQ_8	1998 01 15.0	07 46.61	+22 56.1	18.9	−0.86	+ 2.1	0.5/14.8	31137
1981 EZ_{18}	1998 01 15.1	07 46.79	+20 41.8	17.0	−0.99	+ 2.0	0.2/15.2	31134
1986 QT	1998 01 15.1	07 46.86	+20 33.5	17.1	−1.15	+ 4.0	0.2/15.2	31135
1984 LK	1998 01 15.1	07 46.93	+13 48.3	18.8	−0.79	+ 1.6	1.7/16.2	28883
1989 YF_1	1998 01 15.1	07 47.07	+18 20.9	16.6	−1.10	− 1.9	1.2/15.4	31137
1975 TO_2	1998 01 15.2	07 47.46	+12 17.3	17.3	−1.09	+ 3.9	3.7/16.6	31134
1993 TP_{24}	1998 01 15.2	07 47.51	+15 01.0	17.3	−1.13	+ 4.2	2.5/16.0	31139
1982 FX_3	1998 01 15.4	07 48.47	+28 39.1	16.7	−0.91	+ 2.0	2.2/14.4	30090
1997 YB_{10}	1998 01 15.5	07 48.50	+24 59.2	15.7	−1.06	− 1.1	1.6/15.1	31129
(7323)	1998 01 15.6	07 48.98	+24 52.4	16.7	−0.93	+ 2.5	1.3/15.1	28568
3269 T-2	1998 01 15.6	07 49.10	+10 37.3	18.7	−0.93	+ 4.8	3.7/17.5	16439
1989 YA_2	1998 01 15.6	07 49.25	+18 18.5	16.0	−1.04	− 1.0	1.3/16.0	31137
1991 FL	1998 01 15.6	07 49.31	+19 42.2	16.3	−1.10	+ 2.2	0.6/15.9	31137
1993 VS_1	1998 01 15.7	07 49.73	+19 47.5	16.5	−1.11	+ 1.4	11.1/05.0	31104
1996 VD_1	1998 01 15.8	07 49.76	+44 28.7	18.7	−1.07	+ 2.9	6.3/11.8	28599
1992 UQ	1998 01 15.9	07 50.60	+15 01.5	17.0	−0.98	+ 3.3	2.0/16.9	31139
1981 ER_7	1998 01 15.9	07 50.64	+15 00.2	19.7	−1.10	+ 2.1	2.3/16.8	26916
1979 MJ_4	1998 01 15.9	07 50.68	+18 10.5	18.6	−0.97	+ 6.0	0.9/16.5	30778
1981 ES_2	1998 01 15.9	07 50.71	+16 36.2	18.4	−1.16	− 0.9	1.9/16.5	26915
1992 EJ_4	1998 01 16.0	07 50.64	+21 46.9	17.0	−1.20	+ 4.3	0.3/15.9	31138
1991 VD_2	1998 01 16.0	07 50.98	+21 57.9	16.7	−0.90	+ 3.4	0.3/15.9	31101
1996 PA_1	1998 01 16.1	07 51.05	+17 16.9	18.2	−1.05	+ 5.7	1.4/16.7	31142
1996 TS_{15}	1998 01 16.1	07 51.29	+52 20.1	17.4	−1.20	+ 2.2	8.2/10.6	31111
1991 GV_8	1998 01 16.1	07 51.40	+21 08.0	17.0	−1.09	+ 1.8	0.1/16.1	31100
1996 RC	1998 01 16.2	07 51.65	+16 52.1	18.5	−1.08	+ 4.0	1.8/16.9	28596
1996 TJ_{12}	1998 01 16.2	07 51.79	+35 01.9	17.3	−0.98	+ 2.7	4.1/14.0	31142
1996 OP_2	1998 01 16.4	07 52.38	+03 13.7	18.6	−0.98	+ 4.8	5.9/19.6	27938
1992 JF	1998 01 16.4	07 52.72	+27 14.2	17.8	−1.16	+ 3.7	2.2/15.5	28886
1996 NZ_3	1998 01 16.4	07 52.83	+19 13.9	17.3	−1.08	+ 1.6	0.7/16.7	31108
1990 BZ	1998 01 16.6	07 53.52	+27 20.1	16.5	−1.24	− 3.6	2.6/16.1	31137
1981 DF_2	1998 01 16.6	07 53.72	+12 12.0	16.7	−1.15	+ 0.6	3.7/17.8	24758
1991 QG	1998 01 16.8	07 54.08	+09 54.4	18.4	−0.93	+ 3.2	3.4/18.6	30896
1997 YD_{10}	1998 01 16.8	07 54.45	+25 34.9	16.8	−1.18	+ 1.4	1.8/16.2	31129
1989 WJ_1	1998 01 16.9	07 54.62	+10 38.2	16.4	−1.03	+ 2.5	4.2/18.5	28316
1981 EC_{31}	1998 01 16.9	07 54.93	+41 24.7	18.2	−1.27	− 0.9	8.3/14.4	31096
1984 SY_5	1998 01 17.0	07 54.95	+20 46.1	16.5	−0.84	+ 2.9	0.0/17.0	31135
1990 QK_8	1998 01 17.1	07 55.73	+20 25.9	18.0	−0.88	+ 3.0	0.1/17.2	31099
1996 QQ_1	1998 01 17.1	07 55.76	+21 13.3	18.0	−0.89	+ 3.1	0.1/17.1	31142
1981 EW_{33}	1998 01 17.1	07 55.78	+17 48.8	18.7	−0.98	+ 2.1	1.0/17.6	28581
1979 TV_2	1998 01 17.1	07 55.82	+16 50.3	17.0	−1.10	+ 3.5	1.7/17.8	31134
1981 EY_{38}	1998 01 17.2	07 55.76	+09 54.9	18.6	−1.07	+ 1.1	3.6/18.6	28611
1997 WA_7	1998 01 17.2	07 55.89	+28 36.3	16.8	−1.04	+ 6.3	2.4/15.7	31118
1996 RQ_2	1998 01 17.2	07 56.17	+21 35.6	16.9	−1.11	+ 2.3	0.4/17.2	31009
1996 TR_{10}	1998 01 17.3	07 56.33	+09 54.8	16.8	−0.98	+ 4.8	3.5/19.2	30293
6840 P-L	1998 01 17.4	07 56.79	+21 43.8	19.1	−1.04	+ 3.8	0.4/17.3	23986
1981 EH_7	1998 01 17.4	07 57.08	−03 00.8	19.0	−0.89	+ 2.8	9.0/21.7	26916
(8175)	1998 01 17.6	07 57.60	+27 57.7	16.7	−0.92	+ 5.0	2.2/16.3	31081
1990 SZ_4	1998 01 17.7	07 57.95	+23 27.1	18.9	−0.86	+ 2.6	0.8/17.3	25529
1986 QA_3	1998 01 17.7	07 58.24	+21 33.9	17.0	−1.15	+ 3.8	0.3/17.6	31136
1996 VP	1998 01 17.8	07 58.69	+25 03.3	17.9	−1.11	+ 3.6	1.6/17.2	31144
1993 TZ_{36}	1998 01 17.9	07 58.97	+13 35.3	18.6	−1.08	+ 4.9	2.8/19.2	25332
5023 P-L	1998 01 17.9	07 59.26	+10 12.6	19.1	−1.04	+ 2.4	3.8/19.6	28319
6099 P-L	1998 01 18.1	07 59.87	+28 11.2	19.1	−1.13	+ 1.7	2.8/17.1	29649
1996 VA_5	1998 01 18.1	07 59.93	+02 12.6	17.1	−0.94	+ 2.4	6.2/21.0	31010
3189 T-2	1998 01 18.2	08 00.15	+31 47.1	19.4	−1.17	+ 2.6	4.7/16.5	22701
1996 RF_5	1998 01 18.2	08 00.26	+20 42.8	17.2	−1.09	+ 5.8	0.1/18.2	31142
1996 TZ_9	1998 01 18.2	08 00.27	+07 56.8	18.8	−0.85	+ 2.8	4.0/20.4	28307
1996 UU_1	1998 01 18.3	08 00.71	+28 06.7	17.2	−0.94	+ 1.9	2.7/17.2	31144
1988 CW_4	1998 01 18.3	08 00.82	+12 20.5	16.4	−0.89	+ 1.0	2.8/19.6	22599
1996 PB_1	1998 01 18.3	08 00.85	+22 52.1	19.7	−1.10	+ 2.7	0.8/18.0	31109
1993 XV	1998 01 18.4	08 01.10	+18 31.8	15.5	−1.11	− 1.0	0.9/18.7	31105

(7559)	1998 01 18.5	08 01.64	+28 02.4	17.1	−1.10	+ 4.7	2.4/17.2	29591
1993 DR_2	1998 01 18.6	08 01.86	+27 03.8	17.4	−0.98	+ 0.5	2.0/17.7	31103
1993 SW_3	1998 01 18.6	08 01.92	+29 35.2	17.4	−1.23	+ 4.2	3.4/17.1	31139
1992 GG_3	1998 01 18.7	08 02.31	+19 32.3	16.8	−1.16	+ 2.9	0.4/18.9	27729
2257 T-2	1998 01 18.9	08 03.32	+26 52.0	16.8	−1.08	+ 2.8	2.9/17.9	31161
4550 P-L	1998 01 18.9	08 03.45	+28 27.9	18.4	−1.21	+ 2.1	3.9/17.8	17462
1993 TJ_1	1998 01 19.0	08 03.80	+30 20.5	16.9	−1.24	+ 2.9	3.7/17.5	28616
1991 PT_{12}	1998 01 19.1	08 04.07	+21 34.0	17.4	−0.96	+ 2.9	0.4/18.9	31100
1977 DR_2	1998 01 19.2	08 04.41	+28 51.5	17.5	−1.23	+ 1.3	3.4/18.0	31134
1996 TE	1998 01 19.2	08 04.47	+24 20.4	18.4	−0.96	+ 3.1	1.3/18.6	31110
1306 T-2	1998 01 19.2	08 04.72	+20 26.8	17.4	−0.87	+ 2.7	0.0/19.3	31023
1981 EM_{40}	1998 01 19.2	08 04.73	+19 32.4	19.0	−0.97	+ 4.0	0.3/19.4	28611
1990 TM_1	1998 01 19.3	08 05.08	+25 23.3	16.3	−0.84	+ 3.7	1.4/18.4	29658
1996 UQ	1998 01 19.3	08 05.13	+37 31.1	18.5	−1.16	+ 1.1	5.4/16.8	28619
1975 SA_1	1998 01 19.7	08 06.56	+35 46.1	17.5	−1.02	+ 2.4	4.7/17.0	31134
1976 UT_1	1998 01 19.7	08 06.67	+12 49.2	16.9	−1.08	+ 2.9	3.3/21.0	27565
1988 QB	1998 01 19.7	08 06.82	+11 40.6	16.0	−0.98	+ 6.9	3.4/21.6	31136
1981 ED_{10}	1998 01 19.8	08 07.10	+21 42.8	18.4	−1.16	+ 2.1	0.7/19.6	26916
1992 WT_1	1998 01 19.8	08 07.14	+27 03.0	16.6	−1.03	+ 4.9	2.4/18.6	31103
1269 T-1	1998 01 19.9	08 07.55	+32 29.4	18.1	−1.11	+ 0.1	4.9/18.2	31161
4599 P-L	1998 01 20.0	08 07.73	+28 56.8	17.5	−1.05	+ 2.2	3.2/18.6	28319
1995 SU_{32}	1998 01 20.1	08 08.35	+06 12.1	18.8	−0.76	+ 4.7	4.0/23.0	25967
1995 FV	1998 01 20.1	08 08.41	+15 27.7	16.7	−1.06	+ 5.2	1.9/21.0	31141
1979 UH	1998 01 20.2	08 08.55	+16 05.1	15.8	−0.85	+10.6	1.9/21.2	31003
1996 YZ_2	1998 01 20.2	08 08.61	+03 36.3	17.8	−0.83	+ 2.6	5.3/23.2	31113
1996 TO_{13}	1998 01 20.2	08 08.73	+04 12.9	18.9	−0.83	+ 2.9	5.0/23.2	31009
1988 SC	1998 01 20.2	08 09.04	+40 53.6	16.5	−1.30	− 1.1	8.8/17.6	31136
1981 EU_{15}	1998 01 20.3	08 08.97	+11 34.9	17.5	−1.05	+ 2.0	4.0/21.6	31134
1991 VP_7	1998 01 20.3	08 09.00	−01 04.0	18.1	−0.83	+ 2.2	6.5/24.1	30470
1981 ER_{33}	1998 01 20.3	08 09.13	+10 59.5	19.1	−1.06	+ 3.3	3.9/21.8	26921
1996 QE	1998 01 20.3	08 09.20	+02 15.8	18.6	−0.91	+ 5.4	5.9/24.0	28619
1997 YP_{10}	1998 01 20.3	08 09.23	+28 59.7	17.4	−1.24	+ 2.1	4.1/19.0	31129
1979 MU_7	1998 01 20.4	08 09.53	+14 14.8	20.7	−1.10	+ 2.7	2.0/21.4	30779
3042 T-2	1998 01 20.4	08 09.60	+16 42.6	17.6	−1.08	+ 5.8	1.5/21.1	30294
1996 TR_1	1998 01 20.5	08 10.03	+14 20.6	17.0	−0.91	+ 4.4	2.1/21.6	31110
2315 T-2	1998 01 20.6	08 10.25	+17 48.4	19.2	−0.96	+ 3.7	0.9/21.0	16883
1975 TQ_3	1998 01 20.6	08 10.47	+39 58.6	17.3	−1.19	+ 2.9	6.4/17.2	29652
1986 EJ_1	1998 01 20.6	08 10.66	+43 33.7	17.2	−1.30	+ 1.6	7.9/16.5	31135
4109 T-1	1998 01 20.9	08 11.66	+21 55.7	17.9	−0.82	+ 2.8	0.5/20.6	28607
2716 P-L	1998 01 21.0	08 12.10	+17 21.5	20.1	−1.06	+ 4.1	0.9/21.5	27732
1991 VP_4	1998 01 21.1	08 12.67	+21 44.5	17.2	−0.87	+ 5.1	0.6/20.8	20339
1996 UC	1998 01 21.1	08 12.68	+21 58.6	18.0	−0.88	+ 3.3	0.6/20.8	31144
1993 SR_1	1998 01 21.1	08 12.69	+26 36.7	17.4	−1.21	+ 3.6	2.7/20.1	30899
1972 HL	1998 01 21.2	08 13.18	−03 17.1	18.0	−0.77	+ 1.9	5.9/25.4	23787
1988 BL_3	1998 01 21.4	08 13.94	+13 41.2	16.7	−1.15	+ 1.9	2.4/22.4	31098
1992 SU_{14}	1998 01 21.6	08 14.50	+40 32.5	15.3	−1.27	− 1.6	8.2/18.9	31139
9560 P-L	1998 01 21.6	08 14.71	+22 04.4	17.1	−1.15	+ 5.4	0.9/21.2	25076
1996 QP	1998 01 21.6	08 14.77	+12 19.3	19.3	−1.06	+ 5.6	2.8/23.1	27924
1993 UB_1	1998 01 21.7	08 15.00	+57 03.7	16.1	−1.90	− 2.2	14.3/16.9	30291
1996 XY_{25}	1998 01 21.9	08 15.74	+11 40.8	18.5	−0.92	+ 7.0	2.7/23.7	31113
1981 EK_{32}	1998 01 21.9	08 15.92	+11 16.9	19.9	−1.08	+ 2.1	3.4/23.3	26921
1997 YP_{11}	1998 01 22.1	08 16.88	+14 06.0	16.4	−1.09	+ 4.1	2.5/23.2	31129
1994 LR	1998 01 22.2	08 17.25	+28 03.5	16.4	−0.89	+ 5.9	2.5/20.4	31140
1981 EY_{11}	1998 01 22.2	08 17.30	+25 23.2	17.4	−1.20	− 0.5	2.7/21.5	26917
1990 QO_3	1998 01 22.3	08 17.42	+32 48.6	16.4	−1.00	+ 0.8	4.1/20.2	28614
1996 VJ_4	1998 01 22.3	08 17.52	+00 46.1	18.0	−0.79	+ 1.2	5.2/25.7	31112
1994 HD	1998 01 22.3	08 17.87	−25 35.5	16.7	−0.80	+ 3.6	18.8/03.8	25643
1981 ER_{38}	1998 01 22.4	08 18.22	+00 54.5	17.9	−0.86	+ 5.3	7.7/26.6	26922
1980 GG	1998 01 22.5	08 18.43	+24 05.6	16.7	−1.07	+ 7.2	2.0/21.6	31134
1994 GP	1998 01 22.6	08 18.69	+33 18.2	16.2	−1.06	+ 4.0	4.8/19.8	28590
1981 EO_{31}	1998 01 22.6	08 18.78	+15 14.7	19.3	−0.96	+ 3.9	1.6/23.4	26921
1985 RR_3	1998 01 22.6	08 19.01	+07 59.1	17.2	−0.80	+ 4.4	3.4/25.1	31135
1991 SY	1998 01 22.7	08 19.34	+40 59.0	17.1	−1.19	+ 2.9	7.2/18.5	29659
1996 SK_7	1998 01 22.7	08 19.45	+43 23.5	19.4	−1.22	+ 2.0	6.8/18.5	28864
1979 PA	1998 01 22.8	08 19.77	+02 07.9	19.7	−0.92	+ 2.2	5.2/25.9	25338
1989 SG	1998 01 22.9	08 19.93	+30 10.4	15.3	−1.19	+ 0.6	4.9/21.3	31136
1992 QB	1998 01 23.1	08 20.89	+52 12.8	18.5	−1.50	+ 5.0	10.2/15.5	22432
1996 TK_{15}	1998 01 23.1	08 20.91	+00 30.2	18.0	−0.89	+ 4.0	5.8/27.0	29666
1981 EN_{31}	1998 01 23.1	08 21.08	+15 15.2	19.2	−1.06	+ 5.0	1.6/24.0	26921
1991 LQ	1998 01 23.1	08 21.13	+30 17.9	17.2	−1.04	+ 6.9	3.4/20.8	31138
1975 SF_1	1998 01 23.1	08 21.28	+32 37.9	17.1	−1.10	+ 3.2	4.3/20.7	31134
1990 ST_6	1998 01 23.2	08 21.62	+21 26.6	19.4	−0.83	+ 3.7	0.5/22.9	31005
(7319)	1998 01 23.4	08 22.06	+23 51.3	17.3	−1.17	+ 3.8	1.7/22.6	28818
1997 YA_4	1998 01 23.4	08 22.31	+21 13.6	17.3	−1.23	+ 1.7	0.7/23.2	31128
1991 RS_7	1998 01 23.4	08 22.43	+22 38.2	18.2	−0.93	+ 5.3	1.0/22.8	31138
(7644)	1998 01 23.4	08 22.44	−02 24.1	17.8	−0.93	+ 2.6	7.4/27.7	29898
1981 EY_{14}	1998 01 23.5	08 22.47	+16 14.7	16.8	−1.10	+ 1.2	1.5/24.0	31134
1989 TH_3	1998 01 23.5	08 22.89	+18 56.7	20.7	−1.06	+ 4.6	0.2/23.7	25328
3155 T-2	1998 01 23.6	08 22.88	+16 39.9	17.2	−0.82	+ 5.0	0.9/24.2	28620
1991 UK_3	1998 01 23.6	08 23.25	−04 11.3	15.6	−0.80	+ 0.9	9.6/28.1	31138
1985 RS_1	1998 01 23.7	08 23.30	+23 37.5	17.2	−1.10	+ 3.4	1.5/22.9	31135
1993 UR_2	1998 01 23.7	08 23.59	+09 45.5	16.3	−1.01	+ 6.5	4.3/25.8	31140
1981 EM_{39}	1998 01 23.7	08 23.73	+27 11.5	18.8	−1.21	+ 2.4	3.2/22.4	26922
1981 ED_{37}	1998 01 23.8	08 23.78	+25 48.9	18.3	−1.14	+ 3.5	2.2/22.6	28084
6673 P-L	1998 01 23.8	08 23.92	−03 01.7	16.9	−0.74	+ 6.0	6.3/29.2	23680
1981 DP_1	1998 01 23.9	08 24.36	+10 03.7	19.0	−1.07	+ 2.2	3.4/25.5	26914
3327 T-2	1998 01 24.0	08 24.87	+22 35.7	17.5	−0.87	+ 3.6	1.1/23.4	23686
1996 UC_3	1998 01 24.1	08 25.21	+19 06.7	17.9	−0.75	+ 1.7	0.0/24.2	28619
1990 MC	1998 01 24.1	08 25.28	+01 53.2	18.6	−0.79	+ 3.4	4.3/27.7	29942
1995 GW	1998 01 24.2	08 25.50	+35 49.8	15.8	−1.21	+ 3.9	7.7/20.8	31106
1988 VS_6	1998 01 24.2	08 25.80	+12 08.7	17.8	−0.72	+ 2.7	2.0/25.7	31136
1990 JN_1	1998 01 24.3	08 26.06	+17 28.8	17.3	−0.92	+ 3.0	0.6/24.7	31137
2202 T-1	1998 01 24.4	08 26.26	+15 53.4	18.2	−0.89	+ 4.0	1.0/25.1	26192
1996 TJ_9	1998 01 24.4	08 26.37	+14 34.9	18.1	−0.98	+ 3.5	1.6/25.3	31110
1981 ES_{20}	1998 01 24.5	08 26.77	+21 11.5	18.7	−0.99	+ 2.8	0.7/24.2	28314
1981 DW_2	1998 01 24.5	08 27.05	+11 50.9	19.4	−1.08	+ 2.2	2.7/25.8	26914
1997 YS_1	1998 01 24.6	08 27.35	+24 19.2	17.4	−1.06	+ 6.6	2.1/23.5	31127
1996 SR	1998 01 24.6	08 27.35	+14 13.2	20.3	−0.97	+ 4.7	1.7/25.7	29947
1992 HY_6	1998 01 24.7	08 27.60	+23 59.8	17.8	−1.17	+ 6.0	1.9/23.7	31138
1993 TU	1998 01 24.7	08 27.69	+22 58.4	17.0	−1.21	+ 2.5	1.5/24.1	31139
1976 QS	1998 01 24.8	08 27.98	+23 42.9	18.0	−1.21	+ 2.2	1.7/24.1	31095
(7427)	1998 01 25.0	08 29.10	+23 02.8	17.0	−0.99	+ 4.2	1.4/24.3	28833

1996 SS_6	1998 01 25.0	08 29.10	+22 54.8	17.2	−0.91	+ 3.6	1.2/24.3	31142
1993 TG_{39}	1998 01 25.0	08 29.17	+19 14.1	17.5	−1.05	+ 6.2	0.1/25.0	28616
1991 GP_6	1998 01 25.2	08 29.79	+15 45.6	18.4	−1.06	+ 4.0	1.3/25.9	29659
1991 GY_3	1998 01 25.2	08 29.89	+24 08.3	17.3	−1.10	+ 3.3	2.3/24.3	31138
1989 SJ_5	1998 01 25.3	08 30.00	+31 04.6	16.5	−1.17	+ 4.6	4.8/22.8	28085
1981 EY_{28}	1998 01 25.3	08 30.02	+31 20.5	17.9	−1.19	− 0.8	4.3/23.5	28084
1997 WB_{22}	1998 01 25.3	08 30.08	+26 10.1	15.4	−1.10	+ 7.8	2.8/23.7	31121
1990 RG_2	1998 01 25.3	08 30.14	+06 08.5	17.7	−0.77	+ 3.9	3.4/28.1	23671
1996 RM	1998 01 25.3	08 30.15	+39 56.6	18.3	−1.18	− 0.4	6.8/21.9	31110
(7586)	1998 01 25.3	08 30.19	+10 26.6	18.2	−0.89	+ 2.2	2.5/26.9	29597
1981 EJ_{20}	1998 01 25.4	08 30.56	+31 47.3	17.7	−1.12	+ 0.9	5.1/23.2	26918
1996 UG_3	1998 01 25.5	08 31.13	+38 36.5	17.2	−1.13	+ 2.6	5.8/21.7	31144
1986 RB_5	1998 01 25.5	08 31.27	+19 19.3	17.1	−1.10	+ 6.1	0.2/25.5	31004
1996 PY_6	1998 01 25.5	08 31.35	+54 38.6	19.4	−1.66	+ 2.0	11.5/18.2	28319
1994 BA_1	1998 01 25.6	08 31.34	+29 36.9	17.3	−1.11	+ 1.6	4.5/23.7	23343
1981 ET_{10}	1998 01 25.7	08 32.04	+29 27.9	18.0	−1.08	+ 0.8	3.2/24.0	25078
(7327)	1998 01 25.8	08 32.21	+24 53.5	17.9	−1.19	+ 3.6	2.2/24.7	28569
1996 TC_8	1998 01 26.0	08 32.98	+15 11.0	18.3	−1.10	+ 4.1	1.5/26.7	28306
1052 T-2	1998 01 26.0	08 33.34	+19 38.3	19.4	−0.83	+ 2.9	0.2/25.9	25970
1995 OV	1998 01 26.1	08 33.31	+26 22.5	17.7	−1.00	+ 2.2	2.2/24.7	28618
1125 T-2	1998 01 26.1	08 33.39	+17 29.2	18.5	−0.83	+ 3.1	0.4/26.4	29142
1988 DD_3	1998 01 26.1	08 33.67	+10 30.8	17.5	−0.90	+ 0.8	2.7/27.6	25537
4257 P-L	1998 01 26.1	08 33.81	+24 05.7	19.3	−1.17	+ 1.8	2.1/25.3	16035
3100 T-3	1998 01 26.2	08 34.17	+16 35.5	18.0	−1.03	+ 4.9	0.8/26.7	22088
4343 T-3	1998 01 26.3	08 34.26	+04 54.9	16.1	−0.87	+ 5.7	5.4/29.4	29651
1980 VX_2	1998 01 26.3	08 34.49	−22 55.9	17.2	−0.95	− 0.2	15.6/04.4	28882
4041 P-L	1998 01 26.4	08 34.63	+17 54.3	17.6	−1.11	+ 3.2	0.3/26.6	29141
1980 XX	1998 01 26.4	08 34.83	+24 42.7	16.9	−1.15	+ 6.2	2.6/25.2	30287
1996 VP_2	1998 01 26.5	08 35.09	+18 36.6	19.6	−0.84	+ 3.1	0.0/26.5	28867
1991 PC_{18}	1998 01 26.5	08 35.28	+16 48.3	16.5	−0.97	+ 1.3	0.7/26.9	28614
1993 SZ	1998 01 26.6	08 35.91	+13 01.3	16.6	−1.10	+ 4.3	2.3/27.8	28318
1988 CP_1	1998 01 26.9	08 36.70	+17 52.1	17.1	−0.89	+ 4.4	0.2/27.1	31136
1981 EV_{30}	1998 01 26.9	08 36.75	+20 27.9	18.8	−0.98	+ 2.6	0.6/26.6	26920
1996 UT	1998 01 26.9	08 37.12	+17 23.2	16.6	−0.82	+ 3.3	0.3/27.2	31144
1981 EY_{16}	1998 01 27.0	08 37.12	+13 17.5	19.0	−1.09	+ 3.7	2.1/28.0	26918
1989 PT	1998 01 27.0	08 37.31	+15 12.5	17.2	−1.05	+ 6.3	1.2/27.8	28315
1981 EZ_7	1998 01 27.1	08 37.96	+09 49.9	18.8	−0.91	+ 3.4	2.7/29.0	28611
1992 UT_1	1998 01 27.3	08 38.51	+23 25.1	16.9	−1.01	+ 4.7	1.6/26.3	29661
5011 P-L	1998 01 27.4	08 38.73	+10 53.6	18.2	−0.93	+ 2.7	2.6/28.9	28892
1992 FO_3	1998 01 27.4	08 38.89	+16 28.9	17.2	−1.13	+ 4.7	0.9/27.8	29660
1996 ON	1998 01 27.4	08 38.97	+14 41.7	19.3	−1.06	+ 3.1	1.3/28.2	28618
(7429)	1998 01 27.5	08 39.32	+20 17.2	16.0	−0.93	+ 3.1	0.6/27.2	28833
3355 T-3	1998 01 27.5	08 39.53	+05 36.2	19.2	−0.86	+ 3.8	4.1/30.3	20518
1996 TF_{11}	1998 01 27.6	08 40.04	+16 23.0	17.9	−1.03	+ 3.3	0.7/28.1	31142
1990 RW_7	1998 01 27.7	08 39.97	+15 09.1	17.3	−0.83	+ 4.0	1.0/28.4	29134
4031 P-L	1998 01 27.7	08 40.02	+24 05.6	16.6	−1.16	+ 1.0	2.6/26.8	28892
1996 TH_7	1998 01 27.7	08 40.08	+22 39.5	17.6	−0.98	+ 3.3	1.5/26.9	28597
3066 P-L	1998 01 27.8	08 40.75	−01 34.2	17.5	−0.87	+ 3.6	6.8/01.3	30293
1996 UA	1998 01 27.8	08 40.77	+36 42.7	18.2	−1.15	+ 2.1	6.0/24.2	31111
1992 LK	1998 01 27.9	08 40.92	+26 18.6	17.8	−1.12	+ 5.2	2.7/26.2	30896
(8170)	1998 01 28.0	08 41.38	+17 18.9	16.1	−1.08	− 0.3	0.4/28.2	31080
1996 VV_8	1998 01 28.0	08 41.69	+42 13.5	17.6	−1.00	+ 3.9	6.5/22.4	31010
1982 FN	1998 01 28.1	08 41.80	−14 56.2	17.5	−0.89	+ 8.6	12.5/06.4	25078
1996 SK_6	1998 01 28.2	08 42.05	+09 52.4	18.8	−0.81	+ 3.7	2.3/30.1	28319
1990 QM_1	1998 01 28.2	08 42.12	+16 59.8	17.2	−0.83	+ 3.9	0.4/28.5	31137
(7347)	1998 01 28.2	08 42.13	+17 30.0	16.8	−0.86	+ 3.3	0.2/28.4	28818
1992 JQ_3	1998 01 28.2	08 42.32	+15 17.7	17.2	−1.15	+ 3.4	1.2/28.8	31138
(7380)	1998 01 28.3	08 42.88	+19 10.3	17.2	−1.04	+ 5.1	0.3/28.2	28821
1993 QO	1998 01 28.4	08 42.95	+23 04.8	15.8	−1.61	− 7.2	2.2/28.1	31104
1992 PD_6	1998 01 28.4	08 43.02	+22 28.9	17.9	−1.06	+ 4.9	1.6/27.5	22407
1990 QA	1998 01 28.4	08 43.22	+46 55.4	17.1	−1.16	+ 1.5	8.0/22.5	30653
4089 P-L	1998 01 28.6	08 43.88	+05 17.1	18.2	−0.89	+ 4.2	4.1/31.5	28892
1996 TG_7	1998 01 28.6	08 44.10	+22 07.5	17.9	−1.05	+ 3.8	1.3/27.9	28597
1993 FG_{12}	1998 01 28.6	08 44.13	+01 48.9	16.8	−0.75	+ 6.8	5.6/02.0	30291
1993 UN	1998 01 28.8	08 44.52	+18 13.5	17.9	−1.14	+ 4.6	0.1/28.8	28087
1981 US_{14}	1998 01 29.1	08 46.12	+21 19.8	16.8	−1.05	+ 4.6	1.2/28.5	28883
1969 TR_1	1998 01 29.1	08 46.17	+20 11.6	17.0	−1.13	+ 3.9	0.8/28.7	29131
1981 EQ_8	1998 01 29.2	08 46.35	+11 46.2	17.2	−0.97	+ 3.5	2.6/31.0	26916
1981 EK_{30}	1998 01 29.2	08 46.36	+10 05.3	19.1	−1.09	+ 2.3	3.1/30.7	26920
1992 AK_1	1998 01 29.2	08 46.51	+20 05.6	16.4	−0.83	+ 3.9	0.6/28.8	28886
(8239)	1998 01 29.2	08 46.51	+16 46.3	16.8	−0.84	+ 3.7	0.4/29.5	31095
1987 RN_3	1998 01 29.2	08 46.52	+13 07.6	16.5	−0.99	+ 1.1	1.7/30.2	28296
3019 T-3	1998 01 29.2	08 46.60	+06 45.2	18.1	−0.84	+ 4.3	3.3/31.8	25652
1987 BB	1998 01 29.4	08 47.16	+17 42.1	16.1	−0.99	+ 4.2	0.1/29.5	27932
1996 SJ_4	1998 01 29.4	08 47.21	+22 44.3	18.0	−1.17	+ 3.0	1.7/28.5	31142
1996 VV	1998 01 29.4	08 47.37	+24 06.7	17.4	−1.03	+ 4.3	2.1/28.1	31112
1996 PL_2	1998 01 29.5	08 47.85	+18 29.5	17.3	−1.03	+ 7.1	0.3/29.4	31142
1996 MR	1998 01 29.6	08 48.11	+17 16.0	20.7	−1.01	+ 5.0	0.2/29.8	27938
1995 HQ_2	1998 01 29.6	08 48.16	+28 30.7	20.6	−1.10	+ 5.0	3.8/27.3	28302
1279 T-2	1998 01 29.8	08 48.96	+16 06.7	17.9	−1.12	+ 5.0	0.7/30.2	22972
1989 UF_1	1998 01 29.9	08 49.37	+15 43.0	16.7	−1.08	+ 3.7	0.8/30.4	30781
1981 EJ_3	1998 01 29.9	08 49.47	+17 33.6	17.0	−1.11	− 1.5	0.1/30.0	26915
1989 JF	1998 01 29.9	08 49.49	+23 44.1	16.7	−1.21	+ 3.5	2.3/28.8	31136
6516 P-L	1998 01 30.1	08 49.97	+28 16.3	18.8	−1.29	+ 2.7	4.3/28.2	29141
1996 TK_{48}	1998 01 30.2	08 50.46	+16 42.4	17.6	−0.95	+ 4.4	0.3/30.5	29631
1997 YF_{14}	1998 01 30.3	08 50.90	+14 58.3	17.4	−1.04	+ 1.2	1.2/31.0	31130
1995 OY_3	1998 01 30.3	08 51.05	+16 59.3	21.4	−0.82	+ 3.5	0.2/30.5	25645
1981 EY_{40}	1998 01 30.4	08 51.47	+15 28.2	19.8	−0.93	+ 3.8	0.7/30.9	22271
1979 QJ_1	1998 01 30.4	08 51.53	+13 02.3	16.0	−0.99	+ 9.0	2.0/31.7	13598
1996 TW_8	1998 01 30.5	08 51.63	+01 09.4	16.5	−1.12	− 3.7	6.2/01.8	31142
1996 UF_4	1998 01 30.6	08 52.08	+24 47.2	18.2	−0.95	+ 3.7	2.3/29.1	31144
1991 VH_4	1998 01 30.6	08 52.36	+21 56.6	16.9	−0.86	+ 4.7	1.3/29.7	29135
1993 FT_4	1998 01 30.7	08 52.49	+18 03.3	16.3	−0.83	+ 4.0	0.1/30.6	25975
1997 YO_{18}	1998 01 30.7	08 52.50	+24 00.5	17.3	−1.12	+ 2.0	2.4/29.5	31131
1997 YB_{14}	1998 01 30.7	08 52.72	+23 42.2	15.6	−0.91	+13.1	2.7/28.9	31130
(7388)	1998 01 30.8	08 52.94	+03 13.6	16.0	−0.77	+ 5.4	4.7/03.4	28823
1991 SV	1998 01 30.8	08 52.98	+31 09.9	16.5	−0.98	+ 5.1	4.5/27.6	31138
1981 ES_{42}	1998 01 30.9	08 53.18	+20 46.2	18.0	−0.98	+ 3.4	1.4/30.2	27931
1991 GG_7	1998 01 30.9	08 53.53	+25 25.3	16.7	−1.07	+ 2.8	3.7/29.3	31100
1997 WA_{22}	1998 01 31.0	08 53.65	+26 55.2	17.2	−1.16	+ 6.9	3.6/28.8	31120
6030 P-L	1998 01 31.2	08 54.77	+13 46.8	17.6	−0.71	+ 3.4	0.9/01.1	29141
1993 VB_2	1998 01 31.4	08 55.48	+13 53.4	16.5	−1.06	+ 4.0	1.5/01.2	30783

1992 RO_1	1998 01 31.5	08 55.66	+15 50.0	18.5	−0.97	+ 7.3	0.5/31.9 30782
1990 TJ_3	1998 01 31.7	08 56.46	+23 05.5	16.4	−1.13	+ 6.4	2.5/30.4 30781
1352 T-2	1998 01 31.7	08 56.58	+16 16.8	16.3	−1.01	+ 4.2	0.4/32.0 15080
1994 GH_9	1998 01 31.7	08 56.81	−04 40.9	15.9	−0.81	+ 4.2	9.9/06.2 27937
(7544)	1998 01 31.8	08 56.83	+16 26.9	16.3	−0.88	+ 3.4	0.3/32.0 29588
1992 UO_3	1998 01 31.8	08 56.88	+36 12.6	17.5	−1.13	+ 2.9	5.9/27.6 29661
1981 EQ_6	1998 01 31.8	08 57.02	+24 45.6	19.6	−1.13	0.0	2.7/30.5 26915
1996 RD_1	1998 01 31.8	08 57.06	+12 59.3	18.2	−1.08	+ 5.4	1.6/01.8 31142
1985 RG	1998 01 31.8	08 57.28	+18 42.5	17.5	−1.08	+ 4.2	0.6/31.6 31135
1990 SV_{12}	1998 01 31.9	08 57.29	+20 22.7	18.0	−0.84	+ 3.6	0.9/31.2 28085
1996 TO	1998 01 31.9	08 57.36	+16 08.0	18.3	−1.03	+ 5.6	0.4/01.2 28864
1984 JR	1998 01 31.9	08 57.36	+19 40.2	19.0	−1.04	+ 5.3	0.9/31.4 25636
1995 UQ_5	1998 01 31.9	08 57.48	+19 08.2	16.9	−0.88	+ 1.5	0.5/31.6 30666
1991 RK_{11}	1998 01 31.9	08 57.69	+16 16.5	15.9	−0.92	+ 9.1	0.3/01.2 29659
1997 YK_4	1998 02 01.0	08 57.98	+24 35.2	17.0	−0.87	+ 2.8	2.0/30.4 31128
1981 EH_8	1998 02 01.1	08 58.20	+20 05.8	18.3	−1.20	− 0.5	1.4/31.6 26916
1995 GA	1998 02 01.1	08 58.25	+15 55.7	17.0	−1.05	+ 8.6	0.5/01.5 25223
1993 VC_5	1998 02 01.1	08 58.43	−03 29.5	16.8	−0.94	+18.7	8.8/08.7 30472
1997 YS_{10}	1998 02 01.2	08 58.60	+12 21.3	16.2	−1.01	+ 4.6	1.8/02.3 31129
1978 RL_1	1998 02 01.2	08 58.91	+16 23.0	17.9	−0.78	+ 3.6	0.2/01.5 21964
1978 VT_{10}	1998 02 01.2	08 58.91	+14 20.6	18.4	−1.02	+ 4.2	1.0/01.9 28314
1992 UA_3	1998 02 01.2	08 58.96	+23 38.4	17.0	−1.00	+ 4.0	2.3/30.8 31139
1981 EW_{28}	1998 02 01.3	08 58.88	+14 34.1	18.2	−1.09	+ 2.8	1.1/01.8 26920
1993 GM_1	1998 02 01.3	08 58.95	+10 14.7	16.2	−0.82	+ 3.2	2.4/02.9 28616
1985 PC_2	1998 02 01.4	08 59.47	+18 44.2	17.3	−0.85	+ 4.8	0.5/01.0 21970
1996 TT_{11}	1998 02 01.4	08 59.55	+14 47.1	18.4	−0.94	+ 4.2	0.7/02.0 29666
1993 SQ_{10}	1998 02 01.5	08 59.88	+23 13.3	16.2	−1.16	+ 2.8	3.0/31.3 31139
1994 CJ_2	1998 02 01.6	09 00.27	+17 23.1	16.9	−0.94	+ 7.5	0.1/01.5 29662
1991 RB_{12}	1998 02 01.7	09 00.52	+19 55.8	17.0	−1.07	− 0.4	1.0/01.2 31138
1981 PF	1998 02 01.7	09 00.65	+12 16.1	18.7	−0.95	+ 7.2	1.4/02.9 28611
1996 RJ_5	1998 02 01.7	09 00.67	+21 44.8	18.7	−0.99	+ 2.4	1.5/31.7 28319
1992 SD_1	1998 02 01.8	09 01.04	+32 35.5	17.4	−1.09	+ 4.1	5.3/29.2 28086
1996 RC_1	1998 02 01.8	09 01.12	+16 34.5	18.5	−1.08	+ 5.6	0.1/01.9 29319
4333 T-1	1998 02 01.8	09 01.15	+19 00.1	17.4	−0.84	+ 4.3	0.7/01.4 23533
1978 WB	1998 02 01.8	09 01.35	+20 48.3	17.2	−1.07	+ 4.6	1.6/01.0 27725
1981 EF_{12}	1998 02 01.9	09 01.54	+10 13.0	18.7	−1.09	+ 2.6	2.8/03.3 31134
1981 SE_2	1998 02 02.0	09 01.76	+19 16.7	18.0	−1.03	+ 5.3	0.8/01.5 27566
1986 RD	1998 02 02.0	09 02.01	+07 05.0	18.4	−0.83	+ 3.8	2.7/04.4 30288
1996 TV_1	1998 02 02.0	09 02.01	+13 37.4	17.1	−1.02	+ 6.2	1.3/02.8 31142
1981 EM_{18}	1998 02 02.2	09 02.58	+21 47.1	16.1	−1.18	+ 1.4	2.2/01.3 29132
1981 EU_6	1998 02 02.2	09 02.61	+05 18.8	19.8	−1.01	+ 3.5	3.6/04.7 27303
1996 OL	1998 02 02.2	09 02.63	+21 16.4	18.4	−1.09	+ 5.9	1.6/01.2 31108
1991 VX_5	1998 02 02.2	09 02.69	+28 50.9	16.5	−0.90	+ 6.0	3.9/30.1 30978
1993 AD	1998 02 02.3	09 03.03	+22 45.5	16.0	−1.04	− 1.0	2.6/01.3 27936
1996 TE_8	1998 02 02.3	09 03.10	+05 18.4	19.1	−0.87	+ 6.7	3.7/05.4 28307
1996 SP_7	1998 02 02.3	09 03.34	+05 10.8	20.6	−0.90	+ 3.4	3.4/05.1 28597
1996 RU_2	1998 02 02.3	09 03.45	+18 22.7	18.1	−1.15	+ 4.9	0.6/02.1 30902
1982 TL_2	1998 02 02.4	09 03.36	+08 23.3	16.4	−1.04	+ 2.8	3.7/04.2 31135
1990 UZ_1	1998 02 02.5	09 03.78	+16 26.7	16.6	−1.08	+ 7.3	0.1/02.6 25213
(7444)	1998 02 02.5	09 03.79	+26 27.6	17.3	−1.01	+ 2.1	3.0/31.5 28837
1997 WQ_{22}	1998 02 02.5	09 04.26	+16 34.1	19.2	−1.13	+ 4.0	0.1/02.6 31121
1995 SX_{12}	1998 02 02.6	09 04.61	+16 14.8	18.1	−0.85	+ 3.7	0.1/02.8 30761
1996 WC_3	1998 02 02.7	09 04.66	+02 32.0	19.5	−0.86	+ 4.8	4.2/06.2 28891
1990 RK_2	1998 02 02.7	09 04.84	+13 44.4	17.0	−1.11	+ 5.8	1.2/03.4 28085
1996 VJ	1998 02 02.9	09 05.38	+33 13.1	17.1	−0.92	+ 3.6	5.0/29.9 29631
1985 RJ_5	1998 02 03.1	09 06.50	+21 30.7	17.5	−1.10	+ 4.6	1.9/02.1 16697
1981 ET_{13}	1998 02 03.2	09 06.62	+13 32.9	17.3	−1.15	+ 2.5	1.3/03.8 21966
1993 TE_5	1998 02 03.2	09 06.90	+13 49.4	17.4	−1.11	+ 4.0	1.0/03.9 28888
1991 GT_2	1998 02 03.3	09 07.48	+00 16.8	17.5	−0.95	+ 5.2	5.4/07.3 29658
4790 P-L	1998 02 03.5	09 07.82	+18 46.6	19.6	−0.95	+ 3.5	0.8/03.0 28312
1996 XR_6	1998 02 03.5	09 07.96	+22 02.6	19.1	−1.01	+ 2.9	1.8/02.3 28606
5069 T-2	1998 02 03.5	09 08.03	+04 47.0	17.2	−0.92	+ 3.6	4.1/06.3 28088
4607 P-L	1998 02 03.5	09 08.05	+24 51.7	17.1	−1.01	+ 3.3	3.1/01.6 20830
1996 TX_8	1998 02 03.6	09 08.66	+28 32.6	18.5	−1.37	− 1.3	4.0/01.7 29631
1985 SV_2	1998 02 03.6	09 08.66	+10 54.8	17.4	−1.05	+ 2.7	2.0/05.0 28295
1996 UB	1998 02 03.7	09 08.87	+14 56.3	16.8	−0.88	+ 3.8	0.5/04.1 31144
1979 UR	1998 02 03.7	09 09.06	+24 54.6	17.6	−1.02	+ 3.1	2.8/01.9 23969
1996 TN_{10}	1998 02 03.7	09 09.06	+27 37.7	16.5	−0.99	+ 1.5	3.7/01.4 28890
1993 VJ_4	1998 02 03.8	09 09.43	+20 14.0	17.9	−1.12	+ 4.3	1.4/03.0 28087
3078 P-L	1998 02 03.8	09 09.47	+12 56.3	16.8	−1.09	+ 1.7	1.5/04.6 30914
1979 MZ_4	1998 02 03.9	09 09.65	+18 53.3	19.2	−0.93	+ 6.3	0.8/03.3 30778
1979 SU_{11}	1998 02 03.9	09 09.66	+18 57.5	17.3	−0.81	+ 3.9	0.7/03.3 28882
1981 EZ_{42}	1998 02 03.9	09 09.80	+15 03.6	18.8	−1.07	+ 4.9	0.5/04.3 28581
1996 VQ_6	1998 02 04.0	09 10.02	+34 36.0	18.1	−1.03	+ 5.3	5.4/30.2 28891
1991 VL_{10}	1998 02 04.0	09 10.03	+14 38.2	18.2	−0.85	+ 4.3	0.5/04.5 30290
3196 T-3	1998 02 04.0	09 10.05	+19 20.0	18.8	−1.01	+ 4.8	1.0/03.3 28088
1985 TW	1998 02 04.0	09 10.06	+18 00.9	18.0	−1.04	+ 4.3	0.6/03.7 28883
1996 TZ_{20}	1998 02 04.1	09 10.30	+16 34.7	18.7	−0.88	+ 3.5	0.1/04.0 31009
1981 EL_{31}	1998 02 04.1	09 10.48	+10 21.8	17.7	−0.98	+ 7.5	2.6/05.7 26921
1979 QT_8	1998 02 04.1	09 10.60	+18 01.4	17.7	−1.11	+ 3.9	0.6/03.8 31134
1996 TV_{17}	1998 02 04.2	09 10.98	+24 00.5	20.9	−0.96	+ 3.4	2.3/02.5 30279
4060 T-2	1998 02 04.2	09 11.11	+15 04.9	18.8	−0.89	+ 4.9	0.4/04.6 28609
1983 UG	1998 02 04.2	09 11.15	+24 51.1	16.9	−1.16	+ 5.9	3.4/02.3 31135
1991 GH_{10}	1998 02 04.3	09 11.08	+28 31.5	16.9	−1.10	+ 4.5	5.0/01.4 29942
1993 FE_{31}	1998 02 04.4	09 11.63	−05 31.2	16.5	−0.71	+ 6.3	5.9/10.7 25731
1994 AD	1998 02 04.4	09 11.82	+18 03.4	17.1	−1.01	+ 4.0	0.8/04.0 28087
1991 RQ_{11}	1998 02 04.4	09 11.85	+16 31.8	16.6	−0.88	+10.7	0.1/04.4 28615
1981 EA_{23}	1998 02 04.5	09 12.19	+25 03.6	18.6	−1.06	+ 1.8	3.1/02.7 26919
1990 RV	1998 02 04.5	09 12.20	+17 20.7	15.8	−0.83	+ 4.8	0.4/04.3 29134
1995 DY_1	1998 02 04.5	09 12.30	+08 31.3	18.4	−1.05	+ 5.4	2.7/06.4 31141
1991 UC	1998 02 04.6	09 12.44	+16 04.2	16.5	−0.89	+ 3.6	0.0/04.7 22815
1981 EC_{35}	1998 02 04.6	09 12.47	+12 27.6	19.7	−1.02	+ 6.7	1.4/05.6 26921
1996 TX_7	1998 02 04.6	09 12.74	+14 37.6	17.9	−1.05	+ 6.5	0.6/05.0 30785
1990 SX	1998 02 04.7	09 12.87	+22 17.9	17.5	−0.89	+ 1.6	1.7/03.4 25529
1982 JE_1	1998 02 04.7	09 12.95	+24 07.6	17.7	−1.13	+ 5.6	3.0/02.9 27931
(8227)	1998 02 04.7	09 13.01	+18 21.8	18.0	−0.78	+ 3.7	0.6/04.2 31092
(8217)	1998 02 04.7	09 13.05	+13 22.6	18.1	−1.05	+ 5.4	1.0/05.4 31090
1990 VX_1	1998 02 04.7	09 13.08	+13 31.2	17.3	−1.13	+ 4.9	1.0/05.4 22592
1973 SF_6	1998 02 04.8	09 13.44	+08 57.8	17.5	−1.03	+ 6.3	2.5/06.6 28610
1986 TH	1998 02 04.8	09 13.55	+15 21.3	16.8	−1.14	+ 2.6	10.2/25.0 31097
1996 RD_4	1998 02 04.9	09 13.76	+36 07.4	17.7	−1.05	+ 3.9	5.9/30.8 28890
1992 RJ_3	1998 02 04.9	09 13.97	+22 13.8	17.6	−1.15	+ 2.2	2.4/03.7 28615

1996 PQ	1998 02 05.0	09 14.23	+13 21.9	16.9	−0.97	+	8.5	1.1/05.8	30785
1985 TJ_1	1998 02 05.1	09 14.40	+31 41.5	17.3	−0.95	+	2.7	4.5/01.3	31004
1996 RS_5	1998 02 05.1	09 14.43	+35 36.4	16.7	−1.06	+	1.7	5.8/31.7	29666
1987 UF_5	1998 02 05.1	09 14.43	+24 52.9	17.1	−0.96	+	4.2	2.8/03.0	21257
1401 T-2	1998 02 05.2	09 14.68	+15 46.1	19.4	−1.02	+	4.0	0.1/05.3	24237
1993 VN_2	1998 02 05.4	09 15.71	+14 27.1	17.2	−1.04	+	5.8	0.5/05.8	28616
1981 EO_{25}	1998 02 05.5	09 16.00	−06 49.6	18.6	−0.71	+	7.1	6.7/12.4	26919
1989 CE_8	1998 02 05.5	09 16.04	+01 26.1	16.1	−0.92	+	2.4	5.2/08.9	21571
(7605)	1998 02 05.5	09 16.27	+11 45.7	15.9	−1.05	−	2.4	1.3/06.3	29602
1986 QO_4	1998 02 05.6	09 16.47	+24 27.1	17.1	−1.19	+	2.9	3.3/03.8	22810
1995 SR	1998 02 05.6	09 16.63	−22 02.7	20.0	−0.91	+	3.0	10.7/15.4	27328
4354 T-3	1998 02 05.7	09 16.69	+16 20.5	17.3	−1.07	+	7.2	0.2/05.6	29669
2252 T-2	1998 02 05.7	09 16.74	+26 11.9	18.1	−1.02	+	2.1	3.4/03.4	19329
1996 TL_{12}	1998 02 05.7	09 16.93	+36 10.9	17.2	−1.08	+	3.1	6.0/31.8	31142
1977 DY_3	1998 02 05.7	09 17.06	+18 35.7	17.9	−0.82	+	3.7	0.7/05.1	26187
1986 VQ_2	1998 02 05.8	09 17.16	+10 05.7	17.7	−1.09	+	3.5	2.1/07.1	29095
1981 EO_{44}	1998 02 05.8	09 17.44	+16 27.2	19.4	−1.08	+	4.0	0.3/05.7	26923
1993 SQ_5	1998 02 05.9	09 17.63	+20 09.8	17.4	−1.16	+	3.5	2.0/05.0	31104
2610 P-L	1998 02 05.9	09 17.73	+12 27.3	18.5	−0.96	+	5.4	1.1/06.8	28891
1987 ON	1998 02 05.9	09 17.93	+08 16.4	17.4	−0.86	+	7.3	2.2/08.0	25424
1981 EX_{35}	1998 02 06.0	09 17.99	+04 02.2	19.9	−1.04	+	3.5	4.7/08.6	26921
1993 FR_{44}	1998 02 06.0	09 18.16	+17 45.7	15.6	−0.88	+	2.4	0.7/05.6	28616
1979 MC_3	1998 02 06.0	09 18.21	+13 40.0	19.4	−0.96	+	5.0	0.7/06.6	30778
1998 AN	1998 02 06.1	09 18.50	+17 35.1	16.0	−0.96	+	2.3	0.7/05.7	31131
1990 RE_5	1998 02 06.1	09 18.75	+21 43.7	16.5	−1.00	+	0.5	2.0/04.9	28885
1981 ES_{32}	1998 02 06.2	09 18.81	+12 26.5	19.1	−1.14	+	1.6	1.3/06.9	22271
1992 SW_{10}	1998 02 06.2	09 19.17	+33 06.0	15.8	−1.13	+	0.9	7.3/02.6	23538
1989 TW_3	1998 02 06.3	09 19.23	+16 01.0	19.4	−1.02	+	6.2	0.1/06.2	28613
1981 EV_{47}	1998 02 06.3	09 19.37	+03 26.5	19.2	−0.85	+	6.4	3.8/09.6	26923
1990 OE_5	1998 02 06.3	09 19.51	+04 50.7	17.8	−0.88	+	3.2	3.3/08.9	21574
1993 HG	1998 02 06.4	09 19.91	+17 42.2	17.6	−0.84	+	3.8	0.7/06.0	23676
1996 VC_1	1998 02 06.5	09 20.23	+14 30.3	17.7	−0.85	+	3.8	0.3/06.8	28866
1996 VJ_2	1998 02 06.5	09 20.24	+08 00.4	18.2	−1.03	+	5.5	2.8/08.4	28866
1981 EZ_{24}	1998 02 06.7	09 20.78	+01 30.8	18.2	−0.85	+	7.1	4.8/10.6	26919
1981 EN_6	1998 02 06.8	09 21.15	+07 25.2	19.5	−1.06	+	3.3	2.9/08.6	26915
1981 EF_3	1998 02 06.8	09 21.50	+03 28.5	18.1	−1.03	+	3.5	5.1/09.6	28580
6214 P-L	1998 02 06.8	09 21.54	+07 11.9	17.4	−0.98	+	5.0	3.6/08.9	25442
1993 FB_{23}	1998 02 06.8	09 21.54	+07 30.2	18.4	−0.75	+	4.0	2.2/08.9	26191
1989 RF	1998 02 06.9	09 21.82	+09 35.9	17.3	−0.75	+	3.8	1.5/08.5	25638
1981 EC_{11}	1998 02 07.0	09 22.03	+11 40.1	19.4	−0.93	+	3.2	1.2/07.9	21966
1996 PW_6	1998 02 07.0	09 22.30	+16 29.9	18.0	−1.03	+	4.2	0.4/06.8	28890
(7418)	1998 02 07.1	09 22.42	+14 39.8	15.5	−0.95	+	8.7	0.3/07.3	28831
2607 P-L	1998 02 07.1	09 22.49	+07 04.2	18.0	−0.88	+	5.9	3.0/09.4	28891
4393 T-1	1998 02 07.1	09 22.60	+17 43.1	18.4	−0.83	+	4.5	0.7/06.6	31023
1996 MS	1998 02 07.1	09 22.72	+17 14.9	21.4	−0.93	+	5.8	0.5/06.7	28319
3196 T-1	1998 02 07.2	09 22.91	+12 15.6	16.6	−0.91	+	4.0	1.2/08.0	23791
1993 FM_{16}	1998 02 07.3	09 23.17	+23 50.0	16.0	−0.83	+	4.1	2.5/05.1	28887
1988 DH_1	1998 02 07.3	09 23.19	+12 27.7	16.1	−0.98	+	8.9	1.3/08.1	31136
1017 T-3	1998 02 07.3	09 23.22	+08 28.9	17.4	−0.89	+	2.5	2.0/08.9	31023
1990 SJ_{16}	1998 02 07.3	09 23.28	+12 32.8	17.2	−0.83	+	2.9	0.8/08.0	29658
1991 VC_2	1998 02 07.3	09 23.34	+01 45.7	16.7	−0.80	+	4.6	4.2/11.0	28615
1298 T-2	1998 02 07.4	09 23.93	+09 28.2	17.0	−0.97	+	7.8	2.6/09.1	27939
1996 VB_9	1998 02 07.6	09 24.37	+12 52.0	17.0	−0.68	+	4.2	0.6/08.3	29320
3295 T-2	1998 02 07.6	09 24.73	+11 14.6	18.6	−0.94	+	6.7	1.3/08.7	29142
(7415)	1998 02 07.7	09 25.14	+16 55.5	17.8	−0.78	+	4.1	0.5/07.3	28830
1993 FU_{35}	1998 02 07.8	09 25.13	+17 14.6	16.3	−0.81	+	4.4	0.6/07.3	31104
1996 OK	1998 02 07.8	09 25.13	+17 46.0	19.4	−1.06	+	7.5	0.9/07.1	28077
9542 P-L	1998 02 07.8	09 25.53	+19 42.2	18.1	−0.87	+	4.2	1.4/06.7	28607
1996 VR_{30}	1998 02 07.9	09 25.59	+07 04.5	16.4	−0.81	+	2.6	2.4/09.9	30903
1991 XS	1998 02 08.0	09 26.06	−01 29.8	16.7	−0.81	+	3.2	5.9/12.3	28585
1993 FO_{34}	1998 02 08.0	09 26.07	+09 08.9	17.9	−0.75	+	4.9	1.6/09.6	28588
1993 CO	1998 02 08.0	09 26.11	+19 14.4	15.7	−0.89	+	4.0	1.4/07.0	28887
1992 PT	1998 02 08.0	09 26.28	+13 51.2	19.3	−0.99	+	4.8	0.4/08.4	28317
1996 US	1998 02 08.2	09 26.85	+22 06.4	18.5	−0.98	+	3.8	2.1/06.5	28891
1992 SQ_{26}	1998 02 08.2	09 27.15	+18 20.1	17.9	−0.94	+	5.8	1.2/07.4	29661
1995 PC	1998 02 08.3	09 27.12	+15 26.3	20.0	−0.78	+	3.7	0.1/08.2	28889
1971 US	1998 02 08.3	09 27.36	+19 59.7	17.2	−1.10	+	4.9	2.0/07.2	31095
1981 EY_{35}	1998 02 08.5	09 28.06	+19 56.0	17.1	−1.13	+	3.9	2.1/07.4	28314
1996 VL	1998 02 08.6	09 28.36	+21 07.7	18.5	−1.08	+	3.7	2.0/07.1	28866
1993 XY	1998 02 08.8	09 29.42	+07 33.7	17.6	−0.95	+	6.6	3.2/10.8	28087
4545 P-L	1998 02 09.0	09 30.03	+12 55.7	17.0	−0.84	+	4.3	0.6/09.5	17836
1989 RQ_1	1998 02 09.1	09 30.55	+11 49.0	17.8	−0.99	+	7.1	0.9/10.0	28884
2200 T-2	1998 02 09.1	09 30.74	+14 52.4	18.8	−1.00	+	4.7	0.1/09.2	29314
1994 AE_9	1998 02 09.2	09 30.70	+13 22.4	19.4	−0.99	+	4.4	0.5/09.5	23982
1982 HO_1	1998 02 09.2	09 30.94	+26 42.8	16.9	−1.17	+	6.2	4.8/06.1	31004
1996 VK_{38}	1998 02 09.3	09 31.15	+08 59.7	16.4	−0.84	+	6.2	1.8/10.9	29320
1993 BB_6	1998 02 09.3	09 31.30	+16 16.7	17.1	−0.87	+	3.8	0.5/08.9	29661
1993 FZ_4	1998 02 09.5	09 32.11	+15 44.5	19.0	−0.76	+	4.2	0.3/09.3	26190
4166 T-1	1998 02 09.5	09 32.33	+28 35.3	19.0	−0.89	+	2.6	3.8/06.0	25436
1979 MW_2	1998 02 09.6	09 32.50	+12 08.7	18.5	−0.79	+	4.7	0.7/10.3	28610
1995 EN	1998 02 09.8	09 33.17	+22 10.7	18.2	−1.19	+	4.0	3.1/08.0	31141
1994 CY_{11}	1998 02 09.8	09 33.40	+20 45.3	17.5	−0.99	+	2.6	2.9/08.4	23864
(7489)	1998 02 09.9	09 33.53	−03 15.1	19.1	−0.78	+	5.7	4.6/15.0	29087
1981 EQ_{32}	1998 02 10.0	09 33.97	+03 38.1	19.0	−0.84	+	4.2	2.9/12.9	28839
1996 UC_4	1998 02 10.0	09 34.06	+20 24.5	18.3	−0.95	+	4.2	2.0/08.5	31009
1992 WN_3	1998 02 10.0	09 34.07	+29 23.2	16.4	−0.99	+	5.1	5.3/06.1	21799
1996 SH_7	1998 02 10.0	09 34.22	+18 49.3	18.4	−1.02	+	4.6	1.4/09.0	28864
1991 HM	1998 02 10.1	09 34.32	+33 21.3	17.0	−1.12	+	5.2	6.9/04.9	28316
1981 EX_{29}	1998 02 10.1	09 34.52	+10 45.1	18.6	−1.01	+	1.2	1.2/11.0	26920
1981 ED_{26}	1998 02 10.2	09 34.90	+07 37.5	17.9	−0.98	+	6.9	2.9/12.1	26919
1992 ML	1998 02 10.2	09 34.92	+15 03.7	17.2	−1.07	+	4.6	0.2/10.1	27913
(7529)	1998 02 10.3	09 35.23	+09 01.1	17.5	−0.94	+	5.4	1.8/11.7	29293
1992 OP_5	1998 02 10.3	09 35.36	+10 36.0	17.6	−1.01	+	6.0	1.4/11.3	28086
1991 GW	1998 02 10.3	09 35.42	+29 33.6	17.5	−1.15	+	4.5	6.6/06.3	28072
1995 MG_1	1998 02 10.4	09 35.46	+09 51.0	16.8	−0.90	+	8.1	1.6/11.7	29664
1996 TW_{10}	1998 02 10.4	09 35.68	+15 17.6	16.8	−0.99	+	5.7	0.3/10.2	29140
1992 SF_{14}	1998 02 10.4	09 35.75	−13 10.6	18.6	−0.91	+	4.4	8.1/18.6	27914
1992 OY_2	1998 02 10.5	09 35.83	+15 14.3	17.6	−0.96	+	6.2	0.3/10.3	29660
3109 P-L	1998 02 10.5	09 36.21	+04 52.3	18.4	−0.88	+	1.7	2.9/12.8	14628
1996 TN_{19}	1998 02 10.6	09 36.24	+15 19.0	19.2	−1.01	+	4.9	0.3/10.3	29140
4619 P-L	1998 02 10.6	09 36.32	+16 51.7	17.4	−1.09	+	4.3	1.2/10.0	30914
1981 ES_{47}	1998 02 10.6	09 36.50	+18 29.9	19.0	−1.08	+	5.2	1.6/09.6	22697

1996 TV_{10}	1998 02 10.7	09 36.80	+24 51.1	17.0	−1.15	+ 5.1	4.2/08.0	30902
1997 YO_7	1998 02 10.7	09 36.97	+25 25.3	17.0	−0.84	+ 7.2	3.7/07.4	31129
2651 P-L	1998 02 10.8	09 37.15	+18 40.5	20.0	−1.01	+ 3.6	1.4/09.7	21977
1988 VS_2	1998 02 10.8	09 37.30	−04 52.0	17.3	−0.87	+ 5.6	6.0/16.3	29656
1996 VU_2	1998 02 11.0	09 37.99	+12 29.1	17.1	−0.82	+ 4.7	0.5/11.5	28867
4250 T-3	1998 02 11.3	09 39.03	+13 55.7	18.3	−0.97	+ 6.2	0.0/11.3	16884
(7366)	1998 02 11.3	09 39.07	+23 34.6	16.3	−0.84	+ 3.8	2.7/08.8	29587
1996 TR_{41}	1998 02 11.3	09 39.25	+16 08.8	17.1	−0.91	+ 6.5	0.8/10.8	31111
1996 RL_4	1998 02 11.4	09 39.41	+25 19.5	18.8	−1.12	+ 1.5	3.9/08.9	28088
1996 OJ_2	1998 02 11.4	09 39.64	+06 04.3	18.7	−1.07	+ 2.5	2.7/13.3	28319
1992 CU_2	1998 02 11.5	09 39.80	+04 57.8	18.2	−0.80	+ 2.6	2.5/13.8	29135
2561 P-L	1998 02 11.5	09 39.83	+34 19.9	16.7	−1.11	+ 1.9	7.3/06.3	29668
1996 RE_4	1998 02 11.6	09 40.17	+32 26.8	17.5	−1.08	+ 2.8	5.6/06.9	31142
1981 EC_{38}	1998 02 11.6	09 40.33	+09 39.6	19.5	−1.03	+ 5.2	1.6/12.7	28070
1981 EC_{21}	1998 02 11.6	09 40.50	+20 51.3	17.8	−1.00	+ 2.9	2.8/10.0	28084
1993 HH	1998 02 11.6	09 40.62	+39 33.1	16.6	−1.00	+ 2.4	7.6/04.4	30979
1996 VB_{15}	1998 02 11.7	09 40.60	+19 18.9	19.2	−0.83	+ 4.0	1.7/10.3	28603
3308 T-1	1998 02 11.7	09 40.74	+12 58.0	17.9	−0.79	+ 4.3	0.3/12.0	26193
1990 RH_7	1998 02 11.7	09 40.75	+17 00.8	18.5	−0.82	+ 4.3	0.9/10.9	23671
1984 SK_1	1998 02 11.7	09 40.97	+17 15.7	18.5	−0.79	+ 3.1	0.8/10.9	28883
1981 ER_{28}	1998 02 11.9	09 41.77	+30 50.2	19.4	−1.10	+ 1.3	5.2/08.0	26920
1982 UZ_9	1998 02 12.0	09 41.76	−11 42.3	18.1	−0.82	+ 4.4	7.3/19.6	28839
1992 AP_1	1998 02 12.0	09 41.83	+12 47.5	16.1	−0.81	+ 4.0	0.3/12.3	28316
1996 VS_{30}	1998 02 12.0	09 41.87	+15 51.5	16.5	−0.91	+ 3.7	0.6/11.5	28868
1979 MX_7	1998 02 12.0	09 41.96	+05 08.0	19.6	−0.95	+ 3.2	2.8/14.2	30779
1985 RN_4	1998 02 12.0	09 42.00	+17 33.2	20.2	−1.01	+ 5.0	1.2/11.1	31135
1993 TQ_{23}	1998 02 12.0	09 42.21	+16 09.9	16.3	−1.02	+ 6.2	1.1/11.5	25228
1981 EN_{25}	1998 02 12.1	09 42.14	+10 29.1	17.3	−0.95	+ 7.1	1.5/13.0	26919
2034 T-2	1998 02 12.1	09 42.60	+15 23.2	18.0	−0.81	+ 4.1	0.6/11.8	30888
1996 VG_7	1998 02 12.2	09 42.53	−13 32.5	18.0	−0.84	+ 6.4	9.1/21.2	28602
1996 WQ	1998 02 12.2	09 42.70	+05 53.8	16.0	−1.06	− 0.3	3.1/13.8	28891
1996 TR_9	1998 02 12.2	09 42.94	+14 36.4	18.4	−1.01	+ 6.6	0.3/12.0	31142
1991 FD	1998 02 12.3	09 43.16	−06 24.2	15.6	−0.73	+21.0	8.6/20.5	25426
1996 PK	1998 02 12.3	09 43.19	+17 46.7	16.9	−1.07	+ 4.1	1.7/11.3	31142
2149 T-1	1998 02 12.3	09 43.24	+21 41.3	16.4	−0.90	+ 2.3	2.6/10.4	25436
1989 RO_2	1998 02 12.3	09 43.33	+39 40.1	15.7	−1.68	− 5.5	10.7/08.9	27933
1996 VR_1	1998 02 12.4	09 43.60	+38 03.3	18.7	−1.07	+ 4.3	7.9/05.4	30785
1996 VL_4	1998 02 12.5	09 44.10	+19 05.6	18.7	−0.89	+ 4.4	1.7/11.1	29117
1981 EV_{10}	1998 02 12.6	09 44.47	+04 30.2	19.0	−1.01	+ 5.0	3.8/15.0	22270
1262 T-2	1998 02 12.8	09 44.96	+20 31.4	18.4	−1.18	+ 3.9	3.0/11.1	15078
6643 P-L	1998 02 12.8	09 44.98	+22 14.1	16.9	−1.16	+ 4.1	3.7/10.7	29668
1981 UE_{26}	1998 02 12.9	09 45.44	+16 49.5	16.6	−0.84	+ 4.9	1.0/12.0	28314
1995 OD_1	1998 02 12.9	09 45.44	+09 59.0	18.1	−0.75	+ 8.5	1.2/14.0	31141
1991 PU	1998 02 13.0	09 45.67	+09 40.5	17.6	−0.91	+ 3.6	1.2/14.0	24104
1996 XJ_{26}	1998 02 13.0	09 46.03	+16 50.4	18.6	−0.82	+ 4.6	0.9/12.1	31113
1982 RW_1	1998 02 13.1	09 46.11	+19 53.6	18.5	−1.09	+ 4.0	2.3/11.5	31135
1992 SC_1	1998 02 13.1	09 46.14	+13 19.1	17.3	−0.92	+ 6.2	0.0/13.2	30782
3233 T-1	1998 02 13.1	09 46.20	+21 58.5	17.2	−1.00	+ 2.0	3.2/11.1	27938
1996 SY_4	1998 02 13.2	09 46.57	+18 03.5	19.3	−1.00	+ 5.2	1.5/12.0	31142
(7343)	1998 02 13.3	09 46.89	+18 25.9	16.6	−1.16	+ 3.8	2.2/12.1	28574
1978 RX_7	1998 02 13.3	09 46.98	+12 54.3	17.1	−1.02	+ 2.8	0.2/13.4	22270
1979 MJ_8	1998 02 13.5	09 47.72	+06 34.1	19.2	−0.95	+ 5.2	2.3/15.3	30779
1975 SP_1	1998 02 13.5	09 47.81	+02 18.3	20.4	−0.86	+ 5.9	3.3/16.7	25526
1981 EC_{40}	1998 02 13.5	09 48.01	+05 27.7	19.3	−0.95	+ 2.5	2.4/15.5	26922
1979 MX_3	1998 02 13.6	09 48.28	+08 19.2	20.6	−1.03	+ 5.1	1.7/15.0	30778
(7550)	1998 02 13.6	09 48.33	+04 50.0	18.5	−0.99	+ 5.9	2.9/15.9	29589
1990 UL_2	1998 02 13.6	09 48.50	+23 36.8	15.9	−1.12	+ 5.5	4.5/11.0	31137
1993 TC_3	1998 02 13.7	09 48.58	+11 44.5	18.1	−1.05	+ 6.4	0.5/14.1	30472
(7379)	1998 02 13.8	09 49.20	+10 00.6	19.0	−0.90	+ 4.1	1.0/14.7	28821
(7616)	1998 02 13.9	09 49.56	−01 12.0	16.4	−0.79	+ 4.0	4.2/18.0	29604
(7365)	1998 02 13.9	09 49.60	+10 03.2	17.3	−1.01	+ 7.7	1.1/14.9	28579
1995 AN	1998 02 14.0	09 49.70	+28 30.1	15.6	−1.77	− 8.4	8.1/12.3	30292
(7501)	1998 02 14.0	09 49.74	+11 29.5	17.0	−0.74	+ 4.1	0.4/14.5	29090
2087 T-2	1998 02 14.0	09 49.76	+15 10.1	18.0	−0.91	+ 3.5	0.6/13.5	21978
1992 SO_{24}	1998 02 14.1	09 49.99	+00 26.2	17.3	−0.90	+ 5.7	5.2/17.7	25538
1986 WB	1998 02 14.3	09 51.03	+26 24.7	16.9	−1.10	+ 5.3	5.3/10.8	30868
1995 FH_5	1998 02 14.4	09 51.55	+37 24.2	19.6	−1.44	− 0.2	8.2/09.1	29946
1991 PO_8	1998 02 14.4	09 51.61	+14 15.2	19.6	−0.91	+ 3.1	0.4/14.2	22083
1994 EH_7	1998 02 14.6	09 52.26	+28 14.0	17.8	−1.07	+ 2.4	4.8/10.7	29944
1996 VT_8	1998 02 14.8	09 52.84	+33 10.9	18.2	−0.99	+ 4.5	5.9/09.0	30785
(7346)	1998 02 14.9	09 53.24	+15 04.1	16.9	−0.84	+ 5.2	0.7/14.3	28574
4025 P-L	1998 02 14.9	09 53.41	+01 43.1	17.0	−0.96	+ 8.0	4.7/18.3	28088
1991 NL	1998 02 15.0	09 53.61	−09 45.1	17.5	−0.93	+ 2.5	6.9/20.9	19309
(7461)	1998 02 15.1	09 53.99	+12 40.5	17.6	−0.78	+ 4.1	0.0/15.2	29079
2287 T-2	1998 02 15.2	09 54.55	+08 04.2	17.7	−0.83	+ 6.4	1.5/16.6	21978
6755 P-L	1998 02 15.3	09 54.82	+13 48.8	19.0	−0.84	+ 4.2	0.3/15.0	29314
1996 VX_8	1998 02 15.4	09 55.17	+04 04.8	17.8	−0.96	+ 6.1	2.9/17.8	28891
1994 EJ_1	1998 02 15.4	09 55.34	−06 14.7	16.1	−0.78	+11.4	6.4/22.1	29662
1987 BO_1	1998 02 15.4	09 55.39	−24 16.5	16.1	−1.27	− 2.5	15.1/25.4	28084
1988 XE	1998 02 15.4	09 55.45	−09 33.1	16.3	−0.98	+ 3.8	8.4/22.0	30780
1995 MB	1998 02 15.6	09 56.24	−23 21.7	18.2	−1.16	− 2.4	12.1/23.0	25963
1993 FW_{34}	1998 02 15.7	09 56.38	+13 16.5	17.5	−0.74	+ 4.5	0.2/15.5	28616
(7549)	1998 02 15.8	09 56.91	−02 16.0	17.0	−0.78	+ 4.6	4.5/20.2	29589
1996 VP_1	1998 02 15.8	09 57.00	−05 21.8	17.8	−0.89	+ 3.0	4.9/20.7	29116
1079 T-2	1998 02 16.0	09 57.64	+14 20.7	17.6	−0.89	+ 4.3	0.6/15.5	29668
1994 JG	1998 02 16.1	09 57.94	+01 59.5	17.7	−0.75	+ 5.6	2.9/19.3	26191
1991 AB_2	1998 02 16.1	09 57.99	+08 25.9	15.2	−0.91	+ 7.8	1.8/17.3	28298
1994 AE_{11}	1998 02 16.1	09 58.14	+20 23.6	17.9	−0.99	+ 5.7	3.1/14.0	29662
1996 VG_8	1998 02 16.2	09 58.28	+03 02.0	16.2	−1.07	+ 4.4	3.5/18.6	29947
1995 GV	1998 02 16.3	09 58.61	+08 06.8	17.1	−1.00	+ 6.5	1.7/17.5	26191
1990 HU_1	1998 02 16.3	09 58.76	+14 35.4	17.0	−0.85	+10.4	0.8/15.6	24582
1992 WG_5	1998 02 16.4	09 59.06	+32 59.9	16.4	−0.93	+ 7.2	7.6/09.7	30979
1993 HH_3	1998 02 16.6	09 59.71	+14 10.2	15.9	−0.79	+ 5.2	0.6/16.0	23528
1995 KL_1	1998 02 16.6	09 59.97	−06 45.9	16.1	−1.42	− 7.4	8.6/18.9	26191
1996 VM_3	1998 02 16.6	10 00.15	+10 34.4	17.1	−0.83	+ 4.3	0.5/17.2	29117
3297 T-1	1998 02 16.7	10 00.18	+10 28.8	17.0	−0.79	+ 4.9	0.6/17.2	21124
1996 TO_9	1998 02 16.7	10 00.56	+41 47.2	18.2	−1.39	− 2.5	11.0/10.1	29116
(7775)	1998 02 16.8	10 00.86	+06 35.3	16.2	−0.92	+ 4.1	1.9/18.4	30264
1981 DU	1998 02 16.8	10 00.89	+01 23.3	18.4	−1.02	+ 4.3	3.9/19.7	26914
1990 HH_1	1998 02 16.9	10 00.96	+07 26.9	16.9	−0.84	+ 8.5	1.5/18.4	26189
1981 EU_{11}	1998 02 16.9	10 01.22	+17 48.4	19.7	−1.00	+ 2.4	1.7/15.5	26917
1974 RY_1	1998 02 17.0	10 01.55	+09 33.1	18.3	−0.96	+ 5.9	0.8/17.8	29652

5061 T-2	1998 02 17.0	10 01.57	+07 43.7	18.6	−1.08	+ 4.0	1.5/18.2	15258
1990 EA_7	1998 02 17.0	10 01.58	+18 47.7	16.3	−1.06	+ 2.1	2.4/15.4	24240
1991 LZ	1998 02 17.1	10 01.85	−03 24.1	17.1	−0.93	+ 7.0	5.9/21.6	30654
1981 ET_{34}	1998 02 17.1	10 01.85	−03 20.4	20.2	−0.82	+ 5.2	4.1/21.7	27909
1995 SJ_4	1998 02 17.1	10 01.91	−16 46.0	18.9	−0.78	+ 2.0	7.3/25.6	29664
1995 JK	1998 02 17.2	10 02.10	+15 30.3	18.3	−0.95	+ 7.9	1.2/16.2	25335
1991 PE_{10}	1998 02 17.2	10 02.22	+14 34.6	17.6	−0.94	+ 2.6	0.8/16.6	28614
3141 T-2	1998 02 17.2	10 02.45	+15 26.8	19.2	−1.00	+ 4.9	1.2/16.4	24237
1981 SG_3	1998 02 17.3	10 02.75	+07 21.8	18.4	−0.97	+ 4.6	1.5/18.6	29094
6114 P-L	1998 02 17.5	10 03.57	+20 22.1	17.2	−1.11	+ 0.2	3.2/15.6	21978
1148 T-3	1998 02 17.6	10 03.84	+04 00.9	18.3	−0.84	+ 3.8	2.2/19.8	27124
1995 LD	1998 02 17.6	10 04.02	+01 43.4	17.4	−0.94	+ 6.0	4.0/20.6	28617
1995 OU	1998 02 17.8	10 04.65	+16 43.2	18.0	−0.99	+ 3.9	1.6/16.5	26192
5133 T-2	1998 02 17.8	10 04.70	+09 19.0	19.2	−0.96	+ 2.0	0.8/18.5	31132
1994 AM_1	1998 02 17.9	10 04.90	+03 01.7	18.1	−1.02	+ 4.1	3.3/20.3	31008
1981 ER_6	1998 02 18.0	10 05.15	+03 03.3	16.9	−0.90	+ 2.9	3.8/20.3	21966
1993 FF_4	1998 02 18.0	10 05.25	+15 31.1	16.7	−0.84	+ 4.2	1.3/17.0	24230
1995 OG	1998 02 18.1	10 05.70	+06 57.7	19.0	−0.86	+ 2.3	1.4/19.4	28617
1994 CE_1	1998 02 18.1	10 05.91	+07 45.6	17.5	−1.12	− 0.2	1.5/19.0	31105
1981 EP_{40}	1998 02 18.2	10 06.29	+03 50.1	18.8	−0.96	+ 6.8	2.6/20.5	21968
1979 MG_8	1998 02 18.3	10 06.69	+21 07.0	18.1	−0.79	+ 8.3	2.9/15.3	30779
1993 FS_{14}	1998 02 18.3	10 06.70	+18 21.8	16.1	−0.78	+ 5.3	1.9/16.4	28887
1988 TW_2	1998 02 18.4	10 06.99	−24 54.5	17.4	−1.03	+ 1.0	11.8/28.2	28884
1990 OB_2	1998 02 18.6	10 07.48	+17 46.9	19.0	−0.83	+ 2.7	1.5/16.9	18633
2246 T-2	1998 02 18.6	10 07.61	+08 09.7	19.4	−0.84	+ 5.3	1.0/19.6	28892
(7507)	1998 02 18.7	10 07.97	+04 25.5	18.2	−0.98	+ 5.2	2.3/20.7	29092
2604 P-L	1998 02 18.7	10 08.15	+15 10.7	16.9	−1.08	+ 4.6	1.5/17.8	28619
(7414)	1998 02 18.8	10 08.42	+11 17.6	17.5	−0.76	+ 4.3	0.0/18.9	28830
1995 WB_{43}	1998 02 18.8	10 08.57	+05 33.0	18.1	−0.74	+ 3.8	1.5/20.6	31008
1981 EQ_{15}	1998 02 18.9	10 09.03	+00 18.2	17.7	−0.86	+ 5.7	4.5/22.3	28580
1991 RP_{17}	1998 02 19.0	10 09.38	+18 23.3	18.2	−1.04	+ 2.6	2.2/17.3	24105
1995 QS_3	1998 02 19.0	10 09.40	+02 54.5	17.5	−0.82	+ 2.0	2.3/21.3	25964
1979 OA	1998 02 19.1	10 09.48	−13 37.5	18.2	−1.05	− 1.2	7.6/24.3	25527
3464 T-3	1998 02 19.1	10 09.56	+13 55.8	19.8	−0.99	+ 4.7	0.8/18.4	31161
(7615)	1998 02 19.1	10 09.66	+15 17.1	17.4	−0.96	+ 6.0	1.2/18.0	29604
1989 CE_6	1998 02 19.2	10 09.75	+09 44.9	16.9	−0.99	+ 1.7	0.5/19.6	30975
1981 DK_2	1998 02 19.3	10 10.58	+07 02.5	17.7	−0.96	− 0.3	2.0/20.0	31096
1993 FK_{80}	1998 02 19.4	10 10.77	+18 14.0	17.2	−0.85	+ 3.9	2.1/17.5	29137
1992 SJ_{26}	1998 02 19.4	10 10.91	+25 13.5	19.1	−1.02	+ 3.8	4.5/15.7	25641
4152 P-L	1998 02 19.5	10 11.00	−00 28.3	17.8	−0.76	+ 6.3	3.2/23.1	26423
1990 SX_{16}	1998 02 19.5	10 11.04	+22 01.1	17.7	−0.90	+ 2.7	3.0/16.6	28885
1993 TM_{12}	1998 02 19.5	10 11.33	+12 32.0	16.6	−1.01	+ 7.1	0.6/19.2	31139
1981 EJ_{27}	1998 02 19.7	10 11.81	+10 05.4	18.7	−1.05	+ 5.5	10.7/31.0	26920
1981 EX_7	1998 02 19.8	10 12.06	−02 39.3	19.7	−0.81	+ 7.3	4.2/24.2	26916
1996 UR	1998 02 19.8	10 12.35	+04 44.1	17.0	−0.85	+ 6.2	2.0/21.8	29140
(7348)	1998 02 19.9	10 12.64	+12 01.6	16.3	−0.81	+ 4.3	0.3/19.7	28575
1981 ES_3	1998 02 19.9	10 12.78	+02 55.9	17.9	−0.99	+ 2.0	2.7/22.0	26915
1992 SY_{16}	1998 02 19.9	10 12.78	+18 53.4	18.2	−1.06	+ 2.2	2.9/18.0	27914
1996 XR_1	1998 02 19.9	10 12.87	+16 38.8	17.6	−0.63	+ 3.7	1.2/18.3	29666
1981 ER_{21}	1998 02 19.9	10 12.89	+10 21.5	18.3	−0.72	+ 5.3	0.2/20.2	26188
1991 NS_2	1998 02 20.0	10 13.00	+04 07.7	17.8	−0.87	+ 6.9	2.3/22.1	28886
1995 HL	1998 02 20.1	10 13.51	+27 17.0	17.6	−1.07	+ 5.0	5.2/15.4	28617
1981 EG_{23}	1998 02 20.3	10 14.30	+11 43.4	17.5	−0.80	+ 4.2	0.3/20.1	26919
1981 EG_{40}	1998 02 20.4	10 14.57	+11 06.9	19.0	−0.78	+ 4.9	0.1/20.4	31135
(7577)	1998 02 20.5	10 15.05	+17 59.2	16.6	−0.77	+ 7.1	2.1/18.3	29595
1987 RO_5	1998 02 20.5	10 15.13	+09 47.1	18.0	−0.60	+ 4.3	0.2/20.9	27554
1981 EC_{43}	1998 02 20.6	10 15.31	+05 47.6	18.6	−0.97	+ 6.8	1.7/22.1	26922
1996 TM_6	1998 02 20.7	10 15.73	+14 27.0	19.9	−1.01	+ 5.3	1.3/19.7	28081
1991 TJ_{14}	1998 02 20.8	10 15.95	+14 25.3	17.3	−0.86	+ 5.9	1.2/19.7	28615
1981 DZ_1	1998 02 20.8	10 15.98	−15 31.7	18.0	−0.69	+ 7.0	7.8/02.1	21966
1993 BR_2	1998 02 20.9	10 16.33	+14 13.3	16.2	−0.91	+ 2.6	1.4/20.0	21803
1981 EV_{31}	1998 02 20.9	10 16.55	+07 56.1	19.2	−0.98	+ 8.1	1.1/21.8	26921
1996 VE_9	1998 02 20.9	10 16.63	+27 25.7	16.2	−0.86	+ 5.3	5.2/15.7	29320
1981 EP_{42}	1998 02 21.1	10 17.25	+07 14.2	18.6	−0.87	+ 5.9	1.1/22.2	29940
1981 ES_{15}	1998 02 21.1	10 17.30	+13 09.0	18.5	−1.08	+ 1.4	0.9/20.5	26918
(7720)	1998 02 21.1	10 17.30	+10 18.7	19.6	−0.73	+ 4.2	0.1/21.3	30074
1984 SF_6	1998 02 21.1	10 17.33	+13 29.1	17.8	−0.77	+ 4.9	0.8/20.3	22076
1996 VB_8	1998 02 21.1	10 17.48	+08 50.9	17.0	−1.05	+ 7.3	0.7/21.7	30878
1987 RA_3	1998 02 21.2	10 17.53	+12 03.2	18.2	−0.88	+ 6.1	0.4/20.8	22078
1981 EZ_{35}	1998 02 21.2	10 17.56	+11 19.3	19.0	−0.78	+ 4.5	0.2/21.0	26921
1989 TD	1998 02 21.3	10 18.07	+08 22.2	18.7	−1.01	+ 4.9	0.7/22.0	21973
1981 EZ_{28}	1998 02 21.5	10 18.67	+20 09.8	18.4	−1.41	− 1.9	3.5/19.6	15409
1981 EW_2	1998 02 21.5	10 18.92	+05 04.1	18.0	−1.03	+ 0.8	1.9/22.9	31003
1996 SS_4	1998 02 21.6	10 19.25	+05 08.7	17.6	−0.94	+ 6.7	2.1/23.2	31009
1993 YN_2	1998 02 21.6	10 19.29	+04 50.1	17.6	−0.96	+ 5.3	2.5/23.3	23342
(7499)	1998 02 21.8	10 20.14	+08 06.8	17.0	−0.84	+ 2.3	0.6/22.5	29090
(7431)	1998 02 21.9	10 20.20	+08 13.6	16.8	−0.78	+ 4.9	0.6/22.6	28834
1993 OV_{10}	1998 02 21.9	10 20.32	+07 29.3	20.0	−0.58	+ 3.3	0.5/22.8	22959
1994 CC_{18}	1998 02 22.0	10 20.78	+20 57.7	16.8	−1.14	+ 0.7	4.0/19.6	23785
3224 T-3	1998 02 22.1	10 21.06	+08 58.2	18.2	−1.00	+ 7.8	0.5/22.5	27732
1995 KA_1	1998 02 22.1	10 21.14	−06 07.0	18.4	−0.89	+ 9.8	5.3/27.5	29138
(7551)	1998 02 22.1	10 21.25	+06 15.2	16.2	−0.72	+ 6.4	1.3/23.5	29589
1996 TL_9	1998 02 22.2	10 21.39	+17 35.8	18.1	−1.01	+ 6.5	2.5/20.1	28619
1996 VP_4	1998 02 22.2	10 21.60	+06 56.9	17.8	−0.78	+ 4.8	1.0/23.3	28619
1989 VN_5	1998 02 22.3	10 21.75	+08 56.1	16.8	−1.00	+ 4.9	0.5/22.7	31005
1994 AC_1	1998 02 22.3	10 21.99	+02 07.1	17.1	−1.07	+ 3.1	3.1/24.5	27716
1988 XO	1998 02 22.3	10 22.02	+31 42.2	17.4	−0.97	+ 6.3	6.5/15.4	25339
1981 DU_2	1998 02 22.4	10 22.41	+02 44.3	19.0	−0.98	+ 2.0	2.4/24.4	26914
1981 ER_{13}	1998 02 22.4	10 22.45	+04 04.6	19.5	−0.91	+ 3.9	2.3/24.2	26917
(7457)	1998 02 22.5	10 22.72	+15 15.2	17.1	−0.91	+ 3.7	1.6/21.1	29078
1973 QR_1	1998 02 22.5	10 22.77	+06 23.9	17.2	−1.03	+ 6.6	1.3/23.6	27725
1996 VK_8	1998 02 22.5	10 22.79	+06 45.6	18.7	−0.86	+ 4.4	0.9/23.6	28602
1993 HV_1	1998 02 22.6	10 22.82	+46 08.8	20.0	−1.09	+ 1.1	8.9/10.8	26191
1996 VP_5	1998 02 22.6	10 22.99	−03 04.6	16.5	−0.74	+ 4.7	3.9/26.7	30903
1981 JE_3	1998 02 22.6	10 23.08	+08 14.5	17.1	−0.89	+ 5.5	0.7/23.2	29940
1988 EA_2	1998 02 22.6	10 23.09	+09 44.3	16.0	−0.95	+ 8.0	0.1/22.8	27932
1981 EE_{23}	1998 02 22.7	10 23.57	+07 47.4	19.4	−0.90	+ 4.4	0.7/23.4	25438
1981 ER_{10}	1998 02 22.8	10 23.54	+06 15.2	18.3	−1.00	+ 5.6	1.3/23.9	21966
3526 T-3	1998 02 22.8	10 23.59	+12 17.2	19.3	−1.02	+ 5.1	0.8/22.2	27939
1979 TH_2	1998 02 22.8	10 23.67	+11 28.8	17.0	−0.80	+ 4.3	0.4/22.4	31134
4349 T-1	1998 02 22.8	10 23.72	+09 01.7	18.4	−0.79	+ 6.2	0.3/23.2	22087
1979 ME_7	1998 02 22.8	10 23.90	−09 17.6	17.7	−0.97	+ 2.9	6.8/28.4	21100