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EDITORIAL NOTICE.

MPC 21963-21978 contain 960 improved multiple-opposition and long-arc single-opposition orbits, high-precision data presented in a concise form, printed sideways on the page. Given by popular request, these orbits represent rather minor improvements over earlier results, with a handful of recent observations and no new identifications, and it was therefore thought reasonable to publish them without showing the residuals. Reference is made to the previous orbit computations for these objects, and (in the multiple-opposition cases) the residuals can be seen there. Furthermore, when sufficient additional observations become available, the objects will be given permanent numbers, and the full residuals will then be shown. Orbit computers are indicated by the code letters used for the one-opposition orbits and included in the list on MPC 21902. The opportunity has been taken to incorporate the perturbations by the inner planets, so many of the old "J-P" (Jupiter-Pluto) cases have been replaced, and it is not intended that J-P orbits will be published in the future.

In some sense the 960 orbits should be regarded as an admission of failure. Whenever a new multiple-opposition orbit is published there is a continuing need for further observations. This is an urgent need until the object is numbered, which is done when the orbit computation meets specific accuracy criteria. In practice, this tends to mean that observers should make measurements of an object twice on each of two nights in each of two months around its next convenient opposition. Few objects are numbered nowadays on the basis of observations at fewer than four oppositions, although exceptions are made, specifically for objects of small perihelion distance that have been well observed at only two oppositions. The "2-2-2" regimen is also appropriate for new discoveries, but to ensure that an object is not lost observers might wish to utilize pairs of nights both early and late in a given dark run.

During the past year or two there has been a tremendous increase in the use of CCDs for astrometry of minor planets and comets, particularly by amateur astronomers. The stability and linearity of CCD measurements is in fact making a noticeable improvement in the general consistency of observations in comparison to photographic data, despite the known astrometric imperfections of the GSC (Space Telescope Science Institute Guide Star Catalogue). CCD observers who use the GSC (or any other J2000.0 star catalogue) are requested to be sure to insert the letter "C" in column 15 (i.e., immediately preceding the year of observation) of the observational records they submit to the Minor Planet Center. On the other hand, if observers are still converting their results from positions obtained using a

1950.0 star catalogue--and they really should not be doing this any more--they are requested to put in column 15 the letter "A", irrespective of whether the observation is CCD or photographic (or micrometric or transit). The internal consistency of CCD data is such that discoverers might consider measuring new objects near meridian passage on one night but both several hours before and several hours after meridian passage on the other night in order to obtain a meaningful parallactic determination of the orbit from the data on the two nights, even for objects in the main belt.

The numbering of a minor planet tends to indicate that fewer observations are required of it in the future. Some observations are still needed, however, particularly of the objects on the critical list (the latest version of which is on MPC 21628-21629), as well as of objects involved in special studies, such as the ITA program (see MPC 18486), occultation campaigns and various space missions. With the present batch of MPCs the last numbered-planet orbit for which the perturbations by Mercury were ignored has been eliminated. Although this removes an important inconsistency in the data set, the situation with regard to the ephemerides and masses adopted for the perturbing planets is not entirely satisfactory. Most of the orbits are now being determined with consideration of the perturbations by Ceres (usually instead of Pluto), and this is sometimes indicated by M-C (as opposed to M-P, indicating perturbations by Mercury to Pluto). Although the JPL DE200 ephemeris is a widely-used standard, the values adopted for some of the planetary masses (particularly for Uranus, Neptune and Ceres) are far from the best, and different orbit computers use different conventions with respect to the relativistic terms. Orbit computations ignoring peturbations by both Pluto and Ceres are usually indicated in the MPCs by M-N (Mercury to Neptune), often now with the understanding that the perturbations by the earth and the moon are considered separately. The code M-V has also been used, the intent being to indicate that there has been consideration of the perturbations by Vesta, although a useful standardization in this case would be to include also the perturbations by both Ceres and Pallas. Some computations are made with consideration of perturbations by the five minor planets Ceres, Pallas, Vesta, Iris and Bamberga. Now that both astrometric observations and orbit computations have reached unprecedented levels of accuracy, it is to be hoped that those responsible for the preparation of the planetary ephemerides will address the matter of supplying well-defined, standard, long-term sets (and starting conditions), with appropriate consideration of the difficulties mentioned above.

* * * * *

ERRATA.

MPC	Line		
13586	13	Add	(J-P)
13586	15	For	n 0.17730351 read n 0.17730403
14023	20	For	-Aug. 25, read -Aug. 21,
21606	8 to 9	Delete	the Anderson Mesa Station of
21629	28	For	0.3-m f/2 read 0.3-m f/5.2
21728	11	For	McKenzie read MacKenzie
21803	-12	Add	Id. S. Nakano, K. Ichikawa

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object		Date	UT	R. A. (2000)	Decl.	Reference	Mag.	N	Obs.
1949 KU	*	1949 05	31.18194	15 44 53.77	-22 15 00.5	MPC 432	15.2	1	760
1949 KU		1949 05	31.21736	15 44 51.53	-22 15 07.5	MPC 432		1	760
1949 KV	*	1949 05	31.18194	15 38 01.16	-24 03 13.5	MPC 432	17.2	2	760
1949 KV		1949 05	31.21736	15 37 59.03	-24 03 00.6	MPC 432		2	760
1949 KX	*	1949 05	31.18194	16 00 09.10	-21 16 18.4	MPC 432	14.4	3	760
1949 KX		1949 05	31.21736	16 00 06.99	-21 16 16.7	MPC 432		3	760
1949 KY	*	1949 05	31.18194	15 46 13.42	-20 05 07.8	MPC 432	16.8	4	760
1949 KY		1949 05	31.21736	15 46 11.58	-20 05 05.0	MPC 432		4	760
1977 QH4		1989 02	01.92361	09 14 14.22	+21 33 52.9	MPC 14284	17.0	5	552
1981 UB1		1993 01	25.99418	03 01 00.07	+15 48 16.3	MPC 21734			801
1992 SY17		1992 10	26.20122	00 27 26.37	+14 00 57.2	MPC 21211		6	675
1992 SY17		1992 10	26.24028	00 27 25.43	+14 00 27.9	MPC 21211		6	675
1992 UY6		1992 10	26.20122	00 28 41.66	+12 55 59.7	MPC 21211		6	675
1992 UY6		1992 10	26.24028	00 28 40.28	+12 55 46.1	MPC 21211		6	675
(243)		1990 09	16.19081	22 48 16.48	-06 56 45.0	MPC 17136			801
(243)		1990 09	16.21521	22 48 15.33	-06 56 51.3	MPC 17136			801
(243)		1990 09	18.16499	22 46 48.00	-07 05 07.0	MPC 17136			801
(243)		1990 09	18.18814	22 46 46.94	-07 05 12.7	MPC 17136			801
(243)		1990 10	15.07345	22 32 55.26	-08 22 47.5	MPC 17355			801
(243)		1990 10	15.10728	22 32 54.73	-08 22 50.1	MPC 17356			801
(243)		1990 10	16.04232	22 32 42.08	-08 23 59.0	MPC 17356			801
(243)		1990 10	16.09661	22 32 41.32	-08 24 02.8	MPC 17356			801
(243)		1990 10	18.00047	22 32 19.51	-08 26 00.5	MPC 17356			801
(243)		1990 10	18.09860	22 32 18.38	-08 26 05.6	MPC 17356			801
(243)		1990 10	20.98438	22 31 55.52	-08 28 05.6	MPC 17356			801
(243)		1990 10	21.11639	22 31 54.58	-08 28 09.5	MPC 17356			801
(243)		1990 11	14.06593	22 36 14.14	-08 01 38.7	MPC 17577			801
(243)		1990 11	14.08693	22 36 14.67	-08 01 35.4	MPC 17577			801
(243)		1990 11	19.97001	22 39 11.07	-07 44 03.8	MPC 17577			801
(243)		1990 11	19.99111	22 39 11.76	-07 43 59.4	MPC 17577			801
(243)		1990 11	20.96940	22 39 44.98	-07 40 41.1	MPC 17577			801
(243)		1990 11	20.99363	22 39 45.79	-07 40 36.1	MPC 17577			801
(243)		1990 12	13.96400	22 57 18.98	-05 53 57.5	MPC 17577			801
(243)		1990 12	13.97916	22 57 19.80	-05 53 52.5	MPC 17577			801
(243)		1990 12	14.97694	22 58 15.98	-05 48 06.1	MPC 17577			801
(243)		1990 12	14.98709	22 58 16.54	-05 48 02.4	MPC 17577			801
(830)		1949 05	31.18194	15 53 45.84	-25 42 25.4	MPC 432	15.2		760
(830)		1949 05	31.21736	15 53 43.98	-25 42 19.7	MPC 432			760
(1370)		1955 06	27.25834	19 21 37.84	-26 32 14.8	MPC 5298			760

Note 1: 1949 KU = (1676), time corrected. 2: 1949 KV = (2536), time corrected. 3: 1949 KX = (1044), time corrected. 4: 1949 KY = (2117), time corrected. 5: 1977 QH4 = (5044). 6: time originally in error.

* * * * *

DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (2000)	Decl.	Reference	Obs.
1989 CY1	1989 03	08.53194	09 12 17.66	+14 56 47.0	MPC 14421	391
1989 CY1	1989 03	08.55278	09 12 16.90	+14 56 55.4	MPC 14421	391
1992 HV3	1992 05	07.30473	14 33 22.47	-12 07 44.4	MPC 20274	691

1992 HV3 1992 05 07.33024 14 33 21.27 -12 07 39.5 MPC 20274 691
1992 HV3 1992 05 07.35521 14 33 20.12 -12 07 35.3 MPC 20274 691

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 21627.

Object		Date	UT	R. A. (2000)	Decl.	Old desig.	Mag.	N	Obs.
1928 TM	*	1928 10	14.93611	01 09 01.27	+09 34 14.9	1928 SK			024
1990 HG7	*	1990 04	16.98715	11 07 12.63	+05 25 55.4	1990 GK			809
1990 HG7		1990 04	17.00451	11 07 12.23	+05 25 57.2	1990 GK			809
1990 HG7		1990 04	17.02188	11 07 11.78	+05 25 59.5	1990 GK			809
1990 QO19	*	1990 08	16.27222	23 36 14.67	-05 57 05.3	6726 P-L	19.3	1	809
1990 QO19		1990 08	16.28542	23 36 14.26	-05 57 08.2	6726 P-L		1	809
1990 QO19		1990 08	16.29861	23 36 13.82	-05 57 12.9	6726 P-L		1	809
1990 QO19		1990 08	20.23194	23 34 14.63	-06 16 11.6	6726 P-L	18.8	1	809
1990 QO19		1990 08	20.24514	23 34 14.14	-06 16 15.5	6726 P-L		1	809
1990 QO19		1990 08	20.25833	23 34 13.65	-06 16 19.3	6726 P-L		1	809
1990 QO19		1990 08	26.20347	23 30 41.56	-06 47 40.5	6726 P-L	18.7	1	809
1990 QO19		1990 08	26.21667	23 30 41.08	-06 47 45.6	6726 P-L		1	809
1990 QO19		1990 08	26.22986	23 30 40.57	-06 47 50.3	6726 P-L		1	809
1990 SO29	*	1990 09	23.82427	21 53 33.17	-00 08 37.3	1990 RZ16	16.2		095
1990 TH16	*	1990 10	12.59248	01 32 01.44	+05 12 27.3	4017 T-3			413
1990 WW15	*	1990 11	17.15556	02 13 04.43	+08 14 17.9	1990 VV6	18.2		809
1990 WW15		1990 11	17.16667	02 13 04.04	+08 14 16.2	1990 VV6			809
1990 WW15		1990 11	17.17708	02 13 03.58	+08 14 12.0	1990 VV6			809
1990 WX15	*	1990 11	20.09167	02 10 22.27	+07 55 08.4	1990 VS8			809
1990 WX15		1990 11	20.10208	02 10 21.92	+07 55 06.0	1990 VS8			809
1990 WX15		1990 11	20.11250	02 10 21.57	+07 55 03.1	1990 VS8			809
1991 FO6	*	1991 03	20.12952	11 05 26.25	+07 27 40.4	1991 FX1			809
1991 FO6		1991 03	20.13993	11 05 25.93	+07 27 41.1	1991 FX1			809
1991 FO6		1991 03	20.15034	11 05 25.61	+07 27 41.9	1991 FX1			809
1992 JT3	*	1992 05	08.22395	13 50 37.81	-08 08 45.7	1992 JR2			809
1992 JT3		1992 05	08.23438	13 50 37.12	-08 08 43.8	1992 JR2			809
1992 JT3		1992 05	08.24480	13 50 36.43	-08 08 41.6	1992 JR2			809

Note 1: the identification 6726 P-L = 1990 QV1 (MPC 17219) is invalid.

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DOUBLE DESIGNATIONS.

The following double designations, by G. V. Williams, continue the list on MPC 20062.

1990 GK = 1990 HP3 1991 RZ40= 1991 RK33

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

046 Klet. 0.63-m Maksutov and 0.57-m reflector + CCD. Observers Z. Moravec, E. Pittich, P. Pravec, N. Solovaya, J. Ticha, M. Tichy and Z. Vavrova.

104 San Marcello Pistoiese. 0.40-m reflector. Observers L. Tesi and P. Gigli. Measured by L. Tesi. Reductions by G. Cattani.

107 Cavezzo. 0.40-m f/2.23 reflector + CCD. Observers R. Calanca and F. Calzolari.
108 Montelupo. 0.20-m f/10 reflector + CCD. Observers M. Tombelli and A. Boattini. Measured by M. Tombelli.
361 Sumoto. 0.20-m f/6.3 reflector + CCD. Observer S. Nakano. Long. and Parallax 134.8956, 0.82652, +0.56102 (see MPC 19348).
410 Sengamine. 0.20-m f/4.8 reflector + CCD. Observer K. Ito.
411 Oizumi. 0.16-m f/6.3 reflector + CCD. Observer T. Kobayashi.
540 Linz. 0.3-m f/5.2 Schmidt-Cassegrain + CCD. Observers E. Meyer and H. Raab.
587 Sormano. 0.5-m reflector + CCD. Observers M. Cavagna, C. Gualdoni, P. Sicoli and A. Testa.
595 Farra d'Isonzo. 0.4-m reflector. Observers W. Boschin, F. Damonte, G. Lombardi and E. Pettarin. Communicated by L. Bittesini.
596 Colleverde di Guidonia. 0.31-m f/2.8 Baker-Schmidt + CCD. Observer V. S. Casulli.
657 Climenhaga Observatory, Victoria. 0.5-m reflector + CCD. Observers D. D. Balam and L. Bogan.
658 Dominion Astrophysical Observatory. 1.85-m reflector + CCD. Observers D. D. Balam, J. B. Tatum and G. C. L. Aikman. Measured by D. D. Balam.
670 Camarillo. 0.25-m Schmidt-Cassegrain + CCD. Observer J. E. Rogers.
675 Palomar. 0.46-m Schmidt telescope. Observers E. M. Shoemaker, C. S. Shoemaker and D. H. Levy. Measured by C. S. Shoemaker.
691 Kitt Peak. 0.91-m Spacewatch telescope. Observer J. V. Scotti.
801 Oak Ridge. 1.5-m reflector + CCD. Observers R. E. McCrosky and C.-Y. Shao.
900 Kiryuu Observatory, Ohtsu. 0.26-m f/2.9 reflector + CCD. Observer Y. Ikari.
902 Ootake. 0.25-m f/3.3 reflector. Observer K. Takehashi. Measured by H. Nakahira.
950 La Palma. 2.6-m Nordic Optical Telescope + CCD. Observers M. C. Omang and O. C. Dahl. Measured by O. C. Dahl.

Object	Date	UT	R. A. (2000)	Decl.	Mag.	N	Obs.
		Periodic Comet Tempel 2					
/1988 XIV	1993	02 26.51638	13 15 39.29	+07 48 46.8			658
/1988 XIV	1993	02 26.52569	13 15 39.06	+07 48 50.9			658
		Periodic Comet Schwassmann-Wachmann 1					
/1989 XV	1993	01 22.08542	05 15 32.34	+30 51 10.2	16.2 T		950
/1989 XV	1993	01 22.12206	05 15 31.67	+30 51 06.0	16.2 T		950
/1989 XV	1993	02 14.46711	05 11 57.77	+30 09 58.6			411
/1989 XV	1993	02 14.47216	05 11 57.78	+30 09 58.1			411
/1989 XV	1993	02 14.47469	05 11 57.78	+30 09 57.7			411
/1989 XV	1993	02 15.90207	05 11 58.57	+30 07 36.5	13.7 T		950
/1989 XV	1993	02 15.94118	05 11 58.60	+30 07 32.8	13.7 T		950
/1989 XV	1993	02 16.90632	05 12 00.12	+30 05 59.0	13.7 T		950
/1989 XV	1993	02 16.95421	05 12 00.18	+30 05 54.5	13.7 T		950
/1989 XV	1993	02 23.41089	05 12 29.46	+29 55 44.7			411
/1989 XV	1993	02 23.41594	05 12 29.49	+29 55 44.7			411
/1989 XV	1993	02 23.41847	05 12 29.53	+29 55 44.1			411
/1989 XV	1993	02 25.02466	05 12 41.91	+29 53 19.8			801
/1989 XV	1993	02 25.07912	05 12 42.37	+29 53 16.3			801
		Periodic Comet Faye					
/1991 XXI	1993	03 03.41424	11 44 05.81	-03 53 21.6	20.5 T	1	691

Comet Spacewatch (1992h)

/1992h	1993	02	19.76776	13 50 00.45	+29 00 54.9					411
/1992h	1993	02	19.77097	13 50 00.20	+29 00 59.8					411
/1992h	1993	02	26.79289	13 43 30.90	+32 25 15.2	16	T			900
/1992h	1993	02	26.80415	13 43 30.10	+32 25 34.9					900
/1992h	1993	03	03.36415	13 38 13.65	+34 41 39.4	15.6	T			691
/1992h	1993	03	03.37243	13 38 13.04	+34 41 54.7	18.9	N	2		691
/1992h	1993	03	04.69481	13 36 31.35	+35 21 35.8	15.5	T			900
/1992h	1993	03	04.70365	13 36 30.57	+35 21 52.0					900

Periodic Comet Ciffreo

/1992s	1993	02	26.11859	02 24 17.79	+17 45 13.2	20.5	N	3		691
/1992s	1993	02	26.12654	02 24 18.91	+17 45 21.5	16.7	T			691
/1992s	1993	02	26.13479	02 24 20.09	+17 45 30.2	16.5	T			691

Periodic Comet Vaisala 1

/1992u	1993	02	14.50559	09 54 10.48	+17 17 51.0					411
/1992u	1993	02	14.51064	09 54 10.38	+17 17 54.4					411
/1992u	1993	02	14.51317	09 54 10.30	+17 17 56.3					411
/1992u	1993	02	14.84035	09 54 03.60	+17 22 29.3					596
/1992u	1993	02	14.85849	09 54 03.25	+17 22 45.0					596
/1992u	1993	02	14.86816	09 54 03.05	+17 22 52.6					596
/1992u	1993	02	17.45035	09 53 08.97	+17 58 53.6					657
/1992u	1993	02	17.45225	09 53 08.92	+17 58 55.2					657
/1992u	1993	02	17.45442	09 53 08.87	+17 58 57.2					657
/1992u	1993	02	20.85486	09 51 59.05	+18 46 13.0					104
/1992u	1993	02	20.86944	09 51 58.68	+18 46 25.4					104
/1992u	1993	02	20.90308	09 51 57.97	+18 46 52.8					107
/1992u	1993	02	21.24839	09 51 50.58	+18 51 39.1					801
/1992u	1993	02	21.26396	09 51 50.22	+18 51 52.0					801
/1992u	1993	02	24.18313	09 50 53.08	+19 31 41.1					801
/1992u	1993	02	24.19532	09 50 52.81	+19 31 50.9					801
/1992u	1993	03	13.43788	09 48 03.35	+22 53 35.8					411
/1992u	1993	03	13.44294	09 48 03.38	+22 53 38.8					411
/1992u	1993	03	13.44546	09 48 03.39	+22 53 40.3					411
/1992u	1993	03	14.44436	09 48 06.91	+23 02 52.0					411
/1992u	1993	03	14.44941	09 48 06.91	+23 02 54.4					411
/1992u	1993	03	14.45194	09 48 06.92	+23 02 55.6					411
/1992u	1993	03	17.59272	09 48 29.72	+23 29 38.4					361
/1992u	1993	03	17.60174	09 48 29.82	+23 29 43.7					361

Periodic Comet Schaumasse

/1992x	1992	12	29.86528	03 38 55.85	+20 58 45.4					595
/1992x	1992	12	29.91389	03 38 52.91	+20 59 38.8					595
/1992x	1993	02	08.73766	03 58 31.65	+36 28 47.4					046
/1992x	1993	02	08.74495	03 58 32.31	+36 28 58.3					046
/1992x	1993	02	10.74948	04 03 09.99	+37 19 09.7					046
/1992x	1993	02	10.75711	04 03 10.70	+37 19 19.6					046
/1992x	1993	02	10.93421	04 03 35.48	+37 23 41.6					108
/1992x	1993	02	10.93601	04 03 35.63	+37 23 43.7					108
/1992x	1993	02	10.93981	04 03 36.05	+37 23 47.8					108
/1992x	1993	02	10.94430	04 03 36.75	+37 23 54.5					108
/1992x	1993	02	10.94761	04 03 37.19	+37 24 00.5					108
/1992x	1993	02	11.77019	04 05 39.82	+37 44 30.4					046
/1992x	1993	02	11.77678	04 05 40.72	+37 44 42.3					046
/1992x	1993	02	11.88111	04 05 55.80	+37 47 16.2					108
/1992x	1993	02	11.88801	04 05 56.87	+37 47 24.8					108
/1992x	1993	02	11.89117	04 05 57.31	+37 47 31.0					108

/1992x	1993 02 11.89618	04 05 58.05	+37 47 36.6				108
/1992x	1993 02 11.89985	04 05 58.59	+37 47 41.9				108
/1992x	1993 02 12.78559	04 08 15.35	+38 09 40.1				046
/1992x	1993 02 12.79167	04 08 16.32	+38 09 50.9				046
/1992x	1993 02 18.78284	04 25 46.59	+40 34 44.4				046
/1992x	1993 02 18.78515	04 25 47.02	+40 34 47.7				046
/1992x	1993 02 18.78814	04 25 47.58	+40 34 51.8				046
/1992x	1993 02 18.78946	04 25 47.81	+40 34 53.6	13.7	N		046
/1992x	1993 02 18.79090	04 25 48.11	+40 34 55.7				046
/1992x	1993 02 18.79244	04 25 48.40	+40 34 57.8				046
/1992x	1993 02 18.79363	04 25 48.63	+40 34 59.5				046
/1992x	1993 02 20.88584	04 32 49.88	+41 23 28.5				107
/1992x	1993 02 21.00060	04 33 14.30	+41 26 08.8				801
/1992x	1993 02 21.00870	04 33 15.99	+41 26 19.9				801
/1992x	1993 02 24.99985	04 48 04.57	+42 54 09.5				801
/1992x	1993 02 25.00958	04 48 06.79	+42 54 21.7				801
/1992x	1993 03 06.94075	05 32 40.52	+45 53 48.8				587
/1992x	1993 03 06.94705	05 32 42.42	+45 53 53.9				587
/1992x	1993 03 06.95392	05 32 44.29	+45 53 59.6				587
/1992x	1993 03 06.96840	05 32 48.81	+45 54 11.0				587
/1992x	1993 03 06.97635	05 32 51.19	+45 54 17.9				587
/1992x	1993 03 09.12416	05 43 53.11	+46 23 10.7				670
/1992x	1993 03 10.17087	05 49 24.50	+46 35 34.2				670
/1992x	1993 03 10.18111	05 49 27.68	+46 35 41.3				670
/1992x	1993 03 10.19152	05 49 30.87	+46 35 46.7				670
/1992x	1993 03 10.84608	05 53 00.88	+46 42 53.1	11.3	T		540
/1992x	1993 03 10.84902	05 53 01.79	+46 42 55.0	11.0	T		540
/1992x	1993 03 10.85095	05 53 02.45	+46 42 56.5	11.1	T		540
/1992x	1993 03 10.85289	05 53 03.00	+46 42 56.2	11.0	T		540
/1992x	1993 03 10.85583	05 53 04.16	+46 42 59.1	11.2	T		540
/1992x	1993 03 10.85766	05 53 04.64	+46 43 00.2	11.5	T		540
/1992x	1993 03 12.80486	06 03 44.53	+47 01 43.4	13.4	N		046
/1992x	1993 03 12.80791	06 03 45.52	+47 01 45.0	13.4	N		046
/1992x	1993 03 12.80888	06 03 45.86	+47 01 45.4				046
/1992x	1993 03 12.81036	06 03 46.33	+47 01 46.1				046
/1992x	1993 03 12.81299	06 03 47.19	+47 01 47.4				046
/1992x	1993 03 12.81411	06 03 47.55	+47 01 48.0				046
/1992x	1993 03 12.81502	06 03 47.85	+47 01 48.4				046
/1992x	1993 03 12.81618	06 03 48.23	+47 01 49.0				046
/1992x	1993 03 12.87066	06 04 05.82	+47 02 14.9	11.0	T		540
/1992x	1993 03 12.87448	06 04 07.03	+47 02 16.8				540
/1992x	1993 03 13.40306	06 07 04.88	+47 06 41.0				411
/1992x	1993 03 13.40531	06 07 05.59	+47 06 41.8				411
/1992x	1993 03 13.40642	06 07 05.99	+47 06 43.5				411
/1992x	1993 03 13.83560	06 09 30.07	+47 09 54.6	13.6	T		046
/1992x	1993 03 13.83712	06 09 30.55	+47 09 55.2	13.6	T		046
/1992x	1993 03 13.83841	06 09 30.99	+47 09 55.9				046
/1992x	1993 03 13.83972	06 09 31.42	+47 09 56.3				046
/1992x	1993 03 13.84062	06 09 31.72	+47 09 56.7				046
/1992x	1993 03 13.84178	06 09 32.13	+47 09 57.3				046
/1992x	1993 03 13.84270	06 09 32.40	+47 09 57.6				046
/1992x	1993 03 13.84403	06 09 32.86	+47 09 58.2				046
/1992x	1993 03 14.42363	06 12 49.69	+47 14 07.4				411
/1992x	1993 03 14.42475	06 12 50.08	+47 14 07.9				411
/1992x	1993 03 14.42699	06 12 50.86	+47 14 09.0				411
/1992x	1993 03 16.20498	06 23 01.79	+47 24 08.6				657
/1992x	1993 03 16.20631	06 23 02.24	+47 24 08.9				657
/1992x	1993 03 16.20733	06 23 02.60	+47 24 09.3				657

Comet Shoemaker (1992y)

/1992y	1992	11	24.87639	03	26	25.28	+35 55 17.2	15	T	540
/1992y	1992	11	24.90764	03	26	20.76	+35 55 51.3			540
/1992y	1992	11	27.78958	03	19	16.81	+36 47 36.5		4	540
/1992y	1992	11	27.82083	03	19	12.21	+36 48 09.6		4	540
/1992y	1992	11	30.89201	03	11	33.60	+37 40 31.7			540
/1992y	1992	11	30.91979	03	11	29.41	+37 40 58.9			540
/1992y	1992	12	17.84375	02	30	43.21	+41 31 49.2			595
/1992y	1992	12	17.86667	02	30	40.16	+41 32 03.0			595
/1992y	1992	12	18.88886	02	28	26.10	+41 42 59.1			595
/1992y	1992	12	18.90764	02	28	23.50	+41 43 13.8			595
/1992y	1992	12	25.77361	02	14	30.12	+42 49 44.4		5	540
/1992y	1992	12	25.81632	02	14	24.92	+42 50 08.7		5	540
/1992y	1992	12	28.84097	02	08	59.13	+43 16 15.3			540
/1992y	1992	12	28.88333	02	08	54.75	+43 16 37.0		6	540
/1992y	1993	01	24.11961	01	40	56.82	+46 36 12.1	15	T	675
/1992y	1993	01	24.15815	01	40	55.82	+46 36 30.2			675
/1992y	1993	02	20.87023	01	44	09.93	+50 58 37.6			107
/1992y	1993	02	20.97273	01	44	13.46	+50 59 49.2			801
/1992y	1993	02	20.98041	01	44	13.72	+50 59 53.7			801
/1992y	1993	02	24.97051	01	46	57.95	+51 46 00.3			801

Comet Ohshita (1992a1)

/1992a 1	1992	12	27.03437	14	31	02.66	+47 57 32.3			540
/1992a 1	1992	12	27.04896	14	31	07.29	+47 59 15.5			540

Comet Mueller (1993a)

/1993a	1993	01	23.32361	09	14	36.97	+52 28 17.6	13.7	T	675
/1993a	1993	01	23.36545	09	14	32.07	+52 28 53.3			675
/1993a	1993	01	31.00313	08	58	40.07	+54 10 54.0			540
/1993a	1993	01	31.02397	08	58	37.31	+54 11 08.9			540
/1993a	1993	02	10.85729	08	33	26.93	+56 05 57.2			104
/1993a	1993	02	10.86840	08	33	25.33	+56 06 01.2			104
/1993a	1993	02	11.75542	08	31	16.74	+56 13 38.0			596
/1993a	1993	02	11.78181	08	31	12.67	+56 13 52.0			596
/1993a	1993	02	11.79094	08	31	11.36	+56 13 56.2			596
/1993a	1993	02	11.85833	08	31	01.31	+56 14 31.4			104
/1993a	1993	02	11.87153	08	30	59.49	+56 14 36.9			104
/1993a	1993	02	14.57326	08	24	25.02	+56 35 55.0	13.8	T	902
/1993a	1993	02	14.90903	08	23	35.59	+56 38 23.4			104
/1993a	1993	02	14.92361	08	23	33.66	+56 38 28.9			104
/1993a	1993	02	17.85903	08	16	24.02	+56 58 09.6			104
/1993a	1993	02	17.87361	08	16	21.71	+56 58 16.6			104
/1993a	1993	02	18.23568	08	15	28.89	+57 00 29.3			657
/1993a	1993	02	18.23774	08	15	28.62	+57 00 30.1			657
/1993a	1993	02	18.23998	08	15	28.24	+57 00 30.3			657
/1993a	1993	02	18.90972	08	13	50.35	+57 04 28.2			104
/1993a	1993	02	18.92431	08	13	48.17	+57 04 33.5			104
/1993a	1993	02	20.23076	08	10	38.40	+57 11 48.3			801
/1993a	1993	02	20.24028	08	10	36.58	+57 11 50.9			801
/1993a	1993	02	20.91191	08	08	59.36	+57 15 20.1			107
/1993a	1993	02	24.26432	08	00	58.36	+57 30 19.7			801
/1993a	1993	02	24.27124	08	00	57.34	+57 30 20.9			801
/1993a	1993	02	26.65266	07	55	22.46	+57 38 40.3			410
/1993a	1993	02	26.65546	07	55	21.99	+57 38 37.8			410
/1993a	1993	03	04.61951	07	42	00.53	+57 51 33.8	13	T	900
/1993a	1993	03	04.62605	07	41	59.79	+57 51 33.6			900
/1993a	1993	03	06.26075	07	38	30.96	+57 53 16.6			670
/1993a	1993	03	06.27764	07	38	28.76	+57 53 17.7			670

/1993a	1993 03 06.29550	07 38 26.46	+57 53 16.7			670
/1993a	1993 03 12.89322	07 25 21.12	+57 53 20.2	13.6	T	540
/1993a	1993 03 12.89892	07 25 20.45	+57 53 19.8			540
/1993a	1993 03 12.90398	07 25 19.89	+57 53 19.8			540
/1993a	1993 03 12.90875	07 25 19.43	+57 53 19.0			540
/1993a	1993 03 12.91293	07 25 18.92	+57 53 18.9			540
/1993a	1993 03 12.91762	07 25 18.44	+57 53 18.2			540
/1993a	1993 03 13.41508	07 24 22.89	+57 52 55.7			411
/1993a	1993 03 13.42013	07 24 22.41	+57 52 55.8			411
/1993a	1993 03 13.42265	07 24 22.08	+57 52 56.0			411
/1993a	1993 03 14.42989	07 22 32.07	+57 51 58.1			411
/1993a	1993 03 14.43494	07 22 31.50	+57 51 59.0			411
/1993a	1993 03 14.43747	07 22 31.14	+57 51 58.9			411

Note 1: coma diameter 10", 9′.05 tail in p.a. 286 . 2: coma diameter 23", tail 2′.85 in p.a. 188 . 3: coma diameter 16", 0′.57 tail in p.a. 72 . 4: 3′.5 tail in p.a. 185 . 5: image slightly out of focus. 6: comet involved with star.

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OBSERVATIONS OF MINOR PLANETS.

The observations are listed separately for each observatory code. Alphabetic note codes shown with some of the observations are defined according to the scheme below. Numerical codes are defined in the headings for the individual observatories.

A earlier approximate position inferior
a sense of motion ambiguous
B black or dark plate
b bad seeing
C correction to earlier position
c crowded star field
D declination uncertain
d diffuse image
E at or near edge of plate
F faint image
f involved with emulsion or plate flaw
G poor guiding
g no guiding
I involved with star
i inkdot measured
M measurement difficult
N near edge of plate, measurement uncertain
O image out of focus
o plate measured in one direction only
P position uncertain
p poor image
R right ascension uncertain
r poor distribution of reference stars
S poor sky
s streaked image
T time uncertain
t trailed image
U uncertain image
u unconfirmed image
V very faint image

W weak image
w weak solution

Object	Date	UT	R. A. (2000)	Decl.	Mag.	N Obs.
010 Caussols						
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium						
C. Pollas, Observatoire de la Cote d'Azur, Avenue Copernic, F-06130 Grasse, France						
Observers D. Albanese, E. W. Elst, C. Pollas						
Measurer E. W. Elst						
0.9-m Schmidt telescope						
PPM						
1966 BB	1993 02	20.96806	09 04 26.89	+19 48 24.7	18.0	010
1966 BB	1993 02	20.97986	09 04 26.28	+19 48 30.5		010
1966 BB	1993 02	20.99167	09 04 25.67	+19 48 35.7		010
1981 ER23	1993 02	20.96806	09 09 56.33	+18 39 13.8	18.5	010
1981 ER23	1993 02	20.97986	09 09 55.70	+18 39 17.1		010
1981 ER23	1993 02	20.99167	09 09 55.04	+18 39 20.4		010
1981 SU2	1993 02	20.96806	09 08 58.66	+15 48 18.5	18.2	010
1981 SU2	1993 02	20.97986	09 08 57.98	+15 48 21.1		010
1981 SU2	1993 02	20.99167	09 08 57.27	+15 48 22.6		010
1985 RP2	1993 02	20.96806	09 12 47.32	+16 06 16.3	18.3	010
1985 RP2	1993 02	20.97986	09 12 46.80	+16 06 18.4		010
1985 RP2	1993 02	20.99167	09 12 46.33	+16 06 20.5		010
1985 RM6	1993 02	20.96806	09 09 57.57	+16 05 27.3	18.7	010
1985 RM6	1993 02	20.97986	09 09 57.01	+16 05 29.5		010
1985 RM6	1993 02	20.99167	09 09 56.47	+16 05 31.5		010
1987 UJ	1993 02	20.96806	09 00 08.85	+18 23 39.5	18.4	010
1987 UJ	1993 02	20.97986	09 00 08.25	+18 23 41.0		010
1987 UJ	1993 02	20.99167	09 00 07.64	+18 23 42.8		010
1990 DA1	1993 02	20.96806	09 13 04.99	+19 58 43.4	18.3	010
1990 DA1	1993 02	20.97986	09 13 04.16	+19 58 43.9		010
1990 DA1	1993 02	20.99167	09 13 03.41	+19 58 45.1		010
1991 UA2	1993 02	20.96806	08 59 25.28	+16 37 17.9	18.5	010
1991 UA2	1993 02	20.97986	08 59 24.68	+16 37 19.9		010
1991 UA2	1993 02	20.99167	08 59 24.09	+16 37 22.2		010
1993 BM	1993 02	20.96806	08 59 43.34	+18 41 57.2	18.2	010
1993 BM	1993 02	20.97986	08 59 42.68	+18 41 57.2		010
1993 BM	1993 02	20.99167	08 59 42.07	+18 41 56.3		010
1993 BN	1993 01	27.01944	09 24 05.48	+17 06 14.3	18.0	010
1993 BN	1993 01	27.02986	09 24 04.80	+17 06 14.1		010
1993 BN	1993 01	27.04039	09 24 04.14	+17 06 14.0		010
1993 BN	1993 02	20.96806	08 58 30.86	+16 48 41.8	18.0	010
1993 BN	1993 02	20.97986	08 58 30.21	+16 48 41.0		010
1993 BN	1993 02	20.99167	08 58 29.55	+16 48 39.8		010
1993 BD4	1993 02	20.96806	09 10 47.84	+16 00 38.2	18.5	010
1993 BD4	1993 02	20.97986	09 10 47.49	+16 00 40.7		010
1993 BD4	1993 02	20.99167	09 10 47.14	+16 00 42.7		010
1993 BF4	1993 02	20.96806	09 02 14.82	+18 35 02.9	19.2	010
1993 BF4	1993 02	20.97986	09 02 14.25	+18 35 07.4		010
1993 BF4	1993 02	20.99167	09 02 13.74	+18 35 13.6		010
1993 BH4	1993 02	20.96806	09 03 25.42	+16 04 49.0	19.0	010
1993 BH4	1993 02	20.97986	09 03 24.82	+16 04 51.1		010
1993 BH4	1993 02	20.99167	09 03 24.23	+16 04 52.8		010
1993 BQ4	1993 02	20.96806	09 02 19.20	+18 10 30.5	18.2	010
1993 BQ4	1993 02	20.97986	09 02 18.48	+18 10 34.0		010
1993 BQ4	1993 02	20.99167	09 02 17.84	+18 10 37.0		010
1993 BR4	1993 02	20.96806	09 05 50.61	+17 07 05.9	18.6	010

1993 BR4	1993 02 20.97986	09 05 49.99	+17 07 08.0		010
1993 BR4	1993 02 20.99167	09 05 49.48	+17 07 09.9		010
1993 BS4	1993 02 20.96806	09 08 48.58	+17 37 45.5	18.6	010
1993 BS4	1993 02 20.97986	09 08 48.02	+17 37 48.8		010
1993 BS4	1993 02 20.99167	09 08 47.52	+17 37 49.6		010
1993 BV4	1993 02 20.96806	09 06 45.38	+18 53 08.5	18.5	010
1993 BV4	1993 02 20.97986	09 06 44.79	+18 53 14.3		010
1993 BV4	1993 02 20.99167	09 06 44.23	+18 53 18.7		010
1993 BY4	1993 02 20.96806	09 02 53.58	+16 26 21.5	19.5	010
1993 BY4	1993 02 20.97986	09 02 52.96	+16 26 23.6		010
1993 BY4	1993 02 20.99167	09 02 52.31	+16 26 23.9		010
1993 BC5	1993 02 20.96806	09 10 27.55	+16 06 45.8	18.4	010
1993 BC5	1993 02 20.97986	09 10 26.99	+16 06 47.9		010
1993 BC5	1993 02 20.99167	09 10 26.50	+16 06 50.6		010
1993 BE5	1993 02 20.96806	09 12 59.80	+15 42 06.6	18.5	010
1993 BE5	1993 02 20.97986	09 12 59.27	+15 42 08.6		010
1993 BE5	1993 02 20.99167	09 12 58.90	+15 42 10.1		010
1993 BG5	1993 02 20.96806	09 04 12.13	+16 08 12.2	18.6	010
1993 BG5	1993 02 20.97986	09 04 11.49	+16 08 12.7		010
1993 BG5	1993 02 20.99167	09 04 10.85	+16 08 14.1		010
1993 BJ5	1993 02 20.96806	09 14 05.78	+15 41 03.3	18.3	010
1993 BJ5	1993 02 20.97986	09 14 05.35	+15 41 04.3		010
1993 BJ5	1993 02 20.99167	09 14 04.87	+15 41 06.2		010
1993 BL5	1993 02 20.96806	09 11 50.80	+17 12 48.5	19.0	010
1993 BL5	1993 02 20.97986	09 11 50.27	+17 12 51.1		010
1993 BL5	1993 02 20.99167	09 11 49.82	+17 12 51.5		010
1993 BM5	1993 02 20.96806	09 10 34.99	+18 16 02.8	18.4	010
1993 BM5	1993 02 20.97986	09 10 34.37	+18 16 05.3		010
1993 BM5	1993 02 20.99167	09 10 33.78	+18 16 08.3		010
1993 BQ5	1993 02 20.96806	09 09 54.83	+18 36 40.2	19.0	010
1993 BQ5	1993 02 20.97986	09 09 54.14	+18 36 42.1		010
1993 BQ5	1993 02 20.99167	09 09 53.44	+18 36 41.7		010
1993 BR5	1993 02 20.96806	09 07 39.32	+16 47 00.8	18.0	010
1993 BR5	1993 02 20.97986	09 07 38.61	+16 47 02.6		010
1993 BR5	1993 02 20.99167	09 07 37.90	+16 47 04.5		010
1993 BV5	1993 02 20.96806	09 09 45.92	+17 36 20.5	18.6	010
1993 BV5	1993 02 20.97986	09 09 45.25	+17 36 20.9		010
1993 BV5	1993 02 20.99167	09 09 44.55	+17 36 21.5		010
1993 BB6	1993 02 20.96806	09 15 43.03	+17 26 14.9	18.5	010
1993 BB6	1993 02 20.97986	09 15 42.35	+17 26 16.3		010
1993 BB6	1993 02 20.99167	09 15 41.85	+17 26 18.0		010
1993 BD6	1993 02 20.96806	09 15 01.54	+16 46 38.2	18.7	010
1993 BD6	1993 02 20.97986	09 15 00.92	+16 46 40.1		010
1993 BD6	1993 02 20.99167	09 15 00.31	+16 46 42.7		010
1993 BH6	1993 02 20.96806	09 16 39.35	+18 46 09.6	18.6	010
1993 BH6	1993 02 20.97986	09 16 38.79	+18 46 12.1		010
1993 BH6	1993 02 20.99167	09 16 38.19	+18 46 16.0		010
1993 BN6	1993 02 20.96806	09 17 35.46	+18 44 58.9	19.0	010
1993 BN6	1993 02 20.97986	09 17 34.79	+18 45 02.9		010
1993 BN6	1993 02 20.99167	09 17 34.19	+18 45 05.6		010
1993 BM14	1993 02 20.96806	09 16 05.96	+15 54 24.5	18.6	010
1993 BM14	1993 02 20.97986	09 16 05.38	+15 54 30.1		010
1993 BM14	1993 02 20.99167	09 16 04.77	+15 54 36.3		010
1993 CS	1993 02 20.96806	09 02 10.11	+19 40 38.5	18.4	010
1993 CS	1993 02 20.97986	09 02 09.56	+19 40 41.8		010
1993 CS	1993 02 20.99167	09 02 08.91	+19 40 45.3		010
1993 CA1	1993 02 20.96806	09 16 33.77	+15 09 38.8	18.2	010
1993 CA1	1993 02 20.97986	09 16 33.02	+15 09 37.3		010
1993 CA1	1993 02 20.99167	09 16 32.26	+15 09 35.8		010

1993 DJ1	1993 02 20.96806	09 11 33.10	+16 26 59.1	18.2		010
1993 DJ1	1993 02 20.97986	09 11 32.50	+16 27 05.4			010
1993 DJ1	1993 02 20.99167	09 11 31.92	+16 27 11.3			010
3266 T-1	1993 02 20.96806	09 15 23.48	+16 49 08.2	18.6		010
3266 T-1	1993 02 20.97986	09 15 22.99	+16 49 10.0			010
3266 T-1	1993 02 20.99167	09 15 22.41	+16 49 12.5			010
4193 T-1	1993 02 20.96806	09 11 53.65	+18 40 50.2	18.5		010
4193 T-1	1993 02 20.97986	09 11 53.04	+18 40 54.0			010
4193 T-1	1993 02 20.99167	09 11 52.39	+18 40 56.6			010
(1118)	1993 02 20.96806	09 16 24.63	+15 08 01.0	16.5		010
(1118)	1993 02 20.97986	09 16 24.03	+15 08 01.5			010
(1118)	1993 02 20.99167	09 16 23.43	+15 08 01.4			010
(1162)	1993 02 20.96806	09 12 51.24	+18 40 51.2	16.9		010
(1162)	1993 02 20.97986	09 12 50.76	+18 40 52.8			010
(1162)	1993 02 20.99167	09 12 50.25	+18 40 54.9			010
(1697)	1993 02 20.96806	09 08 53.08	+18 10 38.2	18.0		010
(1697)	1993 02 20.97986	09 08 52.38	+18 10 38.6			010
(1697)	1993 02 20.99167	09 08 51.68	+18 10 39.3			010
(1748)	1993 02 20.96806	09 19 28.64	+16 39 28.3	18.2		010
(1748)	1993 02 20.97986	09 19 28.18	+16 39 30.5			010
(1748)	1993 02 20.99167	09 19 27.79	+16 39 32.3			010
(2545)	1993 02 20.96806	09 15 18.90	+15 45 55.5	17.5		010
(2545)	1993 02 20.97986	09 15 18.13	+15 45 56.0			010
(2545)	1993 02 20.99167	09 15 17.40	+15 45 56.5			010
(2887)	1993 02 20.96806	09 14 34.35	+18 57 51.9	17.9		010
(2887)	1993 02 20.97986	09 14 33.62	+18 57 55.7			010
(2887)	1993 02 20.99167	09 14 32.87	+18 58 00.0			010
(3323)	1993 02 20.96806	09 18 47.11	+16 42 58.5	18.3		010
(3323)	1993 02 20.97986	09 18 46.43	+16 43 01.2			010
(3323)	1993 02 20.99167	09 18 45.85	+16 43 03.6			010
(3778)	1993 02 20.96806	09 04 16.25	+17 29 35.7	18.2		010
(3778)	1993 02 20.97986	09 04 15.70	+17 29 38.1			010
(3778)	1993 02 20.99167	09 04 15.15	+17 29 40.3			010
(4707)	1993 02 20.96806	09 05 49.76	+15 29 16.1	18.5		010
(4707)	1993 02 20.97986	09 05 49.38	+15 29 17.1			010
(4707)	1993 02 20.99167	09 05 49.05	+15 29 18.0			010
(4858)	1993 02 20.96806	09 15 53.98	+16 35 30.0	18.2		010
(4858)	1993 02 20.97986	09 15 53.25	+16 35 31.3			010
(4858)	1993 02 20.99167	09 15 52.55	+16 35 32.2			010
(5002)	1993 02 20.96806	09 00 40.95	+18 21 06.8	18.4		010
(5002)	1993 02 20.97986	09 00 40.23	+18 21 08.8			010
(5002)	1993 02 20.99167	09 00 39.58	+18 21 11.3			010

033 Tautenburg
F. Borngen, Thuringer Landessternwarte, Dorfstrasse 73,
O-6901 Tautenburg, Federal Republic of Germany
1.3-m Schmidt telescope
PPM

1972 RX1	1991 10 04.90625	00 03 05.88	-00 45 19.2	17.0		033
1972 RX1	1991 10 04.95069	00 03 03.81	-00 45 40.1			033
1972 RX1	1991 10 05.90972	00 02 21.12	-00 53 12.3			033
1976 UD4	1991 09 10.01111	00 26 19.80	+02 14 45.3	17.4		033
1976 UD4	1991 09 10.05486	00 26 18.10	+02 14 29.3			033
1976 UD4	1991 09 13.01111	00 24 21.98	+01 56 32.1			033
1976 UD4	1991 10 04.90625	00 06 52.15	-00 36 36.4	17.2		033
1976 UD4	1991 10 04.95069	00 06 49.89	-00 36 54.7			033
1976 UD4	1991 10 05.90972	00 06 03.63	-00 43 31.4			033
1976 UD4	1991 10 30.82118	23 52 20.14	-02 44 46.9	17.9		033
1976 UD4	1991 10 30.87118	23 52 19.39	-02 44 55.1			033

1981 EF28		1991	10	04.90625	00 07 56.29	-00 39 25.6	17.4		033
1981 EF28		1991	10	04.95069	00 07 53.64	-00 39 24.7			033
1981 EF28		1991	10	05.90972	00 06 58.38	-00 39 13.5			033
1982 SL6		1991	09	10.01111	00 30 59.64	+01 50 45.7	17.4		033
1982 SL6		1991	09	10.05486	00 30 57.67	+01 50 39.6			033
1982 SL6		1991	09	13.01111	00 28 43.60	+01 42 59.5			033
1984 SZ5		1991	10	04.90625	00 04 44.29	-01 49 37.7	17.9		033
1984 SZ5		1991	10	04.95069	00 04 41.43	-01 49 39.1			033
1984 SZ5		1991	10	05.90972	00 03 42.37	-01 49 50.2			033
1989 AW6		1991	09	10.01111	00 31 47.26	+01 05 04.1	19.1		033
1989 AW6		1991	09	10.05486	00 31 45.33	+01 04 51.4			033
1989 AW6		1991	09	13.01111	00 29 29.62	+00 50 09.4			033
1989 AW6		1991	10	04.90625	00 09 59.30	-01 09 49.7	18.7		033
1989 AW6		1991	10	04.95069	00 09 56.82	-01 10 03.9			033
1989 AW6		1991	10	05.90972	00 09 04.85	-01 15 07.8			033
1991 RV9		1991	09	10.01111	00 32 30.08	+01 52 59.1	17.9		033
1991 RV9		1991	09	10.05486	00 32 27.95	+01 52 50.6			033
1991 RV9		1991	09	13.01111	00 30 01.54	+01 42 49.0			033
1991 RV9		1991	10	04.90625	00 09 23.43	+00 16 56.2	18.0		033
1991 RV9		1991	10	04.95069	00 09 20.86	+00 16 46.7			033
1991 RV9		1991	10	05.90972	00 08 27.72	+00 13 12.1			033
1991 RJ33		1991	09	10.01111	00 28 45.28	+00 05 17.2	18.2		033
1991 RJ33		1991	09	10.05486	00 28 43.35	+00 05 10.3			033
1991 RJ33		1991	09	13.01111	00 26 28.97	-00 03 50.1			033
1991 RJ33		1991	10	04.90625	00 07 42.73	-01 15 32.1	18.5		033
1991 RJ33		1991	10	04.95069	00 07 40.40	-01 15 40.2			033
1991 RJ33		1991	10	05.90972	00 06 51.80	-01 18 28.7			033
1991 RL33		1991	09	10.01111	00 32 40.29	+00 08 30.6	17.5		033
1991 RL33		1991	09	10.05486	00 32 38.23	+00 08 29.3			033
1991 RL33		1991	09	13.01111	00 30 15.70	+00 06 25.1			033
1991 RL33		1991	10	04.90625	00 08 58.21	-00 16 21.4	17.4		033
1991 RL33		1991	10	04.95069	00 08 55.51	-00 16 23.2			033
1991 RL33		1991	10	05.90972	00 07 59.90	-00 17 03.2			033
1991 RR40	*	1991	09	10.01111	00 25 00.72	+02 12 54.8	17.8		033
1991 RR40		1991	09	10.05486	00 24 59.05	+02 12 43.5			033
1991 RR40		1991	09	13.01111	00 23 07.07	+01 59 58.7			033
1991 RR40		1991	10	04.90625	00 07 13.96	+00 13 05.5	17.6		033
1991 RR40		1991	10	04.95069	00 07 11.95	+00 12 52.8			033
1991 RR40		1991	10	05.90972	00 06 30.42	+00 08 15.4			033
1991 RR40		1991	10	30.82118	23 53 05.44	-01 19 51.2	18.3		033
1991 RR40		1991	10	30.87118	23 53 04.46	-01 19 57.6			033
1991 RS40	*	1991	09	10.01111	00 25 49.76	+00 47 57.4	18.3		033
1991 RS40		1991	09	10.05486	00 25 47.93	+00 47 47.0			033
1991 RS40		1991	09	13.01111	00 23 40.73	+00 35 45.7			033
1991 RS40		1991	10	04.90625	00 06 01.68	-01 00 15.6	18.3		033
1991 RS40		1991	10	04.95069	00 05 59.49	-01 00 26.3			033
1991 RS40		1991	10	05.90972	00 05 14.20	-01 04 20.7			033
1991 RT40	*	1991	09	10.01111	00 26 14.31	+00 41 23.0	18.5		033
1991 RT40		1991	09	10.05486	00 26 12.50	+00 41 12.0			033
1991 RT40		1991	09	13.01111	00 24 06.24	+00 28 59.4			033
1991 RT40		1991	10	04.90625	00 06 52.02	-01 06 55.4	18.1		033
1991 RT40		1991	10	04.95069	00 06 49.92	-01 07 05.8			033
1991 RT40		1991	10	05.90972	00 06 05.66	-01 11 01.1			033
1991 RU40	*	1991	09	10.01111	00 27 18.78	+00 06 14.1	19.3		033
1991 RU40		1991	09	10.05486	00 27 16.75	+00 06 05.7			033
1991 RU40		1991	09	13.01111	00 24 58.09	-00 03 26.5			033
1991 RV40	*	1991	09	10.01111	00 29 06.19	+01 53 58.4	18.9		033
1991 RV40		1991	09	10.05486	00 29 04.37	+01 53 47.8			033
1991 RV40		1991	09	13.01111	00 27 01.18	+01 41 49.6			033

1991	RV40		1991	10	04.90625	00	10	10.38	+00	04	59.2	18.7		033
1991	RV40		1991	10	04.95069	00	10	08.27	+00	04	48.0			033
1991	RV40		1991	10	05.90972	00	09	24.51	+00	00	41.1			033
1991	RW40	*	1991	09	10.01111	00	30	49.17	+02	13	30.9	19.1		033
1991	RW40		1991	09	10.05486	00	30	47.43	+02	13	17.5			033
1991	RW40		1991	09	13.01111	00	28	47.00	+01	57	34.5			033
1991	RX40	*	1991	09	10.01111	00	31	04.69	+00	57	56.4	18.9		033
1991	RX40		1991	09	10.05486	00	31	03.15	+00	57	40.2			033
1991	RX40		1991	09	13.01111	00	29	17.69	+00	38	08.1			033
1991	RX40		1991	10	04.90625	00	12	29.73	-02	02	36.1	18.6		033
1991	RX40		1991	10	04.95069	00	12	27.54	-02	02	55.0			033
1991	RX40		1991	10	05.90972	00	11	42.50	-02	09	32.5			033
1991	RY40	*	1991	09	10.01111	00	32	12.53	+02	20	50.9	18.8		033
1991	RY40		1991	09	10.05486	00	32	10.60	+02	20	43.6			033
1991	RY40		1991	09	13.01111	00	29	58.20	+02	11	51.1			033
1991	RZ40	*	1991	09	10.01111	00	32	20.67	+01	48	09.5	18.4		033
1991	RZ40		1991	09	10.05486	00	32	18.95	+01	47	54.1			033
1991	RZ40		1991	09	13.01111	00	30	21.00	+01	30	32.9			033
1991	RA41	*	1991	09	10.01111	00	32	42.46	+01	31	37.4	19.2		033
1991	RA41		1991	09	10.05486	00	32	40.62	+01	31	27.3			033
1991	RA41		1991	09	13.01111	00	30	37.76	+01	19	40.8			033
1991	RB41	*	1991	09	10.01111	00	34	01.53	+02	35	21.0	17.8		033
1991	RB41		1991	09	10.05486	00	34	00.07	+02	34	51.9			033
1991	RB41		1991	09	13.01111	00	32	20.19	+02	01	28.6			033
1991	RC41	*	1991	09	10.01111	00	34	02.24	+00	06	37.2	19.3		033
1991	RC41		1991	09	10.05486	00	34	00.36	+00	06	19.5			033
1991	RC41		1991	09	13.01111	00	31	48.15	-00	13	35.1			033
1991	RD41	*	1991	09	10.01111	00	34	16.81	+00	31	56.9	19.0		033
1991	RD41		1991	09	10.05486	00	34	15.29	+00	31	44.7			033
1991	RD41		1991	09	13.01111	00	32	26.87	+00	17	13.3			033
1991	RE41	*	1991	09	10.01111	00	34	54.05	+00	19	48.7	18.7		033
1991	RE41		1991	09	10.05486	00	34	52.43	+00	19	33.2			033
1991	RE41		1991	09	13.01111	00	32	57.92	+00	01	58.9			033
1991	RF41	*	1991	09	10.01111	00	36	27.71	+01	35	41.6	16.8		033
1991	RF41		1991	09	10.05486	00	36	26.06	+01	35	25.3		V	033
1991	RF41		1991	09	13.01111	00	34	30.48	+01	15	56.9			033
1991	RG41	*	1991	09	10.01111	00	36	28.17	+01	04	01.4	18.6		033
1991	RG41		1991	09	10.05486	00	36	26.53	+01	03	48.1			033
1991	RG41		1991	09	13.01111	00	34	31.77	+00	49	13.1			033
1991	RH41	*	1991	09	10.01111	00	36	51.38	+00	17	01.1	18.3		033
1991	RH41		1991	09	10.05486	00	36	49.67	+00	16	45.2			033
1991	RH41		1991	09	13.01111	00	34	47.87	-00	01	38.3			033
1991	RJ41	*	1991	09	10.01111	00	37	30.01	-00	10	09.7	18.4		033
1991	RJ41		1991	09	10.05486	00	37	27.85	-00	10	09.8			033
1991	RJ41		1991	09	13.01111	00	34	57.94	-00	11	04.5			033
1991	TH13	*	1991	10	04.90625	00	03	55.92	-02	38	12.7	18.4		033
1991	TH13		1991	10	04.95069	00	03	53.71	-02	38	21.3			033
1991	TH13		1991	10	05.90972	00	03	06.61	-02	41	32.6			033
1991	TJ13	*	1991	10	04.90625	00	09	32.13	+00	10	02.0	18.9		033
1991	TJ13		1991	10	04.95069	00	09	29.73	+00	09	48.6			033
1991	TJ13		1991	10	05.90972	00	08	41.43	+00	04	45.6			033
1991	TK13	*	1991	10	04.90625	00	09	34.17	-00	21	04.6	19.0		033
1991	TK13		1991	10	04.95069	00	09	32.25	-00	21	22.3			033
1991	TK13		1991	10	05.90972	00	08	52.52	-00	27	47.4			033
1991	TL13	*	1991	10	04.90625	00	12	07.16	-00	58	28.1	18.0		033
1991	TL13		1991	10	04.95069	00	12	04.50	-00	58	27.5			033
1991	TL13		1991	10	05.90972	00	11	08.92	-00	58	29.0			033
1991	TM13	*	1991	10	04.90625	00	12	27.49	-00	23	31.2	17.7		033
1991	TM13		1991	10	04.95069	00	12	24.59	-00	23	31.4			033

1991 TM13		1991 10 05.90972	00 11 24.70	-00 23 44.4				033
1991 TN13	*	1991 10 04.90625	00 15 31.02	-02 11 59.6		18.9		033
1991 TN13		1991 10 04.95069	00 15 28.48	-02 12 15.1				033
1991 TN13		1991 10 05.90972	00 14 35.51	-02 17 49.5				033
1991 UD5	*	1991 10 30.82118	23 55 35.49	-04 16 26.1		18.4		033
1991 UD5		1991 10 30.87118	23 55 34.51	-04 16 23.0				033
1274 T-2		1991 10 04.90625	00 04 31.78	+00 09 45.0		18.8		033
1274 T-2		1991 10 04.95069	00 04 29.61	+00 09 33.4				033
1274 T-2		1991 10 05.90972	00 03 43.42	+00 05 17.9				033
3336 T-2		1991 09 10.01111	00 32 40.66	-00 06 29.8		18.0		033
3336 T-2		1991 09 10.05486	00 32 39.39	-00 06 51.7				033
3336 T-2		1991 09 13.01111	00 31 09.92	-00 31 55.7				033
3395 T-3		1991 10 04.90625	00 03 57.43	-00 27 56.3		18.2		033
3395 T-3		1991 10 04.95069	00 03 55.11	-00 28 16.7				033
3395 T-3		1991 10 05.90972	00 03 06.73	-00 35 38.5				033
(319)		1991 10 30.82118	23 45 18.22	-02 25 56.3		15.4		033
(319)		1991 10 30.87118	23 45 17.60	-02 26 12.0				033
(1239)		1991 09 10.01111	00 34 51.58	+01 04 42.3		17.3		033
(1239)		1991 09 10.05486	00 34 49.78	+01 04 30.2				033
(1239)		1991 09 13.01111	00 32 44.87	+00 50 18.0				033
(1239)		1991 10 04.90625	00 14 23.78	-01 06 59.8		17.1		033
(1239)		1991 10 04.95069	00 14 21.40	-01 07 13.8				033
(1239)		1991 10 05.90972	00 13 31.33	-01 12 16.2				033
(1239)		1991 10 30.82118	23 55 56.12	-02 48 37.8		17.6		033
(1239)		1991 10 30.87118	23 55 54.68	-02 48 43.9				033
(2142)		1991 10 04.90625	00 04 17.96	-00 00 45.3		17.8		033
(2142)		1991 10 04.95069	00 04 16.14	-00 00 57.4				033
(2142)		1991 10 05.90972	00 03 37.17	-00 05 17.1				033
(2142)		1991 10 30.82118	23 50 11.94	-01 33 44.3		18.2		033
(2142)		1991 10 30.87118	23 50 10.88	-01 33 50.9				033
(4466)		1991 09 10.01111	00 26 35.79	+02 19 55.9		17.7		033
(4466)		1991 09 10.05486	00 26 34.08	+02 19 42.5				033
(4466)		1991 09 13.01111	00 24 37.64	+02 04 46.8				033
(4466)		1991 10 04.90625	00 08 30.21	+00 03 40.1		17.5		033
(4466)		1991 10 04.95069	00 08 28.20	+00 03 26.0				033
(4466)		1991 10 05.90972	00 07 46.42	-00 01 45.0				033
(4466)		1991 10 30.82118	23 53 59.99	-01 44 15.4		18.0		033
(4466)		1991 10 30.87118	23 53 58.98	-01 44 23.6				033
(4518)		1991 09 10.01111	00 33 06.25	+01 05 33.0		18.1		033
(4518)		1991 09 10.05486	00 33 04.41	+01 05 09.6				033
(4518)		1991 09 13.01111	00 30 54.27	+00 38 54.5				033
(4518)		1991 10 04.90625	00 12 28.31	-02 41 49.8		17.9		033
(4518)		1991 10 04.95069	00 12 26.03	-02 42 11.8				033
(4518)		1991 10 05.90972	00 11 38.60	-02 50 17.4				033
(5018)		1991 10 04.90625	00 05 33.26	-02 29 19.7		17.3		033
(5018)		1991 10 04.95069	00 05 30.56	-02 29 28.9				033
(5018)		1991 10 05.90972	00 04 34.67	-02 32 51.2				033

046 Klet
J. Ticha, Hvezdarna Klet, CS-37001 Ceske Budejovice, Czech Republic
Observers J. Ticha, M. Tichy, Z. Moravec, Z. Vavrova, E. Pittich,
P. Pravec, S. Solovaya
Measurers Z. Moravec, M. Tichy, Z. Vavrova, P. Pravec
0.63-m Maksutov reflector, 0.57-m reflector (with CCD in some cases)
PPM

1980 AA		1993 02 18.76603	08 53 42.16	+02 07 02.6				046
1980 AA		1993 02 18.76951	08 53 42.73	+02 06 58.6				046
1980 AA		1993 02 18.77144	08 53 43.05	+02 06 56.8		16.6	V	046
1980 AA		1993 02 18.77284	08 53 43.28	+02 06 55.0		16.6	V	046

1980 AA		1993	02	18.77400	08	53	43.46	+02	06	54.1	16.6 V	046
1980 AA		1993	03	13.86197	09	42	16.76	-01	11	03.9	18.0 V	046
1980 AA		1993	03	13.86356	09	42	16.90	-01	11	04.2	18.1 V	046
1980 AA		1993	03	13.86582	09	42	17.09	-01	11	04.2	18.0 V	046
1980 AA		1993	03	13.87097	09	42	17.58	-01	11	04.9	17.9 V	046
1980 AA		1993	03	13.87584	09	42	18.03	-01	11	06.1		046
1980 AA		1993	03	13.87769	09	42	18.20	-01	11	05.8		046
1980 AA		1993	03	13.88314	09	42	18.70	-01	11	06.9		046
1980 AA		1993	03	13.88483	09	42	18.86	-01	11	07.2		046
1980 AA		1993	03	13.88622	09	42	18.97	-01	11	07.2		046
1980 AA		1993	03	13.88793	09	42	19.12	-01	11	07.7		046
1980 AA		1993	03	13.88941	09	42	19.28	-01	11	08.3		046
1993 BQ13	*	1993	01	31.03972	09	37	59.74	+10	17	19.7	16.2	046
1993 BQ13		1993	02	01.08209	09	37	01.69	+10	13	19.9		046
1993 BQ13		1993	02	01.09703	09	37	00.84	+10	13	16.9		046
1993 BR13	*	1993	01	31.03972	09	38	23.29	+11	15	01.2	16.0 E	046
1993 BR13		1993	02	01.08209	09	37	47.82	+11	12	04.0		046
1993 BR13		1993	02	01.09703	09	37	47.12	+11	12	02.8		046
1993 CU1	*	1993	02	10.82309	10	07	57.61	+26	11	07.1	16.3	046
1993 CU1		1993	02	10.83750	10	07	56.70	+26	11	07.1		046
1993 CU1		1993	02	11.85550	10	06	44.71	+26	11	10.0		046
1993 CU1		1993	02	11.86972	10	06	43.90	+26	11	10.5		046
1993 CV1	*	1993	02	10.82309	10	09	39.84	+26	55	41.5	16.1 U	046
1993 CV1		1993	02	10.83750	10	09	39.05	+26	55	43.7		046
1993 CV1		1993	02	11.85550	10	08	37.12	+26	57	24.6		046
1993 CW1	*	1993	02	10.82309	10	13	39.70	+24	15	06.9	15.6 U	046
1993 CW1		1993	02	10.83750	10	13	38.90	+24	15	02.2		046
1993 CW1		1993	02	11.85550	10	12	34.73	+24	11	01.5		046
1993 CW1		1993	02	11.86972	10	12	33.86	+24	10	57.7		046
1993 CX1	*	1993	02	10.83750	10	04	15.12	+24	14	17.0	16.3	046
1993 CX1		1993	02	11.85550	10	02	48.68	+24	10	30.7		046
1993 CX1		1993	02	11.86972	10	02	47.43	+24	10	25.5		046
1993 CY1	*	1993	02	10.83750	10	15	30.87	+26	17	52.6	16.3	046
1993 CY1		1993	02	11.85550	10	14	19.12	+26	18	53.7		046
1993 CY1		1993	02	11.86972	10	14	18.19	+26	18	54.2		046
1993 CZ1	*	1993	02	11.88825	10	06	23.97	+12	58	17.2	16.0	046
1993 CZ1		1993	02	11.90300	10	06	23.08	+12	58	16.8		046
1993 CZ1		1993	02	12.83704	10	05	30.23	+12	57	38.7		046
1993 CA2	*	1993	02	11.88825	10	07	52.32	+16	42	58.8	16.0	046
1993 CA2		1993	02	11.90300	10	07	51.58	+16	42	55.1		046
1993 CA2		1993	02	12.83704	10	06	55.96	+16	40	30.9		046
(6)		1993	02	11.88825	10	10	56.77	+14	50	09.8		046
(6)		1993	02	11.90300	10	10	55.95	+14	50	19.2		046
(6)		1993	02	12.83704	10	10	05.04	+15	00	07.3		046
(6)		1993	02	12.85138	10	10	04.28	+15	00	17.0		046
(820)		1993	02	11.88825	10	11	48.51	+15	29	47.1		046
(820)		1993	02	11.90300	10	11	47.85	+15	29	53.3		046
(820)		1993	02	12.83704	10	11	06.10	+15	35	06.8		046
(820)		1993	02	12.85138	10	11	05.45	+15	35	12.4		046
(1005)		1993	02	10.82309	10	06	13.98	+25	00	16.2		046
(1005)		1993	02	10.83750	10	06	13.28	+25	00	16.9		046
(1005)		1993	02	11.85550	10	05	12.41	+25	00	55.3		046
(1005)		1993	02	11.86972	10	05	11.50	+25	00	56.0		046
(1118)		1993	01	31.06137	09	34	27.47	+14	51	57.6	16.0	046
(1118)		1993	01	31.07560	09	34	26.59	+14	51	57.3		046
(1287)		1993	02	12.80833	08	35	57.18	+04	24	30.7	16.0	046
(1287)		1993	02	12.81736	08	35	56.68	+04	24	34.6		046
(1833)		1993	01	31.02479	09	40	26.82	+08	50	58.2		046
(1833)		1993	01	31.03972	09	40	26.18	+08	51	02.3		046

(1837)	1993 01 31.02479	09 36 10.67	+09 57 52.2			046
(1837)	1993 01 31.03972	09 36 09.52	+09 57 56.5			046
(2034)	1993 02 10.82309	10 07 34.33	+26 29 25.8			046
(2034)	1993 02 10.83750	10 07 33.50	+26 29 27.5			046
(2034)	1993 02 11.85550	10 06 19.04	+26 31 40.2			046
(2034)	1993 02 11.86972	10 06 17.95	+26 31 41.2			046
(2328)	1993 02 10.77227	08 32 26.54	+04 23 47.7			046
(2328)	1993 02 10.78106	08 32 26.09	+04 23 54.2			046
(2328)	1993 02 10.79583	08 32 25.39	+04 24 04.6			046
(2328)	1993 02 10.80485	08 32 24.93	+04 24 09.8			046
(2328)	1993 02 11.79328	08 31 37.29	+04 33 49.6			046
(2328)	1993 02 11.80243	08 31 36.78	+04 33 56.2			046
(2328)	1993 02 11.82344	08 31 35.77	+04 34 07.8			046
(2328)	1993 02 11.83228	08 31 35.37	+04 34 14.0			046
(2328)	1993 02 12.80833	08 30 49.69	+04 43 52.3			046
(2328)	1993 02 12.81736	08 30 49.11	+04 44 01.5			046
(2421)	1993 02 10.82309	10 10 28.89	+25 16 16.7			046
(2421)	1993 02 10.83750	10 10 28.42	+25 16 20.8			046
(2421)	1993 02 11.85550	10 09 40.87	+25 21 46.6			046
(2421)	1993 02 11.86972	10 09 40.09	+25 21 51.6			046
(2545)	1993 01 31.06137	09 38 59.90	+15 17 10.6			046
(2545)	1993 01 31.07560	09 38 58.91	+15 17 16.1			046
(2601)	1993 02 01.11821	09 40 32.84	+05 48 16.6			046
(2601)	1993 02 01.13250	09 40 32.32	+05 48 16.6			046
(3560)	1993 01 31.06137	09 44 34.66	+15 10 32.6			046
(3560)	1993 01 31.07560	09 44 33.83	+15 10 35.1			046
(3935)	1993 01 31.02479	09 34 37.08	+09 56 04.2			046
(3935)	1993 01 31.03972	09 34 35.96	+09 56 04.9			046
(4497)	1993 02 10.82309	10 06 43.16	+24 53 59.0			046
(4497)	1993 02 10.83750	10 06 42.26	+24 54 06.3			046
(4497)	1993 02 11.85550	10 05 38.48	+25 02 13.9			046
(4497)	1993 02 11.86972	10 05 37.51	+25 02 20.7			046

104 San Marcello Pistoiese
L. Tesi, Osservatorio di Pian dei Termini, Viale Panoramico 45, I-51028
San Marcello Pistoiese (PT), Italy
Observers L. Tesi, P. Gigli
Measurers L. Tesi, G. Cattani
AGK3, SAOC

1976 AH	1993 01 15.90556	07 01 14.38	+08 13 25.1			104
1976 AH	1993 01 27.95833	06 51 24.64	+07 44 14.1			104
1976 AH	1993 01 27.97266	06 51 24.03	+07 44 12.9			104
1980 AA	1993 02 13.82569	08 38 01.88	+03 57 15.2			104
1980 AA	1993 02 14.81389	08 41 25.31	+03 32 06.6			104
1980 AA	1993 02 14.84306	08 41 30.68	+03 31 24.7			104
1980 AA	1993 02 15.81806	08 44 43.67	+03 08 13.6			104
1980 AA	1993 02 17.89861	08 51 08.69	+02 23 46.9			104
1980 AA	1993 02 17.91667	08 51 11.57	+02 23 24.2			104
1980 AA	1993 02 18.80139	08 53 48.23	+02 06 26.8			104
1980 AA	1993 02 18.81979	08 53 51.10	+02 06 07.6			104
(5036)	1993 02 18.87159	10 27 20.56	+13 25 00.3			104
(5036)	1993 02 18.88611	10 27 19.85	+13 25 05.1			104
(5438)	1993 02 09.84931	09 32 12.01	-10 29 03.6			104
(5438)	1993 02 09.86111	09 32 10.92	-10 29 12.9			104
(5438)	1993 02 10.88958	09 30 43.90	-10 42 25.6			104
(5438)	1993 02 10.90139	09 30 42.88	-10 42 34.9			104
(5438)	1993 02 11.89618	09 29 18.51	-10 55 01.7			104
(5438)	1993 02 11.90764	09 29 17.46	-10 55 10.3			104
(5438)	1993 02 13.92187	09 26 26.17	-11 19 18.3			104

(5438)		1993 02 14.87604	09 25 05.18	-11 30 13.8				104
(5438)		1993 02 14.88715	09 25 04.18	-11 30 21.5				104
(5438)		1993 02 15.85590	09 23 42.07	-11 41 06.7				104
(5438)		1993 02 15.88299	09 23 39.71	-11 41 25.2				104
(5438)		1993 02 18.84132	09 19 31.01	-12 12 10.8				104
(5438)		1993 02 18.85243	09 19 30.11	-12 12 16.7				104

108 Montelupo
M. Tombelli, Via Bozzeto 26, I-50056 Montelupo, Florence, Italy
Observer M. Tombelli
Measurer S. Bartolini
0.20-m f/10 reflector + CCD

(1325)		1993 02 18.88842	10 15 40.31	+19 05 57.8				108
(1325)		1993 02 18.89944	10 15 39.55	+19 05 58.3				108
(1325)		1993 02 18.90537	10 15 39.41	+19 06 03.0				108
(1325)		1993 02 18.91624	10 15 38.71	+19 06 05.8				108
(1325)		1993 02 18.91873	10 15 38.69	+19 06 05.8				108
(1325)		1993 02 20.87054	10 13 43.39	+19 13 30.7				108
(1325)		1993 02 20.87625	10 13 43.20	+19 13 34.6				108

365 Uto Observatory
F. Uto, Mise Machi 2340-1, Kasihara, Nara-Ken 634, Japan
0.20-m f/4.0 reflector
PPM

1993 DL		1993 02 14.62944	10 47 34.12	+13 11 53.2	16.5		S	365
1993 DL		1993 02 14.66243	10 47 32.73	+13 12 10.3			W	365

372 Geisei
T. Seki, Kamimachi 2-9-35, Kochi, Japan
0.60-m f/3.5 reflector
ACRS

1986 JA		1993 02 28.69115	11 47 23.43	+04 59 22.7	17			372
1986 JA		1993 02 28.70035	11 47 22.99	+04 59 30.1				372
1986 JA		1993 03 17.59757	11 33 53.30	+08 22 43.1	16.5			372
1986 JA		1993 03 17.60799	11 33 52.81	+08 22 50.8				372
1986 JA		1993 03 18.60729	11 33 02.08	+08 34 43.0	16.5			372
1987 WY		1993 01 26.71406	10 27 51.47	-08 42 58.3	17			372
1987 WY		1993 01 26.72604	10 27 50.98	-08 42 56.4				372
1987 WY		1993 02 12.58611	10 14 52.67	-08 03 57.4	18			372
1987 WY		1993 02 12.59653	10 14 52.17	-08 03 56.2				372
1987 YK		1993 03 17.68090	12 14 51.83	+05 33 35.9	18			372
1987 YK		1993 03 17.69132	12 14 51.38	+05 33 40.2				372
1987 YK		1993 03 18.71597	12 13 58.37	+05 39 04.2	18			372
1988 WB		1993 02 25.70313	12 10 35.00	-03 58 09.6	17			372
1988 WB		1993 02 25.71319	12 10 34.47	-03 58 06.5				372
1988 WB		1993 02 28.70990	12 08 21.57	-03 47 22.2	16.5			372
1988 WB		1993 02 28.71840	12 08 21.23	-03 47 20.0				372
1989 FL		1993 02 12.50174	09 26 00.38	+21 54 23.8	16.5			372
1989 FL		1993 02 12.51215	09 25 59.69	+21 54 25.4				372
1990 UF		1993 02 12.60799	10 40 05.59	+02 32 52.1	17.5			372
1990 UF		1993 02 12.61875	10 40 04.80	+02 32 55.8				372
1990 UF		1993 02 13.63819	10 39 23.64	+02 37 05.5	17.5			372
1991 CY5	*	1991 02 12.67413	10 16 34.56	+07 46 37.8	18			372
1991 CY5		1991 02 12.68472	10 16 34.18	+07 46 39.6				372
1991 CZ5	*	1991 02 12.67413	10 17 13.68	+07 40 03.2	18			372
1991 CZ5		1991 02 12.68472	10 17 13.14	+07 40 07.8				372
1991 CA6	*	1991 02 12.67413	10 18 27.29	+07 56 56.1	17			372
1991 CA6		1991 02 12.68472	10 18 26.68	+07 57 03.4				372
1991 FT		1991 04 16.58924	12 16 46.37	-04 01 31.0	17			372

1991 FT		1991	04	16.59965	12	16	45.54	-04	01	30.2		372
1991 RM6		1993	02	17.73750	11	54	26.34	+05	38	10.2	17.5	372
1991 RM6		1993	02	17.74826	11	54	25.80	+05	38	16.6		372
1991 RM6		1993	02	19.73785	11	53	08.94	+05	54	11.1	17	372
1991 RM6		1993	02	19.74826	11	53	08.32	+05	54	17.1		372
1992 WN5		1992	12	03.65764	04	07	57.36	+16	59	20.1	16.5	372
1992 WN5		1992	12	03.66696	04	07	56.86	+16	59	18.5		372
1993 CM		1993	02	17.62883	10	42	13.62	+14	07	57.8	17	372
1993 CM		1993	02	17.63889	10	42	13.11	+14	08	00.0		372
1993 CM		1993	02	19.67049	10	40	15.49	+14	18	02.2	16.5	372
1993 CM		1993	02	19.68090	10	40	14.98	+14	18	05.4		372
1993 CB1	*	1993	02	13.61528	10	02	52.47	+22	06	16.8	17.5	372
1993 CB1		1993	02	13.62571	10	02	51.47	+22	06	23.2		372
1993 CB1		1993	02	17.58437	09	58	55.56	+22	36	01.9	17	372
1993 CB1		1993	02	17.59444	09	58	54.72	+22	36	08.2		372
1993 CC1	*	1993	02	13.65139	10	38	08.80	+13	06	34.4	18	372
1993 CC1		1993	02	13.66042	10	38	08.63	+13	06	39.2		372
1993 CC1		1993	02	17.67292	10	34	49.65	+13	35	49.9	17.5	372
1993 CC1		1993	02	17.68264	10	34	49.12	+13	35	54.4		372
1993 CD1	*	1993	02	13.65139	10	40	07.88	+12	30	13.4	18	372
1993 CD1		1993	02	13.66042	10	40	07.39	+12	30	17.0		372
1993 CD1		1993	02	17.69410	10	36	22.10	+12	50	47.0	17.5	372
1993 CD1		1993	02	17.70347	10	36	21.53	+12	50	51.2		372
1993 CD1		1993	02	19.69271	10	34	25.90	+13	01	01.7	17.5	372
1993 CD1		1993	02	19.70278	10	34	25.27	+13	01	06.5		372
1993 CE1	*	1993	02	13.67013	10	39	44.78	+07	23	38.2	17.5	372
1993 CE1		1993	02	13.67986	10	39	44.18	+07	23	41.8		372
1993 CE1		1993	02	17.65104	10	35	51.61	+07	42	22.7	17.5	372
1993 CE1		1993	02	17.66111	10	35	50.97	+07	42	25.2		372
1993 CF1	*	1993	02	13.67013	10	42	19.58	+07	52	20.5	18	372
1993 CF1		1993	02	13.67986	10	42	18.94	+07	52	21.2		372
1993 CF1		1993	02	17.65104	10	38	22.49	+08	07	06.3	17.5	372
1993 CF1		1993	02	17.66111	10	38	21.79	+08	07	08.5		372
1993 CG1	*	1993	02	13.69028	09	58	13.96	+17	00	07.2	17.5	372
1993 CG1		1993	02	13.70278	09	58	13.25	+17	00	13.0		372
1993 CG1		1993	02	17.60660	09	55	17.00	+17	27	12.6	17	372
1993 CG1		1993	02	17.61667	09	55	16.56	+17	27	17.4		372
1993 CG1		1993	02	19.64826	09	53	45.06	+17	40	57.4	18	372
1993 CG1		1993	02	19.65833	09	53	44.41	+17	41	01.6		372
1993 CH1	*	1993	02	13.69028	09	59	19.40	+17	04	27.9	17.5	372
1993 CH1		1993	02	13.70278	09	59	18.66	+17	04	33.7		372
1993 CH1		1993	02	17.60660	09	55	21.90	+17	23	13.4	17	372
1993 CH1		1993	02	17.61667	09	55	21.21	+17	23	16.6		372
1993 CC2	*	1993	02	13.55382	09	46	09.60	+18	03	38.9	18	372
1993 CC2		1993	02	13.56389	09	46	08.78	+18	03	42.3		372
1993 CC2		1993	02	17.55868	09	41	51.61	+18	21	45.4	18	372
1993 CC2		1993	02	17.56771	09	41	51.19	+18	21	48.9		372
1993 DD	*	1993	02	17.60660	09	55	34.86	+18	14	30.4	17.5	372
1993 DD		1993	02	17.61667	09	55	34.46	+18	14	39.1		372
1993 DD		1993	02	19.64826	09	53	49.25	+18	30	34.5	17.5	372
1993 DD		1993	02	19.65833	09	53	48.77	+18	30	36.7		372
1993 DE	*	1993	02	17.60660	09	56	35.14	+18	02	28.3	17.5	372
1993 DE		1993	02	17.61667	09	56	34.65	+18	02	27.7		372
1993 DE		1993	02	19.64826	09	54	19.29	+18	01	15.3	17.5	372
1993 DE		1993	02	19.65833	09	54	18.58	+18	01	14.3		372
1993 DF	*	1993	02	17.62883	10	40	34.72	+14	06	20.8	17	372
1993 DF		1993	02	17.63889	10	40	34.27	+14	06	24.1		372
1993 DF		1993	02	19.67049	10	39	06.27	+14	22	45.7	17	372
1993 DF		1993	02	19.68090	10	39	05.80	+14	22	51.8		372

1993 DG	*	1993	02	17.69410	10	36	58.22	+13	19	01.8	18		372
1993 DG		1993	02	17.70347	10	36	57.42	+13	19	04.0			372
1993 DG		1993	02	19.69271	10	35	10.39	+13	31	16.3	18		372
1993 DG		1993	02	19.70278	10	35	09.56	+13	31	19.0			372
1993 DH	*	1993	02	17.71563	11	27	21.14	+12	40	00.0	16.5		372
1993 DH		1993	02	17.72569	11	27	20.56	+12	40	03.7			372
1993 DH		1993	02	19.71493	11	25	58.33	+12	52	18.0	17		372
1993 DJ	*	1993	02	19.63178	09	40	57.65	+18	27	53.0	17	d	372
1993 DJ		1993	02	22.55833	09	38	03.13	+19	38	39.1	16.5	d	372
1993 DJ		1993	02	22.56910	09	38	02.48	+19	38	57.5		d	372
1993 DJ		1993	02	25.56875	09	35	10.37	+20	48	55.0	16.5		372
1993 DJ		1993	02	25.65035	09	35	05.44	+20	50	46.0			372
1993 DJ		1993	02	25.74931	09	34	59.63	+20	53	01.1			372
1993 DJ		1993	02	28.61181	09	32	25.89	+21	56	38.7	17		372
1993 DJ		1993	02	28.68125	09	32	22.09	+21	58	10.4			372
1993 DJ		1993	03	02.66667	09	30	42.49	+22	40	19.5	17		372
1993 DJ		1993	03	02.67708	09	30	41.97	+22	40	32.8			372
1993 DJ		1993	03	04.78715	09	29	02.86	+23	23	28.1			372
1993 DJ		1993	03	16.57014	09	22	35.84	+26	44	42.0	16.5		372
1993 DJ		1993	03	16.60833	09	22	35.16	+26	45	13.8			372
1993 DJ		1993	03	18.59063	09	22	01.04	+27	12	23.9	17		372
1993 DO	*	1993	02	19.76007	11	53	08.69	+04	57	07.4	17		372
1993 DO		1993	02	19.77083	11	53	08.49	+04	57	10.8			372
1993 DO		1993	02	25.66215	11	49	46.04	+05	41	18.5	17		372
1993 DO		1993	02	25.67118	11	49	45.59	+05	41	21.6			372
1993 DO		1993	03	02.68681	11	46	32.26	+06	20	25.7	17		372
1993 DO		1993	03	02.69514	11	46	32.01	+06	20	32.1			372
1993 DP	*	1993	02	19.80764	13	46	18.64	-06	21	37.3	17		372
1993 DP		1993	02	19.82361	13	46	18.23	-06	21	37.3			372
1993 DP		1993	02	25.76145	13	42	12.93	-06	22	19.9	17		372
1993 DP		1993	02	25.77257	13	42	12.19	-06	22	21.1			372
1993 DG1	*	1993	02	25.60625	11	19	49.89	+12	53	46.3	17		372
1993 DG1		1993	02	25.61597	11	19	49.36	+12	53	45.9			372
1993 DG1		1993	02	28.72882	11	16	11.95	+12	35	25.2	17		372
1993 DG1		1993	02	28.73681	11	16	11.41	+12	35	24.1			372
1993 DH1		1993	02	17.71563	11	28	29.45	+13	31	34.2	17		372
1993 DH1		1993	02	17.72569	11	28	28.95	+13	31	33.9			372
1993 DH1	*	1993	02	25.60625	11	22	05.21	+13	46	35.0	18		372
1993 DH1		1993	02	25.61597	11	22	04.89	+13	46	35.6			372
1993 DH1		1993	02	28.66111	11	19	26.49	+13	51	45.2	18		372
1993 DH1		1993	02	28.67084	11	19	25.89	+13	51	47.8			372
1993 DR1	*	1993	02	25.62743	11	01	31.43	+17	50	57.1	18		372
1993 DR1		1993	02	25.63785	11	01	31.15	+17	50	59.0			372
1993 DR1		1993	02	28.63958	10	58	58.06	+18	06	53.7	18		372
1993 DR1		1993	02	28.64931	10	58	57.51	+18	06	56.1			372
1993 DH2	*	1993	02	25.62743	11	01	44.13	+18	21	09.8	18		372
1993 DH2		1993	02	25.63785	11	01	43.57	+18	21	13.0			372
1993 DH2		1993	03	02.72639	10	57	00.50	+18	57	28.9	18		372
1993 DH2		1993	03	02.73611	10	57	00.00	+18	57	30.5			372
1993 EJ	*	1993	03	04.76285	12	59	02.31	+03	31	46.6	18		372
1993 EJ		1993	03	04.77431	12	59	01.72	+03	31	51.6			372
1993 EJ		1993	03	05.81424	12	58	25.39	+03	35	40.9	18		372
1993 FA	*	1993	03	17.68090	12	12	21.69	+05	51	42.0	15		372
1993 FA		1993	03	17.69132	12	12	20.60	+05	51	36.8			372
1993 FA		1993	03	18.71597	12	10	39.73	+05	43	03.3	15		372
1993 FB	*	1993	03	17.68090	12	15	02.51	+05	15	49.0	17.5		372
1993 FB		1993	03	17.69132	12	15	01.71	+05	15	50.5			372
1993 FB		1993	03	18.71597	12	13	57.01	+05	17	57.7	18		372
1993 FC	*	1993	03	17.70313	13	11	28.95	+03	00	10.2	17		372

1993 FC		1993 03 17.71354	13 11 28.65	+03 00 17.3			372
1993 FC		1993 03 18.73056	13 10 58.06	+03 10 00.6	17		372
1993 FD	*	1993 03 17.70313	13 14 04.92	+02 59 09.8	16.5		372
1993 FD		1993 03 17.71354	13 14 04.50	+02 59 11.4			372
1993 FD		1993 03 18.73056	13 13 12.39	+03 01 20.7	16.5		372
6571 P-L		1993 02 25.66215	11 51 50.35	+05 01 50.8	17.5		372
6571 P-L		1993 02 25.67118	11 51 49.80	+05 01 53.9			372
6571 P-L		1993 02 28.69115	11 49 40.24	+05 19 53.6	17.5		372
6571 P-L		1993 02 28.70035	11 49 39.70	+05 19 55.8			372
7610 P-L		1993 02 13.65139	10 42 09.34	+13 21 26.5	18		372
7610 P-L		1993 02 13.66042	10 42 09.08	+13 21 31.1			372
7610 P-L		1993 02 17.62883	10 38 47.97	+13 54 57.0			372
7610 P-L		1993 02 17.63888	10 38 47.47	+13 55 01.7	17.5		372
7610 P-L		1993 02 17.67292	10 38 45.64	+13 55 20.3			372
7610 P-L		1993 02 17.68264	10 38 45.21	+13 55 23.1			372
7610 P-L		1993 02 19.66980	10 36 58.92	+14 12 13.9	16.5		372
7610 P-L		1993 02 19.68090	10 36 58.41	+14 12 18.9			372
(625)		1993 02 19.62675	09 41 12.27	+19 03 59.3	16		372
(625)		1993 02 19.63681	09 41 11.86	+19 04 01.1			372
(1711)		1993 02 17.62883	10 41 15.31	+13 57 18.4	15.5		372
(1711)		1993 02 17.63889	10 41 14.91	+13 57 21.4			372
(1711)		1993 02 19.67049	10 39 45.25	+14 12 21.3	16		372
(1711)		1993 02 19.68090	10 39 44.80	+14 12 26.6			372
(2121)		1993 03 02.74965	11 53 28.14	+04 05 10.3	16		372
(2342)		1993 02 17.53819	08 48 08.56	+17 25 55.5	17		372
(2342)		1993 02 17.54757	08 48 08.09	+17 25 54.9			372
(2796)		1993 02 28.69915	11 51 18.10	+05 41 21.6	16.5		372
(2796)		1993 02 28.70035	11 51 17.86	+05 41 25.2			372
(3847)		1993 02 19.62675	09 42 13.44	+18 50 12.3	17		372
(3847)		1993 02 19.63681	09 42 12.78	+18 50 12.2			372
(3847)		1993 02 22.59028	09 39 54.75	+19 01 04.3	16.5		372
(4013)		1993 02 17.53819	08 52 12.27	+16 56 15.7	17.5		372
(4013)		1993 02 17.54757	08 52 11.95	+16 56 18.2			372
(4556)		1993 03 04.80104	12 24 48.24	+04 43 20.5	18		372
(4556)		1993 03 04.81146	12 24 47.68	+04 43 26.4			372
(4681)		1993 03 04.76285	12 57 55.56	+03 30 05.6	18		372
(4681)		1993 03 04.77431	12 57 55.01	+03 30 09.5			372
(4681)		1993 03 05.81424	12 57 18.43	+03 33 28.5	17.5		372
(4949)		1993 02 25.58473	09 40 22.83	+19 11 57.0	17		372
(4949)		1993 02 25.59444	09 40 22.29	+19 12 00.2			372
(4949)		1993 02 28.62170	09 37 35.49	+19 27 44.0	17.5		372
(4949)		1993 02 28.62951	09 37 35.09	+19 27 46.0			372

376 Uenohara
N. Kawasato, 3-11-10, Hana-Koganei, Kodaira, Tokyo 187, Japan
0.30-m reflector + CCD
GSC

1991 TS4		1993 02 13.47465	10 29 56.45	+12 07 17.8			376
1991 TS4		1993 02 13.49392	10 29 55.21	+12 07 20.2			376
(4100)		1993 01 30.53125	06 31 43.32	+28 05 30.7			376
(4100)		1993 01 30.54184	06 31 42.96	+28 05 31.5			376

385 Nihondaira Observatory Oohira station
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
0.25-m f/3.4 hyperboloid astrocamera + CCD
GSC

1966 BB		1993 02 14.57014	09 09 57.49	+18 53 07.1	16		385
1966 BB		1993 02 14.57847	09 09 57.06	+18 53 11.3			385
1966 BB		1993 02 15.56528	09 09 03.41	+19 02 08.9	16		385

1966	BB		1993	02	15.57431	09	09	02.84	+19	02	14.2	385
1987	UJ		1993	02	14.57014	09	05	51.30	+18	05	53.6	17.5	385
1987	UJ		1993	02	14.57847	09	05	50.93	+18	05	55.9	385
1987	UJ		1993	02	28.63524	08	54	13.92	+18	40	01.9	17 V	385
1988	WB		1993	03	01.69491	12	07	35.13	-03	43	28.9	17	385
1988	WB		1993	03	01.70764	12	07	34.50	-03	43	25.5	385
1988	WB		1993	03	13.62610	11	56	49.09	-02	44	26.0	16 V	385
1988	WB		1993	03	13.64398	11	56	47.96	-02	44	19.8	385
1988	WB		1993	03	13.64931	11	56	47.64	-02	44	17.7	385
1990	RB		1993	02	28.70804	11	20	25.03	-07	07	32.5	17 V	385
1990	RB		1993	02	28.71632	11	20	24.57	-07	07	31.8	385
1990	RB		1993	02	28.72448	11	20	24.23	-07	07	30.3	385
1990	RB		1993	03	13.57326	11	10	16.82	-06	24	00.2	16.5 V	385
1990	RB		1993	03	13.57865	11	10	16.59	-06	23	58.8	385
1990	RB		1993	03	13.58410	11	10	16.28	-06	23	57.5	385
1991	UP1		1993	02	28.68056	10	32	49.56	-10	06	56.6	17 V	385
1991	UP1		1993	02	28.68889	10	32	49.25	-10	06	52.7	385
1991	UP1		1993	02	28.69722	10	32	48.75	-10	06	50.9	385
1991	UP1		1993	03	13.52859	10	22	40.95	-08	31	25.0	17 V	385
1991	UP1		1993	03	13.53414	10	22	40.73	-08	31	22.4	385
1991	UP1		1993	03	13.53958	10	22	40.50	-08	31	19.7	385
1991	VN2		1993	02	28.75295	12	17	52.21	+07	23	48.6	16.5 V	385
1991	VN2		1993	02	28.75741	12	17	52.04	+07	23	50.4	385
1991	VN2		1993	02	28.76186	12	17	51.84	+07	23	51.7	385
1992	WO3		1993	02	19.49167	05	34	13.73	-08	21	49.3	17	385
1992	WO3		1993	02	19.50208	05	34	14.45	-08	21	43.1	385
1992	YB		1993	02	13.46597	05	58	09.99	+18	21	34.5	385
1992	YB		1993	02	13.49861	05	58	10.14	+18	21	44.5	385
1992	YM		1993	01	28.57014	06	26	15.55	+23	53	02.6	17	385
1992	YM		1993	01	28.58264	06	26	15.09	+23	53	09.5	385
1992	YM		1993	02	13.48281	06	21	11.74	+25	41	36.4	17.5	385
1992	YM		1993	02	13.51389	06	21	11.62	+25	41	48.3	385
1993	BR3		1993	02	24.57066	09	03	27.05	+24	52	49.9	17 V	385
1993	BR3		1993	02	24.57836	09	03	26.70	+24	52	52.8	385
1993	BR3		1993	02	24.58837	09	03	26.29	+24	52	57.4	385
1993	BR3		1993	02	24.60486	09	03	25.54	+24	53	04.6	385
1993	CN		1993	02	28.73646	11	02	34.10	+21	48	49.7	16 V	385
1993	CN		1993	02	28.74115	11	02	33.84	+21	48	51.5	385
1993	CN		1993	02	28.74554	11	02	33.66	+21	48	52.9	385
1993	CN		1993	03	13.54931	10	52	33.61	+22	59	23.5	17 V	385
1993	CN		1993	03	13.55486	10	52	33.33	+22	59	24.7	385
1993	CN		1993	03	13.56042	10	52	33.06	+22	59	26.5	385
1993	CS		1993	02	22.59792	09	00	51.20	+19	48	20.8	16.5	385
1993	CS		1993	02	22.60694	09	00	50.87	+19	48	24.3	385
1993	CS		1993	02	28.59728	08	56	35.80	+20	12	54.0	16.8 V	385
1993	CS		1993	02	28.60302	08	56	35.50	+20	12	55.9	385
1993	CS		1993	02	28.60770	08	56	35.34	+20	12	56.5	385
1993	DK		1993	01	17.52431	05	22	26.90	-10	03	57.2	16.5	385
1993	DK		1993	01	17.57361	05	22	25.79	-10	04	10.3	385
1993	DK		1993	02	11.41319	05	28	00.45	-09	51	58.0	17	385
1993	DK		1993	02	11.42222	05	28	00.88	-09	51	55.7	385
1993	DK	*	1993	02	19.49167	05	35	25.32	-09	10	00.7	17	385
1993	DK		1993	02	19.50208	05	35	25.93	-09	09	56.2	385
1993	DK		1993	02	23.51389	05	40	02.21	-08	45	14.6	17.3	385
1993	DD1		1993	03	01.62465	11	58	48.60	+04	44	35.4	16.5	385
1993	DD1		1993	03	01.63646	11	58	47.87	+04	44	39.2	385
1993	DD2	*	1993	02	22.69323	12	22	26.19	+07	20	10.9	17	385
1993	DD2		1993	02	22.70208	12	22	25.73	+07	20	10.5	385
1993	DD2		1993	02	23.68310	12	21	41.27	+07	21	30.6	17	385

1993 DD2		1993 02 23.69334	12 21 40.68	+07 21 29.7					385
1993 EE	*	1993 03 01.62465	12 03 30.46	+04 16 18.2		16.5			385
1993 EE		1993 03 01.63646	12 03 29.99	+04 16 21.8					385
1993 EE		1993 03 02.68264	12 02 49.16	+04 24 44.3					385
1993 EE		1993 03 02.68854	12 02 48.87	+04 24 47.6					385
1993 EE		1993 03 02.69479	12 02 48.60	+04 24 50.6					385
1993 EE		1993 03 13.59155	11 54 30.53	+05 56 22.8		16		V	385
1993 EE		1993 03 13.59682	11 54 30.25	+05 56 25.2					385
1993 EE		1993 03 13.60203	11 54 29.98	+05 56 28.3					385
1993 EF	*	1993 03 01.62465	12 08 27.28	+05 00 10.3		16.5			385
1993 EF		1993 03 01.63646	12 08 26.85	+05 00 14.3					385
1993 EF		1993 03 02.70700	12 07 36.20	+05 06 03.4					385
1993 EF		1993 03 02.71250	12 07 35.94	+05 06 04.4					385
1993 EF		1993 03 02.71771	12 07 35.67	+05 06 06.8					385
1993 EF		1993 03 13.65324	11 57 59.24	+06 06 12.3		16		V	385
1993 EF		1993 03 13.65694	11 57 59.04	+06 06 13.8					385
1993 EF		1993 03 13.66071	11 57 58.87	+06 06 14.4					385
1993 EG	*	1993 03 01.69491	12 06 30.68	-04 14 37.7		16.5			385
1993 EG		1993 03 01.70764	12 06 30.09	-04 14 32.9					385
1993 EG		1993 03 02.72708	12 05 48.64	-04 08 06.7					385
1993 EG		1993 03 02.73264	12 05 48.41	-04 08 04.6					385
1993 EG		1993 03 02.73785	12 05 48.18	-04 08 02.2					385
1993 EG		1993 03 13.62610	11 57 12.52	-02 46 55.7		16		V	385
1993 EG		1993 03 13.64398	11 57 11.55	-02 46 46.2					385
1993 EG		1993 03 13.64931	11 57 11.28	-02 46 43.3					385
1993 EK	*	1993 03 02.72708	12 06 32.93	-04 07 05.5		17.5		V	385
1993 EK		1993 03 02.73264	12 06 32.57	-04 07 05.0					385
1993 EK		1993 03 02.73785	12 06 32.25	-04 07 05.4					385
1993 EK		1993 03 13.60891	11 55 12.74	-03 50 13.7		17.5		V	385
1993 EK		1993 03 13.61424	11 55 12.32	-03 50 12.8					385
1993 EK		1993 03 13.61944	11 55 12.00	-03 50 11.9					385
3186 T-3		1993 01 29.70845	07 20 53.81	+27 32 45.6		17			385
3186 T-3		1993 01 29.72153	07 20 53.24	+27 32 47.4					385
(1099)		1993 03 13.66580	12 02 03.80	+07 35 20.5		15.8		V	385
(1099)		1993 03 13.66956	12 02 03.64	+07 35 21.2					385
(1099)		1993 03 13.67332	12 02 03.44	+07 35 21.9					385
(4101)		1993 03 13.60891	11 53 40.37	-03 52 23.8		16.5		V	385
(4101)		1993 03 13.61424	11 53 40.07	-03 52 22.8					385
(4101)		1993 03 13.61944	11 53 39.83	-03 52 21.8					385

399 Kushiro
H. Kaneda, Taiyo MS 2-H, 2 chome 2-15, Kawazoe 8 jo, Minami-ku, Sapporo 005, Japan
Observers S. Ueda, M. Matsuyama
Measurer H. Kaneda
0.16-m f/3.8 Wright-Schmidt camera, 0.22-m f/3.0 Schmidt camera, 0.25-m f/3.4 hyperboloid astrocamera
GSC

1981 QK		1993 02 25.61111	10 38 02.68	+12 36 09.3		17			399
1981 QK		1993 02 25.62569	10 38 01.89	+12 36 10.9					399
1988 AL		1993 02 15.68611	11 15 15.40	+02 25 22.6		16.5			399
1988 AL		1993 02 15.70069	11 15 14.86	+02 25 28.8					399
1988 AL		1993 02 21.53785	11 11 50.48	+03 13 49.5		16.3			399
1988 AL		1993 02 21.55347	11 11 49.86	+03 13 58.6					399
1988 AL		1993 03 12.54167	10 58 35.77	+06 12 19.0		16.5			399
1988 AL		1993 03 12.55625	10 58 35.09	+06 12 27.7					399
1991 CX5		1991 01 09.51667	08 41 56.35	+22 32 15.4		16			399
1991 CX5		1991 01 09.57648	08 41 53.90	+22 32 42.2					399
1991 CX5		1991 02 03.53299	08 21 21.91	+25 26 00.5		16			399

1991 CX5		1991	02	03.54844	08	21	21.08	+25	26	08.1		399
1991 CX5	*	1991	02	04.43750	08	20	37.47	+25	31	20.7	16	399
1991 CX5		1991	02	04.45150	08	20	36.92	+25	31	24.9		399
1991 UQ3		1993	02	15.65313	10	47	21.59	+12	26	39.9	16.8	399
1991 UQ3		1993	02	15.66759	10	47	20.85	+12	26	45.5		399
1991 UQ3		1993	02	21.47153	10	41	45.77	+13	10	29.7	17	399
1991 UQ3		1993	02	21.48614	10	41	44.88	+13	10	36.6		399
1991 UQ3		1993	02	25.61111	10	37	34.54	+13	41	21.1	16.7	399
1991 UQ3		1993	02	25.62569	10	37	33.80	+13	41	24.3		399
1991 UO4		1993	02	25.65069	10	43	28.79	+07	47	32.1	16.5	399
1991 UO4		1993	02	25.66632	10	43	27.66	+07	47	37.1		399
1991 UO4		1993	03	02.70069	10	37	49.69	+08	05	17.5	16.7	399
1991 UO4		1993	03	02.71597	10	37	48.60	+08	05	22.8		399
1991 VY3		1993	02	25.68750	11	27	12.08	+04	04	34.1	16.5	399
1991 VY3		1993	02	25.70243	11	27	11.29	+04	04	38.6		399
1991 VY3		1993	03	02.73472	11	23	35.42	+04	30	23.9	16.3	399
1991 VY3		1993	03	02.74965	11	23	34.88	+04	30	28.8		399
1992 SV23		1992	09	28.59346	00	08	59.52	+14	26	20.9	17	399
1992 SV23		1992	09	28.60839	00	08	58.82	+14	26	16.1		399
1993 AN		1993	02	10.44079	07	59	24.38	+22	08	25.4	17.2	399
1993 AN		1993	02	10.45537	07	59	23.75	+22	08	27.4		399
1993 AN		1993	02	15.51817	07	56	21.16	+22	20	07.2	17	399
1993 AN		1993	02	15.53611	07	56	20.56	+22	20	09.5		399
1993 AO		1993	02	10.44079	07	58	14.43	+24	43	05.7	16.5	399
1993 AO		1993	02	10.45537	07	58	13.69	+24	43	07.5		399
1993 AO		1993	02	15.51817	07	55	18.74	+24	52	46.1	17	399
1993 AO		1993	02	15.53611	07	55	18.23	+24	52	50.1		399
1993 BH13		1993	02	10.47347	08	47	23.51	+18	27	51.3	17	399
1993 BH13		1993	02	10.48801	08	47	22.60	+18	27	55.6		399
1993 BP13		1993	03	12.43544	08	49	20.11	-00	21	07.7	15	399
1993 BP13		1993	03	12.45627	08	49	19.63	-00	21	03.2		399
1993 CA		1993	02	25.61111	10	41	49.16	+11	43	30.1	17.2	399
1993 CA		1993	02	25.62569	10	41	48.33	+11	43	33.3		399
1993 CB		1993	02	15.65313	10	52	17.36	+10	45	10.7	16.8	399
1993 CB		1993	02	15.66759	10	52	16.69	+10	45	20.2		399
1993 CB		1993	02	21.47153	10	47	33.80	+11	37	36.3	16.8	399
1993 CB		1993	02	21.48614	10	47	33.07	+11	37	46.3		399
1993 CM		1993	02	15.65313	10	44	03.74	+13	58	10.3	16.5	399
1993 CM		1993	02	15.66759	10	44	02.91	+13	58	13.8		399
1993 CM		1993	02	21.47153	10	38	29.66	+14	26	45.4	15.8	399
1993 CM		1993	02	21.48614	10	38	28.79	+14	26	48.7		399
1993 CO		1993	02	21.43750	09	13	20.14	+20	06	32.1	16.8	399
1993 CO		1993	02	21.45208	09	13	19.29	+20	06	35.0		399
1993 CP		1993	02	21.43750	09	21	55.54	+22	18	45.3	16.5	399
1993 CP		1993	02	21.45208	09	21	54.89	+22	18	56.5		399
1993 CQ		1993	02	21.43750	09	23	22.50	+20	23	39.5	17	399
1993 CQ		1993	02	21.45208	09	23	21.67	+20	23	43.9		399
1993 CR		1993	02	21.43750	09	25	11.47	+22	42	58.2	17.2	399
1993 CR		1993	02	21.45208	09	25	10.75	+22	43	00.0		399
1993 CX		1993	02	25.54514	09	23	02.33	+10	47	22.6	16.5	399
1993 CX		1993	02	25.55972	09	23	01.47	+10	47	25.9		399
1993 CY		1993	02	25.54514	09	22	36.25	+09	27	14.6	16.8	399
1993 CY		1993	02	25.55972	09	22	35.33	+09	27	15.0		399
1993 CZ		1993	02	25.54514	09	25	37.03	+11	09	00.0	17.2	399
1993 CZ		1993	02	25.55972	09	25	36.50	+11	09	08.7		399
1993 CJ1		1993	02	25.68750	11	27	19.53	+04	53	09.7	16.5	399
1993 CJ1		1993	02	25.70243	11	27	18.91	+04	53	19.5		399
1993 CL1	*	1993	02	15.58843	09	29	48.99	+08	29	28.7	17.2	399
1993 CL1		1993	02	15.60278	09	29	48.04	+08	29	28.4		399

1993 CL1		1993 02 16.52720	09 28 50.86	+08 28 52.2	17.3	399
1993 CL1		1993 02 16.54653	09 28 49.83	+08 28 52.3		399
1993 CL1		1993 02 25.54514	09 20 09.22	+08 24 33.0	17.2	399
1993 CL1		1993 02 25.55972	09 20 08.41	+08 24 32.2		399
1993 CM1	*	1993 02 15.62014	10 28 42.54	+02 37 42.3	16.5	399
1993 CM1		1993 02 15.63484	10 28 41.77	+02 37 49.6		399
1993 CM1		1993 02 21.50417	10 23 51.22	+03 18 59.2	16.5	399
1993 CM1		1993 02 21.51875	10 23 50.43	+03 19 05.2		399
1993 CN1	*	1993 02 15.62014	10 29 47.50	+03 05 01.2	16	399
1993 CN1		1993 02 15.63484	10 29 46.58	+03 05 05.5		399
1993 CN1		1993 02 21.50417	10 23 56.41	+03 39 30.4	16	399
1993 CN1		1993 02 21.51875	10 23 55.58	+03 39 35.4		399
1993 CN1		1993 02 25.57778	10 19 47.89	+04 05 32.2	16	399
1993 CN1		1993 02 25.59236	10 19 47.05	+04 05 37.2		399
1993 CO1	*	1993 02 15.62014	10 31 29.19	+02 04 58.5	16.7	399
1993 CO1		1993 02 15.63484	10 31 28.33	+02 05 03.1		399
1993 CO1		1993 02 21.50417	10 26 08.61	+02 41 13.0	16.7	399
1993 CO1		1993 02 21.51875	10 26 07.66	+02 41 17.9		399
1993 CO1		1993 02 25.57778	10 22 21.85	+03 08 47.0	17	399
1993 CO1		1993 02 25.59236	10 22 20.99	+03 08 53.2		399
1993 CP1	*	1993 02 15.62014	10 36 53.76	+04 19 50.5	17	399
1993 CP1		1993 02 15.63484	10 36 53.14	+04 19 57.8		399
1993 CP1		1993 02 21.50417	10 32 23.09	+05 21 58.4	16.8	399
1993 CP1		1993 02 21.51875	10 32 22.35	+05 22 08.9		399
1993 CP1		1993 02 25.57778	10 29 07.17	+06 07 07.9	16.5	399
1993 CP1		1993 02 25.59236	10 29 06.50	+06 07 18.0		399
1993 CQ1		1993 02 15.68611	11 14 47.58	+01 07 19.1	16.3	399
1993 CQ1		1993 02 15.70069	11 14 47.01	+01 07 29.0		399
1993 CQ1		1993 02 21.53785	11 11 07.67	+02 14 16.8	15.8	399
1993 CQ1		1993 02 21.55347	11 11 07.04	+02 14 27.2		399
1993 CQ1		1993 03 12.54167	10 57 26.91	+06 11 14.3	15	399
1993 CQ1		1993 03 12.55625	10 57 26.31	+06 11 24.1		399
1993 CR1	*	1993 02 15.65313	10 43 17.44	+10 01 19.4	17	399
1993 CR1		1993 02 15.66759	10 43 16.90	+10 01 29.9		399
1993 CR1		1993 02 21.47153	10 39 05.06	+11 09 09.4	16.5	399
1993 CR1		1993 02 21.48614	10 39 04.52	+11 09 18.2		399
1993 CR1		1993 02 25.61111	10 35 56.48	+11 57 43.5	16.5	399
1993 CR1		1993 02 25.62569	10 35 55.75	+11 57 55.7		399
1993 CS1	*	1993 02 10.50537	09 23 54.81	+19 22 41.9	17	399
1993 CS1		1993 02 10.51995	09 23 53.94	+19 22 45.0		399
1993 CS1		1993 02 13.58750	09 20 59.95	+19 33 35.0	17.2	399
1993 CS1		1993 02 13.60208	09 20 59.18	+19 33 37.8		399
1993 CS1		1993 02 21.43750	09 14 06.03	+19 55 53.7	17	399
1993 CS1		1993 02 21.45208	09 14 05.28	+19 55 56.1		399
1993 CT1		1993 02 10.50537	09 21 08.10	+19 38 15.8	17	399
1993 CT1		1993 02 10.51995	09 21 07.07	+19 38 17.4		399
1993 CT1	*	1993 02 13.58750	09 18 11.84	+19 48 25.0	17	399
1993 CT1		1993 02 13.60208	09 18 11.07	+19 48 28.1		399
1993 CT1		1993 02 21.43750	09 11 12.37	+20 09 19.1	17.2	399
1993 CT1		1993 02 21.45208	09 11 11.57	+20 09 20.7		399
1993 CB2	*	1993 02 15.65313	10 50 18.64	+11 30 01.1	17	399
1993 CB2		1993 02 15.66759	10 50 17.91	+11 30 06.7		399
1993 CB2		1993 02 25.61111	10 42 06.00	+12 37 55.4	17	399
1993 CB2		1993 02 25.62569	10 42 05.11	+12 38 03.9		399
1993 DB		1993 02 15.65313	10 53 42.67	+12 19 33.4	15.8	399
1993 DB		1993 02 15.66759	10 53 41.96	+12 19 35.5		399
1993 DB		1993 02 21.47153	10 48 00.63	+12 42 48.3	15.5	399
1993 DB		1993 02 21.48614	10 47 59.72	+12 42 51.4		399
1993 DL		1993 02 15.65313	10 46 50.75	+13 22 39.5	16.7	399

1993 DL		1993 02 15.66759	10 46 50.15	+13 22 49.2					399
1993 DL	*	1993 02 21.47153	10 42 28.79	+14 24 46.2		16.7			399
1993 DL		1993 02 21.48614	10 42 28.01	+14 24 55.4					399
1993 DM		1993 02 15.62014	10 30 30.05	+03 05 11.3		17.2			399
1993 DM		1993 02 15.63484	10 30 29.19	+03 05 13.0					399
1993 DM	*	1993 02 21.50417	10 25 09.57	+03 26 34.9		17			399
1993 DM		1993 02 21.51875	10 25 08.62	+03 26 37.2					399
1993 DM		1993 02 25.57778	10 21 22.48	+03 43 13.4		16.8			399
1993 DM		1993 02 25.59236	10 21 21.71	+03 43 15.3					399
1993 DN		1993 02 15.62014	10 32 15.41	+02 50 38.3		17			399
1993 DN		1993 02 15.63484	10 32 14.45	+02 50 39.7					399
1993 DN	*	1993 02 21.50417	10 26 10.02	+03 06 52.6		17			399
1993 DN		1993 02 21.51875	10 26 09.09	+03 06 55.5					399
1993 DN		1993 02 25.57778	10 21 51.22	+03 20 29.8		17			399
1993 DN		1993 02 25.59236	10 21 50.35	+03 20 31.6					399
1993 DQ	*	1993 02 21.47153	10 41 47.58	+13 04 49.6		16.8			399
1993 DQ		1993 02 21.48614	10 41 46.74	+13 04 56.1					399
1993 DQ		1993 02 25.61111	10 37 26.31	+13 33 52.7		16.5			399
1993 DQ		1993 02 25.62569	10 37 25.42	+13 34 00.2					399
1993 DR		1993 02 15.65313	10 49 41.51	+12 40 47.4		17.2			399
1993 DR		1993 02 15.66759	10 49 40.69	+12 40 50.9					399
1993 DR	*	1993 02 21.47153	10 45 11.73	+13 03 07.1		17.2			399
1993 DR		1993 02 21.48614	10 45 10.97	+13 03 08.6					399
1993 DR		1993 02 25.61111	10 41 52.05	+13 18 40.7		17			399
1993 DR		1993 02 25.62569	10 41 51.18	+13 18 42.3					399
1993 DS	*	1993 02 21.47153	10 50 46.24	+14 44 01.0		16			399
1993 DS		1993 02 21.48614	10 50 45.26	+14 44 02.5					399
1993 DS		1993 02 25.61111	10 46 14.24	+14 46 35.1		16.7			399
1993 DS		1993 02 25.62569	10 46 13.35	+14 46 37.6					399
1993 DT	*	1993 02 21.50417	10 21 38.81	+03 48 43.2		17.3			399
1993 DT		1993 02 21.51875	10 21 37.90	+03 48 44.5					399
1993 DT		1993 02 25.57778	10 17 32.11	+03 59 46.2		17.3			399
1993 DT		1993 02 25.59236	10 17 31.19	+03 59 50.5					399
1993 DU	*	1993 02 21.50417	10 22 41.61	+04 50 41.6		16.8			399
1993 DU		1993 02 21.51875	10 22 40.72	+04 50 45.0					399
1993 DU		1993 02 25.57778	10 18 23.00	+05 04 45.7		16.5			399
1993 DU		1993 02 25.59236	10 18 22.14	+05 04 47.3					399
1993 DV		1993 02 15.62014	10 30 52.40	+04 51 10.8		17.2			399
1993 DV		1993 02 15.63484	10 30 51.67	+04 51 12.6					399
1993 DV	*	1993 02 21.50417	10 25 35.93	+05 18 11.5		17			399
1993 DV		1993 02 21.51875	10 25 35.02	+05 18 13.4					399
1993 DV		1993 02 25.57778	10 21 54.53	+05 38 07.0		16.8			399
1993 DV		1993 02 25.59236	10 21 53.70	+05 38 09.7					399
1993 DW		1993 02 15.62014	10 31 21.16	+02 49 57.0		17.3			399
1993 DW		1993 02 15.63484	10 31 20.13	+02 50 01.4					399
1993 DW	*	1993 02 21.50417	10 25 49.42	+03 24 07.2		17.2			399
1993 DW		1993 02 21.51875	10 25 48.57	+03 24 13.6					399
1993 DW		1993 02 25.57778	10 21 56.21	+03 49 51.1		16.8			399
1993 DW		1993 02 25.59236	10 21 55.35	+03 49 57.0					399
1993 DE2	*	1993 02 25.65069	10 43 40.33	+07 20 39.1		16.5			399
1993 DE2		1993 02 25.66632	10 43 39.54	+07 20 43.1					399
1993 DE2		1993 03 02.70069	10 39 42.79	+07 44 47.4		16.7			399
1993 DE2		1993 03 02.71597	10 39 41.94	+07 44 52.0					399
1993 DF2	*	1993 02 25.68750	11 30 50.60	+05 18 37.9		16.8			399
1993 DF2		1993 02 25.70243	11 30 50.00	+05 18 47.2					399
1993 DF2		1993 03 02.73472	11 26 36.77	+06 02 16.9		16.5			399
1993 DF2		1993 03 02.74965	11 26 36.11	+06 02 27.5					399
(1711)		1993 02 21.47153	10 38 25.26	+14 25 31.8		15.5			399
(1711)		1993 02 21.48614	10 38 24.62	+14 25 38.4					399

(2060)	1993 02 25.54514	09 17 53.07	+08 12 53.3	15.8			399
(2060)	1993 02 25.55972	09 17 52.77	+08 12 55.8				399
(4179)	1993 02 10.44079	07 53 04.02	+21 02 45.8	15			399
(4179)	1993 02 10.45537	07 53 04.05	+21 02 45.8				399
(4179)	1993 02 15.51817	07 54 16.52	+21 02 14.6	15			399
(4179)	1993 02 15.53611	07 54 16.74	+21 02 15.0				399

400 Kitami
K. Watanabe, 3-8 Mason Hashimoto B-203, atsubetsu cyuo 3 jo 4 chome, Atsubetsu-ku, Sapporo 004, Japan
Observers K. Endate, T. Fujii, A. Takahashi
Measurer H. Kaneda
0.16-m f/3.3 hyperboloid astrocamera, 0.20 f/4.0 hyperboloid astrocamera, 0.25-m f/3.4 hyperboloid astrocamera
GSC

1986 QB3	1992 09 30.55000	01 15 19.08	+03 11 46.8	16.5			400
1986 QB3	1992 09 30.56806	01 15 18.29	+03 11 41.2				400
1989 SB1	1989 10 24.46493	01 14 55.62	+14 21 01.9	16.5			400
1989 SB1	1989 10 24.48333	01 14 54.44	+14 20 57.4				400
1989 UL	1989 11 21.45694	01 50 43.42	+10 52 41.8	17			400
1989 UL	1989 11 21.48056	01 50 42.87	+10 52 35.8				400
1990 TJ16 *	1990 10 15.62431	01 36 38.89	+16 57 20.5	17			400
1990 TJ16	1990 10 15.64722	01 36 37.62	+16 57 14.4				400
1990 TJ16	1990 10 15.66181	01 36 36.84	+16 57 08.7				400
1991 RS1	1993 02 21.52917	11 10 30.96	+08 11 16.2	16.5			400
1991 RS1	1993 02 21.54792	11 10 29.73	+08 11 16.4				400
1992 QG	1991 03 15.61007	12 56 30.07	-01 03 30.7	16.5			400
1992 QG	1991 03 15.62743	12 56 29.19	-01 03 23.2				400
1992 QG	1991 03 21.51563	12 52 15.99	-00 11 12.1	16.5			400
1992 QG	1991 03 21.53299	12 52 15.16	-00 11 03.1				400
1992 QG	1991 04 11.55799	12 34 57.69	+02 53 24.6	17			400
1992 QG	1991 04 11.57326	12 34 57.02	+02 53 33.0				400
1992 UP	1989 02 03.51910	08 37 00.97	+21 43 47.3	16.5			400
1992 UP	1989 02 03.53993	08 36 59.84	+21 43 50.1				400
1992 UP	1989 02 07.46910	08 33 45.21	+21 55 59.1	16.5			400
1992 UP	1989 02 07.48993	08 33 44.13	+21 56 05.1				400
1992 UB1	1988 08 08.53299	20 53 51.18	-04 48 07.0	16			400
1992 UB1	1988 08 08.55382	20 53 50.07	-04 48 08.4				400
1993 AJ	1993 02 21.41597	08 04 38.95	+25 40 28.4	17			400
1993 AJ	1993 02 21.43542	08 04 38.32	+25 40 35.6				400
1993 AK	1993 02 21.41597	08 07 02.28	+26 48 33.6	17			400
1993 AK	1993 02 21.43542	08 07 01.59	+26 48 43.6				400
1993 BF3	1993 02 21.45278	08 20 38.21	+22 05 08.9	17.5			400
1993 BF3	1993 02 21.47222	08 20 37.22	+22 05 08.8				400
1993 BG3	1993 02 21.48958	08 38 23.86	+18 04 00.9	17			400
1993 BG3	1993 02 21.50903	08 38 23.06	+18 04 06.8				400
(829)	1993 02 21.52917	11 10 24.67	+08 15 36.5	14.0			400
(829)	1993 02 21.54792	11 10 23.70	+08 15 40.1				400

411 Oizumi
T. Kobayashi, 1717-2 Shimo-Koizumi, Oizumi-machi, Ora-gun, Gunma-ken, 370-05 Japan
0.16-m f/6.3 reflector + CCD
GSC

1981 WR	1993 02 25.62989	11 52 42.00	+07 42 09.9				411
1981 WR	1993 02 25.64323	11 52 41.37	+07 42 16.2				411
1986 PF	1993 02 25.49961	10 01 38.41	+02 56 52.3				411
1986 PF	1993 02 25.51296	10 01 37.74	+02 56 57.2				411
1986 PF	1993 02 28.58355	09 59 00.20	+03 12 44.1				411

1986 PF		1993 02 28.59142	09 58 59.69	+03 12 46.3			411
1986 PF		1993 02 28.59536	09 58 59.44	+03 12 47.7			411
1987 UJ		1993 02 24.47233	08 57 18.26	+18 31 51.9			411
1987 UJ		1993 02 24.48020	08 57 17.99	+18 31 53.4			411
1987 UJ		1993 02 24.48412	08 57 17.79	+18 31 54.3			411
1989 CJ8		1993 02 25.65646	11 58 45.86	+06 51 57.0			411
1989 CJ8		1993 02 25.66981	11 58 45.48	+06 52 05.0			411
1989 CJ8		1993 02 26.67250	11 58 15.72	+07 02 56.7			411
1989 CJ8		1993 02 26.68036	11 58 15.49	+07 03 01.2			411
1989 CJ8		1993 02 26.68429	11 58 15.39	+07 03 05.2			411
1993 AA		1993 02 11.57586	07 41 07.39	+14 54 58.2			411
1993 AA		1993 02 11.57977	07 41 07.16	+14 54 59.0			411
1993 AA		1993 02 12.47361	07 40 33.07	+14 57 32.9			411
1993 AA		1993 02 12.48144	07 40 32.70	+14 57 34.6			411
1993 BM		1993 02 24.47233	08 56 48.67	+18 39 56.2			411
1993 BM		1993 02 24.48020	08 56 48.30	+18 39 56.1			411
1993 BM		1993 02 24.48412	08 56 48.16	+18 39 54.8			411
1993 BN		1993 02 24.48970	08 55 29.31	+16 43 22.4			411
1993 BN		1993 02 24.49756	08 55 28.88	+16 43 22.5			411
1993 BN		1993 02 24.50149	08 55 28.65	+16 43 21.7			411
1993 BR3		1993 02 24.45488	09 03 31.97	+24 51 58.4			411
1993 BR3		1993 02 24.46274	09 03 31.69	+24 52 03.4			411
1993 BR3		1993 02 24.46667	09 03 31.48	+24 52 03.4			411
1993 DE1	*	1993 02 25.49628	09 59 11.95	+02 12 36.3		16.5	411
1993 DE1		1993 02 25.50964	09 59 11.16	+02 12 38.1			411
1993 DE1		1993 02 28.56429	09 56 12.04	+02 16 44.1			411
1993 DE1		1993 02 28.57216	09 56 11.49	+02 16 47.2			411
1993 DE1		1993 02 28.57610	09 56 11.21	+02 16 47.4			411
1993 DF1	*	1993 02 25.66310	11 59 16.13	+08 56 44.0		16.5	411
1993 DF1		1993 02 25.67644	11 59 15.63	+08 56 51.8			411
1993 DF1		1993 02 28.60596	11 57 06.36	+09 22 59.2			411
1993 DF1		1993 02 28.61777	11 57 05.91	+09 23 05.3			411
1993 DG2		1993 03 13.52648	11 20 35.07	+13 14 11.2			411
1993 DG2		1993 03 13.53433	11 20 34.61	+13 14 15.7			411
1993 DG2		1993 03 13.53826	11 20 34.48	+13 14 18.7			411
1993 EE		1993 03 14.60212	11 53 39.45	+06 04 57.6			411
1993 EE		1993 03 14.60999	11 53 39.07	+06 05 01.7			411
1993 EE		1993 03 14.61392	11 53 38.83	+06 05 03.8			411
1993 EF		1993 03 14.54333	11 57 09.39	+06 11 00.0			411
1993 EF		1993 03 14.55119	11 57 08.92	+06 11 00.6			411
1993 EF		1993 03 14.55512	11 57 08.73	+06 11 02.8			411
1993 EG		1993 03 14.56365	11 56 23.55	-02 39 03.6			411
1993 EG		1993 03 14.57152	11 56 23.12	-02 39 00.3			411
1993 EG		1993 03 14.57545	11 56 22.88	-02 38 58.1			411
(6)		1993 03 02.49697	09 54 11.85	+17 51 55.7			411
(6)		1993 03 02.49783	09 54 11.81	+17 51 56.2			411
(10)		1993 02 17.43427	07 18 10.59	+20 49 39.8			411
(10)		1993 02 17.43513	07 18 10.57	+20 49 39.9			411
(18)		1993 02 17.41681	06 54 04.49	+15 05 35.8			411
(18)		1993 02 17.41767	06 54 04.48	+15 05 36.3			411
(55)		1993 02 17.53870	09 00 21.91	+26 04 38.3			411
(55)		1993 02 17.53957	09 00 21.84	+26 04 38.4			411
(55)		1993 03 02.46614	08 50 21.35	+26 05 42.9			411
(55)		1993 03 17.41932	08 43 39.44	+25 40 13.9			411
(85)		1993 03 02.54435	10 42 02.58	-04 05 38.4			411
(85)		1993 03 02.54521	10 42 02.54	-04 05 38.0			411
(85)		1993 03 17.50133	10 30 34.66	-02 11 55.9			411
(85)		1993 03 17.50220	10 30 34.62	-02 11 55.4			411
(88)		1993 02 17.43616	07 18 41.50	+19 26 12.1			411

(88)	1993	02	17.43703	07	18	41.47	+19 26 12.2	411
(93)	1993	02	17.48963	08	03	56.62	+30 47 33.2	411
(93)	1993	02	17.49050	08	03	56.58	+30 47 33.1	411
(93)	1993	03	02.42755	07	56	14.90	+30 22 57.9	411
(93)	1993	03	02.42842	07	56	14.89	+30 22 57.8	411
(94)	1993	03	02.47811	09	40	49.28	+21 02 47.0	411
(94)	1993	03	02.47898	09	40	49.25	+21 02 47.1	411
(94)	1993	03	17.46549	09	31	25.81	+21 02 06.7	411
(94)	1993	03	17.46636	09	31	25.79	+21 02 06.6	411
(104)	1993	02	17.44880	07	31	38.15	+25 46 19.7	411
(104)	1993	02	17.44968	07	31	38.12	+25 46 19.7	411
(116)	1993	02	17.45348	07	39	12.38	+26 27 20.1	411
(116)	1993	02	17.45435	07	39	12.34	+26 27 20.2	411
(116)	1993	03	02.41729	07	35	38.19	+26 24 45.6	411
(116)	1993	03	02.41816	07	35	38.19	+26 24 45.7	411
(125)	1993	03	02.57695	10	59	29.87	+05 36 46.2	411
(125)	1993	03	02.57781	10	59	29.83	+05 36 46.4	411
(127)	1993	03	02.53379	10	29	45.85	+21 17 21.1	411
(127)	1993	03	02.53466	10	29	45.80	+21 17 21.3	411
(160)	1993	03	17.44209	08	57	35.50	+21 02 27.8	411
(160)	1993	03	17.44332	08	57	35.47	+21 02 27.7	411
(161)	1993	03	02.56469	10	49	34.08	+17 28 52.9	411
(161)	1993	03	02.56557	10	49	34.03	+17 28 53.1	411
(161)	1993	03	17.51660	10	34	22.02	+18 03 59.4	411
(161)	1993	03	17.51747	10	34	21.96	+18 03 59.5	411
(173)	1993	03	02.53171	10	29	39.07	+12 40 22.1	411
(173)	1993	03	02.53258	10	29	39.04	+12 40 22.5	411
(194)	1993	03	02.57885	11	01	34.30	+08 00 24.2	411
(194)	1993	03	02.57972	11	01	34.25	+08 00 24.7	411
(198)	1993	02	17.43225	07	14	14.35	+14 54 00.7	411
(198)	1993	02	17.43312	07	14	14.33	+14 54 00.8	411
(209)	1993	02	17.45542	07	41	22.52	+29 47 05.4	411
(209)	1993	02	17.45629	07	41	22.50	+29 47 05.3	411
(209)	1993	03	02.41922	07	35	57.82	+29 23 13.4	411
(209)	1993	03	02.42009	07	35	57.80	+29 23 13.5	411
(210)	1993	02	17.52878	08	53	38.08	+25 44 16.9	411
(210)	1993	02	17.52965	08	53	38.03	+25 44 16.9	411
(210)	1993	03	02.46150	08	44	21.83	+25 50 32.2	411
(210)	1993	03	02.46237	08	44	21.80	+25 50 32.3	411
(210)	1993	03	17.41606	08	39	06.21	+25 29 01.5	411
(210)	1993	03	17.41727	08	39	06.20	+25 29 01.5	411
(222)	1993	03	02.51945	10	24	53.89	+13 09 54.0	411
(222)	1993	03	02.52032	10	24	53.85	+13 09 54.7	411
(225)	1993	03	02.55262	10	44	15.23	-08 38 39.1	411
(225)	1993	03	02.55385	10	44	15.16	-08 38 38.7	411
(229)	1993	03	02.57449	10	59	29.48	+08 39 08.8	411
(229)	1993	03	02.57572	10	59	29.43	+08 39 08.9	411
(232)	1993	02	17.45763	07	41	26.06	+17 14 42.3	411
(232)	1993	02	17.45851	07	41	26.03	+17 14 42.3	411
(232)	1993	03	02.42155	07	36	46.30	+18 14 01.1	411
(232)	1993	03	02.42277	07	36	46.28	+18 14 01.4	411
(237)	1993	02	17.52057	08	47	26.91	+29 11 36.5	411
(237)	1993	02	17.52144	08	47	26.88	+29 11 36.6	411
(237)	1993	03	02.45587	08	38	15.05	+29 39 28.1	411
(237)	1993	03	02.45675	08	38	15.01	+29 39 28.2	411
(237)	1993	03	17.41340	08	32	37.86	+29 38 48.5	411
(237)	1993	03	17.41461	08	32	37.85	+29 38 48.4	411
(241)	1993	02	17.49203	08	28	28.38	+13 49 58.0	411
(241)	1993	02	17.49290	08	28	28.34	+13 49 58.2	411

(241)		1993	03	02.44151	08	20	59.38	+14	16	35.6	411
(241)		1993	03	02.44238	08	20	59.35	+14	16	35.7	411
(248)		1993	03	17.43657	08	55	42.32	+11	11	08.0	411
(248)		1993	03	17.43780	08	55	42.30	+11	11	08.1	411
(270)		1993	03	02.43343	08	03	43.39	+17	16	48.4	411
(270)		1993	03	02.43431	08	03	43.38	+17	16	48.6	411
(281)		1993	02	17.51818	08	47	12.96	+27	24	30.1	411
(281)		1993	02	17.51940	08	47	12.93	+27	24	30.1	411
(284)		1993	02	17.41129	06	53	16.41	+12	58	02.9	411
(284)		1993	02	17.41253	06	53	16.40	+12	58	03.3	411
(311)		1993	02	17.43835	07	21	09.79	+25	03	15.0	411
(311)		1993	02	17.43959	07	21	09.73	+25	03	15.2	411
(319)		1993	02	17.47394	07	48	18.10	+07	53	38.5	411
(319)		1993	02	17.47518	07	48	18.09	+07	53	38.8	411
(324)		1993	03	02.49900	09	59	02.11	+11	12	21.7	411
(324)		1993	03	02.49988	09	59	02.06	+11	12	21.9	411
(324)		1993	03	17.48682	09	47	13.36	+11	40	41.2	411
(324)		1993	03	17.48735	09	47	13.33	+11	40	41.4	411
(329)		1993	03	02.48050	09	42	15.94	+01	36	37.8	411
(329)		1993	03	02.48139	09	42	15.92	+01	36	38.4	411
(329)		1993	03	17.47089	09	33	32.17	+04	31	37.2	411
(329)		1993	03	17.47178	09	33	32.16	+04	31	38.0	411
(332)		1993	03	02.43565	08	10	17.50	+23	59	53.2	411
(332)		1993	03	02.43689	08	10	17.47	+23	59	52.9	411
(337)		1993	03	17.43418	08	53	50.69	+23	15	33.6	411
(337)		1993	03	17.43507	08	53	50.68	+23	15	33.3	411
(345)		1993	03	02.53641	10	34	03.31	-05	17	56.6	411
(345)		1993	03	02.53729	10	34	03.27	-05	17	56.0	411
(345)		1993	03	17.49361	10	22	01.56	-02	53	34.6	411
(345)		1993	03	17.49414	10	22	01.56	-02	53	34.0	411
(363)		1993	03	02.48600	09	45	58.40	+22	43	53.0	411
(363)		1993	03	02.48688	09	45	58.35	+22	43	53.1	411
(363)		1993	03	17.47613	09	35	54.22	+23	08	06.2	411
(363)		1993	03	17.47737	09	35	54.19	+23	08	06.2	411
(374)		1993	03	02.47383	09	37	10.53	+00	43	12.6	411
(374)		1993	03	02.47472	09	37	10.51	+00	43	13.2	411
(374)		1993	03	17.46055	09	28	10.43	+02	21	16.1	411
(374)		1993	03	17.46144	09	28	10.40	+02	21	16.4	411
(382)		1993	02	17.42193	06	58	27.51	+25	47	12.3	411
(382)		1993	02	17.42317	06	58	27.47	+25	47	12.2	411
(388)		1993	03	02.55556	10	44	47.23	+10	37	42.3	411
(388)		1993	03	02.55645	10	44	47.18	+10	37	42.5	411
(388)		1993	03	17.51157	10	32	54.95	+11	19	38.7	411
(388)		1993	03	17.51246	10	32	54.91	+11	19	38.7	411
(402)		1993	03	02.49503	09	52	42.00	+20	57	55.6	411
(402)		1993	03	02.49592	09	52	41.95	+20	57	56.0	411
(402)		1993	03	17.48482	09	44	10.31	+22	41	01.1	411
(402)		1993	03	17.48570	09	44	10.29	+22	41	01.3	411
(403)		1993	02	17.51269	08	43	40.03	+03	31	46.5	411
(403)		1993	02	17.51358	08	43	39.91	+03	31	46.6	411
(403)		1993	03	02.45329	08	35	37.35	+04	26	42.0	411
(403)		1993	03	02.45417	08	35	37.32	+04	26	42.3	411
(403)		1993	03	17.40807	08	31	36.86	+05	29	37.2	411
(403)		1993	03	17.40896	08	31	36.85	+05	29	37.4	411
(408)		1993	03	02.51010	10	18	08.21	+01	50	51.6	411
(408)		1993	03	02.51134	10	18	08.15	+01	50	51.9	411
(412)		1993	03	02.59215	11	12	26.91	+24	16	29.0	411
(412)		1993	03	02.59304	11	12	26.86	+24	16	29.5	411
(416)		1993	02	17.50720	08	33	16.85	+36	49	58.0	411

(416)	1993 03 02.44585	08 23 22.27	+36 46 59.9			411
(416)	1993 03 02.44674	08 23 22.24	+36 47 00.0			411
(426)	1993 02 17.50170	08 32 54.03	+17 16 36.9			411
(426)	1993 02 17.50259	08 32 53.99	+17 16 36.6			411
(426)	1993 03 02.44340	08 22 45.02	+16 21 40.9			411
(426)	1993 03 02.44428	08 22 44.99	+16 21 40.5			411
(428)	1993 02 17.49707	08 32 03.54	+28 27 26.5			411
(428)	1993 02 17.49832	08 32 03.44	+28 27 26.2			411
(431)	1993 02 17.49423	08 32 01.22	+19 28 36.6			411
(431)	1993 02 17.49547	08 32 01.17	+19 28 36.7			411
(431)	1993 03 02.45039	08 24 31.93	+19 57 29.6			411
(431)	1993 03 02.45163	08 24 31.90	+19 57 29.5			411
(474)	1993 02 17.52598	08 51 54.82	+11 59 02.5			411
(474)	1993 02 17.52723	08 51 54.78	+11 59 03.7			411
(477)	1993 02 17.44385	07 22 30.69	+29 12 01.6			411
(477)	1993 02 17.44510	07 22 30.62	+29 12 01.4			411
(481)	1993 03 02.57203	10 55 15.41	+23 23 02.4			411
(481)	1993 03 02.57292	10 55 15.36	+23 23 02.6			411
(501)	1993 03 02.48339	09 44 44.67	+30 25 20.9			411
(501)	1993 03 02.48462	09 44 44.61	+30 25 20.4			411
(501)	1993 03 17.46776	09 33 26.09	+29 44 48.5			411
(501)	1993 03 17.46901	09 33 26.05	+29 44 48.3			411
(503)	1993 03 17.45028	09 08 24.59	+24 24 01.3			411
(503)	1993 03 17.45117	09 08 24.57	+24 24 01.1			411
(506)	1993 02 17.49977	08 32 24.77	+18 27 29.7			411
(506)	1993 02 17.50067	08 32 24.73	+18 27 29.5			411
(506)	1993 03 02.44828	08 23 29.62	+17 38 44.0			411
(506)	1993 03 02.44917	08 23 29.60	+17 38 43.8			411
(509)	1993 03 17.42786	08 47 09.32	-02 07 19.8			411
(509)	1993 03 17.42910	08 47 09.30	-02 07 19.4			411
(527)	1993 02 17.53095	08 53 48.30	+21 13 24.3			411
(527)	1993 02 17.53219	08 53 48.30	+21 13 24.0			411
(537)	1993 02 17.44104	07 21 13.95	+21 36 39.1			411
(537)	1993 02 17.44229	07 21 13.90	+21 36 39.5			411
(550)	1993 02 17.42479	07 00 37.39	+16 37 05.0			411
(550)	1993 02 17.42604	07 00 37.36	+16 37 04.9			411
(554)	1993 03 02.49096	09 48 26.99	+10 02 04.2			411
(554)	1993 03 02.49186	09 48 26.94	+10 02 04.4			411
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(554)	1993 03 17.47977	09 37 56.49	+10 50 36.3			411
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(581)	1993 03 02.43853	08 17 22.47	+34 28 25.6			411
(581)	1993 03 02.43977	08 17 22.44	+34 28 25.8			411
(585)	1993 02 17.53376	08 55 03.84	+08 07 06.8			411
(585)	1993 02 17.53465	08 55 03.80	+08 07 07.4			411
(585)	1993 03 02.46381	08 47 07.55	+09 55 54.6			411
(585)	1993 03 02.46470	08 47 07.52	+09 55 54.9			411
(585)	1993 03 17.42089	08 44 16.25	+11 42 21.2			411
(585)	1993 03 17.42214	08 44 16.25	+11 42 21.7			411
(601)	1993 03 17.49105	09 59 54.97	+06 54 29.7			411
(601)	1993 03 17.49230	09 59 54.92	+06 54 30.2			411
(602)	1993 03 02.56696	10 51 16.51	+03 15 02.8			411
(602)	1993 03 02.56786	10 51 16.50	+03 15 04.0			411
(613)	1993 03 02.49308	09 50 51.31	+18 16 47.5			411
(613)	1993 03 02.49398	09 50 51.26	+18 16 47.6			411
(651)	1993 02 17.52275	08 48 12.18	+33 47 07.9			411
(651)	1993 02 17.52400	08 48 12.09	+33 47 07.8			411
(660)	1993 03 17.45501	09 16 03.73	+13 22 37.7			411

(660)	1993	03	17.45591	09	16	03.71	+13	22	38.0	411
(675)	1993	03	17.45281	09	11	08.76	+02	22	56.3	411
(675)	1993	03	17.45370	09	11	08.75	+02	22	56.5	411
(702)	1993	02	17.44665	07	25	54.68	+16	22	02.4	411
(702)	1993	02	17.44755	07	25	54.65	+16	22	02.2	411
(706)	1993	02	17.45098	07	35	14.85	+29	49	39.1	411
(706)	1993	02	17.45223	07	35	14.76	+29	49	39.2	411
(715)	1993	03	02.51653	10	22	52.14	+31	11	43.4	411
(715)	1993	03	02.51778	10	22	52.09	+31	11	43.7	411
(737)	1993	02	17.48017	07	55	57.48	+06	06	40.7	411
(737)	1993	02	17.48107	07	55	57.45	+06	06	41.3	411
(737)	1993	03	02.42448	07	49	35.58	+07	24	39.7	411
(737)	1993	03	02.42575	07	49	35.56	+07	24	40.0	411
(738)	1993	03	02.58981	11	10	55.48	+08	21	28.1	411
(738)	1993	03	02.59071	11	10	55.42	+08	21	28.4	411
(740)	1993	03	02.50120	10	03	35.12	+22	13	46.2	411
(740)	1993	03	02.50209	10	03	35.07	+22	13	46.8	411
(740)	1993	03	17.48851	09	54	22.31	+23	23	40.4	411
(740)	1993	03	17.48940	09	54	22.28	+23	23	40.7	411
(790)	1993	02	17.41411	06	53	41.59	+05	15	06.5	411
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(796)	1993	03	02.58410	11	04	55.81	+30	32	48.8	411
(796)	1993	03	02.58536	11	04	55.72	+30	32	49.0	411
(802)	1993	03	02.55982	10	47	06.03	+12	48	46.8	411
(802)	1993	03	02.56107	10	47	05.95	+12	48	46.9	411
(813)	1993	03	02.53921	10	35	51.15	+20	23	14.7	411
(813)	1993	03	02.54047	10	35	51.06	+20	23	15.1	411
(813)	1993	03	13.46073	10	24	47.51	+20	57	12.5	411
(813)	1993	03	13.46859	10	24	47.05	+20	57	13.5	411
(813)	1993	03	13.47252	10	24	46.82	+20	57	14.1	411
(813)	1993	03	14.47604	10	23	51.84	+20	58	57.7	411
(813)	1993	03	14.48390	10	23	51.40	+20	58	58.6	411
(813)	1993	03	14.48783	10	23	51.18	+20	58	59.0	411
(829)	1993	03	02.58087	11	01	42.52	+08	43	19.6	411
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(834)	1993	03	02.56247	10	49	19.27	+05	11	39.3	411
(834)	1993	03	02.56337	10	49	19.23	+05	11	39.6	411
(844)	1993	03	02.56920	10	53	21.62	+08	55	00.9	411
(844)	1993	03	02.57046	10	53	21.55	+08	55	00.9	411
(859)	1993	03	17.42417	08	46	53.35	+35	32	27.7	411
(859)	1993	03	17.42543	08	46	53.33	+35	32	27.1	411
(872)	1993	03	17.43917	08	55	49.71	+09	15	42.1	411
(872)	1993	03	17.44043	08	55	49.69	+09	15	42.3	411
(931)	1993	03	02.46759	09	25	57.19	+24	14	39.6	411
(931)	1993	03	17.45742	09	18	50.90	+24	56	31.0	411
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(957)	1993	02	17.48679	08	02	01.61	-01	45	58.4	411
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(957)	1993	03	02.43049	07	56	32.42	-00	34	46.4	411
(957)	1993	03	02.43176	07	56	32.40	-00	34	46.2	411
(983)	1993	02	17.47122	07	45	42.11	+04	03	00.6	411
(983)	1993	02	17.47249	07	45	42.05	+04	03	00.4	411
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(1005)	1993	03	02.48811	09	47	07.78	+24	49	33.9	411
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(1005)	1993	03	17.47352	09	35	47.65	+24	06	47.2	411
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(1015)	1993	03	02.55763	10	46	46.64	+16	32	27.5	411

(1015)	1993 03 02.55854	10 46 46.60	+16 32 28.0			411
(1118)	1993 03 17.44759	09 00 49.68	+15 04 17.0			411
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(1164)	1993 03 02.59459	11 14 37.81	+11 39 51.2			411
(1164)	1993 03 02.59586	11 14 37.76	+11 39 53.1			411
(1177)	1993 02 17.42955	07 03 09.01	+08 13 25.5			411
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(1189)	1993 03 17.49526	10 28 18.77	-04 35 42.8			411
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(1249)	1993 02 17.45979	07 41 55.05	+14 33 44.7			411
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(1356)	1993 02 17.51552	08 43 54.90	+28 27 49.9			411
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(1366)	1993 02 25.63321	11 55 37.04	+09 02 38.8			411
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(1781)	1993 03 02.48811	09 46 41.11	+24 51 22.9			411
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(1859)	1993 03 02.54812	10 43 48.28	+08 49 09.4			411
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(2060)	1993 02 14.49297	09 20 57.73	+07 55 01.0			411
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(2204)	1993 03 02.54207	10 37 28.54	+07 44 54.4			411
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(2381)	1993 02 17.50534	08 33 05.27	+12 49 59.1			411
(2654)	1993 02 25.49961	10 01 15.80	+02 33 41.7			411
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(2862)	1993 03 02.52737	10 26 38.71	+02 49 21.3			411
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(3578)	1993 02 17.40705	06 48 05.61	+19 08 11.5			411
(3754)	1993 03 02.50685	10 16 02.09	+20 05 48.2			411
(3754)	1993 03 02.50823	10 16 02.03	+20 05 48.6			411

(3999)	1993 02 17.50170	08 32 07.93	+17 20 14.7			411
(3999)	1993 02 17.50259	08 32 07.82	+17 20 16.1			411
(4179)	1993 02 17.47855	07 54 58.23	+21 01 15.2			411
(4483)	1993 03 17.43218	08 48 13.02	-06 23 40.8			411
(5036)	1993 03 02.51325	10 18 23.70	+14 25 35.3			411
(5036)	1993 03 02.51469	10 18 23.63	+14 25 35.7			411
(5145)	1993 02 14.48194	09 22 59.75	+24 29 05.4			411
(5145)	1993 02 14.48699	09 22 59.58	+24 29 08.3			411
(5145)	1993 02 14.48951	09 22 59.61	+24 29 06.1			411

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observers R. H. McNaught, K. S. Russell
Measurer R. H. McNaught
Uppsala Southern Schmidt, U.K. Schmidt

2041 T-3	1990 04 29.76870	18 56 16.59	-21 22 50.2			413
(1532)	1993 02 24.62543	11 36 54.48	-01 52 31.0			413
(1532)	1993 02 24.67404	11 36 52.20	-01 52 26.6			413

474 Mount John
A. C. Gilmore, P.O. Box 57, Lake Tekapo, New Zealand
Observer A. C. Gilmore
Measurer P. M. Kilmartin
0.6-m f/14 Cassegrain reflector
AGK3, SAOC, CPZ, field plates from Carter Observatory

1987 WO1	1993 02 16.52205	10 25 13.18	-01 17 18.5	17	t	474
1987 WO1	1993 02 16.56806	10 25 10.83	-01 17 04.5		t	474
1987 WO1	1993 02 17.59201	10 24 17.49	-01 12 16.5		t	474
1987 WO1	1993 02 23.43671	10 19 09.22	-00 42 09.6		t	474
1987 WO1	1993 02 23.45541	10 19 08.23	-00 42 03.4		t	474
1993 BW3	1993 02 15.56632	10 26 46.04	-01 26 36.4	18.5		474
1993 BW3	1993 02 15.59757	10 26 42.83	-01 26 38.1			474
1993 BW3	1993 02 16.52205	10 25 05.03	-01 27 16.0			474
1993 BW3	1993 02 16.56806	10 25 00.11	-01 27 17.1			474
1993 BW3	1993 02 17.59201	10 23 12.15	-01 27 47.2			474
1993 BW3	1993 02 17.61597	10 23 09.49	-01 27 46.9			474

511 Haute Provence
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Observers E. W. Elst, G. Spiekermann, G. Traversa
Measurer E. W. Elst
0.6-m Schmidt
PPM

1980 TH	1993 02 19.08611	11 07 33.69	+03 59 00.2	17.5	511
1980 TH	1993 02 19.10764	11 07 32.89	+03 59 03.6		511
1981 SU2	1993 02 18.98264	09 10 52.94	+15 41 51.1	17.7	511
1981 SU2	1993 02 19.00347	09 10 51.55	+15 41 54.0		511
1983 EU	1993 02 19.01944	10 19 03.72	+06 06 06.3	17.2	511
1983 EU	1993 02 19.04028	10 19 02.70	+06 06 12.5		511
1983 EU	1993 02 19.04722	10 19 01.95	+06 06 19.6		511
1983 EU	1993 02 19.06806	10 19 01.15	+06 06 26.1		511
1983 EU	1993 02 22.01042	10 16 14.32	+06 29 14.2		511
1983 EU	1993 02 22.03125	10 16 13.11	+06 29 24.7		511
1985 HL	1993 02 19.08611	11 01 27.21	+02 28 57.2	17.5	511
1985 HL	1993 02 19.10764	11 01 26.59	+02 29 09.2		511
1985 HL	1993 02 21.03125	11 00 19.17	+02 46 05.9		511
1985 HL	1993 02 21.05208	11 00 18.13	+02 46 16.6		511
1987 SG2	1993 02 19.01944	10 22 08.56	+07 02 47.3	17.5	511

1987 SG2		1993 02 19.04028	10 22 07.46	+07 02 56.7			511
1987 SG2		1993 02 19.04722	10 22 07.06	+07 03 02.1			511
1987 SG2		1993 02 19.06806	10 22 06.20	+07 03 11.0			511
1987 SG2		1993 02 22.01042	10 19 35.35	+07 28 14.6			511
1987 SG2		1993 02 22.03125	10 19 34.15	+07 28 26.6			511
1991 PJ5		1993 02 18.98264	09 14 39.51	+14 42 17.2	17.2		511
1991 PJ5		1993 02 19.00347	09 14 38.30	+14 42 19.0			511
1991 PJ5		1993 02 19.94653	09 13 47.71	+14 45 45.7			511
1991 PJ5		1993 02 19.96736	09 13 46.31	+14 45 48.1			511
1993 BE5		1993 02 18.98264	09 14 19.52	+15 37 00.3	18.0		511
1993 BE5		1993 02 19.00347	09 14 18.52	+15 37 03.1			511
1993 BE5		1993 02 19.94653	09 13 40.55	+15 39 29.0			511
1993 BE5		1993 02 19.96736	09 13 39.04	+15 39 33.2			511
1993 BJ5		1993 02 18.98264	09 15 24.22	+15 37 53.2	18.2		511
1993 BJ5		1993 02 19.00347	09 15 23.19	+15 37 55.4			511
1993 BR5		1993 02 18.98264	09 09 34.82	+16 40 58.3	17.8		511
1993 BR5		1993 02 19.00347	09 09 33.44	+16 41 01.5			511
1993 BR5		1993 02 19.94653	09 08 38.47	+16 43 56.8			511
1993 BR5		1993 02 19.96736	09 08 36.90	+16 43 59.4			511
1993 CA1		1993 02 18.98264	09 18 38.16	+15 14 15.9	17.4		511
1993 CA1		1993 02 19.00347	09 18 36.79	+15 14 11.7			511
1993 CA1		1993 02 19.94653	09 17 37.35	+15 12 01.6			511
1993 CA1		1993 02 19.96736	09 17 35.80	+15 11 55.9			511
1993 CQ1		1993 02 19.08611	11 12 43.39	+01 45 28.5	17.4		511
1993 CQ1		1993 02 19.10764	11 12 42.65	+01 45 44.1			511
1993 CQ1		1993 02 21.03125	11 11 27.70	+02 08 16.4			511
1993 CQ1		1993 02 21.05208	11 11 26.60	+02 08 28.7			511
1993 DU		1993 02 19.01944	10 25 17.35	+04 42 45.2	18.0		511
1993 DU		1993 02 19.04028	10 25 16.03	+04 42 46.7			511
1993 DU		1993 02 19.04722	10 25 15.66	+04 42 47.9			511
1993 DU		1993 02 19.06806	10 25 14.54	+04 42 52.0			511
1993 DV		1993 02 19.01944	10 27 50.47	+05 06 23.5	17.6		511
1993 DV		1993 02 19.04028	10 27 49.67	+05 06 27.7			511
1993 DV		1993 02 19.04722	10 27 48.91	+05 06 30.7			511
1993 DV		1993 02 19.06806	10 27 48.10	+05 06 37.6			511
1993 DV		1993 02 22.01042	10 25 07.89	+05 20 34.2			511
1993 DV		1993 02 22.03125	10 25 06.81	+05 20 43.0			511
1993 DJ1	*	1993 02 18.98264	09 13 09.51	+16 08 52.0	17.7		511
1993 DJ1		1993 02 19.00347	09 13 08.46	+16 09 01.0			511
1993 DJ1		1993 02 19.94653	09 12 22.29	+16 17 44.8			511
1993 DJ1		1993 02 19.96736	09 12 20.79	+16 17 52.5			511
1993 DK1	*	1993 02 19.01944	10 16 03.58	+07 00 36.5	17.5		511
1993 DK1		1993 02 19.04028	10 16 02.40	+07 00 39.3			511
1993 DK1		1993 02 19.04722	10 16 01.63	+07 00 41.4			511
1993 DK1		1993 02 19.06806	10 16 00.78	+07 00 45.8			511
1993 DK1		1993 02 22.01042	10 13 50.21	+07 13 35.8			511
1993 DK1		1993 02 22.03125	10 13 49.12	+07 13 40.7			511
1993 DL1	*	1993 02 19.01944	10 22 45.25	+05 37 21.0	17.6		511
1993 DL1		1993 02 19.04028	10 22 44.06	+05 37 25.5			511
1993 DL1		1993 02 19.04722	10 22 43.52	+05 37 27.2			511
1993 DL1		1993 02 19.06806	10 22 42.51	+05 37 33.4			511
1993 DL1		1993 02 22.01042	10 19 39.11	+05 51 01.4			511
1993 DL1		1993 02 22.03125	10 19 37.84	+05 51 08.0			511
1993 DM1	*	1993 02 19.01944	10 23 37.74	+05 58 13.4	17.5		511
1993 DM1		1993 02 19.04028	10 23 36.56	+05 58 17.9			511
1993 DM1		1993 02 19.04722	10 23 35.82	+05 58 19.5			511
1993 DM1		1993 02 19.06806	10 23 34.90	+05 58 23.5			511
1993 DM1		1993 02 22.01042	10 20 25.93	+06 11 00.8			511
1993 DM1		1993 02 22.03125	10 20 24.69	+06 11 04.0			511

1993 DN1	*	1993	02	19.01944	10	24	30.40	+06 52 29.4	17.0	511
1993 DN1		1993	02	19.04028	10	24	29.55	+06 52 39.3		511
1993 DN1		1993	02	19.04722	10	24	29.21	+06 52 47.0		511
1993 DN1		1993	02	19.06806	10	24	28.58	+06 52 57.4		511
1993 DN1		1993	02	22.01042	10	22	31.83	+07 24 38.3		511
1993 DN1		1993	02	22.03125	10	22	30.96	+07 24 52.7		511
1993 DO1	*	1993	02	19.08611	11	06	53.63	+02 52 47.2	18.0	511
1993 DO1		1993	02	19.10764	11	06	52.58	+02 52 51.1		511
1993 DO1		1993	02	21.03125	11	05	25.42	+02 58 08.9		511
1993 DO1		1993	02	21.05208	11	05	24.06	+02 58 08.6		511
(125)		1993	02	19.08611	11	08	23.53	+04 23 14.3	15.5	511
(125)		1993	02	19.10764	11	08	22.68	+04 23 23.1		511
(602)		1993	02	19.08611	11	00	41.04	+02 51 34.6	16.8	511
(602)		1993	02	19.10764	11	00	40.11	+02 51 37.1		511
(602)		1993	02	21.03125	10	59	07.88	+02 55 11.1		511
(602)		1993	02	21.05208	10	59	06.59	+02 55 10.1		511
(1118)		1993	02	18.98264	09	18	03.31	+15 06 55.6	16.5	511
(1118)		1993	02	19.00347	09	18	02.17	+15 06 54.2		511
(1118)		1993	02	19.94653	09	17	15.33	+15 07 28.4		511
(1118)		1993	02	19.96736	09	17	13.98	+15 07 26.7		511
(1542)		1993	02	19.08611	11	14	00.14	+01 48 48.4	17.0	511
(1542)		1993	02	19.10764	11	13	59.49	+01 48 55.6		511
(1542)		1993	02	21.03125	11	12	41.96	+01 57 20.7		511
(1542)		1993	02	21.05208	11	12	40.78	+01 57 22.0		511
(1614)		1993	02	19.01944	10	19	03.41	+06 22 00.5	16.0	511
(1614)		1993	02	19.04028	10	19	02.56	+06 22 08.4		511
(1614)		1993	02	19.04722	10	19	02.03	+06 22 14.7		511
(1614)		1993	02	19.06806	10	19	01.35	+06 22 25.0		511
(1614)		1993	02	22.01042	10	16	53.31	+06 49 59.4		511
(1614)		1993	02	22.03125	10	16	52.41	+06 50 11.8		511
(1894)		1993	02	19.08611	11	12	34.52	+03 40 08.2	17.6	511
(1894)		1993	02	19.10764	11	12	33.82	+03 40 14.0		511
(1894)		1993	02	21.03125	11	11	09.47	+03 48 46.0		511
(1894)		1993	02	21.05208	11	11	08.35	+03 48 48.1		511
(2545)		1993	02	18.98264	09	17	22.21	+15 44 17.7	17.2	511
(2545)		1993	02	19.00347	09	17	20.73	+15 44 16.7		511
(2545)		1993	02	19.94653	09	16	21.73	+15 45 07.9		511
(2545)		1993	02	19.96736	09	16	20.25	+15 45 06.7		511
(3323)		1993	02	18.98264	09	20	33.47	+16 35 27.5	17.6	511
(3323)		1993	02	19.00347	09	20	32.22	+16 35 31.7		511
(3436)		1993	02	18.98264	09	16	30.66	+13 52 19.9	17.5	511
(3436)		1993	02	19.00347	09	16	29.47	+13 52 24.2		511
(3436)		1993	02	19.94653	09	15	44.40	+13 56 24.3		511
(3436)		1993	02	19.96736	09	15	43.37	+13 56 27.2		511
(3742)		1993	02	18.98264	09	15	21.90	+14 04 43.7	17.5	511
(3742)		1993	02	19.00347	09	15	20.62	+14 04 49.1		511
(3742)		1993	02	19.94653	09	14	33.03	+14 10 07.1		511
(3742)		1993	02	19.96736	09	14	31.96	+14 10 11.8		511
(4027)		1993	02	19.08611	11	08	41.34	+03 25 41.5	17.3	511
(4027)		1993	02	19.10764	11	08	40.45	+03 25 49.2		511
(4027)		1993	02	21.03125	11	07	11.62	+03 36 25.7		511
(4027)		1993	02	21.05208	11	07	10.48	+03 36 29.6		511
(4858)		1993	02	18.98264	09	17	52.79	+16 31 42.2	17.7	511
(4858)		1993	02	19.00347	09	17	51.15	+16 31 43.8		511
(4858)		1993	02	19.94653	09	16	54.59	+16 33 38.1		511
(4858)		1993	02	19.96736	09	16	53.00	+16 33 35.7		511
(4912)		1993	02	19.01944	10	17	05.24	+06 22 49.7	17.6	511
(4912)		1993	02	19.04028	10	17	04.16	+06 22 55.1		511
(4912)		1993	02	19.04722	10	17	03.35	+06 23 00.1		511

(4912)	1993 02 19.06806	10 17 02.40	+06 23 07.9			511
(4912)	1993 02 22.01042	10 14 09.13	+06 43 44.0			511
(4912)	1993 02 22.03125	10 14 07.80	+06 43 52.4			511
(4918)	1993 02 18.98264	09 19 13.53	+13 00 38.7	17.4		511
(4918)	1993 02 19.00347	09 19 12.32	+13 00 44.4			511
(5074)	1993 02 18.98264	09 07 14.60	+14 19 51.1	17.6		511
(5074)	1993 02 19.00347	09 07 13.41	+14 19 52.2			511
(5091)	1993 02 19.01944	10 29 45.24	+04 38 40.4	16.8		511
(5091)	1993 02 19.04028	10 29 44.39	+04 38 43.0			511
(5091)	1993 02 19.04722	10 29 43.84	+04 38 46.4			511
(5091)	1993 02 19.06806	10 29 43.05	+04 38 51.5			511

571 Cavriana
L. Lai, via Mantovana 130, I-37062 Dossobuono (Verona), Italy
Observers L. Lai, I. Rocchetti, G. Vesentini
0.4-m f/5 reflector + CCD
GSC

(383)	1992 11 22.79755	01 37 37.42	+06 37 53.9			571
(383)	1992 11 22.80369	01 37 37.27	+06 37 53.5			571
(383)	1992 11 22.80801	01 37 37.17	+06 37 53.2			571
(2708)	1992 12 26.85820	04 18 24.96	+18 53 05.9			571
(2708)	1992 12 26.87035	04 18 24.55	+18 53 06.0			571
(2708)	1992 12 26.88228	04 18 24.13	+18 53 06.1			571
(2708)	1992 12 28.87221	04 17 19.17	+18 53 26.4			571
(2708)	1992 12 28.88354	04 17 18.84	+18 53 26.7			571
(2708)	1992 12 28.89451	04 17 18.36	+18 53 27.0			571
(2918)	1992 12 28.86314	04 16 56.29	+18 49 29.3			571
(2918)	1992 12 28.87491	04 16 55.92	+18 49 28.5			571
(2918)	1992 12 28.88603	04 16 55.44	+18 49 28.1			571
(3252)	1992 11 27.89247	01 35 05.19	+30 13 37.7			571
(3252)	1992 11 27.90385	01 35 04.76	+30 13 33.5			571
(4179)	1992 12 28.93026	08 29 46.70	+17 17 50.6			571
(4179)	1992 12 28.93626	08 29 45.79	+17 17 57.5			571
(4179)	1992 12 28.94561	08 29 44.30	+17 18 07.0			571

587 Sormano
P. Sicoli, Via Valli 9, I-22040 Garbagnate Monastero (Como), Italy
Observers E. Colzani, P. Sicoli, G. Ventre, M. Cavagna, E. Galliani
0.5-m f/5.9 reflector
GSC

(1584)	1993 02 13.95174	09 03 48.13	-00 27 42.8			587
(1584)	1993 02 14.00521	09 03 42.95	-00 28 25.2			587
(3446)	1993 02 13.93264	08 36 07.34	+33 25 37.0			587
(3446)	1993 02 14.01563	08 36 02.66	+33 25 30.5			587

595 Farra d'Isonzo
L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy
Observers W. Boschin, G. Lombardi, E. Pettarin, F. Damonte
0.4-m f/4.5 reflector
PPM

1981 YS1	1992 12 17.89167	05 14 08.47	+12 32 32.3			595
1981 YS1	1992 12 17.92430	05 14 06.93	+12 32 35.5			595
1981 YS1	1992 12 18.85139	05 13 25.29	+12 34 40.1			595
1981 YS1	1992 12 18.86667	05 13 24.84	+12 34 41.5			595
1981 YS1	1992 12 23.90347	05 09 53.31	+12 49 01.1			595
1981 YS1	1992 12 23.94514	05 09 52.32	+12 49 05.2			595
1992 WD5	1992 12 18.89792	06 09 06.23	+47 56 32.9			595
1992 WD5	1992 12 23.95451	06 04 50.79	+48 53 47.2			595

596 Colleverde di Guidonia
V. S. Casulli, Via M. Rosa 1, I-00010 Colleverde di Guidonia (RM), Italy
0.31-m f/2.8 Baker-Schmidt + CCD
GSC

1978 LG	1993 02 20.90007	10 46 30.60	-05 54 53.0		596
1978 LG	1993 02 20.91646	10 46 29.79	-05 54 49.3		596
1978 LG	1993 02 20.93099	10 46 29.06	-05 54 48.8		596
1988 AL	1993 02 22.90637	11 10 57.84	+03 25 53.3		596
1988 AL	1993 02 22.92741	11 10 56.99	+03 26 04.0		596
1988 AL	1993 02 22.93714	11 10 56.70	+03 26 10.3		596
1989 CM1	1993 02 24.78628	09 28 14.22	+22 18 38.3		596
1989 CM1	1993 02 24.80483	09 28 13.13	+22 18 41.1		596
1989 NB1	1993 02 23.84490	10 35 52.65	+17 44 59.6		596
1989 NB1	1993 02 23.86703	10 35 51.53	+17 45 14.0		596
1989 NB1	1993 02 23.89024	10 35 50.72	+17 45 21.6		596
1989 NB1	1993 02 23.90055	10 35 50.22	+17 45 28.1		596
1991 PQ10	1993 02 20.95087	11 32 10.46	-05 31 29.7		596
1991 PQ10	1993 02 20.96056	11 32 09.98	-05 31 27.9		596
(5438)	1993 02 15.88519	09 23 39.52	-11 41 27.2		596
(5438)	1993 02 15.89016	09 23 39.08	-11 41 30.1		596
(5438)	1993 02 15.89455	09 23 38.69	-11 41 33.3		596
(5467)	1993 02 26.84392	10 29 14.16	+10 20 28.4		596
(5467)	1993 02 26.86504	10 29 12.91	+10 20 30.2		596
(5468)	1993 02 11.80889	08 50 04.79	+17 34 52.4		596
(5468)	1993 02 11.83757	08 50 03.27	+17 35 06.3		596
(5468)	1993 02 11.85785	08 50 02.23	+17 35 16.3		596

657 Victoria, Climenhaga Observatory
J. B. Tatum, Dept. of Physics, University of Victoria, P.O. Box 1700,
Victoria, BC V8W 2Y2, Canada
Observers J. B. Tatum, D. D. Balam, L. Bogan
0.5-m reflector + CCD

1980 AA	1993 02 18.24956	08 52 10.94	+02 16 52.3		657
1980 AA	1993 02 18.25175	08 52 11.33	+02 16 49.7		657
1980 AA	1993 02 18.25389	08 52 11.66	+02 16 47.2		657
1990 BW	1993 02 17.52882	13 22 49.50	+22 43 59.3		657
1990 BW	1993 02 17.53238	13 22 49.58	+22 44 03.8		657
1990 BW	1993 02 17.53601	13 22 49.70	+22 44 09.1		657
1990 BW	1993 02 18.45190	13 23 08.61	+23 03 50.0		657
1990 BW	1993 02 18.45544	13 23 08.70	+23 03 54.3		657
1990 BW	1993 02 18.45769	13 23 08.71	+23 03 56.7		657
1990 SL	1993 02 18.46078	13 45 31.13	+27 05 12.2		657
1990 SL	1993 02 18.47015	13 45 31.10	+27 05 18.2		657
1990 SL	1993 02 18.47394	13 45 31.07	+27 05 20.7		657
1991 VF4	1993 02 17.40336	11 13 51.70	+16 05 56.4		657
1991 VF4	1993 02 17.40662	11 13 51.53	+16 05 57.1		657
1991 VF4	1993 02 17.40959	11 13 51.36	+16 05 58.7		657
1991 XC1	1993 02 17.41525	11 14 35.18	+16 46 40.4		657
1991 XC1	1993 02 17.41995	11 14 35.02	+16 46 41.7		657
1991 XC1	1993 02 17.42312	11 14 34.89	+16 46 43.5		657
1991 XC1	1993 02 18.38124	11 13 54.90	+16 52 13.7		657
1991 XC1	1993 02 18.38442	11 13 54.73	+16 52 14.6		657
1991 XC1	1993 02 18.38797	11 13 54.61	+16 52 15.8		657
1992 WD5	1993 02 18.20267	06 34 31.98	+41 37 41.4		657
1992 WD5	1993 02 18.20602	06 34 32.38	+41 37 37.8		657
1992 WD5	1993 02 18.20891	06 34 32.84	+41 37 34.0		657
1992 WD5	1993 03 16.21654	07 44 45.94	+31 46 01.4		657
1992 WD5	1993 03 16.21860	07 44 46.29	+31 45 58.2		657
1992 WD5	1993 03 16.22057	07 44 46.61	+31 45 55.2		657

1993 BW3	1993 02 17.38772	10 23 33.54	-01 27 54.0			657
1993 BW3	1993 02 17.39056	10 23 33.29	-01 27 53.4			657
1993 BW3	1993 02 17.39506	10 23 32.78	-01 27 53.1			657
1993 BX3	1993 02 18.40837	11 24 11.35	-09 24 55.2			657
1993 BX3	1993 02 18.41046	11 24 11.37	-09 24 49.7			657
1993 BX3	1993 02 18.41281	11 24 11.42	-09 24 43.4			657

658 Dominion Astrophysical Observatory, Victoria
J. B. Tatum, Dept. of Physics, University of Victoria, P.O. Box 1700, Victoria, BC V8W 2Y2, Canada
Observers J. B. Tatum, D. D. Balam, G. C. L. Aikman
1.85-m reflector + CCD
GSC

1980 AA	1993 02 28.23826	09 17 00.38	+00 01 03.9			658
1980 AA	1993 02 28.24198	09 17 00.81	+00 01 01.8			658
1992 HE	1993 02 26.12366	01 55 06.43	+33 14 22.8		19.0	658
1992 HE	1993 02 26.12782	01 55 06.77	+33 14 24.4			658
1992 HE	1993 02 26.13152	01 55 07.15	+33 14 26.3			658
1992 ST	1993 02 26.15341	03 54 11.89	+29 09 24.3			658
1992 ST	1993 02 26.15698	03 54 12.45	+29 09 25.7			658
1992 ST	1993 02 26.16039	03 54 12.92	+29 09 26.8			658
1992 VM	1993 02 26.18250	05 11 22.74	+13 28 22.1			658
1992 VM	1993 02 26.18594	05 11 23.18	+13 28 24.9			658
1992 VM	1993 02 26.18958	05 11 23.55	+13 28 27.4		18.7	658
1992 VM	1993 02 26.19323	05 11 24.09	+13 28 30.7			658
1992 WD5	1993 02 26.25677	06 54 47.90	+38 47 21.1		15.7	658
1992 WD5	1993 02 26.26036	06 54 48.46	+38 47 16.5			658
1992 WD5	1993 02 26.26421	06 54 49.07	+38 47 11.1			658
1992 WD5	1993 02 28.27906	07 00 11.47	+38 02 19.6			658
1992 WD5	1993 02 28.28281	07 00 12.04	+38 02 14.6			658
1992 WD5	1993 02 28.28654	07 00 12.61	+38 02 09.5			658
1993 BW3	1993 02 22.41942	10 14 52.26	-01 27 41.3			658
1993 BW3	1993 02 22.42307	10 14 51.88	-01 27 41.3			658
1993 BX3	1993 02 22.40471	11 26 06.03	-06 45 05.4			658
1993 BX3	1993 02 22.40875	11 26 06.00	-06 44 55.9			658
1993 BX3	1993 02 22.41271	11 26 06.01	-06 44 46.9			658

662 Lick
D. K. Yeomans, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109
Observer A. R. Klemola
Measurer A. R. Klemola
0.5-m Carnegie double astrograph

(243)	1990 07 27.38889	23 20 19.59	-03 58 04.9			662
(243)	1990 07 27.43056	23 20 18.98	-03 58 07.1			662
(243)	1990 07 27.47222	23 20 18.37	-03 58 09.4			662

670 Camarillo
J. E. Rogers, 441 Rowland Avenue, Camarillo, CA 93010
0.25-m Schmidt-Cassegrain + CCD
GSC

1992 WD5	1993 03 06.18769	07 16 25.21	+35 46 49.6		15.3 V	670
1992 WD5	1993 03 06.19905	07 16 27.12	+35 46 34.5			670
1992 WD5	1993 03 06.21024	07 16 28.70	+35 46 20.1			670
(1584)	1993 03 12.21092	08 34 20.89	-04 35 24.8		14.0 V	670
(1584)	1993 03 12.23172	08 34 20.15	-04 35 32.7			670
(1584)	1993 03 12.25254	08 34 19.35	-04 35 40.7			670
(3446)	1993 03 19.16146	08 26 40.03	+30 40 03.5		16.7 V	670
(3446)	1993 03 19.17880	08 26 40.37	+30 39 54.9			670

(3446)	1993 03 19.19689	08 26 40.69	+30 39 47.5			670
(5438)	1993 03 12.17208	08 55 12.65	-14 25 24.2	14.5 V		670
(5438)	1993 03 12.18319	08 55 12.00	-14 25 25.6			670
(5438)	1993 03 12.19361	08 55 11.51	-14 25 26.1			670

675 Palomar
C. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A. (3)
C. J. van Houten, Sterrewacht Leiden, Postbus 9513, NL-2300 RA Leiden, The Netherlands (4)
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. (6)
9 = 3 + 6
Observers T. Gehrels (4, L), H. E. Holt (3, S), D. H. Levy (3, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S)
Measurers B. M. Cudnik (3), C. M. Olmstead (6), C. S. Shoemaker (3), E. M. Shoemaker (3), B. A. Skiff (9), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4)
1.2-m (L) and 0.46-m (S) Schmidt telescopes

1954 ON	*	1954 07 29.32083	20 42 49.09	-16 49 23.1		6	675
1954 ON		1954 07 29.34514	20 42 47.83	-16 49 28.0		6	675
1954 OO	*	1954 07 29.32083	20 44 52.03	-19 06 53.4	17.0	6	675
1954 OO		1954 07 29.34514	20 44 50.50	-19 07 02.1		6	675
1954 OP	*	1954 07 29.32083	20 46 25.13	-18 47 38.4	17.5	6	675
1954 OP		1954 07 29.34514	20 46 23.62	-18 47 38.7		6	675
1954 OQ	*	1954 07 29.32083	20 50 25.20	-19 50 57.0	17.5	6	675
1954 OQ		1954 07 29.34514	20 50 23.66	-19 50 55.3		6	675
1954 OR	*	1954 07 29.32083	20 51 56.67	-16 41 23.4	17.5	6	675
1954 OR		1954 07 29.34514	20 51 55.32	-16 41 36.9		6	675
1954 OS	*	1954 07 29.32083	20 59 30.85	-16 17 23.4	17.2	6	675
1954 OS		1954 07 29.34514	20 59 29.70	-16 17 33.7		6	675
1954 OT	*	1954 07 29.32083	21 01 51.26	-15 34 47.9	16.5	6	675
1954 OT		1954 07 29.34514	21 01 49.67	-15 34 49.2		6	675
1954 OU	*	1954 07 29.32083	21 03 01.15	-17 16 19.7	17.8	6	675
1954 OU		1954 07 29.34514	21 02 59.99	-17 16 25.2		6	675
1954 OV	*	1954 07 29.32083	21 04 07.06	-17 18 52.4	17.5	6	675
1954 OV		1954 07 29.34514	21 04 05.83	-17 19 05.6		6	675
1954 OW	*	1954 07 29.32083	21 04 36.76	-16 29 02.2		6	675
1954 OW		1954 07 29.34514	21 04 35.26	-16 29 03.2		6	675
1954 OX		1954 07 31.31181	21 23 37.52	-16 46 00.9		6	675
1954 OX	*	1954 07 31.33681	21 23 35.99	-16 46 04.4	17.5	6	675
1979 QP		1954 07 29.32083	20 54 38.80	-17 17 25.3	17.8	6	675
1979 QP		1954 07 29.34514	20 54 37.38	-17 17 28.2		6	675
1979 SR		1991 02 10.43785	10 49 24.38	-02 20 20.0		9	675
1979 SR		1991 02 10.48663	10 49 22.32	-02 20 08.0		9	675
1980 AA		1993 01 23.25938	06 33 11.49	+21 15 40.5	16	3	675
1980 AA		1993 01 23.29704	06 33 29.29	+21 13 16.4		3	675
1980 AA		1993 01 24.20069	06 41 06.97	+20 15 02.5		3	675
1980 DD1		1952 01 30.39583	11 08 25.93	+19 06 57.9		6	675
1980 DD1		1952 01 30.42430	11 08 24.98	+19 07 05.0		6	675
1980 FR1		1954 07 31.31181	21 23 10.35	-16 41 55.0		6	675
1980 FR1		1954 07 31.33681	21 23 09.27	-16 41 58.9		6	675
1980 FT3		1954 07 03.42778	21 52 53.16	-08 57 00.9		6	675
1980 FT3		1954 07 03.45208	21 52 53.24	-08 56 57.4		6	675
1981 EL4		1991 02 08.36285	10 06 43.81	+07 14 04.7		9	675
1981 EL4		1991 02 08.39913	10 06 41.98	+07 14 05.4		9	675
1981 EL4		1991 02 10.37083	10 05 01.88	+07 17 30.4	17.5	9	675
1981 EL4		1991 02 10.40816	10 04 59.91	+07 17 33.8		9	675
1981 EV8		1991 01 22.43281	09 39 21.86	+05 17 58.4	19.0	9	675
1981 EV8		1991 01 22.46215	09 39 20.21	+05 18 05.7		9	675

1981	EK41	1991	02	10.43785	10	42	34.01	+01 17 35.3	17.8	9 675
1981	EK41	1991	02	10.48663	10	42	31.61	+01 17 53.3		9 675
1981	ED43	1954	09	22.19444	20	55	24.91	-25 32 33.7		6 675
1981	ED43	1954	09	22.21875	20	55	24.95	-25 32 23.1		6 675
1981	SM	1954	07	29.32083	20	52	15.06	-16 47 20.4		6 675
1981	SM	1954	07	29.34514	20	52	13.52	-16 47 25.1		6 675
1981	SN1	1954	07	03.42778	21	43	49.11	-12 26 04.7		6 675
1981	SN1	1954	07	03.45208	21	43	49.18	-12 26 06.8		6 675
1982	UH	1991	02	08.36285	10	20	00.65	+06 31 33.9		9 675
1982	UH	1991	02	08.39913	10	19	58.50	+06 31 43.3		9 675
1982	UV1	1954	07	29.32083	21	04	17.94	-18 09 32.0		6 675
1982	UV1	1954	07	29.34514	21	04	16.93	-18 09 37.3		6 675
1984	OA	1954	07	31.31181	21	12	02.24	-14 56 16.3		6 675
1984	OA	1954	07	31.33681	21	12	01.20	-14 56 38.0		6 675
1984	OA	1954	09	22.19444	20	51	06.40	-25 35 07.5		6 675
1984	OA	1954	09	22.21875	20	51	06.73	-25 35 14.9		6 675
1984	SG1	1991	02	10.37083	10	03	15.27	+08 35 40.3	17.5	9 675
1984	SG1	1991	02	10.40816	10	03	13.27	+08 35 47.4		9 675
1985	CZ1	1954	07	31.31181	21	11	10.52	-15 01 43.6		6 675
1985	CZ1	1954	07	31.33681	21	11	08.94	-15 01 45.1		6 675
1985	QH5	1954	07	03.42778	21	41	21.10	-11 43 50.9		6 675
1985	QH5	1954	07	03.45208	21	41	20.64	-11 43 53.7		6 675
1985	XR	1954	07	31.31181	21	09	28.03	-17 22 58.4		6 675
1985	XR	1954	07	31.33681	21	09	26.68	-17 23 06.7		6 675
1986	AG1	1954	07	03.42778	21	34	07.32	-13 53 53.8		6 675
1986	AG1	1954	07	03.45208	21	34	06.10	-13 53 39.1		6 675
1988	RG1	1993	01	23.31059	08	01	24.46	+01 53 37.6	18.5	3 675
1988	RG1	1993	01	23.34947	08	01	23.29	+01 53 46.1		3 675
1988	RG1	1993	01	27.31475	07	59	26.23	+02 07 41.3		3 675
1988	VD7	1952	01	30.39583	10	59	31.21	+16 10 54.6		6 675
1988	VD7	1952	01	30.42430	10	59	30.06	+16 11 04.9		6 675
1989	SG1	1991	02	10.43785	10	50	05.67	+03 56 31.2		9 675
1989	SG1	1991	02	10.48663	10	50	03.76	+03 56 53.6		9 675
1989	SV1	1954	07	03.42778	21	44	33.39	-13 47 06.6		6 675
1989	SV1	1954	07	03.45208	21	44	33.06	-13 47 09.8		6 675
1989	SV1	1954	07	31.31181	21	30	54.18	-15 19 58.0		6 675
1989	SV1	1954	07	31.33681	21	30	53.06	-15 20 04.2		6 675
1989	TC3	1991	01	22.43281	09	54	27.30	+05 59 22.4	17.8	9 675
1989	TC3	1991	01	22.46215	09	54	26.31	+05 59 31.0		9 675
1989	TC3	1991	02	10.37083	09	41	38.53	+07 55 46.1		9 675
1989	TC3	1991	02	10.40816	09	41	36.71	+07 56 01.8		9 675
1989	VV	1954	07	31.31181	21	18	02.36	-18 03 53.3		6 675
1989	VV	1954	09	22.19444	20	44	33.99	-20 30 06.3		6 675
1989	VV	1954	09	22.21875	20	44	34.08	-20 30 06.2		6 675
1989	WH4	1954	07	29.32083	20	59	37.17	-16 21 21.5		6 675
1989	WH4	1954	07	29.34514	20	59	35.73	-16 21 31.1		6 675
1989	XC	1954	07	31.31181	21	31	44.31	-18 50 26.8	17.8	6 675
1989	XC	1954	07	31.33681	21	31	43.07	-18 50 34.3		6 675
1989	XC	1954	09	22.19444	20	57	57.38	-21 24 43.0		6 675
1989	XC	1954	09	22.21875	20	57	57.13	-21 24 42.7		6 675
1989	YH1	1954	07	31.31181	21	20	07.15	-16 04 52.1		6 675
1989	YH1	1954	07	31.33681	21	20	05.76	-16 04 58.2		6 675
1990	EA	1954	07	29.32083	20	43	37.73	-15 02 57.3		6 675
1990	EA	1954	07	29.34514	20	43	36.27	-15 03 07.1		6 675
1990	OT3	1954	07	29.32083	20	54	30.81	-17 03 34.6		6 675
1990	OT3	1954	07	29.34514	20	54	29.00	-17 03 37.4		6 675
1990	VC1	1952	01	30.39583	10	48	13.24	+19 30 59.0		6 675
1990	VC1	1952	01	30.42637	10	48	12.13	+19 31 15.9		6 675
1991	BV	1991	01	22.43281	09	50	41.42	+10 02 46.5		9 675

1991	BV		1991	01	22.46215	09	50	40.30	+10	03	03.5			9	675
1991	BP4	*	1991	01	22.43281	09	40	56.38	+04	49	20.5	17.8		9	675
1991	BP4		1991	01	22.46215	09	40	55.16	+04	49	26.2			9	675
1991	BQ4	*	1991	01	22.43281	09	53	56.11	+08	25	56.0	18.5		9	675
1991	BQ4		1991	01	22.46215	09	53	54.73	+08	26	00.7			9	675
1991	BR4	*	1991	01	22.43281	10	08	19.87	+05	07	40.5	18.2		9	675
1991	BR4		1991	01	22.46215	10	08	19.20	+05	07	45.3			9	675
1991	BS4	*	1991	01	17.49097	10	27	01.49	+01	54	57.0	17.5		9	675
1991	BS4		1991	01	17.53177	10	27	00.36	+01	54	53.8			9	675
1991	BT4	*	1991	01	17.49097	10	48	54.65	-02	28	32.3	17.5		9	675
1991	BT4		1991	01	17.53177	10	48	53.91	-02	28	49.1			9	675
1991	CO		1991	01	22.43281	09	51	18.68	+10	09	41.4			9	675
1991	CO		1991	01	22.46215	09	51	17.14	+10	09	43.1			9	675
1991	CX		1991	01	17.49097	10	44	03.58	+03	04	42.5			9	675
1991	CX		1991	01	17.53177	10	44	03.05	+03	04	41.8			9	675
1991	CX		1991	02	08.36285	10	32	45.49	+03	41	34.5			9	675
1991	CX		1991	02	08.39913	10	32	43.50	+03	41	42.7			9	675
1991	CX		1991	02	10.43785	10	31	00.23	+03	50	27.6	17.5		9	675
1991	CX		1991	02	10.48663	10	30	57.60	+03	50	41.0			9	675
1991	CY		1991	01	17.49097	10	37	39.97	+00	01	38.3			9	675
1991	CY		1991	01	17.53177	10	37	39.16	+00	01	26.8			9	675
1991	CN1		1991	01	17.49097	10	43	52.01	+05	06	04.0			9	675
1991	CN1		1991	01	17.53177	10	43	51.59	+05	06	04.8			9	675
1991	CO1		1991	01	22.43281	09	55	49.25	+02	57	09.5	17.5		9	675
1991	CO1		1991	01	22.46215	09	55	48.24	+02	57	15.0			9	675
1991	CU1		1991	01	17.49097	10	35	40.29	+03	56	14.5			9	675
1991	CU1		1991	01	17.53177	10	35	39.67	+03	56	07.3			9	675
1991	CU1		1991	02	08.36285	10	23	17.55	+03	47	04.4			9	675
1991	CU1		1991	02	08.39913	10	23	15.56	+03	47	08.4			9	675
1991	CX2		1991	02	10.37083	10	01	29.86	+08	32	43.9			9	675
1991	CX2		1991	02	10.40816	10	01	27.60	+08	33	00.4			9	675
1991	CC3		1991	02	10.43785	10	49	09.25	+04	09	07.2	18.0		9	675
1991	CC3		1991	02	10.48663	10	49	07.17	+04	09	22.7			9	675
1991	CP5	*	1991	02	08.36285	10	11	46.16	+04	32	48.9	17.8		9	675
1991	CP5		1991	02	08.39913	10	11	44.15	+04	32	51.4			9	675
1991	CQ5		1991	01	17.49097	10	25	56.29	+01	24	39.4	17.2		9	675
1991	CQ5		1991	01	17.53177	10	25	55.28	+01	24	35.6			9	675
1991	CQ5	*	1991	02	08.36285	10	12	21.32	+01	22	59.7	17.0		9	675
1991	CQ5		1991	02	08.39913	10	12	19.57	+01	23	03.3			9	675
1991	CR5	*	1991	02	08.36285	10	18	26.58	+04	12	44.3	17.8		9	675
1991	CR5		1991	02	08.39913	10	18	24.39	+04	12	52.7			9	675
1991	CS5	*	1991	02	08.36285	10	25	11.28	+05	17	24.2	17.8		9	675
1991	CS5		1991	02	08.39913	10	25	09.51	+05	17	39.9			9	675
1991	CT5	*	1991	02	08.36285	10	28	15.92	+03	24	06.8	17.2		9	675
1991	CT5		1991	02	08.39913	10	28	14.09	+03	24	14.0			9	675
1991	CU5	*	1991	02	10.37083	09	44	03.05	+08	25	54.5	17.2		9	675
1991	CU5		1991	02	10.40816	09	44	00.74	+08	26	04.7			9	675
1991	CV5	*	1991	02	10.37083	09	56	14.22	+09	35	00.6	18.0		9	675
1991	CV5		1991	02	10.40816	09	56	11.91	+09	35	12.6			9	675
1991	CW5	*	1991	02	10.43785	10	32	14.91	+04	07	14.8	18.2		9	675
1991	CW5		1991	02	10.48663	10	32	12.46	+04	07	23.6			9	675
1991	DX		1991	02	08.36285	10	04	29.66	+00	10	59.8			9	675
1991	DX		1991	02	08.39913	10	04	27.87	+00	11	19.9			9	675
1991	DY		1991	02	08.36285	10	11	59.66	+02	31	27.9	17.5		9	675
1991	DY		1991	02	08.39913	10	11	58.26	+02	31	45.4			9	675
1991	DB1		1991	02	10.37083	10	05	55.48	+07	48	48.2			9	675
1991	DB1		1991	02	10.40816	10	05	53.38	+07	49	03.9			9	675
1991	ED2		1991	02	10.37083	10	01	48.74	+09	16	14.9	17.2		9	675
1991	ED2		1991	02	10.40816	10	01	46.63	+09	16	32.1			9	675

1991 JN1		1954	07	03.42778	21	38	53.85	-08	33	55.4			6	675
1991 JN1		1954	07	03.45208	21	38	53.32	-08	33	57.4			6	675
1991 PM1		1952	01	30.39583	11	08	56.32	+20	12	23.3			6	675
1991 PM1		1952	01	30.42430	11	08	55.25	+20	12	36.8			6	675
1992 AO		1954	07	29.32083	21	08	59.60	-18	46	19.1			6	675
1992 AO		1954	07	29.34514	21	08	58.28	-18	46	43.1			6	675
1992 AO		1954	07	31.31181	21	07	13.05	-19	16	45.5			6	675
1992 AO		1954	07	31.33681	21	07	11.60	-19	17	08.5			6	675
1992 MB		1991	01	22.43281	09	53	37.40	+07	04	04.7			9	675
1992 MB		1991	01	22.46215	09	53	35.97	+07	04	12.6			9	675
1992 OJ		1991	01	22.43281	09	59	31.60	+09	32	42.2			9	675
1992 OJ		1991	01	22.46215	09	59	30.14	+09	32	40.8			9	675
1992 SY17		1992	10	20.20521	00	30	15.33	+15	15	11.1		17.0	3	675
1992 SY17		1992	10	20.23733	00	30	14.11	+15	14	46.7			3	675
1992 US4		1954	07	29.32083	21	01	40.34	-15	40	50.9			6	675
1992 US4		1954	07	29.34514	21	01	38.94	-15	40	55.2			6	675
1992 WD8		1993	01	24.13489	03	56	44.55	+37	40	11.1		17.3	3	675
1992 WD8		1993	01	24.17170	03	56	45.97	+37	39	29.8			3	675
1992 WD8		1993	01	25.13438	03	57	27.20	+37	21	58.9			3	675
1992 WD8		1993	01	25.16788	03	57	28.58	+37	21	24.1			3	675
1993 BW2		1993	02	15.15729	07	10	23.79	+48	42	45.6			3	675
1993 BW2		1993	02	15.21371	07	10	30.56	+48	44	09.2			3	675
1993 BW2		1993	02	15.23489	07	10	32.75	+48	44	39.3			3	675
1993 BW2		1993	02	17.47881	07	15	27.45	+49	33	03.2			3	675
1993 BW2		1993	02	18.12065	07	16	56.20	+49	45	23.2			3	675
1993 BW2		1993	02	18.12899	07	16	57.42	+49	45	34.6			3	675
1993 BW2		1993	02	18.13750	07	16	58.08	+49	45	42.8			3	675
4028 P-L		1991	02	10.43785	10	48	03.31	-02	19	06.2			9	675
4028 P-L		1991	02	10.48663	10	48	00.96	-02	18	51.6			9	675
4577 P-L		1950	06	18.27153	15	55	18.06	-02	32	16.5			6	675
4577 P-L		1950	06	18.29757	15	55	17.05	-02	32	17.3			6	675
6543 P-L		1954	07	31.31181	21	15	33.16	-18	39	39.2			6	675
6543 P-L		1954	07	31.33681	21	15	32.01	-18	39	46.0			6	675
6543 P-L		1954	09	22.19444	20	48	30.64	-20	35	30.0			6	675
6543 P-L		1954	09	22.21875	20	48	30.58	-20	35	29.2			6	675
6564 P-L		1954	07	03.42778	21	43	22.69	-13	51	27.5			6	675
6564 P-L		1954	07	03.45208	21	43	22.37	-13	51	31.2			6	675
6564 P-L		1954	07	31.31181	21	30	34.01	-15	27	04.1			6	675
6564 P-L		1954	07	31.33681	21	30	32.99	-15	27	10.5			6	675
6766 P-L		1991	02	08.36285	10	06	41.85	+03	26	39.8			9	675
6766 P-L		1991	02	08.39913	10	06	40.32	+03	26	53.2			9	675
6766 P-L		1991	02	10.37083	10	05	19.45	+03	39	33.3		17.8	9	675
6766 P-L		1991	02	10.40816	10	05	17.86	+03	39	46.4			9	675
9511 P-L		1954	07	03.42778	21	47	24.07	-12	41	35.7			6	675
9511 P-L		1954	07	03.45208	21	47	23.72	-12	41	38.0			6	675
2168 T-1		1971	03	24.37118	12	10	28.17	-01	06	00.5			4	675
2168 T-1		1971	03	24.38924	12	10	27.26	-01	05	47.7		19.0	4	675
2168 T-1		1971	03	25.24340	12	09	44.50	-00	57	30.6			4	675
2168 T-1	*	1971	03	25.28715	12	09	42.26	-00	57	05.1		18.8	4	675
2168 T-1		1971	03	26.25208	12	08	54.02	-00	47	43.2			4	675
2168 T-1		1971	03	27.31181	12	08	00.98	-00	37	24.9			4	675
2168 T-1		1971	04	02.41285	12	03	02.51	+00	20	53.7			4	675
2168 T-1		1971	04	16.16458	11	53	21.39	+02	19	19.6			4	675
2168 T-1		1971	04	16.25069	11	53	18.25	+02	19	59.1			4	675
2168 T-1		1971	05	13.17535	11	45	20.75	+04	37	55.7		19.0	4	675
2168 T-1		1971	05	14.20694	11	45	22.71	+04	40	24.0			4	675
2168 T-1		1971	05	16.31510	11	45	31.28	+04	44	47.3			4	675
2190 T-1		1971	05	13.17535	11	45	50.38	+04	13	02.6		19.5	4	675
2190 T-1		1971	05	14.20694	11	45	54.77	+04	09	50.1			4	675

2190	T-1		1971	05	16.31510	11	46	08.48	+04	02	48.5		4	675
2251	T-1		1971	05	16.31510	11	51	00.00	+01	07	26.2	19.5	4	675
2258	T-1		1971	05	13.17535	11	46	02.16	+04	49	21.9	18.5	4	675
2258	T-1		1971	05	14.20694	11	45	51.10	+04	47	38.0		4	675
2258	T-1		1971	05	16.31510	11	45	32.93	+04	43	39.3		4	675
2289	T-1		1971	05	16.31510	11	50	46.11	+02	15	20.7	19.2	4	675
2312	T-1		1971	03	24.40486	12	22	27.11	-00	11	24.3	18.5	4	675
3138	T-1		1971	03	24.42015	12	30	43.69	-02	16	47.5		4	675
3138	T-1		1971	03	25.33090	12	29	53.69	-02	09	19.3		4	675
3138	T-1		1971	03	26.29653	12	29	00.49	-02	01	21.4		4	675
3138	T-1		1971	03	26.31007	12	28	59.79	-02	01	16.7		4	675
3138	T-1	*	1971	03	26.33611	12	28	58.34	-02	01	01.9	17.9	4	675
3138	T-1		1971	03	26.34896	12	28	57.56	-02	00	57.2		4	675
3138	T-1		1971	03	27.35208	12	28	02.40	-01	52	42.9		4	675
3138	T-1		1971	04	02.41285	12	22	32.06	-01	03	47.2		4	675
3138	T-1		1971	04	02.43993	12	22	30.52	-01	03	34.7		4	675
3138	T-1		1971	04	16.16458	12	11	41.04	+00	32	48.3		4	675
3138	T-1		1971	04	16.25069	12	11	37.51	+00	33	19.9		4	675
3138	T-1		1971	05	13.17535	12	03	32.49	+01	57	50.2	19.0	4	675
3138	T-1		1971	05	14.20694	12	03	37.97	+01	58	00.2		4	675
3138	T-1		1971	05	16.31510	12	03	54.61	+01	57	41.3		4	675
4023	T-1		1971	03	24.40486	12	23	24.57	-00	32	11.0		4	675
4023	T-1		1971	03	26.25208	12	21	42.34	-00	14	39.6		4	675
4023	T-1		1971	03	26.31007	12	21	39.01	-00	14	08.5		4	675
4023	T-1	*	1971	03	26.34896	12	21	36.78	-00	13	46.3	18.4	4	675
4023	T-1		1971	03	27.31181	12	20	43.78	-00	04	41.2		4	675
4023	T-1		1971	03	27.35208	12	20	41.32	-00	04	18.3		4	675
4023	T-1		1971	04	02.41285	12	15	13.90	+00	51	02.8		4	675
4023	T-1		1971	04	16.16458	12	04	42.44	+02	37	40.9		4	675
4023	T-1		1971	04	16.25069	12	04	38.99	+02	38	13.9		4	675
4023	T-1		1971	05	13.17535	11	57	01.18	+04	12	39.7	19.0	4	675
4023	T-1		1971	05	14.20694	11	57	06.41	+04	13	09.5		4	675
4023	T-1		1971	05	16.31510	11	57	22.06	+04	13	28.9		4	675
1157	T-2		1973	09	19.18611	00	18	29.56	+03	41	15.2		4	675
1157	T-2		1973	09	19.23785	00	18	26.64	+03	40	54.5		4	675
1157	T-2		1973	09	20.22847	00	17	33.34	+03	34	18.2		4	675
1157	T-2		1973	09	24.34688	00	13	48.11	+03	06	12.6		4	675
1157	T-2		1973	09	24.41597	00	13	44.25	+03	05	44.5		4	675
1157	T-2		1973	09	25.24375	00	12	58.78	+03	00	01.6		4	675
1157	T-2		1973	09	25.30729	00	12	55.28	+02	59	34.8		4	675
1157	T-2	*	1973	09	29.25330	00	09	18.88	+02	32	11.8	19.3	4	675
1157	T-2		1973	09	29.31806	00	09	15.25	+02	31	44.3		4	675
1157	T-2		1973	09	30.21007	00	08	26.73	+02	25	32.6		4	675
1157	T-2		1973	09	30.27431	00	08	23.14	+02	25	05.9		4	675
1157	T-2		1973	10	04.28958	00	04	48.78	+01	57	26.9		4	675
1157	T-2		1973	10	04.35208	00	04	45.28	+01	57	02.8		4	675
1157	T-2		1973	10	05.31684	00	03	54.93	+01	50	33.5		4	675
1157	T-2		1973	10	05.37917	00	03	51.57	+01	50	06.6		4	675
1325	T-2		1973	09	19.22500	00	29	54.42	+00	45	45.9		4	675
1325	T-2		1973	09	19.27865	00	29	51.59	+00	45	35.4		4	675
1325	T-2		1973	09	20.30278	00	28	59.64	+00	42	12.9		4	675
1325	T-2		1973	09	24.38750	00	25	27.33	+00	28	29.1		4	675
1325	T-2		1973	09	24.45434	00	25	23.70	+00	28	15.8		4	675
1325	T-2		1973	09	25.28125	00	24	40.36	+00	25	28.9		4	675
1325	T-2		1973	09	25.34601	00	24	36.86	+00	25	16.3		4	675
1325	T-2	*	1973	09	29.25330	00	21	09.26	+00	12	08.8	17.9	4	675
1325	T-2		1973	09	29.29219	00	21	07.23	+00	11	59.6		4	675
1325	T-2		1973	09	29.31806	00	21	05.72	+00	11	56.2		4	675
1325	T-2		1973	09	29.35694	00	21	03.65	+00	11	46.4		4	675

1325	T-2	1973 09 30.21007	00 20 18.46	+00 09 00.6			4	675
1325	T-2	1973 09 30.24826	00 20 16.42	+00 08 52.1			4	675
1325	T-2	1973 09 30.27431	00 20 14.92	+00 08 46.8			4	675
1325	T-2	1973 09 30.31476	00 20 12.70	+00 08 38.3			4	675
1325	T-2	1973 10 04.28958	00 16 43.42	-00 04 03.6			4	675
1325	T-2	1973 10 04.35208	00 16 40.06	-00 04 14.9			4	675
1325	T-2	1973 10 05.31684	00 15 50.14	-00 07 13.7			4	675
1325	T-2	1973 10 05.37917	00 15 46.83	-00 07 23.7			4	675
2281	T-2	1954 07 31.31181	21 14 26.75	-18 02 48.3			6	675
2400	T-3	1954 07 29.32083	21 04 44.83	-17 34 39.8			6	675
2400	T-3	1954 07 29.34514	21 04 43.55	-17 34 42.7			6	675
2400	T-3	1988 09 10.32687	23 33 05.30	+00 44 59.2			9	675
2400	T-3	1988 09 10.36298	23 33 03.23	+00 44 50.3			9	675
2400	T-3	1988 09 11.28485	23 32 11.51	+00 40 45.7	17.8		9	675
2400	T-3	1988 09 11.31940	23 32 09.54	+00 40 37.6			9	675
2400	T-3	1988 09 11.33697	23 32 08.52	+00 40 30.2	17.0		9	675
2400	T-3	1988 09 11.37100	23 32 06.52	+00 40 20.6			9	675
2400	T-3	1988 09 16.34097	23 27 26.08	+00 17 42.5	17.5		9	675
2400	T-3	1988 09 16.37413	23 27 24.28	+00 17 35.4			9	675
2400	T-3	1988 09 16.38872	23 27 23.38	+00 17 29.9			9	675
(16)		1954 07 29.32083	20 50 16.69	-15 47 48.0			6	675
(16)		1954 07 29.34514	20 50 15.34	-15 47 55.5			6	675
(151)		1952 01 30.39583	10 44 53.71	+18 31 42.7			6	675
(151)		1952 01 30.42430	10 44 52.53	+18 31 51.5			6	675
(236)		1991 01 17.49097	10 31 31.87	+02 15 07.7			9	675
(236)		1991 01 17.53177	10 31 30.81	+02 15 13.5			9	675
(236)		1991 02 08.36285	10 18 20.31	+03 38 03.2			9	675
(236)		1991 02 08.39913	10 18 18.63	+03 38 14.3			9	675
(246)		1991 02 08.36285	10 07 00.77	+04 45 30.3			9	675
(246)		1991 02 08.39913	10 06 59.10	+04 45 49.4			9	675
(246)		1991 02 10.37083	10 05 29.02	+05 03 20.6			9	675
(246)		1991 02 10.40816	10 05 27.23	+05 03 40.1			9	675
(251)		1991 02 10.37083	10 03 56.07	+09 01 30.1			9	675
(251)		1991 02 10.40816	10 03 54.37	+09 01 46.1			9	675
(299)		1954 07 29.32083	20 54 59.03	-14 44 28.6			6	675
(299)		1954 07 29.34514	20 54 57.51	-14 44 34.3			6	675
(303)		1954 09 22.19444	20 44 48.90	-21 42 16.0			6	675
(303)		1954 09 22.21875	20 44 48.63	-21 42 13.0			6	675
(308)		1991 02 10.43785	10 46 05.17	+04 32 14.1			9	675
(308)		1991 02 10.48663	10 46 03.05	+04 32 29.5			9	675
(318)		1953 07 10.21840	16 10 01.78	-06 58 22.0			6	675
(318)		1953 07 10.26389	16 10 00.95	-06 58 30.1			6	675
(328)		1952 01 30.39583	11 07 29.67	+15 13 58.6			6	675
(328)		1952 01 30.42430	11 07 28.63	+15 14 00.3			6	675
(335)		1954 07 03.42778	21 35 30.47	-10 18 15.2			6	675
(335)		1954 07 03.45208	21 35 30.27	-10 18 19.4			6	675
(370)		1991 02 08.36285	10 05 30.58	+03 41 23.8			9	675
(370)		1991 02 08.39913	10 05 28.32	+03 41 28.3			9	675
(370)		1991 02 10.37083	10 03 27.08	+03 45 42.1			9	675
(370)		1991 02 10.40816	10 03 24.68	+03 45 46.8			9	675
(407)		1954 07 03.42778	21 51 56.56	-09 57 20.2			6	675
(407)		1954 07 03.45208	21 51 56.15	-09 57 16.3			6	675
(419)		1991 01 17.49097	10 35 52.83	+03 00 08.8			9	675
(419)		1991 01 17.53177	10 35 51.84	+03 00 10.3			9	675
(419)		1991 02 08.36285	10 22 30.50	+03 51 58.3			9	675
(419)		1991 02 08.39913	10 22 28.67	+03 52 07.1			9	675
(461)		1954 07 03.42778	21 32 33.93	-13 39 59.6			6	675
(461)		1954 07 03.45208	21 32 33.29	-13 40 03.5			6	675
(461)		1954 07 31.31181	21 16 13.89	-15 01 28.1			6	675

(461)		1954	07	31.33681	21	16	12.75	-15	01	33.1	6	675
(467)		1954	07	29.32083	20	54	29.95	-20	01	23.9	6	675
(467)		1954	07	29.34514	20	54	28.63	-20	01	25.9	6	675
(514)		1991	02	08.36285	10	09	54.45	+06	10	49.0	9	675
(514)		1991	02	08.39913	10	09	52.77	+06	10	56.0	9	675
(514)		1991	02	10.37083	10	08	21.50	+06	17	31.6	9	675
(514)		1991	02	10.40816	10	08	19.67	+06	17	38.2	9	675
(523)		1991	01	22.43281	09	56	03.36	+06	33	29.1	9	675
(523)		1991	01	22.46215	09	56	02.16	+06	33	31.4	9	675
(523)		1991	02	10.37083	09	41	09.55	+07	20	55.3	9	675
(523)		1991	02	10.40816	09	41	07.57	+07	21	03.5	9	675
(601)		1950	06	18.27153	15	51	06.00	+02	24	41.4	6	675
(601)		1950	06	18.29757	15	51	05.08	+02	24	38.8	6	675
(667)		1991	01	22.43281	09	48	06.05	+02	15	39.2	9	675
(667)		1991	01	22.46215	09	48	05.07	+02	15	56.2	9	675
(667)		1991	02	10.37083	09	35	39.07	+06	11	11.0	9	675
(667)		1991	02	10.40816	09	35	37.34	+06	11	43.0	9	675
(709)		1991	02	10.43785	10	50	09.08	+02	12	34.8	9	675
(709)		1991	02	10.48663	10	50	06.67	+02	12	35.1	9	675
(783)		1954	09	22.19444	20	47	23.23	-20	57	10.7	6	675
(783)		1954	09	22.21875	20	47	24.01	-20	57	15.6	6	675
(784)		1952	01	30.39583	11	03	17.06	+20	08	35.6	6	675
(784)		1952	01	30.42430	11	03	16.10	+20	08	42.5	6	675
(877)		1954	07	31.31181	21	23	41.40	-17	33	48.0	6	675
(877)		1954	07	31.33681	21	23	40.07	-17	33	57.9	6	675
(877)		1954	09	22.19444	20	49	11.10	-21	21	31.8	6	675
(877)		1954	09	22.21875	20	49	10.95	-21	21	32.8	6	675
(968)		1953	07	10.21840	16	08	00.78	-09	19	28.8	6	675
(968)		1953	07	10.26389	16	08	00.12	-09	19	30.2	6	675
(982)		1991	01	22.43281	10	05	17.99	+03	37	48.6	9	675
(982)		1991	01	22.46215	10	05	16.86	+03	37	47.9	9	675
(982)		1991	02	10.37083	09	51	09.74	+03	50	57.1	9	675
(982)		1991	02	10.40816	09	51	07.84	+03	51	00.6	9	675
(1060)		1991	01	17.49097	10	35	50.65	-00	00	07.5	9	675
(1060)		1991	01	17.53177	10	35	49.57	-00	00	07.4	9	675
(1060)		1991	02	08.36285	10	20	52.68	+00	51	46.8	9	675
(1060)		1991	02	08.39913	10	20	50.64	+00	51	56.4	9	675
(1130)		1991	02	08.36285	10	22	15.45	+06	49	08.3	9	675
(1130)		1991	02	08.39913	10	22	13.36	+06	49	20.1	9	675
(1201)		1991	01	17.49097	10	37	22.98	-00	08	13.7	9	675
(1201)		1991	01	17.53177	10	37	22.40	-00	08	13.2	9	675
(1201)		1991	02	08.36285	10	25	13.33	+00	51	16.4	9	675
(1201)		1991	02	08.39913	10	25	11.66	+00	51	26.9	9	675
(1286)		1953	07	10.21840	16	05	43.73	-09	35	04.9	6	675
(1334)		1954	07	03.42778	21	36	30.42	-12	21	33.8	6	675
(1334)		1954	07	03.45208	21	36	30.07	-12	21	41.7	6	675
(1334)		1954	07	31.31181	21	21	46.62	-15	27	57.9	6	675
(1334)		1954	07	31.33681	21	21	45.54	-15	28	09.9	6	675
(1334)		1954	09	22.19444	20	52	57.73	-20	51	11.1	6	675
(1334)		1954	09	22.21875	20	52	57.58	-20	51	16.5	6	675
(1337)		1991	01	22.43281	09	45	48.36	+03	29	47.7	9	675
(1337)		1991	01	22.46215	09	45	47.21	+03	29	58.0	9	675
(1365)		1991	01	22.43281	10	05	32.24	+03	49	49.7	9	675
(1365)		1991	01	22.46215	10	05	30.99	+03	49	49.4	9	675
(1365)		1991	02	10.37083	09	48	47.17	+04	23	33.2	9	675
(1365)		1991	02	10.40816	09	48	44.75	+04	23	40.8	9	675
(1375)		1952	01	30.39583	10	47	10.28	+18	04	29.4	6	675
(1375)		1952	01	30.42430	10	47	09.08	+18	04	39.6	6	675
(1458)		1991	02	10.43785	10	46	15.83	-01	07	46.2	9	675

(1458)		1991	02	10.48663	10	46	13.80	-01 07 27.8	9 675
(1494)		1954	07	03.42778	21	33	48.55	-10 14 32.9	6 675
(1494)		1954	07	03.45208	21	33	48.24	-10 14 33.7	6 675
(1507)		1991	01	17.49097	10	55	59.17	-01 27 12.7	9 675
(1507)		1991	01	17.53177	10	55	58.39	-01 27 16.0	9 675
(1507)		1991	02	10.43785	10	39	40.00	-01 25 10.4	9 675
(1507)		1991	02	10.48663	10	39	37.31	-01 25 04.3	9 675
(1546)		1950	06	18.27153	15	46	24.19	-02 22 16.2	6 675
(1546)		1950	06	18.29757	15	46	23.39	-02 22 15.8	6 675
(1607)		1954	07	31.31181	21	19	55.09	-18 21 47.4	6 675
(1607)		1954	07	31.33681	21	19	54.13	-18 22 05.0	6 675
(1607)		1954	09	22.19444	21	01	39.00	-25 46 08.3	6 675
(1607)		1954	09	22.21875	21	01	39.49	-25 46 10.4	6 675
(1613)		1954	07	31.31181	21	09	18.40	-18 31 54.6	6 675
(1613)		1954	07	31.33681	21	09	16.95	-18 31 58.2	6 675
(1630)		1954	09	22.19444	20	57	20.97	-23 12 08.1	6 675
(1630)		1954	09	22.21875	20	57	20.52	-23 12 08.6	6 675
(1728)		1991	01	17.49097	10	47	11.79	-02 59 33.8	9 675
(1728)		1991	01	17.53177	10	47	10.97	-02 59 37.2	9 675
(1728)		1991	02	10.43785	10	33	32.96	-02 40 59.1	9 675
(1728)		1991	02	10.48663	10	33	30.54	-02 40 50.8	9 675
(1767)		1991	02	10.37083	09	53	42.96	+02 13 01.5	9 675
(1767)		1991	02	10.40816	09	53	41.23	+02 13 12.8	9 675
(1795)		1991	02	10.43785	10	52	43.06	+00 04 52.7	9 675
(1795)		1991	02	10.48663	10	52	41.12	+00 05 06.4	9 675
(1811)		1991	02	08.36285	10	21	09.57	+06 16 29.1	9 675
(1811)		1991	02	08.39913	10	21	08.11	+06 16 40.4	9 675
(1855)		1991	02	10.37083	09	48	30.05	+08 42 19.8	9 675
(1855)		1991	02	10.40816	09	48	27.79	+08 42 33.9	9 675
(1856)		1991	02	08.36285	10	05	21.04	+05 58 21.5	9 675
(1856)		1991	02	08.39913	10	05	18.99	+05 58 34.7	9 675
(1856)		1991	02	10.37083	10	03	28.70	+06 11 26.3	9 675
(1856)		1991	02	10.40816	10	03	26.48	+06 11 41.1	9 675
(1858)		1954	07	29.32083	20	42	41.30	-16 35 15.5	6 675
(1858)		1954	07	29.34514	20	42	39.97	-16 35 19.0	6 675
(1928)		1991	02	08.36285	10	14	10.47	+07 02 07.1	9 675
(1928)		1991	02	08.39913	10	14	08.58	+07 02 19.1	9 675
(2003)		1954	07	31.31181	21	30	33.36	-17 23 31.4	6 675
(2003)		1954	07	31.33681	21	30	32.12	-17 23 38.8	6 675
(2012)		1991	02	10.37083	09	52	42.79	+09 19 28.8	9 675
(2012)		1991	02	10.40816	09	52	40.48	+09 19 38.1	9 675
(2019)		1991	01	17.49097	10	49	34.70	+01 17 15.8	9 675
(2019)		1991	01	17.53177	10	49	33.94	+01 17 12.8	9 675
(2019)		1991	02	10.43785	10	35	07.54	+01 48 49.4	9 675
(2019)		1991	02	10.48663	10	35	04.80	+01 48 58.9	9 675
(2096)		1954	07	03.42778	21	41	07.19	-13 58 46.4	6 675
(2096)		1954	07	03.45208	21	41	07.21	-13 58 45.0	6 675
(2096)		1954	07	31.31181	21	30	42.61	-14 25 44.1	6 675
(2096)		1954	07	31.33681	21	30	41.46	-14 25 47.9	6 675
(2112)		1991	01	17.49097	10	40	17.28	+02 51 20.4	9 675
(2112)		1991	01	17.53177	10	40	16.21	+02 51 20.8	9 675
(2112)		1991	02	08.36285	10	25	03.06	+03 44 59.6	9 675
(2112)		1991	02	08.39913	10	25	00.91	+03 45 09.3	9 675
(2153)		1954	07	31.31181	21	13	35.83	-17 51 05.9	6 675
(2153)		1954	07	31.33681	21	13	34.58	-17 51 12.0	6 675
(2259)		1991	01	17.49097	10	47	14.77	+02 29 18.1	9 675
(2259)		1991	01	17.53177	10	47	13.84	+02 29 16.7	9 675
(2259)		1991	02	08.36285	10	33	19.02	+02 55 01.3	9 675
(2259)		1991	02	08.39913	10	33	17.05	+02 55 07.9	9 675

(2259)	1991	02	10.43785	10	31	26.85	+03 01 27.4	9	675
(2259)	1991	02	10.48663	10	31	24.05	+03 01 36.9	9	675
(2302)	1991	01	22.43281	09	51	53.64	+09 25 31.5	9	675
(2302)	1991	01	22.46215	09	51	52.13	+09 25 32.2	9	675
(2367)	1991	02	10.37083	09	55	12.84	+09 47 46.1	9	675
(2367)	1991	02	10.40816	09	55	10.46	+09 47 59.2	9	675
(2392)	1954	07	29.32083	20	52	07.09	-16 19 03.6	6	675
(2392)	1954	07	29.34514	20	52	05.58	-16 19 12.8	6	675
(2436)	1991	02	08.36285	10	04	15.28	+05 11 22.3	9	675
(2436)	1991	02	08.39913	10	04	13.62	+05 11 29.5	9	675
(2436)	1991	02	10.37083	10	02	45.18	+05 18 39.0	9	675
(2436)	1991	02	10.40816	10	02	43.46	+05 18 46.7	9	675
(2455)	1954	07	29.32083	20	49	41.55	-16 14 07.0	6	675
(2455)	1954	07	29.34514	20	49	40.03	-16 14 09.3	6	675
(2504)	1954	09	22.19444	21	06	36.55	-20 36 10.8	6	675
(2504)	1954	09	22.21875	21	06	36.08	-20 36 09.2	6	675
(2536)	1953	09	06.25938	21	23	15.15	-06 10 24.5	6	675
(2536)	1953	09	06.28472	21	23	14.29	-06 10 27.5	6	675
(2616)	1954	07	03.42778	21	55	03.69	-11 43 56.3	6	675
(2616)	1954	07	03.45208	21	55	03.68	-11 43 58.8	6	675
(2651)	1954	07	03.42778	21	49	05.65	-14 10 58.9	6	675
(2651)	1954	07	03.45208	21	49	05.44	-14 11 09.3	6	675
(2651)	1954	09	22.19444	21	03	15.96	-26 37 51.8	6	675
(2651)	1954	09	22.21875	21	03	15.68	-26 37 57.2	6	675
(2720)	1954	07	29.32083	20	46	49.53	-19 36 54.5	6	675
(2720)	1954	07	29.34514	20	46	48.14	-19 37 04.4	6	675
(2805)	1952	01	30.39583	11	01	26.67	+16 39 31.0	6	675
(2805)	1952	01	30.42430	11	01	25.68	+16 39 39.9	6	675
(2814)	1954	07	29.32083	20	53	06.17	-15 46 00.4	6	675
(2814)	1954	07	29.34514	20	53	04.81	-15 46 08.2	6	675
(2847)	1991	01	22.43281	10	07	39.45	+07 23 36.3	9	675
(2847)	1991	01	22.46215	10	07	38.12	+07 23 39.6	9	675
(2847)	1991	02	10.37083	09	50	25.98	+08 34 15.6	9	675
(2847)	1991	02	10.40816	09	50	23.48	+08 34 26.8	9	675
(3030)	1991	02	10.43785	10	45	13.53	+03 50 38.3	9	675
(3030)	1991	02	10.48663	10	45	10.53	+03 50 50.2	9	675
(3042)	1991	01	22.43281	10	03	38.68	+03 56 12.0	19.0	9	675
(3042)	1991	01	22.46215	10	03	37.58	+03 56 15.4	9	675
(3042)	1991	02	10.37083	09	46	49.38	+05 06 41.5	9	675
(3042)	1991	02	10.40816	09	46	47.02	+05 06 51.8	9	675
(3061)	1954	07	29.32083	20	52	22.73	-20 18 51.0	6	675
(3061)	1954	07	29.34514	20	52	21.53	-20 18 57.9	6	675
(3065)	1954	07	29.34514	20	47	19.42	-17 24 29.1	6	675
(3085)	1991	01	22.43281	09	49	47.03	+08 15 42.4	9	675
(3085)	1991	01	22.46215	09	49	45.65	+08 15 43.3	9	675
(3087)	1954	09	22.21875	20	46	35.26	-26 22 35.1	6	675
(3152)	1991	01	22.43281	09	46	57.77	+08 19 40.0	9	675
(3152)	1991	01	22.46215	09	46	56.31	+08 19 38.1	9	675
(3210)	1952	01	30.39583	10	57	00.66	+14 25 43.7	6	675
(3210)	1952	01	30.42430	10	56	59.95	+14 25 57.2	6	675
(3210)	1953	07	10.21840	15	55	21.23	-05 00 26.0	6	675
(3210)	1953	07	10.26389	15	55	20.61	-05 00 39.9	6	675
(3210)	1954	07	03.42778	21	46	22.78	-14 18 54.1	6	675
(3210)	1954	07	03.45208	21	46	22.31	-14 19 01.1	6	675
(3210)	1954	07	31.31181	21	32	23.46	-17 09 08.3	6	675
(3210)	1954	07	31.33681	21	32	22.45	-17 09 18.0	6	675
(3210)	1954	09	22.19444	21	01	24.00	-21 54 14.6	6	675
(3210)	1954	09	22.21875	21	01	23.66	-21 54 18.7	6	675
(3213)	1954	07	31.31181	21	11	28.33	-17 52 05.6	6	675

(3213)		1954	07	31.33681	21	11	27.11	-17	52	11.0	6	675
(3251)		1954	07	29.32083	21	01	06.63	-16	45	24.4	6	675
(3251)		1954	07	29.34514	21	01	05.43	-16	45	28.7	6	675
(3307)		1991	02	10.43785	10	43	41.25	-02	56	08.8	9	675
(3307)		1991	02	10.48663	10	43	38.62	-02	56	03.3	9	675
(3403)		1991	02	08.36285	10	09	37.65	+05	05	59.8	9	675
(3403)		1991	02	08.39913	10	09	35.66	+05	06	10.4	9	675
(3403)		1991	02	10.37083	10	07	50.16	+05	16	20.7	9	675
(3403)		1991	02	10.40816	10	07	48.07	+05	16	32.3	9	675
(3562)		1952	01	30.39583	11	01	42.73	+15	21	23.4	6	675
(3562)		1952	01	30.42430	11	01	42.12	+15	21	35.6	6	675
(3566)		1991	02	10.37083	09	54	03.34	+10	09	00.2	9	675
(3566)		1991	02	10.40816	09	54	00.98	+10	09	08.2	9	675
(3617)		1950	06	18.27153	15	51	26.81	+01	52	20.5	6	675
(3617)		1950	06	18.29757	15	51	25.99	+01	52	18.6	6	675
(3629)		1991	01	17.49097	10	37	11.44	-00	25	12.4	9	675
(3629)		1991	01	17.53177	10	37	10.35	-00	25	19.1	9	675
(3629)		1991	02	08.36285	10	23	04.39	+00	09	26.7	9	675
(3629)		1991	02	08.39913	10	23	02.51	+00	09	35.7	9	675
(3703)		1991	02	08.36285	10	12	54.77	+06	09	58.5	9	675
(3703)		1991	02	08.39913	10	12	52.80	+06	10	11.1	9	675
(3735)		1954	07	29.32083	20	51	20.49	-16	29	19.7	6	675
(3735)		1954	07	29.34514	20	51	19.18	-16	29	23.9	6	675
(3894)		1991	01	17.49097	10	44	47.16	+02	52	12.2	9	675
(3894)		1991	01	17.53177	10	44	46.20	+02	52	19.9	9	675
(3934)		1991	01	22.43281	10	01	44.89	+05	41	06.0	9	675
(3934)		1991	01	22.46215	10	01	43.79	+05	41	17.7	9	675
(3934)		1991	02	10.37083	09	47	51.94	+08	08	12.7	9	675
(3934)		1991	02	10.40816	09	47	49.95	+08	08	33.0	9	675
(3945)		1954	07	31.31181	21	18	29.17	-18	37	11.4	6	675
(3945)		1954	07	31.33681	21	18	27.99	-18	37	16.4	6	675
(3980)		1954	07	29.32083	21	03	27.73	-19	37	52.9	6	675
(3980)		1954	07	29.34514	21	03	26.35	-19	37	59.2	6	675
(4002)		1950	06	18.29757	15	40	14.70	-00	57	08.5	6	675
(4043)		1991	02	10.43785	10	58	22.38	+00	59	15.5	9	675
(4043)		1991	02	10.48663	10	58	20.45	+00	59	20.7	9	675
(4052)		1991	01	22.43281	10	01	03.44	+08	41	33.6	9	675
(4052)		1991	01	22.46215	10	01	02.16	+08	41	33.5	9	675
(4052)		1991	02	10.37083	09	45	42.53	+09	00	14.9	9	675
(4052)		1991	02	10.40816	09	45	40.47	+09	00	18.0	9	675
(4074)		1953	07	10.21840	16	04	40.75	-08	17	33.6	6	675
(4074)		1953	07	10.26389	16	04	40.15	-08	17	37.3	6	675
(4089)		1954	07	29.32083	20	56	15.84	-17	41	37.9	6	675
(4089)		1954	07	29.34514	20	56	14.18	-17	41	43.7	6	675
(4158)		1954	09	22.19444	21	00	58.61	-22	43	01.8	6	675
(4158)		1954	09	22.21875	21	00	58.20	-22	42	59.9	6	675
(4267)		1991	02	08.36285	10	11	48.12	+07	27	32.2	9	675
(4267)		1991	02	08.39913	10	11	45.99	+07	27	40.7	9	675
(4323)		1954	07	03.42778	21	35	22.73	-08	38	27.9	6	675
(4323)		1954	07	03.45208	21	35	22.60	-08	38	21.9	6	675
(4395)		1991	01	17.49097	10	30	17.00	-00	21	04.1	9	675
(4395)		1991	01	17.53177	10	30	16.10	-00	21	01.9	9	675
(4395)		1991	02	08.36285	10	18	34.85	+00	50	27.3	9	675
(4395)		1991	02	08.39913	10	18	33.18	+00	50	37.4	9	675
(4404)		1991	01	22.43281	09	46	52.32	+03	29	41.8	9	675
(4404)		1991	01	22.46215	09	46	51.29	+03	30	10.8	9	675
(4412)		1954	07	03.42778	21	56	05.19	-12	13	13.2	6	675
(4412)		1954	07	03.45208	21	56	05.11	-12	13	16.0	6	675
(4516)		1954	07	03.42778	21	39	02.01	-09	00	39.5	6	675

(4516)	1954 07 03.45208	21 39 01.53	-09 00 40.8		6	675
(4740)	1991 01 22.43281	09 51 35.67	+03 14 09.2	18.0	9	675
(4740)	1991 01 22.46215	09 51 34.51	+03 14 16.6		9	675
(4740)	1991 02 10.37083	09 37 04.07	+05 13 55.0		9	675
(4740)	1991 02 10.40816	09 37 02.00	+05 14 12.6		9	675
(4844)	1991 01 17.49097	10 48 57.26	-01 39 13.2		9	675
(4844)	1991 01 17.53177	10 48 56.72	-01 39 19.9		9	675
(4844)	1991 02 10.43785	10 36 57.76	-01 45 57.4		9	675
(4844)	1991 02 10.48663	10 36 55.35	-01 45 51.7		9	675
(4854)	1991 01 17.49097	10 38 50.47	+01 15 33.7		9	675
(4854)	1991 01 17.53177	10 38 49.84	+01 15 39.3		9	675
(4854)	1991 02 08.36285	10 28 29.57	+02 49 09.0		9	675
(4854)	1991 02 08.39913	10 28 28.18	+02 49 21.6		9	675
(4854)	1991 02 10.43785	10 27 07.07	+03 01 56.6		9	675
(4854)	1991 02 10.48663	10 27 04.99	+03 02 14.3		9	675
(4874)	1950 06 18.27153	15 52 23.37	-00 55 00.9		6	675
(4874)	1950 06 18.29757	15 52 22.31	-00 55 06.0		6	675
(4878)	1991 02 10.37083	09 50 31.49	+02 48 55.8		9	675
(4878)	1991 02 10.40816	09 50 29.17	+02 49 08.1		9	675
(5122)	1952 01 30.39583	10 48 37.58	+18 51 39.0		6	675
(5122)	1952 01 30.42430	10 48 36.44	+18 51 54.5		6	675
(5128)	1952 01 30.39583	11 04 43.78	+17 30 44.9		6	675
(5128)	1952 01 30.42430	11 04 42.96	+17 30 52.9		6	675
(5260)	1950 06 18.27153	15 46 17.73	-00 19 45.6		6	675
(5260)	1950 06 18.29757	15 46 16.79	-00 19 46.7		6	675
(5275)	1991 01 22.43281	09 48 22.76	+03 34 12.1		9	675
(5275)	1991 01 22.46215	09 48 21.26	+03 34 16.0	19.5	9	675
(5327)	1950 06 18.27153	15 45 48.62	-02 45 00.9		6	675
(5327)	1950 06 18.29757	15 45 47.91	-02 45 11.3		6	675
(5327)	1954 07 03.42778	21 38 32.52	-10 36 34.4		6	675
(5327)	1954 07 03.45208	21 38 32.06	-10 36 42.6		6	675
(5327)	1954 07 31.31181	21 20 38.39	-14 13 24.8		6	675
(5327)	1954 09 22.19444	20 48 34.13	-20 24 27.8		6	675
(5327)	1954 09 22.21875	20 48 34.04	-20 24 32.3		6	675
(5327)	1955 12 11.21806	03 44 21.20	+05 06 32.1		6	675
(5334)	1991 01 22.43281	10 05 24.74	+04 39 11.0		9	675
(5334)	1991 01 22.46215	10 05 23.67	+04 39 18.7		9	675
(5334)	1991 02 10.37083	09 50 43.94	+06 44 59.3		9	675
(5334)	1991 02 10.40816	09 50 41.72	+06 45 18.3		9	675
(5434)	1950 06 18.27153	15 47 15.96	+02 13 35.1		6	675
(5434)	1950 06 18.29757	15 47 15.14	+02 13 33.2		6	675

689 U.S. Naval Observatory, Flagstaff Station
D. K. Yeomans, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109
Observers C. Dahn, H. Harris, S. Leggett, A. Monet, D. Monet, J. Pier, R. Stone, R. Walker, F. Vrba
0.2-m transit + CCD

(243)	1991 11 04.439701	05 59 18.892	+24 55 44.47	689
(243)	1991 11 05.436826	05 59 06.350	+24 56 03.59	689
(243)	1991 11 06.433931	05 58 52.028	+24 56 22.23	689
(243)	1991 11 07.431025	05 58 35.974	+24 56 40.28	689
(243)	1991 11 08.428090	05 58 18.171	+24 56 57.91	689
(243)	1991 11 13.413104	05 56 23.414	+24 58 15.09	689
(243)	1991 12 04.345517	05 41 34.041	+24 57 16.41	689
(243)	1991 12 05.342142	05 40 39.096	+24 56 50.77	689
(243)	1991 12 07.335388	05 38 47.073	+24 55 51.91	689
(243)	1991 12 08.332001	05 37 50.166	+24 55 18.68	689
(243)	1991 12 09.328609	05 36 52.769	+24 54 42.85	689

(243)	1991 12 10.325211	05 35 54.905	+24 54 04.54			689
(243)	1991 12 14.311597	05 32 00.679	+24 51 05.81			689
(243)	1992 01 09.224981	05 09 27.724	+24 20 26.14			689
(243)	1992 01 10.221817	05 08 50.044	+24 19 10.67			689
(243)	1992 01 13.212431	05 07 06.559	+24 15 22.78			689
(243)	1992 01 14.209348	05 06 35.207	+24 14 09.49			689
(243)	1992 01 27.170899	05 02 20.302	+24 00 52.92			689
(243)	1992 01 30.162516	05 02 02.750	+23 58 39.88			689
(243)	1992 01 31.159747	05 02 00.386	+23 58 00.28			689
(243)	1992 02 01.157020	05 01 59.752	+23 57 23.01			689
(243)	1992 02 02.154291	05 02 00.800	+23 56 48.12			689

691 Kitt Peak, Steward Observatory
T. Gehrels, Space Sciences Building, University of Arizona,
Tucson, AZ 85721, U.S.A.
Observers T. Gehrels, D. L. Rabinowitz, J. V. Scotti
0.91-m SPACEWATCH telescope
GSC

1966 BB	1993 01 29.40674	09 25 03.28	+16 16 30.5	15.7 V		691
1966 BB	1993 01 29.41856	09 25 02.62	+16 16 37.2			691
1966 BB	1993 01 29.43052	09 25 01.95	+16 16 44.1			691
1979 QP	1992 02 28.11871	09 36 09.42	+13 34 45.7	18.1 V		691
1979 QP	1992 02 28.13969	09 36 08.42	+13 34 50.4			691
1979 QP	1992 02 28.16050	09 36 07.43	+13 34 55.2			691
1980 UW1	1993 02 23.21063	09 36 22.83	+13 30 45.1			691
1980 UW1	1993 02 23.23303	09 36 21.52	+13 30 50.9	19.3 V		691
1980 UW1	1993 02 23.25504	09 36 20.24	+13 30 56.5			691
1981 ER21	1993 02 26.44758	13 34 17.43	-05 14 00.0			691
1981 ER21	1993 02 26.50588	13 34 16.60	-05 13 49.3	19.0 V		691
1981 ER21	1993 02 26.53366	13 34 16.17	-05 13 43.8			691
1981 ER23	1993 01 29.32030	09 30 49.94	+16 51 58.9	19.2 V		691
1981 ER23	1993 01 29.33228	09 30 49.27	+16 52 02.5			691
1981 ER23	1993 01 29.34430	09 30 48.56	+16 52 06.2			691
1984 QS	1993 01 29.21159	09 25 58.11	+17 45 56.7			691
1984 QS	1993 01 29.22350	09 25 57.81	+17 46 01.4	18.6 V		691
1984 QS	1993 01 29.23489	09 25 57.29	+17 46 04.3			691
1986 QB3	1992 09 29.41457	01 16 06.77	+03 16 38.7			691
1986 QB3	1992 09 29.43941	01 16 05.69	+03 16 31.8	16.6 V		691
1986 QB3	1992 09 29.46477	01 16 04.59	+03 16 25.4			691
1989 FH	1992 01 01.51190	09 31 01.55	+17 44 43.0			691
1989 FH	1992 01 01.53323	09 31 01.11	+17 44 48.0	19.0 V		691
1989 FH	1992 01 01.55621	09 31 00.68	+17 44 52.3			691
1990 KA	1993 01 26.36035	09 30 31.18	+21 11 41.1			691
1990 KA	1993 01 26.39527	09 30 28.82	+21 12 02.4	19.5 V		691
1990 KA	1993 01 26.42931	09 30 26.51	+21 12 22.4			691
1990 KA	1993 03 03.26794	08 45 44.49	+26 18 52.3	21.6 V		691
1990 KA	1993 03 03.27632	08 45 43.94	+26 18 54.8			691
1990 KA	1993 03 03.28445	08 45 43.47	+26 18 57.5			691
1990 VK1	1992 03 06.21104	09 48 28.00	+16 54 40.1			691
1990 VK1	1992 03 06.24050	09 48 26.68	+16 54 45.1	18.9 V		691
1990 VK1	1992 03 06.26154	09 48 25.81	+16 54 48.6			691
1990 VS6	1993 02 26.44081	13 24 30.35	-05 14 52.5			691
1990 VS6	1993 02 26.49910	13 24 29.33	-05 14 44.4	17.4 V		691
1990 VS6	1993 02 26.52688	13 24 28.83	-05 14 41.5			691
1991 CB1	1993 02 26.22400	08 11 13.84	+21 38 04.5	21.8 V		691
1991 CB1	1993 02 26.23265	08 11 13.14	+21 38 04.7	21.3 V		691
1991 CB1	1993 02 26.24548	08 11 12.19	+21 38 04.5	21.2 V		691
1991 PC6	1993 01 29.24591	09 25 28.92	+17 10 17.1	17.9 V		691
1991 PC6	1993 01 29.25784	09 25 28.20	+17 10 23.3			691

1991	PC6		1993	01	29.26924	09	25	27.53	+17	10	29.3	691
1991	RR40		1991	09	15.43057	00	21	30.08	+01	49	01.9	17.8 V 691
1991	RR40		1991	09	15.45312	00	21	29.10	+01	48	55.8	691
1991	RR40		1991	09	15.47506	00	21	28.17	+01	48	50.2	691
1991	RS40		1991	10	03.28589	00	07	19.33	-00	53	29.9	17.3 V 691
1991	RS40		1991	10	03.30605	00	07	18.32	-00	53	35.4	691
1991	RS40		1991	10	03.32647	00	07	17.27	-00	53	40.4	691
1991	RT40		1991	10	03.28645	00	08	07.80	-01	00	10.0	17.3 V 691
1991	RT40		1991	10	03.30661	00	08	06.82	-01	00	15.1	691
1991	RT40		1991	10	03.32703	00	08	05.81	-01	00	20.4	691
1991	RW40		1991	09	15.43440	00	27	01.44	+01	44	04.6	691
1991	RW40		1991	09	15.45694	00	27	00.38	+01	43	57.2	18.6 V 691
1991	RW40		1991	09	15.47888	00	26	59.36	+01	43	49.6	691
1991	RB41		1991	10	02.20993	00	19	26.16	-01	39	20.0	691
1991	RB41		1991	10	02.23057	00	19	25.27	-01	39	33.1	17.0 V 691
1991	RB41		1991	10	02.25079	00	19	24.40	-01	39	46.1	691
1991	RK41	*	1991	09	09.38205	23	13	06.28	-03	47	17.2	18.1 V 691
1991	RK41		1991	09	09.40295	23	13	05.24	-03	47	26.2	691
1991	RK41		1991	09	09.42367	23	13	04.19	-03	47	35.4	691
1992	AE		1992	03	07.13441	04	37	12.17	+24	01	14.2	691
1992	AE		1992	03	07.14974	04	37	14.32	+24	01	20.8	691
1992	AE		1992	03	07.16351	04	37	16.21	+24	01	26.7	20.4 V 691
1992	AE		1993	02	26.40444	12	48	18.57	+04	31	50.0	691
1992	AE		1993	02	26.41773	12	48	18.04	+04	31	55.1	20.3 V 691
1992	AE		1993	02	26.43055	12	48	17.50	+04	31	59.8	691
1992	AE		1993	03	03.32641	12	44	44.64	+05	03	41.5	691
1992	AE		1993	03	03.33472	12	44	44.28	+05	03	45.0	20.1 V 691
1992	AE		1993	03	03.34261	12	44	43.89	+05	03	48.1	691
1992	AE		1993	03	03.43093	12	44	39.67	+05	04	23.2	691
1992	AE		1993	03	03.44088	12	44	39.21	+05	04	26.8	19.8 V 691
1992	AE		1993	03	03.44830	12	44	38.86	+05	04	30.0	691
1992	HL5	*	1992	04	30.28950	14	36	40.43	-10	42	33.7	691
1992	HL5		1992	04	30.31203	14	36	39.03	-10	42	26.2	691
1992	HL5		1992	04	30.33309	14	36	37.90	-10	42	17.4	18.9 V 691
1992	HM5	*	1992	04	29.37283	15	19	15.97	-09	40	26.8	691
1992	HM5		1992	04	29.39326	15	19	14.80	-09	40	20.1	19.1 V 691
1992	HM5		1992	04	29.41418	15	19	13.56	-09	40	12.4	691
1993	BN		1993	01	29.31401	09	21	45.50	+17	05	31.7	16.0 V 691
1993	BN		1993	01	29.32599	09	21	44.73	+17	05	31.8	691
1993	BN		1993	01	29.33801	09	21	43.96	+17	05	31.2	691
1993	BD2		1993	02	18.10822	04	12	29.43	+30	51	24.9	21.6 V 691
1993	BD2		1993	02	18.11727	04	12	30.13	+30	51	38.6	21.5 V 691
1993	BD2		1993	02	18.12790	04	12	30.80	+30	51	52.9	21.5 V 691
1993	BD2		1993	02	22.21262	04	17	33.64	+32	27	12.4	691
1993	BD2		1993	02	22.25482	04	17	37.07	+32	28	09.2	691
1993	BU3		1993	02	26.25444	09	08	59.79	+11	02	45.3	20.5 V 691
1993	BU3		1993	02	26.27280	09	09	00.39	+11	02	30.6	20.7 V 691
1993	BU3		1993	02	26.29123	09	09	00.98	+11	02	15.5	20.5 V 691
1993	BU3		1993	03	03.29614	09	12	44.11	+10	00	18.0	21.1 V 691
1993	BU3		1993	03	03.31336	09	12	44.80	+10	00	05.7	691
1993	BT14		1993	02	26.25641	09	11	50.56	+11	16	14.9	691
1993	BT14		1993	02	26.27475	09	11	49.54	+11	16	19.1	17.7 V 691
1993	BT14		1993	02	26.29317	09	11	48.61	+11	16	24.4	691
1993	DA		1993	02	21.25803	09	33	21.11	-08	18	34.0	V 691
1993	DA		1993	02	21.34100	09	31	46.43	-08	39	49.6	V 691
1993	DA		1993	02	21.35479	09	31	30.90	-08	43	18.0	19.4 V 691
1993	DA		1993	02	21.35844	09	31	26.67	-08	44	13.4	691
1993	DA		1993	02	22.36554	09	14	11.15	-12	51	04.8	691
1993	DA		1993	02	22.36914	09	14	07.27	-12	51	55.7	691

1993	DC	*	1993	02	18.10711	04	10	52.93	+30 58 47.6	18.5 V	691
1993	DC		1993	02	18.11617	04	10	54.56	+30 58 53.3	18.7 V	691
1993	DC		1993	02	18.12681	04	10	56.49	+30 59 01.4	18.8 V	691
1993	DC		1993	02	21.22361	04	20	38.76	+31 33 35.0	18.9 V	691
1993	DC		1993	02	21.23478	04	20	40.80	+31 33 42.3		691
1993	DC		1993	02	21.24721	04	20	43.17	+31 33 49.1		691
1993	DC		1993	02	22.18242	04	23	40.91	+31 43 35.8		691
1993	DC		1993	02	22.18669	04	23	41.58	+31 43 38.3		691
1993	DC		1993	02	22.19994	04	23	44.11	+31 43 46.3		691
1993	DC		1993	02	22.20513	04	23	45.06	+31 43 49.3		691
1993	DC		1993	02	26.14622	04	36	19.73	+32 21 20.1	18.8 V	691
1993	DC		1993	02	26.15533	04	36	21.47	+32 21 24.9	18.9 V	691
1993	DC		1993	02	26.16403	04	36	23.13	+32 21 29.3	18.8 V	691
1993	DY	*	1993	02	26.47093	15	20	06.96	-14 01 56.5	20.7 V	691
1993	DY		1993	02	26.47980	15	20	07.27	-14 01 57.3	21.4 V	691
1993	DY		1993	02	27.45221	15	20	46.25	-14 02 15.1	21.1 V	691
1993	DY		1993	02	27.47045	15	20	46.99	-14 02 15.0	22.4 V	691
1993	DY		1993	02	27.49480	15	20	47.89	-14 02 14.8	21.5 V	691
1993	DY		1993	02	27.52540	15	20	48.97	-14 02 14.7	22.0 V	691
1993	DQ1	*	1993	02	26.26828	09	28	58.82	+11 04 55.9	20.4 V	691
1993	DQ1		1993	02	26.28662	09	28	57.44	+11 04 59.7	20.3 V	691
1993	DQ1		1993	02	26.30503	09	28	56.05	+11 05 03.6	20.5 V	691
1993	DQ1		1993	03	03.23601	09	23	02.58	+11 22 17.6	20.6 V	691
1993	DQ1		1993	03	03.24700	09	23	01.83	+11 22 19.6	19.7 V	691
1993	DQ1		1993	03	03.25747	09	23	01.01	+11 22 21.4	20.5 V	691
1993	DQ1		1993	03	03.38778	09	22	51.76	+11 22 47.5	20.9 V	691
1993	DQ1		1993	03	03.39569	09	22	51.18	+11 22 49.3	20.3 V	691
1993	DQ1		1993	03	03.40337	09	22	50.69	+11 22 50.8	20.3 V	691
1993	DQ1		1993	03	04.12132	09	22	01.71	+11 25 14.0	20.6 V	691
1993	DQ1		1993	03	04.12813	09	22	01.27	+11 25 15.3	20.9 V	691
1993	DQ1		1993	03	04.13620	09	22	00.74	+11 25 17.0	20.7 V	691
1993	DQ1		1993	03	04.25798	09	21	52.15	+11 25 40.8	19.8 V	691
1993	DS1	*	1993	02	26.26306	09	21	26.43	+10 52 25.5	20.9 V	691
1993	DS1		1993	02	26.28140	09	21	25.31	+10 52 31.7		691
1993	DS1		1993	02	26.29982	09	21	24.26	+10 52 37.4		691
1993	DS1		1993	03	03.23180	09	16	57.98	+11 19 55.4		691
1993	DS1		1993	03	03.24279	09	16	57.45	+11 19 57.4	20.9 V	691
1993	DS1		1993	03	03.25326	09	16	56.89	+11 20 01.1		691
1993	DT1	*	1993	02	26.26629	09	26	06.02	+10 51 56.7	19.0 V	691
1993	DT1		1993	02	26.28463	09	26	04.99	+10 52 02.5		691
1993	DT1		1993	02	26.30305	09	26	04.00	+10 52 08.4		691
1993	DT1		1993	03	03.23524	09	21	55.90	+11 18 14.7		691
1993	DT1		1993	03	03.24623	09	21	55.32	+11 18 18.2	19.2 V	691
1993	DT1		1993	03	03.25670	09	21	54.79	+11 18 21.3		691
1993	DT1		1993	03	03.38705	09	21	48.36	+11 19 01.5	19.0 V	691
1993	DT1		1993	03	03.39497	09	21	47.98	+11 19 04.3		691
1993	DT1		1993	03	03.40264	09	21	47.58	+11 19 06.0		691
1993	DU1	*	1993	02	26.26705	09	27	11.94	+10 53 21.0	17.9 V	691
1993	DU1		1993	02	26.28539	09	27	10.93	+10 53 27.1		691
1993	DU1		1993	02	26.30381	09	27	09.93	+10 53 33.5		691
1993	DU1		1993	03	03.23610	09	23	10.55	+11 21 08.8		691
1993	DU1		1993	03	03.24709	09	23	10.08	+11 21 11.8	17.9 V	691
1993	DU1		1993	03	03.25757	09	23	09.55	+11 21 15.3		691
1993	DU1		1993	03	03.38791	09	23	03.38	+11 21 57.1		691
1993	DU1		1993	03	03.39583	09	23	03.01	+11 21 59.8	18.1 V	691
1993	DU1		1993	03	03.40350	09	23	02.66	+11 22 02.0		691
1993	DU1		1993	03	04.12167	09	22	31.48	+11 25 52.5		691
1993	DU1		1993	03	04.12848	09	22	31.20	+11 25 54.7	18.0 V	691
1993	DU1		1993	03	04.13655	09	22	30.81	+11 25 58.0		691

1993 DV1	*	1993	02	26.26801	09	28	35.58	+11 14 25.8	19.0 V	691
1993 DV1		1993	02	26.28636	09	28	34.66	+11 14 28.8		691
1993 DV1		1993	02	26.30477	09	28	33.70	+11 14 32.3		691
1993 DV1		1993	03	03.23726	09	24	51.02	+11 28 01.7	19.1 V	691
1993 DV1		1993	03	03.24825	09	24	50.53	+11 28 03.7		691
1993 DV1		1993	03	03.25873	09	24	50.07	+11 28 05.3		691
1993 DW1	*	1993	02	26.40274	12	45	51.33	+04 26 08.1		691
1993 DW1		1993	02	26.41604	12	45	50.97	+04 26 14.5		691
1993 DW1		1993	02	26.42885	12	45	50.64	+04 26 20.6	21.6 V	691
1993 DW1		1993	03	03.42997	12	43	15.82	+05 07 37.7		691
1993 DW1		1993	03	03.43993	12	43	15.45	+05 07 42.5		691
1993 DW1		1993	03	03.44735	12	43	15.23	+05 07 46.2	21.3 V	691
1993 DX1	*	1993	02	26.40355	12	47	01.58	+04 43 26.5		691
1993 DX1		1993	02	26.41685	12	47	01.23	+04 43 30.2	19.9 V	691
1993 DX1		1993	02	26.42967	12	47	00.91	+04 43 34.1		691
1993 DX1		1993	03	03.32631	12	44	35.97	+05 09 46.3		691
1993 DX1		1993	03	03.33462	12	44	35.67	+05 09 49.2	19.8 V	691
1993 DX1		1993	03	03.34251	12	44	35.40	+05 09 51.7		691
1993 DX1		1993	03	03.43085	12	44	32.29	+05 10 21.3	19.5 V	691
1993 DX1		1993	03	03.44080	12	44	32.00	+05 10 24.1		691
1993 DX1		1993	03	03.44822	12	44	31.69	+05 10 27.0		691
1993 DY1	*	1993	02	26.40496	12	49	03.82	+04 24 06.4		691
1993 DY1		1993	02	26.41826	12	49	03.48	+04 24 10.7		691
1993 DY1		1993	02	26.43108	12	49	03.11	+04 24 15.1	20.9 V	691
1993 DY1		1993	03	03.32785	12	46	49.42	+04 51 03.6	20.4 V	691
1993 DY1		1993	03	03.33616	12	46	49.17	+04 51 07.1		691
1993 DY1		1993	03	03.34405	12	46	48.84	+04 51 09.8		691
1993 DZ1	*	1993	02	26.40557	12	49	56.77	+04 30 54.3		691
1993 DZ1		1993	02	26.41887	12	49	56.39	+04 30 59.2	21.1 V	691
1993 DZ1		1993	02	26.43169	12	49	56.01	+04 31 04.6		691
1993 DZ1		1993	03	03.32821	12	47	20.34	+05 05 59.1	20.9 V	691
1993 DZ1		1993	03	03.33651	12	47	20.01	+05 06 02.3		691
1993 DZ1		1993	03	03.34441	12	47	19.73	+05 06 06.1		691
1993 DZ1		1993	03	03.43274	12	47	16.36	+05 06 44.8	20.7 V	691
1993 DZ1		1993	03	03.44269	12	47	15.98	+05 06 49.7		691
1993 DZ1		1993	03	03.45011	12	47	15.71	+05 06 52.8		691
1993 DA2	*	1993	02	26.40623	12	50	53.75	+04 29 11.8		691
1993 DA2		1993	02	26.41953	12	50	53.29	+04 29 16.9	18.9 V	691
1993 DA2		1993	02	26.43234	12	50	52.83	+04 29 22.4		691
1993 DA2		1993	03	03.32852	12	47	47.60	+05 04 13.0	19.4 V	691
1993 DA2		1993	03	03.33683	12	47	47.23	+05 04 16.5		691
1993 DA2		1993	03	03.34472	12	47	46.89	+05 04 19.9		691
1993 DA2		1993	03	03.43305	12	47	43.08	+05 04 58.6		691
1993 DA2		1993	03	03.44300	12	47	42.65	+05 05 03.0	19.5 V	691
1993 DA2		1993	03	03.45042	12	47	42.32	+05 05 06.2		691
1993 DB2	*	1993	02	26.40644	12	51	11.73	+04 33 51.7		691
1993 DB2		1993	02	26.41973	12	51	11.29	+04 33 54.1	20.5 V	691
1993 DB2		1993	02	26.43255	12	51	10.90	+04 33 56.7		691
1993 DB2		1993	03	03.32902	12	48	30.92	+04 50 29.0	20.4 V	691
1993 DB2		1993	03	03.33733	12	48	30.61	+04 50 30.7		691
1993 DB2		1993	03	03.34522	12	48	30.29	+04 50 32.3		691
1993 DC2	*	1993	02	26.40652	12	51	19.24	+04 37 29.0	20.8 V	691
1993 DC2		1993	02	26.41982	12	51	18.87	+04 37 35.4		691
1993 DC2		1993	02	26.43264	12	51	18.46	+04 37 41.3		691
1993 DC2		1993	03	03.32916	12	48	43.35	+05 16 48.0		691
1993 DC2		1993	03	03.33747	12	48	43.01	+05 16 52.7		691
1993 DC2		1993	03	03.34537	12	48	42.75	+05 16 56.4	20.7 V	691
1993 DC2		1993	03	03.43370	12	48	39.45	+05 17 40.0	20.5 V	691
1993 DC2		1993	03	03.44365	12	48	39.06	+05 17 44.5		691

1993 DC2		1993 03 03.45107	12 48 38.78	+05 17 48.7			691
1993 EA	*	1993 03 03.32749	12 46 18.07	+05 05 29.6	19.3	V	691
1993 EA		1993 03 03.33579	12 46 17.33	+05 05 36.0	19.3	V	691
1993 EA		1993 03 03.34368	12 46 16.63	+05 05 42.3	19.2	V	691
1993 EA		1993 03 03.43196	12 46 08.72	+05 06 51.8	19.1	V	691
1993 EA		1993 03 03.44190	12 46 07.83	+05 06 59.7	19.3	V	691
1993 EA		1993 03 03.44932	12 46 07.15	+05 07 05.7	19.2	V	691
1993 EA		1993 03 04.23291	12 44 58.84	+05 17 26.3	19.2	V	691
1993 EA		1993 03 04.23927	12 44 58.27	+05 17 31.3	20.1	V	691
1993 EA		1993 03 04.24553	12 44 57.69	+05 17 36.3	19.5	V	691
1993 ED	*	1993 03 03.23566	09 22 32.67	+11 25 52.7	20.1	V	691
1993 ED		1993 03 03.24665	09 22 32.12	+11 25 55.8			691
1993 ED		1993 03 03.25713	09 22 31.59	+11 25 59.5			691
1993 ED		1993 03 03.38747	09 22 25.26	+11 26 38.6	19.9	V	691
1993 ED		1993 03 03.39539	09 22 24.83	+11 26 41.1			691
1993 ED		1993 03 03.40306	09 22 24.49	+11 26 43.4			691
1993 ED		1993 03 04.12121	09 21 51.86	+11 30 20.0	20.7	V	691
1993 ED		1993 03 04.12802	09 21 51.50	+11 30 22.6			691
1993 ED		1993 03 04.13609	09 21 51.18	+11 30 24.6			691
4087 P-L		1991 09 08.19094	23 08 32.67	-06 33 37.1	19.1	V	691
4087 P-L		1991 09 08.21196	23 08 31.48	-06 33 43.9			691
4087 P-L		1991 09 08.23283	23 08 30.33	-06 33 50.2			691
4821 P-L		1993 02 26.44211	13 26 22.99	-05 25 33.4			691
4821 P-L		1993 02 26.50040	13 26 21.94	-05 25 21.3	20.4	V	691
4821 P-L		1993 02 26.52818	13 26 21.42	-05 25 15.9			691
4193 T-1		1993 01 29.41289	09 33 55.99	+16 25 08.6	17.3	V	691
4193 T-1		1993 01 29.42471	09 33 55.26	+16 25 13.3			691
4193 T-1		1993 01 29.43667	09 33 54.55	+16 25 17.8			691
4180 T-2		1993 01 29.40714	09 25 38.53	+16 42 05.7	18.3	V	691
4180 T-2		1993 01 29.41896	09 25 37.76	+16 42 09.3			691
4180 T-2		1993 01 29.43093	09 25 37.04	+16 42 13.7			691
3395 T-3		1993 03 03.23552	09 22 19.90	+11 09 11.4	17.1	V	691
3395 T-3		1993 03 03.24651	09 22 19.40	+11 09 16.0			691
3395 T-3		1993 03 03.25698	09 22 18.92	+11 09 20.1			691
3395 T-3		1993 03 04.12111	09 21 43.02	+11 15 04.4			691
3395 T-3		1993 03 04.12792	09 21 42.74	+11 15 07.3	17.4	V	691
3395 T-3		1993 03 04.13599	09 21 42.40	+11 15 10.5			691
(158)		1993 02 23.20804	09 32 39.20	+13 24 13.3			691
(158)		1993 02 23.23045	09 32 38.09	+13 24 18.5	13.5	V	691
(158)		1993 02 23.25246	09 32 36.98	+13 24 23.5			691
(262)		1993 02 26.11890	02 24 44.90	+17 36 21.4	16.0	V	691
(262)		1993 02 26.12685	02 24 45.82	+17 36 26.8			691
(262)		1993 02 26.13510	02 24 46.79	+17 36 32.3			691
(660)		1993 03 03.23658	09 23 52.16	+11 14 21.5	13.0	V	691
(660)		1993 03 03.24757	09 23 51.67	+11 14 28.0			691
(660)		1993 03 03.25805	09 23 51.21	+11 14 34.1			691
(873)		1993 02 23.21327	09 40 11.46	+13 25 02.1			691
(873)		1993 02 23.23567	09 40 10.27	+13 25 10.8	15.1	V	691
(873)		1993 02 23.25768	09 40 09.09	+13 25 19.2			691
(1285)		1993 02 16.34758	11 32 16.53	-01 03 56.9			691
(1285)		1993 02 16.35549	11 32 16.23	-01 03 55.6			691
(1285)		1993 02 16.36294	11 32 15.92	-01 03 55.0	16.2	V	691
(1285)		1993 02 16.37349	11 32 15.51	-01 03 53.6	15.2	V	691
(1285)		1993 02 16.38194	11 32 15.16	-01 03 52.7			691
(1285)		1993 02 16.39034	11 32 14.82	-01 03 51.8			691
(2211)		1993 02 23.22087	09 51 09.82	+13 39 36.1			691
(2211)		1993 02 23.24327	09 51 08.86	+13 39 46.3			691
(2211)		1993 02 23.26529	09 51 07.88	+13 39 56.2	17.4	V	691
(3165)		1993 02 22.38498	11 07 15.39	+12 02 57.7	16.3	V	691

(3165)		1993 02 22.40689	11 07 14.09	+12 03 06.3					691
(3165)		1993 02 22.42884	11 07 13.00	+12 03 15.1					691
(3744)		1993 03 03.29491	09 10 27.41	+10 05 03.3	16.8	V			691
(3744)		1993 03 03.30400	09 10 27.11	+10 05 05.9					691
(3744)		1993 03 03.31212	09 10 26.79	+10 05 08.2					691
(3791)		1993 02 23.21930	09 48 53.68	+13 17 44.7					691
(3791)		1993 02 23.24170	09 48 52.54	+13 17 49.9					691
(3791)		1993 02 23.26371	09 48 51.44	+13 17 55.1	16.8	V			691
(4032)		1993 02 23.20692	09 31 01.94	+13 20 43.5					691
(4032)		1993 02 23.22932	09 31 00.58	+13 20 51.3	17.7	V			691
(4032)		1993 02 23.25133	09 30 59.22	+13 20 59.1					691
(4176)		1993 02 26.44163	13 25 41.86	-05 19 03.6					691
(4176)		1993 02 26.49992	13 25 40.92	-05 18 54.0	16.6	V			691
(4176)		1993 02 26.52770	13 25 40.46	-05 18 49.7					691
(5102)		1993 02 23.20467	09 27 47.44	+13 34 11.5					691
(5102)		1993 02 23.22708	09 27 46.27	+13 34 14.4	17.6	V			691
(5102)		1993 02 23.24909	09 27 45.10	+13 34 17.3					691

693 University of Arizona, Catalina Station
T. Spahr, Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ 85721, U.S.A.
Observers T. Spahr, C. Hergenrother
Measurer C. Hergenrother
0.4-m f/3 Schmidt

1993 EL	*	1993 03 15.32773	12 11 17.29	+33 34 15.5	17.0				693
1993 EL		1993 03 15.37394	12 11 15.71	+33 34 43.2					693
1993 EL		1993 03 18.31318	12 09 39.21	+34 01 01.8					693
1993 EL		1993 03 18.35677	12 09 37.58	+34 01 25.0					693

695 Kitt Peak
T. J. Balonek, Dept. of Physics and Astronomy, Colgate University, Hamilton, NY 13346, U.S.A.
Observers T. J. Balonek, M. MacKenzie, B. Elmegreen, A. Wong
Burrell Schmidt + CCD
GSC

1993 BM3		1993 01 31.42909	10 13 18.26	+22 19 25.8					695
1993 BM3		1993 01 31.43348	10 13 18.00	+22 19 27.2					695
1993 BM3		1993 01 31.43647	10 13 17.82	+22 19 28.2	17.7	V			695
1993 BM3		1993 01 31.43943	10 13 17.65	+22 19 29.3					695
1993 BM3		1993 02 04.29791	10 09 37.95	+22 40 20.9				V	695
1993 BM3		1993 02 04.30426	10 09 37.52	+22 40 22.5				V	695
1993 BM3		1993 02 04.31138	10 09 37.05	+22 40 25.3					695
1993 BM3		1993 02 05.54302	10 08 22.59	+22 46 52.1					695
1993 BM3		1993 02 05.54697	10 08 22.34	+22 46 52.9					695
1993 BM3		1993 02 05.55096	10 08 22.18	+22 46 54.4					695
1993 BN3		1993 01 31.42909	10 13 34.36	+22 15 47.2					695
1993 BN3		1993 01 31.43348	10 13 34.02	+22 15 50.5				V	695
1993 BN3		1993 01 31.43647	10 13 33.85	+22 15 51.1	18.4	V			695
1993 BN3		1993 01 31.43943	10 13 33.67	+22 15 52.0					695
1993 BN3		1993 02 05.54302	10 08 31.1	+22 44 51				V	695
1993 BN3		1993 02 05.55096	10 08 30.6	+22 44 55				V	695
1993 BA15	*	1993 01 29.33456	08 10 43.09	+25 17 55.6					695
1993 BA15		1993 01 29.34025	08 10 42.81	+25 17 57.3					695
1993 BA15		1993 01 29.34396	08 10 42.58	+25 17 58.4					695
1993 BA15		1993 01 29.34771	08 10 42.41	+25 17 59.7					695
1993 BA15		1993 01 29.35127	08 10 42.19	+25 18 01.2					695
1993 BA15		1993 01 29.35454	08 10 42.05	+25 18 01.7					695
1993 BA15		1993 01 29.35816	08 10 41.85	+25 18 03.1					695
1993 BA15		1993 01 29.36054	08 10 41.72	+25 18 04.1					695

1993 BA15	1993 01 29.36244	08 10 41.62	+25 18 04.5				695
1993 BA15	1993 01 29.36451	08 10 41.51	+25 18 05.2				695
1993 BA15	1993 01 29.36718	08 10 41.29	+25 18 06.4				695
1993 BA15	1993 01 29.37038	08 10 41.14	+25 18 07.1				695
1993 BA15	1993 01 29.37218	08 10 41.10	+25 18 07.7				695
1993 BA15	1993 01 31.33892	08 08 58.88	+25 28 24.5				695
1993 BA15	1993 01 31.34132	08 08 58.74	+25 28 25.6				695
1993 BA15	1993 01 31.34350	08 08 58.63	+25 28 26.4				695
1993 BA15	1993 01 31.34556	08 08 58.54	+25 28 27.1				695
1993 BA15	1993 01 31.34832	08 08 58.31	+25 28 27.7				695
1993 BA15	1993 01 31.35168	08 08 58.21	+25 28 28.7				695
1993 BA15	1993 01 31.35426	08 08 58.05	+25 28 29.4				695
1993 BA15	1993 01 31.35899	08 08 57.81	+25 28 31.0				695
1993 BA15	1993 01 31.36073	08 08 57.72	+25 28 31.7				695
1993 BA15	1993 01 31.36221	08 08 57.67	+25 28 32.0				695
1993 BA15	1993 01 31.36595	08 08 57.45	+25 28 33.1	17.2	V		695
1993 BA15	1993 01 31.36785	08 08 57.35	+25 28 33.6	17.2	V		695
1993 BA15	1993 01 31.37054	08 08 57.20	+25 28 34.3				695
1993 BA15	1993 02 01.28878	08 08 10.19	+25 33 15.1				695
1993 BA15	1993 02 01.29059	08 08 10.20	+25 33 15.5				695
1993 BA15	1993 02 01.29227	08 08 10.04	+25 33 16.1				695
1993 BA15	1993 02 01.29385	08 08 10.03	+25 33 16.5				695
1993 BA15	1993 02 01.29519	08 08 09.90	+25 33 17.2				695
1993 BA15	1993 02 01.29675	08 08 09.86	+25 33 17.6	17.3	V		695
1993 BA15	1993 02 01.29866	08 08 09.75	+25 33 18.2	17.3	V		695
1993 BA15	1993 02 01.30059	08 08 09.63	+25 33 18.9	17.3	V		695
1993 BA15	1993 02 01.30247	08 08 09.51	+25 33 19.2	17.0	V		695
1993 BA15	1993 02 01.30609	08 08 09.32	+25 33 20.3				695
1993 BA15	1993 02 01.35958	08 08 06.53	+25 33 36.3				695
1993 BA15	1993 02 01.36133	08 08 06.41	+25 33 36.7				695
1993 BA15	1993 02 01.36348	08 08 06.33	+25 33 37.3	16.8	V		695
1993 BA15	1993 02 04.19907	08 05 44.6	+25 47 30				695
1993 BA15	1993 02 04.21351	08 05 43.6	+25 47 35				695
1993 BA15	1993 02 04.24260	08 05 42.2	+25 47 44	16.6	V		695
1993 BA15	1993 02 04.24995	08 05 41.8	+25 47 46				695
1993 BA15	1993 02 04.25619	08 05 41.4	+25 47 47				695

711 McDonald Observatory
D. K. Yeomans, Jet Propulsion Laboratory, 4800 Oak Grove Drive,
Pasadena, CA 91109
Observers P. D. Hemenway, P. J. Shelus, J. A. Shelus, A. L. Whipple
Measurers L. Eakins, R. Whited
2.1-m Struve reflector
Ida 93 Catalogue

(243)	1991 08 18.47844	05 02 47.61	+23 51 09.0		S	711
(243)	1991 08 19.43609	05 04 05.41	+23 53 07.6			711
(243)	1991 11 30.32730	05 45 06.94	+24 58 35.4		S	711
(243)	1991 12 10.15225	05 36 05.26	+24 54 10.9			711
(243)	1991 12 10.17550	05 36 03.86	+24 54 10.4			711
(243)	1991 12 10.19862	05 36 02.47	+24 54 09.7			711
(243)	1991 12 11.17074	05 35 05.82	+24 53 29.7			711
(243)	1991 12 11.19340	05 35 04.45	+24 53 29.0			711
(243)	1991 12 12.19585	05 34 05.62	+24 52 45.5			711
(243)	1991 12 12.21627	05 34 04.38	+24 52 44.8			711
(243)	1991 12 12.24774	05 34 02.53	+24 52 43.6			711
(243)	1991 12 31.23150	05 16 09.22	+24 32 17.4			711
(243)	1991 12 31.24770	05 16 08.37	+24 32 16.1			711
(243)	1991 12 31.26849	05 16 07.28	+24 32 14.4			711

(243)	1992 01 01.17885	05 15 22.26	+24 31 02.7				711
(243)	1992 01 01.26743	05 15 17.75	+24 30 55.7				711
(243)	1992 01 02.23793	05 14 30.76	+24 29 39.2				711
(243)	1992 01 02.24772	05 14 30.26	+24 29 38.4				711
(243)	1992 01 02.25770	05 14 29.77	+24 29 37.6				711
(243)	1992 01 23.23251	05 03 07.09	+24 04 19.6				711
(243)	1992 01 23.25202	05 03 06.78	+24 04 18.4				711
(243)	1992 02 11.09235	05 03 26.03	+23 53 23.1				711
(243)	1992 02 11.12123	05 03 26.48	+23 53 22.7				711
(243)	1992 02 15.14076	05 04 47.62	+23 52 49.9				711
(243)	1992 02 17.11094	05 05 36.57	+23 52 45.7				711
(243)	1992 02 17.13947	05 05 37.29	+23 52 45.5				711
(243)	1992 03 25.09050	05 36 24.51	+24 03 07.2				711
(243)	1992 11 25.51284	11 47 04.83	+01 08 13.2				711
(243)	1992 12 30.43898	12 18 25.86	-02 28 02.9				711
(243)	1993 01 20.38357	12 28 01.73	-03 39 43.2				711
(243)	1993 01 21.42515	12 28 16.40	-03 41 49.5				711

760 Goethe Link
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers H. L. Cohen, F. K. Edmondson, P. Guyer, R. C. Nicholas,
C. L. Perry
Measurer C. M. Olmstead
0.25-m refractor
PDS scanning microdensitometer
PPM, global solutions

1951 JD1	1951 05 14.32152	15 53 57.10	-19 44 53.6			E	760
1951 JD1	1951 05 14.35135	15 53 55.29	-19 44 57.3			E	760
1965 UO	1965 10 28.34028	02 43 54.83	+28 05 59.8				760
1965 UO	1965 10 28.39166	02 43 52.16	+28 05 47.0				760
1988 XU1	1955 06 27.25834	19 08 16.66	-27 25 33.5			P	760
1988 XU1	1955 06 27.30347	19 08 13.98	-27 25 50.5				760
(95)	1951 05 14.32152	15 30 51.76	-22 05 49.2				760
(95)	1951 05 14.35135	15 30 50.29	-22 05 40.2	14.0			760
(828)	1955 06 27.25834	19 09 26.36	-24 12 12.6	16.0			760
(828)	1955 06 27.30347	19 09 24.14	-24 12 16.7				760
(947)	1955 06 27.25834	19 21 31.50	-30 46 25.4	16.0		E	760
(947)	1955 06 27.30347	19 21 28.91	-30 46 37.4			E	760
(1260)	1965 10 28.34028	02 39 26.97	+28 57 56.8				760
(1260)	1965 10 28.39166	02 39 23.81	+28 57 44.7				760
(1429)	1949 05 31.18194	15 49 32.50	-23 36 13.5				760
(1429)	1949 05 31.21736	15 49 30.05	-23 36 14.2			P	760
(1430)	1949 05 31.18194	15 58 34.28	-26 27 59.7				760
(1430)	1949 05 31.21736	15 58 32.12	-26 27 53.0				760
(1754)	1953 08 11.25069	21 32 14.47	-07 39 23.8				760
(2095)	1955 06 27.25834	19 09 57.24	-27 05 01.5				760
(2095)	1955 06 27.30347	19 09 54.77	-27 05 03.9			P	760
(2412)	1955 06 27.25834	19 20 19.69	-27 00 58.6				760
(2412)	1955 06 27.30347	19 20 16.97	-27 00 54.9				760
(2536)	1953 08 11.20625	21 45 19.22	-05 26 49.7			P	760
(2536)	1953 08 11.25069	21 45 16.85	-05 26 50.1			P	760
(2635)	1949 05 31.18194	15 46 55.24	-24 20 59.4				760
(2635)	1949 05 31.21736	15 46 53.03	-24 20 46.9				760
(2760)	1965 10 28.39166	02 32 20.12	+29 04 34.5				760
(4455)	1949 05 31.22153	15 52 17.23	-20 40 43.4				760
(5484)	1951 05 14.32152	15 32 15.69	-21 25 19.9				760
(5484)	1951 05 14.35135	15 32 13.60	-21 25 26.1				760

778 Allegheny Observatory, Pittsburgh
D. K. Yeomans, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109
Observers J. Stein, M. Castelaz
Ida 93 Catalogue

(243)	1990 10 27.06065	22 31 45.87	-08 28 35.7			778
(243)	1990 10 27.07400	22 31 45.88	-08 28 35.5			778
(243)	1990 10 27.08729	22 31 45.95	-08 28 35.1			778

786 U.S. Naval Observatory
J. A. DeYoung, U.S. Naval Observatory, 3450 Massachusetts Avenue NW, Washington, DC 20392-5420, U.S.A.
Observers J. A. DeYoung, R. E. Schmidt
Measurer J. A. DeYoung
0.61-m reflector + CCD
GSC

1980 AA	1993 02 23.23251	09 05 31.60	+00 56 20.6			786
1980 AA	1993 02 23.23591	09 05 32.12	+00 56 17.6			786
1980 AA	1993 02 23.23762	09 05 32.27	+00 56 16.3			786
1980 AA	1993 02 23.23932	09 05 32.54	+00 56 14.9			786
1980 AA	1993 02 28.13256	09 16 46.64	+00 02 06.5			786
1980 AA	1993 02 28.13473	09 16 46.90	+00 02 05.3			786
1980 AA	1993 02 28.14064	09 16 47.52	+00 02 02.3			786
1980 AA	1993 02 28.14405	09 16 47.91	+00 02 00.5			786
1980 AA	1993 02 28.15521	09 16 49.17	+00 01 54.6			786
1980 AA	1993 02 28.15691	09 16 49.38	+00 01 53.5			786
1980 AA	1993 02 28.15956	09 16 49.64	+00 01 52.2			786
1980 AA	1993 02 28.16126	09 16 49.85	+00 01 51.3			786

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

1932 CY	1993 01 19.39251	12 22 32.98	-01 21 34.8			801
1932 CY	1993 02 18.31251	12 23 30.25	-01 06 58.2			801
1932 CY	1993 02 18.34521	12 23 29.53	-01 06 52.9			801
1932 CY	1993 02 20.30588	12 22 49.03	-01 01 10.6			801
1932 CY	1993 02 20.33594	12 22 48.36	-01 01 05.4			801
1933 UM1	1993 02 21.24495	09 50 03.82	+12 58 51.6			801
1933 UM1	1993 02 21.26106	09 50 02.98	+12 58 55.5			801
1933 UM1	1993 02 25.21189	09 46 45.83	+13 14 34.4			801
1933 UM1	1993 02 25.22732	09 46 45.07	+13 14 38.0			801
1972 RY3	1993 02 25.00306	04 43 58.70	+30 40 26.3			801
1972 RY3	1993 02 25.03953	04 43 59.84	+30 40 24.8			801
1972 RY3	1993 02 26.01281	04 44 32.07	+30 39 57.6			801
1972 RY3	1993 02 26.03602	04 44 32.79	+30 39 56.7		I	801
1975 SS	1993 02 21.20231	09 03 45.79	+03 10 30.3			801
1975 SS	1993 02 21.21943	09 03 45.07	+03 10 37.0			801
1976 GK3	1993 02 21.36816	13 20 40.27	-11 44 22.7			801
1976 GK3	1993 02 25.36168	13 20 01.16	-11 25 20.0			801
1976 GK3	1993 02 25.39200	13 20 00.73	-11 25 09.7			801
1976 GM7	1993 02 20.25608	11 23 17.93	+01 08 10.7			801
1976 GM7	1993 02 20.27128	11 23 17.37	+01 08 17.2			801
1976 GM7	1993 02 26.29299	11 19 37.15	+01 50 12.8			801
1976 GM7	1993 02 26.31016	11 19 36.41	+01 50 19.8			801
1976 QE1	1993 02 18.32220	12 51 06.26	-11 13 20.4		p	801
1976 QE1	1993 02 18.34769	12 51 05.67	-11 13 28.5			801

1977	TO6	1991	09	07.31373	01	45	32.15	-02	58	46.8	801
1977	TO6	1991	09	07.33856	01	45	31.90	-02	58	53.3	801
1978	PT4	1993	02	25.29558	10	44	29.97	+24	08	54.9	801
1978	PT4	1993	02	26.27191	10	43	37.97	+24	17	18.4	r 801
1978	PT4	1993	02	26.28741	10	43	37.13	+24	17	26.0	r 801
1978	SH1	1993	01	19.12216	05	58	29.53	+32	02	52.0	801
1978	SH1	1993	01	19.14888	05	58	28.37	+32	02	55.4	801
1978	TW2	1993	02	25.10336	06	57	43.98	+20	56	22.3	801
1978	TW2	1993	02	25.16148	06	57	44.70	+20	56	27.7	801
1978	TW2	1993	02	26.08037	06	57	58.32	+20	58	01.2	I 801
1978	TW2	1993	02	26.12663	06	57	58.94	+20	58	05.4	801
1978	TH6	1993	02	25.09619	06	37	01.80	+40	19	07.0	801
1978	TH6	1993	02	25.11935	06	37	02.10	+40	18	57.1	801
1978	TH6	1993	02	26.07270	06	37	16.70	+40	11	26.5	801
1978	VY14	1993	02	24.24317	11	28	23.89	+09	19	21.9	U 801
1978	VY14	1993	02	26.29917	11	26	44.48	+09	30	51.9	801
1978	VY14	1993	02	26.31380	11	26	43.73	+09	30	56.5	801
1979	YS	1993	02	24.13696	08	57	26.43	+04	27	47.4	801
1979	YS	1993	02	24.15281	08	57	25.60	+04	27	47.9	801
1980	AA	1993	02	18.09331	08	51	43.71	+02	19	57.9	801
1980	AA	1993	02	18.09906	08	51	44.64	+02	19	50.9	801
1980	AA	1993	02	21.19899	09	00	21.17	+01	25	38.3	801
1980	AA	1993	02	21.20568	09	00	22.08	+01	25	31.8	801
1980	TH	1993	01	26.32964	11	22	17.41	+03	49	35.8	801
1980	TH	1993	01	26.35676	11	22	16.76	+03	49	34.4	801
1980	TH	1993	02	21.30679	11	05	43.00	+04	02	32.5	801
1980	TH	1993	02	21.32449	11	05	42.09	+04	02	34.0	801
1980	TH	1993	02	25.32416	11	02	15.79	+04	09	40.3	r 801
1980	TH	1993	02	25.34821	11	02	14.50	+04	09	42.6	801
1981	DT2	1993	02	20.10381	07	35	05.77	+30	29	17.2	801
1981	DT2	1993	02	20.12134	07	35	05.27	+30	29	08.2	801
1981	DT2	1993	02	25.13174	07	33	05.34	+29	51	00.5	801
1981	DT2	1993	02	25.17278	07	33	04.48	+29	50	40.7	801
1981	GM1	1993	02	25.11598	06	33	14.50	+40	29	23.6	801
1981	GM1	1993	02	26.06938	06	33	24.87	+40	21	34.8	801
1981	GM1	1993	02	26.09307	06	33	25.10	+40	21	23.0	801
1981	WR	1993	02	20.29654	11	56	31.62	+07	01	35.6	801
1981	WR	1993	02	20.31161	11	56	31.04	+07	01	42.3	801
1982	BJ	1993	02	21.42519	16	04	02.35	+09	34	23.2	801
1982	BJ	1993	02	21.43228	16	04	02.93	+09	34	25.9	801
1982	BQ4	1993	02	26.32688	12	06	41.78	+16	42	21.0	801
1982	BQ4	1993	02	26.33505	12	06	41.47	+16	42	24.3	801
1982	FF2	1993	02	18.12049	07	50	19.50	+13	52	04.4	801
1982	FF2	1993	02	18.14083	07	50	18.76	+13	52	08.2	801
1982	FF2	1993	02	20.10792	07	49	13.80	+13	57	56.1	801
1982	FF2	1993	02	20.13078	07	49	13.01	+13	58	00.6	801
1982	SJ1	1993	02	24.16490	09	11	02.06	+09	08	28.5	801
1982	SJ1	1993	02	26.19681	09	09	41.99	+09	23	43.9	801
1982	SJ1	1993	02	26.21553	09	09	41.25	+09	23	52.2	801
1983	CY2	1992	12	27.39767	09	31	34.06	+19	34	54.6	801
1983	CY2	1993	02	21.14895	08	47	25.54	+20	21	16.7	801
1983	CY2	1993	02	21.17284	08	47	24.40	+20	21	16.4	801
1983	CY2	1993	02	24.13362	08	45	13.23	+20	19	44.3	801
1983	CY2	1993	02	24.14961	08	45	12.51	+20	19	43.2	t 801
1984	CM1	1993	02	20.21433	10	44	35.68	+05	57	02.0	801
1984	CM1	1993	02	20.22225	10	44	35.36	+05	57	07.0	801
1984	CM1	1993	02	24.20793	10	41	53.31	+06	40	09.4	r 801
1984	CM1	1993	02	24.22045	10	41	52.76	+06	40	17.5	r 801
1984	DE	1993	02	18.35020	12	26	25.70	-09	50	49.0	801

1984 EC	1993 02 21.34836	13 05 04.33	-09 55 52.7				801
1984 EC	1993 02 21.37847	13 05 03.79	-09 56 01.5				801
1984 EX	1993 02 24.18655	10 12 46.99	+13 19 58.6				801
1984 EX	1993 02 24.20113	10 12 46.13	+13 20 01.5				801
1984 EX	1993 02 26.23329	10 10 52.08	+13 25 28.7				801
1984 EX	1993 02 26.24986	10 10 51.14	+13 25 31.2				801
1984 FS	1993 02 18.41701	15 17 24.18	-03 18 12.0				801
1984 FS	1993 02 18.43674	15 17 25.08	-03 18 06.9				801
1984 UK1	1993 02 25.05081	05 48 39.03	+18 52 52.2				801
1984 UK1	1993 02 25.07097	05 48 39.91	+18 52 51.5				801
1984 UK1	1993 02 26.02979	05 49 28.08	+18 54 10.2				801
1984 UK1	1993 02 26.04844	05 49 29.01	+18 54 11.6				801
1984 UX1	1993 02 26.12980	08 13 06.68	+31 20 30.1				801
1984 UX1	1993 02 26.15933	08 13 05.78	+31 20 24.4				801
1985 CE2	1993 02 18.18750	09 25 18.33	+12 15 16.1				801
1985 CE2	1993 02 18.20225	09 25 17.56	+12 15 22.4				801
1985 CE2	1993 02 21.23280	09 22 47.98	+12 37 09.4				801
1985 CE2	1993 02 21.25116	09 22 47.06	+12 37 17.1				801
1985 FH	1993 02 21.37491	13 52 34.03	-05 37 29.4				801
1985 FH	1993 02 21.39979	13 52 34.61	-05 37 22.3				801
1985 HL	1993 02 18.27465	11 01 54.95	+02 22 02.8				801
1985 HL	1993 02 18.29824	11 01 54.12	+02 22 14.9				801
1985 HL	1993 02 26.29014	10 56 57.40	+03 35 56.4				801
1985 HL	1993 02 26.30438	10 56 56.80	+03 36 04.9				801
1985 UG2	1993 02 21.08679	08 15 09.44	+18 56 55.1				801
1985 UG2	1993 02 21.10851	08 15 08.57	+18 57 00.5				801
1985 VF2	1993 02 25.22133	10 04 46.90	-17 24 08.0				801
1985 VF2	1993 02 25.23719	10 04 46.09	-17 24 05.4				801
1985 VF2	1993 02 26.23097	10 03 55.84	-17 21 52.9				801
1985 VF2	1993 02 26.24707	10 03 55.04	-17 21 51.7				801
1986 EZ4	1993 02 18.24263	10 32 27.23	+10 09 37.6				801
1986 EZ4	1993 02 18.26281	10 32 26.06	+10 09 43.7				801
1986 EZ4	1993 02 21.27547	10 29 38.47	+10 24 06.8				801
1986 EZ4	1993 02 21.29110	10 29 37.54	+10 24 11.5				801
1986 JA	1993 02 21.32134	11 51 58.91	+03 38 23.7				801
1986 JA	1993 02 21.33585	11 51 58.42	+03 38 32.9				801
1986 JA	1993 02 26.32118	11 48 59.53	+04 32 24.0				801
1986 JA	1993 02 26.33214	11 48 59.08	+04 32 31.3				801
1986 QS	1993 02 18.23647	10 27 18.07	+13 53 30.3				801
1986 QS	1993 02 18.25595	10 27 16.93	+13 53 33.7				801
1986 QS	1993 02 26.25736	10 19 35.99	+14 13 18.9				801
1986 QS	1993 02 26.27563	10 19 34.92	+14 13 20.9				801
1986 UM1	1993 02 24.27557	11 38 04.52	+09 15 33.0				801
1986 UM1	1993 02 24.29150	11 38 03.73	+09 15 37.1				801
1986 VD1	1993 02 24.17450	09 23 40.71	+12 51 58.4				801
1986 VD1	1993 02 24.19316	09 23 39.71	+12 51 59.7				801
1986 VD1	1993 02 26.22220	09 21 58.99	+12 54 36.6				801
1986 VD1	1993 02 26.23841	09 21 58.18	+12 54 37.6				801
1986 VF5	1993 02 20.10119	07 26 56.32	+34 28 16.8				801
1986 VF5	1993 02 20.12855	07 26 55.52	+34 28 09.9				801
1986 VF5	1993 02 25.12343	07 25 21.19	+34 06 14.6				801
1987 SV11	1993 02 21.38377	14 02 42.36	-10 47 27.6				801
1987 SV11	1993 02 21.40951	14 02 42.83	-10 47 34.2				801
1988 BC	1993 02 18.40047	15 01 08.97	-01 49 08.3				801
1988 BC	1993 02 18.42128	15 01 09.81	-01 49 08.5				801
1988 BC	1993 02 20.39347	15 02 28.27	-01 47 58.9				801
1988 BC	1993 02 20.41297	15 02 29.00	-01 47 58.4				801
1988 BK2	1993 02 18.35766	13 34 00.44	+20 37 39.7				801
1988 BK2	1993 02 18.38942	13 34 00.03	+20 37 50.2				801

1988	BK2	1993	02	20.34660	13 33 34.28	+20	48	44.1		801
1988	BK2	1993	02	20.37895	13 33 33.74	+20	48	54.3		801
1988	CA	1993	02	18.35561	13 30 04.95	-02	15	32.4		801
1988	CA	1993	02	18.38450	13 30 05.34	-02	15	21.3		801
1988	CA	1993	02	20.33279	13 30 30.73	-02	02	42.9		801
1988	CW4	1993	02	21.15229	08 52 01.61	+07	31	09.8	I	801
1988	CW4	1993	02	21.17726	08 52 00.47	+07	31	15.9		801
1988	EB	1993	02	20.31416	13 08 09.15	-00	49	47.6		801
1988	EB	1993	02	20.35897	13 08 08.30	-00	49	44.2		801
1988	EB	1993	02	24.32619	13 06 47.40	-00	43	08.7		801
1988	RO	1993	02	21.16539	08 58 56.83	-01	19	04.5		801
1988	RO	1993	02	21.19521	08 58 55.92	-01	18	58.8		801
1988	RF7	1993	02	21.09997	08 18 11.02	+23	10	47.1		801
1988	RF7	1993	02	21.12020	08 18 10.04	+23	10	50.9		801
1988	RF7	1993	02	26.13397	08 14 41.60	+23	25	36.8		801
1988	RF7	1993	02	26.15560	08 14 40.76	+23	25	39.9		801
1988	TC1	1993	02	20.11084	08 10 31.34	+26	47	07.6		801
1988	TC1	1993	02	20.13403	08 10 30.27	+26	47	04.7		801
1988	TJ2	1993	02	21.24139	09 44 08.60	+20	19	15.9		801
1988	TJ2	1993	02	21.25726	09 44 07.50	+20	19	17.8		801
1988	TJ2	1993	02	26.22786	09 38 38.78	+20	29	26.8		801
1988	TJ2	1993	02	26.24391	09 38 37.72	+20	29	28.3		801
1988	VO5	1993	02	26.03277	05 50 34.72	+31	40	21.8		801
1988	VO5	1993	02	26.05226	05 50 35.85	+31	40	19.9		801
1989	AL1	1993	02	20.30869	13 01 34.76	+05	57	40.0		801
1989	AL1	1993	02	20.33980	13 01 34.30	+05	57	52.1	r	801
1989	AL1	1993	02	26.34443	12 59 43.49	+06	38	20.5	W	801
1989	AL1	1993	02	26.36399	12 59 42.96	+06	38	28.9		801
1989	BN1	1993	02	20.09244	07 10 51.32	+18	00	00.7		801
1989	BN1	1993	02	20.12625	07 10 51.21	+18	00	10.8		801
1989	BN1	1993	02	25.10993	07 11 07.70	+18	23	58.8		801
1989	BN1	1993	02	25.15269	07 11 07.93	+18	24	11.2		801
1989	CA	1993	02	18.28176	11 13 21.36	+02	06	03.1		801
1989	CA	1993	02	18.30074	11 13 20.37	+02	06	08.9		801
1989	CA	1993	02	20.24508	11 11 42.20	+02	16	50.6		801
1989	CA	1993	02	20.25985	11 11 41.40	+02	16	55.7		801
1989	CF	1993	02	20.09670	07 15 12.74	+20	38	25.1		801
1989	CF	1993	02	20.11860	07 15 12.36	+20	38	34.7	W	801
1989	CF	1993	02	24.06794	07 14 21.89	+21	05	02.4		801
1989	CY1	1993	02	21.38692	14 01 41.00	-10	54	30.5	U	801
1989	EL1	1993	02	18.11087	08 27 25.38	+06	18	50.6		801
1989	EL1	1993	02	18.12501	08 27 24.72	+06	18	58.9		801
1989	EL1	1993	02	20.12366	08 25 59.11	+06	38	03.2		801
1989	EL1	1993	02	20.14646	08 25 58.13	+06	38	16.5		801
1989	FL	1993	02	21.21541	09 17 08.02	+21	59	16.5		801
1989	FL	1993	02	21.22862	09 17 07.25	+21	59	16.4		801
1989	GM	1993	01	26.33200	11 30 10.40	+20	01	07.6		801
1989	GM	1993	01	26.34537	11 30 10.27	+20	01	14.2		801
1989	GM	1993	02	20.24884	11 18 56.03	+24	57	35.7		801
1989	GM	1993	02	20.26377	11 18 55.31	+24	57	45.5		801
1989	GM	1993	02	24.23601	11 15 54.79	+25	44	03.6	W	801
1989	GM	1993	02	24.24874	11 15 54.04	+25	44	12.0	W	801
1989	GB4	1993	02	21.11177	08 22 16.69	+20	23	40.5		801
1989	GB4	1993	02	21.13291	08 22 15.82	+20	23	42.5		801
1989	GB4	1993	02	26.13767	08 19 16.22	+20	30	51.6		801
1989	GB4	1993	02	26.16287	08 19 15.32	+20	30	53.5		801
1989	JK	1993	02	20.37538	13 57 44.31	-03	08	26.8	r	801
1989	JK	1993	02	25.36501	14 00 13.48	-02	30	08.1		801
1989	JK	1993	02	25.38211	14 00 13.84	-02	30	00.6		801

1989	LJ	1993	01	19.44933	14	02	49.27	+04 52 26.8	p	801
1989	LJ	1993	02	18.38056	14	30	42.04	+05 35 08.3		801
1989	LJ	1993	02	18.40319	14	30	42.82	+05 35 12.6		801
1989	LJ	1993	02	20.38578	14	31	50.50	+05 42 37.1		801
1989	LJ	1993	02	20.40565	14	31	51.11	+05 42 41.7		801
1989	NB1	1993	02	26.26471	10	34	08.08	+18 04 49.2		801
1989	NB1	1993	02	26.28394	10	34	07.22	+18 04 58.6		801
1989	PE	1993	02	25.06255	05	57	48.26	+02 22 27.9		801
1989	PE	1993	02	26.04042	05	58	25.68	+02 44 31.0	U	801
1989	YF	1993	02	21.01644	04	44	41.02	+17 35 32.9		801
1989	YF	1993	02	21.05016	04	44	42.06	+17 35 41.5		801
1989	YF	1993	02	25.01433	04	47	02.08	+17 52 42.0	U	801
1989	YF	1993	02	25.04552	04	47	03.13	+17 52 49.8	W	801
1990	BW	1993	02	20.32701	13	23	41.31	+23 44 34.7		801
1990	BW	1993	02	20.34280	13	23	41.47	+23 44 54.4		801
1990	BW	1993	02	24.31247	13	24	23.67	+25 12 40.3	W	801
1990	BW	1993	02	24.32284	13	24	23.83	+25 12 53.7	W	801
1990	DA1	1993	02	21.21144	09	12	48.98	+19 59 04.0		801
1990	DA1	1993	02	21.22495	09	12	48.06	+19 59 05.8		801
1990	DA1	1993	02	26.24132	09	07	30.49	+20 04 52.4	w	801
1990	HC1	1993	02	18.10383	07	42	03.51	-05 38 04.6		801
1990	HC1	1993	02	18.11784	07	42	03.07	-05 37 56.6		801
1990	KB1	1993	02	20.26744	11	30	47.57	+14 32 55.5		801
1990	KB1	1993	02	20.28222	11	30	46.83	+14 33 04.5		801
1990	KB1	1993	02	24.23988	11	27	32.19	+15 13 39.4		801
1990	KB1	1993	02	24.25172	11	27	31.57	+15 13 47.0		801
1990	MV	1993	02	20.19568	10	26	17.92	+26 26 26.5		801
1990	MV	1993	02	20.20590	10	26	17.25	+26 26 33.3		801
1990	MV	1993	02	24.19806	10	22	08.23	+26 58 35.3		801
1990	MV	1993	02	24.21137	10	22	07.40	+26 58 41.3		801
1990	MX	1993	02	21.35884	13	16	14.46	+01 21 13.4		801
1990	MX	1993	02	21.41510	13	16	14.17	+01 21 23.8		801
1990	OO2	1993	02	21.31728	11	40	58.64	-06 02 14.5		801
1990	OO2	1993	02	21.33271	11	40	57.82	-06 02 15.1		801
1990	OJ4	1993	02	21.05642	06	51	54.88	+13 57 25.5		801
1990	OJ4	1993	02	21.09097	06	51	54.30	+13 57 23.6		801
1990	OJ4	1993	02	25.10000	06	51	03.70	+13 53 44.8		801
1990	OJ4	1993	02	25.16420	06	51	03.00	+13 53 41.6		801
1990	QS2	1993	02	21.33902	12	21	00.20	-00 08 18.8		801
1990	QS2	1993	02	21.36174	12	20	59.55	-00 08 13.9		801
1990	QB4	1993	02	24.17163	09	21	19.48	+13 00 13.5		801
1990	QB4	1993	02	24.18997	09	21	18.69	+13 00 19.5		801
1990	QB4	1993	02	26.21929	09	19	57.53	+13 10 59.2		801
1990	QB4	1993	02	26.23584	09	19	56.90	+13 11 04.6		801
1990	RE6	1993	02	18.42368	15	09	02.03	-14 29 42.4		801
1990	RE6	1993	02	18.44034	15	09	03.18	-14 29 44.8		801
1990	RE6	1993	02	25.37406	15	17	09.25	-14 42 18.8		801
1990	RE6	1993	02	25.38535	15	17	10.01	-14 42 21.0		801
1990	SG4	1993	02	21.30190	11	23	20.95	-05 09 00.6		801
1990	SG4	1993	02	21.31441	11	23	20.26	-05 08 59.1		801
1990	SG4	1993	02	26.29566	11	18	34.11	-04 54 30.9		801
1990	SG4	1993	02	26.30716	11	18	33.36	-04 54 28.9		801
1990	SP7	1993	02	21.35640	13	08	38.55	-02 51 18.7		801
1990	SP7	1993	02	21.41833	13	08	37.85	-02 51 12.2		801
1990	SP7	1993	02	25.35478	13	07	45.64	-02 43 12.1		801
1990	SP7	1993	02	25.39594	13	07	44.84	-02 43 05.2		801
1990	TN4	1993	02	21.38965	14	10	28.68	+05 23 57.1		801
1990	TN4	1993	02	21.42880	14	10	28.95	+05 24 04.7		801
1990	TN4	1993	02	25.36836	14	10	48.47	+05 37 40.0		801

1990	TN4	1993	02	25.40424	14	10	48.50	+05	37	47.7	801
1990	WK	1993	02	25.24105	10	04	55.05	+25	55	47.3	801
1990	WK	1993	02	25.29235	10	04	52.74	+25	55	57.6	801
1991	PM1	1993	02	18.11424	08	30	03.40	+29	58	28.7	801
1991	PM1	1993	02	18.13339	08	30	02.48	+29	58	32.1	801
1991	PM1	1993	02	21.11602	08	27	45.09	+30	06	21.7	801
1991	PM1	1993	02	21.13615	08	27	44.19	+30	06	25.2	801
1991	PJ5	1993	02	21.20840	09	12	41.36	+14	50	12.1	801
1991	PJ5	1993	02	21.22225	09	12	40.62	+14	50	14.8	801
1991	PJ5	1993	02	24.16215	09	10	14.64	+14	59	59.2	801
1991	PJ5	1993	02	24.17825	09	10	13.89	+15	00	01.8	801
1991	PO10	1993	02	21.08324	08	14	59.44	+10	44	29.1	801
1991	PO10	1993	02	21.10505	08	14	58.51	+10	44	36.1	801
1991	PO10	1993	02	26.08912	08	11	53.48	+11	10	06.0	801
1991	PO10	1993	02	26.11690	08	11	52.54	+11	10	13.6	801
1991	PN13	1993	02	18.17502	08	39	42.32	+25	46	30.1	801
1991	PN13	1993	02	18.19014	08	39	41.52	+25	46	29.3	801
1991	PN13	1993	02	21.12878	08	37	07.77	+25	39	41.7	801
1991	PN13	1993	02	21.14543	08	37	06.90	+25	39	39.6	801
1991	PW17	1993	02	21.14120	08	41	11.77	+12	23	20.1	801
1991	PW17	1993	02	21.15965	08	41	10.89	+12	23	26.4	801
1991	RX2	1993	02	21.23814	09	35	29.35	+08	50	24.8	801
1991	RX2	1993	02	21.25501	09	35	28.34	+08	50	26.6	801
1991	RX2	1993	02	25.20887	09	31	50.25	+09	04	36.8	801
1991	RX2	1993	02	25.22439	09	31	49.41	+09	04	39.9	801
1991	RA16	1993	02	18.17771	08	41	21.83	+20	52	47.4	801
1991	RA16	1993	02	18.19613	08	41	21.03	+20	52	52.4	801
1991	RA16	1993	02	20.15870	08	39	59.81	+21	01	10.3	801
1991	RA16	1993	02	20.17153	08	39	59.28	+21	01	12.9	801
1991	SL1	1993	02	25.21490	09	40	18.98	+20	47	29.0	801
1991	SL1	1993	02	25.23055	09	40	18.01	+20	47	32.4	801
1991	TS4	1993	02	25.25204	10	16	48.96	+12	47	15.8	801
1991	TS4	1993	02	25.28898	10	16	46.42	+12	47	22.7	801
1991	UL2	1993	02	24.24578	11	28	25.97	+09	08	05.3	801
1991	UL2	1993	02	24.25875	11	28	25.40	+09	08	10.4	801
1991	UL2	1993	02	26.30168	11	26	47.70	+09	21	59.1	801
1991	UL2	1993	02	26.31711	11	26	46.94	+09	22	05.6	801
1991	UQ3	1993	02	24.20476	10	39	00.56	+13	30	55.6	801
1991	UQ3	1993	02	26.26729	10	36	54.29	+13	46	07.4	801
1991	UQ3	1993	02	26.28113	10	36	53.42	+13	46	12.5	801
1991	UO4	1993	02	25.30058	10	43	52.16	+07	46	16.7	801
1991	UO4	1993	02	25.32081	10	43	50.86	+07	46	20.2	801
1991	VS	1993	01	25.42436	13	14	25.57	+02	41	58.2	W 801
1991	VS	1993	02	18.39221	13	24	33.17	+03	40	33.7	801
1991	VS	1993	02	20.37169	13	24	37.62	+03	49	44.0	801
1991	VM1	1993	02	20.32367	13	11	31.44	-00	39	07.6	801
1991	VM1	1993	02	20.36907	13	11	31.39	-00	38	56.7	801
1991	VM1	1993	02	25.38877	13	11	20.36	-00	14	04.2	801
1991	VZ1	1993	02	20.29961	12	14	46.84	+15	42	30.0	I 801
1991	VZ1	1993	02	20.31641	12	14	46.26	+15	42	36.3	I 801
1991	VZ1	1993	02	24.28497	12	12	21.04	+16	07	53.7	801
1991	VZ1	1993	02	24.30269	12	12	20.32	+16	08	00.4	801
1991	VH2	1993	02	18.31882	12	22	37.79	+11	04	53.5	801
1991	VH2	1993	02	18.34150	12	22	37.25	+11	05	02.4	801
1991	VH2	1993	02	20.30199	12	21	51.82	+11	18	18.3	801
1992	AJ	1993	02	20.34972	14	15	36.15	+04	01	14.6	801
1992	AJ	1993	02	20.38236	14	15	36.50	+04	01	26.9	801
1992	BX1	1993	02	20.36572	13	31	39.56	+10	38	26.6	801
1992	BX1	1993	02	20.38966	13	31	39.66	+10	38	39.9	801

1992 CE1	1993 02 18.41315	15 42 10.37	-01 55 54.7			801
1992 CE1	1993 02 18.43356	15 42 11.10	-01 55 47.9			801
1992 CE1	1993 02 20.40169	15 43 23.55	-01 44 49.1			801
1992 CE1	1993 02 20.42168	15 43 24.24	-01 44 42.3			801
1992 UG	1993 02 24.98834	03 49 49.66	+20 34 58.2			801
1992 UG	1993 02 24.99718	03 49 50.57	+20 35 02.2			801
1992 UG	1993 02 26.00035	03 51 31.65	+20 42 31.2			801
1992 UG	1993 02 26.00953	03 51 32.60	+20 42 35.2		r	801
1992 UT4	1993 02 24.99390	03 33 35.34	+25 45 09.7			801
1992 UT4	1993 02 25.99697	03 35 07.31	+25 50 21.5			801
1992 UT4	1993 02 26.00337	03 35 07.85	+25 50 22.8			801
1992 VM	1993 02 25.02016	05 08 55.04	+13 12 57.9		U	801
1992 VM	1993 02 25.03456	05 08 56.90	+13 13 08.9		W	801
1992 VM	1993 02 26.01722	05 11 01.80	+13 26 12.9			801
1992 VM	1993 02 26.02539	05 11 02.77	+13 26 19.0			801
1992 WR3	1993 02 24.99113	04 23 33.80	+21 20 41.9			801
1992 WR3	1993 02 25.00679	04 23 34.80	+21 20 48.9			801
1992 WR3	1993 02 26.00669	04 24 35.25	+21 27 39.9			801
1992 WR3	1993 02 26.02138	04 24 36.13	+21 27 45.0			801
1992 WD5	1993 02 18.07059	06 34 13.11	+41 40 23.2			801
1992 WD5	1993 02 18.07381	06 34 13.53	+41 40 19.3			801
1992 WD5	1993 02 20.08941	06 39 04.40	+40 59 12.8			801
1992 WD5	1993 02 20.09878	06 39 05.68	+40 59 00.8			801
1992 YA3	1993 02 20.09481	07 13 43.26	+17 55 34.4		V	801
1992 YA3	1993 02 20.14868	07 13 42.17	+17 55 34.0		V	801
1992 YA3	1993 02 25.11262	07 12 28.99	+17 51 47.9			801
1992 YA3	1993 02 25.17997	07 12 28.16	+17 51 43.8			801
1993 BW3	1993 02 21.26948	10 16 49.54	-01 28 06.2			801
1993 BW3	1993 02 21.27894	10 16 48.59	-01 28 07.1			801
1993 BX3	1993 02 21.29830	11 25 39.99	-07 27 46.3			801
1993 BX3	1993 02 21.31088	11 25 39.99	-07 27 17.4			801
2557 P-L	1993 02 18.16744	08 39 12.44	+25 29 05.3			801
2557 P-L	1993 02 18.18475	08 39 11.30	+25 29 06.4			801
2835 P-L	1993 02 20.18613	09 07 36.18	+29 33 46.6		V	801
2835 P-L	1993 02 20.19306	09 07 35.70	+29 33 44.9			801
1051 T-2	1992 12 25.28313	07 47 30.35	+01 07 08.7			801
1051 T-2	1992 12 25.29862	07 47 29.69	+01 07 08.4			801
1051 T-2	1993 01 21.17795	07 25 07.84	+02 27 32.3			801
1051 T-2	1993 01 21.19406	07 25 07.01	+02 27 37.8			801
1051 T-2	1993 01 27.22490	07 20 16.20	+03 06 25.0			801
1051 T-2	1993 01 27.24384	07 20 15.31	+03 06 32.9			801
2114 T-2	1993 02 25.08661	06 20 02.06	+18 44 48.7			801
2114 T-2	1993 02 25.10690	06 20 02.73	+18 44 50.5			801
2114 T-2	1993 02 26.10593	06 20 38.92	+18 47 24.1			801
(243)	1993 02 18.30975	12 25 36.56	-03 39 42.3			801
(243)	1993 02 18.33935	12 25 35.79	-03 39 38.5			801
(243)	1993 02 20.29397	12 24 44.57	-03 35 12.0			801
(243)	1993 02 20.31887	12 24 43.85	-03 35 08.5			801
(243)	1993 02 24.28756	12 22 45.03	-03 24 29.5			801
(243)	1993 02 24.30522	12 22 44.42	-03 24 25.9			801
(4179)	1993 02 18.10126	07 55 12.53	+21 00 51.0			801
(4179)	1993 02 18.13547	07 55 13.19	+21 00 49.6			801
(4179)	1993 02 20.10594	07 56 04.22	+20 59 16.5			801
(4179)	1993 02 20.15091	07 56 05.28	+20 59 14.1			801
(4708)	1993 02 21.12373	08 30 48.04	+14 36 51.0			801
(4708)	1993 02 21.15616	08 30 47.09	+14 36 53.1			801
(4708)	1993 02 26.14801	08 28 43.88	+14 43 34.0			801
(4708)	1993 02 26.17885	08 28 43.10	+14 43 31.9			801
(5456)	1993 02 24.14161	09 02 35.85	+29 09 41.9			801

(5456)		1993 02 24.15646	09 02 35.01	+29 09 42.8			801
(5456)		1993 02 26.19252	09 00 50.00	+29 10 00.5			801
(5456)		1993 02 26.21187	09 00 48.97	+29 10 00.2			801
(5463)		1993 01 26.04936	03 36 20.47	+24 16 31.1			801
(5468)		1993 02 18.17988	08 45 00.53	+18 28 28.0			801
(5468)		1993 02 18.19351	08 44 59.89	+18 28 34.3			801
(5468)		1993 02 20.16187	08 43 33.11	+18 44 24.5			801
(5468)		1993 02 20.17409	08 43 32.52	+18 44 30.6			801
(5483)		1993 01 25.39998	13 28 58.71	+01 35 10.6			801

808 El Leoncito
D. K. Yeomans, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109
Observer J. G. Sanguin
Ida 93 Catalogue

(243)		1989 09 01.00540	16 39 03.67	-23 08 14.2			808
(243)		1989 09 01.03449	16 39 05.32	-23 08 15.6			808

809 European Southern Observatory
E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium (4)
K. Jager, Universitats Sternwarte, Geismarlandstrasse 11, W-3400 Gottingen, Federal Republic of Germany (6)
Observers E. W. Elst, K. J. Fricke, K. Jager, W. Kollatschny, G. Pizarro, O. Pizarro
Measurers E. W. Elst, K. Jager
1.0-m Schmidt, 3.6-m reflector

1973 SK1		1993 01 23.23587	09 43 07.63	+08 25 49.4		4	809
1973 SK1		1993 01 28.24931	09 40 23.50	+08 43 44.0	18.5	4	809
1973 SK1		1993 01 28.27569	09 40 22.42	+08 43 50.0		4	809
1986 NJ1	*	1986 07 05.41635	23 51 51.3	-01 10 09		6	809
1986 NJ1		1986 07 05.42172	23 51 51.7	-01 10 07	22.0	6	809
1986 NJ1		1986 07 05.43146	23 51 52.3	-01 10 04	22.9	6	809
1986 NJ1		1986 07 05.43590	23 51 52.5	-01 10 04		6	809
1986 NJ1		1986 07 05.44002	23 51 52.7	-01 10 02	21.5	6	809
1991 PJ5		1993 01 23.23587	09 40 56.01	+12 56 07.2		4	809
1991 PJ5		1993 01 28.24931	09 36 17.77	+13 14 42.3	17.8	4	809
1991 PJ5		1993 01 28.27569	09 36 16.16	+13 14 48.1		4	809
1993 BS3		1993 01 23.23587	09 36 42.06	+10 01 11.1		4	809
1993 BS3		1993 01 28.24931	09 31 52.94	+09 56 54.0	17.9	4	809
1993 BS3		1993 01 28.27569	09 31 51.14	+09 56 53.2		4	809
1993 BS6		1993 01 23.23587	09 36 06.14	+11 09 43.2		4	809
1993 BS6		1993 01 28.24931	09 31 25.22	+10 54 14.8	18.1	4	809
1993 BS6		1993 01 28.27569	09 31 23.57	+10 54 09.7		4	809
1993 BS13	*	1993 01 23.23587	09 27 18.45	+08 37 15.6		4	809
1993 BS13		1993 01 28.24931	09 22 55.05	+09 01 00.7	19.0	4	809
1993 BS13		1993 01 28.27569	09 22 53.63	+09 01 08.0		4	809
1993 BT13	*	1993 01 23.23587	09 27 54.75	+09 13 24.0		4	809
1993 BT13		1993 01 28.24931	09 22 59.15	+09 27 06.4	18.7	4	809
1993 BT13		1993 01 28.27569	09 22 57.35	+09 27 10.4		4	809
1993 BU13	*	1993 01 23.23587	09 28 09.72	+10 43 59.7		4	809
1993 BU13		1993 01 28.24931	09 24 35.26	+11 12 16.3	18.3	4	809
1993 BU13		1993 01 28.27569	09 24 33.92	+11 12 25.3		4	809
1993 BV13	*	1993 01 23.23587	09 28 38.49	+09 26 48.5		4	809
1993 BV13		1993 01 28.24931	09 23 36.74	+09 49 21.0	18.6	4	809
1993 BV13		1993 01 28.27569	09 23 34.89	+09 49 27.1		4	809
1993 BW13	*	1993 01 23.23587	09 29 00.15	+08 51 40.2		4	809
1993 BW13		1993 01 28.24931	09 23 58.88	+09 05 38.2	18.7	4	809
1993 BW13		1993 01 28.27569	09 23 57.08	+09 05 43.8		4	809

1993	BX13	*	1993	01	23.23587	09	29	44.94	+08	11	21.7		4	809
1993	BX13		1993	01	28.24931	09	24	53.20	+08	38	59.8	18.3	4	809
1993	BX13		1993	01	28.27569	09	24	51.50	+08	39	08.0		4	809
1993	BY13	*	1993	01	23.23587	09	29	47.03	+10	24	26.3		4	809
1993	BY13		1993	01	28.24931	09	24	30.07	+10	36	48.1	18.5	4	809
1993	BY13		1993	01	28.27569	09	24	28.29	+10	36	51.2		4	809
1993	BZ13	*	1993	01	23.23587	09	31	58.25	+09	49	10.1		4	809
1993	BZ13		1993	01	28.24931	09	27	59.17	+10	29	58.7	18.6	4	809
1993	BZ13		1993	01	28.27569	09	27	57.66	+10	30	12.1		4	809
1993	BA14	*	1993	01	23.23587	09	32	16.91	+12	12	02.0		4	809
1993	BA14		1993	01	28.24931	09	28	45.59	+12	39	07.6	18.5	4	809
1993	BA14		1993	01	28.27569	09	28	44.39	+12	39	15.9		4	809
1993	BB14	*	1993	01	23.23587	09	33	37.98	+11	11	15.2		4	809
1993	BB14		1993	01	28.24931	09	28	43.28	+11	15	25.1	18.0	4	809
1993	BB14		1993	01	28.27569	09	28	41.53	+11	15	25.9		4	809
1993	BC14	*	1993	01	23.23587	09	34	43.43	+09	50	40.2		4	809
1993	BC14		1993	01	28.24931	09	29	21.85	+10	00	52.9	19.0	4	809
1993	BC14		1993	01	28.27569	09	29	20.03	+10	00	55.5		4	809
1993	BD14	*	1993	01	23.23587	09	35	01.01	+09	38	14.8		4	809
1993	BD14		1993	01	28.24931	09	29	43.75	+09	52	43.8	18.5	4	809
1993	BD14		1993	01	28.27569	09	29	42.03	+09	52	48.1		4	809
1993	BE14	*	1993	01	23.23587	09	35	17.85	+11	55	54.7		4	809
1993	BE14		1993	01	28.24931	09	31	45.80	+12	14	24.3	18.5	4	809
1993	BE14		1993	01	28.27569	09	31	44.51	+12	14	28.8		4	809
1993	BF14	*	1993	01	23.23587	09	35	42.36	+11	55	47.9		4	809
1993	BF14		1993	01	28.24931	09	31	49.68	+12	40	57.9	18.2	4	809
1993	BF14		1993	01	28.27569	09	31	48.26	+12	41	12.2		4	809
1993	BG14	*	1993	01	23.23587	09	35	46.67	+07	54	01.6		4	809
1993	BG14		1993	01	28.24931	09	32	11.42	+08	05	39.8	18.6	4	809
1993	BG14		1993	01	28.27569	09	32	10.06	+08	05	43.3		4	809
1993	BH14	*	1993	01	23.23587	09	36	19.68	+10	37	19.7		4	809
1993	BH14		1993	01	28.24931	09	31	37.03	+10	46	45.6	18.6	4	809
1993	BH14		1993	01	28.27569	09	31	35.39	+10	46	47.8		4	809
1993	BJ14	*	1993	01	23.23587	09	37	22.31	+09	42	18.5		4	809
1993	BJ14		1993	01	28.24931	09	33	16.61	+09	49	22.1	18.8	4	809
1993	BJ14		1993	01	28.27569	09	33	15.08	+09	49	24.4		4	809
1993	BK14	*	1993	01	23.23587	09	38	21.59	+09	34	37.1		4	809
1993	BK14		1993	01	28.24931	09	34	06.19	+09	38	49.9	18.4	4	809
1993	BK14		1993	01	28.27569	09	34	04.58	+09	38	51.4		4	809
1993	BL14	*	1993	01	23.23587	09	38	28.66	+09	26	20.8		4	809
1993	BL14		1993	01	28.24931	09	34	53.22	+09	48	18.8	19.1	4	809
1993	BL14		1993	01	28.27569	09	34	51.84	+09	48	26.2		4	809
1993	BM14	*	1993	01	23.23587	09	38	37.43	+11	54	54.6		4	809
1993	BM14		1993	01	28.24931	09	35	01.71	+12	34	40.2	18.5	4	809
1993	BM14		1993	01	28.27569	09	35	00.29	+12	34	53.5		4	809
1993	BN14	*	1993	01	23.23587	09	39	43.47	+08	03	31.1		4	809
1993	BN14		1993	01	28.24931	09	35	20.31	+08	15	18.9	18.0	4	809
1993	BN14		1993	01	28.27569	09	35	18.67	+08	15	22.8		4	809
1993	BO14	*	1993	01	23.23587	09	40	20.13	+12	26	04.7		4	809
1993	BO14		1993	01	28.24931	09	36	03.08	+12	46	11.1	18.6	4	809
1993	BO14		1993	01	28.27569	09	36	01.53	+12	46	16.6		4	809
1993	BP14	*	1993	01	23.23587	09	40	32.94	+11	48	32.5		4	809
1993	BP14		1993	01	28.24931	09	36	13.97	+11	55	15.1	18.3	4	809
1993	BP14		1993	01	28.27569	09	36	12.33	+11	55	16.8		4	809
1993	BQ14	*	1993	01	23.23587	09	40	58.23	+09	55	49.0		4	809
1993	BQ14		1993	01	28.24931	09	36	47.53	+10	28	26.2	18.5	4	809
1993	BQ14		1993	01	28.27569	09	36	45.92	+10	28	37.2		4	809
1993	BR14	*	1993	01	23.23587	09	43	04.00	+10	09	20.0		4	809
1993	BR14		1993	01	28.24931	09	39	03.62	+10	29	13.8	18.3	4	809

1993 BR14		1993	01	28.27569	09	39	02.18	+10	29	19.8			4	809
1993 BS14	*	1993	01	23.23587	09	43	12.95	+12	06	06.0			4	809
1993 BS14		1993	01	28.24931	09	39	32.41	+12	19	06.2		18.7	4	809
1993 BS14		1993	01	28.27569	09	39	31.09	+12	19	10.5			4	809
1993 BT14	*	1993	01	23.23587	09	43	22.48	+08	48	02.6			4	809
1993 BT14		1993	01	28.24931	09	39	16.68	+09	02	54.7		18.5	4	809
1993 BT14		1993	01	28.27569	09	39	15.17	+09	03	00.3			4	809
1993 BU14	*	1993	01	23.23587	09	43	33.19	+09	01	51.0			4	809
1993 BU14		1993	01	28.24931	09	38	42.40	+09	17	11.0		18.7	4	809
1993 BU14		1993	01	28.27569	09	38	40.60	+09	17	15.7			4	809
1993 BV14	*	1993	01	23.23587	09	43	43.01	+08	39	55.2			4	809
1993 BV14		1993	01	28.24931	09	38	57.96	+08	31	42.6		18.5	4	809
1993 BV14		1993	01	28.27569	09	38	56.12	+08	31	38.9			4	809
1993 BW14	*	1993	01	23.23587	09	44	35.45	+08	59	16.1			4	809
1993 BW14		1993	01	28.24931	09	40	55.06	+09	15	36.8		18.8	4	809
1993 BW14		1993	01	28.27569	09	40	53.65	+09	15	44.3			4	809
1993 BX14	*	1993	01	23.23587	09	44	57.76	+11	34	11.7			4	809
1993 BX14		1993	01	28.24931	09	41	02.54	+11	48	47.1		18.6	4	809
1993 BX14		1993	01	28.27569	09	41	01.06	+11	48	51.6			4	809
1993 BY14	*	1993	01	23.17977	09	25	19.15	+10	14	12.5		19.0	4	809
1993 BY14		1993	01	23.19293	09	25	18.38	+10	14	15.9			4	809
1993 BY14		1993	01	23.20609	09	25	17.52	+10	14	17.7			4	809
1993 BY14		1993	01	28.20556	09	20	01.85	+10	28	08.2			4	809
1993 BY14		1993	01	28.21875	09	20	00.98	+10	28	10.9			4	809
1993 BY14		1993	01	28.23194	09	20	00.08	+10	28	13.4			4	809
1993 BZ14	*	1993	01	23.17977	09	25	45.23	+10	07	48.1		19.2	4	809
1993 BZ14		1993	01	23.19293	09	25	44.58	+10	07	50.3			4	809
1993 BZ14		1993	01	23.20609	09	25	43.96	+10	07	52.9			4	809
1993 BZ14		1993	01	28.20556	09	21	22.84	+10	33	26.3			4	809
1993 BZ14		1993	01	28.21875	09	21	22.06	+10	33	32.0			4	809
1993 BZ14		1993	01	28.23194	09	21	21.31	+10	33	35.1			4	809
(248)		1993	01	23.23587	09	37	47.86	+07	49	03.4		14.0	4	809
(1280)		1993	01	23.23587	09	32	32.67	+10	58	42.4			4	809
(1280)		1993	01	28.24931	09	28	56.39	+11	08	00.2		16.8	4	809
(1280)		1993	01	28.27569	09	28	55.03	+11	08	02.7			4	809
(1434)		1993	01	28.24931	09	21	15.92	+10	38	47.4		17.0	4	809
(1434)		1993	01	28.27569	09	21	14.56	+10	38	56.8			4	809
(1536)		1993	01	23.23587	09	33	15.99	+12	10	41.8			4	809
(1536)		1993	01	28.24931	09	28	06.89	+12	36	09.7		17.5	4	809
(1536)		1993	01	28.27569	09	28	05.09	+12	36	17.2			4	809
(1837)		1993	01	23.23587	09	43	40.04	+09	40	08.5			4	809
(1837)		1993	01	28.24931	09	38	58.99	+09	50	47.6		18.0	4	809
(1837)		1993	01	28.27569	09	38	57.27	+09	50	50.9			4	809
(2299)		1993	01	23.23587	09	31	26.94	+09	48	53.7			4	809
(2299)		1993	01	28.24931	09	27	13.42	+10	12	01.5		18.7	4	809
(2299)		1993	01	28.27569	09	27	11.98	+10	12	07.3			4	809
(3421)		1993	01	23.23587	09	40	17.43	+09	25	47.5			4	809
(3421)		1993	01	28.24931	09	35	41.28	+09	42	24.1		17.8	4	809
(3421)		1993	01	28.27569	09	35	39.59	+09	42	29.6			4	809
(3436)		1993	01	23.23587	09	38	28.29	+11	59	23.6			4	809
(3436)		1993	01	28.24931	09	34	37.86	+12	18	52.7		18.1	4	809
(3436)		1993	01	28.27569	09	34	36.49	+12	18	58.6			4	809
(3618)		1993	01	23.23587	09	30	36.25	+11	56	45.5			4	809
(3618)		1993	01	28.24931	09	26	59.83	+12	12	52.7		18.5	4	809
(3618)		1993	01	28.27569	09	26	58.60	+12	12	57.7			4	809
(3742)		1993	01	23.23587	09	38	34.67	+11	37	58.1			4	809
(3742)		1993	01	28.24931	09	34	41.35	+12	02	08.9		18.0	4	809
(3742)		1993	01	28.27569	09	34	39.91	+12	02	16.7			4	809

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 (3935)          1993 01 23.23587  09 42 33.49  +09 50 00.5           4  809
 (3935)          1993 01 28.24931  09 37 31.82  +09 53 22.1   17.7    4  809
 (3935)          1993 01 28.27569  09 37 30.01  +09 53 23.6           4  809
 (4908)          1993 01 23.23587  09 29 31.71  +08 26 00.7           4  809
 (4908)          1993 01 28.24931  09 24 26.15  +08 52 30.9   18.4    4  809
 (4908)          1993 01 28.27569  09 24 24.31  +08 52 39.8           4  809
 (4918)          1993 01 23.23587  09 43 54.14  +10 52 34.1           4  809
 (4918)          1993 01 28.24931  09 39 31.84  +11 14 30.3   18.2    4  809
 (4918)          1993 01 28.27569  09 39 30.25  +11 14 37.8           4  809
 (5051)          1993 01 23.23587  09 30 25.66  +07 52 15.5           4  809
 (5051)          1993 01 28.24931  09 25 32.40  +08 03 58.2   18.3    4  809
 (5051)          1993 01 28.27569  09 25 30.68  +08 04 01.3           4  809

868 Hidaka Observatory
Observer S. Shirai
Measurer S. Hayakawa
0.25-m f/3.4 Reflector
GSC
Long. and Parallax 135.1359, 0.83066, +0.55492 (see MPC 19348)
 1988 XY1        1993 02 19.77692  11 45 18.69  -01 42 34.4   16.5      868
 1988 XY1        1993 02 19.80855  11 45 17.23  -01 42 29.9             868
 (5125)          1993 02 19.72749  11 41 38.89  +06 46 23.6   17.0      868
 (5125)          1993 02 19.75864  11 41 37.40  +06 46 29.6             868

877 Okutama
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Observer T. Hioki
Measurers S. Hayakawa, T. Hioki
0.30-m f/3.8 hyperboloid astrocamera
GSC
 1993 CA1        1993 02 19.62917  09 17 57.32  +15 12 46.4             877
 1993 CA1        1993 02 19.65486  09 17 55.38  +15 12 45.0             877
 1993 CJ1      * 1993 02 15.66389  11 33 09.12  +02 59 11.4   17.0      877
 1993 CJ1        1993 02 15.69253  11 33 08.26  +02 59 29.1             877
 1993 CJ1        1993 02 20.60694  11 30 30.75  +03 53 31.2             877
 1993 CJ1        1993 02 20.63681  11 30 29.58  +03 53 47.2             877
 1993 CJ1        1993 02 23.74097  11 28 35.49  +04 29 55.3             877
 1993 CJ1        1993 02 23.76389  11 28 34.59  +04 30 10.4             877
 1993 DZ       * 1993 02 20.55833  10 24 32.08  +11 13 09.2   16.5      877
 1993 DZ         1993 02 20.58611  10 24 30.72  +11 13 25.2             877
 1993 DZ         1993 02 23.69722  10 21 47.54  +11 49 43.6             877
 1993 DZ         1993 02 23.72271  10 21 46.05  +11 49 59.6             877
 1993 DZ         1993 02 25.69931  10 20 02.09  +12 12 59.2             877
 1993 DZ         1993 02 25.72292  10 20 00.91  +12 13 16.7             877
 1993 DZ         1993 03 02.72292  10 15 40.35  +13 10 27.5             877
 1993 DZ         1993 03 02.74653  10 15 39.08  +13 10 41.3             877
 1993 DA1        1993 01 30.83333  10 39 47.55  +09 22 37.1   16.5      877
 1993 DA1        1993 01 30.85625  10 39 47.15  +09 22 43.3             877
 1993 DA1      * 1993 02 20.55833  10 26 04.89  +11 50 39.4   15.5      877
 1993 DA1        1993 02 20.58611  10 26 03.71  +11 50 52.7             877
 1993 DA1        1993 02 23.69722  10 23 44.31  +12 13 55.8             877
 1993 DA1        1993 02 23.72271  10 23 43.18  +12 14 06.1             877
 1993 DA1        1993 02 25.69931  10 22 14.91  +12 28 34.6             877
 1993 DA1        1993 02 25.72292  10 22 13.68  +12 28 44.6             877
 1993 DB1      * 1993 02 20.70486  12 22 37.70  -02 01 41.1   16.5      877
 1993 DB1        1993 02 20.77882  12 22 35.86  -02 01 31.0             877
 1993 DB1        1993 02 23.78426  12 21 29.05  -01 53 43.2             877
 1993 DB1        1993 02 23.82569  12 21 28.23  -01 53 38.6             877
```

1993 DB1		1993 02 25.74132	12 20 36.75	-01 47 43.4			877
1993 DB1		1993 02 25.76632	12 20 36.01	-01 47 35.9			877
1993 DJ2	*	1993 02 25.65972	10 30 35.95	+09 01 23.7			877
1993 DJ2		1993 02 25.68264	10 30 34.27	+09 01 16.8			877
1993 DJ2		1993 03 02.68264	10 24 43.33	+08 40 08.6	17.0		877
1993 DJ2		1993 03 02.70602	10 24 41.55	+08 39 59.6			877
(2010)		1993 02 23.69722	10 22 43.11	+12 19 32.9	16.0		877
(2010)		1993 02 23.72271	10 22 41.88	+12 19 38.6			877
(2010)		1993 02 25.69931	10 21 06.67	+12 27 31.3			877
(2010)		1993 02 25.72292	10 21 05.55	+12 27 36.9			877
(5467)		1993 02 17.66979	10 38 11.02	+10 10 57.4			877
(5467)		1993 02 17.70104	10 38 09.07	+10 10 55.6			877

881 Toyota
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observer K. Suzuki
Measurers A. Natori, T. Urata
0.25-m f/4.2 Wright-Schmidt camera
GSC

1993 DX	*	1993 02 24.56875	11 37 52.30	+08 01 56.9	16		881
1993 DX		1993 02 24.58125	11 37 51.80	+08 02 02.0			881
1993 DX		1993 02 25.56389	11 37 14.33	+08 11 14.3	16		881
1993 DX		1993 02 25.57639	11 37 13.70	+08 11 22.9			881
1993 DX		1993 03 13.54722	11 25 21.84	+10 43 40.3	16.5		881
1993 DX		1993 03 13.55347	11 25 21.56	+10 43 43.0			881
1993 DX		1993 03 13.55972	11 25 21.03	+10 43 47.0			881

885 JCPM Yakiimo Station
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observer A. Natori
Measurers A. Natori, T. Urata
0.25-m f/3.4 hyperboloid astrocamera
GSC

1993 BL3		1993 02 13.67326	09 23 51.33	+29 46 22.4	16		885
1993 BL3		1993 02 13.68438	09 23 50.49	+29 46 24.2			885
1993 BP3		1993 02 13.62778	10 11 28.75	+11 05 18.8	16		885
1993 BP3		1993 02 13.63403	10 11 28.04	+11 05 12.8			885
1993 BP3		1993 03 02.61424	09 45 16.33	+08 18 44.9	16.8		885
1993 CQ1	*	1993 02 15.64861	11 14 49.02	+01 06 56.0	16.5		885
1993 CQ1		1993 02 15.66389	11 14 48.52	+01 07 04.5			885
1993 CQ1		1993 02 23.65104	11 09 40.92	+02 39 43.4	15.5		885
1993 CQ1		1993 02 23.65799	11 09 40.63	+02 39 48.5			885
1993 DG2	*	1993 02 24.66354	11 34 27.15	+10 24 55.7	16.5		885
1993 DG2		1993 02 24.67049	11 34 26.81	+10 25 00.5			885
1993 DG2		1993 03 02.62326	11 29 53.20	+11 26 56.3	16.5		885
1993 DG2		1993 03 02.63715	11 29 52.24	+11 27 03.0			885

894 Otomo
S. Otomo, Kiyosato 3545-3902, Takane-cho, Kitakoma-gun, Yamanashi-ken, 407-03, Japan
0.25-m f/3.4 reflector
PPM

1966 BB		1993 02 10.50538	09 13 45.11	+18 15 03.8	16.5		894
1966 BB		1993 02 10.51736	09 13 44.52	+18 15 10.9			894
1966 BB		1993 02 11.51530	09 12 47.74	+18 24 39.8	16.3		894
1966 BB		1993 02 11.52778	09 12 47.04	+18 24 46.6			894
1991 QD		1993 02 25.63669	11 09 19.22	-01 20 56.2	17.0		894
1991 QD		1993 02 25.65104	11 09 18.30	-01 20 53.9			894

1991 QD		1993 03 01.67083	11 05 02.77	-01 04 18.3	17.3	894
1991 QD		1993 03 01.68472	11 05 01.88	-01 04 14.2		894
1991 QD		1993 03 13.59144	10 52 23.88	-00 07 06.7	17.0	894
1991 QD		1993 03 13.60451	10 52 23.07	-00 07 04.5		894
1991 QD		1993 03 14.54444	10 51 25.89	-00 02 17.7		894
1992 WT1		1992 12 22.49514	03 56 31.29	+17 59 33.2	16.5	894
1992 WT1		1992 12 22.50833	03 56 30.90	+17 59 35.9		894
1992 WT1		1992 12 26.54757	03 54 34.50	+18 13 12.1	16.8	894
1992 WT1		1992 12 26.56146	03 54 34.25	+18 13 11.9		894
1992 WR3		1992 12 22.52083	04 15 58.43	+14 13 04.3	16.5	894
1992 WR3		1992 12 22.53333	04 15 57.67	+14 13 08.7		894
1992 WR3		1992 12 26.57431	04 12 50.19	+14 35 09.8	17.0	894
1992 WR3		1992 12 26.58718	04 12 49.65	+14 35 12.2		894
1992 WR3		1992 12 29.58576	04 10 46.96	+14 52 19.4	16.8	894
1992 WR3		1993 01 17.57847	04 04 05.48	+16 52 10.1	17.0	894
1992 WR3		1993 01 17.60486	04 04 05.30	+16 52 21.8		894
1992 XE		1993 01 22.57847	05 12 45.08	+22 45 26.0	17.2	894
1992 XE		1993 01 22.60000	05 12 44.72	+22 45 31.1		894
1992 YS2		1993 01 22.57847	05 11 36.52	+24 07 10.6	17.4	894
1992 YS2		1993 01 22.60000	05 11 36.25	+24 07 10.8		894
1993 CU		1993 02 18.65714	10 00 20.87	+14 04 32.5	16.5	894
1993 CU		1993 02 18.67083	10 00 20.10	+14 04 32.5		894
1993 CU		1993 02 25.55278	09 53 44.21	+14 08 27.9	17.2	894
1993 CU		1993 02 25.56806	09 53 43.33	+14 08 28.3		894
1993 CJ1		1993 03 01.69861	11 24 33.53	+05 42 08.1	16.7	894
1993 CJ1		1993 03 01.71250	11 24 32.94	+05 42 17.5		894
1993 CJ1		1993 03 02.69624	11 23 50.73	+05 54 27.3		894
1993 CJ1		1993 03 02.70938	11 23 50.15	+05 54 37.5		894
1993 CQ1		1993 02 25.66493	11 08 15.82	+03 04 27.4	15.8	894
1993 CQ1		1993 02 25.67813	11 08 15.22	+03 04 37.1		894
1993 DB		1993 02 24.63438	10 44 43.07	+12 55 07.3	16.0	894
1993 DB		1993 02 24.64902	10 44 42.13	+12 55 11.7		894
1993 DB		1993 03 01.64340	10 39 24.37	+13 13 12.4	16.0	894
1993 DB		1993 03 01.65660	10 39 23.45	+13 13 15.6		894
1993 EH	*	1993 03 01.72651	11 34 38.41	-00 06 54.0	16.2	894
1993 EH		1993 03 01.74028	11 34 37.80	-00 06 46.2		894
1993 EH		1993 03 02.67049	11 33 57.24	+00 02 44.5		894
1993 EH		1993 03 02.68229	11 33 56.73	+00 02 51.2		894
1993 EH		1993 03 13.56667	11 25 21.30	+02 02 22.6	15.8	894
1993 EH		1993 03 13.57847	11 25 20.76	+02 02 29.8		894
1993 EH		1993 03 14.55706	11 24 33.02	+02 13 40.3	16.0	894
1993 EH		1993 03 14.56944	11 24 32.44	+02 13 48.4		894
(1335)		1993 02 25.69167	11 16 51.42	+03 57 33.6	17.0	894
(1335)		1993 02 25.70556	11 16 50.68	+03 57 39.4		894
(1542)		1993 02 25.66493	11 09 27.68	+02 18 36.0		894
(1542)		1993 02 25.67813	11 09 27.08	+02 18 39.8		894
(1549)		1992 12 22.49514	04 00 43.46	+18 48 55.0	16.0	894
(1549)		1992 12 22.50833	04 00 42.80	+18 48 57.0		894
(1549)		1992 12 26.54757	03 58 02.20	+18 58 01.6	15.8	894
(1549)		1992 12 26.56146	03 58 01.68	+18 58 03.8		894
(5488)		1992 12 29.76528	08 40 08.39	+24 11 40.0	16.5	894
(5488)		1992 12 29.77951	08 40 07.79	+24 11 44.6		894
(5488)		1993 01 04.78920	08 36 06.96	+24 46 56.7	16.5	894
(5488)		1993 01 04.80243	08 36 06.11	+24 47 01.7		894

896 Yatsugatake South Base Observatory
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Observer Y. Kushida
Measurer O. Muramatsu
0.25-m f/3.4 reflector
PPM

1993 AT		1993 01 29.60243	07 27 50.3	+31 29 16			W	896
1993 BL12		1993 02 19.60729	09 35 32.5	+21 54 10			W	896
1993 BL12		1993 02 19.64479	09 35 30.3	+21 54 22			W	896
1993 CK1	*	1993 02 15.70903	10 57 10.07	+20 07 58.9	16.5			896
1993 CK1		1993 02 17.69444	10 55 20.9	+20 16 20			W	896
1993 CK1		1993 02 17.71875	10 55 19.60	+20 16 25.2				896
1993 CK1		1993 02 24.61285	10 48 35.14	+20 41 46.6				896
1993 CK1		1993 02 24.63924	10 48 33.32	+20 41 50.4				896
1993 CK1		1993 03 01.71701	10 43 23.18	+20 55 44.3				896
1993 CK1		1993 03 01.74288	10 43 21.47	+20 55 46.6				896
1993 DB		1993 02 15.65347	10 53 42.85	+12 19 29.4	16.5			896
1993 DB		1993 02 15.68646	10 53 41.07	+12 19 36.9				896
1993 DB		1993 02 17.63507	10 51 50.13	+12 27 25.5				896
1993 DB		1993 02 17.67170	10 51 47.88	+12 27 34.5				896
1993 DC1	*	1993 02 24.72500	11 57 43.9	+03 50 58	17.0		W	896
1993 DC1		1993 02 24.75990	11 57 42.4	+03 51 11			W	896
1993 DC1		1993 02 25.71354	11 57 04.4	+03 57 23			W	896
1993 DC1		1993 02 25.74167	11 57 03.2	+03 57 31			W	896
1993 DD1	*	1993 02 24.72500	12 02 58.3	+04 27 09	17.0		W	896
1993 DD1		1993 02 24.75990	12 02 56.6	+04 27 13			W	896
1993 DD1		1993 02 25.71354	12 02 10.7	+04 30 29			W	896
1993 DD1		1993 02 25.74167	12 02 09.3	+04 30 36			W	896
1993 DD1		1993 03 01.72882	11 58 42.5	+04 44 58			W	896
1993 DD1		1993 03 01.75625	11 58 40.8	+04 45 06			W	896
1993 DF1		1993 02 24.73646	11 59 54.24	+08 48 35.6	16.5			896
1993 DF1		1993 02 24.77153	11 59 52.78	+08 48 52.1				896
1993 DF1		1993 02 25.72604	11 59 13.31	+08 57 14.8				896
1993 DF1		1993 02 25.75313	11 59 12.10	+08 57 30.2				896
1993 EB	*	1993 03 01.76979	12 13 51.6	+02 04 52	16.5		W	896
1993 EB		1993 03 01.79688	12 13 50.5	+02 04 58			W	896
1993 EB		1993 03 02.72604	12 13 15.8	+02 09 48			W	896
1993 EB		1993 03 02.76076	12 13 14.4	+02 09 58			W	896
1993 EC	*	1993 03 02.72604	12 18 29.1	+00 56 23	16.5		E	896
1993 EC		1993 03 02.76076	12 18 27.6	+00 56 33			E	896
1993 EC		1993 03 04.81250	12 17 03.53	+01 03 50.4				896

905 Nachi-Katsuura Observatory
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observer Y. Shimizu
Measurer T. Urata
0.30-m f/3.8 hyperboloid astrocamera
GSC

1990 RB		1993 02 25.61528	11 22 45.72	-07 15 19.0	17.3			905
1990 RB		1993 02 25.62234	11 22 45.46	-07 15 15.8				905
1990 RB		1993 02 25.62940	11 22 45.19	-07 15 15.7				905

950 La Palma
O. C. Dahl, Institute of Theoretical Astrophysics, P.O. Box 1029,
N-0315 Blindern, Oslo, Norway
Observers M. C. Omang, O. C. Dahl
Measurer O. C. Dahl
2.6-m Nordic Optical Telescope + CCD
GSC

1988 RF1	1993	01	22.16875	09	24	18.51	+38	20	43.3	17.5	950
1988 RF1	1993	01	22.20775	09	24	16.99	+38	20	48.3	17.5	950
1988 RF1	1993	01	23.16338	09	23	40.58	+38	22	50.5	17.9	950
1988 RF1	1993	01	23.19220	09	23	39.53	+38	22	54.8	17.9	950
1988 RF1	1993	02	18.01288	09	06	35.30	+38	45	02.7	17.6	950
1988 RF1	1993	02	18.03239	09	06	34.52	+38	45	02.5	17.6	950
1988 RH13	1993	01	22.26530	09	50	06.87	+33	49	30.0	18	950
1988 RH13	1993	01	22.28376	09	50	06.26	+33	49	34.1	18	950
1988 RH13	1993	01	23.17935	09	49	37.81	+33	52	54.5	18	950
1988 RH13	1993	01	23.22586	09	49	36.28	+33	53	04.5	18	950
1988 RH13	1993	02	16.97354	09	34	54.81	+35	01	22.5	18.1	950
1988 RH13	1993	02	16.99872	09	34	53.86	+35	01	25.1	18.1	950
1988 SL3	1993	01	23.14789	08	52	42.73	+21	05	46.2	18.4	950
1988 SL3	1993	01	23.15160	08	52	42.61	+21	05	47.2	18.4	950
1988 SL3	1993	01	23.18219	08	52	41.62	+21	05	55.2	18.4	950
1988 SL3	1993	01	23.18648	08	52	41.49	+21	05	56.4	18.4	950
1988 SL3	1993	02	18.00662	08	39	22.60	+22	52	14.1	17.9	950
1988 SL3	1993	02	18.02893	08	39	21.91	+22	52	18.5	17.9	950
1988 TH1	1993	01	22.15791	08	38	19.07	+08	38	06.4	17.0	950
1988 TH1	1993	01	22.20587	08	38	17.63	+08	38	13.1	17.0	950
1988 TH1	1993	01	23.16074	08	37	49.47	+08	40	29.8	17.0	950
1988 TH1	1993	01	23.19039	08	37	48.58	+08	40	34.0	17.0	950
1988 TH1	1993	02	15.90832	08	26	29.03	+09	45	35.1	17.6	950
1988 TH1	1993	02	15.94633	08	26	28.00	+09	45	42.5	17.6	950
1988 TH1	1993	02	16.91112	08	26	03.22	+09	48	33.2	17.8	950
1988 TH1	1993	02	16.95793	08	26	01.99	+09	48	41.5	17.8	950
3016 P-L	1993	01	23.23068	13	12	52.09	-18	00	25.9		950
3016 P-L	1993	01	23.26138	13	12	52.95	-18	00	34.4		950
(2060)	1993	01	22.07806	09	27	37.88	+07	22	38.8	15.3	950
(2060)	1993	01	22.10635	09	27	37.41	+07	22	40.6	15.3	950
(2060)	1993	01	22.11508	09	27	37.27	+07	22	41.1	15.3	950
(2060)	1993	01	22.13755	09	27	36.90	+07	22	42.6	15.3	950
(2060)	1993	01	23.07772	09	27	21.79	+07	23	46.3	15.4	950
(2060)	1993	01	23.10861	09	27	21.28	+07	23	48.5	15.4	950
(2060)	1993	02	16.91669	09	20	16.13	+07	58	52.2	15.8	950
(2060)	1993	02	16.96142	09	20	15.35	+07	58	56.5	15.8	950
(2651)	1993	01	23.19836	13	40	33.0	+07	29	13	18 r	950
(2651)	1993	01	23.23449	13	40	33.7	+07	29	22	18 r	950
(4707)	1993	02	16.91372	09	07	52.37	+15	22	54.8	17.3	950
(4707)	1993	02	16.95957	09	07	50.93	+15	22	59.1	17.3	950
(4722)	1993	01	22.21956	09	22	28.44	+25	48	23.5	16.6	950
(4722)	1993	01	22.25293	09	22	27.40	+25	48	29.3	16.6	950
(4722)	1993	01	23.17009	09	21	58.84	+25	51	21.5	16.6	950
(4722)	1993	01	23.21013	09	21	57.56	+25	51	28.9	16.6	950
(4722)	1993	02	15.97365	09	08	58.65	+26	53	04.1	17.0	950
(4722)	1993	02	15.99899	09	08	57.83	+26	53	07.1	17.0	950
(5119)	1993	01	22.09420	08	54	24.84	+20	18	45.9	17.4	950
(5119)	1993	01	22.12703	08	54	23.72	+20	18	47.7	17.4	950
(5119)	1993	02	15.90609	08	40	38.76	+20	36	10.7	16.9	950
(5119)	1993	02	15.94334	08	40	37.58	+20	36	11.8	16.9	950
(5120)	1993	01	22.09642	08	52	24.37	+08	50	26.3	17.4	950
(5120)	1993	01	22.12882	08	52	23.30	+08	50	26.2	17.4	950
(5120)	1993	02	15.92005	08	38	59.27	+08	58	38.4	17.4	950
(5120)	1993	02	15.94938	08	38	58.38	+08	58	39.7	17.4	950
(5145)	1993	01	22.17127	09	29	48.14	+23	27	02.9	15.8	950
(5145)	1993	01	22.20975	09	29	47.48	+23	27	09.5	15.8	950
(5145)	1993	01	23.16546	09	29	31.87	+23	29	52.3	16.1	950
(5145)	1993	01	23.20626	09	29	31.18	+23	29	59.2	16.1	950

ORBITAL ELEMENTS.

Orbital elements have been computed by the following contributors:

C. M. Bardwell, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. (B)
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B. G. Marsden, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. (M)
K. Ichikawa, 45 Shiromae Kamiwada-cho, Okazaki-shi, Aichi, 444-02 Japan
S. Nakano, 3-19, 1 chome, Takenokuchi, Sumoto, Hyogo-ken 656, Japan (N)
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan (U)
G. V. Williams, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A. (W)

The name of the orbit computer is shown on the line giving T for a comet and Epoch for a displayed minor-planet orbit; for many of the minor planets (O-C) residuals are shown in full (in R.A. and Decl.); observations are identified by date and observatory code, X referring to an approximate and Y to a semiaccurate position. For displayed minor planets "Id." shows those involved in establishing the identifications (generally with the principal contributors first), "k" indicating key identifications and "d" (only) double (or multiple) designations; no identifier is shown if only the orbit computer is involved and the results were not previously published. For the one-opposition orbits, equinox 2000.0 is used, and the columns headed Arc and O show the time span in days covered by the observations and the number of observations utilized in the computation (0 = 10 or more). In the note column N, D means that there are double (or multiple) designations, E means that the value of the eccentricity was assumed, F means both; the double designations are listed at the end; the codes for the orbit computers (column C) are as listed above. In some batches of MPCs the opportunity is taken to print improved results for previously-discussed multiple-opposition and long-arc single-opposition orbits sideways on pages at the end, following the ephemerides. These high-precision results make reference to earlier orbit computations for identifications and residuals, and the orbit computers are again indicated by the codes listed above.

Comet Mueller (1993a)
Epoch 1994 Jan. 8.0 TT = JDT 2449360.5
T 1994 Jan. 12.88196 TT Nakano

q	1.9374193	(2000.0)	P	Q
z	-0.0010311	Peri. 130.66539	+0.78249393	+0.40404038
	+/-0.0000412	Node 144.72410	-0.26790021	-0.46838665
e	1.0019976	Incl. 124.87971	+0.56207894	-0.78572598

From 124 observations 1992 Nov. 26-1993 Mar. 14, mean residual 0".70.

One-opposition minor planets

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1989 SB1	13.1	891001	274.57	120.15	355.41	6.37	0.0908	2.2395	26	0		N
1990 QV1	13.0	900817	327.22	261.11	119.40	3.02	0.0847	2.9044	34	0	D	W
1991 CO1	12.5	910124	19.96	296.86	181.34	9.49	0.0591	3.0351	26	6		W
1991 DY	12.9	910305	349.01	340.60	189.09	7.07	0.1428	2.6688	38	7		E
1991 DB1	13.0	910213	216.83	134.67	163.51	8.12	0.1211	2.4058	10	5		E
1991 RV9	14.0	910921	50.22	293.80	11.91	3.82	0.0670	2.3772	26	0		W
1991 RR40	13.0	910921	329.78	260.96	142.85	0.48	0.1666	3.0926	51	8		W
1991 RS40	14.0	910921	5.03	324.40	31.11	2.11	0.0838	2.7803	26	9		W
1991 RV40	13.5	910921	139.18	195.87	23.17	2.05	0.0645	2.9165	26	6		W
1991 RX40	16.0	910921	338.38	239.31	153.32	2.72	0.1818	2.3118	26	6		W

1991	RB41	15.0	910921	28.47	132.29	174.77	8.96	0.3280	2.7036	22	8	D	W
1992	SK13	14.5	921005	4.82	58.80	308.23	4.58	0.1817	2.2766	30	0	D	W
1992	SY17	14.5	921005	36.79	71.46	239.96	8.41	0.2810	2.2897	26	8		W
1992	SV23	12.3	921005	311.68	115.30	310.43	9.84	0.0929	3.1779	6	6	E	N
1992	WT1	12.9	921204	31.02	291.27	84.25	7.53	0.2628	2.7587	39	0		N
1992	WN5	12.8	921204	38.46	209.88	157.36	2.37	0.2335	2.9673	6	6	E	N
1992	WD8	13.5	921224	323.47	197.64	296.04	24.45	0.2322	2.4538	61	0		W
1992	XE	13.4	921224	345.16	6.45	99.99	6.20	0.1048	2.2565	39	0		N
1992	YB	13.8	930113	50.49	257.03	143.54	6.39	0.1052	2.3396	59	0		N
1992	YM	13.0	930113	4.47	351.08	108.11	14.72	0.1132	2.5764	52	0		U
1993	AK	13.1	930113	344.03	24.66	115.65	11.32	0.1015	2.2824	39	6		N
1993	AT	12.2	930113	100.71	306.57	45.12	6.80	0.1938	2.6949	17	5		N
1993	BM	12.5	930202	343.15	188.69	326.52	8.41	0.0914	2.7603	31	0		M
1993	BD2	18.0	930202	332.98	65.09	97.20	25.60	0.3936	2.1230	31	0		M
1993	BW2	17.5	930202	47.36	287.23	121.22	21.84	0.3046	1.3320	21	0		W
1993	BG3	13.0	930202	301.89	75.38	138.71	8.36	0.2158	2.7907	30	0		N
1993	BM3	14.5	930113	291.96	179.35	29.82	6.53	0.0553	2.3321	10	0		M
1993	BP3	13.6	930222	32.32	136.48	327.89	24.21	0.1901	2.3735	31	9		N
1993	BR3	13.4	930222	8.90	9.40	120.76	13.12	0.1008	2.6166	34	0		N
1993	BS3	13.5	930202	352.08	211.69	295.74	6.87	0.1167	2.3112	20	0		W
1993	BU3	21.0	930202	9.16	144.31	316.48	5.29	0.5129	2.4066	33	0		W
1993	BW3	15.0	930202	54.90	74.05	318.98	21.67	0.5287	2.1453	23	0		B
1993	BX3	21.0	930202	16.55	289.76	175.71	2.79	0.2809	1.3952	22	0		B
1993	BD4	10.0	930202	121.24	219.49	138.90	14.75	0.2025	5.2307	25	9	E	M
1993	BF4	13.5	930202	99.51	237.14	134.84	14.41	0.2327	2.6790	25	9		M
1993	BH4	13.0	930202	188.49	357.85	313.63	5.34	0.2792	2.6731	25	9	E	M
1993	BQ4	15.0	930202	318.98	63.58	121.51	1.90	0.1027	2.2472	25	9		M
1993	BR4	14.0	930202	14.78	135.29	344.20	0.75	0.0615	2.8383	25	9		M
1993	BS4	12.5	930202	204.49	271.80	28.85	0.93	0.2216	3.1409	25	9		M
1993	BV4	16.0	930202	2.82	359.52	132.34	6.10	0.1481	2.2892	25	9		M
1993	BY4	15.5	930202	28.74	150.12	315.62	1.92	0.0271	2.2077	25	9	E	M
1993	BC5	13.5	930202	128.57	204.81	149.35	0.76	0.1896	3.0621	25	9		M
1993	BE5	13.0	930202	21.88	156.20	311.66	1.73	0.1504	3.8480	25	9	E	M
1993	BG5	14.5	930202	104.75	64.49	317.72	5.64	0.0881	2.3319	25	9	E	M
1993	BJ5	11.5	930202	250.92	306.07	318.38	9.07	0.1755	3.9143	25	9	E	M
1993	BL5	15.0	930202	8.90	123.90	358.98	1.00	0.2086	3.1336	25	0		M
1993	BM5	13.0	930202	206.59	196.84	98.41	1.95	0.1058	2.7824	25	0		M
1993	BQ5	16.0	930202	346.48	51.55	103.18	1.59	0.1590	2.1856	25	0		M
1993	BR5	14.5	930202	250.37	280.67	326.52	2.09	0.0082	2.2525	25	9	E	M
1993	BV5	14.0	930202	195.86	338.51	326.33	8.27	0.1356	2.4574	25	9		M
1993	BB6	13.5	930202	126.39	8.03	359.40	1.62	0.0446	2.9266	25	0		M
1993	BD6	14.0	930202	196.18	328.32	334.75	2.30	0.0459	2.6409	25	9		M
1993	BH6	15.0	930202	24.41	348.68	116.76	3.41	0.1311	2.3943	25	9		M
1993	BN6	15.5	930202	50.81	313.85	112.82	3.19	0.1944	2.4165	25	9		M
1993	BS6	13.5	930202	347.16	205.41	310.24	19.10	0.1424	3.1895	20	9		W
1993	BH13	13.8	930202	7.30	355.32	124.89	1.98	0.2215	3.0815	19	8		N
1993	BP13	11.3	930222	0.65	235.57	268.91	12.50	0.1042	2.5995	49	8		N
1993	BM14	14.0	930202	20.01	331.94	142.44	10.76	0.0810	2.7904	29	6	E	M
1993	BT14	15.0	930202	323.96	313.72	230.24	2.55	0.1240	2.3123	34	6		W
1993	BA15	12.0	930113	113.80	235.67	108.62	15.16	0.2456	2.9543	6	0		M
1993	CA	13.8	930202	301.53	171.26	58.14	1.87	0.1857	2.5431	23	6		N
1993	CB	14.1	930222	324.85	66.32	134.87	5.36	0.1281	2.3320	19	8		N
1993	CM	13.4	930222	325.68	169.32	29.84	3.50	0.1374	2.3470	8	0		N
1993	CP	13.5	930222	338.42	55.09	126.37	10.89	0.2562	2.5717	11	6		N
1993	CR	13.6	930222	35.47	73.10	16.35	5.11	0.2240	2.6531	11	6		N
1993	CS	13.0	930202	90.96	263.75	120.89	5.21	0.1783	2.4779	6	6	E	M
1993	CY	14.3	930222	352.54	211.85	306.07	7.22	0.1612	2.2876	10	6		N
1993	CZ	13.8	930222	29.58	307.63	162.10	8.39	0.1143	2.3415	10	6		N
1993	CA1	12.0	930202	346.02	192.96	321.58	15.65	0.0793	2.7092	30	9		M

1993	CD1	13.5	930222	283.43	242.96	19.04	3.25	0.2713	2.5396	6	6	N
1993	CG1	12.6	930222	28.40	345.89	128.15	9.58	0.0834	3.1940	6	6	N
1993	CJ1	12.9	930222	10.88	348.83	161.92	13.59	0.0951	2.5716	15	0	N
1993	CK1	12.8	930222	336.15	156.18	29.22	8.60	0.1262	2.5822	14	7	N
1993	CL1	14.0	930222	4.88	195.58	304.29	9.31	0.1667	2.5555	10	6	N
1993	CO1	13.8	930222	22.40	271.66	216.20	4.00	0.1032	2.3116	10	6	N
1993	CP1	13.1	930222	309.36	53.87	165.23	12.40	0.1306	2.5518	10	6	N
1993	CR1	12.8	930222	338.97	31.58	149.74	14.33	0.0975	2.6883	10	6	N
1993	CS1	13.9	930222	15.55	89.80	31.29	2.20	0.1737	2.5468	11	6	N
1993	CT1	13.5	930222	8.54	110.92	20.24	2.55	0.1314	2.6128	11	6	N
1993	DA	26.0	930202	169.82	354.36	329.31	12.43	0.0936	0.9355	5	0	M
1993	DC	16.0	930222	16.13	3.01	70.69	10.03	0.3958	2.2602	8	0	M
1993	DJ	14.0	930222	296.17	74.92	141.65	23.56	0.0471	1.9290	27	0	N
1993	DM	13.1	930222	318.83	283.54	278.79	4.29	0.0709	2.5706	10	6	N
1993	DN	14.1	930222	7.63	213.01	293.45	4.83	0.0774	2.2131	10	6	N
1993	DO	11.7	930222	98.68	267.12	154.17	10.76	0.0828	2.9929	11	6	N
1993	DR	11.6	930222	258.57	265.78	11.22	5.86	0.1827	3.1330	10	6	N
1993	DU	13.0	930222	286.78	297.68	301.96	5.14	0.1031	2.3063	7	8	M
1993	DV	13.8	930222	34.62	202.76	262.40	2.47	0.1900	2.5937	10	0	N
1993	DW	14.0	930222	42.78	236.11	227.02	3.40	0.1086	2.3161	10	6	N
1993	DZ	13.7	930222	313.06	67.30	149.17	9.43	0.1665	2.3369	10	8	N
1993	DB1	13.1	930314	359.22	80.89	98.17	0.22	0.1536	2.3460	5	6 E	N
1993	DD1	13.1	930314	9.90	147.50	16.37	5.47	0.0152	2.2583	5	8 E	N
1993	DH1	12.2	930222	280.99	242.30	4.67	16.43	0.0552	3.2183	11	6 E	N
1993	DJ1	15.0	930202	44.32	289.88	142.83	7.10	0.2052	2.2078	2	7 E	M
1993	DQ1	16.0	930222	275.77	328.61	310.92	7.72	0.4547	2.2147	6	0	W
1993	DG2	13.7	930222	347.61	48.43	129.54	6.46	0.1143	2.2353	17	7	U
1993	EA	17.0	930222	171.92	258.10	98.76	5.09	0.5838	1.2758	1	9	W
1993	EE	13.9	930222	335.69	63.78	136.05	3.88	0.1448	2.2695	13	0	U
1055	T-1	14.5	710419	22.54	313.25	200.24	11.58	0.2721	2.6134	50	9	W
1146	T-1	14.5	710419	282.64	77.89	200.33	4.73	0.0999	2.6358	53	0	W
1160	T-1	13.5	710419	67.53	260.27	189.65	24.89	0.2681	3.1639	51	0	W
1175	T-1	13.5	710419	139.48	212.82	188.75	6.11	0.1226	2.4161	53	0	W
1182	T-1	13.5	710419	141.35	207.82	189.03	12.98	0.1647	2.6679	53	0	W
1252	T-1	14.0	710419	8.59	344.44	198.72	6.54	0.0390	2.3362	53	0	W
1258	T-1	15.5	710419	340.20	34.08	193.59	6.20	0.2336	2.3012	53	0	W
1286	T-1	15.0	710419	347.50	14.59	195.41	17.76	0.1713	3.0958	50	0	W
1290	T-1	14.5	710419	65.98	283.85	195.42	6.18	0.0661	2.3936	53	0	W
2120	T-1	14.5	710419	326.47	96.46	136.25	2.76	0.1273	2.4220	53	0	W
2175	T-1	15.0	710419	60.92	302.87	177.45	5.79	0.0890	2.3582	53	0	W
2202	T-1	14.0	710419	339.59	75.72	156.72	4.15	0.3319	3.1179	51	0	W
2206	T-1	15.0	710419	317.57	225.04	18.87	4.78	0.1137	2.2349	53	0	W
2208	T-1	14.5	710419	321.78	230.43	15.28	8.52	0.1911	2.4523	51	0	W
2214	T-1	15.0	710419	230.05	148.40	178.95	4.12	0.0951	2.3829	51	0	W
2234	T-1	14.5	710419	70.60	91.76	14.85	12.93	0.1073	2.5296	51	0	W
2235	T-1	15.5	710419	28.41	132.60	22.34	6.51	0.1378	2.3198	53	0	W
2236	T-1	14.5	710419	45.73	67.07	72.05	2.30	0.0565	2.5986	51	0	W
2247	T-1	14.0	710419	20.35	118.79	45.76	2.65	0.0975	3.0170	53	0	W
2263	T-1	15.0	710419	270.44	119.25	179.65	6.40	0.1630	2.3287	53	0	W
2269	T-1	15.0	710419	52.82	96.60	29.64	6.28	0.1223	2.3306	51	0	W
2281	T-1	13.5	710419	144.29	235.30	164.19	4.70	0.0831	2.7845	53	0	W
2307	T-1	15.0	710419	61.06	99.32	19.27	6.56	0.1051	2.5893	53	0	W
3035	T-1	16.0	710419	331.97	45.40	199.15	9.97	0.2895	2.7448	52	0	W
3051	T-1	13.0	710419	275.36	108.52	190.27	10.90	0.2096	2.9900	51	0	W
3166	T-1	15.0	710419	296.71	76.17	192.21	14.75	0.1060	2.5324	53	0	W
4025	T-1	15.0	710419	351.22	80.87	120.20	3.27	0.0645	2.5249	53	0	W
4030	T-1	13.5	710419	107.96	47.37	18.27	9.07	0.1520	2.7996	53	0	W
4033	T-1	14.5	710419	264.57	128.59	173.10	5.34	0.1354	2.3825	53	0	W
4042	T-1	14.0	710419	339.31	198.16	17.74	12.88	0.0934	2.5663	51	0	W

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4058 T-1   15.0  710419 248.41 141.90 170.78   6.73 0.0936  2.2817  53 0   W
4105 T-1   14.0  710419 283.42 138.11 148.01   1.29 0.1667  3.2046  53 0   W
4111 T-1   14.5  710419 321.73 189.66  46.86   4.56 0.1018  3.0772  51 9   W
4131 T-1   15.0  710419 348.90 163.64  45.45   2.81 0.1418  2.3796  53 0   W
4133 T-1   16.5  710419 340.99  94.73 124.15   2.52 0.1206  2.1976  51 8   W
4155 T-1   14.0  710419  98.14  15.48  72.84   3.05 0.0408  2.7234  53 0   W
4161 T-1   13.5  710419 240.93 140.42 183.44  14.70 0.1443  2.5893  53 0   W
4172 T-1   15.5  710419 321.79 111.73 130.89   1.69 0.1298  2.4088  53 0   W
4177 T-1   14.5  710419 136.31  20.98  26.01   4.66 0.1298  2.1858  53 0   W
4194 T-1   15.0  710419 236.03 165.56 160.78   6.67 0.1172  2.2755  53 0   W
4225 T-1   14.5  710419 203.82 315.59  33.58   8.27 0.0294  2.3945  51 0   W
4235 T-1   15.0  710419 107.10 297.03 135.74   3.96 0.1254  2.1952  53 0   W
4264 T-1   13.5  710419 289.15 253.00  30.05   8.38 0.1802  2.8473  53 0   W
4271 T-1   14.0  710419 269.37 258.73  39.16   6.83 0.1324  2.3822  53 0   W
4329 T-1   15.0  710419 270.87 253.33  48.98   4.05 0.1761  2.3530  51 9   W
   1990 QV1 = 1990 QO19 (G. V. Williams)
   1991 RB41 = 1991 SG5 (G. V. Williams)
   1992 SK13 = 1992 UY6 (G. V. Williams)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
 (335) Roberta            Obs.  102    M  29.16211      Peri.  139.30871
H    8.96      G   0.15    Opp.   33    n   0.25331407   Node   148.61335
rms res.  0".86   (M-C)    1906-1992    e   0.1754295    Incl.    5.08659

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
 (407) Arachne            Obs.   92    M   9.07902      Peri.   81.03188
H    8.88      G   0.15    Opp.   24    n   0.23180121   Node   294.96851
rms res.  0".90   (M-C)    1912-1991    e   0.0713036    Incl.    7.54176

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
 (843) Nicolaia           Obs.   28    M 145.71697      Peri.  316.57034
H   13.6       G   0.15    Opp.    6    n   0.28656838   Node     4.35037
rms res.  0".98   (M-C)    1916-1992    e   0.2102678    Incl.    8.00143

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
(1649) Fabre              Obs.   23    M  23.61941      Peri.   18.26002
H   11.2       G   0.15    Opp.   10    n   0.18763104   Node   145.93649
rms res.  0".86   (M-C)    1930-1993    e   0.0513134    Incl.   10.81141

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
(1818) Brahms             Obs.   21    M 350.05511      Peri.   74.25000
H   14.7       G   0.15    Opp.    6    n   0.30960241   Node   249.74682
rms res.  0".93   (M-C)    1904-1990    e   0.1778123    Incl.    2.97732

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
(1821) Aconcagua          Obs.   43    M 267.26491      Peri.  349.26798
H   13.3       G   0.15    Opp.    9    n   0.26876995   Node   297.82777
rms res.  0".79   (M-C)    1950-1991    e   0.2029373    Incl.    2.11037

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
(2215) Sichuan            Obs.   18    M  68.60374      Peri.  331.35231
H   11.9       G   0.15    Opp.    6    n   0.21137889   Node    71.46394
rms res.  0".59   (M-C)    1942-1993    e   0.2651111    Incl.   10.75585

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5                Bowell
(2235) Vittore            Obs.   83    M  34.52579      Peri.  274.98898
H   10.7       G   0.15    Opp.   12    n   0.17041761   Node   205.41564
rms res.  0".93   (M-C)    1933-1993    e   0.2000546    Incl.   18.77005
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Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2259) Sofievka	Obs. 18	M	130.87016	Peri.	11.69818
H 12.6 G 0.15	Opp. 9	n	0.28368053	Node	280.62022
rms res. 0".94 (M-C)	1929-1991	e	0.1855946	Incl.	4.68127
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2342) Lebedev	Obs. 38	M	107.36262	Peri.	206.24065
H 11.7 G 0.15	Opp. 12	n	0.17048672	Node	194.28047
rms res. 0".85 (M-C)	1906-1993	e	0.1368241	Incl.	0.33029
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2403) Sumava	Obs. 59	M	167.62389	Peri.	38.88529
H 12.5 G 0.15	Opp. 10	n	0.24253055	Node	290.86562
rms res. 0".83 (M-C)	1918-1993	e	0.1291531	Incl.	3.29415
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2412) Wil	Obs. 42	M	243.93987	Peri.	341.22788
H 12.0 G 0.15	Opp. 10	n	0.22475738	Node	303.99920
rms res. 1".01 (M-C)	1955-1993	e	0.1484906	Incl.	7.11575
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
(2414) Vibeke	Obs. 9	M	240.48877	Peri.	50.52428
H 10.91 G 0.15	Opp. 5	n	0.17201651	Node	357.42884
rms res. 0".85 (M-C)	1931-1985	e	0.1229666	Incl.	16.74445
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2457) Rublyov	Obs. 23	M	211.90590	Peri.	79.50134
H 12.7 G 0.15	Opp. 10	n	0.22974572	Node	140.91264
rms res. 1".04 (M-C)	1956-1992	e	0.0651202	Incl.	6.25867
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2651) Karen	Obs. 21	M	151.13608	Peri.	276.21574
H 12.3 G 0.15	Opp. 6	n	0.19025213	Node	126.93214
rms res. 0".70 (M-C)	1949-1992	e	0.3224421	Incl.	17.71666
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2720) Pyotr Pervyj	Obs. 25	M	318.09644	Peri.	236.40963
H 13.9 G 0.15	Opp. 6	n	0.27708223	Node	113.59602
rms res. 1".03 (M-C)	1954-1990	e	0.2036285	Incl.	3.28703
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2769) Mendeleev	Obs. 20	M	79.68140	Peri.	50.82129
H 12.1 G 0.15	Opp. 7	n	0.17750440	Node	102.45521
rms res. 1".08 (M-C)	1953-1992	e	0.1331886	Incl.	2.52282
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2883) Barabashov	Obs. 31	M	328.67829	Peri.	150.86061
H 13.3 G 0.15	Opp. 9	n	0.29286843	Node	48.59197
rms res. 0".99 (M-C)	1950-1993	e	0.0819576	Incl.	1.41204
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2887) Krinov	Obs. 28	M	296.06947	Peri.	148.66014
H 13.0 G 0.15	Opp. 8	n	0.29021736	Node	119.20718
rms res. 0".90 (M-C)	1939-1993	e	0.1501533	Incl.	4.37559
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(2975) 1970 AF1	Obs. 35	M	293.94415	Peri.	316.63294
H 12.7 G 0.15	Opp. 11	n	0.29241523	Node	236.85023
rms res. 0".87 (M-C)	1957-1992	e	0.0947447	Incl.	6.89066

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3053) Dresden	Obs. 40	M	128.91030	Peri.	316.30702
H 12.9 G 0.15	Opp. 8	n	0.26863189	Node	7.04385
rms res. 0".71 (M-C)	1955-1992	e	0.2069720	Incl.	4.62154
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3065) Sarahill	Obs. 32	M	41.99137	Peri.	212.14733
H 11.8 G 0.15	Opp. 6	n	0.21980603	Node	303.49393
rms res. 1".01 (M-C)	1954-1990	e	0.0659938	Incl.	4.29843
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3152) Jones	Obs. 18	M	128.33395	Peri.	290.86942
H 11.3 G 0.15	Opp. 4	n	0.23143366	Node	301.74529
rms res. 0".97 (M-C)	1980-1991	e	0.0872309	Incl.	11.33274
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3210) Lupishko	Obs. 31	M	216.07592	Peri.	9.21332
H 11.2 G 0.15	Opp. 7	n	0.17948030	Node	128.72877
rms res. 0".88 (M-C)	1952-1987	e	0.0547939	Incl.	13.64580
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3213) Smolensk	Obs. 28	M	247.30140	Peri.	320.67787
H 11.9 G 0.15	Opp. 8	n	0.17118650	Node	34.25888
rms res. 0".91 (M-C)	1954-1992	e	0.1432411	Incl.	0.96463
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3302) Schliemann	Obs. 53	M	83.91554	Peri.	169.33334
H 12.9 G 0.15	Opp. 9	n	0.25646153	Node	154.73327
rms res. 0".78 (M-C)	1954-1992	e	0.0964012	Incl.	3.38224
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
(3446) Combes	Obs. 24	M	48.32639	Peri.	94.30795
H 13.4 G 0.15	Opp. 4	n	0.26896660	Node	35.08906
rms res. 0".97 (M-C)	1942-1993	e	0.1589437	Incl.	7.67647
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3778) Regge	Obs. 23	M	88.97371	Peri.	99.55964
H 12.5 G 0.15	Opp. 6	n	0.20244408	Node	340.16460
rms res. 0".61 (M-C)	1976-1993	e	0.0394878	Incl.	1.38105
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3809) Amici	Obs. 26	M	152.42130	Peri.	307.93069
H 12.6 G 0.15	Opp. 7	n	0.22312638	Node	124.97927
rms res. 0".83 (M-C)	1950-1990	e	0.1054277	Incl.	6.54697
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3894) 1980 PQ2	Obs. 39	M	3.67532	Peri.	187.19779
H 11.7 G 0.15	Opp. 6	n	0.23171687	Node	163.28208
rms res. 0".77 (M-C)	1978-1991	e	0.1729796	Incl.	13.36181
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3945) Gerasimenko	Obs. 29	M	345.00247	Peri.	334.39234
H 12.1 G 0.15	Opp. 5	n	0.17862701	Node	9.68014
rms res. 0".77 (M-C)	1954-1988	e	0.2671713	Incl.	1.83780
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(3980) 1983 XU	Obs. 24	M	274.20697	Peri.	358.29257
H 12.7 G 0.15	Opp. 4	n	0.17869592	Node	74.31944
rms res. 1".06 (M-C)	1954-1988	e	0.1666083	Incl.	2.28325

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(4026) Beet	Obs. 24	M	11.30453	Peri.	352.63555
H 13.3 G 0.15	Opp. 6	n	0.25826391	Node	137.69929
rms res. 0".89 (M-C)	1969-1992	e	0.1203580	Incl.	3.18526
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(4074) 1981 UN11	Obs. 22	M	223.26789	Peri.	65.34021
H 11.8 G 0.15	Opp. 6	n	0.18769786	Node	189.47226
rms res. 0".95 (M-C)	1953-1991	e	0.0438108	Incl.	9.83498
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(4089) 1986 JG	Obs. 25	M	49.50762	Peri.	320.56241
H 13.0 G 0.15	Opp. 7	n	0.30501195	Node	317.06002
rms res. 0".97 (M-C)	1954-1990	e	0.1318283	Incl.	1.14495
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(4145) 1981 SJ7	Obs. 25	M	204.91381	Peri.	34.88643
H 13.6 G 0.15	Opp. 6	n	0.28778067	Node	293.06788
rms res. 0".90 (M-C)	1967-1993	e	0.1999010	Incl.	4.86956
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(4546) Franck	Obs. 34	M	39.38224	Peri.	267.46017
H 13.7 G 0.15	Opp. 6	n	0.27265974	Node	194.98212
rms res. 0".90 (M-C)	1949-1991	e	0.0625655	Incl.	6.09936
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
(4667) 1986 VC	Obs. 28	M	202.04513	Peri.	24.84188
H 12.6 G 0.15	Opp. 5	n	0.22633923	Node	6.32964
rms res. 0".85 (M-C)	1971-1990	e	0.0893822	Incl.	11.25016
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(4754) Panthoos	Obs. 36	M	135.58739	Peri.	219.79026
H 10.0 G 0.15	Opp. 6	n	0.08466449	Node	155.42913
rms res. 0".85 (M-C)	1977-1993	e	0.0093609	Incl.	12.37243
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
(4755) Nicky	Obs. 25	M	323.07532	Peri.	275.59899
H 14.2 G 0.15	Opp. 5	n	0.28561705	Node	102.28305
rms res. 0".70 (M-C)	1931-1991	e	0.2507301	Incl.	3.08481
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
(4769) Castalia	Obs. 77	M	155.13709	Peri.	121.18588
H 16.9 G 0.15	Opp. 2	n	0.89906458	Node	325.77535
rms res. 0".86 (M-N)	1989-1990	e	0.4831715	Incl.	8.88642
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
(4809) 1928 RB	Obs. 15	M	277.66508	Peri.	173.13304
H 13.3 G 0.15	Opp. 4	n	0.23970522	Node	169.44617
rms res. 0".61 (M-C)	1928-1990	e	0.2502901	Incl.	13.69106
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
(4848) Tutenchamun	Obs. 31	M	125.67942	Peri.	312.77715
H 11.1 G 0.15	Opp. 7	n	0.17626974	Node	132.86137
rms res. 1".07 (M-C)	1923-1992	e	0.1196032	Incl.	6.36949
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Bowell	
(4849) 1936 QV	Obs. 32	M	174.81208	Peri.	170.96686
H 13.9 G 0.15	Opp. 5	n	0.28638971	Node	191.11965
rms res. 0".70 (M-C)	1936-1993	e	0.1110762	Incl.	2.99056

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(4874) Burke Obs. 35 M 244.37252 Peri. 324.67782
H 11.8 G 0.15 Opp. 5 n 0.23497478 Node 127.80008
rms res. 0".90 (M-C) 1950-1991 e 0.1266069 Incl. 14.68091

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
(4908) 1933 SD Obs. 40 M 176.44859 Peri. 165.41350
H 14.3 G 0.15 Opp. 5 n 0.30426181 Node 190.40271
rms res. 1".14 (M-C) 1933-1993 e 0.2335322 Incl. 4.56160

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(5002) Marnix Obs. 40 M 281.55914 Peri. 171.91087
H 13.5 G 0.15 Opp. 5 n 0.27757628 Node 108.06500
rms res. 0".82 (M-C) 1951-1993 e 0.2068711 Incl. 1.59154

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(5128) 1989 FJ Obs. 28 M 354.85958 Peri. 123.43298
H 12.3 G 0.15 Opp. 7 n 0.21418375 Node 39.82940
rms res. 0".87 (M-C) 1952-1991 e 0.1435602 Incl. 6.96616

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(5260) 1989 RH Obs. 30 M 215.62215 Peri. 302.79252
H 13.1 G 0.15 Opp. 5 n 0.23493400 Node 175.90105
rms res. 0".69 (M-C) 1950-1992 e 0.1087497 Incl. 13.67444

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(5327) 1989 EX1 Obs. 55 M 32.58498 Peri. 82.21460
H 13.6 G 0.15 Opp. 5 n 0.27502835 Node 137.39939
rms res. 0".50 (M-C) 1950-1990 e 0.1619377 Incl. 9.74527

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(5434) 1989 ES Obs. 22 M 325.54629 Peri. 305.39560
H 11.1 G 0.15 Opp. 5 n 0.17301862 Node 173.44757
rms res. 0".72 (M-C) 1950-1992 e 0.0754388 Incl. 16.97282

(5494)* 1933 UM1 = 1971 QD = 1986 TV10 = 1990 HK2
Discovered 1933 Oct. 19 by K. Reinmuth at Heidelberg.
Id. A. Lowe (k, MPC 16692), B. G. Marsden (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden
M 150.43800 (2000.0) P Q
n 0.20467037 Peri. 58.87220 +0.92263061 -0.38550227
a 2.8516709 Node 323.79890 +0.34666723 +0.84238286
e 0.0778247 Incl. 1.15099 +0.16904018 +0.37653569
P 4.82 H 12.0 G 0.15
Residuals in seconds of arc

331019	024	1.2+	0.7-	900430	413	1.4-	0.7-	930121	801	0.0	0.4-
331020	024	0.0	2.6-	910908	801	0.2-	0.2+	930127	801	0.2-	0.0
710816	095	(5.6-	3.6-)	910908	801	0.3-	0.3+	930221	801	0.3-	0.7-
861003	095	2.0+	0.2+	911108	801	1.0-	0.2+	930221	801	0.3-	0.7-
861008	095	(3.8+	1.8+)	911108	801	0.6-	0.5+	930225	801	0.0	0.2-
900427	413	0.7+	0.1+	911209	372	(2.0-	1.2-)	930225	801	0.2+	0.1-
900427	413	(4.7+	0.1-)	911209	372	0.6-	1.1+				
900430	413	0.4+	0.5-	930121	801	0.1+	0.6-				

(5495)* 1972 RY3 = 1976 GP2
Discovered 1972 Sept. 6 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.
Id. A. Lowe (MPC 17623)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M	135.90112	(2000.0)	P	Q
n	0.15598351	Peri. 300.41801	+0.89446401	+0.43816496
a	3.4178284	Node 33.82671	-0.33526471	+0.78911020
e	0.0459070	Incl. 9.21408	-0.29585760	+0.43048409
P	6.32	H 11.3	G 0.15	

Residuals in seconds of arc

720906	095	0.3+	0.0	910916	675	0.2+	1.1-	911105	801	0.6+	0.7+
721007	095	0.1+	0.6-	910916	675	0.2-	1.3-	921222	801	0.1+	0.1-
760401	095	0.4+	0.3+	911002	691	1.0-	0.6+	921222	801	0.2-	0.1+
760404	095	0.7+	1.4+	911002	691	0.9-	0.7+	921228	801	0.1+	0.4-
910912	801	0.0	0.3+	911002	691	0.9-	0.8+	930225	801	0.3+	0.5+
910912	801	0.1+	0.6+	911009	801	0.0	0.4+	930225	801	0.1+	0.1+
910913	675	0.4+	0.1-	911009	801	0.2-	0.3+	930226	801	0.0	0.2+
910913	675	0.4+	0.3-	911105	801	0.0	0.5+	930226	801	0.5-	0.0

(5496)* 1973 NA = 1992 OA

Discovered 1973 July 4 by E. F. Helin at Palomar.

Id. G. V. Williams (MPC 20627)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	116.55216	(2000.0)	P	Q
n	0.25960953	Peri. 118.24266	-0.23250147	+0.34359199
a	2.4336361	Node 101.10844	-0.80926320	-0.58725545
e	0.6383556	Incl. 68.01105	+0.53947766	-0.73285441
P	3.80	H 14.9	G 0.15	

Residuals in seconds of arc

730704	675	(7.9+	19.3+)	730711	485	1.8-	0.2+	920727	413	1.1-	0.6+
730704	675	(14.6+	36.0+)	730711	485	1.3+	1.7-	920728	413	0.7-	0.5-
730704	675	(0.7+	6.3+)	730718	485	0.7-	0.2+	920728	413	0.8-	0.3+
730704	675	(3.8+	13.2+)	730718	485	0.9+	0.3-	920805	413	0.2+	0.2+
730706	675	0.9+	0.0	730720	485	0.6+	1.0+	920805	413	0.4-	0.3+
730706	675	(3.2-	0.2+)	730720	485	0.1+	0.5+	920805	413	0.5+	0.1+
730706	675	(8.1+	15.2+)	730721	808	0.1+	0.6+	920821	413	0.1+	0.8-
730706	675	(5.4+	13.4+)	730721	808	0.2-	0.6+	920821	413	0.3+	0.5-
730707	675	(2.1+	4.7+)	730726	821	0.8-	0.8-	920822	413	0.3+	0.3-
730707	675	(4.0+	6.7+)	730726	821	0.6-	0.5-	920822	413	0.3+	0.5-
730708	675	(15.6-	14.7+)Y	730731	821	(1.4-	3.5-)	920906	413	0.6+	0.8+
730708	675	(11.4-	10.6+)Y	730801	821	(1.6-	3.8-)	920906	413	1.0+	0.0
730709	485	0.1+	0.4-	730801	808	0.1-	2.2+	921006	413	0.9+	0.4+
730709	485	0.7-	0.4+	920726	413	(0.6+	2.7-)	921006	413	0.8+	0.6+
730709	485	0.7+	1.5+	920726	413	0.2+	0.8+	921015	413	1.0-	0.7-
730709	485	0.7-	1.3-	920727	413	0.1-	1.0-	921015	413	0.8+	0.3-

(5497)* 1975 SS = 1978 GZ1 = 1988 CL1

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

Id. S. Nakano (MPC 14184)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	33.61472	(2000.0)	P	Q
n	0.18885140	Peri. 302.86893	-0.74625962	-0.66372911
a	3.0087718	Node 195.74374	+0.65588224	-0.72019856
e	0.0577577	Incl. 10.74750	+0.11364449	-0.20193490
P	5.22	H 12.4	G 0.15	

Residuals in seconds of arc

750930	675	0.5+	0.2+	880210	809	0.3-	1.0-	880217	809	0.7-	0.9-
751001	675	0.8+	0.6+	880210	809	1.4-	0.2+	880217	809	0.6+	1.0-
751002	675	1.2+	0.8+	880210	809	0.4+	0.0	880220	413	0.2+	0.1+
751015	675	0.4-	1.2-	880211	809	0.8+	0.0	880220	413	0.7+	0.3-
751016	675	1.9-	0.2-	880211	809	0.1+	0.5-	900726	675	0.1-	1.6-
780407	095	0.8-	0.7+	880211	809	0.9+	0.3-	900726	675	0.7-	1.1-

900728 675 2.3+ 0.3+ 900915 675 0.3- 0.2- 930221 801 0.5- 0.1+
900728 675 0.0 1.0- 921226 801 0.2+ 0.5- 930221 801 0.5- 0.2-
900915 675 0.2- 0.9- 921226 801 0.9- 0.8-

(5498)* 1980 FT3 = 1978 XS = 1981 RE3
Discovered 1980 Mar. 16 by C.-I. Lagerkvist at the European Southern Observatory.
Id. T. Kobayashi (MPC 14344)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 188.19003 (2000.0) P Q
n 0.29255848 Peri. 131.33907 +0.95336245 +0.30123034
a 2.2472993 Node 211.14324 -0.28672661 +0.88422676
e 0.1471393 Incl. 2.10340 -0.09427561 +0.35693600
P 3.37 H 14.6 G 0.15
Residuals in seconds of arc
540703 675 0.1- 0.3- 800316 809 0.2- 0.1+ 810902 095 0.0 1.9+
540703 675 0.3+ 0.4+ 800316 809 0.3- 0.7- 910711 801 0.1+ 0.7-
781203 675 0.6+ 0.5- 800317 809 0.3+ 0.2+ 910711 801 0.5- 0.8-
781203 675 0.1- 0.2- 800317 809 0.2- 0.7+ 910712 801 0.6+ 1.3-
781205 675 1.9+ 0.3+ 800317 809 0.3+ 0.4+ 910712 801 0.1- 1.8-
781206 675 0.5- 1.4- 800317 809 0.3+ 0.4- 910806 801 0.6+ 0.3+
781206 675 1.2- 0.5- 800323 809 0.4- 0.8- 910806 801 0.3+ 0.4+
800316 809 0.1- 0.4+ 810830 675 1.1- 0.7+ 910808 801 0.3+ 0.3+
800316 809 0.2+ 0.1+ 810831 675 0.6- 0.1- 910808 801 0.2+ 0.1+

(5499)* 1981 SU2 = 1954 XH = 1986 AX1
Discovered 1981 Sept. 29 at Haute Provence.
Id. E. Bowell (k, MPC 10528), B. G. Marsden (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden
M 136.32045 (2000.0) P Q
n 0.28825100 Peri. 83.91232 +0.79525659 -0.60567319
a 2.2696323 Node 313.36117 +0.54054656 +0.72847956
e 0.1339287 Incl. 2.12528 +0.27454759 +0.32012109
P 3.42 H 14.1 G 0.15
Residuals in seconds of arc
500817 760 0.2+ 2.8- 811005 095 1.4- 0.8+ 930127 010 0.7- 0.9-
500817 760 0.4+ 1.8- 860112 688 (2.9+ 0.8+) 930127 010 0.6+ 0.5-
541204 760 0.0 0.9+ 860112 688 0.1- 1.4- 930127 010 0.3+ 0.8-
541204 760 (2.7+ 3.8+) 870530 413 0.8- 0.8- 930128 010 0.5+ 0.1-
770612 675 1.0+ 2.8+ 870530 413 1.9- 0.3+ 930128 010 0.0 0.5+
770613 675 2.2+ 2.5+ 910721 809(26.0- 5.7-) 930128 010 0.5+ 0.2+
810902 095 (3.0- 1.3-) 910721 809(25.7- 6.0-) 930218 511 (2.6- 1.7+)
810928 095 1.1+ 0.1- 910721 809(25.3- 5.9-) 930219 511 (4.4- 0.4+)
810929 511 0.7+ 1.5+ 910722 809 0.5- 0.8- 930220 010 0.5- 0.3+
810929 511 0.8- 0.9+ 910722 809 0.2+ 0.8- 930220 010 0.4- 0.6+
810929 511 1.0- 0.5- 910722 809 0.9+ 0.7- 930220 010 0.7- 0.1-

(5500)* 1981 WR = 1974 VU2 = 1988 XV
Discovered 1981 Nov. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Id. S. Nakano (MPC 14017)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 108.89466 (2000.0) P Q
n 0.28618360 Peri. 340.83036 -0.06242764 -0.99554255
a 2.2805498 Node 112.69768 +0.92541059 -0.08426721
e 0.0892127 Incl. 4.39488 +0.37378876 +0.04235652
P 3.44 H 13.5 G 0.15

Residuals in seconds of arc

741109	808	0.1+	0.5+	881210	896	(0.7-	5.5+)	911009	801	0.0	0.4+
741109	808	0.4+	1.3+	881210	896	(2.4-	4.0+)	930121	801	0.0	0.5+
811024	675	1.7-	0.9+	910913	801	0.3+	0.1-	930121	801	0.1+	0.5+
811025	675	1.4-	0.7+	910913	801	0.4+	0.1+	930126	801	0.3-	0.6+
811124	688	1.3-	1.5-	910914	675	1.0+	1.1-	930126	801	0.1-	0.5+
811124	688	0.2-	1.4-	910914	675	0.5+	0.9-	930220	801	0.4+	0.4+
811202	688	(0.6+	3.7+)	910916	675	0.1+	1.0-	930220	801	1.1+	0.4+
811220	688	1.8+	1.2-	910916	675	0.2+	0.8-	930225	411	0.9-	1.3-
811220	688	1.9+	0.5-	911008	801	0.2+	0.8+	930225	411	0.5-	1.3-
881207	896	(4.3-	2.6+)	911008	801	2.2-	1.3+				
881207	896	0.9+	1.0+	911009	801	0.1-	0.8+				

(5501)* 1982 FF2 = 1948 GD = 1967 JW = 1987 SJ23 = 1991 RS3

Discovered 1982 Mar. 30 by L. G. Taff at the Lincoln Laboratory ETS.

Id. S. Nakano (MPC 19292)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	0.79515		(2000.0)		P		Q
n	0.26005083	Peri.	311.27637		-0.99481852		+0.08211866
a	2.4308821	Node	233.51884		-0.05555218		-0.93283102
e	0.1378492	Incl.	4.27512		-0.08514733		-0.35083161
P	3.79	H	13.4	G	0.15		

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

480409	020	(0.09+	0.02-)X	820425	688	0.6+	1.6-	911003	033	0.3-	0.2-
670502	095	0.5-	1.2-	870923	095	1.6+	1.6-	911004	033	0.5-	0.6+
820326	046	0.7+	0.6+	910905	033	0.8-	0.8+	911009	033	0.1-	1.1+
820326	046	0.5+	1.9+	910905	033	0.2-	0.4+	911009	033	0.3-	0.7+
820327	046	1.5-	0.4+	910912	033	0.1+	0.7+	930121	596	0.7-	0.6+
820327	046	1.1+	1.0+	910912	033	0.1-	0.2-	930121	596	1.6+	0.5-
820330	704	(0.9-	6.1+)	910914	033	0.0	0.7+	930121	596	1.2+	0.4-
820331	704	1.1+	2.7+	910915	033	0.1+	0.7+	930218	801	0.8-	0.1-
820401	704	(0.4+	4.0+)	910915	033	0.0	0.7+	930218	801	0.6-	0.0
820402	704	0.9+	1.2+	911002	033	0.3-	0.4+	930220	801	0.5-	1.0-
820425	688	1.1-	0.2-	911002	033	0.9-	0.7+	930220	801	1.0-	0.5-

(5502)* 1984 EC = 1986 TQ17 = 1990 RU1

Discovered 1984 Mar. 1 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. E. Bowell (k, MPC 17630), B. G. Marsden (ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden

M	4.26058		(2000.0)		P		Q
n	0.22566392	Peri.	229.66653		-0.73294161		+0.67979294
a	2.6719478	Node	353.01839		-0.54093973		-0.60559062
e	0.1283774	Incl.	12.37110		-0.41252975		-0.41369260
P	4.37	H	12.6	G	0.15		

Residuals in seconds of arc

810903	675	0.7-	0.0	861011	095	2.4-	0.5+	900923	809	1.3+	0.5+
810904	675	0.1-	0.1+	900915	675	1.2+	1.2-	900923	095	2.1-	1.8+
840301	688	0.5-	1.6-	900916	675	0.1-	0.2+	900924	809	0.1-	0.2-
840301	688	0.2-	0.0	900916	675	0.8-	0.3-	900924	809	0.1+	0.2-
840306	688	0.3+	0.7+	900917	675	2.2+	2.6-	900924	809	0.3+	0.1-
840306	688	0.8-	0.2+	900917	675	0.7+	1.3-	930125	801	0.4+	1.0+
840309	688	1.5+	1.5-	900919	675	0.7-	0.7+	930125	801	0.3+	1.0+
840309	688	(3.8+	3.1-)	900919	675	0.4+	0.2-	930221	801	0.7-	0.9-
840331	688	0.8-	0.4-	900923	809	0.9+	0.5+	930221	801	0.8-	0.4-
840331	688	(4.6+	0.4-)	900923	809	1.0+	0.4+				

(5503)* 1985 CE2 = 1987 SC7

Discovered 1985 Feb. 13 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (MPC 12697)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	52.73633	(2000.0)	P	Q
n	0.24218450	Peri. 327.01307	-0.61480234	-0.78806784
a	2.5490116	Node 160.86602	+0.74259487	-0.59170818
e	0.1014846	Incl. 5.44433	+0.26565190	-0.16979550
P	4.07	H 13.1	G 0.15	

Residuals in seconds of arc

850213	809	1.0-	0.1+	850221	809	1.1+	0.1-	871001	033	1.3+	0.4+
850213	809	1.1-	0.1+	850221	809	1.4+	0.1-	871001	033	0.3-	0.3+
850213	809	1.0-	0.2+	850221	809	1.6+	0.0	910902	413	0.5-	1.4+
850215	809	0.2+	0.3-	850222	809	1.3+	0.7+	910911	675	0.1+	0.3+
850215	809	0.5+	0.4-	850222	809	1.2+	0.4+	910911	675	0.7+	0.4+
850215	809	0.6+	0.4-	850222	809	1.3+	0.4+	910913	675	0.3+	0.8-
850216	809	0.2-	0.7+	850222	675	1.0+	0.6-	910913	675	0.4+	1.7-
850216	809	0.1+	0.4+	850224	809	0.6-	0.6-	910916	675	0.4-	1.2-
850216	809	0.3+	0.1+	850224	809	0.4-	0.5-	910916	675	0.1+	1.1-
850217	809	0.1-	0.4-	850224	809	0.0	0.4-	911003	691	0.9+	1.0+
850217	809	0.1-	0.5-	850226	809	1.7-	0.4-	911003	691	0.9-	1.0+
850217	809	0.2-	0.1-	850226	809	1.2-	0.8-	911003	691	1.0-	1.1+
850218	809	0.4+	0.2+	850226	809	1.2-	0.4-	930126	364	1.3+	0.2-
850218	809	0.6+	0.3+	850227	809	1.3-	0.3-	930126	364	0.3-	0.7-
850218	809	0.8+	0.5+	850227	809	1.1-	0.0	930129	886	0.1-	0.6+
850219	809	0.3-	0.8+	850227	809	1.0-	0.1-	930129	886	1.5-	0.6-
850219	809	0.1-	0.8+	850228	809	0.9+	0.5+	930218	801	0.1-	0.4-
850219	809	0.0	0.9+	850228	809	1.0+	0.7+	930218	801	0.0	0.5-
850220	809	0.2-	0.2+	870929	033	0.3+	0.4+	930221	801	0.2+	0.2-
850220	809	0.1-	0.4+	870930	033	0.3-	0.1+	930221	801	0.1+	0.2-
850220	809	0.1-	0.2+	870930	033	0.2+	0.1-				
850220	675	0.3-	0.8+	871001	033	1.2-	0.6-				

(5504)* 1985 FC2 = 1991 RJ25

Discovered 1985 Mar. 22 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. H. E. Holt (MPC 20142)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	343.89745	(2000.0)	P	Q
n	0.23321867	Peri. 133.70622	-0.95203974	+0.22647841
a	2.6139294	Node 60.38939	-0.30079867	-0.81591979
e	0.0756049	Incl. 13.68843	+0.05604008	-0.53196093
P	4.23	H 12.6	G 0.15	

Residuals in seconds of arc

491119	675	0.2+	0.9-	550313	675	0.3+	0.4+	910911	675	0.3+	1.0-
491119	675	0.7-	0.3-	850322	688	(4.2-	0.6+)	910911	675	0.3+	0.7-
491121	675	1.0-	0.3+	850322	688	2.4-	0.1-	910913	675	0.4+	0.4-
491121	675	0.2+	0.3+	850414	688	1.6+	0.7-	921225	801	0.2+	0.2-
531010	675	0.2+	0.7+	850414	688	0.7-	0.8-	921225	801	0.5+	0.3-
531010	675	0.8+	0.7+	850423	688	(3.6-	1.3-)	930126	801	0.3-	0.2+
550313	675	0.1-	0.0	850423	688	0.7+	0.5+	930126	801	0.2-	0.1+

(5505)* 1986 VD1 = 1971 OH1 = 1973 AF

Discovered 1986 Nov. 6 by P. Jensen at Brorfelde.

Id. S. Nakano (MPC 14790)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 150.87902 (2000.0) P Q
n 0.20215956 Peri. 56.34058 +0.96552682 -0.22411700
a 2.8752340 Node 316.19429 +0.12562248 +0.84666849
e 0.1425055 Incl. 11.02684 +0.22798455 +0.48262205
P 4.88 H 11.7 G 0.15
Residuals in seconds of arc

710728	095	1.0-	0.9+	911010	596	0.1-	0.1-	930119	801	0.2-	0.2+
730101	095	0.4-	0.7-	911010	596	1.3-	0.4-	930126	801	0.0	0.0
730103	095	0.2+	0.5+	911010	596	0.1+	0.2-	930126	801	0.0	0.2+
861002	095	0.6+	0.3+	911011	801	0.0	0.3-	930224	801	0.5+	0.5+
861008	095	0.5+	1.3+	911011	801	0.0	0.4-	930224	801	0.0	0.3+
861106	054	0.4-	0.9+	911108	801	0.2+	0.0	930226	801	0.3+	0.4+
911010	801	0.1-	0.3-	911108	801	0.2+	0.1-	930226	801	0.3+	0.2+
911010	801	0.1-	0.4-	930119	801	0.3+	0.1-				

(5506)* 1987 SV11 = 1971 FG1 = 1973 YU = 1982 HY1 = 1984 WD3 = 1991 UH
Discovered 1987 Sept. 24 by H. Debehogne at the European Southern Observatory.
Id. H. Kaneda (MPC 19299)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 68.31186 (2000.0) P Q
n 0.26913931 Peri. 133.34620 -0.88406491 -0.46642496
a 2.3758442 Node 18.91158 +0.39801129 -0.78457847
e 0.1690585 Incl. 5.24250 +0.24498215 -0.40851484
P 3.66 H 13.1 G 0.15
Residuals in seconds of arc

710319	095	0.0	2.3-	870928	809	0.0	0.1+	911019	399	0.8-	0.2+
731220	095	0.3+	2.5-	870928	809	0.1+	0.1-	911029	399	0.7+	0.4+
820419	046	2.4-	0.6+	870928	809	0.3+	0.2-	911029	399	1.6+	0.2-
820419	046	0.4-	2.0-	871001	809	1.6+	0.0	911031	399	0.0	0.8-
841127	010	0.8+	1.4+	871001	809	1.8+	0.0	911031	399	1.4+	0.8-
841128	010	0.5-	1.3-	871001	809	2.0+	0.1-	930121	801	1.1+	0.2+
870924	809	1.1-	0.0	911004	691	0.8-	0.1+	930121	801	0.6+	0.2+
870924	809	0.7-	0.8-	911004	691	0.7-	0.1-	930126	801	0.7+	0.8+
870924	809	0.5-	0.9-	911004	691	0.8-	0.2+	930126	801	0.1+	1.1+
870926	809	1.1-	0.1-	911018	399	1.6-	0.2-	930221	801	0.4+	0.0
870926	809	0.5-	0.1-	911018	399	1.7-	1.4+	930221	801	0.1-	0.2+
870926	809	0.3-	0.3-	911019	399	2.0+	1.0+				

(5507)* 1987 UJ = 1983 VN1
Discovered 1987 Oct. 21 by K. Suzuki and T. Urata at Toyota.
Id. S. Nakano (MPC 12580), T. Kobayashi (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 167.42257 (2000.0) P Q
n 0.23776120 Peri. 20.92308 +0.99975253 +0.01417813
a 2.5805289 Node 338.24332 -0.02024317 +0.89935026
e 0.1356340 Incl. 2.65072 +0.00922445 +0.43699895
P 4.15 H 13.4 G 0.15
Residuals in seconds of arc

831107	046	(2.7-	5.6-)	871025	399	2.1+	0.8- Y	871115	399	2.1+	0.5+
831107	046	(1.7-	4.0-)	871025	399	0.6-	0.6- Y	871117	399	1.7+	1.1-
831107	046	(3.2-	5.0-)	871025	399	0.9-	0.7+ Y	871117	399	1.0-	0.4+
831108	046	(2.0-	4.4-)	871027	881	2.6-	0.0	871117	399	0.4-	1.1-
831108	381	(7.4-	1.4-)	871027	881	0.4-	1.5+	910911	675	1.0+	1.2-
831108	381	(5.2-	0.3-)	871031	399	1.0+	0.2+ Y	910911	675	0.4+	1.8-
870925	095	1.1+	1.5+	871031	399	1.3-	1.3+ Y	910913	801	0.6+	0.5-
871021	881	0.9-	0.9+	871031	399	1.3-	0.2+ Y	910913	801	0.5+	0.3-
871021	881	0.8+	1.2+	871115	399	0.7-	0.7-	910914	675	0.5+	0.9-

910928 385 1.1- 1.3- 911109 675 0.1- 0.2- 930214 385 (3.5+ 0.4+)
911001 894 0.4- 0.3- 911109 675 0.5+ 0.7- 930220 010 1.6- 0.5-
911001 894 0.3- 1.1+ 911110 675 0.8- 0.3- 930220 010 1.4- 0.8-
911003 881 1.2+ 0.3+ 930127 010 0.1- 0.4- 930220 010 1.3- 0.7-
911003 881 2.4+ 0.8- 930127 010 0.8+ 1.1- 930224 411 0.1- 0.1+
911008 691 1.2- 0.1- 930127 010 0.3- 1.3- 930224 411 1.5+ 0.5+
911008 691 1.1- 0.1+ 930129 691 0.7- 0.5+ 930224 411 1.3+ 0.9+
911008 691 1.1- 0.2+ 930129 691 1.1- 0.4+ 930228 385 0.8+ 0.1+
911009 033 0.7+ 1.0+ 930129 691 0.7- 0.3+
911009 033 0.6+ 0.5+ 930214 385 2.0+ 0.4-

(5508)* 1988 EB = 1948 UK = 1969 EV = 1986 SS
Discovered 1988 Mar. 9 by W. Kakei, M. Kizawa and T. Urata at the Oohira Station of the Nihondaira Observatory.
Id. S. Nakano (MPC 13054)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	82.83241	(2000.0)	P	Q
n	0.20542654	Peri. 70.28855	-0.28945139	-0.95458666
a	2.8446686	Node 36.77203	+0.82812863	-0.28672158
e	0.2251159	Incl. 6.77149	+0.48002173	-0.08096319
P	4.80	H 12.1	G 0.15	

Residuals in seconds of arc
481028 094(20.4+ 30.8+)X 880309 385 (3.5+ 4.0+) 911018 894 0.4+ 0.3-
690312 095 1.9+ 0.0 880310 385 0.8+ 1.2+ 911107 376 0.3- 0.0
690323 095 2.4- 2.9- 880310 385 1.4- 1.9+ 911107 376 1.6+ 0.9+
860930 046 0.7- 1.8+ 880312 385 2.4- 0.1- 930119 801 0.0 0.4-
860930 046 2.2- 1.2+ 880312 385 0.2- 0.5- 930119 801 0.1+ 1.0-
861001 046 0.7+ 0.6- 880318 894 0.1+ 1.7+ 930124 801 0.3- 0.9-
861001 046 1.6+ 0.7- 880318 894 0.3- 0.6- 930124 801 0.1- 0.8-
861003 046 0.1- 2.1- 880322 883 0.8+ 1.9- 930220 801 0.0 0.5-
861003 046 0.3- 2.2- 880322 883 0.3+ 0.8- 930220 801 0.2- 0.9-
880309 385 1.0+ 2.2+ 911015 376 0.2+ 0.1- 930224 801 0.1- 0.1-
880309 385 0.8+ 1.3+ 911018 894 0.6+ 0.6-

(5509)* 1988 RD3 = 1978 TK = 1990 DX1
Discovered 1988 Sept. 8 by F. Borngen at Tautenburg.
Id. F. Borngen (k, MPC 16430), B. G. Marsden (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden

M	252.07765	(2000.0)	P	Q
n	0.29936903	Peri. 89.13566	+0.14809894	+0.98895285
a	2.2130852	Node 189.38803	-0.92190681	+0.13576811
e	0.1378384	Incl. 2.19332	-0.35798677	+0.05949193
P	3.29	H 14.6	G 0.15	

Residuals in seconds of arc
781004 095 0.8- 0.9+ 900223 033 0.1+ 0.6- 910904 033 1.0- 0.5+
880908 033 0.2- 0.0 910806 033 0.2+ 0.3- 910905 033 1.1- 0.5-
880908 033 0.1- 0.5- 910807 033 0.4+ 0.1+ 910906 801 0.3+ 0.2+
880909 033 0.1- 0.3+ 910807 801 0.6+ 0.1- 910906 801 0.1+ 0.1+
880910 033 0.0 0.2- 910807 801 0.4+ 0.0 910908 801 0.0 0.1+
880911 033 0.0 0.0 910807 033 0.5+ 0.8+ 910908 801 0.3+ 0.7+
881014 046 1.5+ 2.1+ 910809 675 1.0+ 0.0 910913 033 0.9- 0.0
881014 046 0.0 1.4+ 910809 675 1.1+ 0.4- 910913 033 1.1- 0.2-
881016 046 1.0- 0.2+ 910810 675 0.2- 2.0- 921124 033 0.0 0.4-
881016 046 (4.0- 2.0+) 910810 675 (0.4+ 2.3-) 921230 033 0.7- 0.5-
881103 033 0.1+ 1.5- 910812 033 0.1+ 0.3- 921230 033 0.1- 0.6-
881103 033 1.0+ 1.7- 910812 801 0.1- 0.6- 930101 033 0.5- 0.0
900223 033 0.4+ 0.3- 910812 801 0.3- 0.7-

(5510)* 1988 RF7 = 1988 RL7 = 1936 OJ = 1939 HF = 1949 OD = 1949 OK1 = 1962 PS

Discovered 1988 Sept. 2 by H. Debehogne at the European Southern Observatory.

Id. H. Debehogne (d, MPC 14668), S. Nakano (MPC 14953), O. Kippes (d, MPC 777)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 181.32255		(2000.0)	P	Q
n 0.30395213	Peri.	234.07776	+0.95539308	+0.28016606
a 2.1907825	Node	109.48950	-0.22883800	+0.90225236
e 0.2446084	Incl.	5.68846	-0.18670094	+0.32779209
P 3.24	H 13.8	G 0.15		

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

360716	078	(4.9-	18.7-)X	880905	809	2.0+	0.9+	910609	801	1.0+	0.0
360723	078	(4.8-	53.7-)X	880907	809	0.3-	0.1-	910613	801	0.9+	0.0
390422	020	(0.05+	0.05-)	880907	809	0.1+	0.2-	910613	801	0.9+	0.1+
390422	020	(0.06+	0.05-)	880910	809	0.4+	0.1+	910709	801	0.7-	0.2+
490720	078	(10.3-	9.4-)X	880910	809	0.5+	0.2-	910709	801	0.7-	0.1-
490725	760	1.7+	0.2+	880910	809	1.2+	0.4-	910711	801	0.8-	0.2-
490725	760	0.8+	0.5-	880911	809	0.1-	0.4+	910711	801	0.8-	0.3-
620802	760	2.7-	0.7+	880911	809	0.3+	0.3+	930122	691	0.8-	0.5+
620802	760	0.8-	0.2-	880911	809	0.7+	0.2+	930122	691	0.6-	0.4-
880902	809	1.7-	1.3-	880917	809	(2.0+	5.8+)	930122	691	0.6-	0.2-
880902	809	1.4-	1.1-	880918	809	(1.6+	5.6+)	930126	691	0.3-	0.4-
880902	809	1.1-	0.7-	880918	809	(1.7+	5.8+)	930126	691	0.2-	0.1+
880904	809	0.8-	0.4-	880919	809	(1.7+	7.0+)	930126	691	0.3-	0.1-
880904	809	0.9-	0.5-	880919	809	(1.8+	6.9+)	930221	801	0.8+	0.1-
880904	809	0.5-	0.9-	880919	809	(2.0+	7.4+)	930221	801	0.6+	0.3-
880905	809	1.3+	1.7+	910608	293	0.2-	0.2-	930226	801	0.5+	0.3-
880905	809	1.7+	1.3+	910609	801	0.3+	0.4-	930226	801	0.5+	0.5-

(5511)* 1988 TH1 = 1989 VU3 = 1989 WA7

Discovered 1988 Oct. 8 by C. S. Shoemaker at Palomar.

Id. H. Kaneda (MPC 18430)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 217.18743		(2000.0)	P	Q
n 0.08354456	Peri.	117.80149	+0.35658936	+0.93395855
a 5.1823165	Node	172.96305	-0.91086537	+0.35320735
e 0.1132485	Incl.	11.19225	-0.20776985	+0.05446091
P 11.80	H 9.5	G 0.15		

Residuals in seconds of arc

510730	675	0.0	0.3+	891103	809	0.5-	0.6+	930122	950	0.1+	0.1+
880910	675	0.1+	0.3-	891128	511	1.3-	0.4-	930123	950	0.0	0.4+
880910	675	0.1-	0.3-	891128	511	1.7+	0.5+	930123	950	0.0	0.4+
881008	675	0.7+	1.1+	891128	511	0.8-	0.5+	930123	675	1.3-	0.5+
881010	675	0.1-	0.8+	891128	511	(3.4+	0.0)	930123	675	0.4+	0.5+
881104	675	0.3-	0.4-	920204	675	0.8-	1.5-	930126	801	0.1+	0.0
881106	675	0.4-	1.4-	920204	675	(3.3+	1.1-)	930126	801	0.4-	0.2+
881112	071	(1.2-	3.6+)	920205	675	0.3+	0.5-	930215	950	0.6+	0.6-
881112	071	(0.8-	4.3+)	930119	801	0.0	0.6-	930215	950	0.3+	0.1+
891103	809	(3.1+	0.2-)	930119	801	0.0	0.2-	930216	950	0.5+	0.4+
891103	809	1.0+	0.1-	930122	950	0.1+	0.1+	930216	950	0.4+	0.4+

(5512)* 1988 VD7 = 1981 TL3 = 1981 UV19

Discovered 1988 Nov. 10 by T. Hioki and N. Kawasato at Okutama.

Id. S. Nakano (MPC 14201), N. S. Chernykh (d, ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	194.71779	(2000.0)	P	Q
n	0.28648926	Peri. 263.40664	+0.89917105	+0.42551426
a	2.2789274	Node 71.37001	-0.34670261	+0.83512157
e	0.2102593	Incl. 6.18676	-0.26699947	+0.34858225
P	3.44	H 13.3	G 0.15	

Residuals in seconds of arc

520130	675	0.7-	0.2-		881205	381	1.1+	0.4+	881215	888	0.0	0.1+
520130	675	0.6-	1.2-		881206	381	0.6+	0.6+	881215	888	0.0	0.3-
811007	095	2.5+	0.5+		881207	381	0.5+	0.2+	890105	888	0.5-	1.0-
811024	675	0.7-	0.4-		881208	381	1.0+	0.1+	890105	888	0.1+	0.8-
811025	675	1.5-	0.5+		881211	877	2.0-	0.1-	910815	376	0.9-	0.7+
811025	675	0.6-	0.0		881211	877	0.2+	1.4-	910815	376	0.4+	0.0
811026	675	0.6-	0.9+		881211	888	0.5-	0.5-	911002	376	(3.4- | 2.1-)
811027	095	1.8+	1.1+		881211	888	0.4-	0.9-	930117	376	0.6+	0.9+
881110	877	(0.0 | 6.2-)Y		881214	888	0.8-	0.0	930117	376	0.8+	0.7+
881110	877	(0.2+ | 3.0-)Y		881214	888	0.3-	0.7-	930213	376	0.5+	1.5+
881111	877	(2.3-	3.4+)Y		881214	888	(3.6+	0.7-)	930213	376	0.6+	1.2+
881111	877	(2.9-	2.8+)Y		881214	888	(3.1+	1.1-)				

(5513)* 1988 WB = 1978 SB6 = 1981 RH4

Discovered 1988 Nov. 27 by W. Kakei, M. Kizawa and T. Urata at the Oohira Station of the Nihondaira Observatory.

Id. T. Kobayashi (MPC 14356)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	99.59718	(2000.0)	P	Q
n	0.29970937	Peri. 183.86054	-0.40645615	-0.91326473
a	2.2114095	Node 290.12354	+0.83905058	-0.36130293
e	0.0551832	Incl. 1.66122	+0.36164558	-0.18816940
P	3.29	H 13.5	G 0.15	

Residuals in seconds of arc

780928	095	0.5-	0.2+		881212	372	0.5+	0.0	911009	801	0.5+	0.2+
781004	095	0.2+	0.5+		910909	801	0.3+	0.3+	911107	675	0.2+	2.6-
810905	095	(2.6+ | 5.2+)		910909	801	0.2+	0.3+	911107	675	0.1+	0.5-
881127	385	2.8-	0.9+		910912	675	1.4-	1.2+	911109	675	0.4+	2.1-
881127	385	1.3-	0.8+		910912	675	0.1-	0.0	911109	675	0.2+	2.5-
881129	385	(3.9- | 0.2+)		910913	801	0.6+	0.2-	930225	372	0.2-	0.5-
881129	385	(5.7- | 0.6-)		910913	801	0.1+	0.0	930225	372	1.4-	0.7+
881130	372	(3.7+ | 5.2+)		910914	675	0.2-	0.1+	930228	372	0.7-	0.3-
881130	372	0.2-	1.4+		910914	675	0.6-	0.0	930228	372	0.5+	0.1-
881205	385	(0.8- | 4.4-)		910917	675	0.7+	0.4+	930301	385	0.4+	0.7-
881205	385	(4.6- | 0.9-)		910917	675	0.2+	0.6-	930301	385	0.6+	0.4-
881209	372	2.0+	0.6-		911008	801	0.1+	0.4+	930313	385	0.3+	0.4-
881209	372	1.9+	0.5-		911008	801	0.2+	0.3+	930313	385	0.2-	0.3-
881211	372	0.4-	0.2+		911009	801	0.3+	0.3+	930313	385	0.1-	0.0

(5514)* 1989 BN1 = 1971 UO2 = 1975 TB7 = 1985 DG3

Discovered 1989 Jan. 29 by Z. Vavrova at Klet.

Id. S. Nakano (MPC 14622)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	60.67807	(2000.0)	P	Q
n	0.23979891	Peri. 304.14906	-0.08144777	-0.99509103
a	2.5658893	Node 150.37021	+0.94777981	-0.09477818
e	0.1712367	Incl. 6.52891	+0.30834995	+0.02847706
P	4.11	H 13.5	G 0.15	

Residuals in seconds of arc

711021	805	1.7+	1.5+		751010	033	1.2-	1.0-	890129	046	1.8+	0.7+
711021	805	0.8+	0.6-		850220	675	1.1-	0.2-	890129	046	2.1+	0.4-
711021	095	1.4-	0.9-		850222	675	1.2-	1.3-	890130	046	0.5-	0.8-

890130 046 0.5+ 1.6+ 890305 033 0.4- 0.8- 930126 801 0.3- 0.3+
890131 046 0.6+ 0.3- 910806 675 0.4+ 0.8- 930126 801 0.2- 0.3+
890131 046 0.3- 0.6- 910806 675 0.2+ 1.1- 930220 801 0.5- 0.5-
890201 046 (3.7- 0.3+) 910810 675 0.6+ 0.2+ 930220 801 0.2- 0.5-
890201 046 (4.4- 0.7-) 910810 675 0.1- 0.2- 930225 801 0.3- 0.1-
890305 033 0.6- 1.1- 930120 801 0.5+ 0.6+ 930225 801 1.1- 0.8+

(5515)* 1989 EL1 = 1976 HF
Discovered 1989 Mar. 5 by E. F. Helin at Palomar.
Id. S. Nakano (MPC 14624)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 341.02415 (2000.0) P Q
n 0.22680358 Peri. 45.18966 -0.79841984 +0.60117994
a 2.6629894 Node 171.57145 -0.59636400 -0.78198712
e 0.2279397 Incl. 13.12869 -0.08292006 -0.16455646
P 4.35 H 12.4 G 0.15
Residuals in seconds of arc
760423 095 0.8- 0.7+ 890428 675 0.6+ 1.2- 900918 675 0.7+ 1.9-
760503 095 1.3+ 1.7+ 890501 675 0.4+ 1.4- 900919 675 1.4+ 2.6-
890305 675 1.8- 1.7- 890501 675 0.2+ 1.1- 900919 675 0.0 0.7-
890305 675 2.5- 1.9- 900817 675 1.5- 0.3+ 930120 596 0.5- 1.7-
890306 033 0.7+ 0.9- 900817 675 0.3- 0.6- 930120 596 1.4- 1.1-
890306 033 0.0 1.0- 900820 675 1.1- 0.3+ 930126 801 0.8+ 0.3+
890306 675 (1.7- 2.9-) 900820 675 1.7- 0.4- 930126 801 0.9+ 0.3+
890406 675 0.2+ 0.3+ 900913 675 (0.7+ 2.7-) 930218 801 0.1+ 0.3+
890406 675 1.5+ 1.2+ 900913 675 (0.6+ 3.4-) 930218 801 0.1- 0.5+
890408 675 0.7- 0.6+ 900916 675 (3.8- 1.3+) 930220 801 0.1+ 0.2-
890408 675 0.1- 0.3- 900916 675 1.4+ 0.1+ 930220 801 0.3+ 0.0
890428 675 (0.4+ 3.9-) 900918 675 2.2+ 1.9-

(5516)* 1989 JK = 1983 YA = 1990 QJ7
Discovered 1989 May 2 by E. F. Helin at Palomar.
Id. B. G. Marsden (MPC 17443)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden
M 31.34705 (2000.0) P Q
n 0.23749839 Peri. 35.64901 -0.95441038 +0.28907872
a 2.5824323 Node 160.74090 -0.29816910 -0.93496691
e 0.1713077 Incl. 13.03478 +0.01400074 -0.20559760
P 4.15 H 12.8 G 0.15
Residuals in seconds of arc
831229 567 0.1- 2.5+ 890601 675 (0.9- 3.0-) 900820 809 0.4+ 0.5+
831229 567 (2.6+ 4.5-) 890602 675 1.1- 1.1+ 900820 809 0.4- 0.0
890502 675 1.5+ 0.5+ 890602 675 (6.5- 2.3+) 900820 809 0.1- 0.7+
890502 675 1.0+ 0.6+ 890602 675 (1.6- 6.9-) 900826 809 0.7- 0.5-
890504 675 0.3- 0.4+ 890604 675 0.2+ 0.2+ 900826 809 0.0 0.5-
890504 675 1.2- 0.5- 890604 675 1.3+ 0.4+ 900826 809 0.3- 1.1-
890529 675 0.1+ 0.1+ 890606 675 1.5+ 0.9- 930124 801 0.2+ 0.1+
890529 675 (2.8- 0.8+) 890606 675 (2.3+ 0.4+) 930124 801 0.3+ 0.1-
890530 675 2.1- 2.0- 890705 675 0.3- 1.8- 930126 801 0.7+ 0.3-
890530 675 (0.1+ 3.8+) 890710 675 0.5+ 0.2- 930126 801 (0.2+ 2.7-)
890531 675 0.6+ 1.7+ 890710 675 1.0- 0.0 930220 801 0.2+ 1.0+
890601 675 0.8+ 0.2+ 900816 809 0.3+ 1.6+ 930225 801 0.2- 0.1+
890601 675 1.1- 1.8+ 900816 809 0.5+ 0.8+ 930225 801 0.9- 0.8-
890601 675 (0.1- 4.9-) 900816 809 0.4- 0.9+

(5517)* 1989 LJ = 1980 BK2
Discovered 1989 June 4 by E. F. Helin at Palomar.
Id. G. V. Williams (MPC 17208)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 25.80185	(2000.0)	P	Q	
n 0.23626632	Peri. 116.02698	-0.87033151	+0.42530241	
a 2.5914023	Node 90.01575	-0.49154861	-0.78099603	
e 0.1200091	Incl. 14.37551	+0.03005054	-0.45734348	
P 4.17	H 12.3	G 0.15		

Residuals in seconds of arc

800123	095	1.3+	2.7+	890705	675	1.3-	2.0-	920102	801	0.3+	0.8-
890604	675	0.7+	1.1+	890706	675	1.9+	1.3-	920107	801	0.1+	1.2-
890604	675	1.6-	1.8+	890706	675	1.7+	2.0-	920107	801	0.2+	1.3-
890606	675	1.2+	2.1+	900922	675	0.9+	0.3+	930119	801	0.8-	0.4+
890606	675	0.0	0.6+	900922	675	0.5-	1.3+	930125	801	1.3+	0.6-
890629	675	0.6-	2.2-	900924	675	0.6+	0.3+	930125	801	1.0+	0.2-
890629	675	0.5-	0.6-	900924	675	0.7-	0.7+	930218	801	0.0	0.1-
890701	675	1.5-	0.1-	911207	675	0.1-	1.5-	930218	801	0.1+	0.7-
890701	675	2.5-	0.2+	911207	675	0.0	0.6-	930220	801	0.4+	0.0
890705	675	1.7-	0.7-	920102	801	0.1+	0.8-	930220	801	0.3+	0.0

(5518)* 1989 YF = 1970 EH1 = 1973 AF4 = 1980 DR2

Discovered 1989 Dec. 30 by J. M. Baur at Chions.

Id. G. V. Williams (MPC 16435), H. Kaneda (ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 237.75231	(2000.0)	P	Q	
n 0.28791508	Peri. 140.24057	-0.07973356	+0.99065560	
a 2.2713973	Node 124.91042	-0.94545508	-0.03998529	
e 0.1844547	Incl. 7.75483	-0.31584372	-0.13039422	
P 3.42	H 12.5	G 0.15		

Residuals in seconds of arc

700313	095	0.1-	0.4+	900105	400	0.5+	2.1+	910512	801	0.1-	0.4+
730103	095	(1.3-	4.5-)	900217	567	0.6+	0.3-	910513	801	0.0	0.6+
800220	095	0.3+	2.2-	900217	567	0.5+	1.2-	910513	801	0.4-	1.1+
891230	567	0.4+	1.0+	900218	567	0.8+	0.3-	921224	801	0.4-	0.1+
891230	567	0.1+	0.6+	900218	567	0.0	0.6-	921224	801	0.3-	0.2-
891231	567	0.7-	0.1-	900222	567	0.2-	0.1+	921228	801	0.4-	0.0
891231	567	0.0	0.7-	900222	567	0.1+	0.2+	921228	801	0.3-	1.0-
900102	567	1.4+	0.5+	900224	567	1.6-	0.4+	930221	801	0.4+	0.2-
900102	567	0.3+	0.9+	900224	567	1.6-	0.5+	930221	801	0.2+	0.2-
900104	567	0.8+	0.1+	910419	801	0.7+	0.0	930225	801	1.5+	1.0+
900104	567	0.3-	0.1+	910419	801	0.3+	0.1+	930225	801	0.1+	0.9+
900105	400	1.7-	0.3+	910512	801	0.3-	0.2+				

(5519)* 1990 QB4 = 1968 UR2 = 1979 SF4

Discovered 1990 Aug. 23 by H. E. Holt at Palomar.

Id. H. Kaneda (MPC 17640), R. Nagata (ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 89.32812	(2000.0)	P	Q	
n 0.17457878	Peri. 281.64120	+0.17917280	-0.98282846	
a 3.1706021	Node 157.88927	+0.94212450	+0.15849430	
e 0.0248828	Incl. 6.72933	+0.28336995	+0.09448695	
P 5.65	H 12.4	G 0.15		

Residuals in seconds of arc

681023	095	0.7+	1.0-	710513	675	0.8+	0.5+	900816	809	0.8+	0.5+
710324	675	(0.7+	2.5-)	710513	675	2.1-	1.3-	900816	809	0.3+	0.5+
710326	675	0.7-	0.3-	710514	675	0.0	1.2+	900818	809	0.0	0.7+
710326	675	0.3+	0.5-	710514	675	0.0	1.3-	900818	809	1.4-	0.5+
710327	675	(0.0	3.4-)	710516	675	1.0-	1.0-	900818	809	0.9-	0.8+
710402	675	1.2-	0.2-	710516	675	1.4+	0.7-	900822	675	0.8+	1.1-
710416	675	0.1+	0.7-	790924	095	0.6-	1.2+	900822	675	0.4-	1.8-
710416	675	0.4+	1.4-	900816	809	0.7+	0.2+	900823	675	0.7+	1.5-

900823 675 0.5+ 1.7- 900912 809 1.6- 0.9+ 911107 675 (0.0 3.8-)
900824 809 1.9+ 0.6+ 900912 809 1.4- 1.0+ 911109 809 0.8- 1.2+
900824 809 1.1+ 0.1+ 900912 809 1.3- 0.8+ 911109 809 0.3+ 1.8-
900824 809 1.1+ 0.5+ 900912 809 1.1- 0.5- 911109 675 (1.4+ 2.5-)
900826 809 0.4- 0.4+ 900913 809 1.0- 0.6- 911109 675 0.6- 1.6-
900826 809 0.7+ 0.7+ 900913 809 0.7- 0.5- 930126 801 0.1- 0.1-
900826 809 0.1+ 0.8+ 900913 675 0.6- 0.8- 930126 801 0.1+ 0.4+
900829 675 0.5+ 2.2- 900913 675 0.3- 1.1- 930127 801 0.1+ 0.1+
900829 675 1.8+ 1.8- 900913 809 0.0 0.3- 930127 801 0.2- 0.1+
900910 809 0.2- 0.6+ 900914 809 0.1+ 0.1+ 930224 801 0.1+ 0.3+
900910 809 0.1+ 0.3+ 900914 809 0.2+ 0.2- 930224 801 0.2- 0.4+
900910 809 0.3+ 0.3+ 911106 809 0.6- 0.4+ 930226 801 0.2+ 0.2+
900911 809 0.1+ 0.4+ 911106 809 0.5+ 0.0 930226 801 0.8+ 0.5+
900911 809 0.2+ 0.6+ 911106 809 0.5+ 0.9-
900911 809 0.5+ 0.4+ 911107 675 0.4+ 1.0-

(5520)* 1990 RB = 1979 OR7 = 1982 DU1

Discovered 1990 Sept. 12 by T. Urata at the Oohira Station of the Nihondaira Observatory.

Id. T. Urata (MPC 17215, MPC 19504)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	209.54526	(2000.0)	P	Q
n	0.18925082	Peri. 56.39616	+0.97436507	+0.17463397
a	3.0045369	Node 293.19177	-0.22053641	+0.86601095
e	0.1047298	Incl. 8.87610	+0.04445678	+0.46853817
P	5.21	H 11.8	G 0.15	

Residuals in seconds of arc

790721 095 (4.1- 5.5+) 900920 885 0.8+ 0.7+ 920112 898 0.7- 1.1+
790724 413 1.8- 1.3- 900920 885 0.1+ 1.1+ 930225 905 1.1- 1.1-
790727 675 2.0+ 1.0- 900927 385 2.0- 0.6+ 930225 905 0.2- 1.2+
820226 801 1.5+ 0.8+ 900927 385 (4.0- 4.2+) 930225 905 0.7+ 0.3+
900912 385 1.2- 0.6- 911228 385 1.9- 0.5- 930228 385 0.1+ 0.2-
900912 385 1.4+ 1.8- 911228 385 1.7+ 0.7- 930228 385 0.9- 0.8-
900917 675 1.5+ 0.5- 920104 898 0.0 0.3+ 930228 385 0.3- 0.7-
900917 675 0.3+ 1.5- 920104 898 0.6+ 0.8- 930313 385 0.4- 1.4-
900920 675 (1.1+ 2.6-) 920110 385 0.5- 1.9- 930313 385 0.1+ 1.2-
900920 675 0.2+ 0.8- 920110 385 0.7+ 0.9- 930313 385 0.6- 1.2-
900920 885 1.3+ 0.2- 920112 898 1.5- 1.5+

(5521)* 1991 PM1 = 1991 TA = 1958 TV = 1974 OC = 1979 YE6

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

Id. G. V. Williams (MPC 19309, unpublished), S. Nakano (ibid., unpublished)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	156.02650	(2000.0)	P	Q
n	0.23836403	Peri. 266.40692	+0.98025020	+0.04241154
a	2.5761762	Node 91.09465	+0.03637316	+0.92140533
e	0.1948007	Incl. 11.13932	-0.19438758	+0.38628159
P	4.13	H 12.4	G 0.15	

Residuals in seconds of arc

520130 675 0.3+ 0.5+ 910815 675 0.2- 0.8- 911013 413 1.0- 1.0-
520130 675 1.0- 0.5+ 910815 675 0.4+ 0.1- 930126 801 0.2+ 0.2+
581015 760 0.3- 1.6+ 910816 675 0.5+ 0.0 930126 801 0.5+ 0.2+
581015 760(23.9- 2.9-) 910818 413 0.0 0.3- 930218 801 0.1+ 0.5-
740716 808 0.7- 0.5- 910818 413 0.5- 1.0+ 930218 801 0.5+ 0.4-
740717 808 0.5+ 0.3+ 911001 413 0.8+ 0.6- 930221 801 0.4- 0.9-
740718 808 0.6+ 0.1- 911002 413 0.0 0.4- 930221 801 0.2- 0.3-
791223 095 (5.3- 1.0+) 911009 413 0.1- 0.0

(5522)* 1991 PJ5 = 1954 WG = 1954 WL = 1969 UH2 = 1980 RQ1
Discovered 1991 Aug. 3 by E. W. Elst at the European Southern Observatory.
Id. B. G. Marsden (MPC 19310), O. Kippes (d, MPC 1750), S. Kanda (d, MPC 1753)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden

M	94.68910	(2000.0)	P	Q	
n	0.26256789	Peri.	139.89364	+0.30978673	-0.95056333
a	2.4153216	Node	292.05031	+0.86630027	+0.29149371
e	0.1838043	Incl.	1.32818	+0.39186225	+0.10705502
P	3.75	H	13.5	G 0.15	

Residuals in seconds of arc

541116	760	0.2+	1.3+	910805	809	(4.3+	0.4+)	930128	010	0.1+	0.9+
541116	760	1.5-	0.7+	910904	809	0.3+	1.5+	930128	809	1.0-	1.5-
541117	760	(0.8+	3.6+)	910904	809	0.3+	1.0+	930128	809	1.1-	1.8-
541117	760	0.1+	2.0+	910904	809	0.1+	1.4+	930214	877	0.6+	0.7-
691018	095	1.5-	0.8-	910905	809	0.9-	0.3+	930214	877	0.4-	0.6+
691105	095	1.4+	0.0	910905	809	0.9-	1.0+	930217	877	(2.5+	0.1-)
800908	095	0.5-	2.6-	910905	809	0.4-	1.2+	930217	877	(2.2+	1.0-)
800914	688	1.6+	1.4-	910906	809	0.3+	0.5+	930218	511	0.3-	0.2-
800914	688	2.1+	2.3-	910906	809	0.6-	0.7+	930219	511	(0.8-	2.9-)
910803	809	(3.9+	0.2+)	910906	809	1.4-	1.0+	930219	511	0.1+	0.0
910803	809	(3.1+	0.0)	910907	809	0.7+	0.4-	930219	511	(3.5-	2.1-)
910803	809	(3.0+	0.7+)	910907	809	0.2-	0.4-	930221	801	0.3+	0.8+
910804	809	(2.7+	1.2+)	930123	809	0.1+	1.6-	930221	801	0.4+	0.7+
910805	809	(4.6+	0.7-)	930128	010	0.1-	1.0+	930224	801	0.6+	1.4+
910805	809	(4.3+	0.0)	930128	010	0.2-	0.9+	930224	801	1.4+	0.9+

(5523)* 1991 PH8 = 1980 DB5 = 1987 UX7 = 1989 AH1
Discovered 1991 Aug. 5 by H. E. Holt at Palomar.
Id. G. V. Williams (MPC 19506), A. Lowe (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	198.91110	(2000.0)	P	Q	
n	0.20668492	Peri.	176.19125	-0.09528401	+0.99372556
a	2.8331106	Node	88.33451	-0.91484890	-0.06422404
e	0.0127693	Incl.	3.35917	-0.39239323	-0.09156850
P	4.77	H	12.2	G 0.15	

Residuals in seconds of arc

800221	095	0.6+	2.2+	910710	809	0.7-	0.9-	910807	675	0.8+	0.9+
871023	095	0.6-	2.3+	910710	809	0.8-	1.0-	921028	400	1.0+	0.9-
890113	400	0.8+	0.2-	910711	809	0.9-	0.5+	921028	400	0.1+	1.5-
890113	400	1.2-	1.1-	910711	809	0.0	0.5+	921102	400	0.1-	0.5+
890113	400	0.4+	0.6+	910711	809	0.4+	0.6+	921102	400	1.9-	2.3+
890115	400	0.2-	0.5+	910712	809	(9.2+	4.9-)	930125	801	0.0	0.7-
890115	400	1.4+	0.3+	910805	675	(0.7+	11.6+)	930126	801	0.4+	1.0-
890115	400	0.6-	0.4+	910805	675	1.6+	1.3+	930126	801	0.6+	0.5-
910710	809	0.9-	0.8-	910807	675	(3.1+	1.7+)	930127	801	0.0	0.4-

(5524)* 1991 RA30 = 1954 KB = 1979 EG = 1983 HE1 = 1988 VV4
Discovered 1991 Sept. 15 by H. E. Holt at Palomar.
Id. K. Ichikawa (MPC 20931), S. Nakano (MPC 21579)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	293.44242	(2000.0)	P	Q	
n	0.27076115	Peri.	119.68703	-0.66004690	+0.74097097
a	2.3663473	Node	108.47058	-0.72641753	-0.58757529
e	0.0270460	Incl.	7.49338	-0.19145669	-0.32514197
P	3.64	H	12.9	G 0.15	

Residuals in seconds of arc

540530	760	1.3+	0.6+		910914	675	0.4-	0.4-		921226	894 (3.4- 1.8-)
540530	760	1.8-	1.0-		910915	675	0.2+	0.5-		921226	894 2.4- 1.2-
790304	010	0.1+	0.1-		910915	675	0.2+	0.3-		930119	801 0.7+ 0.4-
790304	010	0.1-	0.1-		910915	675	0.0	0.9-		930119	801 0.3+ 0.7-
830419	688	0.9+	2.4-		910915	675	0.3-	0.8-		930120	385 0.6+ 0.7-
830419	688	0.8-	0.7-		910916	675	0.2+	1.4-		930120	385 1.0+ 0.2-
881112	675	1.2+	0.4+		910916	675	0.6+	0.7-		930121	801 0.4+ 0.6-
881113	675	0.2-	2.1+		921222	894	1.7-	0.6-		930121	801 0.5+ 0.9-
910914	675	0.3+	1.0-		921222	894	0.5-	1.1-			

(5525)* 1991 TS4 = 1980 FO7 = 1981 SX = 1983 CH1 = 1983 DW = 1983 EV3

Discovered 1991 Oct. 15 by N. Kawasato at Uenohara.

Id. S. Nakano (MPC 19510), B. G. Marsden (d, ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	237.50185	(2000.0)	P	Q
n	0.29766791	Peri. 342.78097	+0.82322143	+0.56632529
a	2.2215088	Node 342.54854	-0.50400845	+0.69679186
e	0.1509097	Incl. 7.62172	-0.26130816	+0.44017811
P	3.31	H 13.0	G 0.15	

Residuals in seconds of arc

800323	809	0.8-	0.5+		911007	364	1.1+	0.5+		911212	376 0.9- 0.9+
810929	704	1.2+	1.2+		911007	364	0.2+	0.0		930119	801 0.6+ 0.7+
810929	704	2.0-	1.6+		911013	364	0.3-	2.3-		930119	801 0.6+ 0.4-
810930	704	0.8-	1.7+		911013	364	0.2+	0.7-		930121	801 0.9+ 0.4+
830211	688	2.0+	0.6-		911015	376	0.1+	0.7-	Y	930121	801 0.8+ 0.5+
830211	688	0.1+	1.9-		911015	376	0.0	0.5-	Y	930213	376 0.1- 1.6+
830219	688	2.5-	0.4-		911105	376	1.1-	0.5+		930213	376 0.2+ 0.2-
830315	095	1.7-	0.4+		911105	376	1.0-	0.1-		930225	801 0.3+ 0.2-
910914	675	1.1+	1.1-		911107	376	0.7+	0.1+		930225	801 0.4+ 0.2-
910914	675	0.8+	1.3-		911107	376	0.3-	0.2+			

(5526)* 1991 UP1 = 1948 UB = 1982 SE7 = 1990 MD

Discovered 1991 Oct. 18 by T. Urata at the Oohira Station of the Nihondaira Observatory.

Id. S. Nakano (MPC 19512), T. Urata (ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Urata

M	170.36225	(2000.0)	P	Q
n	0.22980431	Peri. 151.05836	+0.95472530	-0.24830709
a	2.6397569	Node 224.32957	+0.20717750	+0.95019833
e	0.1622120	Incl. 13.55995	+0.21348790	+0.18832611
P	4.29	H 12.3	G 0.15	

Residuals in seconds of arc

481028	062	0.6-	0.9+		911018	385	1.4+	0.9+		930215	385 0.6+ 0.1+
481028	062	0.7+	1.7-		911103	385	0.1-	1.3-		930215	385 0.2+ 0.2+
810508	675	0.5+	0.6-		911103	385	0.5+	1.2-		930228	385 1.0- 0.1-
810509	675	0.7-	0.2+		911104	385	0.3-	0.9+		930228	385 0.7+ 0.5+
820917	095	(1.9+	7.1+)		911104	385	2.0+	0.1+		930228	385 0.4- 1.0-
900622	675	(10.1+	11.9+)		911212	385	0.8-	0.1-		930313	385 0.5- 0.3+
900622	675	(10.2+	11.5+)		911212	385	1.8-	0.5+		930313	385 0.0 0.2+
900623	675	(10.2+	6.7+)		911213	385	0.3-	0.1-		930313	385 0.2+ 0.2+
900623	675	(8.4+	13.8+)		911213	385	1.2-	0.3+			
911018	385	0.3+	0.3+		930120	385	0.4+	1.1-			

(5527)* 1991 UQ3 = 1981 UO25 = 1990 HB5

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

Id. S. J. Bus (k, MPC 20510), G. V. Williams (ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	293.54305	(2000.0)	P	Q
n	0.29594616	Peri. 172.74939	+0.20457710	+0.97696390
a	2.2301166	Node 109.04092	-0.90127293	+0.21221234
e	0.1278193	Incl. 3.68432	-0.38191010	+0.02252679
P	3.33	H 13.0	G 0.15	

Residuals in seconds of arc

811025	675	0.6+	0.6-	911104	399	0.3-	0.0	930215	399	0.8-	0.4+
811026	675	0.2-	0.7-	911109	399	0.7-	0.8+	930215	399	0.5+	0.5-
900419	095	0.5+	0.2+	911109	399	2.0-	1.9+	930221	399	1.1-	1.0+
900419	095	0.5-	0.2-	911204	399	0.9-	0.5+	930221	399	1.1-	1.2+
911018	399	0.9+	0.5-	911204	399	1.6+	0.7+	930224	801	0.0	0.4-
911018	399	1.0+	0.5+	911207	399	0.5+	0.6-	930225	399	1.1-	1.8+
911019	399	1.7+	0.2-	911207	399	0.6+	0.0	930225	399	1.6+	1.4-
911019	399	2.2+	1.0+	930119	801	0.4+	0.4-	930226	801	0.3+	0.3-
911031	399	1.5-	1.0-	930119	801	0.2-	0.8-	930226	801	0.3+	1.2-
911031	399	1.4-	0.8-	930121	801	1.0+	0.2+				
911104	399	1.8-	1.0-	930121	801	0.3+	0.0				

(5528)* 1992 AJ = 1957 BC = 1977 QB4 = 1983 OE = 1990 SC18

Discovered 1992 Jan. 2 by S. Ueda and H. Kaneda at Kushiro.

Id. G. V. Williams (MPC 20031)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	93.05106	(2000.0)	P	Q
n	0.16815050	Peri. 345.20750	-0.59445206	-0.78405272
a	3.2509025	Node 140.79903	+0.76349529	-0.62001989
e	0.0359643	Incl. 16.41139	+0.25239193	+0.02892528
P	5.86	H 10.9	G 0.15	

Residuals in seconds of arc

540928	675	1.5-	0.1-	920104	399	0.5-	0.3-	920301	801	0.0	2.5-
540928	675	0.9+	0.5+	920104	399	0.8-	2.1+	920301	801	0.6+	0.2-
570121	024	0.9+	1.0+	920110	402	0.3+	1.0-	920304	801	0.5+	0.4-
770818	095	1.2-	1.6+	920110	402	1.8+	0.4-	920304	801	0.6+	0.4-
830717	688	0.6+	1.0-	920111	402	0.6+	0.8-	920401	801	0.6+	0.1-
830717	688	0.7+	2.2-	920111	402	0.0	0.5-	920401	801	0.5+	0.1-
900928	413	0.1+	0.2-	920124	399	0.6-	0.4-	930119	801	0.3+	0.3-
900928	413	0.2+	0.8+	920124	399	0.8+	0.6-	930119	801	0.3-	0.7-
920102	399	0.5-	1.3+	920128	399	1.0-	0.2+	930220	801	0.2+	0.8+
920102	399	1.4-	0.9+	920128	399	2.0-	0.6+	930220	801	0.7+	0.8+

(5529)* 2557 P-L = 1990 FN1

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. H. Kaneda (MPC 16438)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	312.30817	(2000.0)	P	Q
n	0.28749824	Peri. 234.47243	-0.35937731	+0.93295548
a	2.2735923	Node 14.50976	-0.82672616	-0.30784540
e	0.1714771	Incl. 4.81362	-0.43286466	-0.18661534
P	3.43	H 13.1	G 0.15	

Residuals in seconds of arc

600924	675	0.5-	0.8-	601025	675	0.6+	0.2-	900430	808	(7.2-	0.9+)
600926	675	0.3-	0.1-	601026	675	0.1+	0.4-	900430	808	0.8-	0.5+
600928	675	0.2+	0.2+	900329	400	0.7+	1.1+	911018	399	0.7+	0.4+
600929	675	0.7+	0.5+	900329	400	0.9+	0.1-	911018	399	(4.3+	0.0)
601017	675	0.1-	0.3+	900330	400	(2.6+	3.1+)	911019	399	0.0	0.6+
601022	675	0.3-	0.4-	900330	400	(2.7+	2.7+)	911019	399	1.3+	1.6+

911029 399 1.6- 0.5- 911031 399 0.6- 1.0+ 930218 801 0.3+ 0.0
911029 399 0.3- 1.1- 930121 801 0.2- 0.3- 930218 801 0.4- 0.1-
911031 399 0.7- 0.3+ 930121 801 0.0 0.2-

(5530)* 2835 P-L = 1981 UX27

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. E. Bowell (MPC 20648)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	52.64712	(2000.0)	P	Q
n	0.28354385	Peri.	114.91127	-0.66176451	-0.74870890
a	2.2946823	Node	16.70557	+0.62998008	-0.58336586
e	0.1520243	Incl.	7.75028	+0.40643920	-0.31483210
P	3.48	H	13.8	G	0.15

Residuals in seconds of arc

550420 675 0.7- 0.6- 601017 675 0.0 0.4- 930121 801 0.0 0.5-
550420 675 0.2- 0.2- 601017 675 0.2+ 0.5- 930121 801 0.1+ 0.1+
600924 675 0.0 0.6- 601026 675 0.7+ 0.3+ 930126 801 0.1- 0.2+
600926 675 0.7+ 1.0+ 811024 675 0.4+ 0.4+ 930126 801 0.0 0.4+
600927 675 0.2+ 0.7+ 811025 675 0.5+ 1.1- 930220 801 0.6+ 0.2+
600928 675 0.4- 0.4- 811026 675 1.7- 0.3- 930220 801 0.1- 0.4-

(5531)* 1051 T-2 = 1980 FD

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (MPC 15075)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	33.42344	(2000.0)	P	Q
n	0.21897244	Peri.	306.39924	-0.58698070	-0.80959879
a	2.7261082	Node	179.53160	+0.79637118	-0.57780071
e	0.0954769	Incl.	13.14474	+0.14576218	-0.10342213
P	4.50	H	13.1	G	0.15

Residuals in seconds of arc

730919 675 1.2+ 1.1- 730929 675 1.0- 0.3+ 800323 809 0.3+ 0.6-
730919 675 0.5+ 1.2- 730930 675 0.5+ 0.2- 910917 675 0.3+ 0.3+
730920 675 0.6+ 0.2- 730930 675 0.7- 0.2- 910917 675 0.8+ 0.2+
730924 675 1.4+ 1.3- 731004 675 0.8+ 1.5- 911106 801 0.9- 0.4+
730924 675 0.1+ 0.6- 731004 675 0.2+ 0.3- 911106 801 0.6- 0.5+
730925 675 0.8- 2.1- 731005 675 0.2- 1.2- 921225 801 0.3- 0.3-
730925 675 1.1- 2.5+ 731005 675 1.1+ 0.3- 921225 801 0.2- 0.5-
730925 675 0.5- 0.1+ 800316 046 0.7+ 1.9- 930121 801 0.6- 0.3+
730925 675 1.5- 2.5+ 800316 046 0.5+ 2.3- 930121 801 0.5- 0.1+
730929 675 0.2+ 1.2+ 800317 046 0.8- 0.6- 930127 801 0.8+ 0.2+
730929 675 0.1+ 0.6- 800317 046 1.3- 2.5+ 930127 801 0.8+ 0.3+

1929 TD1 = 1978 SR5

Id. S. Nakano (MPC 9684)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	6.35048	(2000.0)	P	Q
n	0.26173067	Peri.	290.90563	+0.92666995	+0.37339567
a	2.4204696	Node	47.19711	-0.31932887	+0.84256521
e	0.1844475	Incl.	3.36850	-0.19827224	+0.38814888
P	3.77	H	14.5	G	0.15

Residuals in seconds of arc

291001 690 1.4+ 0.2- 291012 690 1.3+ 0.5- 780927 095 0.5- 0.2+
291005 690 0.3- 0.1+ 770424 675 0.2+ 0.1+ 781003 095 1.5- 0.1-
291011 690 2.3- 0.5+ 770425 675 0.2- 0.1- 781007 095 2.0+ 0.0

1964 UP = 1986 RH
Id. C. M. Bardwell (MPC 11241)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M	97.88766	(2000.0)	P	Q
n	0.30988736	Peri. 357.06843	+0.45287247	+0.89024635
a	2.1627192	Node 299.85521	-0.81685867	+0.39243045
e	0.1471387	Incl. 3.21644	-0.35727921	+0.23121371
P	3.18	H 14.0	G 0.15	

Residuals in seconds of arc

641030	330	1.8-	0.7+	860912	054	1.3+	0.7+	890703	675	1.2+	0.8-
641111	330	1.9+	0.8-	861003	801	0.0	0.1+	890726	403	0.2+	0.8+
641127	330	(7.4+	0.3+)	861006	801	0.9+	1.0-	890726	403	0.0	0.1+
860906	095	1.8-	0.9-	890701	675	1.2+	0.6-	890731	801	1.4-	0.2-
860908	054	(6.1+	1.9+)	890701	675	0.3+	0.3-	890801	675	(3.2-	5.4+)
860911	054	0.1+	0.4+	890703	675	0.8+	1.1-	890801	675	2.3-	2.4+

1969 TR1 = 1928 SK = 1986 TA
Id. B. G. Marsden (MPC 11341, unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	15.33869	(2000.0)	P	Q
n	0.28870793	Peri. 346.68228	+0.93974806	+0.34184498
a	2.2672369	Node 353.32442	-0.31046233	+0.84852498
e	0.2693316	Incl. 1.94698	-0.14313185	+0.40391506
P	3.41	H 13.5	G 0.15	

Residuals in seconds of arc

280922	024	0.9+	0.3-	861001	552	0.9-	0.7-	861011	552	1.0+	1.9+
281007	024	1.7-	2.3+	861002	026	0.4-	0.5+	861011	552	0.1+	0.0
691008	095	2.2-	2.7+	861002	552	0.4+	0.7+	861011	095	0.2+	0.1-
691013	095	(1.0-	4.7+)	861002	552	0.8+	1.9+	861023	026	1.1+	1.2-
691016	095	0.2+	2.0+	861003	552	0.1+	0.7+	861024	552	2.1+	1.8-
691104	095	(6.5-	0.7-)	861003	552	0.5+	1.7+	861024	552	0.8+	1.8-
691111	095	(3.8-	0.4-)	861004	026	0.7-	0.6-	861029	552	0.4+	1.2-
691113	095	(0.4+	4.3+)	861004	552	0.2-	0.2+	861029	552	1.9+	2.0-
860903	026	0.4+	0.2+	861004	552	0.5-	0.4-	861107	552	1.1-	0.3+
860907	026	0.8-	0.5-	861006	026	0.5+	0.3-	861107	552	(1.3-	2.8+)
860911	026	0.2-	1.3-	861006	026	0.3-	0.4-	861108	026	0.9+	0.0
860914	095	0.3-	0.3-	861010	095	0.7+	1.4-	861201	801	0.1-	1.7-
860930	552	1.1-	0.7-	861010	552	0.8-	0.9+				
861001	552	0.4+	0.6-	861010	552	1.1-	0.2+				

1973 QO1 = 1956 SA = 1990 RT4
Id. B. G. Marsden (MPC 17624, unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	243.78529	(2000.0)	P	Q
n	0.23203860	Peri. 36.09660	+0.99067974	+0.10095289
a	2.6227842	Node 317.81817	-0.13290622	+0.86342330
e	0.2932846	Incl. 7.82703	+0.02982614	+0.49427595
P	4.25	H 13.5	G 0.15	

Residuals in seconds of arc

560927	760	0.1-	1.3-	900829	095	(3.1+	12.8+)	900917	675	1.0-	0.4+
560927	760	0.1+	1.3+	900829	095	(2.1+	11.3+)	900918	675	0.1-	0.5+
730829	095	0.8-	0.0	900915	675	0.6+	0.6-	900918	675	1.1+	0.8+
730902	095	0.7+	0.0	900915	675	1.0+	0.2-	900919	675	0.1-	0.6-
730927	095	(9.1+	4.9+)	900917	675	0.9-	0.2+	900919	675	0.7-	0.5-

1977 QD3 = 1986 TA7
Id. T. Kobayashi (MPC 12005)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 257.18491		(2000.0)	P	Q
n 0.22789284	Peri.	316.24809	+0.80906698	+0.58719998
a 2.6544972	Node	7.90696	-0.47785613	+0.68165289
e 0.2401891	Incl.	10.31554	-0.34214638	+0.43651521
P 4.32	H	13.5	G 0.15	

Residuals in seconds of arc

770822 095	2.0-	0.1+	861011 092	0.4-	0.3+	901016 801	0.6+	0.5-
770824 095	1.9-	2.4+	861011 092	1.1-	0.6+	901016 801	0.2-	0.5-
770907 095	(3.2+	3.6-)	861012 092	0.6-	0.1+	901017 801	0.1-	1.5-
770907 095	0.2+	2.9+	861012 092	2.4+	0.7-	901017 801	0.0	0.6-
861009 092	0.2-	0.6+	900529 413	2.4+	2.4-	901022 675	2.4+	0.2-
861009 092	0.2-	0.3-	900529 413	0.2+	2.3-	901022 675	0.6+	0.9-

1977 TQ6 = 1986 WZ10
Id. S. Nakano (MPC 12578)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 241.97490		(2000.0)	P	Q
n 0.22535616	Peri.	297.40689	+0.96901905	+0.16752815
a 2.6743799	Node	53.50372	-0.05271184	+0.85814099
e 0.1907946	Incl.	13.04731	-0.24129556	+0.48531264
P 4.37	H	13.5	G 0.15	

Residuals in seconds of arc

771008 095	0.9-	1.1-	771017 675	0.3+	0.4-	861201 381	1.3+	0.6-
771011 675	1.0-	0.4+	771021 675	0.3-	2.7+	901020 801	0.3-	0.6+
771011 675	1.3-	0.9-	771021 675	0.5-	1.8+	901020 801	0.8-	0.4+
771012 675	0.3-	1.7-	771022 675	0.1-	2.8+	901021 801	0.1+	0.6+
771012 675	0.3-	1.9-	771022 675	0.9+	0.5-	901021 801	0.0	0.6+
771016 675	2.2+	1.1-	861130 381	1.3-	0.7+	901112 413	0.2+	0.2-
771016 675	1.4+	1.1-	861130 381	1.2-	0.9+	901120 801	0.0	0.4-
771017 675	1.1+	0.5-	861201 381	1.0+	0.7-	901120 801	0.1-	0.1-

1978 NN1 = 1935 SE1 = 1983 PD
Id. C. M. Bardwell (MPC 8148, unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M 30.02664		(2000.0)	P	Q
n 0.20523599	Peri.	172.11361	+0.71087415	+0.69837773
a 2.8464291	Node	143.12768	-0.65261664	+0.69910739
e 0.2883036	Incl.	7.97271	-0.26220118	+0.15335386
P 4.80	H	13.0	G 0.15	

Residuals in seconds of arc

350929 078	(36.4+	28.0-)X	830814 046	1.0+	1.2+	830910 095	(1.6-	4.0+)
780704 095	0.1+	2.5+	830814 046	0.1+	1.2+	831004 688	0.1-	0.5+
780707 095	0.5-	0.3-	830815 046	0.3-	0.6-	831009 801	0.4+	0.8+
780708 095	0.6+	0.3-	830815 046	0.3-	1.8-	880912 801	(2.3+	4.3+)
830813 046	0.5-	0.0	830820 046	0.1+	1.1-	881012 801	0.2-	1.6+
830813 046	0.6+	1.4-	830820 046	0.7-	0.9-			

1978 VL11 = 1985 UP2 = 1987 DR5
Id. C. M. Bardwell (MPC 11995), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 192.11835		(2000.0)	P	Q
n 0.26262653	Peri.	143.34420	-0.77794719	+0.62088680
a 2.4149621	Node	75.31977	-0.59756117	-0.68365384
e 0.1652337	Incl.	5.72068	-0.19421333	-0.38355835
P 3.75	H	12.5	G 0.15	

Residuals in seconds of arc

781105 675	0.6-	0.0	781107 675	0.6-	1.1+	781129 675	1.2+	0.4+
781106 675	0.8-	0.0	781108 675	0.7-	0.5+	781130 675	0.9+	0.2-

851017	010	(19.7-	4.1+)	910116	801	0.6+	0.0	
851018	010	(11.0-	4.6+)	910116	801	0.6+	0.1-	
870222	054	0.4-	0.3-	910211	801	0.2+	0.0	
870223	054	0.5-	0.2+	910211	801	0.2+	0.1+	
870301	054	0.8+	0.6-	910212	801	0.1+	0.2-	
910112	675	0.0	0.8-	910212	801	0.1+	0.0	
910112	675	0.5-	1.8-	910214	675	0.6-	0.2+	
910114	801	0.1+	0.2+	910214	675	(2.9+	1.0+)	
910114	801	0.3+	0.0	910218	675	0.3-	1.0+	
910114	675	1.0-	1.8-	910218	675	0.7-	0.3+	
910114	675	0.3+	0.6-	910318	400	(0.5-	3.3+)	
910318	400	1.4-	2.3+					
910410	675	0.6+	0.5+					
910410	675	0.3+	0.2+					
910412	675	0.6+	0.1-					
910412	675	1.2+	0.7+					
910508	675	0.3-	0.9-					
910508	675	0.2+	1.0-					
910512	801	0.7-	0.3-					
910512	801	0.6-	0.4-					
910516	801	0.6+	0.9+					
910516	801	0.5+	0.8+					

1978 VP11 = 1989 VN
Id. S. Nakano (MPC 15552)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Williams
M 273.23969	(2000.0)	P	Q
n 0.17497605	Peri. 259.24325	+0.99156136	+0.11778658
a 3.1658013	Node 93.97654	-0.08719828	+0.91507796
e 0.1790211	Incl. 3.11167	-0.09592979	+0.38569243
P 5.63	H 12.5	G 0.15	

Residuals in seconds of arc

781105	675	0.5-	0.4+	891027	675	0.1-	1.1+	
781106	675	0.2-	0.9+	891027	675	0.0	0.7+	
781107	675	0.4-	2.2+	891029	675	0.0	2.2-	
781108	675	1.1-	0.4+	891029	675	1.4+	1.2-	
781130	675	1.6+	0.5-	891101	877	(5.3-	0.7+)	
880713	675	1.2-	0.9+	891101	877	0.6-	1.1+	
880713	675	1.1+	0.6+	891102	877	1.8-	1.2-	
891102	877	0.3-	1.3-					
891104	877	(0.8-	3.6-)					
891104	877	(5.1-	1.5-)					
891130	675	0.6+	0.2+					
891130	675	1.7+	0.8+					

1979 FD3 = 1979 HE2 = 1979 KY = 1989 CN4
Id. S. Nakano (d, MPC 10610), B. G. Marsden (MPC 14780)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Williams
M 73.70861	(2000.0)	P	Q
n 0.29470771	Peri. 99.19341	-0.69263591	+0.72011299
a 2.2363600	Node 126.88437	-0.68032472	-0.63328748
e 0.1243780	Incl. 2.94854	-0.23961171	-0.28352116
P 3.34	H 14.5	G 0.15	

Residuals in seconds of arc

790331	095	0.5-	0.7-	890206	303	0.3+	0.8+	
790420	095	1.0-	1.6-	890206	303	0.2+	1.0+	
790523	809	1.1-	1.0-	890210	303	0.2-	0.8+	
790524	809	0.5-	0.6-	890210	303	0.2-	1.5+	
820130	675	0.4+	1.4-	890210	303	0.4+	0.7+	
820131	675	0.7+	1.2-	890211	303	0.6+	0.0	
890205	303	0.3-	0.3+	890211	303	0.9+	0.9+	
890205	303	0.2-	0.6+	890211	303	0.2+	0.1-	
890205	303	0.2+	0.5+	890212	303	0.2+	0.5-	
890206	303	0.4+	0.7+	890212	303	0.4+	0.1+	
890212	303	0.5+	0.3+					
890212	303	0.5+	0.3+					
890213	303	0.4+	0.1+					
890213	303	0.3+	0.3+					
890213	303	0.2+	0.2-					
890213	303	0.7+	0.3+					
900915	675	0.3-	1.2+					
920307	950	1.0-	0.7-					
920307	950	0.9-	1.1-					
920307	950	1.0-	1.0-					

1979 MA4 = 1942 VA = 1986 TJ7
Id. C. M. Bardwell (MPC 11629, unpublished)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Bardwell
M 51.18047	(2000.0)	P	Q
n 0.15499260	Peri. 146.12373	+0.90637570	+0.42232561
a 3.4323804	Node 188.91581	-0.40180436	+0.85358533
e 0.1899209	Incl. 4.12298	-0.13052334	+0.30501338
P 6.36	H 12.5	G 0.15	

Residuals in seconds of arc

421102	053(47.0-	23.9+)X	710514	675	0.0	0.4+	790731 095	1.5+ 0.1-
421103	053(50.5-	1.5+)X	710516	675	0.6-	0.5-	790823 675	0.0 0.9-
710324	675	0.0 0.6-	790623	413	0.2+	0.8+	860907 095	(3.6+ 1.4-)
710325	675	1.1+ 2.1-	790624	413	0.2-	0.2+	861002 049	0.4+ 1.4-
710326	675	0.4- 0.6-	790625	413	0.1+	0.9+	861002 049	0.2+ 2.6+
710326	675	0.4- 2.1-	790629	413	0.7+	0.6+	861002 049	(2.3+ 3.5-)
710327	675	0.4- 1.7-	790721	095	0.1-	1.5+	861002 049	(1.1+ 4.8-)
710402	675	1.9- 0.0	790724	413	0.7-	0.2-	861011 049	0.2- 1.3-
710416	675	0.5- 0.1+	790726	675	0.6+	0.8+	861011 049	0.2+ 1.3-
710416	675	0.4+ 1.0-	790726	675	0.6+	0.9+	920803 675	0.9+ 2.0-
710513	675	0.2+ 1.0+	790727	675	1.2-	0.3+	920803 675	0.3- 1.8-
710513	675	0.1+ 0.8+	790728	413	1.5-	1.2-	920806 675	0.8+ 1.6-
710514	675	0.5+ 0.6+	790730	095	0.8-	0.7+	920806 675	0.7+ 1.2-

1979 OB9 = 1982 JC2 = 1983 VH7
Id. H. Oishi (JAM 1996)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	277.80042		(2000.0)	P	Q
n	0.27825642	Peri.	173.33155	+0.89787642	-0.43769533
a	2.3236600	Node	212.75676	+0.39977060	+0.85563265
e	0.1794460	Incl.	5.01900	+0.18439470	+0.27625271
P	3.54	H	14.0	G 0.15	

Residuals in seconds of arc

790724	413	0.6+ 0.7-	900916	675	0.5-	0.4-	901018 801	0.2+ 1.3+
790726	675	1.6+ 0.2-	900916	675	0.7-	0.2-	901018 801	0.2- 1.3+
790728	413	0.2- 0.5-	900917	675	0.5-	0.3-	901020 801	0.3- 0.8+
820515	675	0.1- 0.8+	900917	675	0.5-	0.2-	901020 801	0.1- 0.8+
820516	675	1.7- 1.2-	900918	675	0.3-	0.1+	901021 801	0.7- 0.7+
820517	675	0.9- 0.5-	900918	675	0.5-	0.1-	901021 801	0.7- 0.8+
831104	688	0.0 1.9-	901015	046	(5.2+	2.1+)	901023 095	(2.4- 3.1+)
831104	688	1.2- 1.2-	901015	046	(4.5+	0.1-)	920307 950	0.3- 0.7-
831107	688	1.6+ 0.9-	901016	046	2.9+	1.0-	920307 950	1.4+ 0.8-
831107	688	0.6+ 1.4-	901016	046	(3.7+	0.8+)		

1979 QP = 1990 TJ12
Id. R. Nagata (MPC 17626)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	10.18158		(2000.0)	P	Q
n	0.19864510	Peri.	300.21157	-0.43395686	+0.90078632
a	2.9090474	Node	304.06069	-0.81968310	-0.40226108
e	0.0315839	Incl.	1.12687	-0.37389980	-0.16361547
P	4.96	H	13.5	G 0.15	

Residuals in seconds of arc

540729	675	1.1+ 0.7-	790826	809	0.2-	0.5-	901018 033	0.3+ 0.4-
540729	675	1.1- 0.9+	790826	809	0.5-	0.1-	901018 033	0.4- 1.0+
790822	809	1.3- 0.9-	790830	809	0.0	0.5+	920228 691	0.0 0.5-
790822	809	1.8+ 0.7+	790830	809	0.1+	0.5+	920228 691	0.2- 0.4-
790822	809	0.3- 0.2-	901014	033	0.3+	0.2-	920228 691	0.2- 0.2-
790823	809	0.2- 0.9-	901015	033	0.0	0.4-		
790823	809	1.1+ 0.4-	901015	033	0.2-	0.1+		

1980 CR = 1959 JJ = 1976 JV2 = 1993 DX
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	353.42201		(2000.0)	P	Q
n	0.23001067	Peri.	81.04941	-0.70761472	+0.70152358
a	2.6381778	Node	143.42462	-0.69115723	-0.66230611
e	0.1781145	Incl.	8.15578	-0.14691187	-0.26308799
P	4.29	H	12.5	G 0.15	

Residuals in seconds of arc

590502 760	2.5+	2.2-	800219 046	0.7+	2.0-	800223 046	0.6-	0.1-
590502 760	3.0-	0.3-	800219 046	0.1+	1.8-	930224 881	0.4-	1.2+
760503 095	0.1+	1.8+	800220 095	0.7-	1.3-	930224 881	0.5-	0.7-
800124 095	1.5+	2.7+	800221 046	0.1-	1.0-	930225 881	1.7+	0.1+
800214 046	0.7-	0.3-	800221 046	0.3+	0.8+	930225 881	0.1-	1.7+
800214 046	1.5+	1.0-	800222 046	0.5-	0.7-	930313 881	1.1+	1.2+
800215 046	0.5-	0.4-	800222 046	0.6-	0.1-	930313 881	1.5+	0.4+
800215 046	1.0-	0.2+	800223 046	0.4-	0.3+	930313 881	1.7-	1.0+

1980 DD1 = 1971 KO = 1991 RG6
Id. E. Bowell (MPC 19013), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 260.27621		(2000.0)	P	Q
n 0.21271567	Peri.	209.33125	-0.50336021	+0.85984051
a 2.7793062	Node	30.68001	-0.75655873	-0.39078845
e 0.1024699	Incl.	9.64144	-0.41742950	-0.32857066
P 4.63	H	13.0	G 0.15	

Residuals in seconds of arc

520130 675	0.6+	1.3+	800223 046	0.7+	1.9-	911002 691	1.0-	0.1+
520130 675	0.2+	0.3+	800223 046	1.8+	0.7-	911002 691	0.7-	0.1+
710525 095	1.3-	2.6-	800315 095	3.4-	0.7-	911002 691	0.6-	0.4+
800221 046	(3.8-	1.3-)Y	910913 675	1.0+	0.3-	911107 675	0.2+	1.8-
800221 046	(7.1-	1.5-)Y	910913 675	0.7+	0.8-	911107 675	0.9-	0.1+
800222 046	1.1-	0.4-	910916 675	0.8+	0.8-	911109 675	2.6+	1.6-
800222 046	1.4-	1.7-	910916 675	0.8+	1.8-	911109 675	1.5+	0.4-

1980 FF12 = A919 EA = 1984 SJ6
Id. C. M. Bardwell (MPC 9589, unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M 19.79059		(2000.0)	P	Q
n 0.30789010	Peri.	251.80860	-0.46178410	+0.88695499
a 2.1720621	Node	350.67654	-0.79362821	-0.41725895
e 0.0872869	Incl.	2.88068	-0.39611830	-0.19800458
P 3.20	H	14.5	G 0.15	

Residuals in seconds of arc

190307 024	(41.6+	5.7-)X	840924 809	0.8+	1.3+	840929 809	0.6-	0.4-
800320 323	0.2-	1.0+	840924 809	1.3+	1.2+	840929 809	0.5-	0.3-
800320 323	0.6+	2.3+	840926 809	0.8-	0.7+	840929 809	0.3-	0.1-
800321 323	1.6+	0.2-	840926 809	0.5-	0.7+	860213 801	0.2+	0.7+
800321 323	0.1-	2.7+	840926 809	0.1-	0.7+	870821 046	(4.4-	1.9-)
800410 323	0.4+	0.9+	840927 809	0.1-	0.7+	870821 046	0.2-	1.3-
800410 323	0.5+	0.4-	840927 809	0.2+	0.5+	870822 046	1.9+	1.0-
840923 809	1.6-	0.2+	840927 809	0.5+	0.3+	870822 046	(3.9+	1.0-)
840923 809	1.5-	0.4+	840928 809	0.1-	0.6+	870825 801	0.6-	0.4-
840923 809	1.7-	0.6+	840928 809	0.1+	0.4+			
840924 809	0.2+	1.4+	840928 809	0.3+	0.0			

1980 TH = 1985 PX1
Id. H. Kaneda (MPC 16228)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 86.66373		(2000.0)	P	Q
n 0.19006355	Peri.	122.80279	-0.14633719	-0.98658001
a 2.9959656	Node	335.30412	+0.83974818	-0.08519197
e 0.0732778	Incl.	9.98245	+0.52288470	-0.13929180
P 5.19	H	12.0	G 0.15	

Residuals in seconds of arc

801003 046	(4.4+	2.3-)	801008 095	0.6+	1.5+	850814 010	(1.1+	3.7+)
801003 046	1.0+	2.4-	801012 095	1.0-	0.4+	850816 010	(5.4-	0.5+)

850824	010	0.3-	0.5-	900910	809	1.1-	0.5-	930126	801	0.5-	0.7+
900828	095	1.1+	0.6-	900911	809	0.9-	0.5-	930219	511	2.3-	1.1-
900828	095	1.0-	2.2-	900911	809	0.8-	0.5-	930219	511	2.0+	0.4+
900909	809	0.0	0.0	900914	675	0.1+	0.3-	930221	801	0.0	0.7-
900909	809	0.2+	0.1+	900914	675	1.2+	0.3-	930221	801	0.2+	0.9-
900909	809	0.4+	0.1+	900917	809	(1.7+	2.7+)	930225	801	0.0	0.1+
900910	809	0.3-	0.3-	900918	809	1.1+	2.4+	930225	801	0.0	0.2-
900910	809	0.0	0.0	900918	809	0.5+	2.3+				
900910	809	0.1+	0.3-	930126	801	0.3-	0.6+				

1981 EH9
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 183.22146		(2000.0)	P	Q	
n 0.27550097	Peri.	246.38882	-0.86942165	-0.49039881	
a 2.3391279	Node	264.19649	+0.47247202	-0.78964694	
e 0.1875802	Incl.	3.46476	+0.14448593	-0.36873666	
P 3.58	H	16.0	G 0.15		

Residuals in seconds of arc

790920	675	1.9+	0.2-	810315	413	0.3+	0.1+	810412	413	0.5-	1.2+
790921	675	1.8-	0.3-	810405	413	0.9-	1.0+	810412	413	0.8+	0.3-
810209	413	1.2+	0.4+	810405	413	0.9+	1.0-	810503	413	1.0-	2.1-
810214	413	0.3-	1.4+	810406	413	1.0-	0.5+	880113	688	0.2-	0.3-
810301	413	1.0-	0.7+	810406	413	0.2+	0.4-	880113	688	0.2-	0.3-
810307	413	0.1+	0.1-	810407	413	0.8-	0.1+	880113	688	0.2-	0.4-
810307	413	0.2+	0.3+	810407	413	1.6+	1.5-	880114	688	0.2+	0.1-
810311	413	1.0+	0.9-	810410	413	0.2-	0.9+	880114	688	0.1+	0.0
810315	413	1.1-	0.4+	810410	413	0.7+	0.6-				

1981 EX15 = 1949 SE = 1978 NH5
Id. C. M. Bardwell (MPC 11839, unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M 135.08968		(2000.0)	P	Q	
n 0.23434834	Peri.	56.29928	+0.91647441	-0.39861883	
a 2.6055223	Node	327.15491	+0.34294849	+0.82685646	
e 0.0799563	Incl.	3.62770	+0.20606065	+0.39675108	
P 4.21	H	15.0	G 0.15		

Residuals in seconds of arc

490923	024	1.8-	3.3+	810306	413	1.2-	0.8+	810501	413	1.1+	0.3+
780710	675	(5.7-	9.1-)Y	810308	413	1.7-	0.9+	810503	413	0.8+	0.3+
780711	675	0.9+	0.5+ Y	810308	413	1.4+	0.6+	850220	675	1.9+	0.8-
780713	675	0.4+	0.0 Y	810408	413	1.8-	0.5+	850222	675	1.3+	0.3-
810212	413	1.3+	1.5-	810408	413	(5.9-	1.3+)	910913	675	0.5-	1.2-
810301	413	1.3-	0.7+	810409	413	1.2-	0.5+				
810301	413	0.5+	0.7+	810409	413	0.3+	0.2+				

1981 EV18
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 58.88735		(2000.0)	P	Q	
n 0.18938984	Peri.	54.62281	-0.14900485	+0.98829694	
a 3.0030664	Node	206.86376	-0.92906916	-0.15123116	
e 0.0646768	Incl.	4.14486	-0.33856765	-0.01995711	
P 5.20	H	14.5	G 0.15		

Residuals in seconds of arc

781004	675	0.3-	0.4-	810303	413	1.6-	1.3+	810311	413	0.1+	0.4-
781005	675	0.5+	0.3-	810307	413	0.0	0.5-	810316	413	0.3-	0.9-
810209	413	(3.8+	2.0+)	810307	413	0.7+	0.3+	810329	413	0.1+	0.1+
810213	413	0.9+	0.1+	810307	413	0.6-	0.9-	810329	413	(4.3+	2.4-)
810301	413	(2.7-	1.6+)	810311	413	2.1-	0.2-	810408	413	0.8+	0.8-
810302	413	0.1+	0.5+	810311	413	1.3+	0.3-	810408	413	0.0	1.3-

810411	413	0.3-	0.2-	881005	807	0.3+	1.9-	881105	807	0.0	0.7-
810430	413	0.3-	1.3-	881007	807	0.1-	0.0				
810502	413	0.2-	0.3-	881103	807	1.5+	1.7-				

1981 EK23 = 1964 TY = 1974 HU1 = 1982 SK5
Id. L. D. Schmadel (MPC 10515), K. Hurukawa (ibid.), H. Oishi
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	25.62138		(2000.0)	P	Q
n	0.27185445	Peri.	129.40855	+0.70595918	+0.70823397
a	2.3599986	Node	185.50710	-0.66512309	+0.66046457
e	0.1838995	Incl.	3.06230	-0.24337814	+0.24938162
P	3.63	H	15.0	G 0.15	

Residuals in seconds of arc

641008	330	0.2+	0.2+	810209	413	0.6-	0.3-	810316	413	1.8+	0.5-
740424	805	(4.2-	1.6-)	810213	413	0.7-	0.8+	810329	413	1.8-	0.2-
740425	805	1.6-	0.9+	810303	413	0.1-	1.0-	810329	413	0.6-	1.4+
770211	675	0.7+	0.6+	810303	413	2.2+	1.0-	810502	413	1.4+	0.6-
770212	675	0.2-	1.1+	810307	413	1.3-	1.1+	810503	413	0.6+	0.4-
780610	675	1.0-	0.2+	810311	413	0.0	0.8-	820916	095	0.7-	0.3+
780611	675	1.8+	0.3+	810316	413	(3.3-	2.0+)				

1981 ES23 = 1991 RW40
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	133.52081		(2000.0)	P	Q
n	0.23909206	Peri.	242.00882	+0.79221525	-0.61014690
a	2.5709440	Node	155.58656	+0.56863174	+0.73168360
e	0.0991974	Incl.	1.49162	+0.22147898	+0.30390766
P	4.12	H	15.5	G 0.15	

Residuals in seconds of arc

810209	413	0.2-	0.5+	810311	413	(3.4+	2.5-)	910910	033	1.3+	0.1-
810213	413	1.3+	0.6-	810329	413	0.5-	0.2+	910913	033	0.5+	0.7-
810303	413	0.3-	0.5-	810329	413	2.1+	0.3-	910915	691	0.6-	0.2+
810303	413	0.7-	0.3+	810411	413	0.5-	0.5+	910915	691	0.9-	0.5+
810307	413	1.5-	0.5+	810426	413	(1.3+	3.3-)	910915	691	0.9-	0.4+
810307	413	0.2+	0.4-	810502	413	(4.7-	1.4+)				
810311	413	(2.8-	0.9+)	910910	033	0.6+	0.2-				

1981 ET24 = 1986 WV2
Id. S. J. Bus (MPC 11739)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	175.69493		(2000.0)	P	Q
n	0.28220176	Peri.	19.77444	-0.93876456	+0.34455843
a	2.3019519	Node	180.38295	-0.32959025	-0.89862952
e	0.0429562	Incl.	6.60882	-0.10045580	-0.27155933
P	3.49	H	15.0	G 0.15	

Residuals in seconds of arc

810212	413	0.1-	0.4+	810315	413	1.0+	0.6-	810501	413	0.8+	1.0+
810213	413	1.4+	0.3+	810405	413	1.0-	0.6+	861127	033	0.1-	0.2+
810302	413	1.9-	0.6+	810405	413	(4.4+	3.5-)	861128	033	0.8+	0.0
810302	413	0.9+	2.4-	810406	413	0.6-	0.4+	861129	033	0.5-	0.4-
810306	413	1.2-	0.9+	810406	413	0.2+	1.7-	880322	809	0.9+	0.1-
810306	413	1.2+	0.5-	810407	413	0.0	0.1-	880322	809	1.0+	0.8+
810311	413	0.4-	0.2-	810410	413	0.5-	0.4+	880322	809	1.1-	1.9+
810311	413	0.1-	0.0	810410	413	0.2+	2.0-				
810315	413	1.8-	1.7+	810426	413	1.7+	1.8-				

1981 ER25 = 1991 RK41 = 1993 BZ14
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 113.90241 (2000.0) P Q
n 0.23820489 Peri. 234.75232 +0.63386589 -0.77342382
a 2.5773235 Node 175.89920 +0.73205211 +0.59765814
e 0.1284370 Incl. 4.36562 +0.24962721 +0.21123528
P 4.14 H 15.5 G 0.15
Residuals in seconds of arc

810209	413	0.9+	0.9+	810405	413	0.0	0.7+	930123	809	0.4-	2.2+
810212	413	0.2-	0.2-	810406	413	(3.8-	2.4+)	930123	809	0.1+	0.5+
810213	413	0.4+	0.1+	810406	413	0.2+	0.2-	930123	809	1.2+	0.7-
810302	413	1.4-	0.3+	810426	413	2.0+	0.4-	930128	809	0.2+	1.2-
810302	413	0.1-	2.2-	810501	413	0.9-	0.8+	930128	809	0.4-	0.2+
810306	413	0.1+	1.3+	910909	691	0.1-	0.2-	930128	809	0.6-	0.9-
810311	413	1.9-	0.2-	910909	691	0.1+	0.0				
810315	413	0.9+	0.8-	910909	691	0.0	0.0				

1981 ET27
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 95.47466 (2000.0) P Q
n 0.19486957 Peri. 82.13745 -0.34146747 +0.93985886
a 2.9465017 Node 167.88685 -0.87679881 -0.31543615
e 0.0255181 Incl. 2.20692 -0.33856140 -0.13101666
P 5.06 H 15.0 G 0.15
Residuals in seconds of arc

781003	675	0.4+	1.0-	810302	413	1.2+	1.5-	810405	413	(3.5+	2.1-)
781004	675	0.3+	1.0-	810302	413	0.6-	0.7-	810410	413	1.3+	1.6-
791220	675	1.4-	0.1-	810306	413	(2.6-	0.9+)	810501	413	0.3-	0.4+
791220	675	1.5+	0.8+	810306	413	1.3+	0.2-	881104	807	0.5+	0.5-
810209	413	0.3-	0.1-	810311	413	1.5-	0.7+	881106	807	0.2+	1.3-
810212	413	0.5-	0.4+	810315	413	0.1-	1.4-				
810213	413	0.9-	0.7+	810315	413	1.1-	0.2-				

1981 EZ27 = 1978 NV6 = 1988 DZ2
Id. D. W. E. Green (MPC 12706), S. Nakano
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 342.94398 (2000.0) P Q
n 0.25848301 Peri. 239.14802 +0.48062440 +0.87674482
a 2.4407018 Node 59.58854 -0.79733009 +0.44538356
e 0.1181058 Incl. 1.18615 -0.36505467 +0.18152688
P 3.81 H 14.5 G 0.15
Residuals in seconds of arc

780710	675	(19.2-	9.0-)Y	810405	413	2.2+	0.3-	880216	809	0.0	0.7+
780711	675	(14.1-	1.9-)Y	810406	413	1.6-	1.3+	880216	809	1.0-	1.4+
780713	675	(25.3-	5.4-)Y	810406	413	0.7+	0.3+	880217	809	1.2+	0.3-
810209	413	0.2+	0.5-	810407	413	0.6-	0.9+	880217	809	1.5+	0.2-
810212	413	0.3-	0.4-	810407	413	0.8+	0.5-	880217	809	1.3+	0.1-
810213	413	1.0-	0.8+	810410	413	1.6-	0.6+	880221	809	0.5-	0.1+
810302	413	(4.3+	3.2-)	810410	413	1.3+	0.8-	880221	809	0.7-	0.1+
810302	413	0.8+	1.2-	810426	413	(4.9+	1.7-)	880221	809	1.6-	0.5+
810306	413	2.5-	0.5-	810501	413	1.6+	0.1+	880223	809	0.3+	0.7-
810311	413	0.4-	1.0-	831230	675	0.8+	1.5-	880223	809	0.3-	0.5+
810315	413	1.0-	0.1+	831230	675	1.0-	1.4-	880223	809	0.0	0.3-
810315	413	0.7+	0.3-	880215	809	1.1+	1.3+				
810405	413	(3.8+	0.7-)	880216	809	0.7-	1.3+				

1981 EP42
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 88.02242 (2000.0) P Q
n 0.22771479 Peri. 204.19928 +0.81491956 -0.57946498
a 2.6558807 Node 191.23447 +0.54071696 +0.76712551
e 0.1023750 Incl. 3.30894 +0.20864151 +0.27520682
P 4.33 H 14.5 G 0.15
Residuals in seconds of arc

770424	675	1.2+	1.0+	810302	413	1.4+	0.3-	810501 413 0.2- 0.4-
770425	675	0.8-	0.6+	810306	413	(7.6+	1.8-)	810503 413 0.4+ 2.0-
810212	413	0.5-	0.0	810311	413	1.6-	1.4+	831030 675 0.3- 0.9+
810213	413	0.4+	0.3+	810315	413	0.3-	0.5+	
810302	413	1.3-	0.1-	810315	413	1.5+	0.3-	

1981 RF
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 46.36340 (2000.0) P Q
n 0.26005073 Peri. 239.06424 +0.99735751 +0.05017103
a 2.4308827 Node 118.01381 -0.02711765 +0.92806711
e 0.1904131 Incl. 3.41211 -0.06739904 +0.36901804
P 3.79 H 13.5 G 0.15
Residuals in seconds of arc

810830	688	2.3-	1.7-	810926	688	0.4+	0.3+	840503 801 1.8+ 0.8+
810830	688	0.4+	0.0	810926	688	1.1-	0.4-	840507 675 0.2+ 0.6+
810903	688	1.7-	0.7-	811005	688	0.7+	0.1-	840508 675 0.5- 0.4+
810903	688	1.4-	0.7-	811005	688	3.0+	0.6+	840509 675 0.7- 0.0
810925	688	1.0+	2.2+	820115	675	0.2+	0.7-	851021 095 0.4- 1.4+
810925	688	1.0+	0.8+	820116	675	0.4-	0.3-	
810925	095	0.3+	0.5-	840421	675	0.5-	0.9-	

1983 EU = 1991 RM9
Id. H. E. Holt (MPC 19293)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden
M 12.36332 (2000.0) P Q
n 0.29246114 Peri. 10.20365 -0.97062457 +0.24055286
a 2.2477980 Node 183.72549 -0.22554642 -0.91655135
e 0.0850774 Incl. 4.16413 -0.08376608 -0.31948074
P 3.37 H 13.5 G 0.15
Residuals in seconds of arc

830305	095	0.2-	0.4-	830320	095	1.0+	2.3-	911110 675 0.2+ 0.1-
830310	688	0.6-	0.8-	830409	095	(2.9+	1.1-)	930219 511 1.0- 2.4+
830310	688	(0.8-	3.9-)	910911	675	0.1-	0.9-	930219 511 2.0+ 0.9-
830315	095	0.4-	0.4-	910911	675	0.0	0.3-	930219 511 (3.1- 3.0+)
830317	688	1.5+	1.1-	910914	675	0.1+	0.8-	930219 511 (3.2+ 0.0)
830317	688	0.1+	1.8-	910914	675	0.2+	0.9-	930222 511 0.5- 0.4-
830318	095	2.0-	1.9+	911109	675	0.3+	0.5-	930222 511 0.1- 0.3+
830318	095	0.7-	1.5+	911109	675	0.1+	0.8+	

1983 OD
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 252.53847 (2000.0) P Q
n 0.27097461 Peri. 215.24904 +0.96311010 +0.20254093
a 2.3651044 Node 132.03869 -0.15736541 +0.95800465
e 0.2310185 Incl. 13.80257 -0.21830038 +0.20298831
P 3.64 H 14.0 G 0.15
Residuals in seconds of arc

830717	688	0.1-	1.6-	830902	809	0.2+	0.4-	830904 809 0.1+ 0.9-
830717	688	0.9-	0.3+	830902	809	0.2-	0.1-	830904 809 0.1+ 0.3-
830902	809	0.3+	0.2+	830904	809	0.3+	0.4-	830906 809 0.9+ 0.8-

830906	809	1.3+	0.2-	830909	809	0.1-	1.6+	830915	809	0.0	0.9-
830906	809	1.5+	1.0-	830910	809	0.1-	0.2+	830915	809	0.5+	1.2-
830907	809	0.1+	0.3-	830910	809	0.2+	0.7+	850220	675	0.9-	0.3+
830907	809	0.5+	0.2+	830910	809	0.6+	1.1+	850223	675	0.9+	0.9-
830907	809	0.4+	0.2+	830911	809	1.2-	0.4-	900719	801	0.6+	0.2-
830908	809	0.5-	1.4+	830912	809	0.8-	0.3-	900719	801	0.6-	0.4+
830908	809	0.6-	0.9+	830912	809	0.2-	0.1-	900720	801	0.4+	0.2+
830908	809	0.5-	0.2-	830913	809	(3.4-	1.1-)	900720	801	0.3-	0.0
830909	809	0.7-	1.0+	830913	809	1.1-	0.2-				
830909	809	0.1-	0.5+	830913	809	0.2-	0.0				

1984 SD6 = 1953 TR1 = 1989 AP8 = 1991 RL33

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
M 185.76435		(2000.0)	P	Q	
n 0.28473231	Peri.	0.05625	+0.97733354	-0.21061020	
a 2.2882926	Node	12.16635	+0.19419598	+0.85141262	
e 0.1584334	Incl.	5.85687	+0.08430346	+0.48035392	
P 3.46	H	15.0	G 0.15		

Residuals in seconds of arc

531008	760	0.5+	0.8-	840926	809	0.3-	1.1+	841001	809	0.5+	1.0-
840922	809	0.1+	0.0	840926	809	0.2+	1.0+	841001	809	0.6+	0.6-
840922	809	0.2+	0.3+	840927	809	1.0-	0.8+	890110	054	0.0	0.7+
840922	809	0.5+	0.3+	840927	809	0.8-	0.8+	890110	054	0.0	0.5+
840922	809	0.1+	0.4+	840927	809	0.4-	0.7+	910910	033	0.2+	0.7-
840922	809	0.5+	0.2+	840928	809	0.7-	0.3-	910910	033	1.0+	0.5-
840922	809	0.9+	0.3+	840928	809	0.6-	0.3-	910910	675	0.4+	0.2-
840923	809	0.6+	0.2-	840928	809	1.1-	0.3-	910910	675	1.1-	1.0-
840923	809	1.0+	0.2-	840929	809	0.5-	1.0+	910913	033	0.1+	1.3-
840923	809	1.5+	0.3-	840929	809	0.7-	1.0+	911004	033	0.4+	0.0
840924	809	1.0-	0.2-	840929	809	1.0-	0.8+	911004	033	0.5+	0.1+
840924	809	0.8-	0.1-	840930	809	0.1-	0.4-	911005	033	0.7+	0.2-
840924	809	0.5-	0.2-	840930	809	0.1+	0.4-				
840926	809	0.3-	1.2+	840930	809	0.2+	0.4-				

1985 JU1 = 1976 UW17 = 1989 TN5

Id. S. Nakano (MPC 11426), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
M 155.10588		(2000.0)	P	Q	
n 0.30238894	Peri.	180.35486	+0.01567651	+0.99594763	
a 2.1983261	Node	90.54477	-0.91715100	+0.04959835	
e 0.1333988	Incl.	5.08090	-0.39823146	-0.07502218	
P 3.26	H	14.5	G 0.15		

Residuals in seconds of arc

761022	381	0.1+	0.9-	850524	675	1.1+	0.7+	891007	809	1.5-	1.6+
761022	381	0.2+	1.3-	850524	675	1.2+	0.6+	891007	809	2.4-	2.3+
761024	381	0.3+	0.3-	880316	399	1.8+	0.2+	891008	809	1.0+	0.3+
761024	381	1.0+	0.6-	880316	399	1.6+	1.2+	891008	809	0.2+	1.6+
850513	675	1.2-	0.2+	880316	399	1.4-	2.2+	891008	809	0.9+	1.7+
850515	675	0.8-	0.2+	891007	809	1.9-	0.7+				

1986 EK1 = 1993 FA

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Nakano	
M 79.62341		(2000.0)	P	Q	
n 0.27878734	Peri.	107.97740	-0.40609107	-0.91271919	
a 2.3207090	Node	6.53858	+0.61403716	-0.30908318	
e 0.2329548	Incl.	23.33023	+0.67679273	-0.26722887	
P 3.54	H	13.1	G 0.15		

Residuals in seconds of arc

860305	688	0.1+	1.0-	860307	809	0.1+	0.4+	860409	688	1.2+	0.1+
860305	688	0.3+	1.3-	860310	809	0.7-	0.9-	860409	688	2.3-	0.2-
860306	809	0.3-	0.0	860310	809	0.8-	1.8+	930317	372	0.6+	0.0
860306	809	0.3+	0.2-	860408	675	1.7+	0.1-	930317	372	0.1+	0.0
860307	809	0.8+	1.4+	860408	675	0.3-	0.0	930318	372	0.7-	0.0

1986 PF = 1978 TN5
Id. T. Kobayashi (1993 obs.), S. Nakano

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Nakano
M 238.34814		(2000.0)	P	Q
n 0.22961113	Peri.	67.35686	+0.68043932	+0.72750980
a 2.6412373	Node	245.82838	-0.70274642	+0.61380084
e 0.0525903	Incl.	5.53082	-0.20772531	+0.30655836
P 4.29	H	12.4	G 0.15	

Residuals in seconds of arc

781008	095	0.1-	0.6+	860812	095	1.5+	1.0+	930225	411	0.1-	0.8+
860804	675	0.8-	0.3+	860829	095	1.6+	1.3-	930228	411	1.5+	0.1-
860804	675	0.2-	1.3+	860906	095	1.3-	2.6-	930228	411	0.1+	0.3-
860806	675	0.9-	1.3+	930225	411	0.8-	0.0	930228	411	0.6-	0.2-

1986 QB3 = 1975 VU9 = 1981 WG2
Id. T. Kobayashi (MPC 12206)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Nakano
M 60.74104		(2000.0)	P	Q
n 0.17268426	Peri.	275.68315	+0.99785414	-0.04200783
a 3.1937497	Node	86.73161	+0.05863432	+0.91467921
e 0.1835434	Incl.	2.88353	-0.02913969	+0.40199165
P 5.71	H	12.8	G 0.15	

Residuals in seconds of arc

751109	381	1.1-	0.5-	860903	809	1.0-	0.1+	860909	809	0.8+	0.3-
751109	381	1.0-	0.2-	860903	809	0.7-	0.0	860909	809	0.8+	0.2-
811123	046	1.8+	1.2+	860903	809	0.5-	0.1+	860911	809	0.7+	0.3+
811123	046	1.6+	1.6+	860904	809	1.3-	0.5-	860911	809	1.2+	0.3+
860829	809	1.2-	0.3+	860904	809	1.1-	0.5-	860911	809	1.3+	0.4+
860829	809	1.1-	0.3+	860904	809	0.7-	0.6-	860911	809	0.7+	0.1+
860829	809	0.8-	0.4+	860905	809	0.4-	0.8-	860911	809	1.0+	0.3-
860829	809	0.6-	0.4+	860905	809	0.1-	0.8-	860911	809	0.8+	0.6-
860829	809	0.6-	0.3+	860905	809	0.2-	0.7-	860913	809	2.4+	0.5+
860829	809	0.6-	0.6+	860906	809	0.4-	0.2+	860913	809	2.5+	0.3+
860831	809	0.9-	0.8+	860906	809	0.1-	0.2+	860913	809	2.4+	0.5+
860831	809	1.0-	0.6+	860906	809	0.3-	0.0	860914	809	2.2+	0.8-
860831	809	0.9-	0.6+	860907	809	0.0	0.1-	860914	809	2.3+	0.9-
860901	809	1.2-	0.1+	860907	809	0.3+	0.2-	860914	809	2.2+	0.9-
860901	809	1.0-	0.0	860907	809	0.5+	0.5-	880111	033	0.8-	0.4-
860901	809	1.2-	0.0	860907	809	0.5+	0.9-	880111	033	1.2-	0.7-
860901	809	1.0-	0.1+	860907	809	0.5+	1.0-	920929	691	1.0-	0.1-
860901	809	1.3-	0.1+	860907	809	0.5+	0.8-	920929	691	0.9-	0.7-
860901	809	1.1-	0.1+	860909	809	0.3+	0.6+	920929	691	0.8-	0.5-
860902	809	1.3-	0.9+	860909	809	0.3+	0.7+	920930	400	1.1+	0.5+
860902	809	1.0-	0.8+	860909	809	0.3+	0.6+	920930	400	1.2+	0.5-
860902	809	0.7-	0.4+	860909	809	0.8+	0.2-				

1986 RH12 = A904 UC = 1989 GE5
Id. S. Nakano (MPC 14790), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	264.57709	(2000.0)	P	Q
n	0.25153007	Peri. 148.31608	+0.99032065	+0.08205770
a	2.4854752	Node 207.64725	-0.10238049	+0.97643873
e	0.1760904	Incl. 13.96006	+0.09371895	+0.19958441
P	3.92	H 12.5	G 0.15	

Residuals in seconds of arc

041016	024	(0.6+ 7.8+)	890407	809	0.1- 0.5+	900916	801	0.2- 0.8+
551116	675	0.3+ 0.8+	890407	809	0.0 0.9+	900917	675	0.3- 0.1+
551116	675	0.6- 1.0+	890509	808	1.7- 0.0	900917	675	0.3+ 0.1-
860909	095	(0.7+ 7.2+)	890509	808	1.0- 0.8-	900918	675	0.5+ 0.4-
860913	095	(0.9- 5.2+)	900828	657	0.2- 0.1-	900918	675	0.4+ 0.8-
861003	095	3.0+ 1.7-	900828	657	0.4- 1.5-	901010	049	(4.4- 1.4+)
861006	095	0.8- 2.2+	900911	657	0.9- 0.8+	901010	049	(4.6- 1.4-)
890406	809	0.4+ 1.2+	900911	657	0.5+ 0.4+	901011	049	0.6- 0.5+
890406	809	1.3+ 0.7+	900914	657	0.5- 0.0	901011	049	0.8- 0.7+
890406	809	1.6+ 1.3+	900914	657	0.1- 0.3+	920107	801	0.5+ 0.3-
890407	809	0.9- 0.4+	900916	801	0.1- 0.8+	920107	801	0.4+ 0.0

1986 SC2 = 1986 RJ17 = 1982 QB2
Id. S. Nakano (MPC 14790), G. V. Williams (d)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	325.08882	(2000.0)	P	Q
n	0.25577146	Peri. 57.08703	+0.29949554	+0.94177532
a	2.4579214	Node 231.10595	-0.92777852	+0.25010465
e	0.1783743	Incl. 11.32543	-0.22255209	+0.22473744
P	3.85	H 13.0	G 0.15	

Residuals in seconds of arc

820816	095	0.2- 1.9+	901019	801	0.2- 0.6+	901115	801	0.1- 0.8+
820823	095	0.5- 2.0+	901020	801	0.3- 0.5+	901120	801	0.1+ 0.5+
860909	095	0.1+ 4.5-	901021	801	0.4- 0.4+	901120	801	0.5+ 0.3+
860929	095	(5.3+ 6.3-)	901021	801	0.3- 0.6+			
861003	095	1.1+ 2.8-	901115	801	0.3+ 0.9+			

1987 QW2 = 1952 KF1 = 1976 SV3 = 1991 FO6
Id. S. Nakano (MPC 14197), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	30.84526	(2000.0)	P	Q
n	0.17282470	Peri. 259.37282	+0.51402761	+0.85763121
a	3.1920193	Node 41.57175	-0.77749593	+0.47354026
e	0.1482845	Incl. 1.34978	-0.36231988	+0.20057000
P	5.70	H 12.5	G 0.15	

Residuals in seconds of arc

520525	839	0.2- 0.3+	870822	809	0.5- 0.3+	870829	809	(3.7- 4.6+)
760924	095	1.3- 0.8-	870822	809	0.2- 0.0	870901	809	0.1- 1.1-
760929	095	2.0+ 0.1-	870824	809	0.0 0.3+	870901	809	0.4+ 0.5+
800408	675	0.3+ 0.8-	870824	809	0.6+ 0.2+	910320	809	(3.3- 2.8+)
800409	675	0.1- 0.8-	870829	809	(3.6- 5.0+)	910320	809	1.3- 0.9+
870822	809	0.2- 0.3-	870829	809	(3.9- 4.8+)	910320	809	0.6+ 0.8-

1987 ST10 = 1977 LC = 1979 YF3 = 1993 AO
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	49.87778	(2000.0)	P	Q
n	0.23044989	Peri. 28.76197	-0.38242476	-0.92230544
a	2.6348246	Node 83.76861	+0.83665316	-0.37123767
e	0.1922843	Incl. 3.21280	+0.39212599	-0.10740239
P	4.28	H 13.5	G 0.15	

Residuals in seconds of arc

770612	675	1.3-	0.4+	870929	033	1.1+	0.7+	930120 399	0.2+	0.3+
770612	675	2.1+	0.3-	870930	033	0.1-	0.1+	930120 399	1.3-	0.1-
770613	675	0.7-	0.3+	870930	033	0.6-	0.4-	930210 399	1.2+	1.2+
770613	675	(6.2+	0.6-)	871001	033	0.8-	0.4-	930210 399	0.7-	0.9+
791224	095	0.0	0.3-	930113	399	0.4+	0.3+	930215 399	0.1+	1.9-
870929	033	0.2+	0.6+	930113	399	0.7-	0.5-	930215 399	1.0+	0.5+

1987 WO1 = 1991 UX1
Id. H. Kaneda (MPC 19863)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Marsden
M 158.92056		(2000.0)	P	Q
n 0.23841683	Peri.	156.90488	+0.85027038	-0.51783149
a 2.5757959	Node	234.61966	+0.46307143	+0.82111337
e 0.0357892	Incl.	6.64103	+0.25021018	+0.24004870
P 4.13			0.15	

Residuals in seconds of arc

871122	688	(1.0+	3.6+)	871127	046	0.7+	0.6-	930216 474	0.8-	0.5-
871122	688	1.2-	1.6+	911029	399	1.0+	0.7+	930216 474	0.8+	0.8+
871123	046	0.9+	0.8+	911029	399	0.3-	0.4+	930217 474	0.0	1.1+
871123	046	(6.4+	3.5+)	911031	399	0.5+	1.3-	930223 474	0.2-	0.7-
871126	046	1.1+	0.6-	911031	399	0.7+	0.7-	930223 474	0.2+	0.6-
871126	046	1.2-	0.0	911109	399	0.9-	0.3+			
871126	046	0.4-	1.4-	911109	399	1.2-	0.7+			

1988 BO4 = 1990 RL9 = 1990 SO29
Id. G. V. Williams (MPC 17960; d, unpublished)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams
M 262.62218		(2000.0)	P	Q
n 0.18813429	Peri.	348.48534	-0.05184472	+0.98575681
a 3.0164125	Node	278.39369	-0.90292829	-0.11471228
e 0.0691567	Incl.	9.30667	-0.42665281	+0.12298216
P 5.24	H	11.5	G 0.15	

Residuals in seconds of arc

880122	809	0.4-	0.4+	880125	809	0.7+	0.4+	900830 095	1.8-	2.1+
880122	809	0.3-	0.4+	880125	809	1.0+	0.3+	900914 675	1.1+	1.6-
880122	809	0.4-	0.3+	880127	809	0.3+	0.2-	900914 675	0.8+	2.0-
880123	809	0.1-	0.1+	880127	809	0.3+	0.3-	900918 675	1.0+	0.9-
880123	809	0.2-	0.0	880129	809	1.0-	0.8-	900918 675	0.1-	1.5-
880123	809	0.0	0.2+	880129	809	1.2-	1.0-	900923 095	(0.5-	5.1+)
880124	809	0.3+	0.0	900826	095	0.3+	1.9+	921226 801	0.2-	0.6-
880124	809	0.4+	0.0	900826	095	(2.6-	3.9+)	930121 801	0.3+	0.8+
880124	809	0.4+	0.0	900830	095	1.3-	2.3+	930121 801	0.3+	0.8+

1989 AW6 = 1976 UR7
Id. T. Kobayashi (MPC 14955)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams
M 75.05992		(2000.0)	P	Q
n 0.25941768	Peri.	60.48341	-0.48019590	-0.87685087
a 2.4348358	Node	58.23300	+0.79498133	-0.44629495
e 0.1408190	Incl.	1.57267	+0.37069742	-0.17875505
P 3.80	H	14.5	G 0.15	

Residuals in seconds of arc

761022	381	0.5-	0.5-	890114	033	0.3+	0.3+	910913 033	0.8-	0.5-
761022	381	0.5-	0.4-	890202	033	0.4-	0.2-	911004 033	0.1+	0.6+
761024	381	1.2+	0.4+	890205	033	0.4+	0.5-	911004 033	0.2+	0.6+
890111	033	0.4-	0.1+	910910	033	0.6-	0.2-	911005 033	0.3+	0.2+
890111	033	0.1+	0.3+	910910	033	0.4+	0.2-			

1989 CJ8
Id. T. Kobayashi (1993 obs.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	10.75121	(2000.0)	P	Q
n	0.25434725	Peri. 65.12068	-0.85717286	+0.50779800
a	2.4670882	Node 145.21435	-0.50996490	-0.81347071
e	0.1928711	Incl. 8.66991	-0.07204510	-0.28356057
P	3.88	H 13.3	G 0.15	

Residuals in seconds of arc

890208	809	0.3-	0.3-	890211	809	0.1+	0.3+	890227	809	0.5+	0.4+
890208	809	0.0	0.2-	890211	809	0.3+	0.4+	890227	809	0.5+	0.5+
890208	809	0.3+	0.2-	890211	809	0.5+	0.4+	890227	809	0.7+	0.5+
890209	809	0.2-	0.5-	890212	809	0.0	0.1-	890301	809	0.1-	0.3-
890209	809	0.0	0.7-	890212	809	0.2+	0.2-	890301	809	0.3+	0.3-
890209	809	0.1+	0.6-	890212	809	0.2+	0.2+	890301	809	0.3+	0.2-
890210	809	0.1+	0.8+	890217	809	0.6-	0.0	930225	411	1.0-	0.0
890210	809	0.3+	0.8+	890217	809	0.4-	0.1+	930225	411	0.4-	0.6-
890210	809	0.5+	0.8+	890217	809	0.4-	0.3+	930226	411	0.0	0.1+
890211	809	0.5-	0.4-	890225	809	1.0-	0.3-	930226	411	0.5+	0.5-
890211	809	0.3-	0.4-	890225	809	0.7-	0.4-	930226	411	0.9+	0.9+
890211	809	0.1-	0.5-	890225	809	0.5-	0.2-				

1989 GH = 1990 SB19 = 1993 DL
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	345.42061	(2000.0)	P	Q
n	0.22621614	Peri. 82.04029	-0.74398909	+0.65391696
a	2.6675976	Node 138.64603	-0.66512696	-0.70508633
e	0.1438737	Incl. 12.00083	-0.06392462	-0.27430982
P	4.36	H 12.6	G 0.15	

Residuals in seconds of arc

890405	675	1.0+	0.9+	890502	675	0.7-	0.6+	930214	365	0.3-	2.0+
890405	675	0.1+	0.4+	890604	675	0.1-	1.6+	930214	365	0.6+	1.8-
890407	675	2.0+	0.9-	890604	675	1.2+	0.5+	930215	399	1.7+	0.8-
890407	675	1.1+	0.9-	890606	675	0.4+	1.1-	930215	399	2.3+	0.3-
890430	675	0.9-	0.1+	890606	675	1.6-	0.3+	930221	399	1.4-	1.4+
890430	675	1.4-	1.1-	900916	675	0.6+	0.7+	930221	399	2.6-	1.1+
890502	675	1.2-	0.0	900916	675	0.9-	1.1+				

1989 GF8 = 1968 CA = 1993 DH
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	41.92645	(2000.0)	P	Q
n	0.23818635	Peri. 83.00859	-0.90543328	-0.41726568
a	2.5774572	Node 72.30480	+0.34994752	-0.83770623
e	0.1596269	Incl. 4.69470	+0.24026510	-0.35233171
P	4.14	H 13.8	G 0.15	

Residuals in seconds of arc

680205	095	0.1-	0.5-	890407	033	0.1-	0.2-	930217	372	1.6-	0.6+
890330	675	1.8+	1.8+	890409	033	1.9-	0.7-	930219	372	1.1+	0.8-
890330	675	1.8+	0.5-	890409	033	1.1-	0.9-				
890406	033	0.7-	0.4+	930217	372	0.6+	0.6+				

1989 SV1 = 1984 YP5 = 1991 CR3
Id. B. A. Skiff (k, MPC 18117), G. V. Williams (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	226.94270	(2000.0)	P	Q
n	0.17362029	Peri. 273.97789	+0.76027305	-0.64850347
a	3.1822606	Node 126.45561	+0.61309071	+0.69709516
e	0.2179826	Incl. 2.69303	+0.21471999	+0.30578031
P	5.68	H 13.0	G 0.15	

Residuals in seconds of arc

540703	675	0.1+	0.5-	891002	807	(0.7-	2.9+)	910115	033	1.1+	0.2+
540703	675	0.6+	0.8-	891003	809	1.9+	0.4-	910115	033	1.6+	1.2-
540731	675	0.0	0.1-	891003	809	1.3+	0.1-	910116	033	0.1-	0.1+
540731	675	0.3-	0.2+	891003	809	1.2+	0.5-	910117	033	0.4-	0.5+
841228	095	0.1+	1.0+	891006	807	(0.2-	3.1+)	910122	675	0.5-	1.0-
890926	809	1.4-	0.7-	891009	391	0.3+	0.4+	910122	675	(3.3-	1.9-)
890926	809	1.9-	0.8-	891009	391	0.2-	1.8+	910209	675	0.8-	0.5-
890926	809	1.1-	0.4-	891028	807	(0.2-	4.1+)	910209	675	1.4-	0.3-

1989 XC = 1986 CX1
Id. T. Urata (MPC 15726)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 317.77000		(2000.0)	P	Q
n 0.20344819	Peri.	300.44662	+0.91170270	-0.40701001
a 2.8630801	Node	83.62080	+0.39363844	+0.82627240
e 0.1074440	Incl.	3.23286	+0.11767311	+0.38937999
P 4.84	H 12.5	G 0.15		

Residuals in seconds of arc

540731	675	0.3+	0.0	860212	809	1.6+	1.6-	891202	385	0.7-	0.2+
540731	675	0.2-	0.1-	860212	809	1.7+	1.4-	891202	385	2.0+	0.4-
540922	675	0.1-	0.1+	860213	809	0.4-	0.2+	891204	385	1.8+	0.2-
540922	675	0.1-	0.1+	860213	809	0.2-	0.2+	891204	385	2.9+	0.7-
860211	809	0.2-	0.8+	860213	809	0.0	0.3+	891209	385	1.4-	0.2+
860211	809	0.1-	0.9+	860214	809	1.5-	0.6+	891209	385	0.1-	1.3+
860211	809	0.3+	1.0+	860214	809	1.3-	0.4+	900104	385	2.1-	0.6-
860212	809	1.4+	1.6-	860214	809	1.2-	0.2+	900104	385	2.7-	0.1-

1989 YH1 = 1953 FM1 = 1979 FP1 = 1983 GK2
Id. H. Kaneda (MPC 16031), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 308.27551		(2000.0)	P	Q
n 0.26476522	Peri.	201.59205	-0.96988753	-0.24298455
a 2.4019397	Node	324.33216	+0.22742386	-0.87910128
e 0.1469671	Incl.	1.63471	+0.08715825	-0.41004811
P 3.72	H 13.5	G 0.15		

Residuals in seconds of arc

530319	210(40.7+	32.2+)X		830615	413	0.7-	0.0	900123	403	1.2+	0.5-
540731	675	0.3-	0.1+	891230	413	0.5-	0.7+	900127	887	(3.7-	1.8+)
540731	675	1.1+	0.2-	891230	413	1.8+	0.1-	900127	887	1.4-	1.2-
760527	413	1.4-	0.5-	891231	413	0.4-	0.2-	900217	887	0.9+	1.2+
760527	413	0.1+	0.4-	891231	413	1.8+	0.2+	900217	887	1.6-	0.2+
790323	095	1.2-	0.9-	900121	403	1.0-	0.7- Y	900220	887	0.2-	1.0+
830410	095	1.0+	0.0	900121	403	0.8+	0.9+	900220	887	1.5-	1.1+
830615	413	1.1+	0.5+	900123	403	0.3+	2.2- Y				

1990 DA1 = 1948 PM = 1958 UF = 1980 DB3 = 1991 TF2
Id. S. Nakano (MPC 19503; unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 265.29587		(2000.0)	P	Q
n 0.30010234	Peri.	319.12284	+0.45013849	+0.89120579
a 2.2094786	Node	337.45765	-0.77660279	+0.35980252
e 0.2233183	Incl.	8.38813	-0.44075327	+0.27621438
P 3.28	H 13.1	G 0.15		

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

480809	078(0.01-	0.05+)X		900228	400	(1.1-	13.1+)	900305	809	0.4+	0.5-
581016	760(0.01-	0.05+)X		900302	400	(4.1+	10.4+)	900307	809	0.4+	0.5+
800220	095	2.3-	4.2-	900305	809	0.1+	0.6-	900307	809	0.8+	0.4+
900228	400	(0.9-	10.6+)	900305	809	0.1-	0.5-	900307	809	0.9+	0.2+

900317 400 (3.1- 0.8+) 911029 400 0.1+ 0.7- 930127 801 1.3+ 0.2+
900317 400 2.4- 1.2+ 930122 372 (1.7- 3.6-) 930128 372 2.1- 1.4+
900321 400 (3.2+ 1.1+) 930122 372 0.4- 1.6+ 930128 372 0.4+ 2.0-
900321 400 (0.7- 3.8+) 930125 372 1.5- 0.5- 930220 010 0.8- 0.5+
911008 400 0.1- 0.7+ 930126 801 1.3+ 0.7+ 930220 010 1.2- 0.1-
911008 400 0.6- 2.2+ 930126 801 1.4+ 0.6+ 930220 010 0.5- 0.1+
911016 400 0.7+ 1.8- 930126 372 0.2- 1.2+ 930221 801 0.7+ 0.6-
911016 400 0.7+ 0.2- 930126 372 0.7+ 0.7+ 930221 801 0.5+ 0.1+
911029 400 0.3- 0.9- 930127 801 1.1+ 0.3+ 930226 801 1.3+ 0.5-

1990 EZ5 = 1990 GL = 1990 HG7 = 1976 UZ9 = 1981 SO4 = 1986 PA2
Id. G. V. Williams (MPC 17210; d, unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 166.05299		(2000.0)	P	Q
n 0.18135877	Peri.	339.77750	-0.45119473	+0.89242192
a 3.0910806	Node	263.40207	-0.81843285	-0.41491704
e 0.1252237	Incl.	0.14633	-0.35579627	-0.17727654
P 5.43	H	13.0	G 0.15	

Residuals in seconds of arc
761022 381 0.4- 0.2- 900301 809 0.6+ 1.1- 900415 809 0.9+ 0.4+
761022 381 0.9+ 0.3+ 900302 809 0.5+ 0.3- 900416 809 0.1- 0.9+
761024 381 0.2- 0.4- 900302 809 0.8+ 0.5- 900416 809 0.7- 0.1+
810925 095 0.6- 0.4+ 900302 809 0.9+ 0.6- 900416 809 0.7- 1.0+
860801 675(21.7- 4.1-) 900309 809 0.9+ 0.2+ 900417 809 1.2- 0.5+
860801 675(19.1- 2.6-) 900309 809 1.0+ 0.1+ 900417 809 2.4- 0.6+
860802 675 (4.5- 2.0-) 900309 809 1.1+ 0.2+ 920930 691 0.2- 0.7+
860802 675 0.2+ 0.0 900404 809 0.2+ 0.2+ 920930 691 0.4- 0.8+
900301 809 0.2+ 1.1- 900404 809 0.8- 1.5+ 920930 691 0.4- 0.5+
900301 809 0.4+ 1.2- 900404 809 0.9- 1.6+

1990 HC1 = 1978 SQ3 = 1991 TT1
Id. G. V. Williams (MPC 19304, unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M 199.58662		(2000.0)	P	Q
n 0.23187369	Peri.	141.31100	+0.74495677	+0.66661511
a 2.6240276	Node	176.53569	-0.66711158	+0.74432759
e 0.2139525	Incl.	25.23586	+0.00124666	-0.04000920
P 4.25	H	12.0	G 0.15	

Residuals in seconds of arc
780927 095 0.1+ 2.2+ 900522 675 0.5+ 0.5+ 920101 801 0.1- 0.3-
900426 675 (6.5+ 7.0-) 900522 675 0.5+ 0.2+ 920206 801 0.7- 0.9+
900426 675 0.4- 1.2- 911010 675 1.6+ 0.2+ 920206 801 0.8- 0.9+
900429 675 0.6- 0.1- 911010 675 0.4- 0.8- 920207 801 (1.5- 2.8-)
900429 675 1.3- 0.5- 911013 675 0.7- 1.5- 920207 801 2.0- 1.4-
900519 675 0.5+ 0.1+ 911013 675 1.1+ 0.2- 930218 801 0.0 1.2+
900519 675 0.8+ 0.2+ 920101 801 0.2+ 0.4- 930218 801 0.5+ 0.6+

1990 KA
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 347.46078		(2000.0)	P	Q
n 0.30234713	Peri.	146.50576	-0.29987506	+0.94553252
a 2.1985288	Node	105.76646	-0.90160879	-0.23751795
e 0.4328577	Incl.	7.56284	-0.31173151	-0.22260611
P 3.26	H	16.5	G 0.15	

Residuals in seconds of arc
900323 675 2.4- 0.7- 900425 675 1.1+ 2.5- 900520 675 (3.6- 5.1-)
900323 675 0.5- 0.3+ 900425 675 (0.0 3.0-) 900520 675 1.2- 0.6+
900325 675 (3.1- 0.2+) 900518 675 0.5- 0.7+ 900521 675 0.3- 1.8-
900325 675 (2.7- 0.3-) 900518 675 1.2- 2.0- 900521 675 (1.9- 2.8-)

900522 675 2.1+ 1.3- 900529 589 (7.5+ 5.2+) 900624 589 (1.1+ 5.1-)
900523 675 0.9+ 1.4- 900531 691 1.6+ 1.9- 900624 589 (3.6+ 3.3-)
900524 372 0.8- 1.8+ 900531 691 0.2- 1.2- 900624 589 (5.3+ 0.1-)
900524 372 0.5- 0.0 900531 691 0.1+ 0.7+ 900624 589 1.3+ 1.9-
900525 801 0.3+ 0.3- 900531 691 0.7- 1.3+ 900624 589 (0.9+ 4.2+)
900525 801 0.3+ 0.3- 900531 691 0.4+ 0.8+ 900624 589 (0.5+ 9.9+)
900525 675 1.6+ 1.1+ 900531 691 0.7- 1.3+ 900625 801 0.5- 0.2-
900525 675 1.0+ 0.0 900531 691 0.3+ 2.0+ 900625 801 0.6- 0.2-
900525 871 0.2+ 1.4- 900531 691 1.3- 2.1+ 900625 675 (0.2+ 2.6-)
900526 413 0.7+ 0.3- 900531 691 1.9- 0.8- 900627 675 (1.8- 4.0-)
900526 592 0.6+ 1.7+ 900531 691 0.1+ 1.2+ 900627 675 1.6- 1.8-
900526 592 0.8+ 0.2+ 900531 691 0.6- 1.2+ 900721 413 0.7+ 0.2+
900526 592 0.4+ 1.8+ 900531 691 (1.7- 2.7-) 900721 413 0.3- 0.2+
900526 592 1.6+ 0.8+ 900614 413 (1.0- 3.5+) 900722 801 0.4- 1.0+
900527 801 0.6+ 0.1- 900614 413 1.3+ 1.7- 900722 801 0.8- 0.8-
900527 801 0.5+ 0.1- 900615 413 0.4- 1.9- 930126 691 0.2- 1.0-
900528 091 2.0- 1.4+ 900619 568 1.4- 0.1+ 930126 691 0.1- 0.4-
900529 589 (0.8- 5.0+) 900619 046 (7.7- 0.0) 930126 691 0.1- 0.4-
900529 589 (2.7+ 1.1+) 900619 046 (4.0- 8.5+) 930303 691 0.2- 0.2+
900529 589 (8.1+ 2.0-) 900620 801 0.0 0.1- 930303 691 0.3- 0.1+
900529 589 (5.9- 8.7+) 900620 801 0.1- 0.4+ 930303 691 0.4+ 0.3+
900529 589 (0.7- 7.6+) 900621 657 (3.3- 1.0-)

1990 OT3 = 1990 KB2 = 1951 RC = 1992 BL
Id. S. Nakano (MPC 19679), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 103.61083 (2000.0) P Q
n 0.30191325 Peri. 235.54750 -0.99821743 +0.02350068
a 2.2006346 Node 305.73893 +0.00258176 -0.90134804
e 0.0512437 Incl. 3.87548 -0.05962633 -0.43245743
P 3.26 H 13.0 G 0.15
Residuals in seconds of arc
510904 024 0.6- 1.6+ 900727 675 (2.5+ 4.4-) 920124 894 1.9- 0.7+
540729 675 0.9+ 0.0 900728 033 0.5+ 0.6+ 920125 894 1.3+ 0.5+
540729 675 1.4- 0.6+ 900730 675 (2.2- 3.9-) 920125 894 0.0 0.6-
900529 413 2.1+ 1.1- 900730 675 0.8- 2.0- 920126 894 0.4+ 0.2+
900529 413 (0.6- 3.0+) 900918 675 2.0+ 2.3- 920126 894 1.4+ 1.2-
900726 033 1.4- 1.0+ 900918 675 (1.8+ 4.1-) 920127 894 0.5+ 0.3-
900727 033 1.0+ 0.8+ 920124 894 1.4- 0.9- 920128 894 0.2+ 0.9+
900727 675 1.2- 0.5- 920124 894 0.5- 0.3-

1990 RV = 1990 QV16 = 1993 EB
Id. S. Nakano (d, MPC 20912; unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 75.09484 (2000.0) P Q
n 0.18183559 Peri. 354.43520 -0.41281574 -0.90992269
a 3.0856746 Node 119.94092 +0.83743956 -0.39658541
e 0.1408310 Incl. 2.66542 +0.35815939 -0.12149367
P 5.42 H 12.5 G 0.15
Residuals in seconds of arc
900826 809 0.9+ 0.3+ 900913 675 0.2- 0.4- 930301 896 0.8- 1.8- Y
900826 809 0.2+ 0.5+ 900918 675 1.3+ 0.5- 930302 896 0.6+ 1.0+ Y
900826 809 0.8- 0.7- 900918 675 0.3+ 0.7+ 930302 896 0.1+ 0.3+ Y
900913 675 1.7- 0.2+ 930301 896 0.1+ 0.5+ Y

1990 RE5 = 1993 CU

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Ichikawa
M 330.47624		(2000.0)	P	Q
n 0.19182670	Peri.	247.13444	-0.75030901	+0.65374105
a 2.9775794	Node	333.36968	-0.49715395	-0.65597087
e 0.1083452	Incl.	12.66570	-0.43574574	-0.37725966
P 5.14	H	12.2	G 0.15	

Residuals in seconds of arc

900915 675	0.4+	1.3-	900920 675	0.7-	0.5+	930218 894	0.7-	0.0
900915 675	(6.0+	8.5+)	930213 894	1.0+	0.4-	930218 894	0.0	0.5-
900918 675	0.7-	0.8+	930213 894	0.2-	0.2-	930225 894	0.1+	0.0
900918 675	0.1-	0.5+	930214 894	0.1+	0.1+	930225 894	0.2+	0.0
900920 675	1.1+	0.5-	930214 894	0.5-	0.9+			

1991 CX5 = 1959 CF = 1970 EY = 1978 TC = 1979 WF4 = 1979 YC6 = 1992 HQ4

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Nakano
M 168.61242		(2000.0)	P	Q
n 0.18500778	Peri.	21.91150	-0.58796106	-0.79260726
a 3.0503012	Node	104.46018	+0.71518762	-0.60265203
e 0.1524387	Incl.	9.59961	+0.37790006	-0.09265131
P 5.33	H	11.9	G 0.15	

Residuals in seconds of arc

590204 024	1.0-	1.6-	791218 095	0.7+	2.0+	920430 033	0.1-	0.1-
700307 095	2.5+	4.2+	910109 399	0.9-	1.0-	920501 033	0.9-	0.1-
781007 805	0.1-	0.1+	910109 399	1.0+	0.6-	920504 033	0.2+	0.3-
781008 805	1.0+	1.1+	910203 399	0.3+	1.2-	920505 033	0.6+	0.0
781009 805	0.5-	0.6+	910203 399	0.3-	0.9+	920506 033	0.6-	0.2-
781009 805	1.0-	0.2+	910204 399	1.3-	0.5+			
791117 095	0.8-	1.1-	910204 399	0.8+	0.3-			

1991 GA6 = 1992 OO8

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Ichikawa
M 55.21904		(2000.0)	P	Q
n 0.19993989	Peri.	37.40623	+0.80084148	+0.59866929
a 2.8964748	Node	285.81180	-0.55333750	+0.72963131
e 0.0649936	Incl.	0.93781	-0.22906448	+0.33050450
P 4.93	H	13.7	G 0.15	

Residuals in seconds of arc

910408 809	0.4-	0.0	920722 809	0.5+	0.4+	920727 809	0.4-	0.0
910408 809	0.4-	0.7+	920722 809	0.6+	0.6+	920727 809	0.0	0.3+
910408 809	1.8-	1.1+	920722 809	0.7+	0.7+	920728 809	1.1-	0.2-
910410 809	0.9+	0.5-	920723 809	0.4-	0.1-	920728 809	0.7-	0.1-
910410 809	1.2+	0.9-	920723 809	0.2-	0.8-	920728 809	0.1-	0.1-
910410 809	0.4+	0.9-	920724 809	0.5-	0.2-	920731 809	0.2+	0.1+
910419 809	0.0	0.2+	920724 809	0.2+	0.3-	920731 809	0.3+	0.0
910419 809	0.3-	0.4+	920724 809	0.6+	0.0	920731 809	0.6+	0.0
910419 809	0.3+	0.2-	920727 809	0.5-	0.3-			

1991 RD5 = 1987 KP2 = 1993 CF1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Nakano
M 358.07492		(2000.0)	P	Q
n 0.30992400	Peri.	247.87091	-0.79692033	+0.60352362
a 2.1625488	Node	329.23384	-0.53380191	-0.72371563
e 0.1062155	Incl.	2.91609	-0.28279588	-0.33465644
P 3.18	H	15.0	G 0.15	

Residuals in seconds of arc

870530 413	0.3+	0.2+	910913 033	1.0-	1.1-	910915 033	0.4+	0.8+
870530 413	0.4-	0.5-	910913 033	0.0	0.1-	910915 033	0.6-	0.2-
910913 033	0.5-	0.6-	910914 033	0.1-	0.2+	910918 033	0.1+	0.6+

911003	033	0.5+	0.3+	911007	033	0.6-	0.0	930213	372	0.5-	1.2-
911004	033	0.9+	0.6+	911008	033	0.7-	0.1-	930217	372	0.4+	0.4+
911004	033	0.3+	0.3+	911009	033	0.5+	0.5-	930217	372	0.4-	0.2+
911007	033	0.9+	0.7-	930213	372	0.3+	0.2+				

1991 RP7 = 1979 BW2 = 1982 VX = 1989 GX4 = 1993 CX

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Ichikawa	
M 134.21995		(2000.0)	P	Q	
n 0.21533686	Peri.	124.81138	+0.75743944	-0.64974829	
a 2.7567061	Node	275.80034	+0.57600584	+0.71124347	
e 0.0424253	Incl.	3.69585	+0.30741303	+0.26825341	
P 4.58	H	12.3	G 0.15		

Residuals in seconds of arc

790127	675	0.3-	0.7+	890411	809	2.6-	0.6-	910915	033	0.3-	0.1-
790129	675	0.0	0.1+	890411	809	1.9-	1.4-	930215	399	0.4+	0.6+
821115	688	0.1+	0.2-	910910	033	0.6+	0.6-	930215	399	0.6+	0.2+
821115	688	1.1+	1.9-	910911	033	0.1+	0.1-	930216	399	0.4+	0.9+
890408	809	1.0+	0.5+	910911	033	0.9+	0.4-	930216	399	0.0	0.2-
890408	809	2.7+	0.2-	910913	033	1.5-	0.0	930225	399	0.7+	0.5-
890408	809	2.0+	0.2-	910913	033	0.3-	0.0	930225	399	1.5-	0.3-
890411	809	2.4-	1.0-	910914	033	0.0	0.2+				

1991 RT40 = 1981 RH7

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams	
M 200.32896		(2000.0)	P	Q	
n 0.20194881	Peri.	261.79770	+0.41438789	+0.90982808	
a 2.8772340	Node	32.71166	-0.81794471	+0.38304114	
e 0.0410662	Incl.	2.36081	-0.39906030	+0.15966324	
P 4.88	H	13.5	G 0.15		

Residuals in seconds of arc

810903	675	0.3-	0.3+	910913	033	0.2-	0.1-	911004	033	0.2+	0.0
810904	675	0.3+	0.3-	911003	691	0.5-	0.0	911004	033	0.5+	0.5+
910910	033	0.4-	0.2+	911003	691	0.4-	0.0	911005	033	1.0+	0.4-
910910	033	0.5+	0.2-	911003	691	0.6-	0.1-				

1991 SJ1 = 1993 CQ1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Nakano	
M 72.87790		(2000.0)	P	Q	
n 0.22884994	Peri.	303.39073	-0.36944154	-0.92785209	
a 2.6470908	Node	167.96447	+0.91298113	-0.37265521	
e 0.1716554	Incl.	14.16401	+0.17314273	-0.01478506	
P 4.31	H	12.4	G 0.15		

Residuals in seconds of arc

910912	675	0.4+	0.4+	930215	399	0.1+	0.3+	930223	885	0.1+	0.3-
910912	675	0.3-	0.6+	930215	399	0.5-	0.7+	930223	885	0.3+	0.3-
910914	675	0.1+	0.8+	930219	511	2.0-	2.3-	930225	894	0.4+	0.4+
910914	675	0.7-	0.5+	930219	511	0.2-	1.6-	930225	894	0.3+	0.3+
910916	675	0.1+	1.0-	930221	511	0.8-	1.3+	930312	399	0.1-	0.5+
910916	675	0.4+	1.2-	930221	511	(4.2-	1.1-)	930312	399	0.5+	0.5-
930215	885	0.4+	1.1+	930221	399	0.1-	0.9+				
930215	885	1.4+	0.4-	930221	399	0.3+	0.1+				

1991 UC1 = 1993 CM1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Nakano	
M 45.15068		(2000.0)	P	Q	
n 0.23514475	Peri.	319.53808	-0.84087391	-0.54097410	
a 2.5996359	Node	187.76547	+0.52296111	-0.80416549	
e 0.0152195	Incl.	7.08937	+0.13943724	-0.24630241	
P 4.19	H	12.5	G 0.15		

Residuals in seconds of arc

911018 399	1.1+	1.2-	911104 399	1.5-	0.4+	930215 399	0.7-	1.0-
911018 399	0.4+	0.9-	911104 399	2.3-	1.4-	930215 399	1.2-	0.4+
911019 399	0.5+	0.9+	911109 399	1.3-	2.6-	930221 399	1.1+	0.4+
911019 399	0.7+	1.6+	911109 399	0.4+	0.6+	930221 399	0.6+	0.0
911031 399	0.2-	0.4+	911204 399	1.8+	2.2+			
911031 399	0.8+	1.0-	911204 399	0.2-	0.9+			

1991 VN1 = 1980 EE1 = 1993 DF1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 333.28889		(2000.0)	P	Q	
n 0.30293691	Peri.	137.43288	-0.29415590	+0.95151768	
a 2.1956743	Node	115.27833	-0.90147453	-0.24496134	
e 0.0963358	Incl.	5.70734	-0.31751532	-0.18603240	
P 3.25	H	13.2	G 0.15		

Residuals in seconds of arc

800315 095	0.2-	0.5-	911111 399	0.9+	0.7+	930225 411	0.9+	1.3+
911104 399	2.2-	1.0+	911111 399	1.7+	0.2+	930225 896	0.9-	2.0-
911104 399	0.8-	1.3-	930224 896	0.8-	0.5+	930225 896	0.9-	0.9-
911105 399	0.2+	0.9+	930224 896	0.1-	1.3-	930228 411	0.3+	1.3+
911105 399	0.1+	1.4-	930225 411	0.5-	0.5+	930228 411	2.2+	1.0+

1991 VX2 = 1993 BS14

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 148.45642		(2000.0)	P	Q	
n 0.17426570	Peri.	64.30129	+0.98773751	-0.14250314	
a 3.1743984	Node	303.82988	+0.10089144	+0.89436163	
e 0.1558726	Incl.	4.40323	+0.11914498	+0.42404024	
P 5.66	H	12.5	G 0.15		

Residuals in seconds of arc

911105 402	(0.2+	2.9-)	911130 402	0.8+	0.7-	930123 809	1.6+	1.2+
911105 402	0.0	1.6+	911210 033	0.1+	0.6-	930128 809	0.1-	0.5-
911109 402	1.2-	1.5-	911211 033	0.9-	0.3+	930128 809	1.4-	0.5-
911109 402	0.1+	1.3+	911211 033	0.7-	0.2+			
911130 402	1.6+	0.6-	911212 033	0.2+	0.0			

1992 AE

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 196.71423		(2000.0)	P	Q	
n 0.30112522	Peri.	284.37318	+0.96833345	-0.22346628	
a 2.2044722	Node	88.63027	+0.24948308	+0.88292513	
e 0.4361757	Incl.	6.39351	-0.00940852	+0.41292376	
P 3.27	H	15.5	G 0.15		

Residuals in seconds of arc

920110 691	0.2-	0.2-	920126 691	0.9-	0.3+	920224 691	0.6-	0.1-
920110 691	1.7+	1.4+	920126 691	0.9-	0.1-	920224 691	0.8-	0.0
920110 691	0.0	0.1+	920126 691	0.6-	0.0	920307 691	0.3-	0.8-
920110 691	0.0	0.4+	920126 657	(0.5+	2.2+)	920307 691	0.4+	0.3-
920110 675	1.5+	0.3-	920126 657	0.1+	1.5+	920307 691	0.5+	0.2+
920110 675	0.7+	1.2-	920126 657	(3.5+	2.5+)	930226 691	0.3-	0.1+
920113 691	0.0	0.3+	920205 691	0.5-	0.1-	930226 691	0.1+	0.2+
920113 691	0.1+	0.2-	920205 691	0.9-	0.5-	930226 691	0.1+	0.0
920113 691	0.1+	0.1-	920205 691	0.5-	0.1-	930303 691	0.3-	0.1-
920113 691	0.3-	0.0	920206 801	1.7+	0.3-	930303 691	0.2+	0.1+
920113 691	0.4+	0.8+	920207 801	0.7+	0.0	930303 691	0.0	0.1+
920113 691	1.8-	0.3-	920207 801	0.8+	0.0	930303 691	0.1-	0.1+
920113 691	1.5-	0.4-	920207 658	1.4+	0.4+	930303 691	0.1+	0.2-
920113 691	1.1-	0.2-	920207 658	0.7+	0.3-	930303 691	0.2+	0.0

1992 AO
Id. E. Bowell (1954 obs.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
M 206.48930 (2000.0) P Q
n 0.27330266 Peri. 280.80392 +0.61109373 -0.73217036
a 2.3516543 Node 127.20320 +0.78910854 +0.59337155
e 0.0937735 Incl. 22.18978 -0.06222665 +0.33442005
P 3.61 H 12.3 G 0.15
Residuals in seconds of arc

540729	675	0.4-	0.8+	920109	675	0.1-	0.6-	920130 675 0.2+ 0.4-
540729	675	0.2-	1.0-	920109	675	0.4-	0.4+	920131 675 0.6+ 0.2+
540731	675	0.5+	0.1+	920110	675	0.2+	0.2+	920131 675 0.1+ 1.1-
540731	675	0.0	0.1+	920130	675	0.4-	1.0+	920201 675 0.3- 0.2+

1992 UK1 = 1977 LC1 = 1978 WP
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa
M 114.10226 (2000.0) P Q
n 0.20987404 Peri. 51.29442 +0.72705790 +0.67220854
a 2.8043372 Node 265.99014 -0.66536575 +0.63965912
e 0.1618973 Incl. 8.05165 -0.16933763 +0.37278933
P 4.70 H 12.6 G 0.15
Residuals in seconds of arc

770612	675	0.5+	0.0	921019	399	1.4-	0.1+	921102 399 1.5+ 1.7+
770613	675	0.5-	0.2+	921019	399	0.3+	0.2-	921102 399 1.0+ 1.9+
781124	033	0.5+	0.5+	921022	399	1.6-	1.9-	
781124	033	0.5-	0.3-	921022	399	0.1+	1.5-	

1992 VM
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell
M 56.14219 (2000.0) P Q
n 0.21427616 Peri. 253.94923 +0.71425909 -0.69292697
a 2.7657960 Node 149.70044 +0.69323494 +0.68111252
e 0.5089212 Incl. 11.24897 +0.09622509 +0.23651203
P 4.60 H 15.0 G 0.15
From 25 observations 1992 Nov. 3-1993 Feb. 26, mean residual 0".65.

1992 WO3
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 56.53701 (2000.0) P Q
n 0.28064224 Peri. 237.41607 -0.11670609 -0.96487614
a 2.3104719 Node 221.39596 +0.98797036 -0.08857914
e 0.2611372 Incl. 20.85016 +0.10146058 -0.24732119
P 3.51 H 13.6 G 0.15
From 19 observations 1992 Nov. 23-1993 Feb.19, mean residual 0".57.

1992 WP3 = 1981 SF3 = 1986 RE12 = 1986 TN11 = 1988 AS5
Id. K. Ichikawa (k), S. Nakano
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 73.89267 (2000.0) P Q
n 0.18517834 Peri. 102.64659 +0.90209994 -0.39999800
a 3.0484279 Node 281.11570 +0.30328095 +0.85460415
e 0.1264057 Incl. 9.49801 +0.30697944 +0.33113948
P 5.32 H 12.3 G 0.15
Residuals in seconds of arc

810927	095	0.3-	1.0+	880111	033	0.1+	0.7-	921118 402 0.7- 0.5+
811003	095	0.7-	1.5+	880111	033	0.3-	0.0	921118 402 1.5- 1.1+
860909	095	0.4+	0.9-	921117	402	0.6-	1.1+	921125 372 (3.3+ 6.3-)
861003	095	0.8+	1.4-	921117	402	0.7-	1.1+	921125 372 3.7+ 4.5-

1992 WR3
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 11.96292 (2000.0) P Q
n 0.22455502 Peri. 28.05812 -0.49717150 -0.83318060
a 2.6807370 Node 92.68464 +0.74379803 -0.55296178
e 0.1094877 Incl. 14.02845 +0.44674936 -0.00658480
P 4.39 H 12.2 G 0.15
From 30 observations 1992 Nov. 18-1993 Feb. 26, mean residual 0".90.

1992 YE = 1981 QL4
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa
M 103.46126 (2000.0) P Q
n 0.28380358 Peri. 98.98514 +0.76321456 -0.63804052
a 2.2932820 Node 300.73136 +0.53635710 +0.71363225
e 0.1115608 Incl. 6.81624 +0.36031179 +0.28919423
P 3.47 H 13.8 G 0.15
Residuals in seconds of arc
810830 675 0.6- 0.1+ 921218 885 0.3+ 0.7- 921224 885 0.5- 0.9+
810831 675 0.6+ 0.1- 921221 885 0.4- 0.2- 921224 885 0.2+ 1.2-
921218 885 0.3- 0.6+ 921221 885 0.8+ 0.5+

1992 YH2 = 1982 BL4
Id. A. Lowe
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 84.03336 (2000.0) P Q
n 0.17407352 Peri. 317.22972 +0.70616365 -0.68433701
a 3.1767344 Node 86.92312 +0.68880455 +0.60454143
e 0.0686138 Incl. 10.48422 +0.16395486 +0.40769169
P 5.66 H 13.0 G 0.15
Residuals in seconds of arc
820126 381 0.3- 0.9- 921219 010 0.2+ 0.4- 930116 010 0.2- 0.5-
820126 381 0.8- 0.0 921219 010 0.2+ 0.7+ 930117 010 1.0- 0.3-
820128 381 (6.2+ 2.0-) 921219 010 0.1+ 0.4+ 930117 010 0.8- 0.1+
820128 381 1.1+ 1.0+ 921220 010 0.3- 0.1+ 930117 010 0.1- 0.8+
921218 010 1.1+ 0.2- 930116 010 0.6+ 0.0
921219 010 0.2+ 0.1- 930116 010 0.1+ 0.6-

1993 AJ = 1991 NT6
Id. S. Nakano, K. Ichikawa
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 102.59807 (2000.0) P Q
n 0.23140819 Peri. 286.04978 +0.70397766 -0.67738755
a 2.6275454 Node 117.15207 +0.70803466 +0.64579386
e 0.2012044 Incl. 13.87990 +0.05569901 +0.35227320
P 4.26 H 12.4 G 0.15
Residuals in seconds of arc
910711 809 0.8- 0.5- 930113 400 (3.7+ 4.4-) 930121 403 0.1+ 0.8+
910711 809 0.7- 0.5- 930114 400 0.7+ 0.4- 930121 403 2.3+ 1.8-
910711 809 0.5- 0.5- 930114 400 (3.5- 1.2-) 930221 400 0.1+ 0.4-
910712 809 2.0+ 1.5+ 930117 403 1.4- 1.5+ 930221 400 0.3- 0.5+
930113 400 0.6- 0.1+ 930117 403 0.8- 0.2-

1993 AN = 1982 BP13 = 1988 EX = 1988 FH3
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 40.54054 (2000.0) P Q
n 0.17816907 Peri. 8.21936 -0.38388926 -0.92231714
a 3.1278639 Node 104.36442 +0.84456362 -0.37010141
e 0.1527711 Incl. 2.61945 +0.37328451 -0.11115772
P 5.53 H 12.6 G 0.15

Residuals in seconds of arc

820130	675	0.0	0.4-		880323	809	(36.3+	2.5-)	930120	399	0.7+	0.2-
820131	675	0.1-	0.2+		880324	809	1.7+	0.9-	930210	399	0.5+	0.4+
880313	054	0.4+	0.3+		880324	809	0.1-	0.1+	930210	399	0.0	0.1+
880313	054	1.6-	1.5+		930113	399	0.4+	0.6-	930215	399	0.4-	0.5+
880314	054	0.5-	1.2-		930113	399	0.2-	0.7-	930215	399	0.1-	0.6+
880323	809	(34.6+	7.9-)		930120	399	1.0-	0.1+				

1993 BH2 = 1978 EW1 = 1990 MW = 1991 UC5

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Ichikawa
M 319.85263	(2000.0)	P	Q
n 0.26203541	Peri. 125.72261	-0.50339010	+0.86194457
a 2.4185926	Node 113.94517	-0.81257579	-0.44846341
e 0.1820073	Incl. 3.79026	-0.29380095	-0.23649974
P 3.76	H 12.9	G 0.15	

Residuals in seconds of arc

780305	095	0.1+	0.5+		911031	399	(2.2+	5.4-)	930122	372	0.0	0.2-
900627	675	0.5+	1.0-		911031	399	0.5+	1.4-	930125	372	(7.0+	1.0-)
900627	675	0.3+	0.4+		930119	372	0.6-	0.7-	930126	372	0.9+	0.8-
900629	675	(0.7-	4.4-)		930119	372	0.8-	1.1-	930210	399	0.7+	0.6-
900629	675	1.0-	1.7-		930122	372	(4.1+	0.7-)	930210	399	0.9-	0.8+

1993 BF3 = 1985 DK4 = 1989 CU7

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Nakano
M 47.63314	(2000.0)	P	Q
n 0.24097019	Peri. 150.34119	-0.54982725	-0.83437963
a 2.5575679	Node 332.95787	+0.74860486	-0.47167149
e 0.1568652	Incl. 4.88780	+0.37051419	-0.28519578
P 4.09	H 13.7	G 0.15	

Residuals in seconds of arc

850222	675	0.7-	0.0		930123	400	1.1+	1.6+	930221	400	0.9+	1.5-
850223	675	0.6+	0.1+		930123	400	1.1+	0.2-	930221	400	2.6-	0.2+
890213	049	1.1-	0.7-		930124	400	1.7+	0.2+				
890213	049	1.6+	1.3+		930124	400	2.6-	1.3-				

1993 BL3 = 1950 XM = 1955 FN = 1991 NA1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Nakano
M 116.23094	(2000.0)	P	Q
n 0.28407397	Peri. 350.48128	+0.62499703	-0.77136700
a 2.2918266	Node 60.73623	+0.72494735	+0.51657320
e 0.1712626	Incl. 7.89856	+0.28953420	+0.37167874
P 3.47	H 12.6	G 0.15	

Residuals in seconds of arc

501203	711	3.6+	2.7-	Y	910709	675	2.2+	1.6-	930129	885	1.9-	0.6+
501203	711	2.8-	0.1+	Y	910711	675	2.4-	1.6-	930213	885	1.1+	0.8-
550320	760	0.4-	1.9-		930128	885	1.0-	0.6+	930213	885	0.2+	1.4-
550320	760	0.3-	0.6-		930128	885	0.6+	0.3-				
910709	675	1.0+	1.7-		930129	885	0.5+	0.1+				

1993 BN3 = 1977 UL3

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Marsden
M 248.32103	(2000.0)	P	Q
n 0.28184766	Peri. 276.14075	+0.61817635	+0.78325775
a 2.3038795	Node 32.33978	-0.66347413	+0.56501169
e 0.1495809	Incl. 7.09473	-0.42149741	+0.25936287
P 3.50	H 14.5	G 0.15	

Residuals in seconds of arc

771018	675	0.8+	0.1-		930126	695	0.9-	0.1-	930126	695	0.7-	0.5-
771019	675	0.8-	0.0		930126	695	0.1+	1.3+	930126	695	0.3-	0.0

930126 695 0.0 0.3- 930129 695 0.4+ 0.3+ 930131 695 0.1+ 0.1+
930126 695 0.4+ 0.6- 930129 695 0.3+ 0.4+ 930205 695 0.7- 1.0- Y
930129 695 0.2+ 0.1+ 930131 695 1.3+ 1.1- 930205 695 0.7- 0.4+ Y
930129 695 0.3+ 0.1+ 930131 695 0.1+ 0.7+
930129 695 0.1- 0.1+ 930131 695 0.2+ 0.2+

1993 CN = 1952 HF1 = 1956 AN = 1982 BE = 1990 RM12
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Urata
M 100.59102 (2000.0) P Q
n 0.18885247 Peri. 338.81901 +0.16083847 -0.96774523
a 3.0087603 Node 101.51873 +0.93159955 +0.08396917
e 0.0668991 Incl. 11.41379 +0.32596514 +0.23752547
P 5.22 H 11.9 G 0.15
Residuals in seconds of arc
520428 760 2.1- 1.3- 930214 385 0.5- 0.1- 930228 385 0.2- 1.0+
520428 760 0.6+ 2.0- 930214 385 0.7+ 1.0- 930228 385 0.2+ 0.7+
560114 760(10.3+ 15.0+)X 930215 385 0.7- 0.9+ 930313 385 0.6+ 0.0
820116 688 0.2+ 1.0- 930215 385 0.7+ 0.4- 930313 385 0.3+ 0.2-
820116 688 0.1+ 2.8- 930217 385 0.5+ 1.5+ 930313 385 0.2+ 0.1+
900915 675 0.1+ 1.2- 930217 385 1.0- 0.4-
900915 675 0.2+ 0.2- 930228 385 0.2+ 1.0+

1993 CO = 1976 UM2 = 1978 EB2 = 1981 UN16 = 1986 TC13 = 1988 AV5
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 86.08923 (2000.0) P Q
n 0.19709505 Peri. 36.24578 +0.18092568 -0.98301701
a 2.9242796 Node 43.35421 +0.89149152 +0.15073103
e 0.0708059 Incl. 2.56438 +0.41534176 +0.10467906
P 5.00 H 12.1 G 0.15
Residuals in seconds of arc
761026 095 0.5+ 1.3- 880115 399 0.2- 1.2- 930210 399 0.7- 0.7+
780305 095 0.9- 0.8+ 880115 399 0.1- 0.2+ 930213 399 0.2+ 0.8+
811024 095 0.4+ 3.3+ 880117 399 0.3- 0.5+ 930213 399 0.9+ 1.6+
861005 095 1.2- 1.7- 880117 399 0.8+ 0.8- 930221 399 1.4+ 1.0-
880115 399 0.4- 2.0- 880117 399 1.9+ 0.1- 930221 399 0.7- 0.6-
880115 399 1.5- 0.5- 930210 399 0.5- 1.4+

1993 CQ = 1982 VV12 = 1986 PV3 = 1991 RP24
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 114.76395 (2000.0) P Q
n 0.20931249 Peri. 276.95307 +0.74411188 -0.65249818
a 2.8093507 Node 123.89136 +0.66059043 +0.68667993
e 0.1801775 Incl. 9.94294 +0.09958814 +0.32049462
P 4.71 H 12.1 G 0.15
Residuals in seconds of arc
821114 095 0.2- 0.7+ 910912 675 0.1+ 1.0- 930213 399 0.3- 0.6-
860801 675 0.2- 0.7- 910917 675 0.3- 0.1- 930213 399 1.4+ 0.3+
860801 675 2.2+ 2.5+ 910917 675 0.5+ 0.0 930221 399 1.2+ 0.8+
860802 675 2.8- 0.9- 930210 399 1.7- 0.4+ 930221 399 0.6- 0.3-
860802 675 0.4+ 1.4+ 930210 399 0.3+ 0.9+

1993 CN1 = 1975 TG2 = 1991 RF13
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa
M 335.41128 (2000.0) P Q
n 0.30618650 Peri. 1.58509 -0.63668457 +0.76986443
a 2.1801114 Node 228.87253 -0.70813485 -0.60634081
e 0.0172732 Incl. 3.35354 -0.30525039 -0.19914715
P 3.22 H 13.3 G 0.15

Residuals in seconds of arc

751003	095	0.0	0.1-	910915	675	0.3-	0.2+	930221	399	1.8+	0.1+
910913	675	0.2+	0.3-	930215	399	1.2-	0.1-	930225	399	0.4-	0.4+
910913	675	0.0+	0.0	930215	399	1.7-	0.6-	930225	399	0.8+	0.3-
910915	675	0.1-	0.3+	930221	399	0.6+	0.6+				

1993 DB = 1942 EX = 1983 EF2 = 1991 RQ10

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	18.33888	(2000.0)	P	Q	
n	0.28944060	Peri.	179.73110	-0.98391010	+0.17813319
a	2.2634092	Node	10.56009	-0.16406115	-0.87029754
e	0.1046508	Incl.	4.30756	-0.07074500	-0.45918489
P	3.41	H	13.2	G 0.15	

Residuals in seconds of arc

420312	062	2.0+	1.2-	910916	675	0.2-	0.7-	930217	894	0.5+	1.4+
420312	062	0.2+	0.8+	910916	675	0.1+	0.2-	930218	894	0.5-	0.3-
420312	062	1.2-	0.0	930215	399	2.1-	2.6+	930218	894	0.4-	0.9-
420312	062	2.1-	1.4-	930215	896	0.2+	2.4-	930221	399	0.7-	1.5+
420314	062	0.1+	0.2-	930215	399	0.1-	1.3+	930221	399	0.6-	1.0+
830311	381	0.1+	0.1+	930215	896	2.4+	2.7-	930224	894	0.2+	0.5+
830311	381	0.3+	0.6+	930217	896	1.1+	2.3-	930224	894	0.5+	1.6+
910910	675	0.0	0.5+	930217	896	0.8+	2.1-	930301	894	0.4+	0.3+
910910	675	0.1+	0.4+	930217	894	0.8-	0.9+	930301	894	0.2-	0.8+

1993 DA1 = 1934 EJ = 1975 VF5 = 1979 OA13 = 1980 TQ13 = 1989 LG

Id. S. Nakano, A. Lowe

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	105.28374	(2000.0)	P	Q	
n	0.18451503	Peri.	284.12096	+0.33079517	-0.93864442
a	3.0557293	Node	146.05533	+0.91916500	+0.29704193
e	0.0684180	Incl.	10.06387	+0.21379957	+0.17525052
P	5.34	H	11.3	G 0.15	

Residuals in seconds of arc

340305	024	0.6+	0.4+	890604	675	0.4-	0.2+	930220	877	1.4+	0.2+
751102	095	2.4-	5.1-	890606	675	1.7-	3.4-	930223	877	0.1-	0.6+
790726	675	1.1-	0.8+	890606	675	1.1+	1.8-	930223	877	0.5+	0.3-
790727	675	0.2+	0.9+	930130	877	(4.8-	3.1+)	930225	877	0.3+	0.3+
801012	095	2.7+	2.3+	930130	877	0.4+	0.5+	930225	877	1.9-	0.0
890604	675	0.3+	0.8+	930220	877	0.0	0.6-				

1993 EF = 1978 EU6 = 1984 WS4

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Urata

M	76.92909	(2000.0)	P	Q	
n	0.26477876	Peri.	57.38573	-0.51326582	-0.85686274
a	2.4018578	Node	63.56958	+0.76818397	-0.48383911
e	0.1680771	Incl.	3.09956	+0.38268992	-0.17800550
P	3.72	H	13.9	G 0.15	

Residuals in seconds of arc

780306	095	0.5-	1.4-	930302	385	0.0	0.9+	930313	385	1.0+	0.6-
841120	010	0.2+	0.4+	930302	385	0.2+	0.1+	930314	411	0.5-	1.8+
841121	010	0.3-	0.1+	930302	385	0.1+	0.8+	930314	411	0.6-	0.1-
930301	385	0.9-	1.2-	930313	385	0.0	0.3-	930314	411	0.0	0.9+
930301	385	1.3+	1.0-	930313	385	0.3+	0.0				

1993 EG = 1933 QJ1 = 1977 QP3 = 1987 QC7 = 1990 MD1
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Urata

M	346.04329	(2000.0)	P	Q
n	0.29215782	Peri. 48.35658	-0.43254089	+0.90133995
a	2.2493535	Node 196.05703	-0.84927864	-0.41559164
e	0.1222428	Incl. 4.61224	-0.30271137	-0.12194215
P	3.37	H 13.6	G 0.15	

Residuals in seconds of arc

330828	024	2.2+	7.7-	900619	046	0.6-	1.4+	930313	385	0.3-	1.0-
770823	095	0.2+	0.6+	900619	046	0.7+	1.1+	930313	385	0.1-	0.4-
870822	809	0.6-	1.1-	930301	385	0.2+	0.5-	930313	385	0.2+	0.2-
870822	809	2.1-	0.8-	930301	385	0.5-	0.4-	930314	411	0.1+	0.3-
870826	809	0.0	0.7+	930302	385	0.6-	0.4-	930314	411	0.2+	0.9-
870826	809	0.5+	0.9+	930302	385	0.4-	0.5-	930314	411	0.2-	0.7-
870826	809	1.6+	1.5+	930302	385	0.4-	0.1-				

1993 EH = 1940 GD = 1978 WE = 1980 JJ
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	25.88407	(2000.0)	P	Q
n	0.29688634	Peri. 14.28497	-0.97567665	+0.21918650
a	2.2254059	Node 178.36393	-0.21126846	-0.93591086
e	0.1279479	Incl. 7.07170	-0.05848691	-0.27573202
P	3.32	H 13.4	G 0.15	

Residuals in seconds of arc

400403	062	1.4-	1.2-	800512	046	0.6-	0.9-	930302	894	0.8+	0.1+
400404	062	1.8-	2.3+	800512	046	0.2+	0.3+	930313	894	0.5-	0.2+
400412	062	3.2+	1.5-	800513	046	0.1+	0.4-	930313	894	0.5+	0.6-
781124	046	0.7+	0.6-	800513	046	0.2+	0.2-	930314	894	0.9-	0.1+
781124	046	1.0-	2.2+	930301	894	0.0	0.2+	930314	894	0.1-	0.2-
800511	046	0.0	2.1+ Y	930301	894	0.3+	0.3-				
800511	046	0.2+	0.7+ Y	930302	894	0.1+	0.7+				

6766 P-L = 4243 T-3
Id. S. Nakano (MPC 12700)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	31.18678	(2000.0)	P	Q
n	0.17658531	Peri. 110.17314	+0.20193554	+0.97873318
a	3.1465382	Node 171.23879	-0.96358778	+0.20513738
e	0.0573094	Incl. 13.71094	-0.17527298	-0.00015321
P	5.58	H 12.0	G 0.15	

Residuals in seconds of arc

600924	675	0.1+	1.0-	771012	675	0.7-	0.2+	771022	675	0.9-	2.4+
600926	675	0.8-	0.6-	771016	675	1.5-	0.4+	771022	675	1.6+	2.2-
600927	675	0.2+	0.5-	771016	675	0.3-	0.3+	771022	675	0.7+	0.8-
600928	675	0.1+	0.3+	771017	675	0.1+	1.3-	771022	675	0.6-	0.1+
601017	675	0.5-	0.4+	771017	675	0.3-	1.0+	820727	095	0.0	0.0
601022	675	0.1-	2.7+	771017	675	0.7+	1.3-	910208	675	0.9+	0.3-
601026	675	0.8+	0.8+	771017	675	0.5-	1.3+	910208	675	0.7+	0.6-
771007	675	1.0+	1.2-	771021	675	1.6+	0.5+	910210	675	0.8-	1.4+
771011	675	0.5-	0.6+	771021	675	0.5+	1.7-	910210	675	0.7-	0.0
771011	675	0.1-	0.1-	771021	675	0.6+	0.2+				
771012	675	1.2-	0.6+	771021	675	0.2+	0.5-				

7610 P-L = 1981 UE24
Id. E. Bowell (MPC 20516)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 16.21044 (2000.0) P Q
n 0.28717990 Peri. 77.01531 -0.97260032 +0.22260911
a 2.2752722 Node 115.81401 -0.23150747 -0.90098426
e 0.1331787 Incl. 4.27058 -0.02128186 -0.37238763
P 3.43 H 14.5 G 0.15
Residuals in seconds of arc

601017	675	0.9-	1.0+	811025	675	0.0	0.0	930217	372	0.4+	0.5+
601022	675	0.1+	0.3+	930213	372	0.3+	0.0	930217	372	2.0+	1.7-
601025	675	0.8+	0.9-	930213	372	(3.3+	0.1+)	930219	372	1.4-	1.5+
601026	675	0.1+	0.6-	930217	372	1.3-	0.4-	930219	372	0.4+	0.9+
811024	675	0.0	0.1+	930217	372	0.5-	0.9-				

9508 P-L = 1986 ED1 = 1992 JR2
Id. T. Kobayashi (MPC 14630), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 98.25449 (2000.0) P Q
n 0.17463814 Peri. 93.40856 -0.98424241 +0.17198167
a 3.1698836 Node 96.49744 -0.17417283 -0.90283061
e 0.1348027 Incl. 2.37073 -0.03050729 -0.39410556
P 5.64 H 13.0 G 0.15
Residuals in seconds of arc

601017	675	0.1+	0.4-	860305	688	0.5-	0.4+	920504	809	0.0	0.4+
601022	675	0.9-	1.3-	860305	688	0.8+	2.0-	920504	809	(3.5-	0.0)
601024	675	1.2+	0.9-	860312	809	1.0-	0.1-	920507	801	0.8+	0.2+
601026	675	0.6+	0.6+	920401	801	0.2-	0.4-	920507	801	0.1-	0.5+
781130	675	0.3-	0.4+	920401	801	0.3-	0.3-				
781201	675	0.1+	0.3+	920504	809	(3.2+	0.6+)				

2168 T-1 = 1980 TT10 = 1991 RY
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 164.78522 (2000.0) P Q
n 0.26199213 Peri. 176.18609 +0.99974003 +0.02069684
a 2.4188590 Node 182.68444 -0.02220417 +0.97909227
e 0.1284782 Incl. 11.78562 +0.00518118 +0.20236096
P 3.76 H 14.5 G 0.15
Residuals in seconds of arc

710324	675	0.4+	1.0-	710402	675	1.0+	0.9-	801008	095	0.2+	1.2-
710324	675	0.8+	1.3+	710416	675	0.7+	1.0-	910907	372	1.0-	0.1-
710325	675	1.7-	0.3-	710416	675	1.7+	1.0-	910907	372	0.2-	0.1-
710325	675	1.3-	0.3-	710513	675	0.8-	0.4+	910909	372	1.4+	1.0-
710326	675	0.7-	1.3-	710514	675	0.5-	1.1+				
710327	675	0.5-	0.1-	710516	675	0.5+	0.5+				

3138 T-1 = 1990 SB18 = 1990 VV6 = 1990 VH10 = 1990 WX15 = 1992 HL5
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 234.52526 (2000.0) P Q
n 0.28479140 Peri. 284.69988 -0.21457598 -0.97670373
a 2.2879760 Node 177.68586 +0.91940523 -0.20289934
e 0.1297940 Incl. 3.75196 +0.32962278 -0.06986908
P 3.46 H 15.0 G 0.15
Residuals in seconds of arc

710324	675	1.2+	0.7+	710327	675	1.8+	0.6-	710514	675	0.4-	0.3+
710325	675	1.0-	0.4-	710402	675	1.2+	0.1+	710516	675	1.0+	0.2-
710326	675	2.1-	1.0+	710402	675	0.5+	0.2-	900927	413	0.1-	0.8+
710326	675	0.9-	1.0-	710416	675	(3.4+	3.2-)	901111	809	0.8-	0.5-
710326	675	0.2-	1.0+	710416	675	(4.4+	2.3-)	901111	809	0.2+	0.4-
710326	675	0.8-	0.6-	710513	675	0.1+	0.7+	901111	809	0.1-	0.5+

901114	809	0.7-	1.0-		901120	809	0.0	1.3+		920430	691	0.7-	0.2-
901114	809	0.4+	0.8-		901120	809	2.0+	1.6+		920430	691	0.9-	0.8-
901114	809	0.9-	1.5-		901120	809	(4.1+	1.5+)		920430	691	1.4+	0.4+

4023 T-1 = 1979 OW9 = 1992 HM5

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	267.52534	(2000.0)	P	Q	
n	0.28677249	Peri.	261.96504	+0.21688940	-0.97615266
a	2.2774266	Node	175.47715	+0.93536534	+0.20510608
e	0.1876737	Incl.	6.71279	+0.27937550	+0.07111593
P	3.44	H	15.0	G 0.15	

Residuals in seconds of arc

710324	675	2.1+	0.3-		710402	675	0.1+	0.0		790724	413	1.2-	1.7-
710326	675	1.1-	0.1+		710416	675	1.1+	0.9+		790728	413	1.5+	0.3+
710326	675	1.0-	1.7-		710416	675	0.9+	0.3+		920429	691	0.1-	1.0+
710326	675	0.8-	1.5-		710513	675	0.5+	0.7+		920429	691	0.3+	0.2+
710327	675	0.9+	0.3-		710514	675	0.4-	1.0+		920429	691	0.1+	0.3+
710327	675	1.3-	0.0		710516	675	1.9-	0.4-					

1157 T-2 = 1993 DU1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	3.16329	(2000.0)	P	Q	
n	0.27624235	Peri.	355.50082	-0.94418367	+0.32891521
a	2.3349408	Node	203.72709	-0.30080596	-0.88339881
e	0.1300207	Incl.	2.59532	-0.13428691	-0.33379834
P	3.57	H	15.5	G 0.15	

Residuals in seconds of arc

730919	675	0.7-	0.6-		730930	675	1.2-	0.5+		930303	691	0.6-	0.3+
730919	675	1.8-	0.7-		730930	675	1.1-	0.4+		930303	691	0.3+	0.3-
730920	675	0.3-	0.2+		731004	675	(3.6+	2.6-)		930303	691	0.2-	0.2-
730924	675	0.1+	0.8-		731004	675	2.0+	1.2-		930303	691	0.1-	0.1-
730924	675	1.0+	0.2-		731005	675	0.4+	1.2+		930303	691	0.1-	0.1+
730925	675	(2.5-	0.2+)		731005	675	0.1+	0.5-		930303	691	0.0	0.1-
730925	675	0.8-	0.2-		930226	691	0.6+	0.4+		930304	691	0.5-	0.4-
730929	675	0.9+	1.2+		930226	691	0.4+	0.1+		930304	691	0.0	0.4-
730929	675	1.3+	0.7+		930226	691	0.5+	0.2+		930304	691	0.3-	0.3+

1274 T-2 = 1978 WE18

Id. E. Bowell (MPC 19882)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	76.35074	(2000.0)	P	Q	
n	0.21880398	Peri.	67.46021	+0.20723034	-0.97827310
a	2.7275072	Node	10.58519	+0.88490455	+0.18478179
e	0.0343984	Incl.	1.90585	+0.41713249	+0.09400758
P	4.50	H	14.5	G 0.15	

Residuals in seconds of arc

730919	675	0.7-	0.9-		730924	675	0.7-	0.5-		731004	675	0.5+	1.1-
730919	675	0.4+	0.1+		730924	675	0.4-	1.1+		731005	675	1.2+	0.3+
730919	675	0.6-	1.7+		730925	675	0.5-	1.4-		731005	675	1.4+	1.1+
730919	675	1.2-	0.4-		730925	675	0.8+	0.1-		781130	675	0.7-	0.1-
730919	675	1.2+	0.5-		730929	675	0.3+	1.2-		781201	675	0.6+	0.2+
730920	675	0.5-	0.3+		730929	675	0.2+	0.3-		911004	033	0.9-	0.6+
730920	675	(0.3+ | 3.0+)		730930	675	(2.5- | 0.0)		911004	033	0.2-	0.9+
730924	675	0.4+	1.2-		730930	675	1.3-	0.0		911005	033	0.1+	0.5+
730924	675	0.1-	1.1+		731004	675	0.4+	0.1-					

1325 T-2 = 1991 RJ33
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 139.26587 (2000.0) P Q
n 0.21886048 Peri. 354.46348 +0.97555363 -0.21793337
a 2.7270378 Node 18.19922 +0.20494362 +0.85574259
e 0.0671731 Incl. 5.19639 +0.07932981 +0.46926504
P 4.50 H 14.0 G 0.15
Residuals in seconds of arc

730919	675	0.5-	0.6+	730929	675	0.4+	0.1-	731005	675	0.3-	1.1+
730919	675	1.1-	0.6+	730929	675	1.5+	2.2-	910910	033	0.2-	0.3-
730920	675	0.5-	0.8+	730930	675	0.1-	1.0+	910910	033	0.7+	0.5+
730924	675	0.1-	1.0-	730930	675	0.7+	0.0	910910	675	0.7+	0.7+
730924	675	0.1-	0.7-	730930	675	0.3-	0.1-	910910	675	0.1+	0.2-
730925	675	0.2+	0.0	730930	675	0.2-	0.6-	910913	033	0.4-	0.4-
730925	675	1.0+	0.5+	731004	675	0.6-	0.6+	911004	033	0.8-	0.4+
730929	675	0.1-	0.4-	731004	675	0.4-	0.9+	911004	033	0.7-	0.2+
730929	675	1.6+	1.8-	731005	675	0.6-	0.3-	911005	033	0.0	0.1+

2281 T-2 = 1991 PM10
Id. B. G. Marsden (MPC 18833)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
M 174.86417 (2000.0) P Q
n 0.21372922 Peri. 311.77439 +0.48588568 +0.87398541
a 2.7705125 Node 347.28895 -0.79067373 +0.43561274
e 0.0350051 Incl. 2.09344 -0.37249182 +0.21538580
P 4.61 H 13.7 G 0.15
Residuals in seconds of arc

540731	675	0.7-	2.1+	730929	675	0.2+	1.8+	910814	809	0.5+	1.0+
730920	675	0.6+	2.0+	730930	675	0.3-	0.0	910814	809	0.1-	0.5+
730924	675	(3.3-	1.9+)	730930	675	1.0+	0.3-	910816	809	(0.2-	3.2-)
730924	675	(3.4-	1.7+)	731004	675	0.1-	0.9-	910816	809	0.2-	2.0-
730925	675	(0.1+	2.9-)	731004	675	0.4-	0.7-	910816	809	0.7+	2.0-
730925	675	0.4+	1.1-	731005	675	0.7-	0.9-				
730929	675	0.5-	0.9+	731005	675	0.4-	0.1-				

5069 T-2 = 1978 VQ10
Id. S. Nakano (MPC 15087)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 80.23350 (2000.0) P Q
n 0.21293865 Peri. 162.64075 +0.74766885 -0.65520534
a 2.7773656 Node 238.79336 +0.59328245 +0.73221833
e 0.2211250 Incl. 7.26454 +0.29834078 +0.18590933
P 4.63 H 13.5 G 0.15
Residuals in seconds of arc

730919	675	(4.3+	2.7+)	730929	675	0.6+	0.2-	781106	675	0.5+	0.8-
730920	675	0.3+	0.2+	730930	675	1.6-	0.6-	781107	675	0.1-	0.8+
730920	675	2.4+	0.1+	730930	675	0.8-	0.7-	781108	675	0.4+	0.4-
730924	675	0.4-	1.4+	731004	675	1.4-	1.6-	781129	675	0.9-	0.2-
730924	675	0.5+	1.9+	731004	675	(1.3-	3.5-)	781130	675	0.0	0.6+
730925	675	1.1+	0.1+	731005	675	0.1+	0.8-	870920	095	0.4-	1.7+
730925	675	1.1+	0.5+	731005	675	0.8-	1.9-				
730929	675	0.4-	0.1+	781105	675	0.2+	0.2-				

5493 T-2 = 1989 CT6 = 1989 ED12 = 1990 EE1
Id. G. V. Williams (MPC 16884; d, unpublished)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 253.57783 (2000.0) P Q
n 0.08518612 Peri. 56.93466 +0.92594664 -0.35207565
a 5.1155244 Node 323.15384 +0.22299847 +0.80168579
e 0.0469213 Incl. 13.16930 +0.30478600 +0.48305552
P 11.57 H 10.5 G 0.15
Residuals in seconds of arc

730930	675	1.5+	0.2-	890210	033	0.3-	0.1+	900302	809	0.4+	2.0-
730930	675	0.9+	0.2-	890210	033	0.3+	0.7+	900304	809	1.2-	0.4+
731004	675	0.7-	0.5+	890310	033	0.5+	0.4-	900304	809	1.0-	0.9+
731004	675	0.8-	1.0-	890310	033	0.1-	0.1+	900304	809	1.4-	0.8+
731005	675	0.1-	0.2-	900302	809	1.5+	0.9-	910417	675	0.1-	0.7-
731005	675	0.2+	0.6-	900302	809	0.9+	0.6-	910417	675	0.4-	0.0

2400 T-3 = 1989 YE1
Id. S. Nakano (MPC 15907)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
M 250.03776 (2000.0) P Q
n 0.26339575 Peri. 253.74099 -0.85011968 +0.52494811
a 2.4102580 Node 317.89948 -0.45638004 -0.77383682
e 0.0018635 Incl. 3.55276 -0.26270475 -0.35440945
P 3.74 H 13.7 G 0.15
Residuals in seconds of arc

540729	675	1.3-	1.0-	771022	675	0.7+	0.3+	891230	413	0.0	1.9-
540729	675	1.8+	0.3-	880910	675	1.3+	1.1+	891231	413	1.3-	0.0
771012	675	0.4-	1.8+	880910	675	(1.7+	1.6+)	891231	413	(2.5+	0.1-)
771012	675	0.5+	1.0+	880911	675	0.8-	0.1-	900121	887	(1.0-	2.4+)Y
771016	675	0.3+	2.0-	880911	675	0.1-	0.9+	900121	887	1.1+	0.2+ Y
771016	675	0.9+	1.4-	880911	675	0.0	1.8-	900124	887	0.5+	0.9-
771017	675	1.7-	0.3+	880911	675	(0.2-	2.4-)	900124	887	1.3+	0.6-
771017	675	0.5-	0.9+	880916	675	(1.4-	2.4-)	900125	887	0.2+	1.1+
771021	675	(2.8+	1.3-)	880916	675	0.7+	0.2-	900125	887	1.9-	0.4+
771021	675	(1.7+	1.9-)	880916	675	0.1-	1.7-				
771022	675	0.6-	1.0+	891230	413	0.8-	0.4-				

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NEW NAMES OF MINOR PLANETS.

(2522) Triglav = 1980 PP
Discovered 1980 Aug. 6 by Z. Vavrova at Klet.
Named for a Slavonic deity.

(2523) Ryba = 1980 PV
Discovered 1980 Aug. 6 by Z. Vavrova at Klet.
Named for Jakub Jan Ryba (1765-1815), Czech baroque composer, author of the famous Czech Christmas Mass.

(2581) Radegast = 1980 VX
Discovered 1980 Nov. 11 by Z. Vavrova at Klet.
Named for a Slavonic deity.

(2944) Peyo = 1935 QF
Discovered 1935 Aug. 31 by K. Reinmuth at Heidelberg.
Named in memory of Pierre Culliford (1928-1992), better known under his pseudonym Peyo. He was known worldwide for his comic strips, where he created the blue dwarfs known as the Smurfs. Together with Georges Remi

(Herge), the father of Tintin, Peyo raised the drawing of comic strips to a 'Belgian' work of art. Name proposed and citation prepared by J. Meeus, endorsed by G. Klare and L. D. Schmadel.

(3020) Naudts = 1949 PR

Discovered 1949 Aug. 2 by K. Reinmuth at Heidelberg.

Named in memory of Ignace Naudts (1949-1992), active Belgian amateur astronomer, editor of the monthly magazine 'Heelal' of the Flemish association 'Vereniging voor Sterrenkunde'. His particular fields of interest were planetary satellites and rings, chaos in the solar system, and theoretical and practical study of sundials. He was a talented mathematician, a dynamic and enthusiastic popularizer of astronomy and science. Name proposed and citation prepared by C. Steyaert, endorsed by G. Klare and L. D. Schmadel.

(3122) Florence = 1981 ET3

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

Named in memory of Florence Nightingale (1820-1910), English nurse and hospital reformer, who almost singlehandedly established trained nursing as an honorable profession for women. She transformed the English field hospitals during the Crimean War and was known there for her quiet dignity, her rigorous discipline and her determination. Florence Nightingale is most remembered as The Lady of the Lamp for her courage, compassion and devotion to the injured troops as she visited the hospital wards after a full day's work. Citation prepared by C. S. Shoemaker at the request of the discoverer.

(3492) Petra-Pepi = 1985 DQ

Discovered 1985 Feb. 16 by M. Mahrova at Klet.

Named in honor of the discoverer's daughter on the occasion of her eighteenth birthday.

(3848) Analucia = 1982 FH3

Discovered 1982 Mar. 21 by H. Debehogne at the European Southern Observatory.

Named in honor of Ana Lucia Martins, a good friend of the discoverer and who helps him very much when he is working in connection with this observing program at the Universidade Federal do Rio de Janeiro. Name proposed by the discoverer and by U.F.R.J. professor L. E. Machado, who died on 1992 July 13.

(4159) Freeman = 1989 GK

Discovered 1989 Apr. 5 by E. F. Helin at Palomar.

Named in honor of Ann Freeman, executive secretary of the Seismological Laboratory of the California Institute of Technology and long-time friend of discoverer, on the occasion of her birthday, 1993 Feb. 10. She has enthusiastically supported the planet-crossing asteroid survey during its first decade at Caltech and continues to celebrate its successes.

(4160) Sabrina-John = 1989 LE

Discovered 1989 June 3 by E. F. Helin at Palomar.

Named in memory of Sabrina M. Gonsalves (1962-1980) and John H. Riggins (1962-1980), young lovers tragically lost. In their brief lives they left a legacy of love and dedication to dreams and family. Hurling through space on its eternal journey, this minor planet symbolizes the endurance of their love. Citation prepared by Carl and Teresa Atallah and endorsed by the families and friends of the young couple.

(4567) Becvar = 1982 SO1
Discovered 1982 Sept. 17 by M. Mahrova at Klet.
Named in memory of the Czech astronomer Antonin Becvar (1901-1965), founder and first director of the Skalnate Pleso Observatory in Slovakia. Becvar made observations of comets, meteors and the solar photosphere, but he is best known as the author of Atlas Coeli and the more detailed Atlases Eclipticalis, Borealis and Australis.

(4796) Lewis = 1989 LU
Discovered 1989 June 3 by E. F. Helin at Palomar.
Named in honor of Joseph Walter Lewis, Jr. and his wife Anne Beech Lewis, good friends of the discoverer, on the occasion of their fiftieth wedding anniversary. Joe and Anne, an alumnus and alumna of Caltech and Stanford, respectively, have pursued distinguished civic as well as professional careers. Joe is president of DB Products, an electronic manufacturing company, and formerly vice president of Beckman Instruments. He is also a member of the Caltech Associates and has served as alumni president. Anne has been active in various civic and philanthropic organizations. Their three children, Jeff, Jack and Taffy, along with their many friends, warmly endorse this tribute.

(4921) Volonte
Discovered 1980 Sept. 29 by Z. Vavrova at Klet.
Named for the popular Italian actor Gian Maria Volonte, who portrayed the title role in a film about Giordano Bruno.

(4977) Rauthgundis = 2018 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden, on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Rauthgundis Seitz, a friend of the discoverers, on the occasion of her 70th birthday.

(5092) Manara = 1982 FJ
Discovered 1982 Mar. 21 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Alessandro Manara, since 1963 an astronomer at the Brera Astronomical Observatory in Milan. His fields of interest include astrometry, and the physics and dynamics of minor solar system bodies. In particular, he has studied the dynamics of comets and has carried out polarimetric analyses on several minor planets. He has recently written a study of Schiaparelli. Name suggested and citation prepared by V. Zappala.

(5097) Axford = 1983 TW1
Discovered 1983 Oct. 12 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of William Ian Axford, director of the Max-Planck-Institut fur Aeronomie, Lindau, and current president of the Committee on Space Research, on the occasion of his sixtieth birthday. Axford's seminal contributions in the areas of magnetospheric, heliospheric, cometary and cosmic ray physics and interstellar gas dynamics have greatly enhanced our understanding and stimulated further investigation. While providing strong leadership in promoting space missions, including the highly successful Giotto mission to comet Halley in 1986, he has also been a leading advocate for international cooperation in space. Name suggested and citation prepared by D. A. Mendis.

(5100) Pasachoff = 1985 GW
Discovered 1985 Apr. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Jay M. Pasachoff, Field Memorial professor of astronomy, director of the Hopkins Observatory and chair of the astronomy department of Williams College, Williamstown, Massachusetts. Pasachoff's broad range of astronomical research has centered on the sun, and especially on studies of solar eclipses. He is also well known for an extensive series of college-level textbooks and popular-astronomy textbooks and articles. Besides being an indefatigable public lecturer, Pasachoff has served as chairperson of the astronomy section of the American Association for the Advancement of Science, as a committee member of the American Association of Physics Teachers and on the Astrophysics Council of the National Aeronautics and Space Administration.

(5208) Royer = 1989 CH1

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

Named in honor of Monsignor Ronald Royer, whose work in astronomical photography and variable-star observation has been a life-long passion. For over twenty years he has contributed to astronomical research and has exemplified the ideals of amateur astronomy by sharing his telescopes and enthusiasm with hundreds of students, children of his parish and the general public. Royer is one of the true pioneers of tricolor astro-photography, having first applied this technology to illustrate the different colors of the gas and dust tails of Comet West (1976 VI). This naming is enthusiastically endorsed by Jack Child, Steve Padilla and all his many friends.

(5260) Philveron = 1989 RH

Discovered 1989 Sept. 2 by E. W. Elst at Haute Provence.

Named in honor of Philippe Veron, director of the Observatoire de Haute Provence. In addition to conducting research on quasars and active galaxies, Veron is a student of early cometary books and broadsides.

(5286) Haruomukai = 1989 VT1

Discovered 1989 Nov. 4 by M. Mukai and M. Takeishi at the JCPM Kagoshima Station.

Named in memory of Haruo Mukai (1949-1986), younger brother of one of the discoverers.

(5317) Verolacqua = 1983 CE

Discovered 1983 Feb. 11 by C. S. Shoemaker at Palomar.

Named in honor of Veronica Lynn Passalacqua, on the occasion of her twenty-fifth birthday, by her long-time friend D. W. E. Green, who made the identifications of this object. She has done tremendous volunteer work over several years, while a student at Harvard University, toward compiling the International Comet Quarterly archive of photometric data on comets.

(5377) Komori = 1991 FM

Discovered 1991 Mar. 17 by S. Otomo and O. Muramatsu at Kiyosato.

Named in honor of Yukimasa Komori, owner of the Astro-Dome Company and a committee member of the Gotoh Planetarium and Astonomical Museum. Born in 1900, he is the oldest known amateur astronomer in Japan, and he had the pleasure of watching Halley's Comet in both 1910 and 1986. His main interests are in observing lunar occultations and solar eclipses. Long active in the popularization of astronomy, particularly over Japanese national radio, he planned and carried out a minute-by-minute broadcast of the total solar eclipse in 1936, linking observers at various stations. Name proposed by the discoverers following suggestions by S. Kimura and E. Kobayashi.

(5388) Mottola = 1981 ED1

Discovered 1981 Mar. 5 by H. Debehogne and G. De Sanctis at the European Southern Observatory.

Named in honor of Stefano Mottola, of the Planetary Remote Sensing Section at the Deutsche Forschungsanstalt fur Luft- und Raumfahrt, Wesseling. He has investigated the photometric properties of surfaces of minor planets by applying numerical computer modeling to modern CCD observations, particularly of Trojans and other objects in the outer belt. He is also an active participant in the campaigns on (951) Gaspra and (243) Ida in connection with the Galileo flybys of these objects.

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EPHEMERIDES.

Comet Mueller (1993a) Elements MPC 21902

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993 05 13	06 42.31	+55 15.6	3.947	3.435	53.0	13.6	13.3
1993 05 23	06 45.34	+55 03.5	3.966	3.349	46.4	12.6	13.2
1993 06 02	06 50.09	+55 00.0	3.963	3.263	40.8	11.7	13.1
1993 06 12	06 56.29	+55 05.8	3.936	3.177	36.5	11.0	13.0
1993 06 22	07 03.74	+55 21.6	3.884	3.092	33.8	10.5	12.8
1993 07 02	07 12.29	+55 48.6	3.807	3.008	33.2	10.7	12.7
1993 07 12	07 21.84	+56 28.0	3.705	2.924	34.5	11.4	12.5
1993 07 22	07 32.40	+57 21.5	3.579	2.842	37.6	12.6	12.3
1993 08 01	07 43.98	+58 32.0	3.431	2.761	42.0	14.2	12.1
1993 08 11	07 56.74	+60 02.5	3.262	2.682	47.4	16.2	11.9
1993 08 21	08 11.03	+61 57.8	3.075	2.605	53.6	18.2	11.6
1993 08 31	08 27.50	+64 23.6	2.874	2.529	60.2	20.3	11.3
1993 09 10	08 47.57	+67 26.9	2.664	2.457	67.2	22.2	11.0
1993 09 20	09 14.6	+71 15.4	2.453	2.387	74.4	23.9	10.7
1993 09 30	09 57.9	+75 52.5	2.247	2.320	81.5	25.3	10.4
1993 10 10	11 32.9	+80 50.5	2.057	2.257	88.1	26.2	10.1
1993 10 20	15 28.4	+82 32.5	1.897	2.198	93.7	26.9	9.8
1993 10 30	18 25.9	+76 25.1	1.781	2.144	97.1	27.4	9.6
1993 11 09	19 33.12	+66 52.4	1.720	2.095	97.6	27.9	9.4
1993 11 19	20 08.20	+56 29.1	1.722	2.052	94.5	28.7	9.3
1993 11 29	20 31.84	+46 30.1	1.783	2.015	88.5	29.3	9.3
1993 12 09	20 50.23	+37 39.8	1.892	1.985	80.6	29.3	9.4
1993 12 19	21 05.75	+30 15.2	2.035	1.962	71.7	28.4	9.5
1993 12 29	21 19.50	+24 13.6	2.194	1.946	62.5	26.6	9.6
1994 01 08	21 32.03	+19 22.8	2.359	1.938	53.3	24.0	9.7
1994 01 18	21 43.67	+15 28.9	2.517	1.938	44.3	20.7	9.9
1994 01 28	21 54.59	+12 18.9	2.662	1.946	35.5	17.1	10.0

Periodic Comet Holmes Elements MPC 16379

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993 05 13	00 50.52	+14 11.9	2.926	2.190	36.0	15.7	19.7
1993 05 23	01 08.90	+17 04.1	2.870	2.199	40.4	17.4	19.7
1993 06 02	01 27.19	+19 52.8	2.810	2.211	44.9	18.9	19.7
1993 06 12	01 45.35	+22 37.2	2.747	2.225	49.5	20.3	19.7
1993 06 22	02 03.34	+25 16.7	2.680	2.242	54.1	21.6	19.6
1993 07 02	02 21.06	+27 50.6	2.610	2.260	59.0	22.7	19.6
1993 07 12	02 38.38	+30 18.8	2.537	2.281	63.9	23.6	19.6
1993 07 22	02 55.15	+32 41.0	2.461	2.304	69.1	24.3	19.6
1993 08 01	03 11.13	+34 57.1	2.382	2.328	74.6	24.8	19.6
1993 08 11	03 26.06	+37 07.4	2.302	2.355	80.3	25.1	19.5
1993 08 21	03 39.60	+39 12.2	2.221	2.382	86.4	25.1	19.5
1993 08 31	03 51.32	+41 11.5	2.141	2.412	92.8	24.7	19.5

1993 09 10	04 00.78	+43 05.2	2.063	2.443	99.7	24.0	19.5
1993 09 20	04 07.41	+44 52.5	1.988	2.475	106.9	22.8	19.4
1993 09 30	04 10.70	+46 31.1	1.920	2.508	114.6	21.3	19.4
1993 10 10	04 10.21	+47 57.5	1.861	2.542	122.6	19.3	19.4
1993 10 20	04 05.76	+49 06.2	1.815	2.577	130.7	17.0	19.4
1993 10 30	03 57.67	+49 50.5	1.785	2.613	138.5	14.6	19.4
1993 11 09	03 46.89	+50 04.4	1.775	2.650	145.3	12.3	19.5
1993 11 19	03 34.96	+49 44.9	1.788	2.688	149.7	10.7	19.6
1993 11 29	03 23.71	+48 54.4	1.825	2.726	150.3	10.3	19.7
1993 12 09	03 14.65	+47 40.1	1.886	2.764	147.0	11.2	19.8
1993 12 19	03 08.74	+46 12.0	1.971	2.803	140.8	12.8	19.9
1993 12 29	03 06.33	+44 40.2	2.078	2.843	133.2	14.6	20.1
1994 01 08	03 07.27	+43 12.4	2.203	2.882	125.0	16.2	20.3
1994 01 18	03 11.22	+41 53.4	2.344	2.922	116.8	17.5	20.5

Periodic Comet Kohoutek — Elements MPC 18258

Date TT	R. A. (2000) Decl.	Delta	r	Variation		m2
1993 05 23	22 53.41 -01 46.4	3.546	3.481	-0.54	-3.6	20.8
1993 06 02	23 00.15 -00 46.2	3.359	3.434	-0.57	-3.8	20.7
1993 06 12	23 05.82 +00 09.9	3.170	3.387	-0.62	-4.1	20.6
1993 06 22	23 10.25 +01 00.3	2.982	3.340	-0.66	-4.5	20.4
1993 07 02	23 13.23 +01 43.7	2.800	3.292	-0.72	-4.8	20.2
1993 07 12	23 14.57 +02 18.4	2.625	3.243	-0.77	-5.2	20.0
1993 07 22	23 14.08 +02 42.7	2.462	3.194	-0.83	-5.6	19.8
1993 08 01	23 11.63 +02 54.6	2.313	3.144	-0.88	-6.1	19.5
1993 08 11	23 07.23 +02 52.9	2.184	3.094	-0.93	-6.5	19.3
1993 08 21	23 01.02 +02 36.8	2.078	3.044	-0.97	-6.8	19.0
1993 08 31	22 53.44 +02 06.9	1.997	2.993	-1.00	-7.1	18.7
1993 09 10	22 45.12 +01 25.7	1.944	2.942	-1.00	-7.3	18.6
1993 09 20	22 36.87 +00 37.0	1.920	2.891	-0.99	-7.2	18.7
1993 09 30	22 29.58 -00 13.8	1.922	2.839	-0.96	-7.0	18.8
1993 10 10	22 24.00 -01 01.3	1.948	2.787	-0.91	-6.8	18.9
1993 10 20	22 20.66 -01 40.8	1.994	2.735	-0.87	-6.4	19.1
1993 10 30	22 19.87 -02 08.8	2.056	2.682	-0.83	-6.0	19.2
1993 11 09	22 21.69 -02 23.3	2.128	2.630	-0.79	-5.7	19.3
1993 11 19	22 26.02 -02 23.3	2.207	2.578	-0.76	-5.4	19.3
1993 11 29	22 32.69 -02 08.7	2.289	2.526	-0.75	-5.2	19.4
1993 12 09	22 41.45 -01 39.7	2.370	2.474	-0.74	-5.1	19.4
1993 12 19	22 52.09 -00 57.0	2.449	2.423	-0.74	-5.0	19.5
1993 12 29	23 04.39 -00 01.5	2.522	2.372	-0.74	-4.9	19.5
1994 01 08	23 18.15 +01 05.7	2.590	2.322	-0.76	-4.9	19.5
1994 01 18	23 33.25 +02 23.8	2.650	2.273	-0.78	-4.9	19.4
1994 01 28	23 49.53 +03 51.3	2.702	2.224	-0.80	-5.0	19.4
1994 02 07	00 06.93 +05 26.8	2.746	2.177	-0.83	-5.0	19.3
1994 02 17	00 25.38 +07 09.1	2.782	2.131	-0.87	-5.0	19.3
1994 02 27	00 44.84 +08 56.4	2.809	2.087	-0.91	-5.0	19.2
1994 03 09	01 05.30 +10 46.8	2.830	2.045	-0.96	-4.9	19.1

Periodic Comet Shajn-Schaldach — Elements MPC 16381

Date TT	R. A. (2000) Decl.	Delta	r	Elong.	Phase	m1
1993 05 23	23 27.80 -01 44.3	2.803	2.636	70.1	21.2	20.9
1993 06 02	23 41.29 -00 29.7	2.658	2.607	76.1	22.2	20.8
1993 06 12	23 54.13 +00 39.6	2.512	2.579	82.2	23.0	20.6
1993 06 22	00 06.20 +01 42.1	2.366	2.552	88.6	23.5	20.4
1993 07 02	00 17.30 +02 35.9	2.222	2.527	95.2	23.6	20.3
1993 07 12	00 27.25 +03 19.4	2.082	2.503	102.2	23.4	20.1
1993 07 22	00 35.79 +03 50.3	1.947	2.480	109.6	22.7	19.9
1993 08 01	00 42.65 +04 06.8	1.820	2.459	117.4	21.5	19.7
1993 08 11	00 47.57 +04 07.1	1.703	2.439	125.9	19.7	19.5

1993 08 21	00 50.29	+03 49.6	1.598	2.421	135.0	17.2	19.4
1993 08 31	00 50.67	+03 14.2	1.509	2.405	144.7	14.0	19.2
1993 09 10	00 48.79	+02 22.3	1.439	2.391	155.1	10.2	19.1
1993 09 20	00 44.95	+01 17.5	1.391	2.378	165.9	5.9	19.0
1993 09 30	00 39.83	+00 06.6	1.368	2.367	175.5	1.9	18.9
1993 10 10	00 34.36	-01 02.3	1.369	2.359	169.7	4.3	18.9
1993 10 20	00 29.51	-02 00.9	1.396	2.352	158.8	8.8	18.9
1993 10 30	00 26.22	-02 42.4	1.446	2.348	147.9	13.0	19.0
1993 11 09	00 25.07	-03 03.2	1.517	2.345	137.6	16.6	19.1
1993 11 19	00 26.38	-03 02.4	1.604	2.345	127.9	19.4	19.2
1993 11 29	00 30.18	-02 40.9	1.705	2.346	118.9	21.6	19.4
1993 12 09	00 36.31	-02 01.3	1.817	2.350	110.4	23.1	19.5
1993 12 19	00 44.52	-01 06.3	1.937	2.356	102.6	24.1	19.7
1993 12 29	00 54.56	+00 01.2	2.063	2.364	95.2	24.5	19.8
1994 01 08	01 06.13	+01 18.4	2.192	2.374	88.2	24.5	20.0
1994 01 18	01 19.01	+02 42.7	2.322	2.385	81.6	24.1	20.1
1994 01 28	01 33.01	+04 11.7	2.453	2.399	75.2	23.4	20.2
1994 02 07	01 47.92	+05 43.4	2.583	2.414	69.1	22.4	20.4
1994 02 17	02 03.63	+07 15.8	2.711	2.432	63.2	21.3	20.5
1994 02 27	02 20.01	+08 47.1	2.835	2.451	57.5	19.9	20.7

Periodic Comet Slaughter-Burnham (1992w) Elements MPC 16380

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993 06 02	02 14.23	+17 33.4	3.318	2.548	34.5	13.0	18.7
1993 06 12	02 32.23	+19 22.3	3.245	2.544	39.5	14.7	18.6
1993 06 22	02 50.23	+21 05.3	3.167	2.543	44.5	16.3	18.6
1993 07 02	03 08.11	+22 42.0	3.083	2.544	49.5	17.7	18.5
1993 07 12	03 25.78	+24 11.9	2.995	2.547	54.7	19.0	18.4
1993 07 22	03 43.10	+25 35.0	2.903	2.553	60.1	20.2	18.4
1993 08 01	03 59.90	+26 51.1	2.806	2.561	65.7	21.2	18.3
1993 08 11	04 15.98	+28 00.6	2.706	2.571	71.5	22.0	18.3
1993 08 21	04 31.11	+29 04.0	2.604	2.583	77.6	22.5	18.2
1993 08 31	04 45.02	+30 01.9	2.501	2.598	84.1	22.7	18.1
1993 09 10	04 57.42	+30 55.2	2.397	2.614	90.9	22.7	18.1
1993 09 20	05 07.97	+31 44.7	2.295	2.633	98.2	22.2	18.0
1993 09 30	05 16.31	+32 31.1	2.196	2.653	106.0	21.3	17.9
1993 10 10	05 22.11	+33 14.6	2.103	2.676	114.4	19.9	17.9
1993 10 20	05 25.05	+33 54.9	2.020	2.700	123.4	17.9	17.8
1993 10 30	05 24.97	+34 30.5	1.950	2.725	133.0	15.5	17.8
1993 11 09	05 21.90	+34 58.9	1.896	2.753	143.0	12.5	17.8
1993 11 19	05 16.21	+35 17.2	1.864	2.782	153.1	9.2	17.8
1993 11 29	05 08.66	+35 22.5	1.855	2.812	162.5	6.1	17.8
1993 12 09	05 00.30	+35 13.6	1.874	2.843	167.6	4.3	17.9
1993 12 19	04 52.32	+34 51.8	1.920	2.876	163.4	5.6	18.0
1993 12 29	04 45.80	+34 20.5	1.993	2.910	154.3	8.4	18.1
1994 01 08	04 41.49	+33 44.2	2.091	2.946	144.2	11.2	18.3
1994 01 18	04 39.75	+33 07.3	2.211	2.982	134.2	13.7	18.5
1994 01 28	04 40.66	+32 32.9	2.350	3.019	124.5	15.6	18.7
1994 02 07	04 44.07	+32 02.7	2.502	3.057	115.3	17.0	18.8
1994 02 17	04 49.71	+31 37.2	2.666	3.096	106.5	17.8	19.0
1994 02 27	04 57.30	+31 16.0	2.838	3.135	98.2	18.2	19.2
1994 03 09	05 06.50	+30 58.2	3.013	3.175	90.2	18.2	19.4
1994 03 19	05 17.07	+30 42.5	3.190	3.216	82.5	17.9	19.6
1994 03 29	05 28.73	+30 27.8	3.367	3.258	75.2	17.2	19.8
1994 04 08	05 41.25	+30 12.9	3.540	3.299	68.1	16.4	19.9
1994 04 18	05 54.47	+29 56.8	3.708	3.342	61.2	15.3	20.1
1994 04 28	06 08.18	+29 38.8	3.869	3.384	54.5	14.0	20.2
1994 05 08	06 22.25	+29 18.3	4.021	3.427	47.9	12.6	20.4
1994 05 18	06 36.56	+28 54.7	4.164	3.470	41.4	11.1	20.5

Comet Shoemaker-Levy (1991a1) Elements MPC 20602

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993	06 02	06 50.11	-36 01.9	4.699	4.382	65.8	12.2	17.3
1993	06 12	06 57.24	-35 14.1	4.861	4.486	62.6	11.6	17.5
1993	06 22	07 04.40	-34 43.4	5.013	4.589	60.0	11.1	17.6
1993	07 02	07 11.47	-34 28.7	5.152	4.691	57.9	10.6	17.8
1993	07 12	07 18.32	-34 28.7	5.278	4.793	56.5	10.2	17.9
1993	07 22	07 24.85	-34 42.4	5.391	4.893	55.9	9.9	18.1
1993	08 01	07 30.93	-35 08.9	5.489	4.993	56.0	9.7	18.2
1993	08 11	07 36.46	-35 46.9	5.572	5.092	57.0	9.6	18.3
1993	08 21	07 41.32	-36 35.6	5.642	5.190	58.8	9.6	18.4
1993	08 31	07 45.36	-37 33.7	5.698	5.287	61.3	9.6	18.5
1993	09 10	07 48.45	-38 40.1	5.742	5.384	64.4	9.7	18.6
1993	09 20	07 50.44	-39 53.3	5.775	5.480	68.1	9.8	18.7
1993	09 30	07 51.16	-41 11.4	5.800	5.575	72.2	9.8	18.8
1993	10 10	07 50.45	-42 32.5	5.817	5.670	76.6	9.9	18.9
1993	10 20	07 48.16	-43 54.1	5.831	5.764	81.3	9.8	18.9
1993	10 30	07 44.14	-45 13.2	5.842	5.857	86.0	9.7	19.0
1993	11 09	07 38.34	-46 26.5	5.855	5.950	90.7	9.6	19.1
1993	11 19	07 30.76	-47 30.4	5.872	6.042	95.2	9.4	19.2
1993	11 29	07 21.54	-48 21.1	5.897	6.134	99.3	9.1	19.2
1993	12 09	07 10.98	-48 55.3	5.931	6.225	102.8	8.9	19.3
1993	12 19	06 59.53	-49 10.4	5.978	6.315	105.7	8.6	19.4
1993	12 29	06 47.74	-49 05.0	6.039	6.405	107.6	8.4	19.5
1994	01 08	06 36.24	-48 39.1	6.115	6.494	108.5	8.3	19.6
1994	01 18	06 25.56	-47 54.2	6.207	6.583	108.3	8.2	19.6
1994	01 28	06 16.18	-46 53.0	6.315	6.671	107.1	8.1	19.7
1994	02 07	06 08.37	-45 39.2	6.438	6.759	104.9	8.1	19.8
1994	02 17	06 02.27	-44 16.5	6.574	6.847	101.9	8.1	19.9
1994	02 27	05 57.89	-42 48.8	6.722	6.933	98.2	8.1	20.0
1994	03 09	05 55.14	-41 19.6	6.879	7.020	94.1	8.1	20.2
1994	03 19	05 53.87	-39 51.8	7.042	7.106	89.6	8.1	20.3
1994	03 29	05 53.92	-38 27.8	7.209	7.191	85.0	7.9	20.4

Periodic Comet Whipple Elements MPC 18259

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993	06 12	19 57.46	-08 28.2	3.139	3.970	139.9	9.5	21.0
1993	06 22	19 53.35	-08 25.2	3.037	3.947	149.6	7.5	20.9
1993	07 02	19 48.07	-08 30.8	2.959	3.925	158.9	5.3	20.8
1993	07 12	19 41.98	-08 44.7	2.907	3.902	166.2	3.6	20.7
1993	07 22	19 35.57	-09 06.3	2.884	3.879	166.6	3.5	20.7
1993	08 01	19 29.38	-09 34.2	2.889	3.857	159.8	5.2	20.7
1993	08 11	19 23.95	-10 06.5	2.920	3.834	150.4	7.5	20.7
1993	08 21	19 19.71	-10 41.3	2.976	3.812	140.5	9.7	20.7
1993	08 31	19 17.03	-11 16.6	3.054	3.789	130.6	11.7	20.7
1993	09 10	19 16.07	-11 50.7	3.149	3.767	121.0	13.3	20.8
1993	09 20	19 16.94	-12 22.1	3.257	3.745	111.6	14.4	20.8
1993	09 30	19 19.61	-12 49.5	3.374	3.723	102.5	15.2	20.8
1993	10 10	19 23.99	-13 12.1	3.497	3.700	93.8	15.6	20.9
1993	10 20	19 29.96	-13 29.1	3.621	3.678	85.4	15.7	21.0

Periodic Comet West-Kohoutek-Ikemura Elements MPC 16381

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993	06 12	01 58.65	-17 01.2	2.672	2.402	63.8	22.3	20.9
1993	06 22	02 17.19	-16 05.5	2.528	2.343	67.9	23.7	20.7
1993	07 02	02 35.77	-15 16.5	2.385	2.283	71.9	25.0	20.5
1993	07 12	02 54.33	-14 34.6	2.242	2.224	75.8	26.3	20.2
1993	07 22	03 12.79	-14 00.4	2.101	2.165	79.7	27.5	20.0
1993	08 01	03 30.99	-13 33.9	1.963	2.107	83.6	28.6	19.7

1993 08 11	03 48.82	-13 14.6	1.826	2.050	87.5	29.6	19.4
1993 08 21	04 06.07	-13 02.0	1.693	1.995	91.5	30.5	19.1
1993 08 31	04 22.50	-12 54.3	1.563	1.941	95.6	31.2	18.8
1993 09 10	04 37.84	-12 49.1	1.436	1.889	99.8	31.7	18.5
1993 09 20	04 51.74	-12 43.0	1.312	1.839	104.3	31.9	18.2
1993 09 30	05 03.76	-12 30.4	1.193	1.793	109.3	31.8	17.9
1993 10 10	05 13.44	-12 03.7	1.078	1.749	114.8	31.2	17.6
1993 10 20	05 20.15	-11 12.3	0.968	1.710	121.0	29.9	17.3
1993 10 30	05 23.24	-09 40.7	0.867	1.674	128.3	27.7	16.9
1993 11 09	05 22.10	-07 10.0	0.775	1.644	136.8	24.4	16.6
1993 11 19	05 16.31	-03 18.5	0.698	1.619	146.8	19.5	16.3
1993 11 29	05 06.10	+02 09.5	0.642	1.599	157.7	13.5	16.1
1993 12 09	04 52.68	+09 07.2	0.612	1.585	166.1	8.6	15.9
1993 12 19	04 38.33	+16 54.7	0.612	1.578	162.5	10.8	15.9
1993 12 29	04 26.03	+24 31.9	0.643	1.577	151.2	17.5	16.0
1994 01 08	04 18.24	+31 12.5	0.700	1.583	139.6	23.8	16.2
1994 01 18	04 16.46	+36 40.4	0.778	1.595	129.3	28.5	16.5
1994 01 28	04 21.15	+41 00.4	0.871	1.613	120.5	31.7	16.8
1994 02 07	04 31.98	+44 23.6	0.975	1.637	113.1	33.7	17.1
1994 02 17	04 48.37	+46 59.9	1.085	1.666	106.8	34.6	17.4
1994 02 27	05 09.51	+48 55.8	1.201	1.700	101.3	34.8	17.7
1994 03 09	05 34.46	+50 15.1	1.321	1.738	96.4	34.6	18.0
1994 03 19	06 02.28	+50 59.8	1.444	1.781	91.9	34.0	18.3
1994 03 29	06 31.93	+51 11.7	1.569	1.827	87.8	33.1	18.6
1994 04 08	07 02.41	+50 52.9	1.696	1.876	83.9	32.1	18.9
1994 04 18	07 32.87	+50 05.8	1.825	1.927	80.1	30.9	19.2
1994 04 28	08 02.63	+48 54.0	1.956	1.980	76.5	29.6	19.4
1994 05 08	08 31.20	+47 21.2	2.089	2.035	72.9	28.3	19.7
1994 05 18	08 58.38	+45 31.2	2.223	2.092	69.3	26.9	19.9
1994 05 28	09 24.03	+43 27.9	2.357	2.150	65.8	25.5	20.2
1994 06 07	09 48.20	+41 14.8	2.492	2.208	62.1	24.0	20.4
1993 04 23	16 14.17	+12 58.0	1.730	2.572	138.7	15.0	16.4
- 6.29 -1.19	+ 69.5 - 9.1	1992 AO	21945	- 9.66 +0.19	- 13.1 -16.5		
1993 05 23	15 47.70	+14 36.5	1.677	2.571	144.7	13.2	16.2
1993 05 23	17 05.36	-17 03.7	1.127	2.119	164.0	7.6	16.4
- 8.47 -1.07	+ 47.0 0.0	1983 PZ	17201	- 8.47 +1.09	+ 27.7 - 6.4		
1993 06 22	16 35.95	-14 59.9	1.076	2.054	157.8	10.8	16.4
1993 05 23	17 02.08	-36 41.6	4.891	5.846	158.9	3.6	17.5
- 5.89 -0.29	- 15.2 + 3.0	(5028)	19490	- 5.81 +0.31	+2.5 + 2.5		
1993 06 22	16 43.43	-36 59.7	4.879	5.835	158.2	3.7	17.5
1993 05 23	17 10.89	-45 52.8	1.748	2.678	150.8	10.6	17.5
-11.06 -1.21	- 46.3 +11.2	1973 RF	15698	-11.36 +1.16	+ 29.3 +11.0		
1993 06 22	16 32.86	-46 18.0	1.700	2.635	150.8	10.8	17.4
1993 05 23	17 10.41	-31 29.5	1.321	2.301	160.7	8.4	17.3
- 9.71 -1.05	-7.6 + 6.8	1989 GH4	17637	- 9.28 +1.17	+ 30.3 + 3.7		
1993 06 22	16 37.80	-30 49.6	1.314	2.295	159.7	8.8	17.3
1993 05 23	17 07.59	-27 28.1	1.977	2.960	163.0	5.7	16.2
- 8.00 -0.60	+ 30.9 + 3.8	1992 EF	20034	- 7.39 +0.77	+ 44.4 0.0		
1993 06 22	16 41.98	-25 28.1	1.991	2.972	161.5	6.2	16.2
1993 05 23	17 07.48	-10 20.2	2.431	3.403	160.7	5.6	17.0
- 7.85 -0.59	- 14.5 - 3.7	1983 WF1	9687	- 8.22 +0.49	- 37.5 - 3.6		
1993 06 22	16 41.40	-11 38.3	2.358	3.319	157.3	6.8	17.0

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